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## A New Species in *Lophiaris* (Orchidaceae, Oncidiinae), in the *Lophiaris straminea* Complex

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**ABSTRACT.** An undescribed species of *Lophiaris* Rafinesque (Orchidaceae, Cymbidieae, Oncidiinae) was detected while conducting a phylogenetic study of *Trichocentrum* Poeppig & Endlicher s.l. *Lophiaris sierracaracolensis* Cetzal & Balam is described from Sierra Caracol in the Central Depression of Chiapas, on the Pacific slopes of Mexico. The new species is illustrated, and its affinities are discussed. The novelty is related to *L. straminea* (Bateman ex Lindley) Braem, but the labellum isthmus is broader (to 3 mm wide), the claw of the dorsal sepal is very short (1.5 mm long) and wide, and the callus is 8-partite (vs. 5-partite in *L. straminea*).

**Key words:** Chiapas, IUCN Red List, *Lophiaris*, Mexico, Oncidiinae, Orchidaceae.

During phylogenetic study of the *Trichocentrum* Poeppig & Endlicher s.l. complex (Balam et al., in prep.; Carnevali et al., in prep.; Cetzal et al., in prep.), a hitherto unknown taxon referable to the genus *Lophiaris* Rafinesque was detected. This new entity is closely related and geographically intermediate between two other members of the genus, *L. aurisasinora* (Standley & L. O. Williams) Braem and *L. straminea* (Bateman ex Lindley) Braem. The first species is known from Honduras and Nicaragua, while the second is restricted to a small area of calcareous hills in central Veracruz, Mexico. These two taxa are characterized by small vegetative plants (as compared to other Mesoamerican members of *Lophiaris* with mature leaves 7–15 cm long) and white, greenish to straw-colored flowers borne on proportionally short inflorescences. The novelty here proposed, *L. sierracaracolensis* Cetzal & Balam, is similar to these two species but is a conspicuously larger plant. The three species will be referred to hereafter as the *L. straminea* complex. These three species are also distinctive in growing at intermediate elevations of 700–1200 m; most *Lophiaris* species grow at elevations below 500 m and a group of mainly Mexican species of the genus related to *L. cavendishiana* (Bateman) Braem usually grow above 2000 m. Besides the conspicuous vegetative differ-

ences, the flowers of the new species have a broader isthmus of the labellum, proportionally broader basal lobes (reniform, about as long as wide vs. oblong, longer than wide), and a more complex callus. Comparisons of the three species are featured in Table 1.

As opposed to other authors (e.g., Chase et al., 2005; Pupulin, 1995; Sandoval-Zapotitla & Terrazas, 2001; Sosa et al., 2001; Williams et al., 2001a, b) that treat all the members of the *Trichocentrum* complex as a single genus (*Trichocentrum* Poeppig & Endlicher), we have chosen to describe this new taxon in the genus *Lophiaris*. The rationale behind this narrower generic circumscription is discussed elsewhere (Carnevali et al., 2001; Jiménez-Machorro & Carnevali, 2001; Pupulín & Carnevali, 2005) and basically relies on the logic of recognizing more easily diagnosable genera rather than larger, polymorphic, morphologically impossible to define generic units. These narrower generic limits within the *Trichocentrum* complex have been used in several recent publications (e.g., Braem, 1993; Königer, 1997, 1999; Romero & Carnevali, 2000; Pupulín & Carnevali, 2005; Balam, 2007). *Lophiaris* is well supported as a monophyletic clade by nucleotide sequence data (e.g., Sosa et al., 2001; Carnevali et al., in prep.). In addition, within the *Trichocentrum* complex, the taxon is clearly marked by a suite of morphological characters including conduplicate leaves on top of reduced pseudobulbs, elongate, flexuous inflorescences, sepals and petals with reticulate venation, and a papillose outer surface of the perianth (Balam, 2007). The anther bed is deltate in *Lophiaris* as opposed to elliptic, ovate, or elliptic-ovate in other members of the *Trichocentrum* complex. The stigmatic surface in *Lophiaris* flowers is obtriangular to obovate as opposed to elliptic or deltoid in the other members of the *Trichocentrum* complex (Balam, 2007).

***Lophiaris sierracaracolensis*** Cetzal & Balam, sp. nov. TYPE: Mexico. Chiapas: Mun. Villaflores, Sierra El Caracol, 10 km al O del

Table 1. Morphological comparison of the *Lophiaris straminea* species complex.

