

Supplementary Table 1. Summary data for all abalone (*Haliotis*) and nut shell (*Nucula proxima*) specimens that were analyzed for this study. Coordinates for pinto abalone (*Haliotis kamtschatkana*) and red abalone (*Haliotis rufescens*) are not included in order to minimize the potential risk of poaching for populations of these endangered species. The median tablet thickness of each shell specimen measured in a given region is reported in Median TT. Mean annual sea surface temperature from 1991-2020 from the World Ocean Atlas is reported in Mean SST. 14C age is the calibrated age of that *Nucula proxima* shell, in years before present, determined using radiocarbon analysis; the age of live-collected individuals is reported as 0; all *Haliotis* specimens are denoted with a dash. Context indicates whether specimens were wild-grown, aquaculture-grown, or from existing (archival) collections of specimens. The institution that provided the specimens is indicated in the Institution column, with a dash indicating that the specimen was collected by P.G. Harnik.

Region	Class	Genus	Species	Latitude (deg)	Longitude (deg)	Median TT (μm)	Mean Annual SST (°C)	14C Age (YBP)	Context
Australia	Gastropoda	<i>Haliotis</i>	<i>roei</i>	-32	116	0.42	21.054	-	Archival
France	Gastropoda	<i>Haliotis</i>	<i>tuberculata</i>	48.78	-3.05	0.33	13.081	-	Wild
France	Gastropoda	<i>Haliotis</i>	<i>tuberculata</i>	48.78	-3.05	0.38	13.081	-	Wild
France	Gastropoda	<i>Haliotis</i>	<i>tuberculata</i>	48.82	-3.45	0.4	13.081	-	Wild
Italy	Gastropoda	<i>Haliotis</i>	<i>tuberculata</i>	45.77	13.62	0.52	17.871	-	Wild
Italy	Gastropoda	<i>Haliotis</i>	<i>tuberculata</i>	45.77	13.62	0.48	17.871	-	Wild
Japan	Gastropoda	<i>Haliotis</i>	<i>discus hannai</i>	41.26	140.34	0.38	14.842	-	Wild
Japan	Gastropoda	<i>Haliotis</i>	<i>discus hannai</i>	41.26	140.34	0.32	14.842	-	Wild
Mexico	Gastropoda	<i>Haliotis</i>	<i>kamtschatkana assimilis</i>	31.87	-116.61	0.44	17.348	-	Wild
Mexico	Gastropoda	<i>Haliotis</i>	<i>kamtschatkana assimilis</i>	31.87	-116.61	0.49	17.348	-	Wild
Mexico	Gastropoda	<i>Haliotis</i>	<i>kamtschatkana assimilis</i>	31.87	-116.61	0.49	17.348	-	Wild
Philippines	Gastropoda	<i>Haliotis</i>	<i>clathrata</i>	10.26	124.05	0.52	28.123	—	Wild
Philippines	Gastropoda	<i>Haliotis</i>	<i>clathrata</i>	10.26	124.05	0.61	28.123	-	Wild
Philippines	Gastropoda	<i>Haliotis</i>	<i>clathrata</i>	10.26	124.05	0.55	28.123	-	Wild

Senegal	Gastropoda	<i>Haliotis</i>	<i>speciosa</i>	14.74	-17.51	0.32	24.028	-	Wild
Senegal	Gastropoda	<i>Haliotis</i>	<i>speciosa</i>	14.74	-17.51	0.4	24.028	-	Wild
Senegal	Gastropoda	<i>Haliotis</i>	<i>speciosa</i>	14.74	-17.51	0.47	24.028	-	Wild
Senegal	Gastropoda	<i>Haliotis</i>	<i>marmortata</i>	14.74	-17.51	0.48	24.028	-	Archival
South Africa	Gastropoda	<i>Haliotis</i>	<i>spadicea</i>	-34.05	24.91	0.37	19.23	-	Wild
South Africa	Gastropoda	<i>Haliotis</i>	<i>spadicea</i>	-34.05	24.91	0.48	19.23	-	Wild
South Africa	Gastropoda	<i>Haliotis</i>	<i>spadicea</i>	-34.05	24.91	0.58	19.23	-	Wild
Spain	Gastropoda	<i>Haliotis</i>	<i>lamellosa</i>	42	2.82	0.43	17.714	-	Archival
USA, Alaska	Gastropoda	<i>Haliotis</i>	<i>kamtschatkana</i>	-	-	0.41	9.605	-	Wild
USA, Alaska	Gastropoda	<i>Haliotis</i>	<i>kamtschatkana</i>	-	-	0.5	9.605	-	Wild
USA, Alaska	Gastropoda	<i>Haliotis</i>	<i>kamtschatkana</i>	-	-	0.4	9.605	-	Wild
USA, California	Gastropoda	<i>Haliotis</i>	<i>rufescens</i>	-	-	0.39	12.548	-	Wild
USA, California	Gastropoda	<i>Haliotis</i>	<i>rufescens</i>	-	-	0.38	12.548	-	Wild
USA, California	Gastropoda	<i>Haliotis</i>	<i>rufescens</i>	-	-	0.41	12.548	-	Wild
USA, Hawaii	Gastropoda	<i>Haliotis</i>	<i>discus hannai</i>	-	-	0.39	16	-	Aquaculture
USA, Hawaii	Gastropoda	<i>Haliotis</i>	<i>discus hannai</i>	-	-	0.37	16	-	Aquaculture
USA, Hawaii	Gastropoda	<i>Haliotis</i>	<i>discus hannai</i>	-	-	0.36	16	-	Aquaculture
USA, Hawaii	Gastropoda	<i>Haliotis</i>	<i>discus hannai</i>	-	-	0.4	18	-	Aquaculture

