

A New Natural Hybrid of *Encyclia* Hook. From Colombia.

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ABSTRACT

Natural hybrids of *Encyclia* Hook. are common throughout the distribution of the genus except in Colombia. Only one introgression hybrid is known (*Encyclia replicata* (Lindl. & Paxt.) Schltr.) from Colombia. A new natural hybrid from Colombia is described.

The genus *Encyclia* Hook. is represented in Mexico by approximately 43 species, in Brazil by approximately 43 species and in Cuba at present 41 species are known. In Colombia only 14 species have been reported, no endemic species and only one endemic variety. In addition, hybrids are rare, only one highly polymorphic species, *Encyclia replicata* (Lindl. & Paxt.) Schltr., has been found, which appears to be a result of introgression (Sauleda, 2016).

Hybridization occurs in 25% of plant species according to Baack et. al. (2007) and 10% to 30% according to Mallet (2005). Stebbins (1950) first stated, “Occasional hybridization between recognizable species ... is the rule in flowering plants” and suspected that certain groups of plants produced hybrids more than others (Stebbins, 1959). Observations from floristic surveys demonstrate that hybridization is unevenly distributed taxonomically (Ellstrand et. al., 1996), with hybrids reported in approximately 40% of families and 16% of genera (Whitney et. al., 2010a).

Rapid genomic changes can occur with hybridization which are potentially a creative evolutionary process, allowing genetic novelties to accumulate faster than through mutation alone (Anderson and Hubricht, 1938; Martinsen et al., 2001). These changes in the genome can lead to rapid selection of new phenotypes. Mutations normally are rare, around 10^{-8} to 10^{-9} per generation per base pair (Abbott et al., 2013). Therefore, it is likely to take considerable more time for novel adaptations to evolve via mutation than through hybridization and introgression.

In the genus *Encyclia* (Sauleda & Adams 1984, 1990) hybridization is common and several distinct outcomes (Abbott, 2013) are possible. Only a single isolated individual resulting from hybridization is possible without further reproduction occurring (Sauleda and Adams, 1990). In rare cases a stable persistent population may result, which outcrosses and operates as a species (Sauleda and Adams, 1984). In many cases a hybrid results with introgression in only one direction (Sauleda, 2016) as in *Encyclia replicata* (Lindl. & Paxt.) Schltr. in Colombia, resulting in a highly polymorphic species. Hybridization appears to be very limited in Colombia in contrast to the statistics of Baack et. al. (2007) and Mallet (2005).

In the collection of Jose Fernando Londoño a plant from Valle del Cauca where *E. ceratistes* and *E. diurna* are known to be sympatric was found that resembled *E. diurna* but with a labellum showing characteristics of *E. ceratistes*. In addition, Pedro Ortiz Valdviso in his archive of photographs and illustrations of orchidaceae of Colombia, now in the collection of Carlos Uribe Vellez, has a photograph, which resembles the hybrid of these two species but without specific locality.

This natural hybrid is here described.

***Encyclia xortizii* Sauleda, nat. hyb. nov.**

***Encyclia ceratistes* (Lindl.) Schltr. X *Encyclia diurna* (Jacq.) Schltr.**

Holotype: Colombia. Valle del Cauca. Collector unknown, *s. n.*, March, 2017. Specimen from a plant in the collection of Jose Fernando Londoño of Manizales, Colombia. (HPUJ).

Diagnosis

The labellum of *Encyclia xortizii* demonstrates characteristics of both parents. In *Encyclia xortizii* the midlobe of the labellum is broad and deltoid in contrast to the round midlobe of *E. diurna* and the narrow elongated labellum of *E. ceratistes*. The apex of the midlobe of *E. xortizii* is apiculate similar to the apex of *E. ceratistes* in contrast to the round apex of *E. diurna*. The lateral lobes of *E. xortizii* have the characteristic brown color of *E. ceratistes* in contrast to the dark green color of *E. diurna*. The apex of the petals of *E. xortizii* are obtuse similar to *E. diurna* where the apex of the petals of *E. ceratistes* are acute.

