

Supplementary file

Table S1. The list of species recorded in the pine forest and mixed oak-pine forest categories with their frequency

	Pine forests			Mixed oak-pine forests		
	AF	RF1	RF2	AF	RF1	RF2
Mean number of species in relevé	20.4	18.8	19.0	31.6	27.7	27.5
Plant species	Frequency (%)					
Trees						
<i>Acer platanoides</i>	0.0	0.0	0.0	0.0	0.0	3.9
<i>Alnus glutinosa</i>	0.0	0.0	0.0	0.0	7.7	2.0
<i>Betula pendula</i>	47.4	67.9	73.5	73.3	76.9	82.4
<i>Betula pubescens</i>	1.8	0.0	0.0	3.3	0.0	2.0
<i>Fagus sylvatica</i>	1.8	3.6	0.9	10.0	7.7	2.0
<i>Frangula alnus</i>	0.0	0.0	0.0	0.0	0.0	2.0
<i>Padus serotina</i>	0.0	0.0	1.7	6.7	15.4	9.8
<i>Picea abies</i>	80.7	57.1	57.3	90.0	92.3	76.5
<i>Pinus sylvestris</i>	100.0	100.0	100.0	100.0	100.0	100.0
<i>Quercus robur</i>	28.1	14.3	11.1	66.7	53.8	60.8
<i>Quercus rubra</i>	0.0	0.0	0.9	0.0	7.7	0.0
<i>Sorbus aucuparia</i>	1.8	0.0	0.0	3.3	0.0	9.8
Trees in shrub and understorey layer						
<i>Acer platanoides</i>	0.0	0.0	0.0	6.7	7.7	9.8
<i>Acer pseudoplatanus</i>	0.0	0.0	0.9	3.3	0.0	2.0
<i>Alnus glutinosa</i>	0.0	0.0	0.0	0.0	7.7	0.0
<i>Alnus incana</i>	0.0	7.1	0.9	0.0	0.0	0.0
<i>Betula pendula</i>	57.9	75.0	75.2	56.7	69.2	60.8
<i>Betula pubescens</i>	1.8	0.0	0.0	6.7	0.0	2.0
<i>Carpinus betulus</i>	0.0	0.0	0.9	3.3	0.0	2.0
<i>Fagus sylvatica</i>	3.5	10.7	6.0	30.0	7.7	7.8
<i>Malus sylvestris</i>	1.8	0.0	0.0	3.3	0.0	3.9
<i>Padus serotina</i>	7.0	25.0	25.6	20.0	7.7	35.3
<i>Picea abies</i>	68.4	64.3	60.7	73.3	69.2	62.7
<i>Pinus sylvestris</i>	68.4	78.6	76.1	33.3	53.8	47.1
<i>Populus tremula</i>	1.8	0.0	2.6	0.0	7.7	2.0
<i>Prunus sp.</i>	0.0	0.0	0.9	0.0	0.0	0.0
<i>Pyrus communis</i>	0.0	0.0	1.7	0.0	7.7	2.0
<i>Quercus robur</i>	89.5	78.6	62.4	83.3	92.3	90.2
<i>Quercus rubra</i>	1.8	0.0	12.0	0.0	0.0	3.9
<i>Salix caprea</i>	0.0	0.0	2.6	0.0	0.0	0.0
<i>Sorbus aucuparia</i>	49.1	57.1	35.0	83.3	76.9	74.5
<i>Tilia cordata</i>	0.0	0.0	1.7	3.3	0.0	0.0
Shrubs						
<i>Corylus avellana</i>	0.0	0.0	0.9	6.7	7.7	2.0

<i>Frangula alnus</i>	49.1	39.3	29.1	70.0	53.8	58.8
<i>Juniperus communis</i>	78.9	82.1	76.1	50.0	69.2	60.8
<i>Rhamnus sp.</i>	0.0	0.0	0.0	0.0	0.0	2.0
<i>Ribes spicatum</i>	0.0	0.0	0.0	0.0	0.0	3.9
<i>Rosa canina</i>	0.0	0.0	0.0	0.0	0.0	2.0
<i>Rubus caesius</i>	1.8	3.6	0.0	0.0	0.0	3.9
<i>Rubus fruticosus</i>	0.0	0.0	0.0	0.0	0.0	2.0
<i>Rubus idaeus</i>	3.5	3.6	2.6	40.0	38.5	35.3
