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# A New Species of *Cohniella* (Orchidaceae, Cymbideae, Oncidiinae) from Amazonian Venezuela

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**ABSTRACT.** A new species was detected while conducting a monographic study of *Cohniella* Pfitzer (Orchidaceae, Cymbideae, Oncidiinae). *Cohniella croizatii* Cetzal & Carnevali is newly described from material collected in the vicinity of Puerto Ayacucho and from the upper Orinoco, Amazonas State, Venezuela. The new species is illustrated and its affinities are discussed. The novelty is similar to *C. cebolleta* (Jacq.) Christenson from northern Venezuela and Colombia, but differs in the callus that consists of three large, apical teeth of more or less similar size that emerge directly from the labellum disk, with the two lateral teeth marginally serrate to dentate on the proximal half. In contrast, the callus in *C. cebolleta* is more complex, consisting of five teeth that emerge from a conspicuous central platform, and the central tooth is proportionately larger.

**RESUMEN.** Una especie nueva fue encontrada durante nuestro trabajo monográfico en el género *Cohniella* Pfitzer (Orchidaceae, Cymbideae, Oncidiinae). *Cohniella croizatii* Cetzal & Carnevali se propone como nueva de Puerto Ayacucho y del Alto Orinoco del Estado Amazonas, Venezuela. Esta especie nueva es ilustrada y sus afinidades son discutidas. La novedad está relacionada con *C. cebolleta* (Jacq.) Christenson del norte de Venezuela y Colombia, pero difiere por el callo que consiste de tres dientes apicales más o menos del mismo tamaño que emergen directamente del disco del labelo, los dos dientes laterales son marginalmente serrados a dentados en la mitad proximal. Por el contrario, mientras que el callo en *C. cebolleta* es más complejo, consistiendo de cinco quillas que emergen de una plataforma central conspicua, y el diente central es proporcionalmente muy grande.

**Key words:** Amazonas, *Cohniella*, IUCN Red List, Oncidiinae, Orchidaceae, Venezuela.

The genus *Cohniella* Pfitzer consists of 17 described species that are distributed from northern Mexico into southern Brazil and northern Argentina. The members of this orchid genus can be easily distinguished from other members of the Oncidiinae by their succulent, terete leaves and *Oncidium*-like flowers (Carnevali et al., 2010). Characters used to distinguish species are mainly floral, such as the shape and position of the basal lobes of the lip, the shape and number of teeth of the callus of the lip, and the column shape and position of the column wings. Additionally, we have used diagnostic elements for species-level taxa that consider the size and orientation of the plants (e.g., pendent or erect), leaf thickness, the relative sizes of pseudobulbs, ecological preferences, and geographic distribution (Cetzal & Carnevali, 2010).

Since its resurrection by Christenson (1999), the generic status of *Cohniella* as distinct from *Oncidium*, as well as from a broadly circumscribed *Trichocentrum* Poepp. & Endl., has been controversial. As opposed to other authors (Sandoval-Zapotitla & Terrazas, 2001; Sosa et al., 2001; Williams et al., 2001a, 2001b; Chase, 2009) who have treated members of *Cohniella*, *Lophiaris* Raf., *Lophiarella* Szlach., Mytnik & Romowicz, and *Trichocentrum* s. str. as belonging to a single genus (*Trichocentrum* s.l.), we describe this new taxon in the genus *Cohniella*. Below, we offer a key to the genera of the *Trichocentrum* clade, based upon both vegetative and floral traits. The rationale behind this narrower generic circumscription is discussed in depth elsewhere (Pupulin & Carnevali, 2005; Cetzal et al., 2008; Carnevali et al., 2009, 2010). Our treatment recognizes more, easily diagnosable, monophyletic entities rather than larger, polymorphic generic units that may be unwieldy or difficult to define.

