

## **Phylogeny of *Lithops* N.E. Brown (Aizoaceae) based on nuclear rDNA ITS sequences, AFLP and seed morphology**

*Alexandra Kellner, Christiane M. Ritz, Frank H. Hellwig*  
*Institut für Spezielle Botanik, Friedrich-Schiller-Universität Jena,*  
*Philosophenweg 16, D-07743 Jena, Germany.*

The genus *Lithops* (Aizoaceae, Ruschioideae) includes about 40 species occurring in the western, southern and central regions of southern Africa. All species have a compact growth form consisting of two opposite succulent leaves and are well-known as 'living stones'. The identification is usually difficult because the taxa are morphologically very similar. The aim of this study was to resolve the phylogenetic relationships within the genus using DNA sequence markers.

The internal transcribed spacer (ITS) region of nuclear ribosomal DNA belongs to a multigene family with hundreds of tandemly repeated copies. We investigated 40 samples, representing 37 species of *Lithops*, and in addition two samples of *Conophytum*, two of *Dinteranthus* and one of *Lampranthus*.

Phylogenetic trees from ITS rDNA sequences using maximum parsimony and Bayesian analyses show very low resolution within *Lithops* due to a low number of variable sites. The monophyly of the genus is not supported by the ITS-analyses. The outgroup species *Dinteranthus* and *Conophytum* are nested within the clade and thus the genus *Lithops* is paraphyletic. To solve the problem of low resolution we also want to analyse the taxa using AFLP (amplified fragment length polymorphism).

The results will be discussed with respect to biogeography and seed morphology.