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Enrico Bajona & Vivienne Spadaro

Chorological notes on the Sicilian endemic *Euphorbia papillaris* (*Euphorbiaceae*)

Abstract

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Thanks to the discovery of a new important site in the Trapani Mountains, the distribution of *Euphorbia papillaris*, a rare plant endemic to N-W Sicily, is revised. On the basis of the unpublished record, one of the two hypotheses on the discovery of the species in Sicily, previously advanced, is here confirmed. Floristic and ecological information on the new locality are also provided.

Key words: vascular flora, endemic plants, chorology, Italy.

Introduction

Euphorbia papillaris (Boiss.) Raffaelli & Ricceri is a species endemic to Sicily. Morphologically similar to *E. bivonae* Steud., for a long time it was identified with this taxon or it was considered as a mere variety. Raffaelli and Ricceri (1988) detected sufficient diagnostic differences to consider the population of the Egadi Islands as a separate species: precisely *E. papillaris*. It differs from *E. bivonae*, not only for the shape and density of the papillae of the coccarium but also for its modest size and pulvinate habit. It is close to *E. melitensis* Parl., endemic plant to the Maltese Islands, and it has some similarities with *E. spinosa* L., stenomediterranean element, in Italy found mostly in all the peninsular regions and in Sardinia (Bartolucci & al. 2018).

The species was originally described by Boissier (1862) as a variety of *E. bivonae* based on materials from the Egadi Islands, west of the Trapani coast (N-W Sicily). It was later found on the nearby Sicilian coast, within the Zingaro Nature Reserve (Spadaro 2006).

According to the description given by Brullo & Brullo (2020), *E. papillaris* is a glabrous suffrutex, 30-70 cm hight, with a shrubby or pulvinate habit (Figs. 1b, 1f), with branched root and enlarged stem segments, with a moniliform appearance. The old branches are woody, twisted and shortened; those dead sometimes thorny; the new ones are elongated, leafy, ending in the inflorescence. It has elliptical leaves, (11)14-20(30) × (4)5-6(9) mm, with obtuse apex, mucronate. The flowers are grouped in compound umbels. Each umbel has 3-5 rays; the umbellets, 2-3 rays. The bracts conform to the leaves (the

Fig. 1a-f. Pulvinate habit of *Euphorbia papillaris* and its habitat in the Sicilian new site of Mt Erice (Erice, Trapani).

upper ones are sometimes obovato-lanceolate), while the bracts are obovate, with a rounded apex. The cyathium, 1.5-2 mm long, has a pedicel of 0.5-1 mm and semielliptic glands. The interglandular lobes are rounded, with the indented margin and internally hairy. The fruit is a globose capsule, 4-4.5 mm, with flattened external cylindrical warts, externally puberulous (Figs. 1c, 1d). The seed, of brown colour, is smooth and has an helmet-like caruncle, wavy at the margin.

E. papillaris grows generally on limestone slopes, from 10 to 300 m a.s.l., in communities referable to the *Dianthion rupicolae* Brullo & Marcenò 1979 alliance or on lithosol in communities related to the *Oleo-Ceratonion siliquae* Br.-Bl. ex Guinochet & Drouineau 1944 em. Rivas-Mart. 1975. Considered schizoendemic ($2n = 14$), it is regarded as vulnerable species in the Red List of Italy. Reported from Marettimo, Favignana and Levanzo (Egadi Islands), it was subsequently indicated in the nearby northern coast of Sicily, near S. Vito lo Capo (Spadaro 2006).

Recent floristic collections on the northern slopes of Mount Erice have allowed to find a large population, the subject of this note (Fig. 1a).

New site and ecology

The new and large population was found on the northern slopes of Mount Erice (Fig. 3), in front of the coast where the site of the Zingaro is located (Spadaro 2006).

In the new site, the population of *E. papillaris* – in our opinion the most extensive and therefore significant – is accompanied by several species of the garrigue and the Mediterranean scrub. Among them occur: *Ampelodesmos mauritanicus* (Poir.) T. Durand & Schinz (Figs. 1a, 1b), *Anthyllis vulneraria* subsp. *maura* (Beck) Maire, *Arisarum vulgare* O. Targ. Tozz. subsp. *vulgare, Asparagus acutifolius* L., *A. pastorianus* Webb & Berthel. (Fig. 1e), *Asphodelus ramosus* L. subsp. *ramosus*, *Biscutella maritima* Ten., *Bituminaria bituminosa* (L.) C. H. Stirt., *Brachypodium retusum* (Pers.) P. Beauv., *Carlina sicula* Ten., *Chamaerops humilis* L. (Figs. 1a, 1e), *Charybdis maritima* (L.) Speta, *Convolvulus cantabrica* L., *Cytisus spinosus* (L.) Lam., *Dianthus siculus* C. Presl, *Erica multiflora* L., *Foeniculum vulgare* Mill. subsp. *vulgare, Gladiolus* aff. *segetum* Ker Gawl. (*Gladiolus italicus* Mill.), *Hyparrhenia hirta* (L.) Stapf subsp. *hirta, Iris planifolia* (Mill.) Asch., *Klasea flavescens* (l.) Holub subsp. *mucronata* (Desf.) Cantó & Rivas Mart., *Lonicera implexa* Aiton subsp. *implexa, Micromeria graeca* subsp. *fruticulosa* (Bertol.) Guinea, *Ophrys lutea* Cav., *O. speculum* Link., *Orchis brancifortii* Biv., *O. papilionacea* L., *Petrosedum sediforme* (Jacq.) Grulich subsp. *sediforme, Phagnalon rupestre* (L.) DC., *Quercus calliprinos* Webb. (Fig. 2b), *Quercus ilex* L., *Reichardia picroides* (L.) Roth, *Rhamnus lycioides* subsp. *oleoides* (L.) Jahand. & Maire, *Ruta chalepensis* L., *Senecio* sp., *Silene fruticosa* L., *Stachys major* (L.) Bartolucci & Peruzzi, *Teucrium fruticans* L., *Thapsia garganica* L. subsp. *garganica,* etc.

