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VASCULAR FLORA OF THE VIEŠVILĖ STATE STRICT NATURE RESERVE AND ITS BUFFER ZONE (WEST LITHUANIA)

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Abstract

Uselienė A., Uselis V., 2016: Vascular flora of the Viešvilė State Strict Nature Reserve and its buffer zone (West Lithuania) [Viešvilės valstybinio gamtinio rezervato ir jo apsaugos zonos induočių flora (Vakarų Lietuva)]. – Bot. Lith., 22(1): 23–48.

The paper presents analysis of the results of floristic studies carried out over 25 years in the Viešvilė State Strict Nature Reserve (VSSNR) and its buffer zone. The list of 703 vascular plant species including the data on their distribution and dynamics of abundance are provided. The native flora of the VSSNR includes 580 species, i.e. amounts to 47% of all native vascular plant species recorded in Lithuania. Since 1991, after the establishment of the Reserve, 15 species have become extinct and 30 have become endangered as a result of natural succession. Among 37 alien species recorded in the Reserve, four species are penetrating into natural habitats and threatening their existence. It was ascertained that about half of all species were recorded in meadows and glades of the forests, i.e. in the habitats, which occupy less than 1% of the whole territory. These are also habitats of most extinct and endangered species. Riparian and fontinal black alder woods are the most rich in vascular plant species among forest habitats.

Keywords: native flora, plant habitats, protected areas.

INTRODUCTION

State strict nature reserves usually are quite big territories in which anthropogenic activity is prohibited to ensure natural processes of ecosystems, herewith to protect species vulnerable to human activity. Complex studies on biodiversity alongside with its determinants are necessary to achieve the main goals of protected territories. Vascular plants are one of the key groups that indicate the state of ecosystems, their changes and threats of functioning (Lapelė & Lekavičius, 1993).

The Viešvilė State Strict Nature Reserve (hereafter referred to as the VSSNR) is the fourth and the youngest strict nature reserve in Lithuania. Earlier established state strict nature reserves (hereafter referred to as SSNR) – Žuvintas and Čepkeliai in the southern part of Lithuania, and Kamanos in the northern part, have longer traditions in their vegetation studies (Brundza, 1937; Malakauskienė et al., 1968; Lekavičius et al., 1979). They are important as a starting point for the future observations and for choosing the measures for nature conservation in the reserves. Contrarily, before the establishment of the Viešvilė State Strict Nature Reserve in 1991, no botanical investigations were conducted in the territory. There are only solitary herbarium and literature data about the localities of some rare species (Abromeit et al., 1931–1940; Reimers & Hueck, 1929; Snarskis, 1954; Natkevičaitė-Ivanauskienė, 1959, 1961, 1963, 1971, 1976). After the establishment of the Reserve, the targeted investigations on vascular plant flora in 1989 and in 1991–1992 were performed by M. Lapelė, who compiled preliminary list (manuscript) of 514 vascular plants species. Since 1993, the vascular plant diversity has been investigated by the authors. The first and the only list of vascular plant species (577) was published nearly 20 years ago

(Lapelė, 1997). The list included species recorded not only in the Viešvilė SSNR, but also in its buffer zone, so quite big part of the list included synantropic species not characteristic of natural habitats.

The aims of the paper are: to present recent list of vascular plant species with indications concerning their abundance and distribution in the habitats; to mark clearly the species occurring only in the buffer zone; to discuss the changes in the flora composition and the role of particular habitat for its conservation.

MATERIALS AND METHODS

The investigations on diversity of vascular plant species and their distribution in various habitats were conducted in 1993–2013 during regular targeted walks. Some species were recorded during pfytocoenological investigations or monitoring of rare species habitats and abundance. For most of rare species exact localities were ascertained and later their populations were observed to ascertain the presence of the species in the Reserve. The investigations were carried out throughout the territory of the VSSNR, by less intensity the buffer zone. In anthropogenic habitats of the buffer zonethe cultivated plants were not registered except those escaped from cultivation ones. In many places the VSSNR is surrounded by forest tracks. Species from the tracksides that were regularly disturbed mechanically were attributed to buffer zone. The species from the tracksides, which recovered after old disturbances by mosses and herbs, were attributed to the territory of the Reserve.

Plant species were identified after Lekavičius (1989), Natkevičaitė-Ivanauskienė (1959, 1961, 1963, 1971, 1976), Natkevičaitė-Ivanauskienė et al. (1980). Species of the genus *Alchemilla* were recognized according to Lekavičius (1993), *Pilosella* and *Hieracium* species – according to Kukk & Gudžinskas (2003) and Sennikov (2003). Species of the genus *Taraxacum* were not identified at the species level. The species of hybrid origin were not included into the statistical analysis. Some species were identified at subspecies level. In the list, the subspecies was indicated if it was not typical or several subspecies were ascertained.

The names of plant species in the list follow Euro+Med (2006). The species names of the latest checklist of vascular plant species of Lithuania (Gudžinskas, 1999), which differ from Euro+Med (2006), are provided as synonyms. The families and species were arranged in alphabetic order. The status of species (native or alien) and numbers of plant species in national flora are provided after Gudžinskas (1999).

The rarity (or commonness) of species in the territory was evaluated according to the following scale: 1 – very rare (1–2 localities); 2 – rare (3–5 localities or detected at ⅓ of favourable habitat sites); 3 – rather frequent (6–20 localities or detected at ½ of favourable habitat sites); 4 – frequent (>20 localities or detected nearly at all favourable habitat sites); 5 – common (widespread species in more or less favourable habitats). For the evaluation of abundance, the following scale was used: a – single individuals; b – sparse; c – rather abundant; d – abundant; e – plentiful, prevailing. The very rare species that were known from 1–2 localities and had not been found during the last 10 years were treated as extinct in the territory. Rare and very rare species the number of habitats of which decreased two times were treated as threatened. Those that after the first record in the former localities were more not observed than observed – irregular.

The habitats were divided into 23 physionomically and ecologically different types that were identified after EUNIS habitat classification (European Environment Agency, 2014).

Voucher specimens of all speciess are deposited at the Herbarium of the Viešvilė SNNR, part of them as duplicates at the Herbarium of the Nature Research Centre, Institute of Botany (BILAS).

INVESTIGATION AREA

The Viešvilė State Strict Nature Reserve is located in the southern part of west Lithuania (Tauragė and Jurbarkas administrative districts) (Fig. 1). It occupies the area of 3220 hectares in the middle of the Karšuva Forest (43 000 ha). According to geomorphological structure, the main territory of the forest is located in the sandy glaciolacustrine-ancient Nemunas delta plane (Basalykas, 1981). Nonfertile sandy ground is covered by the prevailing azonal Scots pine (*Pinus sylvestris*) forest communities. Dry and mesic habitats are occupied by cowberry pine and pine-spruce forests, in more humid areas bilberry spruce (*Picea abies*) forests occur. The Reserve is located in the middle part of the Karšuva Forest and covers the major part of the

catchment area of the Viešvilė rivulet. Wetlands occupy about 60% of the Reserve. About half of wetlands cover raised bogs and Scots pine bog woods. Other part is occupied by mesotrophic broadleaved swamp woodland – sedge swamp black alder (*Alnus glutinosa*) and downy birch (*Betula pubescens*) woods. The areas of shallow peat are occupied by fen spruce woods, whereas springy areas – by fontinal black alder woods. Spruce communities also occupy small more fertile habitats that occur in the valley of the Viešvilė rivulet or on the tips of several inconspicuous moraine hills covered by a thin layer of sand.

Not large areas are covered by transition mires and fens, in which plant communities with *Carex lasiocarpa*, *C. elata* and *Calamagrostis cannescens* prevail. There are about 10 ha of meadows (near the village Eičiai and in the valley of the Viešvilė rivulet). More often they are *Deschampsia cespitosa* wet meadows with insertions of *Nardus sticta* or small sedge communities. There are two lakes (6 and 19 ha) in the VSSNR and one lake (1 ha) in the buffer zone, all are surrounded by quaking bogs. The Viešvilė rivulet, which starts in boggy areas, has small valley with small standing water bodies such as oxbow lakes or the areas flooded by beavers.

Flora of the VSSNR is influenced by a number of nonnatural habitats: forest roads (about 5 km), continuously mineralized firebreaks (about 2 km), and territories of former farmsteads with nitrophyllous herb vegetation. Small patches of such vegetation are also distributed in the drained parts of wet peaty meadows.

In Table 1, information about the types of habitats used for flora analysis is provided. Data on habitat areas were obtained during the habitat mapping project in 2005 (unpublished data).

In the buffer zone (2473 ha) of the Viešvilė SSNR, besides the forests and wetlands, there is a compact settlement, several farmsteads and significant areas of meadows. Forests of the buffer zone are extensively used.

According to phytogeographical division of Europe, the territory is in the Middle European region, Central European province, Baltic subprovince (Meusel & Jäger, 1992). Locally (Lithuanian scale), the VSSNR occurs in the group of southern belt districts, the northeastern edge is reached by ranges of temperate-submediterrane species – *Carpinus betulus*, *Cardamine bulbifera*, *Scabiosa ochroleuca*, etc. (Natkevičaitė-Ivanauskienė, 1983). According to this division, the Karšuva Forest is within the district of South Lithuanian plane, which is characterized by relict species *Quercus petraea* and species characteristic of beech forests of Western Europe – *Hedera helix*, *Festuca altissima* and *Hordelymus europaeus*. However, only *Hedera helix* is registered in the Karšuva Forest. On the other hand, the distribution of *Deschampsia flexuosa* in pine forests and *Trichophorum cespitosum* in raised bogs indicates the similarity of the territory to neighbouring phytogeographical district – Southwestern Samogitia.

The VSSNR with its buffer zone is Natura 2000 territory in which natural habitats and rare plant species are protected. The territory harbours 13 Habitats of European importance – 3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation, 3260 Water course of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation, 4030 European dry heaths, 6230 Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas (and submountain areas, in Continental Europe), 6270 Fennoscandian lowland species-rich dry to mesic grasslands, 7110 Active raised bogs, 7140 Transition mires and quaking bogs, 7160 Fennoscandian mineral-rich springs and springfens, 9010 Western taiga, 9050 Fennoscandian herb-rich forests with *Picea abies*, 9080 Fennoscandian deciduous swamp woods, 91D0 Bog woodland, 91E0 Alliuvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) (Aplinkos ministerija, 2014).

