

Glacial refugia and modern genetic diversity of 22 western North American tree species

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Electronic Supplementary Material, Tables S1-S4

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Table S1: The area under the curve (AUC) of the receiver operating characteristic, provided for each species and each modelling method for each of the two GCMs (GFDL and CCM1): discriminant analysis (DA), minimum distance (MD), Random Forests (RF), and the averaged ensemble method (Ens). AUCs are also noted for model projections based on the 1961-1990 observed climate (Modern). The number of palaeoecological records used for the validation is also reported (N). CCM1 projections were validated with data from 6,000, 11,000, 14,000, 16,000, and 21,000 years ago. GFDL projections were validated with data from 6,000, 9,000, 16,000, and 21,000 years ago.

Species	Modern					CCM1 Model					GFDL Model				
	N	DA	MD	RF	Ens	N	DA	MD	RF	Ens	N	DA	MD	RF	Ens
<i>A. amabilis</i>	1615	0.93	0.83	0.93	0.97	3	0.97	0.79	0.63	0.95	3	0.97	0.79	0.80	0.97
<i>A. lasiocarpa</i>	10804	0.82	0.72	0.82	0.86	83	0.63	0.66	0.66	0.70	81	0.69	0.68	0.69	0.78
<i>A. procera</i>	82	0.83	0.68	0.85	0.91	1	0.49	0.49	0.49	0.48	1	1.00	0.99	1.00	1.00
<i>A. macrophyllum</i>	437	0.95	0.94	0.96	0.97	9	0.70	0.69	0.69	0.69	11	0.75	0.74	0.73	0.74
<i>A. rubra</i>	715	0.96	0.94	0.96	0.97	24	0.80	0.73	0.76	0.82	22	0.82	0.80	0.81	0.81
<i>C. decurrens</i>	561	0.96	0.88	0.98	0.99	2	0.99	0.74	0.74	0.99	3	1.00	0.65	0.99	1.00
<i>C. nootkatensis</i>	707	0.94	0.93	0.94	0.97	64	0.62	0.62	0.64	0.67	65	0.69	0.61	0.61	0.72
<i>L. occidentalis</i>	821	0.86	0.67	0.87	0.92	6	0.66	0.57	0.65	0.73	7	0.63	0.70	0.84	0.91
<i>P. engelmannii</i>	6223	0.80	0.69	0.81	0.86	87	0.62	0.60	0.63	0.70	79	0.66	0.60	0.67	0.76
<i>P. glauca</i>	7115	0.87	0.83	0.88	0.90	108	0.68	0.64	0.72	0.73	145	0.66	0.61	0.69	0.69
<i>P. mariana</i>	2922	0.88	0.80	0.89	0.89	87	0.70	0.66	0.76	0.77	99	0.73	0.65	0.73	0.75
<i>P. sitchensis</i>	1016	0.94	0.90	0.95	0.98	55	0.74	0.80	0.76	0.83	56	0.74	0.77	0.74	0.81
<i>P. albicaulis</i>	1038	0.77	0.70	0.77	0.85	82	0.58	0.54	0.58	0.63	61	0.63	0.63	0.67	0.75
<i>P. contorta</i>	11275	0.81	0.72	0.82	0.83	234	0.64	0.63	0.63	0.69	219	0.62	0.66	0.69	0.73
<i>P. edulis</i>	2836	0.80	0.61	0.83	0.90	44	0.61	0.51	0.55	0.63	45	0.63	0.53	0.59	0.70
<i>P. monticola</i>	820	0.87	0.74	0.89	0.92	28	0.62	0.61	0.59	0.69	24	0.62	0.63	0.67	0.68
<i>P. ponderosa</i>	3967	0.83	0.76	0.88	0.91	55	0.68	0.59	0.68	0.72	54	0.67	0.62	0.67	0.71
<i>P. tremuloides</i>	7241	0.82	0.78	0.83	0.85	33	0.57	0.55	0.55	0.58	24	0.60	0.59	0.60	0.61
<i>P. menziesii</i>	8808	0.85	0.79	0.88	0.90	306	0.66	0.66	0.68	0.72	320	0.73	0.72	0.77	0.80
<i>T. plicata</i>	3798	0.93	0.81	0.94	0.95	69	0.88	0.80	0.87	0.89	70	0.87	0.82	0.85	0.89
<i>T. heterophylla</i>	4860	0.93	0.87	0.95	0.97	164	0.84	0.77	0.82	0.87	167	0.84	0.80	0.84	0.87
<i>T. mertensiana</i>	1136	0.90	0.80	0.86	0.94	98	0.78	0.71	0.73	0.81	78	0.75	0.71	0.76	0.80
<i>Average (n≤10)</i>		<i>0.87</i>	<i>0.79</i>	<i>0.89</i>	<i>0.92</i>		<i>0.69</i>	<i>0.65</i>	<i>0.68</i>	<i>0.73</i>		<i>0.71</i>	<i>0.68</i>	<i>0.71</i>	<i>0.75</i>

Table S2: Rate of representation (%) of each species for each identified region in figure 1 at the last glacial maximum 21,000 years before the present, as projected in the average of all model runs for both palaeoclimate simulations. Percentages <1% have been removed. The total count of species projected as present in a given region (of the 22 included species, where representation was $\geq 1\%$) is also listed (Species count).

Species	North coast				South coast				North interior basins				South interior basins							
	Central AK	Western AK	Haida Gwaii	Vancouver Isl.	CA Coast	Klamath Mtns.	Sierra Nevada	S. CA Mtns.	Columbia Plateau	Northern Basin	Snake R. Plains	Willamette	WY Basin	AZ Mtns.	Colorado Plateau	Central Basin	NM Plateau	SW Tablelands	High Plains	Mexico
Mesic: coastal																				
<i>A. amabilis</i>	-	-	16	7	3	28	11	3	6	4	4	8	4	-	-	-	1	-	-	5
<i>A. procera</i>	-	-	-	-	5	51	25	9	-	-	-	-	-	1	-	2	-	-	-	7
<i>A. macrophyllum</i>	-	-	-	-	27	24	25	12	-	-	-	-	-	-	-	-	-	-	-	12
<i>A. rubra</i>	-	-	-	-	46	25	14	4	-	-	-	-	-	1	1	1	-	-	-	8
<i>C. decurrens</i>	-	-	-	-	13	15	23	26	-	1	-	-	-	4	-	3	-	-	-	17
<i>C. nootkatensis</i>	-	-	37	7	15	25	2	3	-	-	-	-	-	-	-	-	-	-	-	11
<i>P. sitchensis</i>	-	-	9	4	51	21	3	1	-	-	-	-	1	-	-	-	1	1	1	7
Mesic: coastal & interior																				
<i>P. monticola</i>	-	-	-	-	12	30	26	12	2	3	1	2	1	3	1	2	-	-	-	5
<i>P. menziesii</i>	-	-	-	-	13	13	11	9	-	2	1	1	1	9	5	6	3	12	3	11
<i>T. plicata</i>	-	-	9	4	18	33	9	3	-	-	-	-	-	1	-	-	-	14	-	9
<i>T. heterophylla</i>	-	-	11	5	26	30	7	2	2	1	1	3	1	-	-	-	-	2	-	9
<i>T. mertensiana</i>	-	-	2	1	7	48	28	8	-	1	-	-	-	1	-	1	-	-	-	3
Boreal & sub-boreal																				
<i>P. glauca</i>	-	19	7	7	-	-	-	-	-	-	-	-	2	-	1	1	1	15	47	-
<i>P. mariana</i>	-	18	17	17	-	-	-	-	-	-	-	-	1	-	-	-	1	1	43	-
<i>P. contorta</i>	3	3	5	4	5	10	8	5	3	3	3	3	5	4	6	7	8	5	9	1
<i>P. tremuloides</i>	-	1	2	2	-	1	-	2	1	1	1	-	1	18	10	10	5	21	20	4

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Table S2 – continued from previous page

Species	North coast				South coast				North interior basins					South interior basins						
	Central AK	Western AK	Haida Gwaii	Vancouver Isl.	CA Coast	Klamath Mtns.	Sierra Nevada	S. CA Mtns.	Columbia Plateau	Northern Basin	Snake R. Plains	Willamette	WY Basin	AZ Mtns.	Colorado Plateau	Central Basin	NM Plateau	SW Tablelands	High Plains	Mexico
Sub-alpine																				
<i>A. lasiocarpa</i>	5	6	1	-	-	5	2	1	9	9	8	10	9	3	6	4	9	5	7	1
<i>P. engelmannii</i>	3	3	-	-	-	1	1	2	2	2	2	2	2	20	14	13	10	13	8	2
<i>P. albicaulis</i>	1	2	-	-	4	7	7	7	10	10	8	12	7	3	4	3	4	8	3	-
Xeric & sub-xeric																				
<i>L. occidentalis</i>	-	-	-	-	1	3	10	15	-	1	-	-	-	26	7	9	-	16	-	12
<i>P. edulis</i>	-	-	-	-	-	-	-	3	-	-	-	-	-	24	3	2	1	16	-	51
<i>P. ponderosa</i>	-	-	-	-	5	2	6	13	-	-	-	-	-	20	3	9	1	23	2	16
<i>Species Count (rate ≤ 1)</i>	4	7	11	9	16	18	18	20	7	11	9	8	12	16	12	15	12	14	10	19

Table S3: Species genetic data, compiled from various sources, listed by species and by reference. For each sampled population in each respective reference, we report the population name and verbal location, Latitude (Lat) in decimal degrees, Longitude (Long) in decimal degrees, Elevation (Elev) in metres, number of individuals sampled (N), average number of alleles per locus (A), percent polymorphic loci (P), observed heterozygosity (H_o), and expected heterozygosity (H_e). Standard errors for H_o and H_e are listed in parentheses. Where data were not reported in the literature but was calculated by the authors of this paper, the values are listed in italics. Data that were not reported and that were not able to be estimated are noted with a hyphen. Where data are presented in the literature as population averages, the values are noted with an asterisk.

