

# Discovery of new populations in Mazara del Vallo (Sicily, Italy) of *Galium litorale* Guss. (Rubiaceae): a naturally rare species with a small distribution area

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## ABSTRACT

*Galium litorale* Guss. (Rubiaceae) is an endemic species of south-western Sicily (Italy) with a very restricted natural range of distribution, confined to a system of calcareous outcrops located along the coastal stretches of the Trapani territory, but circumscribed and fragmented between Marsala and Selinunte. The overall knowledge of the real conservation status of *Galium litorale* in south-western Sicily is poor and is limited to the discovery of a few populations, but some research carried out between 2024 and 2025 in this area, has allowed us to census numerous new populations that are useful for a better understanding of the distribution and protection of this species.

## KEY WORDS

Trapani; Distribution map; Estimation; Trend; Sicily.

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## INTRODUCTION

*Galium litorale* Guss. (Rubiaceae) is an endemic species of south-western Sicily with a very restricted natural range confined to a system of calcareous outcrops along the coastal stretches of the province of Trapani, but circumscribed and fragmented between Marsala and Selinunte.

This species is linked with the few patches of garrigue and maquis, which are now very rarefied in the area due to agriculture, urbanization and fires.

Currently, *Galium litorale* is represented by few populations, but it cannot be excluded that in the past it was locally more frequent. The decline in numbers and size of their populations and the increase in their isolation are typically due to human influence. Such taxa, described as ‘new rare species’ (Huenneke, 1991), are also often threatened by genetic erosion (Ouborg & van Treuren, 1994).

Some species, described as ‘*naturally rare species*’ (or ‘*old rare species*’), are intrinsically associated with specific and rare habitats or with a peculiar geographic location, such as an island, a mountain range or another geographically well-defined area. These species form small, restricted and naturally isolated populations over a long historical period (Holderegger, 1997; Pegtel, 1998) and often include restricted endemic and relict species (Pegtel, 1998). Such species, characterised by their stenotopic ecology and naturally fragmented distribution, are generally expected to have populations that exhibit higher differentiation and lower variation than widespread species (Gitzendanner & Soltis, 2000; Cole, 2003).

*Galium litorale* was recently placed on the IUCN Red List of Threatened Species in 2011 and is classified as near-threatened. This species is also listed in Annex I of the Convention on the Conser-

vation of European Wildlife and Natural Habitats (Bern Convention) and Annex II of the European Habitats Directive. The Sicilian population has been estimated at around 1,000 individuals, but its trend is unknown (Abeli, 2001). It is an excellent example of a naturally very rare species that most probably persisted in the same area after its divergence.

The main objective of this note is to update the current fragmented knowledge on the size and distribution of *G. litorale* populations in Sicily, for a better understanding of this species that deserves greater protection.

## MATERIAL AND METHODS

On 2 May 2023, during a naturalistic survey in the area of Mazara del Vallo (western Sicily, Italy), we found a few plants of *G. litorale* and, given the rarity of this plant, we explored the entire hillside, georeferencing and photographing every single population of this species. All collection data were recorded, including the presence of plants associated with *G. litorale*.

The research continued throughout 2023, 2024 and 2025.

The main study area covers approximately 10 hectares within an archaeological area called Roccazzo, which covers 20 hectares; it is a limestone relief with an average altitude of 150 metres above sea level and is 10.5 km from the sea.

Subsequent excursions, carried out in the same way, were conducted in the surrounding areas listed below:

- Montagna della Meta, a hill in front of the locality of Roccazzo, which is 11.3 km from the sea and ranges from 100 to 160 metres above sea level, covering 22 hectares (10.V.2024, 135 populations).
- Another hill near the locality of Roccazzo, which is 10.8 km from the sea and ranges from 115 to 140 metres above sea level, covering 10 hectares (15.V.2024, 35 populations).
- A hill near Torre and Baglio Grimesi (37°43'06.9"N 12°42'55.1"E) Curcio locality (37°42'54.6"N 12°41'28.1"E) (16.V.2024, 135 populations).
- Four other nearby localities named Santa Teresa (37°42'23.9"N 12°38'32.4"E), Deccaco

