CHAPTER 13: AN ANALYSIS OF FAUNAL REMAINS FROM CASTLE HILL

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Methods

The vertebrate faunal remains from Castle Hill were identified using the zooarchaeological comparative collection at the Department of Anthropology Laboratory, University of Alaska Anchorage, and personal collections, and reference manuals including: Gilbert (1980), Searfoss (1995), Brown and Gustafson (1979), Hillson (1986), MacGregor (1985), and Olsen (1973) for mammals; Gilbert, Martin and Savage (1981), and Olsen (1979) for birds; and Cannon (1987) and Wheeler and Jones (1989) for fish. Bones were identified to the lowest taxonomic level possible. The material was quantified by Number of Identified Specimens (NISP). Vertebrae, long bone shafts, and rib fragments were assigned to species when possible. Fragments that could not be assigned to a specific taxon were sorted to class (*i.e.*, mammal, bird, fish). Elements described as "unidentified large mammals" are cow-to-deer sized, "medium mammals" are dog or cat-sized, and "small mammals" are rat-sized and smaller. Bird ribs, scapulae, and furculum fragments were not identified to specific taxon. Unidentified elements described, as "large birds" are eagle-to-goose sized, "medium birds" are duck-sized, and "small birds" include small shore birds and passerines. No attempt was made to identify fish rays, spines, ribs or branchials to a specific taxon. An attempt was made to identify all other elements unless it became apparent the taxon was not present in the comparative collection.

All materials were dry screened through ¼ inch mesh in the field. Fauna was collected by level and bagged separately from other artifacts. Bones in poor or fragile condition were covered with plastic wrap or aluminum foil to stabilize them for transport. To expedite analysis, lot numbers rather than individual specimen numbers were used for the level bags. Analysis of the fauna includes studying bone condition and portion, side of body, evidence of carnivore and rodent gnawing, butchering marks, burning, and mineral staining. Fifteen 1 x 1 meter units were examined for this report. Fish represented 45% of the faunal assemblage, mammals 47%, birds 6%, and 2% of the assemblage were unable to be assigned to a given class. Shellfish remains were not studied in detail, however, preliminary investigation suggests that shellfish remains consist primarily of California mussels (*Mytilus californias*), barnacles (*Balanus* sp.) and clams, possibly of the family *Tellinidae*.

Results

Fish:

True cods (Gadidae) dominate the fish assemblage (Table 13.1). Salmon (*Oncorhynchus* sp.), halibut (*Hippoglossus stenolepis*), and rockfish (*Sebastes* sp.) are also present in smaller numbers. Only one buttersole (*Isopsetta isolepis*) maxilla fragment was identified. The true cods are well represented by lateral headbones, neurocranial bones and abundant vertebrae. Salmon are represented by vertebrae, one premaxilla, and other fragments too small to identify. Halibut are represented primarily by headbones, with only five vertebrae. Only four rockfish headbones were identified (Table 13.1). The true cods represent 34% of the collection, salmon 8%, halibut 1%, and rockfish and buttersole contribute less than 1%. Unidentified fish vertebrae, rays, spines, ribs, branchials and miscellaneous fragments comprise 57% of the fish assemblage.

Table 13.1. Fish Elements (n=530).

	Lateral skull	Cranial	Appendicular	Axial	Unidentified
Cod	111	27	22	259	
Salmon	1			89	5
Halibut	6			5	
Rockfish	3	1			
Buttersole	1				

Mammals:

Domesticated mammals, both local and imported, and sea mammals comprise the majority of the mammalian assemblage. European rats and unidentified rodents are also present. Mammalian remains are primarily from deer (*Odocoileus hemionus*), cow (*Bos taurus*), pig (*Sus scrofa*), rat (*Rattus* sp.), sea lion (*Eumetopias jubata*), harbor seal (*Phoca vitulina*), walrus (*Odobensus rosmarus*), fur seal (*Callorhinus ursius*), and domestic cat (*Felis domesticus*) (Table 13.2). Axial and appendicular bones from deer dominate the assemblage, with elements from other parts of the skeleton in smaller numbers. Cows and pigs are represented by skull bones, long bones, vertebrae, and pelvic bones. A femur from an apparent juvenile fur seal was identified along with two humeri (one of which also represented juvenile individual) and one radius from a harbor seal. Two maxilla fragments represent walrus. A sea lion radius and scapula were identified, and four other sea lion bones are possibly from a single forelimb. European rats and other unidentified rodents appear to be well represented for the small assemblage; ironically, only one felid mandible was identified. Unidentified mammal remains were classified as large mammal, large/medium mammal, medium mammal, medium/small mammal, small mammal, large/medium ungulate, small ungulate, land mammal, mammal, sea mammal, and unidentified mammal (Table 13.2).

