Chapter 4: Archaeological assemblages included in this study

Recent investigations into the extent and timing of the apparently major changes in fur seal biogeography that occurred in the late Holocene have focused primarily on archaeological deposits from the Oregon (Lyman 1988, 1989, 1991b, 1995) and California coasts (Burton 2000; Burton and Koch 1999; Burton *et al.* 2001, 2002; Hildebrandt 1984a; Hildebrandt and Jones 1992). In contrast, this issue has received little or no attention along the Washington, British Columbia, and Alaska coasts since the first indications of major biogeographical changes were reported in the late 1960s (Gustafson 1968; Peterson *et al.* 1968). The majority of the eastern North Pacific populations of fur seals tend to stay in the eastern North Pacific (Boltnev 1987; Lander and Kajimura 1982; see Figure 4.1). Furthermore, approximately 80% of the world's population of northern fur seals breeds in Pribilof Islands (Lander 1980; Gentry 1998). By extension, then, the majority of the fur seal remains recovered from archaeological sites along the western margin of North America (including the central and eastern Aleutian Islands) should derive from eastern North Pacific population/s. For these reasons, Washington, British Columbia, and Alaska defined the broad geographic limits in which to search for archaeological assemblages to be considered for inclusion in this study.

Using this geographic region as a starting point, I surveyed the archaeological literature for information regarding the absolute and relative abundance of fur seals in archaeofaunal samples. Even a brief survey of coastal archaeological sites from the eastern North Pacific makes it clear that the distribution of different species of pinnipeds

is not uniform (Erlandson *et al.* 1998; Tveskov 1998, 2000). For instance, sites located on estuaries (Cannon 1991; Hall *et al.* 1990) or inland waterways (Galdikas-Brindamour 1972; Stewart and Stewart 1996) are typically dominated by harbor seals (*Phoca vitulina*). In contrast, fur seals are almost exclusively limited to outer coast sites (Calvert 1980; Carlson 1979; Clark 1986; Gustafson 1968; Huelsbeck 1983; Yesner 1977). Indeed, this patterned distribution of pinniped species is one that was also well-known to Native Americans living in the Pacific Northwest (Dewhirst 1978, 1980).

Finally, the temporal extent of sites (or groups of sites) was used as a criterion for inclusion in this study. Tests of the three hypotheses forwarded to explain the apparent behavioral changes in fur seals require a distinction between prehistoric and contact era events (with particular emphasis on the effects of the commercial fur trade). Consequently, emphasis was placed upon finding sites (or groups of sites) that provide a means of characterizing the prehistoric biogeography of fur seals and that also bridge the prehistoric-historic transition.

Because colonization events of humans are often associated with locally severe depredation on “na?ve” faunas (Grayson 2001; Martin 1967; Mosimann and Martin 1975), any evaluation of the effects of prehistoric hunting on fur seal biogeography would ideally span the entire occupational sequence. Unfortunately, the accumulation of faunal remains in Northwest coast archaeological sites typically post-dates initial occupation by hundreds, if not thousands of years (Cannon 1991; Carlson 1979; Clark 1974; Gustafson 1968; Lippold 1966). Thus, any changes in fur seal biogeography that

may have been initiated by colonization of the coast of North America (Fladmark 1979) are not likely to be evidenced in the faunal record.

Given the high degree of variability in the timing of European contact in the eastern North Pacific, a brief overview of relevant dates is also in order. The initial stages of European exploration in the eastern North Pacific are characterized by voyages lasting several years, with brief stops at various points along the coast. As such, the early expeditions probably exerted relatively little influence on the seal hunting practices of Native Americans prior to the onset of the commercial fur trade. Thus, while there is some suggestion that Sir Francis Drake may have traveled as far north as the central coast of Oregon in 1579 (Ward 2000), and Apostolos Valerianos (a.k.a., Juan de Fuca) claimed to have discovered the strait that now bears his name in 1592 (see Bancroft 1884:70-81 for a detailed argument discounting this claim), the first voyages that resulted in sustained contact between Native Americans and Europeans include Juan Perez' trip perhaps as far north as Prince of Wales Island in 1774 and James Cook's arrival to Nootka Sound in 1778 (Bancroft 1884). Ten years later, in 1788, John Meares entered the Strait of Juan de Fuca off Tatoosh Island (Colson 1953; Meares 1967; Whitner 1981; see Figure 4.1). At this time, the Makah already had European trade goods obtained either through trade or through direct contact.

