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THE DIVERSITY AND DISTRIBUTION OF FLORA OF THE ISLAND OF ZLARIN (NORTHERN DALMATIA)

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The flora of the island of Zlarin was studied in 2019 and mapped using the Central European grid (MTB fields), the area studied consisting of nine MTB 1/64 fields. Altogether 576 vascular plant taxa (532 species and 44 subspecies) were identified, out of which there were 126 newly recorded, 450 previously recorded and confirmed, while 153 taxa from previous authors were not confirmed. In total, 730 taxa are currently recorded on the island of Zlarin. Among these, 580 taxa are indigenous, 147 cultivated and 23 listed as invasive in Croatia. Cultivated and adventitious plants were not included in the analysis of families and life forms. The largest number of taxa was attributed to the families *Compositae* (13.89%), *Fabaceae* (12.01%) and *Poaceae* (10.98%). Along with the domination of therophytes, the results of the phytogeographical analysis show a dominance of the Mediterranean floral element, indicating the character of the flora. Altogether 13 endemic, 44 endangered and 42 strictly protected indigenous species and subspecies are currently recorded on the island. The highest plant richness was observed in fields with higher habitat diversity and in fields with olive groves maintained by mowing. Moderate human impact and habitat diversity are crucial for the increase in floristic diversity on small islands and are much more important than the size of the island itself.

Key words: endemic plants, floral elements, IUCN, mapping, life forms

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Tijekom 2019. istražena je i kartirana flora otoka Zlarina, uz upotrebu srednjeeuropske mreže kartiranja (MTB polja), prema kojoj se područje istraživanja sastojalo od devet MTB 1/64 kvadranata. Pri tome je zabilježeno 576 svojti (532 vrste i 44 podvrste) vaskularnih biljaka, od čega je 126 svojti zabilježeno po prvi put, 450 ranije zabilježenih svojti je potvrđeno, dok 153 ranije zabilježene svojte nisu potvrđene. U konačnici, na otoku je sveukupno do danas zabilježeno 730 svojti. Među njima, 580 svojti je samoniklo, 147 je kultivirano, a 23 se smatraju invazivnima. Kultivirane i adventivne biljke nisu uključene u analizu porodica i životnih oblika. Najveći broj zabilježenih svojti pripada porodicama *Compositae* (13,89%), *Fabaceae* (12,01%) i *Poaceae* (10,98%). Rezultati fitogeografske analize samonikle flore pokazuju dominaciju mediteranskog flornog elementa, što zajedno s dominacijom terofita ukazuje na mediteranski karakter flore otoka. Zabilježeno je 13 endemičnih, 44 ugrožene i 42 strogo zaštićene vrste i podvrste. Najbogatiji vrstama bili su kvadranti karakterizirani većom raznolikosti staništa i redovno košenim maslinicima. To nam govori da su za povećanje florističke raznolikosti na malim otocima od veličine samog otoka puno važniji umjereni ljudski utjecaj i raznolikost staništa.

Ključne riječi: endemi, florni elementi, IUCN, kartiranje, životni oblici

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INTRODUCTION

The island of Zlarin (Northern Dalmatia) lies in the central part of the eastern Adriatic coast, in the Šibenik archipelago (Fig. 1). According to the 2011 census report, Zlarin is permanently inhabited by 284 people (Anonymous, 2020), all living in the single settlement on the northwestern side of the island, the village of Zlarin. The island is 6.2 km long, elongated in the NW-SE direction, with an average width of 2.1 km and an area of 8.19 km^2 (Kalogjera, 1997). The highest point on the island is Klepac, 169 m a. s. l. The geological structure of the island is mostly limestone and dolomite of the Upper Cretaceous. Cretaceous limestones, pure limestone and limestone rudist Senonian dominate in the southwestern coast, while dolomites are widespread throughout the northeastern part, with occasional deposits or layers in the southwestern part (Mamužić, 1971). According to Koppen, the climate of the wider area (Šibenik archipelago) is Mediterranean (Csa) characterized by mild winters and hot summers (Šegota & Filipčić, 2003).

Phytogeographically, the area belongs to the typical Mediterranean zone within the Mediterranean littoral vegetation belt, and *Quercus ilex* L. forest used to be the primary vegetation on the island. However, due to the long-term human influence, the forest has been degraded and nowadays other forms of vegetation have taken over. Today, most parts of the island are overgrown with dense populations of *Pinus halepensis* Mill., the rest being mainly covered in macchia and garrigue. Other, less common, habitat types are grasslands and cultivated areas such as olive groves and gardens.

Data on previously recorded taxa were collected from the Flora Croatica Database (Nikolić, 2020). The first check list of the flora of Zlarin was prepared by Pandža (1998b), with an addition made a year later (Trinajstić & Pavletić, 1999). The last study was conducted by Milović & Pandža (2010), when five localities were floristically surveyed. Other data originate from older studies not addressing merely the flora of the island of Zlarin (Host, 1802; Visiani, 1842, 1847), herbarium data from the ZA, ZAGR and CNHM collections (URL http://hirc.botanic.hr/fcd) and field observations (Milović & Pandža, 2009a; Kauf, 2010; Šincek, 2010). In sum, 607 taxa of vascular plants had already been recorded on Zlarin prior to our study.

Zlarin is an example of positive practice in terms of active nature conservation. It is the first zero-waste island in Croatia with no motor vehicles, as their use on the island is prohibited. For this reason, Zlarin was recognized by the international NGO SMILO ("Small island organization"), supporting small islands around the world towards sustainability, trying to declare Zlarin a sustainable island since 2016, inviting the national NGO BIUS ("Biology student association") to explore the biodiversity of the island. The aim of this research was therefore to perform a comprehensive floristic study of Zlarin within the framework of a BIUS project, map the existing flora, and prepare a synthesis of all the floristic surveys conducted on the island of Zlarin to date.

MATERIALS AND METHODS

Once a year BIUS organizes a major research and education project which takes place one week in May and one week in September. As a part of this field research, the Section for Botany conducted systematic mapping of the flora of the island of

Zlarin. Fieldwork was carried out on two occasions in 2019, both times within a period of one week. The first fieldtrip was undertaken at the beginning of May, while the second was at the end of September. We conducted a detailed floristic survey of the whole island, which was thoroughly searched several times, noting the presence of flora and performing systematic, indirect mapping, using the Central European grid composed of MTB fields. The approximate area of one MTB 1/64 field is 2.1 km²; and the study area comprised of nine such fields (Fig. 1). The 1:25000 topographic map and a GARMIN e-trex GPS device were used for determining the position and the boundaries of the mapping fields. Any specimens collected were stored in the ZA herbarium collection at the Division of Botany of the Department of Biology, Faculty of Science, University of Zagreb. Rare, endemic and strictly protected species were not collected, but only photographed.

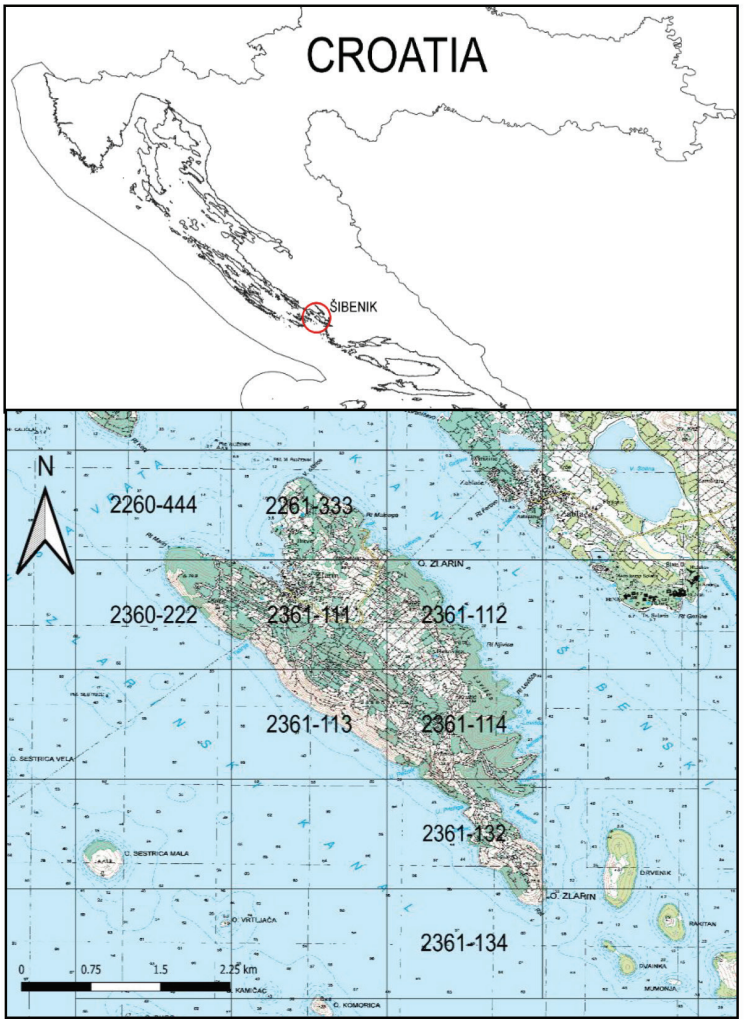

Fig. 1. Geographic location of the island of Zlarin and its division into nine MTB 1/64 fields.

Taxa were identified using standard identification keys and iconographies such as: Horvatić (1954), Domac (1994), Jávorka & Csapody (1991), Pignatti (2018), Alegro (2003), Alegro *et al*. (2003), Bogdanović (2003), Blamey & Grey-Wilson (2004), Delforge (2006), Nikolić (2019). The Flora Croatica Database (Nikolić, 2020) was mainly used as a standard for the nomenclature of taxa, with the exception of some cultivated, adventitious, taxonomically unresolved taxa and varieties (*Callistemon citrinus*, *Colchicum haynaldii*, *Cortaderia selloana*, *Cycas revoluta, Gaura lindheimeri*, *Lantana camara*, *Lavandula stoechas*, *Picea pungens*, *Plumbago auriculata*, *Poa bulbosa* var. *vivipara*, *Salvia greggii*, *Salvia splendens* and *Zanthoxylum armatum*), when The Plant List (2020) was used as a nomenclature reference. Taxa were given in the alphabetical order of families, genera and species. The list comprises both taxa previously recorded by other authors and taxa found during this research. Names of the taxa recorded for the first time are marked with an asterisk. For unconfirmed taxa, a corresponding reference previously recording them was provided. For MTB 1/64 fields, a code and coordinates of a field centroid are given (Tab. 1).

Tab. 1. Nine researched MTB 1/64 fields with codes and coordinates of field centroids in WGS84 coordinate system.

MTB 1/64 field	Field code	X	Y
2361-111	A	15.83854	43.69376
2361-112	B	15.85937	43.69375
2361-114	C	15.85937	43.68125
2361-132	D	15.85936	43.66876
2261-333	E	15.83853	43.70625
2260-444	F	15.81771	43.70626
2360-222	G	15.81772	43.69375
2361-113	H	15.83854	43.68125
2361-134	I	15.85937	43.65625

Some taxa on the list are designated as alien and invasive, and all other taxa are considered native (according to Nikolić *et al*., 2014 and Nikolić, 2020). Cultivated and adventitious plant taxa were not included in the analysis of families and life forms.

The analysis of life forms was carried out according to Horvat (1949). The abbreviations of life forms are given as follows: Ch – chamaephyta, H – hemicryptophyta, P – phanerophyta, G – geophyta, Hy – hydrophyta, T – therophyta.

