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New or interesting records for the Sicilian moss flora

Abstract

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Trichostomopsis umbrosa (Müll. Hal.) Robins is new to Sicily and Italy, *Ditrichum cylindricum* (Hedw.) Grout and *Tortula israelis* Bizot & F. Bilewsky, that are rare in Italy, are recorded for the second time from Sicily. Notes on their corology and ecology are provided.

In the frame research on bryophyte flora and vegetation of urban areas of Agrigento, Militello in Val di Catania and Catania (southern and eastern Sicily) very interesting taxa from the phytogeographical point of view have been found: *Trichostomopsis umbrosa*, *Ditrichum cylindricum* and *Tortula israelis*. Their distribution and ecology as well as the characters of the Sicilian specimens are reported below.

Specimens are kept in the Herbarium of the Botanical Department of the University of Catania (CAT) and in the Herbarium Mediterraneum (PAL).

Trichostomopsis umbrosa (Müll. Hal.) Robins

[Syn.: *Barbula umbrosa* Müll. Hal., *Didymodon umbrosus* (Müll. Hal.) Zander, *Didymodon australasiae* var. *umbrosus* (Müll. Hal.) Zander *fide* Zander, *Trichostomopsis australasiae* var. *umbrosa* (Müll. Hal.) Düll]

According to Zander (1981, 1993) and Sharp & al. (1994), the genus *Trichostomopsis* Card. is poorly distinguishable from *Didymodon* Hedw., therefore they include *Trichostomopsis* within the section *Asteriscium* (Müll. Hal.) Zander of the genus *Didymodon*. Whereas other authors (Düll 1992, Frey & al. 1995), prefer to treat these two genera distinctly.

The taxonomic rank of *T. umbrosa* is also a debatable point: Zander (1981), Guerra & al. (1987), Düll (1992) and Sharp & al. (1994) regard it as a variety of *Trichostomopsis australasiae*, Frey & al. (1995) and Casas (1991, 1998) treat it as a distinct species.

At present, the genus *Trichostomopsis* Card. is represented in Europe by *T. aaronis* (Lor.) Agnew & Townsend, *T. trivialis* (Müll. Hal.) Robins., *T. australasiae* (Hook. & Grev.) Robins. and *T. umbrosa* (Müll. Hal.) Robins.

Trichostomopsis umbrosa is a thermophilous, photo-sciaphilous, nitrophilous moss mostly growing on basic substrate. A favourite habitat is mortar at the base of walls backed by earth (Hill & al. 1992).

According to Düll (1984-1985), *Trichostomopsis umbrosa* is an oceanic-mediterranean species occurring in North, Central and South America, Europe, the Canary Islands and Turkey (Düll 1984-1985,1992). European distribution concerns Portugal, Spain (Casas & al. 1981; Guerra & al. 1987; Casas 1998), Germany, Czech Republic (Kučera 1999), Great Britain and Ireland (Hill & al. 1992; Synnott & Robinson 1990).

Previously unknown in Italy, it has been collected for the first time in Sicily from Catania (UTM: WB 1516) and Agrigento (UTM: UB 8310).

The up-to-date distribution of *Trichostomopsis umbrosa* in Europe is represented in Fig. 1. In accordance with Casas (1970) this taxon was probably introduced to Europe with American phanerogamic species such as *Conyza canadensis* L. (Cronq.), *Aster squamatus* (Sprengel) Hieron., *Amaranthus* sp. pl., etc.

