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VASCULAR FLORA OF THE ŽEŽEVICA AREA (CENTRAL DALMATIA, SOUTHERN CROATIA)

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The flora of the Žeževica area was studied and listed in 2020. In all, 436 taxa from 286 genera and 83 families were recorded. Most taxa belong to the families Poaceae (9.63%) and Fabaceae (9.40%). The most abundant life forms are hemicryptophytes (34.63%) and therophytes (30.96%). As for the chorological analysis, most of the plants belong to Mediterranean (36.24%) and Southern European (22.02%) floral elements. A total of 14 endemic, 34 strictly protected and 22 threatened taxa were recorded. Most of the endemic species belong to the Illyrian Adriatic endemic plants. Of the alien flora, 23 taxa were listed, 16 plants of which are invasive. The greatest plant diversity was found in sites with different habitats, such as dry grasslands in olive groves and vineyards. The reduction of habitat diversity and the introduction of invasive taxa have proved to be the main problems leading to the reduction of plant richness. For this reason, the maintenance of diverse habitats with appropriate human influence are important for the conservation of the biodiversity in such areas.

Keywords: biodiversity, endangered taxa, endemics, floristic analysis, invasive taxa

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Tijekom 2020. istražena je i popisana flora područja Žeževice. Zabilježeno je 436 svojti raspoređenih u 286 rodova i 83 porodice. Najveći broj svojti pripada porodicama Poaceae (9,63%) i Fabaceae (9,40%). Najzastupljeniji životni oblici su hemikriptofiti (34,63%) i terofiti (30,96%). Analizom flornih elemenata utvrđeno je da najveći broj biljaka pripada mediteranskom (36,24%) i južnoeuropskom (22,02%) flornom elementu. Zabilježeno je 14 endemičnih, 34 strogo zaštićene i 22 ugrožene svojte. Većina zabilježenih endemičnih svojti pripada ilirsko-jadranskim endemičnim biljkama. Od alohtone flore popisane su 23 svojte među kojima je 15 biljaka invazivno. Smanjenje raznolikosti staništa i introdukcija invazivnih svojti pokazali su se kao osnovni problemi koji dovode do smanjenja biljnog bogatstva. Iz tog razloga održavanje raznolikih staništa kroz umjereni utjecaj čovjeka važni su za očuvanje bioraznolikosti ovakvih područja.

Ključne riječi: bioraznolikost, endemi, floristička analiza, invazivne svojte, ugrožene svojte

INTRODUCTION

Žeževica is a village in the municipality of Šestanovac, located 30 kilometers northeast of the town of Omiš (Fig. 1). The Omiš hinterland is one of the 7 territorial regions of the Dalmatian hinterland. The term "hinterland" is defined as an area that does not directly border the sea because it is located behind a mountain (Matas & Faričić, 2011). The hinterland of Omiš is separated from the coastal area, which includes the town of Omiš and other settlements, by a series of hills: Poljička Planina, Dovnja, and Omiška Dinara (Carević, 2011). The climate is moderately warm and humid with hot summers, and the vegetation is sub-Mediterranean with large areas under degraded forms such

Fig. 1. Geographical position of the Žeževica settlement in central Dalmatia, southern Croatia.

as maquis and garrigue (Fuerst-Bjeliš *et al.*, 2011). The calcareous karst relief and the influence of the Mediterranean climate have given rise to the characteristic flora and vegetation of this area.

Most of the previous floristic studies in the vicinity of the study area were related to the Biokovo mountain area (Kušan, 1956, 1969; Domac, 1957; Radić, 1974, 1976, 1977; Lovrić & Rac 1987; Šilić & Šolić, 1999, 2002; Trinajstić, 2002; Hršak & Alegro, 2008), while the Biokovo hinterland, including the area of Žeževica, has not been studied in detail. Due to pronounced climatic changes and increased awareness of habitat conservation and biodiversity, botanical studies in the Dalmatian hinterland have recently increased (Vitasović-Kosić *et al.*, 2020; Milović *et al.*, 2021).

The aim of this study was to make a comprehensive list of the vascular flora of the Žeževica area and to perform a floristic analysis that includes taxonomic categories, life forms and floral elements. The study also noted the representation of endangered, endemic, and alien plant taxa.

MATERIALS AND METHODS

Study area

Žeževica has an area of 24.21 km^2 and is the largest settlement in the municipality of Šestanovac. To the north it is bordered by the Sidoč (849 m) and Trbotor (594 m) mountains, and to the south and east by the northern slopes of Biokovo, which rise up to 1500 m above sea level (Fig. 2). The southern border runs along the settlement of Gornja Brela and partially includes the Biokovo Nature Park.

The geological composition of the study area consists of limestones and dolomites from the Cretaceous period. Reefs and other elevations as well as karst plateaus are built of limestone, while the valleys are formed of less resistant limestone-dolomite and dolomite rocks. Colluvial materials and breccias also occur in a smaller part of the area. The youngest geological deposits are alluvial deposits on which fertile soils were

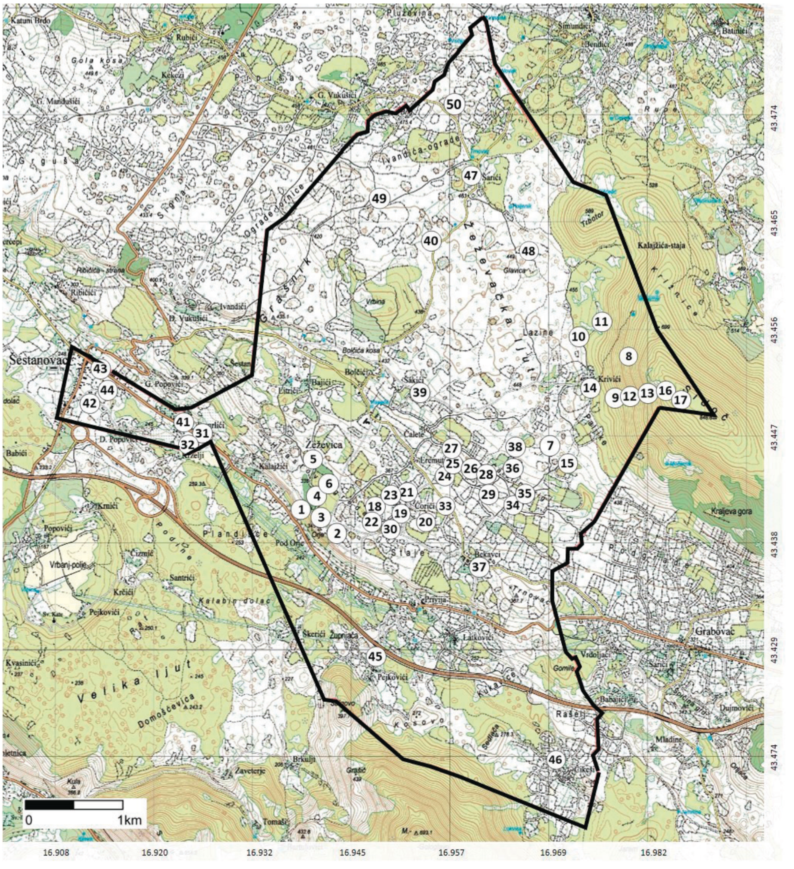

Fig. 2. The borders of the researched area with the positions of the locations investigated.

formed. As a typical limestone karst area, it has all the elements characteristic of karst relief (Mrčić *et al.*, 2007). As for the soil, most of Žeževica is occupied by predominantly brown soils on limestones and dolomites in combination with limestone-dolomite black soil, red soil and anthropogenic soils in sinkholes (Mrčić *et al.*, 2007).

According to Köppen's climate classification (Köppen & Geiger, 1954), a moderately warm, humid climate with hot summers (Csa) prevails in the wider area of Žeževica (Šegota & Filipčić, 2003). It is a Mediterranean climate with significant marine influence in coastal areas. Summers are dry and hot, and winters are mild and humid (Delić, 2019). According to the Imotski Meteorological Station, the average annual air temperature in the area is 13.8 °C. The warmest month of the year is July with an average monthly temperature of 23.8 °C, and the coldest month of the year is January with an average monthly temperature of 10.2 °C. The average annual precipitation is 1310 mm, the average number of rainy days is 112.3, and the average number of snowy days is 7.7. The rainiest season is winter, followed by autumn. Snow usually falls in January and February. The prevailing winds in this area are north winds, but in a certain part of the year south winds are also present.

The vegetation of Žeževica belongs to the sub-Mediterranean zone of the Mediterranean coastal belt, while the areas at higher altitude belong to the epi-Mediterranean zone of the Mediterranean-montane belt (Trinajstić, 1998). The forest vegetation consists of thermophilic forests of downy oak of the vegetation class *Quercetea pubescentis* Doing-Kraft ex Scamoni et Passarge 1959. Up to an altitude of about 400 meters, there are forest communities of downy oak and oriental hornbeam of the alliance *Carpinion orientalis* Horvat 1958. At altitudes above 600 meters, the vegetation consists of forests and thickets of hop hornbeam and downy oak of the alliance *Fraxino orni- Ostryion* Tomažič 1940 (Mucina *et al*., 2016; Škvorc *et al*., 2017). In contrast to the communities that developed at lower altitudes, evergreen species no longer grow here, and the proportion of thermophilic species is lower. Due to human activities, this community is also developed in the form of more or less sparse shrubs or, much less frequently, as shrub dominated by hop hornbeam (Alegro, 2000).