Fig. 1. Location of the Viešvilė State Strict Nature Reserve in Lithuania (forests are marked in grey)

Table 1. The types of habitats in the Viešvilė SSNR

Abbreviation	Definition	EUNIS habitat type	Area in VSSNR
Wp	Pools and old ditches of transition mires and fens	C1.1/C1.2 Permanent oligotrophic/mesotrophic lakes, ponds and pools	0.1 ha
Wl	Lakes, ponds (on mineral ground), oxbows	C1.2/C1.3 Permanent mesotrophic/eutrophic lakes, ponds and pools	26 ha
Wr	Running waters, springs	C2.11 Soft water springs; C2.1A/ C2.27 Mesotrophic vegetation of spring brooks/ fast-flowing streams	1 ha
I	Periodically dryed-up bottoms (islets) and shore outcrops of rivulet; sites of wet meadows disturbed by boars	C3.5 Periodically inundated shores with pioneer and ephemeral vegetation	< 0.1 ha
R	Raised bogs	D1.11 Active, relatively undamaged raised bogs	300 ha
T	Transition mires	D2.3 Transition mires and quaking bogs	50 ha
F	Fenns, sedge and reedbeds	D2.22 Black, white, and star sedge fens; D5.1 Reedbeds normally without free-standing water; D5.2 Beds of large sedges normally without free-standing water	60 ha
Md	Dry and mesophile acid and neutral grasslands	E1.7 Closed non-Mediterranean dry acid and neutral grassland; E2.24 Boreal and sub-boreal meadows	1 ha
Mf	Mesophile eutrophic fringes and glades	E5.22 Mesophile fringes	0.1 ha
Mw	Wet grasslands	E3.4 Moist or wet eutrophic and mesotrophic grassland	7 ha
Gd	Dry and mesophile acid glades, heaths	E1.9 Open non-Mediterranean dry acid and neutral grassland, including inland dune grassland; F4.2 Dry heaths	20 ha
Gw	Wet mesotrophic and eutrophic glades	E5.4 Moist or wet tall-herb and fern fringes and meadows	2 ha
Pc	Cowberry pine and spruce-pine forests	G3.B2 Cowberry pine and spruce-pine taiga	940 ha
Pg	Grassy pine forests	G3.B3 Herb-rich and grassy pine taiga	< 1 ha
Pb	Pine and birch-pine bog woods	G1.51 Sphagnum birch woods; G3.D1 Boreal Scots pine bog woods; G3.D2 Boreal sphagnum Scots pine fen woods	910 ha
Sb	Bilberry spruce and birch-pine-spruce forests	G3.A1 Bilberry western spruce taiga	150 ha
Sh	Herb-rich spruce forests and mesophile mixed woods	G1.A5 Lime woodland (slight); G3.A3 Small-herb western spruce taiga; G3.A4 Tall-herb western spruce taiga; G4.2 Mixed taiga woodland with birch	10 ha
Ss	Spruce swamp woods	G3.D4 Boreal spruce and spruce-birch fen and bog woods; G3.D5 Boreal spruce swamp woods; G4.1 Mixed swamp woodland	100 ha
Br	Black alder woods of rivulets and springs	G1.21 Riverine ash-alder woodland, wet at high but not at low water	130 ha
Bs	Black alder and downy birch swamp woods	G1.41 Alder swamp woods not on acid peat	500 ha
N	Nitrophilous tall herb stands – former farmsteads, post-cultural pine stands, degraded peaty meadows	G3.4F European Scots pine reforestation; E5.11 Lowland habitats colonised by tall nitrophilous herbs	3 ha
D	Trampled and damaged stretches (unsurfaced pathsways, fire protection tracks)	E2.8 Trampled mesophilous grasslands with annuals; I1.53 Fallow un-inundated fields with annual and perennial weed communities (partly)	3 ha
A	Anthropogenic habitats – cultivated areas, yards, wasteland	I Regularly or recently cultivated agricultural, horticultural and domestic habitats; J Constructed, industrial and other artificial habitats	only in buffer zone

RESULTS

The total list of vascular plant species recorded in the VSSNR and its buffer zone is presented in the Appendix. In 1993–2013, 617 vascular plant species were recorded in the Reserve, 580 of these were native and 37 – alien species. Together with the species recorded in the buffer zone, the total number was 703 species.

Compared to the data presented by M. Lapelė (1997), 57 species were not repeatedly recorded in the VSSNR territory. Most of them were those of arable land or of other anthropogenic habitats (17 species) and meadows (eight species) and were found in the buffer zone. On the other hand, 98 new species were recorded as compared to previous data.

Plant families were differently presented in the VSSNR and Lithuanian floras (Table 2). At the country level, the most abundant where *Asteraceae* and *Poaceae*, while in the VSSNR, due to shortage of open habitats, especially meadows, and abundance of wetlands, the *Cyperaceae* family was prevailing. Species of the *Ranunculaceae* and *Caryophyllaceae* families were also abundant in the Reserve. On the other hand, the *Brassicaceae* family representing mainly the plants of anthropogenic habitats was not abundant.

Among 37 alien species recorded in the VSSNR, 22 were tree and shrub species, eight of these were found only at the sites of their introduction. Local distribution in the forests was characteristic of *Larix decidua* and *Pinus banksiana*, sporadically distributed were *Cytisus scoparius* and *Prunus serotina*. Most of the woody alien species were distributed in the former farmsteads (Beržynė site). *Acer pseudoplatanus*, *Fagus sylvatica*, *Quercus rubra* and *Amelanchier spicata* were penetrating from the southern edge of the Reserve (near Viešvilė village) to the territory of the Reserve.

Herbaceous alien plants were less numerous. Some species were associated with the sites of disturbances, such as forest paths, roadsides (*Erigeron annuus*, *Oxalis stricta*, *Juncus tenuis*). *Erigeron canadensis* was also recorded at the forest sites with surface disturbances made by animals. Only at the sites of introduction, *Acorus calamus* and *Armoracia rusticana* were found. In wet forest glades and in river banks, *Epilobium ciliatum* was found as naturalized. Quite dangerous were two species of American origin – *Solidago gigantea* and *S. canadensis*. They were more abundant in the vicinities of the Reserve and their new localities were permanently found within the Reserve. Populations of *Quercus rubra*, *Amelanchier spicata*, *Prunus serotina*, *Solidago gigantea* and *S. canadensis* endangering natural plant communities of the VSSNR have been permanently eradicated during management activities. Popula-

Table 2. Comparison of the families of multispecies of native flora of the Viešvilė State Strict Nature Reserve, its buffer zone and Lithuania

Family	Number of species*			Representativity, %	
	VSSNR	VSSNR with buffer zone	Lithuania	VSSNR	VSSNR with buffer zone
Asteraceae	55	64	143	38	45
Poaceae	50	57	104	48	55
Cyperaceae	53	55	91	58	60
*Rosaceae***	28 (24)	30	78 (53)	36 (45)	38
Caryophyllaceae	32	33	55	58	60
Fabaceae	24	29	54	44	54
Lamiaceae	19	21	41	46	51
Brassicaceae	13	18	41	32	44
Ranunculaceae	23	24	35	66	69
Orchidaceae	17	17	35	49	49
Apiaceae	16	18	34	47	53
Plantaginaceae	16	19	33	48	58
All families	580	646	1226	47	53

* – without *Taraxacum* and hybrid species.
** – in brackets without *Alchemilla* microspecies.

tions of *Lupinus polyphyllus* that was recorded in several places are already totally destroyed.

Dynamics of the flora (disappearance of earlier recorded and establishment of new species) was ascertained during the period of investigations. So the real number of the VSSNR plant species is indicated with the accuracy of 10–20 species. Such fluctuation is associated with irregular disappearance or settling of synantropic or annual-biannual plant species more often occurring at the roadsides, e.g. *Vicia tetrasperma*, *Erodium cicutarium* and *Crepis tectorum*. Irregular species also occurred in natural habitats, e.g. *Anthericum ramosum*, *Platanthera chlorantha* and *Epipactis atrorubens*.

During the investigation period, about 30 species were recorded extinct from the territory of the VSSNR. Some species (*Cynosurus cristatus*, *Ranunculus sceleratus*, *Pedicularis sylvatica*, *Centaurea scabiosa*, *Thalictrum simplex*) became extinct because of the changes in the management of former pastures, stopping of hay moving and grazing. After the renewing of hay moving as a measure of nature conservation management, the abundance of some threatened species (*Dactylorhiza incarnata*, *D. baltica*, *Cardamine pratensis*, *Carex hartmanii*, etc.) recovered. Some species were used to grow in forest glades and roadsides, i.e. in the habitats the existance of which was associated with forestry and recreational activity. With the end of such activities, *Sedum acre, Vicia hirsuta*, *Trifolium montanum*, *Cerastium glutinosum*, etc. became extinct from the territory of the Reserve.

Recently in the territiory of the VSSNR more than 600 species have been encountered with the tendency to decrease to 560–580.

The most rich in plant species were open habitats (Figs. 2, 3). Dry forest glades were the richest by the total number of species and by the number of species that were not recorded in other habitats. Though in the VSSNR such habitats occupied the area of about 20 ha, the species-poor glades with *Calluna vulgaris*, *Deschampsia flexuosa* or *Calamagrostis arundinacea* stands that occurred after cutting of young pine plantations dominated. While species-rich glades in small patches or narrow strips were distributed alongside the forest roads and occupied less than 1 ha. So the habitats are endangered, especially due to the succession of communities. These habitats harboured more than half (14) of threatened species of the VSSNR and six of these have already been extinct.

The rich in plant species forest habitats were herb rich black alder and spruce woods occurring in the valley of the Viešvilė rivulet and on the edges of springy areas. Forest, mire and water habitats were

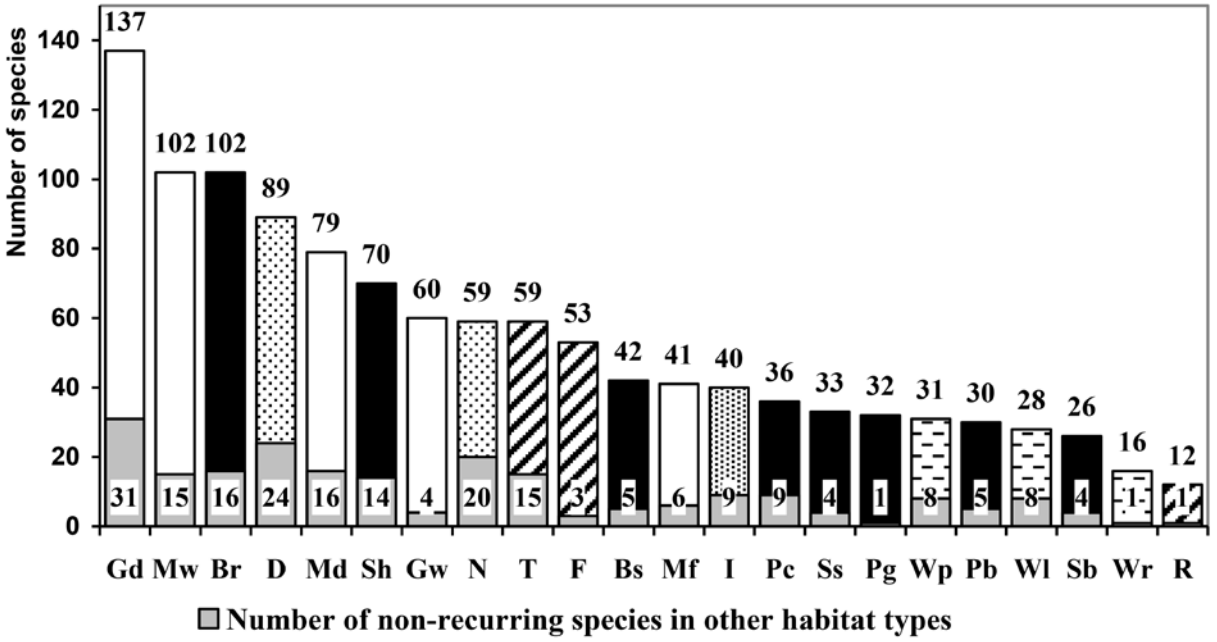

Fig. 2. Floristic richness of different habitat types in the Viešvilė State Strict Nature Reserve. Abbreviations of habitat names are presented according to Table 1. For colour meaning of the columns, see in Fig. 3

quite stable, so extinct or threatened species were not ascertained. These habitats, occupying 99% of the territory of the VSSNR, harbour only half of the Reserve's vascular flora.

