# A View From the Shore: Interpreting Fish Trap Use in Comox Harbour Through Zooarchaeological Analysis of Fish Remains from the Q'umu?xs Village Site (DkSf-19), Comox Harbour, British Columbia

By

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## Abstract

This thesis presents the results of recent sampling of the Q'umu?xs Village site (DkSf-19) at Comox Harbour, British Columbia. Bucket auger and column sampling was undertaken to ascertain resource use patterns associated with the unique abundance of wooden stake fish traps located in Comox Harbour through zooarchaeological analysis of fish remains. Fish remains were identified and quantified to trace changes in resource use and linked to the chronology of fish trap use. Incorporating the theoretical frameworks of human behavioural ecology (optimal foraging models), intensification, household archaeology, and the archaeology of complex hunter-gatherers, this thesis discusses the use of fish traps in Comox Harbour in relation to larger questions of Northwest Coast social and economic complexity, in particular the emphasis on herring seen in the fish remains.

# Dedication

To the fishers of Comox Harbour, past, present, and future.

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Cheers!

# Chapter 1 - Introduction

The cultures found on the Northwest Coast of North America are recognized as anomalous to what have been considered traditional hunter-gatherer groups. The levels of social and economic complexity, along with the well established art traditions encountered on the Northwest Coast at the time of contact have long enamored anthropologists around the world and have led to Northwest Coast communities being labeled "complex hunter-fisher-gatherers". Archaeologists working on the Northwest Coast are interested in understanding the causes for the social and economic complexity seen in this area at the time of contact. Much work has been undertaken in areas of social organization, technological innovation, the development of art and religious traditions, and patterns of subsistence intensification as means of explaining the emergence and further development of complexity on the Northwest Coast. These phenomena vary along the coast because local environmental settings and specific regional histories have had differing effects on the emergence of complexity; however, there are many generalizations that can be made for the coast as a whole.

Sassaman (2004:233-234) lists a series of cultural features that can be linked with complexity (problems associated with such definitions of complexity will be addressed later), and all eleven of these features are known in some form during the Northwest Coast ethnographic period: high population, high population density, sedentism, storage technology, territoriality, elaborate technology, intensive subsistence, delayed-returned economy, long-distance exchange, labour under the direction of non-kin and ascribed status. While all of these elements are central to discussing both social and economic complexity on the Northwest Coast, they have been treated at length elsewhere (Matson and Coupland 1995; Ames and Maschner 1999). Instead, this discussion will focus on intensive subsistence, including aspects of technology, territoriality, labour and status.

One type of subsistence technology that has often been linked to intensive resource procurement on the Northwest Coast is the fish trap. Fish traps are found throughout the culture area from at least 3,500BP onwards (Matson and Coupland 1995), and earlier in some areas of the coast (Eldridge and Acheson 1992; Andrew Mason, personal communication, 2008), and have been strongly linked to discussions of subsistence intensification (Moss and Erlandson 1998:183). The research presented here looks at the phenomenon of fish trap use in one location on the Northwest Coast. Comox Harbour, British Columbia is a large intertidal bay containing the remains of at least two hundred wooden stake fish trap structures (Greene 2005a). While these structures are currently undergoing spatial and structural analysis elsewhere (Greene 2005a), no effort has as yet been made to understand the faunal signature associated with these traps. To understand fish trap use in Comox Harbour, this research presents the results of bucket auger sampling at a village site on the north shore of the bay.

This research was initiated with three main objectives. The first of these was to assess the basic use patterns of the fish traps located in Comox Harbour, including archaeological and ethnographic information, and knowledge gained through interviews with K'omoks Elders. The second objective of this research was to sample shell midden deposits located adjacent to mapped and dated trap features within Comox Harbour. Previous research undertaken within Comox Harbour has looked at elucidating the structural variation and temporal history of these fish trap features; the current research was undertaken as a third means of interpreting fish trap use through consideration of the exploitation of different fish species. The final objective of this research was to trace the temporal variation in fish trap use by considering the chronology of both the fish traps and the fluctuations in fish resource use in Comox Harbour. Correlation of fish remains to fish trap ages is employed to assess the possibility of intensification and related features of social and economic complexity.

To fulfill these objectives, excavations were undertaken at a site on the northern shore of Comox Harbour. The Q'umu?xs Village site is a named winter village with a long history of occupation. Sampling of the shell midden deposits at this site, using both bucket auger and column sampling techniques, allowed for the recovery of fish remains. These fish remains, from midden deposits adjacent to fish traps within Comox Harbour, are assumed for the purpose of this research to have been caught via fish traps. Eight fish taxa were recovered from the deposits and are discussed here, while the shellfish, mammalian and avian remains also recovered are not considered for the current research.

One way of examining intensification and the resulting economic complexity within a subsistence context is through human behavioural ecology. Specifically, this thesis will look to optimal foraging theory as a theoretical framework for discussing fish trap use in Comox Harbour. In addition to optimal foraging theory, literature on household production, complex hunter-gatherers and subsistence intensification will be presented as theoretical frameworks for understanding Northwest Coast social and economic complexity.

Contained within this thesis are the results of the analysis of fish remains recovered from the north shore of Comox Harbour, and a discussion of those fish remains in relation to the Comox Harbour fish traps. I begin by briefly introducing both the environmental and cultural context of the Northwest Coast and Comox Harbour in particular (Chapter 2). I then consider existing literature on optimal foraging theory, complex hunter-gatherers, household archaeology and subsistence intensification, particularly how these theoretical frameworks can be used to address Northwest Coast fish trap use (Chapter 3). Discussion of my methods (Chapter 4) and results (Chapter 5) will be followed by interpretations of those results. Finally, I will re-contextualize this research within the overall Northwest Coast pattern (Chapter 6), and highlight avenues for future research (Chapter 7).

# Chapter 2 – The Northwest Coast Setting

## 2.1 - Defining the Northwest Coast

Many different definitions exist for the Northwest Coast culture area (for a discussion of these definitions see Matson and Coupland 1995:12-20). In the present discussion, I will follow that given by Matson and Coupland (1995:1-2), who define the Northwest Coast as extending "from the northern California coast to Yakutat Bay at the north end of the Alaskan Panhandle" and extending inland along the major salmon riverss (Columbia, Fraser, Skeena, Nass) (Figure 2.1). Matson and Coupland (1995:20) further subdivide the Northwest Coast into a 'northern coast' (from the northern tip of Vancouver Island to Yakutat Bay), a 'central coast' (from the Columbia River to the northern tip of Vancouver Island), and a 'southern coast' (from northern California to the Columbia River). As the culture area presented in this thesis falls into the central coast region, my review of Northwest Coast prehistory will focus on this region, specifically the archaeology of the Strait of Georgia, also known as the Gulf of Georgia.

Mitchell (1971:2-3) defines the physiographical boundaries of the Gulf of Georgia area as extending from the start of Seymour Passage in the north, to the entrance to Puget Sound in the south. It is bounded to the west by Vancouver Island and the Olympic Peninsula, and to the east by the Coast and Cascade mountain ranges. Culturally, the Gulf of Georgia area is considered to be distinct from other areas of the Northwest Coast (Kroeber 1963:29; Mitchell 1971:19). At contact, the area was occupied by Coast Salish language groups, who continue to live in the area today, with Comox being the northernmost language family included in the area (Mitchell 1971:24). In breaking up the Gulf of Georgia region into smaller sub areas, the site under question in this research is located in the northern Gulf area (Mitchell 1971:44). Mitchell (1971:27-28) points out similarities between the northern Gulf groups and their neighbours to the north the Southern Kwakwaka'wakw. These similarities include house types, clothing, ceremonies and crests. As well, northern Gulf groups are described by Mitchell (1971:29) as being more diversified fisherman than their southern neighbours, relying more on smaller runs of salmon than on the major Fraser River run exploited by the rest of the Gulf of Georgia groups.

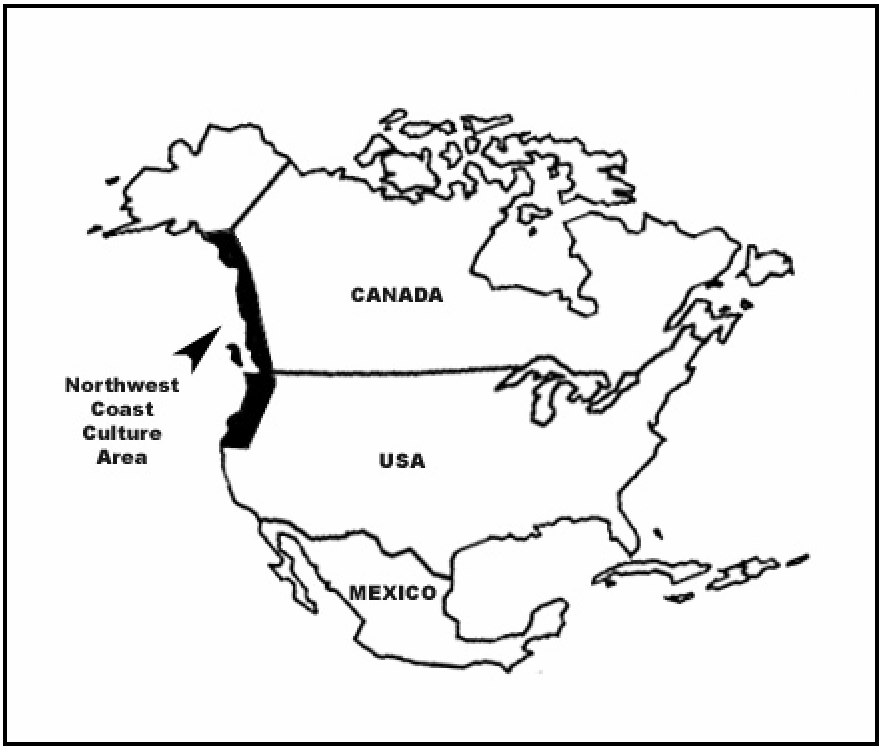



Figure 2.1 The Northwest Coast culture area

## 2.2 - Northwest Coast Environment

### 2.2.1 - *Northwest Coast Environmental Setting*

While the Northwest Coast of North America is often homogenized in terms of its environmental setting, it is in fact an area with highly variable environmental zones, generalized under the Coastal Western Hemlock biogeoclimatic zone. This zone is characterized by high rainfall, with cool summers interspersed with occasional dry hot spells, and mild, rainy winters. Over 1000mm of precipitation occurs almost everywhere along the coast (Ames and Maschner 1999:45; Matson and Coupland 1995:21; Pojar 1991). Vegetation consists of coniferous forest, with species suited to mild temperatures and high amounts of rain. Douglas fir (*Pseudotsuga menziesii*), Sitka spruce (*Picea sitchensis*), western hemlock (*Tsuga heterophylla*) and western red cedar (*Thuja plicata*) dominate the forest cover, with undergrowth consisting of Oregon grape (*Mahonia nervosa*), salal (*Gaultheria shallon*) and red huckleberry (*Vaccinium parvifolium*) (Ames and Maschner 1999:45-46; Matson and Coupland 1995:21; Pojar *et al.* 1991).

### 2.2.2 - *Faunal Resources*

The Northwest Coast is an area within which large abundances of resources are available; however, most are only available for short periods of time. Some of these resources include: various species of fish which school to spawn in particular environmental locations, making them both easy and efficient to procure; migrating populations of waterfowl and other avian species; and migrating populations of sea mammals along both the inner and outer coasts. As well, there are resident populations of various species of fish, some species of birds, land and sea mammals, and of course the abundant populations of shellfish found throughout the Northwest Coast (Ames and Maschner 1999:46-48; Matson and Coupland 1995:21-24).

### 2.2.3 – *Spawning Aggregations of Herring and Salmon*

Ecologists have noted the abundance and predictability during the spawning seasons of marine fishes in the nearshore ecosystems of the Pacific coast of North America (Lewis et al. 2007:216). While the abundance of both fish and roe available during the spawn of herring, salmon, eulachon and other marine fishes are noted by ecologists as food available for other wildlife (Lewis et al. 2007:216), the recognition of the occurrence of such resources on the Northwest Coast is applicable in the context of human use of these resources as well. While Lewis and colleagues (Lewis et al. 2007:216) note that these events provide a "superabundant and predictable food resource in the form of both adult fish and roe deposits," they are also careful to note that these resources are ephemeral in nature.

The nature of spawning aggregations of both Pacific herring and Pacific salmon make them easy and efficient to gather in large quantities, especially with technologies such as the wooden stake fish traps present in Comox Harbour. It should be noted that aggregations of spawning fish are known to attract both avian (Haegele 1993; Sullivan et al. 2002) and mammalian species (Sigler et al. 2004), and it has been previously acknowledged that these occurrences were likely exploited by populations in the past (Monks 1987).

*Pacific Herring (Clupea harengus pallasi)*

Pacific herring (*Clupea harengus pallasi*) are found in the eastern north Pacific from Baja California to Beaufort Sea (Hart 1988:99). While the timing of the herring spawn can range from November (in California) to July (in Alaska), within British Columbia the spawning period occurs at different times in different areas, and varies from early January to June, peaking in March and April. The length of a herring spawning period ranges from three to six weeks, and often consists of two major waves. Pacific herring spawn in both intertidal and upper subtidal zones (up to 11m depth) (Haegele and Schweigert 1985:40; Hart 1988:97).

In southern British Columbia, herring are known to spawn on both the east and west coasts of Vancouver Island, and along the shores of islands in both Georgia and Johnstone straits. As well, herring spawning grounds are known along the entire mainland coast of British Columbia, extending south into Washington state and north into Alaska, and on the shores of Haida Gwaii (Haegele and Schweigert 1985:40). The location of herring spawning grounds is generally restricted to protected inlets, bays and estuaries, rather than along open coastlines. Haegele and Schweigert (1985:41) suggest that this behaviour is an attempt to minimize loss of eggs, which are laid on marine vegetation such as eel grass, kelp and other seaweeds, and, occasionally, rocks and pilings (Hart 1988:97). Investigations in British Columbia have shown that the majority of roe is "deposited within 10m of the mean tide level at spawning" (Haegele and Schweigert 1985:43). Adult herring congregate for weeks or months prior to spawning as they migrate inshore from offshore feeding grounds. Once spawning begins, it lasts for several days, with milt being expunged in order to fertilize the deposited roe (Haegele and Schweigert 1985:45-46). Eggs hatch within ten days of fertilization, presenting a limited window of opportunity for their harvest. In addition to massive human consumption, herring is also known to be fodder for Chinook and Coho salmon, dogfish and other species of shark, lingcod, various species of waterfowl, and seals, sea lions and whales (Hart 1988: 96-99).

*Pacific Salmon (Oncorhynchus spp.)*

Five species of pacific salmon (*Oncorhynchus* spp.) are known on the eastern north Pacific coast: pink salmon (*Oncorhynchus gorbuscha*), chum salmon (*Oncorhynchus keta*), Coho salmon (*Oncorhynchus kisutch*), sockeye salmon (*Oncorhynchus nerka*), and Chinook salmon (*Oncorhynchus tshawytscha*). While all five species of Pacific salmon inhabiting the Northwest Coast culture area are anadromous species, there are some distinct variations in their life-cycles and spawning habits. Spawning habits can vary between those species able to spawn in marine-water intertidal zones (pink and chum), in fresh-water streams (all species), or in fresh-water lakes (sockeye salmon who build nests on the lake floor in which to lay their eggs) (Quinn and Myers 2004:432). Intertidal spawning is known in southeast Alaska and has been linked to high population densities in small streams; that is, the population amassing to spawn was too large for the stream to sustain (Quinn and Myers 2004:433). While some cases of iteroparity occur, in general salmon die after spawning (see Quinn and Myers 2003:433 for a discussion of which species display iteroparous behaviour).

In general, however, salmon migration consists of moving inshore prior to entering spawning streams and rivers (an example is the movement of pink salmon into bays and estuaries in July and August, to enter spawning rivers in September and October) (Heard 1991:136). Salmon mill around in bays and estuaries as they move inshore, testing the water in the vicinity of streams to locate the one they will eventually enter (Heard 1991:134). After making their way upstream, salmon choose a site for spawning, dig out a nest into which the eggs are deposited and then covered with gravel (Heard 1991:148, 150). In the case of pink salmon, the male leaves the nest in order to mate with other females, while the female guards the nest for up to 13 days after the eggs have been deposited before succumbing to death (Heard 1991:150).

#### 2.2.4 - *Other fish species found at Q'umu?xs*

Along with these reliable, yet variable fish resources, other fish species were also important to those people living on the Northwest Coast prior to contact. Some of these species include various rockfish (*Sebastes* spp.) and flatfish (Pleuronectiformes), Pacific cod (*Gadus macrocephalus*), Pacific halibut (*Hippoglossus stenolepis*), spiny dogfish *(Squalus acanthias)*, eulachon (*Thaleichthys pacificus*), and a multitude of other smaller species. While some of these species also aggregate for spawning, such as eulachon, they do not do so in Comox Harbour so they are not the focus of the current research. Species other than salmon have long been underrepresented in archaeological and ethnographic literature on the Northwest Coast, and thus have not been thought to play a major role in Northwest Coast economies. Recent research, however, has shown that while salmon is an important resource throughout the Northwest Coast, other species such as rockfish, lingcod, surfperch and Pacific herring often account for large portions of fish assemblages (Frederick and Crockford 2005; McKechnie 2005; Monks 2006; Orchard and Clark 2005; Trost 2005). In addition to Pacific herring and Pacific salmon, six other fish taxa have been recovered from the Q'umu?xs village site.

*Flatfish (Pleuronectiformes; Bothidae, Pleuronectidae)*

Many species of the order Pleuronectiformes (flatfish) inhabit the waters of British Columbia; two members of the family Bothidae (lefteye flounders) and nineteen members of the family Pleuronectidae (righteye flounders). While distribution and life histories vary greatly for the various species of flatfish, they inhabit both shallow and deep waters, and display varying degrees of mobility (Hart 1988: 595-639). Comox Harbour is likely home to multiple species of flatfish preferring shallow waters and sandy bottoms.

*Greenling (Hexagrammos spp.)*

Many species of greenling (*Hexagrammos* spp.) reside in British Columbia waters (including Kelp Greenling (*Hexagrammos decagrammus*), Rock Greenling (*Hexagrammos lagocephalus*), and Whitespotted Greenling (*Hexagrammos stelleri*)). Greenlings are found in the eastern north Pacific, in general, from California to Alaska. They inhabit rocky environments, and availability varies depending on the species. Spawning can occur in October and November (Kelp Greenling), or in April (Whitespotted Greenling), making occurrences in the Strait of Georgia possible throughout the year (Hart 1988: 461-467).

*Plainfin Midshipman (Porichthys notatus)*

Plainfin Midshipman (*Porichthys notatus*) is the only member of the family Batrachoididae present on the eastern north Pacific coast. It occurs from the Gulf of California to southeastern Alaska, and in British Columbia it is common in the Strait of Georgia between the intertidal zone and 265m below surface. Plainfin midshipmen spawn in spring in the intertidal zone, depositing eggs in cavities under rocks. No mention is made of migratory habits, suggesting that plainfin midshipman would be available year round in the vicinity of Comox Harbour (Hart 1988: 207-209).

*Rockfish (Sebastes spp.)*

Numerous species of rockfish (*Sebastes* spp.) inhabit the waters of the eastern north Pacific. Habitats vary from offshore locations, to inshore rocky beaches, to protected shallow waters. Life histories also vary, with spawning occurring anywhere from late fall to early summer. Although some species migrate between inshore and offshore areas, for the most part populations tend to remain within their specific econiches. Various species occur in the Strait of Georgia region, and it is likely that they were available year round (Hart 1988: 394-450).

*Spiny Dogfish Shark (Squalus acanthias)*

The spiny dogfish (*Squalus acanthias*) is found along the eastern north Pacific coast between Baja California and the Bering Sea, and higher abundances are found between northern California and northern British Columbia than elsewhere on the coast. They can be found at surface and up to 730m below. Immature dogfish are present in British Columbia waters all winter, while adults are only sometimes available. In particular, there seems to be little movement out of the Strait of Georgia by spiny dogfish populations, although movement occurs within the Strait. As well, there appear to be populations that exhibit long-distance migration within the Strait of Georgia and Johnstone Strait (Hart 1988:42-46).

*Surfperch (Embiotocidae)*

Nine species of the surfperch family (Embiotocidae) reside in British Columbian waters, only a few of which occur within the Strait of Georgia. Surfperch are ovoviviparous, and gestation periods are usually quite lengthy; birth tends to occur in the summer months. Studies have shown there to be little movement of resident populations. Surfperch frequent shallow waters and protected bays, similar to the habitat provided in Comox Harbour (Hart 1998: 301-313).

**2.2.5 - *Shellfish Resources***

Shellfish species also played an important role in Northwest Coast subsistence; in fact it is often the remains of these species which distinguish coastal sites from their surrounding area due to the large accumulations of shell midden deposits. Commonly exploited shellfish can include a multitude of clam species (including but not limited to horse clam (*Tresus nuttallii*; *Tresus capax*), butter clam (*Saxidomus giganteus*) and littleneck clam (*Protothaca staminea*)), barnacles (*Balanus* spp.), California mussels (*Mytilus californianus*), cockles (*Clinocardium* spp.), limpets (Patellogastropoda), native oyster (*Ostrea luridae*), scallops (Pectinidae), sea urchins (*Strongylocentrotus* spp.) and whelks (*Nucella* spp.)) (Matson and Coupland 1995). While not considered in the present research, the remains of such species make up the majority of the materials recovered from Q'umu?xs, and their importance to diet and social interaction should not be disregarded. Species that have been observed in the Q'umu?xs materials include: California mussel; horse, butter and littleneck clams; sea urchins; limpets; whelks; barnacles; cockles; and oysters.

### 2.2.6 - *Avian and Mammalian Resources*

Both avian and mammalian taxa are present in faunal assemblages from the Northwest Coast. These species vary by site location, but commonly encountered or exploited species include various waterfowl species (especially ducks, geese and swans, members of the Anatidae family), elk (*Cervus elaphus*), black bear (*Ursus americanus*), black-tailed (or mule) deer (*Odocoileus hemionus columbianus*), white-tailed deer (*Odocoileus virginianus*) and members of the canidae family (Ames and Maschner 1999:46-47; Matson and Coupland 1995). Additionally, various species of sea mammals were exploited along the Northwest Coast, including harbour seals (*Phoca vitulina*), fur seals (*Callorhinus ursinus*), sea otters (*Enhydra lutris*), Northern sea lions (*Eumetopias jubata*), California sea lions (*Zalophus californianus*), porpoises (Phocoenidae), and various species of whales, including grey whales (*Eschrichtius glaucus*) (Ames and Maschner 1999:48; Matson and Coupland 1995:24). At Q'umu?xs, small amounts of domestic dog, mule deer, and some medium-sized waterfowl were recovered as part of this project.

## 2.3 - Northwest Coast Culture Area

### 2.3.1 - *Introduction*

The cultures encountered on the Northwest Coast at the time of European Contact have long held fascination with anthropologists for their high levels of social and economic complexity. Now termed "complex hunter-gatherers", the people living on the Northwest Coast at contact lived in semi- to fully permanent villages; practiced intensive resource procurement, processing and storage; had a well established art tradition; institutionalized, hereditary social inequality; and many other features which made them appear as unique when compared to other hunter-gatherer communities encountered throughout the world by way of European expansion. While it is clear that Northwest

Coast cultures are socially and economically complex, it is important to point out that these features have their beginnings around 3,500 years ago, and are only beginning to be understood in terms of the archaeological record (Ames and Maschner 1999; Matson and Coupland 1995; see also discussion in Cannon and Yang 2006).

### 2.3.2 - ***Early Northwest Coast Occupation***

Human occupation on the Northwest Coast is broken up into a series of cultural periods based on artifact typologies and changes in social organization and subsistence focus. While it is still debated whether the earliest inhabitants of the Northwest Coast migrated south along the coast from Alaska, or north along the coast after reaching southern North America via an ice-free corridor, human occupation on the Northwest Coast is thought to extend back at least 10,000 years, if not longer (Ames and Maschner 1999:57; Fedje and Mackie 2005; Fladmark 1986; Matson and Coupland 1995:59-65). The progression of cultural periods on the Northwest Coast is discussed elsewhere in detail (Ames and Maschner 1999; Matson and Coupland 1995); thus, the following discussion will highlight key features of cultural periods in the central coast region after ca. 3,500BP, the period of time during which it is generally thought that Northwest Coast groups attained social and economic complexity leading to levels of complexity seen during the Gulf of Georgia and ethnographic periods (Matson and Coupland 1995). These periods (following Matson and Coupland (1995) and Mitchell (1971)) are the Locarno Beach Phase, the Marpole Phase, and the Gulf of Georgia Phase, after which the ethnographic period begins, and are discussed below.

### 2.3.3 - ***Locarno Beach Phase***

In the period after 3,500 BP on the central Northwest Coast, a number of cultural phases have been established to delineate changes seen in the archaeological record in terms of artifact assemblages, settlement distribution, and resource use. The first, the Locarno Beach phase, lasts from ca. 3,500 BP until ca. 2,400 BP. This phase is distinguished by a series of artifacts including shaped abrasive stones and quartz crystal microliths (Ames and Maschner 1999:94; Matson and Coupland 1995:156; Mitchell 1971:57), both of which have been recovered from the Q'umu?xs site previously (Hewer and Nicholls 2000:16; Lindberg 2000:10-11). However, a full suite of technologies known from the ethnographic period are found during this period, including technologies made of bone, antler, and chipped and ground stone (Ames and Maschner 1999:93; Matson and Coupland 1995:156; Mitchell 1971:57). Central to the purpose of the current research, fish weirs built at salmon streams first appear during the Locarno Beach phase (Ames and Maschner 1999:93, 140; Matson and Coupland 1995:197). Ground slate knives, which have been suggested to be related to large-scale fish (salmon) processing, also appear during the Locarno Beach phase (Matson and Coupland 1995:197; Mitchell 1971:58). Fish weirs and ground slate knives together suggest that intensified fish procurement was possible, based on technologies and social formations for both catching and processing fish *en masse* (Matson and Coupland 1995:197).

During the Locarno Beach phase, fish play an important role in subsistence patterns; salmon is important at many sites during, as is flatfish, surf smelt and herring. In fact, herring appear to have gained importance during this period as a late winter resource and are present at numerous sites dated to this period (Matson and Coupland 1995:165-166), which is important to note in relation to the Q'umu?xs fish assemblage. Additionally, an absence of salmon cranial bones is noted at many sites, which has been suggested to be evidence for the use of stored fish as salmon heads would not have been part of the processed salmon stored for winter months (Butler and Chatters 1994; Hoffman et al. 2000; Matson and Coupland 1995:166; Wigen and Stucki 1988).

Evidence for storage of fish other than salmon (e.g. flatfish at Hoko River) is noted, and suggests that salmon might not yet have reached the wide-scale importance it holds in later periods (Matson and Coupland 1995:169). Overall, assemblages from many Locarno Beach phase sites display increasing densities of fish remains, with increasing numbers of salmon and herring at most sites, and of flatfish at others (Matson and Coupland 1995: 172-176). Storage of salmon is inferred by the absence of cranial remains at many sites (Matson and Coupland 1995: 166, 177), and the possibility exists that a move to storage of fish and/or salmon intensification begins during this period (Matson and Coupland 1995: 177).

In addition to fish resources used during the Locarno Beach phase, sea mammals, land mammals, birds and shellfish all played important roles in the subsistence base of the Northwest Coast. Sea mammals have been suggested as figuring prominently in this period (Borden 1951, in Mitchell 1971:57); however, subsequent research has shown no strong preference for sea mammals at this time (Mitchell 1971:57). Differences in subsistence between sites are likely due to differing seasonal occupation and resource use (Mitchell 1971:57). Ames and Maschner (1999:142) emphasize the variation in resource use during this period, as well as highlighting intensive exploitation of non-fish resources. Further, Ames and Maschner (1999:142) note the probable importance of plant resources, evidenced by the presence of milling stones.

In terms of linking the Locarno Beach phase with Northwest Coast ethnographic cultures, Matson and Coupland (1995:183) argue that the presence of evidence for stored salmon and seasonally occupied specialized sites, as well as technologies and personal ornamentation known from the ethnographic period suggest that the Locarno Beach phase is the first cultural period on the central coast that can be linked with later Northwest Coast cultures. The use of personal ornamentation, as well as the presence of both burial goods and burial cairns, has been suggested as indicative of status during this period. However, Matson and Coupland (1995:183) point out that the Locarno Beach phase is also missing elements of the ethnographic period that are considered evidence for the social complexity including "evidence for ascribed status, winter villages, [and] large multifamily houses," and neither had cultures elsewhere to the north or south of this area attained these features.

### 2.3.4 - *Marpole Phase*

Following the Locarno Beach Phase on the central coast is the Marpole phase, lasting from ca. 2,400 BP to ca. 1,500 BP-1,100 BP. This phase is named after the Marpole Site located in what is now Vancouver, British Columbia. Extensive archaeological research in the 1950s through 1970s was undertaken on Marpole phase sites throughout the central coast area, especially the Gulf of Georgia. It is during the Marpole phase that many of the cultural features associated with ethnographic cultures on the Northwest Coast appear in the archaeological record. These features include: large plank houses and winter villages; an overt dependence on fish resources, especially salmon and other stored species; evidence for ascribed status (e.g. cranial deformation); a widespread, sophisticated art tradition; and procurement of resources at specialized camps requiring movement seasonal movement (Ames and Maschner 1999:141; Matson and Coupland 1995:224; Mitchell 1971:52-54). It is important to note that these features arise *during* and are not present from the start of the period. By the end of the Marpole phase, however, all of these features are present in the central coast archaeological record.

Technologies present during the Marpole phase include both chipped and ground lithic tools and decorated objects, pecked stone mauls, and numerous types of bone and antler technologies including bone points, awls, needles, chisels and wedges; as well, a large number of the technologies used during this period would have been fashioned in whole or in part from highly perishable wood and bark components. Nets, baskets, fish traps, clothing, spear shafts, portions of fish hooks, and canoes are examples of just some of the technologies which are underrepresented in the archaeological record from this period (Ames and Maschner 1999:93-94, 140-141; Matson and Coupland 1995:218; Mitchell 1971:52-53). Wet sites are increasingly recognized and located on the Northwest Coast from this phase (Bernick 1998), and, while these sites provide much information on the many perishable technologies employed during the Marpole period, they are still highly underrepresented in comparison with dry sites from the same period.

Matson and Coupland (1995) report that very little is known about subsistence during the Marpole period. It is known that salmon was widely used, as was herring, and other fish species such as flatfish and midshipman have been found at sites from this period. All of these species are indicative of winter-spring occupation of the village sites they are found at (Matson and Coupland 1995:223). At Deep Bay, large numbers of herring have been recovered in association with a stone fish trap (Monks 1987), and the Point Grey site has also been identified as a specialized herring fishing locale (Matson and Coupland 1995:224). In addition to fish, clam, mussel and cockles, sea mammals and diving birds have also been recovered from Marpole-age sites (Matson and Coupland 1995:224), and Mitchell (1971:52) notes that in addition to fish, "sea mammals, land mammals, birds, shellfish and vegetable products were all used."

### 2.3.5 - *Gulf of Georgia Phase*

The Northwest Coast ethnographic pattern is well established at archaeological sites throughout the Northwest Coast after the Marpole period. Matson and Coupland (1995:247) note that tracing the subsequent phase, the Gulf of Georgia phase (also known as the Late period), in the archaeological record is easy as it is the closest to the ethnographic period. While this period is well known through excavation of houses on both the southern and northern coasts, the central coast is relatively unknown in comparison (Matson and Coupland 1995:247). The Late period lasts from 1,500 BP until the late 18th century, at which time the ethnographic period commences. During this period there is a continuation of those features associated with the Developed Northwest Coast Pattern that arose during the Marpole phase.

During the Gulf of Georgia period the presence of chipped stone technologies declines to the point where it is almost completely absent in the archaeological record (Ames and Maschner 1999:95, 144; Matson and Coupland 1995:268; Mitchell 1971:48-49). Instead, although some pecked and ground stone technologies are still used, most objects consist of bone, antler and plant materials. Artifact diversity declines during the Gulf of Georgia phase, and very little overall is known from this period on the central coast (Ames and Maschner 1999:144; Matson and Coupland 1995:268). Evidence for community-scale conflict is known during the Late period from the occurrence of trench embankment sites (Matson and Coupland 1995:270), such as the one adjacent to the Q'umu?xs village site in Comox Harbour (McMurdo 1974; Melcombe and Mason 1979).

Evidence for winter village sites, as well as multiple small, specialized activity sites has been reported from the Late period. The Little Qualicum site, for example, is located on the east coast of Vancouver Island, just south of Comox Harbour and is thought to have been occupied in the fall when a wooden stake fish weir would have been used to catch salmon (Bernick 1983). The Crescent Beach site on the mainland has been reported as a clam and herring processing site (Matson and Coupland 1995:270), and the use of the Deep Bay fish trap for herring procurement continues into this period (Monks 1987). Also during this period, the use of reef nets to catch fish begins, increasing the range and diversity of fish resources used (Ames and Maschner 1999:145).

Faunal remains show variability in resource use between sites, including sites with relatively little salmon (Ames and Maschner 1999:145). Continuity with ethnographic period practices is seen at sites like Ozette on the Olympic Peninsula (Ames and Maschner 1999:145), and Mitchell (1971:48) notes that annual rounds based on seasonal availability of resources in different areas was probably central to resource extraction. However, as Matson and Coupland (1995:270) stress, there is a distinct need for Gulf of Georgia period winter villages to be explored in order to understand the extent of behaviour just prior to contact.

### 2.3.6 - *The Ethnographic Period*

The ethnographic period on the Northwest Coast began during the late 18$^{th}$ century. At this time, European exploration of the area expanded, and many explorers and traders recorded observations about the First Nations groups they encountered (Suttles 1990a:71). During the mid-19$^{th}$ century, ethnographic research commenced on the Northwest Coast (Suttles and Jonaitis 1990:73). The ethnographic body of work for the Northwest Coast is enormous, and a lot of archaeological interpretations made about the Northwest Coast are based on 19$^{th}$ and 20$^{th}$ century ethnographic observations. While Northwest Coast ethnography is best known from the work of Franz Boas, in the Coast Salish area other major ethnographic works have been produced by Barnett (1955), Suttles (1974, 1987, 1990b), Elmendorf (1960), Gunther (1927), and Stern (1966). Works by Boas (1887, 1909) are the best known for the Kwakwaka'wakw, although Curtis (1915) also made a substantial contribution. While the body of information provided by this research is immense, the current discussion will touch only on what is recorded for fishing, fishing technologies, and related social organization.

Fish is often stated as being a 'staple food' on the Northwest Coast, owing mostly to the superabundance of aquatic resources in general, and of species like salmon, herring and eulachon specifically. Technologies employed in fishing include toggling harpoons, gaff hooks, numerous specialized fishing hooks such as the halibut hook, reef nets, dip nets, clubs, herring rakes and various tackle and lures (Barnett 1955:83-88; Curtis 1915:19-29; Elmendorf 1960:76-83; Kennedy and Bouchard 1990:444; Suttles 1974:114-145, 1990b:457). Additionally, traps, weirs and basketry were used to obtain fish. Barnett (1955:78) states that a weir is the "simplest and most efficient solution" to catch fish, especially salmon, in large numbers. He further states that traps and weirs were for the most part used to catch salmon (Barnett 1955:79), although they are also known to have been used for herring (Elmendorf 1960:76-77) and suggested to have been used for flatfish (Mitchell 1990). Many different types of traps and weirs were constructed (Curtis 1915:27-28; Barnett 1955:78-83; Elmendorf 1960:63-76; Kennedy and Bouchard 1990:444; Suttles 1974:145-151, 1990b:457), often to account for differing locations of use. These structures are known to have been used up rivers, at the mouths of rivers and in intertidal areas. Stewart (1977) has extensively diagramed and described the use of fishing technologies on the Northwest Coast.

Traps and weirs were owned to various degrees on the Northwest Coast. For example, among the Twana, several individuals from a community might gather together to construct a weir, and each person would own one dip-net platform on that weir (Elmendorf 1960:72). The owner of a dip-net platform could allow others to use his platform to catch fish, and any fish caught either by the owner or a borrower was their own to do with as they pleased (Elmendorf 1960:72). Suttles (1974:205) reports that among the Lummi, a weir was built under the supervision of one family and was owned by that family. However, everyone who took part in the building of the weir had rights to at least gaff fish from it. Suttles (1987b:55) notes elsewhere that while fish traps and weirs might not have been owned by individuals, the houses in which fish were processed were owned, and so access to fish was useless if an individual did not also have the ability to process and store those fish for winter. By allowing an individual access to a house for processing and storage, the individual would be obliged to the household leader.

Herring, in particular, were taken during the spawning period during mid-late March using a herring rake. Herring rakes consisted of a long, 6-12 foot slender pole, with approximately 3 feet of one end fashioned with bone or hardwood points. The pole was moved through water, while the operator was standing in a canoe, as though paddling. As the pole passed through the water herring were impaled on the points and shaken into the bottom on the canoe before the pole was once again passed through the schooling herring (Barnett 1955:86; Elmendorf 1960:81; Kennedy and Bouchard 1990:445; Suttles 1974:126-127). Other accounts mention the use of dipnets once the water is opaque with the milt and thus the net is obscured (Curtis 1915:19). Curtis (1915:19) wrote that using a herring rake for “a short time suffices to obtain a large quantity” of herring. Herring roe was also collected by sinking cedar branches into eel grass beds where herring like to spawn. Herring would deposit their roe on the branches which were collected after the spawn (Barnett 1955:86; Curtis 1915:20-21; Suttles 1974:127).

In addition to being used fresh, fish were processed in various ways for winter storage. Salmon was often smoked or dried, to be used over the winter. Salmon processing techniques differ, but in general the back and belly flesh was removed from the fish by cutting along the belly, behind the gills, along the back and down at the tail, producing two fillets of flesh. Single pieces of flesh were also produced by leaving the back in tact. Salmon was then left in the open air to dry, or smoked in smokehouses or plankhouses, curing it for winter storage (Barnett 1955:62; Kennedy and Bouchard 1983:26-31, 1990:444: Stewart 1977:135-145; Suttles 1990b:457). Herring and herring roe were also dried or smoked for winter storage (Curtis 1915:20-21; Kennedy and

Bouchard 1983:31; Stewart 1977:147; Suttles 1974:127), although this was normally done to whole fish.

## 2.4 - Large-Scale Fishing Structures (Traps and Weirs)

### 2.4.1 - *Fishing Structures Around the World*

Fish trap technology is not unique to the Northwest Coast. Tidal fish traps are known from other areas of the world, including South Africa (Avery 1975), Wales (Momber 1991), Great Britain (Bannerman and Jones 1999; Gilman 1998; O'Sullivan 2003), Denmark (Pederson 1995), the Netherlands (Louwe Kooijams 1987; Waterbolk 1981), Australia (Cambell 1979; Dortch 1997; Welz 2002), New Zealand (Barr 1998), South America (Cooke and Ranere 1999; Williams 1979), and other places within North America (Costa-Pierce 1987; Decima and Dincauze 1998; Peterson et al. 1994; Rostlund 1952; Van Tilburg 2002). Fish trap occurrences are also implied through rock art, such as petroglyphs at El-Hosh in Egypt which have been interpreted as representing fish traps: "their outlines bear remarkable similarities to the ground plan of a universally known fish-trapping device, namely the labyrinth fish fence. The general purpose of such a trap is to channel and barricade fish into a confined space (a catching chamber) where they can easily be speared, netted or simply collected by hand" (Huyge et al. 2001:69).

The antiquity of fish trap use is still undergoing research. However, fish trap use is known throughout the world from the early Holocene onwards, and earlier dates on fish trap use are known. Fish traps in Great Britain are known from the Neolithic through the Middle Ages and into modern times (O'Sullivan 2003:449). O'Sullivan (2003:450) notes that most of the work done on archaeological fish traps in Great Britain has focused on the medieval-aged traps, although work on prehistoric traps has also been done. The petroglyph designs of fish traps at El-Hosh have been dated based on the association of these designs with designs known from dated ceramics. Huyge and colleagues assign a date of at least 4,000 BC to the fish trap petroglyphs, and suggest they might be as early as 7,000 BC or older (Huyge et al. 2001:70). A direct AMS C14 date on varnish covering the rock art returned a date of 6,690±270 BP (5,900-5,300 BC) for the fish trap petroglyphs (Huyge et al. 2001:71) suggesting early use of fish traps in predynastic Egypt, and possibly, as suggested by the authors, during the late Paleolithic. Antiquity of intertidal stone fish traps in Australia has been estimated to 3,500 BP-2,500 BP (Dortch 1997:24), although it is possible some structures were used as early as 7,000 BP (Dortch 1997:27-28). Elsewhere in Australia, weirs and traps in freshwater environments were used in eel aquaculture from at least 4,600 BP (Builth 2008:423).

### 2.4.2 - *Northwest Coast Fishing Structures*

Structures intended to catch large numbers of fish are known throughout the Northwest Coast culture area, from northern California to southeast Alaska. These structures extend beyond the Northwest Coast culture area into southern California (Treganza 1945), and throughout the rest of North America (Rostlund 1952). Often, ‘trap’ and ‘weir’ are used interchangeably to describe the same features, and though some attempts have been made to distinguish those terms from one another (Bannerman and Jones 1999; Moss and Erlandson 1998), no definitive terminology for fishing structures exist. For the present discussion, I will follow the terminology as set forth by Moss and Erlandson (1998:180) who describe the differences between traps and weirs (the two most commonly found fishing features on the Northwest Coast). Traps are those structures consisting of enclosures left in place, elements such as basket traps that function in conjunction with weirs or leadlines. Traps can be made of wood, stone or other elements, and often include removable portions made of basketry or lattice-work. Fish weirs, on the other hand, consist of wooden stakes, arranged in a linear fashion. Often, weirs function as dams blocking the path of fish through rivers and channels, while other weirs acted as guides for fish into traps (Moss and Erlandson 1998:180).

Fish traps and weirs have been recognized on the Northwest Coast since the ethnographic period (Barnett 1955; Boas 1909; Drucker 1951). However, research into the use, structure, function and age of these features has only recently become a focus of Northwest Coast archaeology. In the 1970s, both Hobler (1976) and Pomeroy (1976) published reports on stone fish traps on the central British Columbia coast, and Munsell (1976) reported on a fish weir in Washington. Monks (1987) discusses the use of a stone fish trap at Deep Bay, on the east coast of Vancouver Island, British Columbia, and in 1983, Bernick (1983) reported on a wooden stake fish trap also on the east coast of Vancouver Island. More recently, work has been done on trap and weir structures in Alaska (Betts 1998; Chaney 1998; Mobley and McCallum 2001; Moss et al. 1990), British Columbia (Elridge and Acheson 1992; Greene 2005a; White 2006), Washington (Losey 2008; Moss and Erlandson 1998) and Oregon (Byram 1998, 2002; Tveskov and Erlandson 2003).

Moss and Erlandson (1998) discuss the antiquity of these features on the Northwest Coast; the oldest known fishing structure on the Northwest Coast is the four stakes at Glenrose Cannery on the southern British Columbia coast. These stakes have been dated between 4,590 BP-3,950 BP (Moss and Erlandson 1998:182; Eldridge and Acheson 1992:112). Recently, a stake from the St. Mungo site, near Glenrose Cannery at the mouth of the Fraser River, has been dated to 4,260±50 BP, in keeping with the Glenrose Cannery dates (Andrew Mason, personal communication, 2008). According to Moss and Erlandson (1998:184-188), the age of structures in Alaska ranges between 3770±80 BP and the modern period. In British Columbia, as mentioned, the Glenrose stakes are the oldest dated traps on the coast. Other dates from British Columbia include Axeti on the central coast at 450±90 BP to 240±80 BP (Hobler 1976), and work done recently by the Hamatla Treaty Society (2008). As well, the fish traps in Comox Harbour have been well dated as will be discussed later. In Washington State, two fishing structures have been dated at Vancouver Lake (310±60 BP) and South Bend (380±50 BP). Fishing structures in Oregon are well known, and ages range between 2410±80 BP and the modern period (Moss and Erlandson 1998:184-188).

## 2.5 - Comox Harbour, British Columbia

### 2.5.1 - *Comox Harbour and the Q'umu?xs Village Site*

Comox Harbour is a large tidal bay situated approximately halfway up the east side of Vancouver Island, British Columbia (Figure 2.2). Comox Harbour is fed by the Tsolum and Puntledge rivers, which join to form the Courtenay River at the top of the harbour (Clague 1976:2). Sixteen archaeological sites are known along the shores of the harbour, and numerous other sites are located inland from the bay. The harbour itself, including the small bay protected by Goose Spit at the eastern end of the harbour, represents two more archaeological sites. Specifically, Comox Harbour contains the remains of approximately 200 wooden stake fish traps (Greene 2005a), representing an estimated 100,000 to 200,000 individual wooden stakes. This complex of wooden stakes represents over 1,200 years of human use of the intertidal zone to harvest of fish resources.

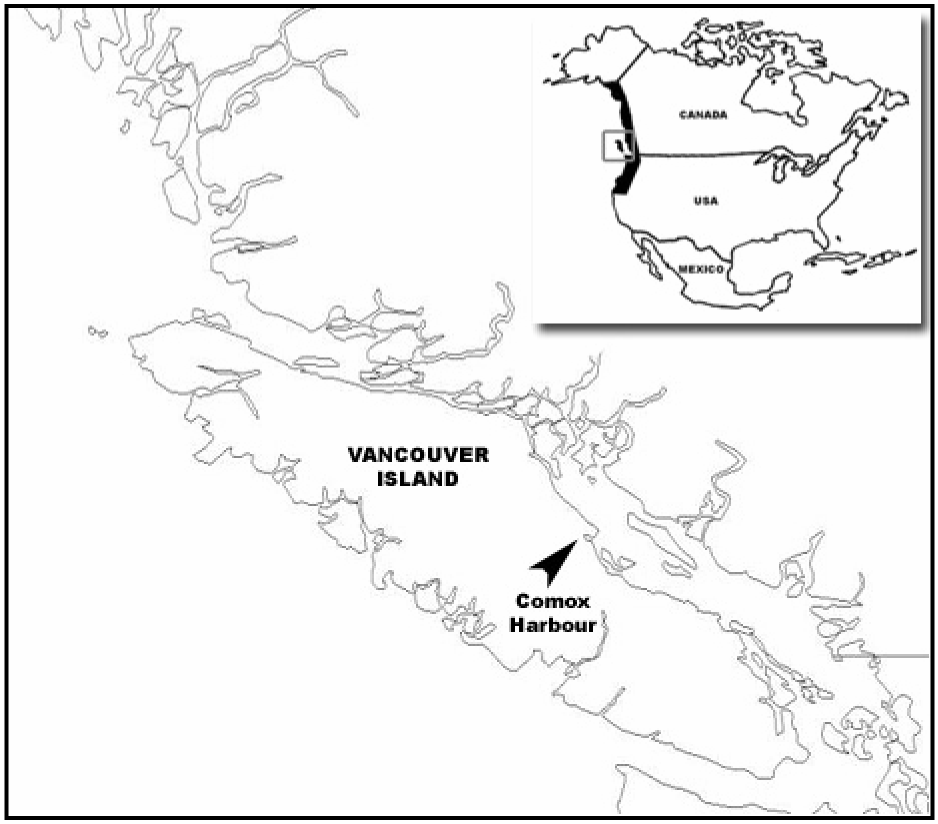



Figure 1.2 Location of Comox Harbour, British Columbia

Dating of the wooden stake fish traps in Comox Harbour has been conducted as part of ongoing work to document and map their occurrence. In 2003, Nancy Greene initiated an ongoing spatial analysis of traps in Comox Harbour and part of this project included twelve individual stakes that were sent for radiocarbon dating. In 2006, as part of a larger foreshore archaeology project, the Hamatla Treaty Society obtained ten additional dates from stakes within Comox Harbour. Altogether, the age of the traps range between 120 BP and 1,230 BP, with a gap between 600 BP and 1,000 BP. While this gap in ages may be a sampling error due to the small number of stakes dated, seventeen of the 22 total dates fall within the later time frame. This distribution suggests a possible increase in the amount of traps present in the harbour following their initial implementation.

The Q'umu?xs village site stretches approximately 1500m along the north shore of Comox Harbour, adjacent to the Courtenay River. It is located at the boundary between Northern Coast Salish and Southern Kwakwaka'wakw territories, and has seen a tumultuous, but continuous, occupation history since at least the 17th century (Kennedy and Bouchard 1990:441). Prior to the 17th century, northeastern Vancouver Island was occupied by Northern Coast Salish groups. Before the K'omoks, another Northern Coast Salish group, the Pentlatch, inhabited Comox Harbour (Kennedy and Bouchard 1990:442). Both European contact and warfare with Nuu-chah-nulth groups from the west coast of Vancouver Island led to reductions in numbers for the Pentlatch (Kennedy and Bouchard 1990:443). By the time Boas visited the Q'umu?xs village site in 1886, there was only one remaining Pentlatch family there (Rohner 1969:59)

During the 17th century, the K'omoks who had previously inhabited the northeastern tip of Vancouver Island, were displaced southwards into the Comox Harbour area by Kwakwala speaking groups. As the Kwakwaka'wakw moved southwards, into the Campbell River and Quadra Island area, the K'omoks and Kwakwala speakers intermarried, and today the K'omoks are considered a Kwakwaka'wakw group (Kennedy and Bouchard 1990:441; McMillan 2003:257). This is not to say that the Salishan roots of the K'omoks have been lost. Families today maintain a connection with their Salish origins, and before Bill C-31 (Indian Act) was passed in 1985, the majority of inhabitants at the Q'umu?xs Village were of Salishan descent (E. Hardy, personal communication, 2008).

No radiometric dating had been done at the Q'umu?xs Village site previous to the present research. However, artifacts found at the site during mitigation projects, including sandstone abraders and a quartz-crystal microblade, have led to the suggestion that the site likely dates from the Locarno period (2,400 BP-3,500 BP) onward (Lindberg 2000:13). Dates obtained for this project (results in Chapter 5) have confirmed the site to be of at least late Marpole period (2,400 BP-1,500 BP) at 1,700 BP-1,340 BP (Beta 240176), and because this is not a basal date, it is possible that initial occupation of the site occurred earlier. Occupation of the Q'umu?xs site continued at the time of European contact and into the present; part of the site is situated within the bounds of the present-day K'omoks Reserve.

### 2.5.2 - *Previous Archaeology in Comox Harbour and the Northern Gulf of Georgia*

Previous work done at the Q'umu?xs Village site consists of impact assessments carried out prior to house construction on areas of the site located off reserve land. During the 1990s monitoring and assessment of archaeological impact prior to house construction occurred numerous times (Arcas Consulting Archaeologists, Ltd. 1993; Oliver 1991; Wilson 1991), and in early 2000, an impact assessment (Hewer and Nicholls 2000) and subsequent data recovery and monitoring (Lindberg 2000) were carried out at the site of another house, all on the portion of the Q'umu?xs Village site resting outside of the K'omoks Reserve. Elsewhere in the Comox Harbour area, the majority of work done consists of development and mitigation projects (Hewer and Nicholls 2000:6); however, Capes (1964, 1977) undertook multiple seasons of excavation at the Millard Creek site on the southern shore of Comox Harbour. The Millard Creek site is a shell midden located away from the harbour itself, and the site is dated to at least 3,520±110 BP, with two younger dates of 3,480±195 BP and 1,780±145 BP (Capes 1977:82). Two older dates from this site (8,300±200 BP and 16,910±270 BP) are thought to be subject to contamination from coal in the area as they are too early in relation to the materials recovered from the site (Borden 1975:91-92; Capes 1977:82). Fauna from the site includes fish remains, and artifacts recovered suggest occupation as early as the Locarno Beach phase (Capes 1964:58-62). A second component of the Millard Creek site is located at the mouth of the creek where it joins Comox Harbour. The midden in this area is more ephemeral and less dense than at the main Millard Creek midden. Artifacts from this area are similar to those found elsewhere in Comox Harbour, suggesting a possible Locarno Beach or Marpole period age (Capes 1964:62-64).

Capes (1964) also investigated two mound sites west of Comox Harbour, the Tsolum River Mound Site and the Mission Hill Mound Site. Dates from the Mission Hill Mound site place one mound between 3,750±80 BP and 1,980±70 BP (Capes 1964:18). Capes (1964) also looked at the Sandwick Midden, north of Courtenay along the Tsolum River. The Sandwick Midden is a small midden, especially when compared to the Q'umu?xs Village site. Capes (1964:26) recovered remains of herring, dogfish and salmon from this midden, and artifacts recovered indicate at least a Marpole-aged (and later) occupation.

Outside of Comox Harbour, not a lot of academic research has been done in the Northern Gulf of Georgia. South of Comox Harbour, as I have already mentioned, both the Deep Bay site (Monks 1987) and the Little Qualicum River site (Bernick 1983) have been the subject of archaeological investigations. Both of these sites also have fish traps associated with them. Across the Strait of Georgia on the British Columbia mainland, the Saltery Bay site was the subject of test excavations in 1971 (Monks 1980). This site was dated to 500±80 BP; however, artifacts recovered from this site suggest an older occupation as well (Monks 1980:115). A wide range of fish species were recovered from the site (Monks 1980:130), and while herring is not present, that may be due to screen size rather than a true absence (Monks 1980:129). More recently in Saltery Bay, Golder Associates have conducted excavations at a second site prior to construction activities. The site has been dated between 480±40 BP and 6,700±40 BP (Pegg et al. 2007:43). This makes it one of the oldest sites on the Central Coast, and the oldest in the study area. A small number of fish remains were recovered from the materials, including salmon and herring. Both of these species are present in the oldest components, and throughout the occupation period (Pegg et al. 2007:79-81). As well, the presence of herring in the older components indicates use of this resource before the suggested start of herring exploitation during the Locarno Beach phase (Matson and Coupland 1995:165-166). Also, there is a fish weir at the mouth of a river in the vicinity of the site (Pegg et al. 2007:4). North of Comox Harbour, the majority of archaeological work done consists of survey work (Carlson and Hobler 1976; Mitchell 1972), although some excavation has been done (Capes 1964; Carlson 1979). In general, however, the Northern Gulf of Georgia is relatively unknown archaeologically, especially when compared to other areas of the Northwest Coast.

# Chapter 3 – Literature Review

## 3.1 - Optimal Foraging Theory

### 3.1.1 - *Introduction*

Optimal foraging theory has its origins in the field of ecology, first presented in the works of Emlen (1966) and MacArthur and Pianka (1966). These initial studies presented the fundamentals of the fine-grained diet-breadth model (discussed below as *prey choice*) and the patch-choice model respectively. Under the assumption that a forager will develop feeding preferences which allow for maximization of "the net caloric intake per individual of that species per unit time" (Emlen 1966:611), models of optimal foraging attempt to quantify behaviours related to foraging, specifically caloric yield (energy) and consumption time, in order to measure their relative importance within a forager's diet (Emlen 1966:611; MacArthur and Pianka 1966:603). Further, optimal foraging models assume that "the fitness of a foraging animal is a function of the efficiency of foraging measured in terms of some 'currency'" (currency is normally measured as energy) (Pyke *et al.* 1977:137), and that foragers which maximize this efficiency of foraging will be selected for (Pyke *et al.*1977:137).

While there are a variety of different models employed under the general heading of optimal foraging, these models can be classified, more or less, into one of the following categories: choice of which food types to eat (optimal diet; diet-breadth; prey-choice); choice of which patch type to feed in (patch-choice); optimal allocation of time to different patches; and optimal patterns and speeds of movements (Charnov 1976:129; Pyke *et al.* 1977:137, 139-140). Formulae and idealized graphs associated with some of the models discussed here can be found in Appendix A.

### 3.1.2 - *Application to Anthropology and Archaeology*

In anthropology and archaeology, optimal foraging theory is often considered a sub-theory of human behavioural ecology. Lupo (2007) defines human behavioural ecology as “a style of evolutionary thought that examines how environmental and ecological factors influence variability in human behaviour.” In a 2006 review paper on behavioural ecology, Bird and O’Connell (2006) note that optimal foraging models are “the most commonly applied component” (Bird and O’Connell 2006:146) of behavioural ecology in archaeology. Human behavioural ecology has also been employed to address research questions on parenting, cooperation, reproduction and overall life histories (Lupo 2007). Behavioural ecology assumes that natural selection leads organisms to optimize their overall reproductive success, and as such is capable of rapidly shifting behaviour to match current external conditions, including those caused by ecological, social and political forces (Lupo 2007). Optimal foraging theory encompasses models which share “the assumption that maximizing the rate of nutrient acquisition enhances fitness” (Bird and O’Connell 2006:146), and that through increasing nutrient intake or reaching an intake threshold more quickly, the optimal forager is thus more free to pursue other activities related to increasing fitness (Bird and O’Connell 2006:146).

Lupo (2007:143) notes that foraging models have been increasingly used for the interpretation of zooarchaeological assemblages for the last three decades. The increase in use of foraging models has led to the development of models that specifically cater to zooarchaeological research questions (e.g.: overexploitation, intensification, domestication, conservation) (Lupo 2007:144). For the purposes of this study discussion will focus on prey choice models, patch choice models, central place foraging, and how issues of optimization relate to technology and intensification.

### 3.1.3 - *Prey Choice*

The most often applied optimal foraging model within archaeology is that of *prey choice* (also known as “encounter-contingent prey choice model”, “basic prey”, “optimal diet” and “diet breadth”) (Bird and O’Connell 2006:147). The prey choice (or diet breadth) model attempts to answer the question of which of the available prey types should an optimal forager attempt to harvest. In order to use the prey choice model, one must make a series of assumptions. The first assumption is that prey is encountered by foragers at random and in the same proportions throughout the habitat. The second assumption concerns the total foraging time, which is conceived of in two categories: search time, which is the same for all prey types as based on random encounter, and handling time, which consists of the time spent after encounter to pursue, capture, process and consume a prey. Handling time is thus prey-specific, and time spent handling is time that is unavailable for searching. The final assumption that needs to be made with the prey choice model is that the forager ranks prey types on only one dimension of profitability, the net energy/food value gained per unit handling time (Bird and O’Connell 2006:147; Lupo 2007; MacArthur and Pianka 1966; Smith 1983; Winterhalder 1981, 1987).

Search time and handling time are measured as two opposing costs in the prey choice model. Handling costs increase as more prey of lower rank are added to the diet; however, search costs decrease as less time is spent searching for prey, and vice versa. An optimal diet is created through the addition of prey types of lower and lower rank, until the net energy or food value return has been maximized. The trade off between amount of prey and the time spent searching and handling creates a unique set of optimal prey types, and it is these types which answer the original question of which prey should an efficient forager attempt to harvest (Lupo 2007; Smith 1983; Winterhalder 1981, 1987; Hames 1992). A more exact calculation for the prey choice model was proposed by Eric Charnov, an ecologist, in the mid 1970s. The algebraic formula assumes that a prey type is in the optimal set when its net energy return is greater than the average return rate per handling time. Handling time here includes search time for higher ranked prey types (Charnov 1976; Smith 1983).

Use of the fine-grained diet-breadth model produces a series of expectations, or testable predictions. The first is related to prey availability in that the optimal diet breadth is related to the availability of higher ranked prey and will thus fluctuate with their availability. With an increase in availability we should see more specialized diets, and with a decrease in availability we should see more generalized diets (Smith 1983; Winterhalder 1981, 1987). The second testable prediction is that "prey types should be added to or dropped from the diet in rank order of handling efficiency" (Smith 1983:628), so that while higher ranked species are pursued when encountered, lower ranked species vary in their inclusion in a forager's diet. And finally, a prey species' inclusion in the diet is dependent not on its own availability, but on the availability of prey ranked higher than it. In other words, if higher-ranked prey species are present, a lower-ranked prey will not be included in the diet; but when higher-ranked prey species are rare or absent, a lower-ranked prey will be included (Smith 1983; Winterhalder 1981, 1987).

### 3.1.4 - ***Patch Choice***

The second model to be discussed is the patch choice model. This model presents a "trade-off between declines in yield per unit time spent foraging in patches . . . and a decrease in travel time between patches" (Smith 1983:631). Similar to the prey choice model, the patch choice model allows for clustering of resources in microhabitats and thus overcomes some shortcomings of the assumption of evenly distributed resources found in the prey choice model (Lupo 2007:148). However, Kaplan and Hill (1992) point out that the assumptions made in a patch choice model differ in consideration of prey distributions and of net energy gain as a function of handling time. Instead, due to encounters being random and based on abundance, search time is shared amongst all prey. Most patch choice models are used to predict which patches a forager will choose to exploit, and how long a forager should remain in a patch once the decision has been made to exploit it (Lupo 2007; Smith 1983; Kaplan and Hill 1992).

A patch is defined as being spatially bounded by the prey contained within the patch, and the predictable, expected return rate from that patch. Lupo (2007:148) suggests a looser definition of a patch being any entity with a predictable return rate; "Thus, a patch can be an individual prey item, a foraging strategy (i.e., hunting or gathering), or a specific habitat type or a type of hunt, which can be defined by habitat, technology, and/or prey type" (Lupo 2007:148). I will return to this point later, but suffice it to say here that under this definition a fish trap such as those located in Comox Harbour, can be conceptualized as a patch.

There is, as previously stated, a trade-off in the patch choice model between declines in yield and travel time. Declines in yield occur as foraging is done in patches of increasingly lesser quality, and the decrease in travel time is a result of passing up fewer lower-quality patches. Foragers optimize by adding more patch types to their itinerary until the total time spent foraging, measured in both foraging and travel time, is minimized. A patch is used, with resources being harvested at a constant rate, until the last item in a forager's diet has been harvested and the rate of return drops to zero (Lupo 2007; Smith 1983; Kaplan and Hill 1992).

Kaplan and Hill (1992) offer three possible energy return rates in a patch-choice model. The first is that energy will increase at a constant rate (in a linearly fashion) when a patch is used over a length of time, which occurs when resources are not measurably depleted by foraging activities. A forager will thus spend all its time in the most profitable patch, because movement is a cost and the next best alternative would be a patch of the rank (Kaplan and Hill 1992). The second is that until a patch is completely depleted of prey, the energy gain per unit remains constant. When the patch is completed, the energy gain abruptly drops to zero. In these cases a forager will exploit patches which have a greater initial profitability than what is expected for the entire environment, as it will cost more to move from the patch until the patch is entirely exploited (Kaplan and Hill 1992). The final energy return rate is when diminishing return rates occur from the forager depleting resources. The lower return rate is obtained as prey becomes harder to find (Kaplan and Hill 1992).

### 3.1.5 - *Marginal Value Theorem*

An extension to the patch-choice model is the marginal value theorem, developed by Charnov (1976). The marginal value theorem assumes that the utilized set of patches is a given, and asks what is the optimal pattern of time allocation, or what will result in the greatest energy capture, for each patch. The marginal value theorem works under the assumption that the resource level of any patch is depleted by foraging, creating a decline in return rate for patches as prey become harder to find and harvest (Charnov 1976). Under the marginal value theorem, optimization has been achieved when the marginal capture rate for the patch is equal to the overall mean capture rate for the set of patches (Lupo 2007; Smith 1983). In this instance, the marginal capture rate is “the instantaneous capture rate at the end of a foraging period within that patch”, and the overall mean capture rate “averaged over the entire set of patches utilized, including travel time between patches” (Smith 1983:631).

The marginal value theorem presents, as with other optimal foraging models, a set of predictions. The first prediction states that a forager who is behaving optimally will leave one patch and move to another when the first patch is depleted to the point that foraging anywhere else will yield higher rates of return. The second prediction deals with productivity of patches, and states that when the productivity of a set of patches rises, less time will be spent in any one patch and vice versa. This prediction can also be applied to travel costs, with high productivity resulting in lower travel costs, and low productivity resulting in higher travel costs. The final prediction states that before a non-utilized patch can be added to the utilized set, its net rate of return must be equal to or greater than the average of the utilized set (Lupo 2007; Smith 1983).

### 3.1.6 - *Central Place Foraging*

Central place foraging models operate on the basis that some foragers return to a central place with resources for consumption or provisioning of offspring, or to store those resources, among other possible activities (Lupo 2007). These models can incorporate foraging strategies ranging from random search and encounter to targeted search and pursuit; often the strategy is somewhere along this continuum. Central place foraging is an extension of other foraging models in that it imposes special travel costs. Such costs can include time it takes to return to an activity site; the cost associated with carrying food to the central place (which can include the time taken to carry it, as well as the loss of foraging time as carrying food decreases one's ability to capture/collect new food items); and time spent handling food items (Kaplan & Hill 1992). It is generally concluded that the further away prey is taken from a central place, the more selective a forager will become (in terms of larger load (prey) size and higher nutritional content) (Lupo 2007).

Central place foraging models include an encounters-at-a-distance model developed by Schoener (1979), and the single-prey-loader model and multiple-prey-loader model developed by Orians and Pearson (1979). In Schoener's (1979) model, a predator will wait at a central location for prey to pass by. Diet breadth will increase with decreasing distance from central location to site of encounter, and will include both high and low profitability items; the longer the distance from the central place, the fewer high profitability items will be included in the diet (Schoener 1979).

The single-prey-loader model, as presented by Orians and Pearson (1979), holds that a predator again waits in a central location for prey to pass by. However, this model accounts for choices made when prey are sequentially encountered in patches at a distance from the central place. While a forager will bring back fewer items with increasing distance from the central place, those items will be of higher profitability. In Orians and Pearson's (1979) multiple-prey-loader model, the forager travels to a patch from the central place, and captures prey items until it returns to the central place. In doing this the forager must carry all items with them until they return to the central place, and thus efficiency in searching and capturing decreases as the load increases. Thus, the trade off is between efficiency of foraging within the patch, and the amount of time it takes to travel back to the central place; optimal size loads will increase as distance to the central place increases (Orians and Pearson 1979).

### 3.1.7 - *Optimization and Technology*

In addition to models focused on how prey are both encountered and selected for, optimal foraging models have been expanded to cover questions related to technology and intensification. In a recent article by Ugan and colleagues (2003), the amount of effort expended in the creation of various subsistence technologies is examined. While the amount of effort expended can vary between technologies for various reasons (what is the technology going to be used for; how will the effort affect the utility of the artifact; what are the costs of creating the artifact rather than expending energy elsewhere), it is often overlooked when discussing the efficiency of a technology in terms of accomplishing the task it is used for (Ugan et al. 2003:1315-1316). However, as Ugan and colleagues (2003:1316) point out, "smaller and smaller gains in performance come at an increasingly greater cost." In order to assess the technological "feasibility" of certain artifacts, Ugan and colleagues (2003) create a series of predictions based on optimization models.

One of the models presented by Ugan and colleagues (2003) looks at the amount of time put into creating a technology used to catch fish, and the amount of fish caught for the time spent to make the technology, and catch and process the fish. While the authors do not directly address the question of fish trap technology, they do discuss the use of large gill nets, and note that while many hours may pass between when the net is set and when the fish caught in it are gathered, calculations of time spent should be made only for the time during which someone is actually handling the net rather than the entire time it is set. Further, Ugan and colleagues (2003:1317) note that the use of a technology "like a gill net does not depend on whether you can walk away from it – *it depends on whether you could catch more fish per time spent working the net than you would per time spent working something else*." In terms of fish technologies, it would appear from Ugan and colleagues' (2003) findings that fish production increases with the amount of time spent creating fishing technologies; however, the amount of fish produced per time invested levels off as a maximum threshold in fish procurement is reached. While Ugan and colleagues (2003) use algebraic functions and known amounts of fish harvested and time spent per technology to reach these conclusions, the general gist of the argument is applicable in instances where known time investment and procurement amounts are not known. That is, initial technological investment (measured as the time spent to create the technology) is only optimal as long as the total amount of time spent creating and using that technology *and* the amount of fish procured with that technology during the time it is used *and* the time spent processing the fish would not be more optimally spent creating and using a different technology or harvesting a different resource.

Ugan and colleagues (2003:1323) also discuss the interaction of technological investment and the traditional prey choice model. In the prey choice model, as previously discussed, a resource is chosen only when the energy gained by doing so is higher than the time spent searching for, pursuing and processing another resource. In effect choosing to use a resource at hand will be independent of its actual encounter rate since, according to Ugan and colleagues (2003:1323) "there is no reason to take a resource at hand if better returns can be obtained by concentrating on higher ranked items, *even after factoring in the additional search time.*" The authors see the prey choice model as being counter intuitive in this sense, and suggest that the addition of technology may explain why choices are made in such a fashion. Inclusion of the effort put into making subsistence related technologies into handling times changes the makeup of how resources are ranked, with search time and encounter rates becoming more important (Ugan et al. 2003:1323). Ranking of prey, when including the effort invested in a subsistence technology, becomes a measure of the amount of energy gained from a resource divided by the total handling time spent, which includes the time spent making the technology (Ugan et al. 2003:1323).

## 3.2 - Households

### 3.2.1 - *Introduction*

Many researchers have tied increasing social complexity and inequalities to the production of surplus food stores; these, in turn, are employed in the accumulation of surplus wealth. It is the successful accumulation of surplus wealth by some, and not by others, which leads to social inequalities and social complexity; those with wealth are better able to assume power and prestige over those without wealth. On the Northwest Coast, accumulation of wealth occurred not at the individual level, but at the household level. This occurred in part due to the fact that Northwest Coast households functioned as residential corporate groups. However, wealth accumulated by the household was concentrated by the household head; any gained status for the household members had to come through the household head.

Determining household membership can be difficult. People living within one house structure may share nothing but a living space while participating in separate economic activities, or household members may occupy several separate buildings but maintain corporate economic activities (Wilk and Rathje 1982:620). On the Northwest Coast, ethnographic sources suggest that households consisted of corporate activity groups living in the same house structure (although sometimes they occupied more than one structure) (Ames and Maschner 1999:147). Northwest Coast household membership was not strictly kin-based, although it was common for close relatives to participate in the same household group; social, political and economic ties also served to determine household membership (Ames and Maschner 1999:148).

### 3.2.2 - *Definition of 'Household'*

A discussion of household archaeology must be prefaced by defining what exactly is meant by 'household'. According to Wilk and Rathje (1982:618), the household is "the most common social component of subsistence, the smallest and most abundant activity group." The household is seen as being composed of social, material and behavioural elements. As well, the household serves to meet the needs of its members; namely, its members' productive, distributive and reproductive needs (Flannery 1976; Wilk and Rathje 1982:618). The house itself, the dwelling in which the household resides, is a form of material culture, which according to Wilk and Rathje (1982:618) "reflects the demographic shape and the activities of households." This distinction between the *house* and the *household* is important since what archaeologists recover from the ground are the material remnants of houses and activities, not the social organization of the households who occupied those spaces. These households must be, archaeologically, inferred from the material record of houses and activities (Flannery 1976; Wilk and Rathje 1982:618).

How are households approached in archaeological studies? What are the questions that are posed when faced with household materials? What information does the study of archaeological households provide to archaeology as a whole? Household archaeology focuses on the material remnants of prehistoric households and is often used as the means of getting at the social, political and economic roles of the household unit in the wider community (Allison 1999). Household archaeology has previously focused on solely architectural structures, on the household as measurable socio-economic units, and as a means of estimating population size among others (Allison 1999; Flannery 1976; Naroll 1962; Wilk and Rathje 1982:618-619). More recently, household archaeology is used, as previously mentioned, as a means of getting at the dynamics of the social side of the household, the household unit, by investigating the material remnants of household structures and the activities performed therein (Allison 1999; Wilk and Rathje 1982:618-619).

### 3.2.3 - *Functional Analysis as a Method of Household Archaeology*

Household archaeology has been employed in one sense or another since the beginnings of archaeology; however, it was not until the 1980s that it became a domain of study in and of itself. Households have always been a unit of analysis in archaeology, unavoidable in the sense that at many archaeological sites the emphasis for excavation is on the structures that people lived in. But it was not until post-processualists began looking for more specific answers to questions in settlement archaeology that the household became a unit of analysis representing unique and tailored research questions. Wilk and Rathje (1982) see household archaeology in this sense as bridging “the existing ‘mid-level theory gap’ in archaeology” (Wilk and Rathje 1982:617) as it provides the models through which archaeologists can connect data to grand theories. Wilk and Rathje (1982) set forth a functional analysis of households wherein the household is viewed as being composed of its social element (the demographic unit), its material element (the dwelling, activity areas, and possessions) and its behavioural element (the activities it performs). Wilk and Rathje (1982:618) further state that the total household “is a product of a domestic strategy to meet the productive, distributive, and reproductive needs of its members.”

Wilk and Rathje (1982:621) write that they “find it necessary to explicitly classify and discuss the *functions* of households, since it is the functions of the household that mediate between the wider socioeconomic realm and the nuts and bolts of household size and composition.” The authors divide the functions of households into four categories, production, distribution, transmission and reproduction, with the organization of a household dependent on how they combine one or more of these functions. Rather than recognizing prehistoric households based on their structural morphology, in a functional analysis the household is recognized based on the combination of functions it performs, within the context of its relationship to other social groups. Wilk and Rathje (1982:621-622) give an example of a hypothetical hunter-gatherer band where the task of reproduction falls within the sphere of the household, while production and transmission are categories which are undertaken by the entire band. The household unit of such a combination of functions would differ from a situation wherein each household is responsible for their own production and transmission along with reproduction (Wilk and Rathje 1982:622).

*Production*

Wilk and Rathje (1982:622) describe production as a "human activity that procures resources or increases their value." The range and scale of production can vary from occurring completely within the household, to occurring completely outside the household sphere. Variation in production can include scheduling of labour between linear and simultaneous tasks. Linear tasks are those tasks which can be done by one person, while simultaneous tasks require the cooperation of many people. Simultaneous tasks can be simple (many people performing the same task) or complex (many people performing different tasks at the same time). Linear tasks are more likely to be undertaken at the household level than are tasks which require organizing large groups. Labour is scheduled according to the task being performed, although economies of scale and task specialization are also considered in scheduling labour. The organization and scheduling of labour affects the efficiency of the group, which in turn is dependent on household size. A household unit will only be successfully productive if its labour is scheduled appropriately for its size and the tasks being performed (Wilk and Rathje 1982:622-624).