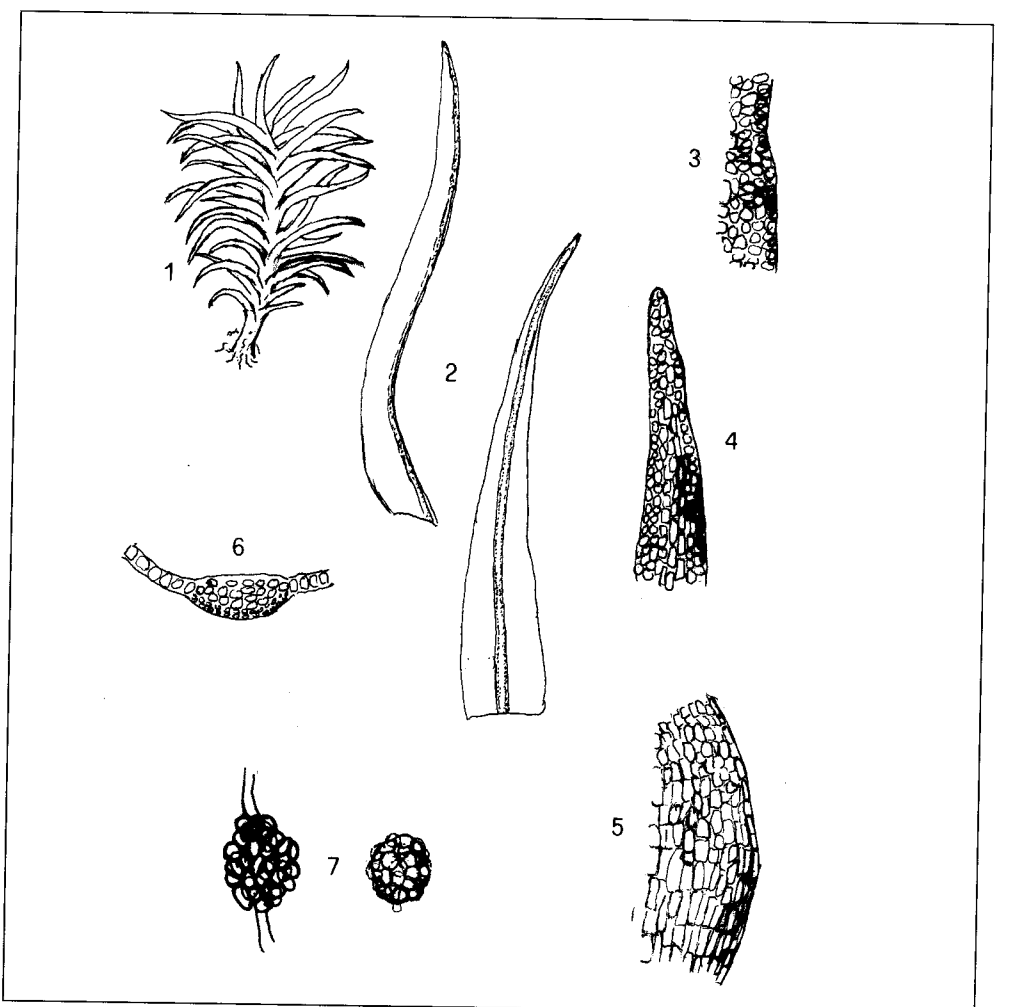

Fig. 1. *Trichostomopsis umbrosa* (Müll. Hal.) Robins. **1:** Habit × 12; **2**: Leaves × 31; **3**: Upper marginal cells × 100; **4**: Leaf apex × 100; **5**: Basal cells × 100; **6**: Leaf section × 280; **7**: Gemmae × 100.

In Catania *Trichostomopsis umbrosa* occurs in the historical centre at the base of the boundary wall of the Ursino castle, mixed with *Tortula muralis* Hedw., *Didymodon vinealis* (Brid.) R. H. Zander, *Bryum argenteum* Hedw., *B. bicolor* Dicks., *Fissidens bryoides* Hedw. and *Tortula marginata* (Bruch & Schimp.) Spruce. In Agrigento it was collected from a wet calcarenite wall in Esseneto road where it grows mixed with, *Aloina ambigua* (Bruch & Schimp.) Limpr., *Bryum capillare* Hedw., *Dicranella howei* Renauld & Cardot, *Didymodon acutus* (Brid.) K. Saito *Fossombronia caespitiformis* De Not. ex Rabenh., *Gymnostomum calcareum* Nees & Hornsch., *Sphaerocarpus michelii* Bellardi, *Lunularia cruciata* (L.) Lindb.

