

Ecography

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Supplementary material

Appendix 1

SUPPLEMENTARY INFORMATION

Supplementary Table A1. Species list and data set.

Supplementary Table A2. Means and standard errors (SE) of trait for the twenty-two species collected from two elevations, shown for each elevation.

Supplementary Table A3. Tests for phylogenetic signal in seed traits.

Supplementary Table A4. Results of Analyses of Variance to test for life cycle differences in seed traits across elevation.

Supplementary Table A5. Results Multiple Linear Regression and Phylogenetic Generalized Mixed Model to test whether seed traits predict the elevation at which species occur.

Supplementary Table A6. Results of Analysis of Variance to test whether seed morphological traits influence germination, and whether that influence differs across elevations.

Supplementary Table A7. Results of Phylogenetic Generalized Mixed Model to test how seed morphological traits predict germination proportion.

Supplementary Figure A1. Histogram of collection sites across the elevation.

Supplementary Figure A2. Annual temperature and precipitation across elevation in 86 study sites.

Supplementary Figure A3. Visualization of the phylogenetic tree and ECV (Environmental Coefficient of Variation) on variation in seed traits in 22 species collected at two elevations.

Supplementary Figure A4. Visualization of the distribution of traits across the elevation gradient and community phylogeny for the 408 species.

Supplementary Table A1. Species list and data set for 442 species-sites. Species life history (LF) were annual herbaceous (AH), perennial herbaceous (PH) and perennial shrub (PS) and perennial tree (PT). SVR = Surface area:volume ratio; GP = germination proportion; GT = germination time.

Species name	Family	Elevation (m)	LF	Mass (mg)	Shape	SVR (cm ⁻¹)	GP	GT (d)	Longitudes	Latitude
<i>Amaranthus retroflexus</i>	Amaranthaceae	1962	AH	0.4400	0.0373	6.4994	0.8200	12.2581	33°59'06.9"	103°54'34.4"
<i>Axyris amaranthoides</i>	Amaranthaceae	2251	AH	1.3430	0.0988	6.0041	0.8000	9.6954	35°19'55.2"	102°46'58.8"
<i>Chenopodium acuminatum</i>	Amaranthaceae	2168	AH	0.7653	0.0399	4.9969	0.9533	5.4786	34°58'06.0"	103°43'01.9"
<i>Chenopodium aristatum</i>	Amaranthaceae	3445	AH	0.1460	0.0236	7.9143	0.3667	4.2229	34°12'12.5"	101°33'02.6"
<i>Chenopodium foetidum</i>	Amaranthaceae	2760	AH	0.1510	0.0191	8.1344	0.9600	12.0447	35°13'11.81"	102°43'41.87"
<i>Chenopodium glaucum</i>	Amaranthaceae	3513	AH	0.1957	0.0385	7.8072	0.1667	16.1333	33°58'05.7"	102°04'37.0"
<i>Chenopodium hybridum</i>	Amaranthaceae	2172	AH	1.9227	0.0473	3.9001	0.0300	13.2500	35°24'55.4"	102°56'13.7"
<i>Chenopodium prostratum</i>	Amaranthaceae	2954	AH	0.6810	0.0534	5.6116	0.2867	5.8496	34°56'59.5"	102°52'59.8"
<i>Polygonum aviculare</i>	Amaranthaceae	2954	AH	1.2353	0.0575	3.4973	0.3800	7.6383	34°56'59.5"	102°52'59.8"
<i>Polygonum divaricatum</i>	Amaranthaceae	3554	PH	3.0007	0.0543	3.3957	0.9133	4.3369	33°41.846'	101°25.981'
<i>Polygonum fertile</i>	Amaranthaceae	3903	AH	0.2977	0.0474	8.6473	0.9867	2.3034	34°04.211'	102°09.878'
<i>Polygonum macrophyllum</i>	Amaranthaceae	3011	PH	0.7293	0.0374	4.3179	0.3667	14.0389	34°57'08.9"	101°53'20.3"
<i>Polygonum sparsipilum</i>	Amaranthaceae	3397	AH	0.7550	0.0290	4.2423	0.0300	5.7500	34°04'23.1"	101°43'34.1"
<i>Rumex aquaticus</i>	Amaranthaceae	3530	PH	1.3947	0.0340	4.0985	0.4533	8.3149	33°39'47.8"	101°52'09.4"
<i>Rumex nepalensis</i>	Amaranthaceae	3740	PH	4.5770	0.0281	2.2853	0.9600	3.6678	34°06.132'	101°53.948'
<i>Rumex patientia</i>	Amaranthaceae	3468	PH	2.5427	0.0659	3.5410	0.8600	4.0313	33°22'16.2"	102°06'18.8"
<i>Rumex patientia</i>	Amaranthaceae	2960	PH	2.5657	0.0328	3.0675	1.0000	3.7200	34°57'08.9"	102°53'20.3"
<i>Rumex pseudonatronatus</i>	Amaranthaceae	3500	PH	2.0113	0.0681	3.1486	0.9667	8.8982	33°39'47.8"	101°52'09.4"
<i>Salsola collina</i>	Amaranthaceae	3049	AH	0.9353	0.0071	3.2943	0.9667	11.1303	35°06.799"	102°24.940"
<i>Allium chrysocephalum</i>	Amariyllidaceae	3824	PH	0.5280	0.0787	4.8538	0.9000	4.3594	34°13'33.7"	101°06'26.0"
<i>Allium mongolicum</i>	Amariyllidaceae	2205	PH	0.9657	0.0557	3.7509	0.0500	20.7500	35°25'08.3"	102°56'54.6"
<i>Allium rude</i>	Amariyllidaceae	3903	PH	0.5357	0.0733	4.6386	0.9267	4.4238	34°04.211'	102°09.878'
<i>Allium rude</i>	Amariyllidaceae	3496	PH	0.4330	0.0895	5.3748	0.9067	6.3292	33°26'56.5"	101°55'48.2"
<i>Allium sikkimense</i>	Amariyllidaceae	3550	PH	0.4940	0.1081	8.5843	0.8000	9.6954	33°40'19.5"	101°51'51.3"
<i>Acronema chinense</i>	Apiaceae	3740	PH	0.5360	0.1050	7.4233	0.4533	16.4870	34°06.132'	101°53.948'
<i>Angelica laxifoliata</i>	Apiaceae	2081	PH	1.0987	0.1174	4.1151	0.7600	18.3294	34°03'36.8"	103°54'13.0"
<i>Angelica nitida</i>	Apiaceae	3550	PH	1.7657	0.1248	7.4204	0.7067	24.1440	33°40'15.7"	101°52'07.5"
<i>Angelica nitida</i>	Apiaceae	2304	PH	2.267	0.1102	2.8648	0.5067	28.9113	34°03'04.0"	103°14'00.3"
<i>Bupleurum chinense</i>	Apiaceae	2659	PH	0.8730	0.0874	5.1825	0.5933	27.3916	34°46'33.9"	103°38'05.8"
<i>Bupleurum commelynoideum</i>	Apiaceae	3454	PH	1.0590	0.0918	4.8278	0.5467	24.5323	34°12.530'	101°16.833'
<i>Bupleurum commelynoideum</i>	Apiaceae	2229	PH	1.0013	0.0906	4.4901	0.9133	20.3824	35°25'03.2"	102°49'16.1"
<i>Bupleurum smithii</i>	Apiaceae	2532	PH	0.8080	0.0830	4.8212	0.6667	25.9409	34°32'26.7"	103°35'06.0"
<i>Bupleurum smithii-parvijolium</i>	Apiaceae	3061	PH	0.8917	0.0899	5.0298	0.8933	25.1423	34°34'26.4"	102°33'57.6"
<i>Bupleurum yinchowense</i>	Apiaceae	2430	PH	0.9380	0.0832	5.2763	0.0467	36.7778	34°49'51.1"	103°40'40.0"
<i>Carum buriaticum</i>	Apiaceae	2928	PH	0.88	0.1030	4.8733	0.2267	16.6108	34°56'59.5"	102°52'59.8"
<i>Carum buriaticum</i>	Apiaceae	2205	PH	0.6757	0.0791	5.2923	0.0533	34.2222	35°24'51.3"	102°56'11.5"
<i>Carum carvi</i>	Apiaceae	3530	PH	2.2917	0.1033	4.3488	0.0533	17.8333	33°40'15.7"	101°52'07.5"
<i>Chaemaesium paradoxum</i>	Apiaceae	3515	AH	0.8520	0.0643	4.8123	0.6333	24.3973	33°40'03.9"	103°14'00.3"
<i>Heraclium millefolium</i>	Apiaceae	2960	PH	1.6997	0.1211	4.6218	0.0400	28.2222	34°56'59.5"	102°52'59.8"
<i>Ligusticum acuminatum</i>	Apiaceae	2168	PH	0.3077	0.0899	6.9573	0.9467	7.9704	34°58'06.0"	103°43'01.9"
<i>Ligusticum moniliforme</i>	Apiaceae	2620	PH	0.5310	0.1184	5.3396	0.8400	15.2834	35°16'27.8"	102°48'00.0"
<i>Ligusticum thomsonii</i>	Apiaceae	3397	PH	0.8560	0.1174	7.4151	0.3533	21.4741	34°04'23.1"	101°43'34.1"
<i>Pimpinella diversifolia</i>	Apiaceae	2081	PH	1.8677	0.0328	3.6226	0.1467	28.1232	34°03'36.8"	103°54'13.0"
<i>Pimpinella diversifolia</i>	Apiaceae	2168	PH	1.6640	0.0520	3.7076	0.0200	36.5000	34°58'06.0"	103°43'01.9"
<i>Pleuropernum hookeri</i>	Apiaceae	3740	PH	1.5583	0.0827	3.2301	0.3400	20.0991	34°06.132'	101°53.948'
<i>Pternopetalum heterophyllum</i>	Apiaceae	3468	PH	0.4993	0.0845	6.8241	0.0267	20.5000	33°22'16.2"	102°06'18.8"
<i>Seseli squarulosum</i>	Apiaceae	2430	PH	1.0787	0.1011	5.0168	0.8133	18.3783	34°49'51.1"	103°40'40.0"
<i>Sphallerocarpus gracilis</i>	Apiaceae	2960	PH	5.2223	0.0922	2.8157	0.0200	5.0000	34°56'59.5"	102°52'59.8"
<i>Tongolosa elata</i>	Apiaceae	3903	PH	0.5580	0.0704	5.4680	0.0200	29.5000	34°04.211'	102°09.878'
<i>Tongolosa gracilis</i>	Apiaceae	2229	PH	0.8477	0.0640	4.3504	0.9400	12.0847	35°25'03.2"	102°49'16.1"
<i>Torilis japonica</i>	Apiaceae	2160	PH	2.7407	0.0470	2.6730	0.0600	25.0000	35°24'47.3"	102°56'16.7"
<i>Cynanchum inamoenum</i>	Apocynaceae	2188	PH	7.2713	0.1165	2.9170	0.8600	18.0313	35°24'47.3"	102°56'16.7"
<i>Arisaema erubescens</i>	Araceae	2749	PH	8.7090	0.0125	2.1041	0.9267	26.7943	34°08'13.1"	103°10'32.4"
<i>Aralia chinensis</i>	Araliaceae	2705	PS	1.2483	0.0827	5.2396	0.0400	37.5000	34°10'00.9"	102°55'08.4"
<i>Arenocaulon himalaicum</i>	Asteraceae	2229	PH	8.5017	0.1201	3.3395	0.6067	16.3821	35°25'03.2"	102°49'16.1"
<i>Ajania temifolia</i>	Asteraceae	3565	PH	0.1377	0.1022	13.4904	0.9533	6.1450	33°41.846'	101°25.981'
<i>Anaphalis aureopunctata</i>	Asteraceae	3824	PH	0.0730	0.0884	15.3364	1.0000	9.8933	34°13'33.7"	101°06'26.0"
<i>Anaphalis aureopunctata</i>	Asteraceae	2081	PH	0.0707	0.0714	12.4121	0.9467	11.8976	34°03'36.8"	103°54'13.0"
<i>Anaphalis bicolor</i>	Asteraceae	3565	PH	0.0783	0.1165	14.8444	0.9400	18.4998	33°42.000'	101°22.001'
<i>Anaphalis bicolor</i>	Asteraceae	3554	PH	0.0850	0.0755	10.1205	0.9400	9.9698	33°41.846'	101°25.981'
<i>Anaphalis gracilis</i>	Asteraceae	3028	PH	0.1040	0.1053	13.3027	0.9533	10.2241	34°33'49.5"	102°33'15.3"
<i>Anaphalis hancockii</i>	Asteraceae	3514	PH	0.1690	0.0977	10.4450	0.9533	11.6408	33°40'03.9"	101°52'28.1"
<i>Anaphalis lactea</i>	Asteraceae	3514	PH	0.2113	0.0941	11.0641	0.8000	8.9297	33°40'03.9"	101°52'28.1"
<i>Anaphalis margaritacea</i>	Asteraceae	2926	PH	0.0497	0.0978	15.1401	0.9400	16.9551	34°27'40.1"	103°05'25.6"
<i>Anaphalis nepalensis</i>	Asteraceae	3903	PH	0.2630	0.0727	7.7734	0.9067	7.0136	34°04.211'	102°09.878'
<i>Arctium lappa</i>	Asteraceae	2602	PH	10.3663	0.1172	3.2364	0.9600	6.9583	34°36.761'	103°20.229'
<i>Artemisia desertorum</i>	Asteraceae	3417	PH	0.2477	0.0861	8.1960	0.5733	8.0897	33°57.968'	102°03.499'
<i>Artemisia dubia</i>	Asteraceae	2188	PH	0.1680	0.1241	12.8826	0.9333	4.7956	35°24'47.3"	102°56'16.7"
<i>Artemisia dubia</i>	Asteraceae	2205	PH	0.1673	0.0747	11.1835	0.9400	5.6401	35°25'08.3"	102°56'54.6"
<i>Artemisia eriopoda</i>	Asteraceae	2188	PH	0.0783	0.0755	13.3606	0.9333	5.7753	35°24'47.3"	102°56'16.7"
<i>Artemisia hedinii</i>	Asteraceae	3514	AH	0.0273	0.0928	12.2573	0.9600	2.5371	33°40'03.9"	101°52'28.1"
<i>Artemisia mongolica</i>	Asteraceae	3402	PH	0.1377	0.1191	17.0054	0.9800	5.3010	34°10'06.0"	101°30'49.8"
<i>Artemisia parvijflora</i>	Asteraceae	3062	PH	0.2190	0.0769	9.5710	0.9733	3.5838	34°34'26.4"	102°33'57.6"
<i>Artemisia scoparia</i>	Asteraceae	3397	PH	0.0833	0.0831	22.4798	0.9733	14.0371	34°04'23.1"	101°43'34.1"
<i>Artemisia sieversiana</i>	Asteraceae	2345	AH	0.4207	0.0675	9.6031	0.9267	4.7503	35°19.762'	102°47.137'
<i>Artemisia sieversiana</i>	Asteraceae	2400	AH	0.3227	0.0804	7.9492	0.7800	2.7563	35°19.762'	102°47.137'
<i>Aster ageratoides</i>	Asteraceae	2188	PH	0.5493	0.1328	9.5656	0.9000	9.2150	35°24'47.3"	102°56'16.7"
<i>Aster albescens</i>	Asteraceae	2081	PH	0.2480	0.1411	11.1146	0.3533	17.2981	34°03'36.8"	103°54'13.0"
<i>Aster diplostophoides</i>	Asteraceae	3550	PH	0.5820	0.1375	8.7918	0.8133	9.0053	33°40'15.7"	101°52'07.5"
<i>Aster poliothamnus</i>	Asteraceae	3582	PH	0.3820	0.1096	8.8502	0.9667	8.3750	33°42.000'	101°22.001'
<i>Aster souliei</i>	Asteraceae	3550	PH	0.7310	0.0939	6.1894	0.6000	13.8051	33°40'15.7"	101°52'07.5"
<i>Bidens tripartita</i>	Asteraceae	2236	AH	2.9387	0.1423	4.8343	0.0333	36.1667	34°00'33.3"	103°24'10.3"
<i>Carduus nutans</i>	Asteraceae	3397	PH	3.2943	0.1262	6.1768	0.4733	5.9039	34°04'23.1"	101°43'34.1"
<i>Carpesium lipskyi</i>	Asteraceae	2954	PH	0.8390	0.1517	7.6293	0.9533	19.3962	34°56'59.5"	102°52'59.8"
<i>Carpesium minus</i>	Asteraceae	3065	PH	0.8643	0.1430	6.5262	0.8933	16.1927	34°08'55.3"	102°48'48.5"
<i>Carpesium triste</i>	Asteraceae	2168	PH	0.9307	0.1543	7.9195	0.9867	15.2261	34°58'06.0"	103°43'01.9"
<i>Chaetosaris roborowskii</i>	Asteraceae	3397	PH	0.5580	0.1481	7.0267	0.8067	5.9325	34°04'23.1"	101°43'34.1"
<i>Cirsium lanatum</i>	Asteraceae	3240	AH	3.1220	0.1098	5.0293	0.4467	12.2878	34°14'11.6"	103°11'46.5"
<i>Cirsium leo</i>	Asteraceae	2304	PH	2.4260	0.0996	4.4594	0.3267	12.4651	34°03'04.0"	103°14'00.3"
<i>Cirsium setosum</i>	Asteraceae	2960	PH	0.9043	0.1224	5.9608	0.0600	15.3333	34°56'59.5"	102°52'59.8"
<i>Cirsium souliei</i>	Asteraceae	3514	PH	4.0560	0.1228	4.0140	0.9600	5.2222	33°40'03.9"	101°52'28.1"
<i>Conyza canadensis</i>	Asteraceae	2202	AH	0.0640	0.1350	17.1337	0.8733	3.4979	35°24'51.3"	102°56'11.5"

