

THE GENUS *HOLOMITRIUM* (DICRANACEAE, BRYOPHYTA), NEW RECORD IN ARGENTINA AND URUGUAY

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Summary: The genus *Holomitrium* Brid. is recorded for first time from Argentina and Uruguay. Only one species, *H. arboreum*, is present in the study area. A brief description, photographs and illustrations of the species are provided.

Key words: Bryophyta, Musci, Neotropics, Southern Cone.

Resumen: El género *Holomitrium* (Dicranaceae, Bryophyta), nuevo registro en Argentina y Uruguay. El género *Holomitrium* Brid. es registrado por primera vez en Argentina y Uruguay. Sólo una especie, *H. arboreum*, está presente en el área de estudio. Se realiza una breve descripción y se proporcionan fotografías e ilustraciones de la especie.

Palabras clave: Bryophyta, Cono Sur, Musci, Neotrópico.

INTRODUCTION

Holomitrium Brid. is a genus with about 30 species in the world, of mostly medium to large-sized acrocarpous mosses. The genus is distinguished from most other genera of Dicranaceae by a combination of five features: strong single costa, well developed alar cells, long sheathing perichaetial leaves, erect capsules, and undivided peristome teeth (Allen, 1990, 1997; Price, 2002, 2012). Until now this genus in South America has been known from the Andean region, the northern areas of the continent, Brazil (Allen, 1994) and Paraguay (Price, 2012).

Recently, specimens collected were identified as *Holomitrium arboreum* Mitt. The genus and species have not been previously recorded from Argentina or Uruguay (see Matteri, 2003, 2004).

Originally, *Holomitrium arboreum* was described from material collected by Spruce in Peru (*Spruce*

22) and Ecuador (*Spruce 22b*). During a visit to the New York Botanical Garden (NY), we were able to locate the two complete well preserved syntypes of this species. *Holomitrium arboreum* is here described and illustrated, and some characteristics of its geographical distribution in Argentina and Uruguay are mentioned.

MATERIALS AND METHODS

As part of project *Studies on Bryophytes in the southern Cone (Systematic and Phylogeny)*, we studied types and common specimens from BA, LIL, and NY, in addition to our own collections deposited in LIL (Thiers, 2013).

The specimens were studied morphologically with conventional techniques for bryophytes and mounted in water-glycerine-phenol or Hoyer's solution (Anderson, 1954).

RESULTS

Taxonomic Treatment

Holomitrium arboreum Mitt., J. Linn. Soc., Bot. 12: 58. 1869. Type. PERU. Andes Peruvianae,

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in Monte Campana (4000 ped.) ad ramos, Spruce 22 (Syntype: NY!). ECUADOR. Andes Quitensis ad fl. Bombanasa et in sylva Canelos (2000 ped.), Spruce 22b (Syntype: NY!). Fig. 1.

Plants medium-sized, green above, green to brownish below. Stems erect, 4–5 cm long, slightly radiculose throughout, branched by subapical innovations. Leaves crisped and incurved near the base when dry, patent to sub-squarrose when wet, 4–5 mm long, linear-lanceolate, keeled above, broadly sheathing at base; margins plane, dentate above; costae robust, percurrent, upper, dorsal surface often with a few teeth, in transverse-section with developed dorsal and ventral stereid bands, 5–7 central guide cells, 5–6 epidermal ventral cells, dorsal epidermal cells smaller than ventral epidermal cells; upper laminal cells quadrate to subquadrate, with thick, straight walls, extending downward along the margins into basal region, 6–9 x 9–10 μm ; basal cells long-rectangular, porose, smooth, 51–90 x 9–12 μm , shorter at margins; alar cells forming distinct groups of enlarged, red-brown, thin-walled cells. Pseudautoicous. Male plants dwarf, with two perigonia, with antheridia and filiform paraphyses, equal or longer than antheridia. Perichaetia terminal, becoming lateral by sub-perichaetial branches. Perichaetial leaves long-sheathing, often extending to or passing the capsule base. Setae erect, yellow-brown, 10–15 mm long. Capsules erect, cylindrical, 4.5–5.0 mm long; exothecial cells long-rectangular, thin-walled, 45–75 x 12–15 μm , stomata phaneroporous. Peristome teeth 16, inserted within capsule mouth, weakly divided or entire, fenestrate at base, papillose, 260–273 μm long. Opercula conic, rostrate. Calyptrae cucullate. Spores 12 μm in diameter, spherical, papillose.