Population code / name	Location & information	Lat	Long	Elev	N	A	P	H_o	(SE)	H_e	(SE)
<i>Abies amabilis</i> (Pacific silver fir)											
(Davidson & El Kassaby, 1997)											
A	Taylor River, BC	48.30	125.37	300	8	1.64	66.7	-	-	0.097	-
B	Sebalhall Creek, BC	49.95	126.42	300	8	1.55	83.3	-	-	0.068	-
C	Maquilla Creek, BC	50.06	126.34	500	8	1.55	66.7	-	-	0.889	-
F	Fleet River, BC	48.65	124.10	710	9	1.73	66.7	-	-	0.156	-
H	Hathaway Creek, BC	50.58	127.73	212	13	1.73	83.3	-	-	0.124	-
N	Holberg Inlet, BC	50.73	128.00	215	11	1.55	66.7	-	-	0.109	-
R	Ronning Creek, BC	50.61	128.19	275	13	1.45	83.3	-	-	0.081	-
W	Mystery Creek, BC	48.8	128.15	625	17	1.82	83.3	-	-	0.177	-
<i>Abies lasiocarpa</i> (subalpine fir)											
(Ettl & Peterson, 2001)											
Mt. Dana high	Olympic Mtns., WA	<i>47.8</i>	<i>123.5</i>	1800	30	1.6	26.7	0.070	0.042	0.079	0.048
Klahhane Ridge high	Olympic Mtns., WA	<i>48.0</i>	<i>123.4</i>	1800	50	1.8	46.7	0.139	0.057	0.137	0.055
Klahhane Ridge middle	Olympic Mtns., WA	<i>48.0</i>	<i>123.4</i>	1575	50	2.1	60.0	0.138	0.056	0.145	0.059
Klahhane Ridge low	Olympic Mtns., WA	<i>48.0</i>	<i>123.4</i>	1350	50	2.1	60.0	0.139	0.057	0.143	0.058
Blue Mtn. high	Olympic Mtns., WA	<i>47.6</i>	<i>123.2</i>	1800	50	2.0	53.3	0.108	0.054	0.115	0.054
Blue Mtn. middle 1	Olympic Mtns., WA	<i>47.6</i>	<i>123.2</i>	1575	50	1.9	46.7	0.116	0.054	0.117	0.055
Blue Mtn. middle 2	Olympic Mtns., WA	<i>47.6</i>	<i>123.2</i>	1575	50	1.9	46.7	0.103	0.043	0.124	0.053
Blue Mtn. low 1	Olympic Mtns., WA	<i>47.6</i>	<i>123.2</i>	1350	50	2.0	60.0	0.120	0.046	0.139	0.053
Blue Mtn. low 2	Olympic Mtns., WA	<i>47.6</i>	<i>123.2</i>	1350	50	1.9	53.3	0.130	0.059	0.143	0.059

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Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
<i>Abies procera</i> (noble fir)											
(Yeh & Hu, 2005)											
1 - Odell Butte	WA & OR	43.27	121.52	1950	34	1.303	41.67	-	-	0.297	0.055
2 - Juniper Ridge	WA & OR	43.35	122.20	1700	34	1.250	41.67	-	-	0.254	0.058
3 - Grass Mtn.	WA & OR	44.26	123.40	1060	34	1.247	37.50	-	-	0.231	0.061
4 - Mary's Peak	WA & OR	44.30	123.33	1065	33	1.157	33.33	-	-	0.171	0.051
5 - Laurel Mtn.	WA & OR	44.56	123.35	975	39	1.258	41.67	-	-	0.243	0.055
6 - Fisher Point	WA & OR	44.33	122.02	1220	36	1.252	45.83	-	-	0.254	0.054
7 - Snow Peak	WA & OR	44.39	122.35	1060	36	1.214	41.67	-	-	0.218	0.054
8 - Elk Lake	WA & OR	44.49	122.06	1200	36	1.264	45.83	-	-	0.265	0.061
9 - One Hundred Road	WA & OR	45.06	122.18	1130	36	1.213	33.33	-	-	0.210	0.058
10 - Elk Mtn.	WA & OR	45.20	121.39	1220	33	1.245	41.67	-	-	0.249	0.054
11 - Larch Mtn.	WA & OR	45.32	122.06	975	38	1.235	45.83	-	-	0.234	0.055
12 - Mt. Defiance	WA & OR	45.38	121.44	1125	39	1.251	45.83	-	-	0.261	0.053
13 - Larch Mtn.	WA & OR	45.43	122.17	975	35	1.231	45.83	-	-	0.244	0.051
14 - Red Mtn.	WA & OR	45.56	121.50	1220	33	1.189	33.33	-	-	0.190	0.056
15 - Hungry Peak	WA & OR	46.07	121.54	1280	34	1.150	37.50	-	-	0.153	0.051
16 - French Butte	WA & OR	46.20	121.57	1300	35	1.216	37.50	-	-	0.221	0.053
17 - Mud Lake	WA & OR	46.24	121.37	1425	37	1.226	41.67	-	-	0.231	0.052
18 - McKinley Lake	WA & OR	46.35	122.08	900	33	1.157	33.33	-	-	0.179	0.047
19 - Corral Pass	WA & OR	47.01	121.08	1615	38	1.258	45.83	-	-	0.270	0.049
20 - Stampede Pass	WA & OR	47.14	121.22	1065	33	1.208	37.50	-	-	0.210	0.055
21 - Stevens Pass	WA & OR	47.43	121.08	1000	33	1.258	37.50	-	-	0.253	0.058
<i>Acer macrophyllum</i> (bigleaf maple)											
(Iddrisu & Ritland, 2004)											
Jericho	Jericho area, BC	49.2	123.1	0	40	2.2	80	0.108	0.029	0.102	0.026
Fraser	Fraser area, BC	49.0	121.0	50	36	2.0	60	0.112	0.036	0.105	0.033
Artic	Artic area, WA	46.5	123.4	60	14	1.5	50	0.160	0.060	0.189	0.066

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Table S3 – continued from previous page

Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
Cascadia	Cascadia area, OR	44.4	122.5	250	20	1.6	60	0.121	0.037	0.164	0.046
Elbe	Elbe area, WA	46.5	122.1	380	20	1.6	60	0.109	0.035	0.172	0.049
Helmick	Helmick area, OR	44.8	123.2	60	20	1.6	60	0.118	0.038	0.176	0.049
Oakville	Oakville area, WA	46.8	123.2	30	20	1.6	60	0.117	0.033	0.148	0.041
Siletz	Siletz area, OR	44.7	123.9	40	20	1.6	60	0.102	0.031	0.163	0.047
<i>Alnus rubra</i> (red alder)											
(Xie <i>et al.</i>, 2002)											
Mainland - GVWD	Seymour, BC	49.40	122.97	200	26	1.53	31.6	0.099	0.038	0.112	0.043
Mainland - CHEA	Cheakmus River, BC	50.07	123.10	540	39	1.53	36.8	0.111	0.041	0.119	0.044
Mainland - KING	Kingcome Inlet, BC	51.50	126.13	30	52	1.53	31.6	0.109	0.040	0.121	0.044
Mainland - NACH	Nachelor Bay, BC	52.37	126.92	30	55	1.58	31.6	0.129	0.048	0.130	0.048
Mainland - SALL	Salloomt River, BC	52.43	126.92	150	56	1.53	31.6	0.116	0.044	0.113	0.042
Mainland - SNOW	Snow Creek, BC	54.25	129.55	10	63	1.47	31.6	0.144	0.057	0.153	0.056
Mainland - PRINT	Prince Rupert, BC	54.27	130.27	46	65	1.53	31.6	0.115	0.047	0.112	0.043
Mainland - SHAM	Shames River, BC	54.43	128.92	100	68	1.47	31.6	0.119	0.048	0.120	0.046
Islands - PORTR	Port Renfrew, BC	48.60	124.23	20	4	1.47	26.3	0.070	0.032	0.071	0.032
Islands - COW	Cowichan M.F., BC	48.77	123.65	150	9	1.42	26.3	0.058	0.029	0.066	0.031
Islands - UCLU	Ucluelet , BC	49.00	125.57	40	14	1.37	26.3	0.068	0.029	0.090	0.038
Islands - LOWR	Lowry Lake, BC	49.40	125.15	120	28	1.63	36.8	0.093	0.038	0.103	0.041
Islands - WOSS	Woss #2, BC	49.97	126.25	150	37	1.47	26.3	0.067	0.030	0.075	0.034
Islands - BIGT	Bigtree #2, BC	50.23	125.72	300	45	1.53	26.3	0.121	0.054	0.123	0.052
Islands - PORTH	Port Hardy, BC	50.62	127.25	37	49	1.53	31.6	0.077	0.033	0.092	0.038
Islands - NE62	Ne 62, BC	50.72	127.98	170	51	1.53	31.6	0.104	0.046	0.102	0.044
Islands - POOL	Poole Inlet, BC	52.35	131.35	1	53	1.58	31.6	0.070	0.029	0.090	0.035
Islands - COPP	Copper Bay, BC	53.12	131.67	10	57	1.47	26.3	0.079	0.035	0.088	0.038
Islands - MASS	Masset , BC	54.05	132.00	10	61	1.53	31.6	0.102	0.044	0.105	0.044

