



A linear sequence of extant families and genera of lycophytes and ferns

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Abstract

Throughout the history of the classification of extant ferns (monilophytes) and lycophytes, familial and generic concepts have been in great flux. For the organisation of lycophytes and ferns in herbaria, books, checklists, indices and spore banks and on the internet, this poses a problem, and a standardized linear sequence of these plants is therefore in great need. We provide here a linear classification to the extant lycophytes and ferns based on current phylogenetic knowledge; this provides a standardized guide for organisation of fern collections into a more natural sequence. Two new families, Diplaziopsidaceae and Rhachidosoraceae, are here introduced.

Key words: club mosses, fern classification, floras, herbarium curation, monilophytes, synonymy, new families, pteridophytes, synonymy

Introduction

The taxonomic treatment of extant ferns (monilophytes) and lycophytes and the varying opinions throughout the history of fern classification are problematic for those who need to organise collections of ferns and lycophytes. Linear sequences of plant families are useful for herbarium curators who wish to arrange collections systematically rather than alphabetically. Linear sequences are also beneficial for organising ferns and lycophytes systematically in floras, books, indices, checklists, conservation assessments and listings on the internet. Most importantly a number of large herbaria (e.g. BM, E, H, K, L, P, QBG, WA) are currently in the process of reorganising (at least part of) their collections, requiring linear classifications (J. A. Wearn, RBG Kew, pers. comm.). Linear sequences for angiosperms based on modern phylogenetic studies are available based on APG-III (Angiosperm Phylogeny Group 2009, Haston *et al.* 2009), which these herbaria plan to follow, but a modern sequence for ferns and lycophytes has not thus far been published.

Our linear classification stands in the tradition of a universally ignored linear system by Crabbe *et al.* (1975), who proposed a system for managing fern collections based on the knowledge available at the time. However, they felt that ‘the family concept was still in a state of flux, needing considerable monographic work at the genus and species level’, so they provided their higher classification tentatively and only as a general layout to organize the genera. They organized the ferns and ‘fern allies’ following seven assemblages, placing genera within these based on a consensus discussed in Jermy *et al.* (1973) and Taylor & Mickel (1974). The history of fern classification preceding this linear sequence has been discussed in great detail by Tryon (1952), from the early classifications by Smith (1810, fig. 1), Presl (1836) and Smith (1875) to Ching (1940) and Copeland (1947), to name only a few.