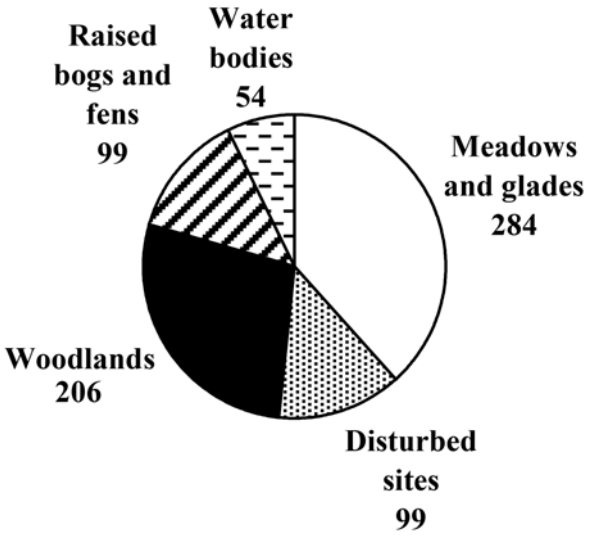

Fig. 3. Distribution of vascular plant species in various ecosystems of the Viešvilė SSNR

DISCUSSION

Flora of the Viešvilė SSNR is quite well investigated. In the future, some new species from the genera *Taraxacum*, *Hieracium*, *Pilosella*, *Alchemilla*, *Calamagrostis*, *Ranunculus auricomus s.l.* might be identified. The occurrence of 24 earlier indicated species (Lapelė, 1997), which were not recorded during our investigations, is doubtfull. Among these are plants of very fertile and calcareous habitats (*Ranunculus lanuginosus*, *Viola mirabilis*, *Circaea lutetiana*, *Angelica archangelica, Eriophorum latifolium etc.*), not characteristic of the investigated territory. During the first investigation (1989), due to absence of detailed cartographic material designating the boundaries of the Reserve, species from the buffer zone or even wider territory were included. Some species (*Parnassia palustris*, *Hylotelephium maximum*, *Ranunculus circinatus*) probably became extinct shortly after their first record. We suppose that some species were erroneously identified as during later investigations only similar species were recorded. Inclusion of *Cypripedium calceolus* L. into the list was a technical mistake (Lapelė, personal communication).

Taking into account other state strict nature reserves of Lithuania, flora of the VSSNR is richer compared to Žuvintas SSNR (since 2002 the territory of former Žuvintas SSNR has increased due to reorganisation into Žuvintas Biosphere Reserve; therefore, for comparison we used only core area of the Biosphere Reserve more or less matching the area of the former Žuvintas SSNR). Alien plant species were also recorded in the following strict nature reserves: Čepkeliai SSNR – 13 species, Žuvintas SSNR – 11 (Lapelė, 1997), Kamanos SSNR – 54 (Sprainaitytė, personal communication), Viešvilė SSNR – 37. The largest number of alien species in the Reserves Kamanos and Viešvilė were determined in abandoned farmsteads.

Besides the inventory data, we obtained preliminary information about the changes in species abundance under the conditions of strict nature protection. The results show territorial disproportion of species distribution. In the meadows and forest glades that occupy only 1% of the VSSNR area, nearly half of all species are concentrated. These habitats were developed under anthropogenic influence, so under conditions of strict nature protection, they are vanishing together with specific plant species. From 10 to 15 species of dry forest glades are endangered. Additionally, 15 species adapted to grow on forest roads may disappear with the stopping of transport ride in the Reserve. Tendency of extinction is observed among ruderal nytrophyllous species that occur in former farmsteads and in degraded drained peaty meadows. Sixteen of such species are known only from one locality, so under the process of naturalization of the habitats, they may become extinct.

Should these processes be left to spontaneous development as strict nature reserves were established for ensuring of natural processes or should nature management be used to maintain recent plant diversity? Currently, the dominant opinion is that without human interruption the processes are not natural as they were caused by the economic activity in the past or are caused by the pressure of recent anthropogenic activity in the vicinities of the Reserve. Most of the woody areas due to earlier forestry activities are still quite young and unnaturally dense. For natural development of pine stands and for the formation of their mosaic structure periodical fires are required (Granström, 2001). The area of the Reserve is too small for fires caused by lightning; on the other

hand, both spontaneous and anthropogenic fires are immediately extinguished. The inserts of meadows in forest masives or sparsely wooded grasslands in former natural landscape could exist due to large herbivores (Vera, 2000). Meadow habitats and their flora should be protected in the Reserve like forest and mire habitats. The current fauna of large herbivores in the VSSNR consists of elks, red deers and roe deers. Their population helps to preserve small wet meadows in the valley of the Viešvilė rivulet and on the edges of eutrophic swamps. Nevertheless, these herbivores according to their nutrition habits are not real determinants of meadow habitats, as the extinct bisons, aurochs and tarpans were in the past. Additionally, most of the meadows are near settlements, which the wild animals avoid. Meadow inserts in the forests especially in the landscape of coniferous forests is under discussion (Samojlik & Kuijper, 2013). There is no one answer what amount of meadows should be protected to ensure natural ecosystem processes.

Spontaneous processes in the ecosystems of the Viešvilė SSNR do not favour the conservation of all biodiversity. One of the main tasks in this protected territory is to stop negative processes and to create favourable conditions for its biodiversity. So, besides the protection of natural processes, some management measures will be needed. Many of the plant species will serve as indicators of positive and negative changes of the habitats in both cases.

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VIEŠVILĖS VALSTYBINIO GAMTINIO REZERVATO IR JO APSAUGOS ZONOS INDUOČIŲ FLORA (VAKARŲ LIETUVA)

Asta Uselienė, Vytautas Uselis

Santrauka

Straipsnyje pateikiama 25 metų trukmės floros tyrimų Viešvilės valstybiniame gamtiniame rezervate ir jo apsaugos zonoje rezultatų analizė. Sudarytas 703 rūšių sąrašas su prieraišumo buveinėmis, gausumo ir jo dinamikos duomenimis. Savaiminę gamtinio rezervato florą sudaro 580 rūšių, arba 47 % visų Lietuvoje aptiktų induočių rūšių. Per gamtinio rezervato gyvavimo laikotarpį (nuo 1991 m.) dėl natūralios sukcesijos išnyko 15 rūšių, ir dar apie 30 yra nykstančios. Iš 37 aptiktų adventyvinių rūšių grėsmę kelia keturios dėl skverbimosi į natūralias buveines. Nustatyta, kad apie pusė augalų rūšių yra susijusios su pievų ir laukymių buveinėmis bei pažeistomis vietomis, kurios iš viso užima tik kiek daugiau nei 1 % teritorijos. Šioje rūšių grupėje yra ir daugiausiai išnykusių bei nykstančių rūšių. Tarp miškų buveinių floros turtingumu išsiskiria aliuviniai ir šaltininiai juodalksnynai.

APPENDIX

The data on flora of the Viešvilė State Strict Nature Reserve and its buffer zone

Explanation: In the column „Habitats“, the abbreviations indicate the meanings shown in Table 1. In the column „Rarity, abundance“, the values are specified in the methodology section. „Localities“ refer (only for very rare species) to forest compartment No (in buffer zone also indicated forest district: E – Eičiai; S – Šilinė (former Sakalinė); K – Kalveliai; V – Viešvilė) or localities Bg – Lake Būgnelis and surroundings; Bu – Lake Buveiniai and surroundings; Be – former village Beržynė; Ei – Eičiai village surroundings; Gl – Lake Glitis; VP – artificial pond of the Viešvilė rivulet in the buffer zone, near Viešvilė town. Specific features: A – alien species; P – artificially planted species (only in VSSNR); I – irregular species; V – vanishing species; X – extinct species; L – species listed by previous authors, but not found later in the VSSNR territory. Rarity, abundance and status of the species are indicated exceptionally for the VSSNR territory or for buffer zone if the species was not recorded in the Reserve (marked with „*“).

CLASS, FAMILY, Species	Habitats	Rarity, abundance	Localities	Specific features
LYCOPODIOPSIDA				
LYCOPODIACEAE				
Huperzia selago (L.)Bernh.ex Schrank et Mart.	Sh, Ss, B	3b		
Lycopodium annotinum L.	Sb, Ss, Bs	4c		
Lycopodium clavatum L.	Pc	3b		
Lycopodium complanatum L. (*Diphasiastrum complanatum* (L.) Holub)	Pc	3b		
POLYPODIOPSIDA				
ASPLENIACEAE				
Athyrium filix-femina (L.) Roth	B, Gw, Ss	4d		
Cystopteris fragilis (L.) Bernh.	Br	1b	24, 27	
Gymnocarpium dryopteris (L.) Newman	Sh, Br	3c		
Onoclea struthiopteris (L.) Roth. (*Matteuccia struthiopteris* (L.) Tod.)	Br	1e	24	
Phegopteris connectilis (Michx.) Watt	Sh	2c		
Thelypteris palustris Schott	F, Bs	4e		
DENNSTAEDTIACEAE				
Pteridium aquilinum (L.) Kuhn	Gd, Sb, Pc	4e		
EQUISETACEAE				
Equisetum arvense L.	D, Md, Gd	3b		
Equisetum fluviatile L.	T, Wl, Wp, Pb	5d		
Equisetum hyemale L.	Pc	2b		
Equisetum palustre L.	Mw	2b		
Equisetum pratense Ehrh.	Sh, Br, Mw	3c		
Equisetum sylvaticum L.	Sh, Br, Mf	3c		
OPHIOGLOSSACEAE				
Botrychium lunaria (L.) Sw.	Gd	1a	27	I
Ophioglossum vulgatum L.	Md, Br	1b	5, 23	V
POLYPODIACEAE				
Dryopteris carthusiana (Vill.) H.P.Fuchs	Pg, Sb, Sh, Ss	4c		
Dryopteris cristata (L.) A.Gray	Pb, Bs	3b		
Dryopteris dilatata (Hoffm.) A.Gray	Sb, Ss, Br	3b		
Dryopteris expansa (C.Presl) Fraser-Jenk.et Jermy	Sb	2b		
Dryopteris filix-mas (L.) Schott	Sh, N	2b		
Polypodium vulgare L.	Pc, Sb	3b		
PINOPSIDA				
CUPRESSACEAE				
Juniperus communis L.	Pc, Pg	4b		

