Patrizia Campisi & Fiorenza Provenzano

New record in Sicily of *Gigaspermum mouretii* (*Gigaspermaceae*, *Musci*), rare species in Europe

Abstract

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Gigaspermum mouretii, unknown species in Italian peninsula, is newly reported from Sicily. Its scattered distribution includes only isolated localities in the Mediterranean area and in the Canary Islands.

Introduction

Recent researches aimed at knowledge of bryofloras of archaeological Sicilian sites have shown that there are some very interesting taxa. For example in the archaeological areas of Solunto and Segesta mosses such as *Didymodon sicculus* Cano, Ros, García-Zamora & J.Guerra e *Pseudocrossidium replicatum* (Taylor) R. H. Zander, both little known in Europe, have been found. Moreover in the Ancient Roman Baths of Acireale *Tortula brevissima* Schiffn., rare in Italy, has been recorded (Aiello & al. 2003; Dia & al. 2003; Polizzi & Lo Giudice 2002).

Likewise, bryofloristic investigations in the archaeological area of Selinunte, still in progress, have allowed the finding of another interesting species, *Gigaspermum mouretii* Corb., that is here reported.

Distribution and ecology

This species is the only one of *Gigaspermum* Lindb. genus present in boreal hemisphere and it is reported in European Red List of Bryophyte as "Rare" (ECCB, 1995). It has an oceanic-Mediterranean distribution and is known from isolated localities in Israel, Morocco, Canaries Isles, Spain, Balearic Isles, Sicily and Crete.

This taxon, unknown in the other Italian regions, have been collected in Sicily only near Capaci (Palermo) in the Northern coast of the island (Düll 1984-85, 1992; Carratello &

Aleffi 1998). Selinunte (South-Western Sicily) is therefore the second locality known in Italy (Fig. 1).

This new finding site is located at ca. 40 m above the level sea (37° 34' 38'' N, 12° 49' 22'' E). According to Rivas Martinez (1995) classification, this area is characterized by bioclimate of Thermo-Mediterranean dry type. Annual average rainfalls are 538 mm, referring to the data of the nearest coastal metereological station, situated at Mazara del Vallo (Brullo & al. 1996).

Gigaspermum mouretii grows in Selinunte under partly shady condition on calcarenite plinth of the Temples E and F. On the Temple E it occurs with *Sphaerocarpos michelii* Bellardi, *Aloina rigida* (Hedw.) Limpr., *Tortula muralis* var. *obcordata* (Schimp.) Limpr., *Didymodon acutus* (Brid.) K. Saito, *D. vinealis* (Brid.) R. H. Zander, *Dicranella howei* Renauld & Cardot, *Funaria pulchella* H. Philib. and *Scorpiurium circinatum* (Brid.) M. Fleisch. & Loeske, while on the Temple F it is associated with *Fossombronia caespitiformis* De Not. Ex Rabenh., *Didymodon acutus* (Brid.) K. Saito, *D. vinealis* (Brid.) R. H. Zander, *Gymnostomum calcareum* Ness & Hornsch., *Funaria pulchella* H. Philib. and *Bryum bicolor* Dicks.

The growing habitat of Selinunte is altogether different from that of Capaci. As a matter of fact the species grows on rocks in the Selinunte locality, whereas at Capaci it grows on soil and moreover in the latter site it is associated with different species, excepted for *Didymodon vinealis* and *Fossombronia caespitiformis*.

Specimens are kept in the *Herbarium Mediterraneum* (PAL).