Starting from the other side of the Pacific Ocean, Russian explorers began moving across the North Pacific in the early 1740s. Alexeï Chirikof and Vitus Bering, though separated for more than five weeks, both made landfall on mainland Alaska in the northern Gulf of Alaska in mid-July 1741 (Bancroft 1886). Following these initial

explorations, which documented the abundance and value of sea otters (*Enhydra lutris*), dozens of voyages departed from Okhotsk, moving eastward into the Aleutian Island archipelago. Consequently, the first arrival of Russians to Umnak Island occurred in 1753 (Berkh 1974). Kodiak Island was reached in 1761 or 1763 (Bancroft 1886).

Although the history of European exploration is important for delimiting the definition of "historic" in each of the regions considered here, as well as delimiting the effects of introduced disease on Native American populations (Boyd 1990; Dobyns 1976; Ramenofsky 1987), the historical event most relevant to the research presented here is the onset of commercial harvest of fur seals in the eastern North Pacific. The Russian exploration of the eastern North Pacific and Bering Sea was driven primarily by the search for sea otter pelts (Busch 1985). However, the value of fur seal pelts was high enough that by the 1780s a concerted effort was launched to discover the "fur seal islands" (Bancroft 1886; Busch 1985). This led to the discovery, in 1786, of the Pribilof Islands (Figure 4.1), with initial fur seal populations estimated at over 3,000,000 (Elliott 1887).

Immediately following the discovery of the Pribilofs, harvest rates of both sea otters and fur seals were high and unregulated (Elliott 1887). Nevertheless, estimates of the number of fur seal pelts taken were stable until about 1820 (Lander 1980; see Figure 4.2). This suggests that the Pribilof Island fur seal population was largely unaffected during the initial 30 years or so of harvest. After 1820, however, the Pribilof population declined to the point that the harvest quotas established by the Russian government could not be met (Busch 1985). This led the Russian-American Company in 1834 to restrict the

harvest of males on land and to place full protection on females (Lander 1980). Nevertheless, the population continued to decline until 1840 (Figure 4.2).

At the same time the Pribilof fur seal population was suffering over-exploitation, the Russian-American Company was also focusing harvest efforts on a population of fur seals on and around the Farallon Islands, California, immediately west of San Francisco Bay (Figure 4.1). Beginning sometime in the early years of the 19th century, unregulated harvests led to the rapid decimation of this population (Table 4.1; Figure 4.3). The last record of harvest data comes from 1833, when only 54 pelts were taken (Elliott 1887). After this time, fur seals were only rarely encountered on the Farallon Islands (Starks 1922).

As discussed in the Chapter 1, the species of fur seal harvested in this area was long assumed to be *Arctocephalus townsendi*, the Guadalupe fur seal (Fleischer 1978; Starks 1922). With the newly-gained knowledge that the Farallon Islands population consisted of northern fur seals (Pyle and Long 2001), and that this population declined precipitously in the first three decades of the 19th century, it is now possible to correlate this population history with events further north. With particular reference to fur seal hunting off the coast of Washington, Charles Scammon observed in 1874 that:

> It is but a few years since the [Makah] Indians have turned their attention to taking seals solely to procure their skins and oil for barter; and what may seem surprising, it is but a few years since the animals have been known to resort to the vicinity of the strait [of Juan de Fuca] in such large numbers. We have it from the most reliable source, that there were but a few dozens of the Fur Seal skins taken annually by the Indians, from 1843 to 1864; after which period, the number of skins sold by them at Victoria, Vancouver Island, Nee-ah Bay, and points on Puget Sound, has steadily increased, up to 1869, when the number in the aggregate amounted to fully five thousand skins (Scammon 1968:154).

Thus, although the Makah did not become involved in the commercial fur seal trade until the 1860s, the abundance of fur seals in Washington waters was apparently affected substantially earlier.