	CLASS, FAMILY, Species	Habitats	Rarity, abundance	Localities	Specific features
	PINACEAE				
	Larix decidua Mill.	Pc	1b	23	A, P
	Picea abies (L.) H.Karst.	S, P, B	5e		
	Pinus banksiana Lamb.	Pc	2b		A, P
	Pinus sylvestris L.	P, Sb, R	5e		
	MAGNOLIOPSIDA				
	ACERACEAE				
	Acer platanoides L.	N, Sh	2a		
	Acer pseudoplatanus L.	Sb	1a	27	A
	ACORACEAE				
	Acorus calamus L.	F	1c	Be, 5	A
	ADOXACEAE				
	Adoxa moschatellina L.	Br	1b	24	
	Sambucus nigra L.	Sb, Br	1a	22, 27	A
	Sambucus racemosa L.	N, Sh	2c		A
	Viburnum opulus L.	B	3b		
	ALISMATACEAE				
	Alisma plantago-aquatica L.	Wl	3b		
	Sagittaria sagittifolia L.	Wl	1b	Gl	
	AMARANTHACEAE				
*	*Amaranthus blitum* L.	A	1b	Ei	A
*	*Atriplex patula* L.	A	1c	Ei, V-50	
*	*Chenopodiastrum hybridum* (L.) S. Fuentes, Uotila & Borsch (*Chenopodium hybridum* L.)	A	1b	Ei	
	Chenopodium album L.	Gd, D	2b		I
*	*Chenopodium glaucum* L.	A	1b	Ei	
*	*Chenopodium rubrum* L.	A	1b	Ei	
*	*Chenopodium strictum* Roth.	A	1b	Ei	A
*	*Corispermum pallasii* Steven (*C. leptopterum* (Asch.) Iljin)	A	1a	Ei. 77	A
	AMARYLLIDACEAE				
	Allium oleraceum L.	Mf	1a	Be	
	ARACEAE				
	Calla palustris L.	Wp	3c		
*	*Lemna gibba* L.	Wl	1d	Ei	
	Lemna minor L.	W	5d		
	Lemna trisulca L.	W	5d		
	Spirodela polyrhiza (L.) Schleid.	Wp, Wl	2c		
	APIACEAE				
	Aegopodium podagraria L.	Br, Sh, N	3c		
*	Aethusa cynapium L.	A	1a	V-50	
	Angelica archangelica L.	–	–		L
	Angelica sylvestris L.	Gw, Br	3b		
	Anthriscus sylvestris (L.) Hoffm.	N, Mw	2b		
	Carum carvi L.	D	1b	14	X
	Chaerophyllum aromaticum L.	Gd	1a	14	I
	Cicuta virosa L.	Wp, Wl, Bs	4c		
*	*Daucus carota* L.	Md	1b	Ei	
	Heracleum sibiricum L.	N, D	2b		
	Oenanthe aquatica (L.) Poir.	Wr, Wl	2b		
	Oreoselinum majus Garsault (*Peucedanum oreoselinum* (L.) Moench)	Gd, Pg	3b		
	Pimpinella saxifraga L.	Gd, D	2b		
	Sanicula europaea L.	Br	1b	5	

	CLASS, FAMILY, Species	Habitats	Rarity, abundance	Localities	Specific features
	Selinum carvifolia (L.) L.	Mw	2b		
	Seseli libanotis (L.) W. D. J. Koch (*Libanotis montana* Crantz)	Md	1b	Ei	
	Sium latifolium L.	W	4c		
	Thysselinum palustre (L.) Hoffm. (*Peucedanum palustre* (L.) Moench.)	T, F	4c		
	Torilis japonica (Houtt.) DC.	N, D	2c		
	APOCYNACEAE				
*	*Vinca minor* L.	Sh	1e	V-50	A
	Vincetoxicum hirundinaria Medik.	Pc, Gd	2b		
	ARALIACEAE				
	Hedera helix L.	Sb	1a	5	X
	ARISTOLOCHIACEAE				
	Asarum europaeum L.	Sh	1c	11	
	ASPARAGACEAE				
	Anthericum ramosum L.	Gd	1a	24	I
*	*Asparagus officinalis* L.	A	1a	Ei	A
	Convallaria majalis L.	Pc, Sh, Pg	4c		
	Maianthemum bifolium (L.) F.W.Schmidt	S, Pg	5c		
	Polygonatum multiflorum (L.) All.	Br, Sh	2c		
	Polygonatum odoratum (Mill.) Druce	Pg, Sh, Gd	3b		
	Polygonatum verticillatum (L.) All.	Sh	1a	1, 27	
	ASTERACEAE				
	Achillea millefolium L.	Md, Gd	4c		
	Achillea ptarmica L.	Mw, Mf, Gw	2c		
	Antennaria dioica (L.) Gaertn.	Gd	1b	1	
*	*Anthemis arvensis* L.	A	1b	Ei	
	Arctium lappa L.	N	1b	27	
*	*Arctium minus* (Hill) Bernh.	N	1b	Ei	L
	Arctium tomentosum Mill.	N	1b	Be	
	Artemisia absinthium L.	D	1b	1, Be	X
	Artemisia campestris L.	D	2b		
	Artemisia vulgaris L.	D, N	2b		
	Bellis perennis L.	Mw, D	1b	Ei, 14	I
	Bidens cernua L.	I	1b	23, 27	
	Bidens tripartita L.	Gw, I	2b		
*	*Carduus acanthoides* L.	A	1b	V-50	
	Carduus crispus L.	Gw, Br	2a		
	Centaurea jacea L.	Mw, Md	3c		
	Centaurea scabiosa L.	Gd	1a	5	X
*	*Centaurea stoebe* L. (*C. rhenana* Boreau)	Gd	1b	S-57	
*	*Chamomilla chamomilla* L. (*Matricaria recutita* L.)	A	1b	Ei	A, L
	Cirsium arvense (L.) Scop.	N, D, Mw	2c		
	Cirsium oleraceum (L.) Scop.	Gw, Br	3c		
	Cirsium palustre (L.) Scop.	Mw, T, Gw	4c		
	Cirsium rivulare (Jacq.) All.	Gw	1a	27	
	Cirsium vulgare (Savi) Ten.	D, Md	1a	14, Ei	I
*	*Cota tinctoria* (L.) J.Gay (*Anthemis tinctoria* L.)	A	1b	Ei	
	Crepis paludosa (L.) Moench	Gw, Br	4d		
	Crepis tectorum L.	D	1a	24	I
*	*Cyanus segetum* Hill (*Centaurea cyanus* L.)	A	1a	Ei	L
	Erigeron acris L.	D	2b		
	Erigeron annuus (L.) Desf. (*Phalacroloma annuum* (L.) Dumort.)	D	2b		A

	CLASS, FAMILY, Species	Habitats	Rarity, abundance	Localities	Specific features
	Erigeron canadensis L. (*Conyza canadensis* (L.) Cronquist)	D, Gd	2c		A
	Eupatorium cannabinum L.	Gw, Br	5d		
*	*Galinsoga parviflora* Cav.	A	2b		A, L
*	*Galinsoga quadriradiata* Ruiz. et Pav.	A	1c	Ei	A
	Gnaphalium sylvaticum L.	D, Gw	2b		
	Gnaphalium uliginosum L.	D, I	2b		
	Hieracium lachenalii Suter subsp. *deductum* (Sudre) Greuter (*Hieracium jackardii* Zahn) and subsp. *pinnatifidum* (Dahlst.) Zahn (*H. neopinnatifidum* Pugsl.)	D	1b	E-49	
	Hieracium laevigatum Willd. subsp. *glareosum* (Lönnr.) (*H. goodbyense* (Norrl.) Norrl., *H. mixopolium* (Dahlst.) Norrl.) and subsp. *tridentatum* (Fr.) Čelak. (*H. tridentatum* (Fr.) Fr.))	Pc	2b		
	Hieracium levicaule subsp. *triviale* (Norrl.) Zahn (*H. vulgatum* Fr.)	–	–		L
	Hieracium murorum subsp. *sylvularum* (Boreau) Zahn (*H. silvularum* Jord. ex Boreau)	Pg	1a	27	
	Hieracium umbellatum L.	Pc	2b		
	Hypochaeris radicata L.	Gd, Md	4c		
*	*Jacobaea erucifolia* (L.) P.Gaertn., B.Mey. et Schreb. (*Senecio erucifolius* L.)	Gw	1a	E-49	
	Jacobaea paludosa (L.) G.Gaertn., B.Mey. et Scherb. (*Senecio paludosus* L.)	Gw	2b		
	Jacobaea vulgaris Gaertn. (*Senecio jacobaea* L.)	D, Gd	2a		
	Lactuca muralis (L.) Gaertn. (*Mycelis muralis* (L.) Dumort.)	Sh, N	4c		
	Lapsana communis L.	Gd	1b	17, 19	V
	Leontodon hispidus L.	Md	1b	5, Ei	
	Leucanthemum vulgare Lam.	Md, Gd	2b		
*	*Matricaria discoidea* DC.	A	1c	Ei	A, L
	Picris hieracioides L.	Mf, Gd	2b		
	Pilosella caespitosa (Dumort) P.D.Sell et C.West	–	–		L
	Pilosella flagellaris (Willd.) Arv.-Touv.	Md	1b	5	
	Pilosella floribunda (Wimm. et Grab.) Fr.	Md	1b	5	
	Pilosella lactucella (Wallr.) P.D.Sell et C.West	Md	1b	5	
	Pilosella leptophyton (Vill.) Arv.-Touv. (*P.* × *brachiata* (Bertol. ex Lam.) F.W.Schultz et Sch.Bip.)	Md	1a	Ei	
	Pilosella officinarum F.W.Schultz et Sch.Bip.	Gd, Md	3d		
	Pilosella piloselloides subsp. *praealta* (Gochnat) S.Bräut. & Greuter (*Pilosella praealta* (Vill. ex Gochnat) F.W.Schultz et Sch.Bip.)	Gd	1b	6	
	Pilosella schultesii (F.W.Schultz) F.W.Schultz et Sch.Bip.	Md	1b	5, Ei	
	Scorzonera humilis L.	Pc, Gd	3b		
	Scorzoneroides autumnalis (L.) Moench (*Leontodon autumnalis* L.)	Md, D	3b		
	Senecio leucanthemifolius subsp. *vernalis* (Waldst. & Kit.) Greuter (*S. vernalis* Waldst. et Kit.)	Gd	1b	27	A
	Senecio sylvaticus L.	D, Gd	2b		
*	*Senecio vulgaris* L.	A	1b	Ei	L
	Solidago canadensis L.	Mw	1b	5	A
	Solidago gigantea Ait. (*S. serotinoides* Á. Löve et D. Löve)	Gw, Br	2b		A
	Solidago virgaurea L.	Pc, Pg	3b		
	Sonchus arvensis L.	Gw, Gd	2b		
	Sonchus asper (L.) Hill	N	1b	Be	
	Sonchus oleraceus L.	N	1b	5, 18	
	Tanacetum vulgare L.	D, N	3b		
	Taraxacum officinale F.H.Wigg., s. l.	D, I, Md	3b		
	Tragopogon pratensis L.	Mf, Gd	1b	Be, 24	V

