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New reports of *Pseudocrossidium replicatum* (*Pottiaceae, Musci*) from Sicily

Abstract

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Pseudocrossidium replicatum, moss poorly known in Europe, has been discovered at Solunto near Palermo (NW Sicily) and in Linosa (Pelagian archipelago). Its ecology and some phytosociological notes are given.

Introduction

Pseudocrossidium replicatum (*Pottiaceae*) has recently been found in the southern coast of Italy (Capo dell'Armi, S Calabria) for the first time in Europe (Privitera & Puglisi 2000). This finding has urged us to search for this species in other Italian localities, in order to widen its distribution area. Thus, during some field works carried out in Sicily and in the sorrounding isles the species has been collected at Solunto near Palermo (NW Sicily) and in a locality of Linosa islet (Pelagian archipelago). Moreover, a revision of the specimens of the *Herbarium* of Catania from Linosa has allowed to add other reports for this islet.

The Italian localities are added to the already known reports from America, eastern and southern Africa and SW Arabia (Zander 1981; Menzel 1986; Frey & Kürschner 1988a, b).

New localities

SICILY: Palermo, Mount Catalfano, Archaeological area of Solunto, from 150 to 200 m of altitude13° 32' 29" E , 38° 05' 33" N, 10 October 2003, *Dia & Provenzano*, on calcarenite blocks and on soil in dry and exposed habitats. Bryophytes associated are: *Tortella nitida* (Lindb.) Broth., *Tortula muralis* Hedw. var. *muralis*, *T. muralis* var. *obcordata* (Schimp.) Limpr., *Didymodon acutus* (Brid.) K. Saito, *D. luridus* Hornsch., *D. vinealis* (Brid.) R. H. Zander, *Aloina ambigua* (Bruch & Schimp.) Limpr., *Bryum bicolor* Dicks.

SICILY: Linosa, Cala Pozzolana di Levante, 50 m a.s.l., 12° 52' 20" E, 35° 51' 18" N, 15 April 1992, *Brullo*, in hollows and fissures of dry rocks with accumulated soil, together with *Tortula muralis* var. *muralis*, *T. revolvens* (Schimp.) G. Roth, *T. marginata* (Bruch & Schimp.) Spruce, *T. brevissima* Schiffn., *Didymodon vinealis*, *D. luridus*, *Bryum bicolor*, *B. caespiticium* Hedw., *Scorpiurium circinatum* (Brid.) M. Fleisch. & Loeske.

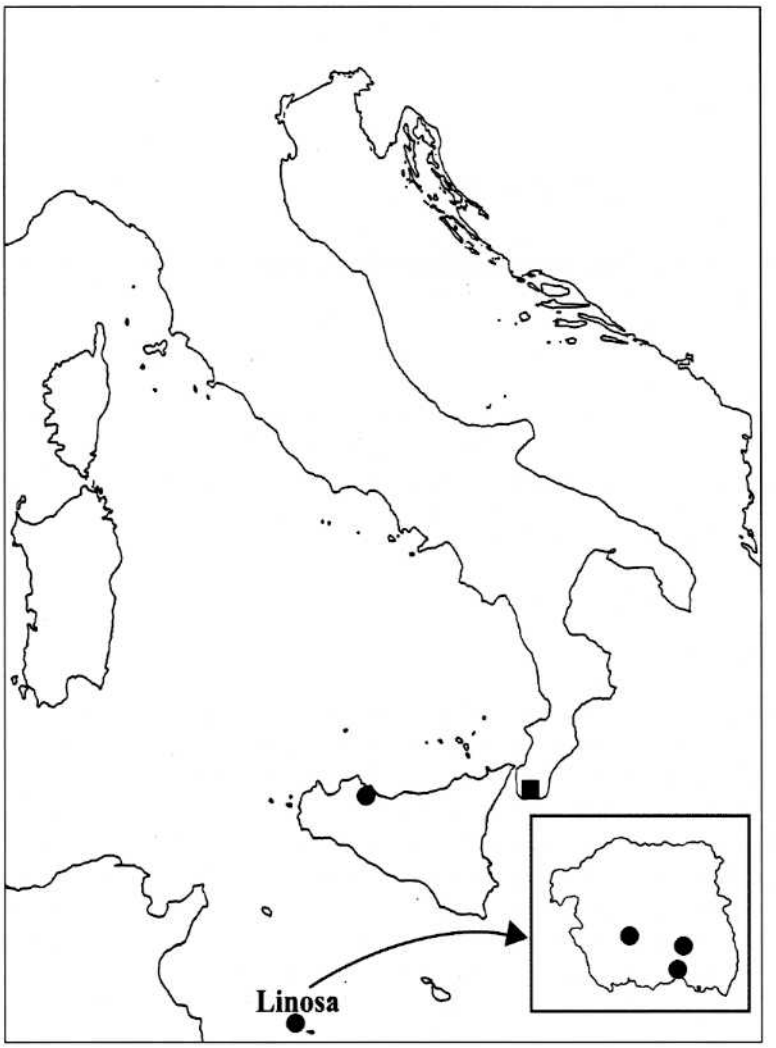

Fig. 1. Italian distribution of *Pseudocrossiduim replicatum*. ● new reports; ■ previous report.

Sicily: Linosa, Mount Bandiera, 90 m a.s.l., 12° 51' 45" E, 35° 51' 20" N, 15 April 1992, *Brullo*, on little exposed tuffs, together with *Didymodon acutus*, *Gymnostomum calcareum* Nees & Hornsch., *Bryum caespiticium*.

