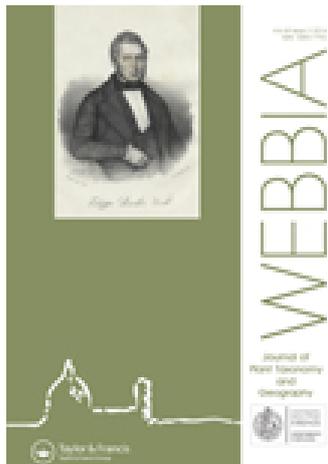


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## The vascular flora of the Taormina Region (Peloritani Mountains – northeast Sicily)

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This study is aimed at, first, producing a complete inventory of the vascular flora of the Taormina Region; second, identifying and mapping the species of high naturalistic value. The vascular flora of this area consists of 624 specific and infraspecific taxa, of which four are endemically restricted to this part of the Peloritani Mountains, namely, *Colymbada tauromenitana*, *Limonium ionicum*, *Limonium tauromenitanum* and *Brassica raimondoi*. The families most represented are Asteraceae (77 taxa), Fabaceae (73 taxa), Poaceae (63 taxa), Orchidaceae (23 taxa), Lamiaceae (23 taxa), and Apiaceae (23 taxa). The life-form spectrum of the vascular flora indicates the predominance of therophytes (40%), with hemicryptophytes (27%) and geophytes (14%). From a chorological viewpoint, most of the species show a Mediterranean distribution (316 taxa). A large number of surveyed taxa are endangered, of which 31 are included in the IUCN Regional Red List, 23 species of Orchidaceae are protected by the CITES and one in the EU 92/43 Habitat Directive. The analysis of the habitats revealed that rare taxa are most abundant on cliffs and dry grasslands.

**Keywords:** vascular flora; life forms; Taormina region

### Introduction

The Taormina Region falls within the southern part of the Peloritani Mountains which, on the whole, represent an important area of speciation and plant refuge (Sciandrello et al. 2014). In recent times, many taxonomic investigations have been carried out in the Peloritani area (Brullo 1980; Brullo and Spampinato 1988; Brullo et al. 1997, 2009; Brullo et al. 2009, 2014; Cristaudo et al. 2009; Cataldo et al. 2012; Sciandrello et al. 2013a) but an update on the floristic knowledge of the whole area is still missing, Nicotra (1878, 1879) being the last contributor who published a complete flora on this territory. In more recent years, accurate floristic lists were provided by Guarino (1997) and by Picone and Crisafulli (2006), although these were not aimed at providing a complete check-list of the flora of the Peloritani Mountains. Additional works including floristic contributions on smaller but significant areas of the Peloritani were published (Gramuglio et al. 1959, 1978; Minissale et al. 2005), while Picone et al. (2003) focused on the most endangered species of the area at issue.

The Taormina Region, within the Peloritani district, represents one of the most interesting area with regards to biodiversity, despite prolonged human activity pressure. It has its own peculiar geological and floristic identity (Sciandrello et al. 2013b; Sciandrello and D'Agostino 2014). In fact, it preserves rare and exclusive species, both from an ecological and phytogeographical viewpoint, including rare and highly localized endemites, like *Colymbada tauromenitana*, *Brassica raimondoi*, *Limonium ionicum* and *Limonium tauromenitanum* (Arena et al. 1975; Brullo et al. 1995; Gramuglio et al.

1985; Spampinato et al. 2008; Sciandrello et al. 2013a; Sciandrello and D'Agostino 2014). The naturalistic high value of the area allowed it to be included in the network of Sites of Community Importance (SCI) according to the Habitats Directive (cod. ITA 030,004 “Bacino del Torrente Letojanni”, cod. ITA 030,031 “Isola Bella, Capo Taormina and Capo St. Andrea, cod. ITA 030,003 “Rupi di Taormina and Monte Veneretta”).

Recently, the area at issue has been identified by Blasi et al. (2010) as an Important Plant Area (IPA), essential for the conservation of plant biodiversity, indicating “Monti Peloritani e Rupi di Taormina (SIC24)”. The Taormina region also has remarkable peculiarities in terms of geological features (Lentini et al. 2000), contributing to the diversification of the flora and plant landscape. Nevertheless, a complete list of plants of this region has never been produced, with the exception of the nature reserve of Isola Bella (Minissale et al. 2005).

This study aims at, first, producing a complete inventory of the vascular flora of the Taormina Region and second, identifying and mapping the species of high naturalistic value.

### Study area

According to Sciandrello et al. (2014), the Peloritani district belongs to the northeastern Sicilian biogeographical subsector. The phytogeographical delimitation of the Peloritani Mountains is essentially based on geological criteria (Angi et al. 2010; Aldega et al. 2011). In particular, this Sicilian mountain range is located north of the tectonic line of Taormina and stretches from this city

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across the mountains up to the Tyrrhenian Sea and just south of Capo d'Orlando. This delimitation is notably supported by the occurrence and distribution pattern of some significant floristic elements (Sciandrello et al. 2014). The territory of the present study includes the southern part of the Peloritani Mountains (eastern Sicily) and occupies an area of about 6000 hectares. It covers the territories of Taormina, Castelmola, Mongiuffi Melia, Roccafiore, Letojanni, Gallodoro, Forza D'Agrò (Figure 1). The area is characterized by the presence of relatively low-altitude hills, represented by Monte Tauro (245 m), Monte Petraro (475 m), Castelmola (496 m), Roccella (602 m), Monte Ziretto (381 m), Costa Ogliastrò (466 m), Monte Veneretta (884 m), Monte Lapa (771 m), Monte Castelluccio (501 m), Monte Pernice (712 m), and Monte Galfa (1000 m). All are characterized by cliffs and narrow river valleys (as for example: T. Mortelletto and T. S. Antonio). From a geological viewpoint, the study area belongs mainly to the Longi-Taormina Unit, and Capo S. Andrea Unit (Lentini et al. 2000). The lower subunit is formed by an epimetamorphic basement, capped by a Mesozoic-Cenozoic sedimentary cover (bottom to top) formed from continental red beds, evolving upwards to platform carbonates (Catalano 2010).

From the climatic viewpoint, the screening of the weather stations of Taormina and its surroundings show a

decreasing gradient of the mean annual temperature corresponding to increasing altitude, which correlates as follows: Taormina Isola Bella (18–19°), M.Tauro–M. Castelluccio (17–18°), Castelmola–M.Petraro–M.Castelluccio (16–17°), Roccella–Monte Ziretto–Costa Ogliastrì–M.Lapa–M.Pernice (15–16°), M.Lapa–M.Pernice (14–15°), and M.Veneretta–M.Galfa (13–14°).

Annual precipitation at the same sites ranges from 600 mm (along the coast) to about 1000 mm (inland area).

According to the bioclimatic classification proposed by Rivas-Martínez (1993, 2004), the investigated territory is referred to the Mediterranean pluviseasonal oceanic bioclimate, with thermotypes ranging from the low thermomediterranean to the supramediterranean, and ombrotypes from the semiarid to lower humid (Brullo et al. 1996).

### Material and methods

Several field trips to the Taormina region were carried out during the years 2004–2014. Plants were collected from all over the study area and also throughout the year to obtain a complete inventory of existing species, noting their local distribution and preferred habitat. The exsiccata (preserved in the Herbarium of University of Catania) were studied with the help of Flora Europaea



Figure 1. The study area in East Sicily.

(Tutin et al. 1964–80), the Italian floras (Fiori 1923–29; Pignatti 1982) and systematic revisions and monographs.

Taxonomic nomenclature follows Giardina et al. (2007) and monographic studies on critical genera, such as *Dianthus* (Bacchetta et al. 2010), *Limonium* (Brullo 1980), and *Ophrys* (Delforge 2005). In the list, species and families follow alphabetical order. For each taxon, life form, chorological element, habitat, current protection and IUCN status are reported. The life form follows the Raunkiaer system as proposed by Pignatti (1982). The classification of taxa takes into account the bibliographic data and our own field research. Moreover, each taxon's frequency in the study area is indicated using the following abbreviations: CC (very common, spread in several habitats with large populations), C (common, spread in some habitats with large populations), NC (not common, localized on specific habitats or restricted altitudinal range or small populations recorded in more than ten sites), R (rare, recorded in four to ten sites), RR (very rare, recorded in one to three sites), NR (not recorded).

Conservation status assessment of threatened taxa is quoted according to IUCN criteria (Conti et al. 1992, 1997; IUCN 2005, 2008; Pignatti et al. 2001; Rossi et al. 2013; Scoppola and Spampinato 2005) but considering the results of this field investigation, the extinction risk category of some surveyed taxa, according to the IUCN guidelines (IUCN 2008), has been checked. Protected taxa are quoted according to CITES (CITES 1973), and also Habitat Directive 92/43 (EEC 1992). The punctual distribution of outstanding species was mapped using ArcGis 9.2 (ESRI Inc., Redlands, CA, USA).

## Results

The vascular flora of this area consists of 624 specific and infraspecific taxa. The most represented families are Asteraceae (77 taxa), Fabaceae (73 taxa), Poaceae (63 taxa) Orchidaceae (23 taxa), Lamiaceae (23 taxa), and Apiaceae (23 taxa). The life form spectrum of the vascular flora indicates the predominance of therophytes (40%), with hemicryptophytes (27%), and Geophytes (14%) (Figure 2). From a chorological viewpoint, most species show a Mediterranean distribution (228 taxa) while another 89 taxa have a restricted range, with predominance of the western Mediterranean (Figure 3). In the district of Taormina, the endemic taxa are particularly interesting as they represent 5% of the total amount of this flora. In fact, four taxa are restricted to the Taormina region: *Colymbada tauromenitana*, *Limonium ionicum*, *Limonium tauromenitanum* and *Brassica raimondoi*, while nine taxa are Sicilian endemics (*Echium italicum* subsp. *siculum*, *Dianthus siculus* subsp. *siculus*, *Tolpis gussonei*, *Tolpis sexaristata*, *Scutellaria rubicunda* subsp. *linnaeana*, *Anthyllis vulneraria* subsp. *busambarensis*, *Bellevalia dubia* subsp. *dubia*, *Salix gussonei* and *Odontites*

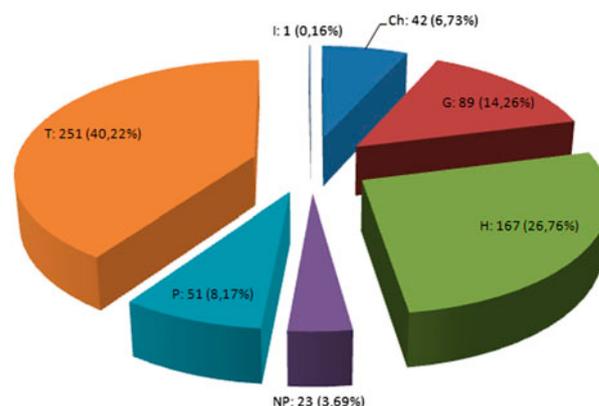


Figure 2. Life-form spectrum.

*bocconeii* subsp. *bocconeii*). Moreover, there are two Sicily–Sardinia–Corsica endemics and 23 are endemic to southern Italy and Sicily. The analysis of habitats revealed that endemic taxa are most abundant on cliffs and dry grasslands.

A large number of surveyed taxa are endangered, since 31 are included in the IUCN Regional Red List, 23 species of Orchidaceae are protected by the CITES and one is in the EU 92/43 Habitat Directive. In particular with regards to the regional Italian red list (Conti et al. 1997), 15 of them are considered Low Risk (LR), five Vulnerable (VU), eight Endangered (EN), two Critically Endangered (CR) and with one data deficient (DD). The recent partial new red list (Rossi et al. 2013) takes into account only *Dianthus rupicola* subsp. *rupicola* (LC category), a Policy Species included in the Annex II of European Habitat Directive.

## Floristic List

### Pteridophyta

#### Adiantaceae

*Adiantum capillus-veneris* L. – G rhiz – Boreo-Trop. – Dripping cliffs, rocky springs – C.

#### Aspidiaceae

*Dryopteris pallida* (Bory) Maire et Petitm. subsp. *pallida* – G rhiz – Euro-Med. – Shady rocks – C.

#### Aspleniaceae

*Asplenium onopteris* L. – H ros – Euro-Med. – Shady cliffs – C.

*Asplenium obovatum* Viv. subsp. *obovatum* – H ros – Med. – Shady cliffs – NC.

*Asplenium ceterach* L. subsp. *ceterach* – H ros – Euro-Med.-Iran.-Tur – Cliffs and walls – CC.

#### Equisetaceae

*Equisetum ramosissimum* Desf. – G rhiz – Boreo-Trop. – Water courses – C.

*Equisetum telmateia* Ehrh. – G rhiz – Circumbor. – Water courses and wet woods – NC.

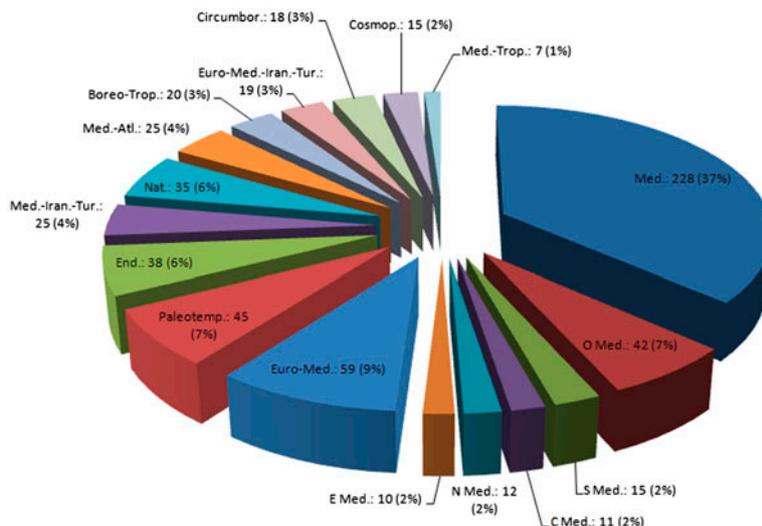


Figure 3. Chorology.

**Hemionitidaceae**

*Anogramma leptophylla* (L.) Link – T caesp – Boreo-Trop. – Shady cliffs and walls – C.

