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Rediscovery and lectotypification of *Dicranella lorentzii* (Dicranellaceae, Bryophyta)

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Summary: The rediscovery of fertile populations of *Dicranella lorentzii* (Müll.Hal.) Broth. allowed the detailed examination of this forgotten endemic taxon of NW Argentina, and its comparison with other South American species. We present a redescription of the species, together with its first illustration. A lectotype for this name is here designated.

Key words: *Aongstroemia*, Argentina, Dicranaceae.

Resumen. Redescubrimiento y lectotipificación de *Dicranella lorentzii* (Dicranellaceae, Bryophyta). El redescubrimiento de poblaciones fértiles de *Dicranella lorentzii* (Müll.Hal.) Broth. permitió un examen detallado de este taxón endémico del Noroeste de Argentina y su comparación con otras especies sudamericanas. En esta contribución presentamos una redescripción de la especie, junto con las primeras ilustraciones de la misma. Se designa un lectótipo para este nombre.

Palabras clave: *Aongstroemia*, Argentina, Dicranaceae.

Introduction

Northern Argentina bryophyte flora has received considerable amount of studies by both local and foreign researchers. One of the pioneer botanists that collected bryophytes in this area was Paul Günther Lorentz (1835-1881), a German botanist and biogeographer that worked as botany professor at the National Academy of Sciences of Córdoba between 1870 and 1874, hired by the Argentinean government to make an inventory of the NW flora. Then, he moved to Concepción del Uruguay, where he continued his work as botany professor of the National School of Concepción del Uruguay, where he died a few years later by a liver inflammation (Frahm & Eggers, 2001). During his years in South America, Lorentz made several expeditions to central and northern Argentina and Uruguay collecting bryophytes, lichens and vascular plants, resulting in more than 1000 new plant species gathered between 1871-1881 (Frahm & Eggers, 2001).

During the examination of some bryophyte collections recently gathered at "La Ciénaga", a high dry grassland in NW Argentina (Tafí del Valle, Tucumán Province) (Ellis *et al*., 2010, 2011; Suárez *et al*., 2010) some of them were identified as *Dicranella lorentzii* (Müll. Hal.) Broth., a forgotten moss species since its description in 1882. It was originally collected by Lorentz in one of his expeditions to northern Argentina. Examination of additional *Dicranella* material collected nearby, yielded more records for this scarcely known taxon.

The species was originally described by C. Müller (1882) as *Aongstroemia lorentzii* Müll. Hal. (the name was published as *Åongströmiae* but according to the International Code of Botanical Nomenclature, article 60.6, the diacritical signs should not be used in the Latin plant names). He originally placed it in the section *Diobelon* (Hampe) Müll. Hal., a taxon proposed by Hampe (1871) to accommodate *Dicranum* Hedw. species having

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crispate leaves, often papillose laminal cells, and serrate apex, in which Hampe included the known species of *Dichodontium* Schimp. In any case, this taxon is illegitimate because Hampe did not provide a description for it. It seems that for both Müller and Hampe, this group of species previously associated with *D. polycarpum* was more related to some Seligeraceae, Ditrichaceae (e.g. *Ceratodon*) and Pottiaceae (e.g. *Weissia*) species than to the rest of the Dicranaceae. Perhaps because of this originally ambiguous systematic placement of the species, it was subsequently transferred to the genera *Dichodontium* (Paris, 1894-1898), *Dicranella* (Brotherus, 1901), and *Anisothecium* (Brotherus, 1924); it was recognized under the later genus in the recent checklist of mosses of Argentina (Matteri, 2003). According to the morphological characterization of the genus *Dicranella* given by Larraín *et al.* (2010), and the generic and specific limits used by Churchill & Linares (1995), this species is best placed within *Dicranella*.

During a visit to the Natural History Museum of London (BM), we found original material of *Dicranella lorentzii*. We also searched in the Brotherus herbarium in Helsinki (H), but did not find any specimen of this taxon. Due to the destruction of Müller's herbarium at Berlin (B), it is very likely that the original material present in BM is the only extant, and for this reason it is here chosen as the lectotype for this name.

In this contribution to the knowledge of South American mosses, we present a complete description of this scarcely known taxon, together with its first illustration and distribution map, including ecological data and discussing its relationships with other *Dicranella* species.

Taxonomic Treatment

Dicranella lorentzii (Müll.Hal.) Broth., *Die Natürlichen Pflanzenfamilien* I (3): 311. 1901. ≡ *Aongstroemia lorentzi* Müll. Hal., *Linnaea* 43: 389. 1882. ≡ Dichodontium lorentzii (Müll.Hal.) Paris, *Index Bryologicus* 322. 1894. ≡ *Anisothecium lorentzii* (Müll.Hal.) Broth., *Die Natürlichen Pflanzenfamilien, Zweite Auflage* 10: 178. 1924.

Type citation: Argentina subtropica, Sierra de Tucumán, in alpinis "der Ciénega" [sic], 1872.

