THE FAUNAL ASSEMBLAGE FROM *AWA'UQ* (REFUGE ROCK): A UNIQUE RECORD FROM THE KODIAK ARCHIPELAGO, ALASKA

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ABSTRACT

The *Awa'uq*, or Refuge Rock site (KOD-450), located on Sitkalidak Island in the southern Kodiak Archipelago (hereafter, Kodiak), is well known as the site of a brutal massacre in 1784. Less appreciated is the fact that twenty-eight house pits and a well-preserved faunal midden were documented at the site in the 1990s. The midden sample is dominated by northern fur seal (*Callorhinus ursinus*), and large cod (*Gadus macrocephalus*) and halibut (*Hippoglossus stenolepis*). Fur seal is a common component of late prehistoric sites in southern Kodiak, but typically in conjunction with harbor seal (*Phoca vitulina*). Unlike other Kodiak samples, harbor seal is virtually absent from the *Awa'uq* sample. Bird remains are scarce, but show a high diversity of species. Fish remains also show a broad spectrum of species ranging from herring (*Clupea pallasii*) to sculpins (Cottidae) to cod, in addition to the large halibut. The fur seal harvest focused on adult females and sub-adult males, with low frequencies of fetal individuals and adult males present. No rookery-age fur seal pups have been identified. This suggests the hunt was conducted at sea and focused on fur seals migrating to and from rookeries in the Bering Sea, rather than on a local rookery not documented historically.

The *Awa'uq* site (also known as Refuge Rock, KOD-450), on the southeastern shore of Sitkalidak Island, adjacent to Kodiak Island (Figs. 1, 2), is infamous as the location where hundreds of Alutiiq villagers were held under siege and later massacred by Grigorii Shelikhov and his men in August, 1784 (Black 1992, 2004). Indeed, the Alutiiq place name translates in English as "to become numb" (Steffian and Counceller 2012), and provides an indication of the dark history and cultural importance of this site. This watershed historical event overshadows the fact that *Awa'uq* also served domestic functions over and above the relative degree of security the site offered the Alutiiq residents. Archaeological investigations led by Rick Knecht discovered at least twenty-eight house depressions, most of which were associated with a Koniag-era occupation (post-dating AD 1200; Clark 1986), as well as a large deposit of well-preserved faunal midden (Knecht et al. 2002). This paper details the analyses of faunal remains recovered in those investigations, and sheds light on what appears to be a unique faunal assemblage from the Kodiak Archipelago.

MATERIALS AND METHODS

A 2 m x 2 m unit was excavated into well-preserved faunal midden by Knecht et al. (2002) to a maximum depth of 54 cm below the surface (Knecht n.d.). Faunal samples were primarily recovered using 13 mm (0.5") screens (Knecht n.d.), though a few opportunistic and/or bulk samples were also collected (see below). According to Knecht et al. (2002), the midden was found to contain a variety of invertebrates (clam, mussel, chiton, urchin, and periwinkles), as well as a limited variety of mammal bones (seal and porpoise).[1] Bird bones were noted as being absent. Fish bones were not mentioned, but the midden deposit was noted to also have pieces of fire-cracked rock and gravel-tempered ceramic fragments mixed in (Knecht

Figure 1. Aerial view of **Awa'uq** *(Refuge Rock) looking north, December 2000. Photo by Sven Haakanson, Jr. Courtesy the Alutiiq Museum.*

et al. 2002). Further analysis of the faunal remains was not conducted prior to the current study. If any natural or arbitrary stratigraphic breaks were used in the field excavations, no record of that was documented. Thus, the entire assemblage is treated here as one cohesive unit, spanning an unknown period of accumulation prior to the abandonment of the village in 1784. Note that if some or all of this particular midden deposit is associated with the Koniag-age house pits, the materials could date to as early as AD 1200.