<i>Cremanthodium lineare</i>	Asteraceae	3514	PH	1.1927	0.1193	5.4235	0.9867	5.9767	33°39'47.8"	101°52'09.4"
<i>Dendranthema lavandulifolium</i>	Asteraceae	2570	PH	0.1133	0.0824	10.8898	0.9333	5.6118	34°50'19.5"	103°27'59.6"
<i>Doronicum stenoglossum</i>	Asteraceae	3050	PH	0.4927	0.1182	6.3363	0.1200	9.6389	34°56'16.5"	102°52'53.0"
<i>Erigeron acer</i>	Asteraceae	3397	AH	0.2047	0.1538	17.6299	0.0300	9.2500	34°04'23.1"	101°43'34.1"
<i>Gerbera anandria</i>	Asteraceae	2202	PH	0.8743	0.1589	8.9272	0.8733	19.7496	35°24'51.3"	102°56'11.5"
<i>Gerbera kunzeana</i>	Asteraceae	3020	PH	1.3223	0.1732	7.7910	0.7933	8.8295	34°56'19.9"	102°53'18.7"
<i>Heteropappus crenatifolius</i>	Asteraceae	2602	AH	0.5367	0.1199	8.7968	0.7200	11.0949	34°36'76.1"	103°20'22.9"
<i>Heteropappus gouldii</i>	Asteraceae	2954	AH	0.2247	0.1192	11.1698	0.4467	10.9954	34°56'59.5"	102°52'59.8"
<i>Heteropappus gouldii</i>	Asteraceae	3445	AH	0.3187	0.1327	11.1129	0.9400	11.5465	34°12'12.5"	101°33'02.6"
<i>Heteropappus hispidus</i>	Asteraceae	3402	AH	0.1170	0.1296	11.6141	0.6200	12.0470	34°10'06.0"	101°30'49.8"
<i>Inula japonica</i>	Asteraceae	2209	PH	0.0413	0.1047	12.9744	0.8867	16.2275	34°00'26.7"	103°24'06.3"
<i>Kalimeris mongolica</i>	Asteraceae	2202	PH	0.8190	0.1127	6.7168	0.6733	14.8028	35°24'51.3"	102°56'11.5"
<i>Leontopodium calocephalum</i>	Asteraceae	3903	PH	0.1420	0.0941	10.2598	0.9667	7.9755	34°04'21.1"	102°09'87.8"
<i>Leontopodium dedekensii</i>	Asteraceae	2976	PH	0.0773	0.1045	16.6630	0.6200	8.1202	34°46'17.9"	103°13'45.3"
<i>Leontopodium haplophyllodes</i>	Asteraceae	3011	PH	0.0910	0.1126	14.7337	0.9067	11.7524	34°56'19.9"	102°53'18.7"
<i>Leontopodium haplophyllodes</i>	Asteraceae	3530	PH	0.1143	0.1014	12.6495	0.9600	3.3390	33°40'15.7"	101°52'07.5"
<i>Leontopodium japonicum</i>	Asteraceae	2081	PH	0.0907	0.0796	11.6025	0.7267	16.8173	34°03'36.8"	103°54'13.0"
<i>Leontopodium nanum</i>	Asteraceae	3526	PH	0.1610	0.1176	13.3752	0.8200	7.2848	34°25'41.0"	102°17'37.3"
<i>Leontopodium ochroleucum</i>	Asteraceae	3486	PH	0.1237	0.0971	13.4138	0.9600	15.9896	33°22'16.2"	102°06'18.8"
<i>Leontopodium ochroleucum</i>	Asteraceae	3434	PH	0.1277	0.1198	12.4958	0.8600	10.9677	34°20'12.9"	102°58'31.8"
<i>Leontopodium souliei</i>	Asteraceae	2954	PH	0.1213	0.0982	11.6522	0.9800	5.9923	34°56'59.5"	102°52'59.8"
<i>Ligularia fischeri</i>	Asteraceae	3565	PH	4.2433	0.1517	4.0753	0.8000	14.2978	33°41'84.6"	101°25'98.1"
<i>Ligularia macrodonta</i>	Asteraceae	2750	PH	2.5573	0.1531	4.1760	0.6600	11.5605	34°24'26.8"	103°35'56.7"
<i>Ligularia purdomii</i>	Asteraceae	2954	PH	1.0670	0.1548	8.3712	0.8333	7.4388	34°56'59.5"	102°52'59.8"
<i>Ligularia sagitta</i>	Asteraceae	3021	PH	0.6243	0.1582	7.1697	0.9267	10.3184	34°58'52.10"	102°53'51.7"
<i>Ligularia tangutorum</i>	Asteraceae	3530	PH	0.8147	0.1523	5.9776	0.6200	9.8630	33°39'47.8"	101°52'09.4"
<i>Ligularia virgaurea</i>	Asteraceae	3457	PH	1.9997	0.1327	5.9669	0.9400	13.0435	33°22'16.2"	102°06'18.8"
<i>Neopallasia pectinata</i>	Asteraceae	2379	AH	0.5763	0.1035	7.6476	0.9600	2.8362	35°19'76.2"	102°47'13.7"
<i>Olgaea tangutica</i>	Asteraceae	2954	PH	6.6780	0.0666	4.2320	0.1400	8.7976	34°56'59.5"	102°52'59.8"
<i>Parasenecio deltophyllus</i>	Asteraceae	3565	PH	1.6260	0.1592	5.2897	0.7533	13.2865	33°41'84.6"	101°25'98.1"
<i>Parasenecio roborowskii</i>	Asteraceae	2081	PH	0.9333	0.1707	7.0397	0.6933	18.5002	34°03'36.8"	103°54'13.0"
<i>Parasenecio sinicus</i>	Asteraceae	2691	PH	0.4667	0.1573	11.4483	0.7467	16.9102	34°09'25.6"	102°48'29.0"
<i>Peryta discolor</i>	Asteraceae	2659	PS	3.7647	0.1138	3.8664	0.8600	14.1901	35°16'42.2"	102°47'86.9"
<i>Picris japonica</i>	Asteraceae	2960	PH	0.4883	0.1401	5.5119	0.3267	11.2476	34°56'59.5"	102°52'59.8"
<i>Prenanthes macrophylla</i>	Asteraceae	2514	PH	0.7883	0.1534	8.0517	0.0200	4.0000	34°35'46.6"	103°28'48.6"
<i>Prenanthes tatarinowii</i>	Asteraceae	2229	PH	0.7817	0.1653	8.7397	0.1267	9.3185	35°25'03.2"	102°49'16.1"
<i>Pyrethrum tatsienense</i>	Asteraceae	3903	PH	0.4227	0.1310	9.2178	0.8400	4.2555	34°04'21.1"	102°09'87.8"
<i>Saussurea graminea</i>	Asteraceae	3500	PH	2.2710	0.1260	4.9743	0.6800	5.6386	33°22'16.2"	102°06'18.8"
<i>Saussurea hieracioides</i>	Asteraceae	3526	PH	2.0113	0.1264	5.3646	0.8533	6.2986	34°25'41.0"	102°17'37.3"
<i>Saussurea iodostegia</i>	Asteraceae	3740	PH	2.2867	0.1351	4.8437	0.8733	5.7156	34°06'13.2"	101°53'94.8"
<i>Saussurea kansuensis</i>	Asteraceae	3550	PH	2.1553	0.1316	5.2662	0.9667	8.8298	33°40'19.5"	101°51'51.3"
<i>Saussurea mongolica</i>	Asteraceae	2532	PH	4.6170	0.1118	3.4296	0.7600	7.8215	34°32'26.7"	103°35'06.0"
<i>Saussurea nigrescens</i>	Asteraceae	3021	PH	1.6003	0.1143	4.7478	0.4867	9.1562	34°58'52.10"	102°53'51.7"
<i>Saussurea parviflora</i>	Asteraceae	3397	PH	1.2047	0.1276	6.0046	0.2800	14.5750	34°04'23.1"	101°43'34.1"
<i>Saussurea parviflora</i>	Asteraceae	2514	PH	1.3170	0.0981	4.5277	0.8667	7.7823	34°35'46.6"	103°28'48.6"
<i>Saussurea salicifolia</i>	Asteraceae	3932	PH	1.5503	0.1401	6.3577	0.7233	6.4385	34°06'36.5"	101°53'55.1"
<i>Saussurea stella</i>	Asteraceae	3550	PH	1.7287	0.1165	5.9215	0.7667	5.9215	33°40'19.5"	101°51'51.3"
<i>Saussurea sylvatica</i>	Asteraceae	3886	PH	1.9733	0.1236	4.1657	0.5200	9.7962	34°13'33.7"	101°06'26.0"
<i>Saussurea sylvatica</i>	Asteraceae	3113	PH	1.3093	0.1060	4.9454	0.9067	6.3685	35°06'22.7"	102°23'56.5"
<i>Saussurea variloba</i>	Asteraceae	2202	PH	2.2510	0.1308	4.4840	0.4400	22.6273	35°24'51.3"	102°56'11.5"
<i>Scorzonera austriaca</i>	Asteraceae	2160	PH	7.0270	0.1864	4.1003	0.9867	6.5386	35°24'47.3"	102°56'16.7"
<i>Senecio arguensis</i>	Asteraceae	2202	PH	0.5970	0.1296	9.1718	0.5933	13.0716	35°24'51.3"	102°56'11.5"
<i>Senecio dubitabilis</i>	Asteraceae	2954	AH	0.1853	0.1566	13.4488	0.9800	2.8095	34°56'59.5"	102°52'59.8"
<i>Serratula stragulata</i>	Asteraceae	2202	PH	5.9200	0.0855	2.5795	0.0733	34.1944	35°24'51.3"	102°56'11.5"
<i>Siegesbeckia pubescens</i>	Asteraceae	2188	AH	2.1490	0.0939	4.6056	0.2333	30.0530	35°24'47.3"	102°56'16.7"
<i>Sonchus arvensis</i>	Asteraceae	2926	AH	0.3250	0.1436	11.1262	0.3400	6.7937	34°27'40.1"	103°05'25.6"
<i>Sonchus transcaasicus</i>	Asteraceae	2954	PH	0.2473	0.1275	7.9567	0.0933	23.9444	34°56'59.5"	102°52'59.8"
<i>Taraxacum calanthodium</i>	Asteraceae	2514	PH	0.5797	0.1385	6.4102	0.8533	3.2948	34°35'46.6"	103°28'48.6"
<i>Taraxacum maurocarpum</i>	Asteraceae	3000	PH	0.6490	0.1364	8.3801	0.5600	5.3803	34°58'30.5"	102°53'47.3"
<i>Taraxacum maurocarpum</i>	Asteraceae	3550	PH	0.7213	0.1490	7.0257	0.9467	8.3850	33°40'19.5"	101°51'51.3"
<i>Tephrosia rufa</i>	Asteraceae	3454	PH	0.3483	0.1267	6.7673	0.5867	13.3032	34°12'53.0"	101°16'83.3"
<i>Xanthopappus subcaulis</i>	Asteraceae	3028	PH	6.3680	0.1176	3.6383	0.8667	7.9823	33°34'49.5"	102°33'15.3"
<i>Berberis aggregata</i>	Berberidaceae	2202	PS	2.7250	0.0942	4.3355	0.0867	31.6857	35°24'51.3"	102°56'11.5"
<i>Berberis vernae</i>	Berberidaceae	2252	PS	2.9837	0.0282	2.9013	0.5000	23.8695	34°00'33.3"	103°24'10.3"
<i>Betula platyphylla</i>	Betulaceae	2205	PS	0.2563	0.1229	8.8871	0.1200	21.1833	35°25'08.3"	102°56'54.6"
<i>Asperugo procumbens</i>	Boraginaceae	3514	AH	1.9090	0.0938	4.6004	0.5067	12.5780	33°40'03.9"	101°52'28.1"
<i>Cynoglossum lanceolatum</i>	Boraginaceae	1718	PH	3.1193	0.0415	2.7111	0.9867	11.3464	33°59'56.3"	102°56'03.0"
<i>Lappula redowskii</i>	Boraginaceae	3028	AH	1.5300	0.0738	3.2824	0.9133	4.4142	34°33'49.5"	102°33'15.3"
<i>Microula tangutica</i>	Boraginaceae	3496	PH	0.5073	0.0325	5.3653	0.5267	3.8642	33°26'56.5"	101°55'48.2"
<i>Arabis hirsuta</i>	Brassicaceae	3565	AH	0.1230	0.1053	11.0422	0.3267	7.9478	33°42'00.1"	101°22'00.1"
<i>Arabis pendula</i>	Brassicaceae	2691	AH	0.2093	0.0987	10.0381	0.4133	5.0859	34°09'25.6"	102°48'29.0"
<i>Braya rosea</i>	Brassicaceae	3402	PH	1.1927	0.0649	4.3380	0.8067	9.7472	34°10'06.0"	101°30'49.8"
<i>Capsella bursa-pastoris</i>	Brassicaceae	3550	AH	0.1643	0.0825	10.9644	0.3600	11.0445	33°40'19.5"	101°51'51.3"
<i>Cordamine tangutorum</i>	Brassicaceae	3740	PH	0.2047	0.0614	3.9357	0.1067	23.4444	34°06'13.2"	101°53'94.8"
<i>Dantostemon micranthus</i>	Brassicaceae	3417	AH	0.4587	0.1037	7.3148	0.1200	4.5944	33°57'96.8"	102°03'49.9"
<i>Draba eriopoda</i>	Brassicaceae	3500	AH	0.0873	0.0764	11.5267	0.5267	7.4534	33°40'03.9"	101°52'28.1"
<i>Draba eriopoda</i>	Brassicaceae	3020	AH	0.1327	0.1027	16.9786	0.0200	5.5000	34°57'10.7"	102°54'19.0"
<i>Draba oreades</i>	Brassicaceae	3903	PH	0.1177	0.0803	12.1987	0.9800	2.1484	34°04'21.1"	102°09'87.8"
<i>Hedimia tibetica</i>	Brassicaceae	3903	PH	0.2133	0.0556	7.9124	0.0200	6.3333	34°04'21.1"	102°09'87.8"
<i>Lepidium apetalum</i>	Brassicaceae	3530	AH	0.2133	0.0817	9.7488	0.1133	3.8389	33°40'19.5"	101°51'51.3"
<i>Lepidium latifolium</i>	Brassicaceae	2380	PH	0.2610	0.0713	8.9147	0.9733	2.1312	35°19'76.2"	102°47'13.7"
<i>Malcolmia africana</i>	Brassicaceae	3500	AH	0.2740	0.0985	9.4045	0.0800	10.4778	33°22'16.2"	102°06'18.8"
<i>Rorippa islandica</i>	Brassicaceae	3530	AH	0.2377	0.0499	6.2846	0.4933	21.3306	33°40'19.5"	101°51'51.3"
<i>Sisymbrium heteromallum</i>	Brassicaceae	2229	AH	0.2090	0.0791	7.9506	0.1533	6.8852	35°25'03.2"	102°49'16.1"
<i>Thlaspi arvense</i>	Brassicaceae	3514	AH	1.0017	0.0571	4.7428	0.3467	2.7189	33°40'03.9"	101°52'28.1"
<i>Torularia humilis</i>	Brassicaceae	2955	PH	0.2440	0.0587	9.9267	0.2767	7.8898	34°59'19.3"	102°46'38.6"
<i>Adenophora himalayana</i>	Campanulaceae	3740	PH	0.1447	0.0771	10.4614	0.8400	13.9333	34°06'13.2"	101°53'94.8"
<i>Adenophora lilifolioides</i>	Campanulaceae	3061	PH	0.1387	0.0838	10.2035	0.7333	18.4798	34°34'26.4"	102°33'57.6"
<i>Adenophora potaninii</i>	Campanulaceae	2668	PH	0.1717	0.0880	10.1113	0.7000	16.0001	35°12'34.2"	102°44'57.5"
<i>Adenophora stenanthina</i>	Campanulaceae	2960	PH	0.0953	0.0836	11.1885	0.8733	13.0095	34°56'59.5"	102°52'59.8"
<i>Campanula aristata</i>	Campanulaceae	3886	PH	0.0287	0.0676	16.8878	0.0200	15.0000	34°13'33.7"	101°06'26.0"
<i>Codonopsis nervosa</i>	Campanulaceae	3678	PH	0.5000	0.0916	7.1491	0.8000	15.1834	34°15'28.3"	101°04'57.7"
<i>Codonopsis pilosula</i>	Campanulaceae	2188	PH	0.3303	0.0595	7.4098	0.3800	9.6470	35°24'47.3"	102°56'16.7"
<i>Cyananthus hookeri</i>	Campanulaceae	3240	AH	0.2213	0.0573	8.1996	0.8600	11.3697	34°14'11.6"	103°11'46.5"
<i>Humulus lupulus</i>	Cannabaceae	2229	PH	1.3037	0.0106	3.1461	0.8800	7.7		

