

***Encyclia brevifolia* (Jenn.) Ackerman & Muj. Benitez, Validation and stat. nov.**

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ABSTRACT

The identity of *Encyclia xbrevifolia* (Jenn.) Ackerman & Muj. Benitez as a natural hybrid with introgression is established.

Since the original publication of *Epidendrum brevifolium* by Jennings (Ann. Carnegie Mus. 11: 103. 1917) there has been confusion as to its identity. Esperon and Sauleda (2014), in a discussion of the names previously confused with *Encyclia pyriformis* (Lindl.) Schltr., commented on the similarities of *Encyclia brevifolia* (Jennings) Ackerman and Muj. Benitez to *Encyclia pyriformis*. However, in the paper *E. brevifolia* is not listed as a synonym of *E. pyriformis* due to lack of information (live material was not available). *Encyclia brevifolia* has been treated as a synonym of *E. pyriformis* in two publications (Vale et al, 2014) and (Mujica Benitez and Gonzalez, 2015) without any explanation.

Recently, live material from the original type locality of *Epidendrum brevifolium* Jennings and nearby areas was observed by the senior author. *Encyclia phoenicea* (Lindl.) Neuman and *E. pyriformis* were found to grow sympatrically in both areas along with plants demonstrating intermediate characters between these two species. One of the more common morphs is identical to the type specimen of *E. brevifolium* Jennings. These morphs were found growing in the same habitat and on the same host species reported by Jennings.

Jennings collected the types of *E. brevifolium* at Los Indios, Isla de Pinos on May 17, 1910 and described it as new species in 1917. In the description, Jennings compares this species to *Epidendrum plicatum* Lindl. and to *E. phoeniceum* and mentions that *E. brevifolium* “is most nearly related to *Epidendrum phoeniceum*”, but differs from *E. phoeniceum* particularly in the much shorter leaves, and fewer flowers per inflorescence. The same is

true if *E. pyriformis* is compared to *E. phoenicea*. *Encyclia pyriformis*, also differs from *E. phoenicea* in the much shorter leaves and fewer flowers. However, *Encyclia brevifolia* differs significantly from *E. pyriformis*. The leaves of *E. pyriformis* are shorter and the inflorescence has fewer flowers than *E. brevifolia*. The plants of *E. brevifolia* are more vigorous, typical of a natural hybrid. The shape and size of the leaves are different, in *E. brevifolia* the leaves are larger and the apex is more acute. The size and shape of the pseudobulbs is totally different from the “little pseudo-bulbs, which look like inverted pears” described by Lindley for *E. pyriforme* Lindl. The pseudobulbs of *E. brevifolia* are more elongated than in *E. pyriformis*. The flowers of *E. brevifolia* show characters of form and color of both *E. pyriformis* and *E. phoenicea*.

Epidendrum pyriforme, was described as early as *E. plicatum* and *E. phoeniceum* however, Jennings did not compare *E. brevifolium* to *E. pyriforme*. This and the lack of live material from the type locality of *E. brevifolium* has lead several authors to consider *E. brevifolia* a synonym of *E. pyriformis*.

The evidence documented by the junior author from extensive observations of the resulting progeny from artificial pollinization and hybridization of *E. pyriformis* sensu strictu and *E. phoenicea* adds to the need for a reevaluation of *E. brevifolia*.

Artificial hybridization of *E. phoenicea* with *E. pyriformis* by the junior author demonstrates the dominance of *E. phoenicea* in the first generation hybrid. The hybrid could be easily confused with morphs of *E. phoenicea*. The size of the plant and inflorescence of *E. phoenicea* are particularly dominant. Unfortunately no backcrosses were made. Self-pollination of individuals of *E. pyriformis* produces small plants with short inflorescences like the parent and the type of *E. pyriformis*. If the progenies obtained from self-pollination of individuals from both species are compared, the progenies of *E. pyriformis* are more homogeneous than the progenies obtained from *E. phoenicea* indicating that introgression has occurred in *E. phoenicea*.