Distribution and context of sites

Using the criteria listed above as a guide, with the added criterion of collection availability, a series of nine sites was selected for analysis. These sites are situated in three main areas: Umnak Island, Alaska; Kodiak Island, Alaska; and the Olympic Peninsula, Washington. The sites included in this analysis will be presented in clockwise order from Umnak Island to the Olympic Peninsula, Washington (Figure 4.1). When multiple sites occur in close proximity to each other the sites will be presented in chronological order from oldest to youngest. Stratigraphic information will be presented only insofar as is necessary to establish the temporal extent of each of the sites (Table 4.2). Full details on the stratigraphic profiles can be found in the primary sources listed with each site below.

All of the sites included in this analysis have easy access to littoral invertebrates, demersal and anadromous fishes, seabird rookeries, cetaceans, sea otters, and pinnipeds (both Otariidae and Phocidae). The specific characteristics of each site, with particular emphasis on the presumed availability of fur seals, will be discussed in turn.

<u>Umnak Island, Alaska, Sites</u>: Umnak Island is in the eastern portion of the Aleutian Island archipelago, and lies ~320 km southwest of the southwest terminus of the Alaska Peninsula (Figures 4.1, 4.4). Archaeological excavations have been conducted on Umnak

sporadically since the early 1900s (Aigner 1974), with heavy emphasis on the southwest end of the island. This end of the island provides ready access to Samalga Pass (Figure 4.4), through which many of the Pribilof Island fur seals migrate on an annual basis (Loughlin *et al.* 1999; Ragen *et al.* 1995).

The two sites from southwest Umnak that are included in this study were excavated as part of the University of Wisconsin's "Aleut-Konyag Prehistory and Ecology Project" which was designed specifically to "investigate the human ecology of two areas that were known to have a time depth of at least a few thousand years" (Laughlin and Reeder 1966:1). The two areas Laughlin and Reeder refer to are the eastern Aleutian Islands and the Kodiak Island archipelago (discussed below).

The first site presented here, Chaluka, is situated on the Bering Sea side of Umnak Island, adjacent to Nikolski Bay and the present Aleut village of Nikolski (Figure 4.4). Chaluka represents a large Aleut village site, consisting of a mound 215 m x 61 m, extending to a depth of 6.5 m (Aigner 1966; Turner *et al.* 1974).

Chaluka has an extensive excavation history, with major projects conducted in 1938, 1948-52, 1961-62, and 1970-72 (Aigner 1974; Laughlin and Marsh 1956; Turner *et al.* 1974). In spite of the long history of excavations, only a sub-sample of the 1962 materials was available for the present analysis. Portions of the assemblage are currently being re-inventoried by the University of Wisconsin Zoological Museum. Thus, although the number of identified specimens (NISP) for fur seals was reported as just over 9500 (Lippold 1966; see Table 4.2), only 74 mandibles were analyzed here.

The 1962 excavations at Chaluka exposed a 30 m trench consisting of 15 adjoining 2 m x 2 m units (Denniston 1966; Turner *et al.* 1974). Excavation followed natural stratigraphic levels, with thick natural levels subdivided into 20 cm arbitrary levels. Cultural materials extended to a maximum depth of 5.0 m, with a minimum depth of 0.60 m. Dates for the 1962 excavations fall around 1640-1680 BC and dates from the upper-most stratum fall in the range of AD 1450-1650 (all dates reported here are calibrated radiocarbon determinations based on Stuiver and Reimer 1993 and Stuiver *et al.* 1998; see Tables 4.2 and 4.3).

No information is available regarding what mesh size, if any, was used to aid in the recovery of faunal materials at Chaluka. However, comments such as "attempts were made to sample fish and marine invertebrate remains…" (Turner *et al.* 1974) and "attempts were made to recover all avian and mammalian remains…." (Yesner 1977: 280) suggests that screens were not used.