Materials were shipped from the Alutiiq Museum and Archaeological Repository in Kodiak to Etnier's lab at Western Washington University. Faunal materials were sorted into broad classes. Invertebrate remains and fish bones were only briefly examined for this study, with taxa present noted and qualitative information on abundance recorded, while all mammal and bird bones were identified to the lowest taxonomic level possible and quantified using NISP (number of identified specimens). Comparative reference skeletons from the Burke Museum of Natural History and from Etnier's personal research collection were used to aid identifications. Male northern fur seals (*Callorhinus ursinus*) were distinguished from females based on a combination of sexually dimorphic size differences and age-specific epiphyseal fusion sequences. Age-at-death for fur seals was approximated using known-age skeletons and published growth curves (Etnier 2002). Age categories used are detailed in Table 1. Minimum number of elements (MNE, following Lyman 1994) was calculated for fur seals to test the hypothesis of differential body part representation. For this calculation, the minimum number of whole and non-overlapping portions of bone was summed separately for bones of the forelimb, the hind limb, and the axial skeleton. The observed MNEs were evaluated against expected frequencies using chi-square (Zar 1996).

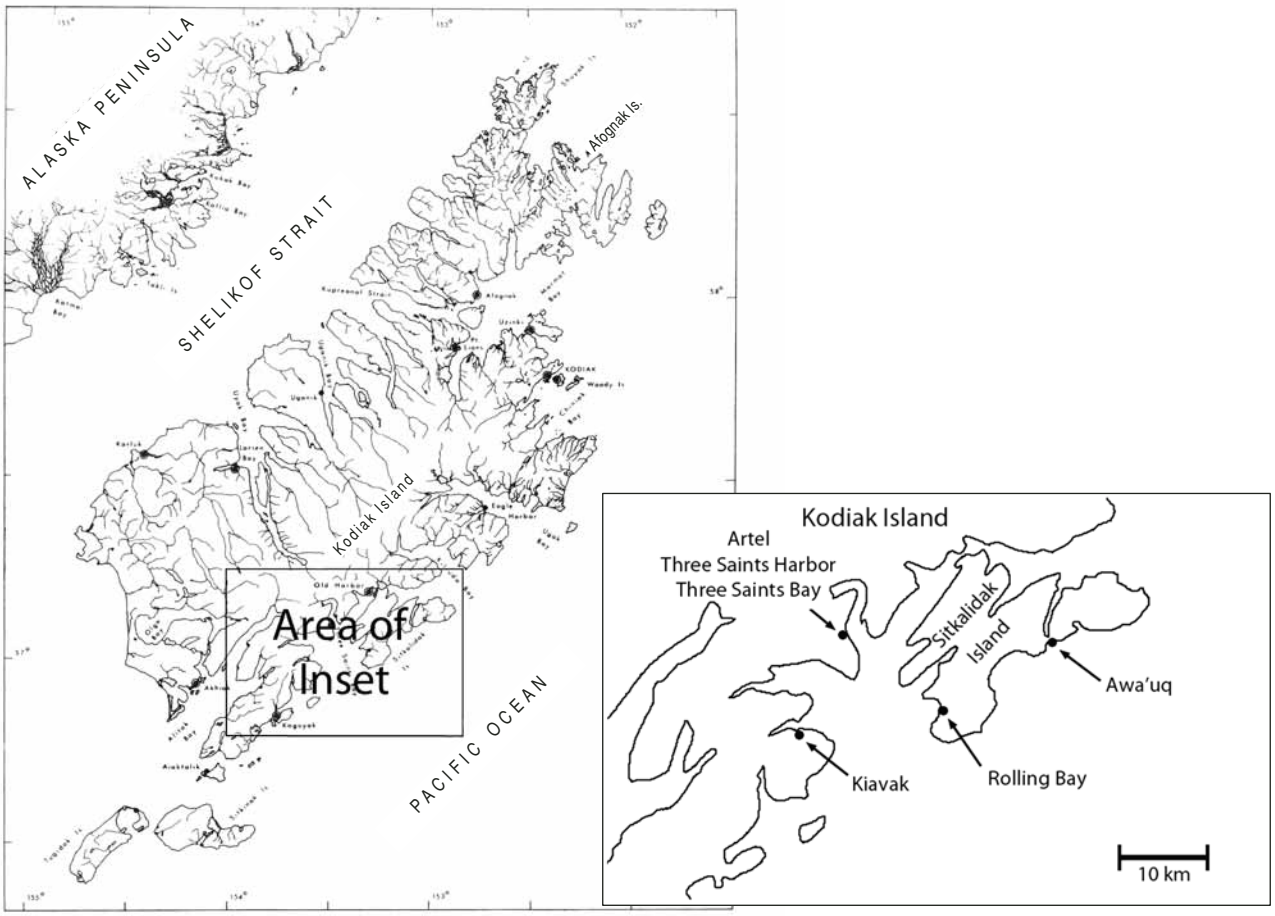

Figure 2. Kodiak Archipelago, Alaska, indicating locations of sites discussed in text. The three sites listed together with a single point on the inset map are all located within a 2 km stretch of shoreline. Inset map modified from Clark 1974.

Table 1. Age categories used to generate the harvest profile for northern fur seals.

Age Category	Characteristics and Comments
Adult	Epiphyses fully fused or annulus counts on teeth indicate adult age (3–4 years or older for females, 10–12 years or older for males)
Sub-adult	Bones at or near adult size, but lacking fused epiphyses. Note that ontogenetic maturity (fusion of epiphyses) does not necessarily correspond to reproductive maturity (see Etnier 2002).
Immature	Specimen from a young individual, but unknown whether it is old enough to be considered sub-adult (i.e., sex not known, so relative degree of development unknown)
Pup/Juvenile	Specimen obviously from a very young individual, but age unknown
Pup	A narrow window of development, from 0 to 3 or 4 months
Fetus/Newborn	Specimen approaches the size and/or development of reference skeleton of a newborn pup
Fetus	Specimen substantially smaller and/or under-developed relative to reference skeleton of a newborn pup

