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### RESEARCH ARTICLE

#### FLORA OF TARNOVSKI HEIGHTS (NORTHERN BULGARIA).

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#### Abstract

Tarnovski Heights are located in the central part of Northern Bulgaria. Inventory of their flora was done for the first time. As a result, 964 species of wild vascular plants from 439 genera and 94 families were described. A floristic analysis was made that includes the following information: taxonomic structure, phytogeographic structure, endemic species, relic species, species with conservation status, distribution of species by biological type and by life form, medicinal plants, antropophytes. The number of invasive species is significant, almost half of the number of invasive plant species in Bulgaria.

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#### Introduction:-

Tarnovski Heights are located in the central part of Northern Bulgaria between the rivers Vesselina and Negovanka. At the Tarnovski Heights we take the Prisovski Ridge, situated beside them. The two geographic sites are included in one protected area of the National Ecological Network of the Republic of Bulgaria, called Tarnovo Heights (with code BG0000213). This gives us reason to consider them together under the name "Tarnovski Heights". The Tarnovski Heights are located on the border between the Middle Danubian Plain and the Middle Forebalkan. They occupy 7 quadrants from the UTM network in Bulgaria: LH67, LH77, LH86, LH87, LH96, LH97, and MH07 (Figure 1). The total area is about 360 km<sup>2</sup>. The maximum height is 439.8 m above sea level.

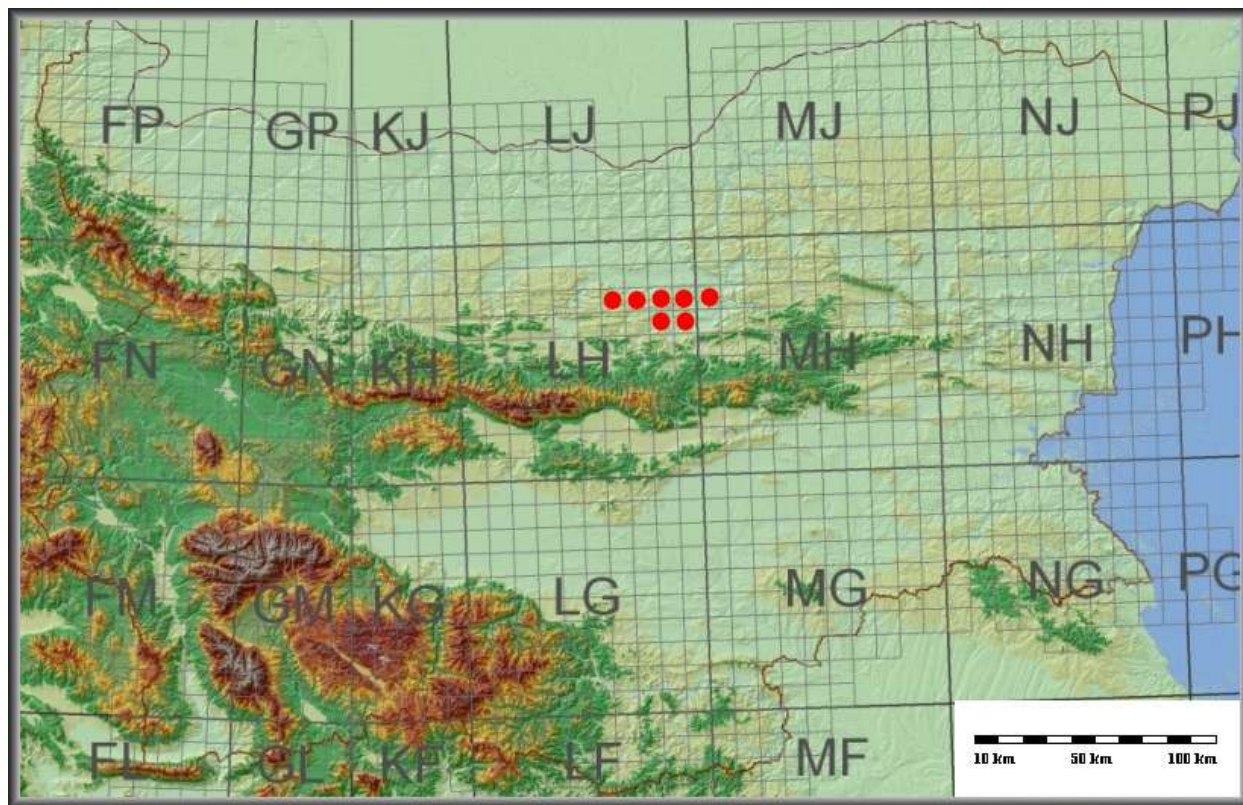
The Tarnovski Heights are located in the Temperate Continental Climate Area, Forebalkan Climate Region. The average annual temperatures are about 10-11°C. Average January temperatures range from -1.5°C to -3.5°C. Average July temperatures are in the range of 20.0-21.5°C. The annual rainfall is about 590-650 mm with a pronounced spring-summer maximum (May-June) and winter minimum (February). The snow cover lasts between 50 and 70 days. Western winds predominate in the direction.

The fullness of the rivers is spring (March-May). The reason for this is the spring-summer maximum of precipitation and the spring melting of the snow in the mountains. Lightning is in the late summer and autumn (August-September) [1]. The largest river in the region of Tarnovski Heights is Yantra River.

According to the FAO classification the soils within the Tarnovski Heights are two types: Leptosols (LP) and Luvisols (LV). The Leptosols are subtypes of rendzic (LPk). The Luvisols are divided into two subtypes: chromic (LVx) and albic (LVa) [2].

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**Figure 1:-** Geographical position of Tarnovski Heights

From a botanical-geographic point of view, Tarnovski Heights are located in the Forebalkan County of the Illyrian Provincial Region of the European Broad-leaved Forest Area [3]. Most of the Tarnovski Heights belong to the Forebalkan (eastern) floristic region. Their easternmost parts are located in the Stara Planina (medium) floristic region [4].

The first botanical studies in the region of Tarnovski Heights were conducted in 1885 by Josef Velenovski as part of his studies in Northern Bulgaria. Vassil Kovatchev also conducted his studies in the region of Veliko Tarnovo and published them in 1892 together with the data from other regions in his second botanical article “Materials on the flora of Northern Bulgaria” [5]. In 1901, the famous Bulgarian botanist Ivan Urumov published a list of established plant species in the then Tarnovo districts and Lovech districts [6]. Data on individual plant species from the region of Veliko Tarnovo are mentioned in the “Flora of the People's Republic of Bulgaria” [7, 8] and “Flora of the Republic of Bulgaria” [4, 9]. Until now, a full study of the flora of Tarnovski Heights has not been carried out.

The aim of our study was to make a full inventory of the flora of Tarnovski Heights and to prepare a floristic analysis of the obtained data. This information is important due to the high conservation value of Tarnovski Heights. There are 12 protected areas and 4 protected zones of the NATURA 2000 ecological network. The protected areas are divided into 7 protected sites and 5 natural monuments [10].

### **Materials and Methods:-**

The present study of the flora of Tarnovski Heights was carried out using the route method in the period 2015-2016. The following sources are used in the determination of taxa and life forms of the plants: Handbook for Plants in Bulgaria [11], Flora of PR Bulgaria [7, 8], and Flora of the Republic of Bulgaria [4, 9]. The names of the species are under Conspectus of the Bulgarian vascular flora [12]. The abbreviations of the authors' names of the plants are according to the International Plant Names Index [13]. The names of the family are according to APG IV [14].

The life forms are represented in the system of Raunkiaer [15]. Biological types are defined by Delipavlov et al. [11]. The floristic elements and the endemics are according to Asyov et al. [12]. The relicts are presented according to Zahariev [16].