*Cosentinia vellea* (Aiton) Tod. subsp. *bivalens* (Reichstein) Rivas-Mart. & Salvo – H ros – Med.-Iran.-Tur. – LR – Shady cliffs – RR.

**Hypolepidaceae**

*Pteridium aquilinum* (L.) Kuhn subsp. *aquilinum* – G rhiz – Cosmop. – Shrubs and uncultivated lands – CC.

**Polypodiaceae**

*Polypodium cambricum* L. – H ros – Euro-Med. – Cliffs and shady walls – CC.

**Pteridaceae**

\**Pteris cretica* L. – H ros – Med.-Trop. – Shady cliffs – NR (Lojacono 1909).

\**Pteris vittata* L. – H ros – Med.-Trop. – Shady cliffs – NR (Nicotra 1893).

**Selaginellaceae**

*Selaginella denticulata* (L.) Spring. – Ch rept – Med. – Shady sites – CC.

**Sinopteridaceae**

*Cheilanthes maderensis* Lowe – H ros – O Med. – VU – Shady cliffs – R.

\**Cheilanthes tinaei* Tod. – H ros – Med. – Shady cliffs – NR (Nicotra and Campagna 1908). Notes: Probably confused with *C. maderensis*.

**Angiospermae (Magnoliopsida)****Acanthaceae**

*Acanthus mollis* L. – H scap – O Med. – Uncultivated shady lands, woods and scrublands – CC.

**Aizoaceae**

*Aptenia cordifolia* (L. fil.) Schwantes. – Ch suffr – Nat. (Sudafr.) – Walls, ruins and gardens – C.

**Amaranthaceae**

*Achyranthes sicula* (L.) All. – Ch suffr – O Med – Rocks and uncultivated lands – C.

*Amaranthus deflexus* L. – T scap – Avv – Ruins and gardens – C.

**Anacardiaceae**

*Pistacia lentiscus* L. – P caesp – Med – Scrublands – C.

*Pistacia terebinthus* L. – P caesp – Med – Scrublands and woods – NC.

*Rhus coriaria* L. – P caesp – Med – Dry grasslands and uncultivated lands – C. Notes: Once cultivated for the extraction of tannin.

**Apiaceae**

*Ammoides pusilla* (Brot.) Breistr. – T scap – Med. – Ephemeral meadows and dry grasslands – CC.

*Anthriscus nemorosa* (Bieb.) Sprengel – H scap – Med. – Woods – C.

*Apium nodiflorum* (L.) Lag. – H scap – Paleotemp. – Water courses – C.

*Athamanta sicula* L. – H scap – SO-Med. – Limestone cliffs – NC.

*Bupleurum fruticosum* L. – NP – Med. – Cliffs – R.

*Cachrys ferulacea* (L.) Calestani – H scap – Med.-Iran.-Tur. – Dry grasslands – RR.

*Crithmum maritimum* L. – Ch suffr – Med.-Atl. – Maritime cliffs – C.

*Daucus carota* L. subsp. *carota* – H bien – Euro-Med. – Uncultivated lands and dry grasslands – CC.

*Elaeoselinum asclepium* (L.) Bertol. subsp. *asclepium* – H scap – Med. – Dry grasslands – C.

*Eryngium campestre* L. – H scap – Euro-Med.-Iran.-Tur. – Dry grasslands – C.

*Ferula communis* L. – H scap – Med. – Dry grasslands and uncultivated lands – CC.

*Foeniculum vulgare* Miller subsp. *piperitum* (Ucria) Coutinho – H scap – S Med. – Dry grasslands and uncultivated lands – CC.

*Kundmannia sicula* (L.) DC. – H scap – Med. – Dry grasslands and uncultivated lands – NC.  
*Oenanthe lachenalii* Gmelin – H scap – Med.-Atl. – Pastures – NC.  
*Oenanthe pimpinelloides* H scap – Med.-Atl. – Pastures – NC.  
*Opopanax chironium* (L.) Koch – H scap – Med. – Dry grasslands and pastures – C.  
*Pimpinella gussonei* Bertol. – H scap – End. It.-sic. – Woods and dry grasslands – NC.  
*Seseli tortuosum* L. subsp. *tortuosum* – H bien – Med. – Cliffs and dry grasslands – R.  
*Smyrniolum olusatrum* L. – H bien – Med. – Uncultivated lands and ruins – CC.  
*Thapsia garganica* L. susp. *messanensis* (Guss.) Brullo, Guglielmo, Pasta, Pavone & Salmeri – H scap – End. pelorit. – Dry grasslands and pastures – NC.  
*Tordylium apulum* L. – T scap – Med. – Uncultivated lands – CC.  
*Torilis arvensis* (Hudson) Link subsp. *arvensis* – T scap – Euro-Med. – Dry grasslands and uncultivated lands – C.  
*\*Orlaya daucooides* (L.) Greuter – T scap – Med. – Uncultivated lands – NR (Gussone 1845).

#### Apocynaceae

*Nerium oleander* L. – P caesp – Med – River – C.  
*Vinca major* L. – Ch rept – Med – Woods – NC.

#### Araliaceae

*Hedera helix* L. subsp. *helix* – P lian – Paleotemp. – Woods and rocks – CC.

#### Aristolochiaceae

*\*Aristolochia clusii* Lojac. – LR – G bulb – End. It.-sic. – Woods – NR (Nardi 1984).

#### Asteraceae

*Achillea ligustica* All. – H scap – Med. – Uncultivated lands and road edges – C.  
*Andryala integrifolia* L. – T scap – Med. – Uncultivated lands and ephemeral meadows – C.  
*Anthemis arvensis* L. subsp. *arvensis* – T scap – Med. – Pastures and uncultivated lands – CC.  
*Anthemis arvensis* L. subsp. *sphacelata* (C. Presl) R. Fern. – Tscap/H ros – End. It.-sic. – Pastures and uncultivated lands – R.  
*Artemisia arborescens* L. – NP – Med. – Scrublands and synanthropic places – C.  
*Atractylis cancellata* L. – T scap – Med. – Ephemeral meadows and dry grasslands – C.  
*Bellis annua* L. – T scap – Med. – Ephemeral meadows and uncultivated lands – C.  
*Bellis perennis* L. – H ros – Euro-Med. – Uncultivated lands and meadows – C.  
*\*Bellis margaritifolia* Huter in Jahreskat – H ros – End. It.-sic. – Uncultivated lands and meadows – NR (Raimondo et al. 1994).

*Bidens pilosa* L. var. *minor* (Blume) Sherff – T scap – Avv. – Uncultivated lands and synanthropic places – C.  
*Bidens tripartita* L. – T scap – Paleotemp. – Uncultivated lands and synanthropic places – C.  
*Calendula arvensis* L. subsp. *arvensis* – T scap – Euro-Med.-Iran.-Tur – Uncultivated lands and road edges – CC.  
*Calendula suffruticosa* Vahl subsp. *fulgida* (Rafin.) Ohle – Ch suffr – O Med. – LR – Cliffs, uncultivated lands and road edges – NC.  
*\*Calendula suffruticosa* Vahl subsp. *suffruticosa* – Ch suffr – O Med. – Uncultivated lands and road edges – NR (Lojacono 1903).  
*Carduus pycnocephalus* L. – H bien – Med. – Uncultivated lands and road edges – CC.  
*Carlina gummifera* (L.) Less. – H ros – S Med. – Dry grasslands and uncultivated lands – C.  
*Carlina hispanica* Lam. subsp. *globosa* (Arcang.) Meusel & Kástner – H scap – End. It.-sic. – Dry grasslands and uncultivated lands – C.  
*Carthamus lanatus* L. subsp. *lanatus* – T scap – Med.-Iran.-Tur. – Dry grasslands and uncultivated lands – CC.  
*Centaurea napifolia* L. – H scap – O Med. – Uncultivated lands and road edges – C.  
*Centaurea sicula* L. (= *C. nicaeensis* All.) – H bien – O Med. – Dry grasslands and uncultivated lands – C.  
*Chondrilla juncea* L. – H scap – Euro-Med.-Iran.-Tur – Uncultivated lands and road edges – C.  
*Chrysanthemum coronarium* L. – T scap – Med. – Uncultivated lands and road edges – CC.  
*Cirsium creticum* (Lam.) D'Urv. subsp. *triumfetti* (Lac.) Werner – H bien – C Med. – Water courses – C.  
*Cirsium scabrum* (Poir.) Dur. et Barr. – H scap – O Med. – Uncultivated lands – C.  
*Coleostephus myconis* (L.) Reichenb. f. – T scap – Med. – Uncultivated lands and road edges – C.  
*Colymbada tauromenitana* (Guss.) Holub (= *Centaurea tauromenitana* Guss.) – Ch frut – End. pelorit. – VU – Cliffs – NC.  
*Conyza bonariensis* (L.) Cronq. – T scap – Avv. (America tropic.) – Uncultivated lands and road edges – CC.  
*Crepis leontodontoides* All. – H ros – C Med. – Woods – C.  
*Crepis vesicaria* L. – T scap – Med. – Uncultivated lands and road edges – C.  
*\*Crepis foetida* L. – T scap – Paleotemp. – Uncultivated lands and road edges – NR (Gussone 1845)  
*Crupina crupinastrum* (Moris) Vis. – T scap – Med. – Dry grasslands and uncultivated lands – CC.  
*Cynara cardunculus* L. subsp. *cardunculus* – H scap – Med. – Pastures and uncultivated lands – CC.  
*Dittrichia graveolens* (L.) Greuter – T scap – Med. – Uncultivated lands and ruins – CC.  
*Dittrichia viscosa* (L.) Greuter – H scap – O Med. – Uncultivated lands and synanthropic places – CC.

*Eupatorium cannabinum* L. – H scap – Euro-Med. – Water courses – C.  
*Erigeron karvinskianus* DC. – H scap – Nat. – Walls – C  
*Filago eriocephala* Guss. – T scap – Med. – Ephemeral meadows and uncultivated lands – C.  
*Filago pyramidata* L. – T scap – Euro-Med. – Ephemeral meadows and uncultivated lands – C.  
*Galactites elegans* (All.) Soldano – H bien – Med. – Uncultivated lands and synanthropic places – CC.  
*Hedypnois cretica* (L.) Dum.-Courset – T scap – Med. – Ephemeral meadows and uncultivated lands – C.  
*Hedypnois rhagadioloides* (L.) F.G. Schmidt – T scap – Med. – Ephemeral meadows and uncultivated lands – C.  
*Helichrysum italicum* (Roth) Don subsp. *siculum* (Jord. & Fourr.) Galbany L. Saèz & Benedi – Ch suffr – End. Sic. – Cliffs and garrigues – R.  
*Helminthotheca echioides* (L.) Holub – T scap – Med. – Dry grasslands and uncultivated lands – C.  
*Hyoseris radiata* L. – H ros – Med. – Dry grasslands and uncultivated lands – C.  
*Hyoseris scabra* L. – T ros – Med. – Ephemeral meadows and uncultivated lands – NC.  
*Hypochaeris achyrophorus* L. – T scap – Med. – Ephemeral meadows and uncultivated lands – C.  
*Hypochaeris hispida* Willd. – H ros – End. It.-sic. – Pastures – R.  
*Hypochaeris laevigata* (L.) Ces., Pass. & Gibelli – H ros – S Med. – Cliffs – C.  
*Klasea flavescens* (L.) Holub subsp. *cichoracea* (L.) Greuter & Wagenitz – H scap – S Med. – EN – Dry grasslands – RR.  
*Lactuca serriola* L. – H bien – Euro-Med.-Iran.-Tur – Uncultivated lands and road edges – C.  
*Leontodon tuberosus* L. – G rhiz – Med. – Pastures – C.  
*Logfia gallica* (L.) Cosson & Germ. – T scap – Euro-Med.-Iran.-Tur – Ephemeral meadows and uncultivated lands – C.  
*Onopordum illyricum* L. – H bien – Med. – Uncultivated lands and pastures – CC.  
*Pallenis spinosa* (L.) Cass. – T scap – Med. – Uncultivated lands and dry grasslands – CC.  
*Phagnalon rupestre* (L.) DC. subsp. *rupestre* – Ch suffr – O Med. – Scrublands and garrigues – NC.  
*Phagnalon saxatile* (L.) Cass. – Ch suffr – O Med. – LR – Cliffs and walls – NC.  
*Picris hieracioides* L. subsp. *spinulosa* (Guss.) Arcang. – H scap – N Med. – Uncultivated lands and road edges – CC.  
*Ptilostemon stellatus* (L.) Greuter – T scap – E Med. – Ephemeral meadows and uncultivated lands – NC.  
*Pulicaria dysenterica* (L.) Bernh. – H scap – Euro-Med. – Water courses – C.  
*Pulicaria odora* (L.) Rchb. – H scap – Med. – Dry grasslands and woods – C.  
*\*Pulicaria vulgaris* var. *graeca* (Schultz-Bip.) Fiori – T scap – Paleotemp – Muds and meadows – NR (Lojacono 1904).  
*Reichardia intermedia* (Schultz-Bip.) Samp. – T scap – Med. – Ephemeral meadows and uncultivated lands – C.

*Reichardia picroides* (L.) Roth var. *picroides* – H scap – Med. – Dry grasslands and uncultivated lands – C.  
*Rhagadiolus stellatus* (L.) Gaertner – T scap – Med. – Uncultivated lands – C.  
*Scolymus grandiflorus* Desf. – H scap – Med. – Uncultivated lands and road edges – C.  
*Scolymus hispanicus* L. var. *aggregatus* (Ruch.) F. M. Vazquez – H bien – Med. – Dry grasslands and uncultivated lands – C.  
*Scorzonera villosa* Scop. subsp. *columnae* (Guss.) Nyman – G rhiz – End. It.-sic. – Cliffs and pastures – NC.  
*Senecio vulgaris* L. – T scap – Paleotemp. – Uncultivated lands and synanthropic places – CC.  
*Silybum marianum* (L.) Gaertner – H bien – Med. – Uncultivated lands, ruins and road edges – CC.  
*Sonchus asper* (L.) Hill subsp. *asper* – T scap – Cosmop. – Uncultivated lands and road edges – C.  
*Sonchus oleraceus* L. – T scap – Cosmop. – Uncultivated lands and synanthropic places – CC.  
*Symphytotrichum squamatum* (Spreng.) G. L. Nesom (= *Aster squamatus* (Spreng.) Hieron) – H scap – Avv. – Uncultivated lands – CC.  
*Tagetes minuta* L. – T scap – Uncultivated lands and road edges – Nat. – C.  
*Tolpis umbellata* Bertol. – T scap – Med. – Ephemeral meadows and uncultivated lands – R.  
*Tolpis virgata* (Desf.) Bertol. subsp. *gussonei* (Fiori) Giardina & Raimondo – H scap – End. sic. – Cliffs and meadows – R.  
*\*Tolpis virgata* subsp. *sexaristata* (Biv.) Giardina & Raimondo – EN – H scap – End. sic. – Cliffs and meadows – NR (Gussone 1845).  
*Urospermum dalechampii* (L.) Schmidt – H scap – Med. – Dry grasslands and uncultivated lands – C.  
*Urospermum picroides* (L.) Schmidt – T scap – Med. – Uncultivated lands and synanthropic places – C.

