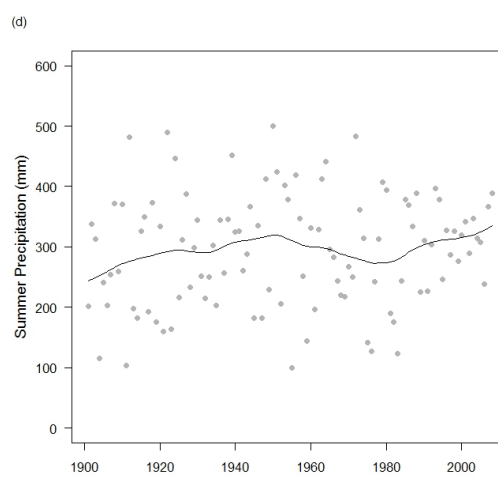
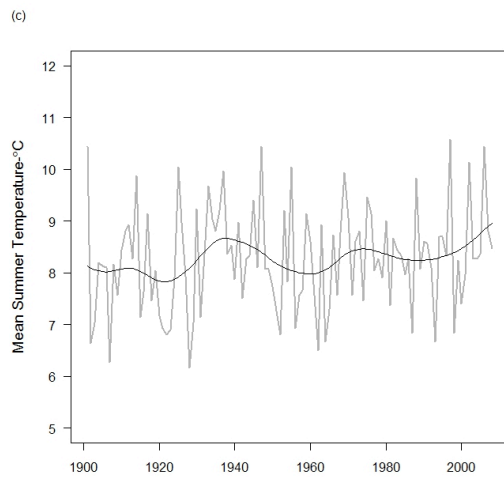
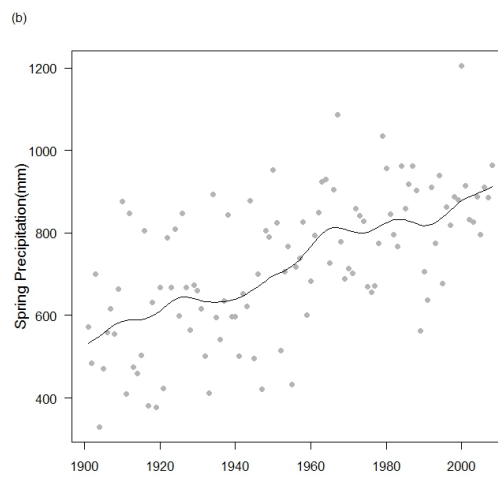
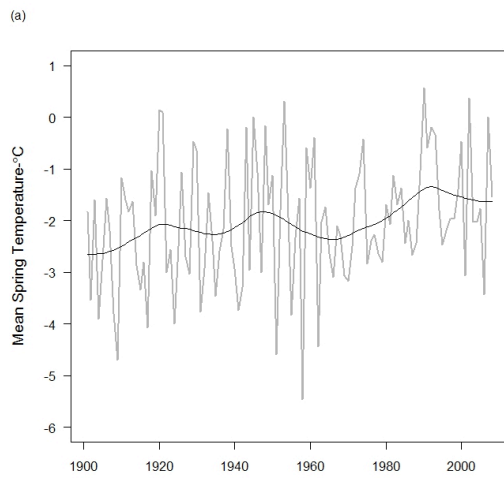


Felde, V. A., Kapfer, J. and Grytnes, J. A. 2012. Upward shift in elevational plant species ranges in Sikkilsdalen, central Norway. – *Ecography* 35: 000–000.