Lectotype (selected here): Herb. Emil Bescherelle: 1900. *Ångströmia* (*Diobelon*) *Lorentzi* C. Müll. Sierra de Tucumán, in alpinis der Cienega, 1872. (BM!). (Figs. 1 y 2).

Plants small, green to yellowish green, forming lax or dense, pure tufts. Stems erect, to 1 cm long, simple or branching by innovations, in cross section rounded, with a central strand, cortex formed by 1-2 rows of enlarged cells with trigones, and with one substereid strand. Axillary hairs with 1-2 (-3) brown basal cells and 1-2 (-3) distal hyaline cells, 20-60 μm long (Fig. 2B). Leaves 1.3-1.8 mm long, becoming larger and more crowded at the apex of the plant, loose, erect, flexuose, sometimes crispate, sub-amplectant, lamina tubulose when wet, and patent when moist; margin entire; apex blunt; costa subpercurrent, less than 1/3 the leaf width at the base and 1/5 at midleaf, smooth dorsally, in cross section with dorsal and ventral epidermis, with 1 row of guide cells, with a well-developed dorsal stereid band and a few ventral stereids; upper laminal cells rectangular, firm walled, becoming long and wide rectangular at the leaf base. Rhizoidal propagules present, reddish brown, the body formed by isodiametric thin-walled cells, 15-30 μm long (Fig. 2A). Dioecious. Perichaetia and perigonia terminal; perigonial leaves with wide and concave base, erect lamina; antheridia pedunculate, surrounded by filiform paraphyses with widened distal cells; perichaetial leaves similar to vegetative leaves but larger. Seta single, brown, erect to something flexuose, 1.5–2.0 mm long, smooth. Capsule erect, subglobose to ovoid when mature, brown, gradually narrowed towards the mouth and the base, smooth; exothecial cells subquadrate to short-rectangular, 37.5–60.5 × 18–25 μm, stomata 2-4 at the base, red; peristome teeth 16, inserted below the mouth, reddish, bordered, trabeculate, broadly perforated or divided, striate papillose, basal membrane low, smooth; operculum long rostrate, curved. Spores oval to spherical, brown, finely papillose, 25–27 μm. Calyptra cucullate, smooth.

Specimens examined: ARGENTINA. *Tucumán*. *Depto. Tafí del Valle*, "La Ciénaga", Pastizal de Neblina, entre rocas de gran tamaño, 26°47'10''S, 65°39'04''W, 2636 m, 8-IV-2010, G. Suárez 774 (LIL); Quebrada de la Toma, 2625 m, IX-2002, D. Ruiz 857 (CONC, LIL); ruta provincial 307, Km 72, La Bolsa, en el lecho del río, 2550 m, 12-IV-1995, M. Schiavone & B. Biasuso 1457 (CONC, LIL).