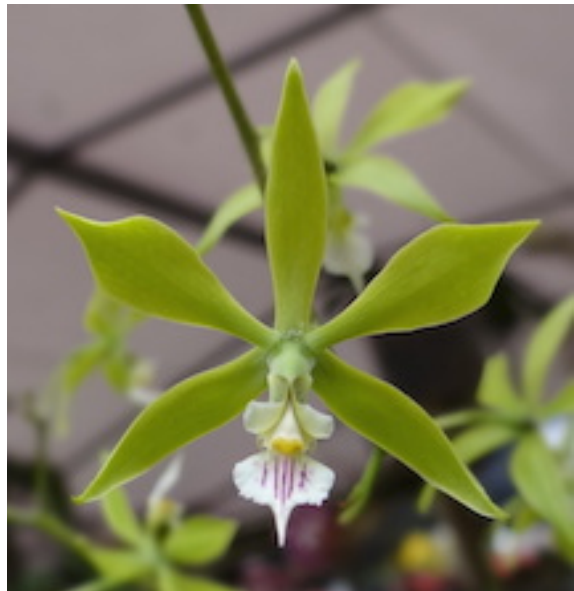
Description

Plant epiphytic or epilithic, rhizomatous, to 120 cm tall; roots many, slender to thick, velamentous or canescent; primary stem or rhizome short, stout, ascending, enclosed by imbricating scarious sheaths; secondary stem modified into pseudobulbs, erect, clustered, ovate, to 9 cm long, 5 cm thick, enclosed by scarious imbricating sheaths, to 2-leaved at apex; leaves coriaceous, linear, apiculate, to 42 cm long, 3.5 cm wide; inflorescence terminal, to 115 cm tall, peduncles slender, erect, distantly several sheathed, paniculate above, with 8-12 lateral branches, to 40 flowers; floral bracts ovate-triangular, acute, to 3 mm long, 3 mm wide; ovary pedicellate, slender, to 2.8 cm long; sepals yellow with light brown suffusion, oblanceolate, acute to 1.7 cm long, 6 mm wide; petals yellow with light brown suffusion, spatulate, apiculate, to 1.7 cm long, 6 mm wide; labellum free, deeply 3-lobed, to 1.2 cm long, 1.3 cm wide, lateral lobes light brown at base, apically white with radiating purple lines, oblong obtuse, erect, embracing column, apex flared outward, midlobe white with undulating margin, deltoid, with 3-4 purple lines, callosity under column is two lateral erect keels joining at midlobe; column green with minute purple spots dorsally, elongate, to 1.0 cm long, 4 mm wide, with membranaceous incurved rounded auricles, anther yellow.

This natural hybrid is named in honor of Pedro Ortiz Valdviso in whose archive of photographs and illustrations of orchidaceae of Colombia, accumulated in over 45 years, a photograph of this hybrid was first found and to acknowledge his contributions to the orchid flora of Colombia. This hybrid was known to occur but could not be named until a live plant was found and a specimen was made.



Encyclia diurna (Jacq.) Schltr. from Colombia.



Encyclia ceratistes (Lindl.) Schltr. from Colombia.



Encyclia xortizii Saulea from Colombia.



Encyclia xortizii Saulea from Ortiz archive.



Encyclia ceratistes (Lindl.) Schltr. from Colombia.



Encyclia diurna (Jacq.) Schltr. from Colombia.



Encyclia diurna (Jacq.) Schltr. from Colombia.



Encyclia diurna (Jacq.) Schltr. from Venezuela.



Variation in Labellum of *Encyclia diurna* (Jacq.) Schltr. from Colombia.



Encyclia diurna (Jacq.) Schltr. from Colombia. *Encyclia xortizii* Saulea flower from type plant.



Encyclia xortizii Saulea flower from type plant.



Encyclia xortizii Sauleda type plant.



Encyclia xortizii Sauleda type plant.



Encyclia ceratistes

Encyclia diurna

Encyclia xortizii

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