	CLASS, FAMILY, Species	Habitats	Rarity, abundance	Localities	Specific features
	Tripleurospermum inodorum (L.) Sch.Bip. (*T. perforatum* (Mérat) M.Laínz)	D	1b	2, 14	I
	Tussilago farfara L.	I, D	3b		
	BALSAMINACEAE				
	Impatiens noli-tangere L.	Br	3c		
*	*Impatiens parviflora* DC.	N, Sh	1c	E-45, V-50	A, L
	BETULACEAE				
	Alnus glutinosa (L.) Gaertn.	B, Ss, F	5e		
	Alnus × *hybrida* A. braun ex Rchb.	B	2a		
	Alnus incana (L.) Moench	Br, Sh	2a		
	Betula × *aurata* Borkh.	S, P	3b		
	Betula humilis Schrank	T, F	2d		
*	*Betula nana* L.	T	1a	Bg	L
	Betula pendula Roth	P, Sb, Sh	4d		
	Betula pubescens Ehrh.	Bs, S, Pb, T	5d		
*	*Carpinus betulus* L.	Pg	1a	V-50	
	Corylus avellana L.	Sh, Br, Pg	3b		
	BORAGINACEAE				
	Anchusa arvensis (L.) M. Bieb.	–	–		L
*	*Anchusa officinalis* L.	D	1b	Ei	L
*	*Echium vulgare* L.	D	1a	Ei	
	Myosotis arvensis (L.) Hill	Md	1b	Ei	
	Myosotis laxa subsp. *caespitosa* (C. F. Schultz) Nordh. (*Myosotis caespitosa* Schultz)	–	–		L
	Myosotis scorpioides L.	Mw, Wr, Br, I	4c		
	Myosotis stricta Link. ex Roem. et Schult. (*M. micrantha* Pall. ex Lehm.)	D	1a	24	I
	Pulmonaria obscura Dumort.	Sh	1b	11	
	Symphytum officinale L.	N	1b	Be	V
	BRASSICACEAE				
	Alliaria petiolata (M.Bieb.) Cavara et Grande	N	1c	Be	
	Arabidopsis arenosa (L.) Lawalrée (*Cardaminopsis arenosa* (L.) Hayek)	–	–		L
	Arabidopsis thaliana (L.) Heynh.	D, Gd	3b		V
	Arabis glabra (L.) Bernh.	D, Gd	1b	18, Be	
	Armoracia rusticana P.Gaertn., B.Mey. et Scherb.	N	1b	Be	A
	Barbarea stricta Andrz.	–	–		L
	Barbarea vulgaris W.T.Aiton	N, D	1a	Be, 2	
	Berteroa incana (L.) DC.	D, N	1b	1, Be	
*	*Brassica napus* L.	D	1a	Ei	A, I
	Capsella bursa-pastoris (L.) Medik.	D	2b		
	Cardamine amara L.	Br, Wr	4c		
	Cardamine dentata Schult.	Br, Mw	2b		
	Cardamine pratensis L.	Mw, Br	3b		
*	*Descurainia sophia* (L.) Webb ex Prantl	A	1b	Ei	L
	Draba verna L. (*Erophila verna* (L.) DC.)	D	1c	1, 24	V
	Erysimum cheirantoides L.	N	1b	Be	
*	*Raphanus raphanistrum* L.	A	1b	Ei, V-50	
	Rorippa palustris (L.) Besser	I	1b	Ei, Be	V
	Rorippa sylvestris (L.) Besser	I	1a	Be	
*	*Sinapis arvensis* L.	A	1c	Ei	L
*	*Sisymbrium altissimum* L.	D	1b	Ei	A

	CLASS, FAMILY, Species	Habitats	Rarity, abundance	Localities	Specific features
*	*Sisymbrium officinale* (L.) Scop.	A	1c	Ei	
*	*Thlaspi arvense* L.	A	1b	Ei	
	CAMPANULACEAE				
	Campanula glomerata L.	Mf, Gd	2b		V
	Campanula patula L.	Md	1b	5, Ei	
	Campanula persicifolia L.	Mf, Pg, Gd	2b		
	Campanula rotundifolia L.	Gd, D	3c		
	Jasione montana L.	Gd, D	2b		
	Phyteuma spicatum L.	Sh	1c	27	
	CANNABACEAE				
	Humulus lupulus L.	N, Br	1c	Be, 22	
	CAPRIFOLIACEAE				
	Knautia arvensis (L.) Coult.	Md, Mf, Gd	4b		
*	*Linnaea borealis* L.	Pc	1b	E-45	
	Lonicera xylosteum L.	Sh	1a	27	
	Succisa pratensis Moench	Mw, Br	1b	Be, 17	V
	Symphoricarpos albus (L.) S.F.Blake	N	1b	Be	A, P
*	*Scabiosa ochroleuca* L.	Gd	1b	K-188	
	CARYOPHYLLACEAE				
	Arenaria serpyllifolia L.	Gd, D	2b		
	Cerastium arvense L.	Mf, Gd	2b		
	Cerastium glutinosum Fr.	D	1b	24	X
	Cerastium holosteoides Fr.	Md, Gd, D	4c		
	Cerastium semidecandrum L.	D	1b	1, 24	
	Dianthus arenarius L.	D, Gd, Pc	3b		
	Dianthus deltoides L.	Mf	1b	Be, 17	V
	Gypsophila fastigiata L.	Gd, D	3b		
	Gypsophila muralis L. (*Psammophiliella muralis* (L.) Ikonn.)	D	1a	24	I
	Herniaria glabra L.	D	2b		
	Moehringia trinervia (L.) Clairv.	Sh, Pg, N	4c		
	Myosoton aquaticum (L.) Moench	Br, Gw	2d		
	Sagina nodosa (L.) Fenzl	T	1b	Bu	
	Sagina procumbens L.	I, D	3c		
	Saponaria officinalis L.	N	1b	Be, 24	
	Scleranthus annuus L.	D	2b		
	Scleranthus perennis L.	D, Gd	4c		
	Silene dioica (L.) Clairv.	Sh, Gw	1b	27	
	Silene flos-cuculi (L.) Greuter et Burdet (*Lychnis flos-cuculi* L.)	Mw, I, Gw, T	5c		
	Silene latifolia Poir. (*S. pratensis* (Rafn.) Godr.)	N, D	2a		
	Silene nutans L.	Mf, Gd, D	2b		
*	*Silene tatarica* (L.) Pers.	Gd	2b		L
	Silene vulgaris (Moench) Garcke	Gd, D	2b		
	Spergula arvensis L.	D	3c		
	Spergula morisonii Boreau	Gd, D	4c		
	Spergularia rubra (L.) J. Presl et C. Presl	D	1b	11	X
	Stellaria alsine Grimm (*S. uliginosa* Murray)	I, Wr	3b		
	Stellaria graminea L.	M, Gd, D	4c		
	Stellaria holostea L.	Sh, Pg, Br	3d		
	Stellaria longifolia (Regel) Muhl. ex Willd.	Ss	2b		
	Stellaria media (L.) Vill.	I, D, N	2b		
	Stellaria nemorum L.	Br	3d		

	CLASS, FAMILY, Species	Habitats	Rarity, abundance	Localities	Specific features
	Stellaria palustris Ehrh. ex Retz.	F, T, Mw	3b		
	CELASTRACEAE				
	Euonymus europaeus L.	Br	2a		
	Euonymus verrucosus Scop.	Sh	2b		
	Parnassia palustris L.	–	–	Be	L, X (?)
	CERATOPHYLLACEAE				
*	*Ceratophyllum demersum* L.	Wl	1b	Bg	L
	CONVOLVULACEAE				
	Calystegia sepium (L.) R.Br.	–	–		L
	Convolvulus arvensis L.	N	1b	Be	
*	*Cuscuta epithymum* (L.) L.	Mw	1b	Ei	
	CORNACEAE				
	Cornus sanguinea L.	Br	1a	22, 25	
	CRASSULACEAE				
	Hylotelephium maximum (L.) Holub	–	–	23	L, X
	Sedum acre L.	Gd	1b	19	X
	CYPERACEAE				
	Carex acuta L. (*C. gracilis* Curtis)	F, Gw, Mw	3d		
	Carex acutiformis Ehrh.	F, B	4e		
	Carex appropinquata Schumach.	F, Bs	3c		
*	*Carex arenaria* L.	Gd	1b	K-181	
	Carex canescens L. (*C. cinerea* Pollich)	T, F, Ss	4c		
	Carex caryophyllea Latourr.	Gd	1a	19	X
	Carex cespitosa L.	B, F, Gw	3b		
	Carex chordorrhiza L. f.	T	2c		
	Carex diandra Schrank	T, F	3c		
	Carex digitata L.	Sh	3c		
	Carex dioica L.	Pb	1b	1	
	Carex disperma Dewey	Ss	1b	27	
	Carex disticha Huds.	F	2b		
	Carex echinata Murray (*C. muricata* V.J.Kretsz.)	Ss, F, Mw	3b		
	Carex elata All.	F, Bs, T	4e		
	Carex elongata L.	Bs	4d		
	Carex ericetorum Pollich	Gd, Pc, D	4b		
	Carex flava L.	Mw, F	3b		
	Carex globularis L.	Sb, Pb	3b		
	Carex hartmanii Cajander	Mw, Md	2b		
	Carex hirta L.	Mw, Gd	3c		
	Carex lasiocarpa Ehrh.	T, F, Pb	4e		
	Carex leporina L. (*C. ovalis* Gooden.)	Mw, Md, Gd	3b		
	Carex limosa L.	T	2c		
	Carex loliacea L.	Ss	3b		
	Carex magellanica Lamk.	Ss	3b		
	Carex montana L.	Sh	1a	24	
	Carex nigra (L.) Reichard	Mw, T, Pb, F, Gw, Ss	5c		
	Carex pallescens L.	Mw	2b		
	Carex panicea L.	Mw, Md, T	4c		
	Carex paniculata L.	Bs, F	3b		
	Carex pauciflora Lightf.	Pb	1c	1, 4	
	Carex pilulifera L.	Gd, Md, Pc	4c		
	Carex praecox Schreb.	Gd	2b		