<i>Silene pterosperma</i>	Caryophyllaceae	2532	PH	0.3343	0.0411	6.3386	0.9667	4.9407	34°32'26.7"	103°35'06.0"
<i>Stellaria graminea</i>	Caryophyllaceae	3020	PH	0.2913	0.0513	9.0254	0.7333	20.4866	34°56'16.5"	102°52'53.0"
<i>Stellaria graminea</i>	Caryophyllaceae	3467	PH	0.2203	0.0338	5.9223	0.4533	8.3489	33°21'15.1"	102°08'52.1"
<i>Stellaria media</i>	Caryophyllaceae	3011	AH	0.4740	0.0425	6.0037	0.9467	13.2553	34°56'19.9"	102°53'18.7"
<i>Stellaria neglecta</i>	Caryophyllaceae	2172	AH	0.3473	0.0343	8.4929	0.6267	24.0453	35°24'55.4"	102°56'13.7"
<i>Stellaria parvumbellata</i>	Caryophyllaceae	3500	PH	0.0933	0.0398	10.9547	0.7333	5.3368	33°39'47.8"	101°52'09.4"
<i>Parnassia brevistyla</i>	Celastraceae	3061	PH	0.0517	0.0761	14.5545	0.3600	15.0388	34°34'26.4"	102°33'57.6"
<i>Parnassia oreophila</i>	Celastraceae	3080	PH	0.0463	0.0794	13.8756	0.6800	14.5636	34°35'07.6"	102°34'25.6"
<i>Parnassia trinervis</i>	Celastraceae	3530	PH	0.0673	0.0792	11.8729	0.4733	14.9206	33°39'47.6"	101°52'09.4"
<i>Circaeastris agrestis</i>	Circaeastraceae	3740	AH	0.4347	0.1319	7.9569	1.0000	8.7800	34°06.132'	101°53.948'
<i>Hypericum ascyron</i>	Clusiaceae	2081	PH	0.1490	0.1017	10.9635	0.1400	8.6706	34°03'36.8"	103°54'13.0"
<i>Hypericum attenuatum</i>	Clusiaceae	2532	PH	0.1183	0.0884	9.8614	0.0400	16.5000	34°32'26.7"	103°35'06.0"
<i>Convolvulus arvensis</i>	Convolvulaceae	2168	PH	7.5737	0.0445	2.4625	0.3000	8.6201	34°52'45.10"	103°43'22.7"
<i>Cuscuta europaea</i>	Convolvulaceae	2876	AH	0.3747	0.0150	5.9873	0.0200	14.5000	34°32'38.0"	103°09'00.7"
<i>Cuscuta japonica</i>	Convolvulaceae	2229	AH	7.5667	0.0431	2.4006	0.0400	3.5000	35°25'03.2"	102°49'16.1"
<i>Rhodiola kirilowii</i>	Crassulaceae	3740	PH	0.1340	0.1262	12.2245	0.8200	5.9238	34°06.132'	101°53.948'
<i>Carex chlorostachys</i>	Cyperaceae	3397	PH	0.4327	0.0754	5.4289	0.0200	25.0000	34°04'23.1"	101°43'34.1"
<i>Carex enervis</i>	Cyperaceae	3423	PH	0.6027	0.1227	7.8448	0.0533	19.3056	34°04'45.6"	101°44'11.8"
<i>Carex hubigena</i>	Cyperaceae	3472	PH	0.3623	0.0448	4.4807	0.9600	12.1983	34°20'12.9"	102°58'31.8"
<i>Carex przewalskii</i>	Cyperaceae	3028	PH	0.6537	0.0924	7.7930	0.1200	7.7778	34°33'49.5"	102°33'15.3"
<i>Carex przewalskii</i>	Cyperaceae	3417	PH	0.5203	0.0823	7.4687	0.3733	20.0526	33°57'96.8"	102°03.499'
<i>Carex scabirostris</i>	Cyperaceae	3824	PH	0.7683	0.0737	5.6566	0.4133	25.1953	34°13'33.7"	101°06'26.0"
<i>Kobresia kansuensis</i>	Cyperaceae	3740	PH	1.1700	0.1199	6.0038	0.7000	15.4445	34°06.132'	101°53.948'
<i>Scirpus triquetus</i>	Cyperaceae	2209	PH	1.0820	0.0982	5.7957	0.0200	27.0000	34°00'26.7"	103°24'06.3"
<i>Hippophae tibetana</i>	Elaeagnaceae	3623	PS	16.3883	0.0797	2.1275	0.6267	5.2632	34°15'28.3"	101°04'57.7"
<i>Euphorbia humifusa</i>	Euphorbiaceae	1718	AH	0.5480	0.0247	5.8130	0.9333	12.5080	33°59'56.3"	103°56'03.0"
<i>Astragalus adsurgens</i>	Fabaceae	2954	PH	1.5313	0.0749	5.3953	0.1000	12.5944	34°56'59.5"	102°52'59.8"
<i>Astragalus bhotanensis</i>	Fabaceae	2514	PH	1.3747	0.0400	4.6331	0.0600	10.6667	34°35'46.6"	103°28'48.6"
<i>Astragalus floridus</i>	Fabaceae	3397	PH	3.4737	0.0706	4.0132	0.0400	21.0000	34°04'23.1"	101°43'34.1"
<i>Astragalus melilotoides</i>	Fabaceae	2430	PH	2.5750	0.0730	3.4619	0.0933	11.1810	34°49'51.1"	103°40'40.0"
<i>Astragalus membranaceus</i>	Fabaceae	3554	PH	4.2180	0.0559	3.4780	0.0200	10.0000	33°41.846'	101°25.981'
<i>Astragalus pastori</i>	Fabaceae	3565	PH	2.3653	0.0471	3.8593	0.0267	9.6667	33°42.001'	101°25.981'
<i>Astragalus polycladus</i>	Fabaceae	3530	PH	1.1617	0.0509	4.9586	0.1267	10.5833	33°40'19.5"	101°51'51.3"
<i>Astragalus przewalskii</i>	Fabaceae	3050	PH	2.3980	0.0464	3.9824	0.0733	11.4167	34°56'16.5"	102°52'53.0"
<i>Astragalus tongolensis</i>	Fabaceae	3050	PH	1.7373	0.0609	4.6916	0.0200	13.0000	34°56'16.5"	102°52'53.0"
<i>Caragana densa</i>	Fabaceae	2168	PS	12.2474	0.0339	2.7346	0.7333	5.0517	34°52'45.10"	103°43'22.7"
<i>Caragana densa</i>	Fabaceae	3115	PS	14.2033	0.0316	2.1377	0.9667	5.5269	35°14'06.7"	102°49'58.7"
<i>Caragana erinacea</i>	Fabaceae	3565	PS	6.7047	0.0109	2.9205	0.8000	7.6434	33°42.001'	101°22.001'
<i>Caragana jubata</i>	Fabaceae	3886	PS	10.9090	0.0181	1.9192	0.2867	9.7037	34°13'33.7"	101°06'26.0"
<i>Hedysarum multijugum</i>	Fabaceae	2380	PH	3.6380	0.0862	3.6206	0.9400	12.4887	35°19'76.2"	102°47.137'
<i>Hedysarum polybotrys</i>	Fabaceae	2514	PH	4.3207	0.0616	3.4594	0.9067	6.6098	34°35'46.6"	103°28'48.6"
<i>Hedysarum tanguticum</i>	Fabaceae	3423	PH	2.1120	0.0546	4.3111	0.0200	20.0000	34°04'45.6"	101°44'11.8"
<i>Lespedeza daurica</i>	Fabaceae	2551	PH	2.7503	0.0828	3.5499	0.1333	13.3889	35°23'25.4"	102°51'23.9"
<i>Lespedeza floribunda</i>	Fabaceae	2251	PH	3.3063	0.0951	3.6112	0.2933	11.7632	35°23'25.4"	102°51'23.9"
<i>Lespedeza formosa</i>	Fabaceae	2081	PH	8.3577	0.0767	2.6166	0.4400	10.9902	34°03'36.8"	103°54'13.0"
<i>Medicago archiducis-nicolai</i>	Fabaceae	2976	PH	3.1167	0.0395	4.0153	0.0333	30.8889	34°46.179'	103°13.453'
<i>Medicago lupulina</i>	Fabaceae	2954	PH	2.0663	0.0490	3.4178	0.0333	11.5000	34°59'19.3"	102°46'38.6"
<i>Medicago lupulina</i>	Fabaceae	2081	PH	2.3047	0.0519	3.2293	0.0600	9.7500	34°03'36.8"	103°54'13.0"
<i>Medicago ruthenica</i>	Fabaceae	2926	PH	2.2160	0.0509	3.9930	0.3267	10.8121	34°27'40.1"	103°05'25.6"
<i>Medicago sativa</i>	Fabaceae	2380	PH	2.1037	0.0582	4.1667	0.2400	6.9881	35°19'76.2"	102°47.137'
<i>Melilotus albus</i>	Fabaceae	3036	AH	2.8603	0.0466	3.6272	0.4067	16.3516	34°08'55.3"	102°48'48.5"
<i>Melilotus officinalis</i>	Fabaceae	2160	AH	2.1497	0.0397	6.4397	0.0400	17.2222	35°24'47.3"	102°56'16.7"
<i>Oxytropis longipedunculata</i>	Fabaceae	3021	PH	1.5803	0.0487	4.0808	0.1867	14.8009	34°58'52.10"	102°53'51.7"
<i>Oxytropis ochrocephala</i>	Fabaceae	2954	PH	1.6283	0.0599	4.7478	0.1733	20.0767	34°56'59.5"	102°52'59.8"
<i>Oxytropis ochrocephala</i>	Fabaceae	3240	PH	2.1627	0.0488	3.7655	0.0533	14.9333	34°14'11.6"	103°11'46.5"
<i>Thermopsis lanceolata</i>	Fabaceae	2380	PH	23.4763	0.0294	1.7512	0.7800	11.7869	35°19'76.2"	102°47.137'
<i>Tibetia himalaica</i>	Fabaceae	2928	PH	2.2013	0.0241	3.5163	0.2667	13.1145	34°56'59.5"	102°52'59.8"
<i>Vicia amoena</i>	Fabaceae	2168	PH	14.9323	0.0021	1.6523	0.1267	13.6667	34°52'45.10"	103°43'22.7"
<i>Vicia angustifolia</i>	Fabaceae	2960	AH	21.4400	0.0036	1.4953	0.0600	16.5556	34°56'59.5"	102°52'59.8"
<i>Vicia cracca</i>	Fabaceae	2954	PH	11.3537	0.0081	2.0083	0.0933	9.0159	34°56'59.5"	102°52'59.8"
<i>Vicia multicaulis</i>	Fabaceae	2602	PH	19.5523	0.0565	2.3626	0.0533	13.0833	34°36.761'	103°20.229'
<i>Comastoma pedunculatum</i>	Gentianaceae	3903	AH	0.2073	0.0082	6.2544	0.0500	10.5833	34°04.211'	102°09.878'
<i>Comastoma pulmonarium</i>	Gentianaceae	2960	AH	0.2693	0.0056	6.1160	0.0267	11.8333	34°56'59.5"	102°52'59.8"
<i>Gentiana abaensis</i>	Gentianaceae	3020	AH	0.1043	0.0782	11.4531	0.1867	23.1037	34°56'16.5"	102°52'53.0"
<i>Gentiana aristata</i>	Gentianaceae	3903	AH	0.0917	0.0518	9.9137	0.0200	21.5000	34°04.211'	102°09.878'
<i>Gentiana dahurica</i>	Gentianaceae	2955	PH	0.2263	0.0636	8.3003	0.2667	20.1911	34°59'19.3"	102°46'38.6"
<i>Gentiana nubigena</i>	Gentianaceae	3712	PH	0.2817	0.0753	8.8961	0.2133	16.2826	34°20.770'	102°57.905'
<i>Gentiana officinalis</i>	Gentianaceae	3570	PH	0.2880	0.0786	8.1625	0.8667	24.7319	33°41.846'	101°25.981'
<i>Gentiana straminea</i>	Gentianaceae	3740	PH	0.2253	0.0674	7.9258	0.9267	11.5139	34°06.132'	101°53.948'
<i>Gentianopsis barbata</i>	Gentianaceae	2532	AH	0.0630	0.0221	10.0355	0.0733	26.8833	34°32'26.7"	103°35'06.0"
<i>Lomatogonium carinthiacum</i>	Gentianaceae	3903	AH	0.1533	0.0504	8.8387	0.0200	7.0000	34°04.211'	102°09.878'
<i>Lomatogonium macranthum</i>	Gentianaceae	3550	AH	0.0793	0.0266	11.8796	0.6867	11.2593	33°40'19.5"	101°51'51.3"
<i>Swertia diluta</i>	Gentianaceae	3028	AH	0.1373	0.0262	9.9706	0.4133	14.7532	34°33'49.5"	102°33'15.3"
<i>Swertia wolfgangiana</i>	Gentianaceae	2749	PH	0.1200	0.0570	10.8797	0.1133	13.1000	34°08'13.1"	103°10'32.4"
<i>Erodium pycnanthum</i>	Geraniaceae	2954	PH	4.7297	0.1437	3.3236	0.0400	23.3333	34°56'59.5"	102°52'59.8"
<i>Geranium sibiricum</i>	Geraniaceae	2960	PH	2.7280	0.0483	3.5126	0.0600	14.5556	34°56'59.5"	102°52'59.8"
<i>Geranium sibiricum</i>	Geraniaceae	2954	PH	2.8760	0.0466	3.5014	0.1333	16.3274	34°56'59.5"	102°52'59.8"
<i>Hypericum przewalskii</i>	Hypericaceae	2304	PH	0.2293	0.0872	8.4311	0.0400	23.5000	34°03'04.0"	103°14'00.3"
<i>Juncus thomsonii</i>	Juncaceae	3740	PH	0.0437	0.1115	18.0821	0.4000	9.9205	34°06.132'	101°53.948'
<i>Triglochin maritimum</i>	Juncaginaceae	3454	PH	0.3327	0.1383	5.3113	0.3333	10.3439	34°12.530'	101°16.833'
<i>Triglochin maritimum</i>	Juncaginaceae	3623	PH	0.4287	0.1509	8.3970	0.4600	10.4070	34°15'28.3"	101°04'57.7"
<i>Triglochin palustre</i>	Juncaginaceae	3113	PH	0.9827	0.1894	9.5785	0.9000	4.8889	35°06'22.7"	102°23'56.5"
<i>Amethystea caerulea</i>	Lamiaceae	2202	AH	0.5907	0.0347	5.1714	0.1800	32.2991	35°24'51.3"	102°56'11.5"
<i>Caryopteris tangutica</i>	Lamiaceae	2282	PH	0.6707	0.0827	4.5282	0.6033	12.2477	34°50'49.5"	103°45'02.5"
<i>Clinopodium urticifolium</i>	Lamiaceae	2160	PH	0.2887	0.0293	7.0003	0.8067	17.2927	35°24'47.3"	102°56'16.7"
<i>Clinopodium urticifolium</i>	Lamiaceae	2304	PH	0.3060	0.0387	7.5088	0.1067	22.3611	34°03'04.0"	103°14'00.3"
<i>Dracocephalum heterophyllum</i>	Lamiaceae	2304	AH	1.3357	0.0985	3.9488	0.2333	11.6259	34°03'04.0"	103°14'00.3"
<i>Dracocephalum tanguticum</i>	Lamiaceae	3467	PH	0.8663	0.0937	4.5020	0.2067	6.2566	33°21'15.1"	102°08'52.1"
<i>Dracocephalum tanguticum</i>	Lamiaceae	2976	PH	1.8270	0.0976	4.2653	0.2000	10.2831	34°46.179'	103°13.453'
<i>Elsholtzia densa</i>	Lamiaceae	3526	AH	1.0075	0.0292	4.4459	0.4200	2.3544	34°25'41.0"	102°17'37.3"
<i>Elsholtzia feddei</i>	Lamiaceae	2926	AH	0.2947	0.0553	7.1016	0.9067	4.7654	34°27'40.1"	103°05'25.6"
<i>Galeopsis bifida</i>	Lamiaceae	2954	AH	3.9477	0.0544	6.1725	0.4400	11.5376	34°56'59.5"	102°52'59.8"
<i>Leonurus japonicus</i>	Lamiaceae	2960	AH	1.0550	0.0490	3.8527	0.1467	4.7222	34°57'10.7"	102°54'19.0"
<i>Nepeta pratii</i>	Lamiaceae	3020	PH	1.1513	0.0720	4.9430	0.5800	11.0931	34°56'19.9"	102°53'18.7"
<i>Rabdosia henryi</i>	Lamiaceae	2081	PH	0.1773	0.0255	5.7075	0.2133	13.5604	34°03'36.8"	103°54'13.0"