<i>Rubus nessensis</i>	0.0	0.0	0.0	10.0	15.4	9.8
<i>Rubus plicatus</i>	1.8	0.0	0.0	0.0	0.0	0.0
<i>Rubus sp.</i>	0.0	0.0	0.0	6.7	0.0	0.0
<i>Rubus suberectus</i>	1.8	0.0	1.7	0.0	0.0	0.0
<i>Salix cinerea</i>	0.0	0.0	4.3	0.0	0.0	5.9
<i>Sambucus racemosa</i>	1.8	0.0	0.0	3.3	0.0	0.0
Species characteristic of <i>Vaccinio-Piceetea</i> class						
Herbs						
<i>Chimaphila umbellata</i>	5.3	3.6	32.5	3.3	23.1	29.4
<i>Diphasiastrum complanatum</i>	5.3	0.0	8.5	3.3	15.4	5.9
<i>Goodyera repens</i>	0.0	0.0	0.0	0.0	7.7	0.0
<i>Ledum palustre</i>	3.5	0.0	0.0	6.7	0.0	2.0
<i>Linnaea borealis</i>	0.0	0.0	0.0	0.0	7.7	0.0
<i>Lycopodium annotinum</i>	10.5	10.7	14.5	26.7	23.1	33.3
<i>Melampyrum pratense</i>	96.5	96.4	86.3	83.3	100.0	90.2
<i>Monotropa hypopitys</i>	1.8	10.7	12.0	3.3	0.0	0.0
<i>Orthilia secunda</i>	3.5	3.6	6.0	16.7	0.0	19.6
<i>Pyrola chlorantha</i>	0.0	3.6	12.8	0.0	0.0	7.8
<i>Pyrola rotundifolia</i>	0.0	0.0	0.0	0.0	0.0	7.8
<i>Trientalis europaea</i>	33.3	7.1	6.8	83.3	69.2	51.0
<i>Vaccinium myrtillus</i>	100.0	96.4	97.4	100.0	100.0	100.0
<i>Vaccinium uliginosum</i>	14.0	0.0	0.0	3.3	0.0	0.0
<i>Vaccinium vitis-idaea</i>	100.0	92.9	68.4	86.7	100.0	66.7
Mosses and lichens						
<i>Cladonia arbuscula</i>	24.6	46.4	48.7	0.0	15.4	11.8
<i>Cladonia rangiferina</i>	22.8	14.3	21.4	3.3	0.0	7.8
<i>Dicranum polysetum</i>	98.2	100.0	97.4	83.3	69.2	74.5
<i>Dicranum scoparium</i>	38.6	28.6	27.4	26.7	23.1	23.5
<i>Hylocomium splendens</i>	91.2	71.4	60.7	90.0	84.6	94.1
<i>Pleurozium schreberi</i>	100.0	100.0	100.0	100.0	100.0	98.0
<i>Ptilium crista-castrensis</i>	28.1	25.0	28.2	40.0	38.5	51.0
Differential species of <i>Peucedano-Pinetum</i> association						
<i>Convallaria majalis</i>	43.9	17.9	2.6	76.7	30.8	17.6
<i>Peucedanum oreoselinum</i>	15.8	7.1	6.8	26.7	15.4	7.8
<i>Polygonatum odoratum</i>	1.8	0.0	1.7	33.3	7.7	3.9
<i>Rubus saxatilis</i>	3.5	0.0	0.9	26.7	38.5	13.7
<i>Scorzonera humilis</i>	29.8	0.0	6.0	20.0	7.7	2.0
<i>Solidago virgaurea</i>	10.5	3.6	12.0	20.0	23.1	5.9
Species characteristic of <i>Querco-Fagetea</i> class						
<i>Aegopodium podagraria</i>	0.0	0.0	0.0	0.0	7.7	0.0

<i>Anemone nemorosa</i>	0.0	0.0	0.0	3.3	0.0	2.0
<i>Carex digitata</i>	0.0	0.0	0.0	16.7	7.7	5.9
<i>Dryopteris filix-mas</i>	3.5	0.0	1.7	13.3	0.0	9.8
<i>Carex sylvatica</i>	0.0	0.0	0.0	3.3	7.7	0.0
<i>Epipactis helleborine</i>	1.8	0.0	0.0	0.0	0.0	0.0
<i>Galium schultesii</i>	0.0	0.0	0.0	6.7	0.0	0.0