The conservation statute is recognized using the following documents: Annex II to Council Directive 92/43/EEC of the European Community to protect natural habitats and of wild fauna and flora [17], Appendix I to *Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)* [18], Appendix II to *Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)* [19], Red Data Book of the Republic of Bulgaria, Vol. 1. Plants and Fungi [20], Red List of Bulgarian vascular plants [21], Annex II, Annex III, and Annex IV to Biodiversity Act of the Republic of Bulgaria [22]. Recorded are the species included in Order for special arrangements for the conservation and use of the medicinal plants in Bulgaria [23].

The medicinal plants are under the Annex to the Medicinal Plants Act of the Republic of Bulgaria [24], Stoyanov [25, 26], Stoyanov and Kitanov [27], Petkov [28], Pamukov and Ahtardzhiev [29], Landzhev [30], Nikolov [31]. The anthropophytes are presented by Stefanov and Kitanov [32]. The Invasive alien plant species are by Petrova et al. [33].

### Results and Discussion:-

As a result of our study, 964 spontaneous prevalent vascular plants belonging to 439 genera and 94 families were described. This represents 23.5% from all species, 48.1% from all genera and 67.6% from all plant families in Bulgaria. The described species represent 42.9% of the vascular plants distributed in the range 0-500 m above sea level according to Peev et al. [34]. Systematic list of identified species is presented in Appendix.

The Division Lycopodiophyta includes 1 family, 1 genus and 1 species. The Division Equisetophyta is represented by 1 family, 1 genus and 2 species. The Division Polypodiophyta is covered with 5 families, 6 genera and 8 species. The Division Magnoliophyta includes the most taxa: 87 families, 431 genera and 953 species. The distribution of taxa in them is as follows: Class Pinopsida is represented with 1 family, 1 genus and 1 species; Class Magnoliopsida includes 70 families, 334 genera and 774 species; Class Liliopsida includes 16 families, 96 genera and 178 species.

The most of the families and genera are presented with smaller number of lower taxa: from 1 to 4. The majority of families, 77 (81.9%) were presented with 1–4 genera. Only 17 (18.1%) of the families are represented by 5 or more genera (Table 1). Most genera belong to the following families: Asteraceae (53 genera), Poaceae (50 genera), and Apiaceae (29 genera). The majority of families, 55 (58.5%) were presented with 1–4 species. Only 39 (41.5%) of the families are represented by 5 or more species (Table 1). Most species belong to the following families: Asteraceae (117 species), Fabaceae (87 species), Poaceae (82 species), Lamiaceae (58 species), Rosaceae (46 species), and Apiaceae (43 species). The majority of genera were presented with 1–4 species. Only 39 (8.9%) of genera are represented by 5 or more species. Most species belong to the following genera: *Trifolium* L. (17 species), *Centaurea* L. (16 species), *Vicia* L. (16 species), *Carex* L. (15 species), *Lathyrus* L. (15 species), *Ranunculus* L. (14 species), *Euphorbia* L. (13 species), and *Veronica* L. (13 species).

**Table 1:-** Families with most genera and species (5 or more)

Families	Genera	Species
Amaranthaceae	5	13
Amaryllidaceae		11
Apiaceae	29	43
Asparagaceae	7	14
Aspleniaceae		5
Asteraceae	53	117
Betulaceae		5
Boraginaceae	11	22
Brassicaceae	24	39
Campanulaceae		10
Caprifoliaceae	8	21
Caryophyllaceae	17	38
Convolvulaceae		7
Crassulaceae		7
Cyperaceae	5	19
Euphorbiaceae		15

Fabaceae	23	87
Fagaceae		5
Geraniaceae		9
Hypericaceae		5
Iridaceae		5
Juncaceae		7
Lamiaceae	25	58
Malvaceae	6	10
Oleaceae		6
Orchidaceae	12	18
Orobanchaceae		5
Papaveraceae		7
Poaceae	50	82
Polygonaceae		21
Primulaceae		5
Ranunculaceae	10	26
Rosaceae	16	46
Rubiaceae		13
Salicaceae		7
Sapindaceae		6
Scrophulariaceae	11	37
Solanaceae		6
Violaceae		6

There are 54 floristic elements in the phytogeographical structure of the flora. The largest number of species belongs to following floristic elements: European-Asiatic (15.3%), Sub-Mediterranean (13.8%), and European-Mediterranean (13.8%) floristic elements. The distribution of the floristic elements correlate with the geographic location of the study area.

The endemic taxa are represented by 3 Bulgarian endemic species and 9 Balkan endemic species. The total number of endemic taxa of Tarnovski Heights is 12 species (1.2% of all species). It is significantly lower than the country average, which is 4.9% [34]. The reason for this is the low altitude of the studied area, which is characterized by a smaller number of endemic plant species.

The relic species are 59 species (6.1% of all species). Tertiary relics are 50 species (5.2% of all species). Quaternary relics are 9 species (0.9% of all species). Of these 4 species are quaternary glacial relics and 5 species are quaternary interglacial relics. The small number of quaternary relics is due to the same reason given for the presentation of the endemic species, namely the low altitude: the highest point of Tarnovo heights is located only at 439.8 m above sea level.

The species with conservation status are 64 species (6.6% of all species). In Annex II of Directive 92/43/EEC is included one species. In Annex V of Directive 92/43/EEC are included 2 species. In Appendix I of Convention on the Conservation of European Wildlife and Natural Habitats (Berne Convention) is included one species. In Appendix II of *Convention on International Trade in Endangered Species of Wild Fauna and Flora* (CITES) are included 22 species. In the Red Data Book of the Republic of Bulgaria are included 10 species in two categories: Endangered – 7 species, Vulnerable – 3 species. In the Red List of Bulgarian vascular plants are included 30 species in following categories: Endangered – 7 species, Vulnerable – 13 species, Nearly Threatened – 5 species, Least Concern – 4 species, and Data Deficient – 1 species. In Annex II, Annex III, and Annex IV of the Act on Amending and Supplementing the Biological Diversity Act of the Republic of Bulgaria are included 42 species. Under ban on collecting herbs from their natural habitats are 10 species. Under restricted collection of herbs from their natural habitats are 6 species.

The analysis of life forms (Table 2) shows the predominant participation of the hemicryptophytes, 447 species (46.4%). Next in number of species are following groups: therophytes, 213 species (22.1%), cryptophytes, 109 species (11.3%), and phanerophytes, 104 species (10.8%). This distribution can be explained by the combination of

several factors: the location of the studied area in the temperate zone, the large area of the forest habitats and the arable lands on the territory of Tarnovski Heights.

**Table 2:-** Distribution of the species by life form

Group	Subgroup	Number of species	Percentage
Phanerophytes (Ph)		<b>104</b>	<b>10.8</b>
	Megaphanerophytes	6	0.6
	Mesophanerophytes	46	4.8
	Microphanerophytes	32	3.3
	Nanophanerophytes	20	2.1
Chamaephytes (Ch)		<b>33</b>	<b>3.4</b>
Hemicryptophytes (H)		<b>447</b>	<b>46.4</b>
Therophytes-Hemicryptophytes (Th-H)		<b>57</b>	<b>5.9</b>
Cryptophytes (Cr)		<b>109</b>	<b>11.3</b>
	Geophytes	85	8.8
	Helophytes	12	1.3
	Hydrophytes	13	1.4
Therophytes (Th)		<b>213</b>	<b>22.1</b>

The biological spectrum includes all biological types, as well as all possible transitions between them (Table 3). Most species belong to the perennial herbaceous plants, 528 species (54.8%) and belong to the annual herbaceous plants, 213 species (22.1%). The dominant presence of the perennial herbaceous plants can be explained by the wide variety of communities and habitats that occur on the territory of Tarnovski Heights. The relatively large number of annual herbaceous plants is due to the following reasons: the large area of the arable lands, the significant number of settlements and the road network between them. As a result of human intervention in these territories, the soil is not covered by dense vegetation, which is favorable for the development of annual herbaceous plants. This group of plants is represented with a large number of species also in natural habitats with shallow and eroded soil cover.

