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NEW RECORDS OF THREATENED OR RARE SAXICOLOUS BRYOPHYTES IN THE NW MOUNTAINS OF PORTUGAL

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Abstract: New information on saxicolous bryophyte distribution in the NW mountains of Portugal is presented as it was considered relevant for the re-evaluation of their conservation status in Portugal and Europe. New localities of three *taxa* corresponding to old collections in Portugal, as well as new reports of three saxicolous bryophyte species previously considered rare in Portugal (Sérgio *et al*., 1994) are presented. Additionally, new localities of two threatened bryophytes in Europe (ECCB, 1995) are reported.

INTRODUCTION

Red listing and threat status evaluation is a dynamic process relying on permanent updates of population status. After the publication of the Red List of Bryophytes of the Iberian Peninsula (Sérgio *et al.*, 1994) new data concerning the *taxa* evaluated as threatened has been added (e.g. Sérgio, Brugués & Cros, 2001; Vieira *et al.*, 2004). We are adding new information on Portuguese saxicolous bryophytes relevant for the re-evaluation of their conservation status in Portugal and Europe, as well as a contribution to the knowledge of their ecological requirements. The data refer to the Northwest of Portugal, a region with a predominant temperate climate, receiving a significant input of Atlantic influence and is presented here as a contribution to the upcoming National Bryophyte Red List.

New records corresponding to old collections, as well as new reports of species previously considered rare in Portugal (Sérgio *et al*., 1994) are presented. Additionally, new localities of threatened bryophytes in Europe (ECCB, 1995) are reported.

Besides the updating of the saxicolous species distribution, new information is added concerning mainly populations regarded as declining, which are two of the most relevant data for identifying species conservation status according to the IUCN threat categories (IUCN,

2001). Saxicolous species considered rare in Portugal will probably be reduced to any of the lower risk categories, since more localities are added and no population decline can be observed, while species that would be considered extinct or data deficient in a near future, given the scarcity of data, have now suitable information for their inclusion in the Threatened and any other lower risk categories.

RESULTS

For each record the following information is given: name of locality with UTM grid reference (1x1 km), altitude, date of collection, brief details of habitat and ecology, and references of previous distributional records. All the localities are referred to the Portuguese geographic units (provinces) which are the support to taxa distribution in Portugal (Sérgio & Carvalho, 2003). The provinces names abbreviations are according to the Iberian flora for vascular plants (Castroviejo *et al*., 1986). Provinces marked with an asterisk (*) indicates a first report.

Names of mosses are according to Corley *et al.* (1981) and Corley & Crundwell (1991), and liverworts to Grolle & Long (2000). Voucher specimens are kept at Porto University Herbarium (PO).

MARCHANTIOPSIDA

Douinia ovata (Dicks.) H. Buch

PORTUGAL, Beira Alta (BA): Serra do Caramulo, Caramulinho, on a crevice of granite outcrops, 29TNE6789, 1.070 m a.s.l., 16 October 2005, *Hespanhol* (PO 10338). **Douro Litoral (DL): Serra de Montemuro**, Talegre, on a crevice of granite outcrops, 29TNF8536, 1.380 m a.s.l., 8 May 2005, *Hespanhol* (PO 9078); near Gralheira, on a crevice of granite outcrops, 29TNF8441, 1.110 m a.s.l., 15 May 2005, *Hespanhol* (PO 9098); Perneval, on a crevice of granite outcrops, 29TNF8037, 1.204 m a.s.l., 22 May 2005, *Hespanhol* (PO 9186); Pedra Posta, on a crevice of granite outcrops, 29TNF7639, 1.194 m a.s.l., 25 May 2005, *Hespanhol* (PO 9234).

This liverwort is known from Parque Nacional Peneda-Gerês and Serra da Estrela and there is an old collection of 1985 from Serra de Montemuro (Casas *et al.*, 1985; Sérgio & Carvalho, 2003). Recently, it was found in other mountain regions nearby. These localities correspond to new populations of this previously considered a rare species (Sérgio *et al.*, 1994).