RESULTS

The sample of invertebrates consists of approximately 10 liters of material, most of which is bivalve and gastropod shells. A cursory examination of the invertebrates in the midden sample shows that a wide range of intertidal and subtidal species were utilized at *Awa'uq* (Table 2), including Pacific octopus (*Enteroctopus dolfleini*). Although these animals were almost certainly utilized widely throughout the North Pacific in prehistoric times, I know of only one other record of octopus from an archaeological site (Atka Island, D. Hansen, pers. com., 2012).

The sample of vertebrates consists of a total NISP of 2405 (birds and mammals only). Detailed examination of the fish remains (approximately 30 liters of material) is forthcoming. However, as samples were sorted to separate the midden sample into different classes, the range of fish species was documented (Table 2). In particular, it was noted that the fish sample is dominated by cod (*Gadus macrocephalus*) and halibut (*Hippoglossus stenolepis*). Many of the bones were from large (cod and halibut) or very large (halibut) individuals.[2] Although cod and halibut can be caught relatively close to shore in most seasons (Mecklenburg et al. 2002), large individuals are typically only caught far offshore in deep water. Interestingly, Irish Lord (*Hemilepidotus* sp.), a sculpin inhabiting near-shore environments, appears to be the third most-abundant taxon, followed distantly by salmon (Salmonidae) and herring (*Clupea pallasii*). The herring bones were presumably collected either opportunistically or in bulk samples from the midden deposit, rather than in the 13 mm mesh screens.

The sample of birds is small (NISP = 52). However, several observations can be made about the assemblage (Table 2). First, there appears to have been a preference for waterfowl at *Awa'uq*, with mallard-sized ducks comprising 40% (22/55) of the total NISP. Second, the number of species identified (n = 9) is high given the small overall sample size. Finally, the sample consists of species that represent a mix of terrestrial, near-shore, and offshore environments.

In contrast to the other classes of faunal remains, the mammalian component (NISP = 2353) is extremely narrowly focused (Table 2), with only four distinct taxa represented. Furthermore, northern fur seals dominate the assemblage, comprising 79% (967/1217) of the mammals identified to a taxonomic level lower than Class. In contrast, harbor seal (*Phoca vitulina*) comprised only 0.4% of the mammals (5/1217), consisting of a single metacarpal and four phalanges.