**Table 3:-** Distribution of the species by biological type

Biological type	Symbol	Number of species	Percentage
Annual herbaceous plant	a	213	22.1
Annual or biannual herbaceous plant	a-b	46	4.8
Annual or perennial herbaceous plant	a-p	11	1.1
Biannual herbaceous plant	b	36	3.7
Biannual or perennial herbaceous plant	b-p	27	2.8
Perennial herbaceous plant	p	528	54.8
Perennial herbaceous plant or shrub	p-sh	1	0.1
Shrub	sh	44	4.6
Shrub or tree	sh-t	13	1.4
Tree	t	45	4.7

The medicinal plants of Tarnovski Heights are 444 species, belong to 284 genera and 81 families. They represent 46.1% from all species, 64.7% from all genera and 86.2% from all plant families of vascular plants, identified in the study area. They are distributed within the following groups: 37 species of trees (8.3%), 23 species of shrubs (5.2%), 251 species of perennial plants (56.5%), 16 species of biennial plants (3.6%) and 63 species of annual plants (14.2%). The remaining 54 species (12.2%) belong to the transitional groups between them.

The presence of anthropophytes species is significant, 545 species (56.5%), distributed as follows: 17 species of trees, 18 species of shrubs, 5 species of transitional group shrubs – trees and 505 species of herbaceous plants. The number of adventive species and cosmopolitan species in the flora of Tarnovski Heights is 39 species (4.1%) and 46 species

(4.8%) respectively. These results can be explained by the large number of settlements and the considerable area of arable lands.

The number of invasive species is significant. There are 29 species, which is almost half of the number of invasive plant species in Bulgaria. These species are as follows: *Acer negundo* L., *Ailanthus altissima* (Mill.) Swingle, *Amaranthus hybridus* L., *Amaranthus retroflexus* L., *Ambrosia artemisiifolia* L., *Amorpha fruticosa* L., *Bidens frondosa* L., *Cuscuta campestris* Yunck., *Datura stramonium* L., *Eclipta prostrata* L., *Elaeagnus angustifolia* L., *Elodea canadensis* Michx., *Erigeron annuus* (L.) Pers., *Erigeron canadensis* L., *Euphorbia davidii* Subils, *Galinsoga parviflora* Cav., *Gleditsia triacanthos* L., *Helianthus tuberosus* L., *Impatiens glandulifera* Royle, *Laburnum anagyroides* Medik., *Lycium barbarum* L., *Oxalis corniculata* L., *Parthenocissus quinquefolia* (L.) Planch., *Phytolacca americana* L., *Robinia pseudoacacia* L., *Solidago gigantea* Aiton, *Sorghum halepense* (L.) Pers., *Xanthium italicum* Moretti, *Xanthium spinosum* L.

The majority of invasive plants (20 species) are herbaceous plants, 5 species are trees and 4 species are shrubs. Most of these species are spread in human-influenced natural habitats and in arable lands.

Most of the invasive species (14 species) originate from North America. Originating from both North America and South America are 6 species. Originating from South America are 3 species and from Asia are 4 species. One species originates from other parts of Europe and one species originates from the Mediterranean.

In the DASIE List of Worst invasive alien species threatening biodiversity in Europe [35] are included 4 species: *Ambrosia artemisiifolia* L., *Ailanthus altissima* (Mill.) Swingle, *Impatiens glandulifera* Royle, and *Robinia pseudoacacia* L.

In the list of invasive species of EPPO [36] are included 6 species: *Ailanthus altissima* (Mill.) Swingle, *Ambrosia artemisiifolia* L., *Amorpha fruticosa* L., *Helianthus tuberosus* L., *Impatiens glandulifera* Royle, and *Solidago gigantea* Aiton. In the List of observed invasive species of EPPO [36] is included *Bidens frondosa* L.

The reasons for the wide diversity of invasive species of Tarnovski Heights are related to the geographic location of the studied territory. The Tarnovski Heights are located in the central part of Northern Bulgaria, where the main roads connecting the eastern and western parts of Northern Bulgaria, as well as Northern and Southern Bulgaria are intersected. In the study area pass many roads and rail lines, which are used very intensively. Road infrastructure is one of the main ways of spreading invasive species. Second is the passage of one of the big rivers that are internal to Bulgaria (Yantra River) through the studied territory. Part of invasive species are spread along its banks.

We recommend monitoring the distribution and number of the invasive species and taking measures to control their numbers in the protected areas and the protected zones.

### Conclusion:-

The results of the inventory of vascular plants on the territory of Tarnovski Heights show a considerable variety of vascular plants. The obtained results can be used for comparison with the data on the flora of different geographic sites in Northern Bulgaria as well as in the whole country.

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**Appendix:-**

Systematic list of species of vascular plants, established in Tarnovski Heights (Northern Bulgaria)

**Division Lycopodiophyta**

**Fam. Selaginellaceae:** *Selaginella helvetica* (L.) Spring

**Division Equisetophyta**

**Fam. Equisetaceae:** *Equisetum ramosissimum* Desf.; *Equisetum telmateia* Ehrh.

**Division Polypodiophyta**

**Fam. Aspidiaceae:** *Dryopteris filix-mas* (L.) Schott

**Fam. Aspleniaceae:** *Asplenium adiantum-nigrum* L.; *Asplenium ruta-muraria* L.; *Asplenium trichomanes* L.; *Ceterach officinarum* DC.

