



A synopsis of the species of *Cyathea* (Cyatheaceae-Polypodiopsida) with pinnate to pinnate-pinnatifid fronds

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Abstract

A summary of the species of *Cyathea sensu strictu* with pinnate to pinnate-pinnatifid fronds is presented. All species are strictly Neotropical and are found throughout the entire range of the genus in the Western Hemisphere, but most species occur in the mountainous regions of northern South America and Central America. This artificially delimited group includes the species formerly recognized as the segregate genus *Cnemidaria*, which form a monophyletic group within *Cyathea* together with some species previously not recognized as *Cnemidaria*. This group is characterized by a general lack of hairs, cartilaginous laminar texture, petiole scales that have white margins or that are completely white, and large sori with diameter ≥ 1 mm and 30–40 sporangia per sorus. *Cnemidaria*-type spores with at least three large equatorial pores dominate in this group but are neither omnipresent nor exclusive to it. The remainder of the pinnate to pinnate-pinnatifid species of *Cyathea* includes predominantly exindusiate species that have moderately to densely pilose laminae and relatively small sori with diameter ≤ 1 mm and ± 20 sporangia per sorus.

Twelve new combinations are made and the following three new names are proposed: *Cyathea cnemidaria* (= *Cnemidaria tryoniana*), *C. glandulifera* (= *Cn. glandulosa*), *C. suprapilosa* (= *Cn. suprastrigosa*). A key to all species of *Cyathea* with pinnate to pinnate-pinnatifid fronds is provided. Hybrids are not treated.

Keywords: Andes, hybrids, tree ferns

Introduction

The family Cyatheaceae, or scaly tree ferns, contains ca. 600 species that are distributed in the humid tropics and the southern temperate regions. The taxonomic history of the family is marked by frequent changes in the number and definition of its genera, with various attempts to form a classification based on the different shapes of indusia (e.g. Christ 1897). Holttum (1957), Holttum & Sen (1961) and Sen (1964) discovered that the morphology of the petiole scales offers a more reliable method of grouping the species of Cyatheaceae, because it correlates with other morphological characters and ecological preferences. Holttum (1963), focussing on Old World taxa, used the scale characters to define subgenera and sections in the then universal genus *Cyathea* (Domin 1930). Tryon (1970) made a more daring attempt dividing the entire family into six genera (eight at first, including *Lophosoria* Presl (1847: 37) and *Metaxya* Presl (1836: 59)). His work was based mainly on the Neotropical species, where a different evolutionary history had led to clearer differences between the natural groups. However, Tryon made some poor choices in recognizing genera based on weak morphological differences (Holttum & Edwards 1983, Lellinger 1987). This fuelled a decade-long dispute over the two generic systems (Holttum & Tryon 1977), which was eventually settled with a truce but was not resolved (Holttum & Edwards 1983).

Recent phylogenetic studies (Korall *et al.* 2006, 2007) favour the taxonomic recognition of at least four clades that correspond with the established genera *Sphaeropteris* Bernhardt (1801: 122), *Alsophila* Brown (1810: 158), *Gymnosphaera* Blume (1828: 242), and *Cyathea* Smith (1793: 416) *sensu strictu*. The latter genus