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VASCULAR FLORA OF MONTE SPARVIERE (SOUTHERN ITALY, POLLINO MASSIF)

Abstract - *Vascular Flora of Monte Sparviere (Southern Italy, Pollino Massif)*. A floristic survey of Monte Sparviere was carried out from 2012 to 2015, allowing us to record 377 specific and subspecific taxa, belonging to 229 genera and 64 families. The most represented families are Asteraceae (55 taxa), Poaceae (30), Fabaceae (28), Rosaceae (23) and Lamiaceae (19). Italian endemic species reach the 8.5% and no exotic species are recorded except three conifers used for reforestation. Biological spectrum shows a dominance of Hemicryptophytes, with a moderate percentage of Therophytes. The chorological analysis shows a dominance of species belonging to the Eurosibiric region, albeit Mediterranean region is also well represented. The ecological spectra are in agreement with climatic and geo-pedologic features, with variations mainly related to woody coverage and altitude. Finally, *Potentilla pedata* Willd. ex Hornem was confirmed for the flora of Basilicata; *Dianthus sternbergii* Capelli was excluded from the flora of Basilicata and Calabria whereas *Dianthus byssopifolius* L. resulted new for both regions.

Key words - Flora, Pollino National Park, Ellenberg values, Italy, Calabria, Basilicata.

Riassunto - *Flora vascolare del Monte Sparviere (Italia meridionale, Massiccio del Pollino)*. Negli anni 2012-2015 è stata condotta una ricerca floristica sul Monte Sparviere, porzione più orientale del Parco Nazionale del Pollino. Sono stati censiti 377 taxa fra specie e sottospecie, appartenenti a 229 generi e 64 famiglie. Le famiglie più rappresentate sono le Asteraceae (55 taxa), Poaceae (30), Fabaceae (28), Rosaceae (23) e Lamiaceae (19). I taxa endemici raggiungono il 8.5% del totale della flora, mentre nessuna entità esotica è stata rinvenuta, ad eccezione di tre conifere usate per rimboschimenti. Lo spettro biologico mostra una prevalenza di Emicriptofite e una percentuale significativa di Terofite. L'analisi corologica evidenzia una dominanza di taxa a distribuzione eurosibirica, seguite dalle entità ad areale mediterraneo. Gli spettri ecologici sono in accordo con le caratteristiche climatiche e geo-pedologiche dell'area indagata e mostrano le principali variazioni legate alla copertura arborea e all'altitudine. Infine *Potentilla pedata* Willd. ex Hornem è confermata per la flora della Basilicata; *Dianthus sternbergii* Capelli viene escluso dalla flora della Basilicata e della Calabria mentre *Dianthus byssopifolius* L. è risultato di nuova segnalazione per entrambe le regioni.

Key words - Flora, Pollino National Park, Ellenberg values, Italy, Calabria, Basilicata.

INTRODUCTION

Mount Sparviere represents the easternmost part of Pollino Massif. This area is included within the Pollino National Park and, partially, within the Site of Community Importance (SCI) "Monte Sparviere" (code IT9310019). The study area is located across the administrative borders of Calabria (Alessandria del Carretto, Plataci and San Lorenzo Bellizzi) and Basilicata (Terranova del Pollino) regions (Fig. 1). It has an extension of 7.3 Km² and elevation ranging from 950 to 1713 metres. As floristic information is concerned, only 10 taxa are generically recorded for Mt. Sparviere, published over several decades (Gavioli, 1947; Codogno & Puntillo, 1993; Bernardo, 1997; Cocca *et al.*, 2006; Puntillo & Peruzzi, 2009). According to Scoppola & Blasi (2005), this area is poorly known.

GEOLOGICAL AND CLIMATIC FEATURES OF THE AREA

The main reliefs are Mount Sparviere (1713 m), Timpone di Bardisce (1679 m), Tacca Peppini (1679 m), Cozzo Sarcone (1678 m) and Serra di Lagoforano (1588 m). Within the study area 3 main river basins occur: Saraceno, Satanasso, and Raganello. The geological substrate is composed by the so-called "Flysch of Albidona": a series of grey sandstones and white-grey clayey marls (Vezzani, 1970; Monaco *et al.*, 1995). A small part of the area (Cozzo Sarcone) falls within the "Saraceno formation", marked by a higher presence of limestones in the upper layers (Monaco *et al.*, 1995). The average annual temperature, inferred by data reported for the Raganello basin, is 12-14 °C (www.regione.calabria.it). The average annual rainfall, recorded in Alessandria del Carretto, is about 800-1000 mm/yr (www.cfd.calabria.it). Based on the De Martonne index, the study area is falling in a humid class (www.regione.calabria.it).

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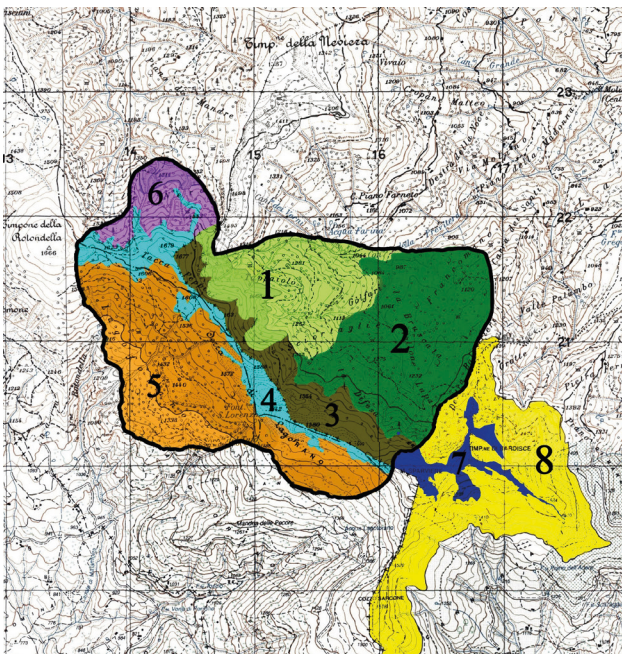


Fig. 1 - Localization of the study area in Italy (top right) and among Basilicata and Calabria regions. On the left, the boundaries on an IGM 1:25000 map are shown. Numbers refer to the eight Operational Geographic Units (OGUs). Dotted line indicates the boundary between Calabria (on the right) and Basilicata (on the left) regions.

MATERIALS AND METHODS

Field research was carried out during the years 2012-2015. The study area has been delimited to include the whole SCI territory, by adding also the portions above 1400 m of Timpone di Bardisce and Cozzo Sarcone on the Calabrian side. The study area was divided in 8 Operational Geographic Units (OGUs) selected based on: 1) the administrative region (Calabria/Basilicata), 2) SCI inclusion/exclusion, 3) presence/absence of woody coverage (Table 1).

For the species identification, we mainly referred to Pignatti (1982) and Tutin *et al.* (1964-1980). In critical cases we also considered monographs (D'Amato, 1955, 1957; Ietswaart, 1980; Nardi, 1984; Brillì-Cattarini & Gubellini, 1986; Castroviejo *et al.*, 1986; Ravník, 1988; Kirschner & Štěpánek, 1998; Brullo *et al.*, 2000;

Snogerup & Snogerup, 2001; Marchetti, 2004; Tison, 2004; Peruzzi & Gargano, 2005; Garbari *et al.*, 2008; Persson, 2008; Bacchetta *et al.*, 2010; Iamonico, 2011; Scoppola & Lattanzi, 2012; Selvi & Sutorý, 2012; Scasellati *et al.*, 2013; Slovák *et al.*, 2012; Tison *et al.*, 2013; Al-Shehbaz, 2014; Arrigoni 2014; Cecchi *et al.*, 2014; Foggi *et al.*, 2014; Arrigoni 20125; Astuti *et al.*, 2015; Peruzzi *et al.*, 2015; Roma-Marzio *et al.*, 2015). Scientific names are attributed according to Conti *et al.* (2005, 2007). The circumscription and systematic order of the families follows Peruzzi (2010). Life forms and chorological types are according to Pignatti (1982), whereas Ellenberg values follow Pignatti (2005) and Guarino *et al.* (2012). The ecograms, represented by a radar graph (Pignatti *et al.*, 1996), are obtained from the average values of the six factors calculated both for the total area and for each OGU. For the distribution of Italian

Table 1 - Features of each OGU.

OGU	Area (Km ²)	Region	SCI	Woody coverage	Altitudinal range
1	1	Calabria	inside	poor	1000-1500
2	1.35	Calabria	inside	abundant	950-1500
3	0.53	Calabria	inside	none	1400-1600
4	0.54	Basilicata	inside	none	1550-1680
5	1.65	Basilicata	inside	abundant	1250-1625
6	0.32	Basilicata	inside	abundant	1350-1600
7	0.25	Calabria	outside	poor	1500-1713
8	1.65	Calabria	outside	abundant	1400-1650

endemic species, we referred to Peruzzi *et al.* (2014). Finally, Conti *et al.* (1997), Scoppola & Spampinato (2005) and Rossi *et al.* (2013) were checked to verify the conservation status for each taxon. The occurrence in the OGU is reported for each taxon. Furthermore, we used the following symbols:

* = taxa not found by us, but recorded in literature. The OGU of occurrence was inferred from literature, and is followed by a question mark (?).

*CLU = taxa with herbarium collections in CLU, but not confirmed in this study. Also in this case, the OGU of occurrence was inferred from herbarium label, and is followed by a question mark (?).

Dried specimens (with the exception of Orchidaceae) are preserved in PI, FI, CLU or in the personal herbarium of the authors (Herb. Roma-Marzio). According to the method proposed by Cristofolini (1998), we calculated the expected floristic richness. To this aim, we considered the sub-regional floras of Basilicata and Calabria published over the last 35 years (La Valva & Ricciardi, 1978; Corbetta & Pirone, 1984; La Valva, 1984; Ballelli & Venanzoni, 1993; Maiorca & Spampinato, 1994; Bernardo & Maiorca, 1996; Caputo *et al.*, 1997; Maiorca *et al.*, 2002; Musarella & Tripodi, 2004; Maiorca *et al.*, 2007; Maiorca & Puntillo, 2009; Di Marco *et al.*, 2013; Maiorca & Puntillo, 2015).