**Fam. Athyriaceae:** *Cystopteris fragilis* (L.) Bernh.

**Fam. Hypolepidaceae:** *Pteridium aquilinum* (L.) Kuhn

**Fam. Polypodiaceae:** *Polypodium vulgare* L.

**Division Magnoliophyta****Class Pinopsida**

**Fam. Cupressaceae:** *Juniperus communis* L.

**Class Magnoliopsida**

**Fam. Acanthaceae:** *Acanthus balcanicus* Heywood & I. Richardson; **Fam. Amaranthaceae:** *Amaranthus blitoides* S. Watson; *Amaranthus crispus* Terrac.; *Amaranthus hybridus* L.; *Amaranthus lividus* L.; *Amaranthus paniculatus* L.; *Amaranthus retroflexus* L.; *Atriplex patula* L.; *Beta vulgaris* L.; *Chenopodium album* L.; *Chenopodium hybridum* L.; *Chenopodium polyspermum* L.; *Chenopodium vulvaria* L.; *Kochia scoparia* (L.) Schrad.; **Fam. Anacardiaceae:** *Cotinus coggygia* Scop.; **Fam. Apiaceae:** *Aegopodium podagraria* L.; *Aethusa cynapium* L.; *Angelica panicii* Vandas ex Velen; *Angelica sylvestris* L.; *Anthriscus cerefolium* Hoffm.; *Anthriscus nemorosa* Spreng.; *Anthriscus sylvestris* (L.) Hoffm.; *Berula erecta* (Huds.) Coville; *Bifora radians* M. Bieb.; *Bupleurum affine* Sadler; *Bupleurum praealtum* L.; *Bupleurum tenuissimum* L.; *Caucalis platycarpus* L.; *Chaerophyllum aureum* L.; *Chaerophyllum bulbosum* L.; *Chaerophyllum byzantinum* Boiss.; *Chaerophyllum temulentum* L.; *Conium maculatum* L.; *Daucus carota* L.; *Daucus guttatus* Sm.; *Eryngium campestre* L.; *Ferulago campestris* (Besser) Grecescu; *Ferulago sylvatica* (Besser) Rchb.; *Foeniculum vulgare* Mill.; *Heracleum sibiricum* L.; *Heracleum ternatum* Velen.; *Laser trilobum* Borkh. ex Gaertn.; *Malabaila graveolens* Hoffm.; *Myrrhoides nodosa* (L.) Cannon; *Orlaya grandiflora* (L.) Hoffm.; *Pastinaca sativa* L.; *Pastinaca umbrosa* Steven ex DC.; *Peucedanum alsaticum* L.; *Peucedanum officinale* L.; *Physospermum cornubiense* DC.; *Pimpinella saxifraga* L.; *Sanicula europaea* L.; *Scandix pecten-veneris* L.; *Seseli rigidum* Waldst. & Kit.; *Seseli tortuosum* L.; *Tordylium maximum* L.; *Torilis arvensis* (Huds.) Link; *Turgenia latifolia* Hoffm.; **Fam. Apocynaceae:** *Vinca herbacea* Waldst. & Kit.; *Vinca minor* L.; *Vincetoxicum hirundinaria* Medik.; **Fam. Araliaceae:** *Hedera helix* L.; **Fam. Aristolochiaceae:** *Aristolochia clematitis* L.; *Asarum europaeum* L.; **Fam. Asteraceae:** *Achillea clypeolata* Sm.; *Achillea millefolium* L.; *Achillea setacea* Waldst. & Kit.; *Ambrosia artemisiifolia* L.; *Arctium lappa* L.; *Arctium minus* Bernh.; *Arctium tomentosum* Mill.; *Artemisia absinthium* L.; *Artemisia annua* L.; *Artemisia vulgaris* L.; *Aster amellus* L.; *Bellis perennis* L.; *Bidens frondosa* L.; *Bidens tripartita* L.; *Bombycilaena erecta* (L.) Smoljan.; *Carduus acanthoides* L.; *Carduus candicans* Waldst. & Kit.; *Carduus crispus* L.; *Carduus nutans* L.; *Carduus thoermeri* Weinm.; *Carlina acanthifolia* All.; *Carlina vulgaris* L.; *Carthamus lanatus* L.; *Centaurea affinis* Friv.; *Centaurea biebersteinii* DC.; *Centaurea calcitrapa* L.; *Centaurea chrysolepis* Vis.; *Centaurea cyanus* L.; *Centaurea degeniana* J. Wagner; *Centaurea diffusa* Lam.; *Centaurea iberica* Trevir. ex Spreng.; *Centaurea orientalis* L.; *Centaurea phrygia* L.; *Centaurea rocheliana* (Heuff.) Dostál; *Centaurea rutifolia* Sm.; *Centaurea scabiosa* L.; *Centaurea solstitialis* L.; *Centaurea stenolepis* Kern.; *Centaurea triumfettii* All.; *Chondrilla juncea* L.; *Cichorium intybus* L.; *Cirsium arvense* (L.) Scop.; *Cirsium ligulare* Boiss.; *Cirsium vulgare* (Savi) Ten.; *Cota austriaca* Sch. Bip.; *Cota tinctoria* (L.) J. Gay.; *Crepis foetida* L.; *Crepis sancta* (L.) Babç.; *Crepis setosa* Haller f.; *Crepis tectorum* L.; *Crupina vulgaris* Pers. ex Cass.; *Echinops banaticus* Rochel & Borza; *Echinops sphaerocephalus* L.; *Eclipta prostrata* L.; *Erigeron acer* L.; *Erigeron annuus* (L.) Pers.; *Erigeron canadensis* L.; *Eupatorium cannabinum* L.; *Filago lutescens* Jord.; *Galinsoga parviflora* Cav.; *Helianthus tuberosus* L.; *Helminthotheca echioides* (L.) Holub; *Hieracium cymosum* L.; *Hieracium echioides* Lumn.; *Hieracium hoppeanum* Schult.; *Hieracium pilosella* L.; *Hieracium praealtum* Gochnat; *Hieracium racemosum* Waldst. & Kit. ex Willd.; *Hypochoeris maculata* L.; *Inula aschersoniana* Janka; *Inula britannica* L.;