Birds:

Bird remains are primarily from waterfowl (Table 13.3). A carpometacarpus, a coracoid, a furculum and two humeri represent dabbling ducks (*Anas* sp.). Diving ducks (*Melanitta* sp.) are represented by three carpometacarpal bones, a furculum, four pelvic bones, two sterna, and one tarsometatarsus. One merganser (*Mergus serrator*) humerus was identified and five other elements (a femur, a fibula, a tibiotarsus, and two synsacrum fragments) can be assigned to Sub-Family Merginae. Geese are represented

Table 13.2. Mammal Elements (n=1276).

	Appendicular	Axial	Cranial	Shaft	Unidentified
Deer	36	28	10		
Cow	9	4	8		
Pig	1	3	13		
Rodent	5	2	5		
Sea lion	4	2			
Harbor seal	3				
Walrus			2		
Fur seal	1				
Cat			1		
Lrg Mammal	21	59	5	26	67
Lrg/Md Mammal	17	11	6	58	112
Md Mammal	45	86	3	75	11
Md/Sm Mammal	6	4	1		
Sm Mammal		2			3
Lrg/Md Ungulate	15	14	1		
Sm Ungulate	2		1		
Land Mammal			1	1	18
Mammal	10	3	1	96	288
Sea Mammal	5	3			2
Unidentified Mammal			1		59

by a tibiotarsus (*Anser* sp.), a coracoid, and an ulna (*Branta* sp.). Twenty-nine other elements can be generally assigned to the waterfowl family (Anatidae).

Other birds identified in the assemblage included Alcids (Alcidae) which are represented by a furculum, an ulna, and two tibiotarsal bones. An ulna, a claw, and a tibiotarsus were assigned to the family Accipitridae, probably representing a bald eagle (*Haliaeetus leucocephalus*). One raven (*Corvus corax*) furculum was identified and one ulna assigned to *Corvas* sp. One loon (*Gavia* sp.) carpometacarpus, one cormorant (*Phalacrocorax* sp.) nasal bone, one shorebird (Scolopacinae) ulna, and one humerus from a gallinaceous bird, probably chicken, were also identified. A wide range of elements are represented (Table 13.3).

Table 13.3. Bird Elements (n=154).

	Head/Neck	Thorax	Wing	Leg	Unidentified Shaft/Fragment
Alcid		1	1	2	
Duck/Goose	5	25	14	9	1
Raven/Crow		1	1		
Loon			1		
Eagle			2	1	
Cormorant	1				
Shorebird			1		
Galliforme			1		
Unidentified	2	37	12	2	34

Butchering Marks:

All bones in the assemblage were examined for butchering marks. Only one bird bone, a coracoid, and one fish bone, a caudal vertebra from a cod, had visible cut marks. Butchering marks on mammalian remains were made with metal tools, and range from small cut marks to chopping and sawing marks. Six cow bones (a mandible, a pelvis, two radii, a rib and a lumbar vertebra) are either chopped or sawn. Two ulnae and one pelvis from a deer also exhibit chop and saw marks. Two pig bones (a lumbar vertebra and a maxilla) have saw marks. Chop marks on a sea lion radius, and cut marks at the distal end of a sea lion metacarpal are clearly visible. The other 41 butchered mammal bones are comprised mostly of ribs, followed by portions of long bones, scapulae, pelvic bones, and vertebrae. Examples of butchering marks are illustrated in Figure 13.1.

Figure 13.1. Examples of faunal elements with butchering marks from the Castle Hill workshop area.

Other Bone Modification:

Rodent gnawing was noted on two bird bones, a carpometacarpus and a rib, and on nine mammal bones. Modification from carnivores was noted on six bird bones and eleven mammal bones; four were extensively chewed and exhibited scooping. Other modifications noted include green staining and burning. Burning was minimal in all units, with the exception of two adjacent units on the eastern side of the site. Green staining could be observed on bones from virtually all of the units analyzed.