### Boraginaceae

*Anchusa azurea* Mill. – H scap – Med.-Iran.-Tur. – Uncultivated lands and road edges – NC.  
*Borago officinalis* L. – T scap – Med. – Uncultivated lands and ruins – CC.  
*Cerintho major* L. subsp. *major* – G bulb – Med. – Uncultivated lands and ruins – CC.  
*Cynoglossum cheirifolium* L. – H bien – O Med. – Dry grasslands and uncultivated lands – NC.  
*Cynoglossum creticum* Miller var. *creticum* – H bien – Med.-Iran.-Tur. – Dry grasslands and uncultivated lands – C.  
*Echium arenarium* Guss. – H bien – C Med. – LR – Uncultivated lands and cliffs – NC.  
*Echium calycinum* Viv. – T scap – Med. – Uncultivated lands and rocky slopes – C.  
*Echium italicum* L. subsp. *siculum* (Lacaita) Greuter & Burdet – H bien – End. sic. – Uncultivated lands and dry grasslands – C.  
*Echium plantagineum* L. – T scap – Med. – Uncultivated lands and ruins – CC.

*Heliotropium europaeum* L. – T scap – Euro-Med.-Iran.-Tur – Uncultivated lands and ruins – CC.

*Myosotis ramosissima* Rochel in Schultes – T scap – Euro-Med.-Iran.-Tur – Ephemeral meadows – C.

### Brassicaceae

*Arabis rosea* DC. – H scap – E Med. – LR – Limestone cliffs – NC.

*Biscutella maritima* Ten. – T scap – SO-Med. – Uncultivated lands – C.

*Brassica fruticulosa* Cyr. – H scap – O Med. – Uncultivated lands – C.

*Brassica incana* Ten. – Ch suffr – C Med. – LR – Limestone cliffs – R.

*Brassica raimondoi* Sciandrello et al. – Ch suffr – End. pelorit. – CR – Cliffs – RR.

*Cakile maritima* Scop. – T scap – Med. – Beach drift lines – C.

*Capsella bursa-pastoris* (L.) Medicus – H bien – Cosmop. – Uncultivated lands – C.

*Cardamine hirsuta* L. – T scap – Circumbor. – Uncultivated lands – C.

*Coronopus didymus* (L.) Sm. – T rept – Avv. – Road edges – C.

\**Conringia orientalis* (L.) Dumort. – T scap – Euro-Med.-Iran.-Tur – Uncultivated lands – NR (Fiori 1924).

*Diplotaxis eruroides* (L.) DC. – T scap – Med.-Iran.-Tur. – Uncultivated lands – CC.

*Diplotaxis muralis* (L.) DC. – T scap – Euro-Med. – Uncultivated lands – C.

*Erucastrum virgatum* C. Presl – H scap – End. It.-sic. – Cliffs – R.

*Hirschfeldia incana* (L.) Lagrèze-Fossat subsp. *incana* – H scap – Med. – Ruins, uncultivated lands and along the roads – CC.

*Lobularia maritima* (L.) Desv. – H scap – Med.- Uncultivated lands, cliffs and walls – C.

*Matthiola incana* (L.) R. Br. subsp. *incana* – Ch suffr – NO-Med. – Maritime limestone cliffs – NC.

*Moricandia arvensis* (L.) DC. – T scap – O Med.- Uncultivated lands and dry grasslands – C.

*Rorippa nasturtium-aquaticum* (L.) Hayek (= *Nasturtium officinale* R. Br. in W. T. Aiton) – H scap – Boreo-Trop. – Water courses – C.

\**Sisymbrium altissimum* L. – T scap – Avv. – Ruins and along the roads – NR (Raimondo & Fici 1990).

*Sisymbrium erysimoides* Desf. – T scap – S Med.-Sah-Arab. – Uncultivated lands and along the roads – NC.

*Sisymbrium officinale* (L.) Scop. – T scap – Subcosm. – Ruins and along the roads – C.

### Cactaceae

*Opuntia amyclaea* Ten. (*O. maxima* Miller) – P succ – Nat. – Cliffs and ruins – C.

*Opuntia ficus-indica* (L.) Mill. – P succ – Nat. (Neotrop.) – Cliffs and ruins – CC.

*Opuntia tuna* (L.) Miller – P succ – Nat. – Cliffs and ruins – C.

### Campanulaceae

*Campanula dichotoma* L. – T scap – O Med. – Uncultivated lands – C.

*Campanula erinus* L. – T scap – Med. – Walls and shady cliffs – C.

*Jasione montana* L. subsp. *echinata* (Boiss. & Reut.) Rivas-Mart. – H scap – O Med. – Uncultivated lands and dry grasslands – NC.

*Trachelium caeruleum* L. – Ch suffr – O Med. – Shady walls – R.

### Capparidaceae

*Capparis orientalis* L. – Ch suffr – Med. – Iran. – Tur. – Cliffs and walls – C.

### Caprifoliaceae

*Lonicera etrusca* Santi – P lian – Med. – Woods and scrublands – C.

*Sambucus nigra* L. – P caesp – Euro-Med. – Wet woods – NC.

### Caryophyllaceae

*Arenaria serpyllifolia* L. subsp. *leptoclados* (Reichenb.) Nyman – T scap – Paleotemp. – Ephemeral meadows and uncultivated lands – C.

*Cerastium glomeratum* Thuill. – T scap – Circumbor. – Ephemeral meadows and uncultivated lands – CC.

*Cerastium semidecandrum* L. – T scap – Euro-Med. – Ephemeral meadows and uncultivated lands – C.

*Dianthus rupicola* Biv. subsp. *rupicola* – Ch suffr – End. It.-sic. – Limestone cliffs – NC.

*Dianthus siculus* C. Presl subsp. *siculus* – H scap – End. sic. – Limestone cliffs – R.

*Gypsophila arrostii* Guss. – Ch suffr – End. It.-sic. – Dry grasslands and cliffs – C.

*Petrorhagia prolifera* (L.) P. W. Ball & Heywood – T scap – Euro-Med. – Ephemeral meadows and uncultivated lands – C.

*Polycarpon tetraphyllum* (L.) L. – T scap – Med. – Walls and uncultivated lands – C.

*Silene coeli-rosa* (L.) Godron – T scap – O Med – Uncultivated lands – C.

*Silene colorata* Poiret – T scap – Med. – Ephemeral meadows and uncultivated lands – CC.

*Silene fruticosa* L. subsp. *fruticosa* – Ch suffr – E Med – Limestone cliffs – NC.

*Silene gallica* L. – T scap – Euro-Med. – Ephemeral meadows and uncultivated lands – C.

*Silene latifolia* Poiret subsp. *alba* (Miller) Greuter & Burdet – H bien – Circumbor. – Woods – C.

*Silene sicula* Ucria – H ros – End. It.-sic. – Cliffs and grasslands – R.

*Silene vulgaris* (Moench) Garcke subsp. *angustifolia* Hayek – H scap – Med. – Uncultivated lands and meadows – NC.

*Spergularia rubra* (L.) J. & C. Presl subsp. *rubra* – H caesp – Paleotemp. – Uncultivated lands and synanthropic places – C.

*Stellaria media* (L.) Vill. subsp. *media* – T rept – Cosmop. – Synanthropic places – C.

**Celastraceae**

*Euonymus europaeus* L. – P caesp – Euro-Med.-Iran.-Tur – Woods – NC.

**Chenopodiaceae**

*Chenopodium album* L. – T scap – Cosmop. – Synanthropic places – CC.

*Chenopodium murale* L. – T scap – Boreo-Trop. – Synanthropic places – CC.

*Halimione portulacoides* (L.) Aellen – Ch frut – Circumbor. – Salt scrublands – R.

*Salsola kali* L. subsp. *tragus* (L.) Nyman – T scap – Circumbor. – Beach drift lines – NC.

*Salsola oppositifolia* Desf. – NP caesp – S Med. – Scrublands – NC.

**Cistaceae**

*Cistus creticus* L. subsp. *creticus* – NP – E Med. – Scrublands and garrigues – C.

*Cistus salvifolius* L. – NP – Med.-Iran.-Tur. – Scrublands and garrigues – C.

*Helianthemum salicifolium* (L.) Miller – T scap – Med. – Ephemeral meadows – C.

*Tuberaria plantaginea* (Willd.) Gallego – T scap – Euro-Med. – Ephemeral meadows – C.

**Convolvulaceae**

*Calystegia sylvatica* (Kit.) Griseb. – H scand – Med.-Iran.-Tur. – Hedges, uncultivated lands and scrublands – CC.

*Convolvulus althaeoides* L. – H scand – Med. – Uncultivated lands, dry grasslands and road edges – CC.

*Convolvulus arvensis* L. – G rhiz – Paleotemp – Gardens and uncultivated lands – C.

*Convolvulus elegantissimus* Miller – H scand – O Med. – Uncultivated lands, dry grasslands and road edges – NC.

*Convolvulus sabatius* Viv. subsp. *mauritanicus* (Boissier) Murbeck – G rhiz – Nat. – EN – Limestone cliffs and dry grasslands – R.

\**Convolvulus siculus* L. – T scap – Med – Hedges, fields and walls – NR – (Gussone 1845).

*Ipomoea purpurea* (L.) Roth – G rhiz – Nat. – Ruins and synanthropic places – NC.

**Crassulaceae**

*Aeonium arboreum* (L.) Webb & Berth. – NP – Nat. – Walls and rocks – C.

*Aeonium decorum* Webb. ex C. Bolle – NP succ – Nat. – Walls and rocks – C.

*Kalanchoe daigremontiana* Hamet & Perr. – Ch succ – Nat. – Roofs and walls – C.

*Sedum album* L. – Ch succ – Paleotemp. – Cliffs, walls – C.

*Sedum caeruleum* L. – T scap – S Med. – Gravels and road edges – C.

*Sedum cepaea* L. – T scap – Euro-Med. – Walls and slopes – C.

*Sedum dasyphyllum* L. var. *glanduliferum* (Guss.) Moris – Ch succ – Euro-Med. – Cliffs and walls – NC.

*Sedum rubens* L. – T scap – Med.-Atl. – Cliffs, gravels, walls – C.

*Sedum sediforme* (Jacq.) Pau – Ch succ – Med. – Rocks and limestone cliffs – C.

*Sedum stellatum* L. – T scap – Med. – Walls and rocks – C.

*Sedum tenuifolium* (Sm.) Strobl – Ch succ – Med. – Cliffs and gravels – C.

*Umbilicus horizontalis* (Guss.) DC. – G bulb – Med.-Trop. – Shady cliffs and walls – C.

*Umbilicus rupestris* (Salisb.) Dandy – G bulb – Med.-Trop. – Shady cliffs and walls – C.

**Dipsacaceae**

*Dipsacus fullonum* L. – H bien – Euro-Med. – Wet uncultivated lands – C.

*Lomelosia cretica* (L.) Greuter et Burdet – Ch frut – C Med. – Limestone cliffs – NC.

*Sixalis atropurpurea* (L.) Greuter & Burdet subsp. *maritima* (L.) Greuter & Burdet – H bien – Med. – Uncultivated lands – C.

**Ericaceae**

*Erica arborea* L. – P caesp – Med.-Trop. – Scrublands and woods – NC.

**Euphorbiaceae**

*Chamaesyce canescens* (L.) Prokh. – T rept – Euro-Med. – Uncultivated lands and road edges – C.

*Chrozophora tinctoria* (L.) A. Juss. – T scap – Med.-Iran.-Tur. – Uncultivated lands – C.

*Euphorbia ceratocarpa* Ten. – Ch suffr – End. It.-sic. – Scrublands, uncultivated lands and road edges – C.

*Euphorbia characias* L. – NP – O Med. – Scrublands and woods – C.

*Euphorbia dendroides* L. – NP – Med. – Limestone cliffs and scrublands – C.

*Euphorbia exigua* L. – T scap – Euro-Med. – Uncultivated lands – C.

*Euphorbia helioscopia* L. – T scap – Paleotemp. – Uncultivated lands – CC.

*Euphorbia peplus* L. – T scap – Circumbor. – Uncultivated lands – C.

*Mercurialis annua* L. – T scap – Paleotemp. – Uncultivated lands, gardens and ruins – CC.

*Ricinus communis* L. – T scap – Nat. (Paleotrop.) – Uncultivated lands and ruins – C.

**Fabaceae**

*Anagyris foetida* L. – P caesp – S-Med. – Garrigues and scrublands – NC.

*Anthyllis vulneraria* L. subsp. *busambarensis* (Lojac.) Pignatti – H scap – End. sic. – LR – Cliffs – R.

*Anthyllis vulneraria* L. subsp. *maura* (G. Beck) Maire – H scap – O Med. – Dry grasslands – C.

*Astragalus echinatus* Murray – T scap – Med. – Ephemeral meadows – R.

*Astragalus hamosus* L. – T scap – Med. – Pastures and uncultivated lands – C.

*Astragalus pelecinus* (L.) Barneby – T scap – Med. – Ephemeral meadows – NC.

*Astragalus sesameus* L. – T scap – O Med. – Ephemeral meadows – NC.

