

THE FLORA OF VASCULAR PLANTS IN THE NATURE RESERVE „PAŠULIENE FOREST”

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The nature reserve “Pašulienē mežs” (hereinafter “Pašulienē Forest”) is relatively small (the area is 106 ha), the biggest part of which is occupied by natural woodland habitats. During the research in the natural reserve there were 284 vascular plant species identified including seven being under special protection, which for a relatively small nature reserve may be considered to be a significant floral diversity. In the territory we have identified two woodland habitats of EU importance - 9020* Old mixed broadleaved forests and 9080* Fennoscandinavian deciduous swamp forests. The old mixed broadleaved forests occupy the biggest part of the territory. While making a phytogeographical analysis of the local flora it was stated that in general it does not differ from floras of other similar territories as well as from the Latvian flora on the whole. After oceanity-continentality range groups in the territory the most represented species are those with slight oceanity (120 species, i.e. 43.1%) and sub-oceanity (62, i.e. 22.3%) range, after sectorial range groups the most represented species are those with Eurasian (87, i.e. 31.3%) and circumpolar (62, i.e. 22.3%) range; after zonal range groups the most widely-represented are the species with polyzonal (159, i.e. 57.4%) and temperate - submeridional (89, i.e. 32.1%) range.

Key words: nature reserve „Pašulienē Forest”, flora, chorological analysis of flora, specially protected plant species.

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INTRODUCTION

The nature reserve „Pašulienē Forest” is located in Šedere municipality, Ilūkste region opposite Ilūkste railway station, (Fig.1.).

The specially protected nature territory was established in 2004 in order to preserve valuable woodland habitats identified there. The area of the reserve is not large and comprises 106 ha; besides, it is relatively homogeneous. The main

nature values in the reserve are old natural ash trees and spruces or spruce and aspen tree-type rich deciduous forests that have not been affected by forestry works for a long time. On the whole, in the region such fragmentarily scattered forests are typical mainly for lake islands and peninsulas or river-bed glens (Tabaka 1982, Ziediņa 2005), though here the old spruces and aspen tree forests are typical for the flat terrain (Ziediņa 2005) and are not connected with hardly managed territories along the lakes and rivers.

In the territory we do not observe a big anthropogenic load; although in the surrounding territories there are 20-30 years' old actively managed young forest stands, in the reserve territory there are no roads or even widely used footpaths. The territory in the north has an indirect border with Daugavpils-Panevėžys railway track, although in this case between the railway track and the nature reserve territory there is a small forest buffer strip, which results in a low amount of alien species.

The aim of the research was to analyze the encountered forest habitats, to carry out a floristic research of the nature reserve "Pašulīene Forest" and a phytogeographic analysis of the local flora.

History of the flora research of the nature reserve "Pašulīene Forest"

The first floristic researches that could allow discussing the flora of South Latgale and Selonia in general were carried out in the first half of the 19th century by J. Fiedorowicz, E. Lehmann and T. Bienert (Suško & Evarts-Bunders, 2010). The first botanic floristic researches in Selonia (at present the territory of Daugavpils and Ilūkste region in Ilūkste vicinity) were started in 1818 by a teacher in natural sciences of Ilūkste Missionary School Józef Fiedorowicz (1777–1860). Owing to his researches, Ilūkste vicinity, or the southern part of present Daugavpils region and Ilūkste region became the most fully-researched territory in Latvia in the 19th century as well as one of the territories with the best-studied flora in the Baltics in general (Fiedorowicz 1830, 1851). Although almost two hundred years have passed, the territory of the nature reserve includes the saved fragments of the forest tract near Pašulīene, which is called Grīnvalde forest and which can be found under this name in Fiedorowicz's manuscript "*Katalog rošlin dziko rosnančnych*". The original of the manuscript is kept in the National Library of Lithuania, though the part of the saved herbarium is found at the University of Vilnius.

The floristic researches done by J. Fiedorowicz and other naturalists of the 19th century were summarized and published in a voluminous work by Edward Lehmann "The Flora of Latgale

and Neighbouring Territory" (Lehmann, 1895). Having researched Latgale together with its neighbouring territory, in Lehmann's flora there were 1338 plant species and also nearly 1000 interspecies taxons, varieties and forms, mentioned. The flora of the territory of Selonia including Ilūkste and Šedere vicinity was also studied by Karl Reinhold Kupffer (Kupffer 1925). Although many of the locations found by these authors cannot be precisely identified within the territory of the nature reserve, they present a good overview of the floristic richness of Ilūkste vicinity.