Sampling and data analysis

The floristic research was carried out in 2020 at sites geocoded with a GPS device with an accuracy of ±5 to ±50 meters. The inventory of plant species was made in 50 selected sites (Tab. 1) within the boundaries of the study area (Fig. 2), taking into account different types of habitats. Gauss-Krüger coordinates were obtained for each site and vascular plants were recorded at a diameter of approximately 100 meters. Fieldwork spanned all seasons from March to October, and some sites were visited more than once. Some taxa were found more often than others, which explains the different number of localities listed for each taxon in Appendix 1. Plants that could not be immediately identified were collected and later identified.

Plant species were determined using standard keys and iconographies: Horvatić (1954); Javorka & Csápody (1975); Horvatić & Trinajstić eds. (1967-1981); Trinajstić eds. (1975a); Tutin *et al.* (1968-1980; 1993); Pignatti (1982); Domac (1994), Nikolić (2019).

Tab. 1. Researched localities with their Gauss-Krüger coordinates and altitude.

Number of locality	Gauss-Krüger coordinates		Altitude
	X	Y	
1	4812524	5657404	353 m
2	4812365	5657530	358 m
3	4812447	5657523	361 m
4	4812531	5657442	332 m
5	4812767	5657407	339 m
6	4812560	5657439	357 m
7	4813381	5660036	439 m
8	4814221	5660752	489 m
9	4813643	5660525	544 m
10	4814125	5660148	443 m
11	4814292	5660229	457 m
12	4813572	5660896	727 m
13	4813553	5660800	678 m

Number of locality	Gauss-Krüger coordinates		Altitude
	X	Y	
14	4813929	5660179	418m
15	4813349	5660005	440m
16	4813630	5660667	591 m
17	4813601	5660707	618 m
18	4812623	5658173	345m
19	4812584	5658243	332m
20	4812529	5658391	344m
21	4812643	5658329	353m
22	4812545	5658100	345m
23	4812621	5658265	313m
24	4812850	5658707	357m
25	4812883	5658771	343 m
26	4812884	5658807	369m

Number of locality	Gauss-Krüger coordinates		Altitude
	X	Y	
27	4813051	5658773	376m
28	4812824	5659020	371m
29	4812762	5659132	369m
30	4812475	5658125	339m
31	4813219	5656075	241m
32	4813094	5656044	238m
33	4812665	5658714	350m
34	4812674	5659441	356m
35	4812695	5659447	381m
36	4812832	5659178	379m
37	4812120	5659016	343m
38	4813067	5659022	397m

Number of locality	Gauss-Krüger coordinates		Altitude
	X	Y	
39	4813722	5658408	405m
40	4815375	5658887	462m
41	4813278	5656152	252m
42	4813575	5655158	240m
43	4813890	5655151	240m
44	4813646	5655225	240m
45	4811293	5658039	233m
46	4810220	5659934	227m
47	4815645	5658857	453m
48	4814963	5659576	466m
49	4815481	5657981	447m
50	4816325	5658757	467m

The nomenclature of plant taxa is in accordance with the Flora Croatica Database (FCD) (Nikolić, 2022a).

Plant life forms were determined according to Horvat (1949) and Pignatti (1982) and marked with following abbreviations: **P** (Phanerophyta), **Ch** (Chamaephyta), **H** (Hemicryptophyta), **T** (Therophyta), and **G** (Geophyta).

The chorological analysis was performed according to Horvatić (1963), Horvatić *et al.* (1967/1968), Pignatti (1982), and Fournier (1961). The names and abbreviations used for the different floral elements are:

1. MEDITERRANEAN FLORAL ELEMENT
   - A. Circum-Mediterranean plants – **ME-circ**
   - B. West Mediterranean plants – **ME-west**
   - C. Eastern Mediterranean plants – **ME-east**
   - D. Illyrian – Mediterranean plants
     - a) Illyrian-Southern European plants – **ME-ilseu**
     - b) Illyrian-Adriatic plants:
       1. Illyrian Adriatic endemic plants – **ME-ilade**
       2. Illyrian Apennine plants – **ME-ilape**
   - E. Mediterranean Atlantic plants – **ME-atl**
   - F. European Mediterranean plants – **ME-eu**
   - G. Mediterranean Pontic plants – **ME-po**
2. ILLYRIAN-BALCANIC FLORAL ELEMENT
   - A. Illyrian-Balkanic endemic plants – **ILBA-end**
   - B. Balkanic-Apennine plants - **ILBA-baap**
3. SOUTH EUROPEAN FLORAL ELEMENT
   - A. South European Mediterranean plants – **SEU-me**
   - B. South European Pontic plants – **SEU-po**

C. South European Atlantic plants – **SEU-atl**
D. South European mountain plants – **SEU-mo**
E. South European continental plants - **SEU-co**
4. SOUTHEAST EUROPEAN FLORAL ELEMENT – **SEEU**
5. EAST EUROPEAN-PONTIC FLORAL ELEMENT – **EEUPO**
6. EUROPEAN FLORAL ELEMENT – **EURO**
7. CENTRAL EUROPEAN FLORAL ELEMENT – **CEU**
8. EURASIAN FLORAL ELEMENT – **EUAS**
9. CIRCUM-HOLARCTIC SPREAD PLANTS – **CIHO**
10. WIDESPREAD PLANTS – **WISP**
11. CULTIVATED AND ADVENTITIOUS PLANTS – **CUAD**

Endemic plant species are denoted according to Nikolić *et al*. (2015) and Nikolić (2022a), and marked with the abbreviation "**end**" in App. 1. Endangerment categories of the taxa were determined using the Red Book of Vascular Flora of Croatia (Nikolić & Topić, 2005) and Flora Croatica Database (Nikolić, 2022b). These taxa are marked with the corresponding IUCN abbreviations: **CR** (Critically Endangered), **EN** (Endangered), **VU** (Vulnerable), **NT** (Near Threatened), **DD** (Data Deficient), **LC** (Least Concern) (Iucn, 2022). Strictly protected taxa were identified according to the Ordinance on Strictly Protected Species (Anonymous, 2013, 2016) and marked with the abbreviation "**sp**". Invasive plant species (Boršić *et al*., 2008; Nikolić *et al*., 2014; Nikolić, 2022c) are listed in the table with the abbreviation "**inv**". Archaeophytes are indicated by "arh" and neophytes by "neo".

Habitats are also indicated in the list of flora and marked with the corresponding letters as follows:

a - rocky grassland
b - ruderal habitats (piles of soil, trash dumps, waste material)
c - anthropogenic habitats (gardens, vineyards, olive groves, parks)
d - forest
e - thicket
f - walls (stone walls, wall cracks, old houses, etc.)
g - trampled habitats
* - plants marked with asterisks are parasites

RESULTS AND DISCUSSION

Taxonomical analysis

Altogether 436 taxa of vascular plants were recorded in the Žeževica area (App. 1). These taxa are distributed among 286 genera and 83 families (Tab. 2). The most abundant plants in the flora are angiosperms (97.93%), with 80.50% being dicotyledons and 17.43% monocotyledons. Gymnosperms (1.38%) are much less represented, while ferns are the least common (0.69%) (Tab. 2). The most abundant families are Poaceae (9.63%)

and Fabaceae (9.40%), followed by Asteraceae (6.88%), Rosaceae (5.96%), and Lamiaceae (5.73%). Together, they represent 37.6% of the total flora (Tab. 3).

From a comparison of the representation of the families Poaceae, Asteraceae and Fabaceae of the study area with other areas of the sub-Mediterranean vegetation zone, there is a clear concordance in the dominance of these families, which is consistent with the phytogeographical position and climatic conditions of central Dalmatia (Tab. 5). The families Poaceae and Asteraceae have light fruits that can be spread by wind over open habitats such as rocky grasslands or ruderal sites, which explains their large presence in the flora of Žeževica. The high prevalence of taxa from the Fabaceae family is most likely the result of a various leguminous crops that people used to cultivate in these areas.

Tab. 2. Taxonomic analysis of the Žeževica area.

TAXON	PTERIDO-PHYTA	GYMNO-SPERMAE	ANGIOSPERMAE		UKUPNO
			Dicotyledons	Monocotyledons	
Families	2	3	68	10	83
Species	3	5	327	71	406
Subspecies	0	1	24	5	30
Species+subspecies	3	6	351	76	436
% of species and subspecies	0.69	1.38	80.50	17.43	100

Tab. 3. List of families including more than 5 taxa.

Family	No. of taxa	% of total no. of taxa
Poaceae	42	9.63
Fabaceae	41	9.40
Asteraceae	30	6.88
Rosaceae	26	5.96
Lamiaceae	25	5.73
Cichoriaceae	24	5.50
Brassicaceae	22	5.05
Scrophulariaceae	17	3.90
Caryophyllaceae	15	3.44
Apiaceae	12	2.75

Family	No. of taxa	% of total no. of taxa
Asparagaceae	9	2.06
Amaryllidaceae	8	3.39
Orchidaceae	7	1.61
Ranunculaceae	7	1.61
Rubiaceae	7	1.61
Geraniaceae	6	1.38
Euphorbiaceae	6	1.38
Other families (65)	131	30.0
TOTAL	436	100

Analysis of life forms and floral elements

The analysis of plant life forms revealed the highest prevalence of hemicryptophytes (34.63%) and therophytes (30.96%). Phanerophytes (15.14%) and geophytes (12.16%) were less represented, and chamaephytes (7.11%) were the least represented (Fig. 3).

The dominance of hemicryptophytes and therophytes is also closely related to climatic characteristics and habitat. This area is characterized by hot and dry summers and a high proportion of open habitats, which strongly favors the spread of therophytes. In winter, however, climatic conditions are not so extreme, allowing the survival of a large number of hemicryptophytes. Grazing also contributes to the spread of he-

micryptophytes by encouraging the development of new buds. Compared to other areas in Central Dalmatia (Tab. 4), the dominance of therophytes in urban areas (Split, Omiš, Imotski) is to be expected given their short life cycle and easy seed dispersal on numerous ruderal sites. The large occurrence of hemicryptophytes in Žeževica, and on Svilaja and Matokit mountains indicates more temperate climatic conditions in the colder season favoring their spread.

