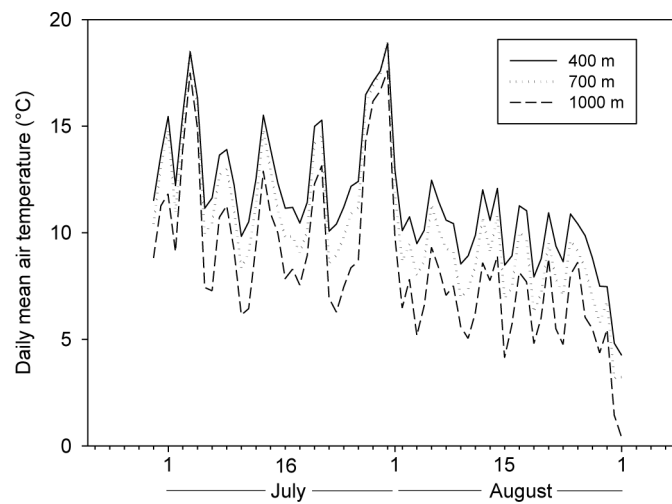


Appendix 1

Daily mean temperature from 28 June to 31 August 2008 measured at 400, 700 and 1000 m in the vicinity of the study site.



Appendix 2

Percentage cover (number of intercepts out of 100 points; mean of four plots \pm SE) for vascular plants with $\geq 20\%$ cover in one or more plots, out of a total of 48 plots, for heath and meadow vegetation across an elevational gradient (500–1000 m). Empty cells denote $0.0 \pm 0.0\%$ cover.

Meadow vegetation	Functional group ^a	Elevation (m)							
		500	600	700	800	900	1000		
		Mean cover (%)							
<i>Betula nana</i>	DS		1.4 \pm 1.2		2.6 \pm 1.0				
<i>Bistorta vivipara</i>	H		4.7 \pm 1.4	9.2 \pm 1.3	12.4 \pm 1.7	20.6 \pm 3.2	5.2 \pm 0.6		
<i>Carex bigelowii</i>	S		3.2 \pm 1.9	8.6 \pm 1.0	13.6 \pm 2.9	13.7 \pm 2.7	19.4 \pm 5.3		
<i>Carex dioica</i>	S					2.6 \pm 1.6	6.0 \pm 5.0		
<i>Carex saxatilis</i>	S					1.6 \pm 1.6	11.1 \pm 5.0		
<i>Cassiope hypnoides</i>	ES		3.2 \pm 1.9	1.0 \pm 1.0	9.0 \pm 5.1				
<i>Cassiope tetragona</i>	ES				0.2 \pm 0.2				
<i>Cicerbita alpina</i>	H	16.9 \pm 6.9							
<i>Deschampsia flexuosa</i>	G	11.6 \pm 5.2	39.1 \pm 6.7	0.4 \pm 0.4					
<i>Empetrum hermaphroditum</i>	ES		2.0 \pm 1.0		0.5 \pm 0.5				
<i>Festuca ovina</i>	G			5.6 \pm 2.5	11.9 \pm 5.0	4.7 \pm 2.8			14.3 \pm 7.3
<i>Festuca vivipara</i>	G								
<i>Phyllodoce cearulea</i>	ES		1.8 \pm 1.7		2.0 \pm 2.0				
<i>Salix herbacea</i>	DS		5.2 \pm 1.7	25.0 \pm 3.5	0.2 \pm 0.2				
<i>Vaccinium myrtillus</i>	DS	2.0 \pm 1.1	0.4 \pm 0.4						
<i>Vaccinium vitis-idaea</i>	ES		1.2 \pm 1.1	0.7 \pm 0.7	0.4 \pm 0.4				
<i>Viola biflora</i>	H	10.0 \pm 3.2	8.4 \pm 2.9	14.4 \pm 1.2	12.8 \pm 3.0	8.1 \pm 2.8			
Heath vegetation									
<i>Betula nana</i>	DS		1.3 \pm 0.8	12.7 \pm 2.5	29.5 \pm 2.0	13.0 \pm 2.3	22.8 \pm 2.7		
<i>Bistorta vivipara</i>	H					0.1 \pm 0.1			
<i>Carex bigelowii</i>	S					1.6 \pm 0.8	2.8 \pm 1.4		
<i>Cassiope tetragona</i>	ES					25.2 \pm 11.0	24.1 \pm 2.0		
<i>Deschampsia flexuosa</i>	G	14.6 \pm 2.3	5.0 \pm 1.8						
<i>Empetrum hermaphroditum</i>	ES	33.3 \pm 6.8	24.4 \pm 13.5	59.1 \pm 5.2	44.6 \pm 4.4	50.7 \pm 8.8	37.7 \pm 6.9		
<i>Festuca ovina</i>	G					0.2 \pm 0.2			
<i>Phyllodoce cearulea</i>	ES		12.3 \pm 7.2	0.4 \pm 0.4					
<i>Vaccinium myrtillus</i>	DS	21.9 \pm 6.5	51.1 \pm 13.4						
<i>Vaccinium vitis-idaea</i>	ES	23.2 \pm 3.0	4.0 \pm 2.9	12.5 \pm 2.7	14.7 \pm 2.6	5.1 \pm 1.9	10.0 \pm 5.0		

