

Species delimitation and biogeography of a southern hemisphere liverwort clade, *Frullania* subgenus *Microfrullania* (Frullaniaceae, Marchantiophyta)

Abstract

Frullania subgenus *Microfrullania* is a clade of ca. 15 liverwort species occurring in Australasia, Malesia, and southern South America. We used combined nuclear and chloroplast sequence data from 265 ingroup accessions to test species circumscriptions and estimate the biogeographic history of the subgenus. With dense infra-specific sampling, we document an important role of long-distance dispersal in establishing phylogeographic patterns of extant species. At deeper time scales, a combination of phylogenetic analyses, divergence time estimation and ancestral range estimation were used to reject vicariance and to document the role of long-distance dispersal in explaining the evolution and biogeography of the clade across the southern Hemisphere. A backbone phylogeny for the subgenus is proposed, providing insight into evolution of morphological patterns and establishing the basis for an improved sectional classification of species within *Microfrullania*. Several species complexes are identified, the presence of two undescribed but genetically and morphologically distinct species is noted, and previously neglected names are discussed.