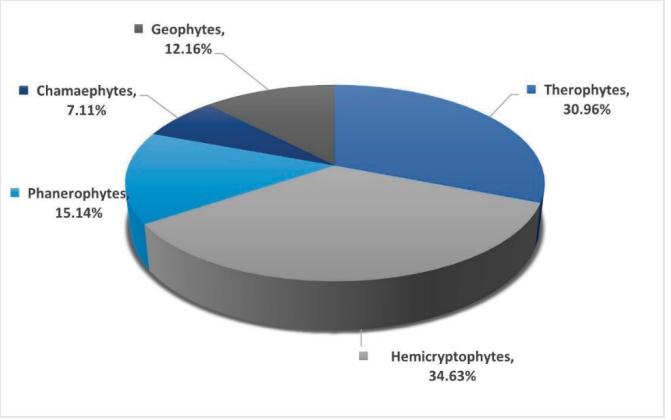

Fig. 3. Life-form spectrum of the Žeževica area.

Tab. 4. Life-form spectrum of the Žeževica area in comparison to other central Dalmatian areas: Primorski Dolac (Brkić, 2019), Imotski (Rimac, 2018), Split (Ruščić, 2002), Omiš (Tafra *et al*., 2012), Mt Svilaja (Milović *et al*., 2021), Mt Matokit (Vitasović-Kosić *et al*., 2020).

Life form	Area						
	Žeževica (%)	Primorski Dolac (%)	Imotski (%)	Split (%)	Omiš (%)	Mt Svilaja (%)	Mt Matokit (%)
Therophytes	30.96	36.36	37.5	37.8	40.07	25.45	26.16
Hemicryptophytes	34.63	33.15	27.3	29.6	28.34	43.35	39.90
Phanerophytes	15.14	17.11	22.7	15.6	14.82	9.81	10.76
Chamaephytes	7.11	6.41	5.3	6.7	8.63	6.61	10.76
Geophytes	12.16	5.88	7.19	9.5	7.98	14.24	12.42
Hydrophytes	0	1.07	0	1.0	0.16	0.54	0

The analysis of the floral elements has shown that the most common plants belong to the Mediterranean floral element (36.24%), followed by southern European plants (22.02%) and widespread plants (14.68%). There is also a considerable proportion of cultivated and alien plants (11.70%) and Eurasian plants (10.32%) (Tab. 6).

The predominance of the Mediterranean floral element is consistent with the climatic conditions, although the influence of the Mediterranean climate is less pronounced in the Svilaja and Imotski area, which explains the lower proportion of plants of the Mediterranean floral element compared to Žeževica, Primorski Dolac, Omiš and Split (Tab. 6). The high prevalence of widespread plants (14.68%) and cultivated and adventitious plants (11.70%) indicates a pronounced human influence on vegetation. Žeževi-

Tab. 5. Comparison of the representation of families in the flora of Žeževica with other central Dalmatian areas (Brkić, 2019; Rimac, 2017; Ruščić, 2002; Milović *et al*., 2021; Tafra *et al*., 2012; Vitasović-Kosić *et al*., 2020).

Family	Area						
	Žeževica (%)	Primorski Dolac (%)	Imotski (%)	Split (%)	Mt Svilaja (%)	Omiš (%)	Mt Matokit (%)
Poaceae	9.63	11.49	9.17	8.79	8.79	11.24	9.1
Fabaceae	9.40	7.75	5.06	8.43	8.72	12.87	9.9
Asteraceae	6.88	9.89	10.44	13.89	8.72	13.19	7.4
Rosaceae	5.96	5.08	6.01	2.85	3.81	2.44	4.8
Total (%)	31.87	34.21	30.68	26.88	30.04	39.74	31.2

Tab. 6. Geoelements representation of Žeževica in comparison to that of Primorski Dolac (Brkić, 2019), Imotski (Rimac, 2018), Split (Ruščić, 2002), Omiš (Tafra *et al*., 2012), Mt Svilaja (Milović *et al*., 2021).

Geoelement	Area					
	Žeževica (%)	Primorski Dolac (%)	Imotski (%)	Split (%)	Omiš (%)	Mt Svilaja (%)
MEDITERRANEAN	36.24	42.24	28.71	36.2	37.95	23.27
ILLYRIAN-BALKANIC	0.00	0.00	0.00	0.2	0.00	3.97
SOUTH EUROPEAN	22.02	17.91	12.5	16.7	16.45	20.93
ATLANTIC PLANTS	0.00	0.00	0.00	0.00	0.00	0.00
EAST EUROPEAN-PONTIC	0.00	0.00	0.00	0.4	0.65	1.87
SOUTHEAST EUROPEAN	1.83	0.26	0.00	0.7	0.81	1.87
CENTRAL EUROPEAN	0.46	0.26	0.00	0.7	0.00	2.55
EUROPEAN	2.75	2.40	1.92	2.7	1.47	4.12
EURASIAN	10.32	12.03	6.81	8.8	7.82	17.43
CIRCUM-HOLARCTIC PLANTS	0	0.26	0.76	1.1	0.65	2.88
WIDESPREAD PLANTS	14.68	16.84	26.6	15.8	16.78	13.93
CULTIVATED & ALIEN PLANTS	11.70	7.75	22.4	16.6	17.43	7.24

ca has a significantly lower proportion of cultivated and adventitious plants than the more populated areas (Split, Imotski and Omiš), which is expected due to reduced anthropogenic influence.

Endemic, endangered, protected and alien plant taxa

A total of 14 endemic taxa were recorded, all of which are strictly protected. Some of them were found in larger populations e.g. *Centaurea tuberosa* Vis., *Rhamnus intermedia* Steud. et Hochst., *Genista sylvestris* Scop. ssp. *dalmatica* (Bartl.) H. Lindb., *Tanacetum cinerariifolium* (Trevis.) Sch. Bip. and *Chaerophyllum coloratum* L. Less common were *Centaurea spinosociliata* Seenus ssp. *spinosociliata*, *Allium croaticum* Bogdanović, Brullo, Mitić et Salmeri, *Cerastium grandiflorum* Waldst. et Kit., *Festuca illyrica* Markgr.-Dann., *Peltaria alliacea* Jacq., *Petteria ramentacea* (Sieber) C. Presl, *Seseli tomentosum* Vis., *and Vincetoxicum hirundinaria* Medik. ssp. *adriaticum* (Beck) Markgr. Most of the endemic species are closely associated with rocky grasslands, and these habitats are increasingly threatened due to vegetation succession caused by the abandonment of agriculture. Grasslands in various stages of succession, mostly in the form of shrubs and thickets, occupy large areas on abandoned farmland and pastures (Vukojević & Vitasović

Kosić, 2012). In such areas, the absence of grazing leads to the development of juniper thickets (*Juniperus oxycedrus* L.), resulting in a decrease in the proportion of endangered and endemic taxa (Vitasović-Kosić *et al*., 2020).

The analysis of the threat status showed that 22 taxa (5.05%) belong to one of the IUCN categories. One species (*Papaver hybridum* L.) is classified as Critically Endangered (CR) and one (*Hibiscus trionum* L.) as Endangered (EN). Seven taxa are classified as Near Threatened (NT) and three species as Vulnerable (VU). A total of 4 recorded taxa were classified as Least Concern (LC) and 5 were clasified as Data Deficient (DD).

A total of 34 taxa (7.8%) are strictly protected under Croatian law. In addition to the endemic species, these taxa also include 7 different orchid species and subspecies. The most widespread orchid was *Ophrys sphegodes* Mill. ssp. *atrata* (Rchb. f.) A. Bol`os, which occurs on grasslands that were once arable land.

Twenty-nine (29) species of alien flora (6.65%) were detected in the study area, 16 species of which are considered invasive. According to the *Flora Croatica Database* (Nikolić, 2022a), among the recorded taxa of non-native flora, 13 taxa are categorized as neophytes, and 7 as archaeophytes (App. 1). Most of the recorded taxa of the non-native flora are naturalized in the flora of Žeževica. The only two taxa of alien flora recorded exclusively in culture are *Ipomoea purpurea* (L.) Roth and *Eriobotrya japonica* (Thunb.) Lindl. The taxa *Campsis radicans* (L.) Seem. and *Mirabilis jalapa* L. can also be highlighted as often cultivated, although they are naturalized in the flora of Žeževica and were frequently recorded outside cultivation. The development of roads and the frequent migration of people from urban to rural areas have led to the spread of numerous invasive species, which are most often found along roads and ruderal areas in the flora of Žeževica, e.g. *Amaranthus retroflexus* L., *Amaranthus graecizans* L., *Ambrosia artemisiifolia* L., *Conyza canadensis* (L.) Cronquist, *Conyza bonariensis* (L.) Cronquist, etc. Due to the emergence of a large number of reproductive offspring, some of these species have occupied larger areas, such as the taxon *Ailanthus altissima* (Mill.) Swingle. The introduction and spread of such plants is a threat to biodiversity.

CONCLUSIONS

This study represents the first detailed flora list for the Žeževica area. Due to the geographical position and specific climatic and pedological factors, a great richness of flora was found. As expected, Mediterranean plants dominate, with hemicryptophytes and therophytes prevailing among the life forms. Rocky grasslands, as habitats with the greatest plant diversity, have recently been threatened by the abandonment of agricultural activity. Succession on such lands leads to the development of uniform thickets and forests with less diverse flora. Long-term human influence is also evident in the increasing presence of invasive taxa, some of which are rapidly expanding their populations and threatening the composition of the indigenous flora. The discovery of numerous endemic and endangered taxa demonstrates the need for continued floristic research in similar rural areas in order to conserve plant diversity.

