



# Development of reforested stand on former peat mining area a case study



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## Vegetation under canopies of trees Birch

	E2	B/WWS	K/WWS	B/MF	K/MF
<i>Betula pendula</i> Roth	25	80	15	35	
<i>Betula pubescens</i> Ehrh.	0,5	3,5	-	0,5	
<i>Pinus sylvestris</i> L.	0,5	1	-	5,5	
<i>Populus tremula</i> L.	0,5	1	-	0,5	
<i>Salix</i> sp.	-	3	-	-	
	E1	B/WWS	K/WWS	B/MF	K/MF
<i>Betula pendula</i> Roth	-	0,5	0,5	-	
<i>Betula pubescens</i> Ehrh.	0,5	0,5	-	0,5	
<i>Calamagrostis canescens</i> (Web.) Roth	0,5	2	-	-	
<i>Calamagrostis epigeios</i> (L.) Roth	1	6	-	-	
<i>Calluna vulgaris</i> (L.) Hull	1	2	0,5	1	
<i>Cerastium holosteoides</i> Fries	-	1	-	-	
<i>Chamaenerion angustifolium</i> (L.) Scop.	1	2,5	-	-	
<i>Dryopteris carthusiana</i> (Vill.) H.P. Fuchs	0,5	-	-	-	
<i>Eriophorum vaginatum</i> L.	10	2,5	1	13	
<i>Festuca ovina</i> L. s.str.	-	1	-	-	
<i>Juncus effusus</i> L.	30	45	-	-	
<i>Leontodon hispidus</i> L.	0,5	0,5	-	-	
<i>Lerchenfeldia flexuosa</i> (L.) Schur	0,5	-	-	-	
<i>Luzula campestris</i> (L.) DC.	-	0,5	-	-	
<i>Molinia caerulea</i> (L.) Moench	1	-	-	-	
<i>Odontites vulgaris</i> Moench	-	0,5	-	-	
<i>Orthilia secunda</i> (L.) House	-	0,5	-	-	
<i>Picea abies</i> (L.) Karst.	-	-	0,5	0,5	
<i>Pinus sylvestris</i> L.	0,5	0,5	0,5	1	
<i>Poa nemoralis</i> L.	-	0,5	-	-	
<i>Populus tremula</i> L.	0,5	0,5	-	5,5	
<i>Pyrola rotundifolia</i> L.	-	0,5	-	-	
<i>Rumex acetosella</i> L.	-	1	-	-	
<i>Salix</i> sp.	-	0,5	-	6,5	
<i>Taraxacum officinale</i> Wigg.	-	0,5	-	-	
<i>Urtica dioica</i> L.	0,5	-	-	-	
	E0	B/WWS	K/WWS	B/MF	K/MF
<i>Aulacomnium palustre</i> (Hedw.) Schwägr.	-	-	-	0,5	
<i>Barbula convoluta</i> Hedw.	-	-	-	1	
<i>Bryum caespiticium</i> Hedw.	-	-	5	57	
<i>Ceratodon purpureus</i> (Hedw.) Brid.	-	1	-	1	
<i>Cladonia gracilis</i> (L.) Willd.	-	-	0,5	0,5	
<i>Peltigera</i> sp.	-	0,5	-	-	
<i>Pohlia nutans</i> (Hedw.) Lindb.	0,5	-	-	-	
<i>Polytrichastrum formosum</i> (Hedw.)	-	0,5	-	-	
<i>Polytrichastrum longisetum</i> (Bridel)	0,5	-	-	-	
<i>Polytrichum juniperinum</i> Hedw.	1	5,5	0,5	3,5	
<i>Sciuro-hypnum curtum</i> (Lindb.) Ignatov.	0,5	-	-	-	

The aim of the study is to find out the effect of different fertilizers on tree growth, dimensions and ground vegetation in a cutaway peatland.

