Syzygiella teres (Machantiophyta) in the Elephant Island, Antarctica

Syzygiella teres (Machantiophyta) en la Isla Elefante, Antártida

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Summary

Background and aims: The known liverworts flora of Elephant Island, Antarctica, is composed by six species: *Cephalozia badia*, *Cephaloziella varians*, *Anthelia juratzkana*, *Barbilophozia hatcheri*, *Lophoziopsis excisa*, and *Syzygiella jacquinotii*. The aim of this communication is to record *Syzygiella teres* in the island.

M&M: The liverworts were studied by conventional technics for bryophytes and mounted in Hoyer´s solution.

Results: *Syzygiella teres* is characterized by unlobed leaves with colorless marginal border. The species is briefly described and illustrated. A comparative key for all liverworts known from Elephant Island is presented.

Key words

Bryophytes, Geographic distribution, Liverworts, Marchantiophyta, South Shetland Islands.

Resumen

Introducción y objetivos: La flora de hepáticas de la Isla Elefante, Antártida, está constituida por seis especies: *Cephalozia badia*, *Cephaloziella varians*, *Anthelia juratzkana*, *Barbilophozia hatcheri*, *Lophoziopsis excisa*, y *Syzygiella jacquinotii*. El objetivo de esta comunicación es registrar a *Syzygiella teres* para la isla.

M&M: Las hepáticas fueron estudiadas mediante técnicas convencionales para briófitas y montadas en solución de Hoyer.

Resultados: *Syzygiella teres* se caracteriza por las hojas no lobadas con los márgenes hialinos. La especie es brevemente descrita e ilustrada. Se presenta una clave para las hepáticas foliosas presentes en la Isla Elefante.

Palabras clave

Briofitas, Distribución geográfica, Hepáticas, Islas Shetland del Sur, Marchantiophyta.

Introduction

Elephant Island is an ice-covered mountainous island off the coast of Antarctica in the outer reaches of the South Shetland Islands, in the Southern Ocean. Its name was given by early explorers sighting elephant seals on its shores. The island is situated 245 km NNE of the tip of the Antarctic Peninsula and 885 km SE of Cape Horn (Mink *et al*. 2015). It was made famous as the provisional refuge of the ill-fated Endurance expedition under Shackleton's command (Alexander, 1998).

According to Bednareck-Ochyra *et al*. (2000), the known liverwort flora in the island is composed by six species: *Cephalozia badia* (Gottsche) Steph., *Cephaloziella varians* (Gottsche) Steph., *Anthelia juratzkana* (Limpr.) Trevis., *Barbilophozia hatcheri* (A. Evans) Loeske, *Lophoziopsis excisa* (Dicks.) Konstant. & Vilnet (as *Lophozia excisa* (Dicks.) Dumort.), and *Syzygiella jacquinotii* (Mont.) Hentschel, K. Feldberg, Váňa & Heinrichs (as *Roivainenia jacquinotii* (Mont.) Grolle).

During the austral summer of 2016 a temporary camp in Stinker point region (61°13'20.5''S, 55°21'35''W), Elephant Island was established. As result of the fieldwork in the area, *Syzygiella teres* (Carrington & Pearson) Váňa, was recorded.

This species was originally described from Tasmania as *Jungermannia teres* Carrington & Pearson, but, apart from the present generic placement, it was also positioned in *Syzygiella* (Váňa *et al.*, 2013).

The aim of this contribution is to record for the first time the presence of *Syzygiella teres* in the Elephant Island, at Antarctica, providing besides a briefly description and illustrations of the species. Additionally a key of liverwort found in the island is given.

Material and Methods

Several botanical surveys were undertaken in January and February 2016, at Stinker Point, Elephant Island within the framework of a major project entitled "Evolution and Dispersion of Antarctic Bipolar Species of Bryophytes and Lichens".

The specimens were studied morphologically following traditional techniques for bryophytes, and mounted in Hoyer's solution (Anderson, 1954). The samples identified were deposited in Herbario Criptogámico Fundación Miguel Lillo (LIL) and in Herbário da Universidade Estadual do Rio Grande do Sul, Litoral Norte (HERW).

