

NEW DATA ON THE DISTRIBUTION OF *BRYUM MINII* (BRYACEAE, BRYOPHYTA) IN PORTUGAL WITH ECOLOGICAL AND CHOROLOGICAL CONSIDERATIONS

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Abstract. *Bryum minii* Podp. ex Machado-Guim. was first described from Portugal in the nineteenth century and only recorded in Spain in 2010. It is found on acidic rocks, such as granite, near watercourses and its glossy appearance makes it relatively easy to identify in the field although it grows in small patches. New chorological data are provided for Portugal, as well as species photographs and an updated distribution map which show that it is no longer a rare species in Portugal and can therefore not be considered threatened. It is likely that more records of this moss will be found with new fieldwork in riparian communities.

Key words. *Bryum minii*, European endemic, Portugal, distribution map, ecology

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Bryum minii Podp. ex Machado-Guim. is an interesting moss in Portugal (Sérgio *et al.* 1999), found in areas with other bryophyte taxa of high phytogeographic importance or endemic to the Iberian Peninsula, such as *Anomobryum lusitanicum* Thériot, *Claopodium whippleanum* (Sull.) Ren. & Card., *Dicranum crassifolium* Sérgio, Ochyra & Séneca, *Racomitrium hespericum* Sérgio, Ochyra & Muñoz and *Schizymenium pontevedrense* (Luis.) Casas, Sérgio, Cros & Brugués (Sérgio & Draper 2001).

This *Bryum* species is relatively easy to recognize in the field by its glossy appearance with a slight metallic sheen and rosulate leaves, which are spirally twisted when dry, but completely distinct from *B. capillare* Hedw. The plants are relatively small (ca 10–12 mm), forming dense tufts, yellowish green to red-brown below, with dense reddish brown rhizoids and with leaves that are ovate to oblong, concave, slightly acute with a shortly pointed apex (Fig. 1).

Bryum minii was collected for the first time by Machado in Portugal in the beginning of the nineteenth century (Machado 1916), as *Bryum mar-*

ginatum Bruch & Schimp., and later some more new Portuguese localities were given in his flora (Machado 1930), again under the same name. The first reference of this species in Spain was only very recently given by Cezón *et al.* (2010) who present new taxonomic information and describe a new Spanish record. This species' presence has been confirmed in Sardinia in the recent list of Mediterranean bryophytes from a single location (Ros *et al.* 2013), and recently reported in France (Skrzypczak 1998), therefore making this species an endemic European taxon (Sérgio *et al.* 1999).

The general distribution indicates that this plant presents oceanic and Mediterranean affinities, found in areas with warm temperate climates. In Portugal *B. minii* grows in granite regions, in rock crevices and on banks near small streams, at altitudes from 50 m to 1450 m a.s.l.

The number of 10 km UTM squares in 1950 was only 4, but subsequently Sérgio and Draper (2002) produced a new cartographic distribution with ca 15 and it is now reported from a large number of UTM squares and localities, ca 40 (Fig. 2). In the recent Iberian Flora it is considered to be present in Alto Alentejo, Beira Alta, Beira

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Fig. 1. Habit of *Bryum minii* Podp. ex Machado-Guim. growing in a typical mat, showing dry plants with spirally twisted leaves (A) and hydrated plants (B). Scale bars: A & B = 4 mm.

Baixa, Douro Litoral, Minho and Trás-os-Montes e Alto Douro (Guerra *et al.* 2010), although in this last province no specific locality is given.

In recent years we have found various new areas (Fig. 2), not only in Trás-os-Montes e Alto Douro but also in Beira Alta and in Beira Baixa (Sérgio *et al.* 2011), where the species can be frequent. In the majority of the known localities the moss grows in small populations covering between 25 cm² and 100 cm². To this present moment this moss has apparently always been rare and found in small quantities.

In Spain it is so far reported from a few localities in only four different provinces: Álava, Cáceres, Ciudad Real and Toledo (Guerra *et al.* 2010).

Based on these new recent collections we now consider that *B. minii* is not a rare species in Portugal, as already pointed out in Sérgio *et al.* (1999), and cannot be considered a threatened species in the country.

Further to this, it is expected that, following additional fieldwork in riparian areas in the north and center of the Iberian Peninsula, the species will be found in more regions.

