

THE FLORA OF VASCULAR PLANTS IN NATURE RESERVE „EGLONE”

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The nature reserve „Eglone” is relatively small specially protected nature territory – its area is 159 ha, nevertheless there are significantly large areas of biologically valuable habitats relatively unaffected by human activities – most of territory is covered by different natural forest and grassland habitats. The investigations of territory of nature reserve „Eglone” in summer 2012 demonstrated the wide variety of valuable natural forest habitats - Fennoscandian hemiboreal natural old broad-leaved deciduous forests (9020*) covers 69,8 ha, alluvial forests (91E0*) – 9,6 ha, Western taiga (9010*) – 0,9 ha, as well as grassland habitats – lowland hay meadows (6510), Northern boreal alluvial meadows (6450), but especially valuable are Fennoscandian wooded meadows (6530*) and *Molinia* meadows (6410). The vascular plant investigations revealed 437 species, from these 13 are specially protected plant species, and it is considered as very high floristic diversity for such small, limited area as nature reserve „Eglone”. The chorological analysis of flora of nature reserve is performed, evaluating distribution of autochthonous flora to oceanity - continentality, sectorial and zonal groups. There are no statistically significant horologic differences in comparison of flora of nature reserve „Eglone”, Daugava river valley, and flora of Latvia as whole.

Keywords: Nature reserve „Eglone”, flora, chorological analysis of flora, specially protected plant species.

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INTRODUCTION

Nature reserve „Eglone” is situated at the left bank of Eglone river, Dunava municipality, Jēkabpils County (Fig.1.). The specially protected nature territory is established on 2004. The area includes three forest blocks as well as meadows near Eglone (Eglaine) river banks and oxbow lakes, most of grasslands in different stages of overgrowing with bushes. The river is regulated.

The mosaic landscape and diversity of forest and grassland habitats, as well as river with oxbow lakes are structures forming large number of different ecological niches, suitable for wide diversity of plant species, unique for such a small area. The most biologically valuable there are extremely rare habitat for Latvia as well as for Europe as such – wooded meadows, distinguishable even in this area with diversity of plant species. The vital middle-aged oaks are growing in

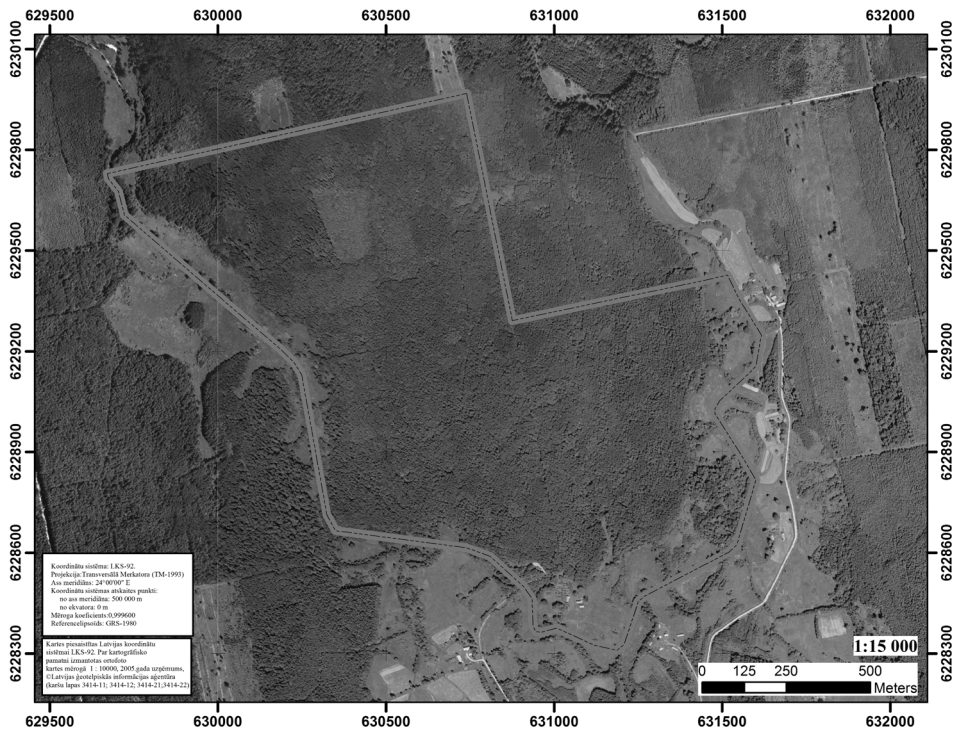
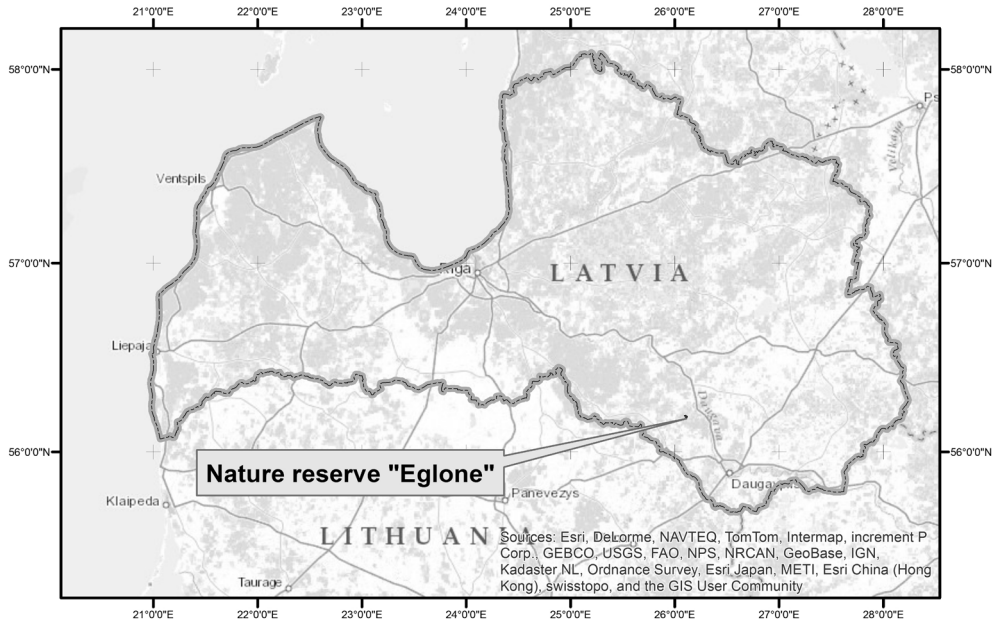


Fig.1. Location of nature park "Egļone"

these wooded meadows, some part of this habitat is well-managed or management is just begun, therefore the future conservation status of this rare and species-rich habitat in nature reserve will be ensured hopefully.