^aDS = deciduous dwarf-shrub, ES = evergreen dwarf-shrub, G = graminoids, H = herbaceous, S = sedge

Appendix 3

Linear regression of plant and microbial community variables tested against temperature.

Variable	Heath			Meadow		
	R ²	p	Direction	R ²	p	Direction
Simpson's diversity index ^a	0.030	0.417	negative	0.005	0.751	negative
Species richness	0.067	0.221	negative	0.088	0.158	positive
Vegetation density (total intercepts)	0.012	0.608	positive	0.391	0.001	positive
Plant community (CCA axis 1) ^c	0.500	<0.001	negative	0.640	<0.001	positive
Plant community (CCA axis 2) ^c	0.416	0.001	negative	0.488	<0.001	negative
Fungal-to-bacterial ratio	0.217	0.029	negative	0.002	0.828	positive
Total fungal PLFA (nmol g ⁻¹ OM)	0.041	0.363	negative	0.041	0.369	positive
Total bacterial PLFA (nmol g ⁻¹ OM) ^b	0.023	0.498	negative	0.009	0.683	positive
Microbial community (RDA axis 1) ^c	0.197	0.038	positive	0.180	0.055	positive
Microbial community (RDA axis 2) ^c	0.014	0.604	negative	0.183	0.053	negative

Degrees of freedom for the plant data are 1,22 for both heath and meadow. For the microbial data degrees of freedom are 1,20 for heath and 1,19 for meadow.

^aanalysis was performed on arcsin transformed data.

^banalysis was performed on ln-transformed data.

^canalysis was performed on the sample ordination scores from canonical correspondence analysis for the plant community and redundancy analysis for the microbial community.

Appendix 4

Linear regression of soil abiotic properties tested against relationship to temperature.

	Variables	Heath			Meadow		
		R ²	p	Direction	R ²	p	Direction
Humus	ammonium (mg g ⁻¹ dw) ^a	0.675	<0.001	positive	0.026	0.453	positive
	phosphate (mg g ⁻¹ dw) ^a	0.552	<0.001	positive	0.082	0.174	positive
	C (%) ^b	0.002	0.833	positive	0.002	0.832	negative
	N (%) ^b	0.175	0.042	negative	0.014	0.577	negative
	P (%) ^b	0.001	0.906	negative	0.011	0.618	positive
	C:N ratio	0.230	0.018	positive	0.034	0.398	positive
	C:P ratio ^a	0.000	0.942	positive	0.075	0.205	negative
	N:P ratio	0.085	0.166	negative	0.168	0.052	negative
	pH	0.402	0.001	negative	0.033	0.396	negative
Ca (mmol kg ⁻¹ OM) ^a	0.214	0.023	negative	0.022	0.501	positive	
Mineral	ammonium (mg g ⁻¹ dw) ^a	0.006	0.734	negative	0.345	0.003	negative
	phosphate (mg g ⁻¹ dw) ^a	0.311	0.007	positive	0.217	0.025	negative
	C (%) ^b	0.029	0.427	negative	0.010	0.634	negative
	N (%) ^b	0.099	0.134	negative	0.069	0.216	negative
	P (%) ^b	0.095	0.143	negative	0.042	0.339	positive
	C:N ratio ^a	0.001	0.895	positive	0.415	0.001	negative
	C:P ratio ^a	0.023	0.507	positive	0.122	0.102	negative
	N:P ratio ^a	0.019	0.556	positive	0.356	0.003	negative
	pH	0.354	0.004	negative	0.001	0.881	negative
Ca (mmol kg ⁻¹ OM) ^a	0.363	0.004	negative	0.024	0.485	positive	