Supplementary material

Appendix 1



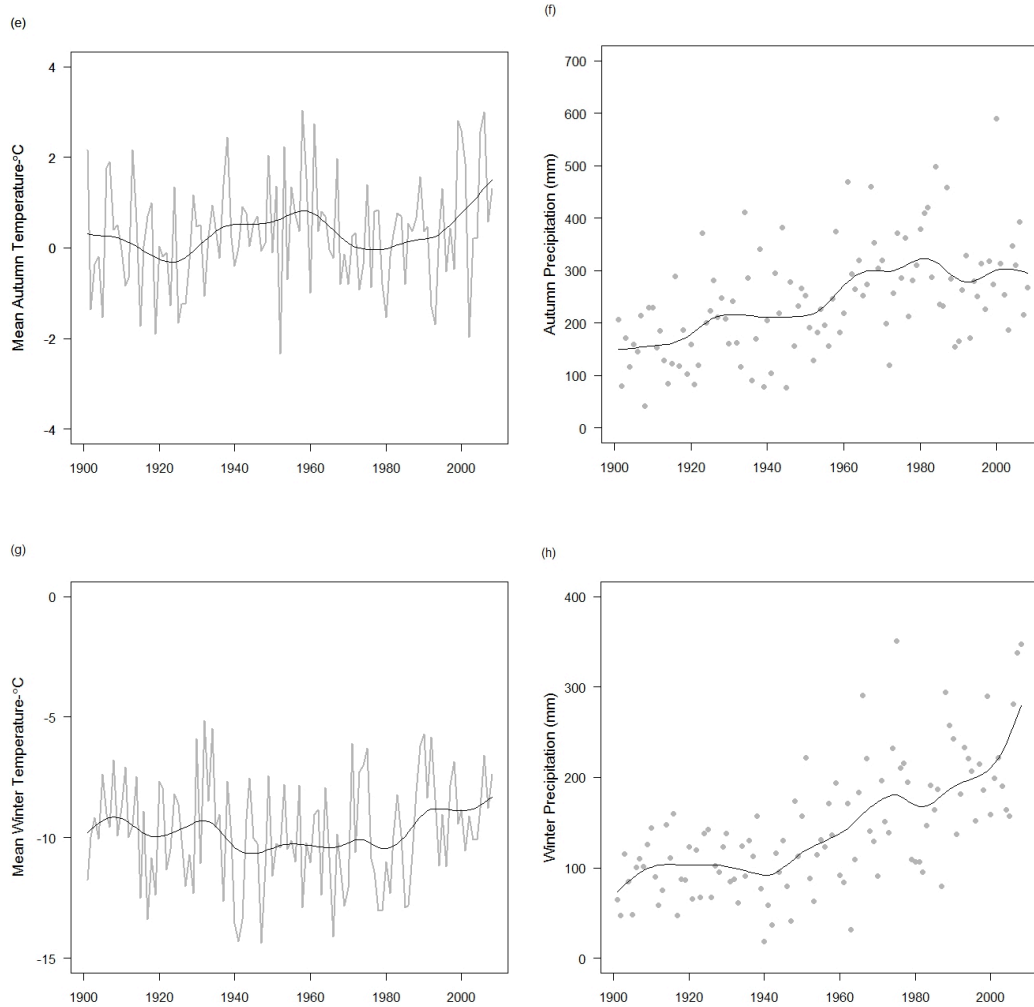


Figure A1: Climate trend charts for temperature and precipitation in spring (March-April; (a), (b)), summer (June-August; (c), (d)), autumn (September-November; (e), (f)) and winter (December-February; (g), (h)). Mean spring temperatures (a) show a small increase in temperature between the study periods of 1920 and 2008 of approximate 0.5 °C, while absolute spring precipitation rates (b) show a steady increase of approximate 300 mm. Mean summer temperatures (c) and absolute summer precipitation rates (d) have fluctuated much between 8-9°C and 200-300 mm, respectively, but show rather small changes between the periods investigated. Mean autumn temperatures (e) seem to have increased the most between the two study periods by approximately 1°C, while absolute autumn precipitation rates (f) have increased only a little (approximate 60 mm). Finally, mean winter temperatures (g) have

fluctuated much around -10°C , with a small increase since 1980, whereas absolute winter precipitation rates (h) have increased steadily from 75 mm to 290 mm throughout the period of 1901-2008.

Table A1: Changes in species elevational distribution limits. Statistically significant changes are printed in bold. n.e = not evaluated.

Species	Species occurrences 2008		Upward shifts in upper limits					Upward shifts in lower limits					Downward shifts in upper limits					Downward shifts in lower limits					Species tested for both upper and lower limits
	Species occurrences old record	Species occurrences old record	Highest observation 2008 (m)	Highest observation old record (m)	Observed elevational difference (m)	Mean randomised difference (m)	p-value	Lowest observation 2008 (m)	Lowest observation old record (m)	Observed elevational difference (m)	Mean randomised difference (m)	p-value	Highest observation 2008 (m)	Highest observation old record (m)	Observed elevational difference (m)	Mean randomised difference (m)	p-value	Lowest observation 2008 (m)	Lowest observation old record (m)	Observed elevational difference (m)	Mean randomised difference (m)	p-value	
<i>Achillea millefolium</i>	25	52	1094	1050	44	44	0.243	995	1000	-5	-5	n.e	1094	1015	79	79	1.000	995	1000	-5	-5	n.e	
<i>Aconitum lycoctonum</i>	24	89	1310	1300	10	0	0.313	995	1000	-5	-5	n.e	1310	1300	10	-1	0.876	995	995	0	-3	n.e	
<i>Agrostis capillaris</i>	64	90	1363	1300	63	29	0.362	995	1000	-5	-5	n.e	1363	1300	63	24	0.822	995	995	0	0	n.e	
<i>Agrostis mertensii</i>	63	43	1549	1350	199	198	0.000	1034	1000	34	34	0.045	1549	1300	249	248	1.000	1034	995	39	71	0.960	x
<i>Alchemilla alpina</i>	24	32	1363	1340	23	6	0.370	1004	1000	4	3	n.e	1363	1340	23	3	0.788	1004	995	9	11	n.e	
<i>Alchemilla vulgaris</i>	62	158	1544	1300	244	232	0.089	995	1000	-5	-5	n.e	1544	1300	244	238	0.991	995	995	0	-1	n.e	
<i>Andromeda polifolia</i>	24	94	1023	1000	23	23	0.000	995	1000	-5	-5	n.e	1023	995	28	20	1.000	995	995	0	0	n.e	
<i>Angelica archangelica</i>	11	34	1357	1300	57	28	0.248	995	1000	-5	-16	n.e	1357	1300	57	24	0.908	995	995	0	-25	n.e	
<i>Antennaria alpina</i>	34	48	1541	1550	-9	-36	n.e	1144	1050	94	94	0.461	1541	1550	-9	-29	n.e	1144	1000	144	63	0.393	
<i>Antennaria dioica</i>	71	153	1549	1475	74	64	0.046	1005	1000	5	5	n.e	1549	1450	99	92	1.000	1005	995	10	17	n.e	
<i>Anthoxanthum odoratum</i>	149	268	1549	1475	74	73	0.003	995	1000	-5	-5	n.e	1549	1450	99	98	1.000	995	995	0	-1	n.e	
<i>Arctostaphylos uva-ursi</i>	17	109	1482	1300	182	125	0.115	1004	1010	-6	-6	n.e	1482	1300	182	70	0.898	1004	995	9	115	n.e	
<i>Arctous alpinus</i>	17	35	1463	1400	63	-19	0.576	1160	1010	150	150	0.380	1463	1350	113	-11	0.574	1160	1000	160	155	0.637	x
<i>Astragalus alpinus</i>	12	37	1483	1300	183	88	0.412	1038	1010	28	27	0.186	1483	1300	183	-8	0.499	1038	1000	38	43	0.971	x
<i>Avenella flexuosa</i>	142	337	1501	1360	141	119	0.078	995	1000	-5	-5	n.e	1501	1360	141	126	0.995	995	995	0	0	n.e	
<i>Bartsia alpina</i>	51	59	1450	1350	100	47	0.082	995	1000	-5	-6	n.e	1450	1350	100	64	0.957	995	995	0	-1	n.e	
<i>Beckwithia glacialis</i>	11	49	1514	1550	-36	-46	0.999	1336	1225	111	136	0.010	1514	1550	-36	-54	0.000	1336	1225	111	150	0.951	x
<i>Betula nana</i>	111	373	1454	1475	-21	-51	0.767	995	1000	-5	-5	n.e	1454	1450	4	-21	0.595	995	995	0	0	n.e	