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Appendix 1. Vascular plant taxa of the Žeževica area.

TAXON	Family	Life form	Geoelement	Status	Habitat	Localities
Acanthus mollis L.	*Acanthaceae*	H	ME-WEST		d	11
Acer monspessulanu.	*Aceraceae*	P	EUR		d, e	**3, 16**, **20**, **21**, **26**, **47**
Achillea millefoliu	*Asteraceae*	H	WISP		a	**2**, **6**, **28**, **29**, **40**, **46**
Acinos arvensis (Lam.) Dandy	*Lamiaceae*	T	EUR		a	**7**, **29**, **46, 49**
Aegilops neglecta Bertol.	*Poaceae*	T	ME-CIRC	NT	a	**3**,**18**,**46**
Aethionema saxatile (L.) R. Br. ssp. *saxatile*	*Brassicaceae*	Ch	SEU-ME		a	**10**, **22**, **39**, **40**
Agrimonia eupatoria L.	*Rosaceae*	H	ME-EAST		a	**11**, **25**, **46**
Ailanthus altissima (Mill.) Swingle	*Simaroubaceae*	P	CUAP	neo, inv	b	**33**, **46**, **37**, **47**
Ajuga reptans L.	*Lamiaceae*	H	ME-EAST		a	**2**, **6**, **20**, **39**, **46**
Alcea rosea L.	*Malvaceae*	H	SEU-ME		a	2
Allium cepa L.	*Amaryllidaceae*	G	CUAP		c	19
Allium croaticum Bogdanović, Brullo, Mitić et Salmeri	*Amaryllidaceae*	G	ME-ILADE	end, sp	a	**12**, **17**
Allium flavum L.	*Amaryllidaceae*	G	SEU-ME		a	**10**, **18**
Allium lusitanicum Lam.	*Amaryllidaceae*	G	SEU-PO		a	9
Allium sativum L.	*Amaryllidaceae*	G	CUAP		c	19
Allium sphaerocephalon L.	*Amaryllidaceae*	G	SEU-ME		a	25
Allium vineale L.	*Amaryllidaceae*	G	ME-EU	LC	a	7
Alyssoides utriculata (L.) Medik.	*Brassicaceae*	Ch	SEEU		a	**1, 45, 47**
Alyssum murale Waldst. et Kit.	*Brassicaceae*	Ch	ME-EAST		b, c	18, 48
Alyssum strigosu	*Brassicaceae*	T	ME-CIRC		a	**1, 18, 24**, **40**, **46**
Amaranthus cruentus L.	*Amaranthaceae*	T	CUAP	neo	b	42, 47
Amaranthus deflexus L.	*Amaranthaceae*	T	SEU-ME	neo, inv	b, c	**14**, **23**, **37**
Amaranthus graecizans L.	*Amaranthaceae*	T	WISP	neo	c	31
Amaranthus retroflexu	*Amaranthaceae*	T	WISP	neo, inv	c	**7**, **18**, **46**
Ambrosia artemisiifolia L.	*Asteraceae*	T	CUAP	neo	b, g	43
Anthemis arvensis L.	*Asteraceae*	T	ME-CIRC		a	2
Anthemis austriac	*Asteraceae*	T	SEEU		a	**23**, **25**, **37, 47**
Anthoxanthum odoratum L.	*Poaceae*	H	ME-CIRC		a	**13**, **30, 49**
Anthyllis vulneraria L. ssp. *praepropera* (A. Kern.) Bornm.	*Fabaceae*	T	ME-ILADE	sp	a	**14, 30**, **34**,
Antirrhinum majus L.	*Scrophulariaceae*	Ch	ME-WEST		b, g	43
Arabis hirsuta (L.) Scop.	*Brassicaceae*	H	WISP		a, b	**3**, **6**, **14**, **28**, **45**, **46**
Arabis turrita L.	*Brassicaceae*	H	SEU-ME		a, b	**4** ,**6**, **28**,
Arenaria serpyllifoli	*Caryophyllaceae*	T	WISP		b	**1**, **14**, **23**, **37**, **39**, **45**, **46**
Argyrolobium zanonii (Turra) P. W. Ball	*Fabaceae*	Ch	ME-WEST		a	10
Artemisia absinthium L.	*Asteraceae*	Ch	EUAS		b	44
Asparagus acutifolius L.	*Asparagaceae*	G	ME-CIRC		e	**2**, **3**, **20**, **21**
Asperula aristata L. f. ssp. *scabra* (J.Presl et C. Presl) Nyman	*Rubiaceae*	H	ME-CIRC		a	**10**, **25**
Asphodeline lutea (L.) Rchb.	*Xanthorrhoeaceae*	G	ME-CIRC		a, b	2

TAXON	Family	Life form	Geoelement	Status	Habitat	Localities
Asphodelus fistulosus L.	*Xanthorrhoeaceae*	H	ME-CIRC		a, b	2
Asplenium ceterach L.	*Aspleniaceae*	H	SEU-ME		f	**5**, **12**, **14**, **23**, **37**, **46**
Asplenium trichomanes L.	*Aspleniaceae*	H	WISP		f	**12**, **23**, **47**
Asyneuma limonifolium (L.) Janch.	*Campanulaceae*	H	ME-ILAPE		a	10
Avena barbata Link	*Poaceae*	T	SEU-PO		b, g	**18**, **19**
Avena sativa L.	*Poaceae*	T	CUAP		a	18
Avena sterilis L.	*Poaceae*	T	SEU-PO		a	**2**, **3**, **19**
Ballota nigra L. ssp. *foetida* (Vis.) Hayek	*Lamiaceae*	H	SEU-ME		a, g	23
Bellis perennis L.	*Asteraceae*	H	CEU		c	2
Bellis sylvestris Cirillo	*Asteraceae*	H	ME-CIRC		a	19
Bergenia crassifolia (L.) R. M. Fritsch	*Saxifragaceae*	G	CUAP		c	2
Berteroa incana (L.) DC.	*Brassicaceae*	T	EUAS		b, g	**2**, **23**, **24**, **37**, **46**
Betonica officinalis L.	*Lamiaceae*	H	EUR		a	9
Bidens subalternans DC.	*Asteraceae*	T	CUAP	inv	b	44
Biscutella cichoriifolia Loisel.	*Brassicaceae*	T	SEU-ME		a	**2**, **22**
Bituminaria bituminosa (L.) C. H. Stirt.	*Fabaceae*	H	ME-CIRC		a, c	22
Brachypodium pinnatum (L.) P. Beauv.	*Poaceae*	H	WISP		a	11, 47
Brachypodium sylvaticum (Huds.) P. Beauv.	*Poaceae*	H	ME-CIRC		a	**25**, **28**, **29**
Bromus arvensi	*Poaceae*	T	EUAS	arh	b, g	**1**, **18**, **45**, **46**
Bromus erectus Huds.	*Poaceae*	T	EUAS		b, g	**2**, **22**, **49**
Bromus madritensis L.	*Poaceae*	T	ME-ATL		a	14
Bromus sterilis L.	*Poaceae*	T	WISP		b, g	**2**, **19**, **39**
Broussonetia papyrifera (L.) Vent.	*Moraceae*	P	CUAP	inv	c	14
Bunias erucago L.	*Brassicaceae*	T	SEU-ME		a	**1**, **18**, **45**, **49**
*Bupleurum veronens*a	*Apiacea*e	T	ME-ILADE		e	**20**, **34**, **30**, **45**
Buxus sempervirens L.	*Buxaceae*	P	CUAP		c	2
Calamintha nepetoides Jord.	*Lamiaceae*	H	SEU-PO		a	**2**, **14**, **23**, **37**, **45**, **47**
Calendula arvensis (Vaill.) L.	*Asteraceae*	T	SEU-ME		a, c	24, 47, 50
Campanula glomerata L.	*Campanulaceae*	H	EUAS		a	**2**, **24**, **25**, **39**
Campanula pyramidalis L.	*Campanulaceae*	H	ME-ILADE		a	19
Campanula rapunculus L.	*Campanulaceae*	H	EUAS		a	13
Campsis radicans (L.) Seem.	*Bignoniaceae*	P	ME-ILADE		b	44, 47
Capsella rubella Reut.	*Brassicaceae*	T	ME-CIRC		b, c	**2**, **15**, **21**, **24**, **46**
Cardamine hirsuta L.	*Brassicaceae*	H	WISP		a	3
Cardaria draba (L.) Desv.	*Brassicaceae*	H	WISP		a	24
Carduus micropterus (Borbás) Teyber ssp. *micropterus*	*Asteraceae*	H	ME-ILADE		a	**10**, **19**, **25**
Carduus pycnocephalus L.	*Asteraceae*	T	ME-CIRC		a	**2**, **19**, **49**
Carex divulsa Stokes	*Cyperaceae*	H	WISP		a	**3**, **6**, **19**, **28**, **40**
Carex halleriana Asso	*Cyperaceae*	H	SEU-ME		a	10
Carpinus orientali	*Corylaceae*	P	ME-ILSEU		d, e	**3**, **8**, **26**, **29**, **48**
Carthamus lanatus L.	*Asteraceae*	T	ME-CIRC		a	**5**, **23**, **37**
Cedrus atlantica (Endl.) Carriere	*Pinaceae*	P	CUAP		c	2
Celtis australis L.	*Ulmaceae*	P	SEU-ME		c, e	**2**, **14**, **23**, **47**
Centaurea rupestri	*Asteraceae*	H	ME-ILAPE		a	**10**, **25**
Centaurea solstitialis L. ssp. *solstitialis*	*Asteraceae*	H	SEU-PO		a	29
Centaurea spinosociliata Seenus ssp. *spinosociliata*	*Asteraceae*	H	ME-ILADE	end, sp	a	**5**, **10**, **23**, **24**,
Centaurea tuberosa Vis.	*Asteraceae*	H	ME-ILADE	end, sp	a	**3**, **4**
Cephalaria leucantha (L.) Roem. et Schult.	*Dipsacaceae*	H	ME-CIRC		a	12