The data on the specially protected species and flora of "Pašulīene Forest" in the researches and literature of the 20th century are rather scarce. At the beginning of 1980s the researchers of the Laboratory of Botany of LU Institute of Biology under the supervision of L. Tabaka made a detailed research into the flora of the south-eastern geobotanic flora. The results of the research were summarized in the book on the flora of the south-easter geobotanic region of Latvia (Tabaka 1982). In the geobotanic region there were 983 vascular plant species identified. The nature reserve "Pašulīene Forest" is located in the first microdistrict of the first sub-district of this geobotanic region, in the Augšzeme highlands, though, unfortunately, no references to floristic rarities in the territory of the nature reserve "Pašulīene Forest" are not mentioned there (Tabaka 1982).

In 2001 the ecologist of Daugavpils forest district S. Soms carried out an inventory of the natural forest habitats, which stated a large concentration of natural habitats; therefore in spring 2002 referring to the campaign organized by the Ministry of Environmental Protection and Regional Development "Recommend a territory!", the forestry of Southern Latgale announced this territory as having a status of a specially protected nature territory.

In 2003 within the project "Compliance of the Latvian System of Specially Protected Territories with the Emerald / Natura 2000 Networks of Protected Areas", the 1st and 2nd appendices

of European directives, the plant and habitat experts provided an evaluation of the territory and acknowledged the necessity to establish a nature reserve here in order to save valuable forest habitats in compliance with NATURA 2000 territory criteria (Ziedīņa 2005).

The first relatively complete floristic study of the territory of the nature reserve “Pašuliene Forest” was carried out in July 2005, when botanists V. Baroniņa and U. Suško inspected the territory of the nature reserve in order to elaborate the plan of protection, although a full floristic analysis as well as a phytogeographic (chorologic) analysis of the species found in the nature reserve have not been carried out there.

MATERIAL AND METHODS

The physical geography of the territory

Latvian south-east, including Selonia, is Latvian

warmest climatic region with the most distinct features of a continental climate. According to the present Latvian climatic zoning, (Kalniņa 1995), south-eastern “Pašuliene Forest” is a part of the climatic zone of Lubana lowland and Latgale highland, a sub-district of Augšzeme highland. The sum of active temperatures here reaches 1900...2100°C. In Ilūkste vicinity a perennial average air temperature in January is – 6,5°C, while in July the average temperature is +17,0 - 17,5°C, the average amplitude of temperatures is 23,5°C. The period without frost in this territory comprises 135-145 days on average. Winters are stable (snow stays for 100-110 days) with 25-35 cm thick snow covering. Precipitation is 550-600 mm per year, from which around 450 mm fall during the warm season (Ziedīņa 2005).

The nature reserve “Pašuliene Forest” is located in Ilūkste hills of Augšzeme highland. Its terrain is formed by ridges, ramparts and hillocks. The absolute height in most places exceeds 160 m above sea level.