<i>Betula pubescens</i>	51	180	1415	1300	115	-3	0.427	995	1000	-5	-5	n.e	1415	1300	115	0	0.706	995	995	0	0	n.e	
<i>Bistorta vivipara</i>	175	405	1549	1540	9	8	n.e	995	1000	-5	-5	n.e	1549	1540	9	8	n.e	995	995	0	0	n.e	
<i>Calamagrostis phragmitoides</i>	14	41	1341	1300	41	6	0.462	995	1000	-5	-5	n.e	1341	1300	41	-1	0.798	995	995	0	-4	n.e	
<i>Campanula rotundifolia</i>	78	291	1549	1550	-1	-3	n.e	995	1000	-5	-5	n.e	1549	1550	-1	-2	n.e	995	995	0	0	n.e	
<i>Carex bigelowii</i>	127	259	1545	1540	5	2	n.e	995	1000	-5	-5	n.e	1545	1540	5	4	n.e	995	995	0	0	n.e	
<i>Carex canescens</i>	23	157	1356	1250	106	46	0.133	995	1000	-5	-5	n.e	1356	1225	131	55	0.998	995	995	0	0	n.e	
<i>Carex dioica</i>	19	112	1067	1250	-183	-183	1.000	995	1000	-5	-5	n.e	1067	1200	-133	-133	0.002	995	995	0	0	n.e	
<i>Carex lachenalii</i>	44	50	1545	1350	195	193	0.001	1213	1250	-37	-40	0.981	1545	1350	195	195	1.000	1213	1250	-37	-37	0.261	x
<i>Carex nigra</i>	22	115	1244	1300	-56	-56	0.446	995	1000	-5	-5	n.e	1244	1300	-56	-56	0.734	995	995	0	0	n.e	
<i>Carex paupercula</i>	16	101	1349	1200	149	53	0.355	995	1000	-5	-5	n.e	1349	1200	149	15	0.699	995	995	0	0	n.e	
<i>Carex rostrata</i>	41	214	1350	1225	125	8	0.748	995	1000	-5	-5	n.e	1350	1225	125	11	0.361	995	995	0	0	n.e	
<i>Carex rupestris</i>	16	57	1549	1540	9	4	n.e	1359	1020	339	376	0.007	1549	1540	9	6	n.e	1359	1000	359	362	0.997	
<i>Carex saxatilis</i>	12	21	1491	1300	191	109	0.275	995	1000	-5	-121	n.e	1491	1300	191	55	0.859	995	995	0	-142	n.e	
<i>Carex vaginata</i>	138	270	1549	1475	74	69	0.068	995	1000	-5	-5	n.e	1549	1450	99	96	0.988	995	995	0	0	n.e	
<i>Cerastium alpinum</i>	33	121	1541	1550	-9	-17	n.e	1004	1000	4	2	n.e	1541	1550	-9	-14	n.e	1004	1000	4	141	n.e	
<i>Cerastium cerastoides</i>	29	60	1544	1350	194	184	0.008	1154	1000	154	154	0.193	1544	1350	194	188	1.000	1154	995	159	156	0.684	x
<i>Cerastium fontanum</i>	18	31	1357	1200	157	117	0.197	995	1000	-5	-7	n.e	1357	1200	157	125	0.943	995	1000	-5	-5	n.e	
<i>Chamerion angustifolium</i>	35	122	1380	1350	30	8	0.282	995	1000	-5	-8	n.e	1380	1325	55	25	0.885	995	995	0	0	n.e	
<i>Cirsium heterophyllum</i>	12	43	1260	1300	-40	-87	0.694	1014	1000	14	11	n.e	1260	1300	-40	-112	0.329	1014	995	19	27	n.e	
<i>Comarum palustre</i>	32	151	1356	1250	106	44	0.092	995	1000	-5	-5	n.e	1356	1225	131	45	0.997	995	995	0	0	n.e	
<i>Deschampsia cespitosa</i>	67	122	1505	1350	155	100	0.416	995	1000	-5	-5	n.e	1505	1350	155	120	0.841	995	995	0	0	n.e	
<i>Empetrum nigrum</i>	130	313	1490	1400	90	73	0.136	995	1000	-5	-5	n.e	1490	1350	140	92	0.999	995	995	0	0	n.e	
<i>Equisetum arvense</i>	16	106	1505	1350	155	111	0.189	995	1000	-5	-5	n.e	1505	1350	155	131	0.967	995	995	0	0	n.e	
<i>Equisetum fluviatile</i>	12	16	1363	1000	363	253	0.006	996	1000	-4	-4	n.e	1363	995	368	250	1.000	996	995	1	1	n.e	
<i>Eriophorum angustifolium</i>	45	329	1492	1350	142	45	0.466	995	1000	-5	-5	n.e	1492	1350	142	21	0.752	995	995	0	0	n.e	
<i>Euphrasia wettsteinii</i>	73	157	1549	1475	74	71	0.003	1144	1000	144	144	0.000	1549	1450	99	97	1.000	1144	995	149	149	0.996	x
<i>Festuca ovina</i>	152	507	1549	1550	-1	-4	n.e	995	1000	-5	-5	n.e	1549	1550	-1	-2	n.e	995	995	0	0	n.e	
<i>Festuca rubra</i>	34	81	1357	1300	57	-3	0.623	995	1000	-5	-5	n.e	1357	1300	57	-24	0.390	995	995	0	-1	n.e	
<i>Geranium sylvaticum</i>	88	186	1545	1325	220	219	0.025	995	1000	-5	-5	n.e	1545	1325	220	220	1.000	995	995	0	-1	n.e	
<i>Geum rivale</i>	18	66	1289	1300	-11	-24	0.617	996	1000	-4	-4	n.e	1289	1300	-11	-44	0.508	996	995	1	-1	n.e	