	CLASS, FAMILY, Species	Habitats	Rarity, abundance	Localities	Specific features
	Carex pseudocyperus L.	Wl, Wp, B, I	4c		
*	*Carex pulicaris* L.	Md	1b	Ei	X, L
	Carex remota L.	Br, Ss	3c		
	Carex riparia Curtis	–	–		L
	Carex rostrata Stokes	T, F, Pb, Wp	3d		
	Carex spicata Huds. (*C. contigua* Hoppe)	Gd	2b		
	Carex vaginata Tausch	Mw	1a	Ei	
	Carex vesicaria L.	F, Bs	3c		
	Carex viridula Michx.	T, I	1b	Be, 1	
	Carex vulpina L.	Mw	2b		
	Eleocharis mamillata H. Lindb.	Wl, Wp, F	2b		
	Eleocharis palustris (L.) Roem. et Schult.	Wl	2c		
	Eleocharis quinqueflora (Hartmann) O.Schwarz	T	1b	Bu	
	Eleocharis uniglumis (Link) Schult.	Mw	1c	Ei	
	Eriophorum angustifolium Honck.	T, F, Pb	3c		
	Eriophorum gracile W.D.J.Koch ex Roth	T	2c		
	Eriophorum latifolium Hoppe	–	–		L
	Eriophorum vaginatum L.	R, Pb	5e		
	Rhynchospora alba (L.) Vahl	R, T	3d		
	Schoenoplectus lacustris (L.) Palla	Wp	1b	17	
	Scirpus sylvaticus L.	Mw, Gw, Br	4d		
	Trichophorum alpinum (L.) Pers.	T	2c		
	Trichophorum cespitosum (L.) C.Hartm.	R	2c		
	DROSERACEAE				
	Drosera anglica Huds.	T	3b		
	Drosera × *obovata* Mert et W.D.J.Koch	T	1b	Bu	
	Drosera rotundifolia L.	R, T	4c		
	ERICACEAE				
	Andromeda polifolia L.	R, T, Pb	4d		
	Arctostaphylos uva-ursi (L.) Spreng.	Gd, Pc	2b		
	Calluna vulgaris (L.) Hull	R, Gd, Pc, Pb	5e		
	*Chimaphila umbellata (*L.) W.P.C.Barton	Pc	2b		
	Empetrum nigrum L.	Pb, Pc, R	3d		
	Hypopitys monotropa Crantz (*Monotropa hypopitys* L.)	Pc	3c		
	Moneses uniflora (L.) A.Gray	Ss, Sh	2b		
	Orthilia secunda (L.) House	Ss, Sh	3c		
	Pyrola chlorantha Sw.	Pc	1b	22	
	Pyrola media Sw.	Bs	1a	Bu	
	Pyrola minor L.	T; Sh	2b		
	Pyrola rotundifolia L.	T, Ss	2b		
	Rhododendron tomentosum Harmaja (*Ledum palustre* L.)	Pb	5e		
	Vaccinium microcarpum (Turcz. ex Rupr.) Schmalh. ex Busch (*Oxycoccus microcarpus* Turcz. ex Rupr.)	R	2b		
	Vaccinium myrtillus L.	P, S	5e		
	Vaccinium oxycoccos L. (*Oxycoccus palustris* Pers.)	T, R, Pb	5d		
	Vaccinium uliginosum L.	Pb	4d		
	Vaccinium vitis-idaea L.	P, Sb; Ss, Gd	5d		
	EUPHORBIACEAE				
*	*Euphorbia cyparissias* L.	A	1b	Be	A, L
	Euphorbia esula L.	–	–		L
	Mercurialis perennis L.	Br, Sh, Gw	3d		
	FABACEAE				

	CLASS, FAMILY, Species	Habitats	Rarity, abundance	Localities	Specific features
*	*Anthyllis vulneraria* L.	A	1b	Ei	L
	Astragalus arenarius L.	Gd	3b		
	Astragalus glycyphyllos L.	Gd	1a	12, 19	V
	Caragana arborescens Lam.	N	1b	Be	A, P
	Cytisus scoparius (L.) Link (*Sarothamnus scoparius* (L.) W.D.J.Koch)	Gd, Pc	2b		A
	Lathyrus palustris L.	Br	1b	22	
	Lathyrus pratensis L.	Mw	3c		
	Lathyrus sylvestris L.	Gd	1a	24	
	Lathyrus vernus (L.) Bernh.	Sh, Br	3c		
	Lotus corniculatus L.	Gd, Mf	2a		V
	Lotus pedunculatus Cav.	Mw, Md, Gw	4c		
	Lupinus polyphyllus Lindl.	Gd	1b	2, 27	A, X
*	*Medicago falcata* L.	D	1b	Ei, K-161	L
	Medicago lupulina L.	D, Gd	2b		
*	*Medicago sativa* L.	A	1b	Ei	A
	Melilotus albus Medik.	D	1b	14, 27	
	Trifolium alpestre L.	Gd	1b	24	V
	Trifolium arvense L.	D, Gd	1b	1, 24	
*	*Trifolium aureum* Pollich	Gd	2b		
*	*Trifolium campestre* Schreb.	D	1b	Ei	
	Trifolium dubium Sibth.	Gd, D	1b	1, 14	
	Trifolium hybridum L.	Mw	1b	Be, 5	V
*	*Trifolium medium* L.	Gd	1b	E-45	L
	Trifolium montanum L.	Gd	1b	27	X
	Trifolium pratense L.	Mw, Md	2b		
	Trifolium repens L.	D, Md, Mw	3c		
	Vicia angustifolia Reichard.)	Gd	1b	1, 14	
	Vicia cassubica L.	Gd, Mf	2b		V
	Vicia cracca L.	Mw, Md, Gd	3c		
	Vicia hirsuta (L.) Gray	Gd	1b	5	X
	Vicia sepium L.	D, N	1b	2, 19	
	Vicia sylvatica L.	Sh, Br	1c	24	
	Vicia tetrasperma (L.) Schreb.	Gd	1b	19, 24	I
	FAGACEAE				
	Fagus sylvatica L.	Sb, Pc	2a		A
	Quercus robur L.	Pg, Pc, Sb, Sh	4b		
	Quercus rubra L.	Sb, Pc	2a		A
	GENTIANACEAE				
*	*Centaurium erythraea* Rafn	Mw, Gd	2b		I, L
	GERANIACEAE				
	Erodium cicutarium (L.) L'Hér.	D	1b	1	I
	Geranium palustre L.	Mf	1b	17	
	Geranium pratense L.	Mf	1b	Be	V
*	*Geranium pusillum* L.	A	2c		L
	Geranium robertianum L.	Br, N	3c		
*	*Geranium sanquineum* L.	Gd	1b	V-50	L
	GROSSULARIACEAE				
	Ribes alpinum L.	Br	1a	16	
	Ribes nigrum L.	Br	3b		
	Ribes spicatum E. Robson.	N, Br	2a		
	Ribes uva-crispa L.	N, Sb	2a		A

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	HALORAGACEAE				
	Myriophyllum spicatum L.	Wl, Wp	2b		
	Myriophyllum verticillatum L.	Wp	1b	12	
	HYDROCHARITACEAE				
	Hydrocharis morsus-ranae L.	Wp, Wl	4c		
	Stratiotes aloides L.	Wl, Wp	2d		
*	*Elodea canadensis* Michx.	Wl	1d	VP	A, L
	HYPERICACEAE				
	Hypericum maculatum Crantz	Mw, Md	4c		
	Hypericum perforatum L.	Md, Mf, Gd	3b		
	IRIDACEAE				
	Gladiolus imbricatus L.	Br, Mf	1c	5, 17	
	Iris pseudacorus L.	B, Gw, F	4c		
	JUNCACEAE				
	Juncus alpinoarticulatus Chaix	Mw	1b	5, Be	V
	Juncus articulatus L.	I, Mw	3c		
	Juncus bufonius L.	I	2b		
	Juncus bulbosus L.	I	1b	Be	
	Juncus compressus Jacq.	Mw	1b	Ei	
	Juncus conglomeratus L.	Md	2b		
	Juncus effusus L.	Mw, Gw, Br	4d		
	Juncus filiformis L.	F, Mw	4d		
	Juncus ranarius Songeon & E.P.Perrier (*J. ambiguus* Guss.)	I	1b	Ei, Be	
	Juncus squarrosus L.	Md, Gd	2b		V
	Juncus stygius L.	T	1a	Bu	
	Juncus tenuis Willd.	D	2b		A
	Luzula campestris (L.) DC.	Md, Gd	3c		
	Luzula multiflora (Ehrh.) Lej.	Md, Mw, Gd	4c		
	Luzula pallescens Sw. (*L. pallidula* Kirschner)	Gd	2b		
	Luzula pilosa (L.) Willd.	S, Pg, Gd	4c		
	JUNCAGINACEAE				
	Triglochin palustris L.	T, I	1b	Bu, 25	
	LAMIACEAE				
	Ajuga reptans L.	Br	1c	Be, 17	
*	*Clinopodium acinos* (L.) Kuntze (*Acinos arvensis* (Lam.) Dandy)	D	1b	Ei, K-135	
	Clinopodium vulgare L.	Mf, Gd	1b	17, 27	
*	*Elsholtzia ciliata* (Thunb.) Hyl.	A	2b		A
	Galeopsis bifida Boenn.	Gd	1b	18	
	Galeopsis ladanum L.	Mf	1b	17	
	Galeopsis pubescens Besser	N	1b	5	
	Galeopsis speciosa Mill.	N, Mw	1a	Be, Ei	
	Galeopsis tetrahit L.	N, Mw, G	4c		
	Glechoma hederacea L.	N, Gw, Br	3b		
	Lamium album L.	N	1b	Be	
	Lamium galeobdolon (L.) L. (*Lamiastrum galeobdolon* (L.) Ehrend. et Polatschek)	Sh, Br	3c		
*	*Lamium purpureum* L.	A	1b	Ei	L
	Leonurus quinquelobatus Gilib.	N	1b	Be	
	Lycopus europaeus L.	B, F	5b		
	Mentha × *verticillata* L.	Gw, Mw	2c		
	Mentha aquatica L.	Wr, I	3c		
	Mentha arvensis L.	Mw, I	3b		

