

## FOUR NEW SPECIES OF *HETERANTHOCIDIUM* (ORCHIDACEAE) FROM COLOMBIA AND SURINAME

DARIUSZ L. SZLACHETKO, NATALIA OŁĘDRZYŃSKA & MARTA KOLANOWSKA<sup>1</sup>

**Abstract.** Four new species of *Heteranthocidium* Szlach., Mytnik & Romowicz are described and illustrated. Each morphological description is complemented with data on the species' ecology and distribution. The taxonomic affinities of the novelties are briefly discussed.

**Key words:** biodiversity, distribution, Neotropics, Oncidiinae sect. *Heterantha*, taxonomy

Dariusz L. Szlachetko, Natalia Ołędryńska & Marta Kolanowska, Department of Plant Taxonomy and Nature Conservation, University of Gdańsk, Wita Stwosza 59, 80-308 Gdańsk, Poland; e-mail: martakolanowska@wp.pl

### INTRODUCTION

The Neotropical genus *Oncidium* Sw. is one of the most controversial orchid taxa within Orchidaceae. Since its description (Swartz 1800), ca 1200 specific names have published in this genus. The discussion on the infrageneric classification of *Oncidium* began in the mid-19<sup>th</sup> century when Lindley (1842) demarcated two sections: *O.* sect. *Cebolletae* and *O.* sect. *Ranifera*. Both were later elevated to generic rank, as *Cohniella* Pfitzer and *Menezesiella* Chiron & V. P. Castro respectively. In subsequent research (e.g., Lindley & Paxton 1850–1851; Lindley 1855; Kraenzlin 1922), scientists established ca 50 new sections within *Oncidium*. The new infrageneric taxa were created based on the pseudobulb form, leaf shape, connation of the tepals, and lip morphology.

Among the numerous species groups recognized within *Oncidium*, only one produces dimorphic flowers. Those plants were first highlighted by Lindley as the separated *O.* sect. *Plurituberculata-hymenoptera-heterantha* (Lindley 1855); the author included only three species: *O. cultratum* Lindl., *O. pentadactylon* Lindl. and *O. retusum* Lindl. Later the autonomous section *Heterantha* was proposed by Kraenzlin (1922) to accommo-

date 28 *Oncidium* species with dimorphic flowers. More recently this section was elevated to generic rank by Szlachetko *et al.* (2006) and named *Heteranthocidium* in reference to the heteraninous inflorescence; they initially included 15 species but in the most recent studies (Szlachetko & Kolanowska 2015) a total of 34 species were recognized within the genus. Representatives of *Heteranthocidium* produce ellipsoid to ovoid, flattened, uni- or bifoliate pseudobulbs which are partially enclosed at the base by longitudinally folded sheaths on each side. The leaf is thin, and linear to obovate. The lateral inflorescence of those plants is paniculate, composed of numerous resupinate flowers. Fertile flowers are larger than the sterile ones. Sterile flowers are often stellate. The ovary is glabrous and the tepals are free, sub-similar and usually spreading. The sessile lip is entire or 3-lobed, ornamented with a prominent callus. The gynostemium is short, rather massive, distinctly swollen above a delicate and narrow base, with the column part as long as the anther or slightly longer, and broadly winged near the stigma. The wings are obliquely subquadrate to obovate, sometimes bipartite, irregularly denticulate and/or papillate along the margins. No column foot is produced. The ventral anther is incumbent,

<sup>1</sup> Corresponding author

operculate, oblong ovoid, dorsiventrally flattened, obscurely 2-chambered and papillate. The connective is narrow, slightly thickened on the dorsal surface. Two subglobose, dorsiventrally flattened, hard pollinia are produced. The caudiculae are sticky and amorphous. The apical clinandrium is narrow, and the elliptic stigma is rather large and deeply concave. The elongate rostellum is conical-digitate and its remnant is bilobulate in the middle. The single viscidium is very small, oblong to elliptic, thick and fleshy. The single, thin, lamellate tegula is oblong-obovate to oblong-triangular, elongate at the apex and slightly thickened there (Szlachetko & Mytnik-Ejsmont 2009).

