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Short Communication

New records of bryophytes for the state of Rio Grande do Sul, Brazil[1]

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ABSTRACT

The aim of this study was to complete the species list and disseminate data regarding the diversity of bryophytes in the state of Rio Grande do Sul, Brazil. We registered 51 species of bryophytes (11 mosses and 40 liverworts) as new records for Rio Grande do Sul, of which six represent the second records for Brazil.

Key words: liverworts, mosses, new records, taxonomy

The study of the bryophytes of the state of Rio Grande do Sul, Brazil, was initiated by Sehnem (1953) with the excellent paper "*Elementos austral-antárticos na flora briológica do Rio Grande do Sul*" ("Austral-Antarctic elements in the bryological flora of the state of Rio Grande do Sul"). The author published a series of works with the aim of compiling a flora of the mosses of southern Brazil (Sehnem 1955; 1969; 1970; 1972; 1976; 1978; 1979; 1980).

Several studies have included samples from the state of Rio Grande do Sul, comprising taxonomic revisions and studies of specific taxa such as Bryophyta (*Polytrichaceae*) (Farias 1987); *Lejeuneaceae* (Lorscheitter-Baptista 1977); families and genera of *Jungermanniales*, except *Lejeuneaceae* (Bueno 1984; 1986); several taxa of liverworts and some mosses (Lemos-Michel 1980; 1983; 1999; 2001); the taxa of *Bazzania* (Lemos-Michel & Bueno 1992); the species of *Radula* (Oliveira 1973); the leafy liverworts (Lorscheitter 1973; 1977); the thallose liverworts (Vianna 1970; 1971; 1976; 1981a; 1981b; 1981c; 1985; 1988; 1990); and new records and illustrations of nomenclatural types of bryophytes, respectively (Yano & Bordin 2006; Yano & Peralta 2008a). Bordin & Yano (2010) compiled a list of updated information on the bryological flora of Rio Grande do Sul, listing 760 taxa, in 93 families and 250 genera. The authors also provided a complete history and commentary on the study of bryophytes in the state. Recently, Yano & Bordin (2011), studying the collection on deposit at the Porto Alegre Colégio Anchieta Herbarium (code, PACA), cited 15 new records for the state. These studies were performed for the elaboration of the "*Catálogo de Plantas e Fungos do Brasil*" ("Catalogue of Plants and Fungi of Brazil", Forzza *et al.* 2010), which cited 526 taxa of bryophytes for the state.

The motivation for this study was the occurrence of species not yet cited for the state of Rio Grande do Sul observed during a survey of terrestrial and corticolous bryophytes, in a fragment of *restinga* (coastal woodland) in the extreme south of Brazil, in the city of Rio Grande. An additional motivation was the existence of several unidentified samples deposited in the Herbarium of the Botanical Institute of São Paulo (code, SP), which were analyzed and from which new records have been included here. Therefore, this study imparts new information to contribute to the knowledge of the diversity and biogeography of bryophytes in the state.

From among samples collected in the field and deposited in the SP herbarium, we identified 500. The identification of samples was based on the studies of Gradstein & Costa (2003), Vaz & Costa (2006a) and Sharp *et al*. (1994). We used the classification system devised by Buck & Goffinet (2000) for Bryophyta and that devised by Crandall-Stotler & Stotler (2000) for Marchantiophyta. The species are listed alphabetically, by division, family and species, in Tab. 1.

We listed 51 species of bryophytes (11 mosses and 40 liverworts) as new records for the state of Rio Grande do Sul (Tab. 1). In relation to the 526 taxa cited by Forzza *et al.* (2010), these new taxa correspond to an increase of approximately 10% in the bryoflora of the state.

[1] Based on the Master's dissertation of the first author

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Table 1. List of new records of bryophytes for the state of Rio Grande do Sul.