The age and sex composition of the fur seals is highly suggestive of the time and location they were harvested. The overall ratio of males to females cannot be determined with accuracy because large immature females cannot be distinguished from small immature males (Etnier 2002). Nevertheless, it is clear that adult females and sub-adult males make up the majority of specimens for which age and sex could be determined (Table 3). The frequency of adult male bones is low (NISP = 5).

Despite the inability to distinguish sex for the bones from young fur seals, many specimens could still be placed into broad age categories. The sample from *Awa'uq* seems to be bimodally distributed, with peaks in the fetal age class and the juvenile/immature age classes, the latter possibly representing the young born that year. Bones identified as potentially being from unweaned, rookery-age pups (i.e., aged zero to 3 or 4 months) are extremely rare, with an NISP of 2.

Because the fur seal bones are predominantly from sub-adult males and adult females, and therefore from animals of broadly similar body size, all fur seal element counts were pooled for the analysis of body-part representation. Within each body portion (forelimb, hind limb, and axial skeleton, or trunk), the observed frequencies are significantly different from expected (Table 4). Likewise, the pooled frequencies are also significantly different from the expected frequencies for forelimb, hind limb, and axial skeleton (Table 4).

DISCUSSION

Aside from the near absence of bird bones noted by Knecht et al. (2002), the initial reports of the *Awa'uq* faunas seem fairly typical of other sites in the Kodiak area. Pinnipeds [primarily harbor seal and Steller sea lion (*Eumetopias jubatus*), with lower frequencies of northern fur seal and small porpoises (harbor porpoise (*Phocoena phocoena*) and Dall's porpoise (*Phocoenoides dalli*)] are commonly recovered from sites throughout the region (Clark 1974;

Table 2. Summary faunal identification data for taxa recovered from **Awa'uq.**

Common Name	Scientific Name	NISP	Comment
Black katie chiton	*Katharina tunicata*	+	
Limpet, indet.	Lottiidae	+	
Periwinkle	*Littorina* sp.	+	~ One liter of sorted shells
Dogwhelk	*Nucella* sp.	+	
Neptune whelk	*Neptunea* sp.	+	
Blue mussel	*Mytilus* sp.	+	
Heart cockle	*Clinocardium nuttallii*	+	
Horse clam	*Tresus capax*	+	
Butter clam	*Saxidomus gigantea*	+	
Pacific octopus	*Enteroctopus dofleini*	3	Beak fragments, perhaps from a single individual
Barnacle, indet.	Balanidae or Semibalanidae	+	
Urchin	*Strongylocentrotus* sp.	+	Trace amounts
Herring	*Clupea pallasii*	+	Present, but in low numbers
Salmon	Salmonidae	+	Present, but in low numbers
Cod	*Gadus macrocephalus*	+	Abundant; many large individuals present
Irish Lord	*Hemilepidotus* sp.	+	Common
Halibut	*Hippoglossus stenolepis*	+	Abundant; many large and extremely large individuals present
Duck, indet.	Anatidae, indet.	5	Mallard-sized
Dabbling duck	*Anas* sp.	17	Mallard-sized
Auks, puffins, and murres	Alcidae	1	
Auks, puffins, and murres	cf. Alcidae	3	
Murre	*Uria* sp.	2	
Gull	*Larus* sp.	2	
Ptarmigan	*Lagopus* sp.	2	
Loon (Pacific or red-throated)	*Gavia stellata/pacifica*	1	
Albatross	*Phoebastria* sp.	5	
Northern fulmar	*Fulmarus glacialis*	1	
Shearwater	*Puffinus* sp.	4	
Bald eagle	*Haliaeetus leucocephalus*	1	
Bird, indet.	Aves	8	
Seal, fur seal, or sea lion	Pinnipedia	112	Probably all or mostly fur seal
Fur seal or sea lion	Otariidae	30	Probably all fur seal
Northern fur seal	*Callorhinus ursinus*	937	See Table 3 for age/sex composition
Northern fur seal	cf. *Callorhinus ursinus*	30	
Harbor seal	*Phoca vitulina*	5	Four phalanges and one metacarpal
Dolphin, indet.	Delphinidae	78	
Whale, indet.	Cetacea	25	
Mammal, indet.	Mammalia	1136	Probably a mix of Delphinidae and fur seal
TOTAL*		2405	