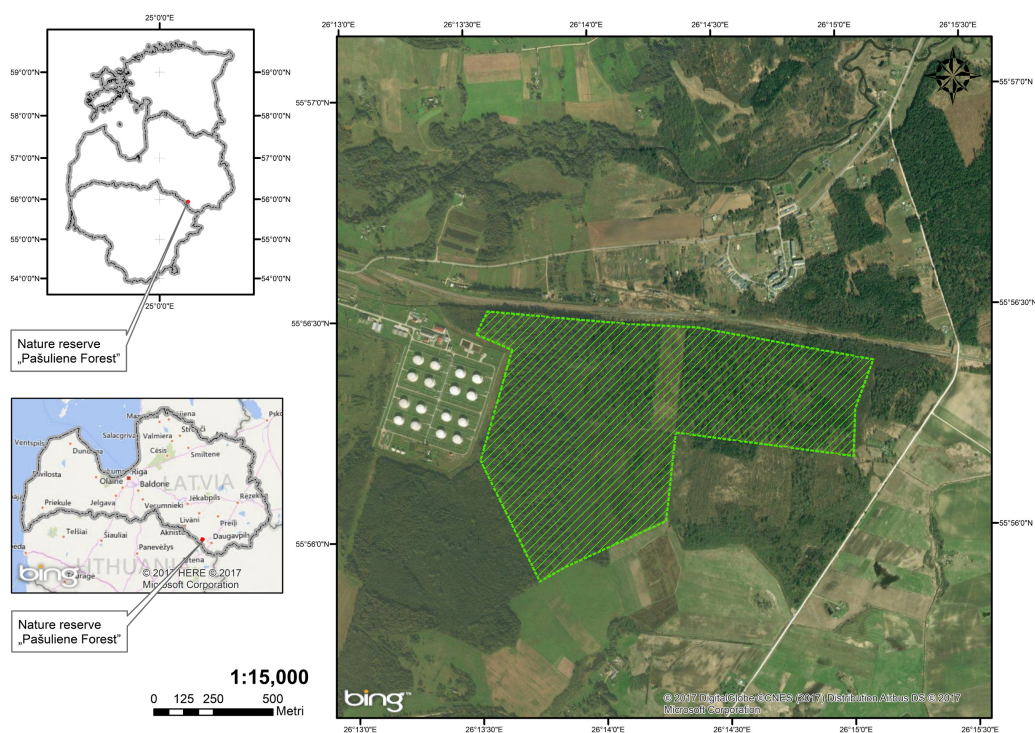


Fig. 1. Location of the nature reserve „Pašuliene Forest” in Latvia.

Table 1. Distribution of autochthonous vascular plant flora in the nature reserves “Pašuliene Forest”, “Sasaļi Forest”, “Eglone” and Latvia by oceanity-continentality range groups

Oceanity-continentality groups	Pašuliene Forest		Sasaļi Forest		Eglone		Latvia	
	Number	%	Number	%	Number	%	Number	%
Littoral	0	0	0	0	0	0	32	2,5
Euoeceanic	0	0	0	0	0	0	5	0,4
Oceanic	1	0,4	9	2	3	0,7	104	8,1
Slightly oceanic	120	43,1	178	38,8	169	39,5	394	30,7
Suboceanic	62	22,3	108	23,7	104	24,3	336	26,2
Subcontinental	15	5,4	30	8,4	40	9,3	132	10,3
Subcontinental-littoral	0	0	0	0	0	0	5	0,4
Continental-littoral	0	0	0	0	0	0	16	1,2
Continental	22	7,9	39	8,6	32	7,5	161	12,5
Indifferent	58	20,9	84	18,5	80	18,7	98	7,7
Total	278	100	456	100	428	100	1283	100

order Nr 93 by 15 March 2010 of the Minister of Environmental Protection and Regional Development.

RESULTS AND DISCUSSION

The characteristic of flora of the nature reserve

The nature reserve „Pašuliene Forest” is small (its area is 106 ha), nevertheless it holds a significant biodiversity – the largest part of the territory is covered by valuable protected forest habitats – Fennoscandian hemiboreal natural old broad leaved deciduous forests (70.70 ha) and Fennoscandian deciduous swamp woods (19.40 ha) During the research in the natural reserve there were 284 vascular plant species identified including seven being under special protection In this specially protected territory the total amount of identified species is not very big, even if compared to the nature reserve “Sasaļi Forest” that is similar in terms of area and is located 4 km away and where floristic richness is considerably bigger, i.e. 482 species. In other small protected nature territories with a broadleaved forest habitat of only one type the number of species is

even smaller; thus, for example, in the specially protected nature territory “Pīlori” the number of species is 189 (the area is 19,6 ha) (Laiviņš & Gavrilova 2009).

In the nature reserve “Pašuliene Forest” no bog, grassland or water habitats have been identified. The territory, though, is crossed by a stream, in which waterflow is observed only in spring and wet autumn seasons, while during the biggest vegetation season the stream waterflow is not observed, therefore it does not confirm to the requirements set for a stream habitat; typical alluvial forest structures do not form in its banks, the stream does not overflow even in extremely wet seasons.

The taxonomic richness of flora (amount of taxa) is not related to the territory of the reserve; the most essential factor determinig it is a diversity of ecotypes (Gavrilova & Laiviņš 1992). In the territory which is represented by only one habitat group (in this case - forests), there is no diversity of ecological niches, therefore a floral diversity, though a very specific one, is not wide.

Specially protected plant species in the territory of the nature reserve

In the territory of the nature reserve there were seven protected plant species identified: *Dactylorhiza fuchsia* (Druce) Soó, *Dactylorhiza incarnata* (L.) Soó, *Dactylorhiza maculata* (L.) Soó, *Euonymus verrucosus* Scop., *Glyceria lithuanica* (Gorski) Gorski, *Huperzia selago* (L.) Bernh. ex Scrank et Mart. and *Lycopodium annotinum* L.

***Dactylorhiza fuchsii* (Druce) Soó** – encountered frequently in Latvia, in the nature reserve it is rich in growth in each forest plot that is over 60 years old and sometimes in younger ones.

***Dactylorhiza incarnata* (L.) Soó** - insufficiently investigated species in Latvia, in the nature reserve some samples on firebreaks identified.

***Dactylorhiza maculata* (L.) Soó** - insufficiently investigated species in Latvia, in numerous forest plots.

***Euonymus verrucosus* Scop.** - 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-eastern regions of Latvia. It is recognised in some sites in *Aegopodiosa* found in some places in small quantities.