The important consideration is that the nature reserve is only small part of large areas of forest around alluvial meadows of small rivers. The detailed research in field of botany and zoology is not performed here in recent years, therefore the main goals of our investigation was to carry out detailed floristic and chorological analysis of the territory as well as to gather information about most biologically valuable parts of the nature reserve; to recognise protected habitats of EU importance, especially around the Eglone river – to recognise valuable meadow habitats, including very rare wooded meadows; to recognise new findings of rare plant species.

Unfortunately there are almost impossible to conserve complexes of valuable habitats outside of specially protected nature areas – the forest habitats are threatened by logging, whereas grassland habitats – by overgrowing by bushes and young trees, therefore the proper conservation and management measures of rare species and habitats there in order to maintain biodiversity is extremely important in regional context.

Investigation of flora in nature reserve „Eglone”

The detailed scientific investigation of forest and grassland habitats as well as plant species in the territory of aforementioned nature reserve is not performed until now. First floristic studies which could be applied in order to carry out considerations about the flora of Selonia and South-Latgale regions as whole are performed in the middle and end of 19thies (J. Fiedorovicz, E. Lehmann, T. Bienert), but summarised and published in voluminous publication of E. Lehmann – „Flora von Polnisch-Livland mit besonderer Berücksichtigung der Florenggebiete Nordwest-Russlands, des Ostbalticums, der Gouvernements Pskow und St. Petersburg” (Lehmann 1895). The aforementioned publication includes 1338 plant species as

well as almost 1000 intraspecific taxa – varieties and forms, speaking about Latgale and neighboring areas. The first concrete data about particular findings of rare plant species in locality of Eglone river are dated in 1898 and 1899 years when K. Kupfer found *Orchis mascula* in Tadenava settlement near Eglone river. This finding was surveyed by Tabaka, Fatara un Eglite (Fatara et al 1981) in 1978. This finding of rare orchid species in the territory of nature reserve was surveyed and confirmed in 2011 as well. Two forester houses are mentioned as localities of other rare plant species – *Dactylorhiza baltica*, *Hypericum hirsutum*, *Cinna latifolia*, *Poa remota*, *Iris sibirica* un *Gymnadenia conopsea* findings (Farape et al 1980, 1981, 1986) – Lukstenieki, (approximately 2 km to the East from Tadenava, Eglone river bank, nowadays ruined), and Putraskalni which is situated in the same large forest areas, but not near Eglone river. Nevertheless both aforementioned findings are outside the recent nature reserve; these are evidence of floristic abundance of circumjacent forests. The specialists of Latvia Academy of Sciences, Institute of Biology under the leadership of L. Tabaka performed the detailed research of flora of Eastern Latvia geobotanical region. The results of survey are published in book about flora of Eastern Latvia geobotanical region (Tabaka et al 1985). There are 1168 species of the vascular plants found in this geobotanical region. Nature reserve „Eglone” is situated in 3rd subregion and 11th microregion of this geobotanical region. The nature reserve „Eglone” was nominated to the status of specially protected nature territory due to high concentration of valuable forest habitats during campaign „Suggest the territory!” proposed by Ministry of Environment of Latvia in 2002. The biodiversity experts estimated the value of the territory of nature reserve in 2003 in framework of Project „Coordination of Latvia’s system of specially protected areas with the EMERALD / NATURA 2000 network” and decided to establish the nature reserve. There are only two protected vascular plant species included in results of inventory – shingled gladiolus (*Gladiolus imbricatus*) and hairy agrimony (*Agrimonia pilosa*).

Table 1. Oceanity-continentiality, zonal and sectorial groups of vascular plant flora of Latvia.

| Oceanity-continentiality groups: | Zonal groups: | Sectorial groups: |
|---|--------------------------|------------------------------|
| Littoral | Arcto-boreal | European |
| Euoceanic | Boreal | European-American |
| Oceanic | Boreal-temperate | European-Siberian |
| Slightly oceanic | Temperate | European-West Siberian |
| Suboceanic | Temperate-submeridional | European-Central Asian |
| Subcontinental | Submeridional | European-Asian |
| Subcontinental-littoral | Submeridional-meridional | European-West Asian |
| Continental-littoral | Polyzonal | European-Siberian-American |
| Continental | | European-West Siberian |
| Indifferent | | European-West Asian American |
| | | Circumpolar |
| | | Cosmopolitic |

MATERIAL AND METHODS

The physical geography of territory

The nature reserve „Eglone” is included in climatic region of Maritime lowland and Zemgale plain according recent climatic division in the districts (Kalniņa 1995). This is the warmest climatic region of Latvia with most typical traits of continental climat in comparison with other climatic region of Latvia.

The terrain of Dunava municipality area is rather flat plain with some increase in North-East direction (difference in absolute altitude 10-11 metres).

The altitude in south of municipality territory is 90 metres, altitude in Northern part – 101 metres. The terrain of of nature reserve „Eglone” is from flat in central part to average wavy in Eastern, Western and Southern part of territory.

The territory of nature reserve is situated in the region of Eastern Latvia hilly upland soils where mechanical composition of soils is determined by loam or carbonatic sand, clay and sandy loam parent soil. The soils are dominated by typical podzol on elevations of terrain, and peaty podzolic gley soil in depressions. Dominant spruce, birch and aspen forests have been stimulated the

podzoling processes. Nature reserve „Eglone” are covered by flood waters of Daugava river during flood period therefore the alluvial soils are found here as well.

The Eglone (Eglaine) river is border of territory of nature reserve. Eglone is left bank tributary of Daugava river with total length of 36 km (4 km in the territory of nature reserve) and catchment area of 51,4 km². The total gradient of Eglone river is 23 m, and average slope 3 m.

The macrophyte cenosis is corresponding to rivers with low influence of human activities. The river stretches opened to sun light with stony river bed have macrophyte cover about 20%, dominated by *Fontinalis sp.* (50% of stone surface), found also *Sparganium sp.*, in littoral – *Scirpus sylvaticus*, *Carex sp.* The typical shady river stretches with sandy river bed have insignificant macrophyte cover (<5%), with *Fontinalis sp.* and green algae (*Cladophora sp.*). The river is characterized as slightly influenced nevertheless there are high proportion of agricultural lands in its basin as well as the biodiversity of cenosis of macrozoobentos is low (Dabas aizsardzības plāns... 2013).

There are large scale operations of land amelioration performed in territory of Dunava

municipality during 20th century. The natural beds of rivers are changed and polders built. The Eglone river was influenced by dredging and straightening as well. The main purpose of river amelioration was control of flooding and intensification of agriculture in the lowlands around river. The drainage ditches are ending in Eglone river, and during spring floods and summer raining periods are influencing the water flow in river. The changes of river water level only in the territory of nature reserve „Eglone” constitute 1-2 m during the year.