The same recovery techniques were likely used in the excavation of Oglodax', the second Umnak Island site included in this analysis. Oglodax' sits on the Pacific Ocean side of the island (Figure 4.4), overlooking a "moderately productive and relatively high-energy strandflat" (Yesner 1977:113). The site was excavated in 1971 by Jean Aigner. The only description of the Oglodax' excavations that is readily available is in Yesner's dissertation (Yesner 1977:115-116, 340-344). Based on his descriptions, Aigner's excavations consisted of twelve column samples, most of which were concentrated in the portion of the deposits that showed evidence of a large house structure and substantial midden depth. These column samples exposed a series of eight stratigraphic units, with

cultural material extending to a depth of ca. 4 m. A date of 400 BC was obtained from near the base of the excavations in Unit VIII (Tables 4.2 and 4.3). The roof fill of the house structure was dated to sometime in the 16th or 17th century (intercepts of AD 1524, 1562, 1629: see Table 4.2). Dates of "< 200 bp" were obtained in association with cultural material in the sod layer (Yesner 1977:342; see Table 4.3). Indeed, Oglodax' was occupied into the historic period.

Although Yesner describes the excavations as a series of twelve column samples, unpublished faunal tabulations only indicate four distinct units (Yesner n.d.). Of these four units, only two were available for this analysis (see Table 4.2 for discrepancies in sample sizes).

Kodiak Island, Alaska, Sites: Three sites from the south end of the Kodiak Island archipelago (Figures 4.1, 4.5) have been selected for inclusion in this analysis based on the apparently anomalous abundance of fur seals in the assemblages (Clark 1974, 1986). The present migratory route of fur seals does not typically pass in close proximity to Kodiak. Nevertheless, Clark (1986) documented a short-term increase in the relative abundance of fur seals during the late prehistoric period. Thus, while the overall samples from the Kodiak sites are relatively small (Table 4.2), analysis of these assemblages with an explicit biogeographic focus may shed some light on the long-term patterns of fur seal behavior in the eastern North Pacific.

The oldest of the Kodiak sites considered here, Three Saints Bay, was excavated in 1962 by Donald Clark as part of the Aleut-Konyag project discussed above (Clark 1970; Laughlin and Reeder 1966). Two intersecting trenches, each 2 m wide, with a

total length of 32 m, were excavated using a combination of natural and 25 cm arbitrary levels. Cultural material extended from the surface to a depth of 2 m (Clark 1970).

The Three Saints Bay site consists of two distinct occupations. The first represents the Kachemak culture-historical phase (de Laguna 1934) and spans the period from around 50 BC to AD 1000 (Table 4.3), after which time the site was abandoned (Clark 1986:39). The historic component consists entirely of artifacts dating to the Russian American Company settlement, which was founded in 1784 by Gregory Shelikof (Bancroft 1886). The only faunal materials analyzed here derive from the prehistoric component (Tables 4.2, 4.3).

As with the Three Saints Bay site, Rolling Bay and Kiavak were also excavated by Clark as part of the Aleut-Konyag project. Rolling Bay was tested in 1961, with more extensive excavations in 1962 (Clark 1974; McHugh 1962). Excavations at Rolling Bay consisted of three sections, with a total areal coverage of 55 m^2. Excavations at Kiavak were conducted in 1963, and consisted of a 2 x 20 m trench. As with the other Kodiak sites analyzed here, stratigraphic control in the Rolling Bay and Kiavak excavations was maintained using a combination of 25 cm arbitrary and natural levels.

Kiavak and Rolling Bay are roughly coeval, with basal radiocarbon dates in the middle of the 15^{th} century (Table 4.3) and European artifacts in the most recent deposits. Indeed, both sites were still being used as winter villages at the time of the first well-documented European visit in 1805 (Clark 1974; Lisianski 1968). As discussed by Clark (1986:167), abandonment of the Kiavak and Rolling Bay sites was probably in the first half of the 19th century.

Because Clark's research on the south end of the Kodiak Archipelago was conducted as part of the same project as Chaluka and Oglodax', I assume that the same recovery techniques were used. Namely, excavated sediments were probably hand-sorted without the aid of screens.

Olympic Peninsula, Washington, Sites:

The Olympic Peninsula, like the other sites analyzed here, provides ready access to nearshore and pelagic marine resources. Of particular interest here is the proximity to the migration route of fur seals (adult females and sub-adults of both sexes) on their way to and from the Pribilof Islands (Fiscus 1978; Gentry 1998; Scheffer 1958). As discussed in Chapter 1, initial analyses of the Ozette faunal remains indicated that, in addition to a high frequency of adult females and sub-adults, adult males were a common component of the assemblage (Gustafson 1968). Although the significance of this discovery has never been fully evaluated, it has been interpreted by many (Burton 2000; Lyman 1988) as evidence that fur seals bred on the Washington coast in the late Holocene.

