

Table S1. Summary of genomic data collected for each individual. Specimen IDs refer to University of Alaska Museum Mammalogy Collection catalog number (UAM) or sample IDs (Hik = David Hik lab, University of Alberta Edmonton) for individuals used in this study. Shown are the raw count of reads from the Illumina run and the number of reads after processing for quality control (i.e., after excluding reads with low quality scores and ambiguous barcodes), as well as the number of reads analyzed with Stacks to identify homologous loci. Starred individuals were excluded from analyses because they had too few reads.

Population	Specimen ID	Raw read count	Post quality control	Analyzed reads	Percentage of raw reads used
Allie's Valley	UAM 102432	2200193	2057166	1759078	80.0
Allie's Valley	UAM 102422	1586907	1487171	1321899	83.3
Allie's Valley	UAM 102435	1267564	1138753	1010043	79.7
Allie's Valley	UAM 102438	1089077	1000485	882573	81.0
Allie's Valley	UAM 102432	1195011	1033694	954753	79.9
Allie's Valley	UAM 102423	510333	451607	350175	68.6
Allie's Valley	UAM 102434	1179276	1114169	995286	84.4
Allie's Valley	UAM 102424	1327323	1216267	1053178	79.3
Anchorage	UAM 102564	774418	753014	523482	67.6
Anchorage	UAM 102565	1126031	1065314	962098	85.4
Anchorage	UAM 102566	3080176	2335737	2560219	83.1
Anchorage	UAM 102567	1646939	1553367	1340924	81.4
Anchorage	UAM 102568	1945449	1849269	1657894	85.2
Anchorage	UAM 64363	420780	381384	278705	66.2
Crescent Creek	UAM 58204	844108	786027	697267	82.6
Crescent Creek	UAM 58205	1166926	1081539	982342	84.2
Crescent Creek	UAM 58213	1876591	1755355	1637374	87.3
Crescent Creek	UAM 58206	1984311	1742179	1674900	84.4
Crescent Creek	UAM 58211	1605214	1410616	1277115	79.6
Crescent Creek	UAM 58212	1771977	1520730	1446598	81.6
Crescent Creek	UAM 58208	1627884	1418606	1305664	80.2
Denali Highway	UAM 102482	1621668	1568650	1372480	84.6
Denali Highway	UAM 102502	621042	564908	494274	79.6
Denali Highway	UAM 102507	1157720	1107975	958350	82.8
Denali Highway	UAM 102498	1072082	961926	838466	78.2
Denali Highway	UAM 102497	1056373	1008968	860030	81.4
Denali Highway	UAM 69346	1067428	969240	844903	79.2
Eagle Summit	UAM 67030	2418283	2159229	2135761	88.3
Eagle Summit	UAM 63938	858050	830613	709030	82.6
Eagle Summit	UAM 63931	1147774	1090189	908065	79.1
Eagle Summit	UAM 63935	1367964	1299827	1150204	84.1
Eagle Summit	UAM 63932	1456907	1369052	1229103	84.4

Eagle Summit	UAM 63936	923332	867221	769652	83.4
Jawbone Lake	UAM 88534	2267399	1992588	1921927	84.8
Jawbone Lake	UAM 88532	783793	733337	579604	73.9
Lake Kenibuna	UAM 100776	1104630	1027784	935020	84.6
Lake Kenibuna	UAM 100849	1278694	1197040	1078639	84.4
Lake Kenibuna	UAM 100867	1432377	1279108	1156776	80.8
Lake Kenibuna	UAM 100773	1564207	1427745	1276077	81.6
Lake Kenibuna	UAM 100847	745895	699382	591534	79.3
Lake Kenibuna	UAM 100839	1259324	1187048	1027264	81.6
Lake Kenibuna	UAM 100795	1213196	1163741	1008900	83.2
Lake Kenibuna	UAM 100796	1265215	1183067	1047871	82.8
Pika Camp*	Hik 431	75194	67780	16611	22.1
Pika Camp	Hik 441	1778613	1661328	1544253	86.8
Pika Camp	Hik 446	1163164	947935	911105	78.3
Pika Camp*	Hik 492	2101	1310	81	3.9
Pika Camp	Hik 1355	892219	860407	717744	80.4
Pika Camp	Hik 1555	1199435	1111021	1007959	84.0
Pika Camp	Hik 1628	1606076	1533478	1412937	88.0
Pika Camp	Hik 1649	1972543	1823294	1673905	84.9
Rock Lake	UAM 56093	1521653	1361724	1256627	82.6
Rock Lake	UAM 56066	1689457	1529948	1388376	82.2
Rock Lake	UAM 56814	768798	717441	614318	79.9
Rock Lake	UAM 56817	1264786	1142843	1081822	85.5
Rock Lake	UAM 102366	1587067	1370691	1314836	82.8
Rock Lake	UAM 102416	2071655	1911803	1694215	81.8
Rock Lake	UAM 56094	1943258	1790527	1609661	82.8

Table S2. Prior values used for demographic inference in FASTSIMCOAL2.

Prior	Value	Reference
nuclear mutation rate	2.2 E -9 per base pair per year	Kumar and Subramanian 2002
generation time of pika	2 years	Peacock 1997
θ_π	0.001	estimated from sequence data in Stacks
N_{anc}	114000	= $\theta_\pi / 2 / (\text{mutation rate} \times \text{generation time})$

Table S3. Population pairwise F_{ST} values from Arlequin. Significant values ($P < 0.05$) are shown in bold.

	Allie's Valley	Anchorage	Crescent Lake	Denali Hwy	Eagle Summit	Jawbone Lake	Lake Kenibuna	Pika Camp
Anchorage	0.313							
Crescent Lake	0.351	0.400						
Denali Hwy	0.330	0.350	0.281					
Eagle Summit	0.473	0.543	0.234	0.420				
Jawbone Lake	0.495	0.611	0.303	0.458	0.493			
Lake Kenibuna	0.475	0.402	0.494	0.449	0.622	0.715		
Pika Camp	0.734	0.799	0.718	0.751	0.775	0.764	0.836	
Rock Lake	0.289	0.436	0.342	0.355	0.433	0.404	0.536	0.616

Table S5. Loadings (eigenvectors) for the first two principle components in relation to the 19 bioclimatic variables (see Fig. 6 and Methods). Values closer to 0 indicate little relationship between scores and bioclimatic variables. Values closer to 1 or -1 indicate strong positive or negative correlation, respectively, with the respective bioclimatic variable.

Bioclimatic variable	PC1	PC2
1	-0.012	0.027
2	0.003	-0.001
3	-0.001	0.001
4	0.990	0.133
5	0.003	0.029
6	-0.027	0.028
7	0.030	0.002
8	0.007	0.006
9	-0.023	0.056
10	0.001	0.028
11	-0.024	0.024
12	-0.115	0.866
13	-0.015	0.123
14	-0.005	0.036
15	0.002	-0.004
16	-0.041	0.324
17	-0.018	0.119
18	-0.017	0.110
19	-0.036	0.279