TAXON	Family	Life form	Geoelement	Status	Habitat	Localities
Cerastium glomeratu	*Caryophyllaceae*	T	WISP		a	**1**, **3**, **45**, **46**
Cerastium grandiflorum Waldst. et Kit.	*Caryophyllaceae*	Ch	ME-ILADE	end, sp	a	13
Chaenorhinum minus (L.) Lange ssp. *litorale* (Willd.) Hayek	*Scrophulariaceae*	T	ME-ILAPE		a	**14**
Chaerophyllum coloratum L.	*Apiaceae*	H	ME-ILADE	end, sp, NT	a	**4, 22**, **24**, **25**
Chelidonium majus L.	*Papaveraceae*	H	WISP		b	**23**, **45**
Chenopodium album L.	*Chenopodiaceae*	T	WISP		c	**7**, **14**, **15**, **18**, **19**, **45**
Chenopodium vulvari	*Chenopodiaceae*	T	SEU-ME	sp, DD	c	19
Chondrilla juncea L.	*Cichoriaceae*	H	EUAS		b	**1**, **18**, **23**, **37**
Cichorium intybus L.	*Cichoriaceae*	H	WISP		b, c	**1**, **39**, **45, 50**
Cleistogenes serotina (L.) Keng	*Poaceae*	H	WISP		a	**28**, **29**
Clematis flammula L.	*Ranunculaceae*	P	ME-CIRC		e	**3, 24**, **25**,**28**
Clematis vitalba L.	*Ranunculaceae*	P	ME-CIRC		d, e	**3**, **20**, **23**, **25**, **37, 47**
Colchicum hungaricum Janka	*Colchicaceae*	G	SEEU		e	**2**, **4**, **20**, **21**, **46**
Colutea arborescens L.	*Fabaceae*	P	ME-CIRC		d	**11**,**12**
Convolvulus arvensis L.	*Convolvulaceae*	H	WISP		e	**2**, **7**, **15**, **19**, **46**
Convolvulus cantabrica L.	*Convolvulaceae*	H	ME-EAST		e	**2**, **9**, **18**
Conyza bonariensis (L.) Cronquist	*Asteraceae*	T	CUAP	inv	b	43
Conyza canadensis (L.) Cronquist	*Asteraceae*	T	CUAP	neo, inv	b	**14**, **45**
Cornus mas L.	*Cornaceae*	P	EUAS		d, e	**3**, **21, 26**
Coronilla emerus L. ssp. *emeroides* Boiss. et Spruner	*Fabaceae*	P	ME-EAST		e	**3**, **10**, **12, 26**
*Coronilla scorpioide*h	*Fabaceae*	T	ME-CIRC		a, e	1
Coronilla varia L.	*Fabaceae*	H	EUR		a	11, 47
Cotinus coggygria Scop.	*Anacardiaceae*	P	SEU-PO		d	**5**, **12, 28**
Crataegus monogyna Jacq.	*Rosaceae*	P	ME-EAST		e	**19**, **28**
Crepis capillaris (L.) Wallr.	*Cichoriaceae*	T	WISP		a	18
Crepis foetida L.	*Cichoriaceae*	H	ME-CIRC		a	18
Crepis neglecta L.	*Cichoriaceae*	T	ME-CIRC		a	**21**, **24**
Crepis vesicari	*Cichoriaceae*	T	ME-CIRC		a	**1**, **2**, **46**
Crocus biflorus Mill. ssp. *weldenii* (Hoppe et Fürnr.) K. Richt.	*Iridaceae*	G	SEU-PO		a	21
Crucianella latifolia L.	*Rubiaceae*	T	ME-CIRC		a, b	30
Cupressus sempervirens L.	*Cupressaceae*	P	ME-EAST		c	**2, 21, 26**
Cuscuta epithymum (L.) L.	*Cuscutaceae*	T	WISP		a*	**29**, **34**
Cyclamen repandum Sm.	*Primulaceae*	G	EUAS		d	**6**, **35**
Cydonia oblonga Mill.	*Rosaceae*	P	CUAP		c	19
Cynodon dactylon (L.) Pers.	*Poaceae*	G	WISP		a	**2**, **18**, **20**, **40**
Cynosurus echinatus L.	*Poaceae*	T	SEU-MO		a	18
Dactylis glomerata L. ssp. *hispanica* (Roth) Nyman	*Poaceae*	H	ME-CIRC		a	**2**, **4**, **19, 20**
Dasypyrum villosum (L.) P. Candargy	*Poaceae*	T	ME-PO		c	23
Datura stramonium L.	*Solanaceae*	T	SEU-MO	inv	a	7
Daucus carota L.	*Apiaceae*	H	ME-ILADE		c	24, 26
*Dianthus sylvestristergestinu*k	*Caryophyllaceae*	H	ME-CIRC		a	**15**
Dichanthium ischaemum (L.) Roberty	*Poaceae*	H	SEU-ME	sp	a	**28**, **30**
Dictamnus albus L.	*Rutaceae*	H	ME-ILADE		e	**5**, **22**
Digitaria ciliaris (Retz.) Koeler	*Poaceae*	T	WISP	DD, sp	b, g	41
Diplotaxis muralis (L.) DC.	*Brassicaceae*	T	WISP		b	43

TAXON	Family	Life form	Geoelement	Status	Habitat	Localities
Diplotaxis tenuifolia (L.) DC.	*Brassicaceae*	Ch	WISP		b	43, 47
Dorycnium germanicu	*Fabaceae*	Ch	EUAS		a	**1, 15, 45, 46**
Dryopteris pallida (Bory) Maire et Petitm.	*Dryopteridaceae*	G	ME-CIRC		d	12
Ecballium elaterium (L.) A. Rich.	*Cucurbitaceae*	G	ME-CIRC	DD, sp	b	41
Echium italicum L.	*Boraginaceae*	H	ME-EAST		b	2
Echium parviflorum Moench	*Boraginaceae*	T	ME-EAST		b	1
Elymus repens (L.) Gould	*Poaceae*	G	WISP		a	11, 22
Ephedra major Host	*Ephedraceae*	P	ME-EAST	NT	a	2
Eriobotrya japonica (Thunb.) Lindl.	*Rosaceae*	P	CUAP	arh	c	**2, 14**
Erodium ciconium (L.) L' Hér	*Geraniaceae*	T	ME-PO		a, g	**1, 45, 47**
Erodium cicutarium (L.) L' Hér	*Geraniaceae*	T	WISP		b	2, 23
Erodium malacoides (L.) L' Hér	*Geraniaceae*	T	ME-CIRC		b	2
Erophila verna (L.) Chevall.	*Brassicaceae*	T	ME-CIRC		a	3, 47
Eryngium amethystinum L.	*Apiaceae*	H	ME-EU		a	**3, 24, 30, 46, 49**
Euonymus europaeus L.	*Celastraceae*	P	EUAS		a	19
Euphorbia chamaesyce L.	*Euphorbiaceae*	T	SEU-ME		b	24
Euphorbia fragifera Jan	*Euphorbiaceae*	Ch	ME-ILADE		a	5
Euphorbia helioscopi	*Euphorbiaceae*	T	WISP		a	1, 24
Euphorbia prostrata Aiton	*Euphorbiaceae*	T	CUAP	LC, inv	b	43
Euphorbia spinosa L.	*Euphorbiaceae*	Ch	ME-CIRC		a	**14, 20, 30, 48**
Fallopia baldschuanica (Regel) Holub	*Polygonaceae*	P	CUAP		d, e	2
Festuca illyrica Markgr. – Dann.	*Poaceae*	H	ME-ILADE	end, sp	a	25
Festuca valesiaca Gaudin	*Poaceae*	H	WISP		a	**2, 28**
Ficus carica L.	*Moraceae*	P	ME-CIRC		c	**23, 24, 37, 46, 47, 50**
Filago vulgaris Lam.	*Asteraceae*	T	SEU-PO		a	22
Foeniculum vulgare Mill.	*Apiaceae*	G	ME-CIRC		a	**2, 14, 23, 24**
Fragaria vesca L.	*Rosaceae*	H	WISP		d	10
Frangula rupestris (Scop.) Schur.	*Rhamnaceae*	H	EUAS		d	**6, 14, 16, 22, 29, 39**
Fraxinus ornus L.	*Oleaceae*	P	SEU-ME		d, e	**3, 16, 20, 21, 26, 46, 48**
Fumaria capreolat	*Fumariaceae*	T	ME-ATL		a	5
Fumaria officinalis L.	*Fumariaceae*	T	WISP		c, a, g	**2, 15, 24**
Galium aparine L.	*Rubiaceae*	T	WISP		a	**2, 24**
Galium corrudifolium Vill.	*Rubiaceae*	H	SEU-ME		a	10, 49
Galium lucidum All.	*Rubiaceae*	H	SEU-ME		a	5
Galium rubrum L.	*Rubiaceae*	H	SEU-ME		a	17
Genista sylvestris Scop. ssp. *dalmatica* (Bartl.) H. Lindb.	*Fabaceae*	Ch	ME-ILADE	end, sp	a	**10, 12**
Geranium molle L.	*Geraniaceae*	T	ME-EAST		b	**3, 18**
Geranium purpureum Vill.	*Geraniaceae*	T	SEU-ME		b	**3**, 15, **19, 24, 39, 46**
Geranium rotundifolium L.	*Geraniaceae*	T	EUAS		b	**2, 21, 24,**
Geum urbanum L.	*Rosaceae*	H	SEU-ME		b	19
Gladiolus illyricus W. D. J. Koch	*Iridaceae*	G	SEU-ME	sp	a	**5, 11**
Hedera helix L.	*Araliaceae*	P	EUR		e	**2, 19, 24, 26, 47**
Helianthemum nummularium (L.) Mill.	*Cistaceae*	Ch	SEU-ME		a	**6, 14, 28, 30**
Helianthus tuberosus L.	*Asteraceae*	G	CUAP	neo, inv	b	32
Helichrysum italicum (Roth) G. Don	*Asteraceae*	Ch	ME-CIRC		a	20
Helictotrichon convolutum (C. Presl) Henrard	*Poaceae*	H	ME-WEST		a	**6, 22, 25**
Heliotropium europaeum L.	*Boraginaceae*	T	ME-PO		b	44
Hermodactylus tuberosus (L.) Mill.	*Iridaceae*	G	ME-EU		a	1