<i>Gymnocarpium dryopteris</i>	14	75	1135	1250	-115	-113	0.910	1020	1000	20	20	n.e	1135	1250	-115	-113	0.208	1020	995	25	29	n.e	
<i>Hieracium sp.</i>	138	196	1549	1550	-1	-5	n.e	1011	1000	11	8	n.e	1549	1550	-1	-3	n.e	1011	995	16	22	n.e	
<i>Juncus biglumis</i>	14	25	1514	1400	114	112	0.039	1147	1200	-53	-53	0.995	1514	1400	114	114	1.000	1147	1200	-53	-56	0.230	x
<i>Juncus trifidus</i>	93	147	1549	1500	49	46	0.007	1203	1000	203	203	0.007	1549	1500	49	48	1.000	1203	995	208	204	1.000	x
<i>Juniperus communis</i>	34	139	1405	1360	45	24	0.160	1010	1000	10	10	n.e	1405	1360	45	19	0.910	1010	995	15	21	n.e	
<i>Leontodon autumnalis</i>	43	73	1545	1350	195	183	0.008	995	1000	-5	-5	n.e	1545	1350	195	188	1.000	995	995	0	0	n.e	
<i>Loiseleuria procumbens</i>	13	20	1424	1300	124	52	0.318	1203	1000	203	163	0.596	1424	1250	174	98	0.941	1203	995	208	134	0.423	x
<i>Luzula confusa</i>	15	58	1517	1550	-33	-36	1.000	1336	1200	136	169	0.002	1517	1550	-33	-35	0.000	1336	1200	136	166	0.991	x
<i>Luzula multiflora</i>	73	100	1514	1350	164	141	0.020	995	1000	-5	-5	n.e	1514	1300	214	199	1.000	995	995	0	0	n.e	
<i>Luzula pilosa</i>	27	110	1160	1300	-140	-140	0.911	996	1000	-4	-4	n.e	1160	1300	-140	-140	0.498	996	995	1	1	n.e	
<i>Luzula spicata</i>	57	164	1545	1550	-5	-7	n.e	1269	1000	269	279	0.000	1545	1550	-5	-5	n.e	1269	1000	269	288	1.000	
<i>Melampyrum sylvaticum</i>	24	122	1259	1300	-41	-62	0.605	996	1000	-4	-4	n.e	1259	1300	-41	-74	0.490	996	995	1	1	n.e	
<i>Myosotis decumbens</i>	16	85	1444	1300	144	27	0.285	995	1000	-5	-7	n.e	1444	1300	144	36	0.856	995	995	0	-3	n.e	
<i>Nardus stricta</i>	13	51	1424	1340	84	-66	0.701	995	1000	-5	-8	n.e	1424	1340	84	-75	0.458	995	995	0	-2	n.e	
<i>Omalotheca norvegica</i>	32	100	1544	1325	219	209	0.046	1017	1000	17	16	n.e	1544	1325	219	214	0.984	1017	995	22	32	n.e	
<i>Omalotheca supina</i>	64	82	1549	1360	189	188	0.000	1017	1000	17	5	n.e	1549	1360	189	188	1.000	1017	1000	17	106	n.e	
<i>Oxycoccus sp.</i>	14	77	1356	1250	106	-72	0.508	995	1000	-5	-5	n.e	1356	1200	156	-48	0.719	995	995	0	0	n.e	
<i>Oxyria digyna</i>	38	29	1549	1400	149	148	0.006	1213	1000	213	155	0.448	1549	1400	149	148	1.000	1213	1000	213	144	0.658	x
<i>Pedicularis lapponica</i>	29	128	1405	1350	55	14	0.210	1006	1000	6	6	n.e	1405	1350	55	11	0.839	1006	995	11	30	n.e	
<i>Pedicularis oederi</i>	25	51	1545	1550	-5	-18	n.e	1029	1150	-121	-143	0.994	1545	1550	-5	-12	n.e	1029	1150	-121	-112	0.102	
<i>Pedicularis sceptrum-carolinum</i>	11	19	1034	1200	-166	-166	0.736	995	1000	-5	-5	n.e	1034	1200	-166	-161	0.523	995	995	0	0	n.e	
<i>Phleum alpinum</i>	59	139	1545	1350	195	194	0.013	995	1000	-5	-5	n.e	1545	1350	195	195	0.999	995	995	0	0	n.e	
<i>Phyllodoce caerulea</i>	55	27	1450	1350	100	55	0.004	1005	1125	-120	-149	0.968	1450	1325	125	102	0.999	1005	1125	-120	-85	0.171	x
<i>Poa alpina</i>	13	119	1512	1400	112	92	0.220	1289	1000	289	302	0.000	1512	1400	112	88	0.894	1289	995	294	320	1.000	x
<i>Poa pratensis</i>	23	129	1444	1350	94	-17	0.729	995	1000	-5	-5	n.e	1444	1340	104	8	0.594	995	995	0	0	n.e	
<i>Potentilla crantzii</i>	62	146	1549	1520	29	28	0.072	995	1000	-5	-6	n.e	1549	1520	29	28	1.000	995	995	0	-3	n.e	
<i>Pulsatilla vernalis</i>	32	93	1549	1475	74	59	0.087	1004	1000	4	2	n.e	1549	1450	99	89	0.990	1004	995	9	43	n.e	
<i>Pyrola minor</i>	51	133	1444	1360	84	0	0.307	995	1000	-5	-5	n.e	1444	1360	84	3	0.766	995	995	0	0	n.e	
<i>Ranunculus acris</i>	98	208	1545	1350	195	194	0.006	995	1000	-5	-5	n.e	1545	1340	205	205	1.000	995	995	0	0	n.e	
<i>Rhinanthus minor</i>	14	43	1098	1300	-202	-202	0.928	995	1000	-5	-11	n.e	1098	1300	-202	-202	0.127	995	995	0	-3	n.e	