KEY TO THE GENERA OF THE *TRICHOCENTRUM* CLADE

- 1a. Leaves terete, fleshy-coriaceous; pseudobulbs relatively small and inconspicuous ..... *Cohniella*
- 1b. Leaves conduplicate, either rigidly fleshy or coriaceous; pseudobulbs ranging from small and inconspicuous to relatively large and conspicuous.
  - 2a. Plants small (leaves rarely exceeding 10 cm long); inflorescences shorter than the subtending leaves, mature plants bearing few (1 to 3[to 5]), successive flowers; labellum basally produced into a spur .... *Trichocentrum*
  - 2b. Plants usually larger (leaves usually exceeding 12 cm long; however, they may be smaller in *Lophiaris pumila* (Lindl.) Braem and relatives, but these flowers lack a spur); inflorescences usually longer than subtending leaves (shorter in *L. pumila* and relatives), mature plants bearing many ([5 to]10 to 50[to 150]),  $\pm$  simultaneous, rarely successive (e.g., *L. lindeni* (Brongn.) Braem) flowers; labellum lacking a spur.
    - 3a. Leaves rigidly and thickly fleshy-coriaceous; pseudobulbs large and conspicuous, at least 2 cm long, but up to 4 cm long; inflorescences stiffly erect, peduncle and rachis glaucous, with a thin film of wax; plants usually lithophytic ..... *Lophiarella*
    - 3b. Leaves coriaceous or fleshy-coriaceous, rarely rigid; pseudobulbs small, rarely exceeding 1.5 cm long; inflorescences more commonly ascendent or arching to nutant, never stiffly erect; peduncle and rachis not glaucous; plants usually epiphytic, rarely lithophytic ..... *Lophiaris*

During the course of preparing a monographic study of *Cohniella* (Cetzal et al., in prep.), a hitherto unknown taxon was detected. The new species is closely related to, yet geographically disjunct from *C. cebolleta* (Jacq.) Christenson. *Cohniella cebolleta* is known from northern Venezuela and Colombia and grows in drier environments, typically tropical dry forest or thorn forests. The novelty proposed here, *C. croizatii* Cetzal & Carnevali, is known from two Venezuelan populations, one from Puerto Ayacucho in northern Amazonas State, where the plants grow in tropical rainforests, and the second collection from the upper Orinoco in the southern portion of the Amazonas State. At this second locality, the plants grew in Amazonian rainforests on white sand substrates.

The most distinctive feature of the new species is the callus. In most *Cohniella* species, the callus is an extremely complex structure. It is conventionally composed of a variously shaped basal platform from which two or four lateral teeth emerge, and the platform terminates in a much larger apical tooth or keel (Fig. 1A). In contrast, in the new species, the callus is composed of three large apical teeth of about the same size that emerge directly from the labellum disk. The two lateral teeth are separated by a narrow

channel and are marginally serrate to dentate on their proximal half (Fig. 1B, H).

***Cohniella croizatii*** Cetzal & Carnevali, sp. nov.

TYPE: Venezuela. Amazonas: Mpio. Alto Orinoco, 1951, *L. Croizat 984* (holotype, NY; isotype, CICY [fragm.]). Figure 1.

Species haec *Cohniellae cebolletae* (Jacq.) Christenson similis, sed ab ea callo minore tridentato e dentibus lateralibus margine proximaliter paucè serrato-dentatis et apicali lateraliter compresso dentes laterales subaequante constante differt.