- Bituminaria bituminosa* (L.) Stirton – H scap – Med. – Pastures and uncultivated lands – CC.
- Calicotome infesta* (C. Presl) Guss. – P caesp – C Med. – Garrigues and scrublands – C.
- Ceratonia siliqua* L. – P caesp – Med. – Scrublands and semi-rocky habitats – NC.
- Coronilla scorpioides* (L.) Koch – T scap – Med.-Iran.-Tur. – Ephemeral meadows – C.
- Coronilla valentina* L. subsp. *valentina* – Ch – Med. – Cliffs and garrigues – R.
- Cytisus villosus* Pourret – P caesp – Med. – Scrublands and woods – NC.
- Dorycnium rectum* (L.) Ser. – H scap – Med. – Water courses – NC.
- Hippocrepis biflora* Sprengel – T scap – Med. – Ephemeral meadows and uncultivated lands – C.
- Hippocrepis ciliata* Willd. – T scap – Med. – Ephemeral meadows – C.
- Hippocrepis emerus* (L.) Lassen subsp. *emeroides* (Boiss. & Spruner) Lassen – NP – Med. – Woods and scrublands – R.
- Hippocrepis multisiliquosa* L. – T scap – O Med. – Ephemeral meadows and uncultivated lands – NC.
- Hymenocarpus circinnatus* (L.) Savi – H scap – Med. – Ephemeral meadows and pastures – R.
- Lathyrus aphaca* L. – T scap – Euro-Med. – Uncultivated lands – C.
- Lathyrus articulatus* L. – T scap – Med. – Uncultivated lands – CC.
- Lathyrus grandiflorus* Sm. – G rhiz – NE-Med. – Uncultivated lands – NC.
- Lotus angustissimus* L. – T scap – Euro-Med.-Iran.-Tur – Ephemeral meadows – NC.
- Lotus conimbricensis* Brot. – T scap – Med. – Ephemeral meadows – R.
- Lotus cytisoides* L. var. *cytisoides* – Ch suffr – Med. – Maritime cliffs – C.
- Lotus edulis* L. – T scap – Med. – Uncultivated lands – CC.
- Lotus ornithopodioides* L. – T scap – Med. – Uncultivated lands and pastures – CC.
- Lupinus angustifolius* L. subsp. *angustifolius* – T scap – Med. – Uncultivated lands – C.
- Medicago doliata* Carmign. – T scap – Med. – Uncultivated lands – C.
- Medicago intertexta* (L.) Miller – T scap – Med. – Ephemeral meadows and uncultivated lands – C.
- Medicago minima* var. *recta* (Desf.). – T scap – Euro-Med. – Ephemeral meadows and uncultivated lands – C.
- Medicago monspeliaca* (L.) Trautv. – T scap – Med. – Ephemeral meadows and uncultivated lands – NC.
- Medicago orbicularis* (L.) Bartal. – T scap – Med.-Iran.-Tur. – Uncultivated lands – C.
- Medicago polymorpha* var. *polymorpha* L. – T scap – Med.-Iran.-Tur. – Uncultivated lands – C.
- Medicago truncatula* var. *truncatula* Gaertner – T scap – Med.-Atl. – Uncultivated lands and pastures – C.
- Melilotus elegans* Ser. – T scap – S Med. – Uncultivated lands – R.
- Melilotus italicus* (L.) Lam. – T scap – Med. – Uncultivated lands – C.
- Melilotus sulcatus* Desf. – T scap – Med. – Uncultivated lands – C.
- Onobrychis aequidentata* (Sm.) Dum.-Urville – T scap – Med. – Ephemeral meadows and uncultivated lands – R.
- Onobrychis caput-galli* Lam. – T scap – Med. – Ephemeral meadows and uncultivated lands – CC.
- Ononis reclinata* L. – T scap – Med. – Uncultivated lands – CC.
- Ononis sieberi* DC. – T scap – C Med. – Ephemeral meadows and uncultivated lands – R.
- Ornithopus compressus* L. – T scap – Med. – Ephemeral meadows and uncultivated lands – C.
- Scorpiurus muricatus* subsp. *subvillosus* L. – T scap – Med. – Ephemeral meadows and uncultivated lands – C.
- Spartium junceum* L. – P caesp – (Nat.) Med. – Scrublands – C.
- Sulla capitata* B. H. Choi & H. Ohashi – T scap – O Med. – Uncultivated lands and pastures – C.
- Sulla coronaria* (L.) Medik. – T scap – Med. – Uncultivated lands and pastures – CC.
- Tetragonolobus purpureus* Moench – T scap – Med. – Uncultivated lands and pastures – C.
- Trifolium arvense* L. – T scap – Euro-Med.-Iran.-Tur – Uncultivated lands and pastures – C.
- Trifolium campestre* Schreber – T scap – Euro-Med. – Uncultivated lands and pastures – CC.
- Trifolium cherleri* L. – T scap – Med. – Uncultivated lands and ephemeral meadows – C.
- Trifolium glomeratum* L. – T scap – Med.-Atl. – Uncultivated lands and ephemeral meadows – NC.
- Trifolium incarnatum* L. subsp. *molinerii* (Hornem.) Syme – T scap – Euro-Med. – Uncultivated lands and pastures – NC.
- Trifolium nigrescens* Viv. subsp. *nigrescens* – T scap – Med. – Uncultivated lands and pastures – C.
- Trifolium pratense* L. subsp. *pretense* – T scap – Paleotemp. – Uncultivated lands and ephemeral meadows – C.
- Trifolium resupinatum* L. – T rept – Med. – Wet uncultivated lands – C.
- Trifolium scabrum* L. – T rept – Med. – Uncultivated lands and ephemeral meadows – C.
- Trifolium stellatum* L. – T scap – Med.-Iran.-Tur. – Uncultivated lands and ephemeral meadows – CC.
- Trifolium subterraneum* L. subsp. *subterraneum* – T rept – Euro-Med. – Meadows and pastures – C.
- Trifolium suffocatum* L. – T scap – Med.-Atl. – Uncultivated lands and ephemeral meadows – NC.
- Trifolium tomentosum* L. – T rept – Med. – Uncultivated lands and ephemeral meadows – NC.
- Tripodion tetraphyllum* (L.) Fourr. – T scap – Med. – Uncultivated lands – C.
- Vicia bithynica* (L.) L. – T scap – Med. – Uncultivated lands – NC.
- Vicia grandiflora* Scop. – H scap – Euro-Med. – Uncultivated lands – NC.
- Vicia hybrida* L. – T scap – Med. – Uncultivated lands – C.

*Vicia lutea* subsp. *lutea* L. – T scap – Med. – Uncultivated lands and pastures – C.

*Vicia peregrina* L. – T scap – Med. – Uncultivated lands and pastures – C.

*Vicia sativa* L. subsp. *sativa* – T scap – Med.-Iran.-Tur. – Uncultivated lands – CC.

*Vicia villosa* Roth subsp. *villosa* – T scap – Euro-Med. – Uncultivated lands – C.

### Fagaceae

*Castanea sativa* Miller – P scap – Euro-Med. – Woods – R.

*Quercus congesta* C. Presl – P caesp – C Med. – Woods – NC.

*Quercus ilex* L. – P scap – Med. – Woods and maquis – NC.

*Quercus virgiliana* (Ten.) Ten. – P scap – C Med. – Woods – C.

### Gentianaceae

*Blackstonia acuminata* (W. D. J. Koch & Ziz) Domin – T scap – Euro-Med. – Ephemeral meadows. – C.

*Centaurium erythraea* Rafin subsp. *erythraea* – H bien – Euro-Med. – Scrublands and garrigues – C.

*Centaurium maritimum* (L.) Fritsch – T scap – Med. – Ephemeral meadows – NC.

### Geraniaceae

*Erodium chium* (L.) Willd. – T scap – Med. – Uncultivated lands, pastures and roadsides – C.

*Erodium ciconium* (L.) L'Her. – T scap – Euro-Med. – Pastures, uncultivated lands and ruins – C.

*Erodium cicutarium* (L.) L'Her. – T scap – Paleotemp. – Uncultivated lands and road edges – CC.

*Erodium malacoides* (L.) L'Her. – T scap – Med. – Uncultivated lands, dry pastures and roadsides – CC.

*Geranium columbinum* L. – T scap – Circumbor. – Uncultivated lands and road edges – C.

*Geranium dissectum* L. – T scap – Circumbor. – Wet uncultivated lands – C.

*Geranium lucidum* L. – T scap – Paleotemp. – Uncultivated lands and road edges – CC.

*Geranium molle* L. subsp. *molle* – T scap – Paleotemp. – Uncultivated lands and dry pastures – CC.

*Geranium robertianum* L. subsp. *purpureum* (Vill.) Nyman – T scap – Paleotemp. – Uncultivated lands and wood edges – C.

*Geranium rotundifolium* L. – T scap – Euro-Med. – Uncultivated lands and road edges – CC.

### Guttiferae

*Hypericum hircinum* L. subsp. *majus* (Aiton) N. K. B. Robson – NP – Med. – Water courses and shady localities – C.

*Hypericum perforatum* L. – H scap – Med. – Scrublands and uncultivated lands – C.

*Hypericum perforatum* L. subsp. *perforatum* – H scap – Paleotemp. – Dry grasslands, scrublands and uncultivated lands – C.

*Hypericum triquetrifolium* Turra – H scap – O Med. – Uncultivated lands – C.

### Hydrophyllaceae

*Wigandia caracasana* Kunth in Humb. – P scap – Nat. – Cultivated for ornament and spontaneous locally – NC.

### Juglandaceae

*Juglans regia* L. – P scap – Nat. (SW-Asiat.) – Cultivated and water courses – NC.

### Lamiaceae

*Ajuga chamaepitys* (L.) Schreber subsp. *chamaepitys* – T scap – Med. – Ephemeral meadows and uncultivated lands – C.

*Ajuga iva* (L.) Schreber – Ch suffr – Med. – Dry grasslands and uncultivated lands – C.

*Ajuga reptans* L. – H rept – Euro-Med.-Iran.-Tur – Wet scrublands and wet grounds – R.

*Ballota hispanica* (L.) Bentham – Ch frut – C Med. – Cliffs – NC.

*Calamintha nepeta* (L.) Savi subsp. *nepeta* – H scap – Euro-Med. – Dry grasslands and uncultivated lands – CC.

*Clinopodium vulgare* L. subsp. *arundanum* (Boiss.) Nyman – H scap – O Med. – Woods – NC.

*Lamium pubescens* Bentham – H scap – End. It.-sic. – Woods – R.

\**Lavandula multifida* L. – EN – Ch frut – O Med – Dry grasslands and garrigues – NR. Notes: In Italy it occurs to Capo dell'Armi (Calabria), while in Sicily it grows at Monte Pellegrino (Palermo) and at Capo Sant'Alessio (Messina), where it is highly endangered by human pressure. It has disappeared in other historic localities such as Capo Scaletta and Taormina (Lojacono 1904; Picone & Crisafulli 2006).

*Melissa officinalis* L. subsp. *altissima* (Sm.) Arcangeli – H scap – Med. – Scrublands and wet grounds – R.

*Mentha pulegium* L. – H scap – Euro-Med.-Iran.-Tur – Marshes and wet grounds – NC.

*Mentha suaveolens* Ehrh. subsp. *suaveolens* – H scap – Euro-Med. – Marshes, water courses and wet grounds – C.

*Micromeria consentina* (Ten.) N. Terracc. – Ch suffr – End. It.-sic. – Cliffs – NC.

*Micromeria graeca* (L.) Bentham subsp. *tenuifolia* (Ten.) Nyman – Ch suffr – End. It.-sic. – Cliffs and dry grasslands – C.

*Origanum vulgare* L. subsp. *viridulum* (Martin-Donos) Nyman – H scap – Med.-Iran.-Tur. – Meadows and dry grasslands – C.

*Phlomis fruticosa* L. – NP – E Med. – Cliffs and garrigues – C.

*Prasium majus* L. – Ch frut – Med. – Garrigues and scrublands – C.

*Salvia verbenaca* L. – H scap – Med.-Atl. – Uncultivated lands and pastures – C.

\**Salvia viridis* L. – LR – T scap – Med. – Dry grasslands and garrigues – NR (Zodda 1908).

*Scutellaria rubicunda* Hornem. – H scap – End. sic. – LR – Woods – R.

*Sideritis romana* L. – T scap – O Med. – Uncultivated lands – CC.

*Teucrium flavum* L. subsp. *flavum* – Ch frut – Med. – Cliffs and garrigues – C.

*Teucrium fruticans* L. – NP – O Med. – Cliffs and garrigues – C.

\**Moluccella spinosa* L. – T scap – Med. – Uncultivated lands – NR (Gussone 1845).

#### Linaceae

*Linum bienne* Miller – H bien – Med.-Atl. – Dry grasslands and uncultivated lands – R.

*Linum decumbens* Desf. – T scap – S Med. – Dry grasslands and uncultivated lands – NC.

*Linum strictum* L. – T scap – Med.-Iran.-Tur. – Ephemeral meadows and garrigues – C.

*Linum tryginum* L. – T scap – Med. – Ephemeral meadows and garrigues – C.

#### Lythraceae

*Lythrum hyssopifolia* L. – T scap – Paleotemp. – Marshes and ponds – R.

*Lythrum junceum* Banks & Solander – H scap – Med. – Ponds and water courses – C.

#### Malvaceae

*Lavatera arborea* L. – H bien – Med. – Cliffs – C.

*Lavatera trimestris* L. – T scap – Med. – Uncultivated lands and pastures – C.

*Malva cretica* Cav. T scap – Med. – Uncultivated lands – C.

*Malva parviflora* L. – T scap – Med. – Uncultivated lands – C.

#### Mimosaceae

*Acacia karroo* Hayne – P caesp – Nat. – Cultivated – C.

*Acacia saligna* (Labill.) Wendl. fil. – P scap – Nat. – Cultivated – C.

#### Moraceae

*Ficus carica* L. – P scap – N Med. – Shady cliffs and walls – C.

#### Myrtaceae

*Myrtus communis* L. – P caesp – Med. – Scrublands – R.

#### Nyctaginaceae

*Boerhaavia repens* L. subsp. *viscosa* (Choisy) Maire – T scap – Nat. – Road edges – C.

#### Oleaceae

*Fraxinus ornus* L. – P scap – N Med. – Woods – C.

*Olea europaea* L. var. *sylvestris* (Mill.) Lehr – P caesp – Med. – Scrublands – C.

