SOME NAME CHANGES IN THE PTERIDIDACEAE OF MACARONESIA AND EUROPE - WITH VALIDATION OF HYBRID NAMES IN THE GENUS ALLOSORUS BERNH.

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ABSTRACT

Molecular studies have confirmed the polyphyletic nature of the genus Cheilanthes Sw. The Macaronesian-Mediterranean taxa form a clade, with Asiatic taxa, distinct from that containing the type C. micropteris Sw. and are best recognised as a separate genus for which the earliest available name is Allosorus Bernh. The novel species combinations have already been made; those for the nine naturally occurring hybrids currently known between them are validated here.

INTRODUCTION

The large cosmopolitan fern genus Cheilanthes Sw. has long been recognised as taxonomically difficult, the recognition of a pragmatic and ‘natural’ solution to generic circumscription regarded as one of the most contentious issues in fern systematics (Tryon & Tryon, 1982). Molecular phylogenetic studies indicated the polyphyletic nature of this aggregate (Gastony & Rollo, 1995; 1998) and as material from further geographic areas has been studied, eg. Prado et al., 2007; Zhang et al., 2007; Windham et al., 2009, Eiserhardt et al., 2011) polyphyly has been confirmed and interesting bio-geographical patterns clarified. As DNA sequence data accumulates and morphological features are re-examined in the light of molecular phylogenies it becomes possible to recognize monophyletic assemblages of species that can be circumscribed as genera. Ongoing work by Windham and others, eg. Link-Perez et al. 2011; Li et al. 2012, Grusz & Windham, 2013) has now reached the point with certain groups of cheilanthoid ferns where taxa and clades that cannot reasonably be included within Cheilanthes are being circumscribed and named. The examples of the genus from Macaronesia, the Mediterranean, and eastwards to Asia Minor are clearly resolved in a distinct clade (Eiserhardt et al., 2011) separate from that of the New World C. micropteris Sw., the nomenclatural type of the genus Cheilanthes Sw. Although Grusz & Windham (2013) suggested that as deeper relationships were as yet poorly resolved further evidence might be necessary before generic status was allocated, Christenhusz (2012) took the step of resurrecting the name Allosorus Berhn. for this clade.

Allosorus as a genus has had a chequered and controversial nomenclatural history, having been variously interpreted as typified by Osmunda crispa L. = Cryptogramma crispa (L.) R.Br., Pteris viridis Forssk. = Pellaea viridis (Forssk.) Prantl and Adiantum pusillum Willd. ex Bernh. = Allosorus pusillus (Willd. ex Bernh.) Bernh. In each case its application would result, through the rule of priority, in the loss of a much used and familiar generic name (Pichi-Sermolli,1953). Farwell (1931) suggested that the last
interpretation was most appropriate, not only because the majority of species included in Bernhardi’s genus are species of Cheilanthes sensu lato, but more compellingly, as Pichi-Sermolli (1953) notes, that Allosorus pusillus was the only binomial established by Bernhardi (1805) in the genus Allosorus.

To preserve the later Cheilanthes as the generic name Pichi-Sermolli (1953) proposed the conservation of Cheilanthes against Allosorus, with C. micropteris Sw. as type. This typification has been challenged (Panigrahi, 1987), but was upheld (Lellinger, 1993). When used in a more restrictive sense, as now suggested by the molecular phylogenetic studies, both names are valid and acceptable. Following Pichi-Sermolli (1953) the type of Allosorus is A. pusillus (Willd. ex Bernh.) Bernh. This has been equated with Polypodium pteridioides Reich. = Allosorus pteridioides (Reich.) Christenh., which itself has had a confusing and controversial taxonomic history. Polypodium pteridioides Reichard was formed as a new name for Polypodium fragrans L. (1771), as this was a later homonym for Polypodium fragrans L. (1753) = Dryopteris fragrans (L.) Schott. The lectotype selected, LINN 1251.34 was however shown to belong not to the tetraploid taxon which had generally gone under the name Cheilanthes pteridioides (Reich.) C.Chr. or C. fragrans (L.) Sw., but rather the diploid hitherto widely known as C. maderensis Lowe (Nardi & Reichstein, 1986). As a consequence a proposal was made to reject the name Polypodium pteridioides and all combinations based on it (Nardi & Reichstein, 1986) but this was, following debate, rejected (Pichi-Sermolli, 1987). Bernhardi (1805) equated Adiantum pusillum Willd. with Pteris acrosticha Balb.; it is likely that Pichi-Sermolli in 1953 would also have equated Polypodium pteridioides with this tetraploid taxon, as presumably did Tryon & Tryon, 1982 (as Cheilanthes fragrans) before the type of this was shown to belong to the diploid. Examination of original material of Adiantum pusillum Willd. ex Bernh. is necessary to confirm the identity, Allosorus acrosticus versus A. pteridioides, of the generitype.

