

Figure 4.1 Map of eastern North Pacific and adjacent coastline, indicating locations of place names discussed in text.

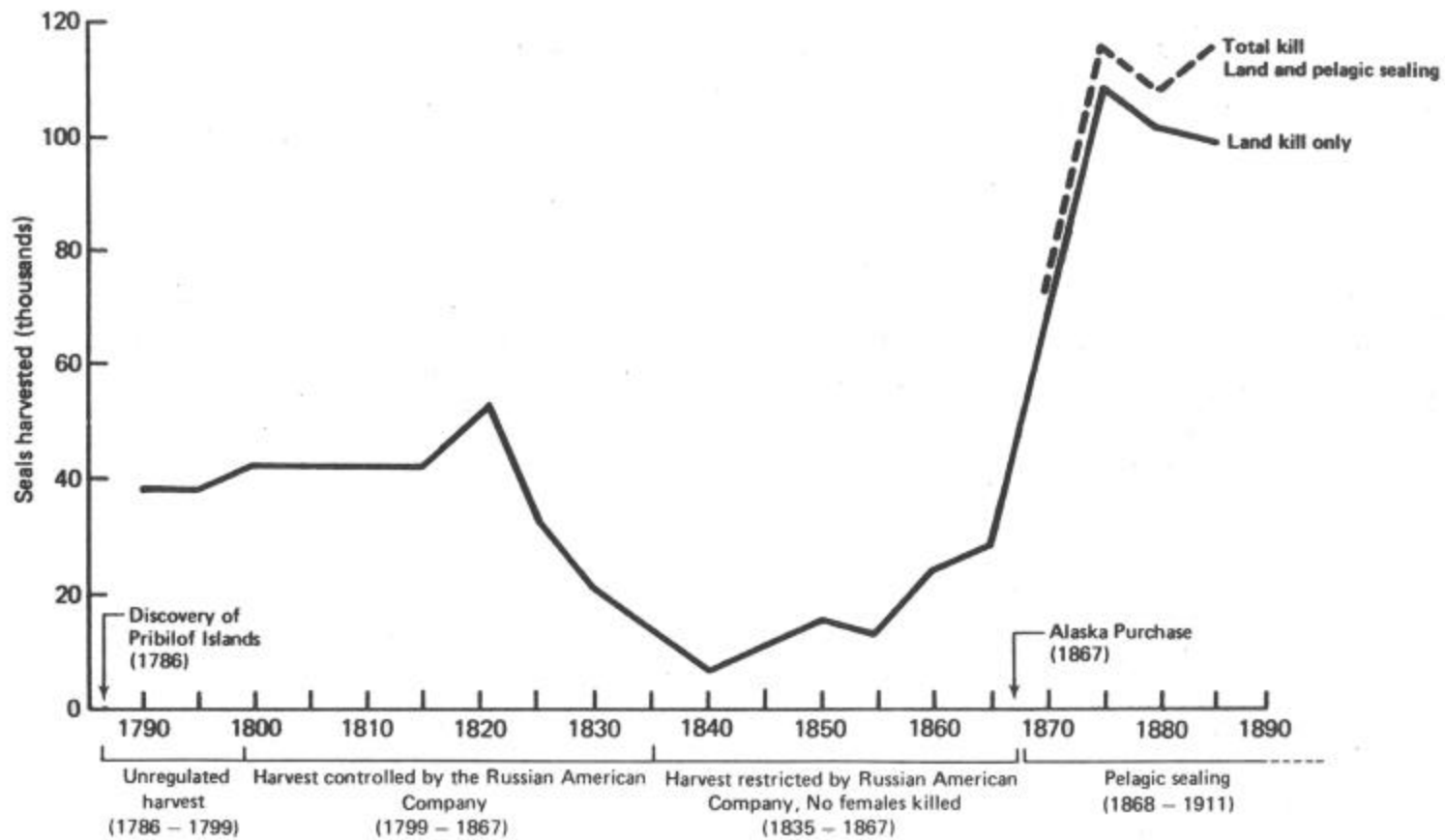


Figure 4.2 History of northern fur seal exploitation on and around the Pribilof Islands, Alaska, 1786-1885, plotted as a five-year running average (from Lander 1980). Because harvests were largely unregulated, the harvest levels between 1820 and 1840 can be taken as a rough proxy of population levels.

