

ISSN 2325-4785

New World Orchidaceae – Nomenclatural Notes

Nomenclatural Note – Issue No. 48

*Polystachya foliosa* var. *triandra* Sauleda & Adams Reestablished

March 19, 2019

### ***Polystachya foliosa* var. *triandra* Sauleda & Adams Reestablished**

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#### ABSTRACT

*Polystachya foliosa* var. *triandra* Sauleda & Adams is reestablished as a valid taxon. The reasons for reducing it to a synonym of *Polystachya foliosa* by Peraza-Flores et al. (2011) and Ackerman (2014) are examined.

Peraza-Flores et al. (2011) reduced *Polystachya foliosa* var. *triandra* Sauleda & Adams to a synonym of *Polystachya foliosa* (Hook.) Rchb. f. with the following explanation: “The status of *P. foliosa* var. *triandra* deserves further discussion. Its description fits both *P. caracasana* Rchb. f. and *P. foliosa*, and the original drawing clearly corresponds to *P. caracasana* (as here circumscribed). We have been unable to study the holotype but the analysis of several paratypes fail to reveal the floral structure depicted by Sauleda & Adams (1979). Alternatively, they (the paratypes) correspond to *P. foliosa* (as here circumscribed).”

All of the live material of *Polystachya* observed in the Bahama Islands by Sauleda & Adams is triandrous. Monandrous plants were not observed in the Bahama Islands but have been observed in Cuba. To which “floral structure depicted by Sauleda & Adams (1979)” Peraza-Flores et al. (2011) was referring to is not clear. Also if the description of *P. foliosa* var. *triandra* fits both *P. caracasana* and *P. foliosa* and the original drawing clearly corresponds to *P. caracasana*, why place it as a synonym of *P. foliosa*? This could indicate, based on the material from the Bahama Islands that as many authors have indicated (Kolanowska et al. , 2011; Kolanowska, 2014; Bogarin et al., 2014; Kolanowska and Szlachetko, 2016), *P. caracasana* is a synonym of a highly variable *P. foliosa*.

Peraza-Flores et al. (2011) in reference to *P. caracasana* state: “This is the most widely distributed species in America; it can be found in rain forests, cloud forests, low, inundated tropical forests, and tropical pine and oak savannas at the Bahamas.” However, *P. caracasana* is not included for the Bahama Islands in their distribution map of *P. caracasana*. Under Iconography of *P. caracasana*, they give “Sauleda & Adams (1979) figure 2 (as *P. foliosa* var. *triandra*)”. This would indicate that they consider the illustration of *P. foliosa* var. *triandra* to be a synonym of *P. caracasana*.

Peraza-Flores et al. (2011) in their treatment reducing *P. foliosa* var. *triandra* to a synonym of *P. foliosa* no mention is made of the characters used in the protolog that establish it as a variety of *P. foliosa*, mainly that this variety is autogamous, usually cleistogamous and triandrous. A study of the holotype would have demonstrated the triandrous condition and the reason for describing *P. foliosa* var. *triandra* as a distinct variety. In the Bahama Islands several orchids demonstrate the autogamous condition, possibly a condition mandated by the lack of a pollinator.

Autogamy results in a high level of homozygosity due to the expression of recessive or ancestral alleles. Species expressing these suppressed alleles give a glimpse of the evolutionary history of that species.

*Polystachya foliosa* var. *triandra* because of its autogamous condition is morphologically expressing recessive or ancestral alleles that are usually suppressed and are not expressed in the outcrossing populations. This accounts for the reason, as expressed by Peraza-Flores et al. (2011) that *P. foliosa* var. *triandra* “fits both *P. caracasana* and *P. foliosa* and the original drawing (that) clearly corresponds to *P. caracasana*” and supports the conclusion of many authors that *P. caracasana* is a synonym of *P. foliosa*. Although there have been several treatments involving species in the *P. foliosa* complex based on morphology (Peraza-Flores and Carnevali, 2012) and studies based on new methods of DNA sequencing as well as using more powerful algorithms recently developed (Abreu et al., 2018), the taxonomy of this complex is far from being solved.

Ackerman (2014) does not mention *P. caracasana* in his treatment of the flora of the Greater Antilles. He only lists *P. foliosa* and *Polystachya concreta* as occurring in the flora area. He describes the labellum of *P. foliosa* as “simple to trilobed, when simple irregularly crenate, oblong-ovate, rounded, retuse, when trilobed, lateral lobes triangular-flacate, mid lobe subquadrate, rounded sometimes apiculate, margins irregular”. Ackerman seems to understand the variable nature of *P. foliosa* throughout its range in the Greater Antilles and takes a conservative approach.

However, in reference to *P. foliosa* var. *triandra* Ackerman (2014) states: “It seems likely that triandry could have arisen several times (referring to triandrous populations in the Bahama Islands and Cuba) just as for taxa such as *Prosthechea cochleata*. It thus seems prudent to avoid nomenclatural recognition of such variants and simply note that some plants may be triandrous”. It is not just some plants but all of the population of the Bahama Islands that is triandrous. If it were just some plants then it may be prudent to just mention that this condition exists in a population of outcrossing individuals. However, since it is an isolated population of all triandrous individuals in the Bahama Islands it is best to consider *P. foliosa* var. *triandra* a valid taxon and not simply a synonym of *P. foliosa* or *P. caracasana*.

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