Material examined. ARGENTINA. *Prov. Salta: Dpto. Santa Victoria*, Los Toldos, 22°30'S, 64°50'W, 1600 m, bosque secundario de *Podocarpus parlatorei* y *Junglans australis*, sobre roca, 28/29-VI-1996, Schiavone & Biasuso 1599 (BA, LIL); on road 50 from Orán to San Andrés, after first river crossing, low montane subtropical forest, 23°07'S, 64°35'W, 600 m, 25-XI-1999, Price *et al.* 1635 (LIL, MO). BELIZE. *Toledo district*: on tree in high ridge hill top near Central Camp, Edwards Road beyond Columbia, 11-I-1951, Gentle 7360 (NY). BOLIVIA. *Dpto. Santa Cruz*:

Guapural, ca. 41 km sur de Vallegrande camino a Gualase, Bosque Yungas, con *Podocarpus*, *Prumnopitys*, *Alnus*, Myrtaceas spp. y *Marattia*, 18°40'S, 64°01'W, 2150 m, 27-II-2002, Churchill & Arroyo 21205 (LIL, MO). COLOMBIA. *Dpto. Antioquia*: Municipio de Belmira, ca. S-10 N of Belmira, Bosque Montano medio alto, musgo sobre rama de arbolito, 2475 m, 23-IV-1991, Churchill *et al.* 17775 (NY). COSTA RICA. *Prov. Alajuela*: La Palma de San Ramón, 30-VII-1932, Brenes 16219a (NY); *Prov. Cartago*: 1450 m, 08-IV-1934, Alfaro 117 (NY). GUATEMALA. *Dpto. Alta Verapaz*: north of Coban, on huge fallen limb, 4400 ft., 4-III-1945, Sharp 2956 (NY). HONDURAS. *Dpto. Olancho*: Sierra de Algalta, La Chorrera, Río Lara below Montaña Babilonia, 15 km NNW of Catacamas, 14°59'N, 85°56'W, 1100-1800 m, on trunk of fallen, 30-V-1992, Allen 12613 (NY). PANAMA. *Prov. Chiquirí*: Cerro Colorado, 4.3 mi above Chami Camp, cut over coffee plantation 08°35'N, 81°45'W, 1500 m, upper branches of fallen tree, 22-VI-1986, Allen 5414 (NY); *Prov. Panama*: Cerro Campana, 3100 ft., epiphyte in cloud forest near north side, McDaniel 6884 (NY). URUGUAY. *Dpto. Cerro Largo*: Camino de Sierra de Río (46 km al norte de Melo), 32°11'24.3"S, 53°51'45.0"W, 280 m, 1-III-2012, Suárez *et al.* 1387 (LIL).

Note. As in other species of *Holomitrium* (Luizi-Ponzo & Barth, 1999), *H. arboreum* has granuloid-type spores that are small (less than 25 μm) in diameter, bilaterally or sometimes radially symmetric to asymmetric, heteropolar, rounded to sub-rounded, and plane convex to concave-convex in shape (Fig. 2, D). The surface is ornamented with granule-like elements.

Observations. *Holomitrium arboreum* is based on two syntypes collected by Spruce in Peru and Ecuador. Both collections represent the same taxon. In NY there are also three additional collections made by Spruce: Andes Quitensis, Monte de Canelos, *Spruce s. n.*; Playa de Río Blanco, *Spruce s. n.* and Bombanasa in ramulio arb. Altrorum, *Spruce s. n.* All three collections represent *H. arboreum*. Although these specimens are labeled in the NY herbarium as syntypes they were not cited in the protologue of *H. arboreum* and so do not represent type material.