TAXON	Family	Life form	Geoelement	Status	Habitat	Localities
Herniaria glabr	*Caryophyllaceae*	T	EUAS		b	1
Herniaria incana Lam.	*Caryophyllaceae*	Ch	SEU-ME		b	**1**, **2**, **14**, **18**, **45, 46**
Hesperis laciniata All.	*Brassicaceae*	H	ME-ILSEU		a	2
Hibiscus trionum L.	*Malvaceae*	T	SEU-PO	EN, sp	b, g	7
Hieracium praealtum Vill. ex Gochnat	*Cichoriaceae*	H	EUAS		a	22
Hieracium praealtum Vill. ex Gochnat ssp. *bauhinii* (Besser) Petunn.	*Cichoriaceae*	H	EUAS		a	14
Hieracium villosum Jacq.	*Cichoriaceae*	H	SEEU		a, f	19
Hippocrepis comosa L.	*Fabaceae*	H	SEU-ME		a	22, 49
Hippocrepis unisiliquosa L.	*Fabaceae*	H	ME-CIRC		a	5
Hordeum murinum L. ssp. *leporinum* (Link) Arcang.	*Poaceae*	T	ME-CIRC		a	**14**, **23**, **37**
Hornungia petraea (L.) Rchb	*Brassicaceae*	T	ME-EU		a	35
Hypericum perforatum L. ssp. *veronense* (Schrank) H. Lindb.	*Clusiaceae*	H	SEU-ME		a	**2**, **6**, **13**, **14**, **24**, **46, 49**
Inula conyza DC.	*Asteraceae*	H	SEU-PO		a	**23**, **24, 47**
Inula heleniu	*Asteraceae*	H	SEEU		a	29
Inula spiraeifolia L.	*Asteraceae*	H	SEU-ME		a	**11**, **22, 49**
Inula verbascifolia (Willd.) Hausskn.	*Asteraceae*	H	ME-ILADE		a	**14**, **28**,**30**
Ipomoea purpurea (L.) Roth	*Convolvulaceae*	T	CUAP		c	21
Iris germanica L.	*Iridaceae*	H	CUAP	sp	a	**2**, **14**
Isatis tinctoria L.	*Brassicaceae*	H	ME-PO		a	**2**, **5**, 15
Juglans regia L.	*Juglandaceae*	P	EUAS		c	**21**, **23**
Juniperus oxycedrus L. ssp. *oxycedrus*	*Cupressaceae*	P	ME-CIRC		e	**6**, **10**, **20**, **29**, **39, 47, 48, 50**
Kickxia spuria (L.) Dumort.	*Scrophulariaceae*	T	EUAS		c	14
*Koeleria splenden*l	*Poaceae*	H	EUAS		a	**14**, **34**
Lactuca serriola L.	*Cichoriaceae*	T	WISP		a, b	23, 50
Lactuca viminea (L.) J. Presl. Et C. Presl	*Cichoriaceae*	H	SEU-PO		a, b	**1**, **7**, **11**, **40**
Lamium amplexicaule L.	*Lamiaceae*	T	EUAS		a	**2**, **24**
Lamium purpureum L.	*Lamiaceae*	T	EUAS		a	5
Lathyrus aphaca L.	*Fabaceae*	T	SEU-ME		a	5
Lathyrus cicera L.	*Fabaceae*	T	ME-CIRC		a	3
Lathyrus latifolius L.	*Fabaceae*	H	SEU-ME		a	43
Lathyrus tuberosus L.	*Fabaceae*	G	EUAS		a	2
Lathyrus venetus (Mill.) Wohlf.	*Fabaceae*	G	SEU-PO		d	5
Lathyrus vernus (L.) Bernh.	*Fabaceae*	G	SEEU		d	5
Lavandula angustifolia Mill.	*Lamiaceae*	P	ME-CIRC		c	3
Leontodon crispus Vill. ssp. *hirsutus*	*Cichoriaceae*	H	SEU-ME		a	**30**, **46**
Lepidium graminifolium L.	*Brassicaceae*	T	SEU-PO		b	19
Lilium candidum L.	*Liliaceae*	G	CUAP	sp	c	2
Limonium narbonense Mill.	*Plumbaginaceae*	H	ME-CIRC		a	42
Linaria vulgaris Mill.	*Scrophulariaceae*	G	EUAS		a	23
Linum tenuifolium L.	*Linaceae*	Ch	SEU-PO		a	5
Lolium perenne L.	*Poaceae*	H	EUR		a, b	19, 26, 38, 49
Lonicera etrusca Santi	*Caprifoliaceae*	P	ME-CIRC		d	**10**
Lotus corniculatus L.	*Fabaceae*	H	EUR		a	**11**, **22**, **25**
Lotus corniculatus L. ssp. *hirsutus* Rothm.	*Fabaceae*	H	SEU-ME		a	6
Lychnis flos – cucul	*Caryophyllaceae*	H	EUAS		a	29
Malus pumila Mill.	*Rosaceae*	P	CUAP		c	24

TAXON	Family	Life form	Geoelement	Status	Habitat	Localities
Malva nicaeensis All.	*Malvaceae*	T	ME-CIRC		b	44
Malva sylvestris L.	*Malvaceae*	H	WISP		a, b	**2, 18, 37, 47**
Marrubium incanum Desr.	*Lamiaceae*	H	ME-ILAPE		a	10
Medicago falcata L.	*Fabaceae*	H	EUAS		a	**6, 11**
Medicago lupulina L.	*Fabaceae*	T	WISP		a	2
Medicago prostrata Jacq.	*Fabaceae*	T	SEU-ME		a	**11, 25, 30, 40, 46**
Medicago rigidula (L.) All.	*Fabaceae*	T	ME-PO		a	**6, 23, 37, 47**
Medicago sativa L. ssp. *sativa*	*Fabaceae*	H	WISP		b	3, 49
Melica ciliata L.	*Poaceae*	H	EUAS		a	**7, 14, 19, 29, 39**
Melilotus albus Medik.	*Fabaceae*	T	EUAS		a	19
Melilotus italicus (L.) Lam.	*Fabaceae*	T	SEU-ME		a	1
Mentha longifolia (L.) L.	*Lamiaceae*	H	WISP		a	24, 37, 39, 48
Mercurialis annua L.	*Euphorbiaceae*	T	WISP		b	**1, 19, 24, 45, 46**
Micromeria juliana (L.) Benth. ex Rchb.	*Lamiaceae*	Ch	ME-CIRC		a, f	16
Mirabilis jalapa L.	*Nyctaginaceae*	G	CUAP		c	43, 47
Misopates orontium (L.) Raf.	*Scrophulariaceae*	T	EUAS		a	1
Morus alba L.	*Moraceae*	P	ME-CIRC	arh	c	23, 47
Morus nigra L.	*Moraceae*	P	CUAP		c	23, 39
Muscari comosum (L.) Mill.	*Asparagaceae*	G	SEU-ME		a	**2, 10**
Muscari neglectum Guss. ex. Ten.	*Asparagaceae*	G	SEU-ME		a	**21, 24**
Myrrhoides nodosa (L.) Cann.	*Apiaceae*	T	ME-CIRC		b	19
Narcissus pseudonarcissus L.	*Amaryllidaceae*	G	CUAP		c	2
Nerium oleander L.	*Apocynaceae*	P	CUAP		c	**2, 23**
Nigella damascena L.	*Ranunculaceae*	T	ME-CIRC		a	**14 19, 25**
Odontites luteus (L.) Clairv	*Scrophulariaceae*	T	SEU-ME		b	30
Olea europaea L.	*Oleaceae*	P	CUAP		e	14, 19, 24, 28, 35
Ononis natri	*Fabaceae*	H	ME-EU		a	25
Ononis reclinata L.	*Fabaceae*	T	ME-CIRC		a	**9, 30, 34**
Onopordum illyricum L.	*Asteraceae*	H	SEU-ME		a	2
Onosma echioides (L.) L.	*Boraginaceae*	Ch	ME-ILADE	sp	a	**5, 10, 29, 30**
Ophrys scolopax Cav. ssp. *cornuta* (Steven) E.G.Camus	*Orchidaceae*	G	ME-PO	sp	a	38
Ophrys sphegodes Mill. ssp. *atrata* (Rchb. f.) A. Bol`os	*Orchidaceae*	G	ME-ATL	sp	a	**27, 28, 36, 38**
Orchis coriophora L.	*Orchidaceae*	G	SEU-ME	VU, sp	a	10
Orchis morio L.	*Orchidaceae*	G	ME-EU	NT, sp	a	22
Orchis provincialis Balb. ssp. *pauciflora* (Ten.) Camus	*Orchidaceae*	G	ME-EU	DD, sp	a	**6**
Orchis quadripunctata Cirillo ex Trn.	*Orchidaceae*	G	ME-EAST	VU, sp	a	25
Orchis tridentata Scop.	*Orchidaceae*	G	SEU-PO	VU, sp	a	10
Orlaya grandiflora (L.) Hoffm.	*Apiaceae*	T	SEU-ME		a	**6, 7, 20, 30, 49**
Ornithogalum comosum L.	*Asparagaceae*	G	SEEU		a	18
Ornithogalum gussonei Ten.	*Asparagaceae*	G	ME-CIRC		a	**2, 24**
Ornithogalum narbonense L.	*Asparagaceae*	G	SEU-ME		a	11
Ornithogalum pyramidale L.	*Asparagaceae*	G	SEU-ME		a	11
Ornithogalum umbellatum L.	*Asparagaceae*	G	SEU-ME		a	5
Orobanche alba Willd.	*Orobanchaceae*	G	SEU-ME		a*	25
Orobanche gracilis Sm.	*Orobanchaceae*	G	SEU-ME		a	29
Orobanche purpurea Jacq.	*Orobanchaceae*	G	EUR		a*	28
Orobanche salviae F. W. Schultz ex W. D. J. Koch	*Orobanchaceae*	T	SEEU		a*	9