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<i>Pedicularis polyodonta</i>	Orobanchaceae	3021	AH	0.5100	0.0514	5.4535	0.6400	8.4025	34°58'52.10"	102°53'51.7"
<i>Pedicularis semitorta</i>	Orobanchaceae	2954	AH	0.5553	0.0602	4.4656	0.0467	8.4444	34°56'59.5"	102°52'59.8"
<i>Pedicularis spicata</i>	Orobanchaceae	2188	AH	0.7467	0.0507	5.0750	0.0333	17.3333	35°24'47.3"	102°56'16.7"
<i>Pedicularis striata</i>	Orobanchaceae	2251	PH	1.1700	0.1009	4.9097	0.8333	17.4533	35°19'55.2"	102°46'58.8"
<i>Pedicularis szetschuanica</i>	Orobanchaceae	3530	AH	0.3810	0.0569	6.0950	0.0533	14.5278	33°40'15.7"	101°52'07.5"
<i>Pedicularis tristis</i>	Orobanchaceae	3500	PH	0.6697	0.0637	3.8943	0.0200	17.5000	33°22'16.2"	102°06'18.8"
<i>Corydalis adunca</i>	Papaveraceae	1755	PH	0.9973	0.0492	4.5712	0.0800	20.1250	33°59'34.4"	103°52'27.7"
<i>Corydalis ophiocarpa</i>	Papaveraceae	2691	PH	0.8087	0.0298	5.2049	0.1133	21.8611	34°09'25.6"	102°48'29.0"
<i>Macleaya microcarpa</i>	Papaveraceae	1962	PH	0.8033	0.0756	5.4811	0.7133	23.7810	33°59'06.9"	103°54'34.4"
<i>Mecopopsis horridula</i>	Papaveraceae	3903	PH	0.1780	0.0492	8.3683	0.6867	8.6560	34°04'21.1"	102°09'87.8"
<i>Callitriche palustris</i>	Plantaginaceae	3588	AH	0.1453	0.0574	7.8551	0.0400	20.5000	33°45'39.4"	101°43'59.3"
<i>Hippuris vulgaris</i>	Plantaginaceae	3036	PH	0.8883	0.0346	4.0333	0.6000	20.1680	34°08'55.3"	102°48'48.5"
<i>Plantago asiatica</i>	Plantaginaceae	3049	PH	0.2400	0.0836	8.7876	0.0267	22.0000	35°06'79.9"	102°24'94.0"
<i>Plantago depressa</i>	Plantaginaceae	2954	PH	0.3960	0.0877	7.7230	0.0733	9.2667	34°56'59.5"	102°52'59.8"
<i>Plantago major</i>	Plantaginaceae	2188	PH	0.2387	0.0852	9.4026	0.7933	11.1076	35°24'47.3"	102°56'16.7"
<i>Veronica biloba</i>	Plantaginaceae	3021	AH	0.6637	0.0659	5.7772	0.7267	11.6494	34°58'52.10"	102°53'51.7"
<i>Veronica ciliata</i>	Plantaginaceae	3903	PH	0.1567	0.1035	14.8095	0.6200	6.9029	34°04'21.1"	102°09'87.8"
<i>Veronica rockii</i>	Plantaginaceae	3020	PH	0.0440	0.0871	19.0574	0.8533	6.8746	34°56'16.5"	102°52'53.0"
<i>Plumbagella micrantha</i>	Plumbaginaceae	3445	AH	3.3460	0.0843	3.2360	0.4800	20.9167	34°12'12.5"	101°33'02.6"
<i>Achnatherum extremiorientale</i>	Poaceae	2430	PH	3.0613	0.1430	5.5645	0.9600	13.2500	34°49'51.1"	103°40'40.0"
<i>Achnatherum neibrans</i>	Poaceae	2768	PH	1.1573	0.1238	6.0342	0.9600	6.9123	35°13'12.81"	102°40'21.33"
<i>Achnatherum sibiricum</i>	Poaceae	2202	PH	2.7780	0.1376	5.2443	0.9000	11.0475	35°24'51.3"	102°56'11.5"
<i>Agrostis eriopalea</i>	Poaceae	2575	PH	0.1480	0.1520	8.1535	0.0200	12.0000	34°34'25.3"	103°29'07.8"
<i>Agrostis gigantea</i>	Poaceae	2514	PH	0.1330	0.0839	10.4220	0.9800	4.0455	34°35'46.6"	103°28'48.6"
<i>Agrostis perla</i>	Poaceae	2960	PH	0.1830	0.0756	10.2093	0.9000	6.8564	34°56'59.5"	102°52'59.8"
<i>Beckmannia syzigachne</i>	Poaceae	3468	AH	0.7403	0.0945	8.6440	0.6533	10.6548	33°22'16.2"	102°06'18.8"
<i>Bromus plurinodis</i>	Poaceae	3454	PH	3.1047	0.1793	5.7070	0.7800	11.8504	34°12'53.0"	101°16'83.3"
<i>Bromus sinensis</i>	Poaceae	3570	PH	3.7470	0.1558	4.6146	0.3667	11.0920	33°41'84.6"	101°25'98.1"
<i>Bromus tectorum</i>	Poaceae	3445	AH	2.9047	0.1768	6.9914	0.8800	12.3688	34°12'12.5"	101°33'02.6"
<i>Deschampsia littoralis</i>	Poaceae	3113	PH	0.3010	0.0814	8.6755	0.9800	4.0492	35°06'22.7"	102°23'56.5"
<i>Deyeuxia flavens</i>	Poaceae	3740	PH	0.4593	0.0978	7.8939	0.8400	11.6839	34°06'13.2"	101°53'94.8"
<i>Digitaria chrysolephara</i>	Poaceae	1962	AH	0.2743	0.1125	10.3091	0.9800	5.2386	33°59'06.9"	103°54'34.4"
<i>Digitaria ciliaris</i>	Poaceae	1962	AH	0.3153	0.0984	7.7959	0.7800	7.0165	33°59'06.9"	103°54'34.4"
<i>Digitaria sanguinalis</i>	Poaceae	2209	AH	0.3520	0.0986	7.7769	0.6533	12.2932	34°00'26.7"	103°24'06.3"
<i>Duthiea brachypodium</i>	Poaceae	3570	PH	2.7377	0.1379	3.2808	0.9467	5.8934	33°41'84.6"	101°25'98.1"
<i>Duthiea brachypodium</i>	Poaceae	2575	PH	10.7337	0.1418	3.4869	0.9400	8.1346	34°34'25.3"	103°29'07.8"
<i>Elymus atratus</i>	Poaceae	3932	PH	4.0073	0.1386	6.0557	0.9667	6.8812	34°06'36.5"	101°53'55.1"
<i>Elymus dahuricus</i>	Poaceae	2954	PH	1.5340	0.1440	5.2528	0.6400	7.7968	34°56'59.5"	102°52'59.8"
<i>Elymus nutans</i>	Poaceae	3550	PH	3.2823	0.1368	5.5631	0.9733	9.2258	33°40'15.7"	101°52'07.5"
<i>Elymus tangutorum</i>	Poaceae	2514	PH	3.6060	0.1363	5.4303	0.9333	5.1717	34°35'46.6"	103°28'48.6"
<i>Festuca ovina</i>	Poaceae	3824	PH	0.4300	0.1486	9.0280	0.1000	2.7333	34°13'33.7"	101°06'26.0"
<i>Festuca parvigluma</i>	Poaceae	3500	PH	0.5217	0.1356	11.0742	0.8667	6.8993	33°39'47.8"	101°52'09.4"
<i>Festuca sinensis</i>	Poaceae	2954	PH	0.6650	0.1417	8.4252	0.9733	12.0994	34°56'59.5"	102°52'59.8"
<i>Festuca sp</i>	Poaceae	3565	PH	0.1900	0.0832	12.3004	0.9200	5.8780	33°41'84.6"	101°25'98.1"
<i>Helictotrichon tibeticum</i>	Poaceae	3397	PH	2.2427	0.1311	5.2141	0.1867	16.1377	34°04'23.1"	101°43'34.1"
<i>Melica przewalskyi</i>	Poaceae	2081	PH	1.0960	0.1461	6.5118	0.8467	19.2959	34°03'56.8"	103°54'13.0"
<i>Oryzopsis munroi</i>	Poaceae	2976	PH	1.8640	0.0841	4.8124	0.4111	34°46'17.9"	103°13'45.3"	
<i>Oryzopsis tibetica</i>	Poaceae	2659	PH	1.3563	0.0907	4.9658	0.4400	10.9933	34°46'33.9"	103°38'05.8"
<i>Poa crymophila</i>	Poaceae	3550	PH	0.1110	0.0921	12.2226	0.8333	7.7744	33°40'15.7"	101°52'07.5"
<i>Poa poophagorum</i>	Poaceae	3000	PH	0.2273	0.1217	9.1077	0.9267	10.4684	34°58'30.5"	102°53'47.3"
<i>Poa poophagorum</i>	Poaceae	3550	PH	0.3047	0.1008	10.9486	0.9200	6.0514	33°40'19.5"	101°51'51.3"
<i>Ptilagrostis concinna</i>	Poaceae	3454	PH	0.6290	0.1295	9.6404	0.9933	18.5476	34°12'53.0"	101°16'83.3"
<i>Ptilagrostis dichotoma</i>	Poaceae	3903	PH	0.9070	0.1344	7.4965	0.8800	21.0268	34°04'21.1"	102°09'87.8"
<i>Roegneria breviglumis</i>	Poaceae	3496	PH	4.1483	0.1329	5.3500	0.8467	6.8586	33°26'56.5"	101°55'48.2"
<i>Roegneria kokonorica</i>	Poaceae	3417	PH	3.3543	0.1313	5.3704	0.7933	7.5225	33°57'96.8"	102°03'49.9"
<i>Roegneria kokonorica</i>	Poaceae	3582	PH	3.3543	0.0695	3.9436	0.3800	11.1508	33°42'00.1"	101°22'00.1"
<i>Roegneria parvigluma</i>	Poaceae	3454	PH	3.6897	0.1436	6.0947	0.4467	18.5721	34°12'53.0"	101°16'83.3"
<i>Roegneria varia</i>	Poaceae	2960	PH	3.4210	0.1495	7.0020	0.9933	11.2303	34°56'59.5"	102°52'59.8"
<i>Stephanachne nigrescens</i>	Poaceae	3824	PH	2.8080	0.1331	4.4457	0.9333	14.0429	34°13'33.7"	101°06'26.0"
<i>Stipa aliena</i>	Poaceae	3021	PH	4.0540	0.1457	4.9762	0.1467	20.9524	34°58'52.10"	102°53'51.7"
<i>Stipa baicalensis</i>	Poaceae	2768	PH	5.4447	0.1810	5.0615	0.4267	19.1081	35°13'12.81"	102°40'21.33"
<i>Stipa bungeana</i>	Poaceae	2768	PH	0.8447	0.1322	7.2332	0.2600	25.2193	35°13'12.81"	102°40'21.33"
<i>Stipa capillacea</i>	Poaceae	3550	PH	5.4830	0.1666	5.9377	0.3867	15.7233	33°40'15.7"	101°52'07.5"
<i>Stipa regeliana</i>	Poaceae	4070	PH	4.0185	0.1434	4.6687	0.6800	17.0732	34°05'44.7"	101°54'20.1"
<i>Trisetum clarkei</i>	Poaceae	3886	PH	0.2603	0.1679	10.7910	0.5133	21.6397	34°13'33.7"	101°06'26.0"
<i>Trisetum sibiricum</i>	Poaceae	3886	PH	0.4887	0.1642	10.4512	0.9667	14.1492	34°13'33.7"	101°06'26.0"
<i>Polemonium coeruleum</i>	Polemoniaceae	3011	PH	1.0290	0.0739	4.6344	0.6000	14.7232	34°56'19.9"	102°53'18.7"
<i>Portulaca oleracea</i>	Portulacaceae	1718	AH	0.1017	0.0355	9.1480	0.8400	6.9502	33°59'56.3"	103°56'03.0"
<i>Androsace erecta</i>	Primulaceae	2251	AH	0.0417	0.0281	11.8790	0.6600	21.2379	35°19'55.2"	102°46'58.8"
<i>Androsace mariae</i>	Primulaceae	3903	PH	0.5390	0.0653	6.0183	0.1667	14.8944	34°04'21.1"	102°09'87.8"
<i>Lysimachia barystachys</i>	Primulaceae	2202	AH	0.2560	0.0375	6.8146	0.6600	25.4470	35°24'51.3"	102°56'11.5"
<i>Pomatosace filicula</i>	Primulaceae	2954	AH	0.8110	0.0562	5.1907	0.0400	8.1677	34°56'59.5"	102°52'59.8"
<i>Primula gemmifera</i>	Primulaceae	3472	PH	0.2737	0.0542	6.3453	0.4333	11.9031	34°20'12.9"	102°58'31.8"
<i>Primula nutans</i>	Primulaceae	3036	PH	0.0640	0.0563	11.6585	0.3067	9.7042	34°08'55.3"	102°48'48.5"
<i>Primula orbicularis</i>	Primulaceae	3454	PH	0.1437	0.1060	9.5638	0.0467	18.4444	34°12'53.0"	101°16'83.3"
<i>Primula stenocalyx</i>	Primulaceae	3554	PH	0.0300	0.0746	18.2873	0.0200	18.0000	33°41'84.6"	101°25'98.1"
<i>Primula tangutica</i>	Primulaceae	3080	PH	0.1370	0.0649	8.1031	0.2600	18.1368	34°35'07.6"	102°34'25.6"
<i>Aconitum barbatum</i>	Ranunculaceae	2188	PH	2.9087	0.0314	2.5452	0.2200	30.0568	35°24'47.3"	102°56'16.7"
<i>Aconitum brunneum</i>	Ranunculaceae	3740	PH	1.8757	0.0589	3.2170	0.2600	19.8393	34°06'13.2"	101°53'94.8"
<i>Aconitum flavum</i>	Ranunculaceae	3712	PH	1.3143	0.0659	4.6619	0.0333	19.6667	34°20'77.0"	102°57'90.5"
<i>Aquilegia oxysepala</i>	Ranunculaceae	2188	PH	1.3293	0.0361	4.2917	0.0700	17.6500	35°24'47.3"	102°56'16.7"
<i>Clematis brevicaudata</i>	Ranunculaceae	2251	PS	0.7210	0.1030	5.4472	0.1933	27.0177	35°19'55.2"	102°46'58.8"
<i>Clematis clarkeana</i>	Ranunculaceae	2168	PS	0.8813	0.1285	6.2943	0.4333	20.8533	34°52'45.10"	103°43'22.7"
<i>Clematis tangutica</i>	Ranunculaceae	2380	PS	1.2233	0.1189	4.7595	0.8400	11.4327	35°19'76.2"	102°47'13.7"
<i>Clematis tangutica</i>	Ranunculaceae	3397	PS	1.6530	0.1433	5.6613	0.4067	15.3248	34°04'23.1"	101°43'34.1"
<i>Delphinium kamaonense</i>	Ranunculaceae	3550	PH	0.5853	0.0566	5.0971	0.1533	19.6453	33°40'15.7"	101°52'07.5"
<i>Delphinium sivanense</i>	Ranunculaceae	2430	PH	0.3370	0.0298	5.3205	0.8667	6.6336	34°49'51.1"	103°40'40.0"
<i>Delphinium Souliei</i>	Ranunculaceae	3500	PH	0.2370	0.0737	7.8678	0.9800	9.8829	33°39'47.8"	101°52'09.4"
<i>Thalictrum minus</i>	Ranunculaceae	2160	PH	1.3680	0.0829	3.8312	0.8400	19.3286	35°24'47.3"	102°56'16.7"
<i>Thalictrum przewalskii</i>	Ranunculaceae	3397	PH	1.2253	0.1572	7.2780	0.9667	19.4313	34°04'23.1"	101°43'34.1"
<i>Thalictrum rutifolium</i>	Ranunculaceae	3397	PH	1.0873	0.1232	4.7073	0.9600	21.9082	34°04'23.1"	101°43'34.1"
<i>Thalictrum uncatum</i>	Ranunculaceae	2659	PH	3.9017	0.1471	4.8323	0.0800	20.1667	34°46'33.9"	103°38'05.8"
<i>Ribes alpestre</i>	Rubiaceae	2768	PS	1.9253	0.0633	3.5202	0.0200	26.0000	35°13'12.81"	102°40'21.33"
<i>Dicranostigma leptopodium</i>	Rosaceae	3886	PH	0.6107	0.0740	19.5273	0.4267	17.2883	34°13'33.7"	101°06'26.0"
<i>Geum alepicum</i>	Rosaceae	2205	PH	1.6457	0.1643	7.7697	0.9733	15.6791	35°25'08.3"	102°56'54.6"
<i>Potentilla glabra</</i>										