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	Prunella vulgaris L.	Mw, Md, D, Br	3b		
	Scutellaria galericulata L.	F, T, Bs	3b		
	Stachys palustris L.	Gw, Mw	2b		
	Stachys sylvatica L.	–	–		L
	Thymus pulegioides L.	D	1b	13	V
	Thymus serpyllum L.	Gd, D	3c		
	LENTIBULARIACEAE				
	Utricularia intermedia Hayne	Wp, T	2c		
	Utricularia minor L.	T	2b		
	Utricularia ochroleuca R.W.Hartm.	T	1b	11	
	Utricularia vulgaris L.	Wp, Wl	3c		
	LILIACEAE				
*	*Gagea lutea* (L.) Ker Gawl.	A	1a	V-50	
	LINACEAE				
	Linum catharcticum L.	D	1b	14	
	LYTRACEAE				
	Peplis portula L.	I	1c	Be	
	Lythrum salicaria L.	F, Gw	3b		
	MALVACEAE				
	Malva alcea L.	Md	1b	5	A, X
	Malva excisa Rchb.	–	–		A, L
	Malva neglecta Wallr.	A	2c		
	MELANTHIACEAE				
	Paris quadrifolia L.	Br, Sh	3b		
	MENYANTHACEAE				
	Menyanthes trifoliata L.	F, T, Pb	4d		
	NYMPHAEACEAE				
	Nuphar lutea (L.) Sm.	Wl, Wp	3c		
	Nymphaea alba L.	Wp	1b	7, 11	
	Nymphaea candida J. Presl	Wl	1b	Bu	V
	OLEACEAE				
	Fraxinus excelsior L.	Br	3b		
	Syringa vulgaris L.	N	1b	Be	A, P
	ONAGRACEAE				
	Circaea alpina L.	Br, Ss	3c		
	Circaea lutetiana L.	–	–		L
	Epilobium angustifolium L. (*Chamerion angustifolium* (L.) Holub)	Gd, I, N	3b		
	Epilobium ciliatum Raf.	I, Mw, G	3b		A
	Epilobium hirsutum L.	Gw	1b	27	
	Epilobium montanum L.	Br, Gd, Mf	3b		
	Epilobium palustre L.	F, T, Gw	4c		
	Epilobium parviflorum Schreb.	I, Gw	2b		
	Epilobium roseum Schreb.	I, D, F, Wr	2b		
	Oenothera biennis L.	D	1b	24	A, I
	Oenothera rubricaulis Kleb.	N	1a	Be	A
	ORCHIDACEAE				
	Corallorrhiza trifida Châtel.	Pb, Bs	3b		
	Dactylorhiza baltica (Klinge) Nevski (*D. longifolia* (Newman) Aver.)	Mw, T, Gw, F	3c		
	Dactylorhiza fuchsii (Druce) Soó	Br, Ss, Gw	3d		
	Dactylorhiza incarnata (L.) Soó	Mw, T, Gw	3b		
	Dactylorhiza maculata (L.) Soó	Pb	1c	Bu, 3	

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	Epipactis atrorubens (Hoffm.) Besser	Gd	1a	27	I
	Epipactis helleborine (L.) Crantz	Sh, Br	2b		
	Epipactis palustris (L.) Crantz	T	1c	1	
	Goodyera repens (L.) R.Br.	Sb	3b		
	Hammarbya paludosa (L.) Kuntze	T	2b		
	Liparis loeselii (L.) Rich.	T	1b	Bu, 11	
	Malaxis monophyllos (L.) Sw.	Bs, T, Gw	2a		
	Neottia cordata (L.) Rich. (*Listera cordata* (L.) R.Br.)	Ss, Pb	3c		
	Neottia nidus-avis (L.) Rich.	Sh, Br	2b		
	Listera ovata (L.) R.Br.	Sh, Br	2a		
	Platanthera bifolia (L.) Rich.	T, Mw, F, Br	3b		
	Platanthera chloranta (Custer) Rchb.	Mf	1a	22	I
	OROBANCHACEAE				
	Euphrasia stricta D.Wolff ex J.F.Lehm.	D	1c	14	
	Lathraea squamaria L.	Sh	3c		
	Melampyrum nemorosum L.	Mf, Mw, Gd	3c		
	Melampyrum pratense L.	Pc, Pg, Gd	4b		
*	*Odontites vulgaris* Moench	D	1b	Ei	L
	Pedicularis palustris L.	T, F	2c		
	Pedicularis sylvatica L.	Md	1b	5	X
	Rhinanthus angustifolius C.C.Gmel.	Mw	1c	Ei	
	Rhinanthus minor L.	Gw	1b	23	
	OXALIDACEAE				
	Oxalis acetosella L.	S, B, Pg	4e		
	Oxalis stricta L.	D	1c	14	A
	PAPAVERACEAE				
	Chelidonium majus L.	N	1b	5, 27	
*	*Fumaria officinalis* L.	A	1a	Ei	
*	*Papaver dubium* L.	D	1a	Ei, K-117	I
*	*Papaver somniferum* L.	D	1a	K-116	A, I, L
	PLANTAGINACEAE				
	Callitriche cophocarpa Sendtn.	Wr, Wp, Bs	3c		
	Callitriche palustris L.	Wp	2b		
*	*Chaenorhinum minus* (L.) Lange	A	1a	Ei	
	Hippuris vulgaris L.	Wp	1b	7	
	Linaria vulgaris Mill.	Gd, D	2b		
	Plantago lanceolata L.	M, Gd	4c		
	Plantago major L.	D, I	2b		
	Plantago media L.	Gd	2b		
*	*Veronica agrestis* L.	A	1b	Ei	
	Veronica anagalis-aquatica L.	Wr, I	3c		
	Veronica arvensis L.	Md, Gd, D	3b		
	Veronica beccabunga L.	Wp, Wr	4c		
	Veronica chamaedrys L.	M, Gd	4c		
*	*Veronica filiformis* Sm.	A	1c	Ei	A
	Veronica longifolia L.	G, Mw	2b		
	Veronica officinalis L.	Gd, D, Md	4c		
*	*Veronica persica* Poir.	A	1a	Ei	A
	Veronica scutellata L.	F	3c		
	Veronica serpyllifolia L.	D	2b		
*	*Veronica spicata* L.	Md	1b	Ei, K-160	L

	CLASS, FAMILY, Species	Habitats	Rarity, abundance	Localities	Specific features
	Veronica verna L.	Gd	3b		V
	POACEAE				
	Agrostis canina L.	Mw, F, T	3b		
	Agrostis capillaris L. (*A. tenuis* Sibth.)	M, Gd, D	5e		
*	*Agrostis giganthea* Roth	A	2b		
	Agrostis stolonifera L.	F, Wl, I	4c		
	Alopecurus aequalis Sobol.	I, Br, D	2b		
	Alopecurus geniculatus L.	I	1b	Ei	
	Alopecurus pratensis L.	Mw	2c		
	Anthoxanthum odoratum L.	Md, Mw, Gd	5d		
*	*Apera spica-venti* (L.) P.Beauv.	A	1a	Ei	
	Arrhenatherum elatius (L.) P.Beauv. ex J.Presl et C.Presl	Gd	2b		
	Avenella flexuosa (L.) Drejer (*Deschampsia flexuosa* (L.) Trin.)	Pc, Pg, Sb, Gd	5c		
	Avenula pubescens (Huds.) Dumort. (*Helictotrichon pubescens* (Huds.) Pilg.)	M	2b		
	Brachypodium pinnatum (L.) P.Beauv.	Gd, N	1b	Be, 22	
	Brachypodium sylvaticum (Huds.) P.Beauv.	Sh	2b		
	Briza media L.	Md, Mw	3c		
	Bromopsis inermis (Leyss.) Holub	Gd, Mw	2b		
	Bromus hordaceus L. (*B. mollis* L.)	Md, Gd	1b	1, 23	
	Calamagrostis arundinacea (L.) Roth	Pg, Pc, Sh	4c		
	Calamagrostis canescens (F.H.Wigg.) Roth	Bs, F	4d		
	Calamagrostis epigejos (L.) Roth	Gd, Gw, Pc	4d		
	Calamagrostis neglecta (Ehrh.) P.Gaertn. et al.	–	–		L
	Corynephorus canescens (L.) P.Beauv.	D, Gd	3b		
	Cynosurus cristatus L.	Md	1b	5	X
	Dactylis glomerata L.	Gd, Mw, Mf, N	3b		
	Danthonia decumbens (L.) DC.	Md, Gd	4b		
	Deschampsia cespitosa (L.) P.Beauv.	Mw, Md, G	5d		
*	*Digitaria ischaemum* (Schreb.) Muhl.	D	1b	E-45	L
*	*Echinochloa crus-galli* (L.) P.Beauv.	A	1b	Ei	L
	Elymus caninus (L.) L.	Br, Sh	2b		
	Elymus repens (L.) Gould (*Elytrigia repens* (L.) Nevski)	N, Gd	2b		
	Festuca gigantea (L.) Vill.	Br	2b		
	Festuca ovina L.	Ph, Pc, Md, Gd	3c		
	Festuca pratensis Huds.	Mw, Md	2b		
	Festuca rubra L.	M, T, Gd	4c		
	Festuca trachyphylla (Hack.) Krajina	Gd, D	2b		
	Glyceria fluitans (L.) R.Br.	W, B	4b		
	Glyceria maxima (C.Hartm.) Holmb.	Wl	1d	17, 22	
*	*Glyceria notata* Chevall.	Wl	1b	Ei	
	Holcus lanatus L.	Md, Mw, Gd	5c		
	Holcus mollis L.	Gd	1c	5, 17	
	Koeleria glauca (Spreng.) DC.	Gd	2b		
	Koeleria grandis Besser ex Gorski	Pc	1a	22	V
*	*Lolium perenne* L.	A	1c	Ei	L
	Melica nutans L.	Sh	3b		
	Milium effusum L.	Br, Sh	3b		
	Molinia caerulea (L.) Moench	Pb, Mw	5d		
	Nardus stricta L.	Md, Gd, Mw	3c		
	Phalaris arundinacea L. (*Phalaroides arundinacea* (L.) Rauschert)	Br	3c		
	Phleum pratense L.	Md, Mw	4c		

