

***Sphagnum boliviae* (Sphagnaceae, Bryophyta) in Argentina**

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Abstract – The presence of *Sphagnum boliviae* Warnst. in the National Park of Baritú (Salta) is reported as new to the bryological flora of Argentina. The species, the site characteristics and the habitat are described and illustrated with photographs.

Resumen – La presencia de *Sphagnum boliviae* Warnst. en el Parque Nacional de Baritú (Salta) se aporta como novedad para la flora briológica de Argentina. Se describe la especie, las características del área y del hábitat y se aportan fotografías.

***Sphagnum boliviae* / Sphagnaceae / Musci / Argentina / taxonomy / ecology / distribution**

INTRODUCTION

At the end of June 2007, during a field expedition in the Jujuy, Salta and Tucumán provinces of Argentina to collect byrophytes that grow in the yungas montane forest, we only found one population of *Sphagnum* sect. *Subsecunda* Lindb.

The species of *Sphagnum* sect. *Subsecunda* are known for an unlimited morphological variability, which has led to a wide description of numerous species and varieties. Warnstorf (1911) recognized 29 species of *Sphagnum* sect. *Subsecunda* in South America, most of them from Southern Brazil. Yano *et al.* (1985) recognized *S. subsecundum* in a broad sense from many localities in Southern and Southeastern Brasil. Crum (1990) states that he has never seen a South American *Sphagnum* that he could comfortably refer to *S. subsecundum*. According to Matteri (2003), *Sphagnum* sect. *Subsecunda* is not included in the Argentinian byrophyte flora.

The referred population was identified as corresponding to *Sphagnum boliviae* Warnstorf; it was collected in the National Park of Baritú, Departamento de Victoria, located at 22°35'S 64°40'W, 1325-1470 m, between Los Toldos and Lipeo, *leg. Fuertes* 2007. The vouchers are kept in MACB101705 and the duplicates in MA-Musci 39641, BA, MO, NY and TRH Herbaria.

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SITE CHARACTERISTICS

The National Park of Baritú is included in the ecoregion named The Yungas, between 22° and 28.5° S, in Northwestern Argentina. This ecoregion is part of the Amazonian Domain of the Neotropical Region (Cabrera, 1976). The climate is tropical: annual average temperature of 21.5°C and annual rainfall usually exceeding 2000 mm. Most of the precipitation occurs during the summer period (November to March), whereas most distinct hydric shortage occurs during the winter period (June to November). The National Park of Baritú is characterized by extreme temperatures, dominated by scorching hot summers with temperatures reaching 50°C on one end of the spectrum and winter temperatures below 0°C on the other (Brown *et al.*, 2001).

The habitat is a multi-canopy rainforest with many vines and dense epiphytes such as *Tillandsia maxima* Lillo & Hauman, *Pecluma oranensis* (de la Sota) de la Sota, *Campyloneurum aglaolepis* (Alston) de la Sota, *Rhipsalis floccosa* Pfeiff, together with bryophytes such as *Zelometeorium patulum* (Hedw.) Manuel, *Meteoridium remotifolium* (Müll. Hal.) Manuel, *Meteorium deppei* (Hornsch.) ex Müll. Hal.) Mitt. The most representative species of vascular plants in this habitat are *Alnus acuminata* Kunth (aliso), *Anadenanthera colubrina* (Vell.) Brenan (cebil), *Cedrela angustifolia* Sessé & Moc. ex DC. (cedro colla), *Cinnamomum porphyrium* (Griseb.) Kosterm (laurel de falda), *Juglans australis* Griseb. (nogal criollo), terricolous bryophytes like *Rhodobryum beyrichanum* (Hornsch.) Müll. Hal., *R. subverticillatum* Broth., *Plagiomnium rhynchophorum* (Hook.) Koponen, tree ferns like *Cyathea odonnelliana* Alston and *Nephelea incana* (H. Karst.) Gastony. This vegetation is characteristic of the montane forest (Brown *et al.*, 2001; Hernán *et al.*, 2008).