Results

Syzygiella teres (Carrington & Pearson) Váňa. 2013, *Phytotaxa* 76 (3): 35–36 ≡ *Jungermannia teres* Carrington & Pearson. 1888, *Pap. & Proc. Roy. Soc*. Tasmania 1887: 9, 1888. ≡ *Jamesoniella teres* (Carrington et Pearson) Steph., *Bull. Herb*. Boissier ser. 2, 1: 1037 (Spec. Hep. [Stephani] 2: 100), 1901 (Stephani 1901). ≡ *Herzogobryum teres* (Carrington et Pearson) Grolle, Österr. *Bot. Z*. 113: 223, 1966 (Grolle 1966). Type:—AUSTRALIA. Tasmania: near top of Mt. Wellington, 25 December 1855, Bastow (MANCH, isotype G). Fig. 1

Description. Plants small to medium-sized, in loose to compact mats, dark colored, almost black or blackish-green when fresh, green, yellowish-green to slightly dull reddish at least above but with decolorate leaf margins on drying. Stems terete, julaceous, rather rigid and stout, simple or lateral-intercalary branched, in transverse section, consisting of a poorly differentiated cortex of slightly smaller, thicker-walled cells in 1-3 rows surrounding medullary cells with markedly incrassate and collenchymatous cells. Leaves contiguous to weakly or moderately closely imbricate, succubously inserted, concave, saucer-shaped, orbicular to ovate, broadly inserted on the stem, partially bistratose in median and basal parts; marginal leaf cells radially elongate, thin-walled, mostly decolorate, erose, forming a distinct, crenulate 1-4-seriate border; inner leaf cells slightly thick-walled, with small trigones, cuticle smooth or faintly striolate.

Specimens examined. **ANTÁRCTICA**, Ilha Elefante, Stinker Point, Platô Norte; 666 m a Norte do Refúgio Brasileiro Emílio Goeldi, 61, 12987S 55, 21510W, Ponto 25, área totalmente pedregosa, rochas grandes expostas e cobertas por *Usnea*; pouco solo exposto, vegetação sobre o solo ou rochas, Feb 2015, G. Suárez & J. Bordin 1814 (LIL); Ibid., J. Bordin & G. Suárez 3135 (HERW, UB).

Observations. *Syzygiella teres* is known to occur in the highly isolated Bouvetøya in the South Atlantic, as well as in the South Sandwich Islands, the South Orkney Islands and in the South Shetland Islands, extending as far south as the Graham Coast in the central part of the Western Antarctic Peninsula (Váňa et al., 2015). In Elephant Island was found growing between rocks mixed with *Andreaea regularis* Müll. Hal. and *Ditrichum hyalinum* (Mitt.) Kuntze. (Fig. 2).

Key to the Elephant Island Liverworts

1 Plants 2-10 mm high. 2

1' Plants > 10 mm high. 3

2 Plants julaceous, leaves unlobed, border differentiated by hyaline cells. ... ***Syzygiella teres***

2' Plants filiform, leaves bilobed, without differentiated border. ..... ***Cephaloziella varians***

3 Underleaves absent. 4

3' Underleaves present. 5

4 Leaf cells thin-walled with small trigones, gemmae present. ..... ***Lophoziopsis excisa***

4' Leaf cells with slightly thickened walls without trigones, gemmae absent. ..... ***Cephalozia badia***

5 Plants isophyllous, underleaves deeply bilobed, margins entire. ..... ***Anthelia juratzkana***

5' Plants anisophyllous, underleaves 2-4 lobed, margins ciliate. 6

6 Leaves 3 (-4) lobed, underleaves large bifid, ciliate. ..... ***Barbilophozia hatcheri***

6' Leaves bilobed, underleaves absent or present, large, long subulate, lanceolate or setaceous ciliate. ..... ***Syzygiella jacquinotii***