Its affinity to acidic substrates, particularly granitic rocks, makes it much more frequently distributed in areas of the Hesperian Massif of

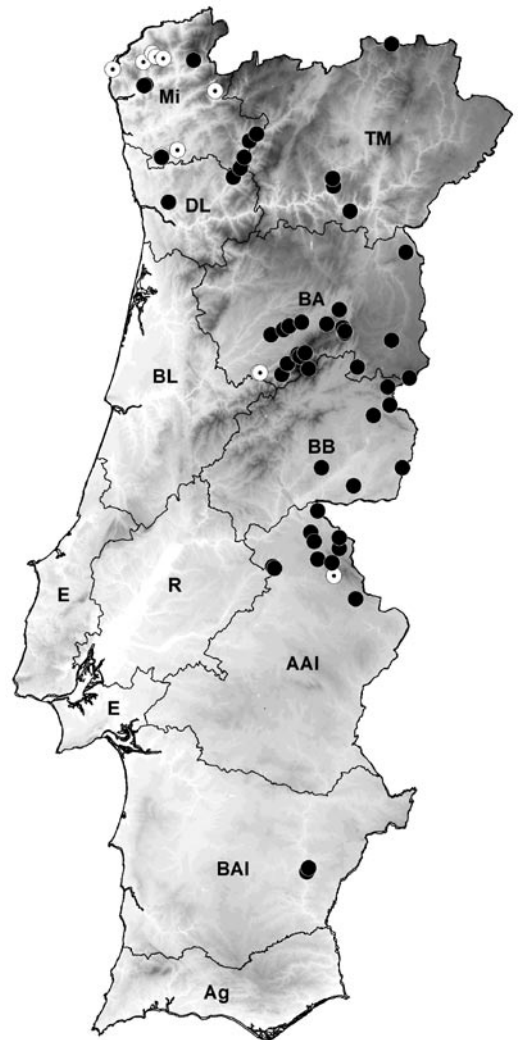


Fig. 2. Known Portuguese distribution of *Bryum minii* Podp. ex Machado-Guim. in UTM squares (1 km). ○ – Until and including 1980; ● – After 1980. Mi – Minho, TM – Trás-os-Montes e Alto Douro, DL – Douro Litoral, BL – Beira Litoral, BA – Beira Alta, BB – Beira Baixa, E – Estremadura, R – Ribatejo, AAI – Alto Alentejo, BAI – Baixo Alentejo, Ag – Algarve.

the Iberian Peninsula and this moss has never been found in areas of limestone origin. It usually develops on acidic bedrock in temporary water courses including habitats related with *Molinio-Arhenatheretea* grasslands such as Serra da Estrela (Sérgio *et al.* 2003). It also often colonizes rock slopes, usually in shaded alluvial forests.

SELECTION OF RECENT SPECIMENS: PORTUGAL. MINHO: Ponte de Lima, Lagoas de Bertandos e S. Pedro d'Arcos, NG3218, 2010, C. A. Garcia & V. Novais (LISU 233456). DOURO LITORAL: Amarante, Fridão, NF7972, 78 m, 2011, C. Garcia (LISU 239404); Celorico de Basto, Codeçoso, NF8377, 103 m, 2011, C. Garcia (LISU 239405); Valongo, NF4358, 2005, C. Vieira (CIBIO 7968, rev. C. Sérgio 2011); TRÁS-OS-MONTES E ALTO DOURO: Vila Nova de Foz Côa, Numão, PF4453, 2004, A. Albuquerque (LISU 207047); Mondim de Basto, Britelo, NF8583, 130 m, 2011, C. Garcia (LISU 239406); Ribeira de Pena, Cavês, NF9296, 168 m, 2011, C. Garcia & C. Sérgio (LISU 239407); Arco de Baúlhe, Ribeira de Peio, NF8892, 139 m, 2011, C. Sérgio (LISU 239408); BEIRA ALTA: Nelas, Senhorim, PE0084, 187 m, 2011, C. Garcia & C. Sérgio (LISU 244615); Mangualde, Cunha Baixa, PE0787, 238 m, 2011, C. Garcia & C. Sérgio (LISU 244616); Póvoa de Cervães, PE1089, 253 m, 2011, C. Sérgio & C. Garcia (LISU 244617); Gouveia, Catielos, PE1089, 253 m, 2011, C. Sérgio & C. Garcia (LISU 244618); Gouveia, Ribamondego, PE1791, 282 m, 2011, C. Sérgio & C. Garcia (LISU 244620); Seia, Valezim, PE0968, 2005, A. Albuquerque (LISU 210186); BEIRA BAIXA: Malcata, PE6555, 2000, C. Sérgio 12747 (LISU 231319); Sabugal, Seixo do Côa, PE6781, 2004, P. Rodríguez-González (LISU 207046); Monforte da Beira, PE4600, 250 m, 2009, C. Sérgio, M. Brugués & R. Cros (LISU 242469); Segura, Rio Erges, PE7310, 240 m, 2009, C. Sérgio, M. Brugués & R. Cros (LISU 242470); ALTO ALENTEJO: Castelo de Vide, Ribeira Maria Rasa, PD3865, 400 m, 2010, C. Sérgio 10561 (LISU 235844); BAIXO ALENTEJO: Serpa, Rio Guadiana, Pulo do Lobo, PB2085, 2000, C. Sérgio 11348 (LISU 212375); Serpa, Ribeira da Lima, PB2187, 2004, C. Sérgio, M. Brugués & R. Cros (LISU 12374).

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