<i>Melica nutans</i>	0.0	0.0	0.0	3.3	0.0	0.0
<i>Milium effusum</i>	0.0	0.0	0.0	3.3	0.0	2.0
<i>Polygonatum multiflorum</i>	0.0	0.0	0.0	3.3	0.0	2.0
<i>Stellaria holostea</i>	0.0	0.0	0.0	3.3	0.0	3.9
<i>Viola reichenbachiana</i>	0.0	0.0	0.0	6.7	23.1	0.0
Companions						
Herbs						
<i>Agrostis capillaris</i>	8.8	3.6	12.0	23.3	15.4	13.7
<i>Agrostis sp.</i>	0.0	3.6	0.0	3.3	0.0	2.0
<i>Agrostis stolonifera</i>	0.0	0.0	1.7	0.0	0.0	0.0
<i>Ajuga reptans</i>	0.0	0.0	0.0	3.3	0.0	0.0
<i>Anthoxanthum odoratum</i>	1.8	14.3	32.5	10.0	15.4	45.1
<i>Anthriscus sylvestris</i>	0.0	0.0	0.0	3.3	0.0	0.0
<i>Arctostaphylos uva-ursi</i>	0.0	0.0	0.9	0.0	0.0	0.0
<i>Arnica montana</i>	1.8	0.0	0.9	0.0	0.0	0.0
<i>Arnoseric minima</i>	0.0	0.0	0.0	3.3	0.0	0.0
<i>Athyrium filix-femina</i>	15.8	3.6	0.9	33.3	30.8	9.8
<i>Calamagrostis arundinacea</i>	38.6	17.9	16.2	73.3	61.5	51.0
<i>Calamagrostis epigejos</i>	7.0	10.7	4.3	0.0	0.0	0.0
<i>Calluna vulgaris</i>	98.2	78.6	47.9	50.0	69.2	31.4
<i>Campanula persicifolia</i>	0.0	0.0	0.0	6.7	0.0	0.0
<i>Carex ericetorum</i>	5.3	0.0	5.1	0.0	0.0	0.0
<i>Carex hirta</i>	0.0	0.0	0.0	3.3	0.0	0.0
<i>Carex leporina</i>	0.0	0.0	0.0	0.0	0.0	0.0
<i>Carex montana</i>	3.5	0.0	0.9	3.3	7.7	0.0
<i>Carex pallescens</i>	1.8	0.0	0.9	0.0	0.0	2.0
<i>Carex pilosa</i>	0.0	0.0	0.0	3.3	7.7	0.0
<i>Carex sp.</i>	3.5	17.9	6.0	23.3	7.7	3.9
<i>Cerasium sp.</i>	0.0	0.0	0.0	3.3	0.0	0.0
<i>Chamaenerion angustifolium</i>	8.8	3.6	3.4	16.7	7.7	7.8
<i>Clinopodium vulgare</i>	0.0	0.0	0.0	3.3	0.0	2.0
<i>Cytisus scoparius</i>	0.0	7.1	4.3	3.3	7.7	27.5
<i>Dactylis glomerata</i>	0.0	0.0	2.6	3.3	0.0	5.9
<i>Danthonia decumbens</i>	5.3	3.6	2.6	10.0	7.7	11.8
<i>Deschampsia caespitosa</i>	0.0	0.0	1.7	0.0	0.0	5.9
<i>Deschampsia flexuosa</i>	77.2	78.6	90.6	83.3	76.9	86.3
<i>Dianthus arenarius</i>	1.8	0.0	0.0	0.0	0.0	0.0
<i>Digitalis purpurea</i>	0.0	0.0	0.0	0.0	0.0	2.0
<i>Dryopteris carthusiana</i>	24.6	28.6	41.9	70.0	46.2	68.6
<i>Dryopteris dilatata</i>	0.0	0.0	0.0	0.0	0.0	0.0
<i>Dryopteris sp.</i>	0.0	0.0	0.0	3.3	7.7	0.0
<i>Equisetum hyemale</i>	0.0	0.0	0.9	0.0	0.0	0.0

<i>Equisetum pratense</i>	0.0	0.0	0.9	0.0	0.0	2.0
<i>Equisetum sylvaticum</i>	0.0	0.0	0.0	0.0	0.0	5.9
<i>Festuca ovina</i>	19.3	46.4	41.9	26.7	23.1	19.6
<i>Festuca rubra</i>	0.0	0.0	0.9	0.0	0.0	2.0
<i>Fragaria vesca</i>	1.8	7.1	0.0	26.7	15.4	21.6
<i>Galeopsis pubescens</i>	0.0	0.0	0.0	10.0	7.7	0.0