Epiphytic erect herbs; rhizome short, thin, brittle; roots ca. 2 mm thick, white; pseudobulbs ca. 8  $\times$  9 mm, subspherical to broadly ovoid. Apically 1-leaved, green, totally enclosed by 3 imbricate sheaths, 30–70  $\times$  5–10 mm, eventually deciduous; leaves terete, thickly fleshy-coriaceous, 23–37.2 cm  $\times$  4–6 mm, dark green; inflorescences solitary from the base of the pseudobulbs, 63–123 cm, a 10- to 15-flowered raceme or panicle with 3 to 4 long branches, each of these 3.6–10 cm, the branches 3- to 4-flowered; peduncle and rachis dark green with brownish spots; peduncle  $\pm$  erect, 2–4 mm thick, terete, with 8 to 13 remotely bracted internodes, the basal and apical bracts equally long, oblanceolate, acuminate, tubular; floral bracts 2–3 mm, narrowly elliptic, acuminate. Flowers resupinate, with perianth segments widely opening, the petals and sepals somewhat reflexed; ovary with pedicel 15–20 mm, of which ca. 4–7 mm correspond to the ovary, this structure 0.4–0.8 mm thick; sepals basally clawed for about 1/3 their total length, flat or somewhat reflexed, dorsal sepal 6.5–7  $\times$  4–5 mm, in general outline obovate, apically obtuse and minutely apiculate, concave in the upper half, the claw ca. 2  $\times$  1 mm; lateral sepals partially fused at the very base, then free, similar to dorsal sepal, 8–9  $\times$  4–5 mm; petals 7–8  $\times$  3–4 mm, oblong, somewhat oblique, the apex subacute, somewhat reflexed in natural position; labellum deeply 3-lobed, 9–13 mm from the base to the apex of the central lobe, 12–15 mm wide across the apices of the lateral lobes, the lateral lobes in the same plane as the central lobe and  $\pm$  perpendicular to it; central lobe (6–) 9–12  $\times$  (11–)17–21 mm, transversely elliptic or subreniform in outline, apically rounded, deeply emarginate, (2–)3–4 mm, basally produced into a short isthmus, ca. 2.5  $\times$  3 mm; lateral lobes 5–6  $\times$  3–5 mm,  $\pm$  oblong to orbicular, obliquely obtuse; disc short, ca. 4  $\times$  4 mm; callus with 3 large apical teeth, similarly sized, emerging directly from the labellum disk, the 2 lateral teeth separated by a narrow channel and marginally serrate to dentate on the proximal half, ca. 2.8  $\times$  0.6 mm, the central tooth is laterally compressed,  $\pm$  equally sized to the lateral teeth, ca. 2  $\times$  0.6 mm;

