

Ecography

ECOG-03733

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Supplementary material

1 **APPENDIX 1**

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3 **Table A1.** Details of the sampling regions.

Region	Location	Researchers	Sampling period	Plot type
CANADA				
Eagle Plains	65.9N, 137.4W to 66.6N, 136.3W	Brown, Johnstone	2007-9	PCQ ¹
Tuktoyaktuk	68.3N, 133.3W to 69.5N, 134.3W	Walker, Henry	2009	Fixed-area
Mackenzie Mountains	63.2N, 130.0W	Mamet, Kershaw	2009	Fixed-area
Churchill	58.6N, 93.8W to 58.7N, 93.8W	Mamet, Harper, Kershaw	2008	PCQ
Boniface River	57.8N, 76.3W	Dufour Tremblay, Boudreau	2006-7	Fixed-area
Kangiqsualujjuaq	58.7N, 65.9W	Dufour Tremblay, Boudreau	2011	Fixed-area
Mealy Mountains	53.6N, 58.8W	Jameson, Trant, Hermanutz	2008	Fixed-area
NORWAY				
Nordreisa, Norway	69.8N, 21.1E	Hofgaard	2007-9	Fixed-area
Alta, Norway	69.9N, 22.9E	Hofgaard	2007-9	Fixed-area
Karasjok, Norway	69.4N, 24.1E	Hofgaard	2007-9	Fixed-area
Porsanger, Norway	70.0N, 24.9E	Hofgaard	2007-9	Fixed-area
SWEDEN				
Abisko, Sweden	68.3N, 18.NE	Hofgaard	2007-9	Fixed-area
RUSSIA				
Kola Peninsula	69.3N, 29.4E	Isaeva	2006-7	NA

4 ¹ Point-centered quarter

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Table A2. Stand density (trees/hectare), seed viability, number of seeds per cone, and number of reproductive structures (cones or catkins) measured across the treeline ecotone in our study regions. Reproductive metrics represent data collected during the recent sampling period.

Region	Sub-region	Site	Latitude	Species ^a	Year	Seeds per cone	Proportion germinated	Conspecific density (trees per ha)	Total stand density (trees per ha)	Reproductive structures per tree ^b	Seeds per tree	Viable seeds per tree ^c	Seeds per ha	Viable seeds per ha	Cone length (cm)
Canada	Yukon Territory	Eagle Plains	65.957	picmar	2007	3	0.44	438	438	14.5	42.1	18.5	18418	8104	25
Canada	Yukon Territory	Eagle Plains	66.125	picmar	2007	2	0.19	145	145	38.8	85.4	16.2	12377	2352	25
Canada	Yukon Territory	Eagle Plains	66.582	picmar	2007	3	0.24	269	269	11.4	31.9	7.7	8587	2061	25
Canada	Yukon Territory	Eagle Plains	65.957	picmar	2008	31	0.261	438	438	135	4240.4	1106.7	1857273	484748	25
Canada	Yukon Territory	Eagle Plains	66.125	picmar	2008	32	0.017	145	145	200	6488	110.3	940760	15993	25
Canada	Yukon Territory	Eagle Plains	66.582	picmar	2008	20	0.028	269	269	118	2350.6	65.8	632301	17704	25
Canada	Yukon Territory	Eagle Plains	65.957	picmar	2009	38	0.071	438	438	81	3099.1	220	1357388	96375	25
Canada	Yukon Territory	Eagle Plains	66.125	picmar	2009	12	0	145	145	38	444.2	0	64412	0	25
Canada	Yukon Territory	Eagle Plains	66.582	picmar	2009	11	0.055	269	269	158	1668.5	91.8	448821	24685	25
Canada	Northwest Territories	Tuktoyaktuk	68.285	picgla	2009	9	0.19	937	937	18.7	168.3	32	157697	29962	45
Canada	Northwest Territories	Tuktoyaktuk	69.109	picgla	2009	4	0.0054	332	332	16.6	69.6	0.4	23107	125	45
Canada	Northwest Territories	Tuktoyaktuk	69.189	picgla	2009	2	0.0029	390	390	25.3	55.8	0.2	21748	63	45
Canada	Northwest Territories	Tuktoyaktuk	69.256	picgla	2009	4	0.0014	42	42	30	132	0.2	5544	8	45
Canada	Northwest Territories	Tuktoyaktuk	69.297	picgla	2009	2	0.0028	0.2	0.2	42	83.9	0.2	17	0	45
Canada	Northwest Territories	Tuktoyaktuk	69.185	picgla	2009	6	0.0006	0.1	0.1	18.6	113.5	0.1	11	0	45
Canada	Northwest Territories	Tuktoyaktuk	69.484	picgla	2009	3	0.0004	0.1	0.1	46.2	143.2	0.1	14	0	45
Canada	Northwest Territories	Tuktoyaktuk	69.314	picgla	2009	2	0.0017	0.1	0.1	42.4	72.1	0.1	7	0	45
Canada	Northwest Territories	Tuktoyaktuk	69.322	picgla	2009	1	0.0025	0.1	0.1	20.3	22.4	0.1	2	0	45
Canada	Northwest Territories	Tuktoyaktuk	69.382	picgla	2009	6	0.0016	0.1	0.1	48.8	273	0.4	27	0	45
Canada	Northwest Territories	Tuktoyaktuk	69.477	picgla	2009	3	0.0013	0.1	0.1	51	153	0.2	15	0	45