Discussion

Some general patterns of subsistence and site use have emerged from this investigation. For purposes of this report, units have been grouped into seven different areas. The midden, the rockface, the forge, the interior of buildings 1, 2, and 4, and the exterior of building 4.

Midden Area:

Five units to the west of building 1 produced organic-enriched midden material believed to be related to a Russian period trash deposit. These include units N100/E133 and N99/E133 (adjacent units), N97/E134 and N96/E134 (adjacent units) and N97/E131. A thick organic layer was present in these units, and bones from this area were well preserved. Fish made up 70 percent of the assemblage NISP. Mammals represented 20 percent of the NISP, birds made up seven percent, and three percent of the bones were unidentifiable to class. Many bones exhibited a green stain from copper salts, resulting from the large number of copper artifacts associated with the organic layer. Rodent gnawing and carnivore chewing was observed on bones from several levels, which indicate that the midden developed over time. Bones had been lying on the surface and were accessible to scavenging animals. Carnivores prefer fresh bone with fat in the cancellous tissue at the ends of the shaft and in the marrow cavity, while rodents prefer dry bone that has been exposed for some time (Blumenschine and Marean 1993, Brain 1980). Historic

documents mention infestation of rats at Sitka. Gibson (1976) reports that in 1823, the frigate *Cruiser* was unloaded and fumigated at New Archangel, and more than 1,000 thousand dead rats were found on board. Some rats obviously escaped from ships, because their remains are in the assemblage. Chewing on some of the bones and the presence of digested phalanges are evidence of canid activities at the site. Scooping, which is a characteristic of canid chewing, was noted on some of the larger bones.

Butchering marks were noted on 17 elements from the midden area. Fifteen of the 17 elements were from ungulates, and medium and large mammals. This was not a surprise, since larger animals require more processing than smaller animals. Ten of the 17 elements from the midden area with butchering marks were ribs. The other seven included two long bones and three vertebrae from mammals, one cod vertebra, and one duck coracoid. Only 13 bones from the midden area had been burned, and all were mammalian.

Outside Building 4:

Unit N104/E133, three meters north of the midden area, exhibits very different characteristics. It is located to the west and outside of Building 4, which is dated as the most recent structure. This unit yielded 26 bones. (Unit N100/E133 yielded 594 bones and Unit N99/E133 yielded 261 bones.) All 26 fragments are mammalian. With the exception of one small incisor tooth fragment and a small fragment of a vertebral cap, none of the bones could be identified to element because they are in poor condition and not well preserved. Eleven of the 26 bones are calcined, only two stained green, and none modified by rodents or carnivores. It is possible that the construction of Building 4 disturbed this area, because this unit did not have a distinct organic layer.

Inside Building 2:

One unit from Building 2 (N106/E136) was analyzed. Thirty-six bones were recovered. Twenty-three mammal bones were identified, 11 bird bones, one fish vertebra, and one unidentified long bone shaft fragment. A carnivore modified the distal end of a radius from a medium bird. Butcher marks were not identified on any bone from this unit, however, a cow radius had been broken when it was fresh. Burning was noted on 11 mammal bones. Further analysis of fauna from Building 2 is needed to determine if there is any distinct pattern.

Inside Building 4:

One unit from inside Building 4 was also examined. Fifty-two bones were recovered. Thirty-three bones were from mammals, ten were bird and nine were fish. One rib from a large bird had rodent gnaw marks, one loon carpometacarpus was chewed on both ends, and a radius from a medium bird was chewed on the distal end. Cut marks were noted on the shafts of a humerus and a radius from large land mammals. Sixteen mammal bones were burned. No general pattern can be determined from this small assemblage.

Rockface Area:

This unit (N85/E121) was near the bottom of a natural rockface at the western edge of the site. This unit did not have an organic layer, and bones from this unit were generally not well preserved. Mammal remains were from large land and sea mammals or medium mammals. No fish or bird remains were identified. No bones have green staining, none have been modified by rodents or carnivores, and only one mammalian caudal vertebra has been burned. It is not clear

if this feature developed quickly or over time. This deposit may have formed through the accumulation of trash being dumped from the top of the hill.