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Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
<i>Calocedrus decurrens</i> (incense cedar)											
(Harry, 1984)											
Kilarc-LS	Sierra Nevada, CA	40.7	121.9	890	43	2.8	52	-	-	0.207	0.043
Kilarc-LN	Sierra Nevada, CA	40.7	121.9	890	44	2.8	52	-	-	0.184	0.039
Kilarc-HS	Sierra Nevada, CA	40.7	121.9	1390	50	3.0	60	-	-	0.222	0.041
Kilarc-HN	Sierra Nevada, CA	40.7	121.9	1390	52	3.0	60	-	-	0.181	0.039
Bailey-LS	Sierra Nevada, CA	38.4	120.3	1510	46	2.7	44	-	-	0.177	0.042
Bailey-LN	Sierra Nevada, CA	38.4	120.3	1510	40	2.6	56	-	-	0.186	0.035
Bailey-HS	Sierra Nevada, CA	38.4	120.3	2010	49	2.4	56	-	-	0.176	0.039
Bailey-HN	Sierra Nevada, CA	38.4	120.3	2010	50	2.3	48	-	-	0.182	0.043
Greenhorn-LS	Sierra Nevada, CA	35.7	118.3	1790	49	2.1	48	-	-	0.172	0.041
Greenhorn-LN	Sierra Nevada, CA	35.7	118.3	1790	51	2.4	40	-	-	0.166	0.040
Greenhorn-HS	Sierra Nevada, CA	35.7	118.3	2290	45	1.9	40	-	-	0.149	0.038
∞ Greenhorn-HN	Sierra Nevada, CA	35.7	118.3	2290	51	2.4	44	-	-	0.154	0.040
<i>Cupressus nootkatensis</i> (yellow cedar)											
(Ritland <i>et al.</i>, 2001)											
Mt. Baker	Mt. Baker, WA	48.8	121.8	>1000	32	1.8	60	-	-	0.153	0.014
Port Hardy	Port Hardy, BC	50.7	127.5	0	32	1.7	60	-	-	0.132	0.011
Mt. Washington	Mt. Washington, BC	49.8	125.3	1000	35	1.5	40	-	-	0.090	0.013
Tofino	Tofino, BC	49.1	125.9	0	36	1.7	50	-	-	0.161	0.011
Anchorage	Anchorage, AK	61.2	149.9	0	27	1.4	30	-	-	0.062	0.006
Juneau	Juneau, AK	58.4	134.2	0	30	1.7	50	-	-	0.198	0.010
Petersburg	Petersburg, AK	56.8	132.9	0	33	1.8	60	-	-	0.197	0.010
Ketchikan	Ketchikan, AK	52.4	131.7	1000	30	1.8	60	-	-	0.192	0.011
Prince Rupert	Prince Rupert, BC	54.3	130.3	0	32	1.7	50	-	-	0.163	0.011
Bella Coola	Bella Coola, BC	52.4	126.8	<1000	32	1.7	50	-	-	0.141	0.008
Hurricane Ridge	Hurricane Ridge, WA	48.0	123.5	>1000	31	1.8	60	-	-	0.149	0.009
Mt. Rainier	Mt. Rainier, WA	46.9	121.8	<1000	32	1.6	40	-	-	0.117	0.015

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Table S3 – continued from previous page

Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
Oakridge	Oakridge, OR	43.7	122.5	>1000	32	1.8	60	-	-	0.156	0.010
Whiskey Peak	Whiskey Peak, OR	42.0	123.3	>1000	30	1.5	30	-	-	0.101	0.011
Castlegar	Castlegar, BC	49.3	117.7	<1000	23	1.6	40	-	-	0.187	0.007
Black Tusk	Black Tusk, BC	50.0	123.0	1000	32	1.8	60	-	-	0.183	0.015
Queen Charlotte	Queen Charlotte, BC	53.8	132.0	400	31	1.7	50	-	-	0.123	0.011
<i>Larix occidentalis</i> (western larch)											
(Jaquish & El-Kassaby, 1998)											
1 - FLAT	Flathead, BC	49.07	114.43	1380	34	1.95	40	0.151	0.038	0.151	0.037
2 - PLUM	Plumbob, BC	49.25	115.40	1160	30	1.80	50	0.177	0.040	0.173	0.040
3 - CARR	Carrol Creek Road, BC	49.10	116.20	975	35	1.90	65	0.174	0.035	0.185	0.037
4 - SALM	Salmo, BC	49.23	117.27	800	35	1.85	40	0.151	0.041	0.143	0.038
5 - CHRI	Christina Lake, BC	49.22	118.15	1200	35	1.80	70	0.206	0.045	0.219	0.040
6 - BLUE	Blue Ridge Kaslo, BC	50.05	117.08	1375	36	1.85	65	0.204	0.038	0.220	0.042
7 - WILS	Wilson Lake Road, BC	50.23	117.72	1300	36	1.80	70	0.236	0.045	0.237	0.043
8 - BECK	Becker Lake, BC	50.25	119.17	1200	38	1.80	65	0.213	0.042	0.204	0.039
9 - MERR	Merritt, BC	50.28	120.93	1300	34	1.70	55	0.151	0.036	0.156	0.037
(Fins & Seeb, 1986)											
Eastern Washington	7 stands, Eastern WA	48.6	118.4	1197.9	69	1.3	30*	0.079	0.035	0.089	0.039
Northern Idaho	9 stands, Northern ID	47.3	116.3	1282.4	79	1.3	30*	0.049	0.020	0.074	0.032
Western Montana	3 stands, Western MT	46.6	114.5	1473.3	29	1.2	30*	0.054	0.031	0.068	0.033
Payette	One stand, Payette, ID	45.1	116.4	1646.0	10	1.3	30*	0.078	0.048	0.089	0.051
<i>Picea engelmannii</i> (Engelmann spruce)											
(Ledig et al., 2006)											
Kootenay River	Nelson Forest Region, BC	50.97	116.27	1830	27.5*	2.7	66.7	-	-	0.247	0.047
Moyie	Nelson Forest Region, BC	49.53	116.10	1700	27.5*	2.6	70.8	-	-	0.247	0.044
Bluebird Creek	Nelson Forest Region, BC	49.13	116.88	1430	27.5*	2.7	66.7	-	-	0.268	0.046
Summit Lake	Payette N.F., ID	45.05	115.92	2075	27.5*	2.3	75.0	-	-	0.252	0.043

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Table S3 – continued from previous page

Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
Beartooth Pass	Shoshone N.F., WY	44.93	109.52	2985	27.5*	2.5	75.0	-	-	0.307	0.045
Panther Creek	Salmon N.F., ID	44.88	114.30	2135	27.5*	2.5	75.0	-	-	0.253	0.045
Six Bit Spring	Cache N.F., UT	41.58	111.43	2560	27.5*	2.1	54.2	-	-	0.227	0.045
Highline Trailhead	Wasatch N.F., UT	40.73	110.87	3180	27.5*	2.4	58.3	-	-	0.228	0.043
Ferron Reservoir	Manti-Lasal N.F., UT	39.13	111.45	2930	27.5*	2.2	62.5	-	-	0.215	0.040
Barlow Lake	San Juan N.F., CO	37.75	107.98	2955	27.5*	2.6	70.8	-	-	0.296	0.046
Navajo Lake	Dixie N.F., UT	37.53	112.77	2865	27.5*	2.2	54.2	-	-	0.231	0.044
East Gavilan Canyon	Carson N.F., NM	36.73	106.30	2970	27.5*	2.5	75.0	-	-	0.273	0.046
San Francisco Mtns.	Coconino N.F., AZ	35.33	111.70	2775	27.5*	2.4	66.7	-	-	0.269	0.046
Sierra Blanca	Sierra Blanca, Lincoln N.F., NM	33.40	105.78	2925	27.5*	2.1	66.7	-	-	0.282	0.050
Mt. Graham	Mt. Graham, Coronado N.F., AZ	32.67	109.87	3018	27.5*	2.4	66.7	-	-	0.261	0.047
Flys Peak	Flys Peak, Coronado N.F., AZ	31.87	109.28	2866	27.5*	2.0	62.5	-	-	0.227	0.043
<i>Picea glauca</i> (white spruce)											
(Godt <i>et al.</i>, 2001)											
Site 1	SK	-	-	-	47.5*	1.83	44.4	0.181	0.042	0.158	0.053
Site 2	SK	-	-	-	47.5*	1.78	55.6	0.167	0.046	0.158	0.049
Site 3	SK	-	-	-	47.5*	1.72	44.4	0.153	0.042	0.166	0.052
Site 4	SK	-	-	-	47.5*	1.72	44.4	0.154	0.042	0.159	0.052
Site 5	SK	-	-	-	47.5*	1.67	44.4	0.164	0.045	0.167	0.050
Site 6	SK	-	-	-	47.5*	1.61	44.4	0.162	0.041	0.157	0.052
Site 7	SK	-	-	-	47.5*	1.72	50.0	0.156	0.044	0.160	0.049
(Furnier <i>et al.</i>, 1991)											
A	NF East	-	-	-	20	2.2	100	0.367	-	0.329	-
B	NF West	-	-	-	20	2.2	100	0.300	-	0.291	-
C	NB	-	-	-	20	2.5	100	0.242	-	0.280	-
D	MN	-	-	-	20	2.5	83.3	0.283	-	0.256	-
E	QC Central	-	-	-	19	2.0	100	0.263	-	0.275	-
F	MA	-	-	-	19	2.0	100	0.272	-	0.250	-