The geographical range of *Heterantheoidium* extends from Costa Rica to Bolivia and Brazil. Plants are usually found growing epiphytically in premontane and montane areas, but *H. pentadactylon* was found at higher elevations at ca 3500 m a.s.l. (Senghas 1997).

During recent studies of oncidoid orchids in the Missouri Botanical Garden, four distinctive representatives of *Heterantheoidium* were found. They are described and illustrated as new species here.

#### TAXONOMIC TREATMENT

#### *Heterantheoidium ciliicolumna* Szlach. & Kolan., *sp. nov.*

Fig. 1

Species similar to *H. pentadactylon* (Senghas) Szlach. & Kolan., distinguished by the distinctly spatulate lateral sepals, semicircular lip lateral lobes, obliquely elliptic lip middle lobe lobules, and callus consisting of three central rows of protuberances and additional small protuberances on each lip lateral lobe.

HOLOTYPE: COLOMBIA. Antioquia. *Fonnegra & al. 3210* (MO).

Pseudobulbs up to 3 cm tall and 0.8 cm in diameter, ellipsoid, compressed. Leaf absent. Inflorescence 30–40 cm long, laxly many-flowered, with some branches, branches up to 5 cm long, usually with 1 terminal fertile flower and several sterile flowers below. Sterile flowers stellate, segments ca 2 mm long, linear. Fertile flowers – floral

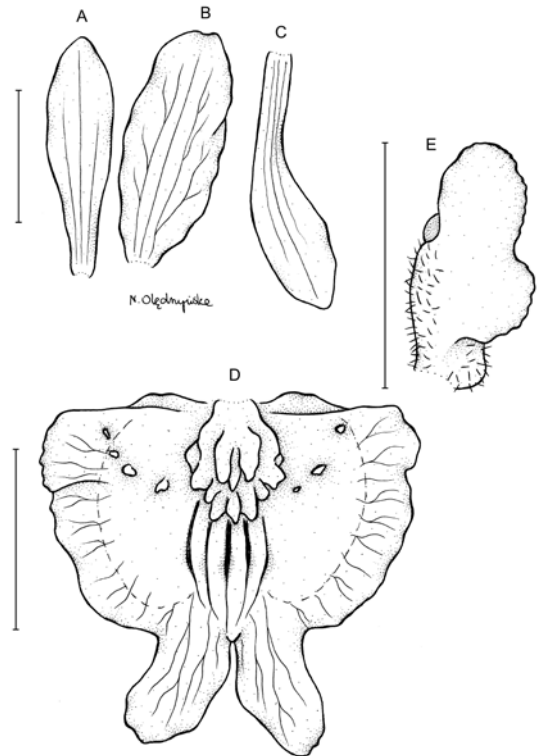
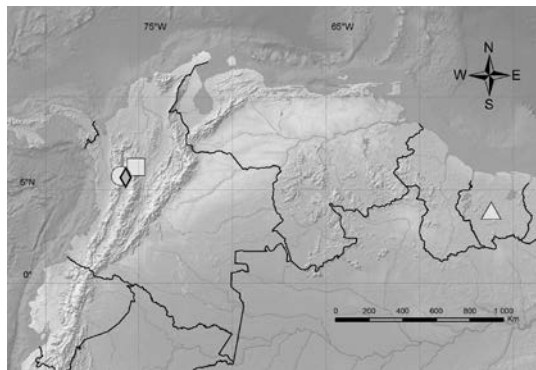


Fig. 1. *Heterantheoidium ciliicolumna* Szlach. & Kolan., *sp. nov.* A – dorsal sepal, B – petal, C – lateral sepal, D – lip, E – gynostemium. Scale bar = 5 mm. Drawn by N. Oledrzyńska from the holotype.

