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# Size doesn´t matter—recircumscription of *Microlejeunea* (Lejeuneaceae, Porellales) based on molecular and morphological evidence

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## Abstract

Phylogenetic analyses of a three marker dataset of Lejeuneaceae (chloroplast genome *rbc*L gene and *trn*L-F region, and nuclear ribosomal ITS1-5.8S-ITS2 region) resolve the "*Lejeunea* complex" in three main lineages assigned here to *Harpalejeunea*, *Lejeunea* and *Microlejeunea*. The taxa *Harpalejeunea fischeri*, *H. filicuspis*, *H. latitans* and *Pluvianthus squarrosus* are nested in a clade with several representatives of *Microlejeunea* including the generitype *M. africana*, and are transferred to the latter genus. *Harpalejeunea* and *Microlejeunea* differ from *Lejeunea* by the presence of ocelli. *Harpalejeunea* has diverging, blunt underleaf lobes in contrast to the forward directed, blunt to acute underleaf lobes of *Microlejeunea*. Morphologically similar accessions of *Microlejeunea* form independent lineages. *Drepanolejeunea vandenberghenii* is newly reported for Madagascar, Malawi and Réunion.

**Key words:** cryptic speciation, *Drepanolejeunea*, *Harpalejeunea*, Jungermanniopsida, *Lejeunea*, liverwort, *Pluvianthus*, taxonomy

## Introduction

*Lejeunea* Libert (1820: 372) is a species rich and taxonomically complex genus of Lejeuneeae with some 1700 species described worldwide (Reiner-Drehwald 1999). The high number of *Lejeunea* species is due to the wide genus concept of early authors including Gottsche et al. (1844-1847) and Spruce (1884). Later authors placed *Lejeunea* elements sensu Spruce in more than 60 different genera (Gradstein et al. 2004), leading to tentative estimates of species numbers "over 100"; the exact number being unclear due to a lack of comprehensive taxonomic studies (Gradstein & Pinheiro da Costa 2003). Molecular phylogenetic studies resolved several of the segregate genera as nested within *Lejeunea*, e.g. *Taxilejeunea* (Spruce 1884: 212) Schiffner (1893: 125), *Macrolejeunea* (Spruce 1884: 224) Schiffner (1893: 118) (Wilson et al. 2007) and *Sphaerolejeunea* Herzog (1938: 88), results that support a wider genus concept (Heinrichs et al. 2012a). Currently *Lejeunea* is considered to be a morphologically heterogeneous genus with unclear boundaries (Gradstein et al. 2001).

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