*Total does not include the octopus beaks

Table 3. Harvest profile for fur seals from **Awa'uq**, *compared with the aggregate harvest profile for Three Saints Bay, Kiavak, and Rolling Bay (from Etnier 2002). Absolute ages from Etnier (2002) have been converted to match the categorical ages used here.*

		Awa'uq		Rolling Bay Sites	
		NISP	Percent	NISP	Percent
Sex determined					
	Female, adult	93	42.7	37	50.7
	Female, sub-adult	33	15.1	2	2.7
	Male, adult	5	2.3	2	2.7
	Male, sub-adult	87	39.9	32	43.9
	Totals	218	100	73	100
Sex indeterminate					
	Fetus	2	1.3	1	3.2
	Fetus/Newborn	37	23.1	0	0.0
	Pup (?)	2	1.3	3	9.7
	Pup/Juvenile	33	20.6	9	29.0
	Immature	80	50.0	18	58.1
	Sub-Adult	6	3.7	0	0.0
	Totals	160	100	31	100

Kopperl 2003; Schaaf n.d.; Yesner 1989), as are a wide variety of intertidal and subtidal invertebrates (Foster 2004; Odell n.d.).

In terms of the birds, fish, and invertebrates, the additional analyses presented here, while still incomplete, generally align the *Awa'uq* faunal assemblage with those from other sites in the region. However, the narrow focus on fur seals at *Awa'uq* appears to be unique among archaeological sites in the Kodiak Archipelago. Does this mark an early attempt by the Alutiit to play an active role in the Russian fur trade? Were they stock-piling food in anticipation of a potential siege? Or does the high frequency of fur seals simply reflect a narrowly focused seasonal hunting strategy that capitalized on the proximity of the site to the fur seals' migration route?

Don Clark (1974, 1986) has noted an apparent increase in fur seal use through time based on analysis of faunal samples from elsewhere in the southern Kodiak Archipelago (Fig. 1). Based on the ratio of fur seal NISP to harbor seal NISP (Table 5), he sees evidence for increased reliance on fur seals, starting at low levels about 1000 years ago and extending forward into the proto-historic period (early 18th century) in what he characterized as a trend (Clark 1986:41). If Clark's data really represent a trend, the faunal assemblage from *Awa'uq*, occupied until August 1784, seems to have reached its natural end-point, with the near total absence of harbor seals (Table 5).

Even so, the age and sex composition of the *Awa'uq* assemblage is broadly similar to that of the assemblages noted by Clark (1986) and further analyzed by Etnier (2002; Table 3). The main difference between these assemblages is seen in the higher relative abundance of bones in the "fetus/newborn" category recovered from *Awa'uq*. The presence of fetuses, and the lack of pups in these harvest profiles suggest that fur seals were not hunted from a nearby, previously unidentified rookery.[3] Rather, it indicates that juveniles and pregnant adult females were hunted in the open ocean in late spring or early summer as they migrated past Kodiak on their way to the breeding grounds in the Pribilof Islands, or perhaps somewhere in the Aleutian Islands (Crockford 2012; Newsome et al. 2007). Fur seals may also have been hunted on their return to the south during the fall migrations. Because of the coarse nature of the age estimates, the two specimens provisionally assigned to the "newborn pup" category should not be taken as evidence of a local, previously undocumented fur seal breeding colony (Newsome et al. 2007).