Degrees of freedom for the humus variable pH for both vegetation types, and for humus concentrations of N, C, P (%) and the ratios of C:N, C:P and N:P for the heath are 1,22. Degrees of freedom for phosphate in heath are 1, 20 and for all other variables in heath degrees of freedom are 1, 19. Degrees of freedom for all other variables in meadow are 1, 21.

^aanalysis was performed on ln-transformed data.

^banalysis was performed on arcsin transformed data.

Appendix 5

Carbon, nitrogen and phosphorus concentrations (%) in humus and mineral soil (mean \pm SE). Each value represents the mean of four plots unless marked in the table. Within each vegetation and soil type values marked with the same letters are not significantly different at $p = 0.05$ (LSD test with Benjamini–Hochberg correction).

Soil layer	Vegetation type	Elevation	C (%)	N (%)	P (%)	
Humus	meadow	500	26.3 \pm 1.3 (a)	1.4 \pm 0.0 (a) ^a	0.13 \pm 0.02 (a) ^a	
		600	24.0 \pm 2.7 (b)	1.5 \pm 0.2 (ab)	0.11 \pm 0.0 (ab)	
		700	22.2 \pm 2.7 (b)	1.5 \pm 0.1 (b)	0.13 \pm 0.01 (a)	
		800	14.5 \pm 0.8 (c)	1.0 \pm 0.1 (c)	0.07 \pm 0.00 (c)	
		900	27.1 \pm 2.5 (b)	1.7 \pm 0.2 (ab)	0.11 \pm 0.01 (ab)	
		1000	26.7 \pm 1.9 (b)	1.7 \pm 0.1 (ab)	0.10 \pm 0.01 (b)	
	heath	500	41.9 \pm 5.0	1.3 \pm 0.2 (cd)	0.09 \pm 0.01	
		600	37.4 \pm 1.6	1.6 \pm 0.1 (abc)	0.10 \pm 0.01	
		700	40.8 \pm 1.6 ^a	1.4 \pm 0.1 (bcd) ^a	0.10 \pm 0.01 ^a	
		800	38.4 \pm 2.5	1.3 \pm 0.1 (d)	0.10 \pm 0.00	
		900	39.2 \pm 1.4	1.7 \pm 0.1 (a)	0.10 \pm 0.01	
		1000	40.3 \pm 0.4	1.7 \pm 0.1 (ab)	0.09 \pm 0.01	
	Mineral	meadow	500	6.3 \pm 0.7 (cd)	0.3 \pm 0.0 (c)	0.07 \pm 0.01
			600	10.4 \pm 2.1 (ab)	0.7 \pm 0.1 (ab)	0.08 \pm 0.01
700			6.4 \pm 0.6 (bcd)	0.4 \pm 0.1 (bc)	0.8 \pm 0.01	
800			4.5 \pm 0.3 (d)	0.3 \pm 0.0 (c)	0.05 \pm 0.0	
900			8.1 \pm 1.5 (abc)	0.6 \pm 0.1 (ab)	0.08 \pm 0.01	
1000			9.4 \pm 2.7 (a) ^a	0.7 \pm 0.3 (a) ^a	0.08 \pm 0.02 ^a	
heath		500	8.3 \pm 3.0	0.3 \pm 0.1	0.05 \pm 0.01	
		600	11.4 \pm 2.6	0.5 \pm 0.1	0.05 \pm 0.01	
		700	6.0 \pm 2.0	0.3 \pm 0.1	0.04 \pm 0.01	
		800	7.8 \pm 1.3	0.2 \pm 0.1	0.04 \pm 0.00	
		900	2.6 \pm 2.0 ^b	0.2 \pm 0.1 ^b	0.07 \pm 0.01 ^b	
		1000	17.0 \pm 4.7	1.0 \pm 0.3	0.09 \pm 0.03	