Floristic research

The territory of nature reserve is inventoried on 1st of July, 2011 as well as 5th of May, 10th of June, 15th of August, and 24th of September 2012. The herbaria of rare and uncertain plants (45 sheets of herbaria) are deposited in Herbarium of Daugavpils University (DAU). The list of vascular plant flora is developed according system of R.Thorne (Thorne 1992, 2000).

Phytogeographic analysis

The phytogeographic analysis of nature reserve was done for autochthonous plant species, and is based on Central-European diagnostic system of plant species (Meusel et al 1965, 1978, Jaeger, Verner 2002) (Table 1). The plant species were divided to sectorial, zonal and oceanicity-continentality groups according this system, and acquired chorological data was compared to flora of Daugava river valley and flora of Latvia as whole. The research results of I. Fatore were used for the interpretation of data about flora chorological groups of Daugava river valley and Latvia (Фатаре 1989).

Statistical analysis of data

Statistical analysis was performed by SPSS (version 20.0) software. Data relevance of sampling was tested for normality of distribution using Kolmogorov – Smirnov test and for homogeneity using Levene test. The average mean values of sampling was compared, and analysed as discrete data –

number of species was expressed in numeric values, and metric values – number of species expressed as percentage. The number of species was calculated and expressed in percentage in order to avoid differences in numbers of species depending on area of territory inventoried and compared as well as using the data in metric system allowing analysing data by parametric tests which are stronger as non-parametric tests (Ивантер, Копосов 2011). The average values of discrete data were compared by Kruskal – Wallis H test, the average values of metric data were compared by one-way ANOVA test.

Significance level for all tests was selected $\alpha = 0,05$.

RESULTS AND DISCUSSION

The characteristic of flora of nature reserve

The 11th microregion of Middle Daugava (Vidusdaugava) lowland subregion of Eastern Latvia region is characterised by large, comparatively well preserved forest areas, mainly moderate wet and wet mixed broadleaved-spruce forests. The areas influenced by logging in many areas are covered by *Aegopodiosa* type forest dominated by aspen. The same is true for the territory of nature reserve, where the natural broadleaved *Aegopodiosa* type forests are remained only as scattered small fragments of lime tree forests as well as some large old-growth oaks. The microregion includes two tributaries of Daugava river left bank – Ilūkste (Berezovka) and Eglone (Eglaine) rivers estuaries and lower reaches. These small river banks are covered by relatively wide floodplains which are partly managed and forms variety of valuable grassland habitats.

Forests

The forest covers the largest area of nature reserve lands – 134,2 ha or 84,2% of area of nature reserve. The most widespread are dry forest types dominated by *Aegopodiosa* type forest - 107,7 ha. Significant areas are covered by *Myrtillosopolytrichosa* forest type as well as drained for-

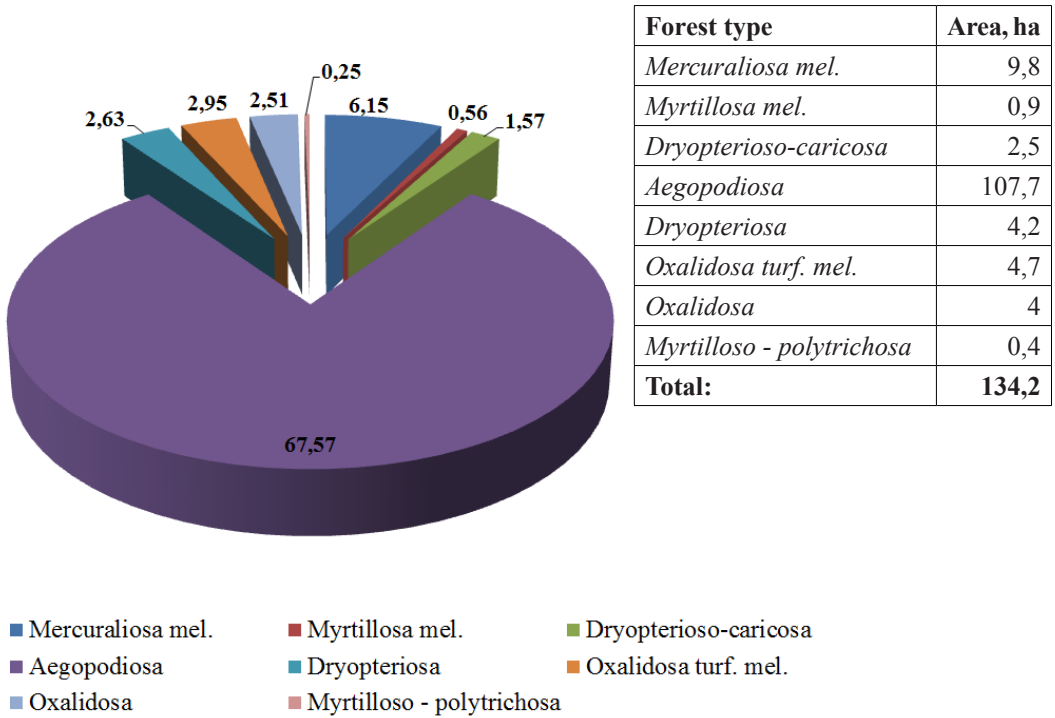


Fig. 2. Distribution of forest stands in nature reserve „Eglone” by forest types.

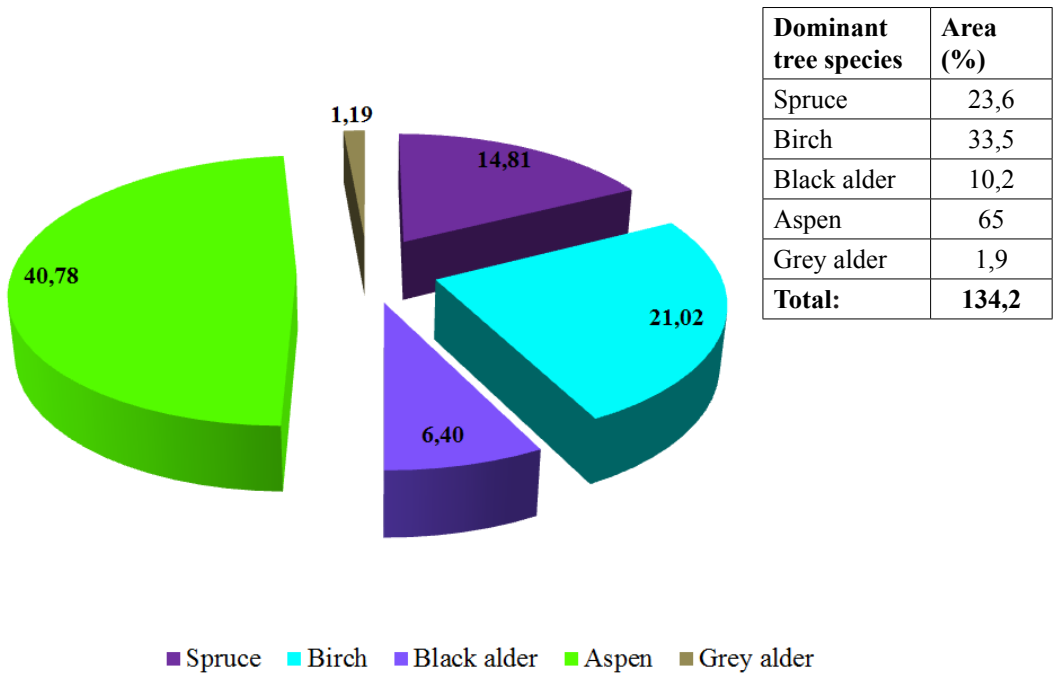


Fig. 3. Distribution of forest stands in nature reserve „Eglone” by dominant tree species.