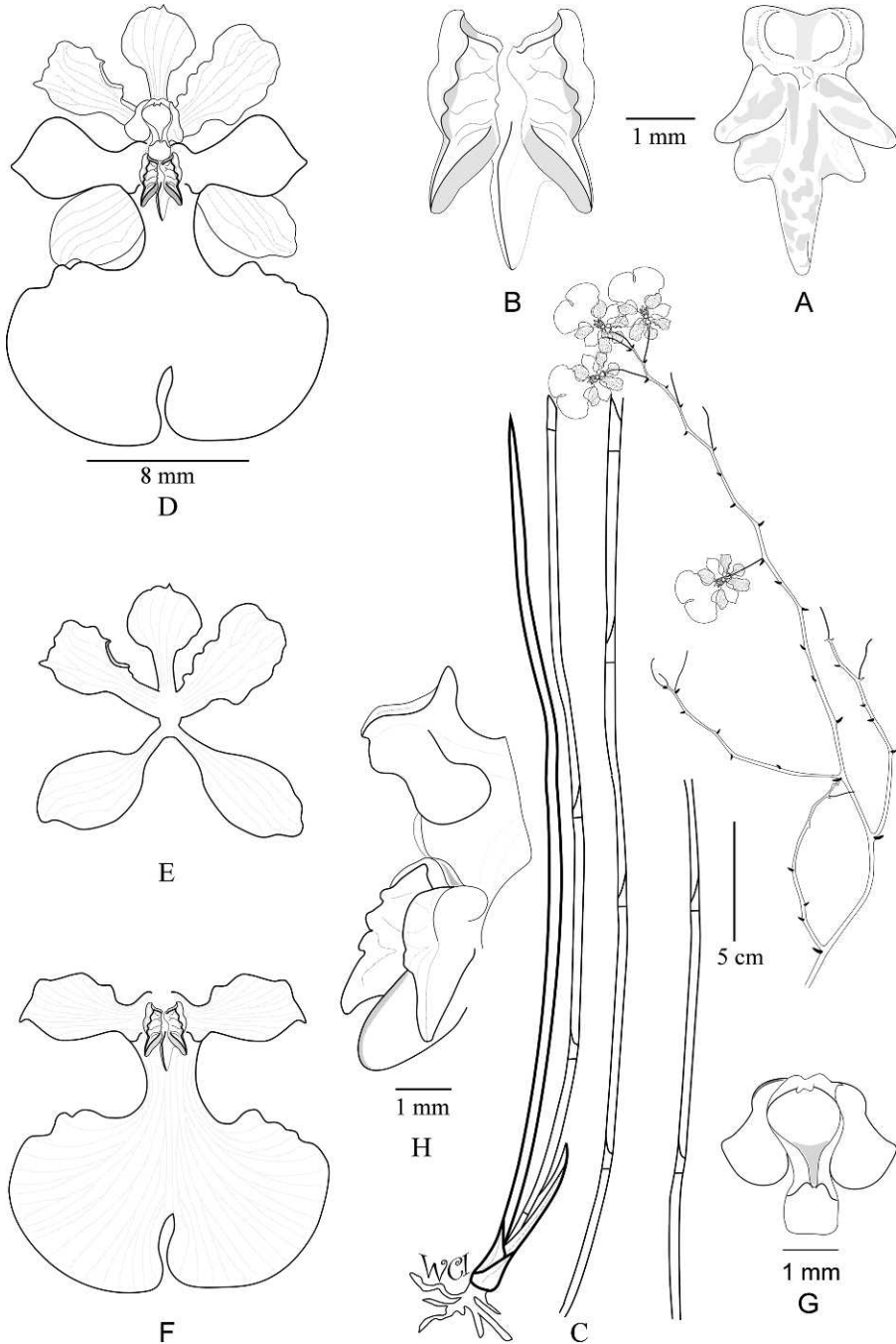


Figure 1. —A. A complex callus of *Cohniella cebolleta* (Jacq.) Christenson, based on *G. Carnevali* 7222 (CICY). B–H. *Cohniella croizatii* Cetzal & Carnevali. —B. A simpler callus. —C. Habit with inflorescence. —D. Intact flower. —E. Sepals (above) and petals (below). —F. Labellum. —G. Column. —H. Lateral view of the callus and column. B–H based on the type *L. Croizat* 984 (NY).

column ca.  $3 \times 1$  mm,  $\pm$  oblong, the ventral face longitudinally convex, stigmatic surface obovate, ca.  $1 \times 0.8$  mm; column wings ca.  $1.8 \times 0.8$  mm,

smaller; anther ca.  $0.9 \times 0.7$  mm, apical, operculate, ellipsoid; pollinarium ca. 1.2 mm, tegula spatulate, ca.  $0.6 \times 0.3$  mm at the subtruncate apex; viscidium disclike, small, pollinia 0.7–0.9 mm; fruit a capsule.

*Distribution.* The new species is known from two collections from Puerto Ayacucho as well as the type collection of the upper Orinoco in Amazonas State, Venezuela. The labels of the specimens from the Puerto Ayacucho area describe the plants as locally common along the Orinoco.

*IUCN Red List category.* Because *Cohniella croizatii* is known from only three collections, it can be considered Data Deficient (DD) according to IUCN Red List criteria (IUCN, 2001). Although the region around Puerto Ayacucho has been severely altered during the past few decades, there are still abundant forested patches in the area. Furthermore, since the species is also known from the Alto Orinoco region, it is therefore suspected to be under no special threat, as this area is largely uninhabited except for a few indigenous tribes, primarily Yekuana.

*Etymology.* The new species honors León Camille Marius Croizat (1894–1982), collector of the type specimen. Croizat contributed enormously to our knowledge of the Euphorbiaceae and also originated the theory of panbiogeography.

*Diagnostic features.* *Cohniella croizatii* seems to be a rather homogeneous taxon. It is easy to distinguish from related species by its small tripartite callus (vs. 5-partite), consisting of one laterally compressed central tooth or keel that is similar to the lateral teeth (ca. 2 mm vs. ca. 2.8 mm long, respectively). The two lateral teeth are separated by a narrow channel and are marginally serrate to dentate along their proximal half. The column wings in *C. croizatii* seem to be proportionally larger than in *C. cebolleta*, but the available herbarium material is not sufficient to assess this accurately. Because *Cohniella* species usually differ from each other in several floral characters, including color, column width and shape, and the relative positions of the floral parts, we anticipate that fresh material of the new species will reveal further differentiating characters lost during specimen preparation. Otherwise, *C. croizatii* is easily diagnosable by its simple callus.