*Inula conyza* L.; *Inula ensifolia* L.; *Inula germanica* L.; *Inula helenium* L.; *Inula hirta* L.; *Inula salicina* L.; *Inula spiraeifolia* L.; *Jacobaea vulgaris* Gaertn.; *Jurinea glycacantha* DC.; *Jurinea ledebourii* Bunge; *Lactuca quercina* L.; *Lactuca serriola* L.; *Lactuca viminea* (L.) J.Presl. & C.Presl.; *Lapsana communis* L.; *Leontodon crispus* Vill.; *Leontodon hispidus* L.; *Leucanthemum vulgare* Lam.; *Matricaria chamomilla* L.; *Mycelis muralis* Dumort.; *Onopordum acanthium* L.; *Petasites hybridus* (L.) G.Gaertn., B.Mey. & Scherb.; *Picris hieracioides* L.; *Pulicaria dysenterica* (L.) Bernh.; *Scorzonera hispanica* L.; *Senecio vernalis* Waldst. & Kit.; *Senecio vulgaris* L.; *Serratula tinctoria* L.; *Solidago gigantea* Aiton; *Sonchus arvensis* L.; *Sonchus asper* (L.) Hill; *Sonchus oleraceus* L.; *Tanacetum corymbosum* (L.) Sch.Bip.; *Tanacetum macrophyllum* Sch.Bip.; *Tanacetum parthenium* Sch.Bip.; *Tanacetum vulgare* L.; *Taraxacum officinale* F.H.Wigg.; *Taraxacum serotinum* Poir.; *Tragopogon dubius* Scop.; *Tragopogon pratensis* L.; *Tripleurospermum inodorum* (L.) Sch.Bip.; *Tripleurospermum tenuifolium* Freyn ex Freyn & E.Brandis; *Tussilago farfara* L.; *Xanthium italicum* Moretti; *Xanthium spinosum* L.; *Xanthium strumarium* L.; *Xeranthemum annuum* L.; **Fam. Balsaminaceae:** *Impatiens glandulifera* Royle; **Fam. Berberidaceae:** *Mahonia aquifolium* (Pursh) Nutt.; **Fam. Betulaceae:** *Betula pendula* Roth; *Carpinus betulus* L.; *Carpinus orientalis* Mill.; *Corylus avellana* L.; *Corylus colurna* L.; **Fam. Boraginaceae:** *Anchusa leptophylla* Roem. & Schult.; *Anchusa officinalis* L.; *Anchusa procera* Besser ex Link; *Buglossoides arvensis* (L.) I.M.Johnst.; *Buglossoides purpureocaerulea* (L.) I.M.Johnst.; *Cerinthum minor* L.; *Cynoglossum creticum* Mill.; *Cynoglossum hungaricum* Simonk.; *Echium italicum* L.; *Echium vulgare* L.; *Heliotropium europaeum* L.; *Myosotis arvensis* (L.) Hill.; *Myosotis incassata* Guss.; *Myosotis ramosissima* Rochel; *Nonea pulla* DC.; *Onosma heterophylla* Griseb.; *Pulmonaria angustifolia* L.; *Pulmonaria mollis* Ten.; *Pulmonaria obscura* Dumort.; *Pulmonaria officinalis* L.; *Symphytum bulbosum* K.F.Schimp.; *Symphytum ottomanum* Friv.; **Fam. Brassicaceae:** *Alliaria petiolata* (M.Bieb.) Cavara & Grande; *Alyssum alyssoides* (L.) L.; *Alyssum montanum* L.; *Alyssum repens* Baumg.; *Alyssum tortuosum* Waldst. & Kit.; *Arabidopsis thaliana* (L.) Heynh.; *Arabis sagittata* (Bertol.) DC.; *Arabis turrata* L.; *Armoracia rusticana* G.Gaertn., B.Mey. & Scherb.; *Aurinaria saxatilis* Desv.; *Barbarea vulgaris* W.T.Aiton; *Berteroa incana* (L.) DC.; *Berteroa obliqua* (Sm.) DC.; *Capsella bursa-pastoris* (L.) Medik.; *Cardamine bulbifera* Crantz; *Cardamine impatiens* L.; *Cardaminopsis arenosa* (L.) Hayek; *Cardaria draba* (L.) Desv.; *Descurainia sophia* (L.) Webb ex Prantl; *Diplotaxis muralis* (L.) DC.; *Erophila verna* (L.) Chevall.; *Erysimum crepidifolium* Rchb.; *Erysimum cuspidatum* DC.; *Erysimum diffusum* Ehrh.; *Hesperis sylvestris* Crantz; *Lepidium campestre* (L.) W.T.Aiton; *Nasturtium officinale* R.Br.; *Rorippa austriaca* Spach; *Rorippa sylvestris* (L.) Besser; *Sinapis arvensis* L.; *Sisymbrium altissimum* L.; *Sisymbrium loeselii* L.; *Sisymbrium officinale* (L.) Scop.; *Sisymbrium strictissimum* L.; *Thlaspi alliaceum* L.; *Thlaspi arvense* L.; *Thlaspi perfoliatum* L.; *Thlaspi praecox* Wulfen; *Turritis glabra* L.; **Fam. Campanulaceae:** *Campanula bononiensis* L.; *Campanula glomerata* L.; *Campanula grossekkii* Heuff.; *Campanula lingulata* Waldst. & Kit.; *Campanula persicifolia* L.; *Campanula rapunculoides* L.; *Campanula sibirica* L.; *Campanula sparsa* Friv.; *Campanula trachelium* L.; *Legousia speculum-veneris* (L.) Chaix; **Fam. Cannabaceae:** *Cannabis sativa* L.; *Humulus lupulus* L.; **Fam. Caprifoliaceae:** *Cephalaria transylvanica* (L.) Roem. & Schult.; *Dipsacus fullonum* L.; *Dipsacus laciniatus* L.; *Dipsacus pilosus* L.; *Knautia drymeia* Heuff.; *Knautia integrifolia* Bertol.; *Knautia macedonica* Griseb.; *Sambucus ebulus* L.; *Sambucus nigra* L.; *Scabiosa columbaria* L.; *Scabiosa hispidula* Boiss.; *Scabiosa ochroleuca* L.; *Scabiosa rotata* M.Bieb.; *Valeriana officinalis* L.; *Valerianella dentata* (L.) Pollich; *Valerianella locusta* (L.) Laterr.; *Valerianella pumila* DC.; *Valerianella rimosa* Bastard; *Valerianella turgida* Bettecke; *Viburnum lantana* L.; *Viburnum opulus* L.; **Fam. Caryophyllaceae:** *Arenaria serpyllifolia* L.; *Cerastium arvense* L.; *Cerastium bulgaricum* R.Uechtr.; *Cerastium holosteoides* Fr.; *Cerastium semidecandrum* L.; *Cucubalus baccifer* L.; *Dianthus armeria* L.; *Dianthus giganteus* D'Urv.; *Dianthus petraeus* Waldst. & Kit.; *Dianthus pseudarmeria* M.Bieb.; *Herniaria glabra* L.; *Herniaria hirsuta* L.; *Holosteum umbellatum* L.; *Lychnis coronaria* (L.) Desr.; *Lychnis flos-cuculi* L.; *Minuartia glomerata* (M.Bieb.) Degen; *Minuartia setacea* (Thuill.) Hayek; *Moehringia trinervia* (L.) Clairv.; *Myosoton aquaticum* Moench; *Paronychia cephalotes* Steven; *Petrorhagia prolifera* (L.) P.W.Ball & Heywood; *Petrorhagia saxifraga* Link; *Saponaria glutinosa* M.Bieb.; *Saponaria officinalis* L.; *Silene alba* (Mill.) E.H.L.Krause; *Silene conica* L.; *Silene dichotoma* Ehrh.; *Silene italica* (L.) Pers.; *Silene otites* Sm.; *Silene viridiflora* L.; *Silene vulgaris* (Moench) Garcke; *Spergula arvensis* L.; *Stellaria graminea* L.; *Stellaria holostea* L.; *Stellaria media* (L.) Vill.; *Stellaria nemorum* L.; *Stellaria pallida* (Dumort.) Pire; *Viscaria vulgaris* Roehl.; **Fam. Celastraceae:** *Euonymus europaeus* L.; *Euonymus verrucosus* Scop.; *Parnassia palustris* L.; **Fam. Ceratophyllaceae:** *Ceratophyllum demersum* L.; **Fam. Cistaceae:** *Fumana procumbens* Gren. & Godr.; *Helianthemum nummularium* Mill.; *Rhodax canus* Fuss.; **Fam. Convolvulaceae:** *Calystegia sepium* (L.) R.Br.; *Calystegia sylvatica* (Kit.) Griseb.; *Convolvulus arvensis* L.; *Convolvulus cantabrica* L.; *Cuscuta campestris* Yunck.; *Cuscuta epithimum* L.; *Cuscuta europaea* L.; **Fam. Cornaceae:** *Cornus mas* L.; *Cornus sanguinea* L.; **Fam. Crassulaceae:** *Sedum acre* L.; *Sedum album* L.; *Sedum caespitosum* (Cav.) DC.; *Sedum hispanicum* L.; *Sedum maximum* Suter; *Sedum ochroleucum* Chaix; *Sedum pallidum* M.Bieb.; **Fam. Dioscoreaceae:** *Tamus communis* L.; **Fam. Elaeagnaceae:** *Elaeagnus angustifolia* L.; **Fam. Euphorbiaceae:** *Euphorbia agraria* M.Bieb.;