FLORISTIC LIST

POLYPODIIDAE

Dennstaedtiaceae

Pteridium aquilinum (L.) Kuhn subsp. *aquilinum* – G rhiz – Cosmopol. – OGU: 1, 2, 3, 4, 5, 6, 7, 8 – (PI).

Aspleniaceae

Asplenium ceterach L. subsp. *bivaleans* (D.E.Meyer) Greuter & Burdet – H ros – Euras.-Temper. – OGU: 1, 2, 8 – (PI).

Asplenium trichomanes L. s.l. – H ros – Cosmopol. – OGU: 2, 3, 6 – (PI).

Woodsiaceae

Cystopteris fragilis (L.) Bernh. – H caesp – Subcosmop. – OGU: 2 – (PI; Herb. Roma-Marzio).

Dryopteridaceae

Polystichum setiferum (Forssk.) T.Moore ex Woynt. – G rhiz – Circumbor. – OGU: 2, 5, 6, 8 – (PI).

PINIDAE

Pinaceae

Abies alba Mill. – P scap – Orofit. S-Europ. – OGU: 2, 3, 8 – (PI).

Cedrus libani A.Richard – P caesp – Orig. Lebanon – OGU: 1 – (PI). Cultivated for reforestation.

Pinus nigra J.F.Arnold subsp. *nigra* – P scap – Orig. NE-Eurimedit – OGU: 7 – (PI). Cultivated for reforestation.

Pseudotsuga menziesii (Mirbel) Franco – P caesp – Orig. N Americ. – OGU: 1 – (PI). Cultivated for reforestation.

MAGNOLIIDAE

Aristolochiaceae

Aristolochia lutea Desf. – G bulb – Eurimedit.-Maca. – OGU: 1, 2 – (PI).

Araceae

Arum cylindraceum Gasp. – G rhiz – Stenomedit. – OGU: 2 – (CLU).

Arum italicum Mill. subsp. *italicum* – G rhiz – Stenomedit. – OGU: 2 – (PI).

Colchicaceae

Colchicum alpinum Lam. & DC. – G bulb – NW-Medit.-Mont. – OGU: 3, 4, 7, 8 – (PI).

Colchicum neapolitanum (Ten.) – G bulb – W-Stenomedit. – OGU: 1, 2, 5, 8 – (PI).

Liliaceae

Fritillaria montana Hoppe ex W.D.J.Koch – G bulb – Orofit. S-Europ. – OGU: 7 – (PI; Herb. Roma-Marzio).

Gagea fragifera (Vill.) Ehr.Bayer & G.López – G bulb – Orofit. S-Europ. – OGU: 3, 4, 8 – (PI; Herb. Roma-Marzio).

Gagea minima (L.) Ker Gawl. – G bulb – Eurosib. – OGU: 1, 3, 4, 8 – (PI; Herb. Roma-Marzio).

Our findings represent the second record for Calabria in recent times (Peruzzi & Gargano, 2005), and also the second record for Basilicata, where this species was recently quoted by Bernardo *et al.* (2013).

Gagea peruzzi J.-M.Tison – G bulb – Endem. – OGU: 6 – (PI).

Gagea villosa (M.Bieb.) Sweet – G bulb – Eurasiat. – OGU: 1, 8 – (PI).

**Lilium bulbiferum* L. subsp. *croceum* (Chaix) Jan – G bulb – Orofit. S-Europ. – OGU: 2(?).

This species was recorded for the study area by Gavioli (1947, sub *Lilium bulbiferum* L. var. *croceum* Chaix) “*In partibus et in silvis a Lagoforano*”.

Orchidaceae

Anacamptis papilionacea (L.) R.M.Bateman, Pridgeon & M.W.Chase – G bulb – Eurimedit. – OGU: 1, 2, 8.

Anacamptis pyramidalis (L.) Rich. – G bulb – Eurimedit. – OGU: 1, 7.

Dactylorhiza sambucina (L.) Soó – G bulb – Europ.-Caucas. – OGU: 1, 2, 3, 8.

Dactylorhiza viridis (L.) R.M.Bateman, Pridgeon & M.W. Chase – G bulb – Circumbor. – OGU: 3.

Himantoglossum hircinum (L.) Spreng. – G bulb – Eurimedit.-Subatl. – OGU: 1.

Neotinea maculata (Desf.) Stearn. – G bulb – Stenomedit. – OGU: 3.

Neotinea tridentata (Scop.) R.M.Bateman, Pridgeon & M.W.Chase – G bulb – Eurimedit. – OGU: 1.

Orchis mascula (L.) L. subsp. *mascula* – G bulb – Europ.-Caucas. – OGU: 1.

Iridaceae

Crocus biflorus Mill. – G bulb – Endem. – OGU: 1, 2, 8 – (PI; Herb. Roma-Marzio).

Crocus neapolitanus (Ker Gawl.) Loisel. – G bulb – Eurimedit. – OGU: 1, 2, 3, 4, 5, 6, 7, 8 – (PI).

According to Peruzzi *et al.* (2013), all the Southern Apennine populations of “*Crocus vernus*” should be referred to *Crocus neapolitanus* (Ker Gawl.) Loisel.

Xanthorrhoeaceae

Asphodelus macrocarpus Parl. subsp. *macrocarpus* – G rhiz – Medit.Mont.-Subatl. – OGU: 4, 5, 7, 8 – (PI).

Amaryllidaceae

Allium tenuiflorum Ten. – G bulb – Stenomedit. – OGU: 1, 2, 8 – (PI).

Narcissus poeticus L. – G bulb – Orof. S-Europ. – OGU: 3, 4, 5, 7 – (PI).

Asparagaceae

Muscari comosum (L.) Mill. – G bulb – Eurimedit. – OGU: 1 – (PI).

Muscari neglectum Guss. ex Ten. – G bulb – Eurimedit. – OGU: 1 – (PI).

Ornithogalum montanum Cirillo – G bulb – NE-Medit.-Mont. – OGU: 1, 3, 4, 5, 7, 8 – (PI).

Polygonatum multiflorum (L.) All. – G rhiz – Eurasiat. – OGU: 2, 5 – R – (PI).

Scilla bifolia L. – G bulb – Europ.-Caucas. – OGU: 1, 2, 3, 4, 5, 6, 7, 8 – (PI).

Juncaceae

Juncus articulatus L. – G rhiz – Circumbor. – OGU: 2 – (PI).

Juncus inflexus L. – H caesp – Paleotemp. – OGU: 2, 5 – (PI).

Luzula campestris (L.) DC. – H caesp – Europ.-Caucas. – OGU: 1, 3, 4, 7, 8 – (PI; Herb. Roma-Marzio).

Cyperaceae

Carex caryophyllea Latourr. – H scap – Eurasiat. – OGU: 3, 4, 7, 8 – (PI).

Poaceae

Anisantha diandra (Roth) Tzvelev – T scap – Eurimedit. – OGU: 2 – (PI).

Anisantha sterilis (L.) Nevski – T scap – Eurimedit. – OGU: 1 – (PI).

Anthoxanthum odoratum L. s.l. – H caesp – Eurasiat. – OGU: 3, 4 – (PI; Herb. Roma-Marzio).

Brachypodium sylvaticum (Huds.) P.Beauv. subsp. *sylvaticum* – H caesp – Paleotemp. – OGU: 2, 4, 5, 6, 8 – (PI).

Briza maxima L. – T scap – Subtrop. – OGU: 1 – (PI; Herb. Roma-Marzio).

Bromopsis erecta (Huds.) Fourr. subsp. *erecta* – H caesp – Paleotemp. – OGU: 1, 4, 7, 8 – (PI; Herb. Roma-Marzio).

Bromopsis ramosa (Huds.) Holub subsp. *ramosa* – H caesp – Eurasiat. – OGU: 2 – (CLU).

Bromus hordeaceus L. subsp. *thominei* (Hardouin) Braun-Blanq. – T scap – Eurimedit. – OGU: 1 – (PI).

Bromus intermedius Guss. subsp. *intermedius* – T scap – Eurimedit. – OGU: 2, 6 – (PI).

Bromus squarrosus L. – T scap – Paleotemp. – OGU: 1, 2 – (PI).

Cynosurus cristatus L. – H caesp – Europ.-Caucas. – OGU: 1, 2, 8 – (PI; Herb. Roma-Marzio).

Cynosurus echinatus L. – T scap – Eurimedit. – OGU: 1, 2, 3, 4, 8 – (PI).

Dactylis glomerata L. subsp. *hispanica* (Roth) Nyman – H caesp – Stenomedit. – OGU: 1, 2 – (PI; Herb. Roma-Marzio).

*CLU *Elymus caninus* (L.) L. subsp. *caninus* – H caesp – Circumbor. – OGU: 2(?)

Festuca circummediterranea Patzke – H caesp – Eurimedit. – OGU: 1, 2 – (PI).

Festuca heterophylla Lam. – H caesp – Europ.-Caucas. – OGU: 2, 5, 6, 8 – (PI).

Festuca rubra L. s.l. – H caesp – Subcosmop. – OGU: 1, 3, 4, 5, 7, 8 – (PI).

Glyceria fluitans (L.) R.Br. – I rad – Subcosmop. – OGU: 3, 4 – (PI).

Hordeum murinum L. subsp. *leporinum* (Link) Arcang. – T scap – Eurimedit. – OGU: 1 – (PI).

Leucopoa dimorpha (Guss.) H.Scholz & Foggi – H caesp – Alps-Apennines – OGU: 8 – (PI).

