

## New data on riparian bryophytes of Madeira

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**Abstract** – The liverwort *Anastrophyllum minutum*, and the mosses *Campylopus brevipilus*, *Pohlia melanodon* and *Syntrichia latifolia* are reported from Madeira for the first time, based on records from riparian habitats. The current threat status in Madeira is assessed for these four species and updated for two other ones.

### **Bryophytes / Madeira / riparian habitats / new records / threat status**

Madeira has a diverse bryophyte flora which results from its geographical position, oceanic climate, insular characteristics and varied topography. The bryoflora currently known comprises 531 taxa (352 mosses, 179 liverworts and hornworts). Among these, 48 taxa are endemic to Macaronesia, including 14 exclusive to Madeira (Sérgio *et al.*, 2006b).

Collections by several researchers in recent decades have improved the knowledge of the Madeira bryophyte flora. However, recent field studies of riparian bryophyte communities on this island have shown that there is still incomplete information on the species occurring in riparian habitats.

This paper reports the occurrence of some hitherto unreported or poorly known riparian bryophyte species found during fieldwork in 2004 and 2005. The distribution and habitat preferences are outlined for each of these six species and their threat status is evaluated using the IUCN criteria according to Sérgio *et al.* (2006a). However, due to the small size of the island we considered each locality as having 1 × 1 Km limit instead of 10 × 10 Km, which was used in the Iberian Peninsula.

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All voucher specimens were collected on stream margins in the Island of Madeira, and are housed at the LISU herbarium. Unless otherwise noted they were collected by L. Luís. Nomenclature follows Hill *et al.* (2006) for mosses and Ros *et al.* (2007) for liverworts.

### New records

#### ***Anastrophyllum minutum* R.M.Schust.**

\*MADEIRA: Ribeira da Ponta do Sol, Bica da Cana, 28SBB0625, 1500 m, 16.06.2005.

This is the first report from Madeira of a species whose previous report in Macaronesia only corresponds to the Azores (Schumacker & Váña, 2006). It was found in riparian communities along the upper reaches of the Ribeira da Ponta do Sol, growing on sunny rocks with clay soil, in the spray zone on the stream margins where stream flow was very low. The main associates were *Scapania undulata* (L.) Dumort., *Fissidens bryoides* Hedw. var. *caespitans* Schimp., *Atrichum undulatum* (Hedw.) P. Beauv. and *Entosthodon obtusus* (Hedw.) Lindb..

*A. minutum* has a worldwide range and is not threatened in Europe (Schumacker & Váña, 2006). In Madeira it can be categorised as a “Data Deficient” taxon.

#### ***Campylopus brevipilus* Bruch et Schimp.**

\*MADEIRA: Ribeira da Janela, Lajeado, 28SCB0426, 1400 m, 14.06.2004.

This is the second record for Macaronesia, where it has been reported only from the Azores (Smith, 2004). On Madeira, it was found in riparian communities in the upper reaches of Ribeira da Janela, growing on sunny rocks in the spray zone on the stream margins. Its principal associates were *Brachythecium rivulare* Schimp., *Scapania undulata* (L.) Dumort., *Fossombronia angulosa* (Dicks.) Raddi, *Sciuro-hypnum plumosum* (Hedw.) Ignatov *et* Huttunen and *Racomitrium aciculare* (Hedw.) Brid.

Sérgio *et al.* (2006a) classified it as being of Least Concern (LC) in the Iberian Peninsula. In Madeira, it should be categorized as a “Data Deficient” species.

#### ***Pohlia melanodon* (Brid.) A.J.Shaw**

\*MADEIRA: Ribeira Brava, Rocha alta, 28SCB0820, 170 m, 04.06.2004; Ribeira da Ametade, Fajã da Nogueira, 28SCB2024, 720 m, 20.03.2004; Ribeira do Porco, Boaventura, 28SCB1533, 23 m, 23.06.2004.

A new species for the Madeiran bryoflora, although it was already known from Macaronesia, in the Azores and Canary Islands (Sjögren, 2001). *Pohlia melanodon* was collected in three of the main drainage basins of the island. All the populations were found growing on rocks with clay soil, in the spray zone on stream margins. On the Ribeira Brava it occurred along the lower reaches of the river, in very disturbed areas dominated by the great reed *Arundo donax* L., and was associated with *Bryum dichotomum* Hedw., *Bryum capillare* Hedw., *Scorpiurium circinatum* (Bruch) M.Fleisch. *et* Loeske, *Conocephalum conicum* (L.) Dumort. and *Lunularia cruciata* (L.) Lindb.. On the Ribeira do Porco, its populations were also found along the lower reaches of the river, but in an undisturbed natural area where its main associates were *Bryum*

*gemmiparum* De Not., *Leptobarbula berica* (De Not.) Schimp., *Tortella flavovirens* (Bruch) Broth and *Conocephalum conicum*. In contrast, on the Ribeira da Ametade it was found in the upper reaches of the stream in a laurel forest area, associated with *Fissidens sublineaefolius* Brugg.-Nann., *F. pusillus* (Wilson) Milde, *Epipterygium tozeri* (Grev.) Lindb., and *Didymodon insulanus* (De Not.) M.O.Hill.