Information on the first three Washington sites presented here (Neah Bay, Tatoosh, and Sooes) comes directly from Friedman's (1976) dissertation research. These sites were excavated by Friedman as part of a site survey of Makah territory designed to place Ozette Village (see discussion below) in its environmental and cultural context. As with the Kodiak assemblages, the samples from Friedman's survey are generally small. However, each of the three sites considered here span roughly the same time period as the much larger site of Ozette (Table 4.3) and all four sites have roughly the same species

composition (Friedman 1976; Huelsbeck 1983). Thus, even though the absolute abundance of fur seals is relatively low, the relative abundance of fur seals (Table 4.2) and the temporal coverage suggest that these assemblages merit analysis in this study. In addition, the materials excavated by Friedman represent the only assemblages included in this analysis that were consistently recovered with ¼" screens.

The excavations at Neah Bay were conducted on the western margin of the present town of Neah Bay (Figure 4.6) and consisted of three 1 x 1 m units. Stratigraphic control was maintained via 10 cm arbitrary levels, with a total of ten levels excavated. Although the only radiocarbon date obtained for Neah Bay was indistinguishable from modern (Table 4.3), European artifacts are limited to the top 10 cm of the profile.

The Tatoosh site is located on Tatoosh Island, which constitutes the northwest extremity of the continental United States (Figures 4.1, 4.6). A total of six stratigraphic levels (10 cm arbitrary) were exposed in three 1 x 1 m units, with historic artifacts limited to the top 15 cm. A date of ca. AD 1000 was obtained from near the base of the excavations (Table 4.3).

Sooes, the third site from Friedman's excavations included in this analysis, has many of the same characteristics as Neah Bay and Tatoosh. Excavated in 10 cm arbitrary levels, each of three 1 x 1 units extended to a depth of nearly 3 m. Nevertheless, basal dates for Sooes are roughly coeval with the dates from Neah Bay and Tatoosh, ca. AD 900 or AD 1000 (Table 4.3). As with the other sites, historic artifacts are limited to within the top 10 cm.

The last site presented here, Ozette village, is situated on Cape Alava (Figures 4.1, 4.6). Excavations at this site were extensive, running 1966-1981 (Gustafson 1968; Huelsbeck 1983; Samuels 1991, 1994). The materials analyzed here all derive from Area B70 of the site, excavated year-round from 1970-1981. The site is perhaps best-known for the preservation of organic materials due to the anoxic, water-logged condition of the sediments (Samuels 1991). The nature of the sediments necessitated the use of hydraulic excavation techniques (Gleeson and Grosso 1976), and allowed the recovery of a wide range of organic remains, including abundant faunal remains (Huelsbeck 1983, 1994; see Table 4.3). Materials were sporadically screened through ¼" mesh, but screens were generally not used for recovery of faunal remains (see DePuydt 1994:206 and Huelsbeck 1983:79-81 for evaluations of the recovery biases this caused in the Ozette faunas).

The general stratigraphy of the site consists of four cultural deposits separated by catastrophic clay slides, with finer stratigraphic distinctions made within many of the four main strata (Samuels and Daugherty 1991; see Table 4.3). Basal dates for Area B70 are around the early or middle 13th century (Mauger 1978; see Table 4.4). Within Unit V, the largest of the cultural deposits, the sub-divisions are based on the stratigraphic relationships between the several different house structures. House 1 was built around AD 1440, and was occupied until at least AD 1719 based on a minimum dendrochronological date (Jozsa *et al.* 1982:41). This date marks the end of Unit V, when a mud slide covered several houses at Ozette, including House 1. Unit III is estimated to have begun around AD 1780 (Mauger 1974), with deposition continuing into

the middle of the 19th century (based on the presence of hard whiteware ceramics). After this time, another mud slide swept across the site. The final unit, Unit I, accumulated after the mud slide (around 1850) until Ozette Village was abandoned around 1910 (Colson 1953; Samuels and Daugherty 1991).