RESULTS AND DISCUSSION

Sphagnum boliviae Warnst. *Hedwigia* 47: 96. 1908

Fig. 1

Ind.loc. "Bolivia, Apolo 1525 m, Williams n. 1689" NY, Type (selected by Warnstorf 1911), *non vid.* (= *Sphagnum boliviae* var. *virescens* Warnst.).

Medium-sized plants, tumid, pale yellow to yellow-green sometimes distinctly orange, growing in hollow cushions, 10-20(-25) cm long, capitula about 10-15 mm in diameter, crowded short branches. Section of stem 0, 50-0,60 mm in diameter, cortical cells in 1(-2) layers, thin-walled, oblong, without fibrils or pores. Stem leaves are lingulate, apex plane or cucullate, obtuse, 1,40-1,60 × 0,60-0,70 mm, appressed when dry, erect to spreading when moist, border well differentiated, 2-3(-5) rows of cells wide; hyaline cells fibrillose on both surfaces, occasionally once septate, adaxial surface with many commissural rows of pores from base to apex; abaxial surface with rows of commissural pores from base to apex, more or less continuous. Fascicles usually comprising 4 branches, 2 larger, spreading and clearly differentiated from the other 2, pendent and thinner than the divergent ones; retort cells with inconspicuous necks. Branch leaves broadly ovate to ovate lanceolate, concave, apex truncate, dentate, 1,30-1,50 × 0,80-1,00 mm, border differentiated by 2(-3) rows of cells wide. Green cells (chlorocystes) in section elliptic, reaching both surfaces; hyaline cells fibrillose, unseptate, with numerous small elliptic ringed pores in commissural rows on both surfaces.



Fig. 1. *Sphagnum boliviae*. A. Habit in field; B, Habit dry; C, Habitat of *Sphagnum boliviae* in National Park of Baritú (Salta).

Other illustrations: Warnstorf (1911): fig. 68F; Crum(1990): figs 1-9 and figs. 10-17.

Ecology: Open montane to shrubby humid puna; boggy sites associated with scrubby or wooded habitats, 1600-3300 m. (Tropicos, 2011).

In Argentina it grows in mountain banks, on wet and oligotrophic soils, in scrubby or ombrophilous wooded habitats.

General distribution: BOLIVIA: Cochabamba, La Paz and Santa Cruz Departments (Hermamm, 1976; Tropicos 2011).

Distribution in Argentina: Salta: Parque Nacional de Baritú, pr. Los Toldos (Fig. 2).

Sphagnum boliviae is an endemic species restricted to the tropical Andes of Bolivia (Tropicos, 2011). The presence of *S. boliviae* in the National Park of Baritú (Salta) is a new record to the bryological flora of Argentina. Its distribution range expands from the Northwest to the East of Bolivia to now include the Northwest of Argentina.

The species most similar to *S. boliviae* are *Sphagnum flaccidum* Besch. and *S. subsecundum* Nees. The long stem leaves (1,20-1,80 mm), elliptic to oblong, rounded at apex, somewhat concave separate *Sphagnum flaccidum* from *S. boliviae*, which has shorter stem leaves (1,40-1,60 mm), lingulate, plane or cucullate apex. Apart from being the smallest of these three species (0,50-1 mm), the stem leaves of *S. subsecundum* are triangular-lingulate, oblong, and concave.



Fig. 2. Geographic location of *Sphagnum boliviae* in Argentina(▲).

S. boliviae and *S. subsecundum* are characterized by stem and branch leaves that are essentially alike in size and shape, which clearly separates it from *S. flaccidum* that presents stem and branch leaves very different in size and shape; the hyaline cells of branch leaves in *S. subsecundum* and *S. flaccidum* are fibrillose, with numerous, minute and ringed pores in series along the commissures on abaxial surface; with few or no pores on the adaxial surface; this clearly separates both from *S. boliviae*, for it has hyaline cells with numerous, small, commissural rows of pores on both surfaces.

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