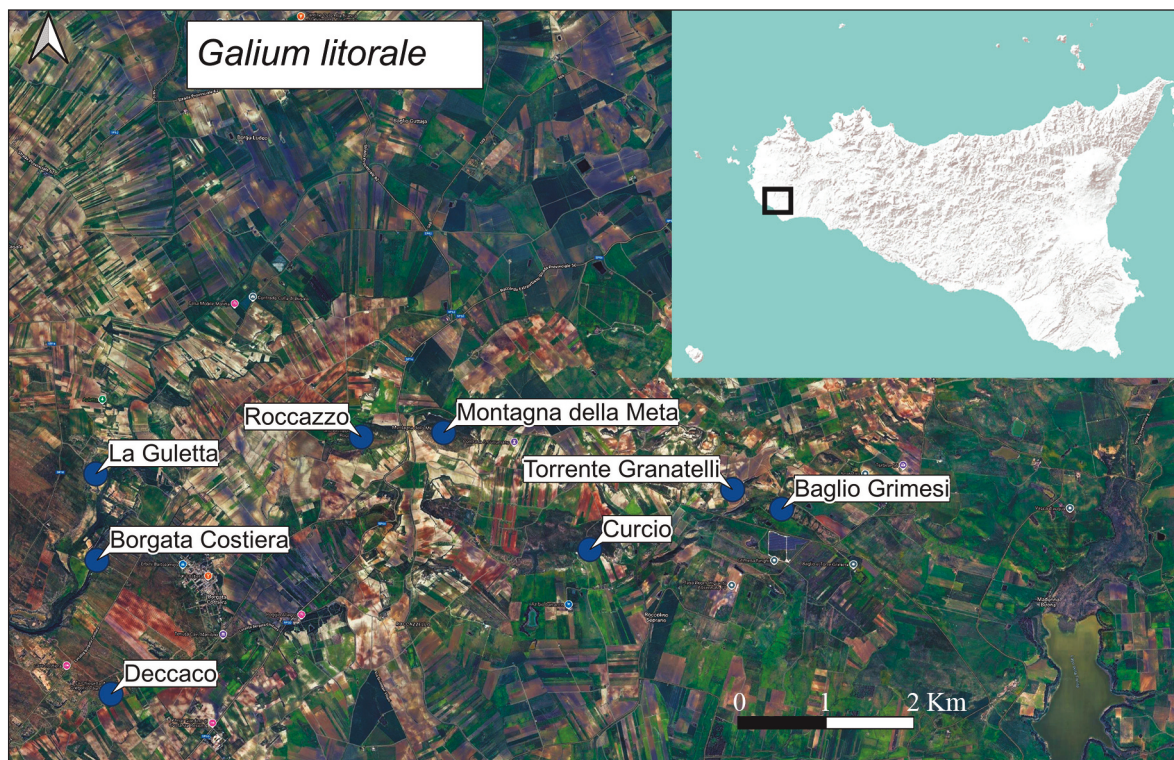


Figure 1. Map of the localities explored to search *Galium litorale* in western Sicily (Italy).





Figures 2-4. *Galium litorale* from Mazara del Vallo (Trapani, Sicily, Italy), May 2023.

(37°41'56.9"N 12°37'47.6"E) near Borgata Costiera, Torrente Granatelli (37°43'18.0"N 12°42'33.7"E) and La Guletta (37°72'24.5"N 12°62'57.1"E).

A set of samples, taken from each of the locality mentioned in the text, is held at Herbarium Mediterraneum Panormitanum (acronym PAL) of the Botanical Garden of the University of Palermo (legit A. Ditta and S. Surdo).

## RESULTS AND CONCLUSIONS

During this initial research, approximately two

hundred and fifty populations of *G. litorale* were found in the study area.

The plants were mainly found under the Mauritanian milkweed *Ampelodesmos mauritanicus* (Poir.) T. Durand & Schinz, to a lesser extent also under the Mediterranean fan palm *Chamaerops humilis* L., and a population even under a pear tree *Pyrus spinosa* Forssk.

*Galium litorale* was selected in the framework of the Life project 'Seedforce' to recover and strengthen populations of endangered Italian native plants in 10 Italian regions (Lombardy, Trentino-

Alto Adige, Friuli-Venezia Giulia, Veneto, Liguria, Emilia-Romagna, Abruzzo, Campania, Sardinia and Sicily) and in some cross-border areas of France, Slovenia and Malta. In particular, to improve the conservation status of 29 species of Annex II of the EU Habitats Directive and remove threats to these rare entities.

During the first year (2023) of 'Seedforce' research, 18 populations were identified in detail in the province of Trapani (lifeseedforce.eu).

The discovery of about two hundred and fifty new populations of this endemic and highly threatened species greatly increases the hope of averting its extinction.

However, it must be considered that these populations insist on a small area that has been left totally abandoned: this requires an effort to actively protect the site by restricting access and prohibiting grazing. Active measures are also needed to protect against fires, a plague that devastates the area in question. Only one of these locations, 'Roccazzo', is under protection as an archaeological area (protected by regulations but lacking any control as it is subject to fires and landfills), while all the other areas have no protection.

The creation of a distribution map that is as precise and detailed as possible for *G. litorale* in Sicily could be useful as a tool for planning conservation strategies and for analysing regional criticalities relating to this sensitive species.

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## Web Site

[lifeseedforce.eu/en/Galium-litorale-guss/](http://lifeseedforce.eu/en/Galium-litorale-guss/)