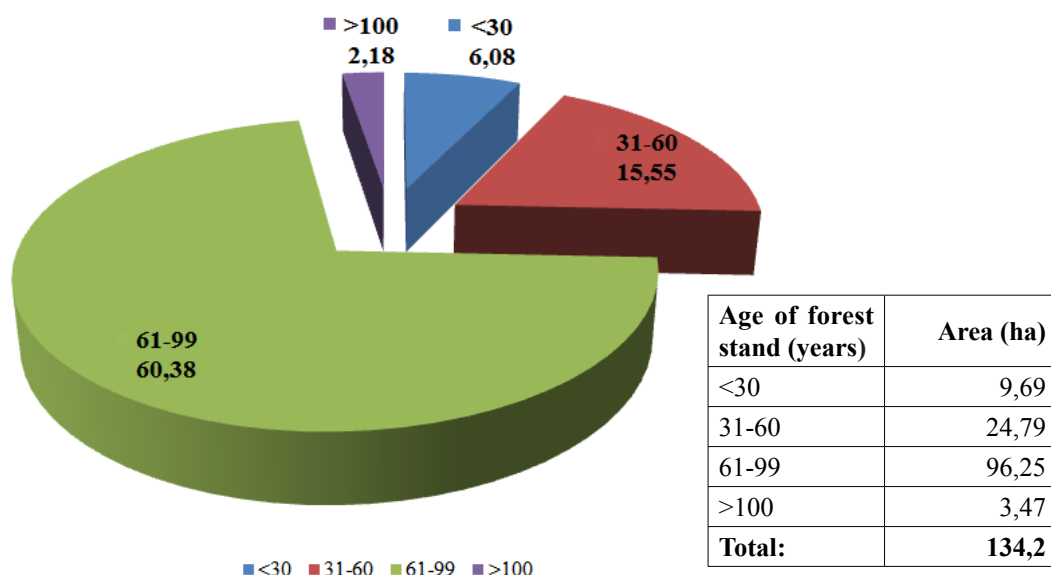


Fig. 4. Distribution of forest stands in nature reserve „Eglone” by forest stand age.

est types - *Mercurialis mel.*, *Myrtillosa mel.*, *Oxalidos* (Fig. 2., Fig. 3. and Fig.4.).

The most valuable forest habitats in the territory of nature reserve are *Aegopodiosa* type forests – aspen and aspen-spruce forest plots with 60-70 species of vascular plants in grass layer. This cenosis is dominated by spring nemoral plant flora segment – *Anemone nemorosa*, *Stellaria-holostea*, *Mercurialis perennis*, *Chrysosplenium alternifolium*, *Pulmonaria obscura* etc. Such plants as *Corydalissolid*, *Gagea lutea* and similar species are found in some sites near river bank where some old oaks persist in younger forest stands. Especially valuable forest habitats are some scattered fragments of *Aegopodiosa* type forests dominated by lime trees, the forest inventory shows there aspen forests. These lime forests are habitat where rare plant species – *Dentaria bulbifera* was found during inventory, this species is usually found in old-growth forests of Western Latvia. There are forest plots logged 40-50 years ago (before the establishment of nature reserve), and planted with spruce monoculture. These *Myrtilloso-polytrichosa* type forests flora are poor, and no rare and protected plant species nor indicator species of natural forest habitats could be found here.

The nature reserve „Eglone” is relatively small (its area is 159 ha), nevertheless it holds significant biodiversity – the largest part of territory is covered by valuable protected forest habitats – Fennoscandian hemiboreal natural old broadleaved deciduous forests (69,8 ha), alluvial forests (9,6 ha), and Western taiga (0,9 ha) (Fig.3) (Dabas aizsardzības plāns... 2013).

Grasslands

The specially protected area was established for the conservation of valuable forest habitats primarily, nevertheless 16,7 % of area is occupied by several kinds of grassland habitats.

One of the most species-rich areas in nature reserve is the plot of wooded meadows with area of 1,1 ha. The number of vascular plants in this area reaches 80 – 85 species. The plant species characteristic to several grassland habitats: lowland hay meadows and *Molinia* meadows – *Selinum carvifolia*, *Cirsium heterophyllum*, *Anthoxanthum odoratum*, *Festuca pratensis*, *Primula veris*, *Trollius europaeus*, *Trifolium medium* etc., as well as plant species characteristic to broadleaved forests – *Melica nutans*, *Melampyrum nemorosum*, *Festuca gigantea*, *Agopodium podagraria* etc.

The meadows of nature reserve are rich in plant species as well. The polygons of some lowland hay meadows are abandoned for several years, therefore the forest is overtaking their area and valuable plant species – indicators of seminatural meadow habitats – are found only in patches of habitat. Most of these meadows are covered by expansive or nitrophilous large herb species – *Calamagrostis epigeios*, *Filipendula ulmaria* etc. The especially valuable and species-rich *Molinia* meadows in western part of nature reserve should be especially highlighted – the total number of vascular plant species in this habitat reaches 65-70 whereas one of important characteristics of biodiversity in concrete habitat – number of plant species per square metre – reaches 35-37 in this habitat. This is the habitat which is very rare in Latvia, and in South-West region of Latvia is known only from some sites. The habitat is dominated by such plant species as *Gladiolus imbricatus*, *Betonica officinalis*, *Scorzonera humilis*, *Inula salicina*, *Succisa pratensis*, *Trollius europaeus*, *Carex panicea* etc. The *Carex* species which is usually typical for this habitat (*Carex hostiana* DC., *C. buxbaumii* Wahlenb., *C. flacca* Schreib.) are not found in concrete meadow, but this could be explained by uneven distribution of these species in Latvia – these species are not found in Eastern Latvia at all.

The area of wooded meadow and aforementioned *Molinia* meadow are especially important for biodiversity in terms of rare and protected plant species – seven out of 13 protected plant species in total found in nature reserve are growing in these two polygons (*Dactylorhiza baltica*, *D. incarnata*, *Iris sibirica*, *Gladiolus imbricatus*, *Gymnadenia conopsea*, *Orchis mascula* and *Platanthera bifolia*).