Lolium rigidum Gaudin subsp. *rigidum* – T scap – Paleosubtrop. – OGU: 1, 2, 8 – (PI).

Milium vernale M.Bieb. s.l. – T scap – Medit.-Mont. – OGU: 2 – (PI).

Phleum hirsutum Honck. subsp. *ambiguum* (Ten.) Tzvelev – G rhiz – Centro-Europ. – OGU: 1, 8 – (PI).

Poa alpina L. – H caesp – Circumbor. – OGU: 3, 4, 5, 7 – (PI; Herb. Roma-Marzio).

Poa annua L. – T caesp – Cosmopol. – OGU: 1, 2, 8 – (PI).

Poa bulbosa L. – H caesp – Paleotemp. – OGU: 1, 2 – (PI; Herb. Roma-Marzio).

Poa nemoralis L. subsp. *nemoralis* – H caesp – Circumbor. – OGU: 2 – (CLU).

Poa sylvicola Guss. – H caesp – Eurimedit. – OGU: 2, 5, 6 – (PI).

Stipa dasyvaginata Martinovský subsp. *apenninicola* Martinovský & Moraldo – H caesp – Endem. – OGU: 5 – (PI).

Triticum ovatum (L.) Raspail – T scap – Stenomedit.-Turan. – OGU: 1 – (PI; Herb. Roma-Marzio).

Papaveraceae

- Corydalis solida* (L.) Desf. subsp. *solida* – G bulb – Centro-Europ. – OGU: 1, 2, 3, 4, 5, 6, 8 – (PI).
Papaver dubium L. s.l. – T scap – Eurimedit.-Tur. – OGU: 1 – (PI).

Ranunculaceae

- Aconitum lycoctonum* L. emend. Koelle – H scap – Orofit. S-Europ. – OGU: 6 – (PI).
Anemone apennina L. subsp. *apennina* – G rhiz – SE-Europ. – OGU: 1, 2, 3, 4, 5, 6, 8 – (PI; Herb. Roma-Marzio).
Caltha palustris L. – H ros – Circumbor. – OGU: 3, 4 – (PI).
Clematis vitalba L. – P lian – Europ.-Caucas. – OGU: 1, 2, 5, 6 – (PI).
Delphinium ajacis L. – T scap – Eurimedit. – OGU: 1, 5 – (PI).
Delphinium fissum Waldst. & Kit. subsp. *fissum* – H scap – Orofit.-Eurasiat. – OGU: 2, 7, 8 – (PI; CLU).
Delphinium pubescens DC. – T scap – W-Stenomedit. – OGU: 1 – (PI).
Ficaria verna Huds. s.l. – G bulb – Eurasiat. – OGU: 1, 2, 6 – (PI).
Helleborus foetidus L. subsp. *foetidus* – Ch suffr – Subatl. – OGU: 2, 5, 6 – (PI).
Ranunculus brutius Ten. – H scap – Orofit. SE-Europ. – OGU: 1, 2, 5, 6, 8 – (PI).
Ranunculus lanuginosus L. – H scap – Europ.-Caucas. – OGU: 2 – (CLU).
Ranunculus millefoliatus Vahl. – H scap – Medit.-Mont. – OGU: 1, 2, 3, 4, 5, 8 – (PI; Herb. Roma-Marzio).
Ranunculus montepellicanus L. subsp. *montepellicanus* – H scap – NW-Medit.-Mont. – OGU: 4, 5, 7, 8 – (PI).
Ranunculus peltatus Schrank subsp. *peltatus* – I rad – Europ. – OGU: 3, 4 – (FI; Herb. Roma-Marzio).
 This taxon was recently recorded for Basilicata (Roma-Marzio & Peruzzi, 2014a). Our finding also represents the second record for Calabria (Peruzzi & Passalacqua, 2005).
Thalictrum aquilegifolium L. subsp. *aquilegifolium* – H scap – Eurosib. – OGU: 2, 3, 5, 6, 8 – (PI).
 *CLU *Thalictrum flavum* L. – H scap – Eurasiat. – OGU: 2(?).

Saxifragaceae

- Saxifraga carpetana* Boiss. & Reut. subsp. *graeca* (Boiss. & Heldr.) D.A.Webb – H scap – NE-Stenomedit. – OGU: 1, 2, 3, 4, 8 – (PI).
Saxifraga rotundifolia L. subsp. *rotundifolia* – H scap – Orofit. S-Europ. – OGU: 5, 8 – (PI).

Crassulaceae

- Sedum acre* L. – Ch succ – Europ.-Caucas. – OGU: 5 – (PI).
Sedum amplexicaule DC. subsp. *tenuifolium* (Sm.

- in Sibth. & Sm.) Greuter – Ch succ – Stenomedit. – OGU: 1 – (PI).
Sedum dasyphyllum L. – Ch succ – Eurimedit. – OGU: 1, 2 (PI).
Sedum hispanicum L. – T scap – SE-Europ. – OGU: 1, 2 – (PI).
Sempervivum tectorum L. – Ch succ – Orofit. S-Europ. – OGU: 5 – (PI).
Umbilicus rupestris (Salisb.) Dandy – G bulb – Medit.-Atlant. – OGU: 1, 2 – (PI).

Fabaceae

- Anthyllis vulneraria* L. subsp. *maura* (Beck) Maire – H scap – Eurimedit. – OGU: 1, 8 – (PI).
Coronilla scorpioides (L.) W.D.J.Koch – T scap – Eurimedit. – OGU: 1 – (PI).
Cytisophyllum sessilifolium (L.) O.Lang – P caesp – Orofit. SW -Europ. – OGU: 3, 4, 5, 7, 8 – (PI).
Laburnum alpinum (Mill.) Bercht. & J.Presl – P caesp – Orofit. S-Europ. – OGU: 1, 2, 8 – (PI; Herb. Roma-Marzio).
Lathyrus grandiflorus Sm. – G rhiz – NE Stenomedit. – OGU: 1, 2, 5 – (PI).
Lathyrus nissolia L. – T scap – Eurimedit. – OGU: 1, 2, 8 – R – (PI).
Lathyrus pratensis L. subsp. *pratensis* – H scap – Paleotemp. – OGU: 2, 6 – (PI).
Lathyrus vernus (L.) Bernh. subsp. *vernus* – G rhiz – Eurasiat. – OGU: 2, 5, 6 – (PI).
Lotus corniculatus L. subsp. *corniculatus* – H scap – Paleotemp. – OGU: 1, 3, 4, 8 – (PI).
Medicago lupulina L. – T scap – Paleotemp. – OGU: 1, 2 – (PI; Herb. Roma-Marzio).
Medicago minima (L.) L. – T scap – Eurimedit. – OGU: 1 – (PI).
Medicago orbicularis (L.) Bartal. – T scap – Eurimedit. – OGU: 1 – (PI).
Medicago sativa L. – H scap – Eurasiat. – OGU: 1 – (PI).
Spartium junceum L. – P caesp – Eurimedit. – OGU: 1 – (PI).
Trifolium arvense L. subsp. *arvense* – T scap – Paleotemp. – OGU: 1, 4 – (PI).
 *CLU *Trifolium brutium* Ten. – T scap – Endem. – OGU: 8(?).
Trifolium campestre Schreb. – T scap – Paleotemp. – OGU: 1, 2 – (PI).
Trifolium incarnatum L. subsp. *molinerii* (Hornem.) Ces. – T scap – Eurimedit. – OGU: 1 – (PI).
 *CLU *Trifolium leucanthum* M.Bieb. – T scap – E-Eurimedit. – OGU: 8(?).
 *CLU *Trifolium medium* L. subsp. *medium* – G rhiz – Eurasiat. – OGU: 8(?).
 *CLU *Trifolium phleoides* Willd. – T scap – Medit.-Mont. – OGU: 8 (?).
Trifolium pratense L. subsp. *semipurpureum* (Strobl)

Pignatti – Ch pulv – Endem. – OGU: 2, 4, 8 – (PI; Herb. Roma-Marzio).

Trifolium repens L. subsp. *repens* – Ch rept – Paleotemp. – OGU: 1 – (PI).

*CLU *Trifolium striatum* L. subsp. *striatum* – T scap – Paleotemp. – OGU: 8(?).

*CLU *Trifolium strictum* L. – T scap – Eurimedit. – OGU: 8(?).

*CLU *Vicia hirsuta* (L.) Gray – T scap – Paleotemp – OGU: 8(?).

Vicia incana Gouan – H scap – Eurimedit. – OGU: 7 – (PI).

Vicia villosa Roth subsp. *varia* (Host) Corb. – T scap – Eurimedit. – OGU: 1, 2, 8 – (PI).

Polygalaceae

Polygala alpestris Rchb. subsp. *meridionalis* Arrigoni – H scap – Endem. – OGU: 3, 4, 7 – (PI).

Polygala nicaeensis W.D.J.Koch subsp. *peninsularis* Arrigoni – H scap – Endem. – OGU: 1 – (PI).

Rosaceae

Agrimonia eupatoria L. subsp. *eupatoria* – H scap – Subcosmop. – OGU: 1, 8 – (PI).

Aremonia agrimonoides (L.) DC. subsp. *agrimonoides* – H ros – NE-Stenomedit. – OGU: 2 – (PI).

Crataegus laevigata (Poir.) DC. – P caesp – Centro-Europ. – OGU: 1 – (PI; CLU).

Crataegus monogyna Jacq. – P caesp – Paleotemp. – OGU: 1, 2, 5, 6, 7, 8 – (PI).

Fragaria vesca L. subsp. *vesca* – Ch rept – Eurosib. – OGU: 1, 2, 5, 6, 8 – (PI; CLU).

Geum urbanum L. – H scap – Circumbor. – OGU: 1, 2, 5, 6 – (PI).

Malus sylvestris (L.) Mill. – P scap – Centro-Europ. – OGU: 1, 2, 5, 6, 8 – (PI).