*Distribution*

The second household function is distribution. Wilk and Rathje (1982:624) describe distribution as "the process of moving resources from producers to consumers," as well as including the consumption of resources. Distribution includes pooling, which is the distribution of resources within the household, and exchange, which is distribution between households or larger corporate units. Many communities practice both pooling and exchange, although in some societies only pooling takes place. A large household unit which practices pooling increases its members' access to various resources, while for a small household, exchange consumption fulfills the same role. Wilk and Rathje

(1982:625) note that the mode in which resources are distributed within the household is often linked to the mode of production practiced by that same household, so it is hard to distinguish the two. A household with a variety of production requires pooling for all of its members to obtain needed goods, and a household which produces very little in terms of variety requires exchange with other households to obtain needed goods (Wilk and Rathje 1982:625), resulting in similar archaeological signatures.

Smaller households can be found in two situations, either when production is uniform across a community and pooling within the household poses no advantage, or when production across a community is diverse and pooling is not a benefit to the entire household. In contrast, large household units produce large labour forces which can afford to pool their product and exchange that product with other households (Wilk and Rathje 1982:625-626). Wilk and Rathje (1982:626) also note that "large households that pool in production *and* in distribution tend to be stable and have generational continuity," while smaller households which "only cooperate in scheduling labour *or* in pooling for distribution tend to be less stable and fission often." When pooling or exchange is needed beyond what a household can provide, extra-household organizations will arise to fulfill the need. Wilk and Rathje (1982:627) finish their discussion of distribution by noting that "in general, band and urban, state-level societies stress *exchange* between households and groups, while predominantly agricultural societies and those with mixed economies pool within the household."

### *Transmission*

The third household function discussed by Wilk and Rathje (1982) is that of transmission. Transmission entails the "transferring of rights, roles, land, and property between generations" (Wilk and Rathje 1982:627) and is closely tied to a society's definition of property. Transmission will vary depending on the size of the household unit and the level of organization at which property is maintained. Transmission is also influenced by availability of resources and group membership. "As property becomes more difficult to gain access to, the group that controls the resources becomes more and more strictly defined" (Wilk and Rathje 1982:627) and might be confined to the household, or even to certain members within a household unit. Households do not usually become the main controllers of transmission until land tenure is determined at the level of households. In agricultural communities, certain types of resources become scarce, and thus controlled through transmission, before others. The change from a non-agricultural to agricultural society can be seen as a shift from labour being the scarce resource to land being the scarce resource. Thus larger households emerge from the desire to continue household ownership of land (Wilk and Rathje 1982:627-628).

Two types of transmission between generations may be employed. The first is partible transmission which entails the fissioning of a household after the death of its head if no other organization (such as pooling distribution or scheduling production) exists to keep the household together. Impartible transmission is the practice of only one heir in the next generation inheriting the majority of a household's resources. Impartible transmission exists when fissioning of a household's resources would result in new households with less than sufficient access to resources. Impartible transmission usually leads to non-inheriting household members staying in the household under the new household head or leaving to join another household (Wilk and Rathje 1982:628-629). Under impartible transmission, Wilk and Rathje (1982:629) note that marriage "becomes a strategy for transmitting and accumulating property." This leads to social stratification as those who stand to inherit will have better marriage prospects than do those who will inherit nothing (Wilk and Rathje 1982:629).

Wilk and Rathje (1982:629) also discuss the idea that households owning land will often accumulate client households for access to additional labour. This results in differences in household sizes between small, non-land owning households where household members do not feel obligated to remain as part of a labour force, and large, landed households which often accumulate members from outside the household in the form of servants and grow in size. Large households will also accumulate members to increase influence and power. Households organized along lines of impartible inheritance will often be more focused on inheritance than on production or distribution, so household organization will be different. Notably, as resources become scarce, large households created through impartible transmission will be unable to stay together because they will no longer have access to sufficient resources to maintain household size. At this point, large households based on inheritance fission into smaller household units, often at the nuclear family level, and become focused on production and distribution again (Wilk and Rathje 1982:629-630).

*Reproduction*

The final function fulfilled by households is reproduction, both biological and societal, and is focused on the raising of children. Childcare requires large amounts of labour, and the way labour is organized to perform childcare is dependent on the types of production undertaken by a household. In societies where the labour of women is needed for subsistence, it is common that childcare labour is pooled and shared by all the women. This distributes child care duties and frees up women to participate in subsistence activities. Large households are capable of pooling child care labour in order to increase the production activity of the entire group. As societies grow even larger, extra-household organizations are formed to undertake the role of childcare such as schools. However, large households do not form solely for the function of childcare.

A large household comes together for production and distribution, pooling of childcare simply enables the household to be more successful in these functions (Wilk and Rathje 1982:630-631).

### 3.2.4 - *The Northwest Coast Household*

The Northwest Coast household, consisting of residential corporate groups and not necessarily 'families', is seen as both the basic economic unit and the basic social unit within Northwest Coast societies (Ames and Maschner 1999:147). Household members work together at resource production, which is then shared amongst the entire household. Ownership of resources occurred, on a whole for the Northwest Coast, at the household level. The status of a household was dependent on its ability to accumulate and maintain wealth, which is best seen as the ability to produce surplus subsistence goods which can then be used in trade for material items. The level of production of any one household is, in turn, dependent on the labour of the household members; larger households have a larger labour pool to draw from and so they tend to have greater levels of production than smaller households. The ability of a household to attract new members, thus expanding its production potential (increased labour pool), is through the ability to create surplus food, and transfer that surplus into wealth (Ames and Maschner 1999:147-150).

The definitions of *house* and *household* outlined above can also be defined in specific relation to the Northwest Coast. On the Northwest Coast, *house* usually refers to the plankhouses as the dwellings within which people lived (Gahr et al. 2006:5). Plankhouses existed throughout the Northwest Coast region, but differed considerably in size, construction and interior organization (Gahr et al. 2006:5). Many terms are used for the groups of people living inside plankhouses on the Northwest Coast. *Household* is generally used for those individuals living together in a plankhouse. This group is also referred to in the literature as an ‘extended household’ or ‘house group’ (Gahr et al. 2006:5). Since together households owned property, exhibited hierarchy, and sustained themselves across generations, they have also been referred to as ‘residential corporate groups’ or as ‘corporate households’ (Gahr et al. 2006:5). Within the household itself are several nuclear families which are referred to in the literature as either ‘families’ or ‘independent households’ (Gahr et al. 2006:5).

The Northwest Coast house is seen as representing both the household and its social rank. Within a village, both the size and location of a house indicate that household’s rank. Furthermore, rank amongst household members is indicated by the interior arrangements of the house; size, position, decoration and how interior space is used have all been used to describe the social relationships present both within a household and between households (Gahr et al. 2006:1). Among the Coast Salish, it has been noted that the style of house used can be linked both to household size and to the nature of household organization; that is, the ease at which house size can be increased or decreased among the Coast Salish is to accommodate the fluidity of movement of household members in and out of a house (Gahr et al. 2006: 1; Suttles 1974).

Among the Coast Salish, the extended family was “the highest unit of common allegiance,” (Barnett 1955:241). Barnett (1955:241) takes care to emphasize the lack of any higher grouping. Extended families, or households, each inhabited a large plankhouse, and plankhouses taken together made up winter village communities (Barnett 1955:241; Suttles 1974:328, 1987a:17). Communities would disperse to different resource extraction areas over the summer, which were owned by individual families (Barnett 1955:241). Within the extended family was the “family head, his sons and their children, his unmarried daughters, his brothers and their children, and his unmarried sisters” (Barnett 1955:242). As well, other close family members (such as grandparents, cousins) were often part of households (Barnett 1955:242; Suttles 1974:329). New independent families most often stayed with the husband's household, but matrilineal ties were also recognized (Barnett 1955:242; Suttles 1974:329). In addition to close relatives, households also included individuals who lacked their own extended family or 'support' (Barnett 1955:242).

The largest household normally exhibited the most influence over a winter village (Barnett 1955:241), and there was no formal group leadership beyond that of the household head over his own household (Barnett 1955:242). In the same vein, a household head's leadership rested more on age and experience than on power over household members (Barnett 1955:244). Barnett (1955:244) indicates that it was the pressure of economic necessity (among other things) that held a household together. As a group, a household had access to both subsistence resources and other everyday commodities. Access to resources was held at both the individual and household level, and if an individual did not have privileges to use certain resources, he was dependent on those who did (Barnett 1955:242). An example of this comes from Suttles (1987a:20) who indicates communal (village) ownership of fish traps among Salish groups, however the structures necessary for processing the fish caught from those traps, namely the houses at those fishing sites, were owned at the individual or household level. A person would need to own or have permission to use a house to process fish caught at the communal trap.

Salishan house structures can take one of two forms. The first, the shed or single-pitched roof type, were more common in the southern Gulf of Georgia region. The second type, the gabled roof type, was more common in the northern Gulf of Georgia region, and was more often associated with higher rank and wealth (Barnett 1955:35). Barnett (1955:43) reports the use of both forms by the Pentlatch, as well as by the Comox (Barnett 1955:45). Kwakwaka'wakw houses were also of the gabled roof variety (Boas 1895:368). The main difference between Kwakwaka'wakw and Salishan houses is the internal organization of the household. In Salishan houses, the independent families each had space along the outside walls of the structure, and shared a fireplace running down the centre of the house, each independent family using the part of the fireplace in front of its own living space (Elmendorf 1960:162). In Kwakwaka'wakw households, each independent family within a house had its own fireplace, and its living area is often divided from the rest of the house by wooden blanks (Boas 1895:369).

A household can vary from having no control to complete control over production (Wilk and Rathje 1982). On the Northwest Coast, the household has long been known to be the basic unit of economic production (Gahr et al. 2006:1), and the household can more applicably be termed a 'residential corporate group' (Gahr et al. 2006:5). Not only did a Northwest Coast household contain several nuclear family groups spanning multiple generations, organized through internal hierarchy, the household, as a whole, owned property and rights to access (Gahr et al. 2006:5). The household also played an important role in the accumulation of wealth in that a household that could produce enough food surplus to allow members to work at different activities would be able to employ those people at "wealth-producing" tasks (Suttles 1987a:22).

### 3.2.5 - *Northwest Coast Household Archaeology*

Households on the Northwest Coast have been approached, archaeologically, in a number of different fashions. The roots of household archaeology can be traced back to early work done by de Laguna (1972) on the northern coast, and to other work done in the 1970s at Ozette on the northern Washington coast (Samuels and Daugherty 1991) and work on Haida Gwaii (Fladmark 1973). While none of this work was undertaken explicitly as household archaeology, they all focused on the house as analytical units (if not always to get at the household). In the latter two projects (Fladmark 1973; Samuels and Daugherty 1991), the focus on houses was in part to look at relationships between production and rank, and household archaeology was employed as a means of understanding Northwest Coast culture, society and economy as understood in historic and ethnographic accounts (Gahr et al. 2006:3).

Household archaeology on the Northwest Coast is also used as a means of explaining the social complexity found on the Northwest Coast that has so long held the interest of anthropologists. Complex hunter-gatherers and household archaeology emerged as central research topics in the discipline as a whole around the same time (later 1970s-early 1980s), and it makes sense that they would be employed together to examine one of the best known complex hunter-gatherer societies (Gahr et al. 2006:4). In this vein, household archaeology on the Northwest Coast has seen much recent research. Gahr and colleagues (2006:4), in introducing Northwest Coast household archaeology for an edited volume on the topic, list recent research investigating various different questions which all address the problem through household archaeology. Included in this list is research looking at household status, household production, intensification of production, the organization of labour within households, and the development of social inequality (Gahr et al. 2006:4). While the authors list multiple research projects for many of these topics, only a couple will be highlighted here.

On type of research that has been done using household archaeology on the Northwest Coast is Grier's (2006:97) work which looks specifically at linking household organization and house structures by focusing on the temporal longevity of both the houses and the households. Longevity is considered through chronology of house occupation, through house design and artifact distribution, and through the reproduction of both the social and economic organization of the household across generations (Grier 2006:97). Specifically, social and economic organization across generations falls under

Wilk and Rathje's (1982:627-630) definition of transmission. By looking at material culture distributions within a house structure over the entire occupation of that structure, it is possible to track changes and, more importantly, continuity in the archaeological record of the Northwest Coast, pointing to the transmission of both social and economic organization (Grier 2006:114-115).

Samuels (2006:200) also employs household archaeology on the Northwest Coast, looking at the spatial organization of material remains recovered from house floors at the Ozette site to gain insight into household production. Considering that the Northwest Coast household was the basic unit of production, many activities related to production occurred within the house structure (Samuels 2006:200). Samuels (2006:205-208) looks at the spatial organization of houses and the differences seen within each house, as well as differences between houses. He also considers the accumulation of refuse and artifacts on the floors of the houses (Samuels 2006:208-211). The distribution of artifacts within and between houses elucidates the activities occurring within each house and point to both production and social differences (Samuels 2006:211-212). This research show that it is possible to examine production and social organization on the Northwest Coast by looking at the distribution of material within a household, as well as setting forth a method of representative sampling for future plankhouse excavations on the Northwest Coast based on activity areas (Samuels 2006:228).

The work by Grier (2006) and Samuels (2006) are only examples of the wide range of research related to household archaeology currently underway on the coast. Other work by Ames (1985, 1995, 2001, 2006; Ames and Maschner 1999), Chatters (1989), Coupland (1985, 1996, 2006), Ellis (2006), Gahr (2006), Huelsbeck (1991), Marshall (2006), Martindale (2006), Matson (1985, 1996), Smith (2006), and Sobel

(2006), to name a few, look at the themes listed above and more in their work examining the Northwest Coast household.

Household archaeology, on the Northwest Coast, encapsulates research looking at multiple aspects of Northwest Coast society. The Northwest Coast household is an excellent venue for examining issues related to economic production, social organization, organization of labour, and intensification of production to name just a few. In regards to the present research, the Northwest Coast household provides a means of interpreting the organization surrounding the production of food through use of fish resources, the organization surrounding the ownership and use of fish traps, and how the intensification of fish procurement through the use of fish trap technology may be explained at the household level. While much household archaeology on the Northwest Coast looks to answer research questions through sampling or complete excavation of houses, the present research looks not to the house structure to answer these questions, but at the material outcomes of household activity relating to the use of fish traps.

## 3.3 - Complexity

### 3.3.1 - ***Introduction***

Hunter-gatherer archaeology seems, at times, to be best known for the seminal "Man the Hunter" symposium in 1966. From this conference, the definition of hunter-gatherers as living in small groups and moving around a lot (Lee and DeVore 1968:11) infiltrated anthropology and archaeology alike. Hunter-gatherer research after this point seemed to fit communities into this model, and areas such as the Northwest Coast, where the model did not fit, were label anomalous. Complexity, as an anthropological concept, has been seen as the result of the formation of agricultural societies, and groups exhibiting social stratification, sedentism and other hallmarks of complex societies without possessing domesticates were seen as anomalous to traditional views of ‘simple’ hunter-gatherer societies (Sassaman 2004:228). However, more recent research has shown that not only are these stratified non-agriculturalists not as anomalous as once believed, it is likely that many societies in prehistory were organized much the same way. Instead of complexity being a result of domestication and agricultural societies, it appears that complexity has often occurred before domestication and could be part of the cause of a shift in subsistence practices towards an agricultural way of life (Price and Brown 1985:4; Sassaman 2004:228-229).

One of the main problems in corroborating any studies of complexity is the lack of a clear-cut definition for ‘complexity’. Price and Brown (1985:7) define complexity as “that which is composed of many interrelated parts.” Price and Brown (1985) acknowledge the wide range of definitions of complexity in regards to human complexity, while Sassaman (2004:231) reviews definitions of complexity and fits them into three forms: “(1) theoretical constructs that enable comparative analyses; (2) lists of organizational or formal traits derived from empirical, cross-cultural observations; and (3) abstractions of specific historical conditions.”

Price and Brown (1985) introduce the history of complex hunter-gatherer research, and list a number of causal and related factors that have been highlighted in previous research including: technology, resource availability, subsistence, storage, labor organization and social organization, among others. There is long-standing interest in how to define complex vs. non-complex hunter-gatherers. Winters (1974, in Price and Brown 1985) set forth eleven traits which could be linked with more complex and social economic activities. Like Winters (1974), Yesner (1980) sets up a list of traits, however, this list is to be used to look specifically at groups living in highly productive marine environments such as the Northwest Coast. Binford (1980) defines the differences between foragers and collectors, setting up expectations for how each group might be seen archaeologically. These, and other early research on complex hunter-gatherers, stress sets of traits which can be linked to complexity as a means of ascertaining if a particular group is or is not complex (see Price and Brown (1985:4-7) for more of these trait lists). However, issues exist around the use of such lists for defining 'complexity'.

Sassaman (2004:233) presents a list of essential features, or attributes, recognized in ethnographies as being central to complex societies: high population, high population density, sedentism, storage technology, territoriality, elaborate technology, intensive subsistence, delayed-return economy, and long-distance exchange. While Sassaman (2004:233) critiques the use of such a list as the basis of confirming or denying the complexity of a particular group, it is significant to note that all ten of these features are known to have been present on the Northwest Coast prior to and at contact. Rather than list features commonly seen in complex societies, some researchers see complexity as the result of certain organizational qualities: "(1) institutionalized labor relations whereby some people must perform work for others under the direction of nonkin, and (2) inherited privileged status" (Sassaman 2004: 234). Again, both of these qualities are seen on the Northwest Coast just prior to and at contact. However, it is also noted that very little evidence for hereditary inequality exists for complex hunter-gatherers away from the Pacific Coast of North America; Sassaman (2004: 234) notes the Calusa of southwest Florida as an exception.

Intensive use of aquatic resources is seen, in many cases, as the economic basis for both sedentism and high population in many areas where complexity was not coupled with or preceded agricultural production (Sassaman 2004:234). Sassaman (2004:234) states that "archaeological research on coastal and riverine adaptations has been instrumental in decoupling emergent complexity from food production."

It is clear that there are many different definitions of complexity, especially as it refers to hunter-gatherer communities, as well as various means of identifying complexity in the archaeological record. In order to operationalize the phenomenon of complexity on the Northwest Coast in terms of the present research, I now turn to a particular means of identifying complexity, as set forth by Arnold (1993, 1996). Arnold (1996:59) argues that complexity arose under a certain set of social constraints; namely the control of power and the labour of many by an elite few. Arnold (1996:60) lays out the process by which labour came to be controlled by a small segment of the population. Two strategies she suggests are, first, that leaders may establish a labour pool "by providing housing, food, payment, protection, access to resource-harvesting areas, or access to land" (Arnold 1996:60). In return for these provisions, leaders are able to call upon members of the labour pool when needed. Slavery falls into this strategy (Arnold 1996:60). The second strategy is to establish a tribute system. Leaders provide essential services and in return can 'tap into' the labour pool through tribute delivered in the form of food and status items (Arnold 1996:60).

Day to day provisions fall under the domain of the household, however, a leader may call upon a labour pool for specific circumstances such as feast preparation, construction of elaborate structures, specialized craft production, organized raids, and the harvest of seasonally abundant resources (such as salmon or herring) perhaps with the use of specialized technologies (such as fish traps) (Arnold 1996:61). Additionally, the labour that is available must be exploited on a consistent basis, usually through large labour-intensive tasks, such as ceremonies, feasts or construction of large structures (Arnold 1996:61).

Finally, Arnold (1996:61) emphasizes the processes through which labour intensive activities might come to be controlled by a few leaders instead of remaining within the sphere of the household. First is labour intensification, a process in which household labour is reorganized by leaders, leading to "increased investment in management, harvesting, technology, etc." (Arnold 1996:61). The importance of this process lies in the increase per capita of material surplus outside of the control of its producers (i.e. in the hands of the leaders, not the labourers) (Arnold 1996:61). The second process outlined by Arnold (1996:61) is the development of occupational specialization, wherein craft production, and/or distribution, is managed by leaders; "control over regional distributions of products may lead to strong corporate group formation" (Arnold 1996:61). The final process leading to the control of labour by elites is the coercive appropriation of labour. This includes slavery, taxation and tribute. Coercive appropriation ensures a regular supply of food and other items for the leaders, and is often linked to supernatural beliefs (Arnold 1996:61-62).

### 3.3.2 - ***Northwest Coast Complexity***

On the Northwest Coast, a problem exists with the application of complexity; that is, complexity is often associated with integrated polities subsuming multiple communities (Arnold 1996:63). Some researchers suggest that chiefdoms were present on the Northwest Coast of North America at the time of European contact, and that these chiefdoms were the end result of a trend of increasing complexity in the fishing-hunting-gathering lifestyle of Northwest Coast peoples (Sassaman 2004:238). However, as I have already stated, the household was the highest level of communal allegiance on the Northwest Coast (Barnett 1955:241). Nonetheless, complex social and economic organization are clearly present on the Northwest Coast.

Certain traits recorded for ethnographic Northwest Coast populations have been considered the end result of a series of economic and social shifts (Matson and Coupland 2005; Sassaman 2004). These traits include: "society stratified into the ascribed statuses of noble, commoner, and slave; ownership or control of important resources; multifamily household units in large, permanent villages; and large-scale storage" (Sassaman 2004:240). Economic change, seen as intensification in both salmon procurement and storage, is viewed by Matson and Coupland (1995) as preceding any shift in social structure. Salmon harvesting and storage began as a corporate group activity; storage, however, allowed for permanent settlements and thus population growth. As well, control of ritual and resources began to be controlled by an emerging elite; dependence on storage prohibited the movement of people away from the control of the emerging elite (Matson and Coupland 1995).

Arnold (1996) applies the idea of labour control leading to complexity on the Northwest Coast, rather than considering complexity as a series of traits. It is known that by at least the end of the Marpole phase, social ranking of some sort had appeared in the Gulf of Georgia region. The Marpole phase, however, does not apply to other areas of the Northwest Coast, and ranking may appear at different times in different areas along the coast. During the Marpole phase in the Gulf of Georgia region, large villages appeared; there is evidence for warfare; and large communities were supported by abundant harvests of aquatic resources (Arnold 1996:64). Arnold (1996:64) suggests that "large-scale harvesting, processing and storing activities may have resulted in increasing control over resources and stimulated a hierarchical organization of power over labor." Control over labour included domestic units producing material culture items and highly developed art, as well as large surpluses of subsistence goods through intensive procurement and storage technologies (Arnold 1996:64). Slave labour was present on the Northwest Coast; ethographic accounts state that both tribute and taxation were enforced; and part-time specialists produced surpluses of prestige goods (Arnold 1996:64-65). Both slave labour and domestic production at the household level were employed in the accumulation of wealth for potlatches (Arnold 1996:65). In sum, it would seem that the organization of labour on the Northwest Coast was such that the control of subsistence and prestige goods came to be held in the hands of an elite few, likely household leaders, leading to the social and economic complexity encountered at contact.

## 3.4 - Intensification

### 3.4.1 - *Introduction*

Social complexity and increased food production have long been linked in terms of farming communities. However, until recently, it has been believed that hunter-gatherers were not capable of food production at the level needed to establish social complexity. This point of view has changed in recent years (Ames 2005:68). While farmers and hunter-gatherers have often been treated as polar opposites when it comes to subsistence economies, research into intensified food production is often done under the umbrella of origins of agriculture, rather than in terms of highly productive hunter-gatherer economies (Ames 2005:70). Smith (2001:1, 2005:40-41) argues that rather than existing as polar opposites with no connections between them, hunter-gatherers and agriculturalists exist at either end of a continuum, along which one finds any number of types of food-producing economies.

According to Smith (2001:5), the management of resources seen on the Northwest Coast lies between traditional hunter-gatherer and agricultural societies, with groups on the Northwest Coast practicing what Smith (2001:32) terms ‘low-level food production’, without domesticates. The difference between food *procurement* and food *production* is that in food production there is a deliberate human intervention in the lifecycle of a resource, such as relocation, weeding or cultivation of plants (Smith 2001:28). Smith (2001:14-17) emphasizes that there can be low-level food production with *or* without domesticates, and that there are varying means of determining the boundary between use of domesticates and full-scale agriculture. What is clear is that while Northwest Coast groups did not have domesticates, they did practice some forms of food production, namely with plant resources (Smith 2001:32). Ames (2005:62) considers low-level food producing communities to be distinctive, although they have been ignored in lieu of agricultural societies and are not often recognized in the archaeological record. Recent research on hunter-gatherer complexity has in fact ignored the role of intensification in the process of achieving complexity and Ames (2005:74) sees the need to address resource intensification in discussions of complexity.

Intensification, according to Ames (2005:74) is tied to technological, economic and social factors. Rather than looking only at the remains of production (e.g.: faunal remains), Ames (2005:74-76) suggests that intensification needs to be measured as increased labour as well (following the example of previous researchers such as Jochim (1976) and Zvelebil (1986*b*)). While intensification often refers to an increase in the amount of something that is being produced, this charge needs to be measured against a standard, such as time, space or labour (Ames 2005:75; Jochim 1976, in Ames 2005). Conversely, intensification may be measured as "an increase in the amount of labor invested in production" (Ames 2005:75; Zvelebil 1986, in Ames 2005). While other definitions of intensification, and how to measure it, exist (Bender 1978; Boserup 1965; Broughton 1997; Gould 1985; McGuire 1984; Morrison 1994; Netting 1993), in this study, it makes sense to measure intensification in terms of both increased labour (especially when considering complexity as defined by Arnold (1996)) and increased production measured by both time and space (use of fish traps).

### 3.4.2 - *Northwest Coast Resource Production*

Increased production of subsistence goods on the Northwest Coast has been suggested as a means of dealing with the variability of those resources (Suttles 1987b). Perlman (1980) outlines the means by which groups living in highly productive coastal environments, such as the Northwest Coast optimize their use of those environments. Referring to optimal foraging models, Perlman (1980:260) notes that there is an expectation that humans will optimize their behaviour by minimizing the effort and risk associated with resource procurement. While this is a generalization, Perlman (1980:260) does note that the outcome of this minimization is new storage technology and new technologies for obtaining resources. He also states that technologies such as fishing tackle, spears, and fish weirs, traps and nets, as well as storage, can be considered as both least effort and least risk technologies (Perlman 1980:261).

Suttles (1987a:22-23) notes four features of the environmental variation affecting human exploitation of resources on the Northwest Coast. First, he notes the variety of food types available, followed by the local variation in the availability of resources due to local biogeophysical differences. Third, Suttles (1987a:22) notes the seasonal variation in availability of resources. Finally, he notes that in addition to seasonal variation there are also year-to-year fluctuations in availability of resources (Suttles 1987a:22-23). Suttles (1987b:46) argues that although the environment of the Northwest Coast was rich despite its variability, the temporary abundances were not enough to account for the level of complexity encountered at contact. Instead, he suggests that "food-getting techniques, food-storing techniques, a social system providing the organization for subsistence activities and permitting exchanges, and a value system that provided motivation" (Suttles 1987b:46) were also needed.

I have already discussed the means by which groups on the Northwest Coast obtained and processed resources, so I will only note here that technologies such as fish traps, weirs, and nets would have enabled the procurement of large numbers of fish during short periods of availability, and the means of processing them would require large amounts of labour. Suttles (1987b:55) notes that access to a plankhouse would be essential for storing enough food for the winter and states "the ownership or control of a house at the site of a fish weir used in the fall may have had as important social and economic consequences as ownership or control of the weir itself." He also notes for the Coast Salish, that while weirs were generally publicly owned, houses were not, and this would have implications for the ability to process and store food (Suttles 1987b:55).

Finally, in order to undertake procurement of seasonally available resources, groups living on the Northwest Coast needed social organization and values that would compel and motivate them to do so (Suttles 1987b:56). Suttles (1987b:56-57) offers ceremonial activities or the need to pay tribute as possible reasons for producing surplus. Whatever the motivator, it seems clear that when resources were available to a group they were exploited, stored and redistributed, and when resources were unavailable, a group could be the recipient of redistribution (Suttles 1987b:60). It is thought that the potlatch system known throughout the Northwest Coast arose out of this practice (Suttles 1987b:61), although this position has been critiqued from a Marxist point of view by Ruyle (1973).

### 3.5 - Expectations

From the information included in the preceding literature review, I hypothesize that there will be an increase in fish remains at or around the time that fish traps appear in Comox Harbour, British Columbia. Additionally, the ethnographic Northwest Coast 'household' will emerge, minimally, at or before the time that fish trap use emerges. Because fish trap ownership and use is related to household membership (Boas 1966:36), then the emergence of fish traps will be dependent on the existence of household groups. Further, the use of fish traps will aid in supporting the larger population base associated likely with the emergence of Northwest Coast households. Minimum age of the ethnographically known "household group" in any one are of the

Northwest Coast can then be inferred from the age of fish traps in that area. In order to test this hypothesis, two sets of expectations were generated.

The first set of expectations is based on an increase in fish remains found in the Q'umu?xs Village shell midden corresponding to the time when fish traps begin to be used in Comox Harbour. The first expectation is that there will be an increase in production with the use of fish traps. Intensification of production can occur one of two ways. First, intensification can represent a higher yield per time spent undertaking a task (that is increase in production without increase in time). Second, intensification can represent a decrease in the amount of time taken at a particular task, without a corresponding decrease in yield (Ames 2005: 76). I propose that fish trap use can indicate either or both of these types to intensification. For the first, initial output in labour will be higher during the building of the fish trap, but upkeep of the fish trap will not be such that overall time spent building and catching will detract from net energy gain. Second, the fish traps represent a created patch within which fish can be taken, meaning that pursuit and handling time spent fishing will be less but yields will still be high. Together, a larger harvest combined with a faster harvesting technique, indicate that intensification of fish procurement has a definite likelihood of occurring.

The second expectation is that the use of fish traps in Comox Harbour will be shown to continue over time. As fish trap ownership is known to have occurred at the household level (Boas 1966: 36), and intensification of subsistence resources is thought to have led to the establishment of household groups (Matson and Coupland 1995: 308), use of fish traps is likely to occur and continue alongside the continuation of household groups.

The second set of expectations is based on there being no increase in fish remains found in the Q'umu?xs Village shell midden corresponding to the time when fish traps begin to be used in Comox Harbour, or that any changes seen in the amount of fish remains recovered cannot be securely linked to fish trap use. The first expectation here is that having found no increase in fish remains at the time that fish traps appear in Comox Harbour, the technological shift indicated by the presence of fish traps does not represent a move towards intensified fishing. Rather, if there is no increase in the amount of fish remains it is likely that fish trap technology replaced the previous technology without increasing the amount of fish harvested.

A second expectation of a lack of increase in fish remains associated with the appearance of fish traps is that the existence of corporate households on the Northwest Coast may not be associated with initial use of fish traps. Smaller independent household groups existing outside of a corporate household would not be as likely to mass harvest fish using fish traps (though this does not mean that they would not have used traps to some degree) as they would not have the labour force to process and preserve large quantities of fish before they begin to rot.

# Chapter 4 – Methods and Materials

## 4.1 - Site Selection

A preliminary survey of Comox Harbour was conducted in late April/early May of 2007. The purpose of this survey was to become familiar with Comox Harbour itself, as well as to ascertain condition and accessibility of sites bordering the harbour. A number of pre-contact sites are recorded adjacent to Comox Harbour. Most of these sites were small to begin with, and since initial recording of these sites in the 1970s much development has taken place around Comox Harbour. The survey indicated that two sites, one on the south side of the harbour and one on the north side of the harbour, would be easily accessible, as well as relatively undisturbed.

## 4.2 - Sampling

### 4.2.1 - *Bucket Auger Sampling*

Fish remains were recovered via bucket auger coring of three areas of the site, and further auger samples from a fourth area of the site were obtained from curation at the Courtenay District Museum and Archives. Cannon (2000) has demonstrated the applicability of bucket auger sampling for tracking the density or abundance of fish species, especially herring and salmon, in pre-contact fisheries at the site of Namu in central British Columbia. While the importance of salmon in Northwest Coast economies is an often-cited phenomenon, identifying the importance of herring as a subsistence resource has been hampered by the use of 1/4" and even 1/8" screens, which are often too large to recover elements from herring and other small fish species. The use of bucket augers to obtain samples which are later sieved through 2mm or smaller mesh in controlled laboratory settings enable the recovery of relatively small herring elements which would otherwise go unobserved. Cannon (2000) noted this pattern at Namu (salmon dominating excavated samples; herring dominating auger samples), and it can be seen as well through comparison of field recovered elements vs. auger recovered elements at K'omoks.

#### 4.2.2 - ***Sampling in the Field***

Locations for bucket auger samples were chosen arbitrarily on the basis of association with mapped and/or dated traps, as well as ease of conducting auger excavation in terms of vegetation cover. Three areas of the site on the north side of the harbour were tested (Figure 4.1). Area 1 consists of the area south of the Band Office and the Art Gallery, between Comox Avenue and the beach front. This area was selected because of its proximity to dated traps, and to those traps which were mapped as part of this fieldwork. Area 2 is located approximately 550m southeast of Area 1, on a raised bank above the Courtenay River and Comox Harbour shore. A column sample was also taken in this area, directly from the midden face. The column sample was obtained as a means of obtaining the depth of cultural materials after auger sampling failed to reach the bottom of the deposits. Finally, Area 3 is located near Area 2, but back away from the beach front. Images of each area can be found in Appendix F.

Placement of auger samples was done arbitrarily in each of these three areas – initial samples were placed in areas that showed good potential for undisturbed midden deposits, and additional samples were placed adjacent to positive auger holes. In Area 1, auger samples were more widespread as the material was disturbed in this area and I attempted, unsuccessfully, to locate undisturbed midden deposits. In Area 2, the samples are clustered in an area free of vegetation close to the midden face; material further north and to the east was disturbed, and the area was bounded to the west by a known cemetery which was left undisturbed. The column sample taken from this area was placed next to a known deer trail which had previously disturbed the midden material. Therefore I removed the material from an area which had a high chance of being disturbed in the future, rather than removing the material from a less disturbed location of the midden and opening up a larger area to future erosional and other destructive forces. In Area 3, midden deposits were located next to a garden plot. Sampling of this area proceeded around the garden plot, and across an open area between the original garden plot and a second plot. One sample was placed on the far side of the second garden plot; however, the majority of the raised midden was removed from this area. The raised midden is present on either side of the flattened area; flattening is likely historical and due to house construction and yard use. The material from this one sample was somewhat disturbed and contained very little in the way of cultural material.

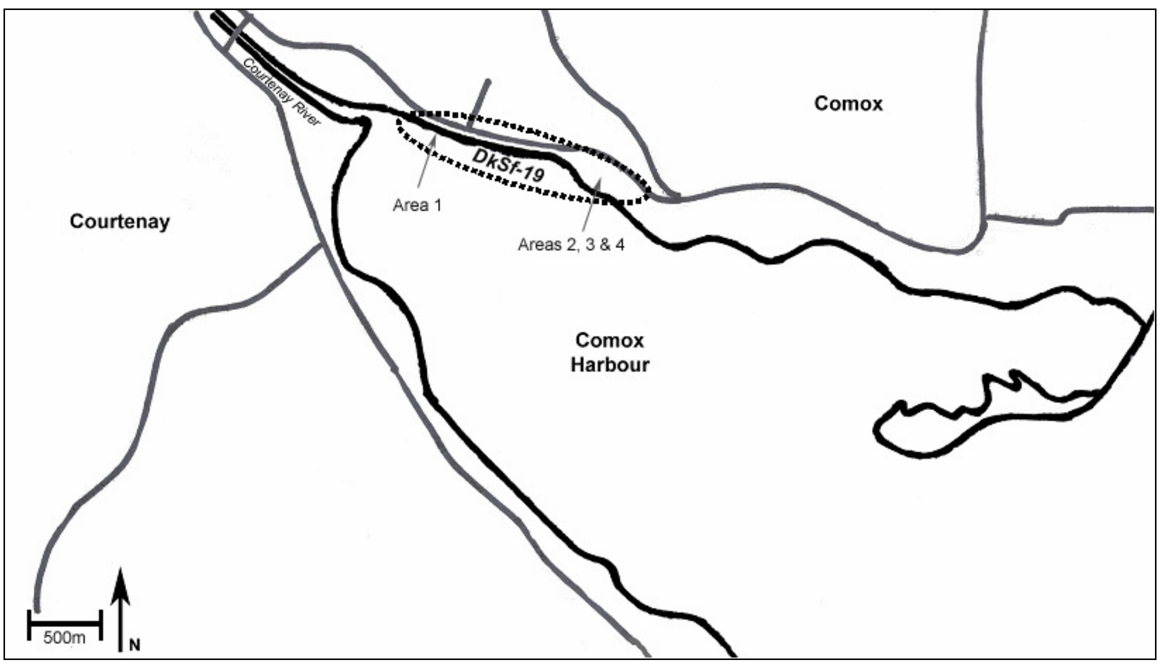



Figure 4.1 Location of sampled areas at the Q'umu?xs Village Site

Auger excavation proceeded in arbitrary levels. The depth of each level is dependant on a number of factors. First, different soil types filled the auger bucket in varying degrees of compaction. Layers with abundant shell material were in general shorter than layers of mostly sediment which compacted easier and therefore a deeper level was needed to fill the auger. Also, at times large rocks (unmodified and fire broken) became lodged in the auger and some layers had to be ended prematurely to remove the impeding material before continuing. Finally, in extremely silty layers, the bucket auger was often less than half full due to matrix falling out of the auger. In these cases the hole was then ended because the material was too loose to hold in the auger. Levels thus reflect the individual conditions encountered for each sample. Levels are treated in this sample as "analytical levels" and are not associated with other levels, except for broad generalizations of trends within areas.

Forty-one auger samples were obtained in the field; eleven of these were returned when they either contained no cultural material, or the cultural material was disturbed to the point of being invalid for analysis. Some site boundaries were confirmed through non-positive auger samples. Distribution of retained samples amongst the three site areas varied. Five auger samples were retained from each of Area 1 and Area 2. In addition, one column sample was obtained from Area 2. Twenty auger samples were retained from Area 3.

### 4.2.3 - *Sampling for Analysis*

All samples retained from Area 1 and Area 2 are included in the sample for analysis. As well, the column sample from Area 2 is included in the sample. Due to the large amount of material retained from Area 3, and the relative homogeneity between the auger samples in this area, the five deepest auger samples from Area 3 are considered in this analysis.

In addition to the materials I obtained, five additional auger samples were obtained from the Courtenay District Museum and Archives, in Courtenay, British

Columbia (Area 4; Figure 4.1). These materials had been previously collected as part of a mitigation project prior to house construction in 2000 by Millennia Reseach. Materials were collected at intervals of 5m along the E/W and N/S axes of a grid laid over the site using a 6cm diameter bucket auger in 10cm levels until sterile sand was reached, or the sample was impenetrable (Lindberg 2000:7). At the request of the Courtenay District Museum and Archives, only a portion of the materials recovered from the site were analyzed as part of this project. Subsamples were taken from the total available volumes, and the remainder was left at the Courtenay District Museum and Archives for future analyses (See Appendix B for further information on these samples).

The entire sample considered for the present analysis thus consists of 17 auger samples and one column sample. A further subsample of material smaller than 2.36mm was taken from the deepest auger sample from Area 1, Area 3 and Area 4, and from the column sample from Area 2. This subsample consists of 250ml of materials smaller than 2.36mm from Area 1, Area 2 and Area 3. For Area 4, since sample size was small to begin with, the entire amount of less than 2.36mm material was considered. These subsamples were then screened through a 1.5mm mesh. No materials smaller than 1.5mm were analyzed.

## 4.3 - Treatment of Materials

### 4.3.1 - *Screening and sorting of auger materials*

All materials were screened by hand using geological sieves. Initial dry-screening of materials was done through 19mm, 4.75mm and 2.36mm screens. Materials larger than 2.36mm were then wet screened through 1mm mesh to remove any adhering sediments to make the process of sorting bone out from amongst the shell easier. For the material smaller than 2.36mm, a subsample was taken from four samples (see above), which was then dry screened and wet screened through a 1mm geological sieve. Once materials were dry, bone was removed from the shell matrix by hand for identification and quantification. Materials from the Courtenay District Museum and Archives were not subjected to wet screening. Instead, these materials were dry-screened through 2.36mm mesh, and for Auger 10W5N, materials smaller than 2.36mm were dry-screened through 1.5mm mesh.

### 4.3.2 - *Identification*

Preliminary identification of some materials was undertaken in the Zooarchaeology Laboratory at Simon Fraser University (Burnaby, BC) using their comparative collection. The majority of identification was done in the Anthropology Laboratory at the University of Manitoba (Winnipeg, MB) using a comparative collection consisting of 91 fish specimens, 21 of which are Pacific species. Analysis included identification to genus/species whenever possible. Excluded from analysis of fish remains are ribs, rays, spines and gill rakers, which are notably difficult to identify to the genus level. Information for each identified element incorporates taxon, element, side, portion, and taphonomy.

### 4.3.3 - *Quantification*

Basic quantification is undertaken at the level of number of specimens (NSP) for elements identifiable only to class, and number of identified specimens (NISP) for elements identifiable beyond class. While all results are presented as NISP, it should be noted that due to differential fragmentation between taxa, especially in regards to salmon remains, NISP counts possibly inflate the actual number of represented elements in any one sample. Relative abundance is measured as the percentage of NISP (%NISP) per taxon as it relates to total NISP.

Density of remains is measured as a NISP per litre of material finer than 2.36mm for each analytical level. For the 1.5mm materials, density is measured as NISP per 250mL to account for the sub-sample (in the case of Auger 10W5N the amount varies). Density is used a means of comparing between samples of differing volume. In general, density measures for the samples considered here mirror the fluctuations seen in the abundance counts, thus it would appear that differences in abundance are not directly related to volume of matrix.

## 4.4 - Soil pH Analysis

### 4.4.1 - *Material Used for Soil pH Analysis*

For each of the three site areas identified during sampling, materials from the deepest auger hole in each area were sent for soil pH analysis at the University of Winnipeg Soil Lab (Winnipeg, MB). For Area 1, material from Auger 9 was sent for soil pH analysis. For Area 2, material from the column sample was sent for soil pH analysis. For Area 3, material from Auger 40 was sent for soil pH analysis, and for Area 4, material from Auger 10W5N was sent for soil pH analysis. Appendix C details the other samples submitted for analysis.

### 4.4.2 - *Method of Soil pH Analysis*

The Soil Lab at the University of Winnipeg uses the following standard procedures for pH tests. Ten grams of sediment are mixed with 20mL of 0.01M $CaCl_2$ and left for 30 minutes, stirring the suspension several times. The suspension is then left standing for 20 minutes to allow the sediment to settle. A clean pH meter electrode is then immersed part way into the suspension, resulting in a digital readout of pH value to two decimal places.

#### 4.4.5 - ***Correlation of Soil pH Analysis and Fish Remains***

Spearman's rank order correlation was applied to analyze the relationship between soil pH values and both NSP and NSP/L from 2.36mm, 1.5mm and the combination of both 2.36mm and 1.5mm material from each of the four samples tested. As Spearman's rank order correlation ($r_s$) requires ordinal data, soil pH values, NSP and NSP/L counts were ranked, with '1' representing the highest value in each sample. The formula used to calculate Spearman's rank order correlation is:

$$r_s = 1 - \frac{6\left(\sum D^2\right)}{N\left(N^2 - 1\right)}$$

where,

$r_s$ = Spearman's rank order correlation coefficient,
*D* = difference in subject's rank between the *X* and *Y* variables,
*N* = total number of subjects used in calculation,
and 6 is a constant always used in the calculation (Levin 1977:210).

To determine if the results of correlation are supported, the substantive hypothesis, that is if soil pH values have an effect on the preservation of bone in these samples, must be tested. The level of significance of the calculated correlation coefficient was set at the 0.05 confidence interval, wherein if the correlation coefficient exceeds the level of confidence at the 0.05 confidence interval, the null hypothesis (that there is no relationship between soil pH values and bone preservation) is rejected and the correlation coefficient is considered to be significant (Levin 1977:213). Correlation coefficients calculated for soil pH values and NSP or NSP/L counts were compared to values of $r_s$ at the 0.05 confidence interval provided by Levin (1977:277) to determine significance. The results of correlation calculations are discussed in the next chapter for the applicable samples; calculations for the correlation coefficient and levels of confidence are provided in Appendix C.

## 4.5 - Fish Trap Mapping

Total station mapping of two wooden stake complexes was undertaken in an effort to improve upon mapping of dated wooden stake complexes done by the Hamatla Treaty Society in 2006. A Topcon GTS-226 Total Station was used in the mapping of these wooden stakes. A datum was established at which the total station was set up in order to capture the location of stakes associated with two trap complexes along the north shore of the Puntledge River as it enters Comox Harbour. Two traps were selected for mapping at this time based on proximity to onshore midden deposits and the presence of radiocarbon dates from these traps. The two traps mapped had been previously mapped and dated during the Hamatla Treaty Society Foreshore Archaeological Research and Training Program in the summer of 2006. Mapping at that time was undertaken using GPS and the maps produced were not of a fine enough scale to determine individual wooden stake complexes or trap structures. Due to the short length of time in the field with a total station and the need to map at low tide when traps are exposed, only two stake complexes were mapped. The spatial data collected with the total station were uploaded into ArcGIS 9.1 to create schematics of the trap complexes.

## 4.6 - Interviews

### 4.6.1 - *Ethics Approval*

As part of my research on fish trap use in Comox Harbour, I conducted interviews with K'omoks First Nation Elders. These interviews were undertaken before and after fieldwork. Four Elders were interviewed prior to excavation, to assess what knowledge exists about the use of fish traps in Comox Harbour, and to help shape some of the expectations of what I might encounter during excavation. Only one Elder was available for a second interview following excavation and laboratory analysis of materials. This interview was conducted to both share the information learned through the analysis of fish remains from the Q'umu?xs Village site, and to gain insight from the Elder as to what possible interpretations of these results may be.

#### 4.6.2 - ***Interview Questions***

The first set of interviews were conducted prior to excavation, and questions were asked relating to knowledge about the fish traps in Comox Harbour, how they may have been constructed and used, who might have owned them, and what fish might have been caught in them. As well, questions about broader subsistence and social organization were asked. During the second interview, the results of research were shared with the interviewee, providing her with information about what was found and some preliminary interpretations of that information. Questions were asked relating specifically to the use of herring and salmon, how they were caught, processed and stored. As well, knowledge about the use of other species found in the samples was sought. A list of questions asked during interviews can be found in Appendix D, along with samples of informed consent forms. Knowledge shared by Elders in these interviews will be incorporated into the discussion of results in Chapter 6.

# Chapter 5 – Results

## 5.1 - Introduction

In this chapter I present the results of my research. I begin by listing the results of both radiocarbon and soil pH analyses. I then discuss at length the results of the analysis of fish remains from the Q'umu?xs Village site. This discussion of results includes details about quantities of fish, and brief descriptions of the patterning of herring and salmon remains found in each sample (detailed results of analysis are available in Appendix G). In general, herring represents the majority of remains from each sample, and so both NISP and NSP counts very closely mirror herring NISP. For this reason, they are only discussed in general. Density measures are discussed (NSP/L, NISP/L), however, for most samples, relative density measures from level to level mirror relative abundance (NSP, NISP) measures from level to level, and as such are not discussed in detail except in those instances where relative density differs greatly from abundance. I then present the results of fish trap mapping on two wooden stake complexes in Comox Harbour, British Columbia.

## 5.2 - Results of Radiocarbon Analysis

Five radiocarbon dates were submitted as part of this project. The materials for these dates come from the column sample in Area 2 and Auger 40 in Area 3. All five dates were taken from shell because charcoal was not frequently encountered in large enough quantities from single samples to be submitted. Samples were sent to Beta Analytic Inc. of Florida for standard radiometric analysis and results are summarized in Table 5.1. Reports provided by Beta Analytic can be found in Appendix E.

Table 5.1 Results of radiocarbon analysis on materials from the Q'umu?xs Village

| Sample | Location | Material | Measured Radiocarbon Age | 13C/12C Ratio | Conventional Radiocarbon Age | 2 Sigma Calibration (Cal. BP) |
|---|---|---|---|---|---|---|
| Beta 240174 | Column Sample 20-40cmBS | Shell | 1810+/-70BP | -1.9 o/oo | 2190+/-70BP | 1500-1240 Midpoint = 1370 |
| Beta 240175 | Column Sample 50-60cmBS | Shell | 1790+/-70BP | -0.5 o/oo | 2190+/-70BP | 1500-1240 Midpoint = 1370 |
| Beta 240176 | Column Sample 80-90cmBS | Shell | 1960+/-50BP | -0.4 o/oo | 2370+/-60BP | 1700-1370 Midpoint = 1535 |
| Beta 241997 | Auger 40 16-27cmBS | Shell | 610+/-50BP | -0.8 o/oo | 1010+/-50BP | 430-110 Midpoint = 270 |
| Beta 241998 | Auger 40 37-47cmBS | Shell | 1440+/-50BP | -1.1 o/oo | 1840+/-60BP | 1180-870 Midpoint = 1025 |

Three radiocarbon samples were sent for analysis from the column sample in Area 2. These three samples came from depths of 20-40cm (Beta 240174), 50-60cm (Beta 240175) and 80-90cm (Beta 240176) below surface. The sample from 80-90cmBS dates to 1535 BP, while the upper two samples both date to 1370 cal. BP. The samples from Auger 40 in Area 3 come from 16-27cm (Beta 241997) and 37-47cm (Beta 231998) below surface. The sample from 37-47cmBS dates to 1025 cal. BP, while the sample from 16-27cmBS dates to 270 cal. BP.

## 5.3 - Results of Soil pH Analysis

Four samples, one from each area of the site, were submitted for soil pH analysis. The samples sent for soil pH analysis are Auger 9 (Area 1), the column sample (Area 2), Auger 40 (Area 3) and Auger 10W5N (Area 4); the results are summarized in Table 5.2. Soil pH values were obtained for each level of each sample. In total 39 soil pH values were obtained, ranging between 7.07 and 7.86, indicating fairly neutral depositional environments in all areas of the site. It has been reported elsewhere that that bone is least effected by soil pH at a value of 7.88 (Lindsay 1979:181) and the values presented here do not vary far enough away from this value for there to be anything more than slight effect on bone preservation.

Table 5.2 Results of soil pH analysis on samples from the Q'umu?xs Village site

| Area 1 - Auger 9 | | Area 2 - Column | | Area 3 - Auger 40 | | Area 4 - Auger 10W5N | |
|---|---|---|---|---|---|---|---|
| Depth (cm BS) | pH Value | Depth (cm BS) | pH Value | Depth (cm BS) | pH Value | Depth (cm BS) | pH Value |
| 0-12.5 | 7.18 | 0-20 | 7.48 | 0-16 | 7.7 | 0-10 | 7.07 |
| 12.5-19 | 7.34 | 20-40 | 7.55 | 16-27 | 7.86 | 10-20 | 7.39 |
| 19-30 | 7.48 | 40-50 | 7.51 | 27-37 | 7.81 | 20-30 | 7.46 |
| 30-36 | 7.56 | 50-60 | 7.61 | 37-47 | 7.75 | 30-40 | 7.43 |
| 36-40.5 | 7.57 | 60-70 | 7.52 | 47-62 | 7.46 | 40-50 | 7.39 |
| 40.5-42 | 7.53 | 70-80 | 7.54 | 62-82 | 7.57 | 50-60 | 7.56 |
| | | 80-90 | 7.48 | 82-88 | 7.64 | 60-70 | 7.43 |
| | | 90-100 | 7.51 | 88-88 | 7.63 | 70-80 | 7.44 |
| | | 100-110 | 7.53 | 88-91.5 | 7.55 | 80-90 | 7.46 |
| | | 110-120 | 7.51 | 91.5-93 | 7.6 | 90-100 | 7.59 |
| | | | | 93-99.5 | 7.56 | 100-110 | 7.72 |
| | | | | 99.5-101 | 7.53 | | |
| | | | | 101-106 | 7.62 | | |
| | | | | 106-115 | 7.55 | | |

## 5.4 - Results of Fish Element Identification

### 5.4.1 - *Results of 2.36mm Samples*

Analysis of materials larger than 2.36mm was undertaken on a total of 18 samples. These materials come from all four areas of the site, and include 17 auger samples, and the single column sample taken from Area 2. Three auger samples are considered from Area 1, four from Area 2, and five each from Area 3 and Area 4. The results of the identification of fish remains from all eighteen samples are outlined below. Discussion and interpretation of those results are found in the next chapter.

A total of 38,855 fish elements were recovered from the 2.36mm materials (Table 5.3 and 5.4). These materials are distributed differentially between the four site areas.

Area 1 has a total of 1,554 (4%) fish remains, the lowest amount for all sites. Area 2 has a total of 4,155 (10.69%) fish remains, while Area 4 has slightly more at 4,564 (11.75%) fish remains. Area 3 has by far the most fish remains present in its samples, with 28,582 (73.56%). Of the 38,855 fish elements recovered, 32,553 (83.78%) have been identified. The majority of identified fish remains, 31,460 (96.64%), are Pacific herring, while only 634 (1.95%) are Pacific salmon. Spiny dogfish (0.75%; n=244), midshipman (0.29%; n=93), flatfish (0.20%; n=64), greenling (0.09%; n=28), surfperch (0.08%; n=27) and rockfish (0.01%; n=3) have also been identified from the 2.36mm materials.

Table 5.3 Distribution of 2.36mm materials by area

| Site Area | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume** | NISP/L | NSP/L | Herring/L | Salmon/L |
| **Area 1** | 1069 | 136 | 6 | 16 | 2 | 14 | 0 | 8 | **1251** | 303 | **1554** | **11.25** | 111 | 138 | 95 | 12 |
| **Area 2** | 3312 | 57 | 18 | 24 | 4 | 31 | 2 | 4 | **3452** | 703 | **4155** | **38.98** | 89 | 107 | 85 | 1 |
| **Area 3** | 23523 | 411 | 212 | 13 | 19 | 32 | 0 | 14 | **24224** | 4358 | **28582** | **33.26** | 728 | 859 | 707 | 12 |
| **Area 4** | 3556 | 30 | 8 | 11 | 3 | 16 | 1 | 1 | **3626** | 938 | **4564** | **6.98** | 519 | 654 | 509 | 4 |
| **Total** | **31460** | **634** | **244** | **64** | **28** | **93** | **3** | **27** | **32553** | **6302** | **38855** | **90.47** | **360** | **429** | **348** | **7** |

Table 5.4 %NISP and %NSP of 2.36mm materials by area

| Site Area | % Species of Area NISP | | | | | | | | **% NISP of Area NSP** | **% NSP of site total NSP** |
|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | | |
| **Area 1** | 85.45 | 10.87 | 0.48 | 1.28 | 0.16 | 1.12 | 0.00 | 0.64 | **80.50** | **4.00** |
| **Area 2** | 95.94 | 1.65 | 0.52 | 0.70 | 0.12 | 0.90 | 0.06 | 0.12 | **83.08** | **10.69** |
| **Area 3** | 97.11 | 1.70 | 0.88 | 0.05 | 0.08 | 0.13 | 0.00 | 0.06 | **84.75** | **73.56** |
| **Area 4** | 98.07 | 0.83 | 0.22 | 0.30 | 0.08 | 0.44 | 0.03 | 0.03 | **79.45** | **11.75** |
| **Total** | **96.64** | **1.95** | **0.75** | **0.20** | **0.09** | **0.29** | **0.01** | **0.08** | **83.78** | **100** |

When fish remains recovered from the 2.36mm materials are considered in terms of density for each area, Area 2, which has the highest volume, has the lowest NISP, NSP, herring and salmon densities. Area 1, which has the third highest volume (but from only three samples) and lowest overall abundance, has the second lowest densities for NISP, NSP and herring.. Area 4, with the smallest volume (although this is due to sampling, not a reflection of difference in site area) has the second highest densities of NISP, NSP and herring, and the third highest salmon density. Area 3 has the highest NISP, NSP and herring densities. Area 1 and Area 3 have the same salmon density, which is higher than that of the other two areas.

**Area 1**

Three auger samples are considered from Area 1 in this analysis. These samples come from varied locations throughout Area 1 and represent remains from historically disturbed deposits. All three samples have differing levels of remains present (Table 5.5; Table 5.6). A total of 1,251 fish elements were identified from this area and these constitute a total of 80.5% of all recovered elements (n=1554). Of the identifiable fish elements, 85.45% (n=1,069) are Pacific herring; 10.87% (n=136) are Pacific salmon; 1.28% (n=16) are flatfish; 1.12% (n=14) are midshipman; 0.64% (n=8) are surfperch; 0.48% (n=6) are spiny dogfish; and 0.16% (n=2) are greenling. However, the representation of species differs between samples.

Table 5.5 Distribution of 2.36mm materials for Area 1

| Sample | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | NISP/L | NSP/L | Herring/L | Salmon/L |
| **Auger 8** | 149 | 60 | 0 | 1 | 0 | 4 | 0 | 1 | **215** | 53 | **268** | **4.55** | 47 | 59 | 33 | 13 |
| **Auger 9** | 64 | 13 | 2 | 4 | 0 | 6 | 0 | 0 | **89** | 101 | **190** | **4.60** | 19 | 41 | 14 | 3 |
| **Auger 13** | 856 | 63 | 4 | 11 | 2 | 4 | 0 | 7 | **947** | 149 | **1096** | **2.10** | 451 | 522 | 408 | 30 |
| **Total** | **1069** | **136** | **6** | **16** | **2** | **14** | **0** | **8** | **1251** | **303** | **1554** | **11.25** | **111** | **138** | **95** | **12** |

Table 5.6 %NISP and %NSP of 2.36mm materials for Area 1

| Sample | % Species of Sample NISP | | | | | | | | **% NISP of Sample NSP** | **% NSP of Area NSP** |
|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | | |
| **Auger 8** | 69.30 | 27.91 | 0.00 | 0.47 | 0.00 | 1.86 | 0.00 | 0.47 | **80.22** | **17.25** |
| **Auger 9** | 71.91 | 14.61 | 2.25 | 4.49 | 0.00 | 6.74 | 0.00 | 0.00 | **46.84** | **12.23** |
| **Auger 13** | 90.39 | 6.65 | 0.42 | 1.16 | 0.21 | 0.42 | 0.00 | 0.74 | **86.41** | **70.53** |
| **Total** | 85.45 | 10.87 | 0.48 | 1.28 | 0.16 | 1.12 | 0.00 | 0.64 | **80.50** | **100** |

When all three samples from Area 1 are compared in terms of density, Auger 13, despite having the smallest volume has by far the highest densities for NISP, NSP, herring and salmon. Densities for both Auger 8 and Auger 9 are low in comparison to Auger 13, although Auger 8 has higher densities than Auger 9 overall.

*Auger 8*

Auger 8 is represented by six analytical levels, representing between three and ten centimeters depth each, for a total depth of 41cm below surface (cmBS). Fish remains peak at two points before dropping off to almost negligible numbers (Table 5.7).

A total of 80.22% of fish remains from this sample were identifiable (NISP=215; NSP=268). Herring dominates the assemblage in the lower levels; however, in level 9-19cmBS, salmon dominates. Herring has the highest overall representation (69.3%; n=149), but salmon is also well represented (27.91%; n=60). The amount of salmon present is mostly highly fragmented vertebral remains, and thus the NISP count exaggerates the number of elements actually represented. Salmon remains come from only two levels, 9-19 cmBS and 19-24.5 cmBS, with the vast majority (n=57) coming from the upper of those two levels. Also present in this sample are small numbers of midshipman (1.86%; n=4), flatfish (0.47%; n=1) and surfperch (0.47%; n=1). None of the other species are present.

Table 5.7 Distribution of 2.36mm materials for Auger 8

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | **NISP/L** | **NSP/L** | **Herring/L** | **Salmon/L** |
| 0-9 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **2** | 5 | **7** | **0.45** | 4 | 16 | 4 | 0 |
| 9-19 | 5 | 57 | 0 | 0 | 0 | 0 | 0 | 0 | **62** | 18 | **80** | **1.15** | 54 | 70 | 4 | 50 |
| 19-24.5 | 18 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | **21** | 16 | **37** | **0.95** | 22 | 39 | 19 | 3 |
| 24.5-34.5 | 92 | 0 | 0 | 1 | 0 | 3 | 0 | 1 | **97** | 8 | **105** | **0.95** | 102 | 111 | 97 | 0 |
| 34.5-38 | 26 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **27** | 3 | **30** | **0.55** | 49 | 55 | 47 | 0 |
| 38-41 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **6** | 3 | **9** | **0.50** | 12 | 18 | 12 | 0 |
| **Total** | **149** | **60** | **0** | **1** | **0** | **4** | **0** | **1** | **215** | **53** | **268** | **4.55** | **47** | **59** | **33** | **13** |
| **%NISP/%NSP** | **69.30** | **27.91** | **0.00** | **0.47** | **0.00** | **1.86** | **0.00** | **0.47** | **80.22** | **19.78** | **100** | * | * | * | * | * |

In terms of density, NSP and NISP fluctuate from level to level in Auger 8, as does herring. Salmon is near absent, except in level 9-19 cmBS, where the density of salmon is higher than that of herring; in every other level herring density is higher than salmon.

*Auger 9*

Auger 9 is also represented by six analytical units, to a depth of 42 cmBS. The analytical levels vary between 1.5-12.5 centimetres depth each. In Auger 9 (Table 5.8), only 47.4% of fish remains were identifiable (NISP=89; NSP=190). After an initial climb, fish remains steadily decline through to the uppermost level. Overall, the number of identified fish elements recovered from Auger 9 is much lower than the other two samples from Area 1 and in fact has the fewest identified elements from all samples (both NISP and NISP/L). Herring is the best represented species from Auger 9 (71.91%; n=64). Salmon (14.61%; n=13) is also well represented in this sample yet it is evenly dispersed throughout all levels except the uppermost level where it is absent. Midshipman (6.74%; n=6), flatfish (4.49%; n=4), and spiny dogfish (2.25%; n=2) are also present. In terms of density, NISP, NSP, herring and salmon all show a general decrease in density from the lower to upper levels.

Table 5.8 Distribution of 2.36mm materials for Auger 9

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | | pH Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | NISP/L | NSP/L | Herring/L | Salmon/L | |
| 0-12.5 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **2** | 6 | **8** | **0.80** | 3 | 10 | 3 | 0 | **7.18** |
| 12.5-19 | 9 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | **13** | 10 | **23** | **0.75** | 17 | 31 | 12 | 4 | **7.34** |
| 19-30 | 15 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **16** | 13 | **29** | **0.95** | 17 | 31 | 16 | 0 | **7.48** |
| 30-36 | 13 | 3 | 0 | 2 | 0 | 3 | 0 | 0 | **21** | 31 | **52** | **1.00** | 21 | 52 | 13 | 3 | **7.56** |
| 36-40.5 | 14 | 4 | 2 | 1 | 0 | 2 | 0 | 0 | **23** | 21 | **44** | **0.65** | 35 | 68 | 22 | 6 | **7.57** |
| 40.5-42 | 11 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | **14** | 20 | **34** | **0.45** | 31 | 76 | 24 | 7 | **7.53** |
| **Total** | **64** | **13** | **2** | **4** | **0** | **6** | **0** | **0** | **89** | **101** | **190** | **4.60** | **19** | **41** | **14** | **3** | * |
| **%NISP/%NSP** | **71.91** | **14.61** | **2.25** | **4.49** | **0.00** | **6.74** | **0.00** | **0.00** | **47.40** | **52.60** | **100** | * | * | * | * | * | * |

The correlation coefficient for soil pH values and NSP from Auger 9 is $r_s$=0.94, and for soil pH values and NSP/L is $r_s$=0.81. Compared to the critical value for N=6 (Levin 1977:277, Table G), the result for soil pH values and NSP is significant, while for

NSP/L is not. Although the correlation coefficients show a strong positive relationship, there is very little fluctuation in soil pH values from this sample in general, and as the material is highly disturbed it is difficult to say that this correlation actually reflects a true relationship between soil pH values and NSP or NSP/L.

*Auger 13*

The final sample from Area 1, Auger 13, consists of only three analytical levels, varying between 6.5 and 8 centimeters in depth, up to a depth of 21 cmBS. While only three levels are represented in this sample, there is a drastic increase in the amount of herring present, followed by a rapid decline. A total of 1,096 fish elements were recovered from Auger 13, of which 86.41% (n=947) have been identified (Table 5.9). Herring represents the majority of fish remains identified (90.39%; n=856), with the overwhelming majority of these located between 6.5-14.5 cmBS (n=666). Salmon shows a similar pattern as herring, although its numbers are much lower overall; only 6.65% (n=63) of the identified fish remains are salmon, and as with the other samples, the majority of the salmon remains represent highly fragmented vertebral elements. Flatfish (1.16%; n=11), surfperch (0.74%; n=7), midshipman (0.42%; n=4), spiny dogfish (0.42%; n=4), and greenling (0.21%; n=2) are also present in Auger 13.

Table 5.9 Distribution of 2.36mm materials for Auger 13

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | NISP/L | NSP/L | Herring/L | Salmon/L |
| **0-6.5** | 44 | 9 | 1 | 0 | 0 | 0 | 0 | 1 | **55** | 6 | **61** | **0.55** | 100 | 111 | 80 | 16 |
| **6.5-14.5** | 666 | 36 | 2 | 6 | 0 | 4 | 0 | 0 | **714** | 79 | **793** | **0.60** | 1190 | 1322 | 1110 | 60 |
| **14.5-21** | 146 | 18 | 1 | 5 | 2 | 0 | 0 | 6 | **178** | 64 | **242** | **0.95** | 187 | 255 | 154 | 19 |
| **Total** | **856** | **63** | **4** | **11** | **2** | **4** | **0** | **7** | **947** | **149** | **1096** | **2.10** | **451** | **522** | **408** | **30** |
| **%NISP/%NSP** | **90.39** | **6.65** | **0.42** | **1.16** | **0.21** | **0.42** | **0.00** | **0.74** | **86.41** | **13.59** | **100** | * | * | * | * | * |

The majority of fish remains from Auger 13 come from level 6.5-14.5 cmBS, and it is clear that this abundance has had an effect on the overall fish bone density of the sample. Overall, NISP, NSP, herring and salmon densities are higher in this level than the other two levels in this sample. In general, the densities in this sample, start low, jump in the second level, and then drop to values below those in the first for the final level.

**Area 2**

Area 2 is represented by four auger samples and a column sample taken from the face of the midden in this area (Table 5.10; Table 5.11). While these samples come from an area clustered around the location of the column sample, the fish remains show a wide range of variation both spatially and temporally. A total of 4,155 elements were recovered from these samples, of which 3,452 (83.08%) were identifiable. Of the identifiable elements an overwhelming majority of those are herring (95.94%; n=3,312); identified herring represents between 92.59% and 97.32% of identified remains in all five samples. Salmon is comparatively underrepresented, at only 1.65% of identified remains (n=7), with the majority of these from the column sample). Midshipman (0.9%;

n=31), flatfish (0.7%; n=24), spiny dogfish (0.52%; n=18), greenling (0.12%; n=4), rockfish (0.06%; n=2) and surfperch (0.12%; n=4) are also present in samples from Area 2.

Table 5.10 Distribution of 2.36mm materials for Area 2

| Sample | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | NISP/L | NSP/L | Herring/L | Salmon/L |
| **Auger 4** | 291 | 5 | 2 | 0 | 0 | 0 | 0 | 1 | **299** | 55 | **354** | **5.35** | 56 | 66 | 54 | 1 |
| **Auger 5** | 124 | 2 | 0 | 4 | 0 | 3 | 0 | 0 | **133** | 57 | **190** | **6.73** | 20 | 28 | 18 | 0 |
| **Auger 6** | 150 | 3 | 0 | 4 | 2 | 3 | 0 | 0 | **162** | 22 | **184** | **5.45** | 30 | 34 | 28 | 1 |
| **Auger 16** | 318 | 2 | 4 | 2 | 0 | 1 | 0 | 1 | **328** | 76 | **404** | **6.00** | 55 | 67 | 53 | 0 |
| **Column** | 2429 | 45 | 12 | 14 | 2 | 24 | 2 | 2 | **2530** | 493 | **3023** | **15.45** | 164 | 196 | 157 | 3 |
| **Total** | **3312** | **57** | **18** | **24** | **4** | **31** | **2** | **4** | **3452** | **703** | **4155** | **38.98** | **89** | **107** | **85** | **1** |

Table 5.11 %NISP and %NSP of 2.36mm materials for Area 2

| Sample | % Species of Sample NISP | | | | | | | | **% NISP of Sample NSP** | **% NSP of Area NSP** |
|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | | |
| **Auger 4** | 97.32 | 1.67 | 0.67 | 0.00 | 0.00 | 0.00 | 0.00 | 0.33 | **84.46** | **8.52** |
| **Auger 5** | 93.23 | 1.50 | 0.00 | 3.01 | 0.00 | 2.26 | 0.00 | 0.00 | **70.00** | **4.57** |
| **Auger 6** | 92.59 | 1.85 | 0.00 | 2.47 | 1.23 | 1.85 | 0.00 | 0.00 | **88.04** | **4.43** |
| **Auger 16** | 96.95 | 0.61 | 1.22 | 0.61 | 0.00 | 0.30 | 0.00 | 0.30 | **81.19** | **9.72** |
| **Column** | 96.01 | 1.78 | 0.47 | 0.55 | 0.08 | 0.95 | 0.08 | 0.08 | **83.69** | **72.76** |
| **Total** | 95.94 | 1.65 | 0.52 | 0.70 | 0.12 | 0.90 | 0.06 | 0.12 | **83.08** | **100** |

In general, the densities for samples from Area 2 are low. The column sample, which has by far the largest volume, also has the highest density of remains. The densities for Auger 4 and Auger 16 are similar, while those for Auger 5 are the lowest overall.

*Auger 4*

Auger 4 is represented by eight analytical levels, which vary between three to ten centimeters in depth, to a total depth of 56.5 cmBS. Auger 4 has the highest representation of herring from all samples in Area 2 (Table 5.12), with 97.32% (n=291) of identified fish being herring. Herring generally increases in numbers, with slight decreases at 36-43.5 cmBS and 19-27 cmBS, before dropping off almost completely in the uppermost level. Salmon is only represented by 5 elements (1.67% of identified fish), with 4 elements at 19-27 cmBS and 1 element at 43.5-47 cmBS. Spiny dogfish (0.67%; n=2) and surfperch (0.33%; n=1) are also present in very small amounts. As with abundances, densities for Auger 4 fluctuate from level to level, although salmon is understandably low as it is relatively absent from this sample.

Table 5.12 Distribution of 2.36mm materials for Auger 4

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | NISP/L | NSP/L | Herring/L | Salmon/L |
| **0-10** | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **11** | 0 | **11** | **0.30** | 37 | 37 | 37 | 0 |
| **10-19** | 47 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **47** | 0 | **47** | **0.65** | 72 | 72 | 72 | 0 |
| **19-27** | 45 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | **49** | 9 | **58** | **0.75** | 65 | 77 | 60 | 5 |
| **27-33** | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **61** | 18 | **79** | **0.75** | 81 | 105 | 81 | 0 |
| **33-36** | 45 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | **47** | 10 | **57** | **0.75** | 63 | 76 | 60 | 0 |
| **36-43.5** | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **30** | 12 | **42** | **0.85** | 35 | 49 | 35 | 0 |
| **43.5-47** | 37 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **38** | 5 | **43** | **0.65** | 58 | 66 | 57 | 2 |
| **47-56.5** | 15 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **16** | 1 | **17** | **0.65** | 25 | 26 | 23 | 0 |
| **Total** | **291** | **5** | **2** | **0** | **0** | **0** | **0** | **1** | **299** | **55** | **354** | **5.35** | **56** | **66** | **54** | **1** |
| **%NISP/%NSP** | **97.32** | **1.67** | **0.67** | **0.00** | **0.00** | **0.00** | **0.00** | **0.33** | **84.46** | **15.54** | **100** | * | * | * | * | * |

*Auger 5*

Ten analytical levels, to a depth of 71.5 cmBS, represent Auger 5. These levels vary between 0.5 and 11 centimeters in depth. A total of 133 elements were identified from Auger 5 (Table 5.13), representing 71.6% of all elements recovered (NSP=190). Herring is highly represented in this sample, with 93.23% of identified elements being herring (n=124). The amount of herring present in any analytical level fluctuates between 0 and 30 elements, and no pattern of increase or decrease over time is seen. Salmon is represented by only two elements (1.5%), both from upper levels of the sample. Flatfish (3.01%; n=4) and midshipman (2.26%; n=3) are also present. The densities for Auger 5 follow patterns of fluctuation similar to those seen with the abundances. Because salmon is near absent from this sample, its density is low throughout.

Table 5.13 Distribution of 2.36mm materials for Auger 5

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | **NISP/L** | **NSP/L** | **Herring/L** | **Salmon/L** |
| **0-11** | 10 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **11** | 8 | **19** | **0.45** | 24 | 42 | 22 | 2 |
| **11-21** | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **3** | 10 | **13** | **0.60** | 5 | 22 | 5 | 0 |
| **21-27** | 0 | 1 | 0 | 3 | 0 | 1 | 0 | 0 | **5** | 10 | **15** | **0.45** | 11 | 33 | 0 | 2 |
| **27-38** | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **30** | 4 | **34** | **0.90** | 33 | 38 | 33 | 0 |
| **38-40.5** | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **15** | 9 | **24** | **0.90** | 17 | 27 | 17 | 0 |
| **40.5-51** | 5 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **6** | 2 | **8** | **0.725** | 8 | 11 | 7 | 0 |
| **51-58** | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **16** | 4 | **20** | **0.55** | 29 | 36 | 29 | 0 |
| **58-62** | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **21** | 4 | **25** | **0.75** | 28 | 33 | 28 | 0 |
| **62-71** | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **5** | 2 | **7** | **0.45** | 11 | 16 | 9 | 0 |
| **71-71.5** | 20 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **21** | 4 | **25** | **0.95** | 22 | 26 | 21 | 0 |
| **Total** | **124** | **2** | **0** | **4** | **0** | **3** | **0** | 0 | **133** | **57** | **190** | **6.725** | **20** | **28** | **18** | **0** |
| **%NISP/%NSP** | **93.23** | **1.50** | **0.00** | **3.01** | **0.00** | **2.26** | **0.00** | **0.00** | **71.60** | **28.40** | **100** | * | * | * | * | * |

*Auger 6*

Auger 6 reaches a depth of 55 cmBS, and is represented by seven analytical units ranging between 2 and 14 centimeters in depth. Of the 184 fish remains recovered from Auger 6, 89.01% (n=162) were identified (Table 5.14). Of the identified fish remains, 92.59% (n=150) are herring. Herring increases gradually before a spike at level 14-23 cmBS, after which the amount of herring drops again. Salmon is represented by only three elements, at depths of 0-14cm, 23-35cm, and 35-40 cmBS, making up 1.85% of identified elements. Flatfish (2.47%; n=4), midshipman (1.85%; n=3), and greenling (1.23%; n=2) are also present in this sample. Densities in Auger 6 follow the same pattern of fluctuation, as does abundance in this sample. As with other samples, overall salmon density is low due to its low overall abundance.