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Table S3 – continued from previous page

Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
G	NY	-	-	-	20	2.2	100	0.333	-	0.301	-
H	QC South	-	-	-	20	2.0	100	0.275	-	0.293	-
I	ON Southeast	-	-	-	20	2.2	100	0.325	-	0.307	-
J	ON East	-	-	-	20	1.8	83.3	0.250	-	0.230	-
K	ON Northeast	-	-	-	20	2.5	100	0.283	-	0.295	-
L	MI	-	-	-	19	2.0	100	0.386	-	0.340	-
M	WI	-	-	-	20	2.2	100	0.300	-	0.309	-
N	ON West	-	-	-	19	2.3	100	0.404	-	0.353	-
O	MN	-	-	-	20	2.3	100	0.283	-	0.281	-
P	MB South	-	-	-	20	2.3	100	0.383	-	0.357	-
Q	MB North	-	-	-	20	2.3	100	0.350	-	0.323	-
R	SD	-	-	-	20	2.0	100	0.308	-	0.294	-
S	SK North	-	-	-	20	1.8	83.3	0.233	-	0.198	-
T	MT	-	-	-	5	1.8	66.7	0.367	-	0.319	-
U	BC	-	-	-	20	2.2	100	0.233	-	0.261	-
V	AK	-	-	-	20	2.0	83.3	0.283	-	0.239	-

Picea mariana (black spruce)

(Rajora & Pluhar, 2003)

E1-FNM	Post-fire nat mature, Pine Falls, MB	50.68	95.90	274	35	2.59	65.6	0.215	0.037	0.296	0.045
E1-FNR	Post-fire nat young regen, Pine Falls, MB	50.68	95.89	274	35	2.31	62.5	0.176	0.033	0.265	0.045
E1-HNR	Post-harvest nat regen, Pine Falls, MB	50.68	95.90	274	35	2.53	62.5	0.222	0.004	0.293	0.047
E1-PLT	Plantation, Pine Falls, MB	50.67	95.91	290	35	2.53	65.6	0.198	0.037	0.279	0.045
E2-FNM	Post-fire nat mature, Bissett, MB	50.78	95.28	320	35	2.59	75.0	0.223	0.035	0.317	0.042
E2-FNR	Post-fire nat young regen, Bissett, MB	50.78	95.29	320	35	2.69	75.0	0.263	0.041	0.335	0.042
E2-HNR	Post-harvest nat regen, Bissett, MB	50.78	95.28	320	35	2.50	59.4	0.267	0.047	0.322	0.050
E2-PLT	Plantation, Bissett, MB	50.83	95.32	305	35	2.66	71.9	0.240	0.039	0.328	0.045
N1-FNM	Post-fire nat mature, The Pas, MB	54.29	101.39	294	35	2.34	59.4	0.201	0.044	0.272	0.046
N1-FNR	Post-fire nat regen, The Pas, MB	54.27	101.38	294	35	2.34	62.5	0.193	0.042	0.280	0.046

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Table S3 – continued from previous page

Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
N1-HNR	Post-harvest nat regen, The Pas, MB	54.30	101.48	290	35	2.56	71.9	0.219	0.043	0.335	0.045
N1-PLT	Plantation, The Pas, MB	54.29	101.44	290	35	2.16	59.4	0.203	0.041	0.291	0.045
N2-FNM	Post-fire nat mature, Snow Lake, MB	54.90	99.76	290	35	2.63	68.8	0.242	0.045	0.341	0.048
N2-FNR	Post-fire nat young regen, Snow Lake, MB	54.72	99.98	274	35	2.47	68.8	0.169	0.030	0.279	0.043
N2-HNR	Post-harvest nat regen, Snow Lake, MB	54.90	99.76	290	35	2.66	71.9	0.239	0.044	0.328	0.047
N2-PLT	Plantation, Snow Lake, MB	54.90	99.76	290	35	2.69	68.8	0.279	0.048	0.362	0.047
(O'Reilly <i>et al.</i>, 1985)											
Sioux Narrows - Upland	Sioux Narrows, ON	49.42	94.13	-	10	-	53.3	-	-	0.20	-
Sioux Narrows - Lowland	Sioux Narrows, ON	49.42	94.13	-	10	-	46.7	-	-	0.22	-
Sioux Lookout - Upland	Sioux Lookout, ON	50.15	91.75	-	10	-	33.3	-	-	0.16	-
Sioux Lookout - Lowland	Sioux Lookout, ON	50.15	91.75	-	10	-	53.3	-	-	0.21	-
Nipigon - Upland	Nipigon, ON	48.83	88.58	-	10	-	64.3	-	-	0.26	-
Nipigon - Lowland	Nipigon, ON	48.83	88.58	-	10	-	73.3	-	-	0.27	-
Macdiarmid - Upland	Macdiarmid, ON	49.42	88.12	-	10	-	46.7	-	-	0.20	-
Macdiarmid - Lowland	Macdiarmid, ON	49.42	88.12	-	10	-	46.7	-	-	0.22	-
Cochrane - Upland	Cochrane, ON	49.08	80.92	-	10	-	40.0	-	-	0.23	-
Cochrane - Lowland	Cochrane, ON	49.08	80.92	-	10	-	66.7	-	-	0.25	-
(Isabel <i>et al.</i>, 1995)											
325	QC	50.2	74.2	-	15	2.3	76.9	0.267	0.056	0.287	0.063
336	QC	48.0	78.9	-	15	2.0	69.2	0.337	0.085	0.285	0.062
342	QC	50.4	68.4	-	15	2.5	61.5	0.305	0.077	0.301	0.070
345	QC	47.2	74.3	-	15	2.1	69.2	0.348	0.083	0.311	0.071
369	QC	48.3	64.2	-	15	2.2	69.2	0.435	0.099	0.324	0.065
<i>Picea sitchensis</i> (sitka spruce)											
(Yeh & El-Kassaby, 1980)											
IUFRO-3024	Duck Cr., AK	58.37	134.58	30	76	2.00	67	-	-	0.16	0.03
IUFRO-3030	Ward L., AK	55.42	131.70	15	78	1.62	50	-	-	0.15	0.04

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Table S3 – continued from previous page

Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
IUFRO-3040	Usk Ferry, BC	54.77	128.25	137	79	1.69	46	-	-	0.15	0.04
IUFRO-3044	Inverness, BC	54.20	130.25	15	79	1.77	50	-	-	0.13	0.04
IUFRO-3049	Link Rd., BC	53.50	132.17	90	78	1.85	50	-	-	0.16	0.04
IUFRO-3058	Salmon Bay, BC	50.38	125.95	0	78	1.69	42	-	-	0.14	0.04
IUFRO-3062	Big Qualicum R., BC	49.38	124.62	0	78	1.92	54	-	-	0.16	0.04
IUFRO-3003	Forks, WA	48.07	124.30	137	79	1.92	46	-	-	0.17	0.04
IUFRO-3008	Hoquiam, WA	47.08	124.05	7	79	1.85	50	-	-	0.13	0.04
IUFRO-3012	Necanicum, OR	45.82	123.77	46	78	1.85	58	-	-	0.13	0.04
<i>Pinus albicaulis</i> (whitebark pine)											
(Bruederle <i>et al.</i>, 1998)											
1. Miller Creek	Gallatin Park, MT	45.4	110.2	-	30	1.6	42.1	0.167	0.052	0.146	0.045
2. Henderson Mtn.	Gallatin Park, MT	45.0	110.0	-	31	1.7	36.8	0.139	0.043	0.164	0.049
3. Fisher Creek	Gallatin Park, MT	45.1	109.9	-	34	1.5	42.1	0.139	0.043	0.151	0.047
4. Island Lake	Shoshone Park, WY	44.9	109.5	-	49	1.7	36.8	0.153	0.047	0.151	0.046
5. Mt. Washburn	Yellowstone N.P., WY	44.8	110.4	-	33	1.6	36.8	0.139	0.045	0.145	0.046
6. Union Pass	Shoshone Forest, Fremont County, WY	43.5	109.9	-	20	1.5	36.8	0.161	0.054	0.146	0.047
7. Togwotee Pass	Bridger-Teton Forest, Teton County, WY	43.8	110.1	-	25	1.7	36.8	0.141	0.047	0.153	0.046
8. Sheep Pass	Bridger-Teton Forest, Lincoln County, WY	42.5	110.8	-	30	1.6	36.8	0.152	0.045	0.155	0.047
9. Commissary Ridge	Bridger-Teton Forest, Lincoln County, WY	42.2	110.6	-	30	1.6	42.1	0.138	0.042	0.161	0.048
(Jorgensen & Hamrick, 1997)											
1. Cascade - WASH	Washington Pass, WA	48.53	120.67	-	48	2.00	25	0.092	0.009	0.096	0.039
2. Cascade - RAIN	Mt. Rainier N.P., WA	46.92	121.65	-	48	2.22	35	0.092	0.009	0.109	0.035
3. Cascade - ADAM	Mt. Adams, WA	46.25	121.53	-	48	2.00	25	0.083	0.009	0.075	0.033
4. Cascade - HOOD	Mt. Hood, OR	45.40	121.67	-	48	2.25	15	0.084	0.009	0.089	0.039
5. Cascade - BACH	Bachelor Peak, OR	43.98	121.68	-	48	2.00	20	0.082	0.009	0.080	0.037
6. Cascade - CRAT	Crater Lake N.P., OR	42.93	122.17	-	48	2.00	20	0.060	0.008	0.070	0.031