TAXON	Family	Life form	Geoelement	Status	Habitat	Localities
Orobanche schultzi Mutel	*Orobanchaceae*	G	SEU-PO		a*	14
Ostrya carpinifoli	*Corylacea*e	P	ME-ILSEU		d, e	**11**, **12**, **16**, **26**, **29**, **48**, **50**
Osyris alba L.	*Santalaceae*	P	ME-CIRC		d	2
Oxalis articulata Savigny	*Oxalidaceae*	G	CUAP	inv, neo	b	2, 37
Oxalis corniculata L.	*Oxalidaceae*	T	WISP		b	2
Oxalis fontana Bunge	*Oxalidaceae*	H	CUAP		b	2
Paliurus spina-christi Mill.	*Rhamnaceae*	P	ME-ILSEU		e	**3**, **19**, **20**, **46**
Panicum capillare L.	*Poaceae*	T	CUAP	inv, neo	a, b	2
Papaver hybridum L.	*Papaveraceae*	T	ME-CIRC	CR, sp	b	15
Papaver rhoeas L.	*Papaveraceae*	T	ME-EAST	arh	a	**1**, **23**, **37**, **47**
Parapholis filiformis (Roth.) C.E.Hubb.	*Poaceae*	T	ME-ATL	DD, sp	a	10
Parietaria judaica L.	*Urticaceae*	H	EUAS		b	**14**, **23**, **37**, **46**
Paronychia kapela (Hacq.) A. Kerner	*Caryophyllaceae*	H	SEU-ME		a	11
Parthenocissus quinquefolia (L.) Planchon	*Vitaceae*	P	CUAP	neo	c	44
Passiflora caerulea L.	*Passifloraceae*	P	CUAP		c	2, 47
Peltaria alliacea Jacq.	*Brassicaceae*	H	ME-ILSEU	NT, end, sp	a	5
Petrorhagia prolifera (L.) P. W. Ball et Heywood	*Caryophyllaceae*	T	EUAS		a	18
Petrorhagia saxifraga (L.) Link	*Caryophyllaceae*	H	SEU-ME		a	**5**, **7**, **23**, **28**, **37**, **40**, **45**, **49**
Petteria ramentacea (Sieber) C. Presl	*Fabaceae*	P	ME-ILADE	end, sp	a	3
Phleum pratense L.	*Poacea*e	H	EUAS		a	15, 49
Phleum subulatum (Savi) Asch. et Graebn.	*Poaceae*	T	ME-CIRC		a	26
Picris echioides L.	*Cichoriaceae*	H	EUAS		a	1, 24
Picris hieracioides L.	*Cichoriaceae*	H	EUAS		b	15
Pinus halepensis Mill.	*Pinaceae*	P	ME-CIRC		e	**2**, **26**, **29**
Pinus nigra J. F. Arnold	*Pinaceae*	P	ME-CIRC		d	**2**, **30**
Piptatherum miliaceum (L.) Coss.	*Poaceae*	H	ME-CIRC		a	29
Pistacia terebinthus L.	*Anacardiaceae*	P	ME-CIRC		d, e	**6**, **9**, **19**, **20**, **25**
Pisum sativum L.	*Fabaceae*	T	ME-CIRC		c	21
Plantago lanceolata L.	*Plantaginaceae*	H	WISP		a	**2**, **6**, **23**, **24**, **37**, **40**, **46**
Plantago major L.	*Plantaginaceae*	H	WISP		g	19
Plantago media L.	*Plantaginaceae*	H	WISP		a	23, 47
Plumbago europaea L.	*Plumbaginaceae*	T	ME-CIRC		a, g	**2**, **19**
Poa bulbosa L.	*Poaceae*	H	EUAS		a	**2**, **6**
Poa trivialis L.	*Poaceae*	H	WISP		a	2, 24, 49
Polycarpon tetraphyllum (L.) L.	*Caryophyllaceae*	T	SEU-ME		g	19
Polygala nicaeensis W. D. J. Koch	*Polygalaceae*	H	ME-CIRC		a	**5**, **35**
Polygonum aviculare L.	*Polygonaceae*	T	WISP		b	**7**, **14**, **48**
Portulaca oleracea L.	*Portulacaceae*	T	WISP	arh	b, c	14
Potentilla inclinata Vill.	*Rosaceae*	H	EUAS		a	**2**, **25**, **28**
Potentilla recta L.	*Rosaceae*	H	EUAS		a	28
Potentilla reptans L.	*Rosaceae*	H	WISP		a	19, 49
Prunella laciniata (L.) L.	*Lamiaceae*	H	SEU-ME		a	10
Prunus avium (L.) L.	*Rosaceae*	P	EUAS		c	**15**, **19**, **24**
Prunus cerasifera Ehrh.	*Rosaceae*	P	CUAP		c	2
Prunus cerasus L.	*Rosaceae*	P	CUAP		c	24, 25
Prunus domestica L.	*Rosaceae*	P	CUAP		c	19
Prunus dulcis (Mill.) D.A. Webb	*Rosaceae*	P	CUAP	arh	c	**22**, **24**, **47**
Prunus mahaleb L.	*Rosaceae*	P	SEU-PO		e	**3**, **12**, **21**, **23**, **24**, **25**, **37**, **46**

TAXON	Family	Life form	Geoelement	Status	Habitat	Localities
Pyracantha coccinea M. Roem.	*Rosaceae*	P	ME-CIRC		c	32
Pyrus amygdaliformis Vill.	*Rosaceae*	P	SEU-ME		e	**13**, **30**, **35**
Pyrus communis L.	*Rosaceae*	P	CUAP		c	19
Quercus ilex L.	*Fagaceae*	P	ME-CIRC		c	26
Quercus pubescens Willd.	*Fagaceae*	P	SEU-PO		d, e	**3**, **12**, **16**, **19**, **20**, **21**, **35**, **48**, **50**
Ranunculus bulbosus L.	*Ranunculaceae*	G	EUAS		a	**3**, **4**, **20**
Ranunculus ficaria L.	*Ranunculaceae*	G	SEU-ME		d	**20**, **28**
Ranunculus neapolitanus Ten.	*Ranunculaceae*	H	SEU-ME		a	5
Reseda lute	*Resedaceae*	H	WISP		a, b	**1**, **23**, **45**, **49**
Rhagadiolus stellatus (L.) Gaertn.	*Cichoriaceae*	T	ME-CIRC		a	**2**, **3**
Rhamnus intermedia Steud. et Hochst.	*Rhamnaceae*	T	ME-ILADE	end, sp, NT	e	**6**, **12**, **14**, **19**, **20**
Robinia pseudoacacia L.	*Fabaceae*	P	CUAP	neo, inv	d	**2**, **14**,**19**
Rosa canina L.	*Rosaceae*	P	WISP		e	**3**, **12**, **20**
Rosmarinus officinalis L.	*Lamiaceae*	P	CUAP		c	**2**, **21**
Rubus caesius L.	*Rosaceae*	P	EUAS		d	8, 47
Rubus ulmifolius Schott.	*Rosaceae*	P	ME-ATL		e	**12**, **19**, **20**, **46**, **48**, **50**
Rumex acetosella L.	*Polygonaceae*	G	WISP		a	**4**, **28**
Rumex crispus L.	*Polygonaceae*	H	ME-CIRC		a	23
Rumex pulcher L.	*Polygonaceae*	T	SEU-PO		a, g	2
Ruscus aculeatus L.	*Asparagaceae*	P	ME-PO		e	**5**, **22**
Salvia officinalis L.	*Lamiaceae*	H	ME-EU		a	**10**, **12**, **35**
Salvia pratensis L.	*Lamiaceae*	H	EUR		a	23
Sambucus nigra L.	*Caprifoliaceae*	P	CUAP		d, e	12
Sanguisorba minor Scop.	*Rosaceae*	H	SEU-ME		a	**2**, 24, **28**
Sanguisorba minormuricata.	*Rosaceae*	H	SEU-ME		a	19
Satureja cuneifolia Ten.	*Lamiaceae*	Ch	ME-ILAPE		a	17
Satureja montana L.	*Lamiaceae*	Ch	SEU-ME		a	**5**, **14**, **20**, **26**, **28**, **39**, **48**
Satureja subspicata Bartl. Ex Vis.	*Lamiaceae*	Ch	ME-ILADE	LC	a	28
Scandix pecten-veneris L.	*Apiaceae*	T	WISP		a	**2**, **24**
Scorzonera villosa Scop.	*Cichoriaceae*	H	ME-ILSEU		a	**12**, **22**
Scrophularia canina L.	*Scrophulariaceae*	H	SEU-ME		a	**1**, **19**, **24**, **45**, **46**
Sedum acre L.	*Crassulaceae*	Ch	WISP		a	**10**, **20**, **49**
Sedum dasyphyllum L.	*Crassulaceae*	Ch	SEU-ME		a	**2**, **10**, **23**, **37**, **40**
Sedum ochroleucum Chaix	*Crassulaceae*	Ch	SEU-ME		a	**6**, **20**, **28**, **29**, **39**, **49**
Sedum telephium L. ssp. *maximum* (L.) Krock.	*Crassulaceae*	G	EUR		f	2
Sempervivum tectorum L.	*Crassulaceae*	Ch	CUAP	sp	f	2, 39, 47
Senecio vulgaris L.	*Asteraceae*	T	WISP		a, b	**2**, **15**, **23**, **24**, **37**, **40**
Serratula radiata (Waldst. et Kit.) M. Bieb. ssp. *cetinjensis* (Rohlena) Hayek	*Asteraceae*	H	ME-ILADE	end, sp	a	17
Seseli tomentosum Vis.	*Apiaceae*	H	ME-ILADE	end, sp, NT	a	**5**, **12**
Sesleria autumnalis (Scop.) F. W. Schultz	*Poaceae*	H	ME-ILSEU		e	4
Sesleria robusta Schott, Nyman et Kotschy	*Poaceae*	H	ME-ILSEU		a	5
Sesleria tenuifolia Schrad.	*Poaceae*	H	ME-ILAPE		a	9
Setaria viridis (L.) P. Beauv.	*Poaceae*	T	EUAS		b	**15**, **19**
Sherardia arvensis L.	*Rubiaceae*	T	WISP		b	2, 7, 10, 49
Sideritis romana L.	*Lamiaceae*	T	ME-CIRC		a	10
Silene latifolia Poir. ssp. *alba* (Mill.) Greuter et Bourdet	*Caryophyllaceae*	H	ME-ILADE		b	**2**, **6**, **12**, **19**, **24**, **46**