Table 5.14 Distribution of 2.36mm materials for Auger 6

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Midshipman | Rockfish | Greenling | Flatfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | **NISP/L** | **NSP/L** | **Herring/L** | **Salmon/L** |
| **0-14** | 28 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **29** | 10 | **39** | **0.60** | 48 | 65 | 47 | 2 |
| **14-23** | 44 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | **45** | 2 | **47** | **0.85** | 53 | 55 | 52 | 0 |
| **23-35** | 16 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | **20** | 4 | **24** | **0.95** | 21 | 25 | 17 | 1 |
| **35-40** | 14 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | **16** | 1 | **17** | **0.85** | 19 | 20 | 16 | 1 |
| **40-49.5** | 15 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | **16** | 0 | **16** | **0.85** | 19 | 19 | 18 | 0 |
| **49.5-53** | 18 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | **20** | 3 | **23** | **0.60** | 33 | 38 | 30 | 0 |
| **53-55** | 15 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **16** | 2 | **18** | **0.75** | 21 | 24 | 20 | 0 |
| **Total** | **150** | **3** | **0** | **3** | **0** | **2** | **4** | **0** | **162** | **22** | **184** | **5.45** | **30** | **34** | **28** | **1** |
| **%NISP/%NSP** | **92.59** | **1.85** | **0.00** | **1.85** | **0.00** | **1.23** | **2.47** | **0.00** | **89.01** | **10.99** | **100** | * | * | * | * | * |

*Auger 16*

Auger 16 is represented by eight analytical levels; these levels range between four and 16 centimetres in depth to a total of 63 cmBS. In total, 404 fish remains were recovered from this sample, 81.23% (n=328) of which were identifiable (Table 5.15). Herring represents the majority at 96.95% (n=318) of identified remains. The amount of herring drops gradually to a low of 8 elements in level 32-41 cmBS, before increasing again to a high of 85 elements in level 0-16 cmBS. Salmon is represented by only two (0.61%) elements in the upper most level. Spiny dogfish (1.22%; n=4), flatfish (0.61%; n=2), midshipman (0.3%; n=1) and surfperch (0.3%; n=1) are also present in this sample. While there are some fluctuations in density in the lower levels of Auger 16 (except for salmon which is only present in the uppermost level of this sample), in general densities increase in the upper levels as compared to the lower levels of Auger 16.

Table 5.15 Distribution of 2.36mm materials for Auger 16

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | **NISP/L** | **NSP/L** | **Herring/L** | **Salmon/L** |
| **0-16** | 85 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | **89** | 10 | **99** | **0.85** | 105 | 116 | 100 | 2 |
| **16-23** | 69 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **69** | 19 | **88** | **0.65** | 106 | 135 | 106 | 0 |
| **23-27** | 51 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **51** | 13 | **64** | **0.55** | 93 | 116 | 93 | 0 |
| **27-32** | 21 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | **24** | 9 | **33** | **0.70** | 34 | 47 | 30 | 0 |
| **32-41** | 8 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **9** | 4 | **13** | **0.85** | 11 | 15 | 9 | 0 |
| **41-49** | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **15** | 4 | **19** | **0.75** | 20 | 25 | 20 | 0 |
| **49-53** | 28 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **29** | 12 | **41** | **0.85** | 34 | 48 | 33 | 0 |
| **53-63** | 41 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **42** | 5 | **47** | **0.80** | 53 | 59 | 51 | 0 |
| **Total** | **318** | **2** | **4** | **2** | **0** | **1** | **0** | **1** | **328** | **76** | **404** | **6.00** | **55** | **67** | **53** | **0** |
| **%NISP/%NSP** | **96.95** | **0.61** | **1.22** | **0.61** | **0.00** | **0.30** | **0.00** | **0.30** | **81.23** | **18.77** | **100** | * | * | * | * | * |

*Column Sample*

The column sample from Area 2 consists of ten analytical levels of either 10cm or 20cm in depth, to a total depth of 120 cmBS. The column sample (Table 5.16) has the lowest percentage of identified fish remains of all samples from this area at 75.69% (NISP=2,528; NSP=3,021) of fish remains having been identified. Of the identified fish remains, 96.08% (n=2,429) are herring. Herring abundance variably increases and decreases throughout the lower levels of the sample before declining for the upper four layers of the deposit. Salmon has the highest representation in this sample (1.78%; n=45), with most coming from the upper levels of the deposit. Midshipman (0.95%; n=24), flatfish (0.55%; n=14), spiny dogfish (0.47%; n=12), rockfish (0.08%; n=2) and greenling (0.08%; n=2) are also represented in the column sample.

Table 5.16 Distribution of 2.36mm materials for the column sample

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | | pH Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | **NISP/L** | **NSP/L** | **Herring/L** | **Salmon/L** | |
| **0-20** | 61 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **62** | 23 | **85** | **0.80** | 78 | 106 | 76 | 0 | **7.48** |
| **20-40** | 222 | 26 | 0 | 3 | 0 | 1 | 0 | 0 | **252** | 78 | **330** | **1.50** | 168 | 220 | 148 | 17 | **7.55** |
| **40-50** | 319 | 8 | 3 | 3 | 0 | 5 | 0 | 0 | **338** | 72 | **410** | **1.15** | 294 | 357 | 277 | 7 | **7.51** |
| **50-60** | 410 | 4 | 2 | 0 | 0 | 1 | 0 | 0 | **417** | 87 | **504** | **1.60** | 261 | 315 | 256 | 3 | **7.61** |
| **60-70** | 265 | 0 | 1 | 2 | 0 | 8 | 1 | 2 | **279** | 51 | **330** | **2.70** | 103 | 122 | 98 | 0 | **7.52** |
| **70-80** | 405 | 3 | 1 | 4 | 0 | 6 | 1 | 0 | **420** | 80 | **500** | **2.75** | 153 | 182 | 147 | 1 | **7.54** |
| **80-90** | 181 | 1 | 0 | 2 | 0 | 1 | 0 | 0 | **185** | 17 | **202** | **1.15** | 161 | 176 | 157 | 1 | **7.48** |
| **90-100** | 89 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | **93** | 31 | **124** | **0.75** | 124 | 165 | 119 | 3 | **7.51** |
| **100-110** | 279 | 0 | 1 | 0 | 2 | 1 | 0 | 0 | **283** | 31 | **314** | **1.70** | 166 | 185 | 164 | 0 | **7.53** |
| **110-120** | 198 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | **201** | 23 | **224** | **1.35** | 149 | 166 | 147 | 1 | **7.51** |
| **Total** | **2429** | **45** | **12** | **14** | **2** | **24** | **2** | **0** | **2528** | **493** | **3021** | **15.45** | **164** | **196** | **157** | **3** | * |
| **%NISP/%NSP** | **96.08** | **1.78** | **0.47** | **0.55** | **0.08** | **0.95** | **0.08** | **0.00** | **75.69** | **24.31** | **100** | * | * | * | * | * | * |

In terms of density, as mentioned, densities are higher for the column sample than for other samples in Area 2. However, while densities fluctuate from level to level in this sample, they do not change as drastically as do the abundances. An exception to this is salmon, where abundances and densities follow the same patterns.

The correlation coefficient for soil pH values and NSP from the column sample is $r_s$=0.80, and for soil pH values and NSP/L is $r_s$=0.57. Compared to the critical value for N=10 (Levin 1977:277, Table G), the result for soil pH values and NSP is significant, while for NSP/L is not. Although the correlation coefficient for soil pH values and NSP shows a somewhat strong positive relationship, the correlation coefficient for soil pH values and NSP/L does not show this same relationship. While soil pH values fluctuate from level to level, these fluctuations are very small and overall the soil pH chemistry likely has no effect on preservation.

**Area 3**

Area 3 is represented by five auger samples. These five are the deepest samples taken from Area 3, which is characterized by a dense lens of herring remains in approximately the upper 40cm of the deposit. A total of 28,582 fish elements (Table 5.17; Table 5.18) were recovered from this area, of which 84.75% (n=24,224) have been identified. Of the identifiable fish elements, 97.11% (n=23,523) are pacific herring; 1.7% (n=411) are pacific salmon; 0.88% (n=212) are spiny dogfish; 0.13% (n=32) are midshipman; 0.06% (n=14) are surfperch; 0.08% (n=19) are greenling; and 0.05% (n=13) are flatfish. While abundances are, for the most part higher in this area than other areas of the site, differences still exist between samples. The same is true for densities; Auger 40 has the lowest overall densities of the five samples from this area. Auger 34 has the second lowest NISP, NSP and herring densities, and the third lowest salmon density. Auger 39 has the third lowest NISP, NSP and herring densities, but the highest salmon density. Auger 36 has the second highest NISP, NSP and herring densities, but the second lowest salmon densities, and Auger 35 has the highest densities of NISP, NSP and herring, and the third lowest salmon densities.

Table 5.17 Distribution of 2.36mm materials for Area 3

| Sample | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | NISP/L | NSP/L | Herring/L | Salmon/L |
| **Auger 34** | 2500 | 56 | 3 | 1 | 4 | 6 | 0 | 3 | **2573** | 343 | **2916** | **5.20** | 495 | 561 | 481 | 11 |
| **Auger 35** | 5653 | 60 | 0 | 3 | 0 | 9 | 0 | 2 | **5727** | 1253 | **6980** | **4.91** | 1166 | 1422 | 1151 | 12 |
| **Auger 36** | 6450 | 51 | 66 | 7 | 1 | 3 | 0 | 5 | **6583** | 1101 | **7684** | **5.95** | 1106 | 1291 | 1084 | 9 |
| **Auger 39** | 3799 | 162 | 71 | 1 | 12 | 6 | 0 | 4 | **4055** | 1102 | **5157** | **7.20** | 563 | 716 | 528 | 23 |
| **Auger 40** | 5121 | 82 | 72 | 1 | 2 | 8 | 0 | 0 | **5286** | 559 | **5845** | **16.85** | 314 | 347 | 304 | 5 |
| **Total** | **23523** | **411** | **212** | **13** | **19** | **32** | **0** | **14** | **24224** | **4358** | **28582** | **40.11** | **604** | **713** | **586** | **10** |

Table 5.18 %NISP and %NSP of 2.36mm materials for Area 3

| Sample | % Species of Sample NISP | | | | | | | | **% NISP of Sample NSP** | **% NSP of Area NSP** |
|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | | |
| **Auger 34** | 97.16 | 2.18 | 0.12 | 0.04 | 0.16 | 0.23 | 0.00 | 0.12 | **9.00** | **10.20** |
| **Auger 35** | 98.71 | 1.05 | 0.00 | 0.05 | 0.00 | 0.16 | 0.00 | 0.03 | **20.04** | **24.42** |
| **Auger 36** | 97.98 | 0.77 | 1.00 | 0.11 | 0.02 | 0.05 | 0.00 | 0.08 | **23.03** | **26.88** |
| **Auger 39** | 93.69 | 4.00 | 1.75 | 0.02 | 0.30 | 0.15 | 0.00 | 0.10 | **14.19** | **18.04** |
| **Auger 40** | 96.88 | 1.55 | 1.36 | 0.02 | 0.04 | 0.15 | 0.00 | 0.00 | **18.49** | **20.45** |
| **Total** | **97.11** | **1.70** | **0.88** | **0.05** | **0.08** | **0.13** | **0.00** | **0.06** | **84.75** | **100** |

*Auger 34*

Auger 34 reaches a depth of 70.5 cmBS, and is represented by eight analytical units ranging between 2.5 and 14 centimeters in depth. 88.01% (n=2,573) of fish remains from Auger 6 were identified (NSP=2,916) (Table 5.19). Of the identified fish remains, 97.16% (n=2,500) are herring. Herring increases gradually during the first half of the sample, before dropping slightly in level 20-34 cmBS. After this drop, herring spikes dramatically in level 13-20 cmBS, before dropping somewhat in the uppermost level. Salmon are present, but not abundant, with 56 (2.18%) elements identified in this sample, the majority of which come from the lower levels of the sample. Midshipman (0.23%; n=6), spiny dogfish (0.12%; n=3), surfperch (0.12%; n=3), flatfish (0.04%; n=1) and greenling (0.16%; n=4) are also present in this sample.

Table 5.19 Distribution of 2.36mm materials for Auger 34

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | **NISP/L** | **NSP/L** | **Herring/L** | **Salmon/L** |
| **0-13** | 536 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | **540** | 98 | **638** | **0.45** | 1200 | 1418 | 1191 | 9 |
| **13-20** | 1225 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **1225** | 127 | **1352** | **0.65** | 1885 | 2080 | 1885 | 0 |
| **20-34** | 128 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **128** | 11 | **139** | **0.55** | 233 | 253 | 233 | 0 |
| **34-43** | 227 | 3 | 1 | 1 | 0 | 1 | 0 | 0 | **233** | 15 | **248** | **0.55** | 424 | 451 | 413 | 5 |
| **43-52** | 207 | 4 | 0 | 0 | 0 | 1 | 0 | 1 | **213** | 38 | **251** | **0.75** | 284 | 335 | 276 | 5 |
| **52-61** | 92 | 21 | 2 | 0 | 0 | 3 | 0 | 0 | **118** | 18 | **136** | **1.20** | 98 | 113 | 77 | 18 |
| **61-68** | 55 | 18 | 0 | 0 | 4 | 0 | 0 | 2 | **79** | 26 | **105** | **0.60** | 132 | 175 | 92 | 30 |
| **68-70.5** | 30 | 6 | 0 | 0 | 0 | 1 | 0 | 0 | **37** | 10 | **47** | **0.45** | 82 | 104 | 67 | 13 |
| **Total** | **2500** | **56** | **3** | **1** | **4** | **6** | **0** | **3** | **2573** | **343** | **2916** | **5.20** | **495** | **561** | **481** | **11** |
| **%NISP/%NSP** | **97.16** | **2.18** | **0.12** | **0.04** | **0.16** | **0.23** | **0.00** | **0.12** | **88.01** | **11.99** | **100** | * | * | * | * | * |

Densities in Auger 34 fluctuate somewhat in the lower levels, before jumping in level 13-20 cmBS, after which they drop slightly in the uppermost level. This pattern mirrors that seen in the abundances for this sample. Herring frequencies are high in all levels of this sample, and its densities mirror the overall densities seen in this sample. Salmon density is comparatively low throughout the sample, but higher in the lower levels than in the upper levels.

*Auger 35*

Reaching a total depth of 75 cmBS, Auger 35 (Table 5.20) is represented by ten analytical levels ranging between 2 and 14cm in depth. A total of 6,980 fish elements were recovered from Auger 35; of these, 82.05% (n=5,727) have been identified. Herring is, once again, the most abundant species present in this sample at 98.71% (n=5,653) of identified fish remains. Salmon is represented by 60 elements (1.02%) and 51 of them derive from level 22.5-35 cmBS. Only three other species of fish were recovered from this sample: midshipman (n=9; 0.16%), surfperch (n=2; 0.03%), and flatfish (n=3; 0.05%).

Table 5.20 Distribution of 2.36mm materials for Auger 35

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | **NISP/L** | **NSP/L** | **Herring/L** | **Salmon/L** |
| **0-14** | 915 | 5 | 0 | 2 | 0 | 0 | 0 | 1 | **923** | 165 | **1088** | **0.60** | 1538 | 1813 | 1525 | 8 |
| **14-18.5** | 1343 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **1344** | 97 | **1441** | **0.40** | 3360 | 3603 | 3358 | 0 |
| **18.5-22.5** | 495 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | **498** | 79 | **577** | **0.45** | 1107 | 1282 | 1100 | 2 |
| **22.5-35** | 1428 | 51 | 0 | 0 | 0 | 2 | 0 | 1 | **1482** | 620 | **2102** | **0.70** | 2117 | 3003 | 2040 | 73 |
| **35-43** | 229 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | **232** | 29 | **261** | **0.50** | 464 | 522 | 458 | 0 |
| **43-49** | 715 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **715** | 146 | **861** | **0.50** | 1430 | 1722 | 1430 | 0 |
| **49-60** | 364 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **365** | 84 | **449** | **0.55** | 664 | 816 | 662 | 0 |
| **60-68** | 54 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **54** | 13 | **67** | **0.55** | 98 | 122 | 98 | 0 |
| **68-73** | 82 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | **86** | 20 | **106** | **0.55** | 156 | 193 | 149 | 5 |
| **73-75** | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **28** | 0 | **28** | **0.11** | 255 | 255 | 255 | 0 |
| **Total** | **5653** | **60** | **0** | **3** | **0** | **9** | **0** | **2** | **5727** | **1253** | **6980** | **4.91** | **1166** | **1422** | **1151** | **12** |
| **%NISP/%NSP** | **98.71** | **1.05** | **0.00** | **0.05** | **0.00** | **0.16** | **0.00** | **0.03** | **82.05** | **17.95** | **100** | * | * | * | * | * |

As with the abundances in this sample, densities fluctuate greatly from level to level, mirroring those seen in the abundances. Herring, by far the most abundant species in the sample, mirrors the general densities throughout this sample. Salmon density has one peak at level 22.5-35 cmBS, corresponding to the peak seen in abundance in the same level.

*Auger 36*

Eleven analytical units, varying between 5 and 12cm depth, to total a depth of 98 cmBS, make up Auger 36. Fish remains peak at two points before dropping off to almost negligible numbers. Of the 7,684 fish elements recovered from Auger 36 (Table 5.21), 85.71% (n=6,583) have been identified. Herring, representing 97.98% (n=6,450) of identified fish remains, dominates the assemblage in every level, increasing dramatically halfway through the sample, with some fluctuation before declining abruptly in the uppermost level. Salmon is present, for the most part, throughout the sample. A total of 51 (0.77%) salmon elements were recovered, with the majority coming from level 68-73 cmBS. Spiny dogfish is relatively well represented in this sample (n=66; 1%); and flatfish (n=7; 0.11%), surfperch (n=5; 0.08%), midshipman (n=3; 0.05%) and greenling (n=1; 0.02%) are also present in the materials from Auger 36.

Table 5.20 Distribution of 2.36mm materials for Auger 36

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | **NISP/L** | **NSP/L** | **Herring/L** | **Salmon/L** |
| **0-12** | 150 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | **154** | 13 | **167** | **0.45** | 342 | 371 | 333 | 2 |
| **12-22** | 1206 | 6 | 1 | 1 | 0 | 0 | 0 | 0 | **1214** | 257 | **1471** | **0.85** | 1428 | 1731 | 1419 | 7 |
| **22-30** | 900 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **900** | 313 | **1213** | **0.55** | 1636 | 2205 | 1636 | 0 |
| **30-39** | 1281 | 3 | 60 | 1 | 0 | 0 | 0 | 0 | **1345** | 191 | **1536** | **0.65** | 2069 | 2363 | 1971 | 5 |
| **39-49** | 1428 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **1428** | 105 | **1533** | **0.50** | 2856 | 3066 | 2856 | 0 |
| **49-56.5** | 851 | 1 | 1 | 3 | 0 | 2 | 0 | 0 | **858** | 94 | **952** | **0.45** | 1907 | 2116 | 1891 | 2 |
| **56.5-68** | 205 | 9 | 1 | 2 | 0 | 1 | 0 | 1 | **219** | 59 | **278** | **0.60** | 365 | 463 | 342 | 15 |
| **68-73** | 202 | 24 | 0 | 0 | 0 | 0 | 0 | 2 | **228** | 24 | **252** | **0.45** | 507 | 560 | 449 | 53 |
| **73-79** | 79 | 2 | 0 | 0 | 1 | 0 | 0 | 2 | **84** | 20 | **104** | **0.35** | 240 | 297 | 226 | 6 |
| **79-88** | 91 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | **95** | 15 | **110** | **0.50** | 190 | 220 | 182 | 8 |
| **88-98** | 57 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **58** | 10 | **68** | **0.60** | 97 | 113 | 95 | 2 |
| **Total** | **6450** | **51** | **66** | **7** | **1** | **3** | **0** | **5** | **6583** | **1101** | **7684** | **5.95** | **11637** | **13506** | **11400** | **100** |
| **%NISP/%NSP** | **97.98** | **0.77** | **1.00** | **0.11** | **0.02** | **0.05** | **0.00** | **0.08** | **85.71** | **14.29** | **100** | * | * | * | * | * |

Densities in Auger 36 again follow a similar pattern as abundances from level to level. However, rather than two peaks, density peaks at level 39-49 cmBS and then declines steadily into the uppermost level. Salmon densities are low throughout the sample and are more common in the bottom half of the unit than the upper half. Due to the high proportion of herring in the sample, herring densities mirror the overall densities in the sample.

*Auger 39*

Auger 39 consists of 12 analytical levels, varying between 2 and 15cm in depth, to a total depth of 90 cmBS (Table 5.22). Recovered from this sample are 5,157 fish elements, of which 78.4% (n=4,055) have been identified. Herring is the most abundant species present, making up 93.69% (n=3,799) of identified elements. Herring abundance is low in the first half of the sample, after which it fluctuates a little, but stays relatively high in the upper levels. Salmon represents 4% (n=162) of identified fish remains from Auger 39. Salmon makes up large proportions of fish remains identified in some levels, however, as previously mentioned, these high counts are largely due to the fragmented nature of the remains and do not actually represent high amounts of salmon in relation to other species. Also present are spiny dogfish (1.75%; n=71), greenling (0.3%; n=12), midshipman (0.15%; n=6), surfperch (0.1%; n=4) and flatfish (0.02%; n=1).

Table 5.21 Distribution of 2.36mm materials for Auger 39

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | **NISP/L** | **NSP/L** | **Herring/L** | **Salmon/L** |
| **0-15** | 703 | 63 | 11 | 0 | 0 | 0 | 0 | 0 | **777** | 88 | **865** | **0.50** | 1554 | 1730 | 1406 | 126 |
| **15-23** | 838 | 19 | 17 | 0 | 1 | 0 | 0 | 0 | **875** | 110 | **985** | **0.50** | 1750 | 1970 | 1676 | 38 |
| **23-27** | 556 | 13 | 18 | 0 | 0 | 1 | 0 | 0 | **588** | 221 | **809** | **0.35** | 1680 | 2311 | 1589 | 37 |
| **27-39** | 862 | 18 | 10 | 0 | 0 | 2 | 0 | 0 | **892** | 237 | **1129** | **0.50** | 1784 | 2258 | 1724 | 36 |
| **39-41** | 546 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | **551** | 299 | **850** | **0.45** | 1224 | 1889 | 1213 | 4 |
| **41-49.5** | 127 | 28 | 6 | 0 | 0 | 0 | 0 | 0 | **161** | 30 | **191** | **0.85** | 189 | 225 | 149 | 33 |
| **49.5-58** | 98 | 9 | 3 | 1 | 1 | 0 | 0 | 0 | **112** | 39 | **151** | **1.05** | 107 | 144 | 93 | 9 |
| **58-71** | 24 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | **28** | 5 | **33** | **0.65** | 43 | 51 | 37 | 0 |
| **71-73** | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **9** | 4 | **13** | **0.15** | 60 | 87 | 60 | 0 |
| **73-76** | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **6** | 2 | **8** | **0.30** | 20 | 27 | 20 | 0 |
| **76-81** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **1** | 1 | **2** | **0.70** | 1 | 3 | 1 | 0 |
| **81-90** | 29 | 10 | 3 | 0 | 10 | 3 | 0 | 0 | **55** | 66 | **121** | **1.20** | 46 | 101 | 24 | 8 |
| **Total** | **3799** | **162** | **71** | **1** | **12** | **6** | **0** | **4** | **4055** | **1102** | **5157** | **7.20** | **563** | **716** | **528** | **23** |
| **%NISP/%NSP** | **93.69** | **4.00** | **1.75** | **0.02** | **0.30** | **0.15** | **0.00** | **0.10** | **78.40** | **21.60** | **100** | * | * | * | * | * |

Once again, densities from Auger 39 closely follow abundance from level to level. There is in general much lower density in the bottom half of the sample as compared to the upper half, where densities climb rapidly before declining slightly in the uppermost levels. Herring densities generally mirror the overall densities, and while salmon density is overall low throughout the sample, it does increase in the upper levels.

*Auger 40*

A total depth of 115 cmBS, represented by 14 analytical levels varying between 1 and 20cm in depth, was reached in Auger 40 (Table 5.23). Of the 5,846 fish elements recovered, 90.42% (n=5,286) have been identified. Herring is by far the most abundant species, with 96.88% (n=5,121) of identified fish elements. Herring NISP is relatively until 37 cmBS, after which the amount of herring jumps drastically, before dropping off in the uppermost analytical level. Salmon, representing 1.55% (n=82) of identified fish remains, is present in all but the upper two levels, and also sees a drastic increase in abundance in analytical level 27-37 cmBS. Spiny dogfish (1.36%; n=72) is also well represented in Auger 40, and midshipman (0.15%; n=8), greenling (0.04%; n=2) and flatfish (0.02%; n=1) are also present.

Table 5.22 Distribution of 2.36mm materials for Auger 40

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | | pH Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | **NISP/L** | **NSP/L** | **Herring/L** | **Salmon/L** | |
| **0-16** | 20 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **21** | 2 | **23** | **0.60** | 35 | 38 | 33 | 0 | **7.7** |
| **16-27** | 2543 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | **2546** | 372 | **2918** | **0.40** | 6365 | 7295 | 6358 | 0 | **7.86** |
| **27-37** | 861 | 28 | 33 | 0 | 0 | 0 | 0 | 0 | **922** | 43 | **965** | **0.60** | 1537 | 1608 | 1435 | 47 | **7.81** |
| **37-47** | 178 | 7 | 2 | 0 | 0 | 2 | 0 | 0 | **189** | 10 | **199** | **0.60** | 315 | 332 | 297 | 12 | **7.75** |
| **47-62** | 55 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | **59** | 13 | **72** | **0.90** | 66 | 80 | 61 | 4 | **7.46** |
| **62-82** | 192 | 9 | 3 | 0 | 0 | 0 | 0 | 0 | **204** | 19 | **223** | **0.80** | 255 | 279 | 240 | 11 | **7.57** |
| **82-88** | 205 | 5 | 2 | 0 | 0 | 1 | 0 | 0 | **213** | 16 | **229** | **0.55** | 387 | 416 | 373 | 9 | **7.64** |
| **88-88** | 187 | 9 | 2 | 0 | 0 | 1 | 0 | 0 | **199** | 7 | **206** | **0.65** | 306 | 317 | 288 | 14 | **7.63** |
| **88-91.5** | 243 | 3 | 2 | 0 | 2 | 2 | 0 | 0 | **252** | 27 | **279** | **0.65** | 388 | 429 | 374 | 5 | **7.55** |
| **91.5-93** | 176 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | **181** | 16 | **197** | **0.85** | 213 | 232 | 207 | 1 | **7.6** |
| **93-99.5** | 163 | 8 | 2 | 0 | 0 | 1 | 0 | 0 | **174** | 13 | **187** | **0.80** | 218 | 234 | 204 | 10 | **7.56** |
| **99.5-101** | 129 | 1 | 15 | 1 | 0 | 1 | 0 | 0 | **147** | 11 | **158** | **0.85** | 173 | 186 | 152 | 1 | **7.53** |
| **101-106** | 87 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | **90** | 8 | **98** | **0.70** | 129 | 140 | 124 | 3 | **7.62** |
| **106-115** | 82 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | **89** | 3 | **92** | **1.05** | 85 | 88 | 78 | 5 | **7.55** |
| **Total** | **5121** | **82** | **72** | **1** | **2** | **8** | **0** | 0 | **5286** | **560** | **5846** | **10.00** | **529** | **585** | **512** | **8** | * |
| **%NISP/%NSP** | **96.88** | **1.55** | **1.36** | **0.02** | **0.04** | **0.15** | **0.00** | **0.00** | **90.42** | **9.58** | **100** | * | * | * | * | * | * |

Again, the densities in Auger 40 mirror the patterns seen in abundance throughout the sample. The majority of the sample has relatively low densities, before spiking in the upper levels and the dropping back down in the uppermost level. Salmon stays low throughout the sample, although it fluctuates, and is absent from the upper two levels. Herring, making up the majority of remains from the sample, mirrors the overall pattern of density throughout the sample.

The correlation coefficient for soil pH values and NSP from Auger 40 is $r_s$=0.49, and for soil pH values and NSP/L is $r_s$=0.53. Compared to the critical value for N=14 (Levin 1977:277, Table G), neither result is significant. Soil pH values fluctuate from level to level, however this fluctuation is unlikely to have an effect on the preservation of bone as it remains within a neutral level.

**Area 4**

Area 4 consists of five auger samples, obtained from the Courtenay District Museum and Archives where they have been curated since their removal in 2000. As with the previous three areas of the site, herring dominates the fish assemblage recovered from Area 4 (Table 5.24; Table 5.25). A total of 4,564 fish elements were recovered from Area 4 of which 3,626 (79.45%) were identifiable. Of the identifiable elements, 98.07% (n=3,556) are herring, and less than one percent (0.83%; n=30) are salmon. Midshipman (0.44%; n=16), flatfish (0.30%; n=11), spiny dogfish (0.22%; n=8), greenling (0.08%; n=3), rockfish (0.03%; n=1) and perch (0.03%; n=1) are also present in samples from Area 4.

Table 5.23 Distribution of 2.36mm materials for Area 4

| Sample | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | NISP/L | NSP/L | Herring/L | Salmon/L |
| **5W25N** | 400 | 1 | 1 | 3 | 0 | 0 | 0 | 0 | **405** | 122 | **527** | **0.93** | 435 | 567 | 430 | 1 |
| **5W5N** | 87 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | **93** | 31 | **124** | **1.24** | 75 | 100 | 70 | 4 |
| **15W5N** | 152 | 9 | 3 | 2 | 1 | 3 | 0 | 1 | **171** | 70 | **241** | **1.16** | 147 | 208 | 131 | 8 |
| **5W30N** | 2678 | 7 | 1 | 3 | 0 | 1 | 0 | 0 | **2690** | 610 | **3300** | **1.39** | 1935 | 2374 | 1927 | 5 |
| **10W5N** | 239 | 8 | 2 | 3 | 2 | 12 | 1 | 0 | **267** | 105 | **372** | **2.26** | 118 | 165 | 106 | 4 |
| **Total** | **3556** | **30** | **8** | **11** | **3** | **16** | **1** | **1** | **3626** | **938** | **4564** | **6.98** | **519** | **654** | **509** | **4** |
| **10W5N - 1.5mm** | 317 | 7 | 0 | 0 | 0 | 1 | 0 | 1 | **326** | 390 | **716** | **2.26** | 144 | 316 | 140 | 3 |

Table 5.24 %NISP and %NSP of 2.36mm materials for Area 4

| Sample | % Species of Sample NISP | | | | | | | | % NISP of Sample NSP | % NSP of Area NSP |
|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | | |
| **5W25N** | 98.77 | 0.25 | 0.25 | 0.74 | 0.00 | 0.00 | 0.00 | 0.00 | **8.87** | **11.547** |
| **5W5N** | 93.55 | 5.38 | 1.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | **2.04** | **2.7169** |
| **15W5N** | 88.89 | 5.26 | 1.75 | 1.17 | 0.58 | 1.75 | 0.00 | 0.58 | **3.75** | **5.2805** |
| **5W30N** | 99.55 | 0.26 | 0.04 | 0.11 | 0.00 | 0.04 | 0.00 | 0.00 | **58.94** | **72.305** |
| **10W5N** | 89.51 | 3.00 | 0.75 | 1.12 | 0.75 | 4.49 | 0.37 | 0.00 | **5.85** | **8.1507** |
| **Total** | **98.07** | **0.83** | **0.22** | **0.30** | **0.08** | **0.44** | **0.03** | **0.03** | **79.45** | **100** |

Volumes for samples from Area 4 are much smaller than samples from the other three areas of the site because they consist of only a portion of the excavated materials. However, when densities are considered, it is clear that the smaller sample size does not have an effect on element recoverability. Densities for all samples from Area 4 are in line with those from other areas, and in fact, Auger 5W30N has the highest density of all samples considered in this research. Auger 5W5N has the lowest densities for all except salmon, where it has the second lowest density. Auger 10W5N has the second lowest densities in everything (and the same salmon density as 5W5N). Auger 15W5N has the third highest overall density, and the highest salmon density, although overall salmon densities are low in this area. Auger 5W25N has the second highest overall density, but the lowest salmon density, and as already mentioned, Auger 5W30N has the highest densities at the site, though only the second highest salmon density in this area.

*Auger 5W25N*

Auger 5W25N consists of seven analytical levels of either 10 or 20 centimetres to a depth of 80 cmBS. Of the 527 fish elements recovered from Auger 5W25N (Table 5.26), 405 (76.85%) are identifiable. Of the identifiable fragments, the majority are herring (98.77%; n=400). Herring remains increase for the lowest three levels, then drop drastically before once again increasing in the upper levels. Salmon, on the other hand, is represented by only one element (0.25%) in a lower level. Also present in Auger 5W25N are flatfish (0.74%; n=3) and spiny dogfish (0.25%; n=1). When density is considered, there is a similar pattern as seen with abundance. However, instead of continuing to increase in the uppermost level, there is a decline in density. Salmon density is relatively non-existent as only one element was recovered from this sample.

Table 5.25 Distribution of 2.36mm materials for Auger 5W25N

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | **NISP/L** | **NSP/L** | **Herring/L** | **Salmon/L** |
| **0-20** | 87 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **87** | 48 | **135** | **0.20** | 435 | 675 | 435 | 0 |
| **20-30** | 61 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **62** | 28 | **90** | **0.10** | 620 | 900 | 610 | 0 |
| **30-40** | 45 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | **46** | 16 | **62** | **0.15** | 307 | 413 | 300 | 0 |
| **40-50** | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **30** | 0 | **30** | **0.11** | 273 | 273 | 273 | 0 |
| **50-60** | 91 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **92** | 7 | **99** | **0.13** | 708 | 762 | 700 | 8 |
| **60-70** | 58 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | **60** | 9 | **69** | **0.14** | 429 | 493 | 414 | 0 |
| **70-80** | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **28** | 14 | **42** | **0.10** | 280 | 420 | 280 | 0 |
| **Total** | **400** | **1** | **1** | **3** | **0** | **0** | **0** | **0** | **405** | **122** | **527** | **0.93** | **435** | **567** | **430** | **1** |
| **%NISP/%NSP** | **98.77** | **0.25** | **0.25** | **0.74** | **0.00** | **0.00** | **0.00** | **0.00** | **76.85** | **23.15** | **100** | * | * | * | * | * |

*Auger 5W5N*

Auger 5W5N consists of 12 analytical units, varying between 5, 10 and 20 centimetres, to a total of 120 cmBS (Table 5.27). However, as two analytical levels were missing from the materials, only those materials to a depth of 90 cmBS are considered here. A total of 124 fish elements were recovered, of which 93 (75%) were identifiable. Herring is the most abundant fish present in this sample at 93.55% (n=87) of fish remains. Herring is present in low numbers in the lower levels of the sample, spiking at 30-40 cmBS, and then dropping to low numbers again. Salmon represents 5.38% of remains, but is only accounted for by 5 fragmented pieces, all of which come from 80-90 cmBS. The only other fish species present in this sample is spiny dogfish (1.08%; n=1).

Table 5.26 Distribution of 2.36mm materials for Auger 5W5N

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | **NISP/L** | **NSP/L** | **Herring/L** | **Salmon/L** |
| **0-20** | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **4** | 7 | **11** | **0.11** | 36 | 100 | 36 | 0 |
| **20-30** | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **3** | 0 | **3** | **0.13** | 23 | 23 | 23 | 0 |
| **30-40** | 56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **56** | 5 | **61** | **0.25** | 224 | 244 | 224 | 0 |
| **40-50** | 9 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **10** | 5 | **15** | **0.15** | 67 | 100 | 60 | 0 |
| **50-60** | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **2** | 4 | **6** | **0.13** | 15 | 46 | 15 | 0 |
| **60-70** | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **4** | 2 | **6** | **0.14** | 29 | 43 | 29 | 0 |
| **70-80** | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **3** | 0 | **3** | **0.19** | 16 | 16 | 16 | 0 |
| **80-90** | 6 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | **11** | 8 | **19** | **0.14** | 79 | 136 | 43 | 36 |
| **Total** | **87** | **5** | **1** | **0** | **0** | **0** | **0** | **0** | **93** | **31** | **124** | **1.24** | **75** | **100** | **70** | **4** |
| **%NISP/%NSP** | **93.55** | **5.38** | **1.08** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **75.00** | **25.00** | **100** | * | * | * | * | * |

In terms of density, fluctuation from level to level is more pronounced than that for abundances. However, the same general pattern is seen with density as with abundance. Herring density closely mirrors overall densities, and salmon is only present in the lowest level.

*Auger 5W30N*

Auger 5W30N is represented by nine 10cm levels, to a depth of 90 cmBS (Table 5.28). This sample is the only sample where the remains recovered follow a pattern similar to that seen in Area 3. A total of 3,300 fish elements were recovered from Auger 5W30N, of which 81.52% (n=2,690) were identified. 99.55% (n=2,678) of identified fish remains are herring. Herring is present in low numbers in the bottom levels of this sample, and then increases halfway through the sample before dropping back down in the upper two levels. Salmon is represented by seven (0.26%) elements, all located in the upper-middle levels of the sample. Flatfish (0.11%; n=3), spiny dogfish (0.04%; n=1) and midshipman (0.04%; n=1) are also present.

Table 5.27 Distribution of 2.36mm materials for Auger 5W30N

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | **NISP/L** | **NSP/L** | **Herring/L** | **Salmon/L** |
| **0-10** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **1** | 9 | **10** | **0.05** | 20 | 200 | 20 | 0 |
| **10-20** | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **30** | 11 | **41** | **0.15** | 200 | 273 | 200 | 0 |
| **20-30** | 1058 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | **1062** | 115 | **1177** | **0.15** | 7080 | 7847 | 7053 | 7 |
| **30-40** | 1197 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | **1199** | 333 | **1532** | **0.30** | 3997 | 5107 | 3990 | 7 |
| **40-50** | 288 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | **293** | 104 | **397** | **0.20** | 1465 | 1985 | 1440 | 20 |
| **50-60** | 49 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **50** | 20 | **70** | **0.15** | 333 | 467 | 327 | 0 |
| **60-70** | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **34** | 15 | **49** | **0.15** | 227 | 327 | 227 | 0 |
| **70-80** | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **15** | 3 | **18** | **0.14** | 107 | 129 | 107 | 0 |
| **80-90** | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **6** | 0 | **6** | **0.10** | 60 | 60 | 60 | 0 |
| **Total** | **2678** | **7** | **1** | **3** | **0** | **1** | **0** | **0** | **2690** | **610** | **3300** | **1.39** | **1935** | **2374** | **1927** | **5** |
| **%NISP/%NSP** | **99.55** | **0.26** | **0.04** | **0.11** | **0.00** | **0.04** | **0.00** | **0.00** | **81.52** | **18.48** | **100** | * | * | * | * | * |

When density is considered, the pattern of increase and decrease seen in abundance also occurs. Densities are quite high in some levels of this sample, and it has already been noted that this sample has the highest overall densities of all samples from this site. Again, herring densities follow the same pattern of overall densities, and salmon densities occur only in the upper middle levels, where they start high, then drop before disappearing altogether.

*Auger 15W5N*

Auger 15W5N reaches a depth of 90 cmBS, and is represented by 8 analytical levels of either 10 or 20cm each (Table 5.29). A total of 171 identifiable elements were recovered, representing 70.95% of the 241 recovered fish elements. 88.89% of identified fish remains are herring (n=152). Herring remains increase throughout the first half of the sample, before gradually declining in the upper levels. Salmon is present in very small numbers throughout (5.26%; n=9), and spiny dogfish (1.75%; n=3), midshipman (1.75%; n=3), flatfish (1.17%; n=2), greenling (0.58%; n=1) and surfperch (0.58%; n=1) are also present.

Table 5.28 Distribution of 2.36mm materials for Auger 15W5N

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | **NISP/L** | **NSP/L** | **Herring/L** | **Salmon/L** |
| **0-20** | 11 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | **14** | 13 | **27** | **0.15** | 93 | 180 | 73 | 13 |
| **20-30** | 17 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | **19** | 14 | **33** | **0.16** | 119 | 206 | 106 | 0 |
| **30-40** | 29 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | **32** | 14 | **46** | **0.17** | 188 | 271 | 171 | 6 |
| **40-50** | 49 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | **52** | 15 | **67** | **0.09** | 578 | 744 | 544 | 22 |
| **50-60** | 19 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | **24** | 3 | **27** | **0.10** | 240 | 270 | 190 | 30 |
| **60-70** | 15 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **16** | 3 | **19** | **0.18** | 89 | 106 | 83 | 0 |
| **70-80** | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **9** | 6 | **15** | **0.19** | 47 | 79 | 47 | 0 |
| **80-90** | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | **5** | 2 | **7** | **0.12** | 42 | 58 | 25 | 8 |
| **Total** | **152** | **9** | **3** | **2** | **1** | **3** | **0** | **1** | **171** | **70** | **241** | **1.16** | **147** | **208** | **131** | **8** |
| **%NISP/%NSP** | **88.89** | **5.26** | **1.75** | **1.17** | **0.58** | **1.75** | **0.00** | **0.58** | **70.95** | **29.05** | **100** | * | * | * | * | * |

As with other samples, density for Auger 15W5N follows the same pattern as abundance throughout the sample. Herring density closely matches overall densities, which increase until about halfway through the sample and then decrease. Salmon density fluctuates throughout, although the highest salmon densities occur when overall densities are highest.

*Auger 10W5N*

Auger 10W5N consists of eleven 10cm levels, to a depth of 110 cmBS. A total of 372 fish elements were recovered, of which 267 (71.77%) are identified (Table 5.30). Of the identified elements, 239 (89.51%) are herring. Herring abundance fluctuates throughout, with varying increases and decreases characterized by two peaks. Salmon is present as well, but only represented by 8 elements (3%) mostly from the uppermost levels. Also present are midshipman (4.49%; n=12), flatfish (1.12%; n=3),spiny dogfish (0.75%; n=2), greenling (0.75%; n=2), and rockfish (0.37%; n=1).

Table 5.29 Distribution of 2.36mm materials for 10W5N

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | | pH Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | NISP | Unidentified | NSP | Volume (L) | NISP/L | NSP/L | Herring/L | Salmon/L | |
| **0-10** | 14 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **15** | 4 | **19** | **0.100** | 150 | 190 | 140 | 10 | **7.07** |
| **10-20** | 10 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | **15** | 15 | **30** | **0.180** | 83 | 167 | 56 | 22 | **7.39** |
| **20-30** | 21 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | **23** | 5 | **28** | **0.220** | 105 | 127 | 95 | 5 | **7.46** |
| **30-40** | 38 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | **40** | 6 | **46** | **0.230** | 174 | 200 | 165 | 0 | **7.43** |
| **40-50** | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **38** | 18 | **56** | **0.210** | 181 | 267 | 181 | 0 | **7.39** |
| **50-60** | 18 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | **22** | 15 | **37** | **0.280** | 79 | 132 | 64 | 0 | **7.56** |
| **60-70** | 49 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | **53** | 19 | **72** | **0.265** | 200 | 272 | 185 | 8 | **7.43** |
| **70-80** | 25 | 0 | 0 | 1 | 0 | 5 | 0 | 0 | **31** | 10 | **41** | **0.180** | 172 | 228 | 139 | 0 | **7.44** |
| **80-90** | 19 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | **23** | 9 | **32** | **0.180** | 128 | 178 | 106 | 0 | **7.46** |
| **90-100** | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **5** | 2 | **7** | **0.240** | 21 | 29 | 21 | 0 | **7.59** |
| **100-110** | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **2** | 2 | **4** | **0.170** | 12 | 24 | 12 | 0 | **7.72** |
| **Total** | **239** | **8** | **2** | **3** | **2** | **12** | **1** | **0** | **267** | **105** | **372** | **2.255** | **118** | **165** | **106** | **4** | * |
| **%NISP/%NSP** | **89.51** | **3.00** | **0.75** | **1.12** | **0.75** | **4.49** | **0.37** | **0.00** | **71.77** | **28.23** | **100** | * | * | * | * | * | * |

Densities for Auger 10W5N in general follow the same pattern as abundances do. However, instead of declining in the uppermost level there is an increase in density. Herring mirrors this pattern, including the increase in the uppermost level (seen in herring abundance as well). Salmon density is relatively low, or non-existent, through the sample, but jumps in the uppermost levels.

The correlation coefficient for soil pH values and NSP from Auger 10W5N is $r_s$=-0.43 and for soil pH values and NSP/L is $r_s$=-0.70. Compared to the critical value for N=11 (Levin 1977:277, Table G), the result for soil pH values and NSP is not significant, while for NSP/L it is. Although the correlation coefficients show somewhat strong negative relationships, there is very little fluctuation in soil pH values between levels, and so this relationship is not likely to represent a true effect of soil pH chemistry on bone preservation.

### 5.4.2 - *Results of 1.5mm Samples*

Materials that are greater than 1.5mm but smaller than 2.36mm have also been considered in this project; however, not all samples have been analyzed. Four samples (one from each of the four areas of the site) are considered here. These samples are: Auger 9 from Area 1; the column sample from Area 2; Auger 40 from Area 3; and Auger 10W5N from Area 4. While only 1.5mm materials are considered from these four samples, abundance distribution identified for each one of them follows the same order as the 2.36mm material (Table 5.31; Table 5.32). Auger 40 has the highest abundance with 1,769 fish remains recovered from the 1.5mm material, representing 69.05% of all fish remains from the 1.5mm material. Auger 10W5N has the second highest abundance of remains, with 14.52% (n=372) of 1.5mm fish remains. The third highest 1.5mm fish remains abundance comes from the column sample, with 11.24% (n=288). Finally, 133 fish remains have been recovered from the 1.5mm material from Auger 9, representing 5.19% of the total 1.5mm fish remains.

Table 5.30 Distribution of 1.5mm materials by area

| Sample | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **Total ID** | Unidentified | **Total** | **Volume** | NISP/L | NSP/L | Herring/L | Salmon/L |
| **Auger 9** | 73 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | **78** | 55 | **133** | **1.50** | 52 | 89 | 49 | 3 |
| **Column** | 195 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | **201** | 87 | **288** | **2.50** | 80 | 115 | 78 | 2 |
| **Auger 40** | 1367 | 43 | 8 | 0 | 0 | 0 | 0 | 1 | **1418** | 351 | **1769** | **3.50** | 405 | 505 | 391 | 12 |
| **10W5N** | 239 | 8 | 2 | 3 | 2 | 12 | 1 | 0 | **267** | 105 | **372** | **2.26** | 118 | 165 | 106 | 4 |
| **Total** | **1874** | **62** | **10** | **3** | **2** | **12** | **1** | **1** | **1964** | **598** | **2562** | **9.76** | 201 | 263 | 192 | 6 |

Table 5.31 %NISP and %NSP of 1.5mm materials by area

| Sample | Species NISP | | | | | | | | %NISP of Sample NSP | %NSP of 1.5mm NSP |
|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | | |
| **Auger 9** | 93.59 | 6.41 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | **58.65** | **5.19** |
| **Column** | 97.01 | 2.99 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | **69.79** | **11.24** |
| **Auger 40** | 96.40 | 3.03 | 0.56 | 0.00 | 0.00 | 0.00 | 0.00 | 0.07 | **80.16** | **69.05** |
| **10W5N** | 89.51 | 3.00 | 0.75 | 1.12 | 0.75 | 4.49 | 0.37 | 0.00 | **71.77** | **14.52** |
| **Total** | **95.42** | **3.16** | **0.51** | **0.15** | **0.10** | **0.61** | **0.05** | **0.05** | **76.66** | **100** |

In terms of densities, Auger 40 has the highest total density of fish remains from the 1.5mm material. Auger 10W5N has the second highest total density of fish remains, and the column sample has the third highest total density of fish remains from the 1.5mm material fish remains. Finally, Auger 9 has the lowest 1.5mm fish remain densities. While herring densities follow this same order, salmon density is highest in Auger 40, second highest in Auger 10W5N, third highest Auger 9, and lowest in the column sample. As with the 2.36mm materials, the results of the analyses of these materials are presented below, while discussion and interpretation are presented in Chapter 6.

*Auger 9*

From Area 1, 1.5mm materials were considered from Auger 9 (Table 5.33). A total of 133 fish elements were recovered from the 1.5mm materials, of which 78 (58.65%) have been identified. Of the identified 1.5mm fish remains, 93.59% (n=73) are herring. The pattern of herring abundance throughout the sample mirrors that seen in the 2.36mm material, despite more herring having been recovered from the 1.5mm material. Salmon represents 6.41% (n=5) of the 1.5mm fish material from Auger 9; these elements come from the middle levels of the deposit. No other species were obtained from the 1.5mm materials. The 1.5mm material densities for Auger 9 follow the same pattern as the abundances throughout the level. Herring density closely matches total density from level to level, and salmon density is overall low.

Table 5.32 Distribution of 1.5mm materials for Auger 9

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | | pH Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | NISP/L | NSP/L | Herring/L | Salmon/L | |
| 0-12.5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **1** | 1 | **2** | **0.25** | 4 | 8 | 4 | 0 | **7.18** |
| 12.5-19 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **3** | 4 | **7** | **0.25** | 12 | 28 | 12 | 0 | **7.34** |
| 19-30 | 22 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | **24** | 8 | **32** | **0.25** | 96 | 128 | 88 | 8 | **7.48** |
| 30-36 | 22 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **23** | 10 | **33** | **0.25** | 92 | 132 | 88 | 4 | **7.56** |
| 36-40.5 | 16 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | **18** | 21 | **39** | **0.25** | 72 | 156 | 64 | 8 | **7.57** |
| 40.5-42 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **9** | 11 | **20** | **0.25** | 36 | 80 | 36 | 0 | **7.53** |
| **Total** | **73** | **5** | **0** | **0** | **0** | **0** | **0** | **0** | **78** | **55** | **133** | **1.50** | **52** | **89** | **49** | **3** | * |
| **%NISP/%NSP** | **93.59** | **6.41** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **0.00** | **58.65** | **41.35** | **100** | * | * | * | * | * | * |

The correlation coefficient for soil pH values and 1.5mm NSP from Auger 9 is $r_s$=0.94, and for soil pH values and 1.5mm NSP/L is $r_s$=0.94. Compared to the critical value for N=6 (Levin 1977:277, Table G), these results are significant; however, as previously mentioned, the positive correlation is hard to interpret due to the disturbed nature of the materials from this sample and the fact that actual soil pH values fluctuate only very slightly from level to level.

*Column Sample*

A total of 288 fish elements were recovered from the 1.5mm material from the column sample from Area 2 (Table 5.34). Of those elements, 201 (69.79%) were identified. A total of 97.01% (n=195) of the identified fish remains are herring. Herring abundance fluctuates throughout the sample and there is no discernable patterning. Salmon represents 2.99% (n=6) of identified fish remains recovered from the 1.5mm materials and is present in low abundances sporadically throughout the sample. Densities fluctuate throughout the column sample in a pattern similar to abundances, with herring densities mirroring overall densities, and salmon densities are low when present.

Table 5.33 Distribution of 1.5mm materials for the column sample

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | | pH Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | NISP | Unidentified | NSP | Volume (L) | NISP/L | NSP/L | Herring/L | Salmon/L | |
| 0-20 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 1 | 8 | 0.25 | 28 | 32 | 28 | 0 | 7.48 |
| 20-40 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 3 | 8 | 0.25 | 20 | 32 | 12 | 8 | 7.55 |
| 40-50 | 19 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 20 | 16 | 36 | 0.25 | 80 | 144 | 76 | 4 | 7.51 |
| 50-60 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 10 | 24 | 0.25 | 56 | 96 | 56 | 0 | 7.61 |
| 60-70 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 35 | 25 | 60 | 0.25 | 140 | 240 | 140 | 0 | 7.52 |
| 70-80 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 21 | 9 | 30 | 0.25 | 84 | 120 | 84 | 0 | 7.54 |
| 80-90 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 7 | 20 | 0.25 | 52 | 80 | 52 | 0 | 7.48 |
| 90-100 | 32 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 33 | 7 | 40 | 0.25 | 132 | 160 | 128 | 4 | 7.51 |
| 100-110 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 11 | 0.25 | 44 | 44 | 44 | 0 | 7.53 |
| 110-120 | 40 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 42 | 9 | 51 | 0.25 | 168 | 204 | 160 | 8 | 7.51 |
| Total | 195 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 201 | 87 | 288 | 2.50 | 80 | 115 | 78 | 2 | * |
| %NISP/%NSP | 97.01 | 2.99 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 69.79 | 30.21 | 100 | * | * | * | * | * | * |

The correlation coefficient for soil pH values and both 1.5mm NSP and 1.5mm NSP/L from the column sample is $r_s$=-0.05. Compared to the critical value for N=10 (Levin 1977:277, Table G), these results are not significant. As well, the relationship is only very slightly negatively correlated, and thus it is unlikely that soil pH values had any effect on the preservation of remains from the 1.5mm sample.

*Auger 40*

Auger 40 1.5mm materials consist of a total of 1,769 fish remains, of which 80.16% (n=1418) have been identified (Table 5.35). Herring remains make up 96.4% (n=1,367) of identified remains. The amount of herring present fluctuates from level to level, with no apparent pattern; peak abundance occurs in level 16-27 cmBS. Salmon is present in many levels in this sample, representing 3.03% (n=43) of identified fish remains. No patterns are apparent in the salmon remains, which fluctuate throughout. Also present in the 1.5mm material from Auger 40 are spiny dogfish (0.56%; n=8) and surfperch (0.07%; n=1). In terms of density, the 1.5mm materials from Auger 40 fluctuate from level to level, and spike dramatically in level 16-27 cmBS. Herring densities closely mirror overall densities, while salmon densities are relatively low throughout the sample.

Table 5.34 Distribution of 1.5mm materials for Auger 40

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | | pH Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | **NISP/L** | **NSP/L** | **Herring/L** | **Salmon/L** | |
| **0-16** | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **11** | 0 | **11** | **0.25** | 44 | 44 | 44 | 0 | **7.7** |
| **16-27** | 553 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **553** | 108 | **661** | **0.25** | 2212 | 2644 | 2212 | 0 | **7.86** |
| **27-37** | 104 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | **106** | 25 | **131** | **0.25** | 424 | 524 | 416 | 8 | **7.81** |
| **37-47** | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **48** | 9 | **57** | **0.25** | 192 | 228 | 192 | 0 | **7.75** |
| **47-62** | 56 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | **62** | 22 | **84** | **0.25** | 248 | 336 | 224 | 24 | **7.46** |
| **62-82** | 22 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | **25** | 11 | **35** | **0.25** | 100 | 140 | 88 | 8 | **7.57** |
| **82-88** | 101 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **102** | 31 | **133** | **0.25** | 408 | 532 | 404 | 4 | **7.64** |
| **88-88** | 60 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | **67** | 23 | **90** | **0.25** | 268 | 360 | 240 | 28 | **7.63** |
| **88-91.5** | 175 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | **182** | 59 | **241** | **0.25** | 728 | 964 | 700 | 28 | **7.55** |
| **91.5-93** | 43 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | **53** | 2 | **55** | **0.25** | 212 | 220 | 172 | 40 | **7.6** |
| **93-99.5** | 92 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | **96** | 25 | **121** | **0.25** | 384 | 484 | 368 | 8 | **7.56** |
| **99.5-101** | 31 | 4 | 6 | 0 | 0 | 0 | 0 | 0 | **41** | 15 | **56** | **0.25** | 164 | 224 | 124 | 16 | **7.53** |
| **101-106** | 43 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | **45** | 14 | **59** | **0.25** | 180 | 236 | 172 | 8 | **7.62** |
| **106-115** | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **29** | 7 | **36** | **0.25** | 116 | 144 | 116 | 0 | **7.55** |
| **Total** | **1368** | **43** | **8** | **0** | **0** | **0** | **0** | **1** | **1420** | **351** | **1771** | **3.50** | **406** | **506** | **391** | 12 | * |
| **%NISP/%NSP** | **96.34** | **3.03** | **0.56** | **0.00** | **0.00** | **0.00** | **0.00** | **0.07** | **80.16** | **19.84** | **100** | * | * | * | * | * | * |

The correlation coefficient for soil pH values and 1.5mm NSP and 1.5mm NSP/L from Auger 40 is $r_s$=0.22. Compared to the critical value for N=14 (Levin 1977:277, Table G), the results are not significant. Only a slightly positive relationship between soil pH values and the amount of fish remains from the 1.5mm material is present, and it is unlikely that there was any true effect on the NSP and NSP/L counts by soil chemistry due to the slight fluctuations seen in soil pH values.

*Auger 10W5N*

A total of 716 fish remains were recovered from the 1.5mm materials from Auger 10W5N (Table 5.36). Of those remains, 326 (45.53%) were identified. The majority of the remains identified from the 1.5mm materials are herring (97.24%; n=317). These remains show a somewhat similar trend to those from the 2.36mm material with two peaks and decreasing abundance in the upper levels. Salmon represents 2.15% (n=7) of the fish remains from the 1.5mm materials from Auger 10W5N, and surfperch and greenling are both represented by one element each (0.31% of identified remains each). Densities for the 1.5mm material from Auger 10W5N fluctuate throughout the sample. They start low and then jump, after which they drop down and continue to fluctuate, but are never as low as the initial two levels. Due to large amounts of unidentified materials in this sample, NISP and herring densities are much lower than NSP densities. As well, although they follow a similar overall pattern, they do not fluctuate as dramatically as do the NSP densities. Salmon density is relatively low and sporadic in this sample.

Table 5.35 Distribution of 1.5mm materials for Auger 10W5N

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | | pH Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | NISP | Unidentified | NSP | Volume (L) | NISP/L | NSP/L | Herring/L | Salmon/L | |
| 0-10 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 24 | 32 | 0.1 | 80 | 320 | 80 | 0 | 7.07 |
| 10-20 | 22 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 26 | 40 | 66 | 0.18 | 144 | 367 | 122 | 22 | 7.39 |
| 20-30 | 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 38 | 20 | 58 | 0.22 | 173 | 264 | 173 | 0 | 7.46 |
| 30-40 | 38 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 39 | 49 | 88 | 0.23 | 170 | 383 | 165 | 4 | 7.43 |
| 40-50 | 27 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 28 | 27 | 55 | 0.21 | 133 | 262 | 129 | 0 | 7.39 |
| 50-60 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 43 | 55 | 98 | 0.28 | 154 | 350 | 154 | 0 | 7.56 |
| 60-70 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 49 | 44 | 93 | 0.265 | 185 | 351 | 181 | 0 | 7.43 |
| 70-80 | 43 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 45 | 69 | 114 | 0.18 | 250 | 633 | 239 | 11 | 7.44 |
| 80-90 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 43 | 56 | 99 | 0.18 | 239 | 550 | 239 | 0 | 7.46 |
| 90-100 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 6 | 0.24 | 8 | 25 | 8 | 0 | 7.59 |
| 100-110 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 2 | 7 | 0.17 | 29 | 41 | 29 | 0 | 7.72 |
| **Total** | **317** | **7** | **0** | **0** | **0** | **1** | **0** | **1** | **326** | **390** | **716** | **2.26** | **144** | **317** | **140** | **3** | * |
| **%NISP/%NSP** | **97.24** | **2.15** | **0.00** | **0.00** | **0.00** | **0.31** | **0.00** | **0.31** | **45.53** | **54.47** | **100** | * | * | * | * | * | * |

The correlation coefficient for soil pH values and 1.5mm NSP from Auger 10W5N is $r_s$=-0.08, and for soil pH values and 1.5mm NSP/L is $r_s$=-0.31. Compared to the critical value for N=11 (Levin 1977:277, Table G), the results for both are not significant. As such it is unlikely that soil pH chemistry had any effect on bone preservation.

### 5.4.3 - ***Results of Combined 1.5mm and 2.36mm Samples***

When materials from the samples where both 1.5mm and 2.36mm materials (Table 5.36) have been analyzed are combined, there is a total of 12,330 fish elements recovered, of which 82.62% (n=10,187) have been identified (Table 5.37; Table 5.38). The sample from Area 3, Auger 40, clearly contains more elements than any of the other areas, both by abundance and by density. The column sample from Area 2 has a higher overall abundance of fish elements than either Area 1 or Area 4; however, in terms of density of remains, Auger 10W5N from Area 4 has a higher density than the column sample. Of the identified fish remains, 96.26% (n=9,806) are herring. As with the overall identified fish remains, Auger 40 displays both the highest abundance and density of herring remains; the column sample has the second highest abundance; however, Auger 10W5N has the second highest density. Auger 9 has both the lowest abundance and lowest density of herring remains from all four samples where both 1.5mm and 2.36mm materials have been analyzed.

Table 5.36 Distribution of combined 1.5mm and 2.36mm materials by area

| Sample | Species NISP | | | | | | | | Totals | | | Density Measures | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **Total ID** | Unidentified | **Total** | **Volume** | NISP/L | NSP/L | Herring/L | Salmon/L |
| **Auger 9** | 137 | 18 | 2 | 4 | 0 | 6 | 0 | 0 | 167 | 156 | 323 | 4.6 | 36 | 70 | 30 | 4 |
| **Column** | 2624 | 51 | 12 | 14 | 2 | 14 | 2 | 2 | 2721 | 582 | 3303 | 15.45 | 176 | 214 | 170 | 3 |
| **Auger 40** | 6489 | 125 | 80 | 1 | 2 | 8 | 0 | 1 | 6706 | 910 | 7616 | 10 | 671 | 762 | 649 | 13 |
| **10W5N** | 556 | 15 | 2 | 3 | 3 | 12 | 1 | 1 | 593 | 495 | 1088 | 2.255 | 263 | 482 | 247 | 7 |
| **Total** | **9806** | **209** | **96** | **22** | **7** | **40** | **3** | **4** | **10187** | **2143** | **12330** | **32.305** | 315 | 382 | 304 | 6 |

Table 5.37 %NISP and %NSP of combined 1.5mm and 2.36mm materials by area

| Sample | Species NISP | | | | | | | | %NISP of Sample NSP | %NSP of 1.5 & 2.36mm NSP |
|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | | |
| **Auger 9** | 82.04 | 10.78 | 1.20 | 2.40 | 0.00 | 3.59 | 0.00 | 0.00 | **51.70** | **2.17** |
| **Column** | 96.44 | 1.87 | 0.44 | 0.51 | 0.07 | 0.51 | 0.07 | 0.07 | **82.38** | **22.16** |
| **Auger 40** | 96.76 | 1.86 | 1.19 | 0.01 | 0.03 | 0.12 | 0.00 | 0.01 | **88.05** | **51.11** |
| **10W5N** | 93.76 | 2.53 | 0.34 | 0.51 | 0.51 | 2.02 | 0.17 | 0.17 | **54.50** | **7.30** |
| **Total** | **96.26** | **2.05** | **0.94** | **0.22** | **0.07** | **0.39** | **0.03** | **0.04** | 82.62 | 100 |

Salmon represents 2.05% (n=209) of identified fish elements in all samples analyzed for both 1.5mm and 2.36mm materials. In terms of distribution amongst areas, Auger 40 from Area 3 has both the highest abundance and the highest density of salmon remains. While the column sample from Area 2 is second in salmon abundance, both Auger 9 from Area 1 and Auger 10W5N from Area 4 have higher densities. Auger 9 has the lowest salmon abundance from all four samples where both 1.5mm and 2.36mm materials have been considered. Also present in relatively low abundances are spiny dogfish (0.94%; n=96), midshipman (0.39%; n=40), flatfish (0.22%; n=22), greenling (0.07%; n=7), rockfish (0.03%; n=3) and surfperch (0.04%; n=4).

**Auger 9**

The total number of fish remains recovered from both the 1.5mm and 2.36mm material for Auger 9 is 323, of which 167 (51.7%) have been identified (Table 5.39). Herring makes up 82.04% (n=137) of the identified fish remains, and when considered altogether, the herring remains follow a trend of increasing abundance through the lower levels of the sample, dropping after level 19-30 cmBS. When the density of herring is considered, there is some slight fluctuation but overall there is a trend of decreasing abundance throughout the sample. A total of 18 (10.78%) salmon elements were recovered from 1.5mm and 2.36mm from Auger 9. These remains are present in all but the uppermost level, and abundance and density fluctuate slightly. Overall, salmon is always lower in abundance and density than is herring. Midshipman (n=6; 3.59%), flatfish (n=4; 2.4%) and spiny dogfish (n=2; 1.2%) are also present in the 1.5mm and 2.36mm material, although they were only recovered from the larger fraction.

Table 5.38 Distribution of combined 1.5mm and 2.36mm materials for Auger 9

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | | pH Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | **NISP/L** | **NSP/L** | **Herring/L** | **Salmon/L** | |
| **0-12.5** | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **3** | 7 | **10** | **0.8** | 4 | 13 | 4 | 0 | **7.18** |
| **12.5-19** | 12 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | **16** | 14 | **30** | **0.75** | 21 | 40 | 16 | 4 | **7.34** |
| **19-30** | 37 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | **40** | 21 | **61** | **0.95** | 42 | 64 | 39 | 2 | **7.48** |
| **30-36** | 35 | 4 | 0 | 2 | 0 | 3 | 0 | 0 | **44** | 41 | **85** | **1** | 44 | 85 | 35 | 4 | **7.56** |
| **36-40.5** | 30 | 6 | 2 | 1 | 0 | 2 | 0 | 0 | **41** | 42 | **83** | **0.65** | 63 | 128 | 46 | 9 | **7.57** |
| **40.5-42** | 20 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | **23** | 31 | **54** | **0.45** | 51 | 120 | 44 | 7 | **7.53** |
| **Total** | **137** | **18** | **2** | **4** | **0** | **6** | **0** | **0** | **167** | **156** | **323** | **4.6** | **36** | **70** | **30** | **4** | * |
| **%NISP/%NSP** | **82.04** | **10.78** | **1.20** | **2.40** | **0.00** | **3.59** | **0.00** | **0.00** | **51.70** | **48.30** | **100** | * | * | * | * | * | * |

The correlation coefficient for soil pH values and combined NSP from Auger 9 is $r_s$=0.89, and for soil pH values and combined NSP/L is $r_s$=0.94. Compared to the critical value for N=6 (Levin 1977:277, Table G), both correlation coefficients are significant. Once again, although the correlation coefficients show a strong positive relationship, there is very little fluctuation in soil pH values from this sample in general. Additionally the material is highly disturbed and it is unlikely that soil chemistry had any real effect on bone preservation.

### Column Sample

When both 1.5mm and 2.36mm materials are considered, there is a total of 3,303 fish remains from the column sample in Area 2 (Table 5.40). Of those fish remains, 82.38% (n=2,721) have been identified. Of the identified fish remains, herring is by far the most abundant with 2,624 elements (96.44%). Herring abundance fluctuates somewhat throughout the sample, displaying two peaks before declining gradually in the upper levels. Salmon, representing 1.87% (n=51) of identified remains, fluctuates throughout as well, reaching a single spike of 39 in level 20-40 cmBS. Also present in this sample are midshipman (n=14; 0.51%), flatfish (n=14; 0.51%), spiny dogfish (n=12; 0.44%), rockfish (n=2; 0.07%), surfperch (n=2; 0.07% and greenling (n=2; 0.07%).

Table 5.39 Distribution of combined 1.5mm and 2.36mm materials for column sample

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | | pH Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | NISP | Unidentified | NSP | Volume (L) | NISP/L | NSP/L | Herring/L | Salmon/L | |
| **0-20** | 68 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **69** | 24 | **93** | **0.8** | 86 | 116 | 85 | 0 | **7.48** |
| **20-40** | 225 | 28 | 0 | 3 | 0 | 3 | 0 | 0 | **259** | 83 | **342** | **1.5** | 171 | 227 | 150 | 19 | **7.55** |
| **40-50** | 338 | 9 | 3 | 3 | 0 | 3 | 0 | 0 | **356** | 88 | **444** | **1.15** | 311 | 388 | 294 | 8 | **7.51** |
| **50-60** | 424 | 4 | 2 | 0 | 0 | 0 | 0 | 0 | **430** | 97 | **527** | **1.6** | 269 | 330 | 265 | 3 | **7.61** |
| **60-70** | 300 | 0 | 1 | 2 | 0 | 2 | 0 | 2 | **307** | 76 | **383** | **2.7** | 116 | 144 | 111 | 0 | **7.52** |
| **70-80** | 426 | 3 | 1 | 4 | 0 | 4 | 0 | 0 | **438** | 89 | **527** | **2.75** | 160 | 193 | 155 | 1 | **7.54** |
| **80-90** | 194 | 1 | 0 | 2 | 0 | 2 | 0 | 0 | **199** | 24 | **223** | **1.15** | 172 | 193 | 169 | 1 | **7.48** |
| **90-100** | 121 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | **125** | 38 | **163** | **0.75** | 168 | 219 | 161 | 4 | **7.51** |
| **100-110** | 290 | 0 | 1 | 0 | 2 | 0 | 2 | 0 | **295** | 31 | **326** | **1.7** | 173 | 191 | 171 | 0 | **7.53** |
| **110-120** | 238 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | **243** | 32 | **275** | **1.35** | 180 | 204 | 176 | 2 | **7.51** |
| **Total** | **2624** | **51** | **12** | **14** | **2** | **14** | **2** | **2** | **2721** | **582** | **3303** | **15.45** | **177** | **214** | **170** | **3** | * |
| **%NISP/%NSP** | **96.44** | **1.87** | **0.44** | **0.51** | **0.07** | **0.51** | **0.07** | **0.07** | **82.38** | **17.62** | **100** | * | * | * | * | * | * |

When density is considered for both the 1.5mm and 2.36mm fish remains from the column sample, overall densities fluctuate only slightly in the lower half of the sample, after which they peak and then decline in the uppermost levels. Herring densities follow the same pattern as the overall densities, while salmon density is low overall low throughout except in levels between 20-40 cmBS where salmon density spikes.

The correlation coefficient for soil pH values and combined NSP from the column sample is $r_s$=0.76, and for soil pH values and combined NSP/L is $r_s$=0.37. Compared to the critical value for N=10 (Levin 1977:277, Table G), the result for soil pH values and NSP is significant, while the result for NSP/L is not. Only slightly strongly correlated, it is unlikely that the relationship between soil pH values and bone counts reflects a true relationship.

**Auger 40**

When the 1.5mm and 2.36mm materials are combined for Auger 40, a total of 7,616 fish remains are considered (Table 5.41). Of those, 6,706 (88.05%) elements have been identified. Herring makes up the majority of identified fish remains at 96.76% (6,489). Herring remains fluctuate somewhat throughout most of the level, before jumping drastically in levels 27-37 cmBS and 16-27 cmBS, after which they drop back down. Salmon represents 1.86% (n=125) of identified fish remains, fluctuating from level to level throughout the sample. Other taxa present include spiny dogfish (n=80; 1.19%), midshipman (n=8; 0.12%), greenling (n=2; 0.03%), flatfish (n=1; 0.01%) and surfperch (n=1; 0.01%).

Table 5.40 Distribution of combined 1.5mm and 2.36mm materials for Auger 40

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | | pH Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | **NISP** | Unidentified | **NSP** | **Volume (L)** | **NISP/L** | **NSP/L** | **Herring/L** | **Salmon/L** | |
| **0-16** | 31 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **32** | 2 | **34** | **0.6** | 53 | 57 | 52 | 0 | **7.7** |
| **16-27** | 3096 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | **3099** | 480 | **3579** | **0.4** | 7748 | 8948 | 7740 | 0 | **7.86** |
| **27-37** | 965 | 30 | 33 | 0 | 0 | 0 | 0 | 0 | **1028** | 68 | **1096** | **0.6** | 1713 | 1827 | 1608 | 50 | **7.81** |
| **37-47** | 226 | 7 | 2 | 0 | 0 | 2 | 0 | 0 | **237** | 19 | **256** | **0.6** | 395 | 427 | 377 | 12 | **7.75** |
| **47-62** | 111 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | **121** | 35 | **156** | **0.9** | 134 | 173 | 123 | 11 | **7.46** |
| **62-82** | 214 | 11 | 3 | 0 | 0 | 0 | 0 | 1 | **229** | 30 | **259** | **0.8** | 286 | 324 | 268 | 14 | **7.57** |
| **82-88** | 306 | 6 | 2 | 0 | 0 | 1 | 0 | 0 | **315** | 47 | **362** | **0.55** | 573 | 658 | 556 | 11 | **7.64** |
| **88-88** | 247 | 16 | 2 | 0 | 0 | 1 | 0 | 0 | **266** | 30 | **296** | **0.65** | 409 | 455 | 380 | 25 | **7.63** |
| **88-91.5** | 418 | 10 | 2 | 0 | 2 | 2 | 0 | 0 | **434** | 86 | **520** | **0.65** | 668 | 800 | 643 | 15 | **7.55** |
| **91.5-93** | 219 | 11 | 4 | 0 | 0 | 0 | 0 | 0 | **234** | 18 | **252** | **0.85** | 275 | 296 | 258 | 13 | **7.6** |
| **93-99.5** | 255 | 10 | 4 | 0 | 0 | 1 | 0 | 0 | **270** | 37 | **307** | **0.8** | 338 | 384 | 319 | 13 | **7.56** |
| **99.5-101** | 160 | 5 | 21 | 1 | 0 | 1 | 0 | 0 | **188** | 26 | **214** | **0.85** | 221 | 252 | 188 | 6 | **7.53** |
| **101-106** | 130 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | **135** | 22 | **157** | **0.7** | 193 | 224 | 186 | 6 | **7.62** |
| **106-115** | 111 | 5 | 2 | 0 | 0 | 0 | 0 | 0 | **118** | 10 | **128** | **1.05** | 112 | 122 | 106 | 5 | **7.55** |
| **Total** | **6489** | **125** | **80** | **1** | **2** | **8** | **0** | **1** | **6706** | **910** | **7616** | **10** | **671** | **762** | **649** | **13** | * |
| **%NISP/%NSP** | **96.76** | **1.86** | **1.19** | **0.01** | **0.03** | **0.12** | **0.00** | **0.01** | **88.05** | **11.95** | **100** | * | * | * | * | * | * |

In terms of density for the 1.5mm and 2.36mm materials from Auger 40, the same overall pattern as seen with abundance is present. Fish remains fluctuate in the lower levels before spiking in levels 27-37 cmBS and 16-27 cmBS, after which they drop back down. Herring densities follow this same pattern, while salmon densities are low throughout the sample.