<i>Galeopsis tetrahit</i>	0.0	0.0	0.9	0.0	7.7	5.9
<i>Galium molugo</i>	0.0	0.0	1.7	10.0	7.7	25.5
<i>Genista tinctoria</i>	0.0	0.0	0.0	10.0	0.0	2.0
<i>Geranium sanguineum</i>	0.0	0.0	0.0	3.3	0.0	0.0
<i>Helianthemum nummularium</i>	0.0	0.0	0.0	0.0	0.0	2.0
<i>Hieracium lachenalii</i>	3.5	0.0	11.1	10.0	7.7	17.6
<i>Hieracium murorum</i>	0.0	0.0	1.7	0.0	0.0	0.0
<i>Hieracium pilosella</i>	1.8	3.6	7.7	6.7	0.0	9.8
<i>Hieracium umbellatum</i>	3.5	0.0	0.0	0.0	0.0	0.0
<i>Holcus lanatus</i>	0.0	0.0	0.9	0.0	7.7	2.0
<i>Holcus molis</i>	0.0	0.0	9.4	0.0	0.0	15.7
<i>Hypericum hirsutum</i>	0.0	0.0	0.0	0.0	0.0	2.0
<i>Hypericum maculatum</i>	0.0	0.0	0.0	0.0	0.0	2.0
<i>Hypericum perforatum</i>	1.8	0.0	0.9	3.3	0.0	3.9
<i>Hypochoeris radicata</i>	0.0	0.0	0.9	3.3	7.7	5.9
<i>Impatiens parviflora</i>	0.0	0.0	0.0	6.7	7.7	0.0
<i>Juncus conglomeratus</i>	0.0	0.0	0.0	3.3	0.0	0.0
<i>Knautia arvensis</i>	0.0	0.0	2.6	0.0	7.7	9.8
<i>Lathyrus sylvestris</i>	0.0	0.0	0.0	3.3	7.7	0.0
<i>Luzula multiflora</i>	1.8	3.6	6.0	0.0	0.0	2.0
<i>Luzula pilosa</i>	42.1	25.0	17.1	90.0	76.9	54.9
<i>Lycopodium clavatum</i>	5.3	14.3	27.4	0.0	30.8	25.5
<i>Lysimachia vulgaris</i>	0.0	0.0	0.0	3.3	7.7	2.0
<i>Maianthemum bifolium</i>	5.3	3.6	0.9	53.3	23.1	21.6
<i>Moehringia trinervia</i>	0.0	0.0	0.0	13.3	0.0	15.7
<i>Molinia caerulea</i>	19.3	7.1	1.7	26.7	7.7	7.8
<i>Mycelis muralis</i>	1.8	0.0	0.0	20.0	7.7	7.8
<i>Oxalis acetosella</i>	7.0	0.0	0.9	53.3	38.5	31.4
<i>Poa augustifolia</i>	0.0	0.0	0.0	10.0	0.0	7.8
<i>Poa trivialis</i>	0.0	0.0	0.0	6.7	0.0	0.0
<i>Polypodium vulgare</i>	0.0	0.0	0.9	0.0	0.0	0.0
<i>Potentilla erecta</i>	0.0	0.0	0.9	10.0	0.0	2.0
<i>Pteridium aquilinum</i>	3.5	0.0	0.0	46.7	30.8	13.7
<i>Ranunculus lanuginosus</i>	0.0	0.0	0.0	3.3	0.0	0.0
<i>Rumex acetosella</i>	3.5	28.6	41.0	13.3	7.7	37.3
<i>Stellaria graminea</i>	0.0	0.0	1.7	0.0	7.7	2.0
<i>Stellaria longifolia</i>	0.0	0.0	0.0	3.3	0.0	0.0
<i>Stellaria media</i>	0.0	0.0	0.0	3.3	0.0	0.0
<i>Stellaria nemorum</i>	0.0	0.0	0.0	3.3	0.0	0.0
<i>Stellaria sp.</i>	0.0	0.0	0.0	3.3	0.0	0.0
<i>Taraxacum officinale</i>	0.0	0.0	0.0	3.3	0.0	0.0
<i>Thymus serpyllum</i>	1.8	3.6	0.9	0.0	0.0	0.0

<i>Urtica dioica</i>	0.0	0.0	0.0	3.3	7.7	5.9
<i>Veronica chamaedrys</i>	0.0	0.0	0.0	6.7	0.0	5.9
<i>Veronica officinalis</i>	1.8	3.6	3.4	6.7	7.7	21.6
<i>Vicia cassubica</i>	0.0	0.0	0.0	3.3	0.0	2.0
<i>Vicia cracca</i>	0.0	0.0	0.0	3.3	7.7	3.9