USA, Hawaii	Gastropoda	<i>Haliotis</i>	<i>discus hannai</i>	-	-	0.4	18	-	Aquaculture
USA, Hawaii	Gastropoda	<i>Haliotis</i>	<i>discus hannai</i>	-	-	0.38	18	-	Aquaculture
USA, Hawaii	Gastropoda	<i>Haliotis</i>	<i>discus hannai</i>	-	-	0.42	19	-	Aquaculture
USA, Hawaii	Gastropoda	<i>Haliotis</i>	<i>discus hannai</i>	-	-	0.41	19	-	Aquaculture
USA, Hawaii	Gastropoda	<i>Haliotis</i>	<i>discus hannai</i>	-	-	0.46	19	-	Aquaculture
USA, Washington	Gastropoda	<i>Haliotis</i>	<i>kamtschatkana</i>	-	-	0.38	11.171	-	Wild
USA, Washington	Gastropoda	<i>Haliotis</i>	<i>kamtschatkana</i>	-	-	0.38	11.171	-	Wild
USA, Washington	Gastropoda	<i>Haliotis</i>	<i>kamtschatkana</i>	-	-	0.4	11.058	-	Wild
USA, Alabama	Bivalvia	<i>Nucula</i>	<i>proxima</i>	30.06	-88.52	0.64	24.962	0	-
USA, Alabama	Bivalvia	<i>Nucula</i>	<i>proxima</i>	30.06	-88.42	0.6	24.962	0	-
USA, Alabama	Bivalvia	<i>Nucula</i>	<i>proxima</i>	30.09	-88.21	0.7	24.962	11	-
USA, Alabama	Bivalvia	<i>Nucula</i>	<i>proxima</i>	30.09	-88.21	0.65	24.962	125	-
USA, Alabama	Bivalvia	<i>Nucula</i>	<i>proxima</i>	30.1	-88.11	0.6	24.962	201	-
USA, Alabama	Bivalvia	<i>Nucula</i>	<i>proxima</i>	30.06	-88.42	0.6	24.962	1044	-
USA, Alabama	Bivalvia	<i>Nucula</i>	<i>proxima</i>	30.09	-88.21	0.58	24.962	1197	-
USA, Louisiana	Bivalvia	<i>Nucula</i>	<i>proxima</i>	28.77	-90.75	0.68	24.356	0	-
USA, Louisiana	Bivalvia	<i>Nucula</i>	<i>proxima</i>	28.79	-90.65	0.57	24.356	0	-

USA, Louisiana	Bivalvia	<i>Nucula</i>	<i>proxima</i>	28.75	-90.57	0.63	24.356	31	-
USA, Louisiana	Bivalvia	<i>Nucula</i>	<i>proxima</i>	28.77	-90.75	0.59	24.356	48	-
USA, Louisiana	Bivalvia	<i>Nucula</i>	<i>proxima</i>	28.75	-90.57	0.59	24.356	136	-
USA, Louisiana	Bivalvia	<i>Nucula</i>	<i>proxima</i>	28.57	-90.57	0.54	24.356	144	-
USA, Louisiana	Bivalvia	<i>Nucula</i>	<i>proxima</i>	28.89	-90.53	0.49	24.356	255	-
USA, Louisiana	Bivalvia	<i>Nucula</i>	<i>proxima</i>	28.89	-90.37	0.58	24.356	257	-