***Glyceria lithuanica* (Gorski) Gorski** - rare in Latvia, only in the central part of the country and the eastern or north-eastern part. In the nature reserve “Pašuliene Forest” there have been two locations found since the environmental protection plan of 2005 and they were identified again in 2011 and 2016. The species is considered to be one of the most significant species among old, mixed broadleaved deciduous woodland habitats, and it is especially essential to save such old, unchanged broadleaved stands in order to save the species location.

***Huperzia selago* (L.) Bernh. ex Scrank et Mart.** – rather common in the whole Latvia, nevertheless the number of locations are decreasing towards

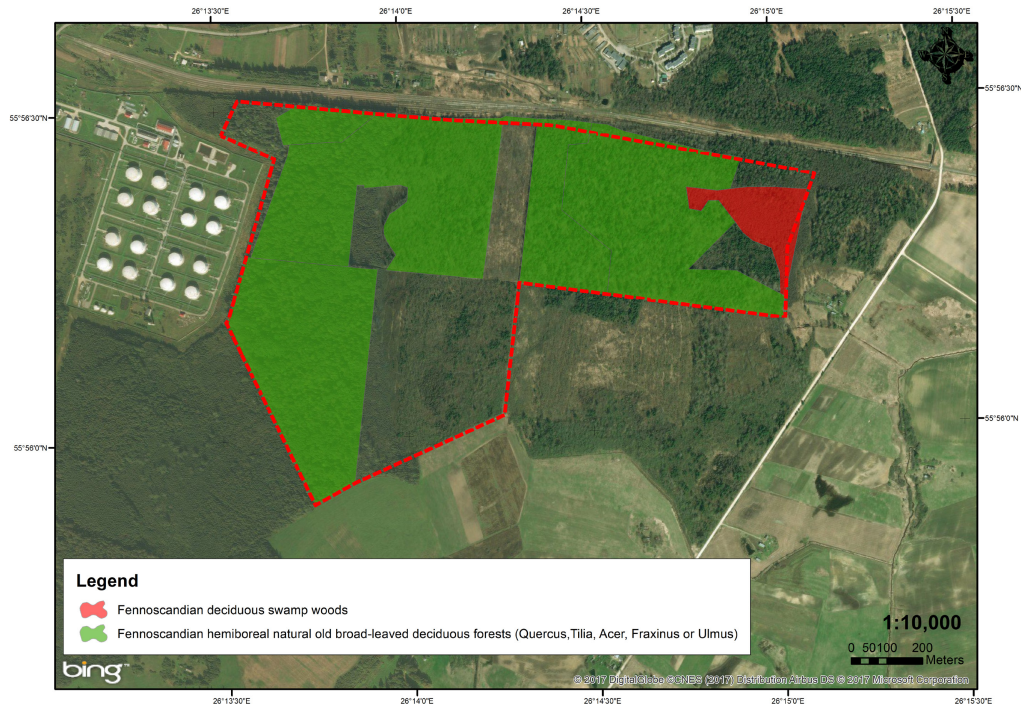


Fig. 3. Protected habitats of European Union importance in the nature reserve „Pašuliene Forest”.

Table 2. Distribution of forest stands in nature reserve “Pašulienes Forest” by forest types.

Forest type	Area (ha)
<i>Aegopodiosa</i>	97.6
<i>Oxalidosa</i>	3.9
<i>Filipendulosa</i>	2.1
<i>Dryopteriosa-caricosa</i>	1.9
<i>Mercurialiosa mel.</i>	1
Total:	106.5

Table 4. Distribution of forest stands in the nature reserve „Pašulienes Forest” by forest stand age

Age of forest stand (years)	Area (ha)
<30	20.9
31-60	8.7
61-100	23.8
>101	53.1
Total:	106.5

the east of Latvia. Rare species in the territory of the nature reserve, in the nature reserve the most frequently encountered is forest type *Oxalidosa*.

Lycopodium annotinum L. - could be considered as insufficiently investigated species in Latvia. It is found sparsely in forests of the nature reserve, some places form large groups. *In the nature reserve the most frequently encountered is forest type Oxalidosa.*

The environment protection plan developed in 2005 shows numerous moss and lichen species that are specially protected and recorded in the Red Data Book of Latvia: *Bazzania trilobata*, *Lejeunea cavifolia*, *Neckera pennata* un *N. complanata*, *Jungermannia leiantha*, *Metzgeria furcata*, *Lobaria pulmonaria*, but in one spring location on the rock - *Fissidens arnoldii* (Ziedīņa 2005).