	<i>L. straminea</i>	<i>L. aurisasinora</i>	<i>L. sierracaracolensis</i>
Plants	small (ca. 20 cm)	small (20–25 cm)	larger (30–38 cm)
Inflorescence	short (15–30 cm)	short (10–15 cm)	long (> 50 cm)
Dorsal sepal claw	short and broad	long and narrow	long and narrow
Petal claw	short and broad	long and narrow	shortly clawed
Lateral lobes of the labellum	oblong, rounded, much surpassing the spread margins of the apical lobe	triangular, acute to obtuse, narrower than the spread margins of the apical lobe	broadly reniform, rounded at apex, about as broad as the spread margins of the apical lobe
Labellum isthmus	short and narrow	long and narrow	short and broad
Marginal thickenings of labellum isthmus	absent or like 2 small plates	present and conspicuous	present and conspicuous
Labellar callus	5-partite: a pair of basal teeth, perpendicular to the main axis of labellum, a distal pair of smaller, round teeth, and a central keel-like unit that is placed on the isthmus	3-partite: a pair of basal teeth and a central keel entering the isthmus	8-partite: a small pair of proximal teeth almost perpendicular to main labellum axis, a larger pair of porrect teeth, and a central keel that is apically 3-toothed
Column wings	long, narrow, pointing toward the base of the column	short, broad, and divaricate	short, broad, and divaricate

ejido La Sombra de la Selva, ca. 14°19'00"N, 93°37'00"W, ca. 860 m, selva baja caducifolia, 17 July 1995, *M. A. Pérez Farrera 565* (holotype, Herbario Eizi Matuda; isotypes, CICY, MO [holotype fragm.]). Figure 1C–F.

Species haec *Lophiaris aurisasinorae* (Standley & L. O. Williams) Braem similis, sed planta majore, foliis 37–39 cm longis non 20–25 cm longis, floris minoribus, labello 8.5–10 mm longo non labello 15 mm longo, unguiculo sepalino dorsali ca. 1.5 × 1.5 mm, isthmo latiore, callo 8-dentato (non 3-dentato) abhorret. Versimiliter *L. stramineae* (Bateman ex Lindley) Braem affinis,

sed isthmo multo latiore, callo 8-dentato (non 5-dentato) recedit.

Epiphytic herb to 38 cm tall (not including the inflorescence); roots 0.5–2.5 mm thick; pseudobulbs clustered, subcylindrical, ca. 1.9 × 1.5 cm, slightly flattened laterally, apically 1-leaved. Leaves 37–39 × 7.6–8 cm, elliptic, acute, erect, thickly coriaceous, dorsally keeled. Inflorescences borne on the base of the mature pseudobulb, one per pseudobulb, racemose, apparently erect-arching, the peduncle apparently elongate (broken and apparently incomplete in the type specimen). Flowers resupinate, ca.

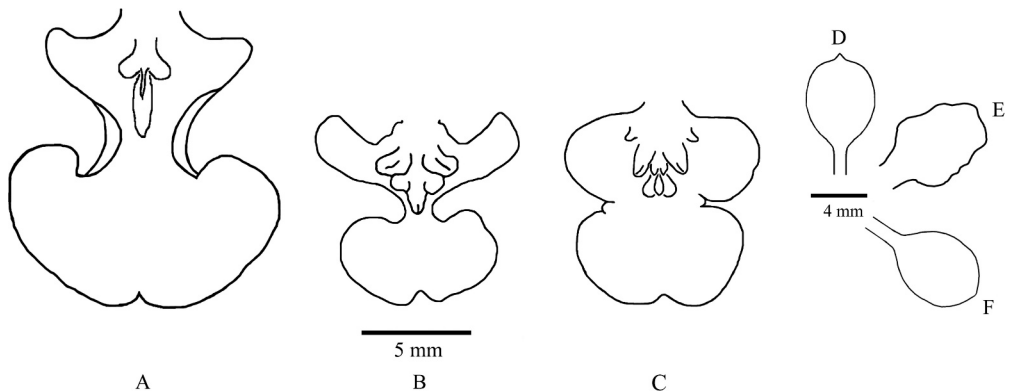


Figure 1. A–C. Labella of members of the *Lophiaris straminea* complex. —A. *L. aurisasinora* (Standley & L. O. Williams) Braem, based on *A. Molina 1823* (US). —B. *L. straminea* (Bateman ex Lindley) Braem, based on *Carnevali 7161* (CICY). —C. *L. sierracaracolensis* Cetzal & Balam. D–F. Floral parts of *L. sierracaracolensis*. —D. Dorsal sepal. —E. Petal. —F. Lateral sepal. Based on *Pérez Farrera 565* (Herbario Eizi Matuda).