<i>Galium boreale</i>	Rubiaceae	2202	PH	0.3097	0.0143	5.3484	0.4733	11.5154	35°24'51.3"	102°56'11.5"
<i>Galium verum</i>	Rubiaceae	3011	PH	0.8327	0.0102	4.0345	0.9267	18.0946	34°56'19.9"	102°53'18.7"
<i>Salix brachista</i>	Salicaceae	3929	PS	0.0210	0.0847	10.1152	0.7400	7.5622	34°18.668'	102°58.271'
<i>Salix oritrepha</i>	Salicaceae	3454	PS	0.2050	0.0910	9.2787	0.8600	7.3947	34°12.530'	101°16.833'
<i>Salix paraplesia</i>	Salicaceae	3479	PS	0.2670	0.0907	9.9140	0.8067	7.3842	33°26'38.1"	101°56'09.40"
<i>Salix variegata</i>	Salicaceae	3479	PS	0.1885	0.1156	10.0646	0.8300	6.4379	33°26'38.1"	101°56'09.40"
<i>Astilbe chinensis</i>	Saxifragaceae	2168	PH	0.0430	0.1424	18.0684	0.7400	9.7694	34°58'06.0"	103°43'01.9"
<i>Saxifraga egregia</i>	Saxifragaceae	3061	PH	0.0213	0.0533	14.7312	0.0800	18.3889	34°34'26.4"	102°33'57.6"
<i>Saxifraga heleonastes</i>	Saxifragaceae	3530	PH	0.0747	0.0474	14.6265	0.5867	17.4788	33°39'47.8"	101°52'09.4"
<i>Saxifraga melanocentra</i>	Saxifragaceae	3712	PH	0.0447	0.0726	14.0277	0.0733	9.8444	34°20'77.0'	102°57.905'
<i>Saxifraga montana</i>	Saxifragaceae	3903	PH	0.0333	0.0442	13.7955	0.1267	18.3651	34°04'21.1'	102°09.878'
<i>Buddleja alternifolia</i>	Scrophulariaceae	1879	PS	0.0530	0.1139	3.1801	0.6200	9.9896	34°06'54.7"	103°25'34.7"
<i>Phtheirospermum japonicum</i>	Scrophulariaceae	2202	AH	0.1987	0.0625	11.1160	0.9600	5.8898	35°24'51.3"	102°56'11.5"
<i>Scrophularia incisa</i>	Scrophulariaceae	2380	PH	0.3850	0.0815	6.5826	0.6067	9.5582	35°19.762'	102°47.137'
<i>Anisodus tanguticus</i>	Solanaceae	3036	PH	8.3430	0.0645	2.5850	0.5800	17.5783	34°34'26.4"	102°33'57.6"
<i>Datura stramonium</i>	Solanaceae	2252	AH	5.1320	0.0642	2.9460	0.0867	11.0778	34°00'33.3"	103°24'10.3"
<i>Hyoscyamus niger</i>	Solanaceae	2202	AH	0.5080	0.0541	5.4079	0.1933	26.5333	35°24'51.3"	102°56'11.5"
<i>Solanum alatum</i>	Solanaceae	2172	AH	0.8960	0.0809	5.7020	0.9667	11.9305	35°24'55.4"	102°56'13.7"
<i>Pilea pumila</i>	Urticaceae	2691	AH	0.2350	0.0893	9.3195	0.9267	6.9958	34°09'25.6"	102°48'29.0"
<i>Urtica cannabina</i>	Urticaceae	2251	PH	0.5873	0.1003	7.5367	0.7733	17.9459	35°19'55.2"	102°46'58.8"
<i>Urtica triangularis</i>	Urticaceae	3011	PH	0.2533	0.0484	4.8415	0.0467	14.5556	34°56'19.9"	102°53'18.7"
<i>Viola rockiana</i>	Violaceae	3475	PH	0.0410	0.1147	17.9644	0.7800	4.7447	34°14'22.2"	101°07'43.6"
<i>Peganum multisectum</i>	Zygophyllaceae	1755	PH	5.7533	0.0612	2.0379	0.6533	4.6004	33°59'34.4"	103°52'27.7"