TAXON	Family	Life form	Geoelement	Status	Habitat	Localities
Silene vulgaris (Moench) Garcke	*Caryophyllaceae*	H	SEU-ME		a	**6, 30, 49**
*Silene vulgarisangustifoli*k	*Caryophyllaceae*	H	SEU-ME		a, b	2, 24
Sisymbrium officinale (L.) Scop.	*Brassicaceae*	T	WISP		b	**14, 23**
Smyrnium perfoliatum L.	*Apiaceae*	H	ME-CIRC		a	**5, 11, 19, 21, 46**
Solanum nigrum L.	*Solanaceae*	T	WISP		b	23
Solanum tuberosum L.	*Solanaceae*	T	CUAP		b	23, 45, 47, 50
Sonchus asper (L.) Hill	*Cichoriaceae*	T	ME-CIRC		c	43
Sonchus asper (L.) Hill ssp. *glaucescens* (Jord.) Ball	*Cichoriaceae*	H	ME-CIRC		b	**2, 23**
Sonchus oleraceus L.	*Cichoriaceae*	T	WISP		b	**2, 23, 24**
Sorbus domestica L.	*Rosaceae*	P	CUAP		d	8, 10
Sorghum halepense (L.) Pers.	*Poaceae*	H	WISP	inv	b	22
Spiraea media Schmidt	*Rosaceae*	P	CUAP		c	2
Stachys cretica L. ssp. *salviifolia* (Ten.) Rech. f.	*Lamiaceae*	H	ME-ILAPE		a	**2, 5, 20**
Stachys subcrenata Vis.	*Lamiaceae*	T	ME-CIRC		a	**13, 30, 34**
Stellaria media (L.) Vill.	*Caryophyllaceae*	T	WISP		c	**2, 21, 23, 24, 37**
Stipa bromoides (L.) Dörfl	*Poaceae*	H	ME-CIRC		a	**6, 26**
Stipa pennata L.	*Poaceae*	H	SEU-ME	sp	a	13
Symphytum tuberosum L.	*Boraginaceae*	G	SEU-CO		e	3
Syringa vulgaris L.	*Oleaceae*	P	CUAP		c	**2, 19**
Tagetes minuta L.	*Asteraceae*	T	CUAP	inv	b	44
Tamus communis L.	*Dioscoreaceae*	G	SEU-ME		e	**4, 14, 48**
Tanacetum cinerariifolium (Trevir.) Sch. Bip.	*Asteraceae*	H	ME-ILADE	end, sp	a	**20, 28, 34**
Taraxacum laevigatum auct. croat.	*Cichoriaceae*	H	SEU-ME		a	**2, 24**
Taraxacum officinal	*Cichoriacea*e	H	WISP		b, c	**23, 24, 37**
Teucrium chamaedrys L.	*Lamiaceae*	Ch	SEU-PO		a	**4, 19, 26**
Teucrium montanu	*Lamiaceae*	Ch	SEU-ME		a	14, 22, 29, 48
Teucrium polium L.	*Lamiaceae*	Ch	ME-PO		a	**6, 10, 20, 30**
Thalictrum minus L.	*Ranunculaceae*	H	WISP		a	9
Thesium divaricatum Mert. et W. D. J. Koch	*Santalaceae*	H	ME-CIRC		a	**10, 30**
Thlaspi perfoliatum L.	*Brassicaceae*	T	EUAS		a	3, 21, 24
Thymus longicaulis C. Presl	*Lamiaceae*	Ch	ME-ILAPE		a	5
Tordylium apulum L.	*Apiaceae*	T	ME-EAST		a	**2, 7, 23, 24,**
Torilis nodosa (L.) Gaertn.	*Apiaceae*	T	ME-ATL		b	23, 48
Tragopogon dubius Scop.	*Cichoriaceae*	H	SEU-PO		a	**1, 7, 30**
Tragopogon porrifolius L.	*Cichoriaceae*	H	ME-CIRC		a	2
Tragus racemosus (L.) All.	*Poaceae*	T	SEU-ME		b, g	31
Tribulus terrestris L.	*Zygophyllaceae*	T	SEU-ME		b	22
Trifolium arvense L.	*Fabaceae*	T	EUAS	arh	a	11
Trifolium campestre Schreb.	*Fabaceae*	T	WISP		a	**11, 22, 46**
Trifolium pratense L.	*Fabaceae*	H	EUAS		a	**23, 25**
Trifolium repens L.	*Fabaceae*	H	WISP		a	**2, 10, 22, 23, 37**
Trifolium scabrum L.	*Fabaceae*	T	ME-CIRC		a	**19, 22, 46**
Trifolium stellatum L.	*Fabaceae*	T	ME-CIRC		a	25
Trigonella esculenta Willd.	*Fabaceae*	T	ME-EU		a	2
Urospermum picroides (L.) F. W. Schmidt	*Cichoriaceae*	T	ME-CIRC		a	2
Urtica urens L.	*Urticaceae*	T	WISP		a	**19, 46, 47**
Valeriana tuberosa L.	*Valerianaceae*	H	SEU-ME		a	28, 49
Valerianella locust.	*Valerianacea*e	T	CUAP		a	1

TAXON	Family	Life form	Geoelement	Status	Habitat	Localities
Verbascum nigrum L.	*Scrophulariaceae*	H	EUR		a	**24**, **28**
Verbascum orientale (L.) All.	*Scrophulariaceae*	H	ME-EAST		a	18
Verbascum pulverulentum Vill.	*Scrophulariaceae*	H	SEU-ATL		a, b	**2**, **23**, **46**
Verbascum sinuatum L.	*Scrophulariaceae*	H	ME-CIRC		b, g	31
Verbena officinalis L.	*Verbenaceae*	H	WISP		a, b	23
Veronica austriaca L. ssp. *jacquinii* (Baumg.) Eb. Fisch.	*Scrophulariaceae*	H	SEU-PO		a	**5**, **7**, **9**, **49**
Veronica chamaedrys L.	*Scrophulariaceae*	H	ME-EU		a	3
*Veronica cymbalari*d	*Scrophulariaceae*	T	SEU-ME		f	**2**, **21**, **24**, **45**
Veronica persic	*Scrophulariaceae*	T	WISP	neo, inv	a, c, f	**3**, **7**, **19**, **45**, **46**
Veronica polita Fr.	*Scrophulariaceae*	T	EUAS		b	1
Veronica triloba (Opiz) Opiz	*Scrophulariaceae*	T	CEU		b	**21**, **24**
Viburnum tinus L.	*Caprifoliaceae*	P	ME-CIRC		c	2
Vicia cracca L.	*Fabaceae*	H	EUAS		a	**19**, **20**
Vicia fab	*Fabacea*e	T	CUAP		c	4, 24
Vicia sativa L.	*Fabaceae*	T	EUR		a	3
Vinca major L.	*Apocynaceae*	Ch	CUAP		d	2
Vinca minor L.	*Apocynaceae*	Ch	CUAP		d	2
Vincetoxicum hirundinaria Medik. ssp. *adriaticum* (Beck) Markgr.	*Asclepiadaceae*	H	ME-ILADE	LC, end, sp	a	17
Viola odorata L.	*Violaceae*	H	WISP		d	**2**, **8**
Vitis vinifera L.	*Vitaceae*	P	CUAP		c	**7**, **19, 23, 47**
Vitis vinifera L. ssp. *sylvestris* (C. C. Gmel.) Hegi	*Vitaceae*	P	SEU-ME	LC	a, c	1, 28
Vulpia ciliat	*Poaceae*	T	SEU-ME		c	**1, 18, 49**