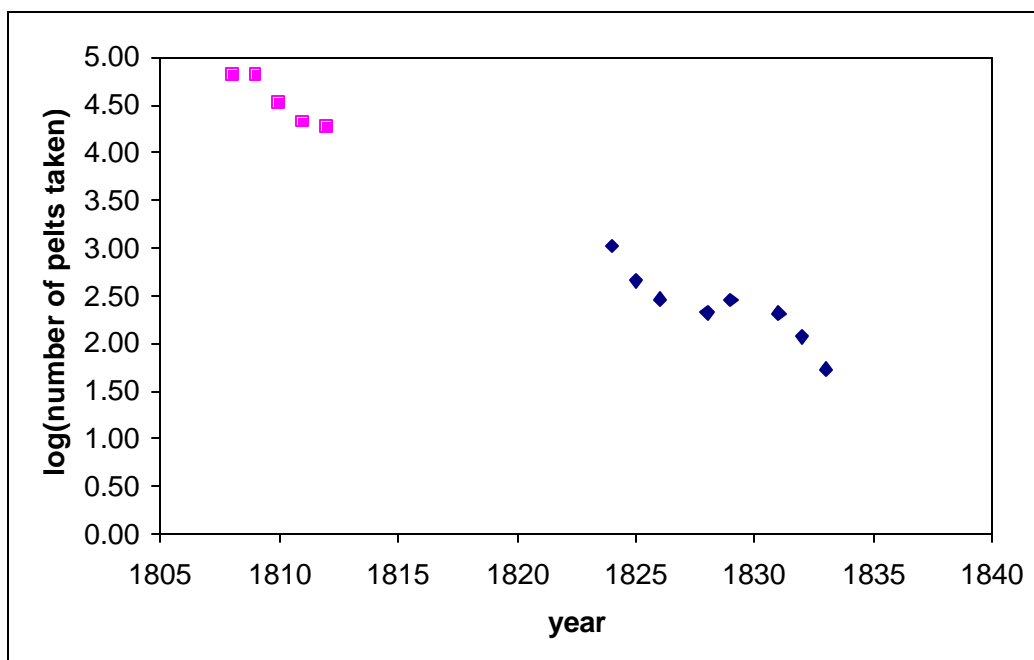


Figure 4.3 Decline in fur seal harvest on and around the Farallon Islands, California, 1808-1833. Because harvests were largely unregulated during this time period, harvest levels can be taken as a proxy of population levels. Note that the vertical axis represents logged values. Data for 1808-1812 from Bancroft (1885), data for 1824-1833 from Elliott (1887) listed in Table 4.1.