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Table S3 – continued from previous page

Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
7. Cascade - SHAS	Mt. Shasta, CA	41.37	122.20	-	48	2.25	15	0.083	0.009	0.091	0.039
8. Cascade - LASS	Lassen Volcanic N.P., CA	40.48	121.48	-	48	2.00	15	0.079	0.009	0.075	0.035
9. Sierra Nevada - ROSE	Mt. Rose Summit, NV	39.32	119.90	-	48	2.43	20	0.119	0.010	0.120	0.046
10. Sierra Nevada - SONO	Sonora Pass, CA	38.33	119.65	-	48	2.43	20	0.104	0.010	0.104	0.042
11. Sierra Nevada - TIOG	Tioga Pass, CA	37.92	119.25	-	48	2.29	20	0.087	0.009	0.090	0.039
12. Sierra Nevada - MOSQ	Mosquito Lake, CA	37.43	118.73	-	48	2.00	20	0.091	0.009	0.100	0.041
13. Rocky Mtns. - JASP	Mt. Edith Cavell, AB	52.68	118.08	-	48	2.43	25	0.080	0.009	0.088	0.036
14. Rocky Mtns. - PARK	Parker Ridge, AB	52.18	117.12	-	48	2.17	25	0.076	0.009	0.095	0.035
15. Rocky Mtns. - CABI	Libby, MT	48.55	115.73	-	48	2.30	25	0.082	0.009	0.113	0.037
16. Rocky Mtns. - GLAC	Glacier N.P., MT	48.68	113.75	-	48	2.25	30	0.094	0.009	0.117	0.040
17. Rocky Mtns. - JEWL	Jewel Basin, MT	48.17	113.93	-	48	2.00	20	0.090	0.009	0.088	0.035
18. Rocky Mtns. - FRNT	Choteau, MT	47.93	112.82	-	48	2.36	25	0.108	0.010	0.111	0.039
19. Rocky Mtns. - NINE	Ninemile Divide, MT	47.13	114.32	-	48	2.00	25	0.083	0.009	0.099	0.033
20. Rocky Mtns. - WILL	Corvallis, MT	46.32	113.92	-	48	2.08	20	0.083	0.009	0.103	0.037
21. Rocky Mtns. - TOBA	Tobacco Roots, MT	45.52	112.00	-	48	2.09	20	0.106	0.010	0.105	0.038
22. Rocky Mtns. - GRAV	Gravelly Range, MT	44.82	111.87	-	48	2.25	30	0.096	0.010	0.111	0.036
23. Rocky Mtns. - BELT	Little Belts, MT	46.78	110.65	-	48	2.09	30	0.098	0.010	0.105	0.034
24. Rocky Mtns. - YELL	Dunraven Pass, WY	44.78	110.50	-	48	2.29	25	0.075	0.009	0.081	0.034
25. Rocky Mtns. - BEAR	Beartooth Plateau, WY	44.95	109.53	-	48	2.33	25	0.086	0.009	0.106	0.038
26. Rocky Mtns. - TOGW	Togwotee Pass, WY	43.75	110.07	-	48	2.14	25	0.079	0.009	0.089	0.037
27. Rocky Mtns. - CIDA	Yellow Pine, ID	45.07	115.42	-	48	2.50	20	0.098	0.010	0.097	0.040
28. Rocky Mtns. - SAWT	Galena Summit, ID	43.87	114.70	-	48	2.50	25	0.107	0.010	0.110	0.040
29. Great Basin - JARB	Jarbridge, NV	41.83	115.47	-	48	2.14	25	0.077	0.009	0.090	0.035
30. Great Basin - RUBY	Ruby Range, NV	40.60	115.38	-	48	2.00	20	0.056	0.008	0.064	0.032
<i>Pinus contorta</i> (lodgepole pine)											
(Yeh & Layton, 1979)											
Marginal - 32	Southern YK	62.14	136.18	671	15	1.80	53	0.160	0.044	0.157	0.042
Marginal - 33	Southern YK	63.18	136.28	877	15	1.72	44	0.165	0.049	0.144	0.044

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Table S3 – continued from previous page

Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
Marginal - 34	Southern YK	60.41	136.11	747	15	1.80	52	0.125	0.032	0.138	0.038
Marginal - 35	Northern BC	59.48	133.47	788	15	1.80	56	0.147	0.042	0.143	0.040
Intermediate - 30	Northern BC	59.59	128.33	640	15	1.76	52	0.149	0.044	0.150	0.043
Intermediate - 31	Southern YK	61.10	129.30	884	15	1.96	64	0.173	0.039	0.178	0.043
Central - 36	Northern BC	57.29	130.13	815	15	2.12	76	0.176	0.036	0.184	0.043
Central - 28	Northern BC	58.40	124.10	762	15	1.92	64	0.184	0.043	0.178	0.043
Central - 71	Interior BC	50.43	119.27	1524	15	2.08	68	0.189	0.045	0.169	0.037
(Wheeler & Guries, 1982)											
BC - 1	Ssp. latifolia	-	-	-	-	1.86	70	-	-	0.114	0.026
BC - 4	Ssp. latifolia	-	-	-	-	1.69	61	-	-	0.125	0.029
WA - 5	Ssp. latifolia	-	-	-	-	1.81	70	-	-	0.103	0.025
AB - 6	Ssp. latifolia	-	-	-	-	1.93	73	-	-	0.128	0.028
AB - 7	Ssp. latifolia	-	-	-	-	2.24	82	-	-	0.144	0.028
AB - 8	Ssp. latifolia	-	-	-	-	1.88	73	-	-	0.102	0.025
AB - 9	Ssp. latifolia	-	-	-	-	1.95	70	-	-	0.120	0.027
BC - 10	Ssp. latifolia	-	-	-	-	2.04	70	-	-	0.115	0.026
YK - 14	Ssp. latifolia	-	-	-	-	1.71	64	-	-	0.108	0.025
BC - 15	Ssp. latifolia	-	-	-	-	1.83	70	-	-	0.114	0.028
YK - 16	Ssp. latifolia	-	-	-	-	1.76	70	-	-	0.129	0.029
YK - 18	Ssp. latifolia	-	-	-	-	1.76	64	-	-	0.109	0.028
YK - 21	Ssp. latifolia	-	-	-	-	1.83	79	-	-	0.113	0.028
BC - 22	Ssp. latifolia	-	-	-	-	1.83	67	-	-	0.113	0.027
CO - 23	Ssp. latifolia	-	-	-	-	1.81	64	-	-	0.119	0.028
BC - 27	Ssp. latifolia	-	-	-	-	1.97	76	-	-	0.111	0.025
BC - 29	Ssp. latifolia	-	-	-	-	1.86	73	-	-	0.119	0.028
WA - 30	Ssp. latifolia	-	-	-	-	1.76	61	-	-	0.114	0.027
AB - 32	Ssp. latifolia	-	-	-	-	1.81	64	-	-	0.105	0.025
MT - 34	Ssp. latifolia	-	-	-	-	2.09	73	-	-	0.116	0.026

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Table S3 – continued from previous page

Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
YK - 36	Ssp. latifolia	-	-	-	-	1.76	61	-	-	0.130	0.031
BC - 37	Ssp. latifolia	-	-	-	-	1.83	70	-	-	0.128	0.029
MT - 46	Ssp. latifolia	-	-	-	-	1.67	58	-	-	0.097	0.026
YK - 50	Ssp. latifolia	-	-	-	-	1.88	67	-	-	0.144	0.030
BC - 45	Ssp. contorta	-	-	-	-	1.88	61	-	-	0.130	0.030
BC - 47	Ssp. contorta	-	-	-	-	1.88	70	-	-	0.123	0.027
BC - 48	Ssp. contorta	-	-	-	-	1.18	64	-	-	0.125	0.029
BC - 49	Ssp. contorta	-	-	-	-	1.57	55	-	-	0.114	0.029
WA - 38	Ssp. contorta	-	-	-	-	1.93	73	-	-	0.139	0.029
CA - 17	Ssp. murrayana	-	-	-	-	1.86	70	-	-	0.120	0.026
OR - 39	Ssp. murrayana	-	-	-	-	2.02	76	-	-	0.128	0.028
CA - 40	Ssp. Bolanderi	-	-	-	-	1.62	58	-	-	0.109	0.280
(Dancik & Yeh, 1983)											
Hinton	Hinton, AB	53.43	117.48	1170	62	3.0	52.4	0.186	-	0.184	0.045
Cypress Hills	Cypress Hills, AB	49.65	110.28	1410	30	2.5	52.4	0.165	-	0.179	0.049
Coleman	Coleman, AB	49.75	114.50	1090	30	2.3	52.4	0.202	-	0.239	0.063
Canmore	Canmore, AB	51.10	115.28	1630	30	2.4	47.6	0.187	-	0.241	0.061
Lake Abraham	Lake Abraham, AB	52.25	116.45	1750	30	2.3	52.4	0.179	-	0.201	0.054
<i>Pinus edulis</i> (pinyon pine)											
(Premoli <i>et al.</i>, 1994)											
OC-North	Northeastern CO	-	-	1835	25	2.1	80	0.214	-	0.262	-
OC-Centre	Northeastern CO	-	-	1835	25	2.0	50	0.192	-	0.187	-
OC-East	Northeastern CO	-	-	1835	25	1.9	60	0.220	-	0.231	-
OC-West	Northeastern CO	-	-	1835	25	2.0	50	0.203	-	0.204	-
OC-South	Northeastern CO	-	-	1835	25	1.9	60	0.205	-	0.213	-
Lone Site	Northeastern CO	-	-	2050	44	2.3	50	0.164	-	0.219	-
Bonner Peak	Northeastern CO	-	-	2270	43	2.1	40	0.181	-	0.188	-
Windy Site	Northeastern CO	-	-	2100	16	1.5	40	0.150	-	0.179	-