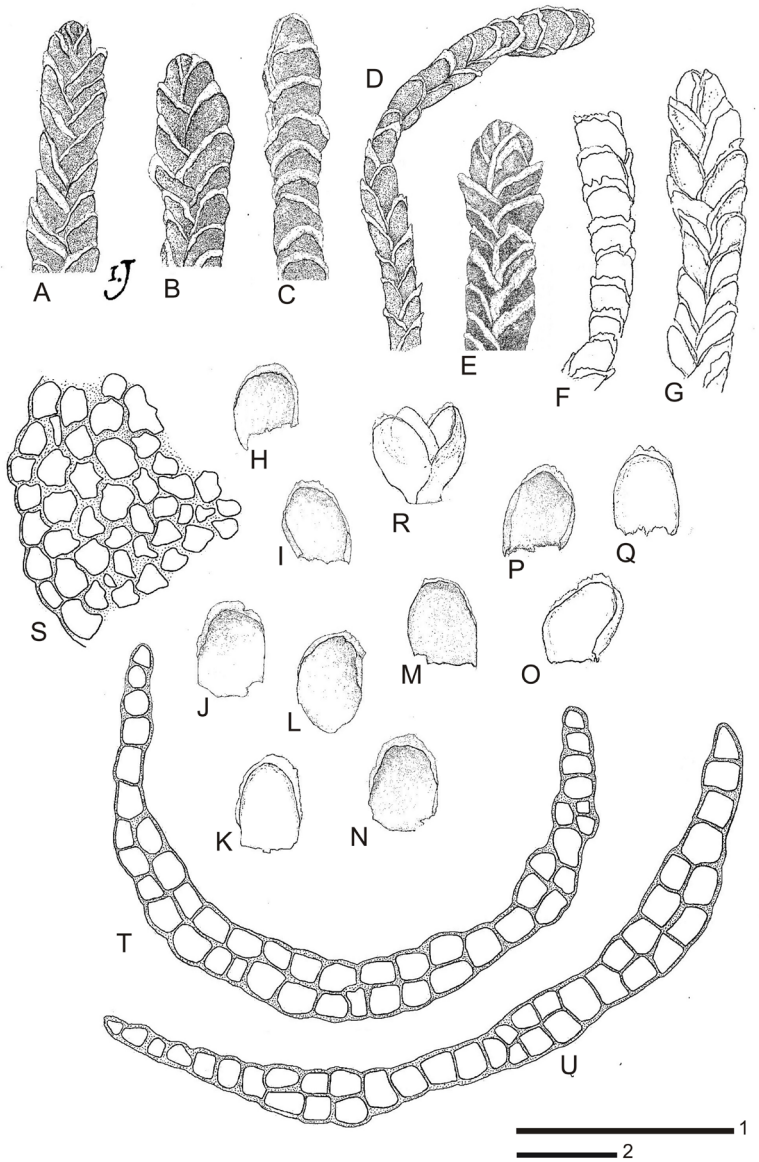

Fig. 1. *Syzygiella teres*. **A-D**, **F-G**: Dry plants; **E**: Wet plant; **H-R**: Leaves; **S**: Portion of stem cross section; **T-U**:Leaf cross section. Scale bar **A-R** = 1 mm; **S-U** = 50 µm.

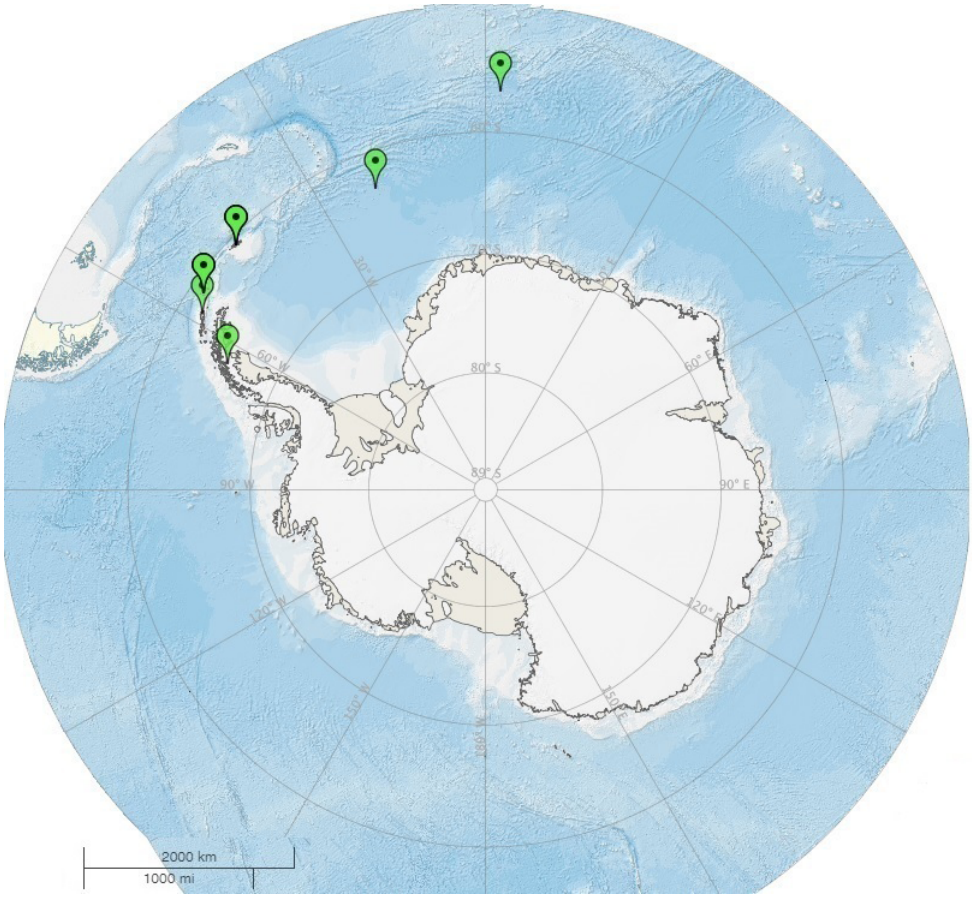

Fig. 2. General distribution of *Syzygiella teres* in the Antarctica.

Author contributions

GMS and JB collected and identified the liverworts. All authors assisted with the writing of the manuscript and provided comments and edits.

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