The phytogeographical analysis of flora was carried out according to Horvatić (1963), Horvatić *et al*. (1968) and Pignatti (2005), with the addition of category "Strictly cultivated", using the abbreviations as follows:

1. MEDITERRANEAN FLORAL ELEMENT – MED

A. Circum-Mediterranean plants – **CME**

B. West Mediterranean plants – **WME**

C. East Mediterranean plants – **EME**

D. Illyrian – Mediterranean plants

a) Illyrian South European plants – **ISEU**

b) Illyrian Adriatic plants:
1. Illyrian Adriatic endemic plants – **ILAE**
2. Illyrian Apennine plants – **ILAP**

E. Mediterranean Atlantic plants – **MEAT**

F. European Mediterranean plants – **EUME**

G. Mediterranean Pontic plants – **MEPO**

2. ILLYRIAN-BALCANIC FLORAL ELEMENT

A. Illyrian-Balcanic endemic plants – **ILBE**

3. SOUTH EUROPEAN FLORAL ELEMENT – SEU

A. South European Mediterranean plants – **SEUME**

B. South European Pontic plants – **SEUPO**

C. South European Atlantic plants – **SEUAT**

D. South European Mountain plants – **SEUMO**

4. SOUTHEAST EUROPEAN FLORAL ELEMENT – SEEU

5. EAST EUROPEAN-PONTIC FLORAL ELEMENT – EEUPO

6. EUROPEAN FLORAL ELEMENT – EU

7. CENTRAL EUROPEAN FLORAL ELEMENT – CEU

8. EURASIAN FLORAL ELEMENT – EUAS

9. CIRCUM-HOLARCTIC SPREAD PLANTS – CIHO

10. WIDESPREAD PLANTS – WSP

11. CULTIVATED AND ADVENTITIOUS PLANTS – CUAD

12. STRICTLY CULTIVATED – SC

The category "Strictly cultivated" was introduced to separate non-naturalized taxa, such as some ornamentals and plants cultivated for consumption, which were also recorded during our study but excluded from all analyses except the analysis of floral elements.

Out of natives, the only exception was *Orobanche* sp., not identified to the species level, so no floral element could be defined and it was therefore not included in the corresponding analysis.

The analysis of endemic taxa was carried out using the Flora Croatica Database (FCD) (Nikolić, 2020) and that of threatened taxa with the use of the Red Book of the Vascular Flora of Croatia (Nikolić & Topić, 2005). Threatened taxa are marked with corresponding IUCN abbreviations showing the degree of threat for each taxon as follows: Endangered – **EN**, Vulnerable – **VU**, Near Threatened – **NT**, Least Concern – **LC** and Data Deficient – **DD**. Data on legally protected taxa are taken from the Ordinance of strictly protected species in Croatia (Anonymous, 2013).

The Pearson's coefficient was used to demonstrate the correlation between the taxa diversity and habitats. The total number of taxa (cultivated excluded) and the number of Red-listed taxa were used to describe taxa diversity, while habitat diversity was expressed through the number of different habitat types. Area percentage of forest and non-forest habitats was used to investigate the possible impact of habitat physiognomy on taxa diversity. In addition, area percentages of non-forest habitats (garrigues, grasslands, olive groves and halophytic habitats) were used to further investigate the possible impact of different habitat types on taxa diversity. The area percentages of habitat types were calculated using the most recent Habitat Map of Croatia (Bardi *et al*., 2016). The analysis was performed in Past 4.0 software (Hammer *et al*., 2001).

RESULTS

Our study resulted in the finding of 576 taxa, including 532 species and 44 subspecies, out of which 126 taxa are newly recorded on the island. Altogether 452 previously recorded taxa have been confirmed in this research, while 152 taxa were not confirmed. In total, 730 taxa are currently recorded in the flora of Zlarin. Among these, 580 taxa are indigenous (Appendix 1). Indigenous taxa belong to 85 families, and families with the highest number of taxa are *Compositae* with 80 taxa (13.89%) and *Fabaceae* with 70 taxa (12.01%), followed by *Poaceae* (64 taxa, 10.98%) and *Lamiaceae* (27 taxa, 4.63%) (Tab. 2). The analysis of plant life forms showed that therophytes account for 44.67%, hemicryptophytes for 26.46%, phanerophytes for 11.51%, chamaephytes for 8.59%, geophytes for 8.25% and hydrophytes for 0.52% of the total number (Fig. 2).

Taxa recorded in this research most commonly belong to the Mediterranean floral element (281 taxa, 38.55%), followed by the South European floral element (113 taxa, 15.50%) and widespread plants (100 taxa, 13.72%) (Fig. 3). Twelve out of 13 endemic taxa found on the island are classified as Illyrian Adriatic endemic plants. All of the

Tab. 2. Families with the highest number of taxa in the flora of Zlarin.

Family	No. of taxa	% of total flora
Compositae	80	13.89
Fabaceae	70	12.01
Poaceae	63	10.98
Lamiaceae	27	4.63
Caryophyllaceae	22	3.77
Scrophulariaceae	20	3.43
Brassicaceae	19	3.26
Rosaceae	16	2.74
Apiaceae	16	2.74
Orchidaceae	14	2.40
Chenopodiaceae	13	2.23
Euphorbiaceae	11	1.89
Geraniaceae	10	1.72
other families (72)	199	34.31

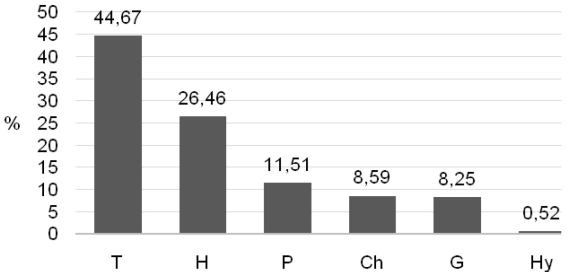

Fig. 2. Life form spectrum of the flora of Zlarin (T – therophyta, H – hemicryptophyta, P – phanerophyta, Ch – chamaephyta, G – geophyta, Hy – hydrophyta).

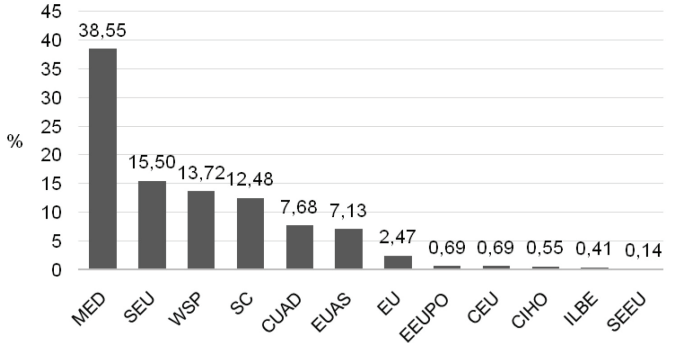

Fig. 3. Chorological spectrum of flora of Zlarin (MED – Mediterranean floral element, SEU – South European floral element, WSP – widespread plants, SC – strictly cultivated plants, CUAD – cultivated and adventitious plants, EUAS – Eurasian floral element, EU – European floral element, EEUPO – East European floral element, CEU – Central European floral element, CIHO – Circum-Holarctic floral element, ILBE – Illyrian-Balcanic endemic plants, SEEU – Southeast European floral element)

recorded endemic taxa are strictly protected by Croatian law. *Centaurea glaberrima*, *Pinus nigra* ssp. *dalmatica* and *Genista sylvestris* ssp. *dalmatica* were not confirmed in this research. The endemic *Ophrys medea* and *Viola suavis* ssp. *adriatica* were newly recorded for the island. The species *Seseli tomentosa*, *Rhamnus intermedia*, *Tanacetum cinerariifolium* and *Limonium cancellatum* were also quite widespread. Less common taxa were *Aurinia sinuata*, *Centaurea spinosociliata* ssp. *cristata* and *Vincetoxicum hirundinaria* ssp. *adriaticus*. *Centaurea spinosociliata* ssp. *tommasinii* was found only in one MTB 1/64 field.

Analysis of the threat status showed that 44 taxa (6.04%) of the flora of Zlarin are classified into one of the IUCN categories, out of which 15 taxa (2.06%) are at risk of extinction in Croatia. Only *Papaver hybridum* is categorized as Critically Endangered (CR). Altogether five taxa were classified as Endangered (EN) and nine taxa as Vulnerable (VU), while 13 taxa were classified as Near Threatened (NT). Seven taxa were classified as Least Concern (LC) and nine taxa were classified as Data Deficient (DD). In total, 42 taxa (5.76%) are strictly protected by Croatian law, out of which there are 11 newly recorded and six unconfirmed. Noteworthily, eight strictly protected taxa

were found in only one MTB 1/64 field: *Centaurea spinosociliata* ssp. *tommasinii*, *Epipactis microphylla*, *Hainardia cylindrica*, *Ophrys medea*, *Orchis morio*, *Papaver hybridum*, *Sempervivum tectorum* and *Trifolium resupinatum*. The most widespread strictly protected taxa were *Orchis tridentata* ssp. *commutata*, *Seseli tomentosum*, *Tanacetum cinerariifolium* and *Delphinium peregrinum*, which were present in seven out of nine MTB 1/64 fields. Altogether 14 orchid taxa were recorded, five of which were new for the island (*Anacamptis pyramidalis*, *Epipactis microphylla*, *Gymnadenia conopsea*, *Ophrys medea* and *Serapias parviflora*). Most orchid taxa were found in maintained olive groves. *Orchis tridentata* was the most widespread of all orchids in terms of MTB 1/64 fields occupied (seven fields), however *Ophrys bertolonii* and *Serapias parviflora* were the most numerous, forming large populations in numerous locations on the island. In addition, very large population of *Limodorum abortivum* was found in the Aleppo pine forest in field E, but only two individuals in field B. The species *Epipactis microphylla*, *Gymnadenia conopsea*, *Orchis morio* and endemic *Ophrys medea* were found extremely rarely, with only one individual each.

Gardens and cultivated areas on the island were occupied by as many as 147 cultivated and adventitious taxa, out of which 91 are strictly cultivated as ornamentals or for human consumption. Among these, 37 are newly recorded and 25 were not confirmed in this research. Cultivated plants were rarely found outside of the gardens, with the exception of *Pisum sativum* and *Vicia faba* which were commonly naturalized, having expanded from cultivated areas. Among the 144 recorded alien taxa, 23 invasive species have been found, 15 of them previously recorded and confirmed in this research. *Euphorbia prostrata*, *Oenothera biennis* and *Parthenocissus quinquefolia* were newly recorded. *Acer negundo*, *Amaranthus deflexus*, *Ambrosia artemisiifolia*, *Conyza canadensis* and *Cuscuta campestris* had been recorded previously but were not confirmed.

Pearson correlation showed a positive correlation between the total number of taxa and the number of habitat types. Also, a positive correlation between the total number of taxa and surface area of olive groves was observed. The same positive correlations were observed between when the number of Red-listed taxa was used (Fig. 4)

DISCUSSION

As is evident from a comparison with other Croatian Adriatic islands (Nikolić *et al*., 2008), the updated number of taxa recorded on the island of Zlarin is exceptionally large. The large number of taxa recorded on a relatively small area, 8.19 km^2, is mostly a result of numerous studies performed on the island within the last 22 years, including our study, conducted in a rather detailed way by searching the whole island and inspecting all available habitats. Other reasons supporting the high variety of recorded taxa are the geographical position of the island and the existence of diverse habitats, which is a consequence of long-term human activity. This region has been inhabited since, at least, the Bronze Age (Podrug *et al*., 2016). Therefore, its vegetation has been both directly and indirectly affected by human activities for more than three thousand years.