#### Onagraceae

*Epilobium hirsutum* L. – H scap – Circumbor. – Marshes and water courses – C.

*Epilobium parviflorum* Schreber – H scap – Euro-Med. – Marshes and water courses – NC.

*Epilobium tetragonum* L. subsp. *tetragonum* – H scap – Paleotemp. – Marshes and water courses – NC.

#### Orobanchaceae

*Orobanche schultzii* Mutel – T par – Euro-Med. – On *Inula viscosa*, *Artemisia* and other Asteraceae. R.

*Orobanche variegata* Wallr., T par – Med. – On *Calicotome infesta* and *Spartium junceum* – NC.

*Phelipanche lavandulacea* (Rchb.) Pomel – T par – Med. – On *Bituminaria bituminosa* – NC.

#### Oxalidaceae

*Oxalis corniculata* L. – H rept – Cosmop. – Uncultivated lands – C.

*Oxalis pes-caprae* L. – G bulb – Avv. (Sudaf.) – Uncultivated lands and gardens – CC.

*Oxalis purpurata* Jacq. – G bulb – Nat. – Uncultivated lands and disturbed habitats – R.

#### Papaveraceae

*Fumaria capreolata* L. subsp. *capreolata* – T scap – Euro-Med. – Walls, gardens and uncultivated lands – CC.

*Fumaria officinalis* L. subsp. *officinalis* – T scap – Paleotemp. – Walls, gardens and uncultivated lands – CC.

*Papaver rhoeas* L. subsp. *rhoeas* – T scap – Paleotemp. – Uncultivated lands – C.

#### Plantaginaceae

*Plantago afra* L. subsp. *afra* – T scap – Med. – Uncultivated lands and pastures – CC.

*Plantago bellardi* All. subsp. *bellardi* – T scap – Med. – Ephemeral meadows and uncultivated lands – C.

*Plantago coronopus* L. – T scap – Paleotemp. – Uncultivated lands and pastures – NC.

*Plantago lagopus* L. – T scap – Med. – Uncultivated lands and pastures – C.

*Plantago lanceolata* var. *dubia* L. – H ros – Circumbor. – Uncultivated lands and roadsides – NC.

*Plantago major* L. subsp. *intermedia* (Gilib.) Lange – H ros – Circumbor. – Marshes and water courses – NC.

*Plantago serraria* L. – H ros – Med. – Dry grasslands and uncultivated lands – C.

#### Platanaceae

*Platanus orientalis* L. – P scap – E Med. – Wet woods – NC.

#### Plumbaginaceae

*Limonium ionicum* Brullo – H ros – End. pelorit. – EN – Limestone maritime cliffs – R.

*Limonium tauromenitanum* Brullo – H ros – End. pelorit. – CR – Volcanic maritime cliffs – RR.

\**Limonium sinuatum* (L.) Mill. – LR – H scap – Med. – NR (Gussone 1827).

#### Polygalaceae

*Polygala monspeliaca* L. – T scap – Med. – Ephemeral meadows and pastures – NC.

#### Polygonaceae

*Persicaria lapathifolia* (L.) Gray subsp. *lapathifolia* – T scap – Boreo-Trop. – Marshes and water courses – C.

*Rumex bucephalophorus* L. subsp. *bucephalophorus* – T scap – Med. – Ephemeral meadows and uncultivated lands – CC.

*Rumex conglomeratus* Murray – H scap – Circumbor. – Marshes and water courses – C.

*Rumex pulcher* L. subsp. *pulcher* – H scap – Med.-Atl. – Marshes and water courses – C.

#### Portulacaceae

*Portulaca oleracea* L. subsp. *oleracea* – T scap – Boreo-Trop. – Gardens and uncultivated lands – CC.

#### Primulaceae

*Anagallis arvensis* L. – T rept – Boreo-Trop. – Ephemeral meadows and uncultivated lands – CC.

*Anagallis foemina* Mill. – T rept – Boreo-Trop. – Ephemeral meadows and uncultivated lands – CC.

*Cyclamen hederifolium* Aiton – G bulb – N Med. – Woods – C.

*Cyclamen repandum* Sm. – G bulb – O Med. – Woods – C.

*Samolus valerandi* L. – H caesp – Boreo-Trop. – Muds, wet walls and marshes – NC.

#### Ranunculaceae

*Adonis annua* L. subsp. *annua* – T scap – Med.-Atl. – Uncultivated lands – NC.

*Anemone coronaria* L. – G bulb – Med. – Dry grasslands and uncultivated lands – C.

*Anemone hortensis* L. – G bulb – Med. – Dry grasslands and uncultivated lands – C.

*Clematis vitalba* L. – P lian – Euro-Med. – Woods and scrublands – C.

*Delphinium halteratum* Sm. – T scap – O Med. – Uncultivated lands – C.

*Nigella damascena* L. – T scap – Med. – Uncultivated lands – CC.

*Ranunculus bullatus* L. – H ros – N Med. – Pastures and uncultivated lands – C.

*Ranunculus paludosus* Poiret – H scap – Med. – Pastures and uncultivated lands – C.

*Ranunculus pratensis* C. Presl – H scap – End. sic.-sard.-cors. – Meadows – R.

*Ranunculus sardous* Crantz subsp. *xatardii* (Lapeyr.) Rouy & Foucaud – T scap – Euro-Med.- Muds and wet grounds – NC.

*Thalictrum calabricum* Sprengel – H scap – End. It.-sic. – Woods and scrublands – NC.

#### Resedaceae

*Reseda alba* L. – T scap – Med. – Uncultivated lands – CC.

#### Rhamnaceae

*Paliurus spina-christi* Miller – P caesp – NE-Med. – Dry slopes and scrublands – NC. Notes: probably the species was introduced

*Rhamnus alaternus* L. – P caesp – Med. – Woods and scrublands – C.

#### Rosaceae

*Crataegus monogyna* Jacq. subsp. *monogyna* – P caesp – Euro-Med.-Iran.-Tur – Woods and scrublands – C.

*Prunus spinosa* L. – P caesp – Euro-Med. – Scrublands – NC.

*Pyrus amygdaliformis* Vill. (= *Pyrus spinosa*) – P caesp – Med. – Scrublands – C.

*Rosa canina* L. – NP – Paleotemp. – Scrublands – NC.

*Rosa sempervirens* L. – NP – Med. – Scrublands – NC.

*Rubus ulmifolius* Schott – NP – Euro-Med. – Scrublands – CC.

\**Rubus francipani* Tineo ex Guss. – NP – Euro-Med. – Scrublands – NR (Lojacono 1891).

*Sanguisorba minor* Scop. subsp. *minor* – H scap – Paleotemp. – Scrublands, dry grasslands and uncultivated lands – NC.

*Sorbus aucuparia* L. subsp. *praemorsa* (Guss.) Nyman – P caesp – End. It.-sic. – VU – Woods and scrublands – R.

#### Rubiaceae

*Galium aetnicum* Biv. – H scap – End. It.-sic. – Cliffs and dry grasslands – NC.

*Galium aparine* L. – T scap – Paleotemp. – Uncultivated lands and scrublands – C.

*Galium divaricatum* Lam. – T scap – Euro-Med. – Ephemeral meadows – NC.

*Galium murale* (L.) All. – T scap – Med. – Walls and uncultivated lands – C.

*Galium verrucosum* Hudson – T scap – Euro-Med. – Uncultivated lands – C.

*Rubia peregrina* L. – P lian – Med. – Woods and scrublands – CC.

*Sherardia arvensis* L. – T scap – Euro-Med. – Uncultivated lands and ephemeral meadows – CC.

*Valantia muralis* L. var. *muralis* – T scap – Med. – Cliffs, walls and ephemeral meadows – CC.

#### Rutaceae

*Ruta chalepensis* L. – Ch suffr – Med. – Garrigues, scrublands and cliffs – NC.

#### Salicaceae

*Populus nigra* L. – P scap – Paleotemp. – Wet woods and water courses – NC.

*Salix alba* L. subsp. *alba* – P scap – Paleotemp. – Wet woods and water courses – NC.

*Salix gussonei* Brullo & Spampinato – P scap – End. sic. – LR – Wet woods and water courses – NC.

*Salix purpurea* L. subsp. *lambertiana* (Sm.) Neumann ex Rech fil. – P scap – Med. – Wet woods and water courses – R.

#### Santalaceae

*Thesium humile* Vahl – T scap – Med. – Uncultivated lands – NC.

#### Scrophulariaceae

*Antirrhinum majus* L. – Ch frut – O Med. – Cliffs and walls – C.

*Antirrhinum siculum* Miller – Ch frut – End. It.-sic. – Cliffs and walls – C.

*Antirrhinum tortuosum* Bosc – Ch frut – Med. – Cliffs and walls – NC.

*Bellardia trixago* (L.) All. – T scap – Med. – Pastures and uncultivated lands – C.

*Kickxia cirrhosa* (L.) Fritsch – T scap – Med. – LR – Ephemeral meadows – R.

*Kickxia commutata* (Bernh.) Fritsch – H rept – Med. – Pastures and ephemeral meadows – NC.

*Kickxia spuria* (L.) Dumort. – T scap – Euro-Med. – Uncultivated lands – C.

*Linaria pelisseriana* (L.) Miller – T scap – Med.-Atl. – Ephemeral meadows – NC.

*Linaria purpurea* (L.) Miller – H scap – End. It.-sic. – Cliffs, stony grounds and uncultivated lands – NC.

*Linaria reflexa* (L.) Desf. – T rept – C Med. – Uncultivated lands – CC.

*Misopates orontium* (L.) Rafin. – T scap – Paleotemp. – Uncultivated lands – CC.

*Odontites bocconei* (Guss.) Walpers subsp. *bocconei* – Ch frut – End. sic. – Limestone cliffs – RR.

*Parentucellia latifolia* (L.) Caruel – T scap – Med.-Atl. – Uncultivated lands – C.

*Parentucellia viscosa* (L.) Caruel – T scap – Med.-Atl. – Uncultivated lands – C.

*Scrophularia peregrina* L. – T scap – Med. – Uncultivated lands – C.

*Verbascum pulverulentum* Vill. – H bien – Euro-Med. – Uncultivated lands – NC.

*Verbascum sinuatum* L. – H bien – Med. – Uncultivated lands – CC.

*Verbascum thapsus* L. – H bien – N Med. – Uncultivated lands – NC.

*Veronica agrestis* L. – T scap – Paleotemp. – Uncultivated lands – R.

*Veronica arvensis* L. – T scap – Paleotemp. – Uncultivated lands – C.

*Veronica cymbalaria* Bodard – T scap – Med. – Rocks and walls – C.

\**Veronica cymbalaria* Bodard subsp. *panormitana* (Tineo ex Guss.) O. Bolos & Vigo – T scap – Med. – Rocks and walls – NR (Gussone 1845).

#### Simaroubaceae

*Ailanthus altissima* (Miller) Swingle – P scap – Nat. (Cina) – Roadsides and ruins – C.

#### Solanaceae

*Solanum dulcamara* L. – NP – Paleotemp. – Wet woods – NC.

*Solanum nigrum* L. subsp. *nigrum* – T scap – Boreo-Trop. – Uncultivated lands and ruins – CC.

#### Thymelaeaceae

*Daphne gnidium* L. – P caesp – Med. – Scrublands – NC.

#### Tropaeolaceae

*Tropaeolum majus* L. – T rept – Nat. – Roadsides and ruins – C.

#### Ulmaceae

*Ulmus minor* Miller – P caesp – Paleotemp. – Wet woods and scrublands – NC.

#### Urticaceae

*Parietaria judaica* L. – H scap – Euro-Med.-Iran.-Tur – Rocks, walls and ruins – CC.

*Parietaria lusitanica* L. subsp. *lusitanica* – T rept – Med. – Rocks, walls and ruins – CC.

*Parietaria mauritanica* Durieu – T rept – SO-Med. – LR – Cliffs and walls – R.

*Urtica dioica* L. – H scap – Cosmop. – Ruins and nitrophilous habitats – C.

*Urtica membranacea* Poiret – T scap – Med. – Ruins and nitrophilous habitats – CC.

#### Valerianaceae

*Centranthus ruber* (L.) DC. – Ch suffr – Med. – Cliffs, walls and road sides – CC.

*Fedia cornucopiae* (L.) Gaertner – T scap – Med. – Uncultivated lands and roadsides – C.

\**Fedia graciliflora* var. *insularis* Mathez & Xena – T scap – S Med. – Ruins and nitrophilous habitats – NR (Xena de Enrech & Mathez 1990).

*Valerianella eriocarpa* Desv. – T scap – Med.-Atl. – Uncultivated lands and pastures – NC.

#### Verbenaceae

*Lantana camara* L. – P caesp – Nat. – Cultivated for ornament and naturalized – C.

*Verbena officinalis* L. – H scap – Boreo-Trop. – Uncultivated lands – C.

#### Violaceae

*Viola alba* Besser subsp. *dehnhardtii* (Ten.) W. Becker – H ros – Med. – Woods – NC.

#### Vitaceae

*Vitis vinifera* L. subsp. *sylvestris* (Gmelin) Hegit. – P lian – Euro-Med. – Wet and shady grounds – R.

#### Zannichelliaceae

*Zannichellia peltata* Bertol. – I rad – O Med. – EN – Running waters – RR.

#### Zygophyllaceae

*Tribulus terrestris* L. – T rept – Cosmop. – Uncultivated lands – C.

#### Angiospermae (Liliopsida)

##### Agavaceae

*Agave americana* L. – P caesp – Nat. Nordameric. – Uncultivated lands, both cultivated and spontaneous – C.

*Agave sisalana* Perrine ex Engelm. – P caesp – Nat. (N Americ.) – Uncultivated lands, both cultivated and spontaneous – R.

**Alliaceae**

- Allium ampeloprasum* L. – G bulb – Med. – Dry grasslands and uncultivated lands – C.  
*Allium arvense* Guss. – G bulb – Med. – Dry grasslands and uncultivated lands – NC.  
*Allium chamaemoly* L. – G bulb – Med. – Dry grasslands and ephemeral meadows – R.  
*Allium commutatum* Guss. – G bulb – Med. – Rocky coasts – C.  
*Allium dentiferum* Webb & Berthelot – G bulb – Med. – Dry grasslands and uncultivated lands – NC.  
*Allium roseum* L. – G bulb – Med. – Dry grasslands and uncultivated lands – CC.  
*Allium subhirsutum* L. – G bulb – Med. – Dry grasslands and scrublands – CC.  
*Allium tenuiflorum* Ten. – G bulb – Med. – Dry grasslands and uncultivated lands – R.  
*Allium triquetrum* L. – G bulb – O Med. – Woods – C.