As regards to the climate of the collecting sites, we refer to the data (1926-76) of the localities of Catania (65 m, P = 720 mm, T =18°C) and Agrigento (313 m, P = 510 mm, T = 18°C). Following the terminology of Rivas-Martínez (1982), these localities belong to the bioclimatic thermomediterranean belt, with subhumid (Catania) or dry (Agrigento) ombroclimate.

Description of Sicilian specimens (Fig. 2)

Dioecious. Plants bright green, seldom branched, about 8-12 mm high. Stem hyaloderm often present. Leaves 2.5-3 mm long, long-lanceolate, apex narrowly acute, margin plane,

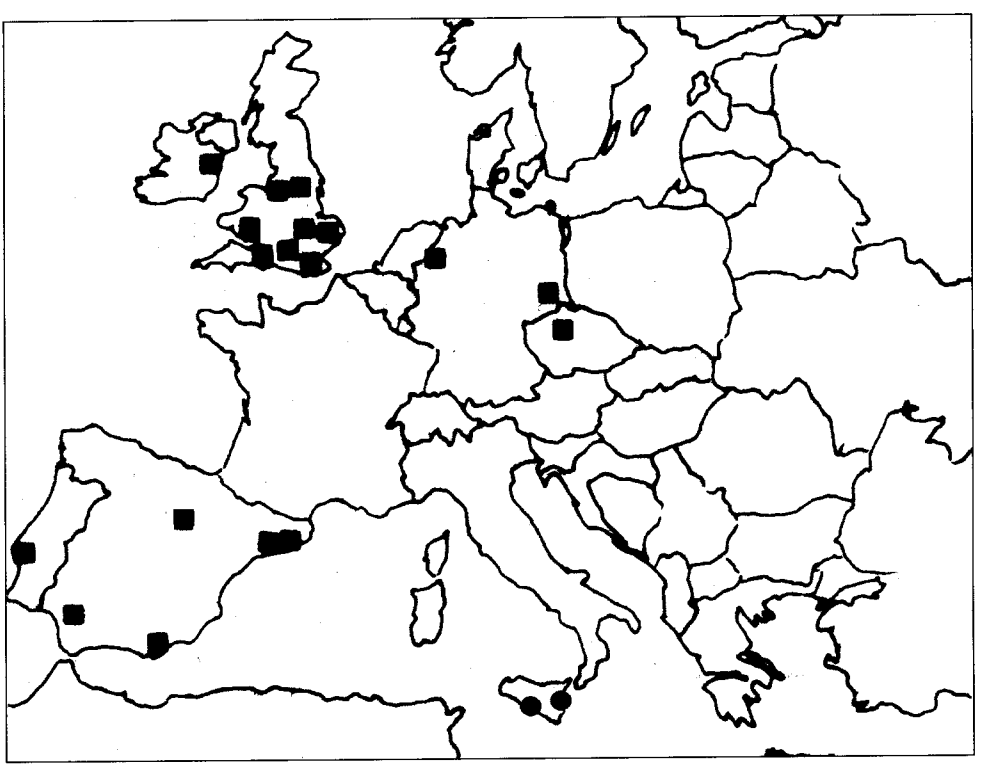

Fig. 2. Distribution of *Trichostomopsis umbrosa* (Müll. Hal.) Robins. in Europe. The new Sicilian localities are marked by circles.

somewhat crenulate, often sinuose, bistratose in upper and middle part. Upper lamina cells quadrate to rectangular with occasionally weakly developed or absent papillae. Basal marginal cells narrowly rectangular in 4-6 rows bordering the inflated inner basal cells. Costa subpercurrent, adaxial superficial cells usually rectangular, transverse section of costa elliptical. Propagula up to 120 μ. Inner perichaetial leaves with more obtuse apex. Sporophyte absent.

