

## ***Micromitrium tenerum* (Bruch & Schimp.) Crosby, new to the moss Flora of Portugal**

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**Abstract** – *Micromitrium tenerum* is reported for the first time from Portugal in the terminal part of Vouga River. Plants grow in alluvial mud in the draw-down zone of a pond. Observations of spores on scanning microscope have been made based on material of the Portuguese locality.

**Musci / Ephemeraeae / *Micromitrium* / Portugal / New National record**

### INTRODUCTION

The worldwide distribution range of *Micromitrium tenerum* (Bruch & Schimp.) Crosby includes western Canada (British Columbia), Asia (Assam, China, Korea, Japan) and some European countries (southern Sweden, Germany and the former Czechoslovakia, France, Belgium, Holland, Spain). However, it appears to be uncommon everywhere.

In Spain, it was recently reported for the first time (Heras & Infante, 1998) in two localities, in the Basque Country and Navarra, so the Aveiro locality is the third one in the Iberian Peninsula. All these localities are placed in the Euro-siberian (with a Central European climate) region of the Iberian Peninsula (Rivas-Martínez *et al.*, 1990; Sérgio & Draper, 2001) with a typical oceanic climate.

In Britain, this species is subject to a Biodiversity Action Plan (<http://www.ukbap.org.uk/UKPlans.aspx?ID=456>), as it has not been recorded since 1971 in the locality where it was known to occur (Church *et al.*, 2001).

### MATERIAL

#### **Specimens examined**

PORTUGAL. Beira Litoral: Aveiro, Pateira de Fermentelos, Requeixo, solo da margem, sobre o lodo retirado do fundo, NE3993, 10 m, 12.03.2004, C. Sérgio, I. Silva & H. Silva (LISU 196168); *ibidem*, 03.01.2005, C. Sérgio 13438 (LISU s/n°).

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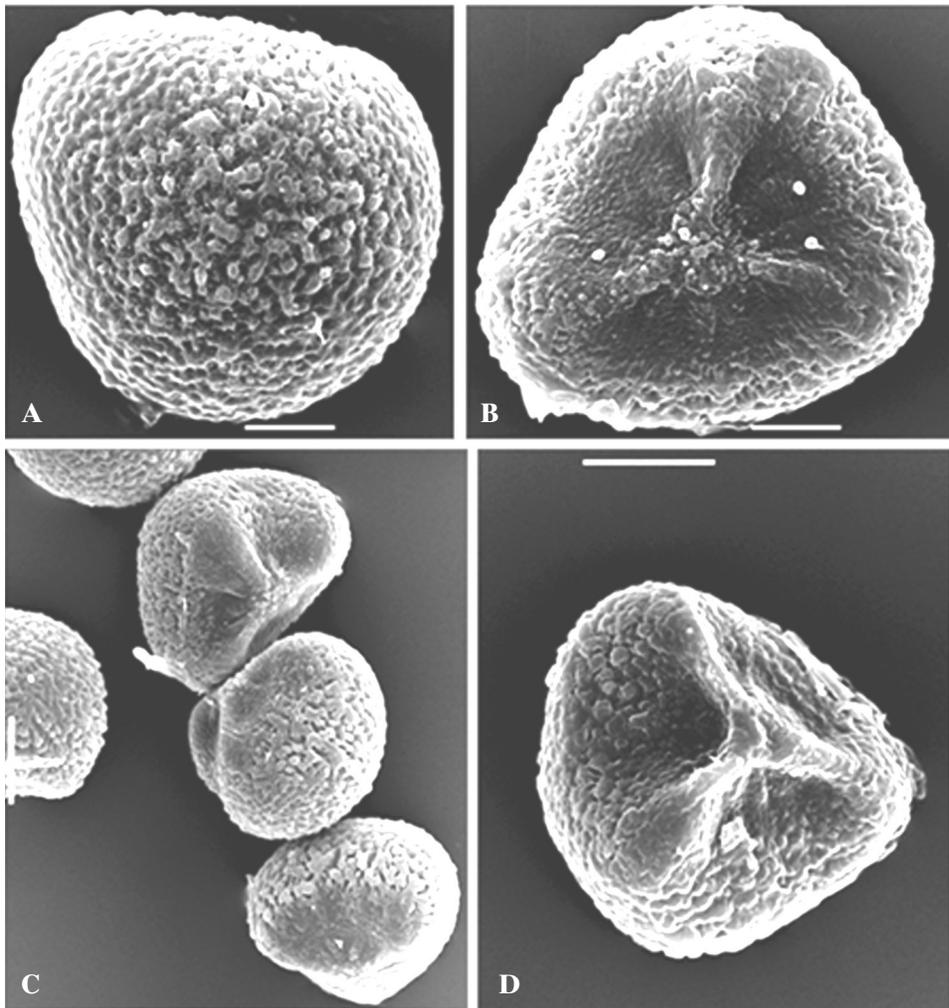


Fig. 1. SEM micrographs of spores of *Micromitrium tenerum* (Bruch & Schimp.) Crosby. **A**: Distal face; **B** and **D**: Proximal faces; **C**: Lateral views. Scales: A, B = 5  $\mu\text{m}$ ; C, D = 10  $\mu\text{m}$ .

## RESULTS AND DISCUSSION

This Portuguese record was found in course of a floristic study on Pateira de Fermentelos, near Aveiro, in an area with a fluvio-lagunar Holocenic origin and a strong oceanic influence, in the terminal part of Vouga River. The first samples were collected in the spring of 2004 and the plants produced abundant sporophytes. Other samples were found again in the winter of 2005 in the same locality, but with a lower frequency and smaller colonies. Due to the special geographical situation, a cross point of different biogeographic influences, the proximity to the Mediterranean region and the strong Atlantic influence, some

interesting plants very rare in Portugal were also recorded in this area: *Fossombronina foveolata* Lindb., *Riccardia chamaedryfolia* (With.) Grolle, *Sphagnum molle* Sull. and *Kurzia pauciflora* (Dicks.) Grolle. All these reports have been reported based on sporadic studies and, in fact, it cannot be said that its bryoflora is completely known. The colonies of *Micromitrium tenerum* are not rare in the area where the species was first found, but additional information is needed to assess its occurrence in other localities.

*Micromitrium tenerum* grows in alluvial mud in the draw-down zone of the large pond Pateira de Fermentelos, with *Riccia huebeneriana* Lindenb., *Pseudephemerum nitidum* (Hedw.) Reim. and *Entosthodon fascicularis* (Hedw.) Müll. Hal. Plants are ephemeral and quite small, with immersed round brown capsules. They can be distinguished from *Ephemerum* species by the spherical cleistocarpous capsule dehiscing along a ring of some differentiated cells.

SEM observations of *Micromitrium tenerum* spores from the Portuguese locality show that their ornamentation is related to some Funariaceae (Fife, 1985). The exine is composed of aggregated baculate-insulate processes, and the arrangement is relatively dense (Fig. 1). The spores are yellow to brownish, with 24-30 (35)  $\mu\text{m}$  diameter and spherical, but tend to be angled in appearance when collapsed. The trilete scars are frequently observable on proximal face (Fig. 1 B, C and D).

According to During (2001), this species seems to have adapted to episodically suitable habitats, and its diaspore bank usually consists of spores. Dispersal ability is of a great importance for bryophytes, which commonly occupy spatially limited habitat patches. Recent studies have shown that “episodic” strategy of species like *Micromitrium tenerum* is less rare, as previously thought by. However, the distribution of this species in Europe gives the impression to be widespread but not frequent and it is considered to be a vulnerable moss in the European Red Data Book (ECCB, 1995).

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