<i>Rhodiola rosea</i>	63	132	1549	1550	-1	-4	n.e	995	1000	-5	-5	n.e	1549	1550	-1	-2	n.e	995	995	0	-1	n.e	
<i>Rubus saxatilis</i>	12	49	1362	1300	62	-114	0.800	1014	1000	14	11	n.e	1362	1300	62	-136	0.222	1014	995	19	25	n.e	
<i>Rumex acetosa</i>	104	203	1545	1350	195	194	0.015	995	1000	-5	-5	n.e	1545	1340	205	205	1.000	995	995	0	0	n.e	
<i>Salix glauca</i>	76	254	1505	1540	-35	-59	0.570	995	1000	-5	-5	n.e	1505	1540	-35	-51	0.650	995	995	0	0	n.e	
<i>Salix herbacea</i>	164	178	1549	1550	-1	-2	n.e	1178	1000	178	178	0.106	1549	1550	-1	-2	n.e	1178	995	183	181	0.875	
<i>Salix lanata</i>	22	54	1405	1350	55	15	0.175	1158	1000	158	157	0.129	1405	1350	55	12	0.871	1158	995	163	162	0.905	x
<i>Salix lapponum</i>	65	268	1423	1350	73	26	0.166	995	1000	-5	-5	n.e	1423	1300	123	83	0.980	995	995	0	0	n.e	
<i>Salix myrsinites</i>	23	23	1284	1250	34	30	0.220	995	1000	-5	-143	n.e	1284	1200	84	74	1.000	995	995	0	-149	n.e	
<i>Saussurea alpina</i>	119	247	1549	1550	-1	-2	n.e	995	1000	-5	-5	n.e	1549	1550	-1	-2	n.e	995	995	0	0	n.e	
<i>Saxifraga stellaris</i>	13	43	1505	1350	155	110	0.420	1213	1000	213	213	0.011	1505	1350	155	127	0.852	1213	995	218	218	0.951	x
<i>Selaginella selaginoides</i>	37	91	1483	1360	123	67	0.107	995	1000	-5	-5	n.e	1483	1360	123	61	0.957	995	995	0	0	n.e	
<i>Sibbaldia procumbens</i>	65	96	1545	1360	185	184	0.001	1013	1010	3	3	n.e	1545	1360	185	185	1.000	1013	1000	13	84	n.e	
<i>Silene acaulis</i>	37	46	1549	1550	-1	-4	n.e	1337	1150	187	170	0.049	1549	1550	-1	-2	n.e	1337	1150	187	162	0.975	
<i>Solidago virgaurea</i>	160	325	1541	1450	91	76	0.139	995	1000	-5	-5	n.e	1541	1450	91	82	0.955	995	995	0	0	n.e	
<i>Stellaria borealis</i>	12	19	1380	1300	80	42	0.245	1001	1000	1	1	n.e	1380	1250	130	86	0.997	1001	1000	1	119	n.e	
<i>Taraxacum sp.</i>	73	150	1545	1360	185	184	0.001	995	1000	-5	-5	n.e	1545	1360	185	185	1.000	995	995	0	-3	n.e	
<i>Thalictrum alpinum</i>	83	156	1549	1520	29	24	0.166	995	1000	-5	-5	n.e	1549	1520	29	26	0.957	995	995	0	0	n.e	
<i>Trientalis europaea</i>	87	240	1444	1360	84	3	0.484	998	1000	-2	-2	n.e	1444	1360	84	8	0.741	998	995	3	3	n.e	
<i>Trifolium repens</i>	24	65	1126	1300	-174	-174	0.534	995	1000	-5	-6	n.e	1126	1300	-174	-174	0.662	995	995	0	-2	n.e	
<i>Trisetum spicatum</i>	23	44	1512	1540	-28	-54	0.434	1270	1225	45	48	0.274	1512	1540	-28	-47	0.725	1270	1225	45	56	0.983	x
<i>Vaccinium myrtillus</i>	91	208	1444	1360	84	25	0.137	995	1000	-5	-5	n.e	1444	1360	84	34	0.928	995	995	0	0	n.e	
<i>Vaccinium uliginosum</i>	70	296	1418	1475	-57	-104	0.929	995	1000	-5	-5	n.e	1418	1450	-32	-67	0.162	995	995	0	0	n.e	
<i>Vaccinium vitis-idaea</i>	195	453	1549	1540	9	6	n.e	995	1000	-5	-5	n.e	1549	1540	9	8	n.e	995	995	0	0	n.e	
<i>Vahlodea atropurpurea</i>	12	19	1431	1020	411	343	0.015	1235	1000	235	235	0.065	1431	1000	431	372	0.999	1235	995	240	240	0.913	x
<i>Valeriana sambucifolia</i>	11	70	1356	1300	56	-38	0.502	1001	1000	1	1	n.e	1356	1300	56	-76	0.487	1001	995	6	8	n.e	
<i>Veronica alpina</i>	41	100	1545	1350	195	194	0.002	1086	1000	86	83	0.000	1545	1340	205	205	1.000	1086	995	91	90	0.993	x
<i>Viola canina</i>	14	27	1098	1200	-102	-88	0.708	1004	1010	-6	-6	n.e	1098	1200	-102	-62	0.467	1004	1000	4	7	n.e	
<i>Viola epipsila</i>	30	82	1380	1300	80	53	0.245	996	1000	-4	-4	n.e	1380	1300	80	38	0.803	996	995	1	1	n.e	