18 mm diam.; dorsal sepal 7–8 × 3–4.2 mm, 5-nerved, obovate to suborbicular, concave, obtuse, clawed, claw ca. 1.5 × 1.5 mm; lateral sepals 7–8 × 3 mm, obovate to elliptic, obtuse, 5-nerved, clawed, the claw ca. 2 × 1–1.5 mm; petals ca. 6 × 5–5.5 mm, shortly clawed, claw ca. 0.5 mm long, blade oblong-ovate, obtuse, 7-nerved; labellum ca. 8.5–10 × 7 mm, 3-lobed, pandurate, the lateral lobes reniform, ca. 2.5 × 3 mm, ca. 8 mm across their spread apices; central lobe transversely reniform, 7–7.5 × 3.5 mm, apically emarginate, isthmus ca. 0.5 × 2–3 mm, short and broad; callus 4–5 × 3 mm, placed at labellum base, barely reaching the isthmus, made up of 8 units: a small pair of proximal teeth almost perpendicular to main labellum axis; a larger pair of porrect teeth, and a central keel that is apically 3-toothed; column ca. 4 × 2 mm, proportionally short, thick, with divergent, thick wings that are flattened at their basalmost 2/3 and thickened at the apical 1/3, the base with a rounded lobe; anther ca. 2 × 1.5 mm, ovoid with a truncate apex, bilocular; pollinarium ca. 2 mm, composed of 2 obovoid pollinia, elongated, stipe short-laminar and viscidium horseshoe-shaped; stigmatic cavity deltoid, flat. Capsule unknown.

*Distribution, habitat, and IUCN Red List category.* *Lophiaris sierracaracolensis* is known from a single collection, gathered in the forests of the Central Depression in Chiapas at an elevation of 860 m. The lone specimen comes from an ecosystem described by the collector as “selva baja caducifolia” (“tropical deciduous forest”). The Central Depression of Chiapas is ca. 200 km long and up to 70 km wide and is characterized by a seasonally dry climate (in some places, of less than 800 mm annual rainfall), and has been characterized by Contreras (cited in Breedlove, 1981) as semi-arid and referred to as Tropical Deciduous Forest. It is completely surrounded by moist, densely forested mountain areas, affording it complete isolation from other pockets of xeric vegetation, and supports an interesting flora characterized by a large number of endemics (Breedlove, 1981). However, the tropical deciduous forest in the Central Depression is being displaced by heavy cultivation and grazing and is being quickly replaced by large tracts of thorn woodland and savanna. Thus, the single type of habitat the species is known from is being severely threatened. Furthermore, the species is known from a single collection, suggesting that it may be rare. Hence, the species might be considered VU (Vulnerable) or EN (Endangered) according to IUCN criteria (IUCN, 2001). However, since we have not been to the type locality, and considering the possibility that the species may be locally common,

we prefer to assess its conservation status as DD (Data Deficient).

*Etymology.* The new species is named after Sierra Caracol, a small mountain range in the Central Depression of Chiapas, where the type specimen was collected.

*Relationships.* This new taxon is similar to *Lophiaris aurisasinora* but is easily distinguished by the larger plants (with leaves to 37–39 cm long vs. 25 cm long in *L. aurisasinora*), the isthmus of the labellum much broader, the callus more complex, and the flowers much smaller (with labellum ca. 8.5–10 mm long vs. up to 15 mm in *L. aurisasinora*). *Lophiaris straminea*, from central Veracruz, is geographically nearer and of about the same floral size, but *L. sierracaracolensis* is distinguished by the labellum with a much wider isthmus (to 3 mm wide vs. 2 mm) and a different callus that consists of eight teeth (vs. callus with five teeth in *L. straminea*). While the two other members of the *L. straminea* complex feature flowers that are white, greenish, or straw-colored, the flowers of *L. sierracaracolensis* are described as “amarillas, rojas y blancas” on the holotype label. This new species is poorly known, and more material is required to ascertain vegetative variability, inflorescence shape and attitude, and the actual flower color and appearance when fresh. Floral tracings of the three members of the *L. straminea* complex are displayed in Figure 1.