Preissia quadrata (Scop.) Nees

PORTUGAL. Trás-os-Montes e Alto Douro (TM): Serra do Marão, Coto, on a crevice of limestone outcrops, 29TNF9075, 773 m a.s.l., 3 June 2005, *Hespanhol* (PO 9248).

Known from two localities in the Northwest of Portugal, *Preissia quadrata* had not been found since 1955 (Sérgio *et al.*, 1997). The present location confirms the 1955 record and

thus, the species can still be referred as occurring in the area. Plants bearing sporophytes were growing together with *Encalypta vulgaris* Hedw. and *E. streptocarpa* Hedw.

BRYOPSIDA

Andreaea heinemannii Hampe & Müll. Hal. subsp. *heinemannii*

PORTUGAL. *Douro Litoral (DL): Serra da Freita, Detrelo da Malhada, on an exposed rock surface of schist outcrops, 29TNF6226, 1.111 m a.s.l., 7 May 2005, *Hespanhol* (PO 9027).

This species is considered very rare in the Iberian Peninsula and in Portugal it is known only in the high north-western mountains and Serra da Estrela (Sérgio, 2004). This record adds a new population that is the first report to Douro Litoral (DL) Province. Other bryophytes growing together were *Racomitrium heterostichum* (Hedw.) Brid. and *Andreaea rothii* F. Weber & D. Mohr subsp. *rothii*.

Andreaea megistospora B. M. Murray

PORTUGAL. Douro Litoral (DL): Serra da Freita, near Castanheira, on a dripping and shaded rock surface of schist outcrops with *Grimmia montana* Bruch & Schimp., 29TNF6122, 978 m a.s.l., 19 June 2005, *Hespanhol* (PO 9728).

This rare species in Europe (ECCB, 1995), with an affinity for hyperoceanic habitats, is known only from the north of Portugal (Casas *et al.*, 1996).The present record adds a second population to Douro Litoral (DL) Province.

Andreaea rupestris Hedw.

PORTUGAL. *Douro Litoral (DL): Serra de Montemuro, Talegre, on an exposed rock surface of granite outcrops, 29TNF8536, 1.380 m a.s.l., 8 May 2005, *Hespanhol* (PO 9053, 9061); near Gralheira, on a shaded rock surface of granite outcrops, 29TNF8441, 1.110 m a.s.l., 15 May 2005, *Hespanhol* (PO 9102); Pedra Posta, on a shaded rock surface of granite outcrops, 29TNF7540, 1.194 m a.s.l., 25 May 2005, *Hespanhol* (PO 9235); Lobos, on an exposed rock surface of granite outcrops, 29TNF9345, 1.109 m a.s.l., 14 November 2005, *Hespanhol* (PO 10487). **Trás-os-Montes e Alto Douro (TM): Serra do Marão,** Outeiro, on a shaded rock surface of schist outcrops, 29TNF9475, 1.162 m a.s.l., 5 June 2005, *Hespanhol* (PO 9619); Seixinhos, on an exposed rock surface of schist outcrops, 29TNF9363, 1.235 m a.s.l., 3 July 2005, *Hespanhol* (PO 10013).

This boreal-montane and widespread species in the Northern Hemisphere is considered rare in Portugal (Sérgio *et al.*, 1994). It was recently found in several localities in two mountain ranges of northern Portugal. Four records are first reports to Douro Litoral (DL) and two are new populations recorded for Trás-os-Montes e Alto Douro (TM). On the rock surfaces it was found together with *Andreaea rothii*, *Racomitrium* spp., *Grimmia* spp. and *Hedwigia* spp.

Encalypta streptocarpa Hedw.

PORTUGAL. Trás-os-Montes e Alto Douro (TM): Serra do Marão, Coto, on a crevice of limestone outcrops, 29TNF9075, 773 m a.s.l., 3 June 2005, *Hespanhol* (PO 9246). ***Douro Litoral (DL): Serra**

do Marão, Sobrido, on a crevice of limestone outcrops, 29TNF8774, 544 m a.s.l., 3 June 2005, *Hespanhol* (PO 9292).