	CLASS, FAMILY, Species	Habitats	Rarity, abundance	Localities	Specific features
	Phragmites australis (Cav.) Trin. ex Steud.	F, T, Wl	4e		
	Poa angustifolia L.	Gd, Md	1b	1, 5	V
	Poa annua L.	D	2b		
	Poa compressa L.	Gd, D	2b		
	Poa nemoralis L.	Sh	2b		
	Poa palustris L.	Br, F	3b		
	Poa pratensis L.	M, Gd, D	4c		
	Poa trivialis L.	Mw, Md, T	3b		
*	*Setaria viridis* (L.) P.Beauv.	A	2b		L
	POLYGALACEAE				
*	*Polygala amarella* Crantz	A	1b	Ei	
	Polygala comosa Schkuhr	–	–		L
	Polygala vulgaris L.	Md	2b		V
	POLYGONACEAE				
	Bistorta officinalis Delarbre (*B. major* Gray)	Mw	1b	Ei, 23	
	Fallopia convolvulus (L.) À.Löve	D, N, Gd	2b		
	Persicaria hydropiper (L.) Spach	I	3c		
	Persicaria lapathifolia (L.) Gray	I, D	1a	23, 24	
	Persicaria maculosa Gray	I, N	2b		
	Persicaria minor (Huds.) Opiz	I, D	3b		
	Persicaria mitis (Schrank) Opiz ex Assenov	I, D	2b		
	Polygonum aviculare L., s.l.	D	2b		
	Rumex acetosa L.	Md, Mw	5c		
	Rumex acetosella L.	Gd, Md, D	5d		
	Rumex aquaticus L.	Gw, F	3c		
	Rumex crispus L.	Mw, Gw	1b	5, 26	
	Rumex hydrolapathum Huds.	F, Wp, Gw, Bs	3b		
	Rumex obtusifolius L.	Gw, N, Br	3c		
	Rumex thyrsiflorus Fingerh.	Md, Mf	1b	Be, 23	V
	POTAMOGETONACEAE				
	Potamogeton alpinus Balb.	Wp	1b	17	
	Potamogeton berchtoldii Fieber	Wp, I	2b		
	Potamogeton gramineus L.	F	1b	11	
	Potamogeton natans L.	Wl, Wp	3c		
	Potamogeton perfoliatus L.	Wl	1c	Gl	
	Potamogeton praelongus Wulfen	Wl	1c	Bu	
	PRIMULACEAE				
	Hottonia palustris L.	Wp	3c		
	Lysimachia nummularia L.	Mw, Gw, I, D	4c		
	Lysimachia thyrsiflora L.	F, T, Bs	3b		
	Lysimachia vulgaris L.	Gw, F, Mw, Ss, B	5c		
	Primula veris L.	Mf, Gd	2b		V
	Trientalis europaea L.	Pg, S, Pc	4c		
	RANUNCULACEAE				
	Actaea spicata L.	Sh	2a		
	Anemone nemorosa L.	Sh, Pg, Br, Mf	4c		
	Anemone ranunculoides L.	Br	1b	22, 23	
	Aquilegia vulgaris L.	N	1a	Be	A
	Caltha palustris L.	Mw, Bs	4c		
	Ficaria verna Huds.	Br	3c		
	Hepatica nobilis Mill.	Sh, Br	2b		

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*	*Myosurus minimus* L.	Mw	1b	Ei	
	Pulsatilla patens (L.) Mill.	Pc	1a	3, 13	V
	Pulsatilla pratensis (L.) Mill.	Gd	1a	24	V
	Ranunculus acris L.	Mw, Md, Gd	4c		
	Ranunculus auricomus L.	Mw, Br	2c		
	Ranunculus cassubicus L.	Br	2c		
	Ranunculus circinatus Sibth. (*Batrachium circinatum* (Sibth.) Spach)	–	–		L
	Ranunculus flammula L.	I, Mw, F	4c		
	Ranunculus fluitans Lam. *(Batrachium fluitans* (Lam.) Wimm.)	Wr	3c		
	Ranunculus lanuginosus L.	–	–		L
	Ranunculus lingua L.	F, Bs, Wp	4b		
	Ranunculus polyanthemos L.	Mf, Md	1a	Be, Ei	V
	Ranunculus pseudofluitans (Syme) Baker & Foggitt (*Batrachium aquatile* (L.) Dumort.)	Wr	1b		
	Ranunculus repens L.	Mw, Br, D, I	5d		
	Ranunculus sceleratus L.	Mw	1a	Ei	X
	Thalictrum aquilegifolium L.	Mf, Br	2b	.	
	Thalictrum flavum L.	Gw, Mw	2a		
	Thalictrum lucidum L.	Mw, Gw	2b		
	Thalictrum minus L.	Mf, Gd	1a	18, Be	
	Thalictrum simplex L	Mw	1a	5	X
	RHAMNACEAE				
	Frangula alnus Mill.	B, Pg, Ps, S	5d		
	Rhamnus catharctica L.	Br, N	2a		
	ROSACEAE				
	Agrimonia eupatoria L.	N	1a	25	
	Alchemilla micans Buser	Md, Mw	1b	Ei, 23	
	Alchemilla monticola Opiz	Md, Gd	2b		
	Alchemilla plicata Buser	Md	1b	Be	V
*	Alchemilla propiqua H.Lindb. ex Juz.	Md	1b	Ei	
	Alchemilla vulgaris L. (*A. acutiloba* Opiz)	Mw, Md, Gd	2c		
	Alchemilla xanthochlora Rothm.	Md	1b	Ei	
	Amelanchier spicata (Lam.) K.Koch	N, Gd, Pc	2b		A
	Argentina anserina (L.) Rydb. (*Potentilla anserina* L.)	I, Mw	4c		
	Aronia melanocarpa (Michx.) Elliot	Mw	1a	Ei	A
	Comarum palustre L. (*Potentilla palustris* (L.) Scop.)	T, F, Wp	4c		
*	*Cotoneaster lucidus* Schltdl.	N	1a	Ei	A
	Crataegus rhipidophylla Gand.	N, Br	2a		
	Filipendula ulmaria (L.) Maxim.	Gw, B, Mw	5e		
	Filipendula vulgaris Moench	–	–		L
	Fragaria vesca L.	Gd, Pg, Sh, D	4c		
	Geum rivale L.	Mw, Br, Gw	4c		
	Geum urbanum L.	N	2b		
	Malus domestica Borkh.	N	1b	Be	A, P
	Malus sylvestris (L.) Mill.	Pg, Sh	2a		
	Potentilla argentea L.	Gd	2b		
	Potentilla erecta (L.) Räusch.	Md, Mw, Gd	4c		
	Potentilla impolita Wahlenb.	Md	1b	5	
	Potentilla incana Gaertn. Mey. et Scherb. (*P. arenaria* Borkh.)	Gd, D	2b		
	Potentilla reptans L.	N	1b	25	
	Prunus avium (L.) L. (*Cerasus avium* (L.) Moench)	N	1a	5	A
	Prunus cerasifera Ehrh.	N	1a	27	A

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	Prunus cerasus L. (*Cerasus vulgaris* Mill.)	N	1a	Be	A, P
	Prunus domestica L.	N	1b	Be	A, P
	Prunus padus L. (*Padus avium* Mill.)	Br	3b		
	Prunus serotina Ehrh. (*Padus serotina* (Ehrh.) Borkh.)	Gd, Sh	1b	4, 19	A, P
	Pyrus communis L. (subsp. *communis* and subsp. *pyraster* (L.) Ehrh.	Pg, Sh, Br, N	2a		
*	*Rosa majalis* Herrm.	A	1b	Ei	L
	Rosa rugosa Thunb.	Gd	1a	1	A
	Rubus caesius L.	N, Br	2b		
	Rubus chamaemorus L.	Pb, R	4d		
	Rubus idaeus L.	G, N, Sh	5d		
	Rubus nessensis Hall.	Gd	3c		
	Rubus saxatilis L.	Sh, Ss, Br	4c		
	Sanguisorba officinalis L.	Mw, Md	2b		
	Sorbus aucuparia L.	S, Pg	4c		
	Spiraea chamaedryfolia L.	N	1b	Be	A, P
	RUBIACEAE				
	Galium album Mill.	Md, Gd, Mf	2b		
	Galium aparine L.	N, Gw	2b		
	Galium boreale L.	Md, Mw, Gd	2b		
	Galium elongatum C.Presl	Br	1b	27	
	Galium mollugo L.	Md, Gd	2b		
	Galium odoratum (L.) Scop.	Br, Sh	2b		
	Galium palustre L.	F, Mw, Bs	5c		
	Galium rivale (Sibth. et Sm.) Griseb.	Gw	1b	24	
	Galium uliginosum L.	Mw, T, Gw	4c		
	Galium verum L. (subsp. *verum* and subsp. *wirtgenii* (F.W.Schultz) Oborny)	Gd, Md, Mf	2b		
	SALICACEAE				
	Populus tremula L.	S, Gd	4c		
	Salix aurita L.	Gw, T, Pb	4b		
	Salix caprea L.	Gd, Sb	3a		
	Salix cinerea L.	Gw, F, T, Mw	5d		
*	*Salix dasyclados* Wimm.	A	1a	Ei	
	Salix fragilis L.	N	1a	5, Be	
	Salix myrsinifolia Salisb.	Gw, F, T	3b		
	Salix pentandra L.	F, T, Bs	3b		
	Salix purpurea L.	G, Mw	2a		
	Salix rosmarinifolia L.	T	4d		
*	*Salix triandra* L.	A	1a	Ei	L
	Salix viminalis L.	Mw, Gd	1a	Ei, 14	
	SAXIFRAGACEAE				
	Chrysosplenium alternifolium L.	Br, Wr	4d		
	Saxifraga hirculus L.	T	1b	Bu	
*	*Saxifraga tridactylites* L.	D	1b	K-117	I
	SCHEUCHZERIACEAE				
	Scheuchzeria palustris L.	T, R	4b		
	SCROPHULARIACEAE				
	Scrophularia nodosa L.	Br, G	3b		
	Verbascum nigrum L.	N, Mf	2b		
*	*Verbascum thapsus* L.	A	2b		
	SOLANACEAE				
	Solanum dulcamara L.	B, Gw	4c		

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*	*Solanum nigrum* L.	A	1b	Ei	L
	THYMELAEACEAE				
	Daphne mezereum L.	Br, Sh	3b		
	TILIACEAE				
	Tilia cordata Mill.	Br, Sh, N	3c		
	ULMACEAE				
	Ulmus glabra Huds.	Sb	1a	1	
	URTICACEAE				
	Urtica dioica L.	N, Br	4d		
*	*Urtica urens* L.	A	2b		L
	VIOLACEAE				
	Viola arvensis Murray	Gd, D	3b		
	Viola canina L. (subsp. *canina* and subsp. *montana* (L.) Hartman)	Md, Gd	3b		
	Viola epipsila Ledeb.	B	3c		
	Viola mirabilis L.	–	–		L
*	*Viola odorata* L.	A	1b	K-160, V-50	A
	Viola palustris L.	Mw, F, B, Ss, G	4d		
	Viola reichenbachiana Jord. ex Boreau	Sh	2b		
	Viola riviniana Rchb.	Sh, Pg, Br	3b		
	Viola rupestris F.W.Schmidt	Gd	2b		
	Viola tricolor L.	Mf, Gd	1b	Be, 19	V
	VITACEAE				
*	*Parthenocissus quinquefolia* (L.) Planch.	N	1b	K-160	A
	TYPHACEAE				
	Sparganium emersum Rehmann	Wr, Wp	3c		
	Sparganium erectum L.	Wl	1b	Gl	
	Sparganium natans L.	Wp, Bs	3b		
	Typha angustifolia L.	–	–		L
	Typha latifolia L.	F, Wl	3c		
	VALERIANACEAE				
	Valeriana officinalis L.	Mw, Gw, N	2b		