Forests

The forest covers all the land of the nature reserve and comprises 106.5 ha. The most widespread are dry forest types dominated by *Aegopodiosa*

Table 3. Distribution of forest stands in the nature reserve „Pašuliene Forest” by dominant tree species

Dominant tree species	Area (ha)
<i>Betula pendula</i>	39.4
<i>Populus tremulus</i>	23.1
<i>Picea abies</i>	24.5
<i>Fraxinus excelsior</i>	15.5
<i>Alnus glutinosa</i>	4
Total:	106.5

type forests – 97.6 ha. There are four more forest types in small areas: *Oxalidosa*, *Filipendulosa*, *Dryopteriosa – caricosa*, *Mercurialiosa mel.*, (Table. 2, Table 3 and Table 4.). Analyzing forest stand inventory descriptions of dominant species it can be observed that there is relatively equal spread of birch trees, aspen trees, spruces and ash trees with a slight dominance of birch trees. However, in the wild aspen trees are certainly more often encountered, it is also mainly in the second stand and is continuously growing. It is to be noted that ash trees are often of a great diameter; their age is evaluated at about 140 years. Therefore, in the forestry plans this forestland is often called “The forest of ash trees”, seeds for planting used to be collected there (Ziedīņa 2005).

The forests that are over 100 years old are especially valuable. Such forests occupy a half of the nature reserve territory. About 1/5 of the territory is occupied by young forests, those that are 18-30 years old (Table 4). The last complete forest clearance was in 1998.

The most valuable forest habitats in the territory of the nature reserve are *Aegopodiosa* type forests – aspen and aspen-spruce forest plots with 60-70 species of vascular plants in grass layer. In this cenosis, the dominant plant flora segment is – *Aegopodium podagraria* L., *Anemone nemorosa* L., *Carex sylvatica* Huds., *Mercurialis perennis* L., *Poa nemoralis* L., *Stellaria nemorum* L. etc. Some scattered fragments of *Aegopodiosa* type forests dominated by old ash trees are especially valuable forest habitats.

Table 5. Distribution of autochthonous vascular plant flora in the nature reserves “Pašuliene Forest”, “Sasaļi Forest”, “Eglone” and Latvia by sectorial range groups.

Sectorial group	Pašuliene Forest		Sasaļi Forest		Eglone		Latvia	
	Species	%	Species	%	Species	%	Species	%
European	43	15,5	72	15,8	60	14,0	333	26,0
European-American	3	1,1	4	0,9	3	0,7	26	2,0
European-Siberian	9	3,2	11	2,4	13	3,0	32	2,5
European-West Siberian	39	13,9	56	12,3	69	16,1	128	10,0
European-Central Asian	1	0,4	3	0,7	4	0,9	13	1,0
European-Asian	87	31,3	136	29,7	131	30,6	276	21,5
European-West Asian	20	7,2	41	9,0	34	7,9	122	9,5
European-Siberian-American	0	0	0	0	0	0	1	0,1
European-West Siberian American	3	1,1	4	0,9	7	1,6	13	1,0
European-West Asian American	3	1,1	4	0,9	3	0,7	10	0,8
Circumpolar	62	22,3	108	23,7	88	20,6	302	23,5
Cosmopolitic	8	2,9	17	3,7	16	3,7	27	2,1
Total	278	100	456	100	428	100	1283	100

In general, the shade-tolerant species are common for old forests; they have a weak ability of colonizing new territories. The seed fertility and the seedling survival rate of these species are low (Hermy et al. 1999). In the territories that have been forested for a long time the ground vegetation species (“Ancient forest species”) have common ecological features which are different from those features that are typical for newly formed characteristic plants encountered in the forests. These ecological features that are distinct for both groups are: ability to spread, seed fertility, seeds’ morphological features, soil requirements, life strategies, molonization abilities (Hermy & Verheyen 2007, Wulf & Thilo 2008, Ikauniece 2013). In this case *Glyceria lithuanica* and *Galium odoratum* can be considered to be such “Ancient forest species”.

Chorological analysis of flora in the nature reserve “Pašuliene Forest”

Having carried out a phytogeographical analysis of the local flora in this territory it can be stated

that on the whole it does not distinctly differ from floras of other similar territories, as well as from the Latvian flora in general.

After oceanity-continentality range groups the most widely-represented species in the territory are those with slight oceanity (120 species, i.e. 43,1%) and sub-oceanity (62, i.e. 22,3%) range (Table 1). The number of species belonging to these two chorological groups is considerably bigger than in Latvia on the whole. It can be explained by the fact that caulescent and even ligneous species of vascular plants that are typical for old mixed broadleaved forests mainly belong to these two groups. Having analyzed the species of this habitat that have been mentioned in descriptions and inventory reports it can be concluded that more than 85% belong to these two groups.