The fact that 153 taxa were not confirmed could be due to several reasons. Some of the taxa perhaps disappeared due to changes caused by human activities such as

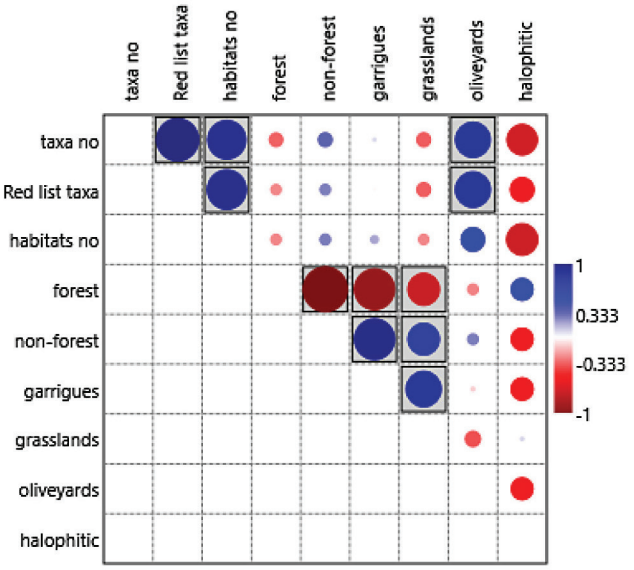

Fig. 4. Pearson's correlations between taxa diversity (total number of taxa and number of Red listed taxa) and habitat diversity. Red circles represent negative and blue circles positive correlations; the size of the circle corresponds with the strength of the correlation; statistically significant correlations (P<0.005) are presented with squares around the circles.

expansion of settlements and consequential habitat loss. On the other hand, some taxa possibly disappeared due to changes in the local people's way of life, which implies abandonment of agriculture, for example abandonment of arable lands, lack of maintenance of olive groves, reduction in animal grazing and so on. Human activity plays an important role in increasing biodiversity of the area, thus depopulation in small islands results in a decrease in the number of taxa found. Other unconfirmed taxa probably still occur in the research area but were overlooked or were not recognized due to the lack of characteristics necessary for plant identification. The fact that twelve cultivated taxa were not confirmed in this research may be explained by their replacement by some other species, including some of the 28 newly recorded cultivated taxa.

The previously recorded *Ophrys sphegodes* was treated as unconfirmed, although we have recorded *Ophrys sphegodes* ssp. *atrata*. Most likely the previous finding refers to the same subspecies; however, we cannot state this with absolute certainty, therefore we listed these two taxa separately, as the possibility that the first record was *Ophrys sphegodes* ssp. *sphegodes* cannot be ruled out. Similarly, the previously recorded *Bromus erectus* ssp. *condensatus* was treated as unconfirmed, although we did record *B. erectus*. The recorded taxon most probably corresponds with the previously reported subspecies; however, we did not identify our specimens further than the species level, therefore we cannot say this with absolute certainty. *Ophrys medea*, recorded on the island only once, is a rare and endemic orchid in Croatia. So far it was recorded only at three localities in Croatia: the islands of Cres and Krk by Devillers & Devillers-Terschuren (2004) and on the Istrian peninsula by Bogdanović (2012), Bogdanović & Ljubičić (2013) and Borovečki-Voska (2019). However, due to

the complexities in orchid identification (especially of the genus *Ophrys*) and the similarity with some other taxa, the distribution of this species should be taken with caution, as it is most probably under-recorded and misidentified in many areas. We did not confirm the previously reported *Quercus virgiliana* due to taxonomical reasons. Although the species was reported by Pandža (1998b), more recently it was shown that all Croatian populations should be regarded as *Q. pubescens* (Škvorc *et al*., 2005, 2006; Franjić *et al*., 2006). In the case of *Juniperus communis*, we recommend taking previous reports with caution. This taxon typically occurs more continentally, while its findings in the Mediterranean could result from the confusion with *J. oxycedrus*.

Several other noteworthy findings have emerged during this research. Two interesting and rare aquatic species have been recorded, *Zannichellia palustris* and *Ranunculus circinatus*, found in one of the few freshwater wells on the island of Zlarin. Both of these species have been recorded quite seldom in Croatia: the latter was not previously recorded in the Mediterranean part, apart from one finding on the island of Korčula (Trinajstić, 1985). The finding of *Alyssum hirsutum* represents the second known finding of the species in Croatia. Prior to this research, the species was found only on the island of Murter (Pandža, 2018). Another interesting record was the finding of three individuals of *Vincetoxicum fuscatum*, growing in one locality, on bare ground next to a path. Previous records of this species are scarce, including only a vague mention of Dalmatia (Visiani, 1852), the islands of Krk (Trinajstić, 1965), Hvar (Trinajstić, 1993), Cres and Lošinj (Wallnöfer, 2008) and a locality near the Cetina river (Mekinić *et al*., 2013). Another rare and newly found species, *Frankenia pulverulenta*, was registered in the village of Zlarin, being the northernmost recorded finding of this species in Croatia. Previous findings referred only to small islands of the southern Adriatic: Island of Biševo (Dobrović, 2000; Bogdanović, 2002b, 2004), Brusnik (Ginzberger, 1921; Pavletić *et al*., 1983; Bogdanović, 2001, 2002a, 2016; Bogdanović & Mitić, 2003), Jabuka (Bogdanović, 2004; Bogdanović *et al*., 2008a), Kamik (Ginzberger, 1921; Pavletić *et al*., 1983; Bogdanović, 2005, 2013; Bogdanović *et al*., 2008b), Mali Mišjak (Milović & Pandža, 2009b), and Mljet (Regula-Bevilacqua & Ilijanić, 1984).

The finding of three agricultural weeds: *Delphinium peregrinum*, *Papaver hybridum* and *Linaria chalepensis,* designated as EN, CR and DD, respectively, is particularly worth mentioning. Nowadays, agricultural weeds are commonly threatened due to shifting agriculture and habitat loss (Nikolić & Topić, 2005), many of them being recognized by the IUCN. Despite the risk however, *D. peregrinum* is very widespread on the island, found in as many as seven of the nine MTB 1/64 fields. On the other hand, only a small population of *P. hybridum* was found on a cultivated area near a house. A rare weed, *L. chalepensis* was found forming a dense population in a traditional vegetable garden, in the settlement of Zlarin. It was previously recorded on Zlarin by Milović & Pandža (2010).

It is not surprising that the vast majority of recorded taxa belongs to *Compositae*, followed by *Fabaceae* and *Poaceae*. Those families are among the best adapted to the ecological conditions of the Mediterranean area, as confirmed by many floristic studies of floras of other Dalmatian islands in Croatia such as Biševo (Pavletić, 1974), Mljet (Regula-Bevilacqua & Ilijanić, 1984), Olib (Milović *et al*., 2016), Vrgada (Pandža *et al*., 2011) and Žirje (Pandža, 2003).

As expected, therophytes are the largest in number within the life-form spectrum as they normally indicate the Mediterranean character of given area. The considerable number of hemicryptophytes is the result of strong anthropogenic activities, along with fires and grazing. The given results match the data for the Dalmatian islands of Mljet (Regula-Bevilacqua & Ilijanić, 1984), Olib (Milović *et al*., 2016), Krapanj and Prvić (Pandža, 1998a), while the islands of Vrgada (Pandža *et al*., 2011), Žirje (Pandža, 2003) and Svetac (Pavletić, 1979) slightly differ from the flora of Zlarin in their third most dominant life form being geophytes instead of phanerophytes. Therefore, the flora of Zlarin more or less coincides with similar Dalmatian islands in the most dominant life forms.

Given that the region of this study belongs to the typically Mediterranean climate, the results of the phytogeographic analysis were as expected. The spectrum of floral elements reflects the phytogeographic location of the researched area. Comparison with floras of other Dalmatian islands shows great similarities. The most dominant floral element in all the floras is the Mediterranean floral element followed by the south-European floral element, cultivated and adventive plants or widespread plants. The high proportion of widespread plants and cultivated and adventive plants is surely a consequence of a strong, long-lasting human influence on the flora and vegetation of the island. The relatively large number of invasive alien taxa recorded is most likely related to the high level of human activity during the long history of the island, which caused the formation of ruderal habitats that are easily and quickly inhabited by invasive taxa. Due to the anthropogenic influence and consequential formation of semi-natural habitats, invasive taxa were, as expected, most represented in fields A and E, that is the fields in which the settlement is located. Noteworthily, although a large number of invasive taxa have been reported, none of them covered a considerable area of the island and their invasive behaviour was not observed. We would however recommend some action towards the eradication of *Ailanthus altissima* and *Carpobrotus acinaciformis*, while their populations are still localized and small. These two aliens are well known for their invasiveness in the Mediterranean with documented adverse effects on local flora (Sladonja *et al*., 2015; Campoy *et al*., 2018) and once established, they are very difficult to eliminate.

Pearson correlation showed certain connections between species richness and habitats. The highest richness of flora was found in fields with higher habitat diversity and in fields with maintained olive groves. This was also expected, as anthropogenic pressure in a form of traditional agriculture plays a major role in increasing habitat diversity. The olive groves on Zlarin are managed almost exclusively by mowing, which is seemingly a much better management practice from the standpoint of the nature conservation, in comparison to tilling. The olive groves provide a nursing effect for a number of endemic and endangered taxa of dry grasslands, a habitat which is otherwise, without grazing, exposed to the possibility of disappearance through the process of secondary succession (Radić-Lakoš *et al*., 2014). Although anthropogenic impact is often associated with loss of biodiversity, mostly through habitat destruction and the introduction of alien species, the island of Zlarin is a good example of how anthropogenic pressure in the form of traditional human activities together with habitat diversity can have a positive impact on the floristic diversity of a small island. Anthropogenic impact may even contribute more to biodiversity than the size of the island itself (Pandža & Milović, 2015), and islands with traditional anthropogenic pressures may have significantly more diverse flora than the islands of similar size without such an impact (Pandža *et al*., 2011).

CONCLUSION

The flora of the island of Zlarin is rather rich, which is partly a result of thoroughness of this and other studies of the island. The floristic analyses did not reveal any unusual results, whereas a common resemblance with other similar areas was found. Habitat diversity, as expected, shows to support plant diversity, and anthropogenic habitats in terms of traditional agriculture (in this case, particularly olive groves), should be preserved, being a valuable reservoirs of plant diversity.

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APPENDIX 1.

The list of vascular plant taxa on the island of Zlarin. Names of the taxa recorded for the first time are marked with an asterisk. For unconfirmed taxa, a corresponding reference previously recording the taxa is provided: H – Host, 1802; K – Kauf, 2010; M – Milović & Pandža, 2010; P – Pandža, 1998b; P1 – Pandža *et al*., 2005; T – Trinajstić & Pavletić, 1999; V – Vuković, 2002.