DIVISION Family	Taxon	Municipality	Voucher
BRYOPHYTA			
Anomodontaceae	*Herpetineuron toccoae* (Sull. & Lesq.) Ackerman	Nova Roma do Sul	*Peralta et al. 10464* (SP)
	Anomobryum perimbricatum (Broth.) Broth.	Nova Roma do Sul	*Peralta et al. 10452* (SP)
	Brachymenium klotzschii (Schwägr.) Paris	Caxias do Sul	*Peralta et al. 10696* (SP)
Bryaceae	*Bryum muehlenbeckii* B.S.G.	Cambará do Sul	*Peralta et al. 10875* (SP)
	Rosulabryum billardierei (Schwägr.) J.R. Spence	Sapiranga	*Peralta et al. 3300* (SP)
	Schizymenium campylocarpum (J.D. Hook.) Broth.	Sapiranga	*Peralta et al. 3297* (SP)
Fabroniaceae	*Fabronia macroblepharis* Schwägr.	Rio Grande	*Heidtmann et al.152 p.p.* (HURG)
Hypnaceae	*Phyllodon truncatulus* (Müll. Hal.) W.R. Buck	Caxias do Sul	*Peralta et al. 10556* (SP)
Meteoriaceae	*Toloxis imponderosa* (Taylor) W.R. Buck	Caxias do Sul	*Peralta et al. 10619* (SP)
Neckeraceae	*Homaliodendron piniforme* (Brid.) Enroth	Nova Roma do Sul	*Peralta et al. 10554* (SP)
Polytrichaceae	*Lepidopilidium caudicaule* (Müll. Hal.) Broth.	Nova Roma do Sul	*Peralta et al. 10486* (SP)
MARCHANTIOPHYTA			
	Aneura pinguis (L.) Dumort.	Rio Grande	*Heidtmann et al. 113 p.p.* (HURG)
Aneuraceae	*Riccardia digitiloba* (Spruce ex Steph.) Pagá	Cambará do Sul	*Peralta et al. 10760* (SP)
	Riccardia metzgeriiformis (Steph.) R.M. Schust.	Rio Grande	*Heidtmann et al. 158 p.p.* (HURG)
	Riccardia fucoidea (Sw.) Schiffn.	Cambará do Sul	*Peralta et al. 10725* (SP)
Balantiopsidaceae	*Neesioscyphus carneus* (Nees) Grolle	Cambará do Sul	*Peralta et al. 10743* (SP)
Calypogeiaceae	*Calypogeia grandistipula* (Steph.) Steph.	Caxias do Sul	*Peralta et al. 10628* (SP
	Calypogeia peruviana Nees & Mont.	Cambará do Sul	*Peralta et al. 10886* (SP)
Cephaloziellaceae	*Cephaloziella divaricata* (G.L. Smith) Schiffn.	Cambará do Sul	*Peralta et al. 10892* (SP)
Geocalycaceae	*Leptoscyphus spectabilis* (Steph.) Grolle	Cambará do Sul	*Peralta et al. 10898* (SP)
	Lophocolea perissodonta (Spruce) Steph.	Caxias do Sul	*Peralta et al. 10651* (SP)
	Jungermannia amoena Lindb. & Gottsche	Caxias do Sul	*Peralta et al. 10671* (SP)
	Jungermannia hyalina Lyell	Caxias do Sul	*Peralta et al. 10666* (SP)
	Syzygiella perfoliata (Sw.) Spruce	Cambará do Sul	*Peralta et al. 3325* (SP)
	Cololejeunea camillii (Lehm.) A. Evans	Rio Grande	*Heidtmann et al. 073 p.p.* (HURG)
	Cololejeunea cardiocarpa (Mont.) A. Evans	Rio Grande	*Heidtmann et al. 149 p.p.* (HURG)
	Cololejeunea microscopica (Taylor) Schiffn. var. *africana* (Pócs) Pócs & Bernecker	Sapiranga	*Peralta et al. 3278* (SP)
	Cololejeunea minutissima (Smith) Schiffn.	Nova Roma do Sul	*Peralta et al. 10487* (SP)
	Cyrtolejeunea holostipa (Spruce) A. Evans	Caxias do Sul	*Peralta et al. 10646* (SP)
	Diplasiolejeunea unidentata (Lehm. & Lindb.) Schiffn.	Cambará do Sul	*Peralta et al. 10737* (SP)
	Drepanolejeunea granatensis (J.B. Jack & Steph.) Bischl.	Cambará do Sul	*Peralta et al. 10866* (SP)
Jungermanniaceae	*Frullanoides tristis* van Slageren	Cambará do Sul	*Peralta et al. 10818* (SP)
	Harpalejeunea subacuta A. Evans	Cambará do Sul	*Peralta et al. 10867* (SP)
	Lejeunea caespitosa Lindenb.	Rio Grande	*Heidtmann et al. 069 p.p.* (HURG)