After sectorial range group the most frequently represented are the species with Euroasian (87, i.e. 31,3%) and circumpolar (62, i.e. 22,3%) range (Table 5). However, after zonal range

Table 6. Distribution of autochthonous vascular plant flora in the nature reserves “Pašuliene Forest”, “Sasaļi Forest”, “Eglone” and Latvia by zonal range groups.

Zonal group	Pašuliene Forest		Sasaļi Forest		Eglone		Latvia	
	Species	%	Species	%	Species	%	Sugas	%
Arcto-boreal	0	0	0	0	0	0	9	0,7
Boreal	0	0	0	0	0	0	13	1,0
Boreal-temperate	16	5,8	30	6,6	27	6,3	105	8,2
Temperate	7	2,5	14	3,1	15	3,5	118	9,2
Temperate-submeridional	89	32,1	155	34,0	153	35,7	423	33,0
Submeridional	5	1,8	7	1,5	6	1,4	59	4,6
Submeridional-meridional	1	0,4	1	0,2	1	0,2	31	2,4
Polyzonal	159	57,4	249	54,6	226	52,8	525	40,9
Total	278	100	456	100	428	100	1283	100

groups the most widely-represented species are those with polyzonal (159, i.e. 57,4%) range in the Latvian flora, too (40,9%) (these are the dominant species with wide ranges embracing numerous bio-geographical zones) (Fatare 1992, Laiviņš 2009) and temperate-submeridional (89, i.e. 32,1%) ranges (Table 6). Vascular plant species characteristic for deciduous forests mainly belong to temperate-submeridional range groups. Although, in this case ordinary common species with a wide ecological tolerance ranges and equally wide range on the whole, which have been found on forest firebreaks, weed-filled forest paths and in young regenerated forest stands of the nature reserve, comprise a relatively much higher proportion of polyzonal species over a relatively small total species richness in this territory.

The flora of the nature reserve “Pašuliene Forest” has had little influence, the majority from 284 vascular plant species (278 species) are autochthonous, while only seven species (2,5%) are anthropophytes: *Conyza canadensis* (L.) Cronquist, *Impatiens parviflora* DC., *Oenothera rubicaulis* Kleb., *Phalacrolooma annuum* (L.) Dumort., *Salix fragilis* L., *Saponaria officinalis* L., *Trifolium hybridum* L (Gavrilova & Šulcs 1999). It is especially demonstrative if we compare these data with the flora of the Daugava

river valley, where the proportion of alien species comprises 14,2% (Fatare, 1989). The spread of alien species in the nature reserve is limited by lack of wounded habitats (in the nature reserve there are no roads at all); some anthropophytes are encountered along forest firebreaks and closer to railway embankments. In the nature reserve territory there is no anthropogenic load, the territory is not landscaped for tourists and there are no places for picking mushrooms and berries.

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Annex 1. List of vascular plants of the nature reserve “Pašulīene Forest”

Lycopodiaceae

Lycopodium annotinum L.

Huperziaceae

Huperiza selago (L.) Brnh. ex Schrank et Mart

Equisetaceae

Equisetum arvense L.

Equisetum fluviatile L.

Equisetum pratense Ehrh.

Equisetum sylvaticum L.

Athyriaceae

Athyrium filix-femina (L.) Roth

Aspidiaceae

Gymnocarpium dryopteris (L.) Newmann

Dryopteriaceae

Dryopteris carthusiana (Vill.) H. P. Fuchs

Dryopteris filix-mas (L.) Schott

Thelypteridaceae

Thelypteris palustris Schott.

Hypolepidaceae

Pteridium aquilinum (L.) Kuhn

Pinaceae

Picea abies (L.) Karst.

Pinus sylvestris L.

Aristolochiaceae

Asarum europaeum L.

Berberidaceae

Berberis vulgaris L.

Ranunculaceae

Actaea spicata L.

Anemone nemorosa L.

Anemone ranunculoides L.

Caltha palustris L.

Ficaria verna Huds.

Hepatica nobilis L.

Ranunculus acris L.

Ranunculus auricomus L.

Ranunculus cassubicus L.

Ranunculus repens L.

Thalictrum flavum L.

Papaveraceae

Chelidonium majus L.

Corydalis solida (L.) Clairv.

Caryophyllaceae

Arenaria serpyllifolia L.

Cerastium holosteoides Fries.

Dianthus deltoides L.

Lychnis flos-cuculi L.

Melandrium album (Mill.) Garcke

Moehringia trinervia (L.) Clairv.

Myosoton aquaticum (L.) Moench.

Saponaria officinalis L.