Family	Taxon	Unconfirmed	MTB field	Life form	Floral element	Endemic	Threatened	Strictly protected	Allochthonous	Invasive
MONILOPHYTA (PTERIDOPHYTA)										
Adiantaceae	*Cheilanthes persica* (Bory) Mett. ex Kuhn		C	H	EME					
Aspleniaceae	*Asplenium ceterach* L.		A, B, C, D, E, F, G, H, I	H	SEUME					
	* *Asplenium ruta-muraria* L.		A, C, E, G	H	CIHO					
	Asplenium trichomanes L.		C, D, E, F, G	H	WSP					
SPERMATOPHYTA – GYMNOSPERMAE										
Cycadaceae	* *Cycas revoluta* Thunb.		E	P	SC				*	
Cupressaceae	*Cupressus horizontalis* Mill.		A, E, H	P	EME				*	
	Cupressus sempervirens L.		A, C, E, G, H	P	EME				*	
	Juniperus communis L.	K		P	CIHO					
	Juniperus oxycedrus L. ssp. *macrocarpa* (Sm.) Ball		D, E, H	P	CME		LC			
	Juniperus oxycedrus L. ssp. *oxycedrus*		A, B, C, D, E, F, G, H, I	P	CME					
	Juniperus phoenicea L.		C, H	P	CME					
	Thuja orientalis L.		A	P	SC				*	
Ephedraceae	*Ephedra fragilis* Desf. ssp. *campylopoda* (C. A. Mayer) Asch. et Graeb.		A, C, D, F, G, H	P	EME		NT			

Family	Taxon	Unconfirmed	MTB field	Life form	Floral element	Endemic	Threatened	Strictly protected	Allochthonous	Invasive
Pinaceae	* *Cedrus libani* A. Rich.		A	P	SC				*	
	* *Picea pungens* Engelm.		A	P	SC				*	
	Pinus halepensis Mill.		A, C, D, E, F, G, I	P	CME					
	Pinus nigra J. F. Arnold ssp. *dalmatica* (Vis.) Franco	T		P	SEUME	*	NT	*		
	Pinus pinea L.	T		P	CME					
SPERMATOPHYTA – ANGIOSPERMAE										
MAGNOLIANAE										
Magnoliaceae	* *Magnolia grandiflora* L.		A	P	SC				*	
LILIANAE										
Agavaceae	*Agave americana* L.		A, B, D	H	CUAD				*	
	Yucca gloriosa L.		B, D, E	P	CUAD				*	
Amaryllidaceae	*Allium ampeloprasum* L.		C, E, F, G	G	CME					
	Allium cepa L.		E	G	SC				*	
	Allium commutatum Guss.	P		G	CME					
	Allium flavum L.		A	G	CME					
	Allium roseum L.		A, B, E	G	CME					
	Allium sativum L.	P		G	SC				*	
	Allium sphaerocephalon L.		A	G	SEUME					
	Allium subhirsutum L.		C, D, F, G	G	CME					
	Narcissus poeticus L.	T		G	SC				*	
Araceae	*Arum italicum* Mill.		A, B, C, E	G	MEAT					
Arecaceae	*Chamaerops humilis* L.		A	P	SC				*	
	Phoenix canariensis Chabaud		A	P	SC				*	
Asparagaceae	*Asparagus acutifolius* L.		A, B, C, D, E, F, G, H, I	G	CME					
	Muscari comosum (L.) Mill.		A, B, C, D, E, G, H	G	SEUME					
	Muscari neglectum Guss. ex Ten.		A, E, F, G, H	G	CME					
	Ornithogalum refractum Kit. ex Schltr.	M		G	SEUME					
	Ornithogalum umbellatum L.	P		G	SEUME					
	* *Ruscus aculeatus* L.		G	G	MEPO		LC			
	Scilla autumnalis L.		B, C, D, G	G	MEPO					
	Sternbergia lutea (L.) Ker Gawl. Ex Spreng.		A, B, E	G	CME					
Cannaceae	*Canna indica* L.		A	G	SC				*	
Cyperaceae	*Carex distachya* Desf.		A	H	CME					
	Carex divulsa Stokes		A, B, E	H	WSP					
	* *Carex flacca* Schreb. ssp. *serrulata* (Biv.) Greuter		B, E	G	CME					
	Carex hallerana Asso		C, F	H	SEUME					
	* *Carex muricata* L.		E	H	EUAS					
	* *Cyperus rotundus* L.		A, E	G	WSP		EN	*		
Iridaceae	*Gladiolus italicus* Mill.		C, E	G	SEUME			*		
	Iris germanica L.		A, B, E	G	CUAD			*	*	
Juncaceae	*Juncus bufonius* L.	M		T	WSP					
	Schoenus nigricans L.		C, E	L	WSP					
Liliaceae	*Lilium candidum* L.		A, C	G	SC				*	
Orchidaceae	* *Anacamptis pyramidalis* (L.) Rich.		B, C	G	EU		NT	*		
	Barlia robertiana (Loisel.) Greuter		A, B, C	G	CME			*		
	* *Epipactis microphylla* (Ehrh.) Sw.		E	G	EUAS			*		
	* *Gymnadenia conopsea* (L.) R. Br.		C	G	EUAS			*		
	Limodorum abortivum (L.) Sw.		B, E	G	SEUME			*		
	Ophrys bertolonii Moretti		A, B, C, E, G	G	SEUME		VU	*		

Family	Taxon	Unconfirmed	MTB field	Life form	Floral element	Endemic	Threatened	Strictly protected	Allochthonous	Invasive
	* *Ophrys medea* Devillers et Devillers-Tersch.		A	G	ILAE	*		*		
	Ophrys scolopax Cav.		A, B	G	MEPO		DD	*		
	Ophrys sphegodes Mill.	K		G	EUME		VU	*		
	Ophrys sphegodes Mill. ssp. *atrata* (Lindl.) E. Mayer		A, B, C	G	EUME			*		
	Orchis morio L.		E	G	EUAS		NT	*		
	Orchis purpurea Huds.		A, B	G	EUAS		VU	*		
	Orchis tridentata Scop. ssp. *commutata* (Tod.) Nyman		A, B, C, D, E, G, H	G	EEUPO			*		
	* *Serapias parviflora* Parl.		A, B, C, E	G	CME			*		
Poaceae	*Aegilops geniculata* Roth		A, B, C, D, E, F, H	T	CME					
	*Aegilops triuncialis*L.		A, E, G	T	CME					
	* *Anthoxanthum odoratum* L.		B	H	EUAS					
	Arundo donax L.		A, E	G	CME				*	
	Avena barbata Pott ex Link		B, E, G	T	SEUME					
	Avena sterilis L.		A, B, D, E, F, H	T	SEUPO					
	Brachypodium distachyon (L.) P. Beauv.		C	T	CME					
	Brachypodium retusum (Pers.) P. Beauv.		A, B, C, D, E, F, G, H, I	H	CME					
	*Briza maxima*L.		A, B, C, D, E, F, G, H	T	CME					
	Bromus erectus Huds.	V	B, C, D, E, F, G, H	H	SEUME					
	Bromus erectus Huds. ssp. *condensatus* (Hack.) Asch. et Graebn.	M		H	SEUME					
	Bromus hordeaceus L. ssp. *molliformis* (Lloyd) Maire et Weiller		A, E	T	SEUME					
	Bromus madritensis L.		A, C, D, E, G	T	MEAT					
	Bromus rigidus Roth	M		T	SEUAT					
	Bromus sterilis L.		A, B, C, E, F, H	T	WSP					
	Chrysopogon gryllus (L.) Trin.		C	H	MEPO					
	Cleistogenes serotina (L.) Keng		A, B, C, D	H	SEUPO					
	* *Cortaderia selloana* (Schult. & Schult.f.) Asch. & Graebn.		A	H	SC				*	
	Cynodon dactylon (L.) Pers.		A, E, I	H	WSP					
	Cynosurus echinatus L.		A, B, E, F, G, H	T	SEUME					
	Dactylis glomerata L.		A, C, D, E, F, G, H	H	CME					
	Dasypyrum villosum (L.) P. Candargy	P1		T	CME					
	Desmazeria marina (L.) Druce		A, G	T	MEAT		VU	*		
	Desmazeria rigida (L.) Tutin		A, C, D, E, F, G, H	T	MEAT					
	Dichanthium ischaemum (L.) Roberty		A, B, C, E, G	H	SEUME					
	Digitaria sanguinalis (L.) Scop.		A	T	WSP					
	* *Echinochloa crus-galli* (L.) P. Beauv.		A	T	WSP					
	Elymus pycnanthus (Godr.) Melderis		A, C, D, E	G	CME		NT			
	Elymus repens (L.) Gould		A, B, I	G	WSP					
	Eragrostis cilianensis (All.) Janch.		E, G	T	WSP					
	Eragrostis minor Host	P		T	WSP					
	Gastridium ventricosum (Gouan) Schinz et Thell.	M		T	MEAT					

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	* *Hainardia cylindrica* (Willd.) Greuter		A	T	CME		VU	*		
	Helictotrichon convolutum (C. Presl) Henrard		B, C, D, E, H	H	WME					
	Heteropogon contortus (L.) P. Beauv. ex Roem. et Schult.		I	T	MEPO		NT			
	* *Hordeum bulbosum* L.		A	H	SEUME					
	Hordeum murinum L. ssp. *leporinum* (Link) Arcang.		A, B, E	T	CME					
	* *Hyparrhenia hirta* (L.) Stapf		C	H	CME					
	* *Koeleria macrantha* (Ledeb.) Schult.		C	H	EUAS					
	Koeleria splendens C. Presl	T		H	SEUME					
	Lagurus ovatus L.		A, C, E, H	T	CME					
	Lolium perenne L.		A, B, E	H	EU					
	Lolium rigidum Gaudin		A, B, E	T	SEUME					
	Lolium rigidum Gaudin ssp. *lepturoides* (Boiss.) Sennen et Mauricio		A	T	EME					
	Lophochloa cristata (L.) Hyl.		A, B	T	MEAT					
	Melica ciliata L.		B, C, D, E, F, G, H, I	H	MEPO					
	Parapholis incurva (L.) C. E. Hubb.		A, E	T	MEAT		VU	*		
	Phleum echinatum Host		C	T	CME					
	Phleum subulatum (Savi) Asch. et Graebn.		A, B, E	T	CME					
	Phragmites australis (Cav.) Trin. ex Steud.	M		G	WSP					
	Piptatherum miliaceum (L.) Coss. ssp. *miliaceum*		A, C, E	H	SEUME					
	Poa annua L.		A, E	T	WSP		LC			
	Poa bulbosa var. *vivipara* Koeler		A, B, C, E, G, H	H	EUAS					
	Poa infirma Kunth	P		T	CME					
	Psilurus incurvus (Gouan) Schinz et Thell.	M		T	CME					
	Sclerochloa dura (L.) P. Beauv.	V		T	MEPO					
	* *Sesleria autumnalis* (Scop.) F. W. Schultz		A, C	H	ISEU					
	Setaria gussonei Kerguélen	M		T	WSP					
	Setaria verticillata (L.) P. Beauv.	P		T	WSP					
	Setaria viridis (L.) P. Beauv.		A, B, C	T	WSP					
	Sorghum halepense (L.) Pers.		E	G	CUAD				*	*
	Stipa bromoides (L.) Dörfl.		B	H	CME					
	* *Stipa capillata* L.		A, C	H	EUAS		DD			
	Stipa pennata L.		B, C, E	H	EUAS					
	Tragus racemosus (L.) All.		C, E	T	SEUME					
	Vulpia ciliata Dumort.		A, B	T	SEUME					
	Zea mays L.	P		T	SC				*	
Potamogetonaceae	* *Zannichellia palustris* L.		E	Hy	WSP					
Smilacaceae	*Smilax aspera* L.		A, B, C, D, E, F, G, H, I	P	CME					
EUDICOTYLEDONAE										
Aceraceae	*Acer negundo* L.	M		P	CUAD				*	*
Actinidiaceae	* *Actinidia chinensis* Planch.		A, E	P	SC				*	
Aizoaceae	* *Carpobrotus acinaciformis* (L.) L. Bolus		A, B, E	Ch	CUAD				*	
	Mesembryanthemum cordifolium L.f.		A		CUAD				*	

