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Additions to the Ricciaceae flora of Rio Grande do Sul, including two remarkable records for the Brazilian liverwort flora

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Abstract

The first record of *Riccia boliviensis* and *R. iodocheila* for Brazil and the first record of *R. squamata* and *R. subplana* for the liverwort flora of the state of Rio Grande do Sul are reported. The species were found during a floristic revision of the family Ricciaceae in the state. Taxonomic notes, photographs, habitat and geographic distribution are provided for each species.

Key words: liverworts, Ricciaceae, new records, southern Brazil

Introduction

The genus *Riccia* Linnaeus (1753:1138), the largest genus of the Marchantiales, comprises about 150 species worldwide (from the Arctic to the Antarctic). Brazil harbors the highest species diversity with 32 species in four subgenera (60% of Neotropical species of *Riccia*). Most species occur in areas with dry seasons (Bischler-Causse *et al.* 2005) and are terrestrial, growing on soil, usually as pioneers of bare soil and often in areas that are occasionally flooded (Jovet-Ast 1991, 1993; Vianna 1985; Gradstein & Costa 2003; Bischler-Causse *et al.* 2005).

The first extensive revision of the genus *Riccia* for the Neotropics was published by Jovet-Ast (1991, 1993). Fifty-two taxa were treated including genus and species descriptions, geographical distributions, and illustrations. In Brazil, Vianna (1985) treated the genus *Riccia* in the revision of the Marchantiales for the state of Rio Grande do Sul, including 14 species. Gradstein & Costa (2003) reported the occurrence of 29 species of *Riccia* for Brazil, 18 of these for Rio Grande do Sul. The most recent revision of *Riccia* was contributed by Jovet-Ast in Bischler-Causse *et al.* (2005) Flora Neotropica Monograph for Marchantiidae, that reported the occurrence of 32 species of *Riccia* for Brazil, 19 of these for Rio Grande do Sul. Species of this genus are delimited morphologically by characters of the thallus (cross section), scales (color and arrangement), and spores (shape, wall ornamentation, and size). Here we report four new records of *Riccia* for Rio Grande do Sul (*Riccia boliviensis* Jovet-Ast (1991:242), *R. iodocheila* M. Howe (1934:200), *R. squamata* Nees in Martius (1833:302) and *R. subplana* Stephani (1902:275)); the records of *R. boliviensis* and *R. iodocheila* are also the first from Brazil.

Taxonomic treatment

Key to the *Riccia* species from Rio Grande do Sul state (based on Jovet-Ast in Bischler-Causse *et al.* 2005 and Gradstein & Costa 2003)

1. Thallus only 2–3 cell layers thick throughout. Thallus segments widened to the tips. Spores spherical, 40–60 µm diam., wingless, spiny, with rounded or truncate spines ..... *R. membranacea* **(subgen. *Leptoriccia*)**

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Riccia squamata is typical of the Caatinga in Brazil (Paraíba, Pernambuco, Bahia, Piauí, and Minas Gerais states) a unique biome in Brazil and very distinct from those found in Rio Grande do Sul, the *Campos Sulinos* (Southern Brazilian Campos) and the Atlantic Forest. We expected to find this species in the Rio Grande do Sul state, because it is also found in northern Argentina and in the open areas of *Campos Sulinos* where the conditions of intense luminosity are similar. The discontinuous distribution in Brazil may partly be explained by the few inventories of Ricciaceae in the country.

The widespread distribution of *R. iodocheila*, from the southern USA to Argentina, suggested that it could occur in southern Brazil, which was confirmed in our study. Other species that are expected to occur in Rio Grande do Sul are *R. crystallina* Linnaeus (1753:1138), *R. frostii* Austin (1875:17), *R. mauryana* Stephani (1898:19), *R. sorocarpa* Bischoff (1835:1053), and *R. weinionis* Stephani (1898:18), which occur elsewhere in Brazil and/or in neighboring Argentina and Paraguay.

These results suggest the need for additional fieldwork to have a better understanding of the distribution and ecology of the species of *Riccia* in southern Brazil.

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