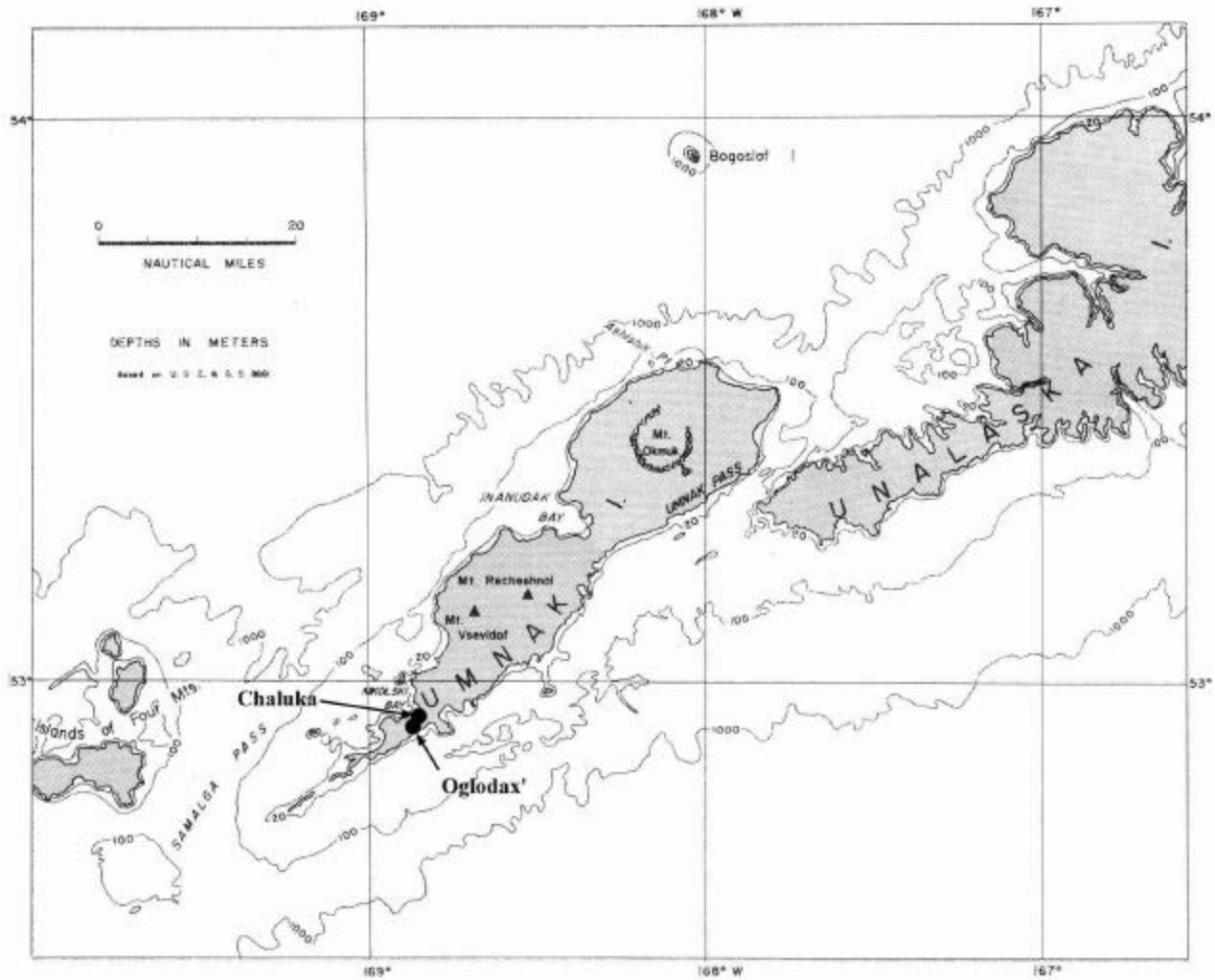


Figure 4.4 Umnak Island, Alaska, showing the approximate locations of the Oglodax' and Chaluka archaeological sites (from Black 1966; Yesner 1977).