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Canada	Northwest Territories	Mackenzie Mountains	63.233	abilas	2009	211	0	0.1	0.1	NA	NA	NA	NA	NA	45
Canada	Manitoba	Churchill	58.717	picgla	2008	20	0.166	318	347	12.8	256	42.5	81408	13514	45
Canada	Manitoba	Churchill	58.617	picmar	2008	49	0.29	612	1049	10.6	519.4	150.6	317873	92183	25
Canada	Manitoba	Churchill	58.717	picgla	2008	35	0.4	228	248	13.6	476	190.4	108528	43411	45
Canada	Manitoba	Churchill	58.717	picgla	2008	30	0.354	278	303	14.4	432	152.9	120096	42514	45
Canada	Manitoba	Churchill	58.617	picmar	2008	58	0.392	274	431	11.8	684.4	268.3	187526	73510	25
Canada	Manitoba	Churchill	58.717	picgla	2008	41	0.272	311	373	15.4	631.4	171.7	196365	53411	45
Canada	Manitoba	Churchill	58.717	larlar	2008	6	0.07	29	347	9.4	56.4	3.9	1636	115	15
Canada	Manitoba	Churchill	58.617	larlar	2008	5	0	175	1049	2.2	11	0	1925	0	15
Canada	Manitoba	Churchill	58.717	larlar	2008	10	0.09	21	248	17.5	175	15.8	3675	331	15
Canada	Manitoba	Churchill	58.717	larlar	2008	5	0	118	304	7	35	0	4130	0	15
Canada	Manitoba	Churchill	58.617	larlar	2008	6	0.005	62	431	9.6	57.6	0.3	3571	18	15
Canada	Nunavik, Quebec	Kangiqsualujjuaq	58.683	picmar	2011	NA	0.236	6	394	NA	NA	NA	NA	NA	25
Canada	Nunavik, Quebec	Kangiqsualujjuaq	58.683	larlar	2011	NA	0.18	388	394	NA	NA	NA	NA	NA	15
Canada	Nunavik, Quebec	Kangiqsualujjuaq	58.683	picmar	2011	NA	0	1	19	NA	NA	NA	NA	NA	25
Canada	Nunavik, Quebec	Kangiqsualujjuaq	58.683	larlar	2011	NA	0.436	19	19	NA	NA	NA	NA	NA	15
Canada	Nunavik, Quebec	Boniface	57.75	picmar	2006	10	0.195	337	337	NA	NA	NA	NA	NA	25
Canada	Nunavik, Quebec	Boniface	57.75	picmar	2007	6	0.211	337	337	NA	NA	NA	NA	NA	25
Canada	Labrador	Mealy Mountains	53.578	picmar	2008	51	0.054	1654	2375	22	1122	60.6	1855788	100213	25
Canada	Labrador	Mealy Mountains	53.609	picmar	2008	37	0.034	53	426	0.6	22.2	0.8	1177	40	25
Canada	Labrador	Mealy Mountains	53.615	picmar	2008	38	0.019	38	134	0.2	7.6	0.1	289	6	25
Canada	Labrador	Mealy Mountains	53.578	abibal	2008	139	0.002	231	2375	0.1	13.9	0	3211	6	70
Canada	Labrador	Mealy Mountains	53.609	abibal	2008	108	0.033	196	426	0.15	16.2	0.5	3175	105	70
Canada	Labrador	Mealy Mountains	53.615	abibal	2008	104	0.004	90	134	0.54	56.2	0.2	5054	20	70