**Amaryllidaceae**

- Narcissus serotinus* L. – G bulb – Med – Dry grasslands – NC.

**Araceae**

- Arum italicum* Miller – G rhiz – Med.-Atl. – Uncultivated shady grounds – CC.  
*Arisarum vulgare* Targ.-Tozz. – G rhiz – Med. – Uncultivated and scrublands – CC.

**Asparagaceae**

- Asparagus acutifolius* L. – NP – Med. – Scrublands and woods – C.  
*Asparagus albus* L. – NP – O Med. – Dry grasslands and scrublands – C.  
*Elide asparagoides* (L.) Kerguelen – P lian – Nat. – Scrublands – R.

**Asphodelaceae**

- Asphodeline lutea* (L.) Rchb. – G rhiz – E Med. – Dry grasslands and uncultivated lands – C.  
*Asphodelus fistulosus* L. – H bien – Med. – Uncultivated lands and road edges – C.  
*Asphodelus ramosus* L. – G rhiz – Med. – Dry grasslands and uncultivated lands – NC.

**Colchicaceae**

- Colchicum cupanii* Guss. – G bulb – Med. – Dry grasslands and ephemeral meadows – NC.

**Cyperaceae**

- Bolboschoenus maritimus* (L.) Palla – G rhiz – Cosmop. – Marshes and pond edges – C.  
*Carex distachya* Desf. – H caesp – Med. – Woods, scrublands and glades – C.  
*Carex flacca* Schreber subsp. *erythrostachys* (Hoppe) Holub – G rhiz – Med.-Iran.-Tur. – Garrigues, dry grasslands and woods – C.  
*Carex otrubae* Podp. – H caesp – Euro-Med.-Iran.-Tur – Marshes and wet woods – R.

*Carex pendula* Hudson – H caesp – Euro-Med.-Iran.-Tur – Wet woods and water courses – NC.

*Carex remota* L. – H caesp – Euro-Med. – Marshes and pond edges – R.

*Cyperus fuscus* L. – T caesp – Paleotemp. – Muddy grounds, wet sands and river-beds – R.

*Isolepis cernua* (Vahl) R. et S. – T scap – Cosmop. – Wet sands and pond edges – R.

*Scirpoides holoschoenus* (L.) Soják subsp. *australis* (Murr.) Soják – G rhiz – Med. – Marshes and pond edges – NC.

**Dioscoreaceae**

*Tamus communis* L. subsp. *communis* – G rad – Med.-Atl. – Woods – NC.

**Hyacinthaceae**

*Bellevalia dubia* (Guss.) Kunth subsp. *dubia* – G bulb – End. sic. Dry grasslands – NC.

*Charybdis pancrati* (Steinh.) Speta (= *Urginea maritima* (L.) Baker) – G bulb – Med. – Dry grasslands and garrigues – C.

*Muscari commutatum* Guss. – G bulb – E Med. – Pastures and ephemeral meadows – NC.

*Muscari comosum* (L.) Mill. – G bulb – Euro-Med. – Pastures and dry grasslands – NC.

*Muscari neglectum* Guss. ex Ten. – G bulb – Med. – Pastures and ephemeral meadows – NC.

*Ornithogalum gussonei* Ten. – G bulb – E Med. – Dry grasslands and uncultivated lands – C.

*Ornithogalum montanum* Cyr. – G bulb – NE-Med. – Pastures and dry grasslands – C.

*Prospero autumnale* (L.) Speta – G bulb – Med. – Ephemeral meadows and garrigues – C.

**Iridaceae**

*Crocus longiflorus* Rafin. – G bulb – C Med. – Meadows and woods – NC.

*Gladiolus communis* L. – G bulb – N Med. – Dry grasslands and uncultivated lands – C.

*Hermodactylus tuberosus* (L.) Salisb. – G rhiz – N Med. – Uncultivated lands and meadows – C.

*Iris planifolia* (Miller) Dur. et Sch. – G bulb – O Med. – Uncultivated lands and meadows – C.

*Moraea sisyrinchium* (L.) Ker-Gawl. – G bulb – Med. – Ephemeral meadows – C.

*Romulea bulbocodium* (L.) Sebast. & Mauri – G bulb – Med. – Ephemeral meadows – NC.

*Romulea columnae* Seb. & Mauri – G bulb – Med. – Ephemeral meadows – R.

**Juncaceae**

*Juncus articulatus* L. – G rhiz – Circumbor. – Marshes and water courses – NC.

*Juncus bufonius* L. – T caesp – Boreo-Trop. – Marshes and wet grounds – C.

*Juncus compressus* Jacq. – G rhiz – Circumbor. – Marshes and wet grounds – R.

*Juncus hybridus* Brot. – T caesp – Euro-Med. – Marshes and wet grounds – C.

*Juncus inflexus* L. – H caesp – Paleotemp. – Marshes and wet grounds – R.

### Liliaceae

*Fritillaria messanensis* Raf. subsp. *messanensis* – G bulb – Med. – VU – Dry grasslands and scrublands – RR.

### Orchidaceae

*Anacamptis pyramidalis* (L.) Rich. – G bulb – Euro-Med. – Dry grasslands and garrigues – NC.

*Barlia robertiana* (Loisel.) Greuter – G bulb – Med. – Dry grasslands and scrublands – C.

*Dactylorhiza romana* (Sebast.) Soò – G bulb – Med. – Pastures and woods – NC.

*Dactylorhiza sambucina* (L.) Soò – G bulb – Paleotemp. – Pastures and woods – NC.

*Ophrys apifera* Hudson – G bulb – Euro-Med. – Garrigues and dry grasslands – NC.

*Ophrys bombyliflora* Link – G bulb – Med. – Dry grasslands – C.

*Ophrys fusca* Link – G bulb – Med. – Garrigues, dry grasslands and scrublands – NC.

*Ophrys incubacea* Bianca – G bulb – O Med. – Garrigues, scrublands and dry grasslands – NC.

*Ophrys lutea* Cav. – G bulb – Med.-Atl. – Scrublands and dry grasslands – C.

*Ophrys passionis* Sennen – G bulb – End. It.-sic. – Scrublands and dry grasslands – NC.

*Ophrys sicula* Tineo – G bulb – Med. – Scrublands and dry grasslands – R.

*Ophrys sphegodes* Mill. subsp. *sphogodes* – G bulb – Euro-Med. – Garrigues, scrublands and dry grasslands – C.

*Ophrys grandiflora* Tenore – G bulb – End. It.-sic. – Garrigues, scrublands and dry grasslands – NC.

*Orchis brancifortii* Bivona – G bulb – End. sic.-sard.-cors. – Garrigues, dry grasslands and woods – R.

*Orchis collina* Solander – G bulb – Med. – Garrigues and dry grasslands – C.

*Orchis italica* Poiret – G bulb – Med. – Garrigues and dry grasslands – C.

*Orchis longicornu* Poiret – G bulb – O Med. – Garrigues and dry grasslands – NC.

*Orchis papilionacea* L. subsp. *papilionacea* – G bulb – O Med. – Garrigues and dry grasslands – R.

*Serapias vomeracea* (Burm. fil.) Briq. G bulb – Med. – Garrigues, scrublands and dry grasslands – R.

*Serapias bergonii* E. G. Camus (pro hybr.) – G bulb – E Med. – Garrigues, scrublands and dry grasslands – R.

*Serapias lingua* L. – G bulb – Med. – Garrigues, scrublands and dry grasslands – NC.

*Serapias parviflora* Parl. – G bulb – Med.-Atl. – Garrigues, scrublands and dry grasslands – NC.

*Spiranthes spiralis* (L.) Koch – G rhiz – Med.-Atl. – Garrigues and dry grasslands – NC.

### Poaceae

*Agrostis stolonifera* L. – H rept – Circumbor. – Pond edges, marshes and river-beds – C.

*Aira caryophyllea* L. – T scap – Med.-Atl. – Ephemeral meadows and uncultivated lands – C.

*Aira cupaniana* Guss. – T scap – O Med. – Ephemeral meadows and uncultivated lands – C.

*Ampelodesmos mauritanicus* (Poiret) Dur. et Sch. – H caesp – O Med. – Dry grasslands – CC.

*Andropogon distachyos* L. – H caesp – Med. – Dry grasslands – C.

*Anthoxanthum odoratum* L. – H caesp – Paleotemp. – Pastures – C.

*Arundo collina* Ten. – G rhiz – Med. – Wet slopes – C.

*Arundo donax* L. – G rhiz – Med. – Wet uncultivated lands – C.

*Avena barbata* Potter – T scap – Cosmop. – Uncultivated lands – CC.

*Avena sterilis* L. – T scap – Med. – Uncultivated lands – C.

*Brachypodium retusum* (Pers.) Beauv. – H caesp – Med. – Garrigues and scrublands – C.

*Brachypodium sylvaticum* (Hudson) Beauv. – H caesp – Paleotemp. – Woods – C.

*Briza maxima* L. – T scap – Med. – Uncultivated lands – C.

*Bromus fasciculatus* Presl – T scap – Med. – Ephemeral meadows and uncultivated lands – C.

*Bromus hordeaceus* L. – T scap – Paleotemp. – Uncultivated lands – C.

*Bromus madritensis* L. – T scap – Med.-Atl. – Uncultivated lands – C.

*Bromus sterilis* L. – T scap – Paleotemp. – Uncultivated lands – C.

*Bromus tectorum* L. – T scap – Paleotemp. – Uncultivated lands – C.

*Catapodium pauciflorum* (Merino) Brullo, Giusso, Minisale & Spampinato – T scap – Med. – Coastal ephemeral meadows – R.

*Catapodium rigidum* (L.) Hubbard subsp. *rigidum* – T scap – Euro-Med.-Iran.-Tur – Uncultivated lands and ephemeral meadows – CC.

*Cenchrus ciliaris* L. – H caesp – S Med.-sah-arab. – EN – Dry grasslands – R.

*Cynodon dactylon* (L.) Pers. – G rhiz – Boreo-Trop. – Uncultivated lands – CC.

*Cynosurus cristatus* L. – H caesp – Paleotemp. – Uncultivated lands – C.

*Cynosurus echinatus* L. – T scap – Med. – Pastures and uncultivated lands – NC.

*Dactylis glomerata* L. – H caesp – Paleotemp. – Scrublands and grasslands – C.

*Dactylis hispanica* Roth – H caesp – Med. – Scrublands and dry grasslands – C.

*Dasypirum villosum* (L.) Borbás – T scap – Med.-Iran.-Tur. – Uncultivated lands – CC.

*Digitaria sanguinalis* (L.) Scop. subsp. *sanguinalis* – T scap – Boreo-Trop. – Wet grounds and water courses – C.

*Echinochloa crus-galli* (L.) Beauv. – T scap – Boreo-Trop. – Cultivated lands, embankments, wet ruins and river-beds – C.

\**Elymus panormitanus* (Parl.) Tzvelev, – H caesp – Med. Mont. – Woods – NR (Pignatti-Wikus 1963).

*Festuca arundinacea* Schreber – H caesp – Paleotemp. – Meadows and wet slopes – C.  
*Festuca circummediterranea* Patzke – H caesp – Euro-Med. – Dry grasslands and cliffs – NC.  
*Gaudinia fragilis* (L.) Beauv. – T scap – Med. – Wet meadows and uncultivated lands – NC.  
*Heteropogon contortus* (L.) Beauv. – H caesp – Boreo-Trop. – Dry grasslands – NC.  
*Holcus lanatus* L. – H caesp – Circumbor. – Wet meadows and marshes – NC.  
*Hordeum leporinum* Link – T scap – Med. – Uncultivated lands and road edges – CC.  
*Hyparrhenia hirta* (L.) Stapf – H caesp – Med.-Trop. – Dry grasslands – C.  
*Lagurus ovatus* L. subsp. *ovatus* – T scap – Med. – Uncultivated lands – CC.  
*Lamarckia aurea* (L.) Moench – T scap – Med.-Iran.-Tur. – Uncultivated lands – C.  
*Lolium perenne* L. – H caesp – Circumbor. – Grasslands and meadows – CC.  
*Lolium rigidum* Gaudin – T scap – Med.-Iran.-Tur. – Uncultivated lands – C.  
*Melica minuta* L. – H caesp – Med. – Cliffs, walls, stony slopes – R.  
*Melica uniflora* Retz. – H caesp – Euro-Med. – Woods and stony slopes – NC.  
*Parapholis incurva* (L.) Hubbard – T scap – Med.-Atl. – Salt ephemeral meadows – NC.  
*Paspalum paspaloides* (Michx.) Scribner – G rhiz – Avv. – Wet grounds and water courses – C.  
*Pennisetum setaceum* (Forsskál) Chiov. – H caesp – Avv. – Uncultivated lands, stony grounds and road edges – NC.  
*Phalaris brachystachys* Link – T scap – Med. – Uncultivated lands – C.  
*Phalaris coerulescens* Desf. – H caesp – Med. – Wet uncultivated lands – C.  
*Phragmites australis* (Cav.) Trin. – G rhiz – Cosmop. – Marshes and water courses – NC.  
*Piptatherum miliaceum* (L.) Coss. subsp. *thomasi* (Duby) Freitag – H caesp – Med.-Atl. – Uncultivated lands and road edges – CC.  
*Poa bulbosa* L. – H caesp – Paleotemp. – Dry meadows and uncultivated lands – C.  
*Polypogon maritimus* Willd. – T scap – Med.-Iran.-Tur. – Wet and salt grounds – C.  
*Polypogon viridis* (Gouan) Breistr. – H caesp – Med. – Marshes and water courses – NC.  
*Rostraria cristata* (L.) Tzvelev – T scap – Med.-Iran.-Tur. – Uncultivated lands and roadsides – C.  
*Secale strictum* (C. Presl) C. Presl – H caesp – Medit.-Mont. – Dry meadows and uncultivated lands – R.  
*Setaria verticillata* (L.) Beauv. – T scap – Boreo-Trop. – Roadsides and disturbed habitats – CC.  
*Sorghum halepense* (L.) Pers. – G rhiz – Med.-Trop. – Uncultivated lands – C.  
*Stipa capensis* Thumb. – T scap – Med. – Uncultivated lands and ephemeral meadows – CC.

