



## Do you know *Cyathea divergens* (Cyatheaceae-Polypodiopsida)?

MARCUS LEHNERT<sup>1,2</sup>

<sup>1</sup> Nees Institut für Biodiversität der Pflanzen, Rheinische-Friedrich-Wilhelms Universität Bonn, Meckenheimer Allee 170, 53115 Bonn, Germany

<sup>2</sup> Staatliches Museum für Naturkunde Stuttgart, Abt. Botanik, Am Löwentor, Rosenstein 1, 70191 Stuttgart, Germany  
Email: [mlehnert@uni-bonn.de](mailto:mlehnert@uni-bonn.de)

### Abstract

The Neotropical scaly tree fern *Cyathea divergens* is a paradigm of a variable species with a wide geographical range. Studies in herbaria and in the field reveal that *C. divergens* is less frequently collected and less variable than previously thought. A lot of records are based on fragmentary collections of similar species that have the characteristically long-stalked, triangular, pinnatisect pinnules and sparse to absent laminar indument in common, but differ in other characters. Their separation from *C. divergens* is easy if petiolar characters are considered and even possible if microscopic remnants of the fine scurf on the pinnules are studied. *Cyathea tuerckheimii* is given here species status, eliminating one variety of *C. divergens*, whereas *C. divergens* var. *sipaliwiniana* is newly described. *Cyathea convergens*, here newly described, also belongs to this group. The identification of *Cyathea* ×*jurgensenii* as a sterile hybrid between *C. tuerckheimii* and *C. fulva* reduces the confusion that exists in the separation of *C. tuerckheimii* from *C. divergens* and *C. fulva*. The typification of *Cyathea kalbreyeri* is corrected here. The type specimen of that species represents a previously unrecognized species, while the specimens known under that name are similar to the type of *Cyathea gibbosa*, which in turn currently denominates a species that has to be referred to as *Cyathea farinosa*. One synonym of *C. gibbosa*, *C. surukunensis*, may represent a hybrid.

### Introduction

Tree ferns are easily spotted in the field, but difficult to collect properly. The huge size of the leaves and stems that most species reach at maturity put certain limitations to the completeness of collections. Fragmentary collections are inevitable, but there is a minimum amount of the leaf (petiole, basal pinna, medial pinna and apex) that has proven to be sufficient for comparative morphological studies and for delimiting and characterizing species confidently (see also collection methods of Dransfield 1986, Christenhusz & Tuomisto 2005 and Janssen 2006). Nowadays collections are easily upgraded by digital images, which give a better general impression of the whole plant. However, it is often the type material that does not meet these minimum requirements and thus many names are often difficult to apply correctly, especially without studying sufficient material from type localities.

A paradigm of incomplete specimens and consequent morphological misconception is *Cyathea divergens* Kunze (1834: 100). The type at Leipzig was destroyed during WWII and the remaining authentic material lacks petioles, which bears crucial morphological features in this group. The petiole characters are not mentioned in the diagnosis and the trunk is only described superficially, not being helpful in assigning this name to modern collections. A surprisingly large amount of collections of this species lacks a petiole, more than in any other large tree fern species with similar distribution and frequency. With few petioles available to compare and no type petiole to compare them with, the determination of *C. divergens* was based on its characteristic fronds. They are notable for their long-stalked, clearly triangular pinnules with truncate to cordate bases, among which the largest are usually more than 2 cm wide, the firm-chartaceous to subcoriaceous texture and almost completely glabrous laminae.

In the revision of the genus *Cyathea*, Tryon (1976) defined *C. divergens* as a widespread and variable species with pale, whitish petiole scurf and brown petiole scales with white margins. He did not detect strong patterns in

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