Potentilla calabra Ten. – H scap – Orofit. SE-Europ. – OGU: 1, 3, 4, 7, 8 – (PI).

Potentilla pedata Willd. ex Hornem. – H scap – Eurimedit. – OGU: 3, 4, 5 – (PI).

Conti *et al.* (2006) reported *Potentilla pedata* for Basilicata, but included it into the variability of *P. recta* L. We confirm here the former species for the region.

Potentilla reptans L. – H ros – Paleotemp. – OGU: 1, 5 – (PI; Herb. Roma-Marzio).

Potentilla rigoana Th.Wolf – H scap – Endem. – OGU: 7 – (PI).

Prunus cocomilia Ten. – P scap – NE-Medit.-Mont. – OGU: 1, 2, 6, 8 – (PI).

*CLU *Prunus spinosa* L. – P caesp – Europ.-Caucas. – OGU: 8(?).

Pyrus communis L. – P caesp – Eurasiat. – OGU: 1 – (PI).

*CLU *Rosa arvensis* Huds. – NP – Stenomedit. – OGU: 8(?).

Rosa canina L. – NP – Paleotemp. – OGU: 1, 2, 3, 4, 6, 7, 8 – (PI; CLU).

Rosa heckeliana Tratt. – NP – NE-Medit.-Mont. – OGU: 2, 3, 7, 8 – (PI; CLU).

*CLU *Rosa rubiginosa* L. – NP – Eurasiat. – OGU: 8(?).

*CLU *Rosa subcanina* (H.Christ.) Vuk. – NP – Paleotemp. – OGU: 8(?).

Rubus canescens DC. – NP – N-Eurimedit. – OGU: 1, 2, 6, 8 – (PI; CLU).

*CLU *Rubus* ser. *Glandulosi* (Wimm. & Grab.) Focke (*R. hirsutus*) – NP – OGU: 8(?).

Sorbus aria (L.) Crantz subsp. *aria* – P caesp – Paleotemp. – OGU: 8 – (PI).

Sorbus aucuparia L. subsp. *praemorsa* (Guss.) Nyman – P caesp – Endem. – OGU: 1, 8 – (PI).

Ulmaceae

Ulmus glabra Huds. – P scap – Europ.-Caucas. – OGU: 2 – (PI).

Urticaceae

Urtica dioica L. subsp. *dioica* – H scap – Subcosmop. – OGU: 1, 2, 3, 5, 6, 8 – (PI).

Fagaceae

**Fagus sylvatica* L. subsp. *sylvatica* – P scap – Centro-Europ.

This species was recorded by Bernardo (1997), but not confirmed by our research. Probably it occurs just outside the limits of the study area.

Quercus cerris L. – P scap – N-Eurimedit. – OGU: 1, 2, 4, 5, 6, 8 – (PI).

Also recorded by Bernardo (1997) and Codogno & Puntillo (1993).

Betulaceae

Alnus cordata (Loisel.) Loisel. – P scap – Endem. – OGU: 2, 5, 6, 8 – (PI).

Ostrya carpinifolia Scop. – P caesp – Circumbor. – OGU: 2, 5, 6, 8 – (PI).

Euphorbiaceae

Euphorbia corallioides L. – G rhiz – Endem. – OGU: 8 – (PI).

Salicaceae

Populus tremula L. – P scap – Eurosib. – OGU: 2, 5, 8 – (PI; Herb. Roma-Marzio).

Salix apennina A.K.Skvortsov – NP – Alps-Apennines – OGU: 1 (PI).

Violaceae

Viola aethnensis (DC.) Strobl subsp. *splendida* (W.Becker) Merxm. & Lippert – H scap – Endem. – OGU: 1, 2, 3, 4, 7, 8 – (PI; Herb. Roma-Marzio).

Viola alba subsp. *dehnhardtii* (Ten.) W.Becker – H ros – Eurimedit. – OGU: 1, 2 – (PI).

Viola kitaibeliana Schult. – T scap – Europ.-Caucas. – OGU: 1 – (PI).

This species was recently recorded for Calabria (Roma-Marzio & Peruzzi, 2014b).

Viola reichenbachiana Jord. ex Boreau – H scap – Eurosib. – OGU: 2, 6 – (PI).

Linaceae

Linum bienne Mill. – H bien – Eurimedit. – OGU: 1 – (PI).

Hypericaceae

Hypericum barbatum Jacq. subsp. *calabricum* (Spreng.) Peruzzi & N.G.Passal. – H scap – Endem. – OGU: 7 – (PI).

Hypericum perforatum L. subsp. *veronense* (Schrank) A.Fröhl. – H scap – Paleotemp. – OGU: 1, 2, 8 – (PI).

Hypericum tetrapertum Fr. – H scap – Paleotemp. – OGU: 5 – (PI).

Geraniaceae

Erodium cicutarium (L.) L'Her. – T scap – Subcosmop. – OGU: 1, 3, 4, 8 – (PI).

Geranium columbinum L. – T scap – S-Europ.-Sudsib. – OGU: 1, 6, 8 – (PI).

Geranium lucidum L. – T scap – Eurimedit. – OGU: 1, 2, 4, 5, 8 – (PI).

Geranium molle L. – T scap – Eurasiat. – OGU: 1, 2 – (PI).

Geranium pyrenaicum Burm.f. subsp. *pyrenaicum* – H scap – Eurimedit. – OGU: 1, 4, 8 – (PI; Herb. Roma-Marzio).

Geranium robertianum L. – T scap – Subcosmop. – OGU: 2, 5, 8 – (PI).

Geranium sanguineum L. – H scap – Europ.-Caucas. – OGU: 7, 8 – (PI).

Geranium versicolor L. – G rhiz – NE-Medit.-Mont. – OGU: 1, 2, 6, 8 – (PI).

Onagraceae

Epilobium montanum L. – H scap – Eurasiat. – OGU: 2, 5, 6, 8 – (PI).

Sapindaceae

Acer campestre L. – P scap – Europ.-Caucas. – OGU: 1, 2, 5, 8 – (PI; CLU).

Already recorded by Cocca *et al.* (2006) for the study area.

Acer cappadocicum Gled. subsp. *lobelii* (Ten.) Murray – P scap – Endem. – OGU: 2 – (PI; CLU).

Already recorded by Cocca *et al.* (2006) for the study area.

Acer opalus Mill. subsp. *obtusatum* (Waldst. & Kit. ex Willd.) Gams – P scap – SE-Europ. – OGU: 1, 2, 5 – (PI; CLU).

Already recorded by Bernardo (1997) and Cocca *et al.* (2006) for the study area.

Acer platanoides L. – P scap – Europ.-Caucas. – OGU: 2, 8 – (PI; CLU).

Already recorded by Bernardo (1997) and Cocca *et al.* (2006) for the study area.

Acer pseudoplatanus L. – P scap – Europ.-Caucas. – OGU: 1, 2, 8 – (PI; CLU).

Already recorded by Bernardo (1997) and Cocca *et al.* (2006) for the study area.

Malvaceae

Malva moschata L. – H scap – Eurimedit. – OGU: 2, 6, 8 – (PI).

Malva thuringiaca (L.) Vis. – H scap – S-Europ.-Sudsib. – OGU: 1, 8 – (PI).

Tilia platyphyllos Scop. subsp. *pseudorubra* C.K.Schneid. – P scap – SE-Europ. – OGU: 2 – (PI).

Thymelaeaceae

Daphne laureola L. – P caesp – Subatlant. – OGU: 1, 2, 5, 6, 8 – (PI).

Cistaceae

Helianthemum croceum (Desf.) Pers. – Ch suffr – W-Medit.-Mont – OGU: 1, 3, 4, 7 – (PI).

Brassicaceae

Alliaria petiolata (M.Bieb.) Cavara & Grande – H scap – Paleotemp. – OGU: 1, 2, 5, 6, 8 – (PI).

Arabis alpina L. subsp. *caucasica* (Willd.) Briq. – H scap – Art.Alp. – OGU: 1, 2, 7, 8 – (PI; Herb. Roma-Marzio).

Arabis collina Ten. subsp. *collina* – H scap – Medit.-Mont. – OGU: 1, 8 – (PI).

Arabis hirsuta (L.) Scop. – H bien – Europ. – OGU: 7 – (PI).

Arabis sagittata (Bertol.) DC. – H bien – SE-Europ. – OGU: 3, 4 – (PI).

Calepina irregularis (Asso) Thell. – T scap – Medit.-Turan. – OGU: 1 – (PI).

Capsella bursa-pastoris (L.) Medik. subsp. *bursa-pastoris* – H bien – Cosmopol. – OGU: 1, 2, 3, 4, 6, 8 – (PI; Herb. Roma-Marzio).

Cardamine graeca L. – T scap – N-Medit.-Mont. – OGU: 1, 2 – (PI; Herb. Roma-Marzio).

Erophila verna (L.) DC. subsp. *verna* – T scap – Circumbor. – OGU: 1, 4, 8 – (PI).

Noccaea perfoliata (L.) Al-Shehbaz – T scap – Paleotemp. – OGU: 1 – (PI; Herb. Roma-Marzio).

Noccaea praecox (Wulfen) F.K.Mey – H scap – Orofit. SE-Europ. – OGU: 7 – (PI).

Sinapis pubescens L. subsp. *pubescens* – Ch suffr – SW-Stenomedit. – OGU: 1, 2, 8 – (PI; Herb. Roma-Marzio).

Viscaceae

Viscum album L. subsp. *album* – P ep – Eurasiat. – OGU: 2, 5, 6, 8 – (PI).

Plumbaginaceae

Armeria gracilis Ten. subsp. *gracilis* – H ros – Endem. – OGU: 3, 4, 5, 7, 8 – (PI; Herb. Roma-Marzio).

Polygonaceae

Polygonum arenastrum Boreau subsp. *arenastrum* – T rept – Subcosmop. – OGU: 2 – (PI).