*Trachynia distachya* (L.) Link – T scap – Med.-Iran.-Tur. – Uncultivated lands and ephemeral meadows – CC.  
*Tricholaena teneriffae* (L.) Link – H caesp – S Med.-sah-arab. – EN – Dry grasslands and uncultivated lands – R.  
*Triticum ovatum* (L.) Raspail – T scap – Med.-Iran.-Tur. – Uncultivated lands – CC.  
*Vulpia ciliata* (Danth.) Link – T caesp – Med. – Uncultivated lands and ephemeral meadows – C.  
*Vulpia ligustica* (All.) Link – T caesp – Med. – Uncultivated lands and ephemeral meadows – C.  
*Vulpia myuros* (L.) Gmelin – T caesp – Boreo-Trop. – Uncultivated lands and ephemeral meadows – C.

#### Ruscaceae

*Ruscus aculeatus* L. – Ch frut – Med. – Woods – C.

#### Smilacaceae

*Smilax aspera* L. – NP – Med. – Woods and scrublands – C.

#### Typhaceae

*Typha domingensis* Pers. – G rhiz – Cosmop. – DD – Marshes and ponds – NC.

*Typha latifolia* L. – G rhiz – Cosmop. – Marshes and ponds – C.

#### Outstanding taxa (narrow endemics and rare species)

In the study area some species are particularly relevant because of the following: they are rare in Sicily, or in Italy: they have been reported in the area for the first time: or they are locally endemic with risk of extinction and need to be assessed. They were examined, one by one, specifying the reasons for inclusion in this special selection. Their punctual distribution is mapped in Figure 4 and some of them are illustrated in Figure 5.

#### Narrow endemics

Based on our field surveys in the study territory, the IUCN status of four endemic taxa was checked in order to contribute to the new Italian Red list, a work in progress (Rossi et al. 2013). They are: *Brassica raimondoi*, *Colymbada tauromenitana*, *Limonium ionicum* and *Limonium tauromenitanum*.

***Brassica raimondoi*** Sciandr., C. Brullo, Brullo, Giusso, Miniss. & Salmeri

**Edaphic features:** Calcicolous species;

**Altitude:** 500–600 m above sea level;

**Bioclimatic range:** Termo-mesomediterranean subhumid;

**Habitat 43/92/CEE:** Cliffs (8210 Calcareous rocky slopes with chasmophytic vegetation);

**Phytosociology:** *Erucastretum virgati* Brullo and Marcenò 1979 subass. *centauretosum tauromenitani*, (*Asplenietea trichomanis*);

**Distribution:** Rupi di Castelmola;

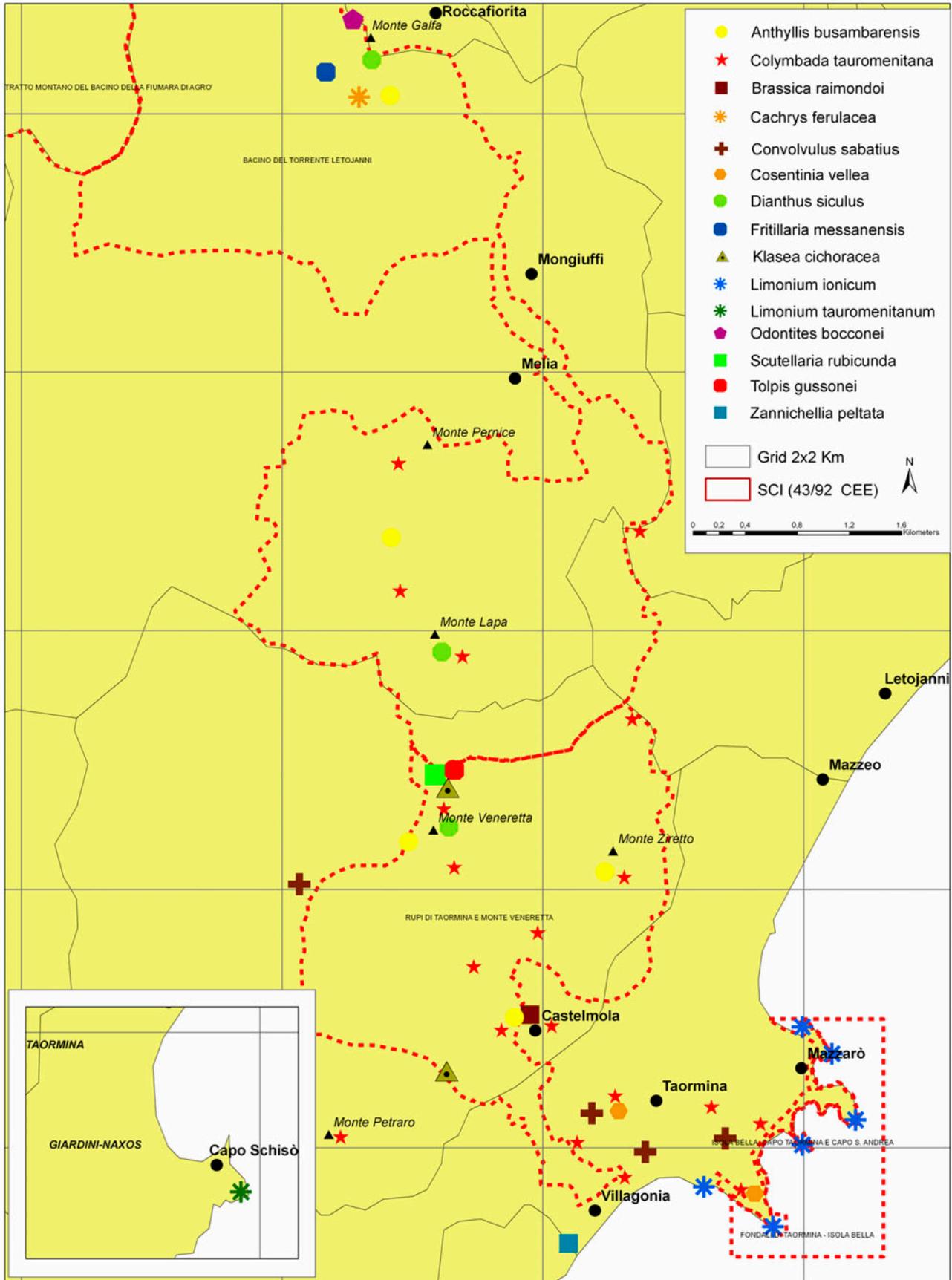


Figure 4. Map of the study area with distribution of the outstanding species.

**IUCN category:** Sciandrello et al. (2013b) indicated a critically endangered status (CR).

***Colymbada tauromenitana*** (Guss.) Holub

**Edaphic features:** Calcicolous species;

**Altitude:** 10–800 m above sea level;

**Bioclimatic range:** Thermo-mesomediterranean subhumid/humid;

**Habitat 43/92/CEE:** Cliffs (8210 Calcareous rocky slopes with chasmophytic vegetation);



Figure 5. Some outstanding species of Taormina Region: (A) *Limonium ionicum*; (B) *Colymbada tauromenitana*; (C) *Brassica raimondoi*; (D) *Dianthus rupicola*; (E) *Odontites bocconeii* subsp. *bocconeii*; (F) *Anthyllis vulneraria* subsp. *busambarensis*; (G) *Scutellaria rubicunda*; (H) *Cosentinia vellea*.

**Phytosociology:** *Erucastretum virgati* Brullo and Marcenò 1979 subass. *centauretosum tauromenitani* (*Asplenietea trichomanis*);

**Distribution:** Monte Petraro, Villagonia, Isola Bella, Monte Tauro, Castelmola, Roccella, Monte Veneretta, Monte Ziretto, Costa Ogliastro, Monte Lapa, Monte Pernice, Monte Castellaccio;

**IUCN category:** The taxon was previously assigned by Conti et al. (1997) to the LR category, but recently Sciandrello and D'Agostino (2014) reassessed the IUCN status and stated the vulnerable (VU) category.

#### *Limonium ionicum* Brullo

**Edaphic features:** Calcicolous species;

**Altitude:** 2–20 m above sea level;

**Bioclimatic range:** Thermo-mediterranean subhumid;

**Habitat 43/92/CEE:** Rocky coast (1240 Vegetated sea cliffs of the Mediterranean coasts with endemic *Limonium* spp.);

**Phytosociology:** *Limonietum ionicum* Bartolo and Brullo 1993 (*Crithmo-Limonietea*);

**Distribution:** Capo Taormina, Isola Bella, Capo S. Andrea, Mazzarò (Minissale et al. 2005).

**IUCN category:** The taxon was assigned by Conti et al. (1997) to EN category.

#### *Limonium tauromenitanum* Brullo

**Edaphic features:** Acidophilous species;

**Altitude:** 2–10 m above sea level;

**Bioclimatic range:** Thermomediterranean subhumid;

**Habitat 43/92/CEE:** Rocky coast (1240 Vegetated sea cliffs of the Mediterranean coasts with endemic *Limonium* spp.);

**Phytosociology:** *Limonietum tauromenitani* Bartolo and Brullo 1993 (*Crithmo-Limonietea*);

**Distribution:** Capo Schisò (Giardini Naxos);

**IUCN category:** The taxon was assigned by Conti et al. (1997) to CR category.

#### Rare species

Some very rare species (RR) were observed for the first time in the territory, while other rare species (R) were strictly localized and knowing the location where they grow would be very useful for future monitoring or to plan any conservation actions. They are *Anthyllis vulneraria* subsp. *busambarensis*, *Cachrys ferulacea*, *Cosentinia vellea*, *Convolvulus sabatius* subsp. *mauritanicus*, *Dianthus siculus*, *Fritillaria messanensis* subsp. *messanensis*, *Klasea flavescens* subsp. *cichoracea*, *Odontites bocconeii* subsp. *bocconeii*, *Scutellaria rubicunda* subsp. *linneana*, *Tolpis gussonei* and *Zannichellia peltata*.

*Anthyllis vulneraria* L. subsp. *busambarensis* (Lojac.) Pignatti

**Edaphic features:** Calcicolous species;

**Altitude:** 600–1000 m above sea level;

**Bioclimatic range:** Thermo-mesomediterranean and supramediterranean subhumid/humid;

**Habitat 43/92/CEE:** Cliffs (8210 Calcareous rocky slopes with chasmophytic vegetation);

**Phytosociology:** *Erucastretum virgati* Brullo and Marcenò 1979, (*Asplenietea trichomanis*);

**Local distribution:** Rupi di Castelmola, Monte Veneretta, Monte Ziretto, Costa Ogliastro, Monte Lapa, Monte Pernice, Monte Galfa;

**Note:** Reported for the first time in the investigated area: in Sicily, in the past, it was known only in western Sicily (Giardina et al. 2007).

#### *Cosentinia vellea* (Aiton) Tod.

**Edaphic features:** Calcicolous species;

**Altitude:** 50–400 m above sea level;

**Bioclimatic range:** Thermomediterranean subhumid;

**Habitat 43/92/CEE:** Cliffs (8210 Calcareous rocky slopes with chasmophytic vegetation);

**Phytosociology:** *Sedo albi-Cosentinetum velleae* Sciandrello, D'Agostino, et al., 2013b (*Asplenietea trichomanis*);

**Local distribution:** Capo Taormina, Castello di Taormina.

#### *Cachrys ferulacea* (L.) Calest.

**Edaphic features:** Calcicolous species;

**Altitude:** 900–1000 m above sea level;

**Bioclimatic range:** Meso-supramediterranean humid;

**Habitat 43/92/CEE:** Dry grasslands (6220\* Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietae*);

**Phytosociology:** *Cachryetum ferulaceae* Raimondo 1980 (*Erysimo-Jurineetalia bocconeii* Brullo 1984, *Rumici-Astragalatea siculi* Pignatti & Nimis in Pignatti et al. 1980)

**Local distribution:** Monte Galfa.

*Convolvulus sabatius* Viv. subsp. *mauritanicus* (Boissier) Murbeck

**Edaphic features:** Calcicolous species;

**Altitude:** 50–700 m above sea level;

**Bioclimatic range:** Thermo-mesomediterranean subhumid;

**Habitat 43/92/CEE:** Cliffs (8210 Calcareous rocky slopes with chasmophytic vegetation); Dry grasslands (6220 \* Pseudo-steppe with grasses and annuals of the *Thero-Brachypodietae*);

**Phytosociology:** *Erucastretum virgati* Brullo and Marcenò 1979 subass. *centauretosum tauromenitani*, (*Asplenietea trichomanis*); *Ferulo communis-Hyparrhenietum hirtae* Brullo and Siracusa 1996 (*Lygeo-Stipetea*).

**Local distribution:** Villagonia, Castello di Taormina and Monte Veneretta.

**IUCN category:** The taxon was assigned by Conti et al. (1997) to the CR category at a national level.

**Note:** The assignments to subspecies *mauritanicus* was made on the basis of diacritical characters shown in the work of Carine and Robba (2010). Therefore, without

prejudice to the remote possibility of its introduction in this territory, as suggested by Fiori (1929) Raimondo and Fici (1990), the location of Taormina is a disjunction of a distribution range area, which affects mainly Morocco and Algeria, whereas *C. sabatius* subsp. *sabatius* is limited to a restricted area of Liguria.