Afforestation trial established at 2015 at Olaine district in Virši on a cutaway peatland. Trees planted 10x10m sample plots 25 trees in each where sewage sludge (10 t ha<sup>-1</sup>) and mineral fertilisers (0,5 t ha<sup>-1</sup>) have been applied. The plots have been afforested with Silver birch, Scots pine, Norway spruce and Black alder seedlings.

The projective cover of ground vegetation (2011) is larger in plots fertilized with sewage sludge. There is much less ground vegetation cover on the plots fertilised with mineral fertilisation, mainly consisting of mosses and typical wetland species.

Due to closing of canopies of trees planted, during last years cover of the ground vegetation and its biodiversity below Pine and Black alder dramatically decreased. Fertilisation provides favourable conditions for self-seeded tree regeneration, while on nonfertilised plots trees dead at third season and no vegetation occurred.

Stand productivity is higher using sewage sludge and it has a lasting effect.

## Vegetation under canopies of trees Pine

E2	P/WWS	P/MF
<i>Betula pendula</i> Roth	0,5	0,5
<i>Betula pubescens</i> Ehrh.	0,5	-
<i>Pinus sylvestris</i> L.	60	30
<i>Populus tremula</i> L.	0,5	-
E1	P/WWS	P/MF
<i>Betula pendula</i> Roth	0,5	0,5
<i>Betula pubescens</i> Ehrh.	0,5	-
<i>Calamagrostis canescens</i> (Web.) Roth	0,5	-
<i>Calamagrostis epigeios</i> (L.) Roth	1	-
<i>Calluna vulgaris</i> (L.) Hull	1	1
<i>Cerastium holosteoides</i> Fries	1	-
<i>Chamaenerion angustifolium</i> (L.) Scop.	3	-
<i>Dryopteris carthusiana</i> (Vill.) H.P. Fuchs	0,5	-
<i>Eriophorum vaginatum</i> L.	1	3
<i>Juncus effusus</i> L.	15	-
<i>Pinus sylvestris</i> L.	0,5	0,5
<i>Populus tremula</i> L.	0,5	-
<i>Salix</i> sp.	0,5	-
<i>Taraxacum officinale</i> Wigg.	0,5	-
E0	P/WWS	P/MF
<i>Bryum caespiticium</i> Hedw.	0,5	0,5
<i>Ceratodon purpureus</i> (Hedw.) Brid.	0,5	1
<i>Polytrichum juniperinum</i> Hedw.	1	0,5
<i>Sciuro-hypnum curtum</i> (Lindb.) Ignatov.	0,5	-

## Vegetation under canopies of trees Black alder

E2	Ma/WWS
<i>Alnus glutinosa</i> (L.) Gaertn.	75
<i>Betula pendula</i> Roth	1
<i>Betula pubescens</i> Ehrh.	1
<i>Populus tremula</i> L.	0,5
<i>Salix</i> sp.	0,5
<i>Sorbus aucuparia</i> L.	0,5
E1	Ma/WWS
<i>Agrostis stolonifera</i> L.	0,5
<i>Calamagrostis canescens</i> (Web.) Roth	20
<i>Calamagrostis epigeios</i> (L.) Roth	10
<i>Calluna vulgaris</i> (L.) Hull	0,5
<i>Cerastium holosteoides</i> Fries	0,5
<i>Chamaenerion angustifolium</i> (L.) Scop.	1
<i>Dryopteris carthusiana</i> (Vill.) H.P. Fuchs	0,5
<i>Juncus effusus</i> L.	10
<i>Poa nemoralis</i> L.	0,5
<i>Populus tremula</i> L.	0,5
<i>Rubus idaeus</i> L.	0,5
<i>Salix</i> sp.	0,5
<i>Urtica dioica</i> L.	1
E0	Ma/WWS
<i>Polytrichastrum longisetum</i> (Bridel) G. L. Smith	0,5
<i>Sciuro-hypnum curtum</i> (Lindb.) Ignatov.	0,5