	Lejeunea cerina (Lehm. & Lindb.) Gottsche *et al.*	Cambará do Sul	*Peralta et al. 10849* (SP)
	Lejeunea grossitexta (Steph.) E. Reiner & Goda	Nova Roma do Sul	*Peralta et al. 10450* (SP)
	Lejeunea laeta (Lehm. & Lindb.) Lehm. & Lindb. & Nees	Nova Roma do Sul	*Peralta et al. 10495* (SP)
	Leptolejeunea exocellata (Spruce) A. Evans	Nova Roma do Sul	*Peralta et al. 10515* (SP)
	Leucolejeunea caducifolia Gradst. & Schäf.-Verw.	Sapiranga	*Peralta et al. 3279* (SP)
	Myriocoleopsis gymnocolea (Spruce) E. Reiner & Gradst.	Nova Roma do Sul	*Peralta et al. 10546* (SP)
	Pluvianthus squarrosus (Steph.) R.M. Schuster & Schäf.-Verw.	Cambará do Sul	*Peralta et al. 10712* (SP)
	Taxilejeunea isocalycina (Nees) Steph.	Nova Roma do Sul	*Peralta et al. 10475* (SP)
	Taxilejeunea lusoria (Lindenb. & Gottsche) Schiffn.	Caxias do Sul	*Peralta et al. 10708* (SP)
Lepidoziaceae	*Paracromastigum pachyrhizum* (Nees) Fulford	Cambará do Sul	*Peralta et al. 10858* (SP)
	Telaranea diacantha (Mont.) J.J. Engel & G.L. Merrill	Sapiranga	*Peralta et al. 3290* (SP)
Pallaviciniaceae	*Jensenia spinosa* (Lindenb. & Gottsche) Grolle	Caxias do Sul	*Peralta et al. 10685* (SP)
Plagiochilaceae	*Plagiochila boryana* Gottsche ex Steph.	Cambará do Sul	*Peralta et al. 10897* (SP)
	Plagiochila gymnocalyciana (Lehm. & Lindb.) Mont.	Cambará do Sul	*Peralta et al. 10799* (SP)
Radulaceae	*Radula angulata* Steph.	Sapiranga	*Peralta et al. 3272* (SP)
	Radula cubensis Yamada	Cambará do Sul	*Peralta et al. 10750* (SP)
Trichocoleaceae	*Trichocolea flaccida* (Spruce) J.B. Jack & Steph.	Cambará do Sul	*Peralta et al. 10864* (SP)

Most of the species observed in the present study occur primarily in the more southern regions of Brazil. There were 46 species that have a wide distribution in Brazil, as was expected because our sampling environment was the Atlantic Forest. The remaining five species (*Anomobryum perimbricatum*, *Bryum muehlenbeckii*, *Schizymenium campylocarpum*, *Jensenia spinosa* and *Plagiochila boryana*) are noteworthy, because our report represents their second records for Brazil, and all five species typically occur at higher elevations in environments with milder temperatures. These new records make an important contribution to the knowledge and understanding of the phytogeography of bryophytes, because the state of Rio Grande do Sul, although relatively well sampled, is in the extreme south of Brazil, and even common species had not yet been recorded for this state.

The large number of new records reported in the present study, in comparison with that reported in the study conducted by Yano & Bordin (2011)—51 *versus* 15—is probably attributable to the diversity of environments sampled in the present study, as well as to the larger number of samples analyzed—500 *versus* 288.

Updated inferences on the composition and biogeography of bryophytes in southern Brazil are probably inconsistent, considering that one asystematic survey led to an increase of 10% in the bryoflora of the state of Rio Grande do Sul. Therefore, additional surveys in the biomes of the region should be carried out in order to properly evaluate the community of bryophytes in the state.

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