Region	Sub-region	Site	Latitude	Species ^a	Year	Seeds per cone	Proportion germinated	Conspecific density (trees per ha)	Total stand density (trees per ha)	Reproductive structures per tree ^b	Seeds per tree	Viable seeds per tree ^c	Seeds per ha	Viable seeds per ha	Cone length (cm)
Canada	Labrador	Mealy Mountains	53.578	larlar	2008	18	0.032	307.69	2375	1.5	27	0.9	8308	266	15
Canada	Labrador	Mealy Mountains	53.609	larlar	2008	13	0.027	157.89	426	32	416	11.2	65682	1773	15
Canada	Labrador	Mealy Mountains	53.609	picgla	2008	47	0.004	19.14	426	0.5	23.5	0.1	450	2	45
Norway	Finnmark	Porsanger	70.0007	bettor	2007	NA	0.102	277.8	277.8	1 - 10	NA	NA	NA	NA	25
Norway	Finnmark	Porsanger	70.0007	bettor	2008	NA	0	277.8	277.8	<1	NA	NA	NA	NA	25
Norway	Finnmark	Porsanger	70.0007	bettor	2009	NA	0.057	277.8	277.8	<1	NA	NA	NA	NA	25
Norway	Finnmark	Alta	69.864	bettor	2007	NA	0.131	110.8	110.8	<1	NA	NA	NA	NA	25
Norway	Finnmark	Alta	69.864	bettor	2008	NA	0.1	110.8	110.8	1 - 10	NA	NA	NA	NA	25
Norway	Finnmark	Alta	69.864	bettor	2009	NA	0.062	110.8	110.8	<1	NA	NA	NA	NA	25
Norway	Troms	Nordreisa	69.756	bettor	2007	NA	0.128	82.6	82.6	<1	NA	NA	NA	NA	25
Norway	Troms	Nordreisa	69.756	bettor	2008	NA	0.1	82.6	82.6	1 - 10	NA	NA	NA	NA	25
Norway	Troms	Nordreisa	69.756	bettor	2009	NA	0.117	82.6	82.6	1 - 10	NA	NA	NA	NA	25
Norway	Finnmark	Karasjok	69.376	bettor	2007	NA	0.152	177.8	177.8	10 - 100	NA	NA	NA	NA	25
Norway	Finnmark	Karasjok	69.376	bettor	2008	NA	0	177.8	177.8	10 - 100	NA	NA	NA	NA	25
Norway	Finnmark	Karasjok	69.376	bettor	2009	NA	0.039	177.8	177.8	1 - 10	NA	NA	NA	NA	25
Sweden	Norrbottn	Abisko	68.313	bettor	2007	NA	0.439	123.5	123.5	10 - 100	NA	NA	NA	NA	25
Sweden	Norrbottn	Abisko	68.313	bettor	2008	NA	0.2	123.5	123.5	100 - 1000	NA	NA	NA	NA	25
Sweden	Norbotten	Abisko	68.313	bettor	2009	NA	0.165	123.5	123.5	1 - 10	NA	NA	NA	NA	25
Russia	Murmansk	Kola Peninsula	69.38	pinsyl	2006	14	NA	1324	1324	NA	NA	NA	NA	NA	48
Russia	Murmansk	Kola Peninsula	69.38	pinsyl	2007	10	NA	1324	1324	NA	NA	NA	NA	NA	48

^a Species codes: abba = *Abies balsamea*; abla = *Abies lasiocarpa*; bettor = *Betula pubescens* ssp *tortuosa*; larlar = *Larix laricina*; picgla = *Picea glauca*; picmar = *Picea mariana*; pinsyl = *Pinus sylvestris*

^b Cones per tree for all conifer species; catkins per tree for *Betula pubescens* ssp *tortuosa* in Norway and Sweden. Catkins per tree estimated as density classes.

^c Measured as proportion of seed that germinated in standardized laboratory germination trials. See Methods for specific details. Data are presented as the mean for the study period in that region.