Rumex conglomeratus Murray – H scap – Eurasiat. – OGU 1, 2 – (PI).

Rumex nebroides Campd. – H scap – N-Medit.-Mont. – OGU: 3, 4 – (PI).

Caryophyllaceae

Cerastium brachypetalum Desp. ex Pers. subsp. *roeseri* (Boiss. & Heldr.) Nyman – T scap – Stenomedit.-Turan. – OGU: 1, 2 – (PI).

Cerastium holosteoides Fr. – H scap – Eurasiat. – OGU: 2, 6, 8 – (PI).

Cerastium tomentosum L. – Ch suffr – Endem. – OGU: 1, 4, 7, 8 – (PI).

Dianthus deltoides L. subsp. *deltoides* – H caesp – Eurasiat. – OGU: 3, 4, 7 – (PI).

Dianthus hyssopifolius L. – H scap – Orofit. S-Europ. – OGU: 2, 3, 4, 7, 8 – (PI; FI; Herb. Roma-Marzio).

This species was previously recorded as *Dianthus sternbergii* Capelli for Basilicata (Conti *et al.*, 2005) and Calabria (Roma-Marzio & Peruzzi, 2014a). As a consequence of field and herbarium investigations the plants occurring in these regions should be actually referred to *Dianthus marsicus* Ten., a name currently synonymized with *Dianthus hyssopifolius* L. (Conti *et al.*, 2005), in need of further studies. Hence, *D. sternbergii* is here excluded for both Basilicata and Calabria regions where, on the contrary, *D. hyssopifolius* (= *D. monspessulanus* L.; see Jarvis, 2007; Tison & de Foucaud, 2014) occurs.

Dianthus vulturius Guss. & Ten. subsp. *vulturius* – H scap – Endem. – OGU: 3, 4 – (PI).

Herniaria glabra L. subsp. *nebrodensis* Jan ex Nyman – H bien – Orofit. SE-Europ. – OGU: 3, 4 – (PI).

This subspecies was recently recorded for Calabria (Roma-Marzio & Peruzzi, 2014b).

Moebria trinervia (L.) Clairv. – T scap – Eurasiat. – OGU: 2 – (CLU).

Petrorhagia prolifera (L.) P.W.Ball & Heywood – T scap – Eurimedit. – OGU: 3, 4, 7 – (PI).

Petrorhagia saxifraga (L.) Link subsp. *gasparrinii* (Guss.) Greuter & Burdet – H caesp – Eurimedit – OGU: 1, 2, 3, 4, 6, 8 – (PI; Herb. Roma-Marzio).

Silene italica (L.) Pers. subsp. *sicula* (Ucria) Jeanm. – H ros – Endem. – OGU: 7 – (PI; Herb. Roma-Marzio).

Silene latifolia Poir. – H bien – Stenomedit. – OGU: 1, 2, 3, 8 – (PI).

Silene multicaulis Guss. subsp. *multicaulis* – H caesp – NE-Medit.-Mont. – OGU: 7 – (PI).

Stellaria holostea L. subsp. *holostea* – Ch pulv – Europ.-Caucas. – OGU: 5, 6, 8 – (PI; CLU).

Stellaria media (L.) Vill. subsp. *media* – T rept – Cosmopol. – OGU: 1, 8 – (PI; Herb. Roma-Marzio).

Amaranthaceae

Blitum bonus-henricus (L.) Rchb. – H scap – Circumbor. – OGU: 1, 6, 8 – (PI).

Montiaceae

Montia fontana L. subsp. *chondrosperma* (Fenzl) Walters – I rad – Medit.-Subatl. – OGU: 3, 4 – (PI).

This taxon was recently confirmed for the flora of Basilicata (Roma-Marzio & Peruzzi, 2014b).

Primulaceae

Cyclamen hederifolium Aiton subsp. *hederifolium* – G bulb – N-Stenomedit. – OGU: 1 – (PI).

Primula vulgaris Huds. subsp. *vulgaris* – H ros – Europ.-Caucas. – OGU: 1, 2, 3, 4, 5, 6, 8 – (PI).

Rubiaceae

Asperula aristata L.f. subsp. *aristata* – H scap – Eurimedit. – OGU: 1, 2 – (PI).

The nomenclature for this subspecies follows Del Guacchio & Caputo (2013).

Asperula laevigata L. – H scap – W-Stenomedit. – OGU: 1, 2, 3, 5, 6, 8 – (PI).

Asperula taurina L. – G rhiz – Orofit. SE-Europ. – OGU: 1, 2 – (PI).

Crucianella angustifolia L. – T scap – Eurimedit. – OGU: 1, 2, 8 – (PI).

Cruciata laevipes Opiz – H scap – Eurasiat. – OGU: 1, 2, 3, 4, 8 – (PI; Herb. Roma-Marzio).

Cruciata pedemontana (Bellardi) Ehrend. – T scap – Eurimedit. – OGU: 1, 8 – (PI).

Galium aparine L. – T scap – Eurasiat. – OGU: 2, 5 – (PI).

Galium lucidum All. s.l. – H scap – Eurimedit. – OGU: 1 – (PI).

Galium verum L. subsp. *verum* – T scap – Europ.-Caucas. – OGU: 3, 4, 7 – (PI).

Sherardia arvensis L. – T scap – Eurimedit. – OGU: 1 – (PI).

Gentianaceae

Centaurium erythraea Rafn subsp. *rumelicum* (Velen.) Melderis – H bien – Paleotemp. – OGU: 1, 3, 8 – (PI).

Gentiana lutea L. subsp. *lutea* – H scap – Orofit. SE-Europ. – OGU: 3, 7 – (PI).

Boraginaceae

Aegonychon purpurocaeruleum (L.) Holub – H scap – S-Europ.-Pont. – OGU: 1 – (PI).

Anchusa azurea Mill. – H scap – Eurimedit. – OGU: 1 – (PI).

Cerintho minor L. subsp. *auriculata* (Ten.) Domac – H scap – SE-Europ. – OGU: 1, 2, 5, 6 – (PI; Herb. Roma-Marzio).

Cynoglossum montanum L. – H bien – S-Stenomedit. – OGU: 8 – (PI).

Echium vulgare L. subsp. *pustulatum* (Sm.) Em. Schmid & Gams – H bien – Europ. – OGU: 1, 2, 8 – (PI; Herb. Roma-Marzio).

Myosotis ramosissima Rochel ex Schult. subsp. *ramosissima* – T scap – Eurimedit.-Subatl. – OGU: 1 – (PI).

Myosotis sylvatica Hoffm. subsp. *elongata* (Strobl) Grau – H scap – Endem. – OGU: 1, 2, 3, 6, 8 – (PI; Herb. Roma-Marzio).

Symphytum tuberosum L. subsp. *angustifolium* (A.Kern.) Nyman – G rhiz – SE-Europ. – OGU: 1, 2 – (PI).

Convolvulaceae

Convolvulus sylvaticus Kit. – H scand – SE-Europ. – OGU: 1, 2, 5, 6 – (PI).

Cuscuta europaea L. – T par – Paleotemp. – OGU: 2, 6 – (PI).

Solanaceae

Solanum nigrum L. – T scap – Cosmopol. – OGU: 1, 8 – (PI).

Oleaceae

Fraxinus ornus L. subsp. *ornus* – P scap – S-Europ.-Sudsib. – OGU: 2, 6, 8 – (PI).

Fraxinus excelsior L. subsp. *excelsior* – P scap – Europ.-Caucas. – OGU: 2, 8 – (PI; FI).

This species was recently recorded for Calabria (Roma-Marzio & Peruzzi, 2014b).

Plantaginaceae

Digitalis ferruginea L. – H scap – NE-Medit.-Mont. – OGU: 2, 3, 5, 6, 8 – (PI).

Digitalis micrantha Roth ex Schweigg. – H scap – Endem. – OGU: 2, 5 – (PI).

Linaria purpurea (L.) Mill. – H scap – Endem. – OGU: 2, 3, 8 – (PI).

Plantago argentea Chaix subsp. *argentea* – H ros – S-Europ.-Sudsib. – OGU: 3, 4, 7 – (PI; FI; Herb. Roma-Marzio).

This subspecies was recently recorded for Calabria (Roma-Marzio & Peruzzi, 2014a).

Plantago lanceolata L. – H ros – Cosmopol. – OGU: 3, 4, 8 – (PI).

Plantago major L. subsp. *major* – H ros – Eurasiat. – OGU: 1, 2, 8 – (PI).

Plantago media L. subsp. *brutia* (Ten.) Arcang. – H ros – Endem. – OGU: 1, 3, 4, 7, 8 – (PI; CLU).

According to the known distribution of this taxon (Peruzzi & Gargano, 2006), the populations of M. Sparviere represent the new eastern limit of the subspecies range.

Veronica beccabunga L. – Ch rept – Eurasiat. – OGU: 2, 5 – (PI).

Veronica hederifolia L. subsp. *hederifolia* – T scap – Eurasiat. – OGU: 1, 8 – (PI; Herb. Roma-Marzio).

Veronica orsiniana Ten. subsp. *orsiniana* – H scap – Orofit. S-Europ. – OGU: 3 – (PI; Herb. Roma-Marzio).

This species was recently confirmed for the Calabrian flora (Roma-Marzio & Peruzzi, 2014a; Roma-Marzio *et al.*, 2014a).

Veronica persica Poir. – T scap – W-Asiat. (Subcosmop.) – OGU: 1 – (PI).

Veronica polita Fr. – T scap – Subcosmop. – OGU: 8 – (PI).

Scrophulariaceae

Scrophularia canina L. subsp. *bicolor* (Sm.) Greuter – H scap – Eurimedit. – OGU: 1 – (PI).

Scrophularia scopolii Hoppe ex Pers. – H scap – Eurasiat. – OGU: 1, 2, 8 – (PI).