bracts 1.5 mm long, triangular-ovate, acute. Pedicellate ovary 12 mm long, slender. Dorsal sepal 9.5 mm long, 2 mm wide, ligulate-spatulate, rounded at apex. Petals 9 mm long, 4 mm wide, sessile, obliquely elliptic, apically truncate to emarginate. Lateral sepals 9 mm long, 2.1 mm wide, claw linear, blade oblong, subobtusate, oblique. Lip 10–11 mm long and wide, sessile, base truncate, subreniform in outline, papillate in center, margins erose, somewhat undulate, lip middle lobe deeply bilobulate, lobules obliquely elliptic, basal callus glabrous, large, composed of several ridges and projections, with 5 keels running to the bottom of the sinus between the lobules and additional knob-like projections on each side of the main callus. Gynostemium 6 mm long, densely ciliate, staminodes bilobed, margins irregularly crenulate, apex rounded.



**Fig. 2.** Localities of *Heteranthocidium ciliicolumna* Szlach. & Kolan., *sp. nov.* (◇), *H. mandritum* Szlach. & Kolan., *sp. nov.* (□), *H. surinamensis* Szlach. & Kolan., *sp. nov.* (△), and *H. croatii* Szlach. & Kolan., *sp. nov.* (○).

**ETYMOLOGY.** In reference to the densely ciliate gynostemium.

**HABITAT AND ECOLOGY.** Growing epiphytically in humid forest *ca* 5 m above the ground. Flowering in February.

**DISTRIBUTION.** Known exclusively from the Colombian Central Andean Cordillera, where it was found growing at *ca* 1850 m a.s.l. (Fig. 2).

**REPRESENTATIVE SPECIMEN:** COLOMBIA. Antioquia: Mpio. Támesis. Vereda Río Frío, Alt. 2100 m, 9 Nov. 1989, R. Fonnegra, F. Roldan, B. Corral & M. Giron 3210 (MO).

**NOTES.** Species similar to *H. pentadactylon*, distinguished by the distinctly spatulate lateral sepals, semicircular lip lateral lobes, obliquely elliptic lip middle lobe lobules, and callus consisting of three central rows of protuberances and additional small protuberances on each lip lateral lobe.

From *H. tigratum* (Rchb. f. & Warsz.) Szlach., Mytnik & Romowicz it differs by the short lip isthmus, larger lip lateral lobes and glabrous lip callus, and from *H. magnificum* (Senghas) Szlach. & Kolan. by the complex callus and larger lip middle lobe lobules.

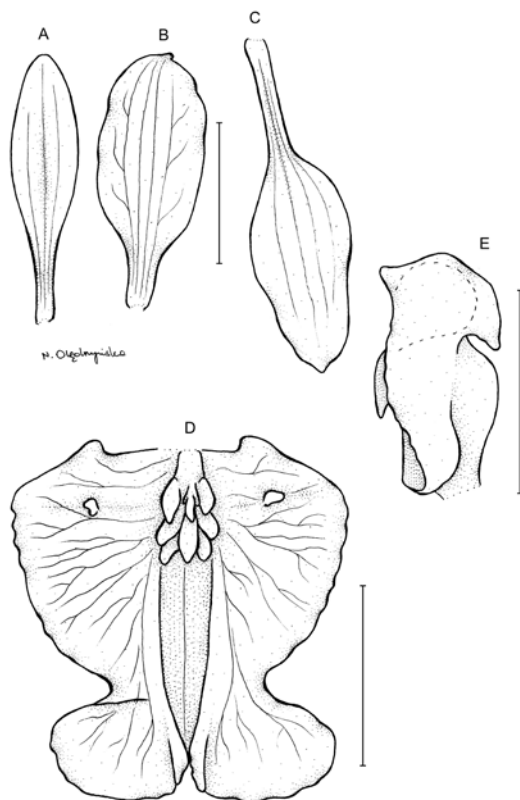
***Heteranthocidium mandritum*** Szlach. & Kolan., *sp. nov.* Fig. 3

Species resembling *H. heterodactylum* (Kraenzl.) Szlach. & Kolan., from which it differs in callus structure, which is many-toothed in the basal third

of the lip, and the additional row of small protuberances present on both lip lateral lobes.