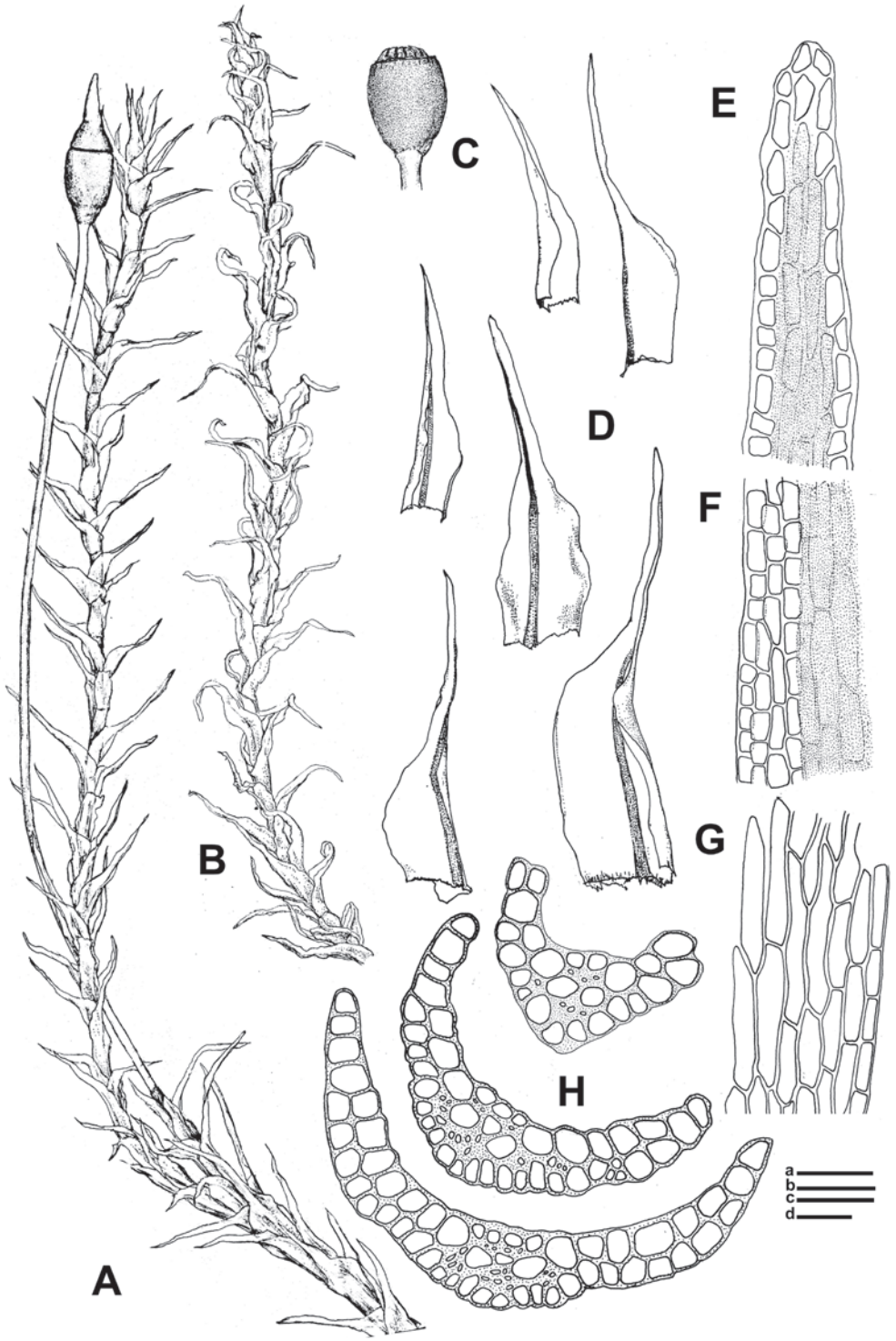

Fig. 1. *Dicranella lorentzii*. **A**: Habit in wet. **B**: Habit in dry. **C**: Sporophyte. **D**: Leaves. **E**: Apical cells. **F**: Median cells. **G**: Basal cells. **H**: Leaf cross sections. Scale bars: a = 1 mm (A, B); b = 500 µm (C); c = 250 µm (D); d = 25 µm (E-H). From G. Suárez 774 (LIL).

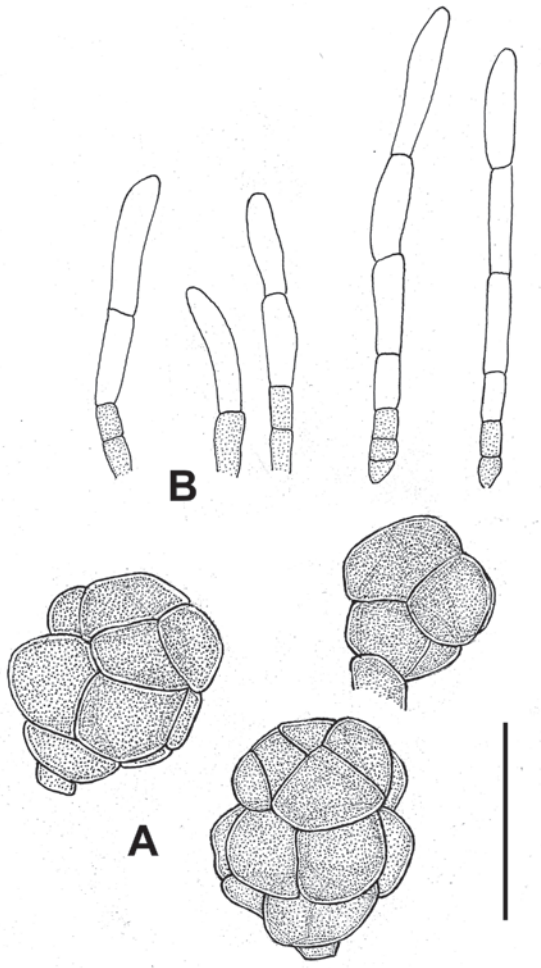

Fig. 2. *Dicranella lorentzii*. **A**: Propagules. **B**: Axillary hairs. Scale bar = 15 µm. From G. Suárez 774 (LIL).

Habitat: Known from only two localities in the same province, it is a frequent species in the high grassland of "La Ciénaga" where it grows on river banks, sheltered by large rocks, and in the valley. Different collections made along the year show that plants found in the river banks had well-developed sporophytes, while in the valley no sporophytes have been seen, although they produce male and female gametangia. *Dicranella lorentzii* grows forming pure turfs, but it has been found mixed with a few plants of *Pohlia wahlenbergii* (F. Weber & D. Mohr) A. L. Andrews.

This species is close to *D. callosa* (Hampe) Mitt., from Colombia and Bolivia, because both share a similar distance of the leaves when dry, although *D. callosa* can be distinguished by its longer and wider leaves, flexuose when wet. The sporophytes of *D. lorentzii* resembles those of *D. hilariana* (Mont.) Mitt., a widely distributed species in the Neotropics, however gametophytic characters such as leaf apex and basal laminal cells can easily differentiate that species.

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