It is, therefore, a community clearly related to aspects of vegetation not strictly rocky and thus of the *Dianthion rupicolae*, but of calcareous lithosol and therefore to be assigned to the *Oleo-Ceratonion siliquae*.

Fig. 2. *Asparagus pastorianus* (a) and the rare *Quercus calliprinos* (b) in the new site of *Euphorbia papillaris* on the limestone slopes of Mt Erice (Trapani).

Conclusions

In the current state of knowledge, *E. papillaris* is present not only in the Egadi Islands but also in the context of the little mountains next to the east and south-east of Trapani (respectively Zingaro and Mount Erice), representing a characteristic element of the Drepano-Panormitano floristic district (*sensu* Brullo & al 1995).

In the new and more internal Sicilian locality of *Euphorbia papillaris*, the presence of some rare or endemic species on the island assumes phytogeographic importance. Among these are *Asparagus pastorianus* (Fig. 2a), *Klasea flavescens* (L.) Holub subsp. *mucronata* (Desf.) Cantó & Rivas Mart., and *Quercus calliprinos* (Fig. 2b). In particular, *A. pastorianus* is a rare species of the genus, new for the flora of Mt Erice (Spadaro & al. 2020); *Q. calliprinos* – rare in Sicily but present in other territories of the Province of Trapani – is instead new for the same area of Mt Erice.

The locality of Erice (Trapani), the highest in altitude (300-400 m a.s.l.), is very extensive and should be interpreted as a primary site from where the species, probably, has pushed down on the coast (Zingaro) and then in the Egadi (Fig. 4). Based on this further discovery, we consider grounded the two hypotheses formulated previously (Spadaro 2006) that the species has passed from the Sicilian coast – as observed just from Erice – to the Egadi Islands, or that it is instead a fragmentation of an ancient areal including the Tyrrhenian coastal reliefs of Trapani and all the Egadi Islands (Marettimo, Favignana and Levanzo) (Pignatti 2017).

Fig. 3. The area of Mt Erice (N-W Sicily) with the localization of the new site of *Euphorbia papillaris* (prepared by Google Earth Pro).

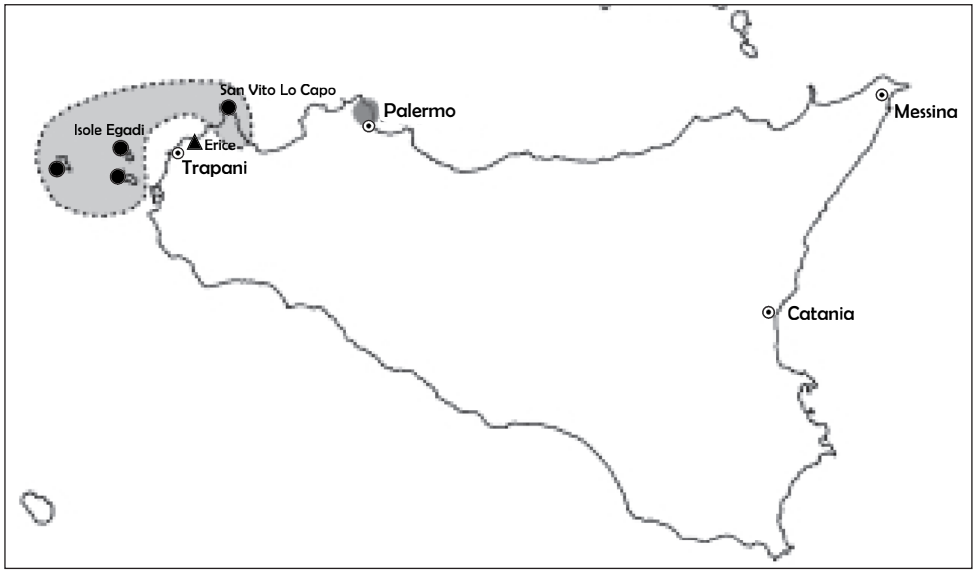

Fig. 4. Distribution sites of the Sicilian endemic *Euphorbia papillaris*: from literature (●) and from the new record (Erice, Trapani) (▲).

Exsiccata

Sicily – Erice (Trapani), limestone slopes of North-West of Mt Erice, on the rock, 370 m a.s.l., 8°2'37.31"N - 12°34'3.27"E, 7 June 2020, *Bajona* & *Raimondo* (PAL, PAL-Gr and FI); Erice (Trapani), limestone slopes of North West of Mt Erice, in the garrigue on litosol, 365 m a.s.l., 8°2'37.31"N - 12°34'3.27"E, 12 June 2020, *Raimondo* (PAL-Gr and FI).

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Addresses of the authors:
Enrico Bajona[1] & Vivienne Spadaro[2]*,
[1]PLANTA/Center for Research, Documentation and Training, Via Serraglio Vecchio 28, I-90123 Palermo, Italy. E-mail: bajona@centroplantapalermo.org
[2]Department STEBICEF/Section of Botany, Anthropology and Zoology, University of Palermo, Via Archirafi 38, I-90123 Palermo, Italy.
E-mail: vivienne.spadaro@unipa.it
*Corresponding author.