Specially protected plant species in the territory of nature reserve

Agrimonia pilosa is close to Western border of its natural range in Latvia, and could be considered as rather common plant species. It is found in small groups on forest outskirts as well as near forest roads mainly at the West of the nature reserve.

Dactylorhiza baltica could be considered as insufficiently investigated species in Latvia, found mostly in natural habitats. It is found near the pond in the nature reserve.

Dactylorhiza incarnata - insufficiently investigated species in Latvia, recognised in wooded meadow, lowland hay meadows, and *Molinia* meadows in the nature reserve.

Dactylorhiza maculata - insufficiently investigated species in Latvia, recognised in lowland hay meadows in the nature reserve.

Dentaria bulbifera is rare and unevenly distributed in Latvia, close to Northern and Eastern borders of its natural range. It is recognised in *Aegopodiosa* type forests dominated by lime trees and aspen in the nature reserve. The closest known findings of this species are nature reserves „Aizkraukles purvs” and „Ābeļi”.

Euonymus verrucosus is close to North-Western border of its natural range in Latvia. It is considered as rather common species in suitable habitats in South and South-East regions of Latvia. It is recognised in some sites in *Aegopodiosa* and *Myrtilloso - polytrichosa* type forests in the nature reserve.

Gladiolus imbricatus is rather rare and unequally distributed, mostly eastern and central part, in river floodplains and valleys. The Western border of its natural range is crossing the territory of Latvia. It is recognised in several spots of Eglone rives floodplain, some of the findings in lowland hay meadows and *Molinia* meadows are very rich – several thousands of plants.

Huperzia selago – rather common in all Latvia, nevertheless the number of findings are decreasing to the direction of the East of Latvia. Rare species in the territory of nature reserve, two findings in aspen-black alder forests.

Gymnadenia conopsea is rather common in Latvia. Solitarily specimens in *Molinia* meadow in the nature reserve.

Iris sibirica is rather rare and unequally dis-

Table 2. Distribution of autochthonous vascular plant flora of nature reserve „Eglone”, Daugava river valley and Latvia by groups of oceanicity-continentality

| Oceanicity-continentality groups | Eglone | | Daugava valley | | Latvia | |
|----------------------------------|------------|------------|----------------|------------|-------------|------------|
| | Number | % | Number | % | Number | % |
| Littoral | 0 | 0 | 3 | 0,4 | 32 | 2,5 |
| Euoceanic | 0 | 0 | 2 | 0,2 | 5 | 0,4 |
| Oceanic | 3 | 0,7 | 33 | 4,0 | 104 | 8,1 |
| Slightly oceanic | 169 | 39,5 | 292 | 35,5 | 394 | 30,7 |
| Suboceanic | 104 | 24,3 | 226 | 27,5 | 336 | 26,2 |
| Subcontinental | 40 | 9,3 | 86 | 10,5 | 132 | 10,3 |
| Subcontinental-littoral | 0 | 0 | 3 | 0,4 | 5 | 0,4 |
| Continental-littoral | 0 | 0 | 3 | 0,4 | 16 | 1,2 |
| Continental | 32 | 7,5 | 90 | 10,9 | 161 | 12,5 |
| Indifferent | 80 | 18,7 | 84 | 10,2 | 98 | 7,7 |
| Total | 428 | 100 | 822 | 100 | 1283 | 100 |

tributed in Latvia, in Eastern part – Daugava river valley and its tributaries. It is recognised in wooded meadow and *Molinia* meadows near Eglone river in the nature reserve.

Lycopodium annotinum could be considered as insufficiently investigated species in Latvia. It is found sparsely in forests of the nature reserve, some places are forming large groups.

Orchis mascula is rare in Latvia, close to Eastern border of natural range. The finding near Tadenava is known from year 1898, and it is registered by K. Kupfer. It is recognised in wooded meadow and *Molinia* meadows near Eglone river in the nature reserve.

Platanthera bifolia could be considered as insufficiently investigated species in Latvia with declining population, associated with declining of suitable habitats and anthropogenic pressure. It is recognised in two sites in overgrowing lowland hay meadows in the nature reserve.

Chorological analysis of flora in nature reserve “Eglone”

The flora of nature reserve “Eglone” could be considered as only slightly influenced – the

absolute majority of 437 plant species found in the nature reserve - 428 are autochthonous plant species, and only eight species (1,8 %) are anthropophytes. This consideration is especially obvious when these numbers are compared with relatively natural area – Daugava river valley flora where proportion of alien species is 14,2 %. The spreading of alien species in nature reserve is limited by the absence of disturbed habitats – only some invasive species are found in abandoned old fields in southern part of nature reserve, and near forest roads.

All data – from sectorial groups, zonal groups, and groups of oceanicity – continentality corresponds to normal distribution, and all data are homogenous ($p > 0.05$).

There are no statistically significant differences found in sectorial group flora among “Eglone”, Daugava river valley, and flora of all Latvia neither in discrete data ($\chi^2=2.62$ $df=2$ $P=0.27$ Kruskal – Wallis), nor metric data ($F_{2, 32}=0.02$ $P=0.98$ ANOVA). The same stands for comparison of “Eglone”, Daugava river valley, and flora of all Latvia concerning flora of zonal group neither in discrete data ($\chi^2=1.64$ $df=2$ $P=0.44$ Kruskal – Wallis), nor metric data ($F_{2, 19}=5.37$ $P=0.89$ ANOVA). The same situation

Table 3. Distribution of autochthonous vascular plant flora of nature reserve „Eglone”, Daugava river valley and Latvia by sectorial groups

| Sectorial group | Eglone | | Daugava valley | | Latvia | |
|---------------------------------|------------|------------|----------------|------------|-------------|------------|
| | Number | % | Number | % | Number | % |
| European | 60 | 14,0 | 182 | 22,2 | 333 | 26,0 |
| European-American | 3 | 0,7 | 4 | 0,5 | 26 | 2,0 |
| European-Sibirian | 13 | 3,0 | 25 | 3,1 | 32 | 2,5 |
| European-West Sibirian | 69 | 16,1 | 96 | 11,7 | 128 | 10,0 |
| European-Central Asian | 4 | 0,9 | 7 | 0,8 | 13 | 1,0 |
| European-Asian | 131 | 30,6 | 210 | 25,5 | 276 | 21,5 |
| European-West Asian | 34 | 7,9 | 81 | 9,8 | 122 | 9,5 |
| European-Sibirian-American | 0 | 0 | 1 | 0,1 | 1 | 0,1 |
| European-West Sibirian American | 7 | 1,6 | 9 | 1,1 | 13 | 1,0 |
| European-West Asian American | 3 | 0,7 | 6 | 0,7 | 10 | 0,8 |
| Circumpolar | 88 | 20,6 | 183 | 22,3 | 302 | 23,5 |
| Cosmopolitic | 16 | 3,7 | 18 | 2,2 | 27 | 2,1 |
| Total | 428 | 100 | 822 | 100 | 1283 | 100 |