**HOLOTYPE:** COLOMBIA. Antioquia. *de Escobar & al.* 6320 (MO).

Pseudobulbs up to 2.5 cm tall and 0.6 cm in diameter, oblongoid-ellipsoid, compressed, 1-leaved, concealed basally by leafy sheaths. Leaf shortly petiolate; petiole *ca* 1 cm long; blade up to 7.5 cm long and 1 cm wide, lanceolate, subacute. Inflorescence 40 cm long, laxly many-flowered, branching, branches up to 4 cm long, usually with 1 terminal fertile flower and several sterile flowers below. Sterile flowers stellate, segments *ca* 2 mm long, linear. Fertile flowers – floral bracts 3 mm long, triangular-ovate, acute. Pedicellate ovary 8 mm long, slender. Dorsal sepal 9 mm long, 2.3 mm



**Fig. 3.** *Heteranthocidium mandritum* Szlach. & Kolan., *sp. nov.* A – dorsal sepal, B – petal, C – lateral sepal, D – lip, E – gynostemium. Scale bar = 5 mm. Drawn by N. Ołędzińska from the holotype.

wide, claw linear, blade elliptic-ligulate, rounded at apex. Petals 9.5 mm long, 4 mm wide, basally shortly clawed, elliptic, apically obtuse, somewhat oblique. Lateral sepals 9 mm long, 2.5 mm wide, claw linear, blade oblong ovate, obtuse, oblique. Lip 9–10 mm long, 7.5 mm wide, sessile, truncate at base, semiorbicular in outline, margins entire, somewhat undulate, lip middle lobe transversely ligulate, sinus shallow, basal callus rather small, composed of 3 rows of 3 parallel ridges, glabrous, with single knob-like projection on each side. Gynostemium 5 mm long, glabrous, staminodes large and spacious, with basal pocket-like cavities, apical part of staminodes cowl-like.

ETYMOLOGY. *Mandrita* (Lat.) – monk, an allusion to the form of the gynostemium seen from the side.

HABITAT AND ECOLOGY. Epiphytic plant growing in humid forest. Flowering in November.

DISTRIBUTION. Known exclusively from the Colombian Western Andean Cordillera, where it was found growing at ca 2100 m a.s.l. (Fig. 2).

REPRESENTATIVE SPECIMEN: COLOMBIA. Antioquia: Mpio. Guatapé. Vereda Santa Rita. Bosque humedo, Alt. 1850 m, 27 Feb. 1986, L. De Escobar, A. Uribe, J. Vallejo & F. Roldan 6320 (MO). Fig. 2.

NOTES. Species resembling *H. heterodactylum*, from which it differs in callus structure, which is many-toothed in the basal third of the lip, and the additional row of small protuberances present on both lip lateral lobes.

It is also similar to *H. silvanoii*, but with a series of small protuberances on both lip lateral lobes, obliquely ovate, rather narrow lobules of the lip middle lobe, and apically rounded gynostemium wings with denticulate margins.

***Heteranthocidium surinamensis*** Szlach.

& Kolan., *sp. nov.*

Fig. 4

Species distinguished by the unlobed, subrectangular lip and dolabriform, undulate petals.

HOLOTYPE: SURINAME. *Evans & al.* 3083 (MO).

Pseudobulbs 3.5 cm tall, 1 cm in diameter, ovoid-oblongoid, compressed, 1-leaved. Leaf shortly petiolate; petiole ca 1.5 cm long; blade 8 cm