Table A2: Changes in species optima. Species abb. = Species abbreviations. Numbers in bold = significant species; NA = no values calculated
 neg. = negative linear response; pos. = positive linear response; null = no response. Occ08/421 = species occurrences in 2008 in 421 plots;
 Occ43/1118 = species occurrences in Nordhagen’s (1943) survey in 1118 plots; opt = estimated optimum; tol = estimated tolerance; CI.low =
 lower Confidence Interval; CI.high = higher Confidence Interval; opt.diff = estimated change in optima; tol.diff = estimated change in tolerance.

Species	Species abb.	occ08/421	occ43/1118	opt08	tol08	CI.low08	CI.high08	opt43	tol43	CI.low43	CI.high43	opt.diff	tol.diff
<i>Achillea millefolium</i>	Achi.mill	25	52	NA	NA	neg.		1017	8	1016	1018	NA	NA
<i>Aconitum lycoctonum</i>	Acon.lyco	24	89	1145	81	1127	1160	1113	52	1108	1118	32	30
<i>Agrostis capillaris</i>	Agro.capi	64	90	NA	NA	neg.		1075	51	1067	1083	NA	NA
<i>Agrostis mertensii</i>	Agro.mert	63	43	NA	NA	pos.		NA	NA	null		NA	NA
<i>Alchemilla alpina</i>	Alch.alpi	24	32	1178	130	1132	1215	NA	NA	null		NA	NA
<i>Alchemilla vulgaris</i>	Alch.vulg	62	158	NA	NA	neg.		1097	70	1086	1105	NA	NA
<i>Andromeda polifolia</i>	Andr.poli	24	94	NA	NA	neg.		NA	NA	neg.		NA	NA
<i>Angelica archangelica</i>	Ange.arch	11	34	1222	96	1194	1253	1197	87	1182	1218	24	9
<i>Antennaria alpina</i>	Ante.alpi	34	48	1451	112	1403	1726	1541	175	1462	1744	-90	-63
<i>Antennaria dioica</i>	Ante.dioc	71	153	NA	NA	pos.		NA	NA	pos.		NA	NA
<i>Anthoxanthum odoratum</i>	Anth.odor	149	268	1325	196	1261	1701	1175	123	1158	1198	150	73
<i>Arctous alpinus</i>	Arct.alpi	17	35	1244	82	1217	1269	1262	108	1237	1297	-18	-26
<i>Arctostaphylos uva-ursi</i>	Arct.uvau	17	109	NA	NA	pos.		1144	115	1125	1164	NA	NA
<i>Astragalus alpinus</i>	Astr.alpi	12	37	NA	NA	null		1108	107	1076	1127	NA	NA
<i>Avenella flexuosa</i>	Aven.flex	142	337	1183	105	1163	1201	1122	101	1106	1134	61	5
<i>Bartsia alpina</i>	Bart.alpi	51	59	NA	NA	null		1202	127	1179	1241	NA	NA
<i>Beckwithia glacialis</i>	Beck.glac	11	49	NA	NA	pos.		NA	NA	pos.		NA	NA
<i>Betula nana</i>	Betu.nana	111	373	1196	174	1117	1252	1126	192	1033	1165	70	-18
<i>Betula pubescens</i>	Betu.pube	51	180	1092	77	1065	1108	1087	44	1083	1092	5	33
<i>Bistorta vivipara</i>	Bist.vivi	175	405	NA	NA	pos.		1303	266	1228	2179	NA	NA
<i>Calamagrostis phragmitoides</i>	Cala.phra	14	41	NA	NA	neg.		1127	68	1119	1137	NA	NA
<i>Campanula rotundifolia</i>	Camp.rotu	78	291	NA	NA	pos.		NA	NA	pos.		NA	NA