Table 4. Distribution of autochthonous vascular plant flora of nature reserve „Eglone”, Daugava river valley and Latvia by zonal groups

| Zonal group | Eglone | | Daugava valley | | Latvia | |
|--------------------------|------------|------------|----------------|------------|-------------|------------|
| | Species | % | Species | % | Species | % |
| Arcto-boreal | 0 | 0 | 2 | 0,2 | 9 | 0,7 |
| Boreal | 0 | 0 | 2 | 0,2 | 13 | 1,0 |
| Boreal-temperate | 27 | 6,3 | 58 | 7,0 | 105 | 8,2 |
| Temperate | 15 | 3,5 | 54 | 6,6 | 118 | 9,2 |
| Temperate-submeridional | 153 | 35,7 | 290 | 35,3 | 423 | 33,0 |
| Submeridional | 6 | 1,4 | 32 | 3,9 | 59 | 4,6 |
| Submeridional-meridional | 1 | 0,2 | 12 | 1,5 | 31 | 2,4 |
| Polyzonal | 226 | 52,8 | 372 | 45,2 | 525 | 40,9 |
| Total | 428 | 100 | 822 | 100 | 1283 | 100 |

is for comparison of “Eglone”, Daugava river valley, and flora of all Latvia concerning flora of groups of oceanity – continentality neither in discrete data ($\chi^2=1.65$ $df=2$ $P=0.44$ Kruskal – Wallis), nor metric data ($F_{2, 23}=0.70$ $P=0.51$ ANOVA) (Table 2,3,4).

CONCLUSIONS

The forest covers the largest area of nature reserve “Eglone” lands – 133,3 ha or 82% of area of nature reserve, and most of forests are wide variety of valuable natural forest habitats - Fenoscandian hemiboreal natural old broad-leaved deciduous forests covers 69,8 ha, alluvial forests

–9,6 ha, Western taiga –0,9 ha. 16,7 % of area is occupied by several kinds of grassland habitats. One of the most species-rich areas in nature reserve is the plot of wooded meadows with area of 1,1 ha. The number of vascular plants in this area reaches 80 – 85 species, whereas number of plant species per square metre reaches 35 in this habitat, as well as valuable and species-rich *Molinia* meadow – the total number of vascular plant species in this habitat reaches 65-70, plant species per square metre reaches 35-37.

The flora of nature reserve “Eglone” could be considered as only slightly influenced – the absolute majority of 437 plant species found in the nature reserve - 428 are autochthonous plant species. The chorological analysis of flora in nature reserve shows that there are no statistically significant differences with flora of larger areas – Daugava river valley and Latvia flora. The most widespread oceanity-continentality groups are slightly oceanic group (39,5 %) and suboceanic (24,3 %); sectorial groups – European-Asian (30,6 %) and circumpolar (20,6 %), as well as zonal groups – polyzonal (52,8 %) and temperate-submeridional (35,7 %).

There are 13 specially protected plant species found in the territory of nature reserve. The floristic rarity here is *Dentaria bulbifera*, found in *Aegopodiosa* type forests dominated by lime trees and aspen. This species in Latvia is close to North and East borders of its natural range, and there are only some findings of this species in the East of Latvia. Seven of specially protected species, most of them are representatives of orchid family – *Dactylorhiza baltica*, *D. incarnata*, *Iris sibirica*, *Gladiolus imbricatus*, *Gymnadenia conopsea*, *Orchis mascula* and *Platanthera bifolia* – are found in natural grassland and wooded meadow habitats.

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THE LIST OF VASCULAR PLANT SPECIES IN THE NATURE RESERVE „EGLONE”

Lycopodiaceae

Lycopodium annotinum L.

Huperziaceae

Huperzia selago (L.) Bernh. ex Schrank et Mart

Equisetaceae

Equisetum arvense L.

Equisetum fluviatile L.

Equisetum hyemale L.

Equisetum palustre L.

Equisetum pratense Ehrh.

Equisetum sylvaticum L.

Athyriaceae

Athrium filix-femina (L.) Roth

Dryopteriaceae

Dryopteris carthusiana (Vill.) H. P. Fuchs

Dryopteris filix-mas (L.) Schott

Gymnocarpium dryopteris (L.) Newmann

Thelypteridaceae

Thelypteris palustris Schott.

Phegopteris connectilis (Michx.) Watt

Hypolepidaceae

Pteridium aquilinum (L.) Kuhn

Pinaceae

Picea abies (L.) Karst.

Pinus sylvestris L.

Aristolochiaceae

Asarum europaeum L.

Ranunculaceae

Actaea spicata L.

Anemone nemorosa L.

Anemone ranunculoides L.

Batrachium circinatum (Sibth.) Spach.

Caltha palustris L.

Ficaria verna Huds.

Hepatica nobilis L.

Ranunculus acris L.

Ranunculus auricomus L.

Ranunculus bulbosus L.

Ranunculus cassubicus L.

Ranunculus fallax (Wimmer et Grab.) Kerner

Ranunculus flammula L.

Ranunculus polyanthemos L.

Ranunculus repens L.

Ranunculus sceleratus L.

Thalictrum aquilegifolium L.

Thalictrum flavum L.

Thalictrum lucidum L.

Trollius europaeus L.

Papaveraceae

Chelidonium majus L.

Corydalis solida (L.) Clairv.

Nymphaeaceae

Nuphar lutea (L.) Sm.

Chenopodiaceae

Atriplex patula L.

Chenopodium album L.

Caryophyllaceae

Arenaria serpyllifolia L.

Cerastium arvense L.

Cerastium holosteoides Fries.

Dianthus deltooides L.

Lychnis flos-cuculi L.

Melandrium album (Mill.) Garcke

Moehringia trinervia (L.) Clairv.

Myosoton aquaticum (L.) Moench.

Saponaria officinalis L.

Scleranthus annuus L.

Silene nutans L.

Silene vulgaris (Moench) Garcke

Spergula arvensis L.

Stellaria graminea L.

Stellaria holostea L.

Stellaria media L.

Stellaria nemorum L.

Stellaria palustris Retz.

Viscaria vulgaris Bernh.

Polygonaceae

Bistorta major Gray

Fallopia convolvulus (L.) Á.Löve

Persicaria hydropiper (L.) Spach

Persicaria amphibia (L.) Gray

Persicaria lapathifolia (L.) Gray

Persicaria maculosa Gray

Persicaria scabra (Moench) Moldenke

Polygonum aviculare L.

Rumex acetosa L.

Rumex acetosella L.

Rumex aquaticus L.

Rumex crispus L.

Rumex hydrolapathum Huds.

Rumex obtusifolius L.