Supplementary Table A2. Trait means and standard errors (SE) for the twenty-two species collected from two elevations, shown for each elevation. SVR = Surface area:volume ratio; GP = germination proportion; GT = germination time (days since planting).

Species	Family	Elevation (m)	GP		GT(d)		Mass(mg)		SVR(cm ³)		Shape	
			Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
<i>Rumex patientia</i>	Amaranthaceae	2960	1.000	0.000	3.720	0.203	2.566	0.019	3.068	0.106	0.033	0.001
<i>Rumex patientia</i>	Amaranthaceae	3468	0.860	0.023	4.031	0.263	2.543	0.023	3.541	0.084	0.066	0.003
<i>Allium rude</i>	Amaryllidaceae	3496	0.907	0.053	6.329	0.163	0.433	0.067	5.375	0.103	0.090	0.006
<i>Allium rude</i>	Amaryllidaceae	3903	0.927	0.007	4.424	0.273	0.536	0.023	4.639	0.141	0.073	0.005
<i>Angelica nitida</i>	Apiaceae	2304	0.707	0.085	24.144	0.348	1.766	0.071	2.863	0.015	0.109	0.001
<i>Angelica nitida</i>	Apiaceae	3550	0.507	0.077	28.911	0.348	1.826	0.077	5.594	0.426	0.120	0.001
<i>Bupleurum commelynoideum</i>	Apiaceae	2229	0.913	0.029	20.382	0.668	1.001	0.004	4.490	0.138	0.091	0.004
<i>Bupleurum commelynoideum</i>	Apiaceae	3454	0.547	0.094	24.532	0.562	1.059	0.078	4.828	0.124	0.092	0.005
<i>Carum buriaticum</i>	Apiaceae	2205	0.053	0.007	34.222	0.401	0.880	0.068	5.292	0.172	0.079	0.003
<i>Carum buriaticum</i>	Apiaceae	2928	0.227	0.070	16.611	0.796	0.676	0.043	4.873	0.243	0.103	0.003
<i>Anaphalis aureopunctata</i>	Asteraceae	2081	0.947	0.007	11.898	0.819	0.071	0.002	12.412	0.297	0.071	0.006
<i>Anaphalis aureopunctata</i>	Asteraceae	3824	1.000	0.000	9.893	0.205	0.073	0.003	15.336	0.400	0.088	0.004
<i>Heteropappus gouldii</i>	Asteraceae	2954	0.447	0.066	10.995	0.678	0.225	0.016	11.170	0.346	0.119	0.002
<i>Heteropappus gouldii</i>	Asteraceae	3397	0.940	0.031	11.547	1.171	0.319	0.028	11.113	0.271	0.133	0.003
<i>Leontopodium haplophylloides</i>	Asteraceae	3011	0.907	0.018	11.752	0.518	0.091	0.003	14.734	0.850	0.113	0.007
<i>Leontopodium haplophylloides</i>	Asteraceae	3515	0.960	0.007	9.664	2.860	0.119	0.003	13.032	0.308	0.099	0.003
<i>Saussurea parviflora</i>	Asteraceae	2514	0.867	0.018	7.782	1.099	1.317	0.032	4.528	0.087	0.098	0.003
<i>Saussurea parviflora</i>	Asteraceae	3062	0.280	0.070	14.575	2.447	1.205	0.016	6.005	0.384	0.128	0.003
<i>Saussurea sylvatica</i>	Asteraceae	3113	0.907	0.037	6.369	0.116	1.309	0.057	4.945	0.162	0.106	0.004
<i>Saussurea sylvatica</i>	Asteraceae	3886	0.520	0.072	9.796	0.913	1.973	0.293	4.166	0.124	0.124	0.003
<i>Taraxacum maurocarpum</i>	Asteraceae	2977	0.723	0.074	5.179	0.173	0.592	0.031	6.654	0.973	0.134	0.002
<i>Taraxacum maurocarpum</i>	Asteraceae	3550	0.947	0.029	8.385	0.290	0.721	0.010	7.026	0.144	0.149	0.002
<i>Draba eriopoda</i>	Brassicaceae	3020	0.013	0.007	3.536	2.500	0.133	0.001	16.979	0.720	0.103	0.003
<i>Draba eriopoda</i>	Brassicaceae	3500	0.527	0.047	7.453	0.307	0.087	0.002	11.527	0.221	0.076	0.002
<i>Stellaria graminea</i>	Caryophyllaceae	3020	0.733	0.027	20.487	0.573	0.291	0.014	9.025	0.181	0.051	0.002
<i>Stellaria graminea</i>	Caryophyllaceae	3467	0.453	0.047	8.349	1.171	0.220	0.006	5.922	0.080	0.034	0.001
<i>Carex przewalski</i>	Cyperaceae	3028	0.120	0.023	7.778	2.301	0.654	0.072	7.793	0.243	0.092	0.004
<i>Carex przewalski</i>	Cyperaceae	3417	0.373	0.007	20.053	0.053	0.520	0.039	7.469	0.146	0.082	0.002
<i>Caragana densa</i>	Fabaceae	2597	0.733	0.029	5.052	0.428	12.247	3.230	2.735	0.084	0.034	0.003
<i>Caragana densa</i>	Fabaceae	3115	0.967	0.007	5.527	0.516	14.203	0.407	2.138	0.067	0.032	0.006
<i>Medicago lupulina</i>	Fabaceae	2081	0.040	0.023	11.500	4.856	2.305	0.066	3.229	0.044	0.052	0.001
<i>Medicago lupulina</i>	Fabaceae	2955	0.033	0.007	11.500	8.411	2.066	0.026	3.418	0.076	0.049	0.003
<i>Dracocephalum tanguticum</i>	Lamiaceae	2976	0.200	0.042	10.283	1.124	1.827	0.067	4.265	0.123	0.098	0.004
<i>Dracocephalum tanguticum</i>	Lamiaceae	3467	0.207	0.058	6.257	1.670	0.866	0.090	4.502	0.071	0.094	0.003
<i>Epilobium angustifolium</i>	Onagraceae	2691	0.227	0.013	20.628	1.051	0.141	0.001	11.320	0.312	0.096	0.003
<i>Epilobium angustifolium</i>	Onagraceae	3500	0.147	0.013	13.556	1.033	0.042	0.004	14.868	0.487	0.108	0.004
<i>Duthiea brachypodium</i>	Poaceae	2575	0.940	0.023	8.135	0.381	10.734	0.158	3.487	0.144	0.142	0.002
<i>Duthiea brachypodium</i>	Poaceae	3554	0.947	0.018	5.893	0.046	2.738	0.125	3.281	0.087	0.138	0.002
<i>Poa poophagorum</i>	Poaceae	3000	0.927	0.007	10.468	0.360	0.227	0.020	9.108	0.335	0.122	0.003
<i>Poa poophagorum</i>	Poaceae	3550	0.920	0.012	6.051	0.046	0.305	0.034	10.949	0.113	0.101	0.003
<i>Clematis tangutica</i>	Ranunculaceae	2380	0.840	0.020	11.433	0.142	1.223	0.045	4.760	0.220	0.119	0.004
<i>Clematis tangutica</i>	Ranunculaceae	3397	0.407	0.044	15.325	0.361	1.653	0.049	5.661	0.273	0.143	0.005
<i>Potentilla saundersiana</i>	Rosaceae	2960	0.387	0.085	12.974	0.232	0.269	0.010	6.539	0.172	0.048	0.002
<i>Potentilla saundersiana</i>	Rosaceae	3451	0.313	0.097	22.816	2.166	0.219	0.011	6.907	0.226	0.041	0.002