There are two reports of this species in Portugal (Sérgio *et al.,* 2001). It is known from Rebordães (Allorge, 1931) and Serra da Estrela (Greven & Melick, 1994). This last report should be considered doubtful, as this species has known calcareous affinities and limestone outcrops are absent in Serra da Estrela. We are adding a new locality, in the Province of Trás-os-Montes and Alto Douro (TM) and a first report for the Douro Litoral (DL) Province. In this case, the plants were growing together with *Preissia quadrata*, *Encalypta vulgaris* Hedw., *Fissidens dubius* P. Beauv., *Trichostomum crispulum* Bruch and *Cheilothela chloropus* (Brid.) Broth.

Grimmia hartmannii Schimp.

PORTUGAL. *Trás-os-Montes e Alto Douro (TM): Parque Nacional da Peneda-Gerês, Pitões das Júnias, on an exposed rock surface of granite outcrops, 29TNG8732, 1.121 m a.s.l., 29 March 2005, *Hespanhol* (PO 7810). ***Douro Litoral (DL): Serra de Montemuro,** near Gralheira, on exposed rock surfaces of granite outcrops, 29TNF8441, 1.110 m a.s.l., 15 May 2005, *Hespanhol* (PO 9092, 9109, 9117); Perneval, on shaded rock surfaces and crevices of granite outcrops, 29TNF8037, 1.204 m a.s.l., 22 May 2005, *Hespanhol* (PO 9194, 9197, 9201, 9206); Pedra Posta, on crevices and rock-pools of granite outcrops, 29TNF7540, 1.194 m a.s.l., 25 May 2005, *Hespanhol* (PO 9215, 9227).

This species was recorded in four localities in Portugal, however these reports correspond to old collections dated from 1889 to 1981 (Sérgio & Carvalho, 2003). Recently, three new populations are first reports to Douro Litoral (DL) and a fourth population is a new record to Trás-os-Montes and Alto Douro (TM). Usually found on rocks in the forest belt, *Grimmia hartmannii* was collected on exposed granite outcrops with *Grimmia* spp., *Racomitrium* spp., *Hedwigia* spp. and *Andreaea* spp. All the material collected lack the characteristic gemmae and only one specimen was found with sporophytes.

Grimmia orbicularis Bruch ex Wilson

PORTUGAL. *Trás-os-Montes e Alto Douro (TM): Serra do Marão, Coto, on a rock surface of limestone outcrops, 29TNF9075, 773 m a.s.l., 3 June 2005, *Hespanhol* (PO 9501, 9506). ***Douro Litoral (DL): Serra do Marão,** Sobrido, on a rock surface of limestone outcrops, 29TNF8774, 544 m a.s.l., 3 June 2005, *Hespanhol* (PO 9535).

This species was only known from the Center of Portugal and was considered rare (e.g. Sérgio *et al*., 1988, Sérgio *et al.*, 1994). Recently, it was collected from two localities in the North that correspond to first populations for Douro Litoral (DL) and Trás-os-Montes e Alto Douro (TM) Provinces. *Grimmia orbicularis* was the more abundant species growing in the rock surfaces together with *G. tricophylla* Grev. and *Orthotrichum rupestre* Schwägr. var. *rupestre.*

Pseudoleskea incurvata (Hedw.) Loeske

PORTUGAL. *Minho (Mi): Serra de Arga, Alto do Corisco, on a crevice of granite outcrops, 29TNG2327, 655 m a.s.l., 4 June 2006, *Hespanhol* (PO 11579).

This species is only known from the Center of Portugal, in Serra da Estrela (Sérgio & Carvalho, 2003). Recently, it was collected from one locality in the North that correspond to the first population for Minho (Mi) Province. It was found growing together with *Plagiothecium* spp., *Racomitrium* spp. and *Campylopus* spp.

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