Verbascum lychnitis L. – H bien – Europ.-Caucas. – OGU: 3, 8 – (PI; CLU).

Verbascum pulverulentum Vill. – H bien – S- e C-Europ. – OGU: 1, 4, 8 – (PI).

Verbascum thapsus L. subsp. *thapsus* – H bien – Europ.-Caucas. – OGU: 7 – (PI).

Lamiaceae

Clinopodium alpinum (L.) Kuntze subsp. *meridionale* (Nyman) Govaerts – Ch suffr – SW-Medit.-Mont. – OGU: 1, 2, 3, 4, 5, 6, 8 – (PI).

Clinopodium grandiflorum (L.) Stace – T scap – Orofit. S-Europ. – OGU: 2, 5, 8 – (PI).

Clinopodium nepeta (L.) Kuntze subsp. *nepeta* – H scap – Medit.-Mont. – OGU: 1, 2, 6, 8 – (PI).

Clinopodium vulgare L. subsp. *vulgare* – H scap – Circumbor. – OGU: 1, 4, 7, 8 – (PI; Herb. Roma-Marzio).

Lamium album L. subsp. *album* – H scap – Eurasiat. – OGU: 1, 2, 8 – (PI; Herb. Roma-Marzio).

Lamium bifidum Cirillo – T scap – Stenomedit. – OGU: 1 – (PI).

Lamium maculatum L. – H scap – Eurasiat. – OGU: 1, 2, 3, 4 – (PI; Herb. Roma-Marzio).

Mentha suaveolens Ehrh. subsp. *suaveolens* – H scap – Eurimedit. – OGU: 1, 2 – (PI).

Micromeria juliana (L.) Benth. ex Rchb. – Ch suffr – Stenomedit. – OGU: 1, 2 – (PI).

Nepeta cataria L. – H scap – E-Medit.-Turan. – OGU: 1, 2 – (PI; FI).

This species was recently confirmed for Calabrian flora (Roma-Marzio & Peruzzi, 2014a).

Origanum vulgare L. subsp. *vulgare* – H scap – Eurasiat. – OGU: 1 – (PI).

This subspecies was recently confirmed for Calabrian flora (Roma-Marzio & Peruzzi, 2014a).

Prunella vulgaris L. subsp. *vulgaris* – H scap – Circumbor. – OGU: 2, 5, 6, 8 – (PI).

*CLU *Scutellaria columnae* All. subsp. *gussonei* (Ten.) Arcang. – H scap – Endem. – OGU: 2(?).

Stachys germanica L. subsp. *salviifolia* (Ten.) Gams – H scap – NE-Stenomedit. – OGU: 1, 2, 8 – (PI; CLU).

Stachys heraclea All. – H scap – NW-Medit.-Mont. – OGU: 1 – (PI).

Stachys italica Mill. – Ch suffr – Endem. – OGU: 1, 3 – (PI).

Stachys sylvatica L. – H scap – Eurosib. – OGU: 1, 2, 5, 6, 8 – (PI).

Teucrium chamaedrys L. subsp. *chamaedrys* – Ch suffr – Eurimedit. – OGU: 1 – (PI).

Thymus praecox Opiz subsp. *polytrichus* (Borbás) Jalas – Ch rept – Orofit. S-Europ. – OGU: 3, 4, 7, 8 – (PI).

Orobanchaceae

Bellardia latifolia (L.) Cuatrec. – T scap – Eurimedit. – OGU: 1 – (PI).

Euphrasia birtella Jord. – T scap – Circumbor. – OGU: 3, 4, 7 – (PI).

Lathraea squamaria – G par – Eurimedit. – OGU: 2, 6 – (PI).

*CLU *Orobanche caryophyllacea* Sm. – T par – Subatlant. – OGU: 8(?)

Orobanche gracilis Sm. – T par – Europ.-Caucas. – OGU: 1, 7, 8 – (PI; CLU).

Orobanche schultzei Mutel – T par – Paleotrop. – OGU: 5 – (PI).

This species was recently confirmed for the flora of Basilicata (Roma-Marzio *et al.*, 2014b).

Pedicularis comosa L. subsp. *comosa* – H scap – Orofit. S-Europ. – OGU: 7, 8 – (PI).

Verbenaceae

Verbena officinalis L. – H scap – Paleotemp. – OGU: 1 – (PI).

Aquifoliaceae

Ilex aquifolium L. – P caesp – Eurimedit. – OGU: 2, 5, 6, 8 – (PI).

Already recorded by Bernardo (1997) for the study area.

Campanulaceae

Campanula glomerata L. – H scap – Orofit. SE-Europ. – OGU: 2, 3, 8 – (PI; Herb. Roma-Marzio).

Campanula trachelium L. subsp. *trachelium* – H scap – Paleotemp. – OGU: 2, 3, 5, 8 – (PI; Herb. Roma-Marzio).

Asteraceae

Achillea collina (Becker ex Rchb.f) Heimerl – H scap – SE-Europ. – OGU: 1 – (PI; Herb. Roma-Marzio).

Achillea ligustica All. – H scap – W-Stenomedit. – OGU: 1, 8 – (PI; Herb. Roma-Marzio).

Anacyclus clavatus (Desf.) Pers. – T scap – Stenomedit. – OGU: 1, 8 – (PI).

Anthemis arvensis L. subsp. *arvensis* – T scap – Subcosmop. OGU: 1 – (PI).

Anthemis arvensis L. subsp. *sphacelata* (C.Presl) R.Fern. – H scap – Endem. – OGU: 7 – (PI; Herb. Roma-Marzio).

Arctium nemorosum Lej. – H bien – Eurasiat. – OGU: 1, 2, 5, 6, 8 – (PI).

Bellis perennis L. – H ros – Europ.-Caucas. – OGU: 1, 2, 3, 4, 7, 8 – (PI; Herb. Roma-Marzio).

Bellis sylvestris Cirillo – H ros – Stenomedit. – OGU: 2, 3, 4, 5, 8 – (PI).

*CLU *Bombycilaena erecta* (L.) Smoljan. – T scap – S-Europ.-Sudsib. – OGU: 8(?)

Carduus affinis Guss. subsp. *affinis* – H scap – Endem. – OGU 7, 8.

Carduus nutans L. subsp. *perspinosus* (Fiori) Arènes – H bien – Endem. – OGU: 1, 8 – (PI).

This subspecies was recently confirmed for Calabrian flora (Roma-Marzio & Peruzzi, 2014b).

Carduus pycnocephalus L. subsp. *pycnocephalus* – H bien – Eurimedit.-Turan. – OGU: 1, 8 – (PI).

Carlina acanthifolia All. subsp. *acanthifolia* – H ros – Centro-Europ. – OGU: 1, 3, 4, 7, 8 – (PI).

Carlina corymbosa L. – H scap – Stenomedit. – OGU: 1 – (PI).

Carlina vulgaris L. s.l. – H scap – Eurosib. – OGU: 1, 3, 4, 8 – (PI).

Centaurea deusta Ten. subsp. *deusta* – H bien – Eurimedit. – OGU: 1, 3, 4, 7, 8 – (PI).

Centaurea solstitialis L. subsp. *schouwii* (DC.) Gugler – H bien – W-Medit. – OGU: 1, 8 – (PI).

Centaurea triumphetti All. – H scap – Europ.-Caucas. – OGU: 3, 4, 7 – (PI).

Cichorium intybus L. – H scap – Paleotemp. – OGU: 1 – (PI).

Cirsium arvense (L.) Scop. – G rad – Eurasiat. – OGU: 1, 2 – (PI).

Cirsium creticum (Lam.) d'Urv. subsp. *triumfetti* (Lacaita) Werner – H bien – NE-Medit.-Mont. – OGU: 2 – (PI).

Cirsium tenoreanum Petr. – H bien – Endem. – OGU: 1, 2, 3, 4, 5, 7, 8 – (PI).

Cirsium vulgare (Savi) Ten. – H bien – Eurasiat. – OGU: 1, 2 – (PI).

Crepis biennis L. – H bien – Centro-Europ. – OGU: 2, 6 – (PI; Herb. Roma-Marzio).

Crepis lacera Ten. subsp. *lacera* – H scap – Apenn.-Balcan. – OGU: 1, 2 – (PI).

Crepis rubra L. – T scap – NE-Stenomedit. – OGU: 1 – (PI).

Crepis vesicaria L. subsp. *vesicaria* – T scap – Eurimedit.-Subatl. – OGU: 1, 6 – (PI).

Crupina vulgaris Cass. – T scap – S-Europ.-Sudsib. – OGU: 7 – (PI; Herb. Roma-Marzio).

Doronicum columnae Ten. – G rhiz – Orofit. SE-Europ. – OGU: 2 – (PI; Herb. Roma-Marzio).

Doronicum orientale Hoffm. – G rhiz – Orofit. SE-Europ. – OGU: 1, 2, 4, 5, 8 – (PI).

Geropogon glaber L. – T scap – Steomedit. – OGU: 1 – (PI).

Helichrysum italicum (Roth) G.Don subsp. *italicum* –

Ch suffr – N-Eurimedit. – OGU: 1 – (PI).

Hieracium racemosum Waldst. & Kit. ex Willd subsp. *crinitum* (Sm.) Rouy – H scap – Europ.-Caucas. – OGU: 3, 8 – (PI; Herb. Roma-Marzio).

Hypochaeris cretensis (L.) Bory & Chaub. – H scap – NE-Medit.-Mont. – OGU: 3, 4, 7 – R – (PI).

Jacobaea alpina (L.) Moench. subsp. *samnitum* (Nyman) Peruzzi – H scap – Endem. – OGU: 2 – (PI).

Lactuca muralis (L.) Gaertn. – H scap – Europ.-Caucas. – OGU: 1, 2, 6, 8 – (PI).

Lactuca saligna L. – T scap – E-Medit.-Turan. – OGU: 1 – (PI).