*Euphorbia amygdaloides* L.; *Euphorbia chamaesyce* L.; *Euphorbia cyparissias* L.; *Euphorbia davidii* Subils; *Euphorbia esula* L.; *Euphorbia helioscopia* L.; *Euphorbia myrsinites* L.; *Euphorbia nicaeensis* All.; *Euphorbia polychroma* Kern.; *Euphorbia peplus* L.; *Euphorbia salicifolia* Host; *Euphorbia segerana* Neck.; *Mercurialis ovata* Sternb. & Hoppe; *Mercurialis perennis* L.; **Fam. Fabaceae:** *Amorpha fruticosa* L.; *Anthyllis vulneraria* L.; *Astragalus glycyphylloides* DC.; *Astragalus glycyphyllos* L.; *Astragalus onobrychis* L.; *Bituminaria bituminosa* (L.) C.H.Stirt.; *Cercis siliquastrum* L.; *Chamaecytisus albus* (Hacq.) Rothm.; *Chamaecytisus ciliatus* (Wahlenb.) Rothm.; *Chamaecytisus hirsutus* Link; *Chamaecytisus supinus* (L.) Link; *Colutea arborescens* L.; *Coronilla scorpioides* W.D.J.Koch; *Coronilla varia* L.; *Dorycnium germanicum* Rouy; *Dorycnium herbaceum* Vill.; *Galega officinalis* L.; *Genista ovata* Waldst. & Kit.; *Genista tinctoria* L.; *Gleditsia triacanthos* L.; *Laburnum anagyroides* Medik.; *Lathyrus annuus* L.; *Lathyrus aphaca* L.; *Lathyrus aureus* (Steven) Bornm.; *Lathyrus cicera* L.; *Lathyrus hirsutus* L.; *Lathyrus latifolius* L.; *Lathyrus laxiflorus* Kuntze; *Lathyrus niger* (L.) Bernh.; *Lathyrus nissolia* L.; *Lathyrus pratensis* L.; *Lathyrus sphaericus* Retz.; *Lathyrus sylvestris* L.; *Lathyrus tuberosus* L.; *Lathyrus venetus* Rouy; *Lathyrus vernus* (L.) Bernh.; *Lembotropis nigricans* (L.) Griseb.; *Lotus angustissimus* L.; *Lotus corniculatus* L.; *Medicago arabica* (L.) Huds.; *Medicago falcata* L.; *Medicago lupulina* L.; *Medicago minima* (L.) Bartal.; *Medicago orbicularis* (L.) Bartal.; *Medicago polymorpha* L.; *Medicago rigidula* (L.) All.; *Medicago sativa* L.; *Melilotus alba* Medik.; *Melilotus officinalis* Pall.; *Onobrychis arenaria* DC.; *Ononis arvensis* L.; *Ononis pusilla* L.; *Ononis spinosa* L.; *Robinia pseudoacacia* L.; *Trifolium alpestre* L.; *Trifolium angustifolium* L.; *Trifolium arvense* L.; *Trifolium campestre* Schreb.; *Trifolium dubium* Sibth.; *Trifolium echinatum* M.Bieb.; *Trifolium fragiferum* L.; *Trifolium hybridum* L.; *Trifolium incarnatum* L.; *Trifolium montanum* L.; *Trifolium ochroleucon* Huds.; *Trifolium pallidum* Waldst. & Kit.; *Trifolium pannonicum* Jacq.; *Trifolium patens* Schreb.; *Trifolium pratense* L.; *Trifolium repens* L.; *Trifolium strictum* L.; *Vicia angustifolia* Grufb.; *Vicia cracca* L.; *Vicia dalmatica* A.Kern.; *Vicia grandiflora* Scop.; *Vicia hirsuta* (L.) Gray; *Vicia lathyroides* L.; *Vicia lutea* L.; *Vicia melanops* Sm.; *Vicia narbonensis* L.; *Vicia pannonica* Crantz; *Vicia peregrina* L.; *Vicia pisiformis* L.; *Vicia sativa* L.; *Vicia serratifolia* Jacq.; *Vicia tetrasperma* (L.) Schreb.; *Vicia villosa* Roth; **Fam. Fagaceae:** *Quercus cerris* L.; *Quercus dalechampii* Ten.; *Quercus frainetto* Ten.; *Quercus pubescens* Willd.; *Quercus robur* L.; **Fam. Gentianaceae:** *Centaurium erythraea* Rafn; *Centaurium pulchellum* (Sw.) Druce; **Fam. Geraniaceae:** *Erodium ciconium* (L.) L'Hér.; *Erodium cicutarium* (L.) L'Her.; *Geranium columbinum* L.; *Geranium dissectum* L.; *Geranium lucidum* L.; *Geranium molle* L.; *Geranium pyrenaicum* Burm.f.; *Geranium robertianum* L.; *Geranium sanguineum* L.; **Fam. Haloragaceae:** *Myriophyllum spicatum* L.; *Myriophyllum verticillatum* L.; **Fam. Hypericaceae:** *Hypericum boissieri* Petrovič; *Hypericum elegans* Stephan ex Willd.; *Hypericum hirsutum* L.; *Hypericum perforatum* L.; *Hypericum rochelii* Griseb. & Schenk; **Fam. Juglandaceae:** *Juglans regia* L.; **Fam. Lamiaceae:** *Acinos alpinus* Moench; *Acinos arvensis* (Lam.) Dandy; *Ajuga chamaepitys* (L.) Schreb.; *Ajuga genevensis* L.; *Ajuga laxmanii* (L.) Benth.; *Ajuga reptans* L.; *Ballota nigra* L.; *Betonica officinalis* L.; *Calamintha nepeta* (L.) Savi; *Calamintha sylvatica* Bromf.; *Clinopodium vulgare* L.; *Galeopsis speciosa* Mill.; *Glechoma hederacea* L.; *Glechoma hirsuta* Waldst. & Kit.; *Lamium amplexicaule* L.; *Lamium galeobdolon* (L.) L.; *Lamium maculatum* L.; *Lamium purpureum* L.; *Leonurus cardiaca* L.; *Lycopus europaeus* L.; *Lycopus exaltatus* L.f.; *Marrubium peregrinum* L.; *Marrubium vulgare* L.; *Melissa officinalis* L.; *Melittis melissophyllum* L.; *Mentha aquatica* L.; *Mentha arvensis* L.; *Mentha longifolia* (L.) Huds.; *Mentha pulegium* L.; *Mentha spicata* L.; *Nepeta cataria* L.; *Nepeta ucrainica* L.; *Origanum vulgare* L.; *Prunella laciniata* L.; *Prunella vulgaris* L.; *Salvia glutinosa* L.; *Salvia nemorosa* L.; *Salvia nutans* L.; *Salvia ringens* Sm.; *Salvia sclarea* L.; *Salvia verbenaca* L.; *Salvia verticillata* L.; *Salvia virgata* Jacq.; *Satureja coerulea* Janka; *Scutellaria altissima* L.; *Scutellaria columnae* All.; *Scutellaria orientalis* L.; *Sideritis montana* L.; *Stachys annua* L.; *Stachys germanica* L.; *Stachys leucoglossa* Griseb.; *Stachys recta* L.; *Stachys sylvatica* L.; *Teucrium chamaedrys* L.; *Teucrium polium* L.; *Thymus callieri* Halácsy ex Litv.; *Thymus moesiacus* Velen.; *Thymus pulegioides* L.; **Fam. Linaceae:** *Linum austriacum* L.; *Linum bienne* Mill.; *Linum hirsutum* L.; *Linum tenuifolium* L.; **Fam. Loranthaceae:** *Viscum album* L.; **Fam. Lythraceae:** *Lythrum salicaria* L.; *Lythrum virgatum* L.; *Peplis portula* L.; **Fam. Malvaceae:** *Abutilon theophrasti* Medik; *Alcea pallida* (Waldst. & Kit. ex Willd.) Waldst. & Kit.; *Alcea rosea* L.; *Althaea cannabina* L.; *Lavatera thuringiaca* L.; *Malva pusilla* Sm.; *Malva sylvestris* L.; *Tilia cordata* Mill.; *Tilia platyphyllos* Scop.; *Tilia tomentosa* Moench; **Fam. Moraceae:** *Morus alba* L.; *Morus nigra* L.; **Fam. Oleaceae:** *Fraxinus excelsior* L.; *Fraxinus ornus* L.; *Fraxinus oxycarpa* Willd.; *Fraxinus pallisiae* Wilmott; *Ligustrum vulgare* L.; *Syringa vulgaris* L.; **Fam. Onagraceae:** *Circaea lutetiana* L.; *Epilobium hirsutum* L.; *Epilobium palustre* L.; *Epilobium parviflorum* Schreb.; **Fam. Orobanchaceae:** *Orobanche arenaria* Borkh.; *Orobanche cumana* Wallr.; *Orobanche minor* Sm.; *Orobanche pubescens* D'Urv.; *Orobanche reticulata* Wallr.; **Fam. Oxalidaceae:** *Oxalis corniculata* L.; **Fam. Paeoniaceae:** *Paeonia peregrina* Mill.; **Fam. Papaveraceae:** *Chelidonium majus* L.; *Corydalis marschalliana* Pers.; *Corydalis slivenensis* Velen. ex Nyman; *Fumaria parviflora* Lam.; *Fumaria officinalis* L.; *Papaver dubium* L.; *Papaver rhoeas* L.; **Fam. Phytolaccaceae:** *Phytolacca americana* L.; **Fam. Plantaginaceae:** *Globularia aphyllanthes* Crantz; *Plantago lanceolata* L.; *Plantago major* L.;