The morphs corresponding to *E. brevifolia* found among the isotypes indicates different levels of introgression to both parents. However, the individuals demonstrating introgression with *E. pyriformis* match the holotype and description of *E. brevifolia* more closely. Therefore, *E. brevifolia* is the result of natural hybridization between *E. phoenicea* and *E. pyriformis* with introgression mostly to *E. pyriformis*.

Hybridization is common in the genus *Encyclia* (Saulea & Adams 1984, 1990, Dressler and Pollard, 1974) and in some cases it is difficult to find a species in its pure state (Saulea and Esperon, 2012). At present 14 natural intrageneric hybrids of *Encyclia* and 1 intergeneric hybrid have been described (Perez-Garcia and Hagsater, 2012).

The results of hybridization may have several distinct outcomes. In most cases with

encyclias only a single isolated individual resulting from hybridization is found without further reproduction occurring (Sauleda and Adams, 1990, Perez-Garcia and Hagsater 2012). *Encyclia xguzinskii* Sauleda & Adams, *Encyclia xhillyerorum* Sauleda & Adams, *Encyclia xknowlesii* Sauleda & Adams, *Encyclia xbajamarensis* Sauleda & Adams and *Encyclia xllediae* Sauleda & Adams are examples.

In rare cases a stable persistent population may result which operates as a species (Sauleda and Adams, 1990, Perez-Garcia and Hagsater 2012). The individuals outcross but introgression does not occur. *Encyclia xraganii* Sauleda & Adams, a hybrid of *Encyclia altissima* Schltr. and *Encyclia correllii* Sauleda, forms a large stable population on Andros Island, Bahama Islands. The hybrid has been reproduced artificially to verify the identity of the natural hybrid.

In other cases a hybrid results with introgression usually only in the direction of one parent. *Encyclia maderoi* Schltr., in Colombia has hybridized with *Encyclia ceratistes* (Lindl.) Schltr. but introgression appears to be exclusively to *E. maderoi*.

In the case of *E. brevifolia* a hybrid has clearly formed and although introgression occurs in both the direction of *E. phoenicea* and *E. pyriformis*, *E. pyriformis* is clearly favored. Plants of the hybrid can be found which closely resemble *E. phoenicea*. However, the prominent forms more closely resemble *E. pyriformis*. For this reason *E. brevifolia* has been erroneously considered a synonym of *E. pyriformis*. Gene flow from *E. phoenicea* from several generations back influences the size of the plant, size of the flowers and results in an inflorescence with many more flowers than normal for *E. pyriformis*. Results of the artificial cross of *E. pyriformis* and *E. phoenicea* demonstrates that the first generation hybrid does not appear to be present in the population only the introgression hybrid.

***Encyclia xbrevifolia* (Jennings) Ackerman & Mújica-Benitez (pro sp), stat. nov.**

Type. Cuba: Isle of Pines, near Los Indios, 17 May 1910, O. E. Jennings 314 (Holotype, CM; isotypes, BM, NY, US, AMES, USF, WTU)

The isotypes were not collected from a single individual but are different plants that clearly demonstrate the morphological variation found in the population of *E. xbrevifolia*.

Due to the tendency of encyclias to produce natural hybrids and hybrid swarms as previously demonstrated (Sauleda & Adams 1984, 1990), populations of *Encyclia xbrevifolia* (pro sp) could occur anywhere that *E. pyriformis* and *E. phoenicea* are sympatric.



Morph of *Encyclia xbrevisfolia* with short leaves and short inflorescences. Labellum with color similar to *E. phoenicea* and shape of disc similar to *E. pyriformis*.



Morph of *Encyclia xbrevisfolia* with flower color similar to *E. pyriformis* and shape of disc similar to *E. phoenicea*.



Morph of *Encylia xbrevisfolia* in situ with long inflorescences and narrow leaves similar to *E. phoenicea* and with flowers favoring *E. pyriformis*.



Holotype of *Encyclia xbrevifolia* at CM.



Encyclia xbreuvifolia in situ resembling holotype.



Encyclia pyriformis x *Encyclia phoenicea* artificial hybrid.

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