Sicily: Linosa, Mount Vulcano, 110 m a.s.l., 12° 52' 10" E, 35° 51' 30" N, 10 April 2003, *Privitera & Prezzavento*, on dry and exposed cliffs and walls covered by soil, together with *Tortula muralis* var. *muralis*, *T. marginata*, *Didymodon vinealis*, *D. acutus*, *Tortella flavovirens* (Bruch) Broth., *Bryum bicolor*, *B. caespiticium*, *B. capillare* Hedw., *Targionia hypophylla* L.

The specimens collected in Linosa are kept in the *Herbarium* of Catania (CAT), those

ones collected at the archaeological area of Solunto in the *Herbarium Mediterraneum* of Palermo (PAL).

The new localities are mapped in Figure 1.

Ecology

Pseudocrossidium replicatum is a terricolous and saxicolous, basiphilous species occurring on different types of substrata, such as soil, rock, concrete, adobe, walls, lava.

In Linosa it was found in rocky fissures, walls and cliffs with soil, tuffs in mostly open and dry places between 50 and 110 m of altitude. The climate is thermomediterranean with a very marked summer aridity. The mean annual rainfalls are 370 mm, one of the lowest values recorded in Sicily and in the whole Italian territory; on the basis of the precipitation value the ombrotype is lower dry verging to the upper semiarid (Rivas Martinez & al. 1991).

In all localities the species was found sterile, in compact tufts up to 0.5 cm^2. The morphological characters of the specimens are like those of the specimens from Capo dell'Armi. In the finding places *Pseudocrossidium replicatum* grows mixed to a lot of xerophilous species, mostly acrocarpous mosses belonging to the families *Pottiaceae* and *Bryaceae*. Among these, *Tortula muralis* var. *muralis*, *T. marginata*, *Didymodon vinealis*, *Bryum bicolor*, *B. caespiticium* are prevalent.

At Solunto *Pseudocrossidium replicatum* is quite spread on the ruins of the archaeological zone where it was collected from 150 to 200 m of altitude. Here the species was found on soil, on stones, in crevices and interstices between stones (calcarenite stones, adobes, mosaic quartz tesserae) of Greek and Roman ruins of the ancient town in dry and mostly sunny habitats. As regards the climate, since no thermo-pluviometrical station is situated at Solunto, only data of the nearest meteorological station of Palermo can be considered. In this station the mean annual temperature and the mean annual precipitations are found to be 18 °C and 584 mm, respectively. According to method of Rivas Martinez & al. (1991.) the climate of Palermo is of lower thermomediterranean type with upper dry ombrotype.

As well as in Linosa, *Pseudocrossidium replicatum* occurs in little patches (up to 0.8 cm^2) usually mixed to other *Pottiaceae*, often within of larger patches of *Tortella nitida* and *Tortula muralis* var. *obcordata*. All specimens were sterile.

Phytosociological notes

In the new localities many species growing together with *Pseudocrossidium replicatum* are characteristics of the alliance *Grimaldion fragrantis* Smarda et Hadac 1944, such as *Didymodon luridus*, *D. acutus*, *D. vinealis*, *Tortula revolvens*, *Aloina ambigua*. Also at Capo dell'Armi (Calabria) the species was found with characteristics of this alliance (*Didymodon luridus*, *Aloina ambigua* and *Pottia lanceolata* (Hedw.) Müll. Hal.). Moreover, some characteristics of higher units, *Barbuletalia unguiculatae* v. Hübschmann 1960 and *Barbuletea unguiculatae* Mohan 1978, occur in Linosa, Solunto and Capo dell'Armi (*Bryum bicolor* and *B. capillare*).

In Linosa some phytosociological relevés were made (Table 1). Here the species was

Table 1. *Didymodonto vinealis - Tortuletum muralis.*

	Number of relevés	1	2	3	4
	Surface (dmq)	6	4	6	6
	Cover (%)	60	75	85	50
	Inclination (°)	50	-	70	90
	Exposition	S	-	S	SW
	Number of species	9	7	6	10
	Characteristic species of association				
D	*Tortula muralis* var. *muralis*	2	3	3	2
	Characteristic species of alliance, order and class (*Grimaldion fragrantis*, *Barbuletalia unguiculatae*, *Barbuletea unguiculatae*)				
	Didymodon luridus	2	1	+	1
	Didymodon vinealis	1	1	2	.
	Pseudocrossidium replicatum	+	1	+	+
	Bryum bicolor	1	+	.	.
	Didymodon acutus	.	.	2	.
	Bryum capillare	.	.	.	1
	Tortula revolvens	+	.	.	.
	Transgressive species of the alliance *Aloino-Crossidion* and order *Tortulo-Aloinetalia bifrontis*				
	Tortula brevissima	+	.	.	+
	Tortula atrovirens	1	.	.	.
	Other species				
	Tortula marginata	.	1	2	2
	Bryum caespiticium	.	+	1	1
	Scorpiurium circinatum	1	.	.	.
	Tortella flavovirens	.	.	.	1
	Targionia hypophylla	.	.	.	+

Relevés origin. Rel. 1, 2 Cala Pozzolana di Levante; rel. 3, 4 M. Vulcano.

found within the *Didymodonto vinealis-Tortuletum muralis*, described for a lot of localities of the volcano Etna (Privitera & Puglisi 1996). This is a terri-saxicolous, xerophilous association occurring on walls covered by soil within or in the proximity of urban centres, showing an urbaniphilous character; this association is included in the alliance *Grimaldion fragrantis*. As regards the phytosociological role of *Pseudocrossidium replicatum*, it could be considered a characteristic species of this alliance.

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