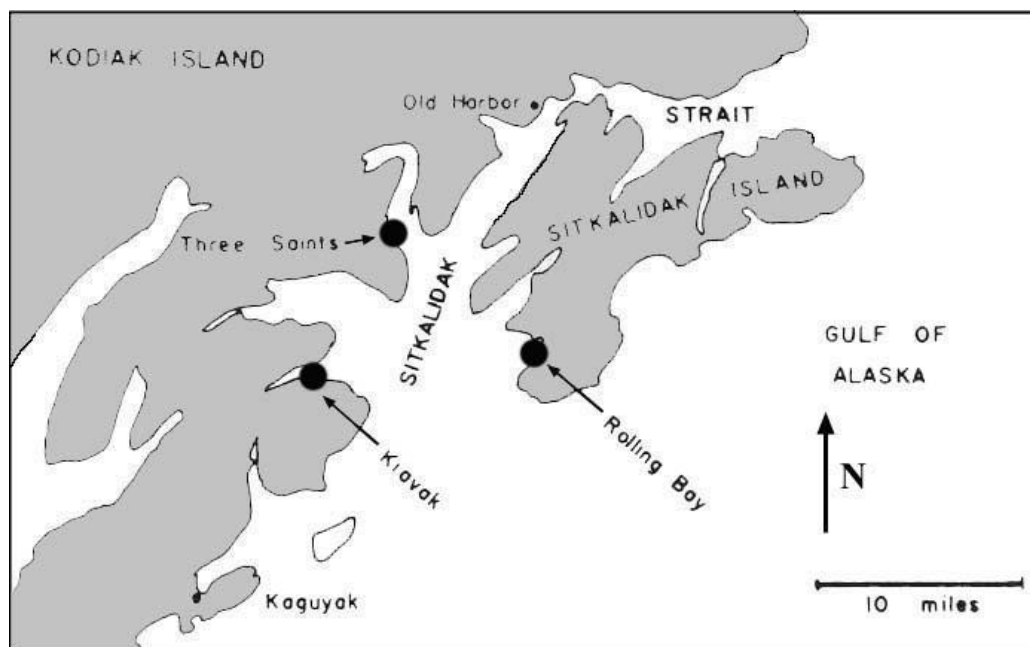


Figure 4.5 Kodiak and Sitkalidak Islands, Alaska, showing the approximate locations of the Three Saints Bay, Rolling Bay, and Kiavak archaeological sites (from Clark 1986).

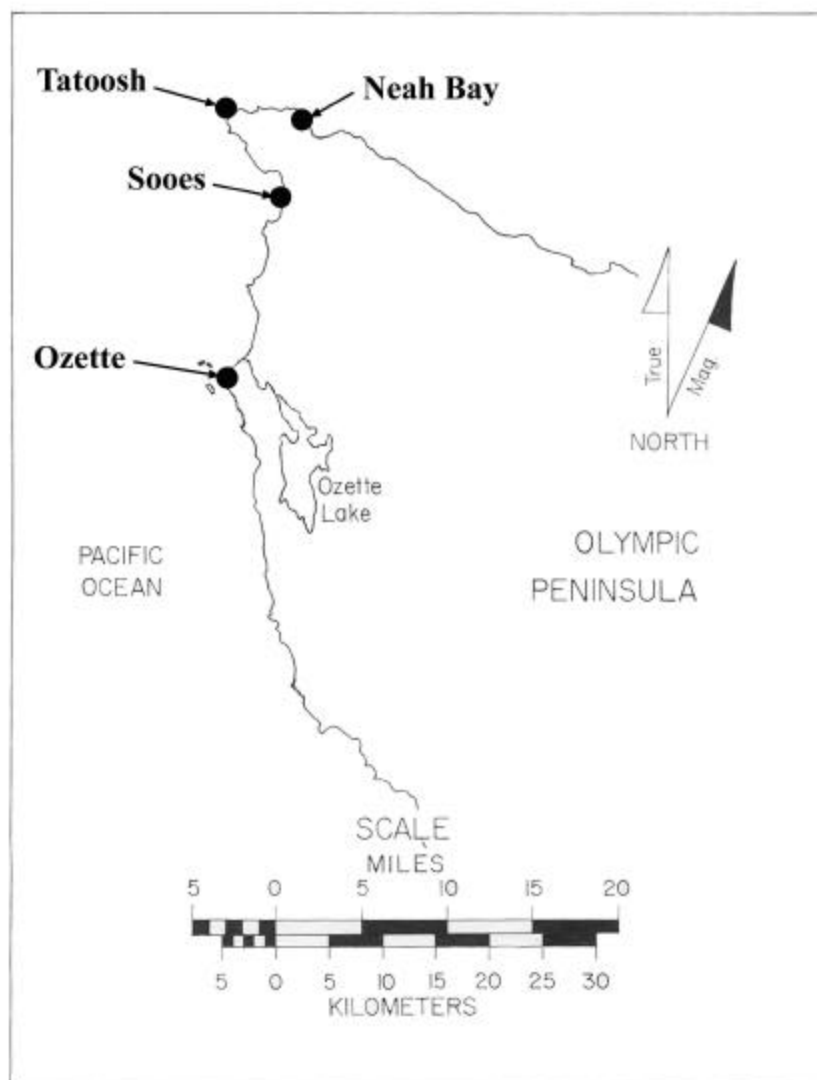


Figure 4.6 Olympic Peninsula, Washington, showing the approximate locations of the Neah Bay, Tatoosh, Sooes, and Ozette archaeological sites (from Friedman 1976; Samuels 1991).