<i>Vicia sp.</i>	0.0	0.0	0.0	3.3	0.0	0.0
<i>Vicia tenuifolia</i>	0.0	0.0	0.0	3.3	0.0	0.0
<i>Viola canina</i>	0.0	0.0	0.0	0.0	0.0	2.0
<i>Viola mirabilis</i>	0.0	0.0	0.0	3.3	7.7	0.0
<i>Viola riviniana</i>	0.0	0.0	0.0	16.7	7.7	3.9
<i>Viola sp.</i>	0.0	0.0	0.0	3.3	0.0	0.0
Mosses and lichens						
<i>Atrichum undulatum</i>	1.8	0.0	0.0	0.0	0.0	0.0
<i>Aulacomnium palustre</i>	3.5	0.0	0.0	10.0	0.0	3.9
<i>Brachythecium oedipodium</i>	0.0	0.0	0.0	0.0	7.7	3.9
<i>Brachythecium rutabulum</i>	0.0	0.0	0.0	3.3	0.0	2.0
<i>Cephaloziella divaricata</i>	1.8	0.0	0.0	0.0	0.0	0.0
<i>Cetraria islandica</i>	5.3	7.1	8.5	0.0	0.0	3.9
<i>Cladonia alpestris</i>	0.0	7.1	0.0	0.0	0.0	0.0
<i>Cladonia cenotea</i>	1.8	0.0	0.0	0.0	0.0	3.9
<i>Cladonia chlorophaea</i>	3.5	3.6	0.0	3.3	0.0	0.0
<i>Cladonia crispata</i>	0.0	0.0	0.9	0.0	0.0	0.0
<i>Cladonia furcata</i>	22.8	35.7	23.9	0.0	0.0	7.8
<i>Cladonia glauca</i>	0.0	0.0	0.9	3.3	0.0	5.9
<i>Cladonia gracilescens</i>	0.0	3.6	0.0	0.0	0.0	0.0
<i>Cladonia gracilis</i>	1.8	0.0	10.3	0.0	0.0	2.0
<i>Cladonia phyllophora</i>	1.8	0.0	0.0	0.0	0.0	0.0
<i>Cladonia polylophora</i>	0.0	0.0	0.9	0.0	0.0	0.0
<i>Cladonia portentosa</i>	1.8	0.0	0.9	0.0	0.0	0.0
<i>Cladonia stellaris</i>	0.0	0.0	0.9	0.0	0.0	0.0
<i>Cladonia subulata</i>	1.8	0.0	0.0	0.0	0.0	0.0
<i>Cladonia sulphurea</i>	0.0	0.0	0.9	0.0	0.0	0.0
<i>Cladonia uncialis</i>	0.0	0.0	0.9	0.0	0.0	0.0
<i>Dicranum spurium</i>	0.0	0.0	0.9	0.0	0.0	0.0
<i>Hypnum cupressiforme</i>	1.8	0.0	0.9	3.3	7.7	2.0
<i>Lepidozia reptans</i>	0.0	0.0	0.0	0.0	0.0	2.0
<i>Leucobryum glaucum</i>	22.8	28.6	18.8	6.7	0.0	5.9
<i>Lophocolea heterophylla</i>	0.0	0.0	0.0	3.3	7.7	0.0
<i>Orthodicranum montanum</i>	5.3	0.0	0.0	6.7	0.0	0.0
<i>Plagiomnium affine</i>	0.0	0.0	0.9	23.3	7.7	15.7
<i>Plagiothecium curvifolium</i>	1.8	0.0	0.0	6.7	0.0	9.8
<i>Pohlia nutans</i>	17.5	0.0	0.0	10.0	23.1	3.9
<i>Polytrichum formosum</i>	43.9	28.6	34.2	70.0	38.5	45.1
<i>Polytrichum commune</i>	7.0	7.1	3.4	3.3	15.4	3.9
<i>Polytrichum juniperinum</i>	3.5	21.4	39.3	13.3	0.0	23.5
<i>Pseudoscleropodium purum</i>	1.8	0.0	0.0	3.3	0.0	2.0
<i>Ptilidium ciliare</i>	0.0	3.6	0.0	0.0	0.0	0.0
<i>Sciuro-hypnum oedipodium</i>	0.0	0.0	0.9	23.3	7.7	2.0

<i>Sphagnum capillifolium</i>	7.0	0.0	2.6	3.3	0.0	2.0
<i>Sphagnum fallax</i>	1.8	0.0	0.0	0.0	0.0	0.0
<i>Sphagnum flexuosum</i>	1.8	0.0	0.0	0.0	0.0	0.0
<i>Sphagnum girgensohnii</i>	1.8	0.0	0.0	3.3	0.0	0.0