Supplementary Table A3. Phylogenetic signal (Pagel's λ and Blomberg's K and their associated P-values from a randomization test) for each trait, using a phylogenetic tree with branch lengths set to unity. Seed mass values were \log_{10} -transformed; SVR = surface area:volume ratio (\log_{10} -transformed); GP = germination proportion (logit-transformed); GT = germination time (ln-transformed). Significant *P*-values (*P* < 0.05) are indicated in boldface.

Traits	n	Pagel's λ (<i>P</i> -values)	Blomberg's K (<i>P</i> -values)
Mass	442	0.8973 (3.49×10^{-50})	0.2226 (1×10^{-4})
Shape	442	0.8907 (9.75×10^{-78})	0.3136 (1×10^{-4})
SVR	442	0.8982 (6.95×10^{-51})	0.1979(1×10^{-4})
GP	442	0.5454 (1.41×10^{-20})	0.0650 (0.023)
GT	442	0.5698 (7.56×10^{-20})	0.1080 (2×10^{-4})

Supplementary Table A4. Results of Analyses of Variance to test for life-history differences in seed traits across elevation, for life cycle was divided two categories: Annual and Perennial. Mass (\log_{10} -transformed); SVR = surface area:volume ratio (\log_{10} -transformed); GP = germination proportion (logit-transformed); GT = germination time (ln-transformed).

Traits	Elevation			Life cycle			Life cycle \times Elevation		
	Df	F-value	<i>P</i> -value	Df	F-value	<i>P</i> -value	Df	F-value	<i>P</i> -value
Mass	1	10.67	0.001	1	10.67	0.001	1	0.11	0.74
Shape	1	4.62	0.032	1	27.08	3.0×10^{-7}	1	0.00	0.999
SVR	1	18.64	2.0×10^{-5}	1	5.26	0.02	1	0.82	0.36
GP	1	0.79	0.38	1	2.29	0.13	1	3.00	0.08
GT	1	13.85	2.0×10^{-4}	1	11.87	6.2×10^{-4}	1	0.31	0.58

Supplementary Table A5. Results of Multiple Linear Regression ($R^2=0.064$, $P=2.23\times 10^{-5}$) and Phylogenetic Generalized Linear Model ($R^2=0.057$, $P=1.07\times 10^{-5}$) to test whether seed traits of 442 species-sites predict the elevation (dependent variable) from which species were collected. Mass values were \log_{10} -transformed; SVR = surface area:volume ratio (\log_{10} -transformed); GP = germination proportion (logit-transformed); GT = germination time (ln-transformed). Significant P-values are indicated in bold type. Elevation is a continuous dependent variable.

Predictor variable	Multiple Linear Regression Model				Phylogenetic Generalized Linear Model			
	Coefficient	Df	F	<i>P</i>	Coefficient	Df	F	<i>P</i>
Mass	-0.028	1	10.94	0.0010	0.010	1	11.10	9.4×10⁻⁴
SVR	0.199	1	8.50	0.0037	0.187	1	5.62	0.0182
Shape	0.049	1	0.25	0.6129	0.042	1	0.12	0.7319
GP	-0.082	1	0.27	0.6067	-0.100	1	0.32	0.5709
GT	-0.173	1	12.38	0.0005	-0.183	1	12.56	4.4×10⁻⁴

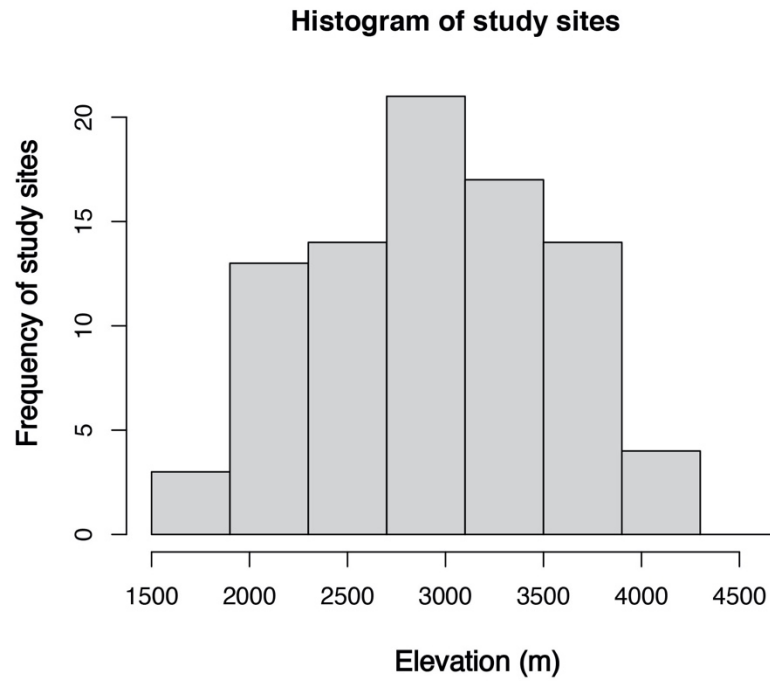
Supplementary Table A6. Results of Analysis of Variance to test whether seed morphological traits of 442 species-sites influence germination, and whether that effect differs across elevations. Mass values were log₁₀-transformed; SVR = surface area:volume ratio (log₁₀-transformed); GP = germination proportion (logit-transformed); GT = germination time (ln-transformed).