Lapsana communis L. subsp. *communis* – T scap – Paleotemp – OGU: 1, 2, 5, 6, 8 – (PI).

Picris hieracioides L. subsp. *hieracioides* – H scap – Eurosib. – OGU: 1, 2, 4, 8 – (PI).

Pilosella officinarum Vaill. – H ros – Europ.-Caucas. – OGU: 1, 3, 4, 7, 8 – (PI; Herb. Roma-Marzio).

Ptilostemon niveus (C.Presl) Greuter – H scap – Endem. – OGU: 7, 8 – (PI).

Pulicaria dysenterica (L.) Bernh. – H scap – Eurimedit. – OGU: 1, 3 – (PI).

*CLU *Rhaponticoides calabrica* Puntillo & Peruzzi – H scap – Endem. – OGU: 2(?).

This species was described for “Bosco di Lagoforano” area by Puntillo & Peruzzi (2009). Very likely, it falls just outside of our research area.

Scorzoneroideis cichoriacea (Ten.) Greuter – H ros – Orofit. SE-Europ. – OGU: 3, 4, 7 – (PI).

Senecio squalidus L. subsp. *rupestris* (Waldst. & Kit.) Greuter – H bien – Orofit. SE-Europ. – OGU: 2 – (PI; Herb. Roma-Marzio).

Solidago virgaurea L. subsp. *virgaurea* – H scap – Eurosib. – OGU: 2, 6 – (PI).

Sonchus asper (L.) Hill subsp. *asper* – T scap – Eurasiat. – OGU: 1 – (PI).

Sonchus oleraceus L. – H bien – Subcosmop. – OGU: 1 – (PI).

Tanacetum corymbosum (L.) Sch.Bip. subsp. *achilleae* (L.) Greuter – H scap – W-Medit. – OGU: 1, 8 – (PI).

Taraxacum multisinuatum Kirschner, Sonck & Štěpánek – H ros – E-Medit.-Mont. – OGU: 3, 4 – (PI; FI).

This species was recently recorded for Basilicata (Roma-Marzio & Peruzzi, 2014b). The population from M. Sparviere also represents the second one documented for Italy. Previously, it was recorded for the Verbicaro-Orsomarso mountain area (Aquaro *et al.*, 2008).

Taraxacum F.H.Wigg. sect. *Erythrosperma* (H.Lindb.) Dahlst. – H scap – Paleotemp. – OGU: 1, 3, 4, 8 – (PI).

Tragopogon crocifolius L. – H scap – Stenomedit. – OGU: 8 – (PI).

Tussilago farfara L. – G rhiz – Paleotemp. – OGU: 1, 5, 6, 8 – (PI; Herb. Roma-Marzio).

Xeranthemum inapertum (L.) Mill. – T scap – S-Europ.-Sudsib. – OGU: 1, 3, 4 – (PI).

Adoxaceae

Adoxa moschatellina L. subsp. *moschatellina* – G rhiz – Circumbor. – OGU: 1, 2, 5, 6 – (PI).

Sambucus ebulus L. – G rhiz – Eurimedit. – OGU: 8 – (PI).

Sambucus nigra L. – P caesp – Europ.-Caucas. – OGU: 5, 8 – (PI).

Caprifoliaceae

Dipsacus fullonum L. – H bien – Eurimedit. – OGU: 1 – (PI).

Lomelosia crenata (Cirillo) Greuter & Burdet subsp. *crenata* – Ch suffr – Orof. S-Medit. – OGU: 1, 5, 8 – (PI).

Scabiosa portae A.Kern ex Huter (≡ *S. columbaria* L. subsp. *portae* (Huter) Hayek) – H scap – Eurasiat. – OGU: 1, 2, 8 – (PI).

This taxon is treated at specific rank, according to Bernardo *et al.* (2012).

Sixalix atropurpurea (L.) Greuter & Burdet – H bien – Stenomedit. – OGU: 1, 3, 4, 7, 8 – (PI).

Scabiosa uniseta Savi – H scap – Endem. – OGU: 2, 4 – (PI).

Valeriana tuberosa L. – H scap – Eurimedit. – OGU: 3, 4, 7 – (PI; Herb. Roma-Marzio).

Apiaceae

Anthriscus nemorosa (M.Bieb.) Spreng. – H scap – S-Europ.-Sudsib. – OGU: 1, 2, 5, 6 – (PI).

Bunium bulbocastanum L. – G bulb – W-Europ. – OGU: 5, 6 – (PI).

Bupleurum baldense Turra – T scap – Eurimedit. – OGU: 7 – (PI).

Bupleurum falcatum L. subsp. *cernuum* (Ten.) Arcang. – H scap – Eurasiat. – OGU: 3, 4, 7, 8 – (PI).

Bupleurum rollii (Montel.) Moraldo – T scap – Endem. – OGU: 2 – (PI).

This name was recently typified by Iberite *et al.* (2015). Our finding represents the second record for the Calabrian flora (Snogerup & Snogerup, 2001).

Chaerophyllum temulum L. – T scap – Eurasiat. – OGU: 2 – (PI; Herb. Roma-Marzio).

Daucus carota L. subsp. *carota* – H bien – Paleotemp. – OGU: 1 – (PI; Herb. Roma-Marzio).

Eryngium amethystinum L. – H scap – SE-Europ.-Pontica – OGU: 1, 3, 4, 7, 8 – (PI).

Eryngium campestre L. – H scap – Eurimedit. – OGU: 3, 4, 7, 8 – (PI).

Katapsuxis silaifolia (Jacq.) Reduron, Charpin & Pimenov – H scap – SE-Europ. – OGU: 5 – (PI; CLU; Herb. Roma-Marzio).

Myrrhoides nodosa (L.) Cannon – T scap – Stenomedit. – OGU: 2 – (CLU).

Physospermum verticillatum (Waldst. & Kit.) Vis. – H scap – Medit.Mont. – OGU: 2, 5 – (PI; CLU).

Pimpinella tragiium Vill. – Ch suffr – Medit.-Mont. – OGU: 7 – (PI).

Scandix pecten-veneris L. subsp. *brachycarpa* (Guss.) Thell. – T scap – Eurimedit. – OGU: 1 – (PI).
Seseli peucedanoides (M.Bieb.) Koso-Pol. – H scap – Medit.Mont. – OGU: 7 – (PI).
Smyrniium perfoliatum L. subsp. *perfoliatum* – H bien – Eurimedit. – OGU: 1 – (PI).
 This subspecies was recently recorded for Calabria (Roma-Marzio & Peruzzi, 2014b).
Torilis arvensis (Huds.) Link subsp. *arvensis* – T scap – Subcosmop. – OGU: 1 – (PI).

CONCLUSIONS

In this survey we have listed 377 specific and subspecific taxa belonging to 229 genera and 64 families. The most represented families are Asteraceae (55 taxa), Poaceae (30), Fabaceae (28), Rosaceae (23) and Lamiaceae (19). These 5 families contain about 41% of the total taxa. The richest genera are *Trifolium* (11 taxa), *Geranium* (7), *Acer*, *Poa*, *Ranunculus*, *Rosa*, and *Veronica* (5). The observed floristic richness was lower than ex-

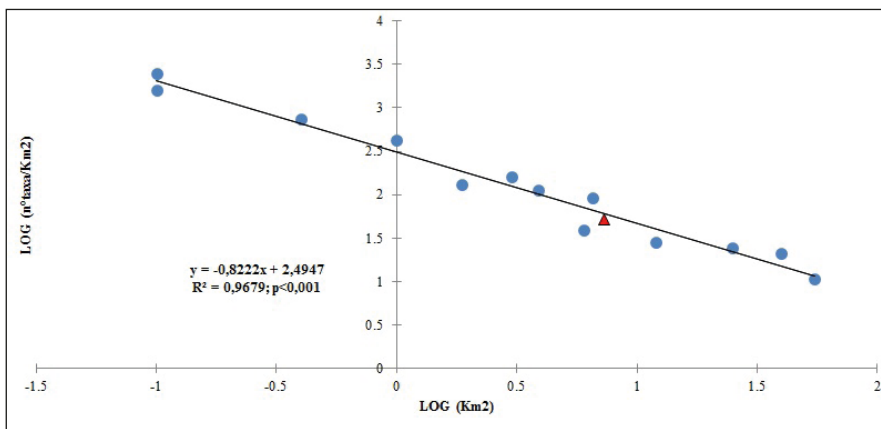


Fig. 2 - Linear regression, with relative formula, among the logarithm of areas (km²) and the logarithm of the ratio n° taxa/km². The value obtained for the study area is marked by a black triangle.

Table 2 - Distribution of Italian endemic taxa (according to Peruzzi *et al.*, 2014).