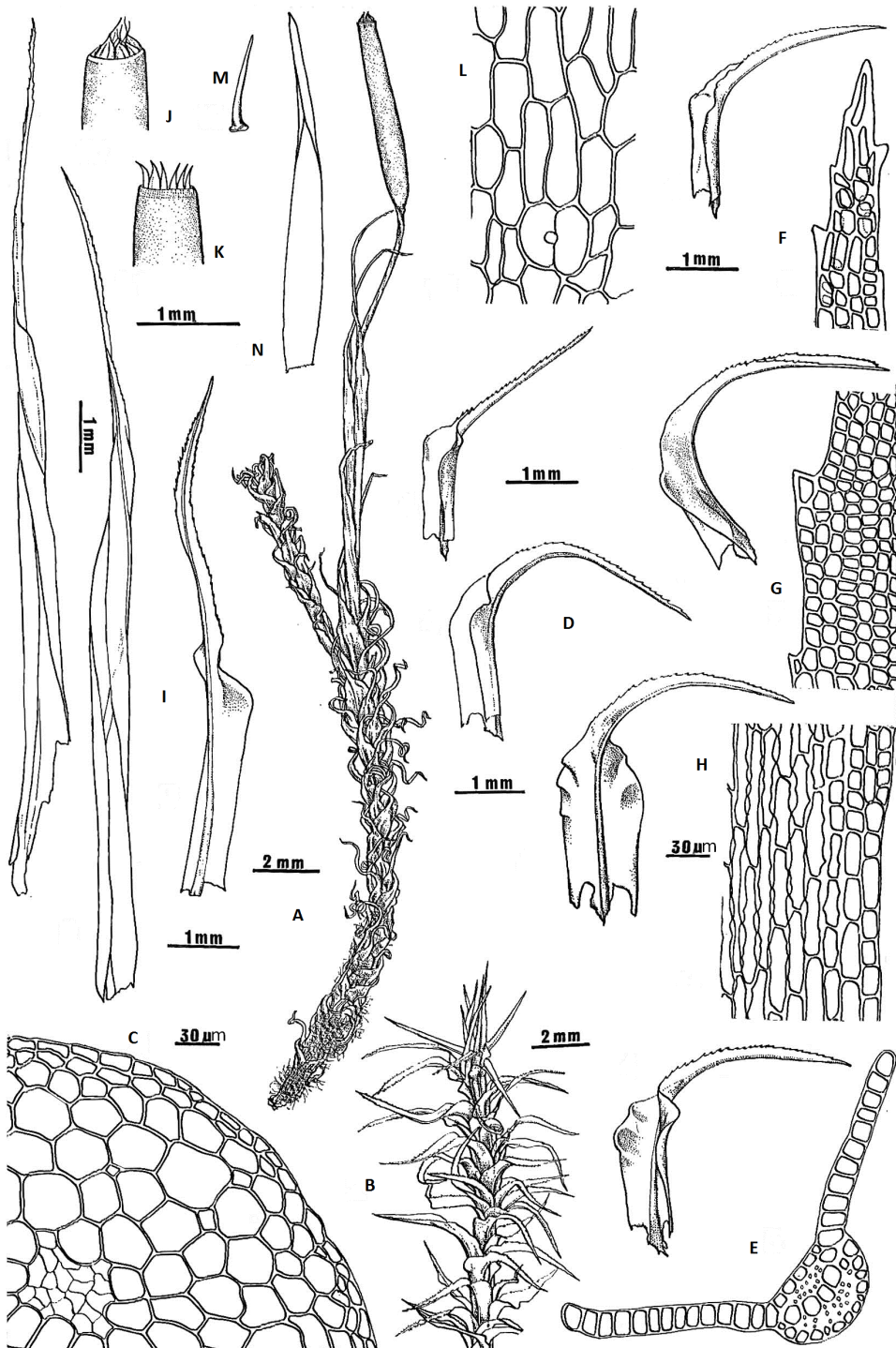


Fig. 1. *Holomitrium arboretum* Mitt. **A:** Dry habit. **B:** Wet habit. **C:** Stem in cross-section. **D:** Leaves. **E:** Leaf in cross-section. **F:** Apical leaf cells. **G:** Median leaf cells. **H:** Basal leaf cells. **I:** Perichaetial leaves. **J:** Peristome dry. **K:** Peristome wet. **L:** Stoma. **M:** Opercula. **N:** Calyptra. (Scale: A, B = 2 mm. C, E, F, G, H, L = 30 µm. D, I, J, K, M, N = 1 mm.)