***Dianthus siculus*** C. Presl in J. & C. Presl

**Edaphic features:** Calcicolous species;

**Altitude:** 800–1200 m above sea level;

**Bioclimatic range:** Meso-supramediterranean humid;

**Habitat 43/92/CEE:** Cliffs (8210 Calcareous rocky slopes with chasmophytic vegetation);

**Phytosociology:** *Erucastretum virgati* Brullo and Marcenò 1979 subass. *dianthetosum siculi* Sciandrello and D'Agostino 2014 (*Asplenietea trichomanis*);

**Local distribution:** Monte Veneretta, Monte Galfa.

***Fritillaria messanensis*** Raf. subsp. *messanensis*

**Edaphic features:** Acidophilous species;

**Altitude:** 600–1200 m above sea level;

**Bioclimatic range:** Meso-supramediterranean humid;

**Habitat 43/92/CEE:** Dry grasslands (6220\* Pseudo-steppe with grasses and annuals of the *Thero-Brachypodieta*);

**Phytosociology:** *Galio-Ampelodesmetum mauritanici* Minissale 1995 (*Lygeo-Stipetea*); *Cisto salviifolii-Calicotometum infestae* Sciandrello, D'Agostino, et al., 2013b (*Oleo-Ceratonion siliquae*);

**Local distribution:** Monte Galfa.

**Note:** The species was reported for the first time by Picone et al. (2003) for this locality.

***Klasea flavescens*** (L.) Holub subsp. *cichoracea* (L.) Greuter & Wagenitz

**Edaphic features:** Calcicolous species;

**Altitude:** 400–800 m above sea level;

**Bioclimatic range:** Thermo-mesomediterranean subhumid;

**Habitat 43/92/CEE:** Dry grasslands (6220 \* Pseudo-steppe with grasses and annuals of the *Thero-Brachypodieta*);

**Phytosociology:** *Seselio-Ampelodesmetum mauritanici* Minissale 1995 (*Lygeo-Stipetea*);

**Local distribution:** Monte Veneretta, Monte Petroso;

**Note:** Reported for the first time for the investigated area: in Sicily, in the past, it was known only in central Sicily (Giardina et al. 2007).

***Odontites bocconei*** (Guss.) Walp. subsp. *bocconei*

**Edaphic features:** Calcicolous species;

**Altitude:** 800–1200 m above sea level;

**Bioclimatic range:** Meso-supramediterranean humid;

**Habitat 43/92/CEE:** Cliffs (8210 Calcareous rocky slopes with chasmophytic vegetation);

**Phytosociology:** *Erucastretum virgati* Brullo and Marcenò 1979 subass. *dianthetosum siculi* Sciandrello and D'Agostino 2014 (*Asplenietea trichomanis*);

**Local distribution:** Monte Galfa;

**Note:** This species, growing mainly on calcareous mountains of North West Sicily, on the Peloritani Mountains is very rare: the location of Monte Galfa was reported for the first time by Sciandrello and D'Agostino (2014). Previously, it was recorded in the Peloritani Mountains only on Monte Scuderi and Triscari (Giardina et al. 2007)

***Scutellaria rubicunda*** Hornem. subsp. *linnaeana* (Caruel) Rech.

**Edaphic features:** Acidophilous nemoral species;

**Altitude:** 600–1000 m above sea level;

**Bioclimatic range:** Thermo-mesomediterranean subhumid;

**Habitat 43/92/CEE:** Dry grasslands (6220 \* Pseudo-steppe with grasses and annuals of the *Thero-Brachypodieta*);

**Phytosociology:** *Erico arboreae-Quercetum virgiliana* Brullo and Marcenò 1985 (*Quercetea ilicis*);

**Local distribution:** Monte Veneretta.

***Tolpis gussonei*** (Fiori) Brullo

**Edaphic features:** Acidophilous eliophilous species;

**Altitude:** 500–1000 m above sea level;

**Bioclimatic range:** Thermo-mesomediterranean subhumid/humid;

**Habitat 43/92/CEE:** Dry grasslands (6220\* Pseudo-steppe with grasses and annuals of the *Thero-Brachypodieta*);

**Phytosociology:** *Bromo-Oryzopsis miliaceae* O. Bolòs 1970 (*Lygeo-Stipetea*);

**Local distribution:** Monte Veneretta.

***Zannichellia peltata*** Bertol.

**Edaphic features:** Mesotrophic and eutrophic waters;

**Altitude:** 0–100 m above sea level;

**Bioclimatic range:** Thermo-mediterranean subhumid;

**Habitat 43/92/CEE:** Streams (3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation)

**Phytosociology:** *Potametalia pectinati* Koch 1926.

**Local distribution:** Torrente Sirina.

**Note:** This species is very rare in Sicily, it was recorded previously only for central Sicily and Palermo (Bonanno

Table 1. Life forms of Taormina flora compared with Sicilian flora.

Life form	Taormina flora		Sicilian flora (Raimondo et al. 2010)	
	<i>n</i>	%	<i>n</i>	%
G	89	14.26	417	12.8
Ch	42	6.73	277	8.52
H	167	26.76	890	27.34
T	251	40.22	1199	36.87
P/NP	74	11.9	378	11.62
He/Hy	1	0.2	91	2.80
	624		3252	

& Veneziano 2011), whereas for Peloritani area this species is reported for the first time.

### Discussion and conclusion

*Floristic features* (Life form, Chorology, Ecological features)

The vascular flora of the Taormina territory has a high biodiversity in terms of number of species but this is comparable to other Mediterranean territories of similar size that are characterized by a great variety of habitats and a rather complex geomorphology (Gianguzzi et al. 2006; Minissale et al. 2007). The high number of therophytes and hemicryptophytes observed can be related to the

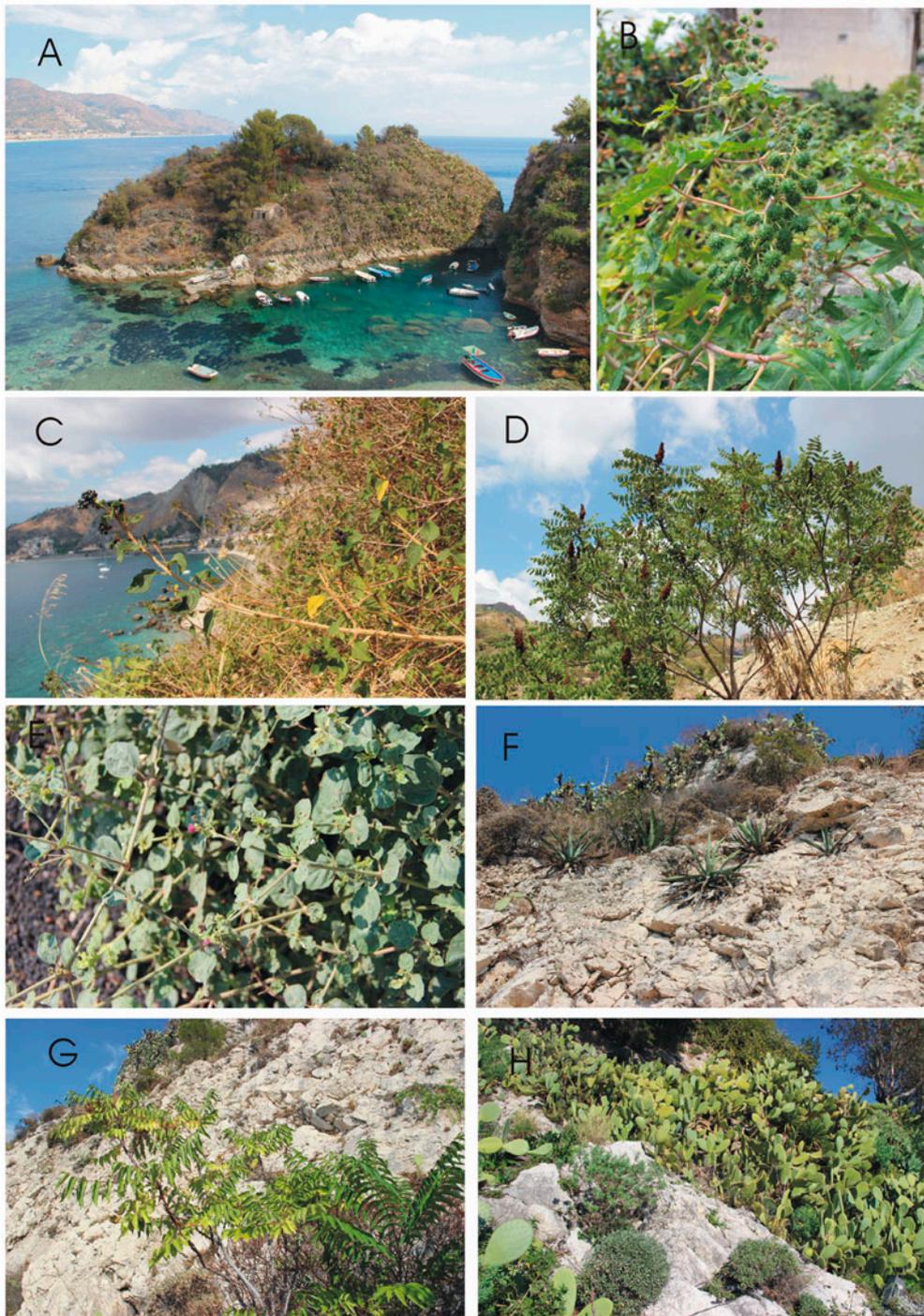


Figure 6. Some alien species of Taormina Region: (A) *Euphorbia dendroides* community on coastal rocks of Mazzarò invaded by *Opuntia ficus-indica*; (B) *Ricinus communis*; (C) *Lantana camara*; (D) *Rhus coriaria*; (E) *Boerhaavia repens* subsp. *viscosa*; (F) *Agave americana*; (G) *Ailanthus altissima*; (H) *Opuntia ficus-indica* invading *Lomelosia cretica* habitat.

considerable diffusion of seminatural habitat, such as dry grassland, originated by anthropic disturbance, and uncultivated lands. Moreover, the abundance of rocky wall and cliffs favours chamaephytes, while the low percentage of nanophanerophytes and phanerophytes can be related to the moderate altitude of the territory, which does not allow the settlement of microthermal woody species. The majority of chamaephytes and hemicryptophytes grow in rocky habitats and they are often endemic. So it would seem possible to recognize a tendency of concentration of endemic taxa in these life forms. This observation is in agreement with Pignatti (1979), who pointed out that the evolution of Mediterranean flora follows a pattern of reduction of the vegetative apparatus associated with an expansion of the geographic distribution. Also Georghiou and Delipetrou (2010) highlighted the predominance of chamaephytes and hemicryptophytes in endemic flora of Greece, arguing that these life forms are connected with the adaptive strategy to their conservative habitats. Similar features occur in the Hyblaen district in S Sicily (Brullo et al. 2011).

The life form spectrum of the Taormina Region flora can be compared with the flora of Sicily for which data are well known (Giardina et al. 2007; Raimondo et al. 2010): there are not significant differences (Table 1). For example, therophytes and geophytes of the Taormina Region are a little greater in percentages (40% versus 37%, 14.3% versus 12.8%, respectively, and genuine aquatic plants are not relevant). However, the high percentage of therophytic life forms is similar to other Mediterranean regions (Melendo et al. 2003).

The analysis of the habitat types shows that the species of the Taormina Region predominantly grow in dry grasslands but the species of higher phytogeographic value, such as endemics and subendemic taxa, occur generally in rocky habitats. These habitats represent a refugium with high capacity of conservation of a very ancient flora dating back to the Tertiary period.

The most striking case is that of *Colymbada tauromenitana* for which various investigations have recently been made, on its distribution by Sciandrello and D'Agostino (2014) and on its origin by Font et al. (2002, 2009). The latter believe that *C. tauromenitana*, belonging to the section *Acrocentron* of the genus *Centaurea*, is the connecting link between the centre of the eastern origin of the section and the species of northern Morocco and southern Spain, such as *C. carolipauana* Fern. Casas & Susanna, *C. clementei* Boiss and *C. lainzii* Fern. Casas. However, it should be noted that all the other species of *Colymbada* above mentioned occur in the western Mediterranean Alpine orogen, which detached from the current Iberian Peninsula during the Eocene era in the form of microplates (Aldega et al. 2011). The origin of the different tribes of Asteraceae by Kim et al. (2005) is placed between the Eocene and Oligocene eras. Therefore, the hypothesis that *C. tauromenitana*, present on the southern edge of the Calabrian Peloritani Arc should have a western origin linked to the movements of

microplates, in contrast to that proposed by Font et al. (2009), does not seem so far fetched and is consistent with similar cases such as the one relating to the group of *Erucastrum virgatum* (Sciandrello et al. 2014), but this requires further specific investigations. Also, the presence of *Convolvulus sabatius* subsp. *mauritanicus* in this territory should be related to ancient palaeogeographic connections. In fact, the Algerian locations of this taxon overlap the Kabilies and the Moroccan ones occurring in the Rif (Carine & Robba 2010). The Kabilies and Rif, together with the Calabrian Peloritani Arc, belong to the Alpine orogen and share the evolution of the western Mediterranean region, because they are in contiguity/proximity from late Eocene until late Oligocene (Aldega et al. 2011). Therefore, the presence of *C. sabatius*, albeit sporadic in the Taormina territory, is a further testimony to support the above-mentioned hypothesis on the palaeogeography of the area in the context of the Calabrian Peloritani Arc.

The present study has also highlighted the presence of several alien species, mostly naturalized and sometimes more or less invasive (Figure 6). In particular, worth mentioning *Opuntia ficus-indica* (Figure 6A,H), *Kalanchoe daigremontiana*, *Aeonium arboreum* and *Agave americana* (Figure 6F) widespread mainly in rocky habitats, *Rhus coriaria* (Figure 6D), *Lantana camara* (Figure 6C) in dry grasslands and shrublands, *Boerhaavia repens* subsp. *viscosa* (Figure 6E) along the roadsides, *Ricinus communis* (Figure 6B) and *Ailanthus altissima* (Figure 6G) in synanthropic stands and sometimes in scrublands. This is mainly due to the past agricultural practices, as well as to the realization of several private gardens with exotic plants since the late nineteenth century. The pioneer of this activity was Lady Florence Trevelyan (1852–1907), who created the public gardens of Taormina and introduced several ornamental plants at Isola Bella and other areas around the city (Rocuzzo 1992). In some cases, alien species, such as *Opuntia ficus-indica*, may represent a serious threat, not only to the natural habitats but also to some rare or endemic rupicolous species, such as *Colymbada tauromenitana*, *Brassica raimondoi*, *Lomelosia cretica*, *Dianthus rupicola* sub. *rupicola*, as already observed by Sciandrello and D'Agostino (2014). The huge spread of *Opuntia ficus-indica* is also favoured by the edaphic conditions, as well as by the past agricultural exploitation of this area (Vila'et al. 2003; Erre et al. 2009).

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