Gigaspermum mouretii is an interesting taxon also from the ecological point of view because it is the only one bryophyte having developed a geophytic strategy responding to

Fig. 1. Italian distribution of *Gigaspermum mouretii* Corb. ▲ new locality; ● previously known locality.

xeric habitat (Kürschner 2004). In fact its gametophyte has erect aerial stems as well as underground rhizomes assuring the surveying of the plants in the unfavourable season. Thanks to this adaptation in the Mediterranean region this species also lives in very arid habitat. In fact, it has been found in the dry and subdesertic areas in Spain as well as in Israel which are generally characterized by annual average rainfall between 50 and 400 mm. Under these conditions the plants are usually sterile, probably because neither fertilization nor gamete developing can occur in some periods of the year due to lack of water (Herrnstadt & al. 1980). Sporified plants have, instead, been found in an Israeli site in a particularly rainy year (Herrnstadt & al. 1980), in Isle of Majorca (Casas & al. 1985), in the Sicilian locality of Capaci (Carratello & Aleffi 1998) and in Canaries Isles (Dirkse & Bouman 1989). Also at Selinunte the plants are greatly sporified, although the climate is drier than in Capaci locality, where annual rainfall are of ca. 700 mm (Fig. 2). It generally seems that in Sicily this taxon has a long sporification period. Actually at Capaci the plants were sporified in September-October whereas at Selinunte sporified specimens have been collected in early February.

Conclusion

The record of *Gigaspermum mouretii* in Selinunte is interesting for the rarity of the taxon inside its distribution area and also because it provides further information on ecology and reproductive capability of the species.

Its presence on the southern coast of Sicily can support both hypotheses reported by Carratello & Aleffi (1998): this species could have been carried by African winds or by

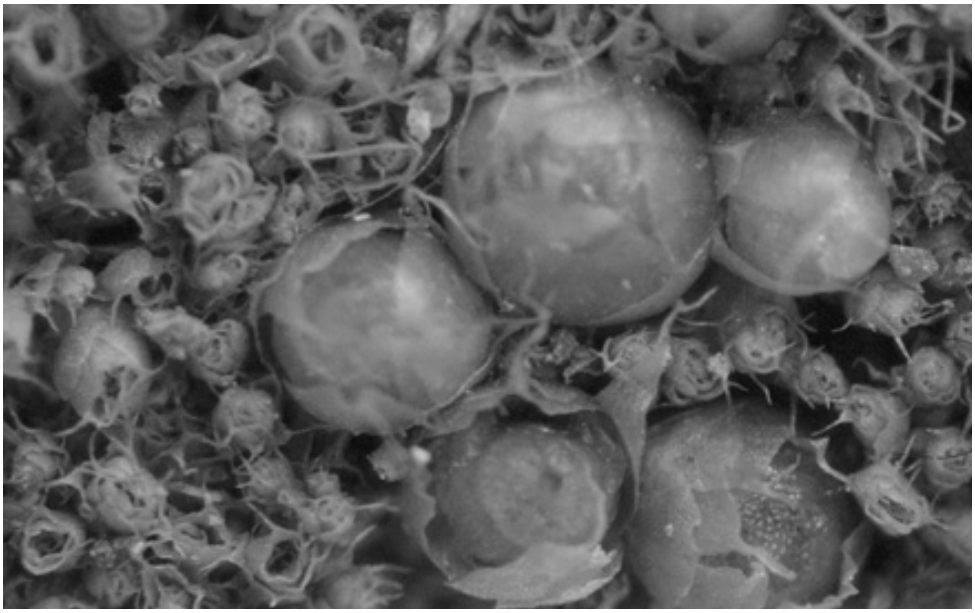

Fig. 2. Plants of *Gigaspermum mouretii* Corb. with sporophytes (×20) (from specimens of Selinunte).

travellers, given that Spain, Canaries Isles, Balearic Isles, Morocco and Israel are frequent tourist destinations. Nevertheless one cannot be sure about its recent introduction since in the past coastal territories have hardly been explored from a bryological point of view.

Moreover, the finding of this species in an archaeological site is a further confirmation that bryologists should devote more attention to bryoflora in these peculiar habitats; that is not only because they comprise interesting taxa, but also for the problem of the protection of rare taxa on the one hand and of the necessity of periodic interventions of cleaning and restoring of archaeological structures on the other.

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Address of the authors
P. Campisi & F. Provenzano, Dipartimento di Scienze Botaniche dell'Università, via Archirafi, 38, 90123 Palermo.