*Plantago media* L.; **Fam. Plumbaginaceae:** *Plumbago europaea* L.; **Fam. Polygalaceae:** *Polygala anatolica* Boiss. & Heldr.; *Polygala major* Jacq.; **Fam. Polygonaceae:** *Fallopia convolvulus* (L.) Á.Löve; *Fallopia dumetorum* (L.) Holub; *Persicaria amphibia* (L.) Gray; *Persicaria hydropiper* (L.) Spach; *Persicaria lapathifolia* (L.) Gray; *Persicaria maculata* (Sibth.) Gray; *Persicaria minor* (Huds.) Opiz; *Persicaria mitis* (Schrank) Assenov; *Polygonum aviculare* L.; *Polygonum patulum* M.Bieb.; *Polygonum pulchellum* Loisel.; *Rumex acetosa* L.; *Rumex acetosella* L.; *Rumex aquaticus* L.; *Rumex conglomeratus* Murray; *Rumex crispus* L.; *Rumex maritimus* L.; *Rumex obtusifolius* L.; *Rumex patientia* L.; *Rumex pulcher* L.; *Rumex sanguineus* L.; **Fam. Portulacaceae:** *Portulaca oleracea* L.; **Fam. Primulaceae:** *Anagallis arvensis* L.; *Cyclamen hederifolium* Aiton; *Lysimachia nummularia* L.; *Lysimachia vulgaris* L.; *Primula veris* L.; **Fam. Ranunculaceae:** *Anemone ranunculoides* L.; *Anemone sylvestris* L.; *Clematis vitalba* L.; *Consolida regalis* Gray; *Delphinium fissum* Waldst. & Kit.; *Helleborus odoratus* Waldst. & Kit. ex Willd.; *Hepatica nobilis* Mill.; *Isopyrum thalictroides* L.; *Nigella arvensis* L.; *Nigella damascena* L.; *Ranunculus acris* L.; *Ranunculus arvensis* L.; *Ranunculus auricomus* L.; *Ranunculus bulbosus* L.; *Ranunculus cassubicus* L.; *Ranunculus fallax* (Wimm. & Grab.) Sloboda; *Ranunculus ficaria* L.; *Ranunculus illyricus* L.; *Ranunculus millefoliatus* Vahl; *Ranunculus nemorosus* DC.; *Ranunculus repens* L.; *Ranunculus sardous* Crantz; *Ranunculus sceleratus* L.; *Ranunculus villosus* DC.; *Thalictrum aquilegifolium* L.; *Thalictrum minus* L.; **Fam. Resedaceae:** *Reseda lutea* L.; **Fam. Rhamnaceae:** *Paliurus spina-christi* Mill.; *Rhamnus saxatilis* Jacq.; **Fam. Rosaceae:** *Agrimonia eupatoria* L.; *Agrimonia procera* Wallr.; *Aremonia agrimonoides* (L.) DC.; *Armeniaca vulgaris* Lam.; *Crataegus monogyna* Jacq.; *Crataegus pentagyna* Waldst. & Kit. ex Willd.; *Cydonia oblonga* Mill.; *Filipendula vulgaris* Moench; *Fragaria moschata* Duchesne; *Fragaria vesca* L.; *Fragaria viridis* Duchesne; *Geum urbanum* L.; *Malus praecox* Borkh.; *Malus sylvestris* Mill.; *Potentilla argentea* L.; *Potentilla inclinata* Vill.; *Potentilla laciniosa* Waldst. & Kit. ex Nestl.; *Potentilla micrantha* Ramond ex DC.; *Potentilla neglecta* Baumg.; *Potentilla pedata* Willd.; *Potentilla reptans* L.; *Prunus avium* L.; *Prunus cerasifera* Ehrh.; *Prunus insititia* L.; *Prunus mahaleb* L.; *Prunus spinosa* L.; *Pyrus nivalis* Jacq.; *Pyrus pyrastra* (L.) Burgsd.; *Pyrus sativa* DC.; *Rosa agrestis* L.; *Rosa canina* L.; *Rosa corymbifera* Borkh.; *Rosa dumalis* Bechst.; *Rosa jundzillii* Besser; *Rosa micrantha* Borrer; *Rosa myriacantha* DC.; *Rosa vosagiaca* Desp.; *Rubus caesius* L.; *Rubus canescens* DC.; *Rubus discolor* Weiche & Nees; *Rubus hirtus* Waldst. & Kit.; *Rubus thyrsanthus* Focke; *Sanguisorba minor* Scop.; *Sorbus aucuparia* L.; *Sorbus domestica* L.; *Sorbus torminalis* (L.) Crantz; **Fam. Rubiaceae:** *Asperula aristata* L.f.; *Asperula cynanchica* L.; *Cruciata glabra* (L.) Ehrend.; *Cruciata laevipes* Opiz; *Cruciata pedemontana* (Bellardi) Ehrend.; *Galium album* Mill.; *Galium aparine* L.; *Galium odoratum* Scop.; *Galium octonarium* (Klokov) Soó; *Galium pseudoaristatum* Schur; *Galium rubioides* L.; *Galium verum* L.; *Sherardia arvensis* L.; **Fam. Rutaceae:** *Dictamnus albus* L.; *Haplophyllum suaveolens* G.Don.; *Ruta graveolens* L.; **Fam. Salicaceae:** *Populus alba* L.; *Populus nigra* L.; *Populus tremula* L.; *Salix alba* L.; *Salix caprea* L.; *Salix fragilis* L.; *Salix purpurea* L.; **Fam. Santalaceae:** *Comandra elegans* Rchb.f.; *Thesium simplex* Velen.; **Fam. Sapindaceae:** *Acer campestre* L.; *Acer heldreichii* Boiss. & Heldr.; *Acer negundo* L.; *Acer platanoides* L.; *Acer pseudoplatanus* L.; *Acer tataricum* L.; **Fam. Scrophulariaceae:** *Cymbalaria muralis* G.Gaertn., B. May. & Schreb.; *Digitalis ferruginea* L.; *Digitalis lanata* Ehrh.; *Kickxia elatine* (L.) Dumort.; *Linaria dalmatica* (L.) Mill.; *Linaria genistifolia* (L.) Mill.; *Linaria vulgaris* Mill.; *Melampyrum arvense* L.; *Odontites serotina* (Lam.) Dumort.; *Pseudolysimachion orchideum* (Crantz) Wraber; *Rhinanthus angustifolius* C.C.Gmel.; *Rhinanthus rumelicus* Velen.; *Scrophularia canina* L.; *Scrophularia nodosa* L.; *Scrophularia scopoli* Hoppe ex Pers.; *Scrophularia umbrosa* Dumort.; *Verbascum blattaria* L.; *Verbascum formanekii* Borbás ex Formánék; *Verbascum lychnitis* L.; *Verbascum nigrum* L.; *Verbascum ovalifolium* Donn; *Verbascum phlomooides* L.; *Verbascum phoeniceum* L.; *Verbascum speciosum* Schrad.; *Veronica anagallis-aquatica* L.; *Veronica arvensis* L.; *Veronica austriaca* L.; *Veronica beccabunga* L.; *Veronica chamaedrys* L.; *Veronica hederifolia* L.; *Veronica krumovii* (Peev) Peev; *Veronica officinalis* L.; *Veronica polita* Fr.; *Veronica praecox* All.; *Veronica teucrium* L.; *Veronica urticifolia* Jacq.; *Veronica vindobonensis* (M.A.Fisch.) M.A.Fisch.; **Fam. Simaroubaceae:** *Ailanthus altissima* (Mill.) Swingle; **Fam. Solanaceae:** *Datura innoxia* Mill.; *Datura stramonium* L.; *Lycium barbarum* L.; *Physalis alkekengii* L.; *Solanum dulcamara* L.; *Solanum nigrum* L.; **Fam. Staphyleaceae:** *Staphylea pinnata* L.; **Fam. Ulmaceae:** *Ulmus glabra* Huds.; *Ulmus minor* Mill.; **Fam. Urticaceae:** *Parietaria lusitanica* L.; *Parietaria officinalis* L.; *Urtica dioica* L.; *Urtica urens* L.; **Fam. Verbenaceae:** *Verbena officinalis* L.; **Fam. Violaceae:** *Viola arvensis* Murray; *Viola jordani* Hanry; *Viola kitaibeliana* Schult.; *Viola odorata* L.; *Viola riviniana* Rchb.; *Viola tricolor* L.; **Fam. Vitaceae:** *Parthenocissus quinquefolia* (L.) Planch.; *Vitis sylvestris* C.C.Gmel.; **Fam. Zygophyllaceae:** *Tribulus terrestris* L.