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Amaranthaceae	*Amaranthus albus* L.		A, E	T	CUAD				*	*
	Amaranthus caudatus L.		A	T	CUAD				*	
	Amaranthus cruentus L.	M		T	CUAD				*	
	Amaranthus deflexus L.	P		T	CUAD					*
	Amaranthus graecizans L.	P		T	CUAD				*	
	* *Amaranthus lividus* L.		A, E	T	WSP					
	Amaranthus retroflexus L.		A, E	T	CUAD				*	*
Anacardiaceae	*Pistacia lentiscus* L.		A, E, F, G, H, I	P	CME					
	Pistacia terebinthus L.		A, B, C, D, E, F, G, H, I	P	CME					
Apiaceae	*Apium graveolens* L.		A	H	SC					
	* *Bunium ferulaceum* Sibth. et Sm.		A, H	G	EEUPO					
	Bupleurum veronense Turra		D, G, H	T	ISEU					
	Caucalis platycarpos L.	P		T	WSP					
	Crithmum maritimum L.		C, D, E, F, I	Ch	MEAT					
	Daucus carota L.		A, B, C, E, H	H	EUAS					
	Daucus carota L. ssp. *major* (Vis.) Arcang.	T		H	SEUME					
	Eryngium amethystinum L.		A, C, D	H	ISEU					
	Foeniculum vulgare Mill.		A, B, E	H	CME					
	Orlaya grandiflora (L.) Hoffm.		A, B, H, I	T	SEUME					
	Petroselinum crispum (Mill.) A. W. Hill		E	H	SC				*	
	* *Scandix australis* L.		A, B, C, D, G, H	T	CME					
	Scandix pecten-veneris L.		A, B, C, E	T	WSP					
	Seseli tomentosum Vis.		A, B, C, D, F, G, I	H	ILAE	*	NT	*		
	Tordylium apulum L.		A, B, E, H	T	CME					
	Tordylium officinale L.	M		T	EME					
	Torilis arvensis (Huds.) Link		E, F, H	T	SEUME					
	Torilis nodosa (L.) Gaertn.	M		T	MEAT					
Apocyanaceae	*Nerium oleander* L.		A, B	P	CME				*	
	Vinca major L.		A, C, E	Ch	CUAD				*	
Araliaceae	*Hedera helix* L.		A, B, E, F	P	EU					
Asclepiadaceae	* *Vincetoxicum fuscatum* (Hornem.) Rchb. f.		C	H	SEUPO					
	Vincetoxicum hirundinaria Medik. ssp. *adriaticum* (Beck) Markgr		C, F, I	G	ILAE	*	LC	*		
Begoniaceae	*Begonia 'Semperflorens'* Cult. group		E		SC				*	
Bignoniaceae	*Campsis radicans* (L.) Seen.		A, E	P	CUAD				*	
Boraginaceae	*Borago officinalis* L.		A, C	T	CME					
	Cynoglossum columnae Ten.		A, F, G, H	H	CME					
	Cynoglossum creticum Mill.	P		H	CME					
	Echium plantagineum L.		A, B, C, E, F, I	H	MEAT					
	Heliotropium europaeum L.		A, B, C, D, E, H	T	MEPO					
	Myosotis ramosissima Rochel		A, E	T	EUAS					
Brassicaceae	*Aethionema saxatile* (L.) R. Br.		A, B, D, E, F, G, H, I	Ch	SEUME					
	Alyssum alyssoides (L.) L.		A	T	SEUME					
	* *Alyssum hirsutum* M. Bieb.		A, B	T	EEUPO					
	Alyssum simplex Rudolphi		A, B, C	T	CME					
	Arabis hirsuta (L.) Scop.		A, B, C	H	WSP					
	Aurinia sinuata (L.) Griseb.		A, H	Ch	ILAE	*		*		
	Brassica oleracea L.		E	Ch	SC					
	Bunias erucago L.		A	T	SEUME					

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	Cakile maritima Scop.	P		T	WSP					
	Capsella rubella Reut.		A, E	T	CME					
	Cardamine hirsuta L.		A, C, E	T	WSP					
	Cardaria draba (L.) Desv.		A	H	WSP					
	Clypeola jonthlaspi L.		A, C, H	T	CME					
	Diplotaxis tenuifolia (L.) DC.		A, E, F	H	WSP					
	Erophila verna (L.) Chevall. ssp. *praecox* (Steven) Walters		C	T	WSP					
	Eruca vesicaria (L.) Cav. ssp. *sativa* (Mill.) Thell.		A	T	SC				*	
	Erysimum cheiri (L.) Crantz	P		H	SC				*	
	Hornungia petraea (L.) Rchb.		A	T	WSP					
	Lepidium graminifolium L. ssp. *suffruticosum* (L.) P. Monts.		A	H	SEUPO					
	Lobularia maritima (L.) Desv.		A, E	H	CME					
	Matthiola incana (L.) R. Br.		A, F	Ch	CUAD		NT			
	Raphanus raphanistrum L. ssp. *landra* (Moretti ex DC.) Bonnier et Layens	P		T	WSP		DD			
	Raphanus sativus L.		A, B, C, D, E, F	T	CUAD				*	
	Saponaria officinalis L.		A, F	H	CUAD					
	Sisymbrium officinale (L.) Scop.		E	T	WSP					
Buddlejaceae	* *Buddleja davidii* Franch.		A	P	CUAD				*	
Buxaceae	*Buxus sempervirens* L.		B	P	SC				*	
Cactaceae	*Opuntia ficus-indica* (L.) Miller		A, B, E	P	CUAD				*	
Campanulaceae	*Campanula erinus* L.	P		T	CME					
	Campanula pyramidalis L.		C, D, F, G, H, I	H	ILAE					
	Legousia hybrida (L.) Delarbre		E, G, H	T	SEUAT					
	* *Legousia speculum-veneris* (L.) Chaix		A	T	SEUME					
Capparaceae	*Capparis orientalis* Veill.		A, I	P	CME					
Caprifoliaceae	*Lonicera implexa* Aiton		B, C, D, E, F, I	P	CME					
	* *Sambucus nigra* L.		A	P	EU					
	* *Viburnum tinus* L.		A, E	P	CME					
Caryophyllaceae	*Arenaria leptoclados* (Rchb.) Guss.		B	T	EUAS					
	Arenaria serpyllifolia L.		A, D, E, H	T	WSP					
	* *Cerastium glomeratum* Thuill.		B, C, E, F, H	T	WSP					
	Cerastium pumilum Curtis ssp. *glutinosum* (Fries) Jalas	M		T	WSP					
	Cerastium semidecandrum L.	P		T	SEUPO					
	Cerastium tomentosum L.		A	Ch	SC				*	
	Herniaria glabra L.		A, E	T	EUAS					
	Herniaria hirsuta L.		A, E	T	EU					
	Herniaria incana Lam.	M		T	SEUME					
	* *Minuartia hybrida* (Vill.) Schischkin in Komarov		A	T	EUAS					
	Minuartia mediterranea (Link.) K. Malý	M		T	CME					
	Petrorhagia prolifera (L.) P. W. Ball et Heywood	P		T	EUAS					
	Petrorhagia saxifraga (L.) Link		A, B, G, H, I	H	SEUME					
	Polycarpon tetraphyllum (L.) L.		A, E	T	SEUME					
	Sagina maritima G. Don	M		T	MEAT					
	Silene conica L.		A	T	EUAS					
	Silene gallica L.		A, B	T	WSP					
	Silene latifolia Poir. ssp. *alba* (Mill.) Greuter et Bourdet		A, B, E, F	H	EUAS					

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	Silene vulgaris (Moench) Garcke ssp. *angustifolia* Hayek		A, C, D, E, F, G, H	H	SEUME					
	* *Spergularia rubra* (L.) J. Presl et C. Presl		A	Ch	WSP					
	Spergularia salina J. Presl et C. Presl	P		T	WSP					
	Stellaria media (L.) Vill.		A	T	WSP					
	Stellaria pallida (Dumort) Piré	P		T	WSP					
Celastraceae	*Euonymus japonica* L. f.		A	P	SC				*	
	Arthrocnemum fruticosum (L.) Moq.	P		Ch	SEUME					
	Arthrocnemum macrostachyum (Moric.) C. Koch		A, C, D, E, F	Ch	SEUME					
	Atriplex littoralis L.	M		T	EUAS					
	Atriplex patula L.	P		T	CIHO					
	* *Atriplex prostrata* Boucher ex DC. in Lam. et DC.		A, E	T	WSP					
	Bassia prostrata (L.) A. J. Scott	P		Ch	EUAS					
Chenopodiaceae	*Beta vulgaris* L. ssp. *maritima* (L.) Arcang.		A, B, D, E	H	MEAT					
	Beta vulgaris L. ssp. *vulgaris*		A, E	H	SC		LC		*	
	Chenopodium album L.		A, B, E	T	WSP					
	Chenopodium murale L.		A, E	T	WSP		DD			
	Chenopodium vulvaria L.	P		T	SEUME		DD			
	Halimione portulacoides (L.) Aellen		A, B, E	Ch	WSP					
	Salsola soda L.		A, B, E	T	SEUPO		VU	*		
	Spinacia oleracea L.	P		T	SC				*	
	Suaeda maritima (L.) Dumort.		A, E	T	WSP		VU	*		
	Cistus incanus L.		B, C, D	P	CME					
	Cistus incanus L. ssp. *creticus* (L.) Heywood	T		P	EME					
	Cistus monspeliensis L.	H		P	CME					
Cistaceae	*Cistus salvifolius* L.		C, I	P	CME					
	Fumana ericifolia Wallr.		B, C, D, E, F, G, H, I	Ch	CME					
	Fumana procumbens (Dunal) Gren. et Godr.	M		Ch	SEUME					
	Fumana thymifolia (L.) Spach ex Webb	M		Ch	CME					
Clusiaceae	*Hypericum perforatum* L. ssp. *veronense* (Schrank) H. Lindb.		A, B, E, F, G, H, I	H	SEUME					
	Colchicum visianii Parl.		C, D, H, I	G	ILAP					
Colchicaceae	* *Colchicum haynaldii* Heuff.		A, C		ILBE				*	
	Colchicum hungaricum Janka		C	G	CME					
	Achillea collina (Wirtg.) Heimerl	P		H	CEU					
	Achillea setacea Waldst. et Kit.	M		H	SEUME					
	Achillea tomentosa L.	T		H	SC					
	Aetheorhiza bulbosa (L.) Cass.		A, E, F, H	G	CME					
	Ambrosia artemisiifolia L.	M		T	CUAD				*	*
	Anthemis arvensis L.	P		T	CME					
Composite	* *Anthemis ruthenica* M. Bieb		E	T	MEPO					
	* *Anthemis segetalis* Ten.		A, B, D, E, H	T	ISEU					
	* *Artemisia absinthium* L.		A	Ch	EUAS					
	Artemisia caerulescens L.		A	Ch	ILAP					
	Aster squamatus (Spreng.) Hieron.		A, E	T	CUAD				*	*
	Balsamita major Desf.	T		Ch	SC				*	
	* *Bellis sylvestris*		A	H	CME					