long, 1 cm wide, oblong-lanceolate, acute. Inflorescence 80 cm long, laxly many-flowered, heavily branching, branches up to 7 cm long, usually with 1 terminal fertile flower and several sterile flowers below. Sterile flowers stellate, segments ca 3 mm long, linear. Fertile flowers – floral bracts 1 mm long, obscure, triangular-ovate, acute. Pedicellate ovary 12 mm long, slender. Dorsal sepal 5 mm long, 2 mm wide, basally shortly clawed, oblong-ovate above, rounded at apex. Petals 5.5 mm long, 4 mm wide, obliquely dolabriform, subacute to subobtuse, outer margin erose. Lateral sepals 6 mm long, 2 mm wide, oblong-elliptic above linear claw, oblique, acute. Lip 10 mm long, 8–9 mm wide, subrectangular in outline, sessile, deeply notched at apex, margins irregularly crenulate, basal callus a relatively small, flat pad surrounded by narrow rim, apically 3-dentate, gradually transforming into 3 keels running along basal part of nerves. Gynostemium 4.5 mm long, glabrous, staminodes widely spread, very large, dolabriform, with erose margins, apex rounded.

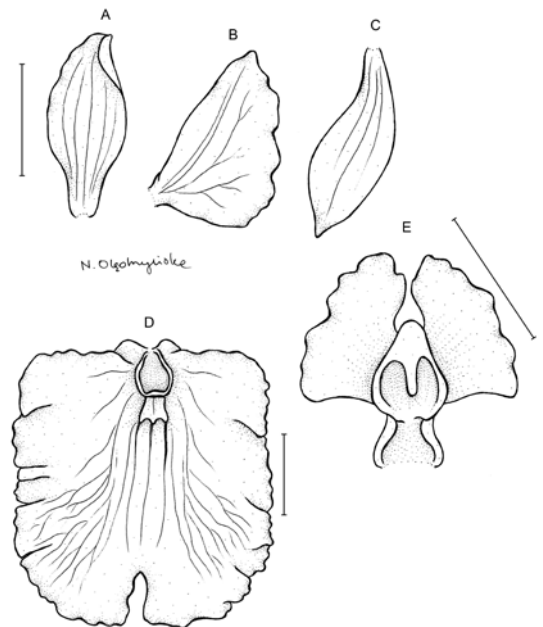


Fig. 4. *Heteranthocidium surinamensis* Szlach. & Kolan., *sp. nov.* A – dorsal sepal, B – petal, C – lateral sepal, D – lip, E – gynostemium. Scale bar = 3 mm. Drawn by N. Ołędzka from the holotype.

**ETYMOLOGY.** In reference to the country of origin of the new species.

**HABITAT AND ECOLOGY.** Epiphytic plant growing in primary wet forest 2–6 m above the ground. Flowering in July.

**DISTRIBUTION.** Known exclusively from the Guiana Highlands, where it was found growing at ca 725 m a.s.l. (Fig. 2).

**REPRESENTATIVE SPECIMEN:** SURINAME. Sipaliwini. Summit of Tafelberg. SW rim of Arrowhead Basin, ca 4 km from Lisa Creek waterfall over W rim of tepui, 3°54'20"N 56°10'30"W, Alt. 725 m, 5 Jul. 1998, R. Evans, H. Peckham & L. Lohmann 3083 (MO).

**NOTES.** *Heteranthocidium surinamensis* is similar to *H. colombianum* Szlach. & Kolan. in lip shape, but may be distinguished from the latter by lip callus form (apically 3-dentate, gradually transforming into 3 keels, vs 3 knob-like projections), petal shape (dolabriform vs ligulate) and staminode position (broadly spread vs touching each other in front of anther).

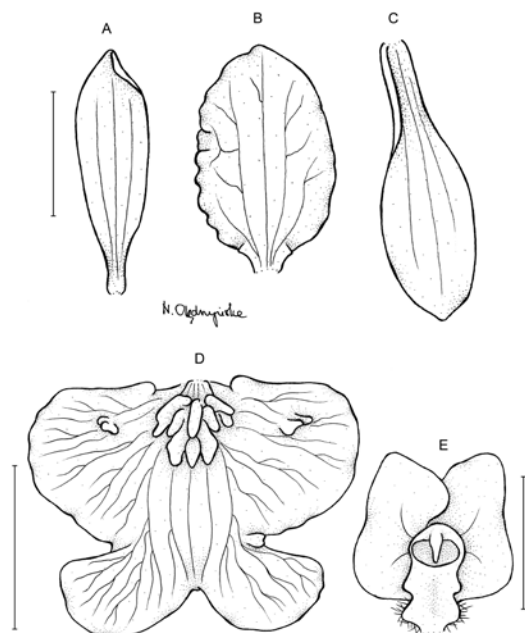
***Heteranthocidium croatii* Szlach. & Kolan., sp. nov.**