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Table S3 – continued from previous page

Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
Hewlett Gulch	Northeastern CO	-	-	1820	9	1.6	60	0.193	-	0.233	-
<i>Pinus monticola</i> (western white pine)											
(Steinhoff <i>et al.</i>, 1983)											
Interior - 5	Beaver, BC	51.55	117.48	1145	-	1.4	42	-	-	0.15	0.057
Interior - 58	Hungry Horse, MT	48.32	113.98	1130	-	1.7	67	-	-	0.13	0.036
Interior - 55	Flower Creek, MT	48.38	115.57	670	-	1.8	75	-	-	0.16	0.050
Interior - 45	Beaver Creek, ID	48.73	116.87	915	-	1.8	67	-	-	0.16	0.049
Interior - 49	Crystal Creek, ID	47.13	116.37	915	-	1.8	83	-	-	0.19	0.048
Interior - 52	Elk River, ID	46.82	116.17	915	-	1.7	67	-	-	0.13	0.032
Interior - 35	Fry Meadow, OR	45.78	117.82	1525	-	1.4	42	-	-	0.11	0.050
Coastal - 3	Coronation, BC	49.00	124.00	870	-	1.8	75	-	-	0.18	0.054
Coastal - 4	Victoria, BC	48.42	123.62	350	-	1.6	58	-	-	0.15	0.060
Coastal - 8	Forks, WA	47.93	124.37	150	-	1.2	17	-	-	0.06	0.038
Coastal - 10	Humptulips, WA	47.30	123.95	150	-	1.1	8	-	-	0.04	0.041
Coastal - 12	Everett, WA	48.08	122.13	30	-	1.5	50	-	-	0.10	0.049
Coastal - 13	Belfair, WA	47.48	122.90	90	-	2.0	92	-	-	0.15	0.039
North-Central - 16	White Pass, WA	46.57	121.37	1310	-	1.6	58	-	-	0.13	0.045
North-Central - 23	Mt. Hood, OR	45.27	121.77	975	-	1.6	58	-	-	0.13	0.050
North-Central - 25	Sweet Home, OR	44.42	122.17	1250	-	1.7	58	-	-	0.18	0.058
South-Central - 29	La Pine, OR	43.80	121.68	1830	-	1.8	67	-	-	0.25	0.060
South-Central - 27	Oakridge, OR	43.60	122.12	1370	-	1.8	67	-	-	0.16	0.049
South-Central - 26	Black Butte, OR	43.53	122.92	1065	-	1.8	75	-	-	0.20	0.053
South-Central - 29	Glide, OR	43.07	122.95	1160	-	1.8	75	-	-	0.23	0.052
South-Central - 30	Prospect, OR	42.87	122.37	1525	-	1.9	75	-	-	0.21	0.052
South-Central - 33	Pinehurst, OR	42.20	122.30	1645	-	1.8	67	-	-	0.21	0.061
Siskiyou - 31	Chicago Creek, CA	41.97	123.67	1295	-	1.8	58	-	-	0.23	0.069
Siskiyou - 32	Elliot Creek, CA	42.00	123.00	1735	-	2.0	92	-	-	0.24	0.054
Warner - 34	Lakeview, OR	42.10	120.28	2286	-	2.0	83	-	-	0.32	0.058

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Table S3 – continued from previous page

Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
Warner - 38	Willow Mtn., CA	41.83	122.23	1980	-	2.3	92	-	-	0.29	0.058
Warner - 41	Lake Audrian, CA	38.65	120.07	2225	-	2.2	83	-	-	0.26	0.069
Warner - 42	Blue Lakes, CA	38.62	119.92	2530	-	2.0	75	-	-	0.26	0.064
(Kim <i>et al.</i>, 2011)											
ReSt	Revelstoke, BC	51.00	118.19	500	27	1.606	87.9	-	-	0.194	-
TeXa	Texada Island, BC	48.26	113.88	1100	25	1.621	90.9	-	-	0.198	-
SwCr	Swamp Creek, WA	47.59	116.03	1345	29	1.667	87.9	-	-	0.208	-
ElCr	Elya Creek, MT	49.70	124.37	215	27	1.636	84.8	-	-	0.190	-
MoSa	Moon Saddle, ID	48.57	120.78	1190	22	1.576	87.9	-	-	0.187	-
HoLy	Holly, WA	47.57	122.92	150	17	1.636	89.4	-	-	0.215	-
SmCr	Smokey Creek, WA	46.02	121.68	1114	21	1.621	90.9	-	-	0.204	-
VeLa	Veda Lake, OR	45.26	121.76	1310	26	1.727	90.9	-	-	0.233	-
InCrb	Indian Creek, OR	44.36	118.79	1585	25	1.758	92.4	-	-	0.274	-
DeCr	Deer Creek, OR	43.25	121.86	1740	28	1.894	97.0	-	-	0.316	-
NaCr	National Creek, OR	43.00	122.38	1150	23	1.697	95.5	-	-	0.225	-
FlSp	Fly Catcher Spring, OR	42.35	124.30	800	27	1.773	89.4	-	-	0.275	-
GaQu	Gasquet, CA	41.86	123.91	435	21	1.789	93.9	-	-	0.264	-
LoSt	Lodge Pole Station, CA	41.83	122.21	1880	22	1.773	92.4	-	-	0.289	-
SpCa	Spur Canyon, CA	38.70	120.10	2500	17	1.721	81.8	-	-	0.254	-
<i>Pinus ponderosa</i> (ponderosa pine)											
(O'Malley <i>et al.</i>, 1979)											
OMALLEY-1979	10 pop., WA, ID, MT	-	-	-	47	2.25	-	-	-	0.123	-
(Woods <i>et al.</i>, 1983)											
WOODS-1983	1 pop., Eastern MT	-	-	-	150	2.6	-	-	-	0.126	0.037
(Hamrick <i>et al.</i>, 1979)											
HAMRICK-1979	7 pop., Eastern CO	-	-	-	-	2.0	68.4	-	-	0.226	-

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Table S3 – continued from previous page

Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
(Niebling & Conkle, 1990)											
Pacific - Warner Mtns.	1 pop., Northern CA	-	-	-	65	2.39	70	-	-	0.150	0.036
Pacific - Mt. Rose	1 pop., Northern CA	-	-	-	55	2.29	70	-	-	0.137	0.035
North Plateau	12 pop., Pacific Northwest US	-	-	-	204	2.77	64	-	-	0.178	0.041
Rocky Mtns.	20 pop., US Rocky Mtns.	-	-	-	186	2.77	75	-	-	0.164	0.039
<i>Populus tremuloides</i> (trembling aspen)											
(Cheliak & Dancik, 1982)											
1	AB	-	-	-	32	2.0	85	0.49	-	0.41	-
2	AB	-	-	-	30	2.3	88	0.46	-	0.40	-
3	AB	-	-	-	30	2.3	88	0.49	-	0.44	-
4	AB	-	-	-	30	2.3	84	0.53	-	0.41	-
5	AB	-	-	-	30	2.5	92	0.60	-	0.43	-
6	AB	-	-	-	30	2.3	85	0.52	-	0.42	-
7	AB	-	-	-	40	2.4	88	0.56	-	0.42	-
(Jelinski & Cheliak, 1992)											
Prairie I	Waterton Lakes N.P., AB	-	-	1300	37	2.5	87.5	0.30	-	0.315	0.042
Prairie II	Waterton Lakes N.P., AB	-	-	1300	25	2.4	75.0	0.35	-	0.258	0.047
Akamina	Waterton Lakes N.P., AB	-	-	2700	25	2.2	81.3	0.31	-	0.346	0.046
Galwey	Waterton Lakes N.P., AB	-	-	1810	23	2.4	75.0	0.34	-	0.267	0.047
Crandall	Waterton Lakes N.P., AB	-	-	1360	22	2.4	81.3	0.33	-	0.306	0.056
Copper	Waterton Lakes N.P., AB	-	-	1400	24	2.5	87.5	0.28	-	0.246	0.040
Prairie I	Waterton Lakes N.P., AB	-	-	1300	37	2.5	87.5	0.30	-	0.315	0.042
Prairie II	Waterton Lakes N.P., AB	-	-	1300	25	2.4	75.0	0.35	-	0.258	0.047
Akamina	Waterton Lakes N.P., AB	-	-	2700	25	2.2	81.3	0.31	-	0.346	0.046
Galwey	Waterton Lakes N.P., AB	-	-	1810	23	2.4	75.0	0.34	-	0.267	0.047
Crandall	Waterton Lakes N.P., AB	-	-	1360	22	2.4	81.3	0.33	-	0.306	0.056
Copper	Waterton Lakes N.P., AB	-	-	1400	24	2.5	87.5	0.28	-	0.246	0.040