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	Bidens subalternans DC.		A	T	CUAD				*	*
	Bombycilaena erecta (L.) Smoljan.		D, E, G, H	T	SEUPO					
	Calendula arvensis L.		A, B, E	T	SEUME					
	Calendula officinalis L.		A	T	CUAD				*	
	Carduus micropterus (Borbás) Teyber ssp. *micropterus*		A	H	ILAE					
	Carduus pycnocephalus L.		A, B, C, E, F, H	T	CME					
	Carlina corymbosa L.		A, B, C, D, E, I	H	CME					
	Carthamus lanatus L.		H	T	CME					
	Centaurea glaberrima Tausch	T		H	ILAE	*	NT	*		
	Centaurea pannonica (Heuff.) Simonk.		A	H	EEUPO					
	Centaurea spinosociliata Seenus ssp. *cristata* (Bertol.) Dostál		A, C, D, E	H	ILAE	*		*		
	Centaurea spinosociliata Seenus ssp. tommasinii (A. Kern.) Dostál		A	H	ILAE	*	DD	*		
	Chamomilla recutita (L.) Rauschert	P		T	WSP					
	Chondrilla juncea L.		A, E	H	EUAS					
	Chrysanthemum coronarium L.	P		T	CUAD				*	
	Cichorium endivia L.		A	T	SC					
	Cichorium intybus L.		A	H	WSP					
	Cirsium arvense (L.) Scop.	P		T	EUAS					
	Conyza bonariensis (L.) Cronquist		A, E, G	T	CUAD				*	*
	Conyza canadensis (L.) Cronquist	P		T	CUAD				*	*
	Conyza sumatrensis (Retz.) E. Walker		A, E, F	T	CUAD				*	*
	* *Crepis biennis* L.		E	H	CEU					
	Crepis dioscoridis L.	P		T	EME					
	* *Crepis pulchra* L.		E	T	SEUME					
	* *Crepis rubra* L.		A, H	T	EME					
	Crepis sancta (L.) Babc.		A	T	EME				*?	
	Crepis setosa Haller f.	M		T	SEUPO					
	* *Crepis vesicaria* L.		A, B	T	SEUME					
	Crepis zacintha (L.) Babc.		A	T	CME					
	Crupina crupinastrum (Moris) Vis.		B, E, G, H	T	SEUME					
	Cynara scolymus L.		A, B, E, H	H	CUAD				*	
	Dahlia variabilis (Willd.) Desf.		A	G	SC				*	
	Dittrichia viscosa (L.) Greuter		A, B, C, D, E, F	H	CME					
	Erigeron annuus (L.) Pers. ssp. *septentrionalis* (Fernald et Wiegand) Wagenitz		A, B, E	T	CUAD				*	*
	Filago pyramidata L.	M		T	SEUME					
	Filago vulgaris Lam.	P		T	WSP					
	*Hedypnois cretica (*L.) Dum. Cours.	M		T	CME					
	Helianthus annuus L.		A, C	T	SC				*	
	Helianthus tuberosus L.		A, E	G	CUAD				*	*
	Helichrysum italicum (Roth) G. Don		A, C, D, E, F, G, I	Ch	CME					
	Hieracium heterogynum (Froel.) Gutermann	M		H	ILBE					
	Hieracium piloselloides Vill.		B	H	ISEU					
	Hieracium praealtum Vill. ex Gochnat ssp. *bauhinii* (Besser) Petunn.		C	H	EUAS					
	* *Hieracium sabaudum* L.		B, C, E	H	CEU					
	Hieracium tommasinii Rchb. f.		C, F	H	ILBE					
	Hypochoeris cretensis (L.) Bory et Chaub.	M		T	EME					

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	Inula conyza DC.		A, B, C, E	H	SEUPO					
	Inula crithmoides L.		A, C, E, F	Ch	MEAT					
	* *Inula hirta* L.		B, C	H	EUAS					
	Inula spiraeifolia L.		C, G	H	SEUME					
	Inula verbascifolia (Willd.) Hausskn.		C, D, G, I	Ch	ILAE					
	Lactuca sativa L.		A	H	SC				*	
	Lactuca serriola L.		A, E, H	H	WSP					
	Lactuca viminea (L.) J. et C. Presl		A, B, D, G, I	H	SEUPO					
	* *Leontodon crispus* Vill.		C, D, E, H	H	SEUME					
	* *Leontodon hispidus* L.		A, C	H	EU					
	Leontodon tuberosus L.		A, B, E	G	CME					
	Leucanthemum adustum (Koch) Gremli	T		H	SEU					
	Leucanthemum vulgare Lam.	P		H	EUAS					
	* *Matricaria perforata* Mérat		A, E	T	EUAS					
	Onopordum illyricum L.		E	H	CME					
	Pallenis spinosa (L.) Cass.		A, B, C, D, E	T	CME					
	Picnomon acarna (L.) Cass.		A, C, H	H	CME					
	Picris hieracioides L.		A, C, E, F, G	H	EUAS					
	* *Picris hispidissima* (Bartl.) Koch		A, E	H	ILAE					
	Reichardia picroides (L.) Roth		A, B, C, D, E, F, H, I	H	CME					
	Rhagadiolus stellatus (L.) Gaertn.		A, B, E, H	T	CME					
	* *Santolina chamaecyparissus* L.		A	Ch	WME					
	* *Scorzonera hispanica* L.		H	H	EU					
	Scorzonera laciniata L.		A	H	WSP					
	Scorzonera villosa Scop.		C, G, H	H	ISEU					
	Senecio bicolor (Willd.) Tod.		C, D, I	Ch	CUAD					
	Senecio vulgaris L.		A, B, D, E, G, H	T	WSP					
	Sonchus arvensis L.	P		H	WSP					
	Sonchus asper (L.) Hill ssp. *glaucescens* (Jord.) Ball		A, B, D, E, F, G, H	T	CME					
	* *Sonchus maritimus* L.		E	H	CME					
	Sonchus oleraceus L.		A	T	WSP					
	Tagetes patula L.		A, E	T	SC				*	
	Tanacetum cinerariifolium (Trevir.) Sch. Bip.		B, C, D, E, F, G, H	Ch	ILAE	*		*		
	Tanacetum parthenium (L.) Sch. Bip.		A	T	WSP					
	* *Tanacetum vulgare* L.		A	H	EUAS					
	Taraxacum megalorrhizon (Forssk.) Hand.-Mazz.	P		H	CME					
	Taraxacum officinale Weber		A, C	H	WSP					
	Tragopogon porrifolius L.		A, B, E, G, H	H	CME					
	Tyrimnus leucographus (L.) Cass.		A, B, C, E	T	CME					
	Urospermum dalechampii (L.) Scop. ex F. W. Schmidt		B, C, D, E, G	H	CME					
	Urospermum picroides (L.) Scop. ex F. W. Schmidt		A, C, D, E, F, G, H	T	CME					
	Zinnia elegans Jacq.		A, E	T	SC				*	
Convolvulaceae	*Convolvulus althaeoides* L.	K		H	EME					
	Convolvulus althaeoides L. ssp. *tenuissimus* (Sibth. et Sm.) Stace		A, B, C, D, E, F, G, H, I	H	EME					
	Convolvulus arvensis L.		A, B, E	G	WSP					
	Convolvulus cantabrica L.		C	H	SEUME					
	Ipomoea purpurea Roth		A	T	SC				*	

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Cornaceae	* *Cornus sanguinea* L.		A	P	EU					
Corylaceae	* *Corylus avellana* kult.		A	P	EU					
Crassulaceae	*Sedum acre* L.		A, B, E	Ch	EUAS					
	Sedum album L.		A	Ch	EUAS					
	Sedum dasyphyllum L.	T		Ch	SEUME					
	Sedum ochroleucum Chaix		A, B, H	Ch	SEUME					
	* *Sedum sediforme* (Jacq.) Pau		A	Ch	CME					
	Sedum sexangulare L.		A	Ch	EU					
	* *Sedum telephium* L. ssp. *maximum* (L.) Krock.		A, E	H	EUAS					
	Sempervivum tectorum L.		A	Ch	CEU			*		
Cucurbitaceae	* *Cucumis melo* L.		A	T	SC				*	
	Cucumis sativus L.	P		T	SC				*	
	Ecballium elaterium (L.) A. Rich.		E	G	CME		DD			
	Sechium edule Sw.	P		T	SC				*	
Cuscutaceae	*Cuscuta campestris* Yuncker	M		T	WSP				*	*
Dioscoriaceae	*Tamus communis* L.		B	G	SEUME					
Dipsacaceae	*Cephalaria leucantha* (L.) Roem. et Schult.		B, C, D, E	H	CME					
	Lomelosia brachiata (Sm.) Greuter et Burdet		B	T	EME					
	Sixalix atropurpurea (Forssk.) Greuter et Burdet ssp. *maritima* (L.) Greuter et Burdet	M		H	SEUME					
Ericaceae	*Arbutus unedo* L.	M		P	CME					
Euphorbiaceae	*Andrachne telephioides* L.		A, C, H	Ch	CME					
	Euphorbia chamaesyce L.	P		T	SEUME					
	Euphorbia characias L. ssp. *wulfenii* (Hoppe ex Koch) A. M. Sm.		A	Ch	ILAE					
	Euphorbia exigua L.		C, G, H	T	SEUME					
	Euphorbia falcata L.	P		T	SEUME					
	Euphorbia fragifera Jan		A, C, D, F, G, H	Ch	ILAE					
	Euphorbia helioscopia L.		A, B, C, E	T	WSP					
	* *Euphorbia maculata* L.		A, B	T	CUAD				*	*
	Euphorbia peplus L.		A, E	T	WSP					
	Euphorbia pinea L.		A, C, D, E, F	Ch	CME					
	Euphorbia prostrata Aiton		A, H	T	CUAD		LC		*	*
	Euphorbia spinosa L.		B, C, H, I	Ch	CME					
	Mercurialis annua L.		A, E, H	T	WSP					
	Ricinus communis L.	M		T	SC				*	
Fabaceae	* *Albizia julibrissin* Durazz.		A, E	P	SC				*	
	Anthyllis vulneraria L. ssp. *praepropera* (A. Kern.) Bornm.		A, B, C, D, E, G	H	EUME					
	Argyrolobium zanonii (Turra) P. W. Ball		C, D, E, G, H	Ch	WSP					
	* *Astragalus hamosus* L.		A, B	T	CME					
	Astragalus sesameus L.	M		T	WSP					
	Bituminaria bituminosa (L.) Stirton		A, B, E	H	CME					
	Cicer arietinum L.	P		T	SC				*	
	Colutea arborescens L.		A, C, E, G	P	CME					
	Coronilla emerus L. ssp. *emeroides* Boiss. et Spruner		A, B, C, D, E, F, G, H, I	P	EME					
	Coronilla scorpioides (L.) Koch		A, C, D, E, F, G, H	T	CME					
	Dorycnium herbaceum Vill.		C	H	SEUME					