Rumex thyrsoiflorus Fingerh.

Ericaceae

Calluna vulgaris (L.) Hull

Orthylia secunda (L.) House

Pyrola rotundifolia L.

Vaccinium myrtillus L.

Vaccinium vitis-idaea L.

Clusiaceae

Hypericum maculatum Crantz

Hypericum perforatum L.

Primulaceae

Lysimachia nummularia L.

Lysimachia vulgaris L.

Naumburgia thyrsoiflora (L.) Reichenb.

Primula veris L.

Trientalis europaea L.

Tiliaceae

Tilia cordata Mill.

Ulmaceae

Ulmus glabra Huds.

Ulmus laevis Pall.

Urticaceae

Urtica dioica L.

Cannabaceae

Humulus lupulus L.

Rhamnaceae

Frangula alnus Mill.

Rhamnus cathartica L.

Euphorbiaceae

Euphorbia virgata Waldst. et Kit.

Mercurialis perennis L.

Thymelaeaceae

Daphne mezereum L.

Celastraceae

Euonymus europaeus L.

Euonymus verrucosus Scop.

Violaceae

Viola arvensis Murr.

Viola canina L.

Viola epipsila Ledeb.

Viola mirabilis L.

Viola palustris L.

Viola riviniana Rchb.

Salicaceae

Populus tremula L.

Salix alba L.

Salix aurita L.

Salix caprea L.

Salix cinerea L.

Salix fragilis L.

Salix myrsinifolia Salisb.

Salix pentandra L.

Salix purpurea L.

Salix triandra L.

Salix viminalis L.

Brassicaceae

Barbarea arcuata (Opiz ex J. et C.Presl) Rchb.

Barbarea vulgaris R. Br.

Berberoa incana (L.) DC.

Capsella bursa-pastoris (L.) Medik.

Cardamine amara L.

Cardamine dentata Schult.

Cardamine pratensis L.

Dentaria bulbifera L.

Erysimum cheirantoides L.

Raphanus raphanistrum L.

Rorippa amphibia (L.) Besser

Rorippa palustris (L.) Besser

Sinapis arvensis L.

Thlaspi arvense L.

Sapindaceae

Acer platanoides L.

Fabaceae

Astragalus glycyphyllus L.

Lathyrus palustris L.

Lathyrus pratensis L.

Lathyrus vernus (L.) Bernh.

Lotus corniculatus L.

Medicago falcata L.

Medicago lupulina L.

Melilotus albus Medik.

Melilotus officinalis (L.) Pall.

Ononis arvensis L.

Trifolium arvense L.

Trifolium hybridum L.

Trifolium medium L.

Trifolium pratense L.

Trifolium repens L.

Trifolium spadiceum L.

Vicia cracca L.

Vicia sepium L.

Oxalidaceae

Oxalis acetosella L.

Geraniaceae

Erodium cicutarium (L.) L'Her.

Geranium pratense L.

Geranium palustre L.

Geranium robertianum L.

Geranium sylvaticum L.

Balsaminaceae

Impatiens noli-tangere L.

Polygalaceae

Polygala amarella Crantz

Polygala comosa Schkuhr

Fagaceae

Quercus robur L.

Betulaceae

Alnus glutinosa (L.) Gaertn.

Alnus incana (L.) Moench

Betula pendula Roth

Betula pubescens Ehrh.

Corylus avellana L.

Rosaceae

Agrimonia eupatoria L.

Agrimonia pilosa Ledeb.

Alchemilla acutiloba Opiz

Alchemilla baltica Sam. ex Juz.

Alchemilla cymatophylla Juz.

Alchemilla monticola Opiz

Alchemilla propinqua H. Lindb. ex Juz.

Alchemilla subcrenata Buser

Comarum palustre L.

Crataegus alemanniensis Cin.

Filipendula ulmaria (L.) Maxim.

Filipendula vulgaris Moench.

Fragaria vesca L.

Geum rivale L.

Geum urbanum L.

Malus domestica Borkh.

Padus avium L.

Potentilla anserina L.

Potentilla argentea L.

Potentilla erecta (L.) Raeusch.

Rubus caesius L.

Rubus idaeus L.

Rubus saxatilis L.

Sorbus aucuparia L.

Crassulaceae

Sedum acre L.

Saxifragaceae

Chrysosplenium alternifolium L.

Grossulariaceae

Ribes alpinum L.

Ribes nigrum L.

Ribes spicatum Robson.

Haloragaceae

Myriophyllum spicatum L.

Myriophyllum verticillatum L.

Lythraceae

Lythrum salicaria L.

Onagraceae

Chamaenerion angustifolium (L.) Scop.

Circaea alpina L.

Epilobium hirsutum L.

Epilobium montanum L.

Epilobium palustre L.

Epilobium parviflorum Schreb.

Oenothera rubricaulis Klebahn

Apiaceae

Aegopodium podagraria L.

Angelica sylvestris L.

Anthriscus sylvestris (L.) Hoffm.

Carum carvi L.

Chaerophyllum aromaticum L.

Cicuta virosa L.

Daucus carota L.

Heracleum sibiricum L.

Pastinaca sativa L.

Peucedanum palustre (L.) Moench

Pimpinella saxifraga L.

Sanicula europaea L.

Selinum carvifolia L.

Sium latifolium L.

Adoxaceae

Viburnum opulus L.

Caprifoliaceae

Lonicera xylosteum L.

Dipsacaceae

Knautia arvensis (L.) Coult.

Succisa pratensis Moench

Valerianaceae

Valeriana officinalis L.

Campanulaceae

Campanula glomerata L.

Campanula latifolia L.

Campanula patula L.

Campanula persicifolia L.

Campanula rapunculoides L.

Phyteuma spicatum L.

Menyanthaceae

Menyanthes trifoliata L.

Asteraceae

Achillea millefolium L.
Anthemis arvensis L.
Anthemis tinctoria L.
Arctium tomentosum Mill.
Artemisia campestris L.
Artemisia vulgaris L.
Bidens tripartita L.
Centaurea jacea L.
Centaurea scabiosa L.
Cirsium heterophyllum (L.) Hill
Cirsium oleraceum (L.) Scop.
Cirsium palustre (L.) Scop.
Cirsium arvense (L.) Scop.
Cirsium vulgare L.
Conyza canadensis L.
Crepis paludosa (L.) Moench
Erigeron acris L. s.l.
Eupatorium cannabinum L.
Filaginella uliginosa (L.) Opiz
Omalotheca sylvatica (L.) Sch. Bip. et. F.W. Schultz
Hieracium vulgatum Fr.
Hieracium umbellatum L.
Inula salicina L.
Lapsana communis L.
Leontodon autumnalis L.
Leontodon hispidus L.
Leucanthemum vulgare Lam.
Matricaria discoidea DC
Mycelis muralis (L.) Dumort.
Pilosella officinarum F. Schultz et Sch. Bip.
Pilosella x floribunda (Wimm. et Grab.) Fr.
Phalacrolooma septentrionale Fernald & Wiegand) Tzvelev
Ptarmica cartilaginea (Ledeb. ex Rchb.) Ledeb.
Scorzonera humilis L.
Senecio jacobaea L.
Senecio paludosus L.
Senecio vulgaris L.
Solidago virgaurea L.
Sonchus arvensis L.
Tanacetum vulgare L.