<i>Carex bigelowii</i>	Care.bige	127	259	1427	142	1369	1593	1407	184	1346	1537	21	-42
<i>Carex canescens</i>	Care.cane	23	157	NA	NA	neg.		1026	137	689	1075	NA	NA
<i>Carex dioica</i>	Care.dioi	19	112	NA	NA	neg.		1128	75	1119	1137	NA	NA
<i>Carex lachenalii</i>	Care.lach	44	50	1501	132	1428	2708	1313	29	1309	1318	188	103
<i>Carex nigra</i>	Care.nigr	22	115	NA	NA	neg.		1046	117	894	1081	NA	NA
<i>Carex paupercula</i>	Care.paup	16	101	NA	NA	neg.		NA	NA	neg.		NA	NA
<i>Carex rostrata</i>	Care.rost	41	214	NA	NA	neg.		975	138	-15	1047	NA	NA
<i>Carex rupestris</i>	Care.rupe	16	57	NA	NA	pos.		NA	NA	pos.		NA	NA
<i>Carex saxatilis</i>	Care.saxa	12	21	NA	NA	null		1191	59	1180	1203	NA	NA
<i>Carex vaginata</i>	Care.vagi	138	270	1294	185	1241	1492	1180	206	1125	1245	115	-21
<i>Cerastium alpinum</i>	Cera.alpi	33	121	NA	NA	pos.		NA	NA	pos.		NA	NA
<i>Cerastium cerastoides</i>	Cera.cera	29	60	NA	NA	pos.		1337	156	1294	1416	NA	NA
<i>Cerastium fontanum</i>	Cera.font	18	31	NA	NA	neg.		1077	44	1070	1084	NA	NA
<i>Chamerion angustifolium</i>	Cham.angu	35	122	1161	126	1113	1191	1130	80	1120	1140	31	46
<i>Cirsium heterophyllum</i>	Cirs.hete	12	43	1099	45	1091	1109	1126	65	1118	1135	-26	-20
<i>Comarum palustre</i>	Coma.palu	32	151	NA	NA	neg.		1070	108	1006	1093	NA	NA
<i>Deschampsia cespitosa</i>	Desc.cesp	67	122	1051	135	784	1103	1102	82	1087	1113	-51	54
<i>Empetrum nigrum</i>	Empe.nigr	130	313	1256	135	1227	1301	1113	145	1063	1137	144	-10
<i>Equisetum arvense</i>	Equi.arve	16	106	NA	NA	null		1195	102	1179	1217	NA	NA
<i>Equisetum fluviatile</i>	Equi.fluv	12	16	NA	NA	neg.		NA	NA	neg.		NA	NA
<i>Eriophorum angustifolium</i>	Erio.angu	45	329	NA	NA	neg.		NA	NA	neg.		NA	NA
<i>Euphrasia wettsteinii</i>	Euph.wett	73	157	1474	137	1406	1861	1276	142	1247	1324	198	-5
<i>Festuca ovina</i>	Fest.ovin	152	507	NA	NA	pos.		NA	NA	pos.		NA	NA
<i>Festuca rubra</i>	Fest.rubr	34	81	NA	NA	neg.		NA	NA	neg.		NA	NA
<i>Geranium sylvaticum</i>	Gera.sylv	88	186	1114	130	1030	1146	1120	65	1114	1126	-6	65
<i>Geum rivale</i>	Geum.riva	18	66	NA	NA	neg.		1114	57	1108	1121	NA	NA
<i>Gymnocarpium dryopteris</i>	Gymn.dryo	14	75	1083	28	1078	1089	1096	54	1090	1103	-13	-27
<i>Hieracium sp.</i>	Hier.sp	138	196	1401	176	1328	1704	NA	NA	pos.		NA	NA
<i>Juncus biglumis</i>	Junc.bigl	14	25	NA	NA	pos.		1371	86	1353	1398	NA	NA
<i>Juncus trifidus</i>	Junc.trif	93	147	1439	102	1402	1547	1459	199	1379	1664	-21	-97
<i>Juniperus communis</i>	Juni.comm	34	139	NA	NA	null		1117	103	1098	1132	NA	NA
<i>Leontodon autumnalis</i>	Leon.autu	43	73	NA	NA	pos.		NA	NA	neg.		NA	NA
<i>Loiseleuria procumbens</i>	Lois.proc	13	20	1274	89	1239	1307	1251	113	1224	1292	23	-24
<i>Luzula confusa</i>	Luzu.conf	15	58	1484	67	1458	1562	NA	NA	pos.		NA	NA
<i>Luzula multiflora</i>	Luzu.mult	73	100	NA	NA	null		NA	NA	neg.		NA	NA