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	Dorycnium hirsutum (L.) Ser.		B, E, I	Ch	CME					
	Genista sylvestris Scop. ssp. *dalmatica* (Bartl.) H. Lindb.	T		Ch	ILAE	*		*		
	Hymenocarpos circinnatus (L.) Savi	M		T	CME					
	Hippocrepis biflora Spreng.	P		T	CME					
	Hippocrepis ciliata Willd.		A, C, D	T	CME					
	Hippocrepis comosa L.		A, B, C, D, E	H	SEUME					
	Lathyrus aphaca L.		E	T	SEUME					
	Lathyrus cicera L.		A, B, D, E, G, H	T	CME					
	Lathyrus latifolius L.	P		T	CME					
	Lathyrus setifolius L.	P		T	MEPO					
	Lathyrus sphaericus Retz.	M		T	SEUME					
	* *Lens culinaris* Medik.		A, B, E	T	CUAD				*	
	Lens nigricans (M. Bieb.) Godr.	M		T	CME					
	Lotus corniculatus L. ssp. *hirsutus* Rothm.		A, C	H	SEUME					
	Lotus cytisoides L.		F	Ch	CME					
	Medicago arabica (L.) Huds.		A, E, G	T	WSP				*	
	Medicago arborea L.		A	P	SC				*	
	Medicago coronata (L.) Bartal.	M		T	CME					
	Medicago falcata L.	M		H	EUAS					
	Medicago littoralis Rohde ex Loisel.	P		T	CME					
	Medicago lupulina L.		A, B, C	T	WSP					
	Medicago minima (L.) Bartal.		A, C, D, G, H	T	WSP					
	Medicago orbicularis (L.) Bartal.		A, E, G	T	CME					
	* *Medicago polymorpha* L.		E	T	SEUME					
	* *Medicago rigidula* (L.) All.		A	T	MEPO					
	Medicago sativa L.		E	H	WSP					
	Medicago truncatula Gaertn.		E	T	CME					
	Melilotus albus Medik.		A	T	EUAS					
	* *Melilotus indicus* (L.) All.		A, C, E, G	T	CME					
	* *Melilotus neapolitanus* Ten.		A, C	T	CME					
	Melilotus officinalis (L.) Lam.		A, G	H	EUAS					
	Melilotus sulcatus Desf.	M		T	CME					
	Onobrychis caput-galli (L.) Lam.		A, H	T	CME					
	Ononis pusilla L.		A, B, C, E, G, H	H	SEUME					
	Ononis reclinata L.	T		T	CME					
	Phaseolus vulgaris L.		A, E	T	SC				*	
	Pisum sativum L.		A, B, E	T	CUAD					
	Pisum sativum L. ssp. *elatius* (M. Bieb.) Asch.et Graebn.	M		T	SEUME					
	Poinciana gilliesii Hook.	P		P	SC				*	
	Robinia pseudoacacia L.		A, E	P	CUAD				*	*
	Scorpiurus muricatus L.	P		T	CME					
	Securigera cretica (L.) Lassen		A, B, C, D, E, G	T	EME					
	Securigera securidaca (L.) Degen et Dörfl.		B, E, G	T	CME					
	Sophora japonica L.		A	P	SC				*	
	Spartium junceum L.		A, B, D, E, F, G, H, I	P	CME					
	Trifolium angustifolium L.		C, E, G	T	CME					
	Trifolium arvense L.	M		R	EUAS				*	
	Trifolium campestre Schreber		A, B, C, D, F, H	T	WSP					
	* *Trifolium incarnatum* L.		A	T	MEAT					
	Trifolium lappaceum L.		F	T	CME					

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	Trifolium repens L. ssp. *prostratum* Nyman	M		H	CME					
	* *Trifolium resupinatum* L.		A	T	MEPO		VU	*		
	Trifolium scabrum L.		A, E, G, H	T	CME					
	Trifolium stellatum L.		A, B, D, E, H	T	CME					
	Trifolium suffocatum L.	M		T	CME					
	Trifolium tomentosum L.	M		T	CME					
	Trigonella esculenta Willd.		A, B, E	T	EUME					
	* *Trigonella gladiata* M. Bieb.		A	T	CME					
	Trigonella monspeliaca L.	P		T	MEPO					
	Vicia angustifolia L. ssp. *angustifolia*	M		T	EU					
	Vicia faba L.		A, B, E	T	CUAD				*	
	Vicia hybrida L.		A, B, E, H	T	CME					
	Vicia lutea L.	P		T	SEUME					
	Vicia narbonensis L.	P		T	CME					
	* *Vicia peregrina* L.		A	T	SEUME					
	Vicia sativa L. ssp. *cordata* (Hoppe) Batt.		D, G, H	T	SEUME					
	Vicia sativa L. ssp. *sativa*		A, B, E	T	WSP				*	
	Vicia tetrasperma (L.) Schreber	M		T	WSP					
	Vicia villosa Roth ssp. *varia* (Host) Corb.		A, B, E, G, H	H	EEUPO					
	* *Wisteria sinensis* (Sims) Sweet		E	P	SC				*	
Fagaceae	* *Quercus cerris* L.		A	P	SEUPO					
	Quercus ilex L.		A, B, C, D, E, G, H, I	P	CME					
	Quercus pubescens Willd.		B	P	SEUPO					
	Quercus virgiliana (Ten.) Ten.	P		P	SEEU					
Frankeniaceae	* *Frankenia pulverulenta* L.		A	T	CME		NT			
Fumariaceae	*Fumaria officinalis* L.		A, B, D, E, G, H	T	WSP					
	Fumaria parviflora Lam.	P		T	WSP					
	Fumaria petteri Rchb. ssp. *thuretii* (Boiss.) Pugsley	M		T	MEPO					
Gentianaceae	*Blackstonia perfoliata* (L.) Huds.		A, B, C, D, E, F, G, H	T	MEAT					
	Centaurium erythraea Rafn		A, C, D, F, G, I	T	WSP					
Geraniaceae	*Erodium ciconium* (L.) L'. Hér.	P		T	MEPO					
	Erodium cicutarium (L.) L'. Hér.		A, E	T	WSP					
	Erodium malacoides (L.) L'. Hér.		A, E	T	CME					
	Geranium columbinum L.		C, E	T	EUAS					
	Geranium lucidum L.	P		T	MEAT					
	Geranium molle L.		B, E, H	T	WSP					
	Geranium molle L. ssp. *brutium* (Gasparr.) Graebn.	M		T	EME					
	Geranium purpureum Vill.		E	T	SEUME					
	* *Geranium robertianum* L.		A, B, C, D, E, F, G, H	T	WSP					
	Geranium rotundifolium L.		A, F	T	EUAS					
	Pelargonium zonale (L.) Aiton		E	Ch	SC				*	
Hydrangeaceae	* *Hydrangea macrophylla* (Thunb.) Ser.		A, E	P	SC				*	
	Philadelphus coronarius L.		A	P	SC				*	
Juglandaceae	*Juglans regia* L.		A, B	P	CUAD				*	

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Lamiaceae	*Acinos arvensis* (Lam.) Dandy		C, H	T	EU					
	Ajuga chamaepitys (L.) Schreb.		A, B, C, D, E, F, G, H	T	CME					
	Ballota nigra L. ssp. *foetida* (Vis.) Hayek	M		H	SEUME					
	Ballota nigra L. ssp. *uncinata* (Fiori et Bég.) Patzak	M		H	CME					
	Calamintha nepetoides Jord.		A, B, E, H	Ch	SEUPO					
	Lamium amplexicaule L.		A, B, E	T	EUAS					
	Lavandula angustifolia Mill.		A	P	SC				*	
	* *Lavandula stoechas* L.		A	P	SC				*	
	Marrubium incanum Desr.		A, E	H	ILAP					
	Marrubium vulgare L.		A	H	WSP					
	* *Mentha x piperita* L.		A, E	H	SC					
	* *Micromeria graeca* (L.) Rchb.		C	Ch	CME					
	Micromeria juliana (L.) Benth. ex Rchb.		A, B, C, D, E, G, H	Ch	CME					
	Ocimum basilicum L.		A	H	SC				*	
	Origanum heracleoticum L.		A, B, C, E	Ch	EME					
	Origanum majorana L.	T		H	CUAD				*	
	Prasium majus L.		D, F, G, I	Ch	CME					
	Rosmarinus officinalis L.		A, B, D, E, G	P	CME					
	* *Salvia bertolonii* Vis.		A, B, H	H	ILAE					
	* *Salvia greggii* A. Gray		A	Ch	SC				*	
	Salvia officinalis L.		A, E	Ch	ILAE					
	Salvia sclarea L.		A, B, E	H	SEUME					
	Salvia splendens Sellow ex Roem. et Schult.		A	T	SC				*	
	Salvia verbenaca L.		A, E	H	MEAT					
	Salvia viridis L.	M		T	SEUME					
	Satureja montana L. ssp. *variegata* (Host) P. W. Ball		A, B, C, D, E, F, G, H, I	Ch	MEPO					
	Sideritis romana L.		D, E, F, H	T	CME					
	Stachys cretica L. ssp. *salviifolia* (Ten.) Rech. f.	P		H	ILAP					
	* *Stachys thirkei* K. Koch		A, B, E, H	H	EME					
	Teucrium chamaedrys L.		A, B, C, D, E, G, H, I	Ch	SEUPO					
	Teucrium flavum L.	M		Ch	CME					
	* *Teucrium fruticans* L.		D	Ch	MEPO		NT			
	Teucrium polium L.		A, C, D, E, G, H, I	Ch	MEPO					
	* *Thymus serpyllum* L.		A	Ch	EU					
Lauraceae	*Laurus nobilis*L.		A, E	P	CME					
Linaceae	*Linum bienne* Mill.		E	H	MEAT					
	Linum nodiflorum L.	M		T	MEPO					
	Linum strictum L.		C, H	T	CME					
	Linum strictum L. ssp. *corymbulosum* (Rchb.) Riony	M		T	MEPO					
	Linum tenuifolium L.	T		Ch	SEUPO					
Lythraceae	* *Lagerstroemia indica* L.		A	P	SC				*	
	* *Lythrum salicaria* L.		E	H	WSP					

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Malvaceae	*Alcea rosea* L.		A	H	CUAD				*	
	Althaea cannabina L.		A, B, E	H	SEUPO					
	Althaea hirsuta L.	M		T	SEUME					
	* *Hibiscus syriacus* L.		A	H	SC				*	
	* *Lavatera arborea* L.		A, E	H	EUME					
	Lavatera cretica L.		A	H	EUME					
	Malva nicaeensis All.		A, E	T	CME					
	Malva parviflora L.		A, E	T	CME		EN	*		
	Malva sylvestris L.		A, B, E	H	WSP					
Meliaceae	*Melia azedarach* L.		A	P	CUAD				*	
Moraceae	*Ficus carica* L.		A, B, C, D, E, F	P	CME					
	Morus alba L.		A, E	P	CUAD				*	
	Morus nigra L.		E	P	CUAD				*	
Myrtaceae	* *Callistemon citrinus* (Curtis) Skeels		E	P	SC				*	
	Myrtus communis L.		B, C, D, E, F, G, H, I	P	CME					
Nyctaginaceae	* *Bougainvillea spectabilis* Willd.		A	P	SC				*	
	Mirabilis jalapa L.		A	G	SC				*	
Oleaceae	*Fraxinus ornus* L.		A, B, C, E, F, G, H	P	SEUME					
	Forsythia viridissima Lindl.	T		P	SC				*	
	* *Ligustrum lucidum* Aiton f.		A	P	SC				*	
	Ligustrum vulgare L.	M		P	CEU					
	Olea europaea L.		A, B, C, D, E, F, H, I	P	CUAD					
	* *Olea europaea* L. var. *sylvestris* Brot.		A	P	CME					
	Phillyrea media L.		B, C, F, G, H	P	CME					
	Syringa vulgaris L.		A, E	P	CUAD				*	
Onagraceae	* *Gaura lindheimeri* Engelm. & A. Gray		A	Ch	SC				*	
	* *Oenothera biennis* L.		A	H	CUAD				*	*
Orobanchaceae	* *Orobanche* sp.		D	T						
Oxalidaceae	*Oxalis articulata* Savigny		A, B, E	G	SC				*	
	Oxalis corniculata L.		A	H	WSP					
Papaveraceae	*Glaucium flavum* Crantz	P		H	MEAT		EN	*		
	* *Papaver hybridum* L.		E	T	EUAS		CR	*		
	Papaver rhoeas L.		A, E, H	T	WSP				*	
Passifloraceae	*Passiflora caerulea* L.		A	P	SC				*	
Phytolacaceae	*Phytolacca americana* L.		A	G	CUAD				*	*
Pittosporaceae	*Pittosporum tobira* (Thunb.) Aiton f.		A, E	P	SC				*	
Plantaginaceae	*Plantago altissima* L.	M		H	SEUME					
	Plantago coronopus L.		A	H	MEPO					
	* *Plantago holosteum* Scop.		C	T	SEUME		LC			
	Plantago lanceolata L.		A, B, C, E, F, H	H	WSP					
	* *Plantago major* L.		A	H	WSP					
	*Plantago media*L.		A	H	WSP					
Plumbaginaceae	*Limonium cancellatum* (Bernh. ex Bertol.) Kuntze		A, C, D, E, F, I	H	ILAE	*		*		
	Limonium narbonense Mill.		A, E	H	CME					
	* *Plumbago auriculata* Lam.		A	P	SC				*	
	Plumbago europaea L.		A, B, C, D, E, F, G, H	Ch	CME					