Taraxacum officinale L.s.l.

Tragopogon pratensis L.

Tripleurospermum inodorum (L.) Sch. Bip.

Tussilago farfara L.

Solanaceae

Solanum dulcamara L.

Convolvulaceae

Convolvulus arvensis L.
Cuscuta epithimum (L.) L.

Boraginaceae

Anchusa officinalis L.
Myosotis arvensis (L.) Hill
Myosotis palustris (L.) L.
Pulmonaria obscura Dumort.
Symphytum officinale L.

Rubiaceae

Galium album Mill.
Galium aparine L.
Galium boreale L.
Galium odoratum (L.) Scop.
Galium palustre L.
Galium rivale (Sibth. et Sm.) Griseb.
Galium uliginosum L.

Oleaceae

Fraxinus excelsior L.
Syringa vulgaris L.

Plantaginaceae

Linaria vulgaris L.
Plantago lanceolata L.
Plantago major L.
Plantago media L.
Veronica anagallis-aquatica L.
Veronica arvensis L.
Veronica beccabunga L.
Veronica chamaedrys L.
Veronica longifolia L.
Veronica officinalis L.
Veronica scutellata L.

Callitrichaceae

Callitriche copocarpa Sendtn.

Scrophulariaceae

Scrophularia nodosa L.
Verbascum nigrum L.

Orobanchaceae

Euphrasia rostkoviana Hayne
Euphrasia stricta D. Wolff ex J.F. Lehm.
Lathraea squamaria L.
Melampyrum polonicum (Beauv.) Soo
Melampyrum pratense L.
Odontites vulgaris Moench
Pedicularis palustris L.
Rhinanthus minor L.
Rhinanthus serotinus (Schoenh.) Oborny

Lentibulariaceae

Utricularia vulgaris L.

Lamiaceae

Acinos arvensis (Lam.) Dandy
Clinopodium vulgare L.
Galeobdolon luteum Huds.
Galeopsis bifida Boenn.
Galeopsis tetrahit L.
Glechoma hederacea L.
Lamium album L.
Lycopus europaeus L.
Mentha aquatica L.
Mentha arvensis L.
Prunella vulgaris L.
Scutellaria galericulata L.
Stachys officinalis (L.) Trevis.
Stachys palustris L.
Stachys sylvatica L.
Thymus ovatus Mill.
Thymus serpyllum L.

Liliaceae

Gagea lutea (L.) Ker-Gavl.

Trilliaceae

Paris quadrifolia L.

Iridaceae

Gladiolus imbricatus L.
Iris pseudacorus L.
Iris sibirica L.

Asparagaceae

Convallaria majalis L.
Maianthemum bifolium (L.) F. W. Schmidt
Polygonatum odoratum (Mill.) Druce
Polygonatum multiflorum (L.) All.

Orchidaceae

Dactylorhiza baltica (Klinge) N.I. Orlova
Dactylorhiza incarnata (L.) Soo
Dactylorhiza maculata (L.) Soo
Gymnadenia conopsea (L.) R. Br.
Listera ovata (L.) R. Br.
Neottia nidus-avis (L.) Rich.
Orchis mascula L.
Platanthera bifolia (L.) Rich.

Alismataceae

Alisma plantago-aquatica L.
Sagittaria sagittifolia L.

Hydrocharitaceae

Elodea canadensis Michx.
Hydrocharis morsus-ranae L.

Juncaginaceae

Triglochin palustre L.

Potamogetonaceae

Potamogeton gramineus L.
Potamogeton lucens L.
Potamogeton natans L.
Potamogeton perfoliatus L.

Acoraceae

Acorus calamus L.

Araceae

Calla palustris L.

Lemnaceae

Lemna minor L.
Spirodela polyrhiza (L.) Schleid.

Typhaceae

Sparganium emersum Rehm.
Typha latifolia L.

Juncaceae

Juncus alpino-articulatus Chaix
Juncus articulatus L.
Juncus buffonius L.
Juncus compressus Jacq.
Juncus conglomeratus L.
Juncus effusus L.
Juncus filiformis L.
Juncus tenuis Willd.
Luzula campestris (L.) DC
Luzula multiflora (Ehrh.) Lej.
Luzula pilosa (L.) Willd.

Cyperaceae

Carex acuta L.
Carex acutiformis Ehrh.
Carex caespitosa L.
Carex cinerea Poll.
Carex contigua Hoppe
Carex digitata L.
Carex echinata Murray
Carex elongata L.
Carex flava L. s. str.
Carex hartmanii Cajander
Carex hirta L.
Carex leporina L.
Carex nigra (L.) Reichard
Carex pallescens L.
Carex panicea L.
Carex pseudocyperus L.
Carex rostrata Stokes
Carex sylvatica Huds.
Carex vesicaria L.
Carex vulpina L.
Eleocharis palustris L.
Scirpus sylvaticus L.

Poaceae

Agrostis gigantea Roth
Agrostis stolonifera L.
Agrostis tenuis Sibth.
Alopecurus aequalis Sobol.
Alopecurus pratensis L.
Anthoxanthum odoratum L. s.l.
Arrhenatherum elatius (L.) J. et C. Presl
Brachypodium sylvaticum (Huds.) Beauv.
Briza media L.
Bromopsis inermis (Leys.) Holub
Calamagrostis arundinacea (L.) Roth

Calamagrostis canescens (Web.) Roth
Calamagrostis epigeios (L.) Roth
Calamagrostis neglecta (Ehrh.) P. Gaertn.
Cynosurus cristatus L.
Dactylis glomerata L.
Deschampsia caespitosa (L.) Beauv.
Elymus caninus (L.) L.
Elytrigia repens (L.) Nevski
Festuca gigantea (L.) Vill.
Festuca ovina L. s. str.
Festuca pratensis Huds.
Festuca rubra L.
Glyceria fluitans (L.) R. Br.
Hierochloë odorata (L.) P. Beauv.
Lolium perenne L.
Melica nutans L.
Milium effusum L.
Molinia caerulea (L.) Moench.
Phalaroides arundinacea (L.) Rauschert
Phleum pratense L.
Phragmites australis (Cav.) Trin. ex Steud.
Poa annua L.
Poa compressa L.
Poa nemoralis L.
Poa palustris L.
Poa pratensis L.
Poa trivialis L.
Setaria viridis (L.) Beauv.
Sieglingia decumbens (L.) Bernh.

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