*Paratypes.* VENEZUELA. Amazonas: Puerto Ayancho [Ayacucho] on Orinoco River, [grown at New York Bot. Gard.], 50 ft., 1 Jan. 1961, *Prop. 1270/59* (NY); Raudal de Atures, 10 km S of Pto. Ayacucho, 100–120 m, 10 Nov. 1953, *B. Maguire, J. J. Wurdack & G. S. Bunting 36131* (AMES, NY).

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#### Literature Cited

- Carnevali, G., R. Duno de Stefano, G. A. Romero-González, R. Balam, W. Cetzal-Ix, J. L. Tapia-Muñoz & I. M. Ramírez. 2009. A reappraisal of the turtle-orchids, genus *Chelyorchis* (Oncidiinae: Orchidaceae): Molecular, phylogenetic, and morphometric approaches. *J. Torrey Bot. Soc.* 136(2): 164–185.
- Carnevali, G., W. Cetzal-Ix, R. Balam Narváez & G. A. Romero-González. 2010. A synopsis of *Cohniella* (Orchidaceae, Oncidiinae). *Brittonia* 62(2): 153–177.
- Cetzal-Ix, W. & G. Carnevali. 2010. A revision of *Cohniella* Pfitzer (Orchidaceae) in Mexico. *J. Torrey Bot. Soc.* 137(2–3): 180–213.
- Cetzal-Ix, W., R. Balam & G. Carnevali. 2008. A new species in *Lophiaris* (Orchidaceae, Oncidiinae) in the *Lophiaris straminea* complex. *Novon* 18: 12–15.
- Chase, M. W. 2009. Subtribe Oncidiinae. In A. M. Pridgeon, M. W. Chase, P. J. Cribb & F. Rasmussen (editors), *Genera Orchidacearum*, Vol. 5: Epidendroideae. Oxford University Press, Oxford, United Kingdom.
- Christenson, E. A. 1999. The return of *Cohniella* (Orchidaceae: Oncidiinae). *Lindleyana* 14(4): 176–177.
- IUCN. 2001. IUCN Red List Categories and Criteria, Version 3.1. Prepared by the IUCN Species Survival Commission. IUCN, Gland, Switzerland, and Cambridge, United Kingdom.
- Pupulin, F. & G. Carnevali. 2005. *Cohniella* Pfitzer. Pp. 141–147 in F. Pupulin (editor), *Vanishing Beauty: Native Costa Rican Orchids*, Vol. I. Costa Rica University Press, San José.
- Sandoval-Zapotitla, E. & T. Terrazas. 2001. Leaf anatomy of 16 taxa of the *Trichocentrum* clade (Orchidaceae: Oncidiinae). *Lindleyana* 16(2): 81–93.
- Sosa, V. M., M. W. Chase, G. Salazar, W. M. Whitten & N. H. Williams. 2001. Phylogenetic position of *Dignathe* (Orchidaceae: Oncidiinae): Evidence from nuclear ITS ribosomal DNA sequences. *Lindleyana* 16(2): 94–101.
- Williams, N. H., M. W. Chase, T. Fulcher & W. M. Whitten. 2001a. Molecular systematics of the Oncidiinae based on evidence from four DNA sequence regions: Expanded circumscriptions of *Cyrtochilum*, *Erycina*, *Otoglossum*, and *Trichocentrum* and a new genus (Orchidaceae). *Lindleyana* 16(2): 113–139.
- Williams, N. H., M. W. Chase & W. M. Whitten. 2001b. Phylogenetic positions of *Miltoniopsis*, *Caucaea*, a new genus, *Cyrtochiloides*, and *Oncidium phymatochilum* (Orchidaceae: Oncidiinae) based on nuclear and plastid DNA sequence data. *Lindleyana* 16(4): 272–285.