We offer the following key for the identification of the three known members of this complex, the *Lophiaris straminea* complex:

KEY TO THE *LOPHIARIS STRAMINEA* COMPLEX

- 1a. Lip with long isthmus (4–5 mm); labellum ca. 15 mm long; plants from Honduras and Nicaragua . . . . . *L. aurisasinora*
- 1b. Lip with a very short isthmus (0.5–2 mm); labellum not exceeding 10 mm long; plants from Mexico . . . . . 2
- 2a. Plants vegetatively small (pseudobulbs + leaves rarely exceeding 25 cm tall); claw of the dorsal sepal very short and wide (0.5 mm long); claw of the labellum central lobe 1–2 mm long; endemic to Veracruz . . . . . *L. straminea*
- 2b. Plants larger (pseudobulbs + leaves exceeding 30 cm tall); claw of the dorsal sepal long and thin (1.5 mm long); claw of the labellum central lobe 4–5 mm long; endemic to Chiapas . . . *L. sierracaracolensis*

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Literature Cited

- Balam, R. 2007. Sistemática y Filogenia del Género *Lophiaris* Raf. (Orchidaceae). M.S. Thesis, Centro de Investigación Científica de Yucatán, A.C., Mérida, Yucatán, Mexico.
- Braem, G. J. 1993. Studies in the *Oncidiinae*—Discussion of some taxonomic problems with description of *Gudrunia* Braem, gen. nov., and reinstatement of the genus *Lophiaris* Rafinesque. *Schlechteriana* 4(1–2): 8–29.
- Breedlove, D. E. 1981. Flora of Chiapas, Part 1: Introduction to the Flora of Chiapas. California Academy of Sciences, San Francisco.
- Carnevali, G., J. L. Tapia-Muñoz, R. Jiménez-Machorro, L. Sánchez-Saldaña, L. Ibarra-González, I. M. Ramírez & M. P. Gómez-Juárez. 2001. Notes on the flora of the Yucatan Peninsula II: A synopsis of the orchid flora of the Mexican Yucatan Peninsula and a tentative checklist of the Orchidaceae of the Yucatan Peninsula Biotic Province. *Harvard Pap. Bot.* 5: 383–466.
- Chase, M. W., L. Hanson, V. A. Albert, W. M. Whitten & N. H. Williams. 2005. Life history evolution and genome size in subtribe *Oncidiinae* (Orchidaceae). *Ann. Bot.* 95: 191–199.
- 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.
- Jiménez-Machorro, R. & G. Carnevali. 2001. Nomenclatural notes: New combinations in *Lophiaris* Raf. (Orchidaceae). *Harvard Pap. Bot.* 6: 283–284.
- Königer, W. 1997. *Stilifolium*: A new name for the section *Cebolletae* of the genus *Oncidium* as a new genus in subtribe *Oncidiinae*. *Arcula* 7: 186–190.
- . 1999. New species of the genera *Busiella*, *Masdevallia*, *Oncidium* and *Stilifolium*: One new taxon and some new lectotypes. *Arcula* 9: 250–265.
- Pupulin, F. 1995. A revision of the genus *Trichocentrum* (Orchidaceae: *Oncidiinae*). *Lindleyana* 10(3): 183–210.
- & G. Carnevali. 2005. *Cohniella* Pfitz. Pp. 141–147 in F. Pupulin (editor), *Vanishing Beauty: Native Costa Rican Orchids*, Vol. I. Costa Rica Univ. Press, San José, Costa Rica.
- Romero, G. & G. Carnevali. 2000. Orchids of Venezuela. An Illustrated Field Guide, Vol. II, ed. 2a. Ed. Armitano Editores, Caracas.
- 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: 94–101.
- Williams, N. H., M. W. Chase, T. Filcher & W. M. Whitten. 2001a. Molecular systematics of the *Oncidiinae* based on evidence from four DNA sequence regions: Expanded circumscriptions of *Cyrtorchilum*, *Erycina*, *Otoglossum*, and *Trichocentrum* and new genus (Orchidaceae). *Lindleyana* 16(2): 113–139.
- , ——— & 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.