<i>Luzula pilosa</i>	Luzu.pilo	27	110	1065	40	1055	1077	1091	39	1087	1095	-26	1
<i>Luzula spicata</i>	Luzu.spic	57	164	1479	80	1447	1577	NA	NA	pos.	NA	NA	
<i>Melampyrum sylvaticum</i>	Mela.sylv	24	122	1107	52	1098	1116	1095	53	1089	1100	12	0
<i>Myosotis decumbens</i>	Myos.decu	16	85	NA	NA	neg.	1114	52	1109	1119	NA	NA	
<i>Nardus stricta</i>	Nard.stri	13	51	NA	NA	neg.	NA	NA	neg.	NA	NA	NA	
<i>Omalotheca norvegica</i>	Omal.norv	32	100	1227	145	1182	1289	1132	82	1122	1144	94	63
<i>Omalotheca supina</i>	Omal.supi	64	82	NA	NA	pos.	1310	110	1287	1342	NA	NA	
<i>Oxycoccus sp.</i>	Oxyc.sp	14	77	NA	NA	neg.	NA	NA	neg.	NA	NA	NA	
<i>Oxyria digyna</i>	Oxyr.digy	38	29	NA	NA	pos.	1347	120	1317	1393	NA	NA	
<i>Pedicularis lapponica</i>	Pedi.lapp	29	128	1219	112	1190	1253	1164	135	1141	1194	55	-23
<i>Pedicularis oederi</i>	Pedi.oede	25	51	NA	NA	pos.	1390	140	1352	1453	NA	NA	
<i>Pedicularis sceptrum-carolinum</i>	Pedi.scep	11	19	1015	14	1010	1020	NA	NA	neg.	NA	NA	
<i>Phleum alpinum</i>	Phle.alpi	59	139	NA	NA	null	1136	176	1064	1176	NA	NA	
<i>Phyllodoce caerulea</i>	Phyl.caer	55	27	1335	117	1298	1394	1278	75	1261	1299	57	41
<i>Poa alpina</i>	Poa.alpi	13	119	NA	NA	pos.	NA	NA	null	NA	NA	NA	
<i>Poa pratensis</i>	Poa.prat	23	129	NA	NA	neg.	NA	NA	neg.	NA	NA	NA	
<i>Potentilla crantzii</i>	Pote.cran	62	146	NA	NA	pos.	NA	NA	null	NA	NA	NA	
<i>Pulsatilla vernalis</i>	Puls.vern	32	93	NA	NA	pos.	NA	NA	pos.	NA	NA	NA	
<i>Pyrola minor</i>	Pyro.mino	51	133	1167	106	1142	1189	1110	110	1082	1127	58	-4
<i>Ranunculus acris</i>	Ranu.acri	98	208	NA	NA	neg.	1116	108	1095	1131	NA	NA	
<i>Rhinanthus minor</i>	Rhin.mino	14	43	1056	45	1037	1073	1086	100	1040	1106	-30	-55
<i>Rhodiola rosea</i>	Rhod.rose	63	132	1390	160	1325	1627	1409	194	1342	1575	-20	-34
<i>Rubus saxatilis</i>	Rubu.saxa	12	49	1098	80	1064	1117	1121	57	1115	1128	-24	23
<i>Rumex acetosa</i>	Rume.acet	104	203	1191	126	1161	1218	1168	124	1149	1191	23	1
<i>Salix glauca</i>	Sali.glau	76	254	1250	118	1222	1287	1271	157	1239	1325	-21	-39
<i>Salix herbacea</i>	Sali.herb	164	178	1574	140	1454	2939	NA	NA	pos.	NA	NA	
<i>Salix lanata</i>	Sali.lana	22	54	1280	80	1249	1306	1194	92	1178	1215	86	-13
<i>Salix lapponum</i>	Sali.lapp	65	268	1117	169	791	1166	1080	107	1037	1099	37	62
<i>Salix myrsinites</i>	Sali.myrs	23	23	1077	98	989	1106	1197	55	1186	1209	-121	43
<i>Saussurea alpina</i>	Saus.alpi	119	247	NA	NA	pos.	NA	NA	pos.	NA	NA	NA	
<i>Saxifraga stellaris</i>	Saxi.stel	13	43	1330	91	1290	1377	NA	NA	null	NA	NA	
<i>Selaginella selaginoides</i>	Sela.sela	37	91	NA	NA	null	1128	178	1022	1170	NA	NA	
<i>Sibbaldia procumbens</i>	Sibb.proc	65	96	1472	156	1391	1992	1318	160	1277	1394	155	-4
<i>Silene acaulis</i>	Sile.acau	37	46	1474	66	1451	1531	NA	NA	pos.	NA	NA	
<i>Solidago virgaurea</i>	Soli.virg	160	325	1198	115	1177	1220	1159	124	1141	1179	39	-9

<i>Stellaria borealis</i>	Stel.bore	12	19	1247	104	1213	1287	1122	85	1108	1137	125	19
<i>Taraxacum sp.</i>	Tara.sp	73	150	1351	192	1278	1892	1158	178	1108	1204	193	14
<i>Thalictrum alpinum</i>	Thal.alpi	83	156	NA	NA	pos.	1225	142	1199	1268	NA	NA	
<i>Trientalis europaea</i>	Trie.euro	87	240	1141	92	1121	1156	1116	98	1099	1128	26	-6
<i>Trifolium repens</i>	Trif.repe	24	65	1061	40	1051	1074	1069	40	1063	1076	-8	-1
<i>Trisetum spicatum</i>	Tris.spic	23	44	1405	80	1379	1462	1332	61	1320	1348	74	19
<i>Vaccinium myrtillus</i>	Vacc.myrt	91	208	1174	101	1154	1193	1114	107	1092	1129	61	-6
<i>Vaccinium uliginosum</i>	Vacc.ulig	70	296	1148	135	1087	1179	1157	154	1128	1186	-9	-19
<i>Vaccinium vitis-idaea</i>	Vacc.viti	195	453	1273	177	1228	1391	NA	NA	pos.	NA	NA	
<i>Vahlodea atropurpurea</i>	Vahl.atro	12	19	1347	67	1322	1377	NA	NA	neg.	NA	NA	
<i>Valeriana sambucifolia</i>	Vale.samb	11	70	NA	NA	neg.	1135	65	1128	1144	NA	NA	
<i>Veronica alpina</i>	Vero.alpi	41	100	1454	169	1366	2258	1250	155	1217	1313	204	14
<i>Viola canina</i>	Viol.cani	14	27	1065	28	1059	1075	1080	41	1075	1087	-15	-12
<i>Viola epipsila</i>	Viol.epip	30	82	NA	NA	neg.	1138	73	1130	1148	NA	NA	