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Table S3 – continued from previous page

Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
(Liu & Furnier, 1993)											
LIU1993	MI, MN, WI	-	-	-	118	2.8	77	0.19	0.05	0.32	0.06
(Lund <i>et al.</i>, 1992)											
A	MN	-	-	-	40	2.7	90	0.205	-	0.206	-
B	MN	-	-	-	38	2.7	100	0.224	-	0.235	-
C	MN	-	-	-	40	2.6	90	0.205	-	0.215	-
D	MN	-	-	-	40	2.8	100	0.235	-	0.244	-
E	MN	-	-	-	40	2.4	80	0.230	-	0.234	-
F	MN	-	-	-	40	2.7	100	0.195	-	0.212	-
G	MN	-	-	-	40	2.9	100	0.242	-	0.232	-
H	MN	-	-	-	29	2.3	80	0.217	-	0.210	-
I	MN	-	-	-	40	2.2	80	0.197	-	0.193	-
(Hyun <i>et al.</i>, 1987)											
Moosonee	ON	-	-	-	19	2.5	80.0	0.108	-	0.248	-
Kenora	ON	-	-	-	29	2.9	93.3	0.119	-	0.233	-
Cochrane	ON	-	-	-	28	2.8	66.7	0.133	-	0.207	-
Thunder Bay	ON	-	-	-	29	2.8	73.3	0.160	-	0.227	-
Hearst	ON	-	-	-	27	2.9	73.3	0.101	-	0.234	-
Sudbury	ON	-	-	-	30	2.5	86.7	0.114	-	0.212	-
Barrie	ON	-	-	-	10	2.1	73.3	0.140	-	0.246	-
Simcoe	ON	-	-	-	28	1.9	86.7	0.127	-	0.270	-
<i>Pseudotsuga menziesii</i> (douglas-fir)											
(El-Kassaby & Ritland, 1996)											
Alberni	Port Alberni, BC	49.2	124.8	-	51	2.25	55	-	-	0.153	-
Bowen Island	Bowen Island, BC	49.4	123.4	-	51	2.25	55	-	-	0.162	-
Cassidy	Cassidy, BC	49.1	123.9	-	51	2.05	45	-	-	0.146	-
Caycuse	Caycuse, BC	48.9	124.4	-	51	2.25	50	-	-	0.186	-

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Table S3 – continued from previous page

Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
Chehalis	Chehalis, BC	46.7	123.0	-	51	2.15	50	-	-	0.162	-
Chilliwack High	Chilliwack, BC	49.2	121.9	-	51	2.25	60	-	-	0.159	-
Chilliwack Low	Chilliwack, BC	49.2	121.9	-	51	2.20	50	-	-	0.158	-
Courtenay	Courtenay, BC	49.7	125.0	-	51	2.20	40	-	-	0.144	-
Darrington	Darrington, WA	48.3	121.6	-	51	2.15	40	-	-	0.122	-
Denman Island	Denman Island, BC	49.5	124.8	-	51	2.25	55	-	-	0.188	-
Duncan	Duncan, BC	48.8	123.7	-	51	2.15	60	-	-	0.169	-
Empress Mtn.	Empress Mtn., BC	48.4	123.7	-	51	2.15	50	-	-	0.181	-
E. Thurlow	East Thurlow, BC	50.4	125.4	-	51	2.25	65	-	-	0.164	-
Forbidden Plat.	Forbidden Plateau, BC	49.7	125.2	-	51	2.30	50	-	-	0.177	-
Franklin R.	Franklin River, BC	49.1	124.8	-	51	2.10	50	-	-	0.151	-
Gold River	Gold River, BC	49.8	126.1	-	51	2.10	50	-	-	0.152	-
Granite Falls	Granite Falls, WA	48.1	122.0	-	51	2.10	40	-	-	0.139	-
Haney	Haney, BC	49.2	122.6	-	51	2.10	55	-	-	0.160	-
Harrison Lake	Harrison Lake, BC	49.3	121.8	-	51	2.05	55	-	-	0.166	-
Hernando Is.	Hernando Island, BC	50.0	124.9	-	51	2.05	65	-	-	0.181	-
Hoh	Hoh, WA	47.9	123.9	-	51	2.30	70	-	-	0.181	-
Hope	Hope, BC	49.4	121.4	-	51	2.10	50	-	-	0.126	-
Jervis	Jervis Inlet, BC	50.2	124.0	-	51	2.15	50	-	-	0.164	-
Jeune Landing	Jeune Landing, BC	50.4	127.5	-	51	2.15	55	-	-	0.185	-
Jordan River	Jordan River, BC	48.4	124.0	-	51	2.20	55	-	-	0.169	-
Kaouk River	Kaouk River, BC	50.1	127.1	-	51	2.15	55	-	-	0.189	-
Klinaklini High	Klinaklini, BC	51.3	125.8	-	51	2.00	55	-	-	0.190	-
Klinaklini Low	Klinaklini, BC	51.3	125.8	-	51	2.00	65	-	-	0.157	-
Kelsey Bay	Kelsey Bay, BC	50.4	126.0	-	51	2.10	55	-	-	0.160	-
Kennedy Lake	Kennedy Lake, BC	49.0	125.6	-	51	1.75	45	-	-	0.138	-
Malcolm Island	Malcolm Island, BC	50.6	127.0	-	51	1.90	40	-	-	0.143	-
Mead Cr.	Mead Creek, BC	48.8	124.1	-	51	2.35	50	-	-	0.181	-
Nimpkish	Nimpkish, BC	50.3	126.9	-	51	2.15	65	-	-	0.169	-

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Table S3 – continued from previous page

Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
Nanaimo L.	Nanaimo Lake, BC	49.1	124.2	-	51	2.15	45	-	-	0.166	-
Parksville	Parksville, BC	49.3	124.3	-	51	2.20	55	-	-	0.146	-
Pitt River	Pitt River, BC	49.3	122.6	-	51	2.05	50	-	-	0.171	-
Port Hardy	Port Hardy, BC	50.7	127.5	-	51	2.20	55	-	-	0.198	-
Powell River	Powell River, BC	49.9	124.6	-	51	2.15	50	-	-	0.161	-
Quadra Island	Quadra Island, BC	50.1	125.3	-	51	2.05	65	-	-	0.167	-
San Juan R.	San Juan River, BC	48.5	124.0	-	51	2.15	50	-	-	0.157	-
Sechelt	Sechelt, BC	49.5	123.8	-	51	2.05	50	-	-	0.158	-
Shelton	Shelton, WA	47.2	123.1	-	51	2.10	45	-	-	0.148	-
Sooke	Sooke, BC	48.4	123.7	-	51	2.20	55	-	-	0.161	-
Squamish	Squamish, BC	49.7	123.2	-	51	2.20	55	-	-	0.169	-
Stella Lake	Stella Lake, BC	50.3	125.5	-	51	2.15	45	-	-	0.160	-
Tahsis	Tahsis, BC	49.9	126.7	-	51	2.15	50	-	-	0.154	-
Texada Island	Texada Island, BC	49.7	124.6	-	51	2.05	55	-	-	0.171	-
Tinhat Mtn.	Tinhat Mtn., BC	49.9	124.4	-	51	2.25	45	-	-	0.163	-
Toba River	Toba River, BC	50.5	124.3	-	51	2.25	55	-	-	0.172	-
(Yeh & O'Malley, 1980)											
I	South Vancouver Island, BC	48.55	124.08	244	100	2.33	42.86	-	-	0.156	0.041
II	South Vancouver Island, BC	48.87	123.75	457	100	2.33	57.14	-	-	0.156	0.035
III	Skagit Valley, BC	49.23	121.23	930	100	2.29	52.38	-	-	0.168	0.040
IV	Lower Mainland, BC	49.25	122.35	152	100	2.29	47.62	-	-	0.161	0.041
V	Hope, BC	49.50	121.35	884	100	2.10	57.14	-	-	0.149	0.039
VI	Halfmoon Bay, BC	49.50	123.87	175	100	2.34	47.62	-	-	0.139	0.038
VII	North Vancouver Island, BC	49.87	125.83	250	100	2.14	47.62	-	-	0.142	0.036
VIII	North Vancouver Island, BC	50.25	125.73	137	100	2.05	47.62	-	-	0.140	0.037
IX	West Lillooet, BC	50.53	122.47	457	100	1.91	61.91	-	-	0.167	0.041
X	West Lillooet, BC	50.57	122.53	1067	100	2.29	57.14	-	-	0.184	0.042
XI	Bella Coola, BC	52.42	126.25	244	100	2.05	47.62	-	-	0.140	0.041

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Table S3 – continued from previous page

Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
(Hamrick <i>et al.</i>, 1979)											
YEH	11 pop., Interior BC	-	-	-	-	2.23	-	-	-	0.180	-
MORRIS	11 pop., Coastal CA	-	-	-	-	3.17	74.2	-	-	0.332	-
CONKLE	1 pop., Interior CA	-	-	-	-	1.78	100	-	-	0.330	-
HAMRICK	5 pop., Eastern CO	-	-	-	-	1.86	64.0	-	-	0.264	-
<i>Sequoia sempervirens</i> (coast redwood) *not included in analysis											
(Rogers, 1994)											
High Rock River Access	Humboldt Redwoods S.P., CA	-	-	50	121	3.00	80	-	-	-	-
Kent Grove	Humboldt Redwoods S.P., CA	-	-	55	121	3.25	92	-	-	-	-
Grasshopper Hill	Humboldt Redwoods S.P., CA	-	-	213	121	3.25	83	-	-	-	-
Squaw Creek Ridge	Humboldt Redwoods S.P., CA	-	-	210	121	2.92	75	-	-	-	-
<i>Thuja plicata</i> (western redcedar)											
(Yeh, 1988)											
1 - Cowichan Lake	Interior BC	48.817	124.167	161	20	1.16	15.79	0.44	-	0.050	0.031
2 - Salmo	Interior BC	49.183	117.250	610	30	1.16	15.79	0.32	-	0.038	0.026
3 - Tashme	Interior BC	49.333	121.283	734	30	1.16	15.79	0.42	-	0.036	0.026
4 - Kootney Lake	Interior BC	49.667	116.667	532	30	1.21	15.79	0.55	-	0.051	0.031
5 - Kamloops	Interior BC	50.700	120.333	344	30	1.16	15.79	0.32	-	0.035	0.026
6 - Revelstoke	Interior BC	51.033	118.250	610	30	1.11	10.53	0.30	-	0.036	0.027
7 - Adams Lake	Interior BC	51.217	119.500	404	30	1.21	21.05	0.29	-	0.037	0.026
8 - Quesnel Lake	Interior BC	52.617	120.967	697	30	1.16	15.79	0.24	-	0.031	0.026
(El-Kassaby <i>et al.</i>, 1994)											
Strait of Juan De Fuca	2 pop., Van Isl & BC Coast	-	-	-	28	1.0	12	-	-	0.06	-
(Copes, 1981)											
COPEs	5 pop., WA, OR	-	-	-	49	1.0	0	0	0	0	0

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Table S3 – continued from previous page

Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
<i>Tsuga heterophylla</i> (western hemlock)											
(El-Kassaby <i>et al.</i>, 2003)											
OG-TSUGHET	Campbell River, BC	49.917	125.417	795	30	1.6	38.1	0.098	-	0.113	-
(Wellman, 2004)											
HOLBERG	Holberg, BC	50.38	128.05	92	49	2.0	50.0	0.143	0.071	0.171	0.051
TOBA	Toba River, BC	50.30	124.10	366	49	1.9	50.0	0.149	0.072	0.146	0.045
UCONA	Ucona River, BC	49.40	126.00	475	49	1.9	50.0	0.131	0.069	0.145	0.045
FLEET	Fleet River, BC	48.38	124.04	370	50	1.6	28.6	0.117	0.071	0.132	0.054
SOMBRIO	Sombrio Creek, BC	48.32	124.18	365	50	1.6	42.9	0.143	0.075	0.147	0.052
CAMPER	Camper Creek, BC	48.34	124.30	300	50	1.4	28.6	0.119	0.075	0.114	0.051
SECHELT	Sechelt, BC	-	-	-	52	1.6	42.9	0.160	0.076	0.148	0.049
NANAIMO	Nanimo River, BC	49.00	124.10	550	50	1.9	35.7	0.140	0.072	0.131	0.046
UBC	UBC Res. Forest, BC	49.17	122.33	275	49	1.7	28.6	0.112	0.073	0.137	0.054
KAOUK	Kaouk, BC	50.05	126.59	60	50	1.6	42.9	0.149	0.075	0.147	0.053
UNKNOWN	Unknown natural, BC	48.50	123.45	600	49	1.5	42.9	0.161	0.079	0.131	0.048
<i>Tsuga mertensia</i> (mountain hemlock)											
(Ally <i>et al.</i>, 2000)											
A - Meade Crk.	Meade Crk. , BC	48.55	124.05	1067	40	1.9	36.8	-	-	0.092	0.026
B - Wakeman High	Wakeman High , BC	51.10	126.25	1100	40	1.7	42.1	-	-	0.097	0.028
C - Hanna Ridge	Hanna Ridge , BC	56.18	129.20	700	40	1.5	31.6	-	-	0.065	0.023
D - Wakeman Low	Wakeman Low , BC	51.17	126.17	600	40	1.6	42.1	-	-	0.084	0.025
E - Garbage Crk.	Garbage Crk. , BC	48.33	124.06	850	40	1.6	31.6	-	-	0.106	0.040
F - Mission	Mission , BC	49.18	122.26	900	40	1.7	31.6	-	-	0.122	0.042
G - Lyon Lk.	Lyon Lk. , BC	49.39	123.54	1005	40	1.4	26.3	-	-	0.068	0.028
H - Parksville	Parksville , BC	49.16	124.33	824	40	1.6	31.6	-	-	0.102	0.033
I - Mayo Crk.	Mayo Crk. , BC	54.47	129.02	683	40	1.7	36.8	-	-	0.088	0.027
J - Zeballos	Zeballos , BC	50.10	126.47	700	40	1.3	21.1	-	-	0.050	0.025
K - Kearsley Crk.	Kearsley Crk. , BC	49.19	122.22	1280	40	1.7	42.1	-	-	0.106	0.036

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Table S3 – continued from previous page

Population	Location/Comments	Lat	Long	Elev	N	A	P	H _o	(SE)	H _e	(SE)
L - Blue Ox Crk.	Blue Ox Crk. , BC	50.18	127.16	660	40	1.2	10.5	-	-	0.056	<i>0.036</i>
M - Hkusam Mt.	Hkusam Mt. , BC	50.20	125.50	950	40	1.4	31.6	-	-	0.075	<i>0.028</i>
N - Port Alice	Port Alice , BC	50.24	124.27	750	40	1.4	26.3	-	-	0.086	<i>0.035</i>
O - Sale Mt.	Sale Mt. , BC	51.10	118.10	1700	40	1.2	10.5	-	-	0.050	<i>0.034</i>
P - Hodoo Crk.	Hoodoo Crk. , BC	51.20	125.32	1250	40	1.6	31.6	-	-	0.095	<i>0.030</i>
Q - Copper Canyon	Copper Canyon , BC	48.56	124.13	1100	40	1.8	47.4	-	-	0.120	<i>0.057</i>
R - Ashley Crk.	Ashley Crk. , BC	50.01	123.33	1000	40	1.7	36.8	-	-	0.109	<i>0.034</i>
S - Woss Lk.	Woss Lk. , BC	50.07	126.35	900	40	1.6	36.8	-	-	0.082	<i>0.027</i>

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Table S4: Alternative splits for each node of the regression tree (figure 2), explaining allelic richness (A) and expected heterozygosity (H_e). Alternative splitting variables are listed (Variable), as are the percent variances explained by each split (VarEx) and to which side of the regression tree each group splits at each node.

Variable	VarEx	To the left	To the right
Allelic richness (A)			
Split 1			
Glacial range area	66.1%	<3.5e5 km ²	≥ 3.5e5 km ²
Glacial refugia count	47.4%	<21.9	≥ 21.9
Modern range patch count	41.8%	<58	≥ 58
Modern range area	37.5%	<8.4e5 km ²	≥ 8.4e5 km ²
Modern range contiguity	32.3%	≥ 0.86	<0.86
Split 2			
Glacial range contiguity	8.6%	<0.85	≥ 0.85
Modern range contiguity	8.3%	<0.86	≥ 0.86
Glacial refugia count	8.2%	≥ 15	<15
Glacial range area	7.4%	<1.4e5 km ²	≥ 1.4e5 km ²
Modern range area	6.6%	≥ 5.5e5 km ²	<5.5e5 km ²
Split 3			
Dispersal mechanism	3.7%	all others	wind
Glacial refugia count	3.6%	<64	≥ 64
Glacial contiguity	2.6%	≥ 0.84	<0.84
Modern range patch count	1.6%	<101	≥ 101
Glacial range area	1.6%	<9.7e5 km ²	≥ 9.7e5 km ²
Expected heterozygosity (H_e)			
Split 1			
Glacial refugia count	26.7%	<64	≥ 64
Glacial range contiguity	25.2%	≥ 0.84	<0.84
Modern range contiguity	14.7%	≥ 0.86	<0.86
Glacial range area	12.3%	<2.1e5 km ²	≥ 2.1e5 km ²
Modern range patch count	9.4%	<101	≥ 101
Split 2			
Modern range area	20.8%	≥ 4.3e5 km ²	<4.3e5 km ²
Glacial range contiguity	13.1%	≥ 0.86	<0.86
Modern range contiguity	7.3%	≥ 0.85	<0.85
Modern range patch count	7.2%	≥ 20	<20
Glacial range area	4.1%	≥ 0.8e5 km ²	<0.8e5 km ²
Split 3			
Glacial range area	16.3%	<1.4e5 km ²	≥ 1.4e5 km ²
Glacial refugia count	7.5%	<22	≥ 22
Succession	7.1%	early, late	middle
Glacial range contiguity	5.5%	≥ 0.86	≥ 0.86
Modern range patch count	5.2%	<36	≥ 36