The correlation coefficient for soil pH values and combined NSP from Auger 40 is $r_s$=0.43, and for soil pH values and combined NSP/L is $r_s$=0.50. Compared to the critical value for N=14 (Levin 1977:277, Table G), the results for soil pH values and both NSP and NSP/L are not significant. As well, soil pH values and combined NSP and NSP/L are only somewhat positively correlated, suggesting that very little, if any, relationship exists.

*Auger 10W5N*

When the identified fish remains from both the 1.5mm and the 2.26mm materials are combined, a total of 593 elements are identified (54.5% of 1088 elements total) (Table 5.42). Combining the herring from both screen sizes shows the same trend of increasing and decreasing abundance, with two distinct peaks; however, the pattern more closely matches that of the 2.36mm materials than that of the 1.5mm materials. When salmon from the 1.5mm and 2.36mm materials are combined, no apparent patterns are clear in the overall salmon, although elements from both sets of materials come from the upper and middle levels, and none from the bottom levels.

Table 5.41 Distribution of combined 1.5mm and 2.36mm materials for Auger 10W5N

| Depth (cm Below Surface) | Species NISP | | | | | | | | Totals | | | Density Measures | | | | | pH Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Herring | Salmon | Dogfish | Flatfish | Greenling | Midshipman | Rockfish | Surfperch | NISP | Unidentified | NSP | Volume (L) | NISP/L | NSP/L | Herring/L | Salmon/L | |
| **0-10** | 22 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **23** | 29 | **52** | **0.1** | 230 | 520 | 220 | 10 | **7.07** |
| **10-20** | 32 | 8 | 0 | 1 | 0 | 0 | 0 | 0 | **41** | 55 | **96** | **0.18** | 228 | 533 | 178 | 44 | **7.39** |
| **20-30** | 59 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | **61** | 25 | **86** | **0.22** | 277 | 391 | 268 | 5 | **7.46** |
| **30-40** | 76 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | **79** | 55 | **134** | **0.23** | 343 | 583 | 330 | 4 | **7.43** |
| **40-50** | 65 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | **66** | 45 | **111** | **0.21** | 314 | 529 | 310 | 0 | **7.39** |
| **50-60** | 61 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | **65** | 70 | **135** | **0.28** | 232 | 482 | 218 | 0 | **7.56** |
| **60-70** | 97 | 2 | 0 | 0 | 0 | 2 | 0 | 1 | **102** | 63 | **165** | **0.265** | 385 | 623 | 366 | 8 | **7.43** |
| **70-80** | 68 | 2 | 0 | 1 | 0 | 5 | 0 | 0 | **76** | 80 | **156** | **0.18** | 422 | 867 | 378 | 11 | **7.44** |
| **80-90** | 62 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | **66** | 65 | **131** | **0.18** | 367 | 728 | 344 | 0 | **7.46** |
| **90-100** | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **7** | 6 | **13** | **0.24** | 29 | 54 | 29 | 0 | **7.59** |
| **100-110** | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **7** | 4 | **11** | **0.17** | 41 | 65 | 41 | 0 | **7.72** |
| **Total** | **556** | **15** | **2** | **3** | **3** | **12** | **1** | **1** | **593** | **495** | **1088** | **2.255** | **263** | **482** | **247** | **7** | * |
| **%NISP/%NSP** | **93.76** | **2.53** | **0.34** | **0.51** | **0.51** | **2.02** | **0.17** | **0.17** | **54.50** | **45.50** | **100** | * | * | * | * | * | * |

In terms of density for the 1.5mm and 2.36mm materials for Auger 10W5N, a similar pattern to that seen with abundances is present with two distinct peaks and decreasing densities in the uppermost levels. Herring densities follow the same patterns as that for overall densities, while salmon density is low throughout the sample except for a peak at levels between 10-20 cmBS.

The correlation coefficient for soil pH values and combined NSP from Auger 10W5N is $r_s$=-0.35, and for soil pH values and combined NSP/L is $r_s$=-0.45. Compared to the critical value for N=11 (Levin 1977:277, Table G), the results for soil pH values and both NSP and NSP/L are not significant. Although there is a somewhat strong negative pattern in the correlation coefficients, there is very little fluctuation in soil pH values from this sample in general, and it is unlikely that any true relationship between soil pH values and bone preservation exists.

### 5.5 - Fish Trap Mapping Results

Two wooden stake complexes were mapped as part of this project. Previous and ongoing spatial analysis of traps has been undertaken elsewhere in Comox Harbour by Nancy Greene (2005a) and a report on this research is forthcoming. Greene's research has shown that two structure types exist: heart-shaped and chevron-winged traps. Preliminary dating of stakes from these traps suggests two distinct periods of use for the two trap forms. The heart-shaped traps are older, while the chevron-winged traps are more recent. Greene (2005a) gives the example of one stake complex where an older heart-shaped trap (1,070 BP) is overlain with at least four building and rebuilding phases of a chevron-winged trap dated to 220 BP-230 BP.

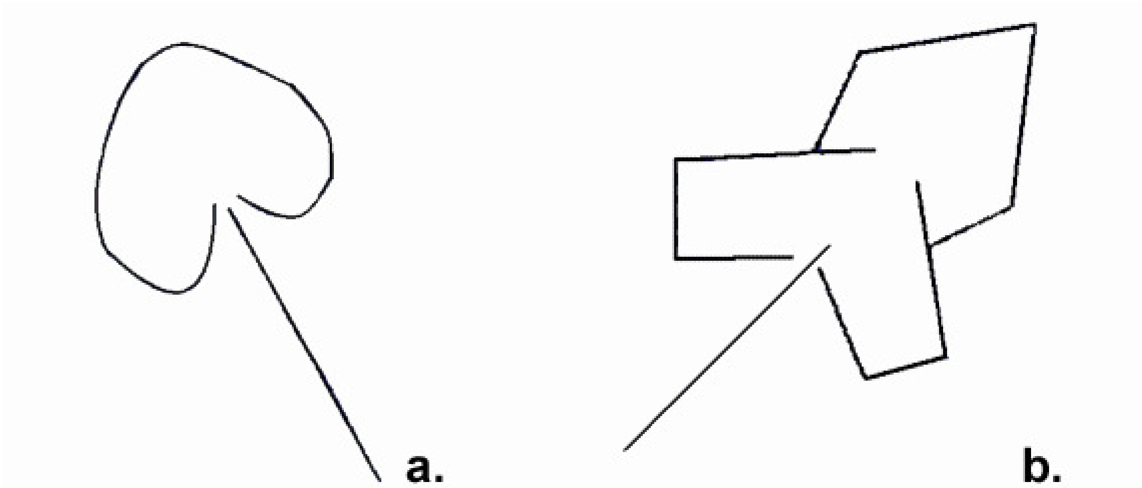



Figure 5.1 Schematics of trap structures found in Comox Harbour: (a) heart-shaped trap; (b) chevron-winged trap

Both of the complexes mapped for this project are located along the northern shore of the Courtenay River as it enters Comox Harbour. Due to silt deposition from the outwash of the river (Clague 1976) it is likely that many stakes associated with the traps are buried. The southern portions of these traps have also been lost to the dredging of the Courtenay River during the 20th century. Photographs of both mapped stake complexes can be found in Appendix F.

The first of the two complexes mapped for this project (Figure 5.2) contains 154 individual wooden stakes, and has been dated to 1,030 $\pm$50 BP (Hamatla 2006). As is clear from the image, it would appear that this trap was heart-shaped when in used. As well there is some indication that the trap was rebuilt at least once, with overlapping stakes in multiple portions of the trap. The date of the heart-shaped trap conforms to Greene's (2005a) recognition that heart-shaped traps are older than the chevron-shaped traps.

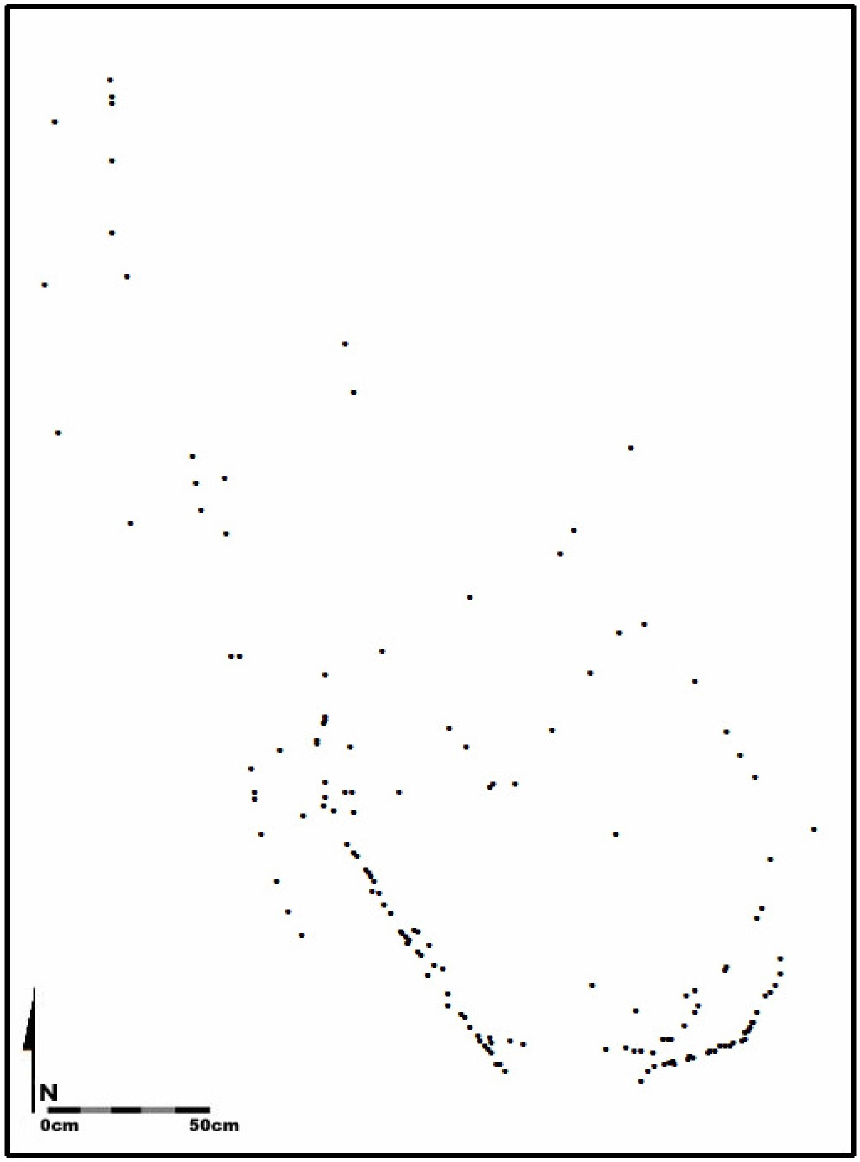



Figure 5.2 Schematic of mapped wooden stake complex #1

The second stake complex mapped as part of this project (Figure 5.3) is located just west of the first stake complex on the northern shore of the Courtenay River. This complex consists of 398 individual wooden stakes. Unfortunately, it appears as though the dredging of the Courtenay River resulted in the removal of a large portion of this complex, and no structure is discernable from the remaining stakes. However, there does appear to be a series of linear, rather than curvilinear, stake arrangements. This complex has been dated to 210 ±60 BP (Hamatla 2006), falling into the time period in which chevron-winged traps were in used according to Greene (2005a). While there is no evidence for this complex being a chevron-winged trap, the date suggests that this is possible. It is also possible that this complex represents a different form of structure, in that its placement along the shore of the Courtenay River with lines of stakes running into the river suggests the possibility of one or multiple weirs built across the river. The number of stakes present also suggests the possibility of reuse of the area for weirs during more than one construction phase. Losey (2008) has recently suggested the possibility that weirs were removed from main river channels in Willapa Bay, Washington, to allow for the movement of canoes once use of those weirs ceased, and it is possible that the same practice was undertaken in Comox Harbour if these stakes do in fact represent weirs crossing the river channel.

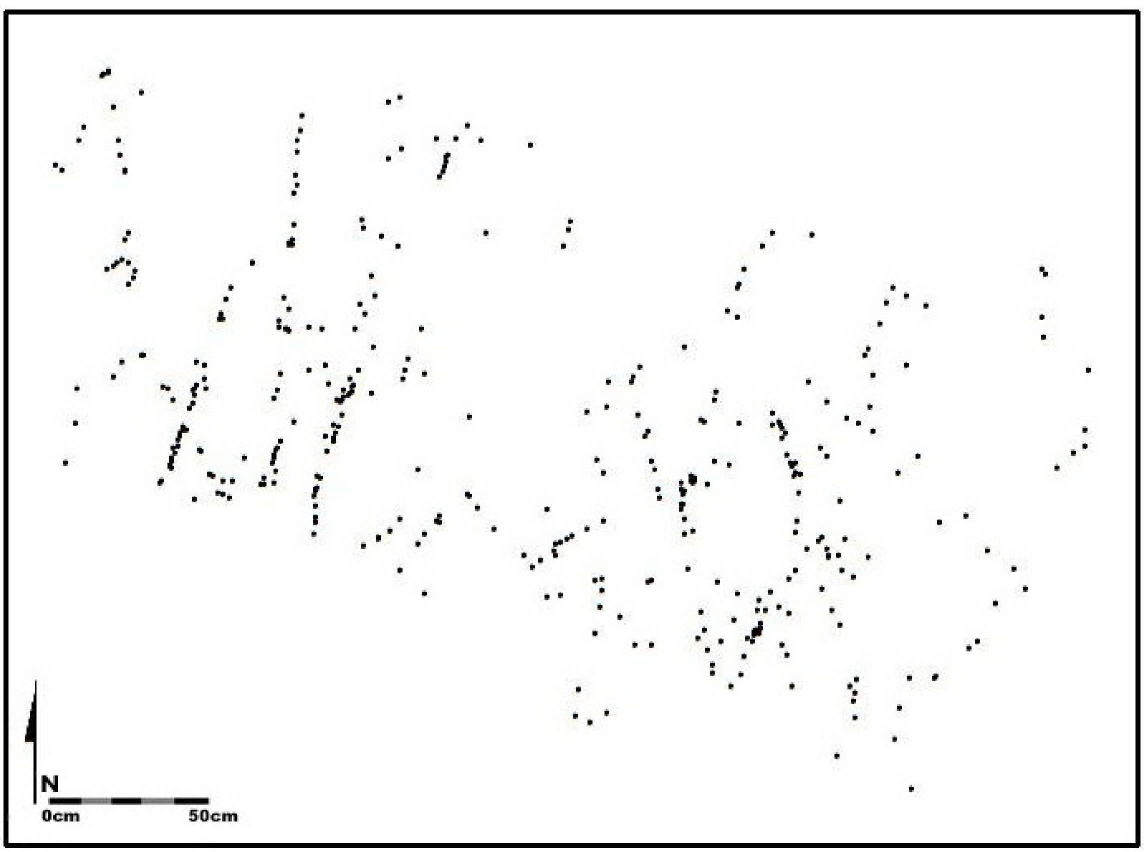



**Figure** 2.3 Schematic of mapped wooden stake complex #2

# Chapter 6 – Discussion

## 6.1 - Discussion of Results

### 6.1.1 - *Fish Remains at Q'umu?xs Village*

The presence of herring at all depths of deposits in all four areas considered at the Q'umu?xs village site shows that Comox Harbour sustained an important herring fishery for a continuous period of time from at least 1,535 BP, and likely into the post-contact period. In the lower levels of the Q'umu?xs deposits fewer fish remains are recorded overall. This may occur for a number of reasons. First, preservation of bone in shell middens occurs because the shell neutralizes the soil. As soil pH analysis from Q'umu?xs shows, soil pH values are neutral. The change in values from level to level is so slight as to be negligible in terms of affecting bone preservation. Although in some samples the association between soil pH values and NSP or NSP/L suggests a possible relationship, it must be remembered that soil pH values only vary, site wide, between 7.07 and 7.86. Thus, all soil pH values from the site can be considered neutral.

Further, the intensity of the herring fishery appears to fluctuate through time before an abrupt increase after 1,025 BP. Although this date comes from only one sample in Area 3, Auger 40, the pattern can be expanded somewhat to the area as a whole which sees a dense layer of herring bone and mussel shell in the uppermost levels of the deposit (although the pattern of herring abundance may differ in individual samples from the area). As well, in Area 4, one sample, Auger 5W30N also shows a similar increase in herring remains in the uppermost levels. Dates from Area 2 show that these deposits are earlier than 1,025 BP, and so it is assumed that this area represents activities prior to the increase in herring fishing, as do deposits deeper than approximately 40cmBS in Area 3. In Area 1, as discussed elsewhere, deposits have been disturbed by historic activity. However, Auger 13 from this area, although relatively shallow, hints towards an increase in herring utilization as well.

An increase in the amount of herring remains occurs after 1,025 BP. However, this is not to suggest that herring fishing did not occur or was stable prior to this time. Rather, what we see in the archaeological record are fluctuations in the amount of herring present at different depths of the deposit in all areas of the site. In light of the dates from both the fish traps and the shell midden, it would appear that much of this fluctuation occurred prior to when fish trap use began in Comox Harbour. These earlier fluctuations may possibly be the result of differential depositional processes through time, or attempts at intensification of the herring fishery prior to the construction of fish traps beginning approximately 1,200 BP. Fluctuations in herring remains may also represent fluctuations in the natural availability of herring.

Salmon is represented in low numbers throughout the site. The relative absence of salmon (when compared with herring) was surprising, based on the expectation that the traps in Comox Harbour were constructed to exploit schooling salmon waiting to enter the Courtenay River to spawn. The possibility that these traps may have been used to procure other species was not exactly discarded prior to excavation. Rather, it was assumed that other species caught in the trap would be by-catch through use of the traps to catch salmon. However, while salmon is found only in small numbers throughout the sample (and it must be remembered that in relation to other species, these remains are also highly fragmented and so counts are inflated), this is by no means evidence that salmon was not important at the Q'umu?xs village site. Information provided by K'omoks Elders indicates that salmon fishing on the river was important (M. Everson, personal communication, 2007, 2008; N. Frank, personal communication, 2007; E. Hardy, personal communication, 2007; S. Hardy, personal communication, 2007) and that the remains recovered from the site do not represent the true importance of this taxon. Salmon caught elsewhere may have been transported back to the site already processed. Processing taking place away from the Q'umu?xs village site would lead to evidence of their use in the form of bones being absent in the midden deposits. If the Comox Harbour fish traps were being used to catch salmon, it is possible that the salmon were processed on the flats after collection in order to reduce the weight and volume of what was carried back to shore (M. Everson, personal communication, 2008).

The six other fish taxa recovered from the Q'umu?xs village site are all found in relatively low densities, and in scattered, non-patterned contexts. While spiny dogfish is at times as or more abundant than salmon, its overall contribution would have been small. The other fish taxa recovered (flatfish, greenling, midshipman, surfperch and rockfish) are most likely to have been by-catch through use of he traps, or caught by other means. Flatfish are known to have been taken with spears, while others were taken by line or net. Contribution of these species to the overall diet is hard to judge. While Cannon (2000) notes the applicability of auger sampling to the study of herring and salmon fisheries, it is possible that other species are underrepresented in comparison due to the use of this method of sampling. However, the column sample, a method of sampling generally thought to be representative of larger excavation units, does not show a notable difference in the distribution or amount of other species present than do the rest of the samples, suggesting that herring was the main species exploited at Q'umu?xs Village site.

### 6.1.2 - *Fish Remains and Fish Traps in Comox Habour*

In order to understand the relationship between the fish traps in Comox Harbour and the fish remains from the Q'umu?xs Village site, the timing of fish trap use in relation to fish remains needs to be understood. As previously mentioned, 22 dates have been obtained from fish traps located in Comox Harbour (Green 2005; Hamatla 2006). These dates range between 120 BP and 1,230 BP, with a gap between 600 BP and 1,000 BP. When associated with the dates from the Q'umu?xs village site materials (Figure 6.1) it is clear that there is some association with fish resource use and trap utilization. Although counts fluctuate across the entire site, between samples in each area, and from level to level in individual samples, overall abundance remains low prior to the introduction of fish traps. When traps are first introduced abundances remain low, although some more drastic fluctuations are seen especially in Area 3. However, following the gap in fish trap dates from 1,000 BP to 600 BP, it is clear that there are both increases in the number of fish traps present in Comox Harbour and in the amount of fish being taken. The following discussion will provide some possible explanations for this phenomenon.

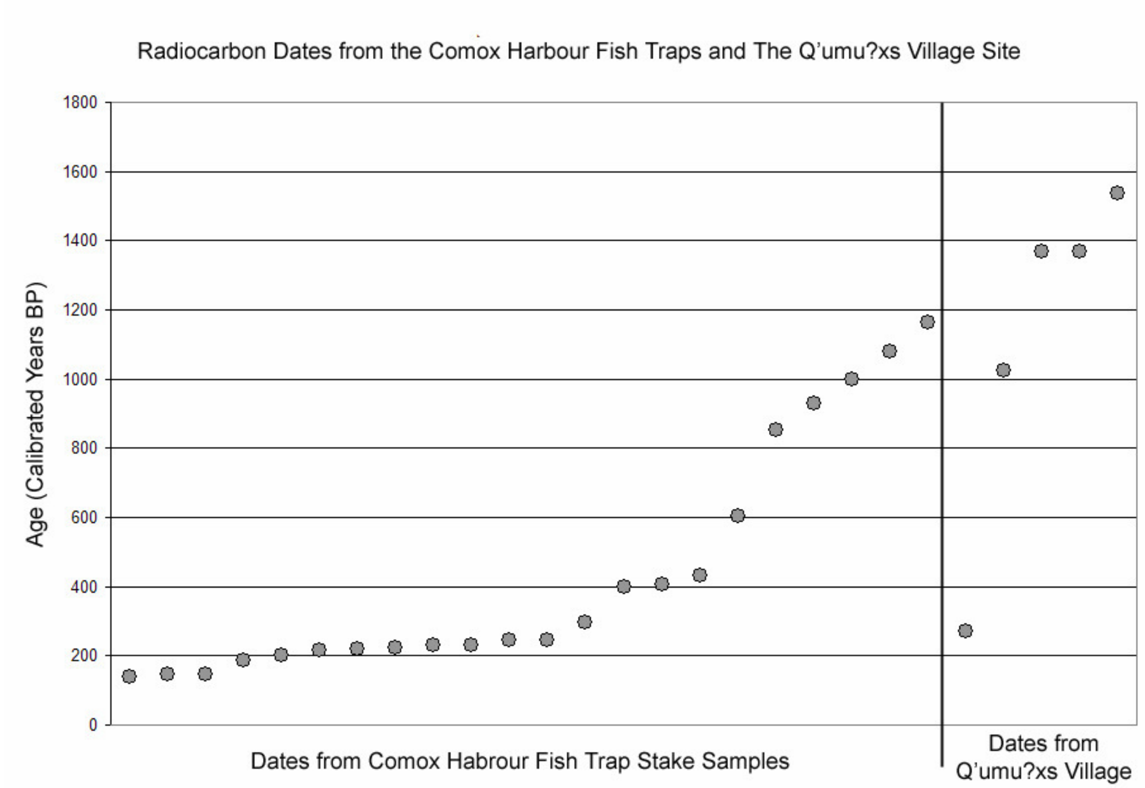



Figure 3.1 Radiocarbon Dates from the Comox Harbour Fish Traps and the Q'umu?xs Village Site (Dates for traps obtained by Hamatla Treaty Society; N. Greene (2005b)).

### 6.1.3 - *The Use of Fish Traps in Comox Harbour*

Up until recently, herring spawned in large numbers in Comox Harbour in late winter. Lindberg (2000:1) reports the presence of kelp and sea grass on the mud flats in front of Area 4, which would be attractive to spawning herring. Herring fishing is well documented in many Northwest Coast ethnographies, which tend, in general, to agree with each other on the means by which herring were taken. Herring fishing occurred during mid-late March as the herring gathered to spawn in large numbers. The method of taking herring using a herring rake has already been described, although it is important to stress that this was seen as being highly efficient (Curtis 1974(1915):19). So, if a seemingly efficient, technologically simple means of taking herring was known and practiced widely, how did fish traps play a role in a herring fishery?

Various sources mention Comox Harbour specifically as a destination for herring fishing in late winter by Northern Coast Salish and Southern Kwakwaka'wakw peoples during the ethnographic period (Assu 1989:12; Curtis 1974(1915):19). Comox Harbour as a destination for herring fishing leads to the suggestion that the large complex of fish traps within Comox Harbour were used not only by the local population, but also the extended population of Northern Coast Salish and Southern Kwakwaka'wakw territories. K'omoks Elders speak about the use of herring in the past, and have indicated the possibility that traps in Comox Harbour may have been used to catch herring (M. Everson, personal communication, 2008; E. Hardy, personal communication 2007; S. Hardy, personal communication, 2007). Increases in the abundance of herring remains, and the possible increase in the number of traps within the harbour may both point to the period of time when Comox Harbour was integrated into larger-scale land-use patterns.

What would have instigated the move to intensified herring exploitation using fish traps in Comox Harbour? Why replace a technology, the herring rake, which by all accounts required little technological investment and yielded high returns? I would like to propose that instead of replacing existing technologies, the fish traps represent a means of intensifying the herring harvest. Hilary Stewart (1977:107) depicts a man in a canoe catching eulachon at the convergence of two wooden stake weir lines. It is possible that the traps in Comox Harbour were employed in a similar manner, to direct schooling herring into a confined space, thus making it even easier to catch them from canoe. Further, in a large tidal bay like Comox Harbour, the herring would move out of the bay as the tide recedes. By first concentrating the schooling herring and increasing the efficiency of raking or dipnetting, and then, once the tide has receded, trapping the herring from leaving the bay and making those herring available for gathering during low tide, it is possible that the amount of fish taken could be substantially increased, whether of herring or other species caught in the traps.

I have proposed the use of fish traps for herring procurement; however, I am not attempting to rule out the use of the traps for salmon or other species as well. Indeed, it is likely that other species were caught, or even targeted through the traps. Ethnographic evidence, and information provided by K'omoks Elders indicate the likelihood that at least some of these traps were used to catch salmon (M. Everson, personal communication, 2007, 2008; N. Frank, personal communication, 2007; E. Hardy, personal communication, 2007; S. Hardy, personal communication, 2007). It is simply impossible to show using the archaeological data whether these traps were also used to target other species. The low abundance of salmon and other species relative to herring remains indicates that these traps were targeting herring. Soil pH analysis on samples from all four areas of the site range between 7.07-7.86, indicating a fairly neutral environment which is not likely to have created differential preservation of remains. From the outset of this project the assumption was that the remains of wooden stake fish traps in Comox Harbour represented a large salmon fishery at the mouth of the Courtenay River. While Monks (1987) demonstrates the use of a stone fish trap in Deep Bay, British Columbia, to trap herring as part of his "prey as bait" hypothesis, and further south on the Washington coast Elmendorf (1960:76-77) reports the use of a wooden stake intertidal trap to catch herring, wooden stake fish traps have been linked to salmon not herring fishing within the northern Strait of Georgia region. Kennedy and Bouchard (1990:444) report the use of stake or stone tidal pounds at the mouth of spawning rivers to catch returning salmon; no mention is made of the use of such traps to catch herring. Instead, herring is reported to have been taken via raking or dip netting in ethnographic accounts from this area (Curtis 1974(1915):19; Barnett 1955:86-88; Kennedy and Bouchard 1990:445). Not only is salmon scarce in relation to herring abundance and density, but the overall paucity of salmon remains in these materials is uncommon for Northwest Coast archaeological deposits. This scarcity of salmon, however, is not unknown for Comox Harbour. At another site on the northern shore of the harbour, just east of the Q'umu?xs village site, salmon are equally underrepresented while herring are present in large quantities throughout the deposit (Pacific ID 1991). While data from the southern shore are not available, this report suggests a focus on herring within Comox Harbour as a whole, and not just at the Q'umu?xs site.

## 6.2 - Expectations Revisited

Earlier in this thesis I outlined two sets of expectations for the outcome of this research, to test the hypothesis that there will be an increase in fish remains in the Q'umu?xs Village shell midden corresponding to the appearance of fish traps in Comox Harbour, British Columbia. Corresponding to this hypothesis is the additional assumption that the ethnographic Northwest Coast 'household', the most basic social and economic group at the time of contact on the coast, would have emerged before or at the time that fish trap use emerges on the Northwest Coast. Because an increase in fish remains is seen in the materials from the Q'umu?xs Village site at the time that fish traps appear in the harbour, only the first set of expectations will be discussed here. The first expectation concerned an increase of production or intensification, through the use of fish traps (or that traps are a technological result of intensification). The second expectation is that fish trap use will continue through time in conjunction with the continuation of households.

### 6.2.1 - *Optimal Foraging Theory and Fish Trap Use*

The first expectation concerning increasing production can best be discussed using optimal foraging theory. As discussed, dates on midden material from the Q'umu?xs Village site can be associated with dates from the fish traps in Comox

Harbour. Initially, trap dates are associated with a period of fluctuating abundances of fish. With the disjuncture in dates on the stakes (gap between 600 BP and 1,000 BP), these initial dates may represent the beginnings of fish trap use before the technology was a firm part of resource extraction in Comox Harbour. However, as fluctuations in fish abundances occur earlier than there are dates for traps, this may suggest, first, that trap use began earlier than 1,200 BP and sampling error has resulted in only younger stakes being dated. Or, this may suggest that initial trap use did not have a large impact on overall fish resource use and that it was only later when traps were more common that increases in fish procurement are seen. This second hypothesis is supported by the jump in fish abundances in the upper levels of Area 3. The increase in fish remains has been dated to 1,025 BP, falling into the period of time when fish trap use seems to increase, with 17 of the 22 dated stakes returning ages younger than 600 BP.

Further interpretations can be made when the second expectation is considered in terms of optimal foraging theory. In regards to the patch choice model, I noted earlier that a fish trap within Comox Harbour might be considered a patch in the sense that it is a bounded space with a predictable return rate. Use of fish traps during spawning aggregations (be it for herring or for salmon) would be guaranteed to obtain a quantity of fish, barring any sort of technical failure. As with a patch defined by habitat, a fish trap will experience a decline in yield (receding tide or end of the spawning season are examples of causes for this decline), although this too may be considered to be predictable in as much as fish habits can be predicted. Considering central place foraging, the creation of a patch (fish trap) also creates a central location in which to encounter and procure prey. When ownership or rights to use traps are considered, the building of a trap (or a patch) creates an area of the harbour within which the owner or user of the trap is guaranteed resources. In terms of Arnold's (1993, 1996) path to complexity, owning a fish trap, or owning a patch, would ensure access to resources which leaders could harvest by calling on their followers (labour pool).

There are two implications for fish trap use when considered in terms of the marginal value theorem, wherein the greatest energy capture per patch is the optimization sought. First, with the prediction that a forager will leave a patch when its rate of return drops below that of another patch, if fish traps are assumed owned, leaving a patch is not an option as there is not another patch to exploit unless the user owns additional trap(s). Second, considering the prediction which states that a non-utilized patch can only be added to the set of patches when its net return is equal to or greater than the average for that set, if a fish trap is a built patch, then the process of building the trap should raise the productivity of the patch to the level at which it may be included in the set of patches.

The use of fish traps would also create a decrease in overall search and handling time of the resources procured with them. After initial building and occasional upkeep of fish traps, handling time would drop as the traps would function to catch the fish without need for the user to be present. When the user arrives at the trap, handling time would consist of time spent on removal of the fish from the trap, processing the fish for immediate use or storage, and transport of the fish back to the habitation site. In terms of search time, the user of the fish trap would not need to spend time searching for fish, as the fish would come to the trap. As well, under Monks' (1987) prey as bait model, other species would be drawn to the fish caught in the trap and search time for those prey would be minimal as well.

### 6.2.2 - *Intensification and Fish Trap Use*

The use of fish traps can be applied to both models of increased production as set forth by Ames (2005). The first model states that increased production occurs without an associated increase in the time spent procuring the resource (Ames 2005:78). In terms of fish traps, although there may be an initial output of time and energy in the creation of the trap, as well as possible upkeep of the structure, there will likewise be a decrease in the amount of time spent procuring resources and as such production will intensify (intensified production). The inverse of this argument holds for the second model of increased production; that is, that there is a decrease in the amount of time spent undertaking a task, without an associated decrease in yield (intensified labour) (Ames 2005:76). Thus, while initial construction of traps may represent a large time investment, use of the traps will actually see a decrease in amount of time spent to procure resources. As well, rather than a decrease in yield, use of fish traps sees an increase in yield.

Both of these models are supported through the fish remains at the Q'umu?xs Village site. Increasing fish remains show that use of the traps has clearly increased the yield of fish procured from Comox Harbour. With the assumption that fish traps, while representing a large initial output of time and energy, actually represent a decrease in the amount of time spent to procure fish it can be shown that the use of fish traps in Comox Harbour represents both intensified production and intensified labour in the procurement of fish resources at the Q'umu?xs Village site.

### 6.2.3 - *Intensification, Complexity and Households*

Production and intensification have been closely linked with the emergence of social and economic complexity. Arnold (1993, 1996) links the origins of complex hunter-gatherers to the ability to control labour, while Ames (2005) links labour to the ability to increase production. Tying these two theories together is the role that households, as both the highest common level of social organization and the basic unit of production, play on the Northwest Coast. It seems clear from these two models that the household would play a large role in the use of fish traps for procurement, leading to intensification. As I have already reiterated, two of the expectations generated at the outset of this research related to the household.

The hypothesis generated earlier in this thesis, considering the increase in the amount of fish remains at the time that fish traps appear in Comox Harbour, also predicts that use of fish traps will not begin until households have emerged, since the ownership and use of fish traps can be linked to households. As I have outlined elsewhere, a household, as the basic unit of production, would have owned or had access (rights to use) to fish traps. Whether ownership of traps occurred at the village, household or individual level does not change the fact that production was undertaken on behalf of the household, or at least the independent household. Ownership of traps does have an effect on control of labour since if everyone had equal access to traps (ownership at village level), no opportunity would arise to take control of the labour involved in their use. On the other hand, if traps are owned by households or individuals, access to those traps can be limited and thus control over labour can be enacted.

Households are thus needed in order to construct, use and own fish traps on the Northwest Coast. While it is possible that traps were used prior to the emergence of households (especially with early dates like those at Glenrose and St. Mungo), it is possible that these are related to initial, short-lived, attempts at control of labour before households took shape. I have already outlined the relationship of intensification to fish traps, and only reiterate here that intensified labour, as well as intensified production, can be linked to the emergence of leaders and households on the Northwest Coast. In terms of Comox Harbour, if households need to exist in order for fish traps to be used successfully overtime, then the earliest date for the emergence of household groups will be at or before the time that fish traps appear in Comox Harbour. Households likely exerted some kind of control over fish traps in Comox Harbour, whether through direct ownership or responsibility for the construction, use and upkeep of the traps (Mary Everson, personal communication, 2007). In Comox Harbour, the earliest dated fish trap occurs at 1,200 BP, although it is possible that earlier traps exist. As well, the fluctuations in fish remains prior to traps may suggest attempts to intensify production through some other means, possibly indicating an even earlier emergence of households.

The second expectation speaks to continuing use of fish traps over time. More specifically, if fish trap ownership by households, and if households were the basic unit of production, then as long as household groups continue to exist, so too should fish traps. More explicitly, leaders (presumably of households) emerge through their ability to control labour and products of labour. Fish traps represent a means of both intensifying labour and intensifying production, which in turn would strengthen the leader of the household. So the continued use of fish traps should be indicative of the continuance of household groups.

Other than a period of approximately 400 years, which may be due to sampling error rather than a true gap, fish traps have been in use in Comox Harbour since ca. 1,200 BP. These traps were likely owned at the household level, and their continued use indicates continuing household existence. Further, the evidence for rebuilding of traps in the same location suggests that households returned to the same location each year and some ownership of space must have existed. Increasing levels of fish remains at the Q'umu?xs Village site point to continuing control of labour, specifically the ability to control labour in the harvesting of seasonally available resources.

## 6.3 - Summary

To summarize, the results of analysis of fish remains from the Q'umu?xs Village site, and the resulting knowledge about fish trap use in Comox Harbour in the past, indicate first, that fish trap use is tied to the formation of households. Namely, if fish trap ownership occurred at the household level as ethnographic evidence suggests it did then fish traps would not come into play until households have been formed. It has been shown that fish trap use began in Comox Harbour as early as 1,200 BP, and thus household groups in the area are at least that old, if not older. Second, the use of fish traps in Comox Harbour should be indicative of increased production of fish resources. There is clearly an increase in fish remains recovered from Area 3 of the Q'umu?xs Village site, and indications that that pattern may have been similar in Area 1 and Area 4. Dated materials from the midden deposits link the increase in fish remains temporally with an increase in the number of traps present in Comox Harbour, indicating that the fish remains are the result of intensified production and labour. Finally, both household groups and use of fish traps should be shown to continue through time. Dating of the Comox Harbour fish traps has shown that their use began at least 1,200 years ago and continued until at least the ethnographic period. Fish traps and fish remains have been linked temporally, and it is clear that the use of fish traps in Comox Harbour can be tied to increasing levels of production. Since fish traps would have been owned at the household level, and the household is the basic unit of production, it follows that household groups existed in tandem with the use of fish traps in Comox Harbour.

# Chapter 7 – Implications, Future Directions and Conclusion

## 7.1 - Implications and Future Directions

There is a great deal of work yet to be done in terms of understanding fish trap use on the Northwest Coast in general, and specifically looking at the history of fish trap use in Comox Harbour in particular. In terms of future research directions within Comox Harbour itself, the ongoing work by Nancy Greene looking at the fish traps themselves will shed light onto the immense variability present in these structures and how they may have been built, rebuilt and used. A greater understanding of the importance of these traps would be aided with the recovery and analysis of fish remains from many of the other sites around the harbour, as well as through larger-scale investigations at the Q'umu?xs site itself. While I have endeavored to show how four distinct areas of the site follow similar use-patterns, I can in truth only speak to four very small portions of what is a very large site. A better chronological understanding of both the fish traps within Comox Harbour, and the materials obtained from sites around the bay will allow for fine-tuning of the history presented here. It is important to emphasize that this research has been able to show a clear increase in fish remains at the time when the earliest dated fish traps come into use in Comox Harbour.

There are a number of points to highlight considering the implications of this research to the Northwest Coast as a whole. First, I have shown that fish traps and the associated habitation or procurement sites should be considered together, rather than as separate entities when addressing the archaeological record. Too often there is mention of a fish trap in the vicinity of a village site or seasonal camp with no effort made to record the fish trap and to fully include its use in the interpretation of subsistence practices at that site. Conversely, often when fish traps are the focus of research, associated habitation sites are overlooked. Second, I have also shown that changes in the faunal record, namely fish remains, of a habitation site adjacent to fish traps can be linked to known dates of those fish traps. Dates from Q'umu?xs Village site and from the Comox Harbour fish traps clearly coalesce, and while further dating from both the village site and the fish traps is needed to elucidate what this means in terms of the history of Comox Harbour, it is clear that even when a trap cannot be directly dated (which is the case with many stone fish traps found on the Northwest Coast), it should be possible to point to where the trap(s) begin to be used in the archaeological deposits associated with them.

A final implication of this research to the Northwest Coast relates to what it shows about resource intensification and household archaeology. While it is well known and considered elsewhere in detail that Northwest Coast households are intricately linked to labour and resource production, including intensified production, the present research has shown that it may be possible to point to the origins of the Northwest Coast ethnographic household group in the archaeological record by considering the ethnographic pattern of households, and applying expectations to the archaeological remnants of household activity. In particular, with the assumption that fish traps in the past would have been operated on a household level as they were in the ethnographic period, households would need to exist in order for fish traps to be built and used. The timing of household formation can thus be inferred from the chronological history of fish trap use. As well, timing of intensification of resource production, at least production through the use of fish traps, can be timed to the establishment of fish traps on the Northwest Coast, again hinting at the age of household groups.

Broader implications related to optimal foraging theory rest in the application of models such as the patch choice model to modified environments. Specifically regarding fish traps, the current research has shown that by considering the trap to be a created patch, inferences can be made in regards to return rates, as well as to the amount of time and energy invested in the construction and use of fish traps. These inferences can be applied to other built environments, both on the Northwest Coast (e.g.: clam gardens, camas and wapato beds) and elsewhere, in order to better understand resource use by low-level food producers without domesticates.

### 7.2 - Conclusion

In conclusion, the fish assemblage at the Q'umu?xs village site suggests a focus on herring exploitation. Salmon are surprisingly absent from the assemblage at Q'umu?xs, as well as from another site on the north shore of Comox Harbour. Contrary to expectations, it would appear that the wooden stake fish traps on the tidal flats of Comox Harbour were used to target herring and not salmon. Even prior to the implementation of wooden stake fish traps in Comox Harbour around 1,200 BP, herring are identified as the focus of fish resource use. Herring abundances do fluctuate over time, but even when these abundances are relatively low herring is still the dominant species present and there is no switch in focus to other fish species. With the implementation of fish trap technology in the harbour there is a large jump in the abundance and density of herring remains at Q'umu?xs, providing evidence that the wooden stake fish trap complex in Comox Harbour was established to intensify the already important herring fishery. Thus it would appear that throughout the occupation of the Q'umu?xs Village site, herring are the focus of fish procurement, with the construction of fish traps specifically targeting the herring spawn in order to intensify the use of this resource.

While these results do not match the expectation of an intensive salmon fishery, they are not inconsistent with known archaeological and ethnographic practices on the Northwest Coast. As more research is aimed at examining the age, variability and associated village and processing sites of both stone and wooden fish traps on the Northwest Coast, our understanding and expectations of pre-contact fisheries will continue to be challenged and expanded.

# - References -


Allison, Penelope M.

1999 Introduction. In *The Archaeology of Household Activities*, edited by Penelope M. Allison, pp. 1-18. Routledge: London.

Ames, Kenneth M.

1985 Hierarchies, stress and logistical strategies among hunter-gatherers in northwestern North America. In *Prehistoric Hunter Gatherers: The Emergence of Cultural Complexity*, edited by T.D. Price and J. Brown, pp. 155-180. Academic Press: New York.

1995 Chiefly power and household production on the Northwest Coast. In *Foundations of Inequality*, edited by T.D. Price and G.M. Feinman, pp. 155-187. Plenum Pres: New York.

2001 Slaves, chiefs and labour on the northern Northwest Coast. *World Archaeology* 33(1):1-17.

2005 Intensification of Food Production on the Northwest Coast and Elsewhere. In *Keeping it Living: Traditions of Plant Use and Cultivation on the Northwest Coast of North America*, edited by Douglas Deur and Nancy J. Turner, pp. 67-100. UBC Press: Vancouver.

2006 Thinking about Household Archaeology on the Northwest Coast. In *Household Archaeology on the Northwest Coast*, edited by Elizabeth A. Sobel, D. Ann Trieu Gahr and Kenneth M. Ames, pp. 16-36. Archaeological Series 16. International Monographs in Prehistory: Ann Arbor, Michigan.

Ames, Kenneth M. and Herbert D.G. Maschner

1999 *Peoples of the Northwest Coast: Their Archaeology and Prehistory*. Thames and Hudson: London.

Arcas Consulting Archaeologists Ltd.

1993 *Archaeological Impact Assessment of Lot A, Section 3, Plan VIP51626, Comox District.* Report on file at the Archaeology Branch, Heritage Resource Centre, Ministry of Small Business, Tourism and Culture, Victoria, B.C.

Arnold, Jeanne E.

1993 Labor and the Rise of Complex Hunter-Gatherers. *Journal of Anthropological Archaeology* 12:75-119.

1996 Organizational Transformations: Power and Labor among Complex Hunter-Gatherers and Other Intermediate Societies. In *Emergent Complexity: The Evolution of Intermediate Socieites*, edited by Jeanne E. Arnold, pp. 59-73. International Monographs in Prehistory, Archaeological Series 9, Ann Arbor, Michigan.

Assu, H., with J. Inglis

1989 *Assu of Cape Mudge: recollections of a coastal Indian chief*. University of British Columbia Press: Vancouver.

Avery, Graham

1975 Discussion on the Age and Use of Tidal Fish-Traps (Visvywers). *The South African Archaeological Bulletin* 30(119/120):105-113.

Bannerman, Nigel and Cecil Jones

1999 Fish-trap types: a component of the maritime cultural landscape. *The International Journal of Nautical Archaeology* 28(1):70-84.

Barnett, H.G.

1955 *The Coast Salish of British Columbia*. University of Oregon Press: Eugene, Oregon.

Bernick, Kathryn

1983 *A Site Catchment Analysis of the Little Qualicum River Site, DiSc-1: A Wet Site on the East Coast of Vancouver Island, B.C.* National Museum of Man Mercury Series, Archaeological Survey of Canada Paper no. 118. National Museums of Canada, Ottawa.

1998 Introduction. In *Hidden Dimensions: the Cultural Significance of Wetland Archaeology*, edited by Kathryn Bernick, pp. xi-xix. University of British Columbia Press: Vancouver.

Betts, Robert C.

1998 The Montana Creek Fish Trap I: Archaeological Investigations in Southeast Alaska. In *Hidden Dimensions: the Cultural Significance of Wetland Archaeology*, edited by Kathryn Bernick, pp. 239-251. University of British Columbia Press: Vancouver.

Binford, Lewis R.

1980 Willow Smoke and dogs' tails: hunter-gatherer settlement systems and archeological site formation. *American Antiquity* 45:4-20.

Bird, Douglas W. and James F. O'Connell

2006 Behavioral Ecology and Archaeology. *Journal of Archaeological Research* 14(2):143-188.

Boas, Franz

1887 The Coast Tribes of British Columbia. *Science* 9(216):288-289.

1889 The Indians of British Columbia. *Transactions of the Royal Society of Canada for 1888* 6(2):47-57.

1909 The Kwakiutl of Vancouver Island. *American Museum of Natural History Memoirs* 8.

1966 *Kwakiutl Ethnography*. Edited by Helen Codere. University of Chicago Press: Chicago.

Borden, C.E.

1975 *Origins and development of early Northwest Coast culture to about 3000 B.C.* Archaeological Survey of Canada, Mercury Series Paper no. 45. National Museum of Man: Ottawa.

Builth, Heather, A. Peter Kershaw, Chris White, Anna Roach, Lee Hartney, Merna McKenzie, Tara Lewis and Geraldine Jacobsen

2008 Environmental and cultural change on the Mt Eccles lava-flow landscapes of southwest Victoria, Australia. *The Holocene* 18(3):413-424.

Butler, V.L. and J.C. Chatters

1994 The Role of Bone Density in Structuring Prehistoric Salmon Bone Assemblages. *Journal of Archaeological Science* 21:413-424.

Byram, R. Scott

2002 *Brush Fences and Basket Traps: The Archaeology and Ethnohistory of Tidewater Weir Fishing on the Oregon Coast*. Unpublished PhD Dissertation, Department of Anthropology, University of Oregon.

1998 Fishing Weirs in Oregon Coast Estuaries. In *Hidden Dimensions: the Cultural Significance of Wetland Archaeology*, edited by Kathryn Bernick, pp. 199-219. University of British Columbia Press: Vancouver.

Cambell, J.B.

1979 Settlement patterns on offshore islands in Northeastern Queensland. *Australian Archaeology* 9:18-32.

Cannon, A.

2000 Assessing Variability in Northwest Coast Salmon and Herring Fisheries: Bucket-Auger Sampling of Shell Midden Sites on the Central Coast of British Columbia. *Journal of Archaeological Science* 27(8): 725-737.

Capes, Katherine H.

1964 *Contributions to the Prehistory of Vancouver Island*. Occasional Papers of the Idaho State University Museum, Number 15, Pocatello, Idaho.

1977 Archaeological investigations of the Millard Creek site, Vancouver Island, British Columbia. *Syesis* 10:57-84.

Carlson, Catherine

1979 The Early Component at Bear Cove. *Canadian Journal of Archaeology* 3:177-194.

Carlson, Roy L. and Phil Hobler

1976 Archaeological Survey of Seymour Inlet, Quatsino Sound, and Adjacent Localities. In *Current Research Reports*, edited by Roy L. Carlson, pp. 115-141. Simon Fraser University, Department of Archaeology: Burnaby, BC.

Chaney, Greg

1998 The Montana Creek Fish Trap II: Stratigraphic Interpretation in the Context of Southeastern Alaska Geomorphology. In *Hidden Dimensions: the Cultural Significance of Wetland Archaeology*, edited by Kathryn Bernick, pp. 252-266. University of British Columbia Press: Vancouver.

Charnov, E.L.
1976 Optimal Foraging, the Marginal Value Theorem. *Theoretical Population Biology* 9(2): 129-136.

Chatters, J.C.
1989 The antiquity of economic differentiation within households in the Puget Sound Region, Northwest Coast. In *Households and Communities*, edited by S. MacEachern, D.J.W. Archer, and R.D. Garvin, pp. 168-178. Archaeological Association, University of Calgary: Calgary, AB.

Clague, J.J.
1976 *Sedimentology and geochemistry of marine sediments near Comox, British Columbia*. Paper (Geological Survey of Canada) 76-21. Geological Survey of Canada: Ottawa.

Cooke, Richard G. and Anthony J. Ranere
1999 Precolumbian Fishing on the Pacific Coast of Panama. In *Pacific Latin America in Prehistory: the Evolution of Archaic and Formative Cultures*, edited by M. Blake, pp. 103-121. Washington State University Press, Pullman, WA.

Costa-Pierce, Barry A.
1987 Aquaculture in Ancient Hawaii. *BioScience* 37(5):320-331.

Coupland, Gary
1985 Household variability and status differentiation at Kitselas Canyon. *Canadian Journal of Archaeology* 9:39-56.

1996 The evolution of multi-family households on the Northwest Coast of North America. In *People Who Lived in Big Houses: Archaeological Perspectives on Large Domestic Structures*, edited by G. Coupland and E.B. Banning, pp. 121-130. Monographs in World Prehistory, No. 27. Prehistory Press: Madison, WI.

2006 A Chief's House Speaks: Communicating Power on the Northern Northwest Coast. In *Household Archaeology on the Northwest Coast*, edited by Elizabeth A. Sobel, D. Ann Trieu Gahr and Kenneth M. Ames, pp. 80-96. Archaeological Series 16. International Monographs in Prehistory: Ann Arbor, Michigan.

Curtis, E.S.
1974(1915) *The North American Indian, Being a Series of Volumes Picturing and Describing the Indians of the United States, the Dominion of Canada and Alaska.* Johnson Reprint Company Ltd.: London.

Decima, Elena B. and Dena F. Dincauze

1998 The Boston Back Bay Fish Weirs. In *Hidden Dimensions: the Cultural Significance of Wetland Archaeology*, edited by Kathryn Bernick, pp. 157-172. University of British Columbia Press: Vancouver.

de Laguna, F.
1972 *Under Mount St. Elias: The History and Culture of the Yakutat Tlingit*. Smithsonian Contributions to Anthropology, Vol. 7. (in three parts) U.S. Government Printing Office: Washington, D.C.

Dortch, C. E.
1997 New perceptions of the chronology and development of Aboriginal fishing in south-western Australia. *World Archaeology* 29(1):15-35.

Drucker, P.
1951 *The Northern and Central Nootkan Tribes.* Bulletin 144. Bureau of American Ethnology, Smithsonian Institution, Washington, D.C.

Eldridge, M. and S. Acheson
1992 The Antiquity of Fish Weirs on the Southern Coast: A Response to Moss, Erlandson and Stuckenrath. *Canadian Journal of Archaeology* 16:112-116.

Ellis, David. V.
2006 Of a More Temporary Cast: Household Production at the Broken Tops Site. In *Household Archaeology on the Northwest Coast*, edited by Elizabeth A. Sobel, D. Ann Trieu Gahr and Kenneth M. Ames, pp. 120-139. Archaeological Series 16. International Monographs in Prehistory: Ann Arbor, Michigan.

Elmendorf, W.W.
1960 The Structure of Twana Culture. *Washington State University. Research Studies* 28(3), *Monographic Supplement* 2. Washington State University: Pullman, Washington.

Emlem, J.M.
1966 The role of time and energy in food preference. *American Naturalist* 100: 611-617.

Fedje, D.W. and Q. Mackie
2005 Overview of Cultural History. In *Haida Gwaii: Human History and Environment from the Time of Loon to the Time of the Iron People,* edited by D.W. Fedje and R.W. Mathewes, pp. 154-162. Pacific Rim Archaeology, UBC Press, Vancouver.

Fladmark, K.R.
1973 The Richardson Ranch Site: a 19th century Haida house. In *Historical Archaeology on Northwestern North America*, edited by R.M. Getty and K.R. Fladmark, pp. 53-95. Archaeological Association of Calgary: Calgary, AB.

1986 Lawn Point and Kasta: Early Microblade Sites on the Queen Charlotte Islands, British Columbia. *Canadian Journal of Archaeology* 10: 39-58.

Frederick, Gay and Susan Crockford
2005 Appendix D: Analysis of the Vertebrate Fauna from Ts'ishaa Village, DfSi-16, Benson Island, B.C. In *Ts'ishaa: Archaeology and Ethnography of a Nuu-chah-nulth Origin Site in Barkley Sound* Alan D. McMillan and Denis E. St. Claire, pp. 173-205. Archeology Press: Simon Fraser University, Burnaby.

Gahr, D. Ann Trieu, Elizabeth A. Sobel, and Kenneth M. Ames
2006 Introduction. In *Household Archaeology on the Northwest Coast*, edited by Elizabeth A. Sobel, D. Ann Trieu Gahr and Kenneth M. Ames, pp. 1-15. Archaeological Series 16. International Monographs in Prehistory: Ann Arbor, Michigan.

Gilman, Paul J.
1998 Essex Fish Traps and Fisheries: An Integrated Approach to Survey, Recording, and Management. In *Hidden Dimensions: the Cultural Significance of Wetland Archaeology*, edited by Kathryn Bernick, pp. 273-289. University of British Columbia Press: Vancouver.

Greene, N.A.
2005a A New Angle On Northwest Coast Fish Trap Technologies: Gis Total Station Mapping Of Intertidal Wood-Stake Features At Comox Harbour, B.C. Electronic Document, http://www.canadianarchaeology.com/comox/Comox_Harbour.html, accessed March 8, 2008.

2005b Resource Management Reports for DkSf-43 and DkSf-44. Reports on file at the Heritage Resource Centre, Ministry of Small Business, Tourism and Culture, Victoria, B.C.

Grier, Colin
2006 Temporality in Northwest Coast Households. In *Household Archaeology on the Northwest Coast*, edited by Elizabeth A. Sobel, D. Ann Trieu Gahr and Kenneth M. Ames, pp. 97-119. Archaeological Series 16. International Monographs in Prehistory: Ann Arbor, Michigan.

Gunther, Erna
1927 Klallam Ethnography. *University of Washington Publications in Anthropology* 1(5):171-314.

Haegele C.W.
1993 Seabird predation of Pacific herring, *Clupea pallasi*, spawn in British Columbia. *Canadian Field-Naturalist* 107:73–82.

Haegele, C.W., and J.F. Schweigert
1985 Distribution and characteristics of herring spawning grounds and description of spawning behaviour. *Canadian Journal of Fisheries and Aquatic Science* 42 (Supplement 1): 39-55.

Hames, R.
1992 Time Allocation. In *Evolutionary Ecology and Human Behaviour*, edited by E.A. Smith and B. Winterhalder, pp. 203-235. Aldine de Gruyter, New York.

Hart, J.L.
1988 *Pacific Fishes of Canada*. Fisheries Research Board of Canada, Bulletin 180. First published 1973.

Heard, William R.
1991 Life History of Pink Salmon. In *Pacific Salmon Life Histories*, edited by Cornelius Groot and Leo Margolis, pp. 121-230. UBC Press: Vancouver.

Hewer, Tony and Nicole Nicholls
2000 *Archaeological Inventory and Impact Assessment, Lot B, Plan 49201, Section 3, Comox Land District, B.C.* Report on file at the Heritage Resource Centre, Ministry of Small Business, Tourism and Culture, Victoria, B.C.

Hobler, P.M.
1976 Wet Site Archaeology at Kwanta. In *The Excavation of Water-Saturated Archaeological Sites (Wet Sites) on the Northwest Coast of North America*, edited by D.R. Croes, pp. 146-157. National Museum of Man Mercury Series, Archaeological Survey of Canada Paper No. 50. National Museums of Ottawa, Canada.

Hoffman, B.W., J.M.C. Czederpiltz and M.A. Partlow
2000 Heads or Tails: the Zooarchaeology of Aleut Salmon Storage on Unimak Island, Alaska. *Journal of Archaeological Science* 27:699-708.

Huelsbeck, D.R.
1991 Mammals and fish in the subsistence economy of Ozette. In *Ozette Archaeological Project Research Reports, Volume II, Fauna,* edited by S.R. Samuels, pp. 17-92. Washington State University Department of Anthropology Reports of Investigations 66. University of Washington: Pullman, WA.

Huyge, D., A. Watchman, M. De Dapper, and E. Marchi
2001 Dating Egypt's oldest 'art': AMS $^{14}C$ age determinations of rock varnishes covering petroglyphs at El-Hosh (Upper Egypt). *Antiquity* 75:68-72.

Jochim, M.A.
1976 *Hunter-Gatherer Subsistence and Settlement, A Predictive Model*. Academic Press: New York.

Kaplan, H. and K. Hill
1992 The Evolutionary Ecology of Food Acquisition. In *Evolutionary Ecology and Human Behavior*, edited by E.A. Smith and B. Winterhalder, pp. 167-201. Aldine de Gruyter, New York.

Kennedy, Dorothy I.D. and Randy T. Bouchard

1983 *Sliammon Life, Sliammon Lands.* Talonbooks: Vancouver, BC.

1990 Northern Coast Salish. In *Northwest Coast*, edited by Wayne Suttles, pp. 441-452. Handbook of North American Indians, Vol. 7, William C. Sturtevant, general editor. Smithsonian Institution: Washington, D.C.

Kroeber, A.L.
1963 *Cultural and Natural Areas of Native North America*. University of Califronia: Berkeley.

Lee, R.B. and I. DeVore (editors)
1968 *Man the Hunter*. Aldine: Chicago.

Levin, Jack
1977 *Elementary Statistics in Social Research*. 2nd Edition. Harper & Row: New York.

Lewis, Tyler L., Daniel Esler, and W. Sean Boyd
2007 Foraging Behaviors of Surf Scoters and White-Winged Scoters During Spwaning of Pacific Herring. *The Condor* 109(1): 216-222.

Lindberg, Jennifer J.
2000 *Building a House at Q$^w$umu?X$^w$s: Archaeological Site DkSf-019.* Report on file at the Heritage Resource Centre, Ministry of Small Business, Tourism and Culture, Victoria, B.C.

Losey, Robert
2008 Late Holocene Fish Traps in the Transforming Landscapes of Willapa Bay, Washington. Paper presented at the 73rd Annual Meeting of the Society for American Archaeology. March 26-30, 2008, Vancouver, BC.

Louwe Kooijmans, L.P.
1987 Neolithic settlement and subsistence in the wetlands of the Rhine/ Meuse Delta of the Netherlands. In *European Wetlands in Prehistory*. eds J.M. Coles and A.J. Lawson. Oxford: Oxford University Press, pp. 227-51.

Lupo, Karen D.
2007 Evolutionary Foraging Models in Zooarchaeological Analysis: Recent Applications and Future Challenges. *Journal of Archaeological Research* 15(143-189).

MacArthur, R.H. and E.R. Pianka
1966 On optimal use of a patchy environment. *American Naturalist* 100: 603-609.

Marshall, Yvonne
2006 Houses and Domestication on the Northwest Coast. In *Household Archaeology on the Northwest Coast*, edited by Elizabeth A. Sobel, D. Ann Trieu Gahr and Kenneth M. Ames, pp. 37-56. Archaeological Series 16. International Monographs in Prehistory: Ann Arbor, Michigan.

Martindale, Andrew

2006 The Tsimshian Household through the Contact Period. In *Household Archaeology on the Northwest Coast*, edited by Elizabeth A. Sobel, D. Ann Trieu Gahr and Kenneth M. Ames, pp. 140-158. Archaeological Series 16. International Monographs in Prehistory: Ann Arbor, Michigan.

Matson, R.G.

1985 The relationship between sedentism and status inequalities among hunter-gatherers. In *Status, Structure and Stratification: Current Archaeological Reconstructions*, edited by M. Thompson, M.T. Garcia and F.J. Kense, pp. 245-252. Archaeological Association, University of Calgary: Calgary AB.

1996 Households as economic organization: a comparison between large houses on the Northwest Coast and in the Southwest. In *People Who Lived in Big Houses: Archaeological Perspectives on Large Domestic Structures*, edited by G. Coupland and E.B. Banning, pp. 107-120. Monographs in World Archaeology, No. 27. Prehistory Press: Madison, WI.

Matson, R.G. and Gary Coupland

1995 *The Prehistory of the Northwest Coast.* Academic Press: Toronto.

McKechnie, Iain

2005 *Five Thousand Years of Fishing at a Shell Midden in the Broken Group Islands, Barkley Sound, British Columbia*. Unpublished MA Thesis, Department of Archaeology, Simon Fraser University.

McMillan, Alan D.

2003 Reviewing the Wakashan Migration. In *Emerging From the Mist: Studies in Northwest Coast Culture History*, edited by R.G. Matson, Gary Coupland, and Quentin Mackie, pp. 244-259. University of British Columbia Press: Vancouver.

Mitchell, Donald H.

1971 Archaeology of the Gulf of Georgia, a natural region and its cultural types. *Syesis* 4(Supplement 1):1-228.

1972 Artifacts from Archaeological Surveys in the Johnstone Strait Region. *Syesis* 5:21-41.

Momber, Carry

1991 *Gorad Beuno*: investigation of an ancient fish-trap in Caernarfon Bay, N. Wales. *International Journal of Nautical Archaeology* 20(2):95–109.

Monks, G.G.

1980 Saltery Bay: A mainland archaeological site in the Northern Strait of Georgia. *Syesis* 13:109-136).

1987 Prey as Bait: the Deep Bay Example. *Canadian Journal of Archaeology* 11:119-142.

2006 The Fauna from Ma'acoah (DfSi-5), Vancouver Island, British Columbia: An Interpretative Summary. *Canadian Journal of Archaeology* 30(2):272-301.

Moss, M.L. and J.M. Erlandson

1998 A Comparative Chronology of Northwest Coast Fishing Features. In *Hidden Dimensions: the Cultural Significance of Wetland Archaeology*, edited by Kathryn Bernick, pp. 180-198. University of British Columbia Press: Vancouver.

Moss, M.L., J.M. Erlandson, and R. Stuckenrath

1990 Wood Stake Weirs and Salmon Fishing on the Northwest Coast: Evidence from Southeast Alaska. *Canadian Journal Of Archaeology* 14:143-158.

Munsell, D.A.

1976 The Wapato Creek Fish Weir Site 45PI47, Tacoma, Washington. In *The Excavation of Water-Saturated Archaeological Sites (Wet Sites) on the Northwest Coast of North America*, edited by D.R. Croes, pp. 45-57. National Museum of Man Mercury Series, Archaeological Survey of Canada Paper No. 50. National Museums of Ottawa, Canada.

Oliver, Lindsay

1991 *Archaeological Assessment of Lot A, Plan 49201, Comox, B.C., Archaeological Site DkSf-19&21.* Report on file at the Heritage Resource Centre, Ministry of Small Business, Tourism and Culture, Victoria, B.C.

O'Sullivan, Aidan

2003 Place, Memory and Identity among Estuarine Fishing Communities: Interpreting the Archaeology of Early Medieval Fish Weirs. *World Archaeology* 35(3):449-468.

Orchard, Trevor J. and Terence Clark

2005 Multidimensional Scaling of Northwest Coast Faunal Assemblages: A Case Study from Southern Haida Gwaii, British Columbia. *Canadian Journal of Archaeology* 29(1):88-112.

Orians, G.H. and N.E. Pearsons

1979 On the theory of central place foraging. In *Analysis of Ecological Systems*, edited by D.J. Horn, B.R. Stairs, and R.D. Mitchell, pp. 155-177. Ohio State University Press, Columbus.

Pacific I.D.

1991 DkSf-4: Faunal Analysis Report. Report on file at the Courtenay District Museum and Archives, Courtenay, BC.

Pedersen, L.

1995 7000 years of fishing: stationary fishing structures in the Mesolithic and after- wards. In *Man and Sea in the Mesolithic, Coastal Settlement above* *and below Present Sea Level*, ed. A. Fischer, pp. 75-86. Oxford: Oxbow Monograph 53.

Pegg, Brian, Andrew Mason and Gail Wada
2007 *Final Report on Archaeological Mitigation of DkSb-30, Saltery Bay, B.C., Telus North Island Ring Project*. Report on file at the Heritage Resource Centre, Ministry of Small Business, Tourism and Culture, Victoria, B.C.

Peterson, J.B., B.S. Robinson, D.F. Belknap, J. Stark, and L.K. Kaplan
1994 An Archaic and Woodland Period Fish Weir Complex in Central Main. *Archaeology of Eastern North America* 22:197-221.

Pojar, J., K. Klinka, and D.A. Demarchi
1991 Coastal Western Hemlock Zone. In *Ecosystems of British Columbia*, edited by D. Meidinger and J. Pojar. B.C. Ministry of Forests, Special Report Series 6:95-111. Crown Publications, Victoria.

Pomeroy, J.A.
1976 Stone Fish Traps of the Bella Bella Region. In *Current Research Reports*, edited by R.L. Carlson, pp. 165-173. Department of Archaeology, Simon Fraser University, Burnaby, B.C.

Price, T. Douglas and James A. Brown
1985 Aspects of Hunter-Gatherer Complexity. In *Prehistoric Hunter-Gatherers: The Emergence of Cultural Complexity*, edited by T. Douglas Price and James A. Brown, pp. 3-20. Studies in Archaeology, Academic Press: Toronto.

Pyke, G.H., H.R. Pulliam, and E.L. Charnov
1977 Optimal Foraging: A Selective Review of Theory and Tests. *The Quarterly Review of Biology* 52(2): 137-154.

Quinn, Thomas P., and Katherine W. Myers
2004 Anadromy and the marine migrations of Pacific salmon and trout: Rounsefell revisited. *Reviews in Fish Biology and Fisheries* 14:421-442.

Rohner, Ronald P.
1969 *The ethnography of Franz Boas: Letters and diaries of Franz Boas written on the Northwest Coast from 1886 to 1931*. University of Chicago Press: Chicago.

Rostlund, Erhard
1952 *Freshwater Fish and Fishing in Native North America*. University of California Publications in Geography Vol. 9. University of California Press: Berkeley.

Samuels, S.R.
2006 Ozette Household Production. In *Household Archaeology on the Northwest Coast*, edited by Elizabeth A. Sobel, D. Ann Trieu Gahr and Kenneth M. Ames, pp. 200-232. Archaeological Series 16. International Monographs in Prehistory: Ann Arbor, Michigan.

Samuels, S.R. and R.D. Daugherty

1991 Introduction to the Ozette Archaeological Project. In *Ozette Archaeological Project Research Reports, Volume 1, House Structure and Floor Midden*. Washington State University, Department of Anthropology Reports of Investigations 63. Washington State University: Pullman, WA.

Sassaman, Kenneth E.

2004 Complex Hunter-Gatherers in Evolution and History: A North American Perspective. *Journal of Archaeological Research* 12(3):227-280.

Schoener, T.

1979 Generality of the size-distance relation in models of optimal feeding. *American Naturalist* 114: 902-914.

Sigler M.F., J.N. Womble, and J.J. Vollenweider

2004 Availability to Steller sea lions (*Eumetopias jubatus*) of a seasonal prey resource: a prespawning aggregation of eulachon (*Thaleichthys pacificus*). *Canadian Journal of Fisheries and Aquatic Science* 61:1475–1484.

Smith, Bruce D.

2001 Low-Level Food Production. *Journal of Archaeological Research* 9(1):1-43.

2005 Low-Level Food Production and the Northwest Coast. In *Keeping it Living: Traditions of Plant Use and Cultivation on the Northwest Coast of North America*, edited by Douglas Deur and Nancy J. Turner, pp. 37-66. UBC Press: Vancouver.

Smith, Cameron M.

2006 Formation Processes of a Lower Columbia River Plankhouse Site. In *Household Archaeology on the Northwest Coast*, edited by Elizabeth A. Sobel, D. Ann Trieu Gahr and Kenneth M. Ames, pp. 233-269. Archaeological Series 16. International Monographs in Prehistory: Ann Arbor, Michigan.

Smith, E.A.

1983 Anthropological Applications of Optimal Foraging Theory: A Critical Review. *Current Anthropology* 24(5): 625-651.

Sobel, Elizabeth A.

2006 Household Prestige and Exchange in Northwest Coast Societies: A Case Study from the Lower Columbia River Valley. In *Household Archaeology on the Northwest Coast*, edited by Elizabeth A. Sobel, D. Ann Trieu Gahr and Kenneth M. Ames, pp. 159-199. Archaeological Series 16. International Monographs in Prehistory: Ann Arbor, Michigan.

Stern, Theodore

1966 *The Klamath Tribe: A People and Their Reservation.* American Ethnological Society Monograph 41. University of Washington Press: Seattle, WA.

Sullivan, T.M., R.W. Butler, and W.S. Boyd
2002 Seasonal distribution of waterbirds in relation to spawning Pacific herring, *Clupea pallasi*, in the Strait of Georgia, British Columbia. *Canadian Field-Naturalist* 116:366–370.

Suttles, Wayne P.
1974 *The Economic Life of the Coast Salish of Haro and Rosario Straits*. American Indian Ethnohistory, Coast Salish and Western Washington Indians 1. Garland Publishing Inc.: New York.

1987 *Coast Salish Essays*. Talonbooks: Vancouver, BC.

1987a Affinial Ties, Subsistence, and Prestige among the Coast Salish. In *Coast Salish Essays*, by Wayne P. Suttles, pp. 15-25. Talonbooks: Vancouver.

1987b Coping with Abundance: Subsistence on the Northwest Coast. In *Coast Salish Essays*, by Wayne P. Suttles, pp. 45-63. Talonbooks: Vancouver.

1990a History of Research: Early Sources. In *Northwest Coast*, edited by Wayne Suttles, pp. 70-72. Handbook of North American Indians, Vol. 7, William C. Sturtevant, general editor. Smithsonian Institution: Washington, D.C.

1990b Central Coast Salish. In *Northwest Coast*, edited by Wayne Suttles, pp. 453-475. Handbook of North American Indians, Vol. 7, William C. Sturtevant, general editor. Smithsonian Institution: Washington, D.C.

Suttles, Wayne and Aldona C. Jonaitis
1990 History of Research in Ethnology. In *Northwest Coast*, edited by Wayne Suttles, pp. 73-87. Handbook of North American Indians, Vol. 7, William C. Sturtevant, general editor. Smithsonian Institution: Washington, D.C.

Treganza, Adan E.
1945 The "Ancient Stone Fish Traps" of the Coachella Valley, Southern California. *American Antiquity* 10(3):285-294.

Trost, Teresa
2005 *Forgotten Waters: A Zooarchaeological Analysis of the Cove Cliff Site (DhRr-18), Indian Arm, British Columbia*. Unpublished MA Thesis, Department of Archaeology, Simon Fraser University.

Tveskov, Mark A. and Jon M. Erlandson
2003 The Haynes Inlet weirs: estuarine fishing and archaeological site visibility on the southern Cascadia coast. *Journal of Archaeological Science* 30:1023-1035.

Ugan, Andrew, Jason Bright and Alan Rogers
2003 When is technology worth the trouble? *Journal of Archaeological Science* 30:1315-1329.

Van Tilburg, Hans
2002 Underwater Archaeology, Hawaiian Style. In *International Handbook of Underwater Archaeology* edited by Carol V. Ruppe and Janet F. Barstad, pp. 247-265. Kluwer Academic/Plenum Publishers: New York, 2002

Waterbolk, H.T.
1981 Archaeology in the Netherlands: Delta Archaeology. *World Archaeology* 13(2):240-254.

Welz, Aara I.
2002 *Fish Trap Placement! The Environmental and Cultural Influences in Fish Trap Placement along the Australian Coastline*. Unpublished BA(Honours) Thesis, Department of Archaeology, Flinders University of South Australia. Accessed online, http://ehlt.flinders.edu.au/archaeology/department/publications/PDF%20Theses/Aara%20Welz.pdf, May 28, 2008.

White, Elroy A.F./Xanius
2006 *Heiltsuk Stone Fish Traps: Products of my Ancestor's Labour*. Unpublished MA Thesis, Department of Archaeology, Simon Fraser University.

Wigen, R.J. and B.R. Stucki
1988 Taphonomy and Stratigraphy in the Interpretation of Economic Patterns at Hoko River Rockshelter. *Research in Economic Anthropology,* Supplement 3:87-146.

Wilk, Richard R. and William L. Rathje
1982 Household Archaeology. *American Behavioral Scientist* 25(6): 617-639.

Williams, D.
1979 'Preceramic fishtraps on the Upper Essequibo: report on a survey of unusual petroglyphs on the Upper Essequibo and Kassikaityu rivers 12-28 March, 1979'. *Journal of Archaeology and Anthropology* 2(2): 125-140.