Table 4.1 Number of fur seals harvested, by year, on and around the Farallon Islands, California, 1808-1833. Data for 1808-1812 from Bancroft (1885); data for 1824-1833 from Elliott (1887). Asterisks indicate average number of seals harvested based on reports of 130,000 seals killed in the years 1808 and 1809, combined.

year	number of seals harvested	log (number of seals harvested)
1808	65000*	4.813
1809	65000*	4.813
1810	33740	4.528
1811	21153	4.325
1812	18509	4.267
1824	1050	3.021
1825	455	2.658
1826	290	2.462
1827	---	
1828	210	2.322
1829	287	2.458
1830	---	
1831	205	2.312
1832	118	2.072
1833	54	1.732
1834	---	

Table 4.2 Number of identified specimens (NISP) and approximate dates for the major stratigraphic units for assemblages analyzed in this report. Bold number represent site totals. Reported (NISP) extracted from sources cited. “Fur seal NISP this analysis” lists the number of specimens available for the present study. Asterisks indicate that only mandibles were analyzed. See Table 4.3 for the full series of dates.

Site Stratigraphic information	Source	reported sample size (NISP)		fur seal NISP this analysis	fur seal ageable NISP
		fur seal	total mammals		
Chaluka	Lippold 1966	9,509	22,396	74*	63
Unit I (AD 650 to historic)		1,343	2,798	6*	4
Unit II (1250 - 800 BC)		1,639	3,277	28*	24
Unit III (1400 - 1250 BC)		5,996	14,277	39*	35
Unit IV (1890 BC)		531	2,044	1*	0
Oglodax'	Yesner 1977	1231	1942	258	172
sod level (<200 BP)		89	113	28	17
Level 1		382	536	48	34
Level 2 (AD 1530)		266	427	73	45
Level 3		169	285	31	22
Level 4 (AD 1440)		171	267	31	23
Level 5 (380 BC - AD 1400)		53	108	22	17
Level 6		81	155	18	14
Levels 7/8 (400 BC)		20	51	7	0
Three Saints, Kodiak Is.	Clark 1970, 1974, 1986	20	370	70	48
40 BC - AD 900		20	370	70	48
Kiavak, Kodiak Is.	Clark 1970, 1974, 1986	50	261	39	6
AD 1475 to historic		50	261	39	6
Rolling Bay II, Kodiak Is.	Clark 1970, 1974, 1986	184	314	244	83
AD 1475 to historic		184	314	244	83

Table 4.2, continued.

Site Stratigraphic information	Source	reported sample size (NISP)		fur seal NISP this analysis	fur seal ageable NISP
		fur seal	total mammals		
Neah Bay (45 CA 22)	Friedman 1976	61	107	81	19
historic (contact period)		15	36	24	4
pre-historic		46	71	57	15
Tatoosh (45 CA 207)	Friedman 1976	531	635	787	253
historic (contact period)		23	32	31	13
AD 1030 to historic		508	603	756	140
Sooes (45 CA 25)	Friedman 1976	335	577	518	111
historic (contact period)		82	129	105	0
AD 900 to historic		253	448	413	111
Ozette (45 CA 24), area B70	Huelsbeck 1983, 1991	44,538	48,596	1,406	
Unit I (late 1800s-early 1900s)		488	632	10*	9
Unit III (ca. AD 1780)		940	1302	40*	40
Unit IV (< AD 1719)		3467	3733	144*	137
Unit V, House 2 (?? - < AD 1719)		5561	6059	135*	
Unit V, VtV		2523	2671	72*	185
Unit V, House 3		3428	3772	126*	
Unit V, VtVI		1932	2092	58*	164
Unit V, House 5 (AD 1440 - ??)		1580	1720	64*	
Unit V, VtVII		3252	3517	123*	169
Unit V, House 1 (AD 1440)		3921	4316	103*	
Unit V, VXM		16882	18093	507*	610
Unit VI		219	236	16*	5
Unit VII (AD 1220)		345	453	8*	0

Table 4.3 Absolute dating of strata from each of the sites analyzed in this report. Original dates are from sources listed in the column labeled “original source.” Calibration of dates follows Stuiver and Reimer 1993, Stuiver *et al.* 1998.