Fig. 5

Species similar to *H. adelaidae* (Koniger) Szlach., but with a glabrous callus consisting of five rows of digitate projections. It also resembles *H. rostrans* (Rehb.f.) Szlach. & Kolan., but this species produces smaller flowers with a lip lacking protuberances on the lateral lobes, and its gynostemium wings are bilobed.

**HOLOTYPE:** COLOMBIA. Valle del Cauca: *Croat* 70734 (MO).

Pseudobulbs up to 4.5 cm tall and 1.3 cm in diameter, ellipsoid, compressed, 1-leaved, concealed basally by large, leafy sheaths. Leaf shortly petiolate; petiole ca 1.5 cm long; blade up to 11 cm long and 3.3 cm wide, elliptic-ligulate, rounded at apex. Inflorescence 30 cm long, laxly many-flowered, with few branches, which are secondarily branched, branches up to 5 cm long, usually with 1–2 terminal, fertile flowers and several sterile flowers below. Sterile flowers stellate, segments ca 2–3 mm long, linear. Fertile flowers – floral bracts 0.5 mm long, obscure,



**Fig. 5.** *Heteranthocidium croatii* Szlach. & Kolan., sp. nov. A – dorsal sepal, B – petal, C – lateral sepal, D – lip, E – gynostemium. Scale bars = 5 mm. Drawn by N. Ołędzka from the holotype.

triangular-ovate, acute. Pedicellate ovary 19 mm long, slender. Dorsal sepal 10 mm long, 2 mm wide, shortly clawed, blade ligulate to ligulate-obovate, obtuse. Petals 9 mm long, 5 mm wide, sessile, suborbicular, obtuse, margins somewhat undulate. Lateral sepals 9 mm long, 2.5 mm wide, claw linear, blade oblong elliptic, obtuse, oblique. Lip 8 mm long, 11 mm wide, sessile, truncate at base, basal part transversely elliptic in outline, lip middle lobe bilobulate, sinus shallow, lobules obliquely elliptic-obovate, margins entire, basal callus glabrous, relatively large, composed of several knob-like projections and additional protuberances on lip lateral lobes. Gynostemium 7 mm long, ciliate at base, staminodes large, apically overlapping, margins entire.

**ETYMOLOGY.** Dedicated to the collector of the type specimen.

**HABITAT AND ECOLOGY.** It grows on the edges of subandean forest. It was found at 1485–2100 m a.s.l. Flowering in February and November.

**DISTRIBUTION.** Known exclusively from the slopes of the Western Andean Cordillera. So far it was found in the Colombian departments of Antioquia and Valle del Cauca (Fig. 2).

**REPRESENTATIVE SPECIMENS:** COLOMBIA. Antioquia: Mpio. Betania, Farallones del Citara, paraje Las Canoas. Quebrada La Bramadora, 5°44'N 76°00'W, Alt. 2100 m, 12 Nov. 1997, R. Fonnegra, G. Velez & Grupo Tax. Pl. Vasc. 6641 (MO!); Valle del Cauca: Cordillera Occidental, E slopes. Along highway between Dapa and Loboguerrero at Parque Yotoco, 3°52'N 76°22'W, Alt. 1485–1550 m, 17 Feb. 1990, T. Croat 70734 (MO!).

**NOTES.** This species resembles *H. adelaidae*, from which it differs by the glabrous callus (vs. callus microscopically hairy at base) consisting of five rows of digitate projections (vs. 5 lamellae). It resembles *H. rostrans* somewhat, but this species produces smaller flowers with a lip lacking protuberances on the lateral lobes, and its gynostemium wings are bilobed.

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