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Polygonaceae	* *Fallopia baldschuanica* (Regel) Holub		A, E	P	CUAD				*	
	Fallopia convolvulus (L.) Á. Löve		B, C, E	T	WSP					
	Polygonum aviculare L.		A, E, F	T	WSP					
	Rumex crispus L.	P		H	WSP					
	Rumex pulcher L.		A, B, E	H	SEUPO					
Portulacaceae	* *Portulaca grandiflora* Hook.		A, E	T	SC				*	
	Portulaca oleracea L.		A, B, D, E	T	WSP				*	
Primulaceae	*Anagallis arvensis* L.		A, C, D, E	T	WSP				*	
	Anagallis coerulea Schreb.		A, C	T	WSP					
	Asterolinon linum-stellatum (L.) Duby		A, E, G	T	CME					
	Cyclamen repandum Sibth. et Sm.		B, C, F, G	G	EUME		NT			
Punicaceae	*Punica granatum* L.		A, E	P	CME				*	
Ranunculaceae	*Clematis flammula* L.		A, B, C, D, E, F, G, H, I	P	CME					
	Delphinium peregrinum L.		A, B, C, D, E, F, G	T	SEUME		EN	*		
	Delphinium staphisagria L.	P		T	CME		EN	*		
	Nigella damascena L.		A, B, E, H	T	CME					
	* *Ranunculus circinatus* Sibth.		E	Hy	EUAS					
	Ranunculus ficaria L.		A	G	EU					
	Ranunculus muricatus L.		A, E, G	T	CME					
Resedaceae	*Reseda alba* L.		A, E	T	CME					
	Reseda lutea L.		A, B, C, E, F, H	T	WSP					
	Reseda phyteuma L.		A, B, C, E, H	T	SEUME					
Rhamnaceae	*Frangula rupestris* (Scop.) Schur.		A, B, C, D, E, F, G, H	P	ILAE					
	Paliurus spina-christi Mill.		A, B, D, E, G, H	P	ISEU					
	Rhamnus alaternus L.		A	P	CME					
	Rhamnus intermedia Steud. et Hochst.		C, D, E, F, G, H	P	ILAE	*	NT	*		
	Ziziphus jujuba (L.) Mill.		A	P	SC				*	
Rosaceae	*Agrimonia eupatoria* L.		A, E	H	CIHO					
	Crataegus monogyna Jacq.		B, C	P	EUAS					
	Cydonia oblonga Mill.		A, E	P	SC				*	
	Eriobotrya japonica (Thunb.) Lindl.		A	P	SC				*	
	* *Malus domestica* Borkh.		A, E	P	SC				*	
	* *Mespilus germanica* L.		E	P	EUAS					
	Potentilla australis Krašan	T		H	ILAE					
	Potentilla recta L.		A, B, C, D, G, H	H	EUAS					
	Prunus armeniaca L.		E	P	SC					
	Prunus avium L.		A, E	P	SC					
	Prunus cerasifera Ehrh.	M		P	SC					
	Prunus cerasus L.	P		P	SC				*	
	* *Prunus domestica* L. ssp. *insititia* (L.) C. K. Schneid.		A	P	SC					
	Prunus dulcis (Mill.) D. A. Webb		A, B, E, G	P	SC				*	
	Prunus laurocerasus L.		A	P	SC				*	
	Prunus mahaleb L.		A, B, C, D, E, F, G, H	P	SEUPO					
	Prunus persica (L.) Batsch		A, E	P	SC				*	
	Prunus spinosa L.	P		P	EUAS					
	Pyracantha coccinea M. J. Roemer		A, E	P	CME					
	Pyrus communis L.		E	P	SC				*	
	* *Rosa canina* L.		A, B, C, E	P	WSP					
	Rosa gallica L.		E	P	EUAS					

Family	Taxon	Unconfirmed	MTB field	Life form	Floral element	Endemic	Threatened	Strictly protected	Allochthonous	Invasive
	Rosa sempervirens L.	P		P	CME					
	Rubus caesius L.	M		P	EUAS					
	Rubus heteromorphus Ripart ex Genev.	P		P	ILAE					
	* *Rubus ulmifolius* Schott		A, D, E, F, H	P	ILAP					
	Sanguisorba minor Scop. ssp. *muricata* Briq.		A, B, C, E, F, H	H	SEUPO					
	Sorbus domestica L.		A, B, C, E, H	P	CME					
Rubiaceae	*Asperula aristata* L. f. ssp. *scabra* (J. Preslet C Presl) Nyman		B, C, D, E, H, I	H	SEUME					
	Crucianella latifolia L.		A, B, D, G, H	T	CME					
	Galium aparine L.		A, B, E, F, H	T	WSP					
	Galium corrudifolium Vill.	P		H	SEUME					
	* *Galium lucidum* All.		B, C, D, E, F, G, H, I	P	CME					
	Galium parisiense L.	M		T	SEUME					
	Rubia peregrina L.		A, B, C, D, E, F, H	P	CME					
	Sherardia arvensis L.		A, B, C, E	T	WSP					
	Valantia muralis L.		A, C, D, E, F, H	T	CME					
Rutaceae	* *Citrus deliciosa* Ten.		E	P	SC				*	
	* *Citrus limon* (L.) Burm. f.		E	P	SC				*	
	Ruta chalepensis L.	M		Ch	SEUME					
	Ruta graveolens L.		A, E, G	Ch	MEPO					
	* *Zanthoxylum armatum* DC.		E	P	SC				*	
Santalaceae	*Osyris alba* L.		A, D	P	CME					
Saxifragaceae	*Saxifraga tridactylites* L.		A, D, H	T	WSP					
Scrophulariaceae	*Antirrhinum majus* L.		A	Ch	CUAD				*	
	Chaenorhinum minus (L.) Lange ssp. *litorale* (Willd.) Hayek		A, E, H	T	ILAP					
	Chaenorhinum minus (L.) Lange ssp. *minus*	M		T	EU					
	Cymbalaria muralis P. Gaertn., B. Mey. et Scherb.		A	H	SEUME					
	Kickxia commutata (Bernh. ex Rchb.) Fritsch ssp. *commutata*		A	H	EUME					
	Linaria angustissima (Loisel.) Borbás		E	H	SEUMO					
	Linaria chalepensis (L.) Mill.		A	T	SEUME		DD			
	Linaria simplex (Willd.) DC.		A, G, H	T	CME					
	Linaria vulgaris Mill.		A, B, C, E	T	EUAS					
	Misopates orontium (L.) Raf.		A, E, G, H	T	EUAS					
	Odontites lutea (L.) Clairv.		A, B, C, D, E, G, H, I	T	SEUME					
	* *Paulownia tomentosa* (Thunb.) Steud.		E	P	SC				*	
	Scrophularia canina L.		A, B, E, H	H	SEUME					
	Scrophularia peregrina L.		A	T	CME					
	Verbascum orientale (L.) All.		A, B, C, G, H	T	EME					
	Verbascum sinuatum L.		A, B, E, F, H	H	CME					
	* *Verbascum thapsus* L.		A	H	EU					
	Veronica arvensis L.		A, E, G, H	T	EUAS					
	Veronica cymbalaria Bodard		A, C, H	T	SEUME					
	Veronica hederifolia L.	P		R	EUAS					
	Veronica persica Poir.		A, B, E	T	WSP				*	*
	Veronica polita Fr.		A, B	T	EUAS					

Family	Taxon	Unconfirmed	MTB field	Life form	Floral element	Endemic	Threatened	Strictly protected	Allochthonous	Invasive
Simaroubaceae	*Ailanthus altissima* (Mill.) Swingle		A, B, E	P	CUAD				*	*
Solanaceae	*Capsicum annuum* L.		E	T	SC				*	
	Datura innoxia Mill.		E	T	CUAD				*	*
	Hyoscyamus niger L.	M		T	WSP					
	* *Physalis alkekengi* L.		A	H	EU					
	Solanum lycopersicum L.		B, E	T	SC				*	
	* *Solanum melongena* L.		A	T	SC				*	
	Solanum nigrum L.		A, E	T	WSP					
	Solanum tuberosum L.		A, E	T	SC				*	
	Solanum villosum Mill. ssp. *villosum*		A, E	T	SEUME					
Tamaricaceae	*Tamarix dalmatica* Baum		E	P	WME					
	Tamarix gallica L.		E	P	CUAD					
Theligonaceae	*Theligonum cynocrambe* L.	M		T	SEUME					
Ulmaceae	*Celtis australis* L.		A, B, E, G	P	SEUME					
	* *Ulmus glabra* Huds.		A	P	WSP					
	Ulmus minor Mill.		A	P	WSP					
	Ulmus pinnato-ramosa Dieck ex Koehne	M		P	SC					
Urticaceae	*Parietaria judaica* L.		A, E	H	SEUME					
	Urtica urens L.		A, E	T	WSP					
Valerianaceae	*Centranthus ruber* (L.) DC.		A	Ch	CUAD					
	Valerianella coronata (L.) DC.		H	T	CME					
	Valerianella discoidea (L.) Loisel.		A, B, E	T	CME					
	Valerianella echinata (L.) DC.		A, B	T	CME					
	* *Valerianella locusta* (L.) Laterrade		A	T	CME					
	Valerianella muricata (Stiven ex M. Bieb.) J. W. Loudon	M		T	EME				*	
	Valerianella pumila (L.) DC	M		R	CME					
Verbenaceae	* *Lantana camara* L.		A	P	SC				*	
	Verbena officinalis L.		A, B, C	H	WSP					
	Vitex agnus-castus L.	P		P	CME					
Violaceae	*Viola alba* Besser ssp. *dehnhardtii* (Ten.) W. Becker		B	H	SEUME					
	Viola arvensis Murray		A, C, E, H	T	WSP					
	Viola odorata L.	P		H	EU					
	* *Viola suavis* M. Bieb. ssp. *adriatica* (Freyn) Haesler		A, B, C, E	H	ILAE	*		*		
Vitaceae	* *Parthenocissus quinquefolia* (L.) Planchon		A, E	P	CUAD				*	*
	Vitis vinifera L.		A, B, C, E, F, G	P	CUAD					
Xanthorrhoeaceae	* *Asphodeline lutea* (L.) Rchb.		C, D, I	G	EME					
Zosteraceae	* *Posidonia oceanica* (L.) Delile		B, D	Hy	CME		DD	*		
Zygophyllaceae	*Tribulus terrestris* L.		A, B	T	SEUME					