Site	level	material dated?	lab number	¹⁴ C date ± one sigma	intercept/s for calibrated dates	one sigma calibrated range	original source
Chaluka	1	wood	P-1078	308 ± 45	cal AD 1532, 1543, 1635	cal AD 1493 - 1647	Laughlin 1966; Stuckenrath 1967
Chaluka	1	charred wood	P-1077	411 ± 45	cal AD 1452	cal AD 1439 - 1489	Laughlin 1966; Stuckenrath 1967
Chaluka	1	charcoal	P-747	1402 ± 46	cal AD 651	cal AD 618 - 663	Lippold 1966; Stuckenrath 1967
Chaluka	2	charcoal	P-761	2588 ± 55	cal BC 796	cal BC 804 - 764	Lippold 1966; Stuckenrath 1967
Chaluka	2	charcoal	P-1079	2761 ± 57	cal BC 902	cal BC 973 - 831	Laughlin 1966; Stuckenrath 1967
Chaluka	2	charcoal	P-1081	2769 ± 57	cal BC 904	cal BC 996 - 832	Laughlin 1966; Stuckenrath 1967
Chaluka	2	charcoal	P-1083	2811 ± 57	cal BC 971, 958, 937	cal BC 1013 - 899	Laughlin 1966; Stuckenrath 1967
Chaluka	2	charcoal	P-762	2817 ± 56	cal BC 972, 957, 940	cal BC 1018 - 901	Laughlin 1966; Stuckenrath 1967
Chaluka	2	charcoal	P-1080	2823 ± 57	cal BC 995, 995, 974, 955, 943	cal BC 1042 - 903	Laughlin 1966; Stuckenrath 1967
Chaluka	2	charcoal	P-763	2942 ± 56	cal BC 1206, 1204, 1188, 1181, 1151, 1143, 1129	cal BC 1259 - 1045	Lippold 1966; Stuckenrath 1967
Chaluka	2	charcoal	P-1082	2980 ± 57	cal BC 1256, 1240, 1213, 1196, 1194, 1137, 1134	cal BC 1366 - 1126	Laughlin 1966; Stuckenrath 1967
Chaluka	3	charcoal	P-1086	3015 ± 57	cal BC 1287, 1283, 1261	cal BC 1375 - 1131	Laughlin 1966; Stuckenrath 1967
Chaluka	3	charcoal	P-765	3022 ± 57	cal BC 1290, 1280, 1263	cal BC 1383 - 1132	Lippold 1966; Stuckenrath 1967
Chaluka	3	charcoal	P-1085	3056 ± 57	cal BC 1370, 1358, 1350, 1342, 1317	cal BC 1406 - 1219	Laughlin 1966; Stuckenrath 1967
Chaluka	3	charcoal	P-1088	3126 ± 50	cal BC 1408	cal BC 1434 - 1320	Laughlin 1966; Stuckenrath 1967
Chaluka	3 ?	charcoal	P-1084	3488 ± 43	cal BC 1863, 1843, 1808, 1803, 1774	cal BC 1881 - 1741	Laughlin 1966; Stuckenrath 1967
Chaluka	4	charcoal	P-766	3359 ± 128	cal BC 1681, 1669, 1659, 1650, 1639	cal BC 1863 - 1516	Laughlin 1966; Stuckenrath 1967
Chaluka	4	carbonized soil/bone	P-1087	3567 ± 53	cal BC 1892	cal BC 2009 - 1782	Laughlin 1966; Stuckenrath 1967
Oglodax'	sod	charcoal	GX 2440	<200			Yesner n.d., 1977
Oglodax'	sod	charcoal	GX 2354	<200			Yesner n.d., 1977
Oglodax'	sod	charcoal	GX 2355	<200			Yesner n.d., 1977
Oglodax'	2	charcoal	GX 2359	325 ± 80	cal AD 1524, 1562, 1629	cal AD 1454 - 1654	Yesner n.d., 1977
Oglodax'	4	charcoal	GX 2430	445 ± 90	cal AD 1442	cal AD 1410 - 1613	Yesner n.d., 1977
Oglodax'	5 ?	wood	GX 2343	305 ± 90	cal AD 1533, 1539, 1636	cal AD 1472 - 1786	Yesner n.d., 1977