Table 4. Minimum number of elements (after Lyman 1994) from various portions of the body for fur seals. "Base" is the number of each element found in a complete carcass. "Observed" is the frequency identified from the **Awa'uq** *assemblage. "Expected" is the frequency expected based on the observed sub-total for that range of elements. Chi-square values: forelimb $\chi^2 = 42$; hind limb $\chi^2 = 67$; axial skeleton $\chi^2 = 20$; $p > 0.001$; $df = 5$. Pooled frequencies for forelimb, hind limb and axial skeleton: $\chi^2 = 9.3$; $p = 0.009$; $df = 2$.*

		Base	Observed	Expected
Forelimb				
	Scapula	2	5	5.2
	Humerus	2	12	5.2
	Radius	2	13	5.2
	Ulna	2	9	5.2
	Carpals	12	8	31.2
	Metacarpals	10	31	26
	Subtotal	30	78	78
Hind Limb				
	Pelvis	2	12	6
	Femur	2	21	6
	Tibia	2	14	6
	Fibula	2	7	6
	Tarsals	14	24	42
	Metatarsals	10	18	30
	Subtotal	32	96	96
Axial Skeleton				
	Teeth (canines only)	4	7	15.7
	Cranium	1	11	3.9
	Mandible	2	6	7.8
	Cervical Vertebrae	7	31	27.4
	Thoracic Vertebrae	16	58	62.6
	Lumbar Vertebrae	5	24	19.6
	Subtotal	35	137	137
Combined Data				
	Forelimb	30	96	96.2
	Hind Limb	32	78	102.6
	Axial Skeleton	35	137	112.2
	Subtotal	97	311	311

As Clark (1986) points out, the beginnings of the Kodiak fur seal harvests were not related to the commercial fur trade because the earliest fur seal bones substantially predate any Russian presence in Kodiak. However, by the middle of the 18th century, Russian fur traders were well known to the Alutiit, and had been for many decades (Black 1992, 2004; Luehrmann 2008). In fact, low frequencies of Euro-American trade goods were recovered from *Awa'uq* (Knecht et al. 2002), indicating at least some direct or indirect trade. Several lines of evidence, however, suggest that the Alutiit residents at *Awa'uq* were not stockpiling furs in anticipation of trade with the Russians. First, the dating of the midden deposit is completely unresolved. The accumulation of bones could span decades or millennia. Second, no sea otter (*Enhydra lutris*) bones were recovered from the midden, though sea otters would have been more highly sought for their furs than fur seals, and would still have been at pre-commercial population levels. Third, interactions between Russian traders and the Alutiit prior to the siege at *Awa'uq* had been anything but peaceful (Black 1992, 2004; Crowell 1997).

Given the time of year the siege took place (August), fur seals were also clearly not stock-piled in anticipation of a siege. The migrating fur seals would have been harvested primarily in late May or early June, at which point Grigorii Shelikhov and his men would have been in the Aleutian Islands, en route to Unalaska Island (Crowell 1997).

All of these points suggest that the faunal assemblage from *Awa'uq* represents the remains of a narrowly focused subsistence strategy. But even if *Awa'uq* were a uniquely situated seasonal hunting camp focused on pelagic sea mammals, the near-total absence of harbor seals still requires explanation. The low frequency of harbor seal bones could have arisen through one of three scenarios:

1. harbor seals were not present in the area in substantial numbers;
2. harbor seals were present as they are today, but not harvested in any appreciable numbers;
3. harbor seals were present as they are today, and harvested in proportion to their abundance, but not deposited in and/or recovered from the midden that was excavated by Knecht et al. (2002).

Scenario 1 does not seem particularly likely, given that nearby sites that immediately post-date the abandonment of *Awa'uq*, the Artel site (Clark 1986) and Three Saints Harbor (Crowell 1997), both contain harbor seal bones (172/282 and 7/50, respectively, of total mammal NISP; see also Table 5). Nor does Scenario 2 seem likely. The

Table 5. NISPs and the ratio of fur seals to harbor seals from sites discussed in text. Data for Three Saints Bay, Kiavak, Rolling Bay, and the Artel site from Clark (1986). "NISP Mammals" includes only those specimens identified to a taxonomic category lower than class.

