

Notes on the Hawaiian Fern Genus *Adenophorus*

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The majority of the Hawaiian representatives of the fern family Grammitidaceae have recently been interpreted as representing a single endemic genus (Copeland, 1947). This concept is not entirely new. As early as 1824, in a short report describing some new plant genera collected during Freycinet's voyage around the world, Charles Gaudichaud (1824) published a description of the genus *Adenophorus*¹ in which he included three species. Two of these species had been described earlier Kaulf. (*Adenophorus minuta* Gaud.) and *Polypodium hymenophylloides* Kaulf. (*Adenophorus minuta* (Gaud.)). The third species, *Adenophorus tripinnatifidus* Gaud. was described here for the first time. This genus as originally described included those Hawaiian grammitids with pinnatifid or bipinnatifid pinnae, bearing glandular epidermal hairs and possessing glandular-stipitate paraphyses in the sori.

Evidently as a result of nomenclatural complexities, Desvaux (1827) later proposed the new name *Amphoradenium* for the described species of *Adenophorus*, and also provided a new epithet for *Adenophorus tripinnatifidus* in honor of Gaudichaud (*Amphoradenium gaudichaudii* Desv.). Clearly, however, the correct name for this group of grammitids when treated as a genus is *Adenophorus* Gaud. *Amphoradenium* is a synonym of this name. *Amphoradenium*, however, is the name that was adopted for this genus by Copeland (1947), who also made numerous new combinations.

Investigation shows that, according to Copeland's concept of the genus, *Adenophorus* includes two distinct groups of species.

¹The name *Adenophorus* had been published earlier by Desvaux (1808) in a list of names without any description. According to Article 12 of the Code of Nomenclature (Montreal) this earlier name has no status under the code.

The first group is characterized by having elongate creeping rhizomes, remote fronds, pinnate-pinnatifid to pinnate-tripinnatifid blades, with an irregular epidermal layer bearing numerous appressed, usually unicellular, reddish-brown glandular hairs which are oriented so that they point to the apex of the ultimate blade segment or lobe. The second group includes the species with short, erect or ascending rhizomes closely invested by the crowded stipes, simple, pinnatifid or pinnate blades, with a smooth epidermis bearing scattered uniseriate, simple or more frequently branched, erect hairs. In the first group belong *Adenophorus hymenophylloides* Hook. and Grev., *A. tamariscinus* Hook. & Grev. (as *tamarisci*), *A. tripinnatifidus* Gaud., *A. hillebrandii* (Hook.) K. A. Wilson² and *A. abietinus* (Eaton in Mann) K. A. Wilson.³

The second group includes *Adenophorus sarmentosus* (Brack.) K. A. Wilson,⁴ *Adenophorus haalilioanus* (Brack) K. A. Wilson⁵ and *Adenophorus pinnatifidus* Gaud.

The presence of clavate glandular paraphyses in the sori is the single morphological character that unites these two groups of Hawaiian grammitid ferns.

The distinctness of these two groups raises the problem of the generic validity of *Adenophorus*. Considering only the Hawaiian species of the Grammitidaceae, it might be suggested that each one of the two groups merits generic status. The great similarity of the species within each group argues strongly in favor of their close relationship. The degree of relationship between the two groups, however, is not clearly established. Convincing evi-

²ADENOPHORUS *hillebrandii* (Hook.) K. A. Wilson, comb. nov. Basionym: *Polypodium hillebrandii* Hook., Sp. Fil. 4: 228, tab. 279. 1864.

³ADENOPHORUS *abietinus* (Eaton in Mann) K. A. Wilson, comb. nov. Basionym: *Polypodium abietinum* Eaton in Mann, Proc. Am. Acad. Arts and Sci. 7⁵ 219. 1867.

⁴ADENOPHORUS *sarmentosus* (Brack.) K. A. Wilson, comb. nov. Basionym: *Polypodium sarmentosum* Brack. U. S. Explor. Exped. Bot. 16: 8, 9. 1854; pl. 2, fig. 3. 1855.

⁵ADENOPHORUS *haalilioanus* (Brack.) K. A. Wilson, comb. nov. Basionym: *Polypodium haalilioanum* Brack. U. S. Explor. Exped. Bot. 16: 5, 6. 1854; pl. 1, fig 4. 1855.

dence could be presented in favor of treating these ferns as two separate genera.

This situation is not uncommon throughout the entire family Grammitidaceae. There seems to be general agreement that the genus *Xiphopteris* is polyphyletic and, although easily recognizable, an artificial grouping. The assemblage of ferns placed in the genus "*Ctenopteris*" (the name is illegitimate) includes numerous groups of ferns. The interrelationships of these ferns is very poorly understood. *Prosaptia* is another grammitid genus which is probably polyphyletic. Problems similar to those in "*Ctenopteris*" are also evident in the large genus *Grammitis*. Clearly, a detailed study of the entire family is needed in order to establish clearer, more natural genera.

Until such a study is undertaken I consider it best to retain these convenient, although most likely artificial genera.

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