	Df	GP		GT	
		F-value	P-value	F-value	P-value
Elevation	1	0.57	0.4518	13.85	0.0002
Mass	1	7.72	0.0057	5.02	0.0255
SVR	1	30.80	0.0000	4.20	0.0409
Shape	1	8.54	0.0037	0.47	0.4911
Elevation:Mass	1	3.38	0.0669	1.26	0.2623
Elevation:SVR	1	0.39	0.5303	0.28	0.5946
Mass:SVR	1	1.11	0.2931	3.79	0.0521
Elevation:Shape	1	2.19	0.1401	0.02	0.8850
Mass:Shape	1	0.01	0.9163	5.72	0.0172
SVR:Shape	1	1.25	0.2646	0.07	0.7949
Elevation:Mass:SVR	1	0.30	0.5866	0.85	0.3566
Elevation:Mass:Shape	1	4.17	0.0418	0.05	0.8157
Elevation:SVR:Shape	1	0.20	0.6520	0.18	0.6692
Mass:SVR:Shape	1	0.32	0.5722	1.53	0.2166
Elevation:Mass:SVR:Shape	1	0.00	0.9991	0.49	0.4841

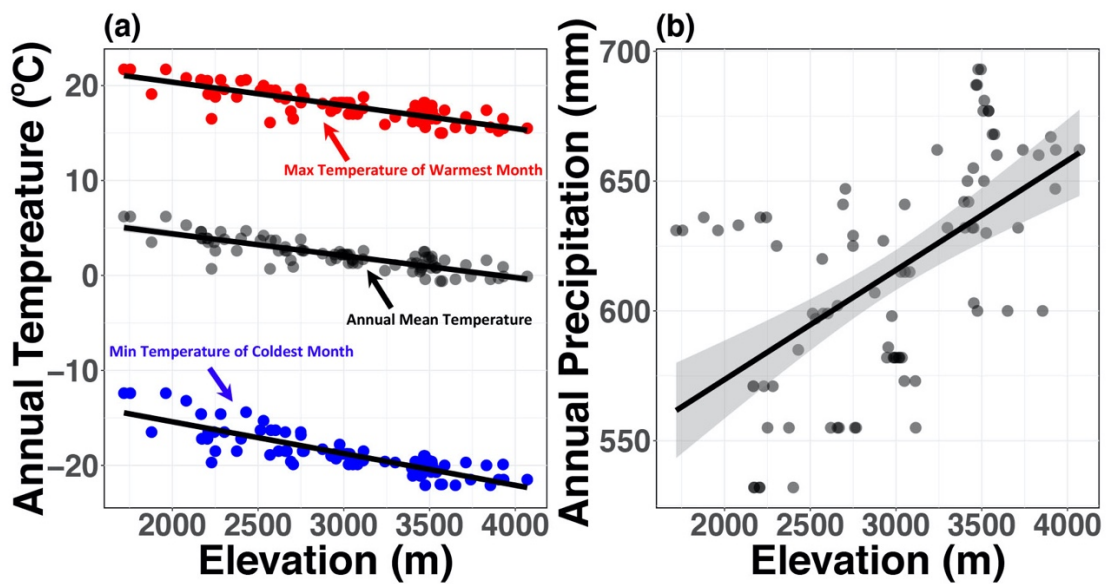
Supplementary Table A7. Results of Phylogenetic Generalized Linear Model to test whether seed morphological traits of 442 species-sites predict germination, and whether that effect differs across elevations. Mass values were log₁₀-transformed; SVR = surface area:volume ratio (log₁₀-transformed); GP = germination proportion (logit-transformed); GT = germination time (ln-transformed). The analysis controls for phylogenetic relationships across 442 species-sites.

	Df	GP		GT	
		F-value	<i>P</i> -value	F-value	<i>P</i> -value
Elevation	1	0.06	0.8145	11.36	0.0008
Mass	1	3.13	0.0774	3.59	0.0588
SVR	1	5.30	0.0218	0.17	0.6824
Shape	1	0.002	0.9623	0.84	0.3589
Elevation:Mass	1	1.70	0.1924	0.05	0.8264
Elevation:SVR	1	0.94	0.3337	0.05	0.8299
Mass:SVR	1	2.97	0.0854	5.52	0.0193
Elevation:Shape	1	0.22	0.6360	0.61	0.4366
Mass:Shape	1	0.001	0.9737	4.85	0.0282
SVR:Shape	1	0.01	0.9411	0.05	0.8157
Elevation:Mass:SVR	1	0.20	0.6552	0.21	0.6468
Elevation:Mass:Shape	1	3.34	0.0685	0.08	0.7786
Elevation:SVR:Shape	1	0.02	0.8811	0.06	0.8114
Mass:SVR:Shape	1	0.31	0.5753	2.53	0.1123
Elevation:Mass:SVR:Shape	1	0.01	0.9038	0.02	0.8879

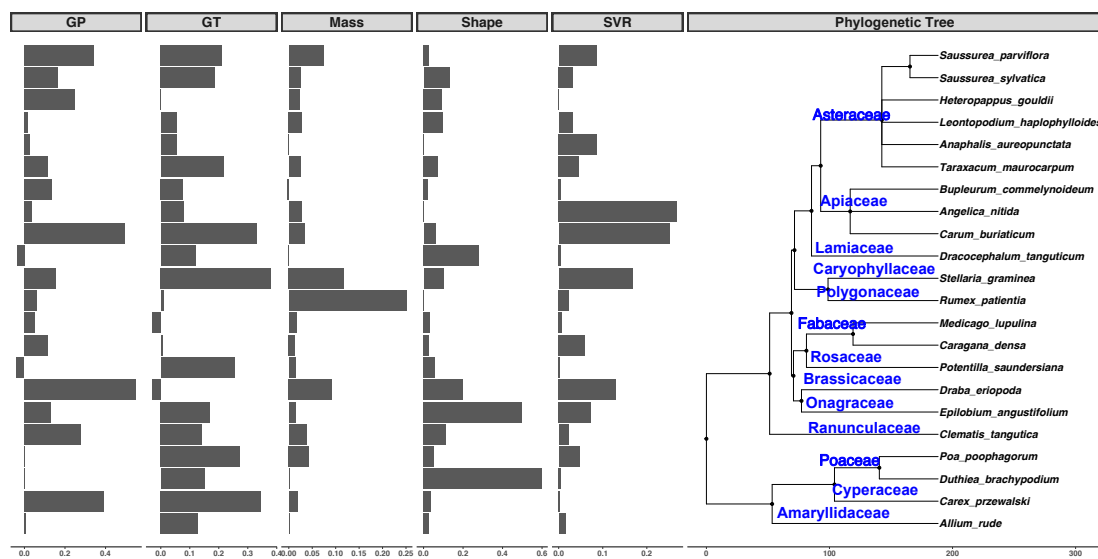
Supplementary Figure A1. Histogram of 86 study sites across the elevation.



Supplementary Figure A2. Linear regression analysis of annual temperature and precipitation as a function of elevation across 86 study sites. (a) red points show the maximum temperature of the warmest month at different elevations ($\beta = -0.0024$, $R^2 = 0.70$, $P < 2 \times 10^{-16}$); black points show the annual mean temperature at different elevations ($\beta = -0.0023$, $R^2 = 0.70$, $P < 2 \times 10^{-16}$); blue points show the minimum temperature of the coldest month at different elevations ($\beta = -0.0033$, $R^2 = 0.72$, $P < 2 \times 10^{-16}$). (b) black points show the annual precipitation at different elevations ($\beta = 6.90 \times 10^{-5}$, $R^2 = 0.31$, $P < 1.7 \times 10^{-8}$). Annual precipitation values were ln-transformed in linear regression analysis. The data of annual temperature and precipitation in the 86 study sites was collected from the WorldClim database (<http://www.worldclim.org/>) using the R package “raster” (Hijmans and van Etten 2016).



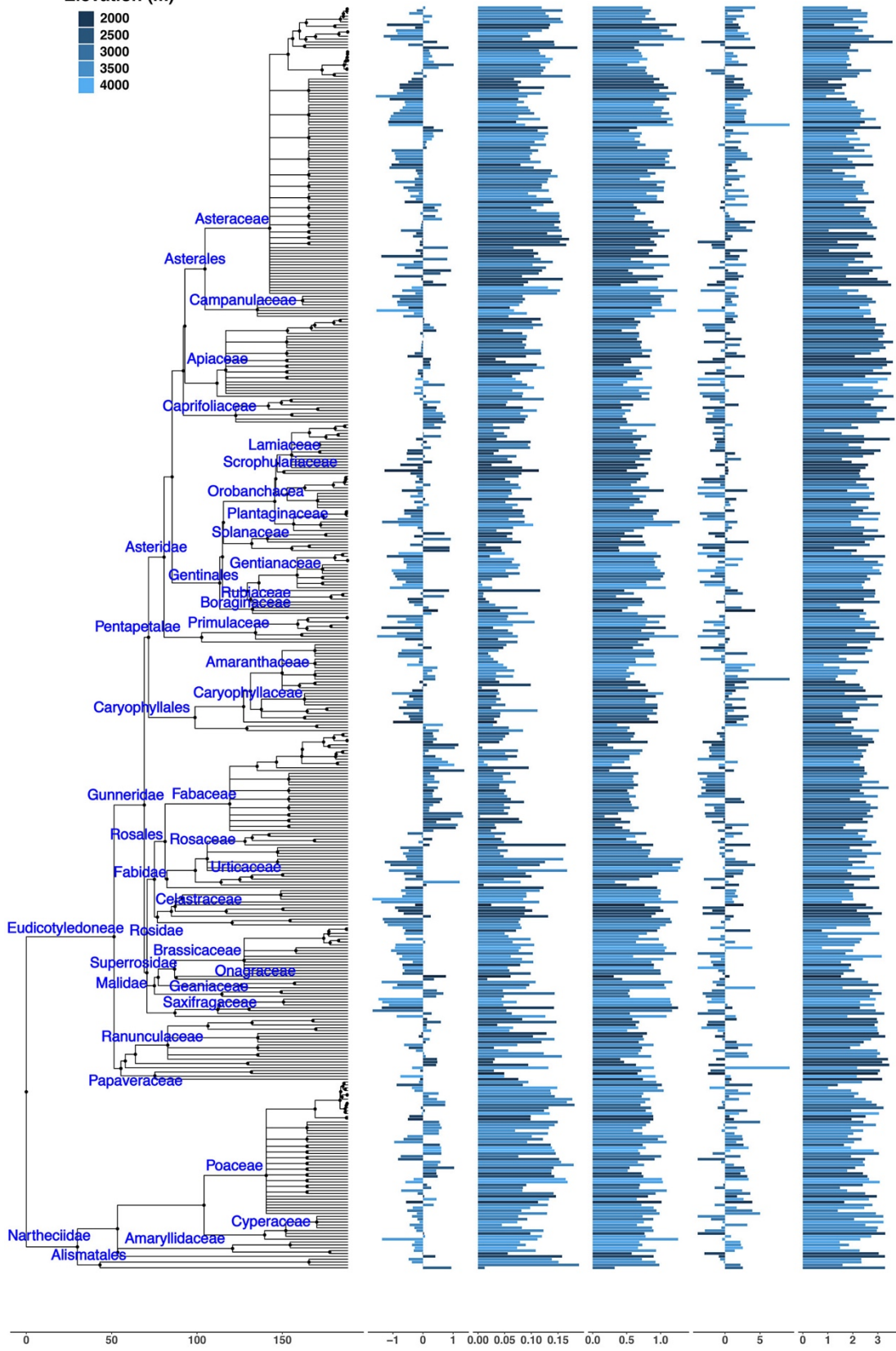
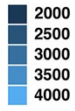
Supplementary Figure A3. Variation in seed traits across elevation within 22 species collected at two elevations. The phylogenetic tree is shown on the right, and the Environmental Coefficient of Variation (ECV) is shown for each trait on the left. The ECV measures the magnitude of the effect of elevation on variation in seed traits. Positive values indicate that species vary more across elevation than within elevation. Negative values indicate the opposite. Mass values were \log_{10} -transformed; SVR = surface area:volume ratio (\log_{10} -transformed); GP = germination proportion (logit-transformed); GT = germination time (ln-transformed).



Supplementary Figure A4. Visualization of the distribution of traits across elevation gradient and phylogeny (n = 408 species). The phylogenetic tree represents the evolutionary relationships among the 408 species studied, generated from the megatree of Zanne *et al.* (2014) using Phylomatic version 3.0 (Webb and Donoghue, 2005) and R package ‘ggtree’ (Yu *et al.* 2017). Seed mass values were log₁₀-transformed; SVR = surface area:volume ratio (log₁₀-transformed); GP = germination proportion (logit-transformed); GT = germination time (ln-transformed).

Phylogenetic Tree	Mass	Shape	SVR	GP	GT
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Elevation (m)



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