Ditrichum cylindricum (Hedw.) Grout

(syn.: *Ditrichum tenuifolium* Lindb. *Trichodon cylindricus* (Hedw.) Schimp.)

D. cylindricum is a terricolous or rarely saxicolous species that grows in patches or scattered plants on damp soil in fields, margins of woods and roadsides (Smith 1980).

This moss, belonging to the subboreal element, is widely distributed in Europe, having been recorded from Austria, Bulgaria, Denmark, Belgium, Great Britain, ex Czechoslovakia, Finland, France, Ireland, Switzerland, The Netherlands, Spain, Iceland, ex Yugoslavia, Norway, Poland, Romania, the ex USSR, Denmark (Düll 1984-1984); it also occurs in North America, Turkey, the Canary Islands, Faroes, Siberia, Japan and New Zealand (Smith 1978, Düll 1992).

In the Italian Peninsula the few reports of *D. cylindricum* concern Piemonte, Lombardia, Trentino-Alto Adige, Friuli-Venezia Giulia, Lazio (Cortini Pedrotti 1992). The report for Lazio requires mention of a precise locality.

Recent research in urban environments have shown that *D. cylindrichum* also occurs in the town of Enna (central Sicily) (Lo Giudice & al. 1996).

Catania is a new locality for *D. cylindrichum*, which has been collected on lave stone with a thin layer soil in the Ursino castle and in the graveyard. It is generally associated with *Tortella inflexa* (Bruch) Broth., *Didymodon tophaceus* (Brid.) Lisa, *Gymnostomum calcareum* Nees & Hornsch.

This *taxon* is mainly distinguished by squarrose, flexuose leaves abruptly narrowed into long, linear subula composed mainly of the denticulate nerve. The specimens collected in Catania are sterile.

As *Trichostomopsis umbrosa*, *Ditrichum cylindrichum* seems to be linked to anthropogenic urban habitats. Both taxa show the typical characters of the urban bryophytes: small size, short turf, presence of propagula.

Tortula israelis Bizot & F. Bilewsky

(syn.: *Tortula baetica* (Casas & Oliva) J. Guerra & Ros; *Tortula muralis* var. *baetica* Casas & Oliva, *Tortula muralis* var. *israelis* (Bizot & F. Bilewsky) Bizot)

This species is a nitrophilous, photophilous moss growing on basic substrate: mortar of old walls, calcareous rocks and stones, rarely on salty soils. It is known from Spain (Casas & Oliva 1982; Guerra & al.1992; Cano & al.1996; Fuertes & al. 1998), Israel (Bilewsky & Nachmony 1955), Cyprus (Bilewsky 1965; Koppe 1976) and Turkey (Henderson & Prentice 1969).

In Italy it has recently been collected from Rome and Agrigento (Oliva 1999; Aiello & Dia 2000). It has been found in the historical centre of Militello in Val di Catania (U.T.M.: VB 8215) on a wall of the Palazzo Majorana mixed with *Tortula muralis*

Hedw., *Crossidium squamiferum* (Viv.) Jur., *Bryum argenteum* Hedw., *Grimmia pulvinata* (Hedw.) Sm.

As far as the climate is concerned, we refer to data of the nearby weather locality of Mineo (1926-1976). The annual precipitation of 623 mm and the annual mean temperature of 17°C correspond to thermo-mediterranean thermotype and subhumid ombrotype (Rivas-Martinez 1982).

Tortula israelis is close to *T. muralis* by which is mainly distinguished by upper laminal cells having very high cylindroconical, single or seldom bifurcate, papillae or mamillae (1-3 per cell). (For further details see Guerra & al. 1992 and Aiello & Dia 2000). Therefore the geographical distribution of *Tortula israelis*, presently confined in a few areas, could be wider; in fact, it is possible that some specimens named *T. muralis* are actually *T. israelis*.

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