Silene vulgaris (Moench) Garcke

Stellaria graminea L.

Stellaria holostea L.

Stellaria media L.

Stellaria nemorum L.

Chenopodiaceae

Chenopodium album L.

Clusiaceae

Hypericum perforatum L.

Hypericum maculatum Crantz

Ericaceae

Calluna vulgaris (L.) Hull

Vaccinium myrtillus L.

Vaccinium vitis-idaea L.

Primulaceae

Lysimachia nummularia L.

Lysimachia vulgaris L.

Primula veris L.

Trientalis europaea L.

Polygonaceae

Persicaria amphibia (L.) Gray

Persicaria hydropiper (L.) Spach

Persicaria scabra (Moench) Moldenke

Polygonum aviculare L.

Rumex acetosa L.

Rumex acetosella L.

Rumex aquaticus L.

Rumex obtusifolius L.

Celastraceae

Euonymus europaea L.

Euonymus verrucosus Scop.

Tiliaceae

Tilia cordata Mill.

Ulmaceae

Ulmus glabra Huds.

Ulmus laevis Pall.

Urticaceae

Urtica dioica L.

Cannabaceae

Humulus lupulus L.

Rhamnaceae

Frangula alnus Mill.

Euphorbiaceae

Mercurialis perennis L.

Thymelaeaceae

Daphne mezereum L.

Violaceae

Viola arvensis Murr.

Viola canina L.

Viola epipsila Ledeb.

Viola mirabilis L.

Viola palustris L.

Viola reichenbachiana Jord. ex Boreau

Viola riviniana Rchb.

Salicaceae

Populus tremula L.

Salix aurita L.

Salix caprea L.

Salix cinerea L.

Salix fragilis L.

Salix myrsinifolia Salisb.

Brassicaceae

Barbarea vulgaris R. Br.

Berteroa incana (L.) DC.

Capsella bursa-pastoris (L) Medik.

Cardamine amara L.

Cardamine dentata Schult.

Cardamine impatiens L.

Cardamine pratensis L.

Erysimum cheirantoides L.

Rorippa palustris (L.) Besser

Sisymbrium officinale (L.) Scop.

Oxalidaceae

Oxalis acetosella L.

Geraniaceae

Geranium palustre L.

Gernium sylvaticum L.

Balsaminaceae

Impatiens parviflora DC

Impatiens noli-tangere L.

Polygalaceae

Polygala vulgaris L.

Sapindaceae

Acer platanoides L.

Fabaceae

Lathyrus pratensis L.

Lathyrus vernus (L.) Bernh.

Medicago falcata L.

Medicago lupulina L.

Melilotus albus Medik.

Trifolium hybridum L.

Trifolium medium L.

Trifolium pratense L.

Trifolium repens L.

Vicia cracca L.

Vicia sepium L.

Vicia sylvatica L.

Betulaceae

Alnus incana (L.) Moench

Alnus glutinosa (L.) Gaertn.

Betula pendula Roth

Betula pubescens Ehrh.

Corylus avellana L.

Fagaceae

Quercus robur L.

Rosaceae

Agrimonia eupatoria L.

Alchemilla acutiloba Opiz

Comarum palustre L.

Filipendula ulmaria (L.) Maxim.

Fragaria vesca L.

Geum rivale L.

Geum urbanum L.

Malus sylvestris (L.) Mill.

Padus avium L.

Potentilla anserina L.

Potentilla argentea L.

Potentilla erecta (L.) Raeusch.

Pyrus pyraeaster Burgsd.

Rubus caesius L.

Rubus idaeus L.

Rubus saxatilis L.

Sorbus aucuparia L.

Saxifragaceae

Chrysosplenium alternifolium L.

Grossulariaceae

Ribes alpinum L.

Ribes nigrum L.

Apiaceae

Aegopodium podagraria L.

Angelica sylvestris L.

Anthriscus sylvestris (L.) Hoffm.

Chaerophyllum aromaticum L.

Cicuta virosa L.

Peucedanum palustre (L.) Moench

Sanicula europaea L.

Caprifoliaceae

Lonicera xylosteum L.

Viburnum opulus L.

Valerianaceae

Valeriana officinalis L.

Dipsacaceae

Knautia arvensis (L.) Coult.

Campanulaceae

Campanula latifolia L.

Campanula patula L.

Campanula trachelium L.

Phyteuma spicatum L.

Menyanthaceae

Menyanthes trifoliata L.

Asteraceae

Achillea millefolium L.

Arctium tomentosum Mill.

Artemisia vulgaris L.

Bidens tripartita L.

Centaurea jacea L.

Cirsium arvense (L.) Scop.

Cirsium oleraceum (L.) Scop.