Forge Area:

Two adjacent units north of the metal working forge (N106/E139 and N106/E140 respectively) were analyzed. Nearly all the bones from these units are mammals with the exception of one fish bone and one bird bone. The remaining 14 percent of the assemblage is comprised of shell fragments. Only two elements, a cow mandible and radius have butchering marks. None of the bones have been modified by rodents or carnivores, and only three elements are stained green. Of the 688 bones examined from these two units, only 31 are not burned. Virtually all of the bones are calcined and highly fragmented. The large concentration of calcined bone and shell fragments were found mixed with wood chips and brick fragments. A small amount of charcoal and metal working slag was in the level above the bones. Below the concentration was sterile rocky black gravel and large stones. It appears that one or more animals were cremated in the forge and then dumped outside the building. The deposition appears to have happened quickly, and may represent one dumping event.

Inside Building 1:

Four units (N98/E137, N101/E141, N101/E140 and N102/E140) inside Building 1 were analyzed. Mammals made up 62 percent of the assemblage NISP, fish 26 percent, birds 5 percent, shellfish 3 percent, and 4 percent were unidentifiable to taxon. As in the midden area, the assemblage inside the building appears to have developed over time. Bones with rat gnawing and carnivore chewing were throughout this feature. Many of the bones exhibited the same green staining as bones in the midden. A fish hook and a copper kettle were found in association with a large concentration of fish bones in one of the units; the copper kettle was filled with at least three cod heads (Figure 13.2). The fish may have been cleaned in the building, and the bones dumped in a pile.

An interesting element found below the fish bone concentration was a walrus maxilla with the tusk missing. Worked ivory artifacts were found within 20-50 cm of the maxilla. A polar bear (Figure 13.3, a) carved from walrus ivory was in the same unit in the level below the maxilla, and two carved ivory birds were in the same stratum in an adjacent unit. Another ivory artifact was 10-15 cm above the maxilla. Worked incomplete pieces of ivory were in other areas indicating that ivory may have been worked on the site. The walrus maxilla may have been traded, sold, or given to someone in the colony, possibly with the tusk intact. Carved ivory birds, similar to those found at Castle Hill, are a common and ancient Eskimo artifact and have been found all across the Arctic; they were strung together by holes drilled in the tail and may have been used as a game. The carved bear is also a common Eskimo artifact. Murdoch described similar carvings at Point Barrow in the late 1800's (Murdoch 1988:365). In addition to the sea mammal bone bear described above, an ivory bear (Figure 13.3, b) was recovered approximately 6 m to the south.

In addition to the ivory artifacts, two worked bones were recovered from the unit adjacent to and in the same stratum as the unit with the carved bear. One of the bones is a shaft fragment that was broken and then drilled from the inside of the bone. The other is a bird or mammal long bone shaft fragment that was hollowed, polished, and cut at one end. This artifact has not been positively identified.

Figure 13.2. A copper kettle, spout removed, with codfish head bones. The green staining is from copper salts within the soil matrix.

The level above the fish concentration had primarily medium to large land mammals. Remains were mixed with brick rubble. The bones may have been dumped inside the building after it was abandoned. Deer elements dominated the assemblage, and many had butchering marks and evidence of having been broken when they were fresh. Most of the elements were long bones, although there were axial and cranial bones in smaller numbers. A deer metacarpal with articulated phalanges was recovered from the same level of one of the units. It is possible that the lower portion of the leg was cut off and discarded, because it does not provide much meat.

Conclusions

While Russians imported domestic animals from California, Hawaii, and Russia, their subsistence patterns were influenced by the Native inhabitants. Conditions in Sitka were unfavorable for raising crops and domestic animals, and ships sailing to the colony with provisions were irregular. As a result, the Russians bought large quantities of fish and game from the Tlingit. Indigenous fauna, therefore, became a large part of the diet for the colonists.