Site	Date AD	NISP fur seal	NISP harbor seal	NISP mammals	Ratio
Three Saints Bay	1–1000	20	167	371	1:8
Kiavak	1700s	50	92	243	1:2
Rolling Bay	1700s	184	58	316	3:1
Artel	1780s	98	172	282	1:2
Awa'uq	1200 (?) to 1780s	967	5	1217	193:1

limited data available for the invertebrate and fish remains indicate that at least some foraging activity was occurring in the near-shore waters. Absent any culturally mediated avoidance of harbor seals, basic foraging theory tenets indicate they would always be taken upon encounter (cf. Broughton 1994).

According to Scenario 3, for whatever reason, the bones of harvested harbor seals were not deposited and/or recovered by Knecht et al.'s excavations. It is worth noting that *Awa'uq* is bounded by cliffs, with extremely limited access to the top of the sea stack (Fig. 2). Thus, large-bodied animals such as harbor seals (adults can weigh up to 170 kg, compared to an adult female fur seal that weighs ~40 kg) may have been butchered on the beach, with only the meat transported up the cliffs to the village.

I have demonstrated that fur seal skeletal element frequencies do not match the expected frequencies of a complete skeleton. However, the specific ways in which they depart from expected do not clearly match what would be predicted from transport decisions. Specifically, the bones of the forelimb are all over-represented except for the bones of the wrist (Table 4). If front flippers were being systematically removed for differential treatment, either as specialty food items or for discard on the beach, then carpals and metacarpals should be affected similarly. The situation is less clear for bones of the axial skeleton, with thoracic vertebrae and canine teeth being slightly under-represented, and bones of the cranium slightly over-represented. The only body segment with frequencies that may result from transport decisions is the hind limb, where tarsals and metatarsals are both under-represented in the assemblage. On balance, the MNE data indicate that transport decisions did not significantly affect fur seal element frequencies—a finding not that is too surprising for carcasses that would have weighed on the order of 40 kg and could have been transported in their entirety. Another possibility is that front and rear flipper bones were not recovered in the process of screening the midden deposits. However, if the element representation of the limbs were a function of recovery bias associated with the use of 13 mm screens, it is unclear why metatarsals would be affected while metacarpals were not.

The best way to resolve the issue would be more detailed excavations at *Awa'uq*. Not only would this help determine the antiquity of the village, but it could also shift the emphasis of the site's history further away from the dark final days of occupation and shed light on the origins and development of such a heavy reliance on fur seals.

CONCLUSION

The midden samples from *Awa'uq* indicate that the Alutiiq residents harvested a wide range of intertidal, subtidal, near-shore, and pelagic resources. However, their main focus was a highly specialized harvest of migrating fur seals in late spring and perhaps also in the fall. Harbor seals appear to have not been harvested in appreciable numbers, despite the fact that other near-shore resources (invertebrates, fish, birds) were harvested.

Awa'uq is a somber place with a dark history. But the history of the people who lived there is much more complicated than suggested by a single, violent event. It is not uncommon for archaeological sites to exhibit characteristics of "special-use" sites. What makes *Awa'uq* so unique is the degree of specialization that appears to have taken place here. Despite the painful history of this site, recovery of additional midden samples could provide valuable insights into the origins of and the final days of a subsistence economy unique in the Kodiak Archipelago.

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NOTES

1. Scientific names were not used by Knecht et al. (2002), leading to some confusion as to what taxa were present in the assemblage.
2. The largest cod bones were comparable in size to those from a one-meter-long individual in Etnier's reference collection, while the halibut bones were as large as or larger than those from a two-meter-long individual in Etnier's reference collection. Maximum reported sizes for these species are 1.2 m and 2.7 m, respectively (Froese and Pauly 2012).
3. Note that fur seals do not typically "haul out," or rest, in nonbreeding aggregations except immediately adjacent to breeding colonies (Gentry 1998).

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