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**Fam. Alismataceae:** *Alisma lancetolatum* With.; *Alisma plantago-aquatica* L.; **Fam. Amaryllidaceae:** *Allium atropurpureum* Waldst. & Kit.; *Allium flavum* L.; *Allium moschatum* L.; *Allium paniculatum* L.; *Allium rotundum* L.; *Allium scorodoprasum* L.; *Allium sphaerocephalon* L.; *Galanthus elwesii* Hook.f.; *Galanthus nivalis* L.;

*Sternbergia colchiciflora* Waldst. & Kit.; *Sternbergia lutea* (L.) Ker Gawl. ex Spreng.; **Fam. Araceae:** *Arum alpinum* Schott & Kotschy; *Arum maculatum* L.; *Lemna gibba* L.; *Lemna minor* L.; **Fam. Asparagaceae:** *Asparagus tenuifolius* Lam.; *Hyacinthella leucophaea* Schur; *Muscari botryoides* (L.) Mill.; *Muscari comosum* (L.) Mill.; *Muscari neglectum* Ten.; *Muscari tenuiflorum* Tausch; *Ornithogalum montanum* Ten.; *Ornithogalum umbellatum* L.; *Polygonatum latifolium* Desf.; *Polygonatum multiflorum* (L.) All.; *Polygonatum odoratum* (Mill.) Druce; *Ruscus aculeatus* L.; *Ruscus hypoglossum* L.; *Scilla bifolia* L.; **Fam. Butomaceae:** *Butomus umbellatus* L.; **Fam. Cyperaceae:** *Carex caryophyllea* Latourr.; *Carex depauperata* Curtis; *Carex digitata* L.; *Carex distans* L.; *Carex divulsa* Stokes; *Carex flacca* Schreb.; *Carex halleriana* Asso; *Carex hirta* L.; *Carex otrubae* Podp.; *Carex pendula* Huds.; *Carex praecox* Schreb.; *Carex remota* L.; *Carex sylvatica* Huds.; *Carex tomentosa* L.; *Carex vulpina* L.; *Cyperus fuscus* L.; *Eleocharis palustris* R.Br.; *Pycneus flavescens* (L.) P.Beauv. ex Rchb.; *Schoenoplectus lacustris* (L.) Palla; **Fam. Hydrocharitaceae:** *Elodea canadensis* Michx.; *Najas marina* L.; **Fam. Iridaceae:** *Crocus flavus* Weston; *Crocus pallasii* Goldb.; *Gladiolus communis* L.; *Iris graminea* L.; *Iris pumila* L.; **Fam. Juncaceae:** *Juncus articulatus* L.; *Juncus bufonius* L.; *Juncus compressus* Jacq.; *Juncus conglomeratus* L.; *Juncus effusus* L.; *Juncus inflexus* L.; *Luzula campestris* (L.) DC.; **Fam. Liliaceae:** *Gagea arvensis* (Pers.) Dumort.; *Gagea lutea* Ker Gawl.; *Lilium martagon* L.; **Fam. Orchidaceae:** *Anacamptis pyramidalis* (L.) Rich.; *Cephalanthera damasonium* Druce; *Cephalanthera longifolia* (L.) Fritsch; *Dactylorhiza romana* (Sebast.) Soó; *Epipactis helleborine* (L.) Crantz; *Epipactis microphylla* Sw.; *Gymnadenia conopsea* (L.) R.Br.; *Himantoglossum caprinum* Spreng.; *Limodorum abortivum* (L.) Sw.; *Neottia nidus-avis* (L.) Rich.; *Ophrys apifera* Huds.; *Ophrys cornuta* Steven ex M.Bieb.; *Orchis morio* L.; *Orchis purpurea* Huds.; *Orchis simia* Lam.; *Orchis tridentata* Scop.; *Platanthera chlorantha* (Custer) Rchb.; *Spiranthes spiralis* (L.) Chevall.; **Fam. Poaceae:** *Achnatherum calamagrostis* P.Beauv.; *Aegilops cylindrica* Host; *Aegilops lorentii* Hochst.; *Aegilops triuncialis* L.; *Agrostis capillaris* L.; *Aira elegantissima* Schur; *Alopecurus myosuroides* Huds.; *Anthoxanthum odoratum* L.; *Apera spica-venti* (L.) P.Beauv.; *Arrhenatherum elatius* (L.) P.Beauv. ex J.Presl & C.Presl; *Avena fatua* L.; *Avenula compressa* (Heuff.) W.Sauer & Chmel.; *Botriochloa ischaemum* (L.) Keng; *Brachypodium pinnatum* (L.) P.Beauv.; *Brachypodium sylvaticum* P.Beauv.; *Briza media* L.; *Bromus arvensis* L.; *Bromus commutatus* Schrad.; *Bromus japonicus* Thunb.; *Bromus mollis* L.; *Bromus racemosus* L.; *Bromus squarrosus* L.; *Bromus sterilis* L.; *Calamagrostis epigeios* (L.) Roth; *Catabrosa aquatica* (L.) P.Beauv.; *Chrysopogon gryllus* (L.) Trin.; *Cleistogenes serotina* (L.) Keng.; *Cynodon dactylon* (L.) Pers.; *Cynosurus cristatus* L.; *Cynosurus echinatus* L.; *Dactylis glomerata* L.; *Dasypyrum villosum* (L.) P.Candargy; *Deschampsia caespitosa* (L.) P.Beauv.; *Digitaria sanguinalis* (L.) Scop.; *Echinochloa crus-galli* (L.) P.Beauv.; *Elymus caninus* L.; *Elymus elongatus* (Host) Runemark; *Elymus hispidus* (Opiz) Melderis; *Elymus repens* (L.) Gould; *Eragrostis minor* Host; *Eragrostis pilosa* (L.) P.Beauv.; *Festuca arundinacea* Schreb.; *Festuca heterophylla* Lam.; *Glyceria maxima* (Hartm.) Holmb.; *Holcus lanatus* L.; *Hordeum bulbosum* L.; *Hordeum leporinum* Link; *Hordeum murinum* L.; *Koeleria macrantha* (Ledeb.) Schult.; *Koeleria nitidula* Velen.; *Koeleria simonkaii* Adamovič; *Leersia oryzoides* (L.) Sw.; *Lolium perenne* L.; *Lolium temulentum* L.; *Melica ciliata* L.; *Melica pica* C.Koch; *Melica uniflora* Retz.; *Milium effusum* L.; *Molinia caerulea* (L.) Moench; *Phalaris arundinacea* L.; *Phleum phleoides* H.Karst.; *Phleum pratense* L.; *Phragmites australis* (Cav.) Steud.; *Piptatherum virescens* Boiss.; *Poa annua* L.; *Poa bulbosa* L.; *Poa nemoralis* L.; *Poa palustris* L.; *Poa pratensis* L.; *Poa trivialis* L.; *Sclerochloa dura* (L.) P.Beauv.; *Setaria italica* (L.) P.Beauv.; *Setaria pumila* (Poir.) Roem. & Schult.; *Setaria viridis* (L.) P.Beauv.; *Sorghum halepense* (L.) Pers.; *Stipa capillata* L.; *Stipa epilosa* Martinovský; *Taeniatherum caput-medusae* (L.) Nevski; *Trachynia distachya* (L.) Link; *Tragus racemosus* (L.) All.; *Vulpia ciliata* Dumort.; *Vulpia myuros* (L.) C.C.Gmel.; **Fam. Potamogetonaceae:** *Potamogeton crispus* L.; *Potamogeton natans* L.; *Potamogeton nodosus* Poir.; *Potamogeton pectinatus* L.; **Fam. Typhaceae:** *Sparganium erectum* L.; *Typha angustifolia* L.; *Typha latifolia* L.; *Typha laxmanii* Lepech.; **Fam. Xanthorrhoeaceae:** *Anthericum ramosum* L.