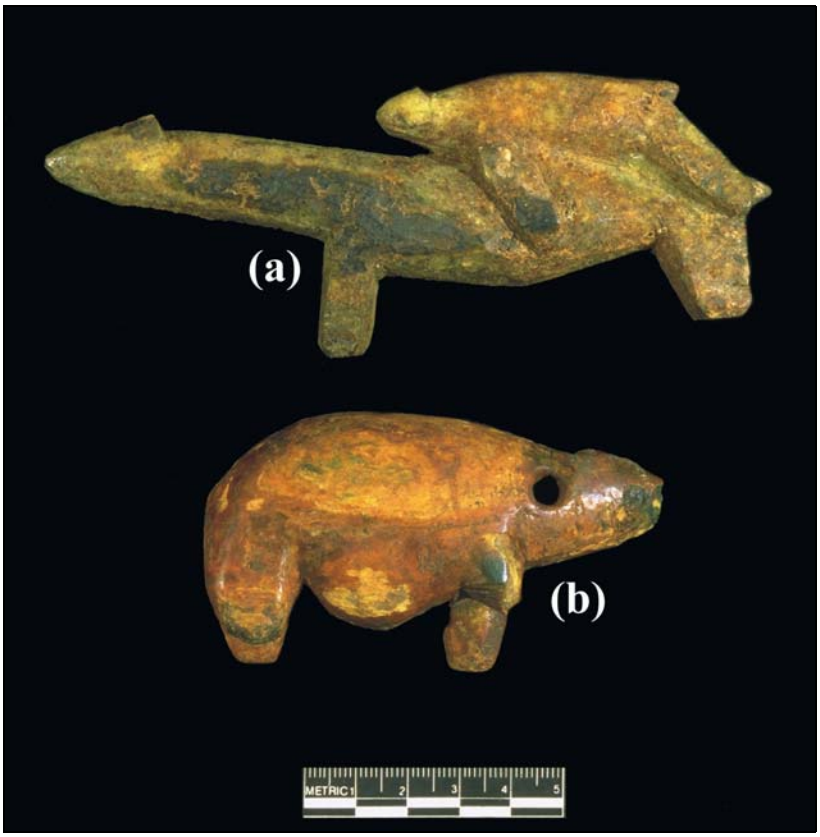

Figure 13.3. (a) Sea mammal bone polar bear (#98-1201); (b) ivory bear (#98-1207).

Cod dominate the archaeological fish assemblage from Castle Hill. Historic documents confirm that cod was popular in Sitka, and it was available almost year around (Gibson 1976:40, Khlebnikov 1994). Halibut also was popular because of its year around availability and was sold to the Russians by the Tlingit in large numbers. Halibut, however, represents only a small portion of the assemblage from Castle Hill.

Gibson (1987:93) writes that during the 1850s approximately 400 deer were brought to the colony annually. The abundance of deer remains found at the site supports statements that land mammals were an important source of fresh meat for the Russian colonists. Pigs and cows are the primary large domesticated animals present in the assemblage, but their numbers are small in comparison to the deer remains. Stockbreeding in the colony largely was unsuccessful due to a lack of suitable food for the animals. Although cows were imported to provide meat, milk, and butter, it was reported that they did not produce much milk and their flesh was greasy and watery tasting (Gibson 1976:102). Incessant rain at Sitka destroyed virtually all the hay grown for the livestock, and shipping hay to the colony was expensive. Pigs also were imported. They were fed fish remains, and Klebnikov (1994:179) states that they generally were not eaten because "they had a repulsive taste."

The analysis of bird remains from Castle Hill confirms statements in historic documents that waterfowl were sold to the Russians whole. There were domesticated ducks at Sitka (Wrangell 1980:6) which could account for the representation of all skeletal elements. Chickens also were raised in Sitka (Andrews 1965:37), but Holder-Blee (1986:320) writes that by 1860 chickens were only occasionally kept at the colony. Chickens also were fed fish remains and had

a “bad flavor” (Golovin 1979:37). In addition, chickens were expensive to buy (Federova 1973: 236-237). These reasons could account for the fact that only one probable chicken humerus has been identified in the Castle Hill assemblage. Emmons (1991:150-151) writes that ravens, hawks, and small forest birds were not normally eaten by the Tlingit, and eagles were eaten only under dire circumstances. This would account for their low representation in the faunal assemblage.

The picture that emerges from this investigation is that local fauna appear to have provided the bulk of the food consumed at Sitka. The faunal assemblage analyzed confirms statements in the historic records of the Russians’ dependence on Native peoples and local foods for their survival at Castle Hill.