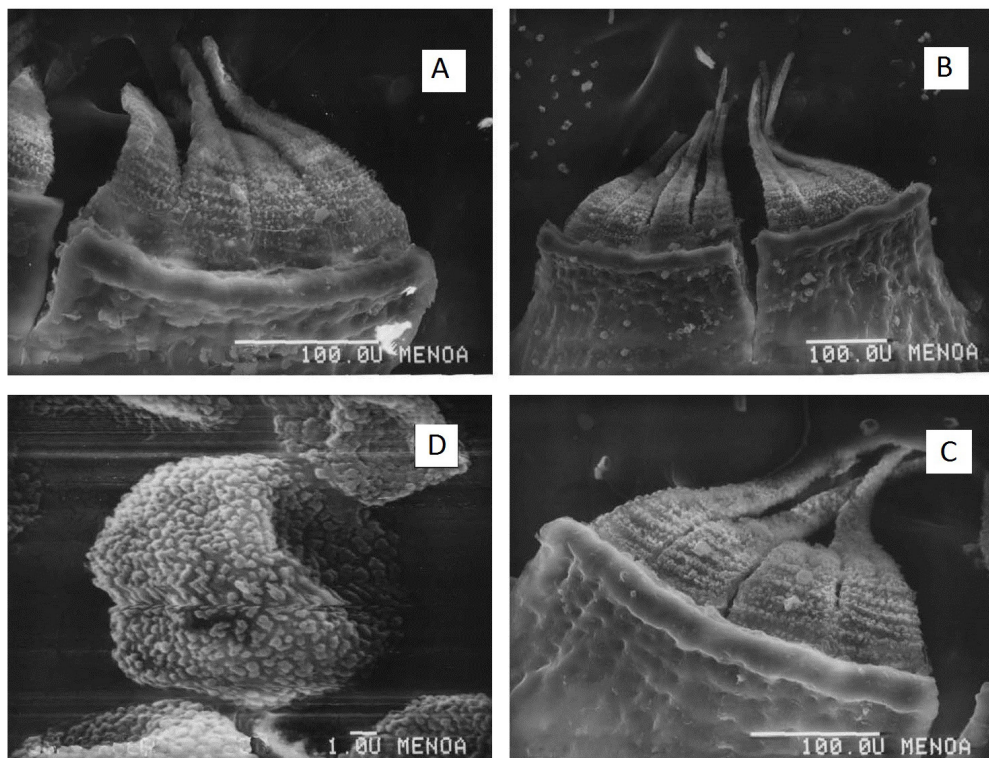


Fig. 2. *Holomitrium arboretum* Mitt. A, B, C: Peristome. D: Spore.

Habitat. In Argentina *Holomitrium arboreum* was found forming large cushions in areas of secondary forests dominated by *Podocarpus parlatorei* Pilg. and *Junglans australis* Griseb. The forests also had numerous hanging, epiphytic species of Meteoriaceae and Pterobryaceae (Bryophyta). When mature these forests are dominated by *Blepharocalyx salicifolius* (Kunth.) O. Berg. They are the result of human activities (crop and pasture burning) that occurred several decades ago. This area belongs to a sector of the Montane Forest of the Yungas Phytogeographic Province. It may represent a stable forest sector since it has a high number of species of vascular plants that are not found in other areas of Montane Forest farther south (Brown & Ramadori, 1989) this situation was recorded too in some Bryophytes what found its southern limit in this area (Schiavone & Suárez, 2007; Suárez & Schiavone, 2010).

Holomitrium arboreum was collected in Uruguay from a rock, in a mountainous region

of the Cerro Largo Department, located in the northeast of the country that is an area where many other new Uruguayan records were found recently (Flores & Suárez, 2012; Suárez, 2012; Suárez & Jimenez, 2011; Suárez & Schiavone, 2013a, b). In this area the vegetation is primarily prairie with an herbaceous component (comprising graminoid monocotyledons, and dicotyledonous rosettes) and many sub-woody species. The woody vegetation in this region is confined to the margin of streams, creeks and some steep, rocky areas.

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