Italian endemic taxa	Distribution
<i>Gagea peruzzii</i>	Basilicata and Calabria (Pollino)
<i>Plantago media</i> subsp. <i>brutia</i>	Basilicata and Calabria (Pollino)
<i>Rhaponticoides calabrica</i>	Basilicata (Pollino) and Calabria
<i>Polygala alpestris</i> subsp. <i>meridionalis</i>	Basilicata and Calabria
<i>Ptilostemon niveus</i>	Basilicata, Calabria and Sicily
<i>Trifolium brutium</i>	southern Italy and Sicily
<i>Myosotis silvatica</i> subsp. <i>elongata</i>	southern Italy and Sicily
<i>Acer cappadocicum</i> subsp. <i>lobelii</i>	central-southern Italy
<i>Carduus affinis</i> subsp. <i>affinis</i>	central-southern Italy
<i>Dianthus vulturius</i> subsp. <i>vulturius</i>	central-southern Italy
<i>Jacobaea alpina</i> subsp. <i>samnitum</i>	central-southern Italy
<i>Potentilla rigoana</i>	central-southern Italy
<i>Stipa dasyvagnata</i> subsp. <i>apenninica</i>	central-southern Italy
<i>Viola aethnensis</i> subsp. <i>splendida</i>	central-southern Italy
<i>Anthemis arvensis</i> subsp. <i>sphacelata</i>	central-southern Italy and Sicily
<i>Bupleurum rollii</i>	central-southern Italy and Sicily
<i>Cerastium tomentosum</i>	central-southern Italy and Sicily
<i>Euphorbia corallioides</i>	central-southern Italy and Sicily
<i>Scutellaria columnae</i> subsp. <i>gussonei</i>	central-southern Italy and Sicily
<i>Silene italica</i> subsp. <i>sicula</i>	central-southern Italy and Sicily
<i>Stachys italica</i>	central-southern Italy and Sicily
<i>Armeria gracilis</i> subsp. <i>gracilis</i>	Apennines
<i>Carduus nutans</i> subsp. <i>perspinosus</i>	Apennines
<i>Cirsium tenoreanum</i>	Apennines
<i>Digitalis micrantha</i>	Apennines
<i>Polygala nicaeensis</i> subsp. <i>peninsularis</i>	Apennines
<i>Scabiosa uniseta</i>	Apennines
<i>Crocus biflorus</i>	Apennines and N Italy
<i>Linaria purpurea</i>	Apennines and Sicily
<i>Trifolium pratense</i> subsp. <i>semipurpureum</i>	Apennines and Sicily
<i>Alnus cordata</i>	southern Italy and Corsica
<i>Sorbus aucuparia</i> L. subsp. <i>praemorsa</i>	southern Italy, Sicily and Corsica

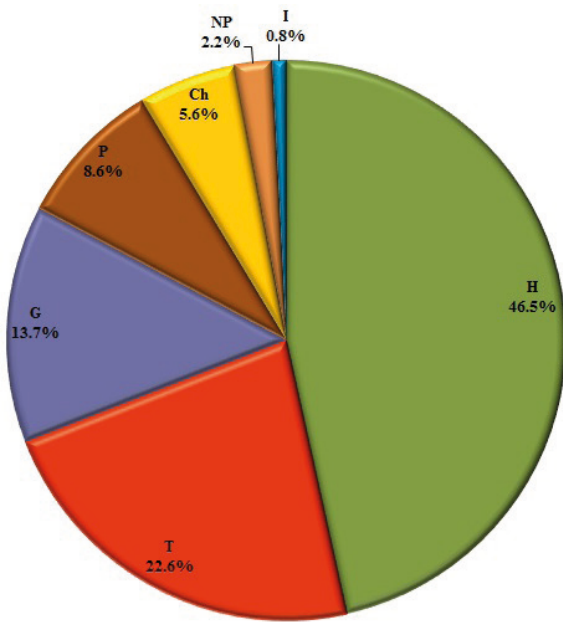


Fig. 3 - Biological spectrum of the vascular flora of M. Sparviere.

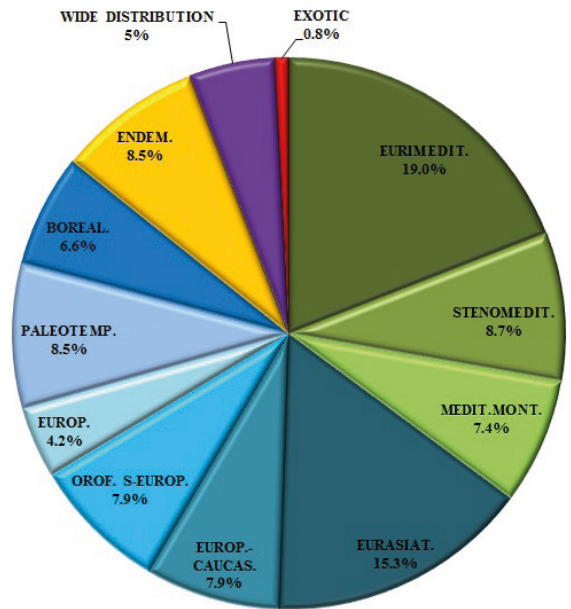


Figure 4 - Chorological spectrum of the vascular flora of M. Sparviere.

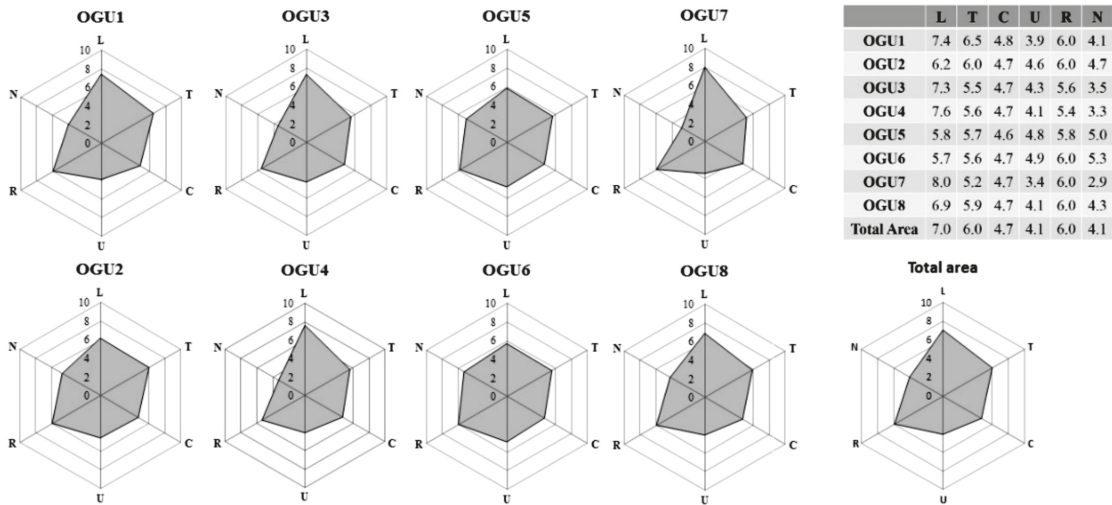


Fig. 5 - Ecograms for each OGU and for the total area. On the top right the mean Ellenberg values are reported.

pected (expected number of taxa, according to the linear regression formula: 445), with a ratio observed/expected of 0.84 (Fig. 2). This value could be explained by the presence of unreachable areas.

Despite this, it is possible to highlight a certain floristic interest, considering the high percentage of Italian endemic taxa (8.5%). Comparing the endemic contingent of M. Sparviere with those of available neighbouring floras, the studied area comes just after Sirino-Papa Mountains (Caputo *et al.*, 1997). Another expression of floristic quality is the very low number of exotic taxa exclusively used for reforestation (*Cedrus libani*, *Pinus*

nigra subsp. *nigra* and *Pseudotsuga menziesii*).

A closer analysis of Italian endemic taxa (Table 2) revealed a high frequency of Central and Southern Italian endemics (50%), followed by Apennine endemics (25%).

The life form spectrum (Fig. 3) shows a dominance of Hemicryptophytes (46.5%), typical of temperate regions, followed by Therophytes (22.6%), well represented in the Mediterranean climate.

Chorological spectrum (Fig. 4) shows the highest frequencies of Eurimediterranean (19%) and Eurasiatic species (15%). Considering those species belonging to

Table 3 - Taxa included in regional and / or national red lists, listed in alphabetical order. For each taxon, the evaluation level and IUCN category are reported.

Taxa	Evaluation level	IUCN category
<i>Abies alba</i>	Regional (BAS)	LR
<i>Acer cappadocicum</i> subsp. <i>lobelii</i>	National/regional (BAS/CAL)	LR
<i>Aconitum lycoctonum</i>	Regional (CAL)	LR
<i>Delphinium fissum</i> subsp. <i>fissum</i>	Regional (CAL)	LR
<i>Dianthus vulturius</i> subsp. <i>vulturius</i>	Regional (CAL)	LR
<i>Euphorbia coralliooides</i>	Regional (CAL)	LR
<i>Euphrasia hirtella</i>	Regional (CAL)	LR
<i>Fritillaria montana</i>	National/regional (BAS/CAL)	NT (National) LR (BAS/CAL)
<i>Gagea minima</i>	Regional (CAL)	DD
<i>Gagea villosa</i>	Regional (CAL)	DD
<i>Gentiana lutea</i> subsp. <i>lutea</i>	National	NT
<i>Laburnum alpinum</i>	Regional (CAL)	LR
<i>Lathraea squamaria</i>	Regional (BAS/CAL)	LR
<i>Ptilostemon niveus</i>	National	LR
<i>Salix apennina</i>	Regional (CAL)	DD
<i>Seseli peucedanooides</i>	Regional (CAL)	LR
<i>Tilia platyphyllos</i> subsp. <i>pseudorubra</i>	Regional (CAL)	VU
<i>Ulmus glabra</i>	Regional (CAL)	VU

the Eurosibiric phytogeographical region (e.g. Eurasian, European-Caucasian, Orophilous S-European, European, Paleotemperate, and Boreal), and those belonging to the Mediterranean region (e.g. Eurimediterranean, Stenomediterranean, and Mediterranean Mountain), the former reaches the highest percentage (51%).

Considering separately the eight chorological spectra derived for each OGU, it is possible to highlight that OGU 1 (located at lower altitude and with poor forest cover) is the only one where Mediterranean (44.6%) and Eurosibiric (44.4%) species have similar abundance.

The ecological characterization of the area, based on Ellenberg values (Figure 3), supports its geo-pedological and climatic features. All parameters, either related to climate (L, T, C) or to pedology (U, R, S) have average values, in agreement with the environmental heterogeneity of the area. The only exception concerns soil's pH value (R), addressing to a slightly basic soil, as expected given the geological substrates. Ellenberg mean values, calculated separately for each OGU (Fig. 5), suggest that the variation is mainly related to presence/absence of woody coverage and altitude.

The taxa included in regional (Conti *et al.*, 1997) and/or national (Scoppola & Spampinato, 2005; Rossi *et al.*, 2013) red lists are 17 (Table 3).

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