Oglodax'	5	wood	GX 2439	530 ± 135	cal AD 1412	cal AD 1298 - 1474	Yesner n.d., 1977
Oglodax'	5	bulk charcoal	GX 2434	645 ± 130	cal AD 1301, 1371, 1380	cal AD 1264 - 1419	Yesner n.d., 1977
Oglodax'	5	charcoal	GX 2429	695 ± 100	cal AD 1292	cal AD 1257 - 1394	Yesner n.d., 1977
Oglodax'	5	charcoal	GX 2357	735 ± 130	cal AD 1281	cal AD 1190 - 1391	Yesner n.d., 1977
Oglodax'	5	charcoal	GX 2344	785 ± 140	cal AD 1261	cal AD 1044 - 1380	Yesner n.d., 1977
Oglodax'	5	bulk charcoal	GX 2345	2175 ± 90	cal BC 201	cal BC 379 - 65	Yesner n.d., 1977
Oglodax'	5	mix of charcoal and fish bone	GX 2346	2275 ± 110	cal BC 382	cal BC 405 - 199	Yesner n.d., 1977
Oglodax'	6 ?	bulk charcoal	GX 2437	1050 ± 120	cal AD 997	cal AD 887 - 1155	Yesner n.d., 1977
Oglodax'	6 ?	bulk charcoal	GX 2438	1245 ± 140	cal AD 776	cal AD 657 - 975	Yesner n.d., 1977
Oglodax'	6 ?	bulk charcoal	GX 2436	1340 ± 155	cal AD 666	cal AD 564 - 882	Yesner n.d., 1977
Oglodax'	8	bulk charcoal	GX 2433	2165 ± 130	cal BC 200	cal BC 389 - 4	Yesner n.d., 1977
Oglodax'	8	bulk charcoal	GX 2432	2360 ± 195	cal BC 401	cal BC 788 - 199	Yesner n.d., 1977
Three Saints 401	top	charcoal	P-1043	1119 ± 49	cal AD 900, 919, 958	cal AD 887 - 984	Clark 1974; Stuckenrath <i>et al.</i> 1966
Three Saints 401	base	charcoal	P-1042	2028 ± 55	cal BC 40, 26, 24, 9, 2	cal BC 92 - cal AD 49	Clark 1974; Stuckenrath <i>et al.</i> 1966
Kiavak 418	base	charcoal	P-1044	280 ± 44	cal AD 1642	cal AD 1524 - 1657	Clark 1974; Stuckenrath <i>et al.</i> 1966
Kiavak 418	base	charcoal	P-1045	391 ± 48	cal AD 1476	cal AD 1442 - 1620	Clark 1974; Stuckenrath <i>et al.</i> 1966
Rolling Bay 420	base	charcoal	P-1048	353 ± 44	cal AD 1494, 1501, 1510, 1600, 1614	cal AD 1469 - 1635	Clark 1974; Stuckenrath <i>et al.</i> 1966
Rolling Bay 420	base	charcoal	P-1047	393 ± 40	cal AD 1475	cal AD 1443 - 1614	Clark 1974; Stuckenrath <i>et al.</i> 1966
Neah Bay	4 of 10	?	WSU 1607	"modern"			Friedman 1976
Neah Bay	5 of 10	?	WSU 1608	"modern"			Friedman 1976
Tatoosh	6 of 6	?	WSU 1606	960 ± 70	cal AD 1034	cal AD 1003 - 1162	Friedman 1976
Sooes	8 of 8		WSU 1611	980 ± 60	cal AD 1025	cal AD 1000 - 1157	Friedman 1976
Sooes	8 of 8	hearth (charcoal?)	WSU 1612	1110 ± 60	cal AD 902, 917, 962	cal AD 887 - 998	Friedman 1976
Ozette	Unit V, House 1	early hearth	WSU-1778	440 ± 90	cal AD 1443	cal AD 1412 - 1616	Mauger 1978; Samuels 1991
Ozette	Unit VII		WSU 1865	790 ± 80	cal AD 1259	cal AD 1165 - 1287	Mauger 1978; Samuels 1991
Ozette	Unit VII		WSU 1777	810 ± 70	cal AD 1224, 1231, 1239	cal AD 1163 - 1281	Mauger 1978; Samuels 1991