Cirsium palustre (L.) Scop.

Conyza canadensis L.

Crepis paludosa (L.) Moench

Erigeron acris L. s. l.

Hieracium vulgatum Fr.

Lapsana communis L.

Leontodon autumnalis L.

Leucanthemum vulgare Lam.

Mycelis muralis (L.) Dumort.

Phalacrologium annuum (L.) Dumort.

Pilosella officinarum F. Schultz et Sch. Bip.

Senecio sylvaticus L.

Senecio vulgaris L.

Solidago virgaurea L.

Sonchus arvensis L.

Tanacetum vulgare L.

Taraxacum officinale L. s. l.

Tragopogon pratensis L.

Tussilago farfara L.

Solanaceae

Solanum dulcamara L.

Boraginaceae

Myosotis arvensis (L.) Hill

Myosotis caespitosa Schultz

Myosotis palustris (L.) L.

Pulmonaria obscura Dumort.

Onagraceae

Chamaenerion angustifolium (L.) Scop.

Circaea alpina L.

Epilobium hirsutum L.

Epilobium montanum L.

Epilobium palustre L.

Oenothera rubricaulis Klebahn

Rubiaceae

Galium album Mill.

Galium odoratum (L.) Scop.

Galium palustre L.

Galium uliginosum L.

Oleaceae

Fraxinus excelsior L.

Scrophulariaceae s. str.

Scrophularia nodosa L.

Orobanchaceae

Euphrasia stricta D. Wolff ex J.F. Lehm

Lathraea squamaria L.

Melampyrum polonicum (Beauv.) Soo

Melampyrum pratense L.

Plantaginaceae

Plantago lanceolata L.

Plantago major L.

Veronica beccabunga L.

Veronica chamaedrys L.

Veronica officinalis L.

Lamiaceae

Ajuga reptans L.
Clinopodium vulgare L.
Galeobdolon luteum Huds.
Galeopsis tetrahit L.
Glechoma hederacea L.
Lamium album L.
Lycopus europaeus L.
Mentha arvensis L.
Prunella vulgaris L.
Scutellaria galericulata L.
Stachys palustris L.
Stachys sylvatica L.

Liliaceae s. str.

Gagea lutea (L.) Ker-Gavl.

Trilliaceae

Paris quadrifolia L.

Iridaceae

Iris pseudacorus L.

Asparagaceae

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

Orchidaceae

Dactylorhiza fuchsii (Druce) Soo
Dactylorhiza incarnata (L.) Soo
Dactylorhiza maculata (L.) Soo
Epipactis helleborine (L.) Crantz
Epipactis palustris (L.) Crantz
Neottia nidus-avis (L.) Rich.

Alismataceae

Alisma plantago-aquatica L.

Acoraceae

Acorus calamus L. – smaržīgā kalme

Juncaceae

Juncus compressus Jacq.
Juncus conglomeratus L.
Juncus effusus L.
Juncus filiformis L.
Luzula pilosa (L.) Willd.

Cyperaceae

Carex acuta L.
Carex appropinquata Schumach.
Carex caespitosa L.
Carex cinerea Poll.
Carex digitata L.
Carex echinata Murray
Carex flava L. s. str.
Carex hirta L.

Carex leporina L.
Carex nigra (L.) Reichard
Carex pallescens L.
Carex pseudocyperus L.
Carex remota L.
Carex sylvatica Huds.
Carex vaginata Tausch.
Carex vesicaria L.
Carex vulpina L.
Scirpus sylvaticus L.

Poaceae

Agrostis canina L.
Agrostis gigantea Roth
Agrostis stolonifera L.
Agrostis tenuis Sibth.
Alopecurus pratensis L.
Anthoxanthum odoratum L.
Brachypodium sylvaticum (Huds.) Beauv.
Bromus mollis L.
Calamagrostis arundinacea (L.) Roth
Calamagrostis canescens (Web.) Roth
Calamagrostis epigeios (L.) Roth
Calamagrostis neglecta (Ehrh.) P. Gaertn.
Calamagrostis stricta (Timm) Koeler
Dactylis glomerata L.
Deschampsia caespitosa (L.) Beauv.
Elymus caninus (L.) L.
Elytrigia repens (L.) Nevski
Festuca gigantea (L.) Vill.
Festuca pratensis Huds.
Glyceria fluitans (L.) R. Br.
Glyceria lithuanica (Gorski) Gorski
Milium effusum L.
Molinia caerulea (L.) Moench.
Phleum pratense L.
Phragmites australis (Cav.) Trin. ex Steud.
Poa annua L.
Poa compressa L.
Poa nemoralis L.
Poa palustris L.
Poa pratensis L.