In the Iberian Peninsula it is a species of Least Concern (LC) according to Sérgio *et al.* (2006a). Although all the populations were in good conditions, the species is regarded as rare on Madeira because of its restricted distribution, and as a newly recorded taxon, it is categorised a “Data Deficient”.

### ***Syntrichia latifolia* (Bruch ex Hartm.) Huebener**

\*MADEIRA: Ribeira da Ametade, Fajã da Nogueira, 28SCB2024, 720 m, 20.03.2004; Ribeira dos Socorridos, Pico Furão, 28SCB1624, 780 m, 13.06.2006.

*Syntrichia latifolia* is reported for the first time for Madeira and Macaronesia. It was found in riparian communities in two of the main river basins. On the Ribeira da Ametade it grew on rocks in the spray zone of the stream margins, the main associates being *Anomobryum julaceum* (Schrad. ex P. Gaertn. *et al.*) Schimp., *Dicranella howei* Renauld *et* Cardot, *Philonotis rigida* Brid., *Platyhypnidium riparioides* (Hedw.) Dixon, *Phaeoceros laevis* (L.) Prosk. and *Conocephalum conicum* (L.) Dumort.. Similarly, along the Ribeira dos Socorridos it grew on rocks in the riparian spray-zone, in places dominated by *Dicranella howei*, *Didymodon insulanus* (De Not.) M.O.Hill, *Philonotis rigida* Brid., *Platyhypnidium riparioides* (Hedw.) Dixon, *Phaeoceros laevis* (L.) Prosk. and *Conocephalum conicum*. The specimens from Ribeira dos Socorridos have sporophytes. In both sites, the populations were found along the upper reaches, in catchment areas having natural and well conserved vegetation. In continental Portugal it is considered rare, although the species is regarded as being of Least Concern in the Iberian Peninsula as a whole (Sérgio *et al.*, 2006a). In Madeira it is categorised as “Data Deficient”.

### **Previous records with deficient data**

#### ***Bryoerythrophyllum inaequalifolium* (Taylor) R.H.Zander**

\*MADEIRA: Ribeira dos Marinheiros, area close to Casas, 28SBB9430, 920 m, 28.06.2005; Ribeiro Bonito, Rocha Branca, 28SCB2132, 130 m, 08.06.2004.

This species had been reported by Sjögren (2001) from Madeira, but without locality. So, Sérgio *et al.* (2006b) considered its occurrence uncertain. It is known elsewhere in Macaronesia from the Canary Islands (Dirkse *et al.*, 1993) and Azores (Sjögren, 2001).

The records given here were found in two streams in natural forest areas, respectively on the north-east and south-west sides of the island. Associates at both sites were *Bryum pseudotriquetrum* (Hedw.) P.Gaertn. *et al.*, *Dicranella howei* Renauld *et* Cardot and *Didymodon insulanus* (De Not.) M.O.Hill. In Europe it is considered Endangered only for the Iberian Peninsula (Sérgio *et al.*, 2006a). Since it is known in small colonies and only from two localities it should likewise be considered “Endangered” on Madeira.

***Mnium hornum* Hedw.**

\*MADEIRA: Ribeira da Cruz, Paúl da Serra, 28SBB9432, 1040 m, 27.06.2005.

*M. hornum* was reported from Madeira by Eggers (1982) and Koponen (1980), but without localities (Sérgio *et al.*, 2006b). Its occurrence in Madeira is now confirmed. Elsewhere in Macaronesia it is also known in the Azores (Smith, 2004; Sjögren, 2001).

It was found at a single site in the western part of the island, in vegetation dominated by *Sphagnum auriculatum* Schimp. and *Atrichum undulatum* (Hedw.) P. Beauv. Sérgio *et al.* (2006a) classified this widespread European species as being of Least Concern (LC) in the Iberian Peninsula. However, since it was found only once on Madeira, it should be categorised as “Endangered” there.

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