

Supplementary Table 1. Bulk density of mineral soil samples (n= 5 for pasture; n= 3 for forest). Values are average \pm SE (**Average \pm SE of the individual plots; n= 5 for pasture; n= 3 for forest).

Mineral soil	Bulk density [g cm ⁻³]			
	Pasture	Forest		
		40-year-old	55-year-old	130-year-old
0-5cm	0.87 \pm 0.04	0.76 \pm 0.02	0.83 \pm 0.09	0.86 \pm 0.04
5-10cm	0.95 \pm 0.03	0.86 \pm 0.03	0.90 \pm 0.07	0.83 \pm 0.07
10-15cm	1.00 \pm 0.02	1.04 \pm 0.01	1.04 \pm 0.02	1.04 \pm 0.04
15-20cm	1.05 \pm 0.04	1.11 \pm 0.04	1.11 \pm 0.06	1.14 \pm 0.02
20-25cm	1.12 \pm 0.03	1.17 \pm 0.03	1.11 \pm 0.04	1.19 \pm 0.03
25-30cm	1.12 \pm 0.03	1.28 \pm 0.00	1.17 \pm 0.04	1.25 \pm 0.05
30-35cm	1.15 \pm 0.04	1.22 \pm 0.00	1.22 \pm 0.02	1.26 \pm 0.04
35-40cm	1.14 \pm 0.06	1.20 \pm 0.00	1.24 \pm 0.01	1.21 \pm 0.05
40-45cm	1.16 \pm 0.06	1.18 \pm 0.00	1.19 \pm 0.03	1.23 \pm 0.02
**Average	1.05 \pm 0.02	1.08 \pm 0.04	1.09 \pm 0.03	1.10 \pm 0.03

Supplementary Table 2. Vegetation composition of each forest stand age (40-, 55-, and 130-years-old) obtained during field work per one Ar [A-1].

	Canopy cover [%]	Individual living spruce trees [A ⁻¹]	Individual dead spruce trees [A ⁻¹]	Individual broadleaf trees [A ⁻¹]
40-year-old forest	58 \pm 5	44 \pm 10	1 \pm 1	1 \pm 0
55-year-old forest	48 \pm 3	18 \pm 2	6 \pm 1	4 \pm 1
130-year-old forest	65 \pm 5	13 \pm 0	2 \pm 1	8 \pm 4

Supplementary Table 3. Composition of the Oi horizon of each forest age (40-, 55-, and 130-years-old; n.a. = not available).

Residues [mass - %]	40-year-old forest	55-year-old forest	130-year-old forest
Wood and twigs	24.0	16.4	16.2
Spruce cones	32.5	64.3	58.2
Spruce needles	24.5	3.9	7.5
Moss	1.2	n.a.	0.2
Grass residues	n.a.	n.a.	2.3
Arbuscular mycorrhiza	4.3	n.a.	n.a.

Supplementary Table 4. Root biomass and root frequency (counted in the field) of pasture and forest areas (40-, 55-, and 130-years old). Values are mean values \pm SE (n= 5 for pasture; n= 3 for forest, * Sum \pm SE (0-45cm) (n.a. = not available).

	Fine (0-2mm) root biomass [g m ⁻²]				Coarse (2-5mm) root biomass [g m ⁻²]			
		Forest				Forest		
Mineral soil	Pasture	40-year-old	55-year-old	130-year-old	Pasture	40-year-old	55-year-old	130-year-old
0-5cm	87.7 \pm 26.9	1.3 \pm 0.4	1.4 \pm 0.4	0.7 \pm 0.2	55.2 \pm 20.9	225.4 \pm 62.9	135.6 \pm 21.5	178.1 \pm 81.1
5-10cm	27.2 \pm 10.5	4.8 \pm 3.6	0.4 \pm 0.3	2.9 \pm 1.9	197.9 \pm 183.0	117.0 \pm 32.1	78.3 \pm 15.0	222.3 \pm 61.1
10-15cm	19.6 \pm 3.6	4.6 \pm 1.9	0.9 \pm 0.8	3.4 \pm 3.1	189.0 \pm 131.5	74.8 \pm 17.5	40.3 \pm 10.8	77.4 \pm 26.7
15-20cm	38.0 \pm 23.1	2.2 \pm 1.2	n.a.	3.3 \pm 2.6	5.8	87.5 \pm 58.8	59.3 \pm 7.6	80.4 \pm 61.9
20-25cm	3.5 \pm 0.9	2.5 \pm 1.5	0.1	0.2 \pm 0.1	27.8	15.6 \pm 3.8	13.7 \pm 2.9	18.0 \pm 11.9
25-30cm	4.3 \pm 0.9	0.5 \pm 1.2	0.1	1.1 \pm 0.6	27.4 \pm 22.1	59.8 \pm 18.7	16.8 \pm 9.1	13.3 \pm 6.4
30-35cm	3.5 \pm 1.2	0.4 \pm 0.0	n.a.	0.9 \pm 0.4	96.8	34.6 \pm 3.8	4.8 \pm 0.2	32.3 \pm 17.5
35-40cm	1.4 \pm 0.4	0.3	n.a.	1.0 \pm 0.1	n.a.	16.7 \pm 0.1	2.8 \pm 0.9	36.0 \pm 11.9
40-45cm	1.7 \pm 0.6	n.a.	n.a.	1.1 \pm 0.8	n.a.	22.2 \pm 10.5	4.1 \pm 2.6	34.0 \pm 22.7
*Sum	184.9 \pm 39.5	16.1 \pm 6.1	2.9 \pm 1.4	12.1 \pm 7.5	274.2 \pm 209.2	640.7 \pm 140.4	349.5 \pm 31.3	683.5 \pm 202.1
	Fine (0-2mm) root frequency [m ⁻²]				Coarse (2-5mm) root frequency [m ⁻²]			
		Forest				Forest		
Mineral soil	Pasture	40-year-old	55-year-old	130-year-old	Pasture	40-year-old	55-year-old	130-year-old
0cm	7'478.4 \pm 1'150.6	1'924.0 \pm 285.2	880.0 \pm 36.7	845.3 \pm 201.6	n.a.	717.3 \pm 22.8	870.7 \pm 264.7	334.7 \pm 116.9
10cm	5'079.2 \pm 736.5	854.7 \pm 212.5	541.3 \pm 121.8	910.7 \pm 141.6	n.a.	438.7 \pm 22.5	366.7 \pm 67.7	545.3 \pm 61.5
20cm	2'991.2 \pm 759.9	610.7 \pm 22.7	368.0 \pm 49.1	469.3 \pm 89.3	n.a.	276.0 \pm 22.8	233.3 \pm 58.3	320.0 \pm 22.8
30cm	1'229.6 \pm 339.0	436.0 \pm 80.9	129.3 \pm 2.2	346.7 \pm 87.7	n.a.	310.7 \pm 42.5	141.3 \pm 19.4	264.0 \pm 60.7
40cm	1'729.0 \pm 814.5	1'646.0	98.7 \pm 23.3	68.0 \pm 13.2	n.a.	628.0 \pm 202.7	88.0 \pm 22.3	168.0 \pm 42.8
*Sum	15'761.3 \pm 4'422.4	5'320.0 \pm 623.8	2'017.3 \pm 151.3	2'640.0 \pm 504.9	n.a.	2'370.7 \pm 225.6	1'700.0 \pm 377.9	1'632.0 \pm 260.8