Christenhusz (2012) made the valid combinations necessary for the species previously recognized in Cheilanthes from the Macaronesian and Mediterranean regions, including the creation of a novel specific epithet (Allosorus fragilis Christenh.) for the Canarian endemic diploid Cheilanthes pulchella Willd., necessitated as the epithet pulchellus was unavailable due to the existence of Allosorus pulchellus C.Presl.

For clarity the nomenclatural changes (Table 1) made subsequent to the publication of Flora Europaea (Tutin et al., 1993), in which all of the species treated by Christenhusz (2012) (with the exception of the Arabian endemic Allosorus coriaceus (Decne) Christenhusz (Cheilanthes coriacea Decne)) and other generic changes to taxa which have previously been considered under Cheilanthes (eg. Shing, 1993) are presented.

Table 1. Summary of nomenclatural changes in the Pteridaceae of Europe and Macaronesia since the publication of Tutin et al., (1993)

<table>
<thead>
<tr>
<th>Currently accepted name</th>
<th>Tutin et al. (1993) name</th>
</tr>
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<tbody>
<tr>
<td>Allosorus acrosticus (Balb.) Christenh.</td>
<td>= Cheilanthes acrostica (Balbis) Tod.</td>
</tr>
<tr>
<td>Allosorus fragilis Christenh.</td>
<td>= Cheilanthes pulchella Bory ex Willd.</td>
</tr>
<tr>
<td>Allosorus guanchicus (Bolle) Christenh.</td>
<td>= Cheilanthes guanchica C.Bolle</td>
</tr>
<tr>
<td>Allosorus hispanicus (Mett.) Christenh.</td>
<td>= Cheilanthes hispanica Mett.</td>
</tr>
<tr>
<td>Allosorus persicus (Bory) Christenh.</td>
<td>= Cheilanthes persica (Bory) Mett. ex Kuhn</td>
</tr>
<tr>
<td>Allosorus pteridioides (Reichard) Christenh.</td>
<td>= Cheilanthes maderensis Lowe</td>
</tr>
<tr>
<td>Allosorus tinaei (Tod.) Christenh.</td>
<td>= Cheilanthes tinaei Tod.</td>
</tr>
<tr>
<td>Paragymnopteris marantae (L.) K.H.Shing</td>
<td>= Notholaena marantae (L.) Desv.</td>
</tr>
</tbody>
</table>
Christenhusz (2012) did not, however, provide combinations for the nine naturally occurring hybrids currently known (Rasbach & Reichstein, 1982; Rasbach et al., 1983). That omission is rectified here.

**NOVEL COMBINATIONS**

*[Allosorus hispanicus* (Mett.) Christenh. × *A. tinaei* (Tod.) Christenh.]*

*[Allosorus guanchicus* (Bolle) Christenh. × *A. tinaei* (Tod.) Christenh.]*

*[Allosorus pteridioides* (Reichard) Christenh. × *A. tinaei* (Bory) Christenh.]*

*[Allosorus acrosticus* (Balb.) Christenh. × *A. persicus* (Bory) Christenh.]*

*[Allosorus acrosticus* (Balb.) Christenh. × *A. guanchicus* (Bolle) Christenh.]*

*[Allosorus acrosticus* (Balb.) Christenh. × *A. pteridioides* (Reichard) Christenh.]*

*[Allosorus hispanicus* (Mett.) Christenh. × *A. tinaei* (Tod.) Christenh.]*

*[Allosorus fragilis* Christenh. × *A. pteridioides* (Reichard) Christenh.]*

*[Allosorus guanchicus* (Bolle) Christenh. × *A. pteridioides* (Reichard) Christenh.]*

**REFERENCES**


mediterraneam pertinentes 29]. Willdenowia 42:284.


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