Wilson, Ian R.
1991 *Monitoring of Lot C, Plan 49201, Comox Bay, Site DkSf-19.* Report on file at the Heritage Resource Centre, Ministry of Small Business, Tourism and Culture, Victoria, B.C.

Winterhalder, B.
1981 Optimal Foraging Strategies and Hunter-Gatherer Research in Anthropology: Theory and Models. In *Hunter-Gatherer Foraging Strategies Ethnographic and Archaeological Analyses*, edited by B. Winterhalder and E.A. Smith, pp. 13-35.

1987 The Analysis of Hunter-Gatherer Diets: Stalking an Optimal Foraging Model. In *Food and Evolution: Toward a Theory of Human Food Habits*, pp. 311-339.

Winters, H.D.
1974 Introduction to the new edition. In *Indian Knoll*, by W.S. Webb, pp. v-xxvii. University of Tennessee Press, Knoxville.

Yesner, D.R.
1980 Maritime hunter-gatherers: ecology and prehistory. *Current Anthropology* 21:727-750.

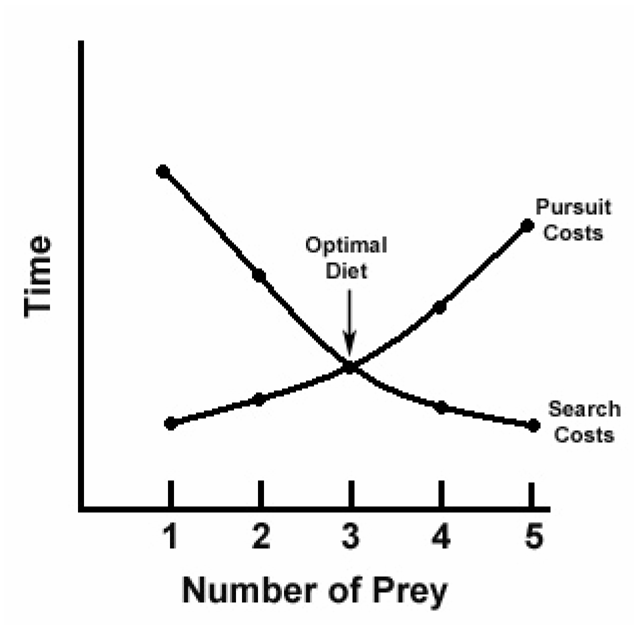
Zvelebil, M.
1986 Mesolithic Socities and the Transition to Farming: Problems of Time, Scale and Organization. In *Hunters in Transition: Mesolithic Societies of Temperate Eurasia and Their Transition to Farming*, edited by M. Zvelebil, pp. 167-188. Cambridge University Press: Cambridge.

# Appendix A

# Functions and Formulae for Optimal Foraging Models

**Prey Choice**

This graph represents an optimal diet, with search costs per unit harvest decreasing and pursuit costs per harvest increasing as more prey are added to the diet. The optimal diet is made up by all those items to the left of the optimal diet indicator. (After Smith 1980:628, Figure 1)

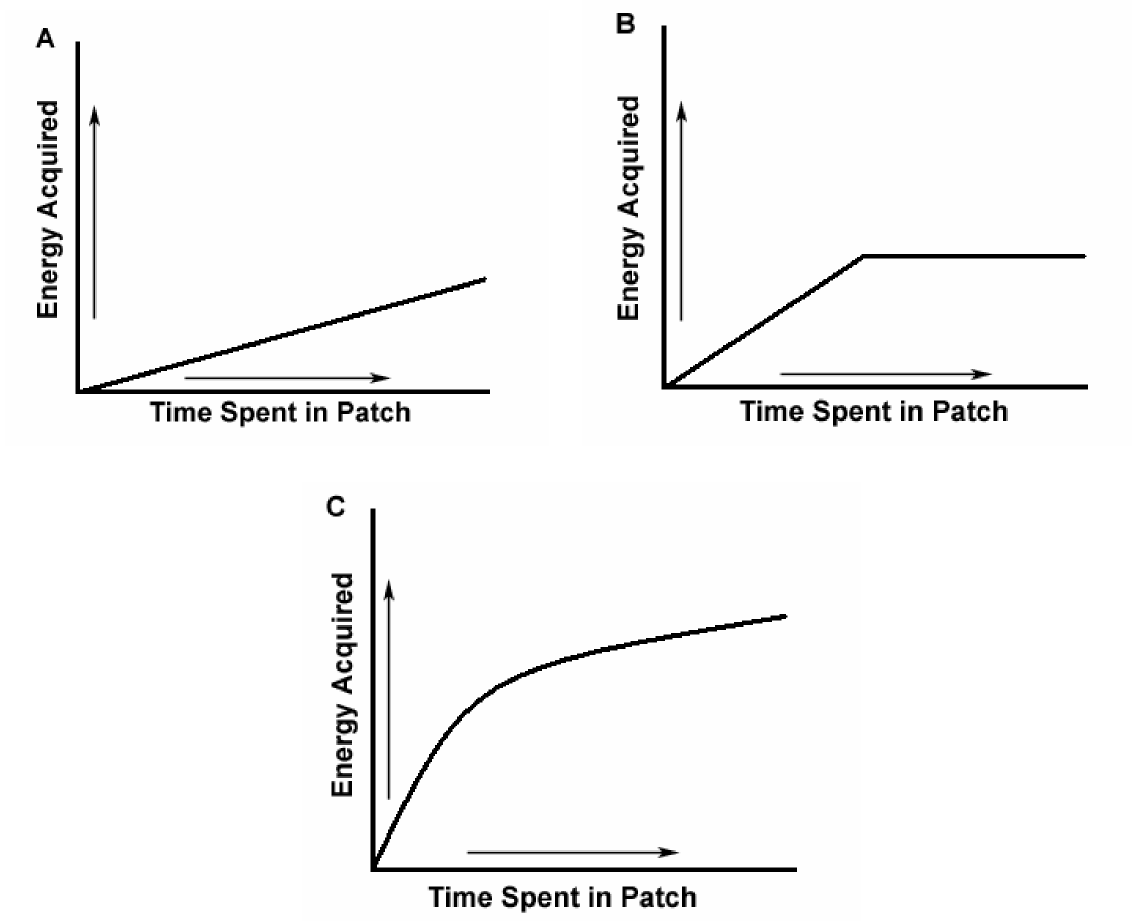



The algebraic formula for calculating optimal diet using the prey choice (diet-breadth) model was originally presented by Charnov (1973). According to this formula, a prey type is included in the optimal set if it's energy return ($E_1$) per handling time ($h_1$) is higher than the average engery return rate for all prey of higher rank. $\lambda$ represents the encounter rate with each prey type.

$$\frac{E_i}{h_i} > \frac{\Sigma\lambda_i \cdot E_i}{\Sigma\lambda_i \cdot h_i + 1}$$

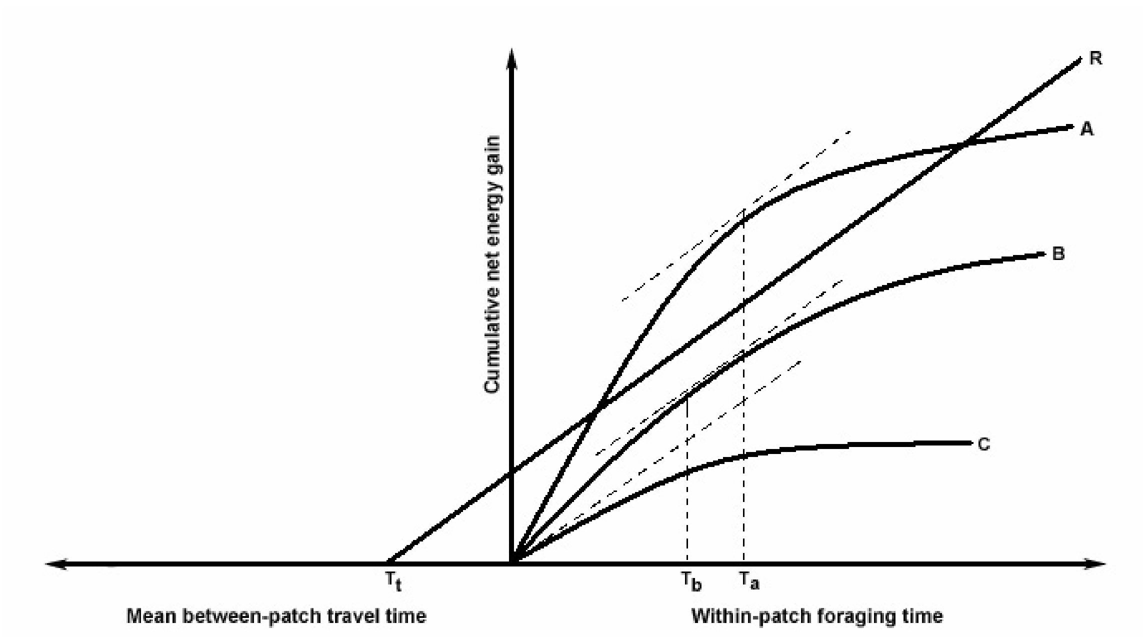
## Patch Choice

These graphs are idealized models of resources acquired as a function of time spent in a patch. In A, the patch does not become depleted and so the amount of resources acquired grows as time passes. In B, the patch becomes depleted, but there is a constant return rate until the last resource is gone. And in C, a patch is progressively depleted or search time increases over time (after Kaplan and Hill 1992:178, Figure 6.3).



## Marginal Value Theorem

This graph represents the marginal value theorem. In this graph, the line along the bottom symbolizes time. The curves labeled *A, B,* and *C* represent declining net return rates for three patches. Slope *R* represents the average capture rate for the entire set of patches. Optimal time allocation for each patch is indicated by highest line tangents matched to the return rate curves, parallel to *R*. Connecting the tangent perpendicularly to the line for time at the bottom results in the optimal time allocation (after Smith 1983:632, Figure 4).



## Appendix B

## Samples from the Courtenay District Museum and Archives

Appendix B Table 1 Table of weights and volumes for Area 4, Courtenay River District Museum and Archives Samples

| Westing | Northing | Depth (cmbs) | Comments | Total Weight (g) | Total Volume (ml) | Sampled Weight (g) | Sampled Volume (ml) | Remaining Volume (ml) | <2.36mm Volume | <2.36mm Weight |
|---|---|---|---|---|---|---|---|---|---|---|
| 15 | 5 | 0-20cm | | 404 | 300 | 264 | 200 | 100 | 150 | 165.47 |
| 15 | 5 | 20-30cm | | 322 | 200 | 232 | 150 | 50 | 140 | 179.54 |
| 15 | 5 | 30-40cm | | 384 | 250 | 274 | 150 | 100 | 130 | 172.44 |
| 15 | 5 | 40-50cm | | 252 | 150 | 172 | 100 | 50 | 90 | 102.38 |
| 15 | 5 | 50-60cm | | 274 | 150 | 172 | 100 | 50 | 90 | 124.25 |
| 15 | 5 | 60-70cm | | 414 | 250 | 278 | 150 | 100 | 130 | 212.61 |
| 15 | 5 | 70-80cm | | 382 | 200 | 302 | 150 | 50 | 140 | 272.24 |
| 15 | 5 | 80-90cm | Auger End | 272 | 150 | 188 | 100 | 50 | 90 | 162.58 |
| 10 | 5 | 0-10cm | | 238 | 200 | 164 | 150 | 50 | 100 | 104.53 |
| 10 | 5 | 10-20cm | | 390 | 300 | 270 | 200 | 100 | 180 | 180.58 |
| 10 | 5 | 20-30cm | | 472 | 350 | 344 | 250 | 100 | 220 | 231.73 |
| 10 | 5 | 30-40cm | | 514 | 350 | 378 | 250 | 100 | 230 | 284.98 |
| 10 | 5 | 40-50cm | | 496 | 350 | 364 | 250 | 100 | 210 | 274.88 |
| 10 | 5 | 50-60cm | | 568 | 400 | 442 | 300 | 100 | 280 | 355.96 |
| 10 | 5 | 60-70cm | | 558 | 400 | 432 | 300 | 100 | 265 | 347.35 |
| 10 | 5 | 70-80cm | | 486 | 300 | 308 | 200 | 100 | 180 | 207.69 |
| 10 | 5 | 80-90cm | | 492 | 300 | 370 | 200 | 100 | 180 | 263.28 |
| 10 | 5 | 90-100cm | | 616 | 350 | 444 | 250 | 100 | 240 | 366.57 |
| 10 | 5 | 100-110cm | Auger End | 380 | 200 | 300 | 150 | 50 | 140 | 286.12 |
| 5 | 30 | 0-10cm | | 148 | 100 | 80 | 50 | 50 | 40 | 45.91 |
| 5 | 30 | 10-20cm | | 256 | 200 | 188 | 150 | 50 | 110 | 120.37 |
| 5 | 30 | 20-30cm | | 212 | 200 | 160 | 150 | 50 | 110 | 116.79 |
| 5 | 30 | 30-40cm | | 460 | 400 | 352 | 300 | 100 | 250 | 239.66 |
| 5 | 30 | 40-50cm | | 394 | 300 | 260 | 200 | 100 | 180 | 187.67 |
| 5 | 30 | 50-60cm | | 298 | 200 | 226 | 150 | 50 | 130 | 164.29 |
| 5 | 30 | 60-70cm | | 344 | 200 | 248 | 150 | 50 | 140 | 222.97 |
| 5 | 30 | 70-80cm | | 328 | 200 | 238 | 150 | 50 | 140 | 226.53 |
| 5 | 30 | 80-90cm | Auger End | 360 | 150 | 238 | 100 | 50 | 110 | 232.71 |
| 5 | 25 | 0-20cm | | 516 | 350 | 360 | 250 | 100 | 200 | 200.21 |
| 5 | 25 | 20-30cm | | 340 | 200 | 192 | 150 | 50 | 100 | 117.15 |
| 5 | 25 | 30-40cm | | 402 | 250 | 254 | 150 | 100 | 140 | 190.23 |
| 5 | 25 | 40-50cm | | 240 | 200 | 180 | 150 | 50 | 110 | 116.81 |
| 5 | 25 | 50-60cm | | 292 | 200 | 210 | 150 | 50 | 130 | 138.33 |
| 5 | 25 | 60-70cm | | 330 | 200 | 204 | 150 | 50 | 140 | 154.44 |
| 5 | 25 | 70-80cm | Auger End | 256 | 150 | 196 | 100 | 50 | 90 | 122.21 |
| 5 | 5 | 0-20cm | | 256 | 200 | 200 | 150 | 50 | 110 | 120.72 |
| 5 | 5 | 20-30cm | | 282 | 200 | 210 | 150 | 50 | 130 | 157.02 |
| 5 | 5 | 30-40cm | | 546 | 350 | 390 | 250 | 100 | 230 | 307.14 |
| 5 | 5 | 40-50cm | | 334 | 200 | 250 | 150 | 50 | 140 | 217.38 |
| 5 | 5 | 50-60cm | | 298 | 200 | 208 | 150 | 50 | 130 | 168.57 |
| 5 | 5 | 60-70cm | | 390 | 200 | 262 | 150 | 50 | 140 | 213.87 |
| 5 | 5 | 70-80cm | | 520 | 300 | 310 | 225 | 75 | 190 | 294.85 |
| 5 | 5 | 80-90cm | * | 312 | 200 | 238 | 150 | 50 | 140 | 205.98 |

* sample continues to 120cmbs, however material from 90-110cmbs is missing so depth greater than 90cmbs is not considered here

# Appendix C

# Soil pH Analysis – Correlation

Appendix C Table 1 Soil pH, NSP and NSP/L values and ranks

| Sample | Depth | pH Value | pH Rank | 2.36mm NSP | Rank | 2.36mm NSP/L | Rank | 1.5mm NSP | Rank | 1.5mm NSP/L | Rank | Combined NSP | Rank | Combined NSP/L | Rank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | 0-12.5 | 7.18 | 6 | 8 | 6 | 10 | 6 | 2 | 6 | 8 | 6 | 10 | 6 | 13 | 6 |
| 9 | 12.5-19 | 7.34 | 5 | 23 | 5 | 31 | 4.5 | 7 | 5 | 28 | 5 | 30 | 5 | 40 | 5 |
| 9 | 19-30 | 7.48 | 4 | 29 | 4 | 31 | 4.5 | 32 | 3 | 128 | 3 | 61 | 3 | 64 | 4 |
| 9 | 30-36 | 7.56 | 2 | 52 | 1 | 52 | 3 | 33 | 2 | 132 | 2 | 85 | 1 | 85 | 3 |
| 9 | 36-40.5 | 7.57 | 1 | 44 | 2 | 68 | 2 | 39 | 1 | 156 | 1 | 83 | 2 | 128 | 1 |
| 9 | 40.5-42 | 7.53 | 3 | 34 | 3 | 76 | 1 | 20 | 4 | 80 | 4 | 54 | 4 | 120 | 2 |
| Column | 0-20 | 7.48 | 9.5 | 85 | 9 | 106 | 10 | 8 | 9.5 | 32 | 9.5 | 93 | 10 | 116 | 10 |
| Column | 20-40 | 7.55 | 2 | 330 | 4.5 | 220 | 3 | 10 | 9.5 | 40 | 9.5 | 340 | 5 | 227 | 3 |
| Column | 40-50 | 7.51 | 7 | 410 | 3 | 357 | 1 | 36 | 4 | 144 | 4 | 446 | 3 | 388 | 1 |
| Column | 50-60 | 7.61 | 1 | 504 | 1 | 315 | 2 | 24 | 6 | 96 | 6 | 528 | 1.5 | 330 | 2 |
| Column | 60-70 | 7.52 | 5 | 330 | 4.5 | 122 | 9 | 60 | 1 | 240 | 1 | 390 | 4 | 144 | 9 |
| Column | 70-80 | 7.54 | 3 | 500 | 2 | 182 | 5 | 30 | 5 | 120 | 5 | 530 | 1.5 | 193 | 6.5 |
| Column | 80-90 | 7.48 | 9.5 | 202 | 7 | 176 | 6 | 20 | 7 | 80 | 7 | 222 | 8 | 193 | 6.5 |
| Column | 90-100 | 7.51 | 7 | 124 | 8 | 165 | 8 | 40 | 3 | 160 | 3 | 164 | 9 | 219 | 4 |
| Column | 100-110 | 7.53 | 4 | 314 | 5 | 185 | 4 | 11 | 8 | 44 | 8 | 325 | 6 | 191 | 8 |
| Column | 110-120 | 7.51 | 7 | 224 | 6 | 166 | 7 | 51 | 2 | 204 | 2 | 275 | 7 | 204 | 5 |
| 40 | 0-16 | 7.7 | 4 | 23 | 14 | 38 | 14 | 11 | 14 | 44 | 14 | 34 | 14 | 57 | 14 |
| 40 | 16-27 | 7.86 | 1 | 2918 | 1 | 7295 | 1 | 661 | 1 | 2644 | 1 | 3579 | 1 | 8948 | 1 |
| 40 | 27-37 | 7.81 | 2 | 965 | 2 | 1608 | 2 | 131 | 4 | 524 | 4 | 1096 | 2 | 1827 | 2 |
| 40 | 37-47 | 7.75 | 3 | 199 | 7 | 332 | 5 | 57 | 9.5 | 228 | 9.5 | 256 | 8 | 427 | 6 |
| 40 | 47-62 | 7.46 | 14 | 72 | 13 | 80 | 13 | 84 | 7 | 336 | 7 | 156 | 12 | 173 | 12 |
| 40 | 62-82 | 7.57 | 9 | 223 | 5 | 279 | 7 | 35 | 13 | 140 | 13 | 259 | 7 | 324 | 8 |
| 40 | 82-88 | 7.64 | 5 | 229 | 4 | 416 | 4 | 133 | 3 | 532 | 3 | 362 | 4 | 658 | 4 |
| 40 | 88-88 | 7.63 | 6 | 206 | 6 | 317 | 6 | 90 | 6 | 360 | 6 | 296 | 6 | 455 | 5 |
| 40 | 88-91.5 | 7.55 | 11.5 | 279 | 3 | 429 | 3 | 241 | 2 | 964 | 2 | 520 | 3 | 800 | 3 |
| 40 | 91.5-93 | 7.6 | 8 | 197 | 8 | 232 | 9 | 55 | 11 | 220 | 11 | 252 | 9 | 296 | 9 |
| 40 | 93-99.5 | 7.56 | 10 | 186 | 9 | 233 | 8 | 121 | 5 | 484 | 5 | 307 | 5 | 384 | 7 |
| 40 | 99.5-101 | 7.53 | 13 | 158 | 10 | 186 | 10 | 56 | 9.5 | 224 | 9.5 | 214 | 10 | 252 | 10 |
| 40 | 101-106 | 7.62 | 7 | 98 | 11 | 140 | 11 | 59 | 8 | 236 | 8 | 157 | 11 | 224 | 11 |
| 40 | 106-115 | 7.55 | 11.5 | 92 | 12 | 88 | 12 | 36 | 12 | 144 | 12 | 128 | 13 | 122 | 13 |
| 10W5N | 0-10 | 7.07 | 11 | 19 | 9 | 190 | 5 | 32 | 9 | 320 | 7 | 52 | 9 | 520 | 7 |
| 10W5N | 10-20 | 7.39 | 9.5 | 30 | 7 | 167 | 7 | 66 | 6 | 367 | 4 | 96 | 7 | 533 | 5 |
| 10W5N | 20-30 | 7.46 | 4.5 | 28 | 8 | 127 | 9 | 58 | 7 | 264 | 8 | 86 | 8 | 391 | 9 |
| 10W5N | 30-40 | 7.43 | 7.5 | 46 | 3 | 200 | 4 | 88 | 5 | 383 | 3 | 134 | 4 | 583 | 4 |
| 10W5N | 40-50 | 7.39 | 9.5 | 56 | 2 | 267 | 2 | 55 | 8 | 262 | 9 | 111 | 6 | 529 | 6 |
| 10W5N | 50-60 | 7.56 | 3 | 37 | 5 | 132 | 8 | 98 | 3 | 350 | 6 | 135 | 3 | 482 | 8 |
| 10W5N | 60-70 | 7.43 | 7.5 | 72 | 1 | 272 | 1 | 93 | 4 | 351 | 5 | 165 | 1 | 623 | 3 |
| 10W5N | 70-80 | 7.44 | 6 | 41 | 4 | 228 | 3 | 114 | 1 | 633 | 1 | 156 | 2 | 867 | 1 |
| 10W5N | 80-90 | 7.46 | 4.5 | 32 | 6 | 178 | 6 | 99 | 2 | 550 | 2 | 131 | 5 | 728 | 2 |
| 10W5N | 90-100 | 7.59 | 2 | 7 | 10 | 29 | 10 | 6 | 11 | 25 | 11 | 13 | 10 | 54 | 11 |
| 10W5N | 100-110 | 7.72 | 1 | 4 | 11 | 24 | 11 | 7 | 10 | 41 | 10 | 11 | 11 | 65 | 10 |

Appendix C Table 2 Values of $r_s$ at the 0.05 and 0.01 levels of confidence (after Levin 1977:277, Table G)

| *N* | 0.05 | 0.01 |
|---|---|---|
| 5 | 1.000 | ---- |
| 6 | 0.886 | 1.000 |
| 7 | 0.786 | 0.929 |
| 8 | 0.738 | 0.881 |
| 9 | 0.683 | 0.833 |
| 10 | 0.648 | 0.794 |
| 12 | 0.591 | 0.777 |
| 14 | 0.544 | 0.714 |
| 16 | 0.506 | 0.665 |
| 18 | 0.475 | 0.625 |
| 20 | 0.450 | 0.591 |
| 22 | 0.428 | 0.562 |
| 24 | 0.409 | 0.537 |
| 26 | 0.392 | 0.515 |
| 28 | 0.377 | 0.496 |
| 30 | 0.364 | 0.478 |

# Appendix D

## Interviews with K'omoks Elders

## Questions from the first round of interviews, April and May 2007

1. What can you tell me about the fish traps located in Comox Harbour?
2. How were the traps constructed? What were the materials used? Who constructed the traps?
3. What types of activities enabled the upkeep of traps? Who did this, and by what means?
4. Who owned the fish traps? If not directly owned, were there means by which a form of ownership might have been enacted (e.g.: ownership of house in which processing and preservation would be done adjacent to trap)?
5. What type of organization was enacted for the use of fish traps?
6. When were fish traps used? Were there times of specific non-use?
7. What fish species were targeted using these traps? Were different types of traps used for different species?
8. Were different fish species caught using the traps than those initially targeted?
9. How did the use of fish traps fit into the larger subsistence practices in Comox Harbour?
10. How did the use of fish traps, and the social organization involved, fit into the larger social organization in Comox Harbour?

## Questions from the second round of interviews, May 2008

1. The general idea for the fish traps in Comox Harbour has been that these structures were used to obtain salmon waiting to enter the river to spawn. However, the archaeological materials show that it is more likely that these traps were being used to harvest herring. What can you tell me about the use of herring?
2. While the amount of herring is unusually high, the amount of salmon is also unexpectedly low. Do you have any thoughts on why salmon might not be present in the archaeological record?
3. What do you know about traditional methods of herring fishing?
4. In what ways were herring processed after being brought back to shore?
5. In what ways were salmon processed after being caught? Could processing have been done on shore, removing the flesh from the skeleton, leading to the possibility that the under-representation of salmon is the result of those bones never making it to the village proper?
6. What can you tell me about the other species of fish identified within the assemblage? (Midshipman, Greenling, Rockfish, Flounder, Dogfish Shark, Perch)
7. How do you think these species were being caught? Is it possible that trap use extends to these species?

## Sample of Informed Consent From provided to interviewees at beginning of each interview

### Informed Consent Document

Research Project Title: Examining the role of fish traps in the emergence of cultural complexity on the Northwest Coast of North America

Researcher: Megan Caldwell, Department of Anthropology, University of Manitoba

Thesis Supervisor: Dr. Gregory Monks, Department of Anthropology, University of Manitoba

This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

This research entails an examination of the use of fish traps on the Northwest Coast of North America. Various lines of evidence will be undertaken, including archaeological excavation, ethnographic consultation, and interviews with Comox Band Elders. This information will be used to assess the role of fish traps as one form of subsistence practice in the increasing social complexity encountered at European contact. The use of traps, the ownership and social organization surrounding trap construction and use, how traps were integrated into the larger subsistence economy, and how use of traps might have fluctuated or changed through time are just some of the questions which might be considered as part of this research. Permission has been granted from the Chief and Council for my study of the use of fish traps to be undertaken in Comox Harbour.

Your participation in this research, in the form of interviews, will allow for a fuller examination of the questions outlined above. Specifically, the integration of First Nations knowledge into this research will allow for a more complete history of these fish traps. Any interviews will be conducted by myself, Megan Caldwell, and will be transcribed by hand and recorded using a digital voice recorder. Should you have any concerns with the use of this equipment, feel free to discuss them with myself, and another arrangement will be made. Ideally, we will conduct two interviews, one before and one following excavation in Comox Harbour. The interview prior to excavation will focus on more general questions regarding fish traps, social organization, and subsistence. Following excavation, I will share the results of my analysis of the fish remains, and we can discuss in more detail the use of traps as is reflected in the recovered remains.

All recorded interviews will be transcribed, and copies will be submitted to you for your review and approval. These copies are yours too keep, and copies of the paper transcripts and digital recordings will be left at the band office as well. Once you have approved the content of these interviews, I will incorporate the information into my thesis research, specifically in the interpretation of the use of fish traps. You may choose to remain anonymous, or give me the permission to cite you for any information included in the thesis and any publications resulting from my thesis. If you should choose to remain anonymous, your name will in no way be associated with the materials collected during the interview (notes, recordings, transcripts), and instead you will be cited as an 'informant'. As well, you may choose at anytime to withdraw, partially or completely, any statements made to me during our interviews.

If you choose to remain anonymous any transcripts, notes and recordings of the interviews (and any copies of them) will be disposed of. Recordings will be physically destroyed if in CD format, and any electronic copies will be erased. Transcripts and notes will be shredded and recycled. If you do not choose to remain anonymous, copies of any notes, recordings and transcripts of your interviews will be provided to yourself, and the Comox Band. As well, I will retain copies in my personal possession.

I expect that each interview will take no more than two hours to conduct, and will be conducted at a time that is convenient to you. An honorarium of $50/half-day will be provided for each interview as a token of my appreciation for your participation in this research.

Once my thesis has been defended, I will provide you with a copy of the thesis which will be yours to keep. As well, I will return and present the results of my thesis research to the Comox Band in the form of a public talk, outlining my conclusions, and allowing for feedback from the entire community.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and/or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

Researcher:
Megan Caldwell
Department of Anthropology
University of Manitoba
435 Fletcher Argue
Winnipeg, MB

Supervisor:
Dr. Gregory Monks
Department of Anthropology
University of Manitoba
435 Fletcher Argue
Winnipeg, MB

This research has been approved by the Joint-Faculty Research Ethics Board. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Secretariat at 474-7122, or e-mail margaret_bowman@umanitoba.ca. A copy of this consent form has been given to you to keep for your records and reference.

______________________________ ____________________

Participant's Signature Date

If you wish to remain anonymous, please initial here: ________ __________________

Initial Date

______________________________ ____________________

Researcher's Signature Date

# Appendix E

# Reports on Radiocarbon Analysis

This appendix contains the reports on radiocarbon analysis and calibration charts of each of the five samples submitted for radiocarbon analysis to Beta Analytic Inc. These items are reproduced here with permission.

Ms. Megan Caldwell — Report Date: 2/14/2008

University of Manitoba — Material Received: 1/21/2008

| Sample Data | Measured Radiocarbon Age | 13C/12C Ratio | Conventional Radiocarbon Age(*) |
|---|---|---|---|
| Beta - 240174 | 1810 +/- 70 BP | -1.9 o/oo | 2190 +/- 70 BP |
| SAMPLE : DkSf19:20-40 | | | |
| ANALYSIS : Radiometric-Standard delivery | | | |
| MATERIAL/PRETREATMENT : (shell): acid etch | | | |
| 2 SIGMA CALIBRATION : Cal AD 450 to 710 (Cal BP 1500 to 1240) | | | |
| Beta - 240175 | 1790 +/- 70 BP | -0.5 o/oo | 2190 +/- 70 BP |
| SAMPLE : DkSf19: 50-60 | | | |
| ANALYSIS : Radiometric-Standard delivery | | | |
| MATERIAL/PRETREATMENT : (shell): acid etch | | | |
| 2 SIGMA CALIBRATION : Cal AD 450 to 710 (Cal BP 1500 to 1240) | | | |
| Beta - 240176 | 1960 +/- 50 BP | -0.4 o/oo | 2370 +/- 60 BP |
| SAMPLE : DkSf19: 80-90 | | | |
| ANALYSIS : Radiometric-Standard delivery | | | |
| MATERIAL/PRETREATMENT : (shell): acid etch | | | |
| 2 SIGMA CALIBRATION : Cal AD 250 to 580 (Cal BP 1700 to 1370) | | | |

## CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-1.9:Delta-R=390±25:Glob res=-200 to 500:lab. mult=1)

**Laboratory number:** **Beta-240174**

**Conventional radiocarbon age:** **2190±70 BP**

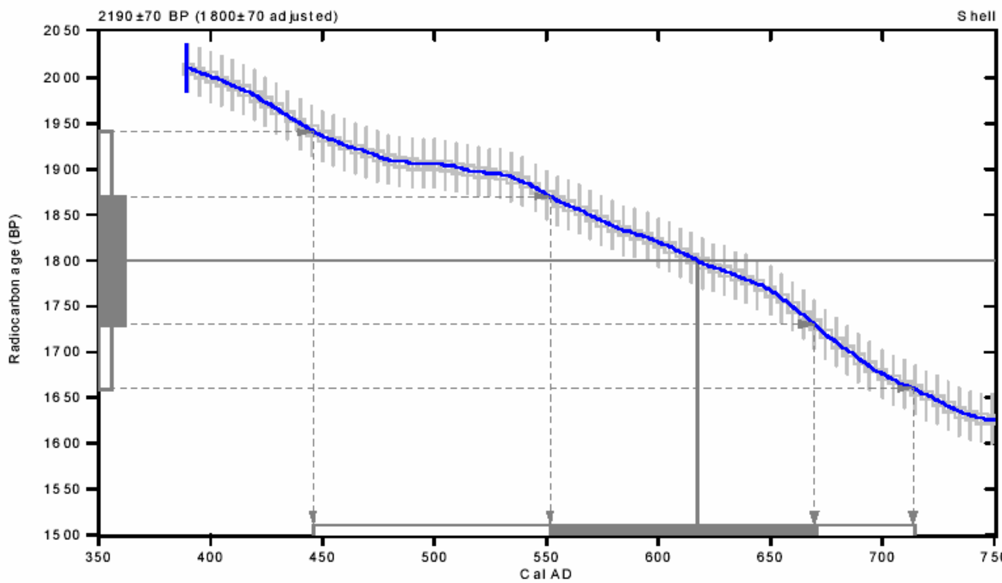
**(1800±70 adjusted for local reservoir correction)**

**2 Sigma calibrated result:** **Cal AD 450 to 710 (Cal BP 1500 to 1240)**
**(95% probability)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 620 (Cal BP 1330)

1 Sigma calibrated result: Cal AD 550 to 670 (Cal BP 1400 to 1280)
(68% probability)





References:

***Database used***
*MARINE04*
***Calibration Database***
***INTCAL04 Radiocarbon Age Calibration***
*IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).*
***Mathematics***
***A Simplified Approach to Calibrating C14 Dates***
*Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322*



**Beta Analytic Radiocarbon Dating Laboratory**

*4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com*

## CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-0.5:Delta-R=390±25:Glob res=-200 to 500:lab. mult=1)

**Laboratory number:** **Beta-240175**

**Conventional radiocarbon age:** **2190±70 BP**

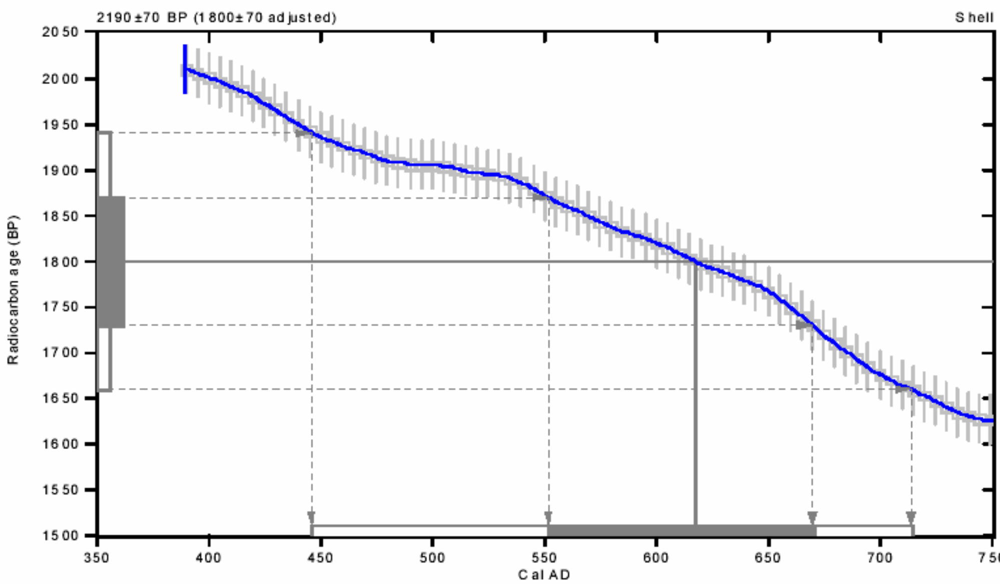
**(1800±70 adjusted for local reservoir correction)**

**2 Sigma calibrated result: (95% probability)** **Cal AD 450 to 710 (Cal BP 1500 to 1240)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 620 (Cal BP 1330)

1 Sigma calibrated result: (68% probability) Cal AD 550 to 670 (Cal BP 1400 to 1280)





References:

***Database used***
*MARINE04*
***Calibration Database***
***INTCAL04 Radiocarbon Age Calibration***
*IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).*
***Mathematics***
***A Simplified Approach to Calibrating C14 Dates***
*Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322*



**Beta Analytic Radiocarbon Dating Laboratory**

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## CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-0.4:Delta-R=390±25:Glob res=-200 to 500:lab. mult=1)

**Laboratory number:** **Beta-240176**

**Conventional radiocarbon age:** **2370±60 BP**

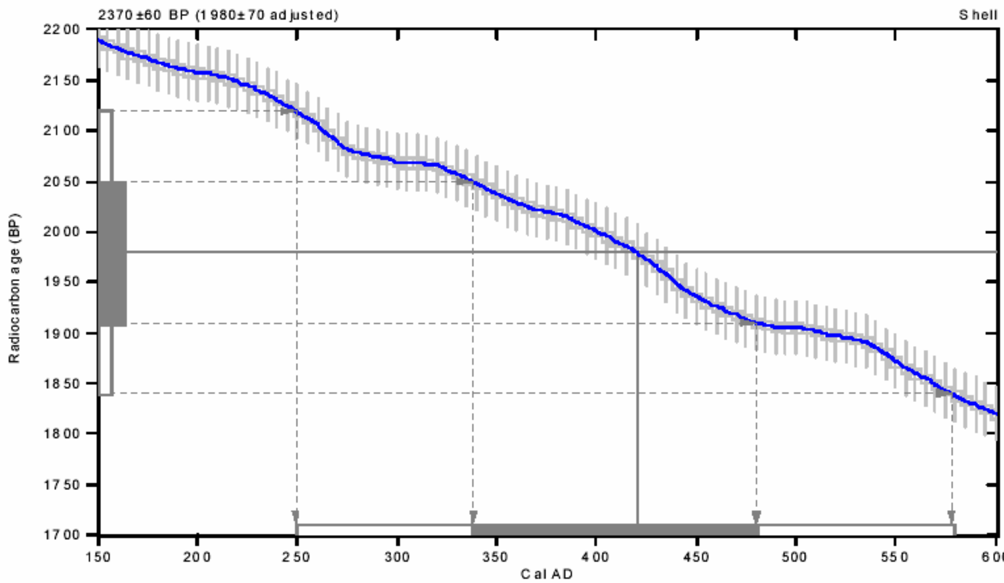
**(1980±70 adjusted for local reservoir correction)**

**2 Sigma calibrated result: (95% probability)** **Cal AD 250 to 580 (Cal BP 1700 to 1370)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 420 (Cal BP 1530)

1 Sigma calibrated result: (68% probability) Cal AD 340 to 480 (Cal BP 1610 to 1470)




References:


***Database used***
*MARINE04*
***Calibration Database***
***INTCAL04 Radiocarbon Age Calibration***
*IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).*
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BETA

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E-MAIL: beta@radiocarbon.com

# REPORT OF RADIOCARBON DATING ANALYSES

Ms. Megan Caldwell

University of Manitoba

Report Date: 3/13/2008

Material Received: 3/3/2008

| Sample Data | Measured Radiocarbon Age | 13C/12C Ratio | Conventional Radiocarbon Age(*) |
|---|---|---|---|
| Beta - 241997<br>SAMPLE : DkSf-19:40_1<br>ANALYSIS : Radiometric-Advance delivery<br>MATERIAL/PRETREATMENT : (shell): acid etch<br>2 SIGMA CALIBRATION : Cal AD 1520 to 1840 (Cal BP 430 to 110) | 610 +/- 50 BP | -0.8 o/oo | 1010 +/- 50 BP |
| Beta - 241998<br>SAMPLE : DkSf-19:40_2<br>ANALYSIS : Radiometric-Advance delivery<br>MATERIAL/PRETREATMENT : (shell): acid etch<br>2 SIGMA CALIBRATION : Cal AD 770 to 1080 (Cal BP 1180 to 870) | 1440 +/- 50 BP | -1.1 o/oo | 1840 +/- 60 BP |

Dates are reported as RCYBP (raduicarbon years before present, "present" = 1950A.D.). By International convention, the modern reference standard was 95% of the C14 content of the National Bureau of Standards' Oxalic Acid & calculated using the Libby C14 half life (5568 years). Quoted errors represent 1 standard deviation statistics (68% probability) & are based on combined measurements of the sample, background, and modern reference standards.

Measured C13/C12 ratios were calculated relative to the PDB-1 international standard and the RCYBP ages were normalized to -25 per mil. If the ratio and age are accompanied by an (*), then the C13/C12 value was estimated, based on values typical of the material type. The quoted results are NOT calibrated to calendar years. Calibration to calendar years should be calculated using the Conventional C14 age.

# CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-0.8:Delta-R=380±50:Glob res=-200 to 500:lab. mult=1)

**Laboratory number:** **Beta-241997**

**Conventional radiocarbon age:** **1010±50 BP**

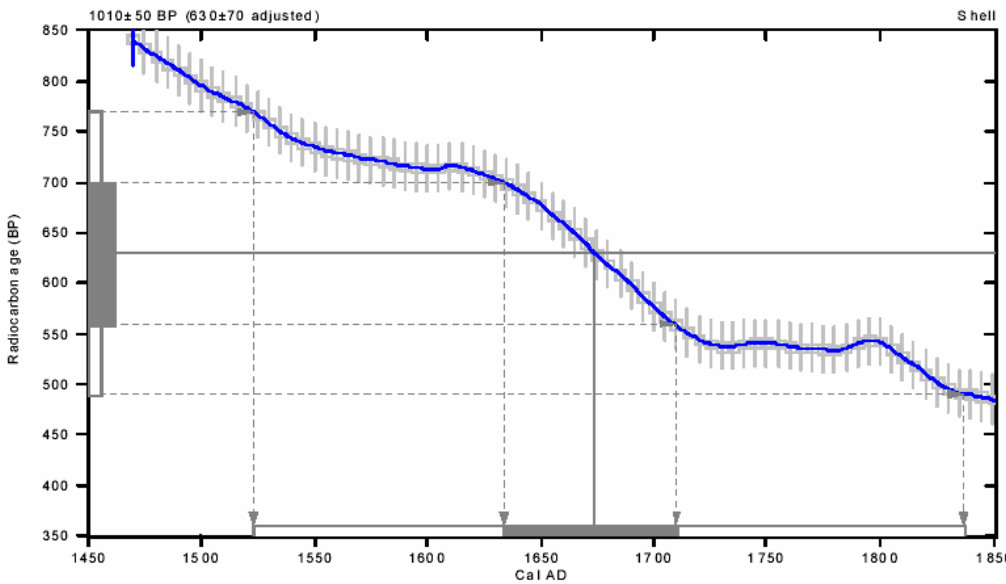
**(630±70 adjusted for local reservoir correction)**

**2 Sigma calibrated result:** **Cal AD 1520 to 1840 (Cal BP 430 to 110)**
**(95% probability)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 1670 (Cal BP 280)

1 Sigma calibrated result: Cal AD 1630 to 1710 (Cal BP 320 to 240)
(68% probability)





References:

***Database used***
*MARINE04*
***Calibration Database***
***INTCAL04 Radiocarbon Age Calibration***
*IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).*
***Mathematics***
***A Simplified Approach to Calibrating C14 Dates***
*Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322*



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## CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-1.1:Delta-R=380±50:Glob res=-200 to 500:lab. mult=1)

**Laboratory number:** **Beta-241998**

**Conventional radiocarbon age:** **1840±60 BP**

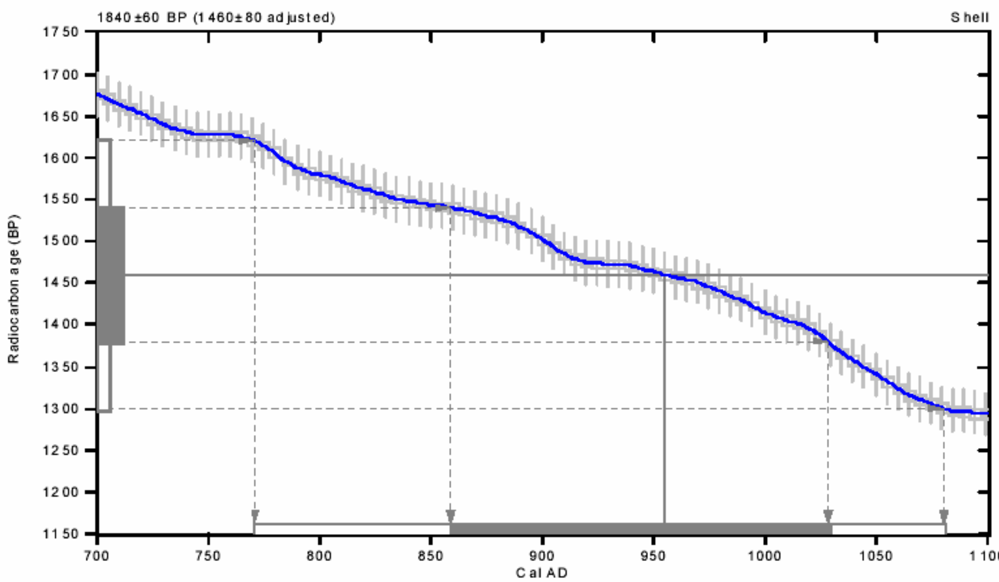
**(1460±80 adjusted for local reservoir correction)**

**2 Sigma calibrated result: (95% probability)** **Cal AD 770 to 1080 (Cal BP 1180 to 870)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 960 (Cal BP 1000)

1 Sigma calibrated result: (68% probability) Cal AD 860 to 1030 (Cal BP 1090 to 920)




References:


***Database used***
*MARINE04*
***Calibration Database***
***INTCAL04 Radiocarbon Age Calibration***
*IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).*
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## Appendix F

## Photographs of Q'umu?xs Village Site and Comox Harbour, British Columbia

Appendix F Figure 1  View of Area 1 from beach

Appendix F Figure 2  Example of disturbed matrix from Area 1

Appendix F Figure 3 View of Area 2 from beach

Appendix F Figure 4 View of Area 2 from beach

Appendix F Figure 5 Column Sample from Area 2

Appendix F Figure 6 View of Area 3

Appendix F Figure 7 Example of herring lens from Area 3

Appendix F Figure 8 View of Area 4

Appendix F Figure 9 Mapped wooden stake complex 1

Appendix F Figure 10 Mapped wooden stake complex 1

Appendix F Figure 11 Mapped wooden stake complex 2

Appendix F Figure 12 Wooden stake complexes on north shore near Areas 2, 3 and 4

Appendix F Figure 13 Heart-shaped wooden stake complex on south shore

Appendix F Figure 14 Heart-shaped wooden stake complex on south shore

Appendix F Figure 15 Chevron-shape wooden stake complex on south shore

# Appendix G

# Digital appendix of fish remains identifications

***(Provided as .pdf document on attached CD-rom)***

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 8 | 0-9 | 2.36 | 1 | Pacific Herring | Unidentifiable | Fragment | | | | 3 | |
| 1 | 8 | 0-9 | 2.36 | 1 | Pacific Herring | Vertebra | Centrum | | | 1 | | |
| 1 | 8 | 0-9 | 2.36 | 5 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 5 | |
| 1 | 8 | 9-19 | 2.36 | 5 | Pacific Herring | Vertebra | Centrum | | | 5 | | |
| 1 | 8 | 9-19 | 2.36 | 57 | Pacific Salmon | Vertebral Fragment | Centrum | | | 57 | | Calcined |
| 1 | 8 | 9-19 | 2.36 | 17 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 17 | |
| 1 | 8 | 9-19 | 2.36 | 1 | Unidentified | Unidentifiable | Fragment | | | | 1 | |
| 1 | 8 | 19-24.5 | 2.36 | 2 | Pacific Herring | Unidentifiable | Fragment | | | | 2 | |
| 1 | 8 | 19-24.5 | 2.36 | 16 | Pacific Herring | Vertebra | Centrum | | | 16 | | |
| 1 | 8 | 19-24.5 | 2.36 | 3 | Pacific Salmon | Vertebra | Centrum | | | 3 | | |
| 1 | 8 | 19-24.5 | 2.36 | 14 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 14 | |
| 1 | 8 | 19-24.5 | 2.36 | 2 | Unidentified | Unidentifiable | Fragment | | | | 2 | |
| 1 | 8 | 24.5-34.5 | 2.36 | 1 | Flatfish | Angular | Posterior | | 1 | | | |
| 1 | 8 | 24.5-34.5 | 2.36 | 1 | Midshipman | Ceratohyal | Central | | 1 | | | |
| 1 | 8 | 24.5-34.5 | 2.36 | 1 | Midshipman | Cleithrum | Central | 1 | | | | |
| 1 | 8 | 24.5-34.5 | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 1 | 8 | 24.5-34.5 | 2.36 | 5 | Pacific Herring | Unidentifiable | Fragment | | | | 5 | |
| 1 | 8 | 24.5-34.5 | 2.36 | 87 | Pacific Herring | Vertebra | Centrum | | | 87 | | |
| 1 | 8 | 24.5-34.5 | 2.36 | 1 | Surfperch | Vertebra | Centrum | | | 1 | | |
| 1 | 8 | 24.5-34.5 | 2.36 | 8 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 8 | |
| 1 | 8 | 34.5-38 | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 1 | 8 | 34.5-38 | 2.36 | 1 | Pacific Herring | Unidentifiable | Fragment | | | | 1 | |
| 1 | 8 | 34.5-38 | 2.36 | 25 | Pacific Herring | Vertebra | Centrum | | | 25 | | |
| 1 | 8 | 34.5-38 | 2.36 | 3 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 3 | |
| 1 | 8 | 38-41 | 2.36 | 6 | Pacific Herring | Vertebra | Centrum | | | 6 | | |
| 1 | 8 | 38-41 | 2.36 | 3 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 3 | |
| 1 | 9 | 0-12.5 | 1.5 | 1 | Pacific Herring | Vertebra | Centrum | | | 1 | | |
| 1 | 9 | 0-12.5 | 1.5 | 1 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 1 | |
| 1 | 9 | 12.5-19 | 1.5 | 3 | Pacific Herring | Unidentifiable | Fragment | | | | 3 | |
| 1 | 9 | 12.5-19 | 1.5 | 3 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 3 | |
| 1 | 9 | 12.5-19 | 1.5 | 1 | Unidentified | Unidentifiable | Fragment | | | | 1 | |
| 1 | 9 | 19-30 | 1.5 | 13 | Pacific Herring | Unidentifiable | Fragment | | | | 13 | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9 | 19-30 | 1.5 | 9 | Pacific Herring | Vertebra | Centrum | | | 9 | | |
| 1 | 9 | 19-30 | 1.5 | 2 | Pacific Salmon | Vertebral Fragment | Centrum | | | 2 | | |
| 1 | 9 | 19-30 | 1.5 | 4 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 4 | |
| 1 | 9 | 19-30 | 1.5 | 4 | Unidentified | Unidentifiable | Fragment | | | | 4 | |
| 1 | 9 | 30-36 | 1.5 | 16 | Pacific Herring | Unidentifiable | Fragment | | | | 16 | |
| 1 | 9 | 30-36 | 1.5 | 6 | Pacific Herring | Vertebra | Centrum | | | 6 | | |
| 1 | 9 | 30-36 | 1.5 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 1 | 9 | 30-36 | 1.5 | 10 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 10 | |
| 1 | 9 | 36-40.5 | 1.5 | 10 | Pacific Herring | Unidentifiable | Fragment | | | | 10 | |
| 1 | 9 | 36-40.5 | 1.5 | 6 | Pacific Herring | Vertebra | Centrum | | | 6 | | |
| 1 | 9 | 36-40.5 | 1.5 | 2 | Pacific Salmon | Vertebral Fragment | Centrum | | | 2 | | |
| 1 | 9 | 36-40.5 | 1.5 | 21 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 21 | |
| 1 | 9 | 40.5-42 | 1.5 | 7 | Pacific Herring | Unidentifiable | Fragment | | | | 7 | |
| 1 | 9 | 40.5-42 | 1.5 | 2 | Pacific Herring | Vertebra | Centrum | | | 2 | | |
| 1 | 9 | 40.5-42 | 1.5 | 9 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 9 | |
| 1 | 9 | 40.5-42 | 1.5 | 2 | Unidentified | Unidentifiable | Fragment | | | | 2 | |
| 1 | 9 | 0-12.5 | 2.36 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 1 | 9 | 0-12.5 | 2.36 | 1 | Pacific Herring | Vertebra | Centrum | | | 1 | | |
| 1 | 9 | 0-12.5 | 2.36 | 3 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 3 | |
| 1 | 9 | 0-12.5 | 2.36 | 3 | Unidentified | Unidentifiable | Fragment | | | | 3 | |
| 1 | 9 | 12.5-19 | 2.36 | 1 | Flatfish | Vertebra | Centrum | | | 1 | | |
| 1 | 9 | 12.5-19 | 2.36 | 9 | Pacific Herring | Vertebra | Centrum | | | 9 | | |
| 1 | 9 | 12.5-19 | 2.36 | 3 | Pacific Salmon | Vertebral Fragment | Centrum | | | 3 | | |
| 1 | 9 | 12.5-19 | 2.36 | 6 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 6 | |
| 1 | 9 | 12.5-19 | 2.36 | 4 | Unidentified | Unidentifiable | Fragment | | | | 4 | |
| 1 | 9 | 19-30 | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 1 | 9 | 19-30 | 2.36 | 8 | Pacific Herring | Unidentifiable | Fragment | | | | 8 | |
| 1 | 9 | 19-30 | 2.36 | 7 | Pacific Herring | Vertebra | Centrum | | | 7 | | |
| 1 | 9 | 19-30 | 2.36 | 8 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 8 | |
| 1 | 9 | 19-30 | 2.36 | 5 | Unidentified | Unidentifiable | Fragment | | | | 5 | |
| 1 | 9 | 30-36 | 2.36 | 1 | Flatfish | Cleithrum | Central | | 1 | | | |
| 1 | 9 | 30-36 | 2.36 | 1 | Flatfish | Posttemporal | Complete | 1 | | | | |

# DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 9 | 30-36 | 2.36 | 3 | Midshipman | Vertebra | Centrum | | | 3 | | |
| 1 | 9 | 30-36 | 2.36 | 4 | Pacific Herring | Unidentifiable | Fragment | | | | 4 | |
| 1 | 9 | 30-36 | 2.36 | 9 | Pacific Herring | Vertebra | Centrum | | | 9 | | |
| 1 | 9 | 30-36 | 2.36 | 3 | Pacific Salmon | Vertebral Fragment | Centrum | | | 3 | | |
| 1 | 9 | 30-36 | 2.36 | 18 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 18 | |
| 1 | 9 | 30-36 | 2.36 | 13 | Unidentified | Unidentifiable | Fragment | | | | 13 | |
| 1 | 9 | 36-40.5 | 2.36 | 1 | Flatfish | Vertebra | Centrum | | | 1 | | |
| 1 | 9 | 36-40.5 | 2.36 | 2 | Midshipman | Vertebra | Centrum | | | 2 | | |
| 1 | 9 | 36-40.5 | 2.36 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 1 | 9 | 36-40.5 | 2.36 | 2 | Pacific Herring | Unidentifiable | Fragment | | | | 2 | |
| 1 | 9 | 36-40.5 | 2.36 | 11 | Pacific Herring | Vertebra | Centrum | | | 11 | | |
| 1 | 9 | 36-40.5 | 2.36 | 4 | Pacific Salmon | Vertebral Fragment | Centrum | | | 4 | | |
| 1 | 9 | 36-40.5 | 2.36 | 2 | Spiny Dogfish | Vertebra | Centrum | | | 2 | | |
| 1 | 9 | 36-40.5 | 2.36 | 19 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 19 | |
| 1 | 9 | 36-40.5 | 2.36 | 2 | Unidentified | Unidentifiable | Fragment | | | | 2 | |
| 1 | 9 | 40.5-42 | 2.36 | 5 | Pacific Herring | Unidentifiable | Fragment | | | | 5 | |
| 1 | 9 | 40.5-42 | 2.36 | 6 | Pacific Herring | Vertebra | Centrum | | | 6 | | |
| 1 | 9 | 40.5-42 | 2.36 | 3 | Pacific Salmon | Vertebral Fragment | Centrum | | | 3 | | |
| 1 | 9 | 40.5-42 | 2.36 | 20 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 20 | |
| 1 | 13 | 0-6.5 | 2.36 | 3 | Pacific Herring | Atlas | Centrum | | | 3 | | |
| 1 | 13 | 0-6.5 | 2.36 | 1 | Pacific Herring | Unidentifiable | Fragment | | | | 1 | |
| 1 | 13 | 0-6.5 | 2.36 | 4 | Pacific Herring | Unidentified | Fragment | | | | 4 | |
| 1 | 13 | 0-6.5 | 2.36 | 36 | Pacific Herring | Vertebra | Centrum | | | 36 | | |
| 1 | 13 | 0-6.5 | 2.36 | 2 | Pacific Salmon | Tooth | Complete | | | | 2 | |
| 1 | 13 | 0-6.5 | 2.36 | 7 | Pacific Salmon | Vertebral Fragment | Centrum | | | 7 | | |
| 1 | 13 | 0-6.5 | 2.36 | 1 | Spiny Dogfish | Tooth | Complete | | | | 1 | |
| 1 | 13 | 0-6.5 | 2.36 | 1 | Surfperch | Vertebra | Centrum | | | 1 | | |
| 1 | 13 | 0-6.5 | 2.36 | 4 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 4 | |
| 1 | 13 | 0-6.5 | 2.36 | 2 | Unidentified | Unidentified | Fragment | | | | 2 | |
| 1 | 13 | 6.5-14.5 | 2.36 | 2 | Spiny Dogfish | Vertebra | Centrum | | | 2 | | |
| 1 | 13 | 6.5-14.5 | 2.36 | 10 | Pacific Herring | Atlas | Centrum | | | 10 | | |
| 1 | 13 | 6.5-14.5 | 2.36 | 4 | Pacific Herring | Cleithrum | Central | 3 | 1 | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13 | 6.5-14.5 | 2.36 | 2 | Pacific Herring | Hypural | Complete | | | 2 | | |
| 1 | 13 | 6.5-14.5 | 2.36 | 5 | Pacific Herring | Mesethmoid | Complete | | | 5 | | |
| 1 | 13 | 6.5-14.5 | 2.36 | 2 | Pacific Herring | Mesopterygoid | Central | 1 | 1 | | | |
| 1 | 13 | 6.5-14.5 | 2.36 | 1 | Pacific Herring | Posttemporal | Inferior | | 1 | | | |
| 1 | 13 | 6.5-14.5 | 2.36 | 112 | Pacific Herring | Unidentified | Fragment | | | | 112 | |
| 1 | 13 | 6.5-14.5 | 2.36 | 528 | Pacific Herring | Vertebra | Centrum | | | 528 | | |
| 1 | 13 | 6.5-14.5 | 2.36 | 2 | Pacific Herring | Vomer | Complete | | | 2 | | |
| 1 | 13 | 6.5-14.5 | 2.36 | 1 | Midshipman | Ceratohyal | Central | 1 | | | | |
| 1 | 13 | 6.5-14.5 | 2.36 | 1 | Midshipman | Premaxilla | Anterior and Central | | 1 | | | |
| 1 | 13 | 6.5-14.5 | 2.36 | 2 | Midshipman | Vertebra | Centrum | | | 2 | | |
| 1 | 13 | 6.5-14.5 | 2.36 | 4 | Flatfish | Unidentifiable | Fragment | | | | 4 | |
| 1 | 13 | 6.5-14.5 | 2.36 | 2 | Flatfish | Vertebra | Centrum | | | 2 | | |
| 1 | 13 | 6.5-14.5 | 2.36 | 36 | Pacific Salmon | Vertebral Fragment | Centrum | | | 36 | | |
| 1 | 13 | 6.5-14.5 | 2.36 | 57 | Unidentified | Rib/Ray/Spine | Incomplete | | | 57 | | |
| 1 | 13 | 6.5-14.5 | 2.36 | 3 | Unidentified | Unidentified | Fragment | | | | 3 | |
| 1 | 13 | 6.5-14.5 | 2.36 | 19 | Unidentified | Unidentified | Fragment | | | | 19 | |
| 1 | 13 | 14.5-21 | 2.36 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |
| 1 | 13 | 14.5-21 | 2.36 | 11 | Pacific Herring | Atlas | Centrum | | | 11 | | |
| 1 | 13 | 14.5-21 | 2.36 | 1 | Pacific Herring | Cleithrum | Central | 1 | | | | |
| 1 | 13 | 14.5-21 | 2.36 | 1 | Pacific Herring | Coracoid | Complete | | 1 | | | |
| 1 | 13 | 14.5-21 | 2.36 | 1 | Pacific Herring | Epihyal | Complete | 1 | | | | |
| 1 | 13 | 14.5-21 | 2.36 | 2 | Pacific Herring | Mesethmoid | Complete | | | 2 | | |
| 1 | 13 | 14.5-21 | 2.36 | 1 | Pacific Herring | Mesopterygoid | Central | | 1 | | | |
| 1 | 13 | 14.5-21 | 2.36 | 38 | Pacific Herring | Unidentified | Fragment | | | | 38 | |
| 1 | 13 | 14.5-21 | 2.36 | 89 | Pacific Herring | Vertebra | Centrum | | | 89 | | |
| 1 | 13 | 14.5-21 | 2.36 | 2 | Pacific Herring | Vomer | Complete | | | 2 | | |
| 1 | 13 | 14.5-21 | 2.36 | 3 | Flatfish | Unidentifiable | Fragment | | | | 3 | |
| 1 | 13 | 14.5-21 | 2.36 | 2 | Flatfish | Vertebra | Centrum | | | 2 | | |
| 1 | 13 | 14.5-21 | 2.36 | 1 | Greenling | Parasphenoid | Central | | | 1 | | |
| 1 | 13 | 14.5-21 | 2.36 | 1 | Greenling | Premaxilla | Anterior | 1 | | | 2 | |
| 1 | 13 | 14.5-21 | 2.36 | 3 | Pacific Salmon | Vertebra | Centrum | | | 3 | | |
| 1 | 13 | 14.5-21 | 2.36 | 15 | Pacific Salmon | Vertebral Fragment | Centrum | | | 15 | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 13 | 14.5-21 | 2.36 | 1 | Surfperch | Scapula | Complete | | 1 | | | |
| 1 | 13 | 14.5-21 | 2.36 | 5 | Surfperch | Vertebra | Centrum | | | 5 | | |
| 1 | 13 | 14.5-21 | 2.36 | 34 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 34 | |
| 1 | 13 | 14.5-21 | 2.36 | 30 | Unidentified | Unidentified | Fragment | | | | 30 | |
| 2 | 4 | 0-10 | 2.36 | 1 | Pacific Herring | Cleithrum | Central | | 1 | | | |
| 2 | 4 | 0-10 | 2.36 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 2 | 4 | 0-10 | 2.36 | 5 | Pacific Herring | Unidentifiable | Fragment | | | | 5 | |
| 2 | 4 | 0-10 | 2.36 | 4 | Pacific Herring | Vertebra | Centrum | | | 4 | | |
| 2 | 4 | 10-19 | 2.36 | 4 | Pacific Herring | Prootic | Central | 2 | 1 | | 1 | |
| 2 | 4 | 10-19 | 2.36 | 13 | Pacific Herring | Unidentifiable | Fragment | | | | 13 | |
| 2 | 4 | 10-19 | 2.36 | 30 | Pacific Herring | Vertebra | Centrum | | | 30 | | |
| 2 | 4 | 19-27 | 2.36 | 1 | Pacific Herring | Opercle | Complete | 1 | | | | |
| 2 | 4 | 19-27 | 2.36 | 1 | Pacific Herring | Pharyngobranchial | Complete | 1 | | | | |
| 2 | 4 | 19-27 | 2.36 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 2 | 4 | 19-27 | 2.36 | 1 | Pacific Herring | Subopercle | Central | | 1 | | | |
| 2 | 4 | 19-27 | 2.36 | 19 | Pacific Herring | Unidentifiable | Fragment | | | | 19 | |
| 2 | 4 | 19-27 | 2.36 | 22 | Pacific Herring | Vertebra | Centrum | | | 22 | | |
| 2 | 4 | 19-27 | 2.36 | 4 | Pacific Salmon | Vertebral Fragment | Centrum | | | 4 | | |
| 2 | 4 | 19-27 | 2.36 | 6 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 6 | |
| 2 | 4 | 19-27 | 2.36 | 3 | Unidentified | Unidentifiable | Fragment | | | | 3 | |
| 2 | 4 | 27-33 | 2.36 | 1 | Pacific Herring | Basioccipital | Complete | | | 1 | | |
| 2 | 4 | 27-33 | 2.36 | 2 | Pacific Herring | Prootic | Central | | 1 | | 1 | |
| 2 | 4 | 27-33 | 2.36 | 21 | Pacific Herring | Unidentifiable | Fragment | | | | 21 | |
| 2 | 4 | 27-33 | 2.36 | 37 | Pacific Herring | Vertebra | Centrum | | | 37 | | |
| 2 | 4 | 27-33 | 2.36 | 18 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 18 | |
| 2 | 4 | 33-36 | 2.36 | 2 | Pacific Herring | Prootic | Central | | | | 2 | |
| 2 | 4 | 33-36 | 2.36 | 10 | Pacific Herring | Unidentifiable | Fragment | | | | 10 | |
| 2 | 4 | 33-36 | 2.36 | 33 | Pacific Herring | Vertebra | Centrum | | | 33 | | |
| 2 | 4 | 33-36 | 2.36 | 1 | Spiny Dogfish | Vertebral Fragment | Centrum | | | 1 | | |
| 2 | 4 | 33-36 | 2.36 | 1 | Surfperch | Vertebral Fragment | Centrum | | | 1 | | |
| 2 | 4 | 33-36 | 2.36 | 8 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 8 | |
| 2 | 4 | 33-36 | 2.36 | 2 | Unidentified | Unidentifiable | Fragment | | | | 2 | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 4 | 36-43.5 | 2.36 | 1 | Pacific Herring | Posttemporal | Inferior | 1 | | | | |
| 2 | 4 | 36-43.5 | 2.36 | 10 | Pacific Herring | Unidentifiable | Fragment | | | | 10 | |
| 2 | 4 | 36-43.5 | 2.36 | 19 | Pacific Herring | Vertebra | Centrum | | | 19 | | |
| 2 | 4 | 36-43.5 | 2.36 | 9 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 9 | |
| 2 | 4 | 36-43.5 | 2.36 | 3 | Unidentified | Unidentifiable | Fragment | | | | 3 | |
| 2 | 4 | 43.5-47 | 2.36 | 2 | Pacific Herring | Unidentifiable | Fragment | | | | 2 | |
| 2 | 4 | 43.5-47 | 2.36 | 35 | Pacific Herring | Vertebra | Centrum | | | 35 | | |
| 2 | 4 | 43.5-47 | 2.36 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 2 | 4 | 43.5-47 | 2.36 | 4 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 4 | |
| 2 | 4 | 43.5-47 | 2.36 | 1 | Unidentified | Unidentifiable | Fragment | | | | 1 | |
| 2 | 4 | 47-56.5 | 2.36 | 15 | Pacific Herring | Vertebra | Centrum | | | 15 | | |
| 2 | 4 | 47-56.5 | 2.36 | 1 | Spiny Dogfish | Vertebral Fragment | Centrum | | | 1 | | |
| 2 | 4 | 47-56.5 | 2.36 | 1 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 1 | |
| 2 | 5 | 0-11 | 2.36 | 10 | Pacific Herring | Vertebra | Centrum | | | 10 | | |
| 2 | 5 | 0-11 | 2.36 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 2 | 5 | 0-11 | 2.36 | 8 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 8 | |
| 2 | 5 | 11-21 | 2.36 | 1 | Pacific Herring | Unidentifiable | Fragment | | | | 1 | |
| 2 | 5 | 11-21 | 2.36 | 2 | Pacific Herring | Vertebra | Centrum | | | 2 | | |
| 2 | 5 | 21-27 | 2.36 | 1 | Flatfish | Frontal | Complete | 1 | | | | |
| 2 | 5 | 21-27 | 2.36 | 2 | Flatfish | Vertebra | Centrum | | | 2 | | |
| 2 | 5 | 21-27 | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 2 | 5 | 21-27 | 2.36 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 2 | 5 | 21-27 | 2.36 | 10 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 10 | |
| 2 | 5 | 27-38 | 2.36 | 29 | Pacific Herring | Vertebra | Centrum | | | 29 | | |
| 2 | 5 | 27-38 | 2.36 | 1 | Pacific Herring | Vomer | Complete | | | 1 | | |
| 2 | 5 | 27-38 | 2.36 | 4 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 4 | |
| 2 | 5 | 38-40.5 | 2.36 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 2 | 5 | 38-40.5 | 2.36 | 14 | Pacific Herring | Vertebra | Centrum | | | 14 | | |
| 2 | 5 | 38-40.5 | 2.36 | 3 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 3 | |
| 2 | 5 | 38-40.5 | 2.36 | 6 | Unidentified | Unidentifiable | Fragment | | | | 6 | |
| 2 | 5 | 40.5-51 | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 2 | 5 | 40.5-51 | 2.36 | 5 | Pacific Herring | Vertebra | Centrum | | | 5 | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 5 | 40.5-51 | 2.36 | 1 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 1 | |
| 2 | 5 | 40.5-51 | 2.36 | 1 | Unidentified | Unidentifiable | Fragment | | | | 1 | |
| 2 | 5 | 51-58 | 2.36 | 15 | Pacific Herring | Vertebra | Centrum | | | 15 | | |
| 2 | 5 | 51-58 | 2.36 | 1 | Pacific Herring | Vomer | Complete | | | 1 | | |
| 2 | 5 | 51-58 | 2.36 | 3 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 3 | |
| 2 | 5 | 51-58 | 2.36 | 1 | Unidentified | Unidentifiable | Fragment | | | | 1 | |
| 2 | 5 | 58-62 | 2.36 | 1 | Pacific Herring | Hyomandibular | Superior | | 1 | | | |
| 2 | 5 | 58-62 | 2.36 | 1 | Pacific Herring | Opercle | Complete | | 1 | | | |
| 2 | 5 | 58-62 | 2.36 | 3 | Pacific Herring | Unidentifiable | Fragment | | | | 3 | |
| 2 | 5 | 58-62 | 2.36 | 16 | Pacific Herring | Vertebra | Centrum | | | 16 | | |
| 2 | 5 | 58-62 | 2.36 | 4 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 4 | |
| 2 | 5 | 62-71 | 2.36 | 1 | Midshipman | Quadrate | Anterior | | 1 | | | |
| 2 | 5 | 62-71 | 2.36 | 4 | Pacific Herring | Vertebra | Centrum | | | 4 | | |
| 2 | 5 | 62-71 | 2.36 | 2 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 2 | |
| 2 | 5 | 71-71.5 | 2.36 | 1 | Flatfish | Vertebra | Centrum | | | 1 | | |
| 2 | 5 | 71-71.5 | 2.36 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 2 | 5 | 71-71.5 | 2.36 | 5 | Pacific Herring | Unidentifiable | Fragment | | | | 5 | |
| 2 | 5 | 71-71.5 | 2.36 | 14 | Pacific Herring | Vertebra | Centrum | | | 14 | | |
| 2 | 5 | 71-71.5 | 2.36 | 4 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 4 | |
| 2 | 6 | 0-14 | 2.36 | 2 | Pacific Herring | Cleithrum | Central | 1 | 1 | | | |
| 2 | 6 | 0-14 | 2.36 | 1 | Pacific Herring | Hyomandibular | Superior | 1 | | | | |
| 2 | 6 | 0-14 | 2.36 | 1 | Pacific Herring | Pharyngobranchial | Complete | | 1 | | | |
| 2 | 6 | 0-14 | 2.36 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 2 | 6 | 0-14 | 2.36 | 5 | Pacific Herring | Unidentifiable | Fragment | | | | 5 | |
| 2 | 6 | 0-14 | 2.36 | 18 | Pacific Herring | Vertebra | Centrum | | | 18 | | |
| 2 | 6 | 0-14 | 2.36 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 2 | 6 | 0-14 | 2.36 | 1 | Unidentified | Otolith | Incomplete | | | | 1 | Surface is too worn to determine species; of a size with Pacific Salmon |
| 2 | 6 | 0-14 | 2.36 | 6 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 6 | |
| 2 | 6 | 0-14 | 2.36 | 3 | Unidentified | Unidentifiable | Fragment | | | | 3 | |
| 2 | 6 | 14-23 | 2.36 | 1 | Flatfish | Vertebra | Centrum | | | 1 | | |
| 2 | 6 | 14-23 | 2.36 | 5 | Pacific Herring | Unidentifiable | Fragment | | | | 5 | |
| 2 | 6 | 14-23 | 2.36 | 39 | Pacific Herring | Vertebra | Centrum | | | 39 | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 6 | 14-23 | 2.36 | 2 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 2 | |
| 2 | 6 | 23-35 | 2.36 | 1 | Flatfish | Vertebra | Centrum | | | 1 | | |
| 2 | 6 | 23-35 | 2.36 | 1 | Greenling | Vertebra | Centrum | | | 1 | | |
| 2 | 6 | 23-35 | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 2 | 6 | 23-35 | 2.36 | 1 | Pacific Herring | Unidentifiable | Fragment | | | | 1 | |
| 2 | 6 | 23-35 | 2.36 | 15 | Pacific Herring | Vertebra | Centrum | | | 15 | | |
| 2 | 6 | 23-35 | 2.36 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 2 | 6 | 23-35 | 2.36 | 4 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 4 | |
| 2 | 6 | 35-40 | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 2 | 6 | 35-40 | 2.36 | 3 | Pacific Herring | Unidentifiable | Fragment | | | | 3 | |
| 2 | 6 | 35-40 | 2.36 | 11 | Pacific Herring | Vertebra | Centrum | | | 11 | | |
| 2 | 6 | 35-40 | 2.36 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 2 | 6 | 35-40 | 2.36 | 1 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 1 | |
| 2 | 6 | 40-49.5 | 2.36 | 1 | Flatfish | Vertebra | Centrum | | | 1 | | |
| 2 | 6 | 40-49.5 | 2.36 | 15 | Pacific Herring | Vertebra | Centrum | | | 14 | | |
| 2 | 6 | 49.5-53 | 2.36 | 1 | Flatfish | Vertebra | Centrum | | | 1 | | |
| 2 | 6 | 49.5-53 | 2.36 | 1 | Greenling | Vertebra | Centrum | | | 1 | | |
| 2 | 6 | 49.5-53 | 2.36 | 2 | Pacific Herring | Angular | Posterior | 1 | 1 | | | |
| 2 | 6 | 49.5-53 | 2.36 | 5 | Pacific Herring | Unidentifiable | Fragment | | | | 5 | |
| 2 | 6 | 49.5-53 | 2.36 | 11 | Pacific Herring | Vertebra | Centrum | | | 11 | | |
| 2 | 6 | 49.5-53 | 2.36 | 3 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 3 | |
| 2 | 6 | 53-55 | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 2 | 6 | 53-55 | 2.36 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 2 | 6 | 53-55 | 2.36 | 7 | Pacific Herring | Unidentifiable | Fragment | | | | 7 | |
| 2 | 6 | 53-55 | 2.36 | 7 | Pacific Herring | Vertebra | Centrum | | | 7 | | |
| 2 | 6 | 53-55 | 2.36 | 2 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 2 | |
| 2 | 16 | 0-16 | 2.36 | 1 | Pacific Herring | Coracoid | Complete | | 1 | | | |
| 2 | 16 | 0-16 | 2.36 | 1 | Pacific Herring | Dentary | Anterior | 1 | | | | |
| 2 | 16 | 0-16 | 2.36 | 1 | Pacific Herring | Hyomandibular | Superior | 1 | | | | |
| 2 | 16 | 0-16 | 2.36 | 1 | Pacific Herring | Opercle | Anterior | | 1 | | | |
| 2 | 16 | 0-16 | 2.36 | 1 | Pacific Herring | Posttemporal | Inferior | | 1 | | | |
| 2 | 16 | 0-16 | 2.36 | 2 | Pacific Herring | Preopercle | Central | 2 | | | | |

# DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 16 | 0-16 | 2.36 | 2 | Pacific Herring | Prootic | Central | 1 | 1 | | | |
| 2 | 16 | 0-16 | 2.36 | 1 | Pacific Herring | Quadrate | Anterior and Central | | 1 | | | |
| 2 | 16 | 0-16 | 2.36 | 31 | Pacific Herring | Unidentifiable | Fragment | | | | 31 | |
| 2 | 16 | 0-16 | 2.36 | 44 | Pacific Herring | Vertebra | Centrum | | | 44 | | |
| 2 | 16 | 0-16 | 2.36 | 2 | Pacific Salmon | Vertebral Fragment | Centrum | | | 2 | | |
| 2 | 16 | 0-16 | 2.36 | 1 | Spiny Dogfish | Dorsal Spine | Central | | | 1 | | |
| 2 | 16 | 0-16 | 2.36 | 10 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 10 | |
| 2 | 16 | 16-23 | 2.36 | 2 | Pacific Herring | Basipterygium | Posterior | 1 | 1 | | | |
| 2 | 16 | 16-23 | 2.36 | 1 | Pacific Herring | Cleithrum | Central | | 1 | | | |
| 2 | 16 | 16-23 | 2.36 | 1 | Pacific Herring | Hyomandibular | Superior and Central | 1 | | | | |
| 2 | 16 | 16-23 | 2.36 | 2 | Pacific Herring | Preopercle | Central | 1 | 1 | | | |
| 2 | 16 | 16-23 | 2.36 | 3 | Pacific Herring | Prootic | Central | 2 | | | 1 | |
| 2 | 16 | 16-23 | 2.36 | 13 | Pacific Herring | Unidentifiable | Fragment | | | | 13 | |
| 2 | 16 | 16-23 | 2.36 | 47 | Pacific Herring | Vertebra | Centrum | | | 47 | | |
| 2 | 16 | 16-23 | 2.36 | 19 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 19 | |
| 2 | 16 | 23-27 | 2.36 | 2 | Pacific Herring | Atlas | Centrum | | | 2 | | |
| 2 | 16 | 23-27 | 2.36 | 1 | Pacific Herring | Dentary | Anterior | | 1 | | | |
| 2 | 16 | 23-27 | 2.36 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 2 | 16 | 23-27 | 2.36 | 3 | Pacific Herring | Prootic | Central | 1 | 2 | | | |
| 2 | 16 | 23-27 | 2.36 | 10 | Pacific Herring | Unidentifiable | Fragment | | | | 10 | |
| 2 | 16 | 23-27 | 2.36 | 34 | Pacific Herring | Vertebra | Centrum | | | 34 | | |
| 2 | 16 | 23-27 | 2.36 | 13 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 13 | |
| 2 | 16 | 27-32 | 2.36 | 1 | Flatfish | Unidentifiable | Fragment | | | | 1 | |
| 2 | 16 | 27-32 | 2.36 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 2 | 16 | 27-32 | 2.36 | 1 | Pacific Herring | Mesopterygoid | Central | | 1 | | | |
| 2 | 16 | 27-32 | 2.36 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 2 | 16 | 27-32 | 2.36 | 2 | Pacific Herring | Unidentifiable | Fragment | | | | 2 | |
| 2 | 16 | 27-32 | 2.36 | 16 | Pacific Herring | Vertebra | Centrum | | | 16 | | |
| 2 | 16 | 27-32 | 2.36 | 2 | Spiny Dogfish | Vertebra | Centrum | | | 2 | | |
| 2 | 16 | 27-32 | 2.36 | 9 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 9 | |
| 2 | 16 | 32-41 | 2.36 | 1 | Flatfish | Vertebra | Centrum | | | 1 | | |
| 2 | 16 | 32-41 | 2.36 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 16 | 32-41 | 2.36 | 2 | Pacific Herring | Unidentifiable | Fragment | | | | 2 | |
| 2 | 16 | 32-41 | 2.36 | 5 | Pacific Herring | Vertebra | Centrum | | | 5 | | |
| 2 | 16 | 32-41 | 2.36 | 4 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 4 | |
| 2 | 16 | 41-49 | 2.36 | 2 | Pacific Herring | Mesethmoid | Complete | | | 2 | | |
| 2 | 16 | 41-49 | 2.36 | 1 | Pacific Herring | Prootic | Central | | 1 | | | |
| 2 | 16 | 41-49 | 2.36 | 4 | Pacific Herring | Unidentifiable | Fragment | | | | 4 | |
| 2 | 16 | 41-49 | 2.36 | 8 | Pacific Herring | Vertebra | Centrum | | | 8 | | |
| 2 | 16 | 41-49 | 2.36 | 3 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 3 | |
| 2 | 16 | 41-49 | 2.36 | 1 | Unidentified | Unidentifiable | Fragment | | | | 1 | |
| 2 | 16 | 49-53 | 2.36 | 1 | Midshipman | Opercle | Complete | | 1 | | | |
| 2 | 16 | 49-53 | 2.36 | 2 | Pacific Herring | Atlas | Centrum | | | 2 | | |
| 2 | 16 | 49-53 | 2.36 | 1 | Pacific Herring | Basipterygium | Posterior and Central | | 1 | | | |
| 2 | 16 | 49-53 | 2.36 | 1 | Pacific Herring | Dentary | Anterior | 1 | | | | |
| 2 | 16 | 49-53 | 2.36 | 8 | Pacific Herring | Unidentifiable | Fragment | | | | 8 | |
| 2 | 16 | 49-53 | 2.36 | 16 | Pacific Herring | Vertebra | Centrum | | | 16 | | |
| 2 | 16 | 49-53 | 2.36 | 11 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 11 | |
| 2 | 16 | 49-53 | 2.36 | 1 | Unidentified | Unidentifiable | Fragment | | | | 1 | |
| 2 | 16 | 53-63 | 2.36 | 2 | Pacific Herring | Angular | Posterior and Central | 2 | | | | |
| 2 | 16 | 53-63 | 2.36 | 2 | Pacific Herring | Hyomandibular | Superior | | 2 | | | |
| 2 | 16 | 53-63 | 2.36 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 2 | 16 | 53-63 | 2.36 | 1 | Pacific Herring | Mesopterygoid | Central | | 1 | | | |
| 2 | 16 | 53-63 | 2.36 | 1 | Pacific Herring | Prootic | Central | 1 | | | | |
| 2 | 16 | 53-63 | 2.36 | 1 | Pacific Herring | Subopercle | Central | | 1 | | | |
| 2 | 16 | 53-63 | 2.36 | 4 | Pacific Herring | Unidentifiable | Fragment | | | | 4 | |
| 2 | 16 | 53-63 | 2.36 | 29 | Pacific Herring | Vertebra | Centrum | | | 29 | | |
| 2 | 16 | 53-63 | 2.36 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |
| 2 | 16 | 53-63 | 2.36 | 5 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 5 | |
| 2 | Column | 0-20 | 1.5 | 1 | Pacific Herring | Unidentifiable | Fragment | | | | 1 | |
| 2 | Column | 0-20 | 1.5 | 6 | Pacific Herring | Vertebra | Centrum | | | 6 | | |
| 2 | Column | 0-20 | 1.5 | 1 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 1 | |
| 2 | Column | 20-40 | 1.5 | 3 | Pacific Herring | Vertebra | Centrum | | | 3 | | |
| 2 | Column | 20-40 | 1.5 | 2 | Pacific Salmon | Vertebral Fragment | Centrum | | | 2 | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | Column | 20-40 | 1.5 | 4 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 4 | |
| 2 | Column | 20-40 | 1.5 | 1 | Unidentified | Unidentifiable | Fragment | | | | 1 | |
| 2 | Column | 40-50 | 1.5 | 9 | Pacific Herring | Unidentifiable | Fragment | | | | 9 | |
| 2 | Column | 40-50 | 1.5 | 10 | Pacific Herring | Vertebra | Centrum | | | 10 | | |
| 2 | Column | 40-50 | 1.5 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 2 | Column | 40-50 | 1.5 | 16 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 16 | |
| 2 | Column | 50-60 | 1.5 | 8 | Pacific Herring | Unidentifiable | Fragment | | | | 8 | |
| 2 | Column | 50-60 | 1.5 | 6 | Pacific Herring | Vertebra | Centrum | | | 6 | | |
| 2 | Column | 50-60 | 1.5 | 10 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 10 | |
| 2 | Column | 60-70 | 1.5 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 2 | Column | 60-70 | 1.5 | 21 | Pacific Herring | Unidentifiable | Fragment | | | | 21 | |
| 2 | Column | 60-70 | 1.5 | 13 | Pacific Herring | Vertebra | Centrum | | | 13 | | |
| 2 | Column | 60-70 | 1.5 | 24 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 24 | |
| 2 | Column | 60-70 | 1.5 | 1 | Unidentified | Unidentifiable | Fragment | | | | 1 | |
| 2 | Column | 70-80 | 1.5 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 2 | Column | 70-80 | 1.5 | 8 | Pacific Herring | Unidentifiable | Fragment | | | | 8 | |
| 2 | Column | 70-80 | 1.5 | 12 | Pacific Herring | Vertebra | Centrum | | | 12 | | |
| 2 | Column | 70-80 | 1.5 | 9 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 9 | |
| 2 | Column | 80-90 | 1.5 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 2 | Column | 80-90 | 1.5 | 6 | Pacific Herring | Unidentifiable | Fragment | | | | 6 | |
| 2 | Column | 80-90 | 1.5 | 6 | Pacific Herring | Vertebra | Centrum | | | 6 | | |
| 2 | Column | 80-90 | 1.5 | 7 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 7 | |
| 2 | Column | 90-100 | 1.5 | 1 | Pacific Herring | Ceratohyal | Central | 1 | | | | |
| 2 | Column | 90-100 | 1.5 | 17 | Pacific Herring | Unidentifiable | Fragment | | | | 17 | |
| 2 | Column | 90-100 | 1.5 | 14 | Pacific Herring | Vertebra | Centrum | | | 14 | | |
| 2 | Column | 90-100 | 1.5 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 2 | Column | 90-100 | 1.5 | 7 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 7 | |
| 2 | Column | 100-110 | 1.5 | 6 | Pacific Herring | Unidentifiable | Fragment | | | | 6 | |
| 2 | Column | 100-110 | 1.5 | 5 | Pacific Herring | Vertebra | Centrum | | | 5 | | |
| 2 | Column | 110-120 | 1.5 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 2 | Column | 110-120 | 1.5 | 21 | Pacific Herring | Unidentifiable | Fragment | | | | 21 | |
| 2 | Column | 110-120 | 1.5 | 18 | Pacific Herring | Vertebra | Centrum | | | 18 | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | Column | 110-120 | 1.5 | 2 | Pacific Salmon | Vertebral Fragment | Centrum | | | 2 | | |
| 2 | Column | 110-120 | 1.5 | 9 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 9 | |
| 2 | Column | 0-20 | 2.36 | 3 | Pacific Herring | Pharyngobranchial | Complete | 2 | 1 | | | |
| 2 | Column | 0-20 | 2.36 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 2 | Column | 0-20 | 2.36 | 56 | Pacific Herring | Vertebra | Centrum | | | 56 | | |
| 2 | Column | 0-20 | 2.36 | 1 | Pacific Herring | Vomer | Anterior | | | 1 | | |
| 2 | Column | 0-20 | 2.36 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |
| 2 | Column | 0-20 | 2.36 | 20 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 20 | |
| 2 | Column | 0-20 | 2.36 | 3 | Unidentified | Unidentifiable | Fragment | | | | 3 | |
| 2 | Column | 20-40 | 2.36 | 3 | Flatfish | Vertebra | Centrum | | | 3 | | |
| 2 | Column | 20-40 | 2.36 | 1 | Midshipman | Pharyngobranchial | Complete | | 1 | | | |
| 2 | Column | 20-40 | 2.36 | 4 | Pacific Herring | Atlas | Centrum | | | 4 | | |
| 2 | Column | 20-40 | 2.36 | 1 | Pacific Herring | Prootic | Central | | 1 | | | |
| 2 | Column | 20-40 | 2.36 | 55 | Pacific Herring | Unidentifiable | Fragment | | | | 55 | |
| 2 | Column | 20-40 | 2.36 | 160 | Pacific Herring | Vertebra | Centrum | | | 160 | | |
| 2 | Column | 20-40 | 2.36 | 2 | Pacific Herring | Vomer | Anterior and Central | | | 2 | | |
| 2 | Column | 20-40 | 2.36 | 1 | Pacific Salmon | Vertebra | Centrum | | | 1 | | |
| 2 | Column | 20-40 | 2.36 | 25 | Pacific Salmon | Vertebral Fragment | Centrum | | | 25 | | |
| 2 | Column | 20-40 | 2.36 | 74 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 74 | |
| 2 | Column | 20-40 | 2.36 | 4 | Unidentified | Unidentifiable | Fragment | | | | 4 | |
| 2 | Column | 40-50 | 2.36 | 1 | Flatfish | Dentary | Central | | 1 | | | |
| 2 | Column | 40-50 | 2.36 | 2 | Flatfish | Vertebra | Centrum | | | 2 | | |
| 2 | Column | 40-50 | 2.36 | 2 | Midshipman | Cleithrum | Central | 1 | 1 | | | |
| 2 | Column | 40-50 | 2.36 | 1 | Midshipman | Opercle | Complete | | 1 | | | |
| 2 | Column | 40-50 | 2.36 | 2 | Midshipman | Vertebra | Centrum | | | 2 | | |
| 2 | Column | 40-50 | 2.36 | 1 | Pacific Herring | Angular | Central | | 1 | | | |
| 2 | Column | 40-50 | 2.36 | 2 | Pacific Herring | Atlas | Centrum | | | 2 | | |
| 2 | Column | 40-50 | 2.36 | 1 | Pacific Herring | Dentary | Anterior | 1 | | | | |
| 2 | Column | 40-50 | 2.36 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 2 | Column | 40-50 | 2.36 | 2 | Pacific Herring | Maxilla | Central | 1 | 1 | | | |
| 2 | Column | 40-50 | 2.36 | 1 | Pacific Herring | Mesopterygoid | Complete | 1 | | | | |
| 2 | Column | 40-50 | 2.36 | 1 | Pacific Herring | Pharyngobranchial | Complete | | 1 | | | |

# DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | Column | 40-50 | 2.36 | 1 | Pacific Herring | Posttemporal | Inferior | | 1 | | | |
| 2 | Column | 40-50 | 2.36 | 1 | Pacific Herring | Supracleithrum | Complete | 1 | | | | |
| 2 | Column | 40-50 | 2.36 | 34 | Pacific Herring | Unidentifiable | Fragment | | | | 34 | |
| 2 | Column | 40-50 | 2.36 | 269 | Pacific Herring | Vertebra | Centrum | | | 269 | | |
| 2 | Column | 40-50 | 2.36 | 5 | Pacific Herring | Vomer | Anterior and Central | | | 5 | | |
| 2 | Column | 40-50 | 2.36 | 8 | Pacific Salmon | Vertebral Fragment | Centrum | | | 8 | | |
| 2 | Column | 40-50 | 2.36 | 3 | Spiny Dogfish | Vertebra | Centrum | | | 3 | | |
| 2 | Column | 40-50 | 2.36 | 66 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 66 | |
| 2 | Column | 40-50 | 2.36 | 6 | Unidentified | Unidentifiable | Fragment | | | | 6 | |
| 2 | Column | 50-60 (1 of 2) | 2.36 | 1 | Midshipman | Ceratohyal | Central | | 1 | | | |
| 2 | Column | 50-60 (1 of 2) | 2.36 | 7 | Pacific Herring | Atlas | Centrum | | | 7 | | |
| 2 | Column | 50-60 (1 of 2) | 2.36 | 1 | Pacific Herring | Cleithrum | Superior | | 1 | | | |
| 2 | Column | 50-60 (1 of 2) | 2.36 | 2 | Pacific Herring | Mesethmoid | Complete | | | 2 | | |
| 2 | Column | 50-60 (1 of 2) | 2.36 | 1 | Pacific Herring | Quadrate | Anterior | 1 | | | | |
| 2 | Column | 50-60 (1 of 2) | 2.36 | 21 | Pacific Herring | Unidentifiable | Fragment | | | | 21 | |
| 2 | Column | 50-60 (1 of 2) | 2.36 | 168 | Pacific Herring | Vertebra | Centrum | | | 168 | | |
| 2 | Column | 50-60 (1 of 2) | 2.36 | 1 | Pacific Salmon | Parietal | Complete | 1 | | | | |
| 2 | Column | 50-60 (1 of 2) | 2.36 | 2 | Pacific Salmon | Vertebral Fragment | Centrum | | | 2 | | |
| 2 | Column | 50-60 (1 of 2) | 2.36 | 36 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 36 | |
| 2 | Column | 50-60 (1 of 2) | 2.36 | 19 | Unidentified | Unidentifiable | Fragment | | | | 19 | |
| 2 | Column | 50-60 (2 of 2) | 2.36 | 5 | Pacific Herring | Atlas | Centrum | | | 5 | | |
| 2 | Column | 50-60 (2 of 2) | 2.36 | 1 | Pacific Herring | Ceratohyal | Anterior and Central | 1 | | | | |
| 2 | Column | 50-60 (2 of 2) | 2.36 | 1 | Pacific Herring | Cleithrum | Superior | | 1 | | | |
| 2 | Column | 50-60 (2 of 2) | 2.36 | 2 | Pacific Herring | Coracoid | Complete | 1 | 1 | | | |
| 2 | Column | 50-60 (2 of 2) | 2.36 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 2 | Column | 50-60 (2 of 2) | 2.36 | 1 | Pacific Herring | Maxilla | Anterior | | 1 | | | |
| 2 | Column | 50-60 (2 of 2) | 2.36 | 4 | Pacific Herring | Mesethmoid | Complete | | | 4 | | |
| 2 | Column | 50-60 (2 of 2) | 2.36 | 1 | Pacific Herring | Posttemporal | Central | | 1 | | | |
| 2 | Column | 50-60 (2 of 2) | 2.36 | 3 | Pacific Herring | Prootic | Central | 1 | | | 2 | |
| 2 | Column | 50-60 (2 of 2) | 2.36 | 1 | Pacific Herring | Supracleithrum | Complete | 1 | | | | |
| 2 | Column | 50-60 (2 of 2) | 2.36 | 1 | Pacific Herring | Supraoccipital | Complete | | | 1 | | |
| 2 | Column | 50-60 (2 of 2) | 2.36 | 28 | Pacific Herring | Unidentifiable | Fragment | | | | 28 | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | Column | 50-60 (2 of 2) | 2.36 | 160 | Pacific Herring | Vertebra | Centrum | | | | 160 | |
| 2 | Column | 50-60 (2 of 2) | 2.36 | 1 | Pacific Herring | Vomer | Anterior | | | 1 | | |
| 2 | Column | 50-60 (2 of 2) | 2.36 | 1 | Pacific Salmon | Vertebra | Centrum | | | 1 | | |
| 2 | Column | 50-60 (2 of 2) | 2.36 | 2 | Spiny Dogfish | Vertebra | Centrum | | | 2 | | |
| 2 | Column | 50-60 (2 of 2) | 2.36 | 27 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 27 | |
| 2 | Column | 50-60 (2 of 2) | 2.36 | 5 | Unidentified | Unidentifiable | Fragment | | | | 5 | |
| 2 | Column | 60-70 (1 of 2) | 2.36 | 1 | Midshipman | Ceratohyal | Central | | 1 | | | |
| 2 | Column | 60-70 (1 of 2) | 2.36 | 2 | Midshipman | Cleithrum | Central | 1 | 1 | | | |
| 2 | Column | 60-70 (1 of 2) | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 2 | Column | 60-70 (1 of 2) | 2.36 | 3 | Pacific Herring | Atlas | Centrum | | | 3 | | |
| 2 | Column | 60-70 (1 of 2) | 2.36 | 2 | Pacific Herring | Exoccipital | Central | 1 | 1 | | | |
| 2 | Column | 60-70 (1 of 2) | 2.36 | 1 | Pacific Herring | Mesopterygoid | Central | | 1 | | | |
| 2 | Column | 60-70 (1 of 2) | 2.36 | 1 | Pacific Herring | Pharyngobranchial | Complete | | 1 | | | |
| 2 | Column | 60-70 (1 of 2) | 2.36 | 29 | Pacific Herring | Unidentifiable | Fragment | | | | 29 | |
| 2 | Column | 60-70 (1 of 2) | 2.36 | 119 | Pacific Herring | Vertebra | Centrum | | | 119 | | |
| 2 | Column | 60-70 (1 of 2) | 2.36 | 2 | Pacific Herring | Vomer | Complete | | | 2 | | |
| 2 | Column | 60-70 (1 of 2) | 2.36 | 1 | Surfperch | Epihyal | Complete | 1 | | | | |
| 2 | Column | 60-70 (1 of 2) | 2.36 | 1 | Surfperch | Vertebra | Centrum | | | 1 | | |
| 2 | Column | 60-70 (1 of 2) | 2.36 | 12 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 12 | |
| 2 | Column | 60-70 (2 of 2) | 2.36 | 2 | Flatfish | Vertebra | Centrum | | | 2 | | |
| 2 | Column | 60-70 (2 of 2) | 2.36 | 1 | Midshipman | Angular | Posterior | 1 | | | | |
| 2 | Column | 60-70 (2 of 2) | 2.36 | 1 | Midshipman | Cleithrum | Central | | 1 | | | |
| 2 | Column | 60-70 (2 of 2) | 2.36 | 1 | Midshipman | Opercle | Complete | 1 | | | | |
| 2 | Column | 60-70 (2 of 2) | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 2 | Column | 60-70 (2 of 2) | 2.36 | 2 | Pacific Herring | Atlas | Centrum | | | 2 | | |
| 2 | Column | 60-70 (2 of 2) | 2.36 | 1 | Pacific Herring | Basipterygium | Posterior | 1 | | | | |
| 2 | Column | 60-70 (2 of 2) | 2.36 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 2 | Column | 60-70 (2 of 2) | 2.36 | 1 | Pacific Herring | Mesopterygoid | Central | | 1 | | | |
| 2 | Column | 60-70 (2 of 2) | 2.36 | 2 | Pacific Herring | Prootic | Central | 1 | 1 | | | |
| 2 | Column | 60-70 (2 of 2) | 2.36 | 4 | Pacific Herring | Unidentifiable | Fragment | | | | 4 | |
| 2 | Column | 60-70 (2 of 2) | 2.36 | 97 | Pacific Herring | Vertebra | Centrum | | | 97 | | |
| 2 | Column | 60-70 (2 of 2) | 2.36 | 1 | Rockfish | Vertebra | Centrum | | | 1 | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | Column | 60-70 (2 of 2) | 2.36 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |
| 2 | Column | 60-70 (2 of 2) | 2.36 | 33 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 33 | |
| 2 | Column | 60-70 (2 of 2) | 2.36 | 6 | Unidentified | Unidentifiable | Fragment | | | | 6 | |
| 2 | Column | 70-80 (1 of 3) | 2.36 | 1 | Flatfish | Cleithrum | Central | 1 | | | | |
| 2 | Column | 70-80 (1 of 3) | 2.36 | 1 | Flatfish | Vertebra | Centrum | | | 1 | | |
| 2 | Column | 70-80 (1 of 3) | 2.36 | 1 | Midshipman | Basioccipital | Complete | | | 1 | | |
| 2 | Column | 70-80 (1 of 3) | 2.36 | 4 | Pacific Herring | Atlas | Centrum | | | 4 | | |
| 2 | Column | 70-80 (1 of 3) | 2.36 | 1 | Pacific Herring | Exoccipital | Central | 1 | | | | |
| 2 | Column | 70-80 (1 of 3) | 2.36 | 1 | Pacific Herring | Frontal | Complete | | | 1 | | |
| 2 | Column | 70-80 (1 of 3) | 2.36 | 2 | Pacific Herring | Maxilla | Anterior | 1 | 1 | | | |
| 2 | Column | 70-80 (1 of 3) | 2.36 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 2 | Column | 70-80 (1 of 3) | 2.36 | 1 | Pacific Herring | Parasphenoid | Central | | | 1 | | |
| 2 | Column | 70-80 (1 of 3) | 2.36 | 1 | Pacific Herring | Pharyngobranchial | Complete | 1 | | | | |
| 2 | Column | 70-80 (1 of 3) | 2.36 | 1 | Pacific Herring | Posttemporal | Inferior | | 1 | | | |
| 2 | Column | 70-80 (1 of 3) | 2.36 | 2 | Pacific Herring | Prootic | Central | | 1 | | 1 | |
| 2 | Column | 70-80 (1 of 3) | 2.36 | 37 | Pacific Herring | Unidentifiable | Fragment | | | | 37 | |
| 2 | Column | 70-80 (1 of 3) | 2.36 | 119 | Pacific Herring | Vertebra | Centrum | | | 119 | | |
| 2 | Column | 70-80 (1 of 3) | 2.36 | 1 | Pacific Herring | Vomer | Complete | | | 1 | | |
| 2 | Column | 70-80 (1 of 3) | 2.36 | 1 | Surfperch | Parasphenoid | Central | | | 1 | | |
| 2 | Column | 70-80 (1 of 3) | 2.36 | 32 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 32 | |
| 2 | Column | 70-80 (1 of 3) | 2.36 | 4 | Unidentified | Unidentifiable | Fragment | | | | 4 | |
| 2 | Column | 70-80 (2 of 3) | 2.36 | 1 | Midshipman | Hyomandibular | Complete | | 1 | | | |
| 2 | Column | 70-80 (2 of 3) | 2.36 | 1 | Midshipman | Quadrate | Complete | 1 | | | | |
| 2 | Column | 70-80 (2 of 3) | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 2 | Column | 70-80 (2 of 3) | 2.36 | 7 | Pacific Herring | Atlas | Centrum | | | 7 | | |
| 2 | Column | 70-80 (2 of 3) | 2.36 | 1 | Pacific Herring | Cleithrum | Central | 1 | | | | |
| 2 | Column | 70-80 (2 of 3) | 2.36 | 1 | Pacific Herring | Exoccipital | Central | 1 | | | | |
| 2 | Column | 70-80 (2 of 3) | 2.36 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 2 | Column | 70-80 (2 of 3) | 2.36 | 19 | Pacific Herring | Unidentifiable | Fragment | | | | 19 | |
| 2 | Column | 70-80 (2 of 3) | 2.36 | 128 | Pacific Herring | Vertebra | Centrum | | | 128 | | |
| 2 | Column | 70-80 (2 of 3) | 2.36 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 2 | Column | 70-80 (2 of 3) | 2.36 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |

# DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | Column | 70-80 (2 of 3) | 2.36 | 26 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 26 | |
| 2 | Column | 70-80 (2 of 3) | 2.36 | 8 | Unidentified | Unidentifiable | Fragment | | | | 8 | |
| 2 | Column | 70-80 (3 of 3) | 2.36 | 2 | Flatfish | Vertebra | Centrum | | | 2 | | |
| 2 | Column | 70-80 (3 of 3) | 2.36 | 1 | Midshipman | Premaxilla | Complete | | 1 | | | |
| 2 | Column | 70-80 (3 of 3) | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 2 | Column | 70-80 (3 of 3) | 2.36 | 1 | Pacific Herring | Angular | Posterior | | 1 | | | |
| 2 | Column | 70-80 (3 of 3) | 2.36 | 2 | Pacific Herring | Atlas | Centrum | | | 2 | | |
| 2 | Column | 70-80 (3 of 3) | 2.36 | 1 | Pacific Herring | Cleithrum | Central | | 1 | | | |
| 2 | Column | 70-80 (3 of 3) | 2.36 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 2 | Column | 70-80 (3 of 3) | 2.36 | 2 | Pacific Herring | Mesethmoid | Complete | | | 2 | | |
| 2 | Column | 70-80 (3 of 3) | 2.36 | 1 | Pacific Herring | Prootic | Central | 1 | | | | |
| 2 | Column | 70-80 (3 of 3) | 2.36 | 9 | Pacific Herring | Unidentifiable | Fragment | | | | 9 | |
| 2 | Column | 70-80 (3 of 3) | 2.36 | 59 | Pacific Herring | Vertebra | Centrum | | | 59 | | |
| 2 | Column | 70-80 (3 of 3) | 2.36 | 1 | Pacific Herring | Vomer | Complete | | | 1 | | |
| 2 | Column | 70-80 (3 of 3) | 2.36 | 2 | Pacific Salmon | Vertebral Fragment | Centrum | | | 2 | | |
| 2 | Column | 70-80 (3 of 3) | 2.36 | 1 | Rockfish | Vertebra | Centrum | | | 1 | | |
| 2 | Column | 70-80 (3 of 3) | 2.36 | 7 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 7 | |
| 2 | Column | 70-80 (3 of 3) | 2.36 | 3 | Unidentified | Unidentifiable | Fragment | | | | 3 | |
| 2 | Column | 80-90 | 2.36 | 2 | Flatfish | Vertebra | Centrum | | | 2 | | |
| 2 | Column | 80-90 | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 2 | Column | 80-90 | 2.36 | 1 | Pacific Herring | Angular | Central | | 1 | | | |
| 2 | Column | 80-90 | 2.36 | 5 | Pacific Herring | Atlas | Centrum | | | 5 | | |
| 2 | Column | 80-90 | 2.36 | 2 | Pacific Herring | Basipterygium | Posterior and Central | 1 | 1 | | | |
| 2 | Column | 80-90 | 2.36 | 1 | Pacific Herring | Ceratohyal | Central | 1 | | | | |
| 2 | Column | 80-90 | 2.36 | 4 | Pacific Herring | Cleithrum | Central | 3 | 1 | | | |
| 2 | Column | 80-90 | 2.36 | 1 | Pacific Herring | Dentary | Anterior | 1 | | | | |
| 2 | Column | 80-90 | 2.36 | 2 | Pacific Herring | Exoccipital | Central | | 2 | | | |
| 2 | Column | 80-90 | 2.36 | 2 | Pacific Herring | Mesethmoid | Complete | | | 2 | | |
| 2 | Column | 80-90 | 2.36 | 5 | Pacific Herring | Posttemporal | Inferior | 2 | 3 | | | |
| 2 | Column | 80-90 | 2.36 | 2 | Pacific Herring | Prootic | Central | | | | 2 | |
| 2 | Column | 80-90 | 2.36 | 1 | Pacific Herring | Supraoccipital | Central | | | 1 | | |
| 2 | Column | 80-90 | 2.36 | 21 | Pacific Herring | Unidentifiable | Fragment | | | | 21 | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | Column | 80-90 | 2.36 | 134 | Pacific Herring | Vertebra | Centrum | | | 134 | | |
| 2 | Column | 80-90 | 2.36 | 1 | Pacific Salmon | Tooth | Complete | | | 1 | | |
| 2 | Column | 80-90 | 2.36 | 17 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 17 | |
| 2 | Column | 90-100 | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 2 | Column | 90-100 | 2.36 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | Calcined |
| 2 | Column | 90-100 | 2.36 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 2 | Column | 90-100 | 2.36 | 1 | Pacific Herring | Exoccipital | Central | | 1 | | | |
| 2 | Column | 90-100 | 2.36 | 3 | Pacific Herring | Hyomandibular | Superior | 1 | 2 | | | |
| 2 | Column | 90-100 | 2.36 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 2 | Column | 90-100 | 2.36 | 1 | Pacific Herring | Prootic | Central | 1 | | | | |
| 2 | Column | 90-100 | 2.36 | 1 | Pacific Herring | Quadrate | Anterior | | 1 | | | |
| 2 | Column | 90-100 | 2.36 | 26 | Pacific Herring | Unidentifiable | Fragment | | | | 26 | |
| 2 | Column | 90-100 | 2.36 | 52 | Pacific Herring | Vertebra | Centrum | | | 52 | | |
| 2 | Column | 90-100 | 2.36 | 2 | Pacific Herring | Vomer | Anterior and Central | | | 2 | | |
| 2 | Column | 90-100 | 2.36 | 1 | Pacific Salmon | Vertebra | Centrum | | | 1 | | |
| 2 | Column | 90-100 | 2.36 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 2 | Column | 90-100 | 2.36 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |
| 2 | Column | 90-100 | 2.36 | 31 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 31 | |
| 2 | Column | 100-110 | 2.36 | 1 | Greenling | Pharyngeal | Central | | 1 | | | |
| 2 | Column | 100-110 | 2.36 | 1 | Greenling | Vomer | Anterior | | | 1 | | |
| 2 | Column | 100-110 | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 2 | Column | 100-110 | 2.36 | 2 | Pacific Herring | Angular | Posterior and Central | 1 | 1 | | | |
| 2 | Column | 100-110 | 2.36 | 3 | Pacific Herring | Atlas | Centrum | | | 3 | | |
| 2 | Column | 100-110 | 2.36 | 1 | Pacific Herring | Basioccipital | Complete | | | 1 | | |
| 2 | Column | 100-110 | 2.36 | 2 | Pacific Herring | Ceratohyal | Central | 1 | | | 1 | |
| 2 | Column | 100-110 | 2.36 | 1 | Pacific Herring | Cleithrum | Central | 1 | | | | |
| 2 | Column | 100-110 | 2.36 | 1 | Pacific Herring | Epihyal | Complete | 1 | | | | |
| 2 | Column | 100-110 | 2.36 | 2 | Pacific Herring | Frontal | Complete | | | 2 | | |
| 2 | Column | 100-110 | 2.36 | 1 | Pacific Herring | Hyomandibular | Superior | | 1 | | | |
| 2 | Column | 100-110 | 2.36 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 2 | Column | 100-110 | 2.36 | 3 | Pacific Herring | Maxilla | Anterior and Central | 1 | 2 | | | |
| 2 | Column | 100-110 | 2.36 | 1 | Pacific Herring | Opercle | Anterior and Central | | 1 | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | Column | 100-110 | 2.36 | 2 | Pacific Herring | Pharyngobranchial | Complete | 2 | | | | |
| 2 | Column | 100-110 | 2.36 | 8 | Pacific Herring | Prootic | Central | 2 | 1 | | 5 | |
| 2 | Column | 100-110 | 2.36 | 2 | Pacific Herring | Quadrate | Anterior and Central | 1 | 1 | | | |
| 2 | Column | 100-110 | 2.36 | 1 | Pacific Herring | Subopercle | Central | | 1 | | | |
| 2 | Column | 100-110 | 2.36 | 72 | Pacific Herring | Unidentifiable | Fragment | | | | 72 | |
| 2 | Column | 100-110 | 2.36 | 174 | Pacific Herring | Vertebra | Centrum | | | 174 | | |
| 2 | Column | 100-110 | 2.36 | 2 | Pacific Herring | Vomer | Complete | | | 2 | | |
| 2 | Column | 100-110 | 2.36 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |
| 2 | Column | 100-110 | 2.36 | 29 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 39 | |
| 2 | Column | 100-110 | 2.36 | 2 | Unidentified | Unidentifiable | Fragment | | | | 2 | |
| 2 | Column | 110-120 | 2.36 | 1 | Pacific Herring | Angular | Posterior | | 1 | | | |
| 2 | Column | 110-120 | 2.36 | 2 | Pacific Herring | Atlas | Centrum | | | 2 | | |
| 2 | Column | 110-120 | 2.36 | 5 | Pacific Herring | Ceratohyal | Central | 2 | 3 | | | |
| 2 | Column | 110-120 | 2.36 | 1 | Pacific Herring | Cleithrum | Central | 1 | | | | |
| 2 | Column | 110-120 | 2.36 | 1 | Pacific Herring | Dentary | Anterior | 1 | | | | |
| 2 | Column | 110-120 | 2.36 | 2 | Pacific Herring | Epihyal | Complete | 1 | 1 | | | |
| 2 | Column | 110-120 | 2.36 | 2 | Pacific Herring | Exoccipital | Central | 1 | 1 | | | |
| 2 | Column | 110-120 | 2.36 | 1 | Pacific Herring | Maxilla | Anterior | | 1 | | | |
| 2 | Column | 110-120 | 2.36 | 1 | Pacific Herring | Pharyngobranchial | Complete | 1 | | | | |
| 2 | Column | 110-120 | 2.36 | 1 | Pacific Herring | Posttemporal | Complete | | 1 | | | |
| 2 | Column | 110-120 | 2.36 | 3 | Pacific Herring | Preopercle | Central | 2 | 1 | | | |
| 2 | Column | 110-120 | 2.36 | 5 | Pacific Herring | Prootic | Central | 2 | 2 | | 1 | |
| 2 | Column | 110-120 | 2.36 | 1 | Pacific Herring | Subopercle | Complete | | 1 | | | |
| 2 | Column | 110-120 | 2.36 | 1 | Pacific Herring | Supraoccipital | Complete | | | 1 | | |
| 2 | Column | 110-120 | 2.36 | 74 | Pacific Herring | Unidentifiable | Fragment | | | | 74 | |
| 2 | Column | 110-120 | 2.36 | 97 | Pacific Herring | Vertebra | Centrum | | | 97 | | |
| 2 | Column | 110-120 | 2.36 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 2 | Column | 110-120 | 2.36 | 2 | Spiny Dogfish | Vertebra | Centrum | | | 2 | | |
| 2 | Column | 110-120 | 2.36 | 20 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 20 | |
| 2 | Column | 110-120 | 2.36 | 3 | Unidentified | Unidentifiable | Fragment | | | | 3 | |
| 3 | 34 | 0-13 | 2.36 | 3 | Pacific Herring | Angular | Posterior and Central | 1 | 2 | | | |
| 3 | 34 | 0-13 | 2.36 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | Calcined |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 34 | 0-13 | 2.36 | 6 | Pacific Herring | Atlas | Centrum | | | 6 | | |
| 3 | 34 | 0-13 | 2.36 | 1 | Pacific Herring | Basioccipital | Complete | | | 1 | | |
| 3 | 34 | 0-13 | 2.36 | 6 | Pacific Herring | Ceratohyal | Central | 2 | 4 | | | |
| 3 | 34 | 0-13 | 2.36 | 4 | Pacific Herring | Cleithrum | Central | 2 | 2 | | | |
| 3 | 34 | 0-13 | 2.36 | 1 | Pacific Herring | Coracoid | Complete | | 1 | | | |
| 3 | 34 | 0-13 | 2.36 | 4 | Pacific Herring | Dentary | Anterior and Central | 1 | 3 | | | |
| 3 | 34 | 0-13 | 2.36 | 7 | Pacific Herring | Exoccipital | Central | 4 | 3 | | | |
| 3 | 34 | 0-13 | 2.36 | 1 | Pacific Herring | Frontal | Complete | | | 1 | | |
| 3 | 34 | 0-13 | 2.36 | 1 | Pacific Herring | Hyomandibular | Complete | 1 | | | | |
| 3 | 34 | 0-13 | 2.36 | 8 | Pacific Herring | Hyomandibular | Superior | 3 | 5 | | | |
| 3 | 34 | 0-13 | 2.36 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 3 | 34 | 0-13 | 2.36 | 5 | Pacific Herring | Maxilla | Anterior and Central | 3 | 2 | | | |
| 3 | 34 | 0-13 | 2.36 | 3 | Pacific Herring | Mesethmoid | Complete | | | 3 | | |
| 3 | 34 | 0-13 | 2.36 | 1 | Pacific Herring | Mesopterygoid | Central | | 1 | | | |
| 3 | 34 | 0-13 | 2.36 | 1 | Pacific Herring | Opercle | Complete | 1 | | | | |
| 3 | 34 | 0-13 | 2.36 | 9 | Pacific Herring | Pharyngobranchial | Complete | 5 | 4 | | | |
| 3 | 34 | 0-13 | 2.36 | 4 | Pacific Herring | Posttemporal | Complete | 3 | 1 | | | |
| 3 | 34 | 0-13 | 2.36 | 3 | Pacific Herring | Preopercle | Central | 1 | 2 | | | |
| 3 | 34 | 0-13 | 2.36 | 20 | Pacific Herring | Prootic | Central | 3 | 5 | | 12 | |
| 3 | 34 | 0-13 | 2.36 | 2 | Pacific Herring | Quadrate | Anterior and Central | 1 | 1 | | | |
| 3 | 34 | 0-13 | 2.36 | 6 | Pacific Herring | Subopercle | Central | 4 | 2 | | | |
| 3 | 34 | 0-13 | 2.36 | 1 | Pacific Herring | Supraoccipital | Complete | | | 1 | | |
| 3 | 34 | 0-13 | 2.36 | 331 | Pacific Herring | Unidentifiable | Fragment | | | | 331 | |
| 3 | 34 | 0-13 | 2.36 | 104 | Pacific Herring | Vertebra | Centrum | | | 104 | | |
| 3 | 34 | 0-13 | 2.36 | 2 | Pacific Herring | Vomer | Anterior and Central | | | 2 | | |
| 3 | 34 | 0-13 | 2.36 | 4 | Pacific Salmon | Vertebra | Centrum | | | 4 | | |
| 3 | 34 | 0-13 | 2.36 | 93 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 93 | |
| 3 | 34 | 0-13 | 2.36 | 5 | Unidentified | Unidentifiable | Fragment | | | | 5 | |
| 3 | 34 | 13-20 | 2.36 | 8 | Pacific Herring | Angular | Posterior and Central | 4 | 4 | | | |
| 3 | 34 | 13-20 | 2.36 | 3 | Pacific Herring | Atlas | Centrum | | | 3 | | |
| 3 | 34 | 13-20 | 2.36 | 10 | Pacific Herring | Basioccipital | Complete | | | 10 | | |
| 3 | 34 | 13-20 | 2.36 | 4 | Pacific Herring | Basipterygium | Posterior and Central | 2 | 2 | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 34 | 13-20 | 2.36 | 9 | Pacific Herring | Ceratohyal | Central | 4 | 5 | | | |
| 3 | 34 | 13-20 | 2.36 | 5 | Pacific Herring | Cleithrum | Central | 3 | 2 | | | |
| 3 | 34 | 13-20 | 2.36 | 10 | Pacific Herring | Dentary | Anterior | 4 | 6 | | | |
| 3 | 34 | 13-20 | 2.36 | 1 | Pacific Herring | Ectopterygoid | Complete | | 1 | | | |
| 3 | 34 | 13-20 | 2.36 | 11 | Pacific Herring | Epihyal | Complete | 5 | 6 | | | |
| 3 | 34 | 13-20 | 2.36 | 21 | Pacific Herring | Exoccipital | Central | 11 | 10 | | | |
| 3 | 34 | 13-20 | 2.36 | 2 | Pacific Herring | Frontal | Complete | | | 2 | | |
| 3 | 34 | 13-20 | 2.36 | 3 | Pacific Herring | Hyomandibular | Complete | 2 | 1 | | | |
| 3 | 34 | 13-20 | 2.36 | 33 | Pacific Herring | Hyomandibular | Superior | 13 | 17 | | 3 | |
| 3 | 34 | 13-20 | 2.36 | 2 | Pacific Herring | Lacrymal | Complete | 1 | 1 | | | |
| 3 | 34 | 13-20 | 2.36 | 14 | Pacific Herring | Maxilla | Anterior and Central | 7 | 7 | | | |
| 3 | 34 | 13-20 | 2.36 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 3 | 34 | 13-20 | 2.36 | 3 | Pacific Herring | Mesopterygoid | Central | 1 | | | 2 | |
| 3 | 34 | 13-20 | 2.36 | 3 | Pacific Herring | Opercle | Anterior | 1 | 2 | | | |
| 3 | 34 | 13-20 | 2.36 | 4 | Pacific Herring | Parasphenoid | Central | | | 4 | | |
| 3 | 34 | 13-20 | 2.36 | 33 | Pacific Herring | Pharyngobranchial | Complete | 19 | 14 | | | |
| 3 | 34 | 13-20 | 2.36 | 3 | Pacific Herring | Posttemporal | Inferior | 1 | 2 | | | |
| 3 | 34 | 13-20 | 2.36 | 5 | Pacific Herring | Preopercle | Central | 2 | 2 | | 1 | |
| 3 | 34 | 13-20 | 2.36 | 52 | Pacific Herring | Prootic | Central | 22 | 17 | | 13 | |
| 3 | 34 | 13-20 | 2.36 | 8 | Pacific Herring | Quadrate | Anterior and Central | 4 | 4 | | | |
| 3 | 34 | 13-20 | 2.36 | 2 | Pacific Herring | Scapula | Complete | 1 | 1 | | | |
| 3 | 34 | 13-20 | 2.36 | 4 | Pacific Herring | Subopercle | Central | 2 | 2 | | | |
| 3 | 34 | 13-20 | 2.36 | 2 | Pacific Herring | Supraoccipital | Complete | | | 2 | | |
| 3 | 34 | 13-20 | 2.36 | 836 | Pacific Herring | Unidentifiable | Fragment | | | | 836 | |
| 3 | 34 | 13-20 | 2.36 | 129 | Pacific Herring | Vertebra | Centrum | | | 129 | | |
| 3 | 34 | 13-20 | 2.36 | 4 | Pacific Herring | Vomer | Complete | | | 4 | | |
| 3 | 34 | 13-20 | 2.36 | 121 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 121 | |
| 3 | 34 | 13-20 | 2.36 | 6 | Unidentified | Unidentifiable | Fragment | | | | 6 | |
| 3 | 34 | 20-34 | 2.36 | 3 | Pacific Herring | Ceratohyal | Central | 2 | 1 | | | |
| 3 | 34 | 20-34 | 2.36 | 1 | Pacific Herring | Dentary | Anterior | | 1 | | | |
| 3 | 34 | 20-34 | 2.36 | 2 | Pacific Herring | Epihyal | Complete | 2 | | | | |
| 3 | 34 | 20-34 | 2.36 | 4 | Pacific Herring | Exoccipital | Central | 3 | 1 | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 34 | 20-34 | 2.36 | 5 | Pacific Herring | Hyomandibular | Superior | 3 | 2 | | | |
| 3 | 34 | 20-34 | 2.36 | 4 | Pacific Herring | Pharyngobranchial | Complete | 2 | 2 | | | |
| 3 | 34 | 20-34 | 2.36 | 1 | Pacific Herring | Preopercle | Central | 1 | | | | |
| 3 | 34 | 20-34 | 2.36 | 11 | Pacific Herring | Prootic | Central | 4 | 4 | | 3 | |
| 3 | 34 | 20-34 | 2.36 | 1 | Pacific Herring | Subopercle | Central | | 1 | | | |
| 3 | 34 | 20-34 | 2.36 | 74 | Pacific Herring | Unidentifiable | Fragment | | | | 74 | |
| 3 | 34 | 20-34 | 2.36 | 22 | Pacific Herring | Vertebra | Centrum | | | 22 | | |
| 3 | 34 | 20-34 | 2.36 | 11 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 11 | |
| 3 | 34 | 34-43 | 2.36 | 1 | Flatfish | Vertebra | Centrum | | | 1 | | |
| 3 | 34 | 34-43 | 2.36 | 1 | Midshipman | Cleithrum | Central | | 1 | | | |
| 3 | 34 | 34-43 | 2.36 | 2 | Pacific Herring | Angular | Posterior and Central | 1 | 1 | | | |
| 3 | 34 | 34-43 | 2.36 | 3 | Pacific Herring | Ceratohyal | Central | 1 | 2 | | | |
| 3 | 34 | 34-43 | 2.36 | 2 | Pacific Herring | Cleithrum | Central | 1 | 1 | | | |
| 3 | 34 | 34-43 | 2.36 | 8 | Pacific Herring | Dentary | Anterior and Central | 4 | 4 | | | |
| 3 | 34 | 34-43 | 2.36 | 2 | Pacific Herring | Epihyal | Anterior and Central | 2 | | | | |
| 3 | 34 | 34-43 | 2.36 | 4 | Pacific Herring | Hyomandibular | Superior | 1 | 3 | | | |
| 3 | 34 | 34-43 | 2.36 | 2 | Pacific Herring | Lacrymal | Complete | | 2 | | | |
| 3 | 34 | 34-43 | 2.36 | 8 | Pacific Herring | Maxilla | Anterior and Central | 5 | 3 | | | |
| 3 | 34 | 34-43 | 2.36 | 2 | Pacific Herring | Metapterygoid | Central | 1 | 1 | | | |
| 3 | 34 | 34-43 | 2.36 | 2 | Pacific Herring | Parasphenoid | Central | | | 2 | | |
| 3 | 34 | 34-43 | 2.36 | 2 | Pacific Herring | Pharyngobranchial | Complete | 1 | 1 | | | |
| 3 | 34 | 34-43 | 2.36 | 1 | Pacific Herring | Preopercle | Central | | | | 1 | |
| 3 | 34 | 34-43 | 2.36 | 7 | Pacific Herring | Prootic | Central | 2 | 4 | | 1 | |
| 3 | 34 | 34-43 | 2.36 | 5 | Pacific Herring | Quadrate | Anterior and Central | 3 | 2 | | | |
| 3 | 34 | 34-43 | 2.36 | 2 | Pacific Herring | Scapula | Complete | 1 | 1 | | | |
| 3 | 34 | 34-43 | 2.36 | 4 | Pacific Herring | Subopercle | Complete | 2 | 2 | | | |
| 3 | 34 | 34-43 | 2.36 | 1 | Pacific Herring | Supraoccipital | Complete | | | 1 | | |
| 3 | 34 | 34-43 | 2.36 | 121 | Pacific Herring | Unidentifiable | Fragment | | | | 121 | |
| 3 | 34 | 34-43 | 2.36 | 5 | Pacific Herring | Vertebra | Centrum | | | 5 | | Burnt |
| 3 | 34 | 34-43 | 2.36 | 44 | Pacific Herring | Vertebra | Centrum | | | 44 | | |
| 3 | 34 | 34-43 | 2.36 | 3 | Pacific Salmon | Vertebral Fragment | Centrum | | | 3 | | |
| 3 | 34 | 34-43 | 2.36 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 34 | 34-43 | 2.36 | 12 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 12 | |
| 3 | 34 | 34-43 | 2.36 | 3 | Unidentified | Unidentifiable | Fragment | | | | 3 | |
| 3 | 34 | 43-52 | 2.36 | 1 | Midshipman | Epihyal | Complete | | 1 | | | |
| 3 | 34 | 43-52 | 2.36 | 4 | Pacific Herring | Angular | Posterior and Central | 2 | 2 | | | |
| 3 | 34 | 43-52 | 2.36 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 3 | 34 | 43-52 | 2.36 | 1 | Pacific Herring | Basioccipital | Complete | | | 1 | | |
| 3 | 34 | 43-52 | 2.36 | 1 | Pacific Herring | Basipterygium | Posterior and Central | 1 | | | | |
| 3 | 34 | 43-52 | 2.36 | 1 | Pacific Herring | Cleithrum | Central | | 1 | | | |
| 3 | 34 | 43-52 | 2.36 | 5 | Pacific Herring | Dentary | Anterior and Central | 4 | 1 | | | |
| 3 | 34 | 43-52 | 2.36 | 2 | Pacific Herring | Epihyal | Complete | 1 | 1 | | | |
| 3 | 34 | 43-52 | 2.36 | 4 | Pacific Herring | Exoccipital | Central | 3 | 1 | | | |
| 3 | 34 | 43-52 | 2.36 | 5 | Pacific Herring | Hyomandibular | Superior | 2 | 3 | | | |
| 3 | 34 | 43-52 | 2.36 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 3 | 34 | 43-52 | 2.36 | 2 | Pacific Herring | Lacrymal | Complete | 1 | 1 | | | |
| 3 | 34 | 43-52 | 2.36 | 4 | Pacific Herring | Maxilla | Anterior and Central | 2 | 2 | | | |
| 3 | 34 | 43-52 | 2.36 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 3 | 34 | 43-52 | 2.36 | 2 | Pacific Herring | Mesopterygoid | Central | 1 | 1 | | | |
| 3 | 34 | 43-52 | 2.36 | 2 | Pacific Herring | Opercle | Anterior | 2 | | | | |
| 3 | 34 | 43-52 | 2.36 | 3 | Pacific Herring | Pharyngobranchial | Complete | 2 | 1 | | | |
| 3 | 34 | 43-52 | 2.36 | 1 | Pacific Herring | Posttemporal | Inferior | | 1 | | | |
| 3 | 34 | 43-52 | 2.36 | 1 | Pacific Herring | Preopercle | Central | | 1 | | | |
| 3 | 34 | 43-52 | 2.36 | 5 | Pacific Herring | Prootic | Central | 2 | 1 | | 2 | |
| 3 | 34 | 43-52 | 2.36 | 2 | Pacific Herring | Quadrate | Complete | 2 | | | | |
| 3 | 34 | 43-52 | 2.36 | 1 | Pacific Herring | Subopercle | Central | 1 | | | | |
| 3 | 34 | 43-52 | 2.36 | 97 | Pacific Herring | Unidentifiable | Fragment | | | | 97 | |
| 3 | 34 | 43-52 | 2.36 | 60 | Pacific Herring | Vertebra | Centrum | | | 60 | | |
| 3 | 34 | 43-52 | 2.36 | 1 | Pacific Herring | Vomer | Complete | | | 1 | | |
| 3 | 34 | 43-52 | 2.36 | 1 | Pacific Salmon | Tooth | Complete | | | | 1 | |
| 3 | 34 | 43-52 | 2.36 | 3 | Pacific Salmon | Vertebral Fragment | Centrum | | | 3 | | Burnt |
| 3 | 34 | 43-52 | 2.36 | 1 | Surfperch | Ceratohyal | Complete | | 1 | | | With attached hypohyal |
| 3 | 34 | 43-52 | 2.36 | 29 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 29 | |
| 3 | 34 | 43-52 | 2.36 | 9 | Unidentified | Unidentifiable | Fragment | | | | 9 | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 34 | 52-61 | 2.36 | 3 | Midshipman | Vertebra | Centrum | | | 3 | | Burnt |
| 3 | 34 | 52-61 | 2.36 | 1 | Pacific Herring | Angular | Posterior | | 1 | | | |
| 3 | 34 | 52-61 | 2.36 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 3 | 34 | 52-61 | 2.36 | 1 | Pacific Herring | Dentary | Superior | | 1 | | | |
| 3 | 34 | 52-61 | 2.36 | 2 | Pacific Herring | Epihyal | Complete | 1 | 1 | | | |
| 3 | 34 | 52-61 | 2.36 | 2 | Pacific Herring | Hyomandibular | Superior | 1 | 1 | | | |
| 3 | 34 | 52-61 | 2.36 | 3 | Pacific Herring | Maxilla | Central | 1 | 2 | | | |
| 3 | 34 | 52-61 | 2.36 | 1 | Pacific Herring | Pharyngobranchial | Complete | | 1 | | | |
| 3 | 34 | 52-61 | 2.36 | 1 | Pacific Herring | Posttemporal | Inferior | 1 | | | | |
| 3 | 34 | 52-61 | 2.36 | 1 | Pacific Herring | Prootic | Central | 1 | 1 | | | |
| 3 | 34 | 52-61 | 2.36 | 43 | Pacific Herring | Unidentifiable | Fragment | | | | 43 | |
| 3 | 34 | 52-61 | 2.36 | 6 | Pacific Herring | Vertebra | Centrum | | | 6 | | Burnt |
| 3 | 34 | 52-61 | 2.36 | 30 | Pacific Herring | Vertebra | Centrum | | | 30 | | |
| 3 | 34 | 52-61 | 2.36 | 2 | Pacific Salmon | Tooth | Complete | | | | 2 | Burnt |
| 3 | 34 | 52-61 | 2.36 | 19 | Pacific Salmon | Vertebral Fragment | Centrum | | | 19 | | Burnt |
| 3 | 34 | 52-61 | 2.36 | 2 | Spiny Dogfish | Vertebra | Centrum | | | 2 | | Burnt |
| 3 | 34 | 52-61 | 2.36 | 10 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 10 | Burnt |
| 3 | 34 | 52-61 | 2.36 | 6 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 6 | |
| 3 | 34 | 52-61 | 2.36 | 2 | Unidentified | Unidentifiable | Fragment | | | | 2 | Burnt |
| 3 | 34 | 61-68 | 2.36 | 3 | Greenling | Dentary | Superior and Central | | 3 | | | |
| 3 | 34 | 61-68 | 2.36 | 1 | Greenling | Vertebra | Centrum | | | 1 | | |
| 3 | 34 | 61-68 | 2.36 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 3 | 34 | 61-68 | 2.36 | 1 | Pacific Herring | Ceratohyal | Central | | 1 | | | |
| 3 | 34 | 61-68 | 2.36 | 1 | Pacific Herring | Dentary | Superior and Central | 1 | | | | |
| 3 | 34 | 61-68 | 2.36 | 1 | Pacific Herring | Epihyal | Anterior | | 1 | | | |
| 3 | 34 | 61-68 | 2.36 | 1 | Pacific Herring | Exoccipital | Complete | 1 | | | | |
| 3 | 34 | 61-68 | 2.36 | 1 | Pacific Herring | Hyomandibular | Superior | | 1 | | | |
| 3 | 34 | 61-68 | 2.36 | 1 | Pacific Herring | Lacrymal | Complete | | 1 | | | |
| 3 | 34 | 61-68 | 2.36 | 1 | Pacific Herring | Maxilla | Anterior | | 1 | | | |
| 3 | 34 | 61-68 | 2.36 | 1 | Pacific Herring | Opercle | Complete | | 1 | | | |
| 3 | 34 | 61-68 | 2.36 | 1 | Pacific Herring | Pharyngobranchial | Complete | 1 | | | | |
| 3 | 34 | 61-68 | 2.36 | 1 | Pacific Herring | Posttemporal | Complete | 1 | | | | |

# DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 34 | 61-68 | 2.36 | 2 | Pacific Herring | Prootic | Central | 1 | | | 1 | |
| 3 | 34 | 61-68 | 2.36 | 1 | Pacific Herring | Quadrate | Anterior | | 1 | | | |
| 3 | 34 | 61-68 | 2.36 | 13 | Pacific Herring | Unidentifiable | Fragment | | | | 13 | |
| 3 | 34 | 61-68 | 2.36 | 10 | Pacific Herring | Vertebra | Centrum | | | 10 | | Burnt |
| 3 | 34 | 61-68 | 2.36 | 17 | Pacific Herring | Vertebra | Centrum | | | 17 | | |
| 3 | 34 | 61-68 | 2.36 | 1 | Pacific Herring | Vomer | Anterior | | | 1 | | |
| 3 | 34 | 61-68 | 2.36 | 4 | Pacific Salmon | Tooth | Complete | | | | 4 | Burnt |
| 3 | 34 | 61-68 | 2.36 | 14 | Pacific Salmon | Vertebral Fragment | Centrum | | | 14 | | Burnt |
| 3 | 34 | 61-68 | 2.36 | 2 | Surfperch | Vertebra | Centrum | | | 2 | | |
| 3 | 34 | 61-68 | 2.36 | 14 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 14 | Burnt |
| 3 | 34 | 61-68 | 2.36 | 1 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 1 | |
| 3 | 34 | 61-68 | 2.36 | 8 | Unidentified | Unidentifiable | Fragment | | | | 8 | Burnt |
| 3 | 34 | 61-68 | 2.36 | 3 | Unidentified | Unidentifiable | Fragment | | | | 3 | |
| 3 | 34 | 68-70.5 | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | Burnt |
| 3 | 34 | 68-70.5 | 2.36 | 1 | Pacific Herring | Ceratohyal | Complete | 1 | | | | |
| 3 | 34 | 68-70.5 | 2.36 | 6 | Pacific Herring | Unidentifiable | Fragment | | | | 6 | |
| 3 | 34 | 68-70.5 | 2.36 | 17 | Pacific Herring | Vertebra | Centrum | | | 17 | | Burnt |
| 3 | 34 | 68-70.5 | 2.36 | 6 | Pacific Herring | Vertebra | Centrum | | | 6 | | |
| 3 | 34 | 68-70.5 | 2.36 | 6 | Pacific Salmon | Vertebral Fragment | Centrum | | | 6 | | Burnt |
| 3 | 34 | 68-70.5 | 2.36 | 10 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 10 | |
| 3 | 35 | 0-14 | 2.36 | 2 | Flatfish | Dentary | Central | | 2 | | | |
| 3 | 35 | 0-14 | 2.36 | 6 | Pacific Herring | Angular | Posterior and Central | 4 | 2 | | | |
| 3 | 35 | 0-14 | 2.36 | 5 | Pacific Herring | Atlas | Centrum | | | 5 | | |
| 3 | 35 | 0-14 | 2.36 | 4 | Pacific Herring | Basioccipital | Complete | | | 4 | | |
| 3 | 35 | 0-14 | 2.36 | 2 | Pacific Herring | Basipterygium | Posterior | 1 | 1 | | | |
| 3 | 35 | 0-14 | 2.36 | 7 | Pacific Herring | Ceratohyal | Central | 3 | 4 | | | |
| 3 | 35 | 0-14 | 2.36 | 4 | Pacific Herring | Cleithrum | Central | 3 | 1 | | | |
| 3 | 35 | 0-14 | 2.36 | 2 | Pacific Herring | Coracoid | Complete | 1 | 1 | | | |
| 3 | 35 | 0-14 | 2.36 | 9 | Pacific Herring | Epihyal | Complete | 4 | 5 | | | |
| 3 | 35 | 0-14 | 2.36 | 13 | Pacific Herring | Exoccipital | Central | 6 | 7 | | | |
| 3 | 35 | 0-14 | 2.36 | 9 | Pacific Herring | Hyomandibular | Superior and Central | 3 | 6 | | | |
| 3 | 35 | 0-14 | 2.36 | 2 | Pacific Herring | Hypural | Complete | | | 2 | | |

# DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 35 | 0-14 | 2.36 | 7 | Pacific Herring | Maxilla | Anterior and Central | 3 | 4 | | | |
| 3 | 35 | 0-14 | 2.36 | 3 | Pacific Herring | Mesethmoid | Complete | | | 3 | | |
| 3 | 35 | 0-14 | 2.36 | 3 | Pacific Herring | Mesopterygoid | Central | 1 | 2 | | | |
| 3 | 35 | 0-14 | 2.36 | 2 | Pacific Herring | Parasphenoid | Central | | | 2 | | |
| 3 | 35 | 0-14 | 2.36 | 11 | Pacific Herring | Pharyngobranchial | Complete | 5 | 6 | | | |
| 3 | 35 | 0-14 | 2.36 | 5 | Pacific Herring | Posttemporal | Inferior | 2 | 3 | | | |
| 3 | 35 | 0-14 | 2.36 | 26 | Pacific Herring | Prootic | Central | 9 | 11 | | 6 | |
| 3 | 35 | 0-14 | 2.36 | 1 | Pacific Herring | Supraoccipital | Complete | | | 1 | | |
| 3 | 35 | 0-14 | 2.36 | 588 | Pacific Herring | Unidentifiable | Fragment | | | | 288 | |
| 3 | 35 | 0-14 | 2.36 | 204 | Pacific Herring | Vertebra | Centrum | | | 204 | | |
| 3 | 35 | 0-14 | 2.36 | 2 | Pacific Herring | Vomer | Anterior | | | 2 | | |
| 3 | 35 | 0-14 | 2.36 | 5 | Pacific Salmon | Vertebral Fragment | Centrum | | | 5 | | |
| 3 | 35 | 0-14 | 2.36 | 1 | Surfperch | Pharyngeal Tooth | Complete | | | 1 | | |
| 3 | 35 | 0-14 | 2.36 | 128 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 128 | |
| 3 | 35 | 0-14 | 2.36 | 37 | Unidentified | Unidentifiable | Fragment | | | | 37 | |
| 3 | 35 | 14-18.5 | 2.36 | 1 | Midshipman | Ceratohyal | Complete | 1 | | | | |
| 3 | 35 | 14-18.5 | 2.36 | 8 | Pacific Herring | Angular | Posterior and Central | 5 | 3 | | | |
| 3 | 35 | 14-18.5 | 2.36 | 8 | Pacific Herring | Atlas | Centrum | | | 8 | | |
| 3 | 35 | 14-18.5 | 2.36 | 6 | Pacific Herring | Basioccipital | Complete | | | 6 | | |
| 3 | 35 | 14-18.5 | 2.36 | 3 | Pacific Herring | Basipterygium | Posterior and Central | 1 | 2 | | | |
| 3 | 35 | 14-18.5 | 2.36 | 15 | Pacific Herring | Ceratohyal | Anterior and Central | 8 | 7 | | | |
| 3 | 35 | 14-18.5 | 2.36 | 6 | Pacific Herring | Coracoid | Complete | 4 | 2 | | | |
| 3 | 35 | 14-18.5 | 2.36 | 7 | Pacific Herring | Dentary | Anterior | 4 | 3 | | | |
| 3 | 35 | 14-18.5 | 2.36 | 2 | Pacific Herring | Ectopterygoid | Complete | 1 | 1 | | | |
| 3 | 35 | 14-18.5 | 2.36 | 11 | Pacific Herring | Epihyal | Complete | 7 | 4 | | | |
| 3 | 35 | 14-18.5 | 2.36 | 19 | Pacific Herring | Exoccipital | Central | 8 | 9 | | 2 | |
| 3 | 35 | 14-18.5 | 2.36 | 4 | Pacific Herring | Frontal | Complete | | | 4 | | |
| 3 | 35 | 14-18.5 | 2.36 | 16 | Pacific Herring | Hyomandibular | Superior | 9 | 7 | | | |
| 3 | 35 | 14-18.5 | 2.36 | 4 | Pacific Herring | Hypural | Complete | | | 4 | | |
| 3 | 35 | 14-18.5 | 2.36 | 7 | Pacific Herring | Lacrymal | Central | 3 | 4 | | | |
| 3 | 35 | 14-18.5 | 2.36 | 9 | Pacific Herring | Maxilla | Anterior and Central | 4 | 5 | | | |
| 3 | 35 | 14-18.5 | 2.36 | 5 | Pacific Herring | Mesethmoid | Complete | | | 5 | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 35 | 14-18.5 | 2.36 | 5 | Pacific Herring | Mesopterygoid | Central | 2 | 3 | | | |
| 3 | 35 | 14-18.5 | 2.36 | 3 | Pacific Herring | Metapterygoid | Central | 1 | 2 | | | |
| 3 | 35 | 14-18.5 | 2.36 | 3 | Pacific Herring | Opercle | Complete | 2 | 1 | | | |
| 3 | 35 | 14-18.5 | 2.36 | 5 | Pacific Herring | Parasphenoid | Central | | | 5 | | |
| 3 | 35 | 14-18.5 | 2.36 | 27 | Pacific Herring | Pharyngobranchial | Complete | 15 | 12 | | | |
| 3 | 35 | 14-18.5 | 2.36 | 11 | Pacific Herring | Posttemporal | Inferior | 7 | 4 | | | |
| 3 | 35 | 14-18.5 | 2.36 | 7 | Pacific Herring | Preopercle | Central | 4 | 3 | | | |
| 3 | 35 | 14-18.5 | 2.36 | 37 | Pacific Herring | Prootic | Central | 10 | 15 | | 12 | |
| 3 | 35 | 14-18.5 | 2.36 | 10 | Pacific Herring | Quadrate | Anterior and Central | 6 | 4 | | | |
| 3 | 35 | 14-18.5 | 2.36 | 4 | Pacific Herring | Scapula | Complete | 2 | 2 | | | |
| 3 | 35 | 14-18.5 | 2.36 | 8 | Pacific Herring | Subopercle | Central | 4 | 4 | | | |
| 3 | 35 | 14-18.5 | 2.36 | 3 | Pacific Herring | Supraoccipital | Complete | | | 3 | | |
| 3 | 35 | 14-18.5 | 2.36 | 667 | Pacific Herring | Unidentifiable | Fragment | | | | 667 | |
| 3 | 35 | 14-18.5 | 2.36 | 417 | Pacific Herring | Vertebra | Centrum | | | 417 | | |
| 3 | 35 | 14-18.5 | 2.36 | 6 | Pacific Herring | Vomer | Anterior and Central | | | 6 | | |
| 3 | 35 | 14-18.5 | 2.36 | 94 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 94 | |
| 3 | 35 | 14-18.5 | 2.36 | 3 | Unidentified | Unidentifiable | Fragment | | | | 3 | |
| 3 | 35 | 18.5-22.5 | 2.36 | 1 | Midshipman | Opercle | Complete | 1 | | | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 4 | Pacific Herring | Angular | Posterior | 2 | 2 | | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 6 | Pacific Herring | Atlas | Centrum | | | 6 | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 2 | Pacific Herring | Basioccipital | Posterior and Central | | | 2 | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 2 | Pacific Herring | Basipterygium | Posterior and Central | 1 | 1 | | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 3 | Pacific Herring | Ceratohyal | Central | 2 | 1 | | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 2 | Pacific Herring | Cleithrum | Central | 1 | 1 | | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 1 | Pacific Herring | Coracoid | Central | 1 | | | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 4 | Pacific Herring | Epihyal | Complete | 3 | 1 | | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 7 | Pacific Herring | Exoccipital | Central | 4 | 3 | | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 11 | Pacific Herring | Hyomandibular | Superior | 5 | 6 | | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 5 | Pacific Herring | Maxilla | Anterior and Central | 3 | 2 | | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 35 | 18.5-22.5 | 2.36 | 2 | Pacific Herring | Mesopterygoid | Central | 1 | 1 | | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 1 | Pacific Herring | Parasphenoid | Central | | | 1 | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 8 | Pacific Herring | Pharyngobranchial | Complete | 5 | 3 | | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 2 | Pacific Herring | Posttemporal | Inferior | 2 | | | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 13 | Pacific Herring | Prootic | Central | 4 | 5 | | 4 | |
| 3 | 35 | 18.5-22.5 | 2.36 | 1 | Pacific Herring | Supraoccipital | Complete | | | 1 | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 288 | Pacific Herring | Unidentifiable | Fragment | | | | 288 | |
| 3 | 35 | 18.5-22.5 | 2.36 | 130 | Pacific Herring | Vertebra | Centrum | | | 130 | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 1 | Pacific Herring | Vomer | Anterior | | | 1 | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 3 | 35 | 18.5-22.5 | 2.36 | 74 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 74 | |
| 3 | 35 | 18.5-22.5 | 2.36 | 5 | Unidentified | Unidentifiable | Fragment | | | | 5 | |
| 3 | 35 | 22.5-35 | 2.36 | 2 | Midshipman | Vertebra | Centrum | | | 2 | | |
| 3 | 35 | 22.5-35 | 2.36 | 6 | Pacific Herring | Angular | Posterior and Central | 4 | 2 | | | |
| 3 | 35 | 22.5-35 | 2.36 | 5 | Pacific Herring | Atlas | Centrum | | | 5 | | |
| 3 | 35 | 22.5-35 | 2.36 | 8 | Pacific Herring | Basioccipital | Complete | | | 8 | | |
| 3 | 35 | 22.5-35 | 2.36 | 9 | Pacific Herring | Ceratohyal | Central | 5 | 4 | | | |
| 3 | 35 | 22.5-35 | 2.36 | 7 | Pacific Herring | Cleithrum | Central | 3 | 4 | | | |
| 3 | 35 | 22.5-35 | 2.36 | 1 | Pacific Herring | Coracoid | Complete | | 1 | | | |
| 3 | 35 | 22.5-35 | 2.36 | 13 | Pacific Herring | Dentary | Anterior and Central | 8 | 5 | | | |
| 3 | 35 | 22.5-35 | 2.36 | 7 | Pacific Herring | Epihyal | Complete | 3 | 4 | | | |
| 3 | 35 | 22.5-35 | 2.36 | 19 | Pacific Herring | Exoccipital | Central | 9 | 10 | | | |
| 3 | 35 | 22.5-35 | 2.36 | 2 | Pacific Herring | Frontal | Complete | | | 2 | | |
| 3 | 35 | 22.5-35 | 2.36 | 19 | Pacific Herring | Hyomandibular | Superior and Central | 10 | 9 | | | |
| 3 | 35 | 22.5-35 | 2.36 | 6 | Pacific Herring | Lacrymal | Central | 3 | 3 | | | |
| 3 | 35 | 22.5-35 | 2.36 | 16 | Pacific Herring | Maxilla | Anterior and Central | 7 | 9 | | | |
| 3 | 35 | 22.5-35 | 2.36 | 2 | Pacific Herring | Mesethmoid | Complete | | | 2 | | |
| 3 | 35 | 22.5-35 | 2.36 | 6 | Pacific Herring | Mesopterygoid | Central | 5 | 1 | | | |
| 3 | 35 | 22.5-35 | 2.36 | 8 | Pacific Herring | Opercle | Anterior | 3 | 5 | | | |
| 3 | 35 | 22.5-35 | 2.36 | 3 | Pacific Herring | Parasphenoid | Central | | | 3 | | |
| 3 | 35 | 22.5-35 | 2.36 | 34 | Pacific Herring | Pharyngobranchial | Complete | 16 | 18 | | | |
| 3 | 35 | 22.5-35 | 2.36 | 4 | Pacific Herring | Posttemporal | Inferior | 2 | 2 | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 35 | 22.5-35 | 2.36 | 14 | Pacific Herring | Preopercle | Central | 8 | 6 | | | |
| 3 | 35 | 22.5-35 | 2.36 | 54 | Pacific Herring | Prootic | Central | 23 | 19 | | 12 | |
| 3 | 35 | 22.5-35 | 2.36 | 11 | Pacific Herring | Quadrate | Anterior | 5 | 6 | | | |
| 3 | 35 | 22.5-35 | 2.36 | 19 | Pacific Herring | Subopercle | Central | 8 | 11 | | | |
| 3 | 35 | 22.5-35 | 2.36 | 4 | Pacific Herring | Supraoccipital | Complete | | | 4 | | |
| 3 | 35 | 22.5-35 | 2.36 | 990 | Pacific Herring | Unidentifiable | Fragment | | | | 990 | |
| 3 | 35 | 22.5-35 | 2.36 | 160 | Pacific Herring | Vertebra | Centrum | | | 160 | | |
| 3 | 35 | 22.5-35 | 2.36 | 1 | Pacific Herring | Vomer | Anterior and Central | | | 1 | | |
| 3 | 35 | 22.5-35 | 2.36 | 51 | Pacific Salmon | Vertebral Fragment | Centrum | | | 51 | | |
| 3 | 35 | 22.5-35 | 2.36 | 1 | Surfperch | Angular | Posterior and Central | | 1 | | | |
| 3 | 35 | 22.5-35 | 2.36 | 574 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 574 | |
| 3 | 35 | 22.5-35 | 2.36 | 46 | Unidentified | Unidentifiable | Fragment | | | | 26 | |
| 3 | 35 | 35-43 | 2.36 | 1 | Flatfish | Hyomandibular | Central | | 1 | | | |
| 3 | 35 | 35-43 | 2.36 | 1 | Midshipman | Ceratohyal | Complete | | 1 | | | |
| 3 | 35 | 35-43 | 2.36 | 1 | Midshipman | Opercle | Complete | 1 | | | | |
| 3 | 35 | 35-43 | 2.36 | 3 | Pacific Herring | Atlas | Centrum | | | 3 | | |
| 3 | 35 | 35-43 | 2.36 | 2 | Pacific Herring | Basioccipital | Complete | | | 2 | | |
| 3 | 35 | 35-43 | 2.36 | 3 | Pacific Herring | Basipterygium | Posterior and Central | 1 | 2 | | | |
| 3 | 35 | 35-43 | 2.36 | 5 | Pacific Herring | Ceratohyal | Central | 2 | 3 | | | |
| 3 | 35 | 35-43 | 2.36 | 5 | Pacific Herring | Epihyal | Complete | 2 | 1 | | | |
| 3 | 35 | 35-43 | 2.36 | 3 | Pacific Herring | Exoccipital | Complete | 2 | 1 | | | |
| 3 | 35 | 35-43 | 2.36 | 5 | Pacific Herring | Hyomandibular | Superior | 3 | 2 | | | |
| 3 | 35 | 35-43 | 2.36 | 6 | Pacific Herring | Maxilla | Anterior | 2 | 4 | | | |
| 3 | 35 | 35-43 | 2.36 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 3 | 35 | 35-43 | 2.36 | 3 | Pacific Herring | Opercle | Complete | 2 | 1 | | | |
| 3 | 35 | 35-43 | 2.36 | 8 | Pacific Herring | Pharyngobranchial | Complete | 3 | 5 | | | |
| 3 | 35 | 35-43 | 2.36 | 2 | Pacific Herring | Posttemporal | Inferior | 1 | 1 | | | |
| 3 | 35 | 35-43 | 2.36 | 7 | Pacific Herring | Prootic | Central | 3 | 2 | | 2 | |
| 3 | 35 | 35-43 | 2.36 | 2 | Pacific Herring | Quadrate | Anterior | 1 | 1 | | | |
| 3 | 35 | 35-43 | 2.36 | 89 | Pacific Herring | Unidentifiable | Fragment | | | | 89 | |
| 3 | 35 | 35-43 | 2.36 | 82 | Pacific Herring | Vertebra | Centrum | | | 82 | | |
| 3 | 35 | 35-43 | 2.36 | 3 | Pacific Herring | Vomer | Anterior and Central | | | 3 | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 35 | 35-43 | 2.36 | 27 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 27 | |
| 3 | 35 | 35-43 | 2.36 | 2 | Unidentified | Unidentifiable | Fragment | | | | 2 | |
| 3 | 35 | 43-49 | 2.36 | 9 | Pacific Herring | Atlas | Centrum | | | 9 | | |
| 3 | 35 | 43-49 | 2.36 | 2 | Pacific Herring | Basioccipital | Complete | | | 2 | | |
| 3 | 35 | 43-49 | 2.36 | 2 | Pacific Herring | Basioccipital | Posterior | | | 2 | | |
| 3 | 35 | 43-49 | 2.36 | 11 | Pacific Herring | Basipterygium | Posterior and Central | 4 | 5 | | 2 | |
| 3 | 35 | 43-49 | 2.36 | 1 | Pacific Herring | Ceratohyal | Complete | | 1 | | | |
| 3 | 35 | 43-49 | 2.36 | 11 | Pacific Herring | Cleithrum | Central | 4 | 7 | | | |
| 3 | 35 | 43-49 | 2.36 | 7 | Pacific Herring | Coracoid | Complete | 3 | 4 | | | |
| 3 | 35 | 43-49 | 2.36 | 3 | Pacific Herring | Epihyal | Complete | 2 | 1 | | | |
| 3 | 35 | 43-49 | 2.36 | 4 | Pacific Herring | Exoccipital | Central | 2 | 2 | | | |
| 3 | 35 | 43-49 | 2.36 | 3 | Pacific Herring | Exoccipital | Complete | 1 | 2 | | | |
| 3 | 35 | 43-49 | 2.36 | 4 | Pacific Herring | Frontal | Complete | | | 4 | | |
| 3 | 35 | 43-49 | 2.36 | 5 | Pacific Herring | Hyomandibular | Superior | 3 | 2 | | | |
| 3 | 35 | 43-49 | 2.36 | 1 | Pacific Herring | Hyomandibular | Superior and Central | | | | 1 | |
| 3 | 35 | 43-49 | 2.36 | 13 | Pacific Herring | Hypural | Complete | | | 13 | | |
| 3 | 35 | 43-49 | 2.36 | 1 | Pacific Herring | Maxilla | Anterior | 1 | | | | |
| 3 | 35 | 43-49 | 2.36 | 7 | Pacific Herring | Mesethmoid | Complete | | | 7 | | |
| 3 | 35 | 43-49 | 2.36 | 8 | Pacific Herring | Mesopterygoid | Central | 4 | 4 | | | |
| 3 | 35 | 43-49 | 2.36 | 1 | Pacific Herring | Opercle | Complete | 1 | | | | |
| 3 | 35 | 43-49 | 2.36 | 11 | Pacific Herring | Pharyngobranchial | Complete | 6 | 5 | | | |
| 3 | 35 | 43-49 | 2.36 | 2 | Pacific Herring | Posttemporal | Complete | 2 | | | | |
| 3 | 35 | 43-49 | 2.36 | 4 | Pacific Herring | Prootic | Central | 1 | 2 | | 1 | |
| 3 | 35 | 43-49 | 2.36 | 7 | Pacific Herring | Prootic | Central | 2 | 3 | | 2 | |
| 3 | 35 | 43-49 | 2.36 | 1 | Pacific Herring | Quadrate | Anterior | | 1 | | | |
| 3 | 35 | 43-49 | 2.36 | 4 | Pacific Herring | Supraoccipital | Anterior and Central | | | 4 | | |
| 3 | 35 | 43-49 | 2.36 | 235 | Pacific Herring | Unidentifiable | Fragment | | | | 235 | |
| 3 | 35 | 43-49 | 2.36 | 354 | Pacific Herring | Vertebra | Centrum | | | 354 | | |
| 3 | 35 | 43-49 | 2.36 | 1 | Pacific Herring | Vomer | Anterior | | | 1 | | |
| 3 | 35 | 43-49 | 2.36 | 3 | Pacific Herring | Vomer | Complete | | | 3 | | |
| 3 | 35 | 43-49 | 2.36 | 146 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 146 | |
| 3 | 35 | 49-60 | 2.36 | 1 | Midshipman | Hyomandibular | Complete | | 1 | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 35 | 49-60 | 2.36 | 1 | Pacific Herring | Angular | Posterior | | 1 | | | |
| 3 | 35 | 49-60 | 2.36 | 4 | Pacific Herring | Atlas | Centrum | | | 4 | | |
| 3 | 35 | 49-60 | 2.36 | 1 | Pacific Herring | Basipterygium | Posterior and Central | | 1 | | | |
| 3 | 35 | 49-60 | 2.36 | 2 | Pacific Herring | Cleithrum | Central | 1 | 1 | | | |
| 3 | 35 | 49-60 | 2.36 | 1 | Pacific Herring | Coracoid | Complete | | 1 | | | |
| 3 | 35 | 49-60 | 2.36 | 1 | Pacific Herring | Dentary | Anterior and Central | 1 | | | | |
| 3 | 35 | 49-60 | 2.36 | 5 | Pacific Herring | Epural | Complete | | | 5 | | |
| 3 | 35 | 49-60 | 2.36 | 4 | Pacific Herring | Exoccipital | Central | 2 | 2 | | | |
| 3 | 35 | 49-60 | 2.36 | 3 | Pacific Herring | Hyomandibular | Superior | 2 | 1 | | | |
| 3 | 35 | 49-60 | 2.36 | 2 | Pacific Herring | Hypural | Complete | | | 2 | | |
| 3 | 35 | 49-60 | 2.36 | 1 | Pacific Herring | Maxilla | Anterior | 1 | | | | |
| 3 | 35 | 49-60 | 2.36 | 5 | Pacific Herring | Mesethmoid | Complete | | | 5 | | |
| 3 | 35 | 49-60 | 2.36 | 1 | Pacific Herring | Mesopterygoid | Central | | 1 | | | |
| 3 | 35 | 49-60 | 2.36 | 1 | Pacific Herring | Opercle | Anterior and Central | 1 | | | | |
| 3 | 35 | 49-60 | 2.36 | 1 | Pacific Herring | Pharyngobranchial | Complete | 1 | | | | |
| 3 | 35 | 49-60 | 2.36 | 3 | Pacific Herring | Posttemporal | Inferior | 1 | 2 | | | |
| 3 | 35 | 49-60 | 2.36 | 2 | Pacific Herring | Preopercle | Central | | 2 | | | |
| 3 | 35 | 49-60 | 2.36 | 8 | Pacific Herring | Prootic | Central | 2 | 3 | | 3 | |
| 3 | 35 | 49-60 | 2.36 | 2 | Pacific Herring | Scapula | Complete | 2 | | | | |
| 3 | 35 | 49-60 | 2.36 | 1 | Pacific Herring | Subopercle | Complete | | 1 | | | |
| 3 | 35 | 49-60 | 2.36 | 68 | Pacific Herring | Unidentifiable | Fragment | | | | 68 | |
| 3 | 35 | 49-60 | 2.36 | 243 | Pacific Herring | Vertebra | Centrum | | | 243 | | |
| 3 | 35 | 49-60 | 2.36 | 4 | Pacific Herring | Vomer | Anterior and Central | | | 4 | | |
| 3 | 35 | 49-60 | 2.36 | 84 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 84 | |
| 3 | 35 | 60-68 | 2.36 | 2 | Pacific Herring | Ceratohyal | Central | 1 | 1 | | | |
| 3 | 35 | 60-68 | 2.36 | 1 | Pacific Herring | Epihyal | Complete | | 1 | | | |
| 3 | 35 | 60-68 | 2.36 | 1 | Pacific Herring | Hyomandibular | Complete | | 1 | | | |
| 3 | 35 | 60-68 | 2.36 | 1 | Pacific Herring | Maxilla | Central | 1 | | | | |
| 3 | 35 | 60-68 | 2.36 | 1 | Pacific Herring | Posttemporal | Inferior | | 1 | | | |
| 3 | 35 | 60-68 | 2.36 | 2 | Pacific Herring | Prootic | Central | 1 | 1 | | | |
| 3 | 35 | 60-68 | 2.36 | 19 | Pacific Herring | Unidentifiable | Fragment | | | | 19 | |
| 3 | 35 | 60-68 | 2.36 | 27 | Pacific Herring | Vertebra | Centrum | | | 27 | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 35 | 60-68 | 2.36 | 10 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 10 | |
| 3 | 35 | 60-68 | 2.36 | 3 | Unidentified | Unidentifiable | Fragment | | | | 3 | |
| 3 | 35 | 68-73 | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | Burnt |
| 3 | 35 | 68-73 | 2.36 | 2 | Pacific Herring | Atlas | Centrum | | | 2 | | |
| 3 | 35 | 68-73 | 2.36 | 1 | Pacific Herring | Exoccipital | Central | | 1 | | | |
| 3 | 35 | 68-73 | 2.36 | 1 | Pacific Herring | Frontal | Complete | | | 1 | | |
| 3 | 35 | 68-73 | 2.36 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 3 | 35 | 68-73 | 2.36 | 2 | Pacific Herring | Posttemporal | Inferior | 1 | 1 | | | |
| 3 | 35 | 68-73 | 2.36 | 4 | Pacific Herring | Prootic | Central | 1 | 1 | | 2 | Burnt |
| 3 | 35 | 68-73 | 2.36 | 7 | Pacific Herring | Prootic | Central | 4 | 5 | | 1 | |
| 3 | 35 | 68-73 | 2.36 | 39 | Pacific Herring | Unidentifiable | Fragment | | | | 39 | |
| 3 | 35 | 68-73 | 2.36 | 25 | Pacific Herring | Vertebra | Centrum | | | 25 | | |
| 3 | 35 | 68-73 | 2.36 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | Burnt |
| 3 | 35 | 68-73 | 2.36 | 2 | Pacific Salmon | Vertebral Fragment | Centrum | | | 2 | | |
| 3 | 35 | 68-73 | 2.36 | 14 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 14 | |
| 3 | 35 | 68-73 | 2.36 | 6 | Unidentified | Unidentifiable | Fragment | | | | 6 | |
| 3 | 35 | 73-75 | 2.36 | 1 | Pacific Herring | Basioccipital | Complete | | | 1 | | |
| 3 | 35 | 73-75 | 2.36 | 1 | Pacific Herring | Prootic | Central | 1 | | | | |
| 3 | 35 | 73-75 | 2.36 | 11 | Pacific Herring | Unidentifiable | Fragment | | | | 11 | |
| 3 | 35 | 73-75 | 2.36 | 14 | Pacific Herring | Vertebra | Centrum | | | 14 | | |
| 3 | 35 | 73-75 | 2.36 | 1 | Pacific Herring | Vomer | Complete | | | 1 | | |
| 3 | 36 | 0-12 | 2.36 | 2 | Pacific Herring | Angular | Posterior | 1 | 1 | | | |
| 3 | 36 | 0-12 | 2.36 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 3 | 36 | 0-12 | 2.36 | 2 | Pacific Herring | Basipterygium | Posterior | 1 | 1 | | | |
| 3 | 36 | 0-12 | 2.36 | 4 | Pacific Herring | Ceratohyal | Central | 1 | 3 | | | |
| 3 | 36 | 0-12 | 2.36 | 3 | Pacific Herring | Cleithrum | Central | 2 | 1 | | | |
| 3 | 36 | 0-12 | 2.36 | 1 | Pacific Herring | Coracoid | Complete | | 1 | | | |
| 3 | 36 | 0-12 | 2.36 | 3 | Pacific Herring | Dentary | Anterior and Central | 2 | 1 | | | |
| 3 | 36 | 0-12 | 2.36 | 2 | Pacific Herring | Epihyal | Complete | 1 | 1 | | | |
| 3 | 36 | 0-12 | 2.36 | 6 | Pacific Herring | Exoccipital | Central | 4 | 2 | | | |
| 3 | 36 | 0-12 | 2.36 | 5 | Pacific Herring | Hyomandibular | Superior | 3 | 2 | | | |
| 3 | 36 | 0-12 | 2.36 | 7 | Pacific Herring | Pharyngobranchial | Complete | 4 | 3 | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 36 | 0-12 | 2.36 | 7 | Pacific Herring | Prootic | Central | 2 | 4 | | 1 | |
| 3 | 36 | 0-12 | 2.36 | 3 | Pacific Herring | Quadrate | Anterior | 1 | 2 | | | |
| 3 | 36 | 0-12 | 2.36 | 2 | Pacific Herring | Subopercle | Central | | 1 | | 1 | |
| 3 | 36 | 0-12 | 2.36 | 56 | Pacific Herring | Unidentifiable | Fragment | | | | 56 | |
| 3 | 36 | 0-12 | 2.36 | 46 | Pacific Herring | Vertebra | Centrum | | | 46 | | |
| 3 | 36 | 0-12 | 2.36 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 3 | 36 | 0-12 | 2.36 | 1 | Spiny Dogfish | Tooth | Complete | | | | 1 | |
| 3 | 36 | 0-12 | 2.36 | 2 | Spiny Dogfish | Vertebra | Centrum | | | 2 | | |
| 3 | 36 | 0-12 | 2.36 | 9 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 9 | |
| 3 | 36 | 0-12 | 2.36 | 4 | Unidentified | Unidentifiable | Fragment | | | | 4 | |
| 3 | 36 | 12-22 | 2.36 | 1 | Flatfish | Vertebra | Centrum | | | 1 | | |
| 3 | 36 | 12-22 | 2.36 | 7 | Pacific Herring | Angular | Posterior and Central | 3 | 4 | | | |
| 3 | 36 | 12-22 | 2.36 | 8 | Pacific Herring | Atlas | Centrum | | | 8 | | |
| 3 | 36 | 12-22 | 2.36 | 2 | Pacific Herring | Basioccipital | Complete | | | 2 | | |
| 3 | 36 | 12-22 | 2.36 | 1 | Pacific Herring | Basipterygium | Posterior and Central | | 1 | | | |
| 3 | 36 | 12-22 | 2.36 | 12 | Pacific Herring | Ceratohyal | Anterior and Central | 4 | 7 | | | |
| 3 | 36 | 12-22 | 2.36 | 2 | Pacific Herring | Coracoid | Complete | 1 | 1 | | | |
| 3 | 36 | 12-22 | 2.36 | 6 | Pacific Herring | Dentary | Anterior | 3 | 3 | | | |
| 3 | 36 | 12-22 | 2.36 | 5 | Pacific Herring | Ectopterygoid | Complete | 1 | | | | |
| 3 | 36 | 12-22 | 2.36 | 7 | Pacific Herring | Epihyal | Complete | 5 | 2 | | | |
| 3 | 36 | 12-22 | 2.36 | 19 | Pacific Herring | Exoccipital | Central | 7 | 9 | | 3 | |
| 3 | 36 | 12-22 | 2.36 | 3 | Pacific Herring | Frontal | Complete | | | 3 | | |
| 3 | 36 | 12-22 | 2.36 | 13 | Pacific Herring | Hyomandibular | Superior | 5 | 8 | | | |
| 3 | 36 | 12-22 | 2.36 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 3 | 36 | 12-22 | 2.36 | 3 | Pacific Herring | Lacrymal | Central | 1 | 2 | | | |
| 3 | 36 | 12-22 | 2.36 | 12 | Pacific Herring | Maxilla | Anterior and Central | 7 | 5 | | | |
| 3 | 36 | 12-22 | 2.36 | 4 | Pacific Herring | Mesethmoid | Complete | | | 3 | | |
| 3 | 36 | 12-22 | 2.36 | 4 | Pacific Herring | Mesopterygoid | Central | 2 | 2 | | | |
| 3 | 36 | 12-22 | 2.36 | 2 | Pacific Herring | Metapterygoid | Central | 1 | 1 | | | |
| 3 | 36 | 12-22 | 2.36 | 1 | Pacific Herring | Opercle | Complete | | 1 | | | |
| 3 | 36 | 12-22 | 2.36 | 3 | Pacific Herring | Parasphenoid | Central | | | 3 | | |
| 3 | 36 | 12-22 | 2.36 | 17 | Pacific Herring | Pharyngobranchial | Complete | 7 | 10 | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 36 | 12-22 | 2.36 | 11 | Pacific Herring | Posttemporal | Inferior | 5 | 6 | | | |
| 3 | 36 | 12-22 | 2.36 | 7 | Pacific Herring | Preopercle | Central | 4 | 3 | | | |
| 3 | 36 | 12-22 | 2.36 | 2 | Pacific Herring | Preopercle | Complete | 1 | 1 | | | |
| 3 | 36 | 12-22 | 2.36 | 40 | Pacific Herring | Prootic | Central | 13 | 18 | | 19 | |
| 3 | 36 | 12-22 | 2.36 | 9 | Pacific Herring | Quadrate | Anterior and Central | 5 | 4 | | | |
| 3 | 36 | 12-22 | 2.36 | 2 | Pacific Herring | Scapula | Complete | 1 | 1 | | | |
| 3 | 36 | 12-22 | 2.36 | 8 | Pacific Herring | Subopercle | Central | 3 | 5 | | | |
| 3 | 36 | 12-22 | 2.36 | 2 | Pacific Herring | Supraoccipital | Complete | | | 2 | | |
| 3 | 36 | 12-22 | 2.36 | 673 | Pacific Herring | Unidentifiable | Fragment | | | | 673 | |
| 3 | 36 | 12-22 | 2.36 | 316 | Pacific Herring | Vertebra | Centrum | | | 316 | | |
| 3 | 36 | 12-22 | 2.36 | 4 | Pacific Herring | Vomer | Anterior and Central | | | 4 | | |
| 3 | 36 | 12-22 | 2.36 | 1 | Pacific Salmon | Vertebra | Centrum | | | 1 | | |
| 3 | 36 | 12-22 | 2.36 | 5 | Pacific Salmon | Vertebral Fragment | Centrum | | | 5 | | |
| 3 | 36 | 12-22 | 2.36 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |
| 3 | 36 | 12-22 | 2.36 | 240 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 240 | |
| 3 | 36 | 12-22 | 2.36 | 13 | Unidentified | Unidentifiable | Fragment | | | | 13 | |
| 3 | 36 | 22-30 | 2.36 | 4 | Pacific Herring | Angular | Posterior and Central | 1 | 3 | | | |
| 3 | 36 | 22-30 | 2.36 | 2 | Pacific Herring | Atlas | Centrum | | | 2 | | |
| 3 | 36 | 22-30 | 2.36 | 1 | Pacific Herring | Basioccipital | Complete | | | 1 | | |
| 3 | 36 | 22-30 | 2.36 | 2 | Pacific Herring | Basipterygium | Posterior and Central | 2 | | | | |
| 3 | 36 | 22-30 | 2.36 | 7 | Pacific Herring | Ceratohyal | Anterior and Central | 4 | 3 | | | |
| 3 | 36 | 22-30 | 2.36 | 4 | Pacific Herring | Coracoid | Complete | 2 | 2 | | | |
| 3 | 36 | 22-30 | 2.36 | 8 | Pacific Herring | Dentary | Anterior | 5 | 3 | | | |
| 3 | 36 | 22-30 | 2.36 | 6 | Pacific Herring | Epihyal | Complete | 3 | 3 | | | |
| 3 | 36 | 22-30 | 2.36 | 17 | Pacific Herring | Exoccipital | Central | 8 | 7 | | 2 | |
| 3 | 36 | 22-30 | 2.36 | 2 | Pacific Herring | Frontal | Complete | | | 2 | | |
| 3 | 36 | 22-30 | 2.36 | 5 | Pacific Herring | Hyomandibular | Superior | 2 | 3 | | | |
| 3 | 36 | 22-30 | 2.36 | 2 | Pacific Herring | Hypural | Complete | | | 2 | | |
| 3 | 36 | 22-30 | 2.36 | 3 | Pacific Herring | Lacrymal | Central | 1 | 2 | | | |
| 3 | 36 | 22-30 | 2.36 | 11 | Pacific Herring | Maxilla | Anterior and Central | 6 | 5 | | | |
| 3 | 36 | 22-30 | 2.36 | 4 | Pacific Herring | Mesethmoid | Complete | | | 4 | | |
| 3 | 36 | 22-30 | 2.36 | 3 | Pacific Herring | Mesopterygoid | Central | 2 | 1 | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 36 | 22-30 | 2.36 | 2 | Pacific Herring | Opercle | Anterior and Central | 1 | 1 | | | |
| 3 | 36 | 22-30 | 2.36 | 2 | Pacific Herring | Parasphenoid | Central | | | 2 | | |
| 3 | 36 | 22-30 | 2.36 | 25 | Pacific Herring | Pharyngobranchial | Complete | 14 | 11 | | | |
| 3 | 36 | 22-30 | 2.36 | 14 | Pacific Herring | Posttemporal | Inferior | 6 | 8 | | | |
| 3 | 36 | 22-30 | 2.36 | 3 | Pacific Herring | Preopercle | Central | 2 | 1 | | | |
| 3 | 36 | 22-30 | 2.36 | 31 | Pacific Herring | Prootic | Central | 11 | 16 | | 4 | |
| 3 | 36 | 22-30 | 2.36 | 6 | Pacific Herring | Quadrate | Anterior and Central | 2 | 4 | | | |
| 3 | 36 | 22-30 | 2.36 | 3 | Pacific Herring | Scapula | Complete | 1 | 2 | | | |
| 3 | 36 | 22-30 | 2.36 | 5 | Pacific Herring | Subopercle | Central | 1 | 4 | | | |
| 3 | 36 | 22-30 | 2.36 | 620 | Pacific Herring | Unidentifiable | Fragment | | | | 620 | |
| 3 | 36 | 22-30 | 2.36 | 106 | Pacific Herring | Vertebra | Centrum | | | 106 | | |
| 3 | 36 | 22-30 | 2.36 | 2 | Pacific Herring | Vomer | Anterior and Central | | | 2 | | |
| 3 | 36 | 22-30 | 2.36 | 313 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 313 | |
| 3 | 36 | 30-39 | 2.36 | 1 | Flatfish | Angular | Posterior | 1 | | | | |
| 3 | 36 | 30-39 | 2.36 | 8 | Pacific Herring | Angular | Posterior and Central | 5 | 3 | | | |
| 3 | 36 | 30-39 | 2.36 | 6 | Pacific Herring | Atlas | Centrum | | | 6 | | |
| 3 | 36 | 30-39 | 2.36 | 6 | Pacific Herring | Basioccipital | Complete | | | 6 | | |
| 3 | 36 | 30-39 | 2.36 | 4 | Pacific Herring | Basipterygium | Posterior and Central | 2 | 2 | | | |
| 3 | 36 | 30-39 | 2.36 | 21 | Pacific Herring | Ceratohyal | Anterior and Central | 12 | 9 | | | |
| 3 | 36 | 30-39 | 2.36 | 2 | Pacific Herring | Coracoid | Complete | | 2 | | | |
| 3 | 36 | 30-39 | 2.36 | 12 | Pacific Herring | Dentary | Anterior | 5 | 7 | | | |
| 3 | 36 | 30-39 | 2.36 | 9 | Pacific Herring | Epihyal | Complete | 6 | 3 | | | |
| 3 | 36 | 30-39 | 2.36 | 15 | Pacific Herring | Exoccipital | Central | 6 | 9 | | | |
| 3 | 36 | 30-39 | 2.36 | 2 | Pacific Herring | Frontal | Complete | | | 2 | | |
| 3 | 36 | 30-39 | 2.36 | 17 | Pacific Herring | Hyomandibular | Superior | 9 | 8 | | | |
| 3 | 36 | 30-39 | 2.36 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 3 | 36 | 30-39 | 2.36 | 4 | Pacific Herring | Lacrymal | Central | 3 | 1 | | | |
| 3 | 36 | 30-39 | 2.36 | 13 | Pacific Herring | Maxilla | Anterior and Central | 6 | 7 | | | |
| 3 | 36 | 30-39 | 2.36 | 5 | Pacific Herring | Mesethmoid | Complete | | | 5 | | |
| 3 | 36 | 30-39 | 2.36 | 2 | Pacific Herring | Mesopterygoid | Central | 1 | 1 | | | |
| 3 | 36 | 30-39 | 2.36 | 4 | Pacific Herring | Opercle | Anterior and Central | 3 | 1 | | | |
| 3 | 36 | 30-39 | 2.36 | 3 | Pacific Herring | Parasphenoid | Central | | | 3 | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 36 | 30-39 | 2.36 | 29 | Pacific Herring | Pharyngobranchial | Complete | 11 | 18 | | | |
| 3 | 36 | 30-39 | 2.36 | 7 | Pacific Herring | Posttemporal | Inferior | 3 | 4 | | | |
| 3 | 36 | 30-39 | 2.36 | 6 | Pacific Herring | Preopercle | Central | 4 | 2 | | | |
| 3 | 36 | 30-39 | 2.36 | 24 | Pacific Herring | Prootic | Central | 7 | 9 | | 8 | |
| 3 | 36 | 30-39 | 2.36 | 9 | Pacific Herring | Quadrate | Anterior and Central | 4 | 5 | | | |
| 3 | 36 | 30-39 | 2.36 | 4 | Pacific Herring | Scapula | Complete | 2 | 2 | | | |
| 3 | 36 | 30-39 | 2.36 | 5 | Pacific Herring | Subopercle | Central | 2 | 3 | | | |
| 3 | 36 | 30-39 | 2.36 | 782 | Pacific Herring | Unidentifiable | Fragment | | | | 782 | |
| 3 | 36 | 30-39 | 2.36 | 275 | Pacific Herring | Vertebra | Centrum | | | 275 | | |
| 3 | 36 | 30-39 | 2.36 | 6 | Pacific Herring | Vomer | Anterior and Central | | | 6 | | |
| 3 | 36 | 30-39 | 2.36 | 3 | Pacific Salmon | Vertebral Fragment | Centrum | | | 3 | | |
| 3 | 36 | 30-39 | 2.36 | 47 | Spiny Dogfish | Unidentifiable | Fragment | | | | 47 | Ossified Fragments |
| 3 | 36 | 30-39 | 2.36 | 13 | Spiny Dogfish | Vertebra | Centrum | | | 13 | | |
| 3 | 36 | 30-39 | 2.36 | 180 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 180 | |
| 3 | 36 | 30-39 | 2.36 | 11 | Unidentified | Unidentifiable | Fragment | | | | 11 | |
| 3 | 36 | 39-49 | 2.36 | 11 | Pacific Herring | Angular | Posterior and Central | 5 | 6 | | | |
| 3 | 36 | 39-49 | 2.36 | 5 | Pacific Herring | Atlas | Centrum | | | 5 | | |
| 3 | 36 | 39-49 | 2.36 | 9 | Pacific Herring | Basioccipital | Complete | | | 9 | | |
| 3 | 36 | 39-49 | 2.36 | 4 | Pacific Herring | Basipterygium | Posterior and Central | 2 | 2 | | | |
| 3 | 36 | 39-49 | 2.36 | 21 | Pacific Herring | Ceratohyal | Central | 9 | 12 | | | |
| 3 | 36 | 39-49 | 2.36 | 9 | Pacific Herring | Cleithrum | Central | 5 | 4 | | | |
| 3 | 36 | 39-49 | 2.36 | 12 | Pacific Herring | Dentary | Anterior | 5 | 7 | | | |
| 3 | 36 | 39-49 | 2.36 | 2 | Pacific Herring | Ectopterygoid | Complete | 1 | 1 | | | |
| 3 | 36 | 39-49 | 2.36 | 11 | Pacific Herring | Epihyal | Complete | 5 | 6 | | | |
| 3 | 36 | 39-49 | 2.36 | 21 | Pacific Herring | Exoccipital | Central | 9 | 12 | | | |
| 3 | 36 | 39-49 | 2.36 | 4 | Pacific Herring | Frontal | Complete | | | 4 | | |
| 3 | 36 | 39-49 | 2.36 | 24 | Pacific Herring | Hyomandibular | Superior and Central | 9 | 12 | | 3 | |
| 3 | 36 | 39-49 | 2.36 | 5 | Pacific Herring | Lacrymal | Complete | 2 | 3 | | | |
| 3 | 36 | 39-49 | 2.36 | 22 | Pacific Herring | Maxilla | Anterior and Central | 9 | 13 | | | |
| 3 | 36 | 39-49 | 2.36 | 3 | Pacific Herring | Mesethmoid | Complete | | | 3 | | |
| 3 | 36 | 39-49 | 2.36 | 5 | Pacific Herring | Mesopterygoid | Central | 2 | 3 | | | |
| 3 | 36 | 39-49 | 2.36 | 5 | Pacific Herring | Opercle | Anterior | 2 | 3 | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 36 | 39-49 | 2.36 | 3 | Pacific Herring | Parasphenoid | Central | | | 3 | | |
| 3 | 36 | 39-49 | 2.36 | 43 | Pacific Herring | Pharyngobranchial | Complete | 24 | 19 | | | |
| 3 | 36 | 39-49 | 2.36 | 6 | Pacific Herring | Posttemporal | Inferior | 2 | 4 | | | |
| 3 | 36 | 39-49 | 2.36 | 6 | Pacific Herring | Preopercle | Central | 2 | 4 | | | |
| 3 | 36 | 39-49 | 2.36 | 43 | Pacific Herring | Prootic | Central | 19 | 17 | | 7 | |
| 3 | 36 | 39-49 | 2.36 | 7 | Pacific Herring | Quadrate | Anterior and Central | 4 | 3 | | | |
| 3 | 36 | 39-49 | 2.36 | 2 | Pacific Herring | Scapula | Complete | 1 | 1 | | | |
| 3 | 36 | 39-49 | 2.36 | 4 | Pacific Herring | Subopercle | Central | 2 | 2 | | | |
| 3 | 36 | 39-49 | 2.36 | 3 | Pacific Herring | Supraoccipital | Complete | | | 3 | | |
| 3 | 36 | 39-49 | 2.36 | 787 | Pacific Herring | Unidentifiable | Fragment | | | | 787 | |
| 3 | 36 | 39-49 | 2.36 | 347 | Pacific Herring | Vertebra | Centrum | | | 347 | | |
| 3 | 36 | 39-49 | 2.36 | 4 | Pacific Herring | Vomer | Complete | | | 4 | | |
| 3 | 36 | 39-49 | 2.36 | 105 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 105 | |
| 3 | 36 | 49-56.5 | 2.36 | 2 | Flatfish | Unidentifiable | Fragment | | | | 2 | |
| 3 | 36 | 49-56.5 | 2.36 | 1 | Flatfish | Vertebra | Centrum | | | 1 | | |
| 3 | 36 | 49-56.5 | 2.36 | 1 | Midshipman | Basioccipital | Complete | | | 1 | | |
| 3 | 36 | 49-56.5 | 2.36 | 1 | Midshipman | Parasphenoid | Central | | | 1 | | |
| 3 | 36 | 49-56.5 | 2.36 | 3 | Pacific Herring | Angular | Posterior and Central | 1 | 2 | | | |
| 3 | 36 | 49-56.5 | 2.36 | 4 | Pacific Herring | Atlas | Centrum | | | 4 | | |
| 3 | 36 | 49-56.5 | 2.36 | 2 | Pacific Herring | Basioccipital | Complete | | | 2 | | |
| 3 | 36 | 49-56.5 | 2.36 | 8 | Pacific Herring | Ceratohyal | Anterior and Central | 3 | 5 | | | |
| 3 | 36 | 49-56.5 | 2.36 | 5 | Pacific Herring | Dentary | Anterior | 2 | 3 | | | |
| 3 | 36 | 49-56.5 | 2.36 | 8 | Pacific Herring | Epihyal | Complete | 2 | 6 | | | |
| 3 | 36 | 49-56.5 | 2.36 | 6 | Pacific Herring | Exoccipital | Central | 2 | 4 | | | |
| 3 | 36 | 49-56.5 | 2.36 | 9 | Pacific Herring | Hyomandibular | Superior | 5 | 4 | | | |
| 3 | 36 | 49-56.5 | 2.36 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 3 | 36 | 49-56.5 | 2.36 | 11 | Pacific Herring | Maxilla | Anterior and Central | 6 | 5 | | | |
| 3 | 36 | 49-56.5 | 2.36 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 3 | 36 | 49-56.5 | 2.36 | 2 | Pacific Herring | Mesopterygoid | Central | 1 | 1 | | | |
| 3 | 36 | 49-56.5 | 2.36 | 3 | Pacific Herring | Opercle | Anterior and Central | 2 | 1 | | | |
| 3 | 36 | 49-56.5 | 2.36 | 18 | Pacific Herring | Pharyngobranchial | Complete | 7 | 11 | | | |
| 3 | 36 | 49-56.5 | 2.36 | 9 | Pacific Herring | Posttemporal | Inferior | 3 | 6 | | | |

# DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 36 | 49-56.5 | 2.36 | 1 | Pacific Herring | Preopercle | Central | 1 | | | | |
| 3 | 36 | 49-56.5 | 2.36 | 25 | Pacific Herring | Prootic | Central | 9 | 11 | | 5 | |
| 3 | 36 | 49-56.5 | 2.36 | 7 | Pacific Herring | Quadrate | Anterior and Central | 4 | 3 | | | |
| 3 | 36 | 49-56.5 | 2.36 | 3 | Pacific Herring | Subopercle | Central | 2 | 1 | | | |
| 3 | 36 | 49-56.5 | 2.36 | 589 | Pacific Herring | Unidentifiable | Fragment | | | | 589 | |
| 3 | 36 | 49-56.5 | 2.36 | 134 | Pacific Herring | Vertebra | Centrum | | | 134 | | |
| 3 | 36 | 49-56.5 | 2.36 | 2 | Pacific Herring | Vomer | Anterior and Central | | | 2 | | |
| 3 | 36 | 49-56.5 | 2.36 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 3 | 36 | 49-56.5 | 2.36 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |
| 3 | 36 | 49-56.5 | 2.36 | 88 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 88 | |
| 3 | 36 | 49-56.5 | 2.36 | 6 | Unidentified | Unidentifiable | Fragment | | | | 6 | |
| 3 | 36 | 56.5-68 | 2.36 | 1 | Flatfish | Epihyal | Complete | 1 | | | | |
| 3 | 36 | 56.5-68 | 2.36 | 1 | Flatfish | Vertebra | Centrum | | | 1 | | |
| 3 | 36 | 56.5-68 | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 3 | 36 | 56.5-68 | 2.36 | 3 | Pacific Herring | Angular | Posterior and Central | 1 | 1 | | | |
| 3 | 36 | 56.5-68 | 2.36 | 3 | Pacific Herring | Atlas | Centrum | | | 3 | | |
| 3 | 36 | 56.5-68 | 2.36 | 1 | Pacific Herring | Ceratohyal | Central | | 1 | | | |
| 3 | 36 | 56.5-68 | 2.36 | 2 | Pacific Herring | Cleithrum | Central | 1 | 1 | | | |
| 3 | 36 | 56.5-68 | 2.36 | 3 | Pacific Herring | Epihyal | Complete | 1 | 2 | | | |
| 3 | 36 | 56.5-68 | 2.36 | 4 | Pacific Herring | Exoccipital | Central | 2 | 2 | | | |
| 3 | 36 | 56.5-68 | 2.36 | 3 | Pacific Herring | Hyomandibular | Superior | 2 | 1 | | | |
| 3 | 36 | 56.5-68 | 2.36 | 2 | Pacific Herring | Hypural | Complete | | | 2 | | |
| 3 | 36 | 56.5-68 | 2.36 | 2 | Pacific Herring | Mesethmoid | Complete | | | 2 | | |
| 3 | 36 | 56.5-68 | 2.36 | 1 | Pacific Herring | Opercle | Anterior and Central | 1 | | | | |
| 3 | 36 | 56.5-68 | 2.36 | 7 | Pacific Herring | Pharyngobranchial | Complete | 3 | 4 | | | |
| 3 | 36 | 56.5-68 | 2.36 | 2 | Pacific Herring | Posttemporal | Inferior | 1 | 1 | | | |
| 3 | 36 | 56.5-68 | 2.36 | 12 | Pacific Herring | Prootic | Central | 4 | 5 | | 3 | |
| 3 | 36 | 56.5-68 | 2.36 | 1 | Pacific Herring | Scapula | Complete | | 1 | | | |
| 3 | 36 | 56.5-68 | 2.36 | 1 | Pacific Herring | Subopercle | Complete | | 1 | | | |
| 3 | 36 | 56.5-68 | 2.36 | 100 | Pacific Herring | Unidentifiable | Fragment | | | | 100 | |
| 3 | 36 | 56.5-68 | 2.36 | 55 | Pacific Herring | Vertebra | Centrum | | | 55 | | |
| 3 | 36 | 56.5-68 | 2.36 | 3 | Pacific Herring | Vomer | Complete | | | 3 | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 36 | 56.5-68 | 2.36 | 9 | Pacific Salmon | Vertebral Fragment | Centrum | | | 9 | | |
| 3 | 36 | 56.5-68 | 2.36 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |
| 3 | 36 | 56.5-68 | 2.36 | 1 | Surfperch | Pharyngeal Tooth | Complete | | | | 1 | |
| 3 | 36 | 56.5-68 | 2.36 | 54 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 54 | |
| 3 | 36 | 56.5-68 | 2.36 | 5 | Unidentified | Unidentifiable | Fragment | | | | 5 | |
| 3 | 36 | 68-73 | 2.36 | 3 | Pacific Herring | Angular | Posterior | 1 | 2 | | | |
| 3 | 36 | 68-73 | 2.36 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 3 | 36 | 68-73 | 2.36 | 2 | Pacific Herring | Cleithrum | Central | 1 | 1 | | | |
| 3 | 36 | 68-73 | 2.36 | 1 | Pacific Herring | Coracoid | Complete | | 1 | | | |
| 3 | 36 | 68-73 | 2.36 | 2 | Pacific Herring | Dentary | Anterior and Central | 1 | 1 | | | |
| 3 | 36 | 68-73 | 2.36 | 7 | Pacific Herring | Exoccipital | Central | 3 | 4 | | | |
| 3 | 36 | 68-73 | 2.36 | 4 | Pacific Herring | Hyomandibular | Superior | 3 | 1 | | | |
| 3 | 36 | 68-73 | 2.36 | 1 | Pacific Herring | Lacrymal | Complete | 1 | | | | |
| 3 | 36 | 68-73 | 2.36 | 2 | Pacific Herring | Maxilla | Anterior and Central | 1 | 1 | | | |
| 3 | 36 | 68-73 | 2.36 | 1 | Pacific Herring | Parasphenoid | Central | | 1 | | | |
| 3 | 36 | 68-73 | 2.36 | 7 | Pacific Herring | Pharyngobranchial | Complete | 5 | 2 | | | |
| 3 | 36 | 68-73 | 2.36 | 1 | Pacific Herring | Preopercle | Central | 1 | | | | |
| 3 | 36 | 68-73 | 2.36 | 19 | Pacific Herring | Prootic | Central | 7 | 8 | | 4 | |
| 3 | 36 | 68-73 | 2.36 | 2 | Pacific Herring | Quadrate | Anterior | 1 | 1 | | | |
| 3 | 36 | 68-73 | 2.36 | 5 | Pacific Herring | Subopercle | Central | 4 | 1 | | | |
| 3 | 36 | 68-73 | 2.36 | 95 | Pacific Herring | Unidentifiable | Fragment | | | | 95 | |
| 3 | 36 | 68-73 | 2.36 | 48 | Pacific Herring | Vertebra | Centrum | | | 48 | | |
| 3 | 36 | 68-73 | 2.36 | 1 | Pacific Herring | Vomer | Complete | | 1 | | | |
| 3 | 36 | 68-73 | 2.36 | 24 | Pacific Salmon | Vertebral Fragment | Centrum | | | 24 | | |
| 3 | 36 | 68-73 | 2.36 | 2 | Surfperch | Vertebra | Centrum | | | 2 | | |
| 3 | 36 | 68-73 | 2.36 | 17 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 17 | |
| 3 | 36 | 68-73 | 2.36 | 7 | Unidentified | Unidentifiable | Fragment | | | | 7 | |
| 3 | 36 | 73-79 | 2.36 | 1 | Greenling | Dentary | Central | | 1 | | | |
| 3 | 36 | 73-79 | 2.36 | 1 | Pacific Herring | Angular | Posterior | | 1 | | | |
| 3 | 36 | 73-79 | 2.36 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 3 | 36 | 73-79 | 2.36 | 1 | Pacific Herring | Basipterygium | Posterior | 1 | | | | |
| 3 | 36 | 73-79 | 2.36 | 1 | Pacific Herring | Cleithrum | Central | | 1 | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 36 | 73-79 | 2.36 | 1 | Pacific Herring | Coracoid | Complete | 1 | | | | |
| 3 | 36 | 73-79 | 2.36 | 1 | Pacific Herring | Dentary | Anterior and Central | 1 | | | | |
| 3 | 36 | 73-79 | 2.36 | 6 | Pacific Herring | Exoccipital | Central | 3 | 3 | | | |
| 3 | 36 | 73-79 | 2.36 | 1 | Pacific Herring | Hyomandibular | Superior | 1 | | | | |
| 3 | 36 | 73-79 | 2.36 | 1 | Pacific Herring | Pharyngobranchial | Complete | | 1 | | | |
| 3 | 36 | 73-79 | 2.36 | 5 | Pacific Herring | Prootic | Central | 1 | 2 | | 2 | |
| 3 | 36 | 73-79 | 2.36 | 1 | Pacific Herring | Quadrate | Anterior | 1 | | | | |
| 3 | 36 | 73-79 | 2.36 | 3 | Pacific Herring | Subopercle | Central | 2 | 1 | | | |
| 3 | 36 | 73-79 | 2.36 | 38 | Pacific Herring | Unidentifiable | Fragment | | | | 38 | |
| 3 | 36 | 73-79 | 2.36 | 18 | Pacific Herring | Vertebra | Centrum | | | 18 | | |
| 3 | 36 | 73-79 | 2.36 | 2 | Pacific Salmon | Vertebral Fragment | Centrum | | | 2 | | |
| 3 | 36 | 73-79 | 2.36 | 2 | Surfperch | Vertebra | Centrum | | | 2 | | |
| 3 | 36 | 73-79 | 2.36 | 20 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 20 | |
| 3 | 36 | 79-88 | 2.36 | 2 | Pacific Herring | Atlas | Centrum | | | 2 | | |
| 3 | 36 | 79-88 | 2.36 | 1 | Pacific Herring | Ceratohyal | Anterior | | 1 | | | |
| 3 | 36 | 79-88 | 2.36 | 2 | Pacific Herring | Cleithrum | Central | 1 | 1 | | | |
| 3 | 36 | 79-88 | 2.36 | 1 | Pacific Herring | Epihyal | Complete | 1 | | | | |
| 3 | 36 | 79-88 | 2.36 | 1 | Pacific Herring | Maxilla | Anterior | | 1 | | | |
| 3 | 36 | 79-88 | 2.36 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 3 | 36 | 79-88 | 2.36 | 2 | Pacific Herring | Mesopterygoid | Central | | 2 | | | |
| 3 | 36 | 79-88 | 2.36 | 2 | Pacific Herring | Pharyngobranchial | Complete | 1 | 1 | | | |
| 3 | 36 | 79-88 | 2.36 | 23 | Pacific Herring | Prootic | Central | 6 | 5 | | 12 | |
| 3 | 36 | 79-88 | 2.36 | 1 | Pacific Herring | Subopercle | Complete | 1 | | | | |
| 3 | 36 | 79-88 | 2.36 | 32 | Pacific Herring | Unidentifiable | Fragment | | | | 32 | |
| 3 | 36 | 79-88 | 2.36 | 22 | Pacific Herring | Vertebra | Centrum | | | 22 | | |
| 3 | 36 | 79-88 | 2.36 | 1 | Pacific Herring | Vomer | Complete | | | 1 | | |
| 3 | 36 | 79-88 | 2.36 | 4 | Pacific Salmon | Vertebral Fragment | Centrum | | | 4 | | |
| 3 | 36 | 79-88 | 2.36 | 15 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 15 | |
| 3 | 36 | 88-98 | 2.36 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 3 | 36 | 88-98 | 2.36 | 1 | Pacific Herring | Basioccipital | Complete | | | 1 | | |
| 3 | 36 | 88-98 | 2.36 | 1 | Pacific Herring | Ceratohyal | Central | 1 | | | | |
| 3 | 36 | 88-98 | 2.36 | 1 | Pacific Herring | Cleithrum | Central | | 1 | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 36 | 88-98 | 2.36 | 1 | Pacific Herring | Epihyal | Complete | | 1 | | | |
| 3 | 36 | 88-98 | 2.36 | 4 | Pacific Herring | Exoccipital | Central | 2 | 2 | | | |
| 3 | 36 | 88-98 | 2.36 | 1 | Pacific Herring | Pharyngobranchial | Complete | | 1 | | | |
| 3 | 36 | 88-98 | 2.36 | 4 | Pacific Herring | Prootic | Central | 1 | 2 | | 1 | |
| 3 | 36 | 88-98 | 2.36 | 32 | Pacific Herring | Unidentifiable | Fragment | | | | 32 | |
| 3 | 36 | 88-98 | 2.36 | 11 | Pacific Herring | Vertebra | Centrum | | | 11 | | |
| 3 | 36 | 88-98 | 2.36 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 3 | 36 | 88-98 | 2.36 | 8 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 8 | |
| 3 | 36 | 88-98 | 2.36 | 2 | Unidentified | Unidentifiable | Fragment | | | | 2 | |
| 3 | 39 | 0-15 | 2.36 | 3 | Pacific Herring | Angular | Posterior | 1 | 2 | | | |
| 3 | 39 | 0-15 | 2.36 | 4 | Pacific Herring | Atlas | Centrum | | | 4 | | |
| 3 | 39 | 0-15 | 2.36 | 2 | Pacific Herring | Basioccipital | Complete | | | 2 | | |
| 3 | 39 | 0-15 | 2.36 | 11 | Pacific Herring | Ceratohyal | Central | 1 | 2 | | 8 | |
| 3 | 39 | 0-15 | 2.36 | 4 | Pacific Herring | Cleithrum | Central | 3 | 1 | | | |
| 3 | 39 | 0-15 | 2.36 | 7 | Pacific Herring | Coracoid | Complete | 2 | 5 | | | |
| 3 | 39 | 0-15 | 2.36 | 4 | Pacific Herring | Dentary | Anterior | 1 | 2 | | 1 | |
| 3 | 39 | 0-15 | 2.36 | 2 | Pacific Herring | Epihyal | Complete | 1 | 1 | | | |
| 3 | 39 | 0-15 | 2.36 | 3 | Pacific Herring | Exoccipital | Central | 1 | 2 | | | |
| 3 | 39 | 0-15 | 2.36 | 4 | Pacific Herring | Frontal | Complete | | | 4 | | |
| 3 | 39 | 0-15 | 2.36 | 10 | Pacific Herring | Hyomandibular | Superior | 2 | 8 | | | |
| 3 | 39 | 0-15 | 2.36 | 2 | Pacific Herring | Lacrymal | Complete | 2 | | | | |
| 3 | 39 | 0-15 | 2.36 | 6 | Pacific Herring | Maxilla | Anterior and Central | 1 | 2 | | 3 | |
| 3 | 39 | 0-15 | 2.36 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 3 | 39 | 0-15 | 2.36 | 1 | Pacific Herring | Parasphenoid | Central | | | 1 | | |
| 3 | 39 | 0-15 | 2.36 | 10 | Pacific Herring | Pharyngobranchial | Complete | 6 | 4 | | | |
| 3 | 39 | 0-15 | 2.36 | 4 | Pacific Herring | Posttemporal | Inferior | 2 | 2 | | | |
| 3 | 39 | 0-15 | 2.36 | 5 | Pacific Herring | Preopercle | Central | 1 | 1 | | 3 | |
| 3 | 39 | 0-15 | 2.36 | 36 | Pacific Herring | Prootic | Central | 9 | 7 | | 20 | |
| 3 | 39 | 0-15 | 2.36 | 3 | Pacific Herring | Quadrate | Anterior and Central | 2 | 1 | | | |
| 3 | 39 | 0-15 | 2.36 | 1 | Pacific Herring | Scapula | Complete | | 1 | | | |
| 3 | 39 | 0-15 | 2.36 | 2 | Pacific Herring | Subopercle | Central | 2 | | | | |
| 3 | 39 | 0-15 | 2.36 | 275 | Pacific Herring | Unidentifiable | Fragment | | | | 275 | |

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 39 | 0-15 | 2.36 | 302 | Pacific Herring | Vertebra | Centrum | | | 302 | | |
| 3 | 39 | 0-15 | 2.36 | 1 | Pacific Herring | Vomer | Anterior | | | 1 | | |
| 3 | 39 | 0-15 | 2.36 | 63 | Pacific Salmon | Vertebral Fragment | Centrum | | | 63 | | |
| 3 | 39 | 0-15 | 2.36 | 4 | Spiny Dogfish | Unidentified | Fragment | | | | 4 | |
| 3 | 39 | 0-15 | 2.36 | 7 | Spiny Dogfish | Vertebra | Centrum | | | 7 | | |
| 3 | 39 | 0-15 | 2.36 | 43 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 43 | |
| 3 | 39 | 0-15 | 2.36 | 45 | Unidentified | Unidentifiable | Fragment | | | | 45 | |
| 3 | 39 | 15-23 | 2.36 | 1 | Greenling | Vertebra | Centrum | | | 1 | | |
| 3 | 39 | 15-23 | 2.36 | 7 | Pacific Herring | Angular | Posterior and Central | 3 | 4 | | | |
| 3 | 39 | 15-23 | 2.36 | 8 | Pacific Herring | Atlas | Centrum | | | 8 | | |
| 3 | 39 | 15-23 | 2.36 | 7 | Pacific Herring | Basioccipital | Complete | | | 7 | | |
| 3 | 39 | 15-23 | 2.36 | 2 | Pacific Herring | Basipterygium | Posterior and Central | 1 | 1 | | | |
| 3 | 39 | 15-23 | 2.36 | 5 | Pacific Herring | Ceratohyal | Anterior and Central | 2 | 3 | | | |
| 3 | 39 | 15-23 | 2.36 | 4 | Pacific Herring | Cleithrum | Central | 2 | 2 | | | |
| 3 | 39 | 15-23 | 2.36 | 7 | Pacific Herring | Dentary | Anterior and Central | 3 | 4 | | | |
| 3 | 39 | 15-23 | 2.36 | 3 | Pacific Herring | Epihyal | Complete | 2 | 1 | | | |
| 3 | 39 | 15-23 | 2.36 | 11 | Pacific Herring | Exoccipital | Central | 4 | 5 | | 2 | |
| 3 | 39 | 15-23 | 2.36 | 11 | Pacific Herring | Hyomandibular | Superior | 6 | 5 | | | |
| 3 | 39 | 15-23 | 2.36 | 9 | Pacific Herring | Maxilla | Anterior and Central | 5 | 4 | | | |
| 3 | 39 | 15-23 | 2.36 | 3 | Pacific Herring | Mesopterygoid | Central | 2 | 1 | | | |
| 3 | 39 | 15-23 | 2.36 | 4 | Pacific Herring | Opercle | Anterior | 1 | 3 | | | |
| 3 | 39 | 15-23 | 2.36 | 2 | Pacific Herring | Parasphenoid | Central | | | 2 | | |
| 3 | 39 | 15-23 | 2.36 | 11 | Pacific Herring | Pharyngobranchial | Complete | 6 | 5 | | | |
| 3 | 39 | 15-23 | 2.36 | 3 | Pacific Herring | Posttemporal | Inferior | 2 | 1 | | | |
| 3 | 39 | 15-23 | 2.36 | 3 | Pacific Herring | Preopercle | Central | 1 | 1 | | 1 | |
| 3 | 39 | 15-23 | 2.36 | 19 | Pacific Herring | Prootic | Central | 7 | 8 | | 4 | |
| 3 | 39 | 15-23 | 2.36 | 4 | Pacific Herring | Quadrate | Anterior and Central | 1 | 2 | | 1 | |
| 3 | 39 | 15-23 | 2.36 | 1 | Pacific Herring | Scapula | Complete | | 1 | | | |
| 3 | 39 | 15-23 | 2.36 | 4 | Pacific Herring | Subopercle | Central | 1 | 2 | | 1 | |
| 3 | 39 | 15-23 | 2.36 | 3 | Pacific Herring | Supraoccipital | Complete | | | 3 | | |
| 3 | 39 | 15-23 | 2.36 | 572 | Pacific Herring | Unidentifiable | Fragment | | | | 572 | |
| 3 | 39 | 15-23 | 2.36 | 135 | Pacific Herring | Vertebra | Centrum | | | 135 | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 39 | 15-23 | 2.36 | 19 | Pacific Salmon | Vertebral Fragment | Centrum | | | 19 | | |
| 3 | 39 | 15-23 | 2.36 | 12 | Spiny Dogfish | Tooth | Complete | | | | 12 | |
| 3 | 39 | 15-23 | 2.36 | 5 | Spiny Dogfish | Vertebra | Centrum | | | 5 | | |
| 3 | 39 | 15-23 | 2.36 | 94 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 94 | |
| 3 | 39 | 15-23 | 2.36 | 16 | Unidentified | Unidentifiable | Fragment | | | | 16 | |
| 3 | 39 | 23-27 | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 3 | 39 | 23-27 | 2.36 | 7 | Pacific Herring | Angular | Posterior | 3 | 4 | | | |
| 3 | 39 | 23-27 | 2.36 | 8 | Pacific Herring | Atlas | Centrum | | | 8 | | |
| 3 | 39 | 23-27 | 2.36 | 3 | Pacific Herring | Basioccipital | Complete | | | 3 | | |
| 3 | 39 | 23-27 | 2.36 | 3 | Pacific Herring | Basipterygium | Posterior | 1 | 2 | | | |
| 3 | 39 | 23-27 | 2.36 | 7 | Pacific Herring | Ceratohyal | Central | 2 | 4 | | 1 | |
| 3 | 39 | 23-27 | 2.36 | 10 | Pacific Herring | Cleithrum | Central | 2 | 3 | | 5 | |
| 3 | 39 | 23-27 | 2.36 | 8 | Pacific Herring | Coracoid | Complete | 4 | 4 | | | |
| 3 | 39 | 23-27 | 2.36 | 9 | Pacific Herring | Dentary | Anterior | 3 | 6 | | | |
| 3 | 39 | 23-27 | 2.36 | 2 | Pacific Herring | Epihyal | Complete | 2 | | | | |
| 3 | 39 | 23-27 | 2.36 | 10 | Pacific Herring | Exoccipital | Central | 5 | 5 | | | |
| 3 | 39 | 23-27 | 2.36 | 21 | Pacific Herring | Hyomandibular | Superior | 7 | 7 | | 7 | |
| 3 | 39 | 23-27 | 2.36 | 5 | Pacific Herring | Lacrymal | Central | 2 | 2 | | 1 | |
| 3 | 39 | 23-27 | 2.36 | 9 | Pacific Herring | Maxilla | Anterior and Central | 4 | 5 | | | |
| 3 | 39 | 23-27 | 2.36 | 1 | Pacific Herring | Mesopterygoid | Central | | 1 | | | |
| 3 | 39 | 23-27 | 2.36 | 1 | Pacific Herring | Metapterygoid | Central | 1 | | | | |
| 3 | 39 | 23-27 | 2.36 | 5 | Pacific Herring | Opercle | Anterior and Central | 1 | 4 | | | |
| 3 | 39 | 23-27 | 2.36 | 1 | Pacific Herring | Parasphenoid | Central | | | 1 | | |
| 3 | 39 | 23-27 | 2.36 | 15 | Pacific Herring | Pharyngobranchial | Complete | 3 | 4 | | 8 | |
| 3 | 39 | 23-27 | 2.36 | 6 | Pacific Herring | Posttemporal | Inferior | 3 | 3 | | | |
| 3 | 39 | 23-27 | 2.36 | 5 | Pacific Herring | Preopercle | Central | 2 | | | 3 | |
| 3 | 39 | 23-27 | 2.36 | 12 | Pacific Herring | Prootic | Central | 5 | 6 | | 1 | |
| 3 | 39 | 23-27 | 2.36 | 7 | Pacific Herring | Quadrate | Anterior and Central | 4 | 3 | | | |
| 3 | 39 | 23-27 | 2.36 | 2 | Pacific Herring | Scapula | Complete | 1 | 1 | | | |
| 3 | 39 | 23-27 | 2.36 | 2 | Pacific Herring | Subopercle | Central | 1 | 1 | | | |
| 3 | 39 | 23-27 | 2.36 | 301 | Pacific Herring | Unidentifiable | Fragment | | | | 301 | |
| 3 | 39 | 23-27 | 2.36 | 95 | Pacific Herring | Vertebra | Centrum | | | 95 | | |

# DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 39 | 23-27 | 2.36 | 1 | Pacific Herring | Vomer | Anterior and Central | | | 1 | | |
| 3 | 39 | 23-27 | 2.36 | 1 | Pacific Salmon | Basipterygium | Posterior | | 1 | | | |
| 3 | 39 | 23-27 | 2.36 | 12 | Pacific Salmon | Vertebral Fragment | Centrum | | | 12 | | |
| 3 | 39 | 23-27 | 2.36 | 17 | Spiny Dogfish | Tooth | Complete | | | | 17 | |
| 3 | 39 | 23-27 | 2.36 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |
| 3 | 39 | 23-27 | 2.36 | 218 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 218 | |
| 3 | 39 | 23-27 | 2.36 | 3 | Unidentified | Unidentifiable | Fragment | | | | 3 | |
| 3 | 39 | 27-39 | 2.36 | 2 | Midshipman | Vertebra | Centrum | | | 2 | | |
| 3 | 39 | 27-39 | 2.36 | 13 | Pacific Herring | Angular | Posterior and Central | 4 | 9 | | | |
| 3 | 39 | 27-39 | 2.36 | 6 | Pacific Herring | Atlas | Centrum | | | 6 | | |
| 3 | 39 | 27-39 | 2.36 | 4 | Pacific Herring | Basioccipital | Complete | | | 4 | | |
| 3 | 39 | 27-39 | 2.36 | 9 | Pacific Herring | Ceratohyal | Central | 4 | 5 | | | |
| 3 | 39 | 27-39 | 2.36 | 10 | Pacific Herring | Cleithrum | Central | 5 | 5 | | | |
| 3 | 39 | 27-39 | 2.36 | 4 | Pacific Herring | Coracoid | Central | 1 | 3 | | | |
| 3 | 39 | 27-39 | 2.36 | 8 | Pacific Herring | Dentary | Anterior and Central | 4 | 4 | | | |
| 3 | 39 | 27-39 | 2.36 | 1 | Pacific Herring | Ectopterygoid | Central | | 1 | | | |
| 3 | 39 | 27-39 | 2.36 | 11 | Pacific Herring | Epihyal | Complete | 6 | 5 | | | |
| 3 | 39 | 27-39 | 2.36 | 8 | Pacific Herring | Exoccipital | Central | 4 | 4 | | | |
| 3 | 39 | 27-39 | 2.36 | 9 | Pacific Herring | Frontal | Complete | | | 9 | | |
| 3 | 39 | 27-39 | 2.36 | 16 | Pacific Herring | Hyomandibular | Superior | 9 | 7 | | | |
| 3 | 39 | 27-39 | 2.36 | 2 | Pacific Herring | Hypural | Complete | | | 2 | | |
| 3 | 39 | 27-39 | 2.36 | 5 | Pacific Herring | Lacrymal | Central | 2 | 3 | | | |
| 3 | 39 | 27-39 | 2.36 | 10 | Pacific Herring | Maxilla | Anterior and Central | 4 | 6 | | | |
| 3 | 39 | 27-39 | 2.36 | 8 | Pacific Herring | Mesethmoid | Complete | | | 8 | | |
| 3 | 39 | 27-39 | 2.36 | 6 | Pacific Herring | Opercle | Anterior | 3 | 3 | | | |
| 3 | 39 | 27-39 | 2.36 | 2 | Pacific Herring | Parasphenoid | Central | | | 2 | | |
| 3 | 39 | 27-39 | 2.36 | 14 | Pacific Herring | Pharyngobranchial | Complete | 6 | 8 | | | |
| 3 | 39 | 27-39 | 2.36 | 10 | Pacific Herring | Posttemporal | Inferior | 5 | 5 | | | |
| 3 | 39 | 27-39 | 2.36 | 3 | Pacific Herring | Preopercle | Central | 2 | 1 | | | |
| 3 | 39 | 27-39 | 2.36 | 34 | Pacific Herring | Prootic | Central | 5 | 10 | | 19 | |
| 3 | 39 | 27-39 | 2.36 | 11 | Pacific Herring | Quadrate | Anterior and Central | 4 | 7 | | | |
| 3 | 39 | 27-39 | 2.36 | 1 | Pacific Herring | Scapula | Complete | | 1 | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 39 | 27-39 | 2.36 | 4 | Pacific Herring | Subopercle | Central | 2 | 2 | | | |
| 3 | 39 | 27-39 | 2.36 | 1 | Pacific Herring | Supraoccipital | Complete | | | 1 | | |
| 3 | 39 | 27-39 | 2.36 | 414 | Pacific Herring | Unidentifiable | Fragment | | | | 414 | |
| 3 | 39 | 27-39 | 2.36 | 235 | Pacific Herring | Vertebra | Centrum | | | 235 | | |
| 3 | 39 | 27-39 | 2.36 | 3 | Pacific Herring | Vomer | Complete | | | 3 | | |
| 3 | 39 | 27-39 | 2.36 | 5 | Pacific Salmon | Vertebra | Centrum | | | 5 | | |
| 3 | 39 | 27-39 | 2.36 | 13 | Pacific Salmon | Vertebral Fragment | Centrum | | | 13 | | |
| 3 | 39 | 27-39 | 2.36 | 1 | Spiny Dogfish | Tooth | Complete | | | | 1 | |
| 3 | 39 | 27-39 | 2.36 | 7 | Spiny Dogfish | Tooth | Complete | | | | 7 | |
| 3 | 39 | 27-39 | 2.36 | 2 | Spiny Dogfish | Vertebra | Centrum | | | 2 | | |
| 3 | 39 | 27-39 | 2.36 | 207 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 207 | |
| 3 | 39 | 27-39 | 2.36 | 30 | Unidentified | Unidentifiable | Fragment | | | | 30 | |
| 3 | 39 | 39-41 | 2.36 | 2 | Pacific Herring | Angular | Posterior | 2 | | | | |
| 3 | 39 | 39-41 | 2.36 | 6 | Pacific Herring | Atlas | Centrum | | | 6 | | |
| 3 | 39 | 39-41 | 2.36 | 1 | Pacific Herring | Basioccipital | Posterior | | | 1 | | |
| 3 | 39 | 39-41 | 2.36 | 7 | Pacific Herring | Basipterygium | Posterior and Central | 3 | 4 | | | |
| 3 | 39 | 39-41 | 2.36 | 2 | Pacific Herring | Ceratohyal | Central | 1 | 1 | | | |
| 3 | 39 | 39-41 | 2.36 | 4 | Pacific Herring | Cleithrum | Central | 1 | 3 | | | |
| 3 | 39 | 39-41 | 2.36 | 2 | Pacific Herring | Coracoid | Complete | 1 | 1 | | | |
| 3 | 39 | 39-41 | 2.36 | 2 | Pacific Herring | Dentary | Anterior | 1 | 1 | | | |
| 3 | 39 | 39-41 | 2.36 | 5 | Pacific Herring | Epihyal | Complete | 1 | 3 | | 1 | |
| 3 | 39 | 39-41 | 2.36 | 5 | Pacific Herring | Exoccipital | Central | 2 | 3 | | | |
| 3 | 39 | 39-41 | 2.36 | 1 | Pacific Herring | Frontal | Complete | | | 1 | | |
| 3 | 39 | 39-41 | 2.36 | 12 | Pacific Herring | Hyomandibular | Superior | 6 | 6 | | | |
| 3 | 39 | 39-41 | 2.36 | 2 | Pacific Herring | Hypural | Complete | | | 2 | | |
| 3 | 39 | 39-41 | 2.36 | 2 | Pacific Herring | Maxilla | Anterior and Central | 1 | 1 | | | |
| 3 | 39 | 39-41 | 2.36 | 3 | Pacific Herring | Mesethmoid | Complete | | | 3 | | |
| 3 | 39 | 39-41 | 2.36 | 1 | Pacific Herring | Mesopterygoid | Central | 1 | | | | |
| 3 | 39 | 39-41 | 2.36 | 3 | Pacific Herring | Opercle | Anterior and Central | 1 | 2 | | | |
| 3 | 39 | 39-41 | 2.36 | 2 | Pacific Herring | Parasphenoid | Central | | | 2 | | |
| 3 | 39 | 39-41 | 2.36 | 9 | Pacific Herring | Pharyngobranchial | Complete | 5 | 4 | | | |
| 3 | 39 | 39-41 | 2.36 | 3 | Pacific Herring | Posttemporal | Inferior | 1 | 2 | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 39 | 39-41 | 2.36 | 1 | Pacific Herring | Prefrontal | Complete | | | 1 | | |
| 3 | 39 | 39-41 | 2.36 | 4 | Pacific Herring | Preopercle | Central | 2 | 2 | | | |
| 3 | 39 | 39-41 | 2.36 | 10 | Pacific Herring | Prootic | Central | 2 | 3 | | 5 | |
| 3 | 39 | 39-41 | 2.36 | 3 | Pacific Herring | Quadrate | Anterior and Central | 1 | 2 | | | |
| 3 | 39 | 39-41 | 2.36 | 1 | Pacific Herring | Scapula | Complete | 1 | | | | |
| 3 | 39 | 39-41 | 2.36 | 3 | Pacific Herring | Subopercle | Central | 1 | 2 | | | |
| 3 | 39 | 39-41 | 2.36 | 1 | Pacific Herring | Supraoccipital | Complete | | | 1 | | |
| 3 | 39 | 39-41 | 2.36 | 207 | Pacific Herring | Unidentifiable | Fragment | | | | 207 | |
| 3 | 39 | 39-41 | 2.36 | 239 | Pacific Herring | Vertebra | Centrum | | | 239 | | |
| 3 | 39 | 39-41 | 2.36 | 3 | Pacific Herring | Vomer | Complete | | | 3 | | |
| 3 | 39 | 39-41 | 2.36 | 2 | Pacific Salmon | Vertebral Fragment | Centrum | | | 2 | | |
| 3 | 39 | 39-41 | 2.36 | 1 | Spiny Dogfish | Tooth | Complete | | | | 1 | |
| 3 | 39 | 39-41 | 2.36 | 2 | Spiny Dogfish | Vertebra | Centrum | | | 2 | | |
| 3 | 39 | 39-41 | 2.36 | 296 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 296 | |
| 3 | 39 | 39-41 | 2.36 | 3 | Unidentified | Unidentifiable | Fragment | | | | 3 | |
| 3 | 39 | 41-49.5 | 2.36 | 1 | Pacific Herring | Angular | Posterior | | 1 | | | |
| 3 | 39 | 41-49.5 | 2.36 | 4 | Pacific Herring | Cleithrum | Central | 3 | 1 | | | |
| 3 | 39 | 41-49.5 | 2.36 | 1 | Pacific Herring | Dentary | Anterior | 1 | | | | |
| 3 | 39 | 41-49.5 | 2.36 | 1 | Pacific Herring | Hyomandibular | Superior | | 1 | | | |
| 3 | 39 | 41-49.5 | 2.36 | 1 | Pacific Herring | Maxilla | Anterior and Central | 1 | | | | |
| 3 | 39 | 41-49.5 | 2.36 | 4 | Pacific Herring | Mesopterygoid | Central | 2 | 2 | | | |
| 3 | 39 | 41-49.5 | 2.36 | 1 | Pacific Herring | Pharyngobranchial | Complete | 1 | | | | |
| 3 | 39 | 41-49.5 | 2.36 | 1 | Pacific Herring | Posttemporal | Inferior | | 1 | | | |
| 3 | 39 | 41-49.5 | 2.36 | 11 | Pacific Herring | Prootic | Central | 3 | 4 | | 3 | |
| 3 | 39 | 41-49.5 | 2.36 | 2 | Pacific Herring | Scapula | Complete | 1 | 1 | | | |
| 3 | 39 | 41-49.5 | 2.36 | 1 | Pacific Herring | Supraoccipital | Anterior and Central | | | 1 | | |
| 3 | 39 | 41-49.5 | 2.36 | 42 | Pacific Herring | Unidentifiable | Fragment | | | | 42 | |
| 3 | 39 | 41-49.5 | 2.36 | 57 | Pacific Herring | Vertebra | Centrum | | | 57 | | |
| 3 | 39 | 41-49.5 | 2.36 | 1 | Pacific Salmon | Tooth | Complete | | | | 1 | |
| 3 | 39 | 41-49.5 | 2.36 | 27 | Pacific Salmon | Vertebral Fragment | Centrum | | | 27 | | |
| 3 | 39 | 41-49.5 | 2.36 | 6 | Spiny Dogfish | Vertebra | Centrum | | | 6 | | |
| 3 | 39 | 41-49.5 | 2.36 | 19 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 19 | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 39 | 41-49.5 | 2.36 | 11 | Unidentified | Unidentifiable | Fragment | | | | 11 | |
| 3 | 39 | 49.5-58 | 2.36 | 1 | Flatfish | Vertebra | Centrum | | | 1 | | |
| 3 | 39 | 49.5-58 | 2.36 | 1 | Greenling | Vertebra | Centrum | | | 1 | | |
| 3 | 39 | 49.5-58 | 2.36 | 1 | Pacific Herring | Angular | Complete | | 1 | | | |
| 3 | 39 | 49.5-58 | 2.36 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 3 | 39 | 49.5-58 | 2.36 | 2 | Pacific Herring | Basipterygium | Posterior | 2 | | | | |
| 3 | 39 | 49.5-58 | 2.36 | 1 | Pacific Herring | Ceratohyal | Central | | 1 | | | |
| 3 | 39 | 49.5-58 | 2.36 | 1 | Pacific Herring | Cleithrum | Central | | 1 | | | |
| 3 | 39 | 49.5-58 | 2.36 | 1 | Pacific Herring | Dentary | Anterior and Central | 1 | | | | |
| 3 | 39 | 49.5-58 | 2.36 | 1 | Pacific Herring | Exoccipital | Central | 1 | | | | |
| 3 | 39 | 49.5-58 | 2.36 | 1 | Pacific Herring | Maxilla | Anterior and Central | | 1 | | | |
| 3 | 39 | 49.5-58 | 2.36 | 5 | Pacific Herring | Prootic | Central | 1 | 2 | | 2 | |
| 3 | 39 | 49.5-58 | 2.36 | 1 | Pacific Herring | Quadrate | Anterior and Central | | 1 | | | |
| 3 | 39 | 49.5-58 | 2.36 | 44 | Pacific Herring | Unidentifiable | Fragment | | | | 44 | |
| 3 | 39 | 49.5-58 | 2.36 | 38 | Pacific Herring | Vertebra | Centrum | | | 38 | | |
| 3 | 39 | 49.5-58 | 2.36 | 1 | Pacific Herring | Vomer | Complete | | | 1 | | |
| 3 | 39 | 49.5-58 | 2.36 | 9 | Pacific Salmon | Vertebral Fragment | Centrum | | | 9 | | |
| 3 | 39 | 49.5-58 | 2.36 | 3 | Spiny Dogfish | Vertebra | Centrum | | | 3 | | |
| 3 | 39 | 49.5-58 | 2.36 | 35 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 35 | |
| 3 | 39 | 49.5-58 | 2.36 | 4 | Unidentified | Unidentifiable | Fragment | | | | 4 | |
| 3 | 39 | 58-71 | 2.36 | 1 | Pacific Herring | Maxilla | Anterior and Central | | 1 | | | |
| 3 | 39 | 58-71 | 2.36 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 3 | 39 | 58-71 | 2.36 | 1 | Pacific Herring | Unidentifiable | Fragment | | | | 1 | |
| 3 | 39 | 58-71 | 2.36 | 21 | Pacific Herring | Vertebra | Centrum | | | 21 | | |
| 3 | 39 | 58-71 | 2.36 | 4 | Surfperch | Vertebra | Centrum | | | 4 | | |
| 3 | 39 | 58-71 | 2.36 | 2 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 2 | |
| 3 | 39 | 58-71 | 2.36 | 3 | Unidentified | Unidentifiable | Fragment | | | | 3 | |
| 3 | 39 | 71-73 | 2.36 | 1 | Pacific Herring | Cleithrum | Central | 1 | | | | |
| 3 | 39 | 71-73 | 2.36 | 3 | Pacific Herring | Unidentifiable | Fragment | | | | 3 | |
| 3 | 39 | 71-73 | 2.36 | 5 | Pacific Herring | Vertebra | Centrum | | | 5 | | |
| 3 | 39 | 71-73 | 2.36 | 4 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 4 | |
| 3 | 39 | 73-76 | 2.36 | 3 | Pacific Herring | Unidentifiable | Fragment | | | | 3 | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 39 | 73-76 | 2.36 | 3 | Pacific Herring | Vertebra | Centrum | | | 3 | | |
| 3 | 39 | 73-76 | 2.36 | 2 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 2 | |
| 3 | 39 | 76-81 | 2.36 | 1 | Pacific Herring | Vertebra | Centrum | | | 1 | | |
| 3 | 39 | 76-81 | 2.36 | 1 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 1 | |
| 3 | 39 | 81-90 | 2.36 | 1 | Greenling | Quadrate | Anterior and Central | | 1 | | | |
| 3 | 39 | 81-90 | 2.36 | 9 | Greenling | Vertebra | Centrum | | | 9 | | |
| 3 | 39 | 81-90 | 2.36 | 1 | Midshipman | Opercle | Complete | 1 | | | | |
| 3 | 39 | 81-90 | 2.36 | 2 | Midshipman | Vertebra | Centrum | | | 2 | | |
| 3 | 39 | 81-90 | 2.36 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 3 | 39 | 81-90 | 2.36 | 1 | Pacific Herring | Posttemporal | Complete | | 1 | | | |
| 3 | 39 | 81-90 | 2.36 | 7 | Pacific Herring | Unidentifiable | Fragment | | | | 7 | |
| 3 | 39 | 81-90 | 2.36 | 20 | Pacific Herring | Vertebra | Centrum | | | 20 | | |
| 3 | 39 | 81-90 | 2.36 | 4 | Pacific Salmon | Tooth | Complete | | | | 4 | |
| 3 | 39 | 81-90 | 2.36 | 6 | Pacific Salmon | Vertebral Fragment | Centrum | | | 6 | | |
| 3 | 39 | 81-90 | 2.36 | 3 | Spiny Dogfish | Vertebra | Centrum | | | 3 | | |
| 3 | 39 | 81-90 | 2.36 | 66 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 66 | |
| 3 | 40 | 0-16 | 1.5 | 11 | Pacific Herring | Unidentifiable | Fragment | | | | 11 | |
| 3 | 40 | 16-27 | 1.5 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 3 | 40 | 16-27 | 1.5 | 3 | Pacific Herring | Ceratohyal | Central | 1 | 1 | | 1 | |
| 3 | 40 | 16-27 | 1.5 | 1 | Pacific Herring | Epihyal | Anterior | | 1 | | | |
| 3 | 40 | 16-27 | 1.5 | 5 | Pacific Herring | Exoccipital | Central | 2 | 3 | | | |
| 3 | 40 | 16-27 | 1.5 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 3 | 40 | 16-27 | 1.5 | 7 | Pacific Herring | Prootic | Central | 2 | 1 | | 4 | |
| 3 | 40 | 16-27 | 1.5 | 464 | Pacific Herring | Unidentifiable | Fragment | | | | 464 | |
| 3 | 40 | 16-27 | 1.5 | 69 | Pacific Herring | Vertebra | Centrum | | | 69 | | |
| 3 | 40 | 16-27 | 1.5 | 2 | Pacific Herring | Vomer | Complete | | | 2 | | |
| 3 | 40 | 16-27 | 1.5 | 108 | Unidentified | Rib/Ray/Spine | Incomplete | | | 108 | | |
| 3 | 40 | 27-37 | 1.5 | 1 | Pacific Herring | Pharyngobranchial | Complete | 1 | | | | |
| 3 | 40 | 27-37 | 1.5 | 3 | Pacific Herring | Prootic | Central | | 1 | | 2 | |
| 3 | 40 | 27-37 | 1.5 | 87 | Pacific Herring | Unidentifiable | Fragment | | | | 87 | |
| 3 | 40 | 27-37 | 1.5 | 13 | Pacific Herring | Vertebra | Centrum | | | 13 | | |
| 3 | 40 | 27-37 | 1.5 | 2 | Pacific Salmon | Vertebral Fragment | Centrum | | | 2 | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 40 | 27-37 | 1.5 | 25 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 25 | |
| 3 | 40 | 37-47 | 1.5 | 1 | Pacific Herring | Maxilla | Anterior | | 1 | | | |
| 3 | 40 | 37-47 | 1.5 | 36 | Pacific Herring | Unidentifiable | Fragment | | | | 36 | |
| 3 | 40 | 37-47 | 1.5 | 11 | Pacific Herring | Vertebra | Centrum | | | 11 | | |
| 3 | 40 | 37-47 | 1.5 | 9 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 9 | |
| 3 | 40 | 47-62 | 1.5 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 3 | 40 | 47-62 | 1.5 | 1 | Pacific Herring | Ceratohyal | Central | | 1 | | | |
| 3 | 40 | 47-62 | 1.5 | 48 | Pacific Herring | Unidentifiable | Fragment | | | | 48 | |
| 3 | 40 | 47-62 | 1.5 | 6 | Pacific Herring | Vertebra | Centrum | | | 6 | | |
| 3 | 40 | 47-62 | 1.5 | 6 | Pacific Salmon | Vertebral Fragment | Centrum | | | 6 | | |
| 3 | 40 | 47-62 | 1.5 | 22 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 22 | |
| 3 | 40 | 62-82 | 1.5 | 1 | Pacific Herring | Maxilla | Central | 1 | | | | |
| 3 | 40 | 62-82 | 1.5 | 18 | Pacific Herring | Unidentifiable | Fragment | | | | 18 | |
| 3 | 40 | 62-82 | 1.5 | 3 | Pacific Herring | Vertebra | Centrum | | | 3 | | |
| 3 | 40 | 62-82 | 1.5 | 2 | Pacific Salmon | Vertebral Fragment | Centrum | | | 2 | | |
| 3 | 40 | 62-82 | 1.5 | 1 | Surfperch | Vertebra | Centrum | | | 1 | | |
| 3 | 40 | 62-82 | 1.5 | 11 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 11 | |
| 3 | 40 | 82-88 | 1.5 | 4 | Pacific Herring | Prootic | Central | 1 | 2 | | 1 | |
| 3 | 40 | 82-88 | 1.5 | 63 | Pacific Herring | Unidentifiable | Fragment | | | | 63 | |
| 3 | 40 | 82-88 | 1.5 | 34 | Pacific Herring | Vertebra | Centrum | | | 34 | | |
| 3 | 40 | 82-88 | 1.5 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 3 | 40 | 82-88 | 1.5 | 31 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 31 | |
| 3 | 40 | 88-88 | 1.5 | 48 | Pacific Herring | Unidentifiable | Fragment | | | | 48 | |
| 3 | 40 | 88-88 | 1.5 | 12 | Pacific Herring | Vertebra | Centrum | | | 12 | | |
| 3 | 40 | 88-88 | 1.5 | 7 | Pacific Salmon | Vertebral Fragment | Centrum | | | 7 | | |
| 3 | 40 | 88-88 | 1.5 | 23 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 23 | |
| 3 | 40 | 88-91.5 | 1.5 | 2 | Pacific Herring | Ceratohyal | Central | 1 | 1 | | | |
| 3 | 40 | 88-91.5 | 1.5 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 3 | 40 | 88-91.5 | 1.5 | 1 | Pacific Herring | Maxilla | Anterior | | 1 | | | |
| 3 | 40 | 88-91.5 | 1.5 | 2 | Pacific Herring | Prootic | Central | 1 | | | 1 | |
| 3 | 40 | 88-91.5 | 1.5 | 148 | Pacific Herring | Unidentifiable | Fragment | | | | 148 | |
| 3 | 40 | 88-91.5 | 1.5 | 21 | Pacific Herring | Vertebra | Centrum | | | 21 | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 40 | 88-91.5 | 1.5 | 7 | Pacific Salmon | Vertebral Fragment | Centrum | | | 7 | | |
| 3 | 40 | 88-91.5 | 1.5 | 59 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 59 | |
| 3 | 40 | 91.5-92 | 1.5 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 3 | 40 | 91.5-92 | 1.5 | 33 | Pacific Herring | Unidentifiable | Fragment | | | | 33 | |
| 3 | 40 | 91.5-92 | 1.5 | 9 | Pacific Herring | Vertebra | Centrum | | | 9 | | |
| 3 | 40 | 91.5-92 | 1.5 | 10 | Pacific Salmon | Vertebral Fragment | Centrum | | | 10 | | |
| 3 | 40 | 91.5-92 | 1.5 | 2 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 2 | |
| 3 | 40 | 93-99.5 | 1.5 | 3 | Pacific Herring | Exoccipital | Central | 1 | 2 | | | |
| 3 | 40 | 93-99.5 | 1.5 | 2 | Pacific Herring | Prootic | Central | | | | 2 | |
| 3 | 40 | 93-99.5 | 1.5 | 61 | Pacific Herring | Unidentifiable | Fragment | | | | 61 | |
| 3 | 40 | 93-99.5 | 1.5 | 25 | Pacific Herring | Vertebra | Centrum | | | 25 | | |
| 3 | 40 | 93-99.5 | 1.5 | 1 | Pacific Herring | Vomer | Complete | | | 1 | | |
| 3 | 40 | 93-99.5 | 1.5 | 2 | Pacific Salmon | Vertebral Fragment | Centrum | | | 2 | | |
| 3 | 40 | 93-99.5 | 1.5 | 2 | Spiny Dogfish | Vertebra | Centrum | | | 2 | | |
| 3 | 40 | 93-99.5 | 1.5 | 25 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 25 | |
| 3 | 40 | 99.5-101 | 1.5 | 2 | Pacific Herring | Prootic | Central | | | | 2 | |
| 3 | 40 | 99.5-101 | 1.5 | 25 | Pacific Herring | Unidentifiable | Fragment | | | | 25 | |
| 3 | 40 | 99.5-101 | 1.5 | 4 | Pacific Herring | Vertebra | Centrum | | | 4 | | |
| 3 | 40 | 99.5-101 | 1.5 | 4 | Pacific Salmon | Vertebral Fragment | Centrum | | | 4 | | |
| 3 | 40 | 99.5-101 | 1.5 | 6 | Spiny Dogfish | Vertebra | Centrum | | | 6 | | |
| 3 | 40 | 99.5-101 | 1.5 | 15 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 15 | |
| 3 | 40 | 101-106 | 1.5 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 3 | 40 | 101-106 | 1.5 | 35 | Pacific Herring | Unidentifiable | Fragment | | | | 35 | |
| 3 | 40 | 101-106 | 1.5 | 6 | Pacific Herring | Vertebra | Centrum | | | 6 | | |
| 3 | 40 | 101-106 | 1.5 | 1 | Pacific Herring | Vomer | Complete | | | 1 | | |
| 3 | 40 | 101-106 | 1.5 | 2 | Pacific Salmon | Vertebral Fragment | Centrum | | | 2 | | |
| 3 | 40 | 101-106 | 1.5 | 14 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 14 | |
| 3 | 40 | 106-115 | 1.5 | 21 | Pacific Herring | Unidentifiable | Fragment | | | | 21 | |
| 3 | 40 | 106-115 | 1.5 | 8 | Pacific Herring | Vertebra | Centrum | | | 8 | | |
| 3 | 40 | 106-115 | 1.5 | 7 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 7 | |
| 3 | 40 | 0-16 | 2.36 | 1 | Pacific Herring | Cleithrum | Central | 1 | | | | |
| 3 | 40 | 0-16 | 2.36 | 2 | Pacific Herring | Prootic | Central | | | | 2 | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 40 | 0-16 | 2.36 | 11 | Pacific Herring | Unidentifiable | Fragment | | | | 11 | |
| 3 | 40 | 0-16 | 2.36 | 6 | Pacific Herring | Vertebra | Centrum | | | 6 | | |
| 3 | 40 | 0-16 | 2.36 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |
| 3 | 40 | 0-16 | 2.36 | 3 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 3 | |
| 3 | 40 | 16-27 | 2.36 | 14 | Pacific Herring | Angular | Posterior and Central | 6 | 8 | | | |
| 3 | 40 | 16-27 | 2.36 | 14 | Pacific Herring | Atlas | Centrum | | | 14 | | |
| 3 | 40 | 16-27 | 2.36 | 15 | Pacific Herring | Basioccipital | Complete | | | 15 | | |
| 3 | 40 | 16-27 | 2.36 | 25 | Pacific Herring | Ceratohyal | Central | 11 | 14 | | | |
| 3 | 40 | 16-27 | 2.36 | 11 | Pacific Herring | Cleithrum | Central | 4 | 7 | | | |
| 3 | 40 | 16-27 | 2.36 | 8 | Pacific Herring | Coracoid | Complete | 3 | 5 | | | |
| 3 | 40 | 16-27 | 2.36 | 15 | Pacific Herring | Dentary | Anterior and Central | 6 | 9 | | | |
| 3 | 40 | 16-27 | 2.36 | 16 | Pacific Herring | Epihyal | Complete | 9 | 7 | | | |
| 3 | 40 | 16-27 | 2.36 | 36 | Pacific Herring | Exoccipital | Central | 17 | 19 | | | |
| 3 | 40 | 16-27 | 2.36 | 2 | Pacific Herring | Frontal | Complete | | | 2 | | |
| 3 | 40 | 16-27 | 2.36 | 30 | Pacific Herring | Hyomandibular | Superior and Central | 14 | 16 | | | |
| 3 | 40 | 16-27 | 2.36 | 8 | Pacific Herring | Lacrymal | Complete | 5 | 3 | | | |
| 3 | 40 | 16-27 | 2.36 | 11 | Pacific Herring | Maxilla | Anterior and Central | 7 | 4 | | | |
| 3 | 40 | 16-27 | 2.36 | 5 | Pacific Herring | Mesethmoid | Complete | | | 5 | | |
| 3 | 40 | 16-27 | 2.36 | 4 | Pacific Herring | Parasphenoid | Central | | | 4 | | |
| 3 | 40 | 16-27 | 2.36 | 51 | Pacific Herring | Pharyngobranchial | Complete | 24 | 27 | | | |
| 3 | 40 | 16-27 | 2.36 | 13 | Pacific Herring | Posttemporal | Complete | 6 | 7 | | | |
| 3 | 40 | 16-27 | 2.36 | 13 | Pacific Herring | Preopercle | Central | 4 | 6 | | 3 | |
| 3 | 40 | 16-27 | 2.36 | 73 | Pacific Herring | Prootic | Central | 24 | 27 | | 22 | |
| 3 | 40 | 16-27 | 2.36 | 20 | Pacific Herring | Quadrate | Anterior and Central | 11 | 9 | | | |
| 3 | 40 | 16-27 | 2.36 | 5 | Pacific Herring | Scapula | Complete | 2 | 3 | | | |
| 3 | 40 | 16-27 | 2.36 | 10 | Pacific Herring | Subopercle | Central | 6 | 4 | | | |
| 3 | 40 | 16-27 | 2.36 | 1396 | Pacific Herring | Unidentifiable | Fragment | | | | 1369 | |
| 3 | 40 | 16-27 | 2.36 | 651 | Pacific Herring | Vertebra | Centrum | | | 651 | | |
| 3 | 40 | 16-27 | 2.36 | 7 | Pacific Herring | Vomer | Anterior and Central | | | 7 | | |
| 3 | 40 | 16-27 | 2.36 | 3 | Spiny Dogfish | Clasper Spine | Incomplete | | | | 3 | |
| 3 | 40 | 16-27 | 2.36 | 372 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 372 | |
| 3 | 40 | 27-37 | 2.36 | 7 | Pacific Herring | Angular | Posterior and Central | 4 | 3 | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 40 | 27-37 | 2.36 | 6 | Pacific Herring | Basioccipital | Complete | | | 6 | | |
| 3 | 40 | 27-37 | 2.36 | 7 | Pacific Herring | Ceratohyal | Complete | 4 | 3 | | | |
| 3 | 40 | 27-37 | 2.36 | 7 | Pacific Herring | Cleithrum | Central | 4 | 3 | | | |
| 3 | 40 | 27-37 | 2.36 | 3 | Pacific Herring | Coracoid | Complete | 2 | 1 | | | |
| 3 | 40 | 27-37 | 2.36 | 11 | Pacific Herring | Dentary | Anterior and Central | 4 | 7 | | | |
| 3 | 40 | 27-37 | 2.36 | 20 | Pacific Herring | Exoccipital | Central | 9 | 11 | | | |
| 3 | 40 | 27-37 | 2.36 | 2 | Pacific Herring | Frontal | Complete | | | 2 | | |
| 3 | 40 | 27-37 | 2.36 | 21 | Pacific Herring | Hyomandibular | Superior | 13 | 8 | | | |
| 3 | 40 | 27-37 | 2.36 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 3 | 40 | 27-37 | 2.36 | 10 | Pacific Herring | Maxilla | Anterior and Central | 4 | 6 | | | |
| 3 | 40 | 27-37 | 2.36 | 3 | Pacific Herring | Mesethmoid | Complete | | | 3 | | |
| 3 | 40 | 27-37 | 2.36 | 3 | Pacific Herring | Mesopterygoid | Central | 2 | 1 | | | |
| 3 | 40 | 27-37 | 2.36 | 5 | Pacific Herring | Opercle | Anterior and Central | 3 | 2 | | | |
| 3 | 40 | 27-37 | 2.36 | 26 | Pacific Herring | Pharyngobranchial | Complete | 14 | 12 | | | |
| 3 | 40 | 27-37 | 2.36 | 6 | Pacific Herring | Posttemporal | Complete | 2 | 4 | | | |
| 3 | 40 | 27-37 | 2.36 | 5 | Pacific Herring | Preopercle | Central | 2 | 1 | | 2 | |
| 3 | 40 | 27-37 | 2.36 | 23 | Pacific Herring | Prootic | Central | 11 | 9 | | 3 | |
| 3 | 40 | 27-37 | 2.36 | 4 | Pacific Herring | Quadrate | Anterior | 3 | 1 | | | |
| 3 | 40 | 27-37 | 2.36 | 5 | Pacific Herring | Scapula | Complete | 2 | 3 | | | |
| 3 | 40 | 27-37 | 2.36 | 6 | Pacific Herring | Subopercle | Central | 4 | 2 | | | |
| 3 | 40 | 27-37 | 2.36 | 2 | Pacific Herring | Supraoccipital | Complete | | | 2 | | |
| 3 | 40 | 27-37 | 2.36 | 407 | Pacific Herring | Unidentifiable | Fragment | | | | 407 | |
| 3 | 40 | 27-37 | 2.36 | 269 | Pacific Herring | Vertebra | Centrum | | | 269 | | |
| 3 | 40 | 27-37 | 2.36 | 2 | Pacific Herring | Vomer | Anterior and Central | | | 2 | | |
| 3 | 40 | 27-37 | 2.36 | 1 | Pacific Salmon | Vertebra | Centrum | | | 1 | | |
| 3 | 40 | 27-37 | 2.36 | 27 | Pacific Salmon | Vertebral Fragment | Centrum | | | 27 | | |
| 3 | 40 | 27-37 | 2.36 | 33 | Spiny Dogfish | Vertebra | Centrum | | | 33 | | |
| 3 | 40 | 27-37 | 2.36 | 43 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 43 | |
| 3 | 40 | 37-47 | 2.36 | 2 | Midshipman | Vertebra | Centrum | | | 2 | | |
| 3 | 40 | 37-47 | 2.36 | 2 | Pacific Herring | Atlas | Centrum | | | 2 | | |
| 3 | 40 | 37-47 | 2.36 | 3 | Pacific Herring | Ceratohyal | Central | 2 | 1 | | | |
| 3 | 40 | 37-47 | 2.36 | 1 | Pacific Herring | Cleithrum | Central | | 1 | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 40 | 37-47 | 2.36 | 1 | Pacific Herring | Coracoid | Complete | 1 | | | | |
| 3 | 40 | 37-47 | 2.36 | 1 | Pacific Herring | Dentary | Anterior and Central | | 1 | | | |
| 3 | 40 | 37-47 | 2.36 | 2 | Pacific Herring | Epihyal | Complete | 1 | 1 | | | |
| 3 | 40 | 37-47 | 2.36 | 1 | Pacific Herring | Frontal | Complete | | | 1 | | |
| 3 | 40 | 37-47 | 2.36 | 5 | Pacific Herring | Hyomandibular | Superior | 3 | 2 | | | |
| 3 | 40 | 37-47 | 2.36 | 3 | Pacific Herring | Maxilla | Anterior and Central | 2 | 1 | | | |
| 3 | 40 | 37-47 | 2.36 | 2 | Pacific Herring | Preopercle | Central | | 1 | | 1 | |
| 3 | 40 | 37-47 | 2.36 | 5 | Pacific Herring | Prootic | Central | 2 | 2 | | 1 | |
| 3 | 40 | 37-47 | 2.36 | 105 | Pacific Herring | Unidentifiable | Fragment | | | | 105 | |
| 3 | 40 | 37-47 | 2.36 | 47 | Pacific Herring | Vertebra | Centrum | | | 47 | | |
| 3 | 40 | 37-47 | 2.36 | 7 | Pacific Salmon | Vertebral Fragment | Centrum | | | 7 | | |
| 3 | 40 | 37-47 | 2.36 | 2 | Spiny Dogfish | Vertebra | Centrum | | | 2 | | |
| 3 | 40 | 37-47 | 2.36 | 10 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 10 | |
| 3 | 40 | 47-62 | 2.36 | 1 | Pacific Herring | Angular | Posterior and Central | 1 | | | | |
| 3 | 40 | 47-62 | 2.36 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 3 | 40 | 47-62 | 2.36 | 1 | Pacific Herring | Dentary | Anterior | | 1 | | | |
| 3 | 40 | 47-62 | 2.36 | 3 | Pacific Herring | Hyomandibular | Superior | 1 | 2 | | | |
| 3 | 40 | 47-62 | 2.36 | 1 | Pacific Herring | Posttemporal | Complete | | 1 | | | |
| 3 | 40 | 47-62 | 2.36 | 3 | Pacific Herring | Prootic | Central | 2 | 1 | | | |
| 3 | 40 | 47-62 | 2.36 | 1 | Pacific Herring | Subopercle | Central | 1 | | | | |
| 3 | 40 | 47-62 | 2.36 | 28 | Pacific Herring | Unidentifiable | Fragment | | | | 30 | |
| 3 | 40 | 47-62 | 2.36 | 16 | Pacific Herring | Vertebra | Centrum | | | 16 | | |
| 3 | 40 | 47-62 | 2.36 | 4 | Pacific Salmon | Vertebral Fragment | Centrum | | | 4 | | |
| 3 | 40 | 47-62 | 2.36 | 11 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 11 | |
| 3 | 40 | 47-62 | 2.36 | 2 | Unidentified | Unidentifiable | Fragment | | | | 2 | |
| 3 | 40 | 62-82 | 2.36 | 2 | Midshipman | Angular | Complete | | 2 | | | |
| 3 | 40 | 62-82 | 2.36 | 1 | Pacific Herring | Angular | Posterior | 1 | | | | |
| 3 | 40 | 62-82 | 2.36 | 2 | Pacific Herring | Atlas | Centrum | | | 2 | | |
| 3 | 40 | 62-82 | 2.36 | 1 | Pacific Herring | Ceratohyal | Complete | 1 | | | | |
| 3 | 40 | 62-82 | 2.36 | 2 | Pacific Herring | Cleithrum | Central | 1 | 1 | | | |
| 3 | 40 | 62-82 | 2.36 | 1 | Pacific Herring | Coracoid | Complete | | 1 | | | |
| 3 | 40 | 62-82 | 2.36 | 1 | Pacific Herring | Epihyal | Complete | 1 | | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 40 | 62-82 | 2.36 | 1 | Pacific Herring | Frontal | Complete | | | 1 | | |
| 3 | 40 | 62-82 | 2.36 | 6 | Pacific Herring | Hyomandibular | Superior | 2 | 4 | | | |
| 3 | 40 | 62-82 | 2.36 | 1 | Pacific Herring | Maxilla | Anterior | | 1 | | | |
| 3 | 40 | 62-82 | 2.36 | 4 | Pacific Herring | Opercle | Anterior and Central | 2 | 2 | | | |
| 3 | 40 | 62-82 | 2.36 | 2 | Pacific Herring | Pharyngobranchial | Complete | 1 | 1 | | | |
| 3 | 40 | 62-82 | 2.36 | 1 | Pacific Herring | Posttemporal | Complete | 1 | | | | |
| 3 | 40 | 62-82 | 2.36 | 3 | Pacific Herring | Prootic | Central | | 1 | | 2 | |
| 3 | 40 | 62-82 | 2.36 | 59 | Pacific Herring | Unidentifiable | Fragment | | | | 59 | |
| 3 | 40 | 62-82 | 2.36 | 106 | Pacific Herring | Vertebra | Centrum | | | 106 | | |
| 3 | 40 | 62-82 | 2.36 | 1 | Pacific Herring | Vomer | Complete | | | 1 | | |
| 3 | 40 | 62-82 | 2.36 | 1 | Pacific Salmon | Basipterygium | Posterior | | 1 | | | |
| 3 | 40 | 62-82 | 2.36 | 8 | Pacific Salmon | Vertebral Fragment | Centrum | | | 8 | | |
| 3 | 40 | 62-82 | 2.36 | 3 | Spiny Dogfish | Vertebra | Centrum | | | 3 | | |
| 3 | 40 | 62-82 | 2.36 | 18 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 18 | |
| 3 | 40 | 62-82 | 2.36 | 1 | Unidentified | Unidentifiable | Fragment | | | | 1 | |
| 3 | 40 | 82-88 | 2.36 | 1 | Midshipman | Opercle | Complete | 1 | | | | |
| 3 | 40 | 82-88 | 2.36 | 5 | Pacific Herring | Angular | Posterior and Central | 3 | 2 | | | |
| 3 | 40 | 82-88 | 2.36 | 2 | Pacific Herring | Atlas | Centrum | | | 2 | | |
| 3 | 40 | 82-88 | 2.36 | 1 | Pacific Herring | Basioccipital | Complete | | | 1 | | |
| 3 | 40 | 82-88 | 2.36 | 4 | Pacific Herring | Ceratohyal | Complete | 2 | 2 | | | |
| 3 | 40 | 82-88 | 2.36 | 3 | Pacific Herring | Cleithrum | Central | 2 | 1 | | | |
| 3 | 40 | 82-88 | 2.36 | 1 | Pacific Herring | Coracoid | Complete | 1 | | | | |
| 3 | 40 | 82-88 | 2.36 | 2 | Pacific Herring | Dentary | Anterior | 1 | 1 | | | |
| 3 | 40 | 82-88 | 2.36 | 7 | Pacific Herring | Epihyal | Complete | 3 | 4 | | | |
| 3 | 40 | 82-88 | 2.36 | 1 | Pacific Herring | Exoccipital | Central | 1 | | | | |
| 3 | 40 | 82-88 | 2.36 | 3 | Pacific Herring | Hyomandibular | Superior | 2 | 1 | | | |
| 3 | 40 | 82-88 | 2.36 | 4 | Pacific Herring | Maxilla | Central | 1 | 3 | | | |
| 3 | 40 | 82-88 | 2.36 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 3 | 40 | 82-88 | 2.36 | 1 | Pacific Herring | Mesopterygoid | Central | 1 | | | | |
| 3 | 40 | 82-88 | 2.36 | 1 | Pacific Herring | Opercle | Complete | | 1 | | | |
| 3 | 40 | 82-88 | 2.36 | 2 | Pacific Herring | Parasphenoid | Central | | | 2 | | |
| 3 | 40 | 82-88 | 2.36 | 1 | Pacific Herring | Posttemporal | Inferior | | 1 | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 40 | 82-88 | 2.36 | 2 | Pacific Herring | Preopercle | Central | 1 | 1 | | | |
| 3 | 40 | 82-88 | 2.36 | 5 | Pacific Herring | Prootic | Central | 1 | 2 | | 2 | |
| 3 | 40 | 82-88 | 2.36 | 1 | Pacific Herring | Quadrate | Anterior and Central | | 1 | | | |
| 3 | 40 | 82-88 | 2.36 | 1 | Pacific Herring | Scapula | Complete | | 1 | | | |
| 3 | 40 | 82-88 | 2.36 | 3 | Pacific Herring | Subopercle | Central | 2 | 1 | | | |
| 3 | 40 | 82-88 | 2.36 | 93 | Pacific Herring | Unidentifiable | Fragment | | | | 93 | |
| 3 | 40 | 82-88 | 2.36 | 59 | Pacific Herring | Vertebra | Centrum | | | 59 | | |
| 3 | 40 | 82-88 | 2.36 | 2 | Pacific Herring | Vomer | Anterior and Central | | | 2 | | |
| 3 | 40 | 82-88 | 2.36 | 5 | Pacific Salmon | Vertebral Fragment | Centrum | | | 5 | | |
| 3 | 40 | 82-88 | 2.36 | 2 | Spiny Dogfish | Vertebra | Centrum | | | 2 | | |
| 3 | 40 | 82-88 | 2.36 | 15 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 15 | |
| 3 | 40 | 82-88 | 2.36 | 1 | Unidentified | Unidentifiable | Fragment | | | | 1 | |
| 3 | 40 | 88-88 | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 3 | 40 | 88-88 | 2.36 | 2 | Pacific Herring | Angular | Posterior | 1 | 1 | | | |
| 3 | 40 | 88-88 | 2.36 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 3 | 40 | 88-88 | 2.36 | 1 | Pacific Herring | Basioccipital | Complete | | | 1 | | |
| 3 | 40 | 88-88 | 2.36 | 3 | Pacific Herring | Ceratohyal | Central | 2 | 1 | | | |
| 3 | 40 | 88-88 | 2.36 | 1 | Pacific Herring | Cleithrum | Central | 1 | | | | |
| 3 | 40 | 88-88 | 2.36 | 2 | Pacific Herring | Dentary | Anterior and Central | 1 | 1 | | | |
| 3 | 40 | 88-88 | 2.36 | 2 | Pacific Herring | Epihyal | Complete | 1 | 1 | | | |
| 3 | 40 | 88-88 | 2.36 | 2 | Pacific Herring | Exoccipital | Central | 1 | 1 | | | |
| 3 | 40 | 88-88 | 2.36 | 2 | Pacific Herring | Hyomandibular | Superior and Central | 1 | 1 | | | |
| 3 | 40 | 88-88 | 2.36 | 2 | Pacific Herring | Maxilla | Anterior | | 2 | | | |
| 3 | 40 | 88-88 | 2.36 | 3 | Pacific Herring | Opercle | Anterior and Central | 1 | | | 2 | |
| 3 | 40 | 88-88 | 2.36 | 7 | Pacific Herring | Pharyngobranchial | Complete | 3 | 4 | | | |
| 3 | 40 | 88-88 | 2.36 | 1 | Pacific Herring | Preopercle | Central | | 1 | | | |
| 3 | 40 | 88-88 | 2.36 | 7 | Pacific Herring | Prootic | Central | 2 | 3 | | 2 | |
| 3 | 40 | 88-88 | 2.36 | 1 | Pacific Herring | Supraoccipital | Complete | | | 1 | | |
| 3 | 40 | 88-88 | 2.36 | 84 | Pacific Herring | Unidentifiable | Fragment | | | | 84 | |
| 3 | 40 | 88-88 | 2.36 | 66 | Pacific Herring | Vertebra | Centrum | | | 66 | | |
| 3 | 40 | 88-88 | 2.36 | 9 | Pacific Salmon | Vertebral Fragment | Centrum | | | 9 | | |
| 3 | 40 | 88-88 | 2.36 | 2 | Spiny Dogfish | Vertebra | Centrum | | | 2 | | |

# DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 40 | 88-88 | 2.36 | 5 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 5 | |
| 3 | 40 | 88-88 | 2.36 | 2 | Unidentified | Unidentifiable | Fragment | | | | 2 | |
| 3 | 40 | 88-91.5 | 2.36 | 1 | Greenling | Dentary | Anterior and Central | 1 | | | | |
| 3 | 40 | 88-91.5 | 2.36 | 1 | Greenling | Vomer | Anterior | | | 1 | | |
| 3 | 40 | 88-91.5 | 2.36 | 2 | Midshipman | Vertebra | Centrum | | | 2 | | |
| 3 | 40 | 88-91.5 | 2.36 | 2 | Pacific Herring | Angular | Posterior and Central | 1 | 1 | | | |
| 3 | 40 | 88-91.5 | 2.36 | 2 | Pacific Herring | Atlas | Centrum | | | 2 | | |
| 3 | 40 | 88-91.5 | 2.36 | 1 | Pacific Herring | Ceratohyal | Complete | | 1 | | | |
| 3 | 40 | 88-91.5 | 2.36 | 1 | Pacific Herring | Dentary | Anterior | | 1 | | | |
| 3 | 40 | 88-91.5 | 2.36 | 5 | Pacific Herring | Epihyal | Complete | 2 | 3 | | | |
| 3 | 40 | 88-91.5 | 2.36 | 4 | Pacific Herring | Hyomandibular | Superior | 2 | 2 | | | |
| 3 | 40 | 88-91.5 | 2.36 | 1 | Pacific Herring | Maxilla | Anterior | 1 | | | | |
| 3 | 40 | 88-91.5 | 2.36 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 3 | 40 | 88-91.5 | 2.36 | 1 | Pacific Herring | Opercle | Complete | | 1 | | | |
| 3 | 40 | 88-91.5 | 2.36 | 6 | Pacific Herring | Prootic | Central | 3 | 2 | | 1 | |
| 3 | 40 | 88-91.5 | 2.36 | 1 | Pacific Herring | Quadrate | Anterior | 1 | | | | |
| 3 | 40 | 88-91.5 | 2.36 | 1 | Pacific Herring | Supraoccipital | Complete | | | 1 | | |
| 3 | 40 | 88-91.5 | 2.36 | 144 | Pacific Herring | Unidentifiable | Fragment | | | | 144 | |
| 3 | 40 | 88-91.5 | 2.36 | 73 | Pacific Herring | Vertebra | Centrum | | | 73 | | |
| 3 | 40 | 88-91.5 | 2.36 | 3 | Pacific Salmon | Vertebral Fragment | Centrum | | | 3 | | |
| 3 | 40 | 88-91.5 | 2.36 | 2 | Spiny Dogfish | Vertebra | Centrum | | | 2 | | |
| 3 | 40 | 88-91.5 | 2.36 | 27 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 27 | |
| 3 | 40 | 91.5-93 | 2.36 | 2 | Pacific Herring | Angular | Posterior | 1 | 1 | | | |
| 3 | 40 | 91.5-93 | 2.36 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | Burnt |
| 3 | 40 | 91.5-93 | 2.36 | 3 | Pacific Herring | Atlas | Centrum | | | 3 | | |
| 3 | 40 | 91.5-93 | 2.36 | 1 | Pacific Herring | Ceratohyal | Central | 1 | | | | |
| 3 | 40 | 91.5-93 | 2.36 | 1 | Pacific Herring | Cleithrum | Central | 1 | | | | |
| 3 | 40 | 91.5-93 | 2.36 | 1 | Pacific Herring | Dentary | Anterior | | 1 | | | |
| 3 | 40 | 91.5-93 | 2.36 | 1 | Pacific Herring | Exoccipital | Central | | 1 | | | |
| 3 | 40 | 91.5-93 | 2.36 | 4 | Pacific Herring | Hyomandibular | Superior | 2 | 2 | | | |
| 3 | 40 | 91.5-93 | 2.36 | 1 | Pacific Herring | Lacrymal | Complete | | 1 | | | |
| 3 | 40 | 91.5-93 | 2.36 | 1 | Pacific Herring | Maxilla | Central | | 1 | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 40 | 91.5-93 | 2.36 | 1 | Pacific Herring | Opercle | Anterior | | 1 | | | |
| 3 | 40 | 91.5-93 | 2.36 | 2 | Pacific Herring | Parasphenoid | Central | | | 2 | | |
| 3 | 40 | 91.5-93 | 2.36 | 1 | Pacific Herring | Posttemporal | Inferior | 1 | | | | |
| 3 | 40 | 91.5-93 | 2.36 | 11 | Pacific Herring | Prootic | Central | 4 | 5 | | 2 | |
| 3 | 40 | 91.5-93 | 2.36 | 2 | Pacific Herring | Quadrate | Anterior and Central | 1 | 1 | | | |
| 3 | 40 | 91.5-93 | 2.36 | 1 | Pacific Herring | Scapula | Complete | | 1 | | | |
| 3 | 40 | 91.5-93 | 2.36 | 2 | Pacific Herring | Subopercle | Complete | 2 | | | | |
| 3 | 40 | 91.5-93 | 2.36 | 1 | Pacific Herring | Supraoccipital | Complete | | | 1 | | |
| 3 | 40 | 91.5-93 | 2.36 | 80 | Pacific Herring | Unidentifiable | Fragment | | | | 80 | |
| 3 | 40 | 91.5-93 | 2.36 | 2 | Pacific Herring | Vertebra | Centrum | | | 2 | | Burnt |
| 3 | 40 | 91.5-93 | 2.36 | 54 | Pacific Herring | Vertebra | Centrum | | | 54 | | |
| 3 | 40 | 91.5-93 | 2.36 | 3 | Pacific Herring | Vomer | Complete | | | 3 | | |
| 3 | 40 | 91.5-93 | 2.36 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 3 | 40 | 91.5-93 | 2.36 | 4 | Spiny Dogfish | Vertebra | Centrum | | | 4 | | |
| 3 | 40 | 91.5-93 | 2.36 | 12 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 12 | |
| 3 | 40 | 91.5-93 | 2.36 | 4 | Unidentified | Unidentifiable | Fragment | | | | 4 | |
| 3 | 40 | 93-99.5 | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 3 | 40 | 93-99.5 | 2.36 | 1 | Pacific Herring | Angular | Posterior and Central | 1 | | | | |
| 3 | 40 | 93-99.5 | 2.36 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 3 | 40 | 93-99.5 | 2.36 | 1 | Pacific Herring | Basipterygium | Posterior | | 1 | | | |
| 3 | 40 | 93-99.5 | 2.36 | 1 | Pacific Herring | Dentary | Complete | 1 | | | | |
| 3 | 40 | 93-99.5 | 2.36 | 4 | Pacific Herring | Epihyal | Complete | 2 | 2 | | | |
| 3 | 40 | 93-99.5 | 2.36 | 3 | Pacific Herring | Exoccipital | Central | 2 | 1 | | | |
| 3 | 40 | 93-99.5 | 2.36 | 1 | Pacific Herring | Hyomandibular | Complete | | 1 | | | |
| 3 | 40 | 93-99.5 | 2.36 | 2 | Pacific Herring | Hyomandibular | Superior | 1 | 1 | | | |
| 3 | 40 | 93-99.5 | 2.36 | 3 | Pacific Herring | Mesethmoid | Complete | | | 3 | | |
| 3 | 40 | 93-99.5 | 2.36 | 1 | Pacific Herring | Mesopterygoid | Central | | 1 | | | |
| 3 | 40 | 93-99.5 | 2.36 | 1 | Pacific Herring | Prootic | Central | | 1 | | | |
| 3 | 40 | 93-99.5 | 2.36 | 71 | Pacific Herring | Unidentifiable | Fragment | | | | 71 | |
| 3 | 40 | 93-99.5 | 2.36 | 72 | Pacific Herring | Vertebra | Centrum | | | 72 | | |
| 3 | 40 | 93-99.5 | 2.36 | 1 | Pacific Herring | Vomer | Complete | | | 1 | | |
| 3 | 40 | 93-99.5 | 2.36 | 2 | Pacific Salmon | Vertebral Fragment | Centrum | | | 2 | | Burnt |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 40 | 93-99.5 | 2.36 | 6 | Pacific Salmon | Vertebral Fragment | Centrum | | | 6 | | |
| 3 | 40 | 93-99.5 | 2.36 | 2 | Spiny Dogfish | Vertebra | Centrum | | | 2 | | |
| 3 | 40 | 93-99.5 | 2.36 | 5 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 5 | |
| 3 | 40 | 93-99.5 | 2.36 | 7 | Unidentified | Unidentifiable | Fragment | | | | 7 | |
| 3 | 40 | 99.5-101 | 2.36 | 1 | Flatfish | Vertebra | Centrum | | | 1 | | |
| 3 | 40 | 99.5-101 | 2.36 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 3 | 40 | 99.5-101 | 2.36 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 3 | 40 | 99.5-101 | 2.36 | 5 | Pacific Herring | Ceratohyal | Central | 2 | 3 | | | |
| 3 | 40 | 99.5-101 | 2.36 | 1 | Pacific Herring | Dentary | Anterior and Central | 1 | | | | |
| 3 | 40 | 99.5-101 | 2.36 | 2 | Pacific Herring | Epihyal | Complete | 2 | | | | |
| 3 | 40 | 99.5-101 | 2.36 | 2 | Pacific Herring | Exoccipital | Central | | 2 | | | |
| 3 | 40 | 99.5-101 | 2.36 | 1 | Pacific Herring | Hypural | Complete | | | 1 | | |
| 3 | 40 | 99.5-101 | 2.36 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 3 | 40 | 99.5-101 | 2.36 | 1 | Pacific Herring | Mesopterygoid | Central | | 1 | | | |
| 3 | 40 | 99.5-101 | 2.36 | 2 | Pacific Herring | Pharyngobranchial | Complete | 1 | 1 | | | |
| 3 | 40 | 99.5-101 | 2.36 | 2 | Pacific Herring | Posttemporal | Inferior | 1 | 1 | | | |
| 3 | 40 | 99.5-101 | 2.36 | 6 | Pacific Herring | Prootic | Central | 3 | 1 | | 2 | |
| 3 | 40 | 99.5-101 | 2.36 | 2 | Pacific Herring | Subopercle | Central | 1 | 1 | | | |
| 3 | 40 | 99.5-101 | 2.36 | 54 | Pacific Herring | Unidentifiable | Fragment | | | | 54 | |
| 3 | 40 | 99.5-101 | 2.36 | 2 | Pacific Herring | Vertebra | Centrum | | | 2 | | Burnt |
| 3 | 40 | 99.5-101 | 2.36 | 47 | Pacific Herring | Vertebra | Centrum | | | 47 | | |
| 3 | 40 | 99.5-101 | 2.36 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 3 | 40 | 99.5-101 | 2.36 | 15 | Spiny Dogfish | Vertebra | Centrum | | | 15 | | Calcined |
| 3 | 40 | 99.5-101 | 2.36 | 7 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 7 | |
| 3 | 40 | 99.5-101 | 2.36 | 4 | Unidentified | Unidentifiable | Fragment | | | | 4 | |
| 3 | 40 | 101-106 | 2.36 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 3 | 40 | 101-106 | 2.36 | 1 | Pacific Herring | Ceratohyal | Central | | 1 | | | |
| 3 | 40 | 101-106 | 2.36 | 1 | Pacific Herring | Epihyal | Complete | 1 | | | | |
| 3 | 40 | 101-106 | 2.36 | 3 | Pacific Herring | Hyomandibular | Superior | 2 | 1 | | | |
| 3 | 40 | 101-106 | 2.36 | 1 | Pacific Herring | Maxilla | Anterior | | 1 | | | |
| 3 | 40 | 101-106 | 2.36 | 1 | Pacific Herring | Opercle | Central | | 1 | | | |
| 3 | 40 | 101-106 | 2.36 | 3 | Pacific Herring | Prootic | Central | 1 | 2 | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 40 | 101-106 | 2.36 | 1 | Pacific Herring | Quadrate | Complete | 1 | | | | |
| 3 | 40 | 101-106 | 2.36 | 36 | Pacific Herring | Unidentifiable | Fragment | | | | 36 | |
| 3 | 40 | 101-106 | 2.36 | 39 | Pacific Herring | Vertebra | Centrum | | | 39 | | |
| 3 | 40 | 101-106 | 2.36 | 2 | Pacific Salmon | Vertebral Fragment | Centrum | | | 2 | | |
| 3 | 40 | 101-106 | 2.36 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |
| 3 | 40 | 101-106 | 2.36 | 8 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 8 | |
| 3 | 40 | 106-115 | 2.36 | 2 | Pacific Herring | Angular | Complete | 1 | 1 | | | |
| 3 | 40 | 106-115 | 2.36 | 2 | Pacific Herring | Ceratohyal | Central | 1 | 1 | | | |
| 3 | 40 | 106-115 | 2.36 | 1 | Pacific Herring | Dentary | Complete | 1 | | | | |
| 3 | 40 | 106-115 | 2.36 | 2 | Pacific Herring | Epihyal | Complete | 1 | 1 | | | |
| 3 | 40 | 106-115 | 2.36 | 2 | Pacific Herring | Hyomandibular | Superior | | 2 | | | |
| 3 | 40 | 106-115 | 2.36 | 1 | Pacific Herring | Maxilla | Central | | 1 | | | |
| 3 | 40 | 106-115 | 2.36 | 2 | Pacific Herring | Mesopterygoid | Central | 1 | 1 | | | |
| 3 | 40 | 106-115 | 2.36 | 2 | Pacific Herring | Opercle | Central | 1 | 1 | | | |
| 3 | 40 | 106-115 | 2.36 | 3 | Pacific Herring | Pharyngobranchial | Complete | 2 | 1 | | | |
| 3 | 40 | 106-115 | 2.36 | 1 | Pacific Herring | Posttemporal | Inferior | | 1 | | | |
| 3 | 40 | 106-115 | 2.36 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 3 | 40 | 106-115 | 2.36 | 29 | Pacific Herring | Unidentifiable | Fragment | | | | 29 | |
| 3 | 40 | 106-115 | 2.36 | 33 | Pacific Herring | Vertebra | Centrum | | | 33 | | |
| 3 | 40 | 106-115 | 2.36 | 1 | Pacific Herring | Vomer | Complete | | | 1 | | |
| 3 | 40 | 106-115 | 2.36 | 5 | Pacific Salmon | Vertebral Fragment | Centrum | | | 5 | | |
| 3 | 40 | 106-115 | 2.36 | 2 | Spiny Dogfish | Vertebra | Centrum | | | 2 | | |
| 3 | 40 | 106-115 | 2.36 | 3 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 3 | |
| 4 | 10W5N | 0-10 | 1.5 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 4 | 10W5N | 0-10 | 1.5 | 6 | Pacific Herring | Unidentified | Fragment | | | | 6 | |
| 4 | 10W5N | 0-10 | 1.5 | 1 | Pacific Herring | Vertebra | Centrum | | | 1 | | |
| 4 | 10W5N | 0-10 | 1.5 | 8 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 8 | |
| 4 | 10W5N | 0-10 | 1.5 | 16 | Unidentified | Unidentified | Fragment | | | | 16 | |
| 4 | 10W5N | 10-20 | 1.5 | 2 | Pacific Herring | Prootic | Central | | | | 2 | |
| 4 | 10W5N | 10-20 | 1.5 | 10 | Pacific Herring | Unidentified | Fragment | | | | 10 | |
| 4 | 10W5N | 10-20 | 1.5 | 10 | Pacific Herring | Vertebra | Centrum | | | 10 | | |
| 4 | 10W5N | 10-20 | 1.5 | 4 | Pacific Salmon | Vertebral Fragment | Centrum | | | 4 | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 10W5N | 10-20 | 1.5 | 16 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 16 | |
| 4 | 10W5N | 10-20 | 1.5 | 24 | Unidentified | Unidentified | Fragment | | | | 24 | |
| 4 | 10W5N | 20-30 | 1.5 | 2 | Pacific Herring | Atlas | Centrum | | | 2 | | |
| 4 | 10W5N | 20-30 | 1.5 | 10 | Pacific Herring | Unidentified | Fragment | | | | 10 | |
| 4 | 10W5N | 20-30 | 1.5 | 26 | Pacific Herring | Vertebra | Centrum | | | 26 | | |
| 4 | 10W5N | 20-30 | 1.5 | 13 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 13 | |
| 4 | 10W5N | 20-30 | 1.5 | 7 | Unidentified | Unidentified | Fragment | | | | 7 | |
| 4 | 10W5N | 30-40 | 1.5 | 1 | Pacific Herring | Angular | Posterior | | | | 1 | |
| 4 | 10W5N | 30-40 | 1.5 | 11 | Pacific Herring | Unidentified | Fragment | | | | 11 | |
| 4 | 10W5N | 30-40 | 1.5 | 26 | Pacific Herring | Vertebra | Centrum | | | 26 | | |
| 4 | 10W5N | 30-40 | 1.5 | 1 | Pacific Salmon | Vertebral Fragment | Centrum | | | 1 | | |
| 4 | 10W5N | 30-40 | 1.5 | 32 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 32 | |
| 4 | 10W5N | 30-40 | 1.5 | 17 | Unidentified | Unidentified | Fragment | | | | 17 | |
| 4 | 10W5N | 40-50 | 1.5 | 1 | Greenling | Dentary | Central | | | | 1 | |
| 4 | 10W5N | 40-50 | 1.5 | 17 | Pacific Herring | Unidentified | Fragment | | | | 17 | |
| 4 | 10W5N | 40-50 | 1.5 | 10 | Pacific Herring | Vertebra | Centrum | | | 10 | | |
| 4 | 10W5N | 40-50 | 1.5 | 24 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 24 | |
| 4 | 10W5N | 40-50 | 1.5 | 3 | Unidentified | Unidentified | Fragment | | | | 3 | |
| 4 | 10W5N | 50-60 | 1.5 | 19 | Pacific Herring | Unidentified | Fragment | | | | 19 | |
| 4 | 10W5N | 50-60 | 1.5 | 24 | Pacific Herring | Vertebra | Centrum | | | 24 | | |
| 4 | 10W5N | 50-60 | 1.5 | 29 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 29 | |
| 4 | 10W5N | 50-60 | 1.5 | 26 | Unidentified | Unidentified | Fragment | | | | 26 | |
| 4 | 10W5N | 60-70 | 1.5 | 3 | Pacific Herring | Pharyngobranchial | Complete | | | | 3 | |
| 4 | 10W5N | 60-70 | 1.5 | 27 | Pacific Herring | Unidentified | Fragment | | | | 27 | |
| 4 | 10W5N | 60-70 | 1.5 | 17 | Pacific Herring | Vertebra | Centrum | | | 17 | | |
| 4 | 10W5N | 60-70 | 1.5 | 1 | Pacific Herring | Vomer | Complete | | | 1 | | |
| 4 | 10W5N | 60-70 | 1.5 | 1 | Surfperch | Vomer | Complete | | | 1 | | |
| 4 | 10W5N | 60-70 | 1.5 | 36 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 36 | |
| 4 | 10W5N | 60-70 | 1.5 | 8 | Unidentified | Unidentified | Fragment | | | | 8 | |
| 4 | 10W5N | 70-80 | 1.5 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 4 | 10W5N | 70-80 | 1.5 | 18 | Pacific Herring | Unidentified | Fragment | | | | 18 | |
| 4 | 10W5N | 70-80 | 1.5 | 24 | Pacific Herring | Vertebra | Centrum | | | 24 | | |

# DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 10W5N | 70-80 | 1.5 | 2 | Pacific Salmon | Vertebra | Fragment | | | 2 | | |
| 4 | 10W5N | 70-80 | 1.5 | 1 | Unidentified | Unidentified | Fragment | | | | 1 | Small |
| 4 | 10W5N | 70-80 | 1.5 | 54 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 54 | |
| 4 | 10W5N | 70-80 | 1.5 | 15 | Unidentified | Unidentified | Fragment | | | | 15 | |
| 4 | 10W5N | 80-90 | 1.5 | 37 | Pacific Herring | Unidentified | Fragment | | | | 37 | |
| 4 | 10W5N | 80-90 | 1.5 | 6 | Pacific Herring | Vertebra | Centrum | | | 6 | | |
| 4 | 10W5N | 80-90 | 1.5 | 56 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 56 | |
| 4 | 10W5N | 90-100 | 1.5 | 2 | Pacific Herring | Unidentified | Fragment | | | | 2 | |
| 4 | 10W5N | 90-100 | 1.5 | 4 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 4 | |
| 4 | 10W5N | 100-110 | 1.5 | 2 | Pacific Herring | Unidentified | Fragment | | | | 2 | |
| 4 | 10W5N | 100-110 | 1.5 | 3 | Pacific Herring | Vertebra | Centrum | | | 3 | | |
| 4 | 10W5N | 100-110 | 1.5 | 2 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 2 | |
| 4 | 10W5N | 0-10 | 2.8 | 1 | Greenling | Cleithrum | Central | | 1 | | | |
| 4 | 10W5N | 0-10 | 2.8 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 4 | 10W5N | 0-10 | 2.8 | 3 | Pacific Herring | Prootic | Central | | | | 3 | |
| 4 | 10W5N | 0-10 | 2.8 | 3 | Pacific Herring | Unidentified | Fragment | | | | 3 | |
| 4 | 10W5N | 0-10 | 2.8 | 7 | Pacific Herring | Vertebra | Centrum | | | 7 | | |
| 4 | 10W5N | 0-10 | 2.8 | 6 | Unidentified | Unidentified | Fragment | | | | 6 | Medium to large; Burnt |
| 4 | 10W5N | 0-10 | 2.8 | 2 | Pacific Salmon | Vertebra | Fragment | | | 2 | | |
| 4 | 10W5N | 0-10 | 2.8 | 4 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 4 | |
| 4 | 10W5N | 0-10 | 2.8 | 2 | Unidentified | Unidentified | Fragment | | | | 2 | |
| 4 | 10W5N | 10-20 | 2.8 | 1 | Flatfish | Parasphenoid | Central | | | 1 | | |
| 4 | 10W5N | 10-20 | 2.8 | 1 | Pacific Herring | Epihyal | Central | | | | 1 | |
| 4 | 10W5N | 10-20 | 2.8 | 1 | Pacific Herring | Pharyngobranchial | Complete | | | | 1 | |
| 4 | 10W5N | 10-20 | 2.8 | 6 | Pacific Herring | Unidentified | Fragment | | | | 6 | |
| 4 | 10W5N | 10-20 | 2.8 | 7 | Pacific Herring | Vertebra | Centrum | | | 7 | | |
| 4 | 10W5N | 10-20 | 2.8 | 5 | Unidentified | Unidentified | Fragment | | | | 5 | |
| 4 | 10W5N | 10-20 | 2.8 | 1 | Pacific Salmon | Tooth | Complete | | | | 1 | |
| 4 | 10W5N | 10-20 | 2.8 | 3 | Pacific Salmon | Vertebra | Fragment | | | 3 | | |
| 4 | 10W5N | 10-20 | 2.8 | 4 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 4 | |
| 4 | 10W5N | 10-20 | 2.8 | 3 | Unidentified | Unidentified | Fragment | | | | 3 | |
| 4 | 10W5N | 20-30 | 2.8 | 2 | Flatfish | Vertebra | Complete | | | 2 | | |

# DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 10W5N | 20-30 | 2.8 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 4 | 10W5N | 20-30 | 2.8 | 3 | Pacific Herring | Prootic | Central | | | | 3 | |
| 4 | 10W5N | 20-30 | 2.8 | 1 | Pacific Herring | Scapula | Complete | | | | 1 | |
| 4 | 10W5N | 20-30 | 2.8 | 14 | Pacific Herring | Vertebra | Centrum | | | 14 | | |
| 4 | 10W5N | 20-30 | 2.8 | 3 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 3 | |
| 4 | 10W5N | 20-30 | 2.8 | 4 | Unidentified | Unidentified | Fragment | | | | 4 | |
| 4 | 10W5N | 30-40 | 2.8 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |
| 4 | 10W5N | 30-40 | 2.8 | 1 | Pacific Herring | Coracoid | Anterior | | 1 | | | |
| 4 | 10W5N | 30-40 | 2.8 | 1 | Pacific Herring | Posttemporal | Complete | | 1 | | | |
| 4 | 10W5N | 30-40 | 2.8 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 4 | 10W5N | 30-40 | 2.8 | 2 | Pacific Herring | Unidentified | Fragment | | | | 2 | |
| 4 | 10W5N | 30-40 | 2.8 | 33 | Pacific Herring | Vertebra | Centrum | | | 33 | | |
| 4 | 10W5N | 30-40 | 2.8 | 1 | Unidentified | Unidentified | Fragment | | | | 1 | Small |
| 4 | 10W5N | 30-40 | 2.8 | 1 | Surfperch | Vertebra | Centrum | | | 1 | | |
| 4 | 10W5N | 30-40 | 2.8 | 3 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 3 | |
| 4 | 10W5N | 30-40 | 2.8 | 3 | Unidentified | Unidentified | Fragment | | | | 3 | |
| 4 | 10W5N | 40-50 | 2.8 | 1 | Pacific Herring | Atlas | Complete | | | 1 | | |
| 4 | 10W5N | 40-50 | 2.8 | 6 | Pacific Herring | Unidentified | Fragment | | | | 6 | |
| 4 | 10W5N | 40-50 | 2.8 | 36 | Pacific Herring | Vertebra | Centrum | | | 36 | | |
| 4 | 10W5N | 40-50 | 2.8 | 1 | Pacific Herring | Vomer | Complete | | | 1 | | |
| 4 | 10W5N | 40-50 | 2.8 | 13 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 13 | |
| 4 | 10W5N | 50-60 | 2.8 | 5 | Unidentified | Unidentified | Fragment | | | | 5 | |
| 4 | 10W5N | 50-60 | 2.8 | 1 | Greenling | Pharyngeal Plate | Central | 1 | | | | |
| 4 | 10W5N | 50-60 | 2.8 | 1 | Greenling | Vertebra | Centrum | | | 1 | | |
| 4 | 10W5N | 50-60 | 2.8 | 1 | Pacific Herring | Angular | Posterior | | 1 | | | |
| 4 | 10W5N | 50-60 | 2.8 | 1 | Pacific Herring | Cleithrum | Posterior | | 1 | | | |
| 4 | 10W5N | 50-60 | 2.8 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 4 | 10W5N | 50-60 | 2.8 | 6 | Pacific Herring | Unidentified | Fragment | | | | 6 | |
| 4 | 10W5N | 50-60 | 2.8 | 12 | Pacific Herring | Vertebra | Centrum | | | 12 | | |
| 4 | 10W5N | 50-60 | 2.8 | 4 | Pacific Salmon | Vertebra | Fragment | | | 4 | | |
| 4 | 10W5N | 50-60 | 2.8 | 1 | Unidentified | otolith | Complete | | | | 1 | Surface is too worn to determine species; small |
| 4 | 10W5N | 50-60 | 2.8 | 3 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 3 | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 10W5N | 50-60 | 2.8 | 2 | Unidentified | Vertebra | Fragment | | | 2 | | |
| 4 | 10W5N | 60-70 | 2.8 | 2 | Pacific Herring | Atlas | Centrum | | | 2 | | |
| 4 | 10W5N | 60-70 | 2.8 | 1 | Pacific Herring | Dentary | Central | | | | 1 | |
| 4 | 10W5N | 60-70 | 2.8 | 2 | Pacific Herring | exocc. | Central | 2 | | | | |
| 4 | 10W5N | 60-70 | 2.8 | 3 | Pacific Herring | mesopterygoid | Central | | | | 3 | |
| 4 | 10W5N | 60-70 | 2.8 | 1 | Pacific Herring | opercle | Anterior | 1 | | | | |
| 4 | 10W5N | 60-70 | 2.8 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 4 | 10W5N | 60-70 | 2.8 | 17 | Pacific Herring | Unidentified | Fragment | | | | 17 | |
| 4 | 10W5N | 60-70 | 2.8 | 21 | Pacific Herring | Vertebra | Centrum | | | 21 | | |
| 4 | 10W5N | 60-70 | 2.8 | 1 | Pacific Salmon | Vertebra | Fragment | | | 1 | | |
| 4 | 10W5N | 60-70 | 2.8 | 3 | Surfperch | Vertebra | Centrum | | | 3 | | |
| 4 | 10W5N | 60-70 | 2.8 | 12 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 12 | |
| 4 | 10W5N | 60-70 | 2.8 | 6 | Unidentified | Unidentified | Fragment | | | | 6 | |
| 4 | 10W5N | 60-70 | 2.8 | 2 | Unidentified | Vertebra | Fragment | | | 2 | | |
| 4 | 10W5N | 70-80 | 2.8 | 1 | Flatfish | Prootic | Complete | | 1 | | | |
| 4 | 10W5N | 70-80 | 2.8 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 4 | 10W5N | 70-80 | 2.8 | 1 | Pacific Herring | mesopterygoid | Central | | | | 1 | |
| 4 | 10W5N | 70-80 | 2.8 | 1 | Pacific Herring | preopercle | Central | | | | 1 | |
| 4 | 10W5N | 70-80 | 2.8 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 4 | 10W5N | 70-80 | 2.8 | 3 | Pacific Herring | Unidentified | Fragment | | | | 3 | |
| 4 | 10W5N | 70-80 | 2.8 | 14 | Pacific Herring | Vertebra | Centrum | | | 14 | | |
| 4 | 10W5N | 70-80 | 2.8 | 1 | Pacific Herring | Vomer | Complete | | | 1 | | |
| 4 | 10W5N | 70-80 | 2.8 | 1 | Surfperch | Ultimate Vertebra | Incomplete | | | 1 | | |
| 4 | 10W5N | 70-80 | 2.8 | 7 | Surfperch | Vertebra | Centrum | | | 7 | | |
| 4 | 10W5N | 70-80 | 2.8 | 1 | Unidentified | Unidentified | Fragment | | | | 1 | Small |
| 4 | 10W5N | 70-80 | 2.8 | 5 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 5 | |
| 4 | 10W5N | 70-80 | 2.8 | 6 | Unidentified | Unidentified | Fragment | | | | 6 | |
| 4 | 10W5N | 80-90 | 2.8 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |
| 4 | 10W5N | 80-90 | 2.8 | 1 | Flatfish | Unidentified | Fragment | | | | 1 | |
| 4 | 10W5N | 80-90 | 2.8 | 9 | Pacific Herring | Vertebra | Centrum | | | 9 | | |
| 4 | 10W5N | 80-90 | 2.8 | 1 | Pacific Herring | Vomer | Complete | | | 1 | | |
| 4 | 10W5N | 80-90 | 2.8 | 1 | Surfperch | Hyomandibular | Superior | 1 | | | | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 10W5N | 80-90 | 2.8 | 1 | Surfperch | Vertebra | Centrum | | | 1 | | |
| 4 | 10W5N | 80-90 | 2.8 | 1 | Unidentified | Unidentified | Fragment | | | | 1 | Small |
| 4 | 10W5N | 80-90 | 2.8 | 10 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 10 | |
| 4 | 10W5N | 80-90 | 2.8 | 9 | Unidentified | Unidentified | Fragment | | | | 9 | |
| 4 | 10W5N | 90-100 | 2.8 | 4 | Pacific Herring | Vertebra | Centrum | | | 4 | | |
| 4 | 10W5N | 90-100 | 2.8 | 2 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 2 | |
| 4 | 10W5N | 90-100 | 2.8 | 2 | Unidentified | Unidentified | Fragment | | | | 2 | |
| 4 | 10W5N | 100-110 | 2.8 | 1 | Pacific Herring | Vertebra | Centrum | | | 1 | | |
| 4 | 10W5N | 100-110 | 2.8 | 1 | Surfperch | Vertebra | Centrum | | | 1 | | |
| 4 | 10W5N | 100-110 | 2.8 | 1 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 1 | |
| 4 | 10W5N | 100-110 | 2.8 | 1 | Unidentified | Unidentified | Fragment | | | | 1 | |
| 4 | 15W5N | 0-20 | 2.8 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 4 | 15W5N | 0-20 | 2.8 | 1 | Pacific Herring | Coracoid | Central | | | | 1 | |
| 4 | 15W5N | 0-20 | 2.8 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 4 | 15W5N | 0-20 | 2.8 | 8 | Pacific Herring | Vertebra | Centrum | | | 8 | | |
| 4 | 15W5N | 0-20 | 2.8 | 1 | Unidentified | Unidentified | Fragment | | | | 1 | |
| 4 | 15W5N | 0-20 | 2.8 | 1 | Midshipman | Vertebra | Centrum | | | 1 | | |
| 4 | 15W5N | 0-20 | 2.8 | 2 | Pacific Salmon | Vertebra | Fragment | | | 2 | | |
| 4 | 15W5N | 0-20 | 2.8 | 5 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 5 | |
| 4 | 15W5N | 0-20 | 2.8 | 8 | Unidentified | Unidentified | Fragment | | | | 8 | |
| 4 | 15W5N | 20-30 | 2.8 | 1 | Canidae | Tooth | Incomplete | | | | 1 | Tooth root - either incisor or canine |
| 4 | 15W5N | 20-30 | 2.8 | 1 | Greenling | Premaxilla | Anterior | 1 | | | | |
| 4 | 15W5N | 20-30 | 2.8 | 1 | Pacific Herring | Epihyal | Central | | | | 1 | |
| 4 | 15W5N | 20-30 | 2.8 | 1 | Pacific Herring | Mesopterygoid | Central | | | | 1 | |
| 4 | 15W5N | 20-30 | 2.8 | 1 | Pacific Herring | Posttemporal | Central | | | | 1 | |
| 4 | 15W5N | 20-30 | 2.8 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 4 | 15W5N | 20-30 | 2.8 | 13 | Pacific Herring | Vertebra | Centrum | | | 13 | | |
| 4 | 15W5N | 20-30 | 2.8 | 1 | Surfperch | Vertebra | Centrum | | | 1 | | Small |
| 4 | 15W5N | 20-30 | 2.8 | 7 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 7 | |
| 4 | 15W5N | 20-30 | 2.8 | 7 | Unidentified | Unidentified | Fragment | | | | 7 | |
| 4 | 15W5N | 30-40 | 2.8 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 4 | 15W5N | 30-40 | 2.8 | 1 | Pacific Herring | Posttemporal | Central | | | | 1 | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 15W5N | 30-40 | 2.8 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 4 | 15W5N | 30-40 | 2.8 | 26 | Pacific Herring | Vertebra | Centrum | | | 26 | | |
| 4 | 15W5N | 30-40 | 2.8 | 1 | Unidentified | Unidentified | Fragment | | | | 1 | |
| 4 | 15W5N | 30-40 | 2.8 | 1 | Midshipman | Cleithrum | Central | 1 | | | | |
| 4 | 15W5N | 30-40 | 2.8 | 1 | Midshipman | Unidentified | Fragment | | | | 1 | |
| 4 | 15W5N | 30-40 | 2.8 | 1 | Pacific Salmon | Vertebra | Complete | | | 1 | | |
| 4 | 15W5N | 30-40 | 2.8 | 5 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 5 | |
| 4 | 15W5N | 30-40 | 2.8 | 9 | Unidentified | Unidentified | Fragment | | | | 9 | |
| 4 | 15W5N | 40-50 | 2.8 | 1 | Flatfish | Vertebra | Centrum | | | 1 | | |
| 4 | 15W5N | 40-50 | 2.8 | 1 | Pacific Herring | Ceratohyal | Anterior and Central | 1 | | | | |
| 4 | 15W5N | 40-50 | 2.8 | 1 | Pacific Herring | Dentary | Central | | | | 1 | |
| 4 | 15W5N | 40-50 | 2.8 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 4 | 15W5N | 40-50 | 2.8 | 1 | Pacific Herring | Mesopterygoid | Fragment | | | | 1 | |
| 4 | 15W5N | 40-50 | 2.8 | 45 | Pacific Herring | Vertebra | Centrum | | | 45 | | |
| 4 | 15W5N | 40-50 | 2.8 | 2 | Pacific Salmon | Vertebra | Fragment | | | 2 | | |
| 4 | 15W5N | 40-50 | 2.8 | 8 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 8 | |
| 4 | 15W5N | 40-50 | 2.8 | 7 | Unidentified | Unidentified | Fragment | | | | 7 | |
| 4 | 15W5N | 50-60 | 2.8 | 2 | Spiny Dogfish | Vertebra | Centrum | | | 2 | | |
| 4 | 15W5N | 50-60 | 2.8 | 10 | Pacific Herring | Vertebra | Centrum | | | 10 | | |
| 4 | 15W5N | 50-60 | 2.8 | 1 | Unidentified | Unidentified | Fragment | | | | 1 | |
| 4 | 15W5N | 50-60 | 2.8 | 3 | Pacific Salmon | Vertebra | Fragment | | | 3 | | |
| 4 | 15W5N | 50-60 | 2.8 | 1 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 1 | |
| 4 | 15W5N | 50-60 | 2.8 | 2 | Unidentified | Unidentified | Fragment | | | | 2 | |
| 4 | 15W5N | 60-70 | 2.8 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |
| 4 | 15W5N | 60-70 | 2.8 | 15 | Pacific Herring | Vertebra | Centrum | | | 15 | | |
| 4 | 15W5N | 60-70 | 2.8 | 3 | Unidentified | Unidentified | Fragment | | | | 3 | |
| 4 | 15W5N | 70-80 | 2.8 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 4 | 15W5N | 70-80 | 2.8 | 8 | Pacific Herring | Vertebra | Centrum | | | 8 | | |
| 4 | 15W5N | 70-80 | 2.8 | 2 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 2 | |
| 4 | 15W5N | 70-80 | 2.8 | 4 | Unidentified | Unidentified | Fragment | | | | 4 | |
| 4 | 15W5N | 80-90 | 2.8 | 1 | Flatfish | Vertebra | Fragment | | | 1 | | |
| 4 | 15W5N | 80-90 | 2.8 | 1 | Pacific Herring | Unidentified | Fragment | | | | 1 | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 15W5N | 80-90 | 2.8 | 2 | Pacific Herring | Vertebra | Centrum | | | 2 | | |
| 4 | 15W5N | 80-90 | 2.8 | 1 | Pacific Salmon | Vertebra | Fragment | | | 1 | | |
| 4 | 15W5N | 80-90 | 2.8 | 2 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 2 | |
| 4 | 5W25N | 0-20 | 2.8 | 1 | Pacific Herring | Atlas | Complete | | | 1 | | |
| 4 | 5W25N | 0-20 | 2.8 | 1 | Pacific Herring | Dentary | Anterior | | | | 1 | |
| 4 | 5W25N | 0-20 | 2.8 | 1 | Pacific Herring | Epihyal | Fragment | | | | 1 | |
| 4 | 5W25N | 0-20 | 2.8 | 1 | Pacific Herring | Maxilla | Central | | | | 1 | |
| 4 | 5W25N | 0-20 | 2.8 | 1 | Pacific Herring | Mesethmoid | Complete | | | 1 | | |
| 4 | 5W25N | 0-20 | 2.8 | 4 | Pacific Herring | Pharyngobranchial | Complete | | | | 4 | |
| 4 | 5W25N | 0-20 | 2.8 | 3 | Pacific Herring | Prootic | Central | | | | 3 | |
| 4 | 5W25N | 0-20 | 2.8 | 39 | Pacific Herring | Unidentified | Fragment | | | | 39 | |
| 4 | 5W25N | 0-20 | 2.8 | 36 | Pacific Herring | Vertebra | Centrum | | | 36 | | |
| 4 | 5W25N | 0-20 | 2.8 | 9 | Unidentified | Trachial Rings | Complete | | | 9 | | Medium |
| 4 | 5W25N | 0-20 | 2.8 | 35 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 35 | |
| 4 | 5W25N | 0-20 | 2.8 | 13 | Unidentified | Unidentified | Fragment | | | | 13 | |
| 4 | 5W25N | 20-30 | 2.8 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |
| 4 | 5W25N | 20-30 | 2.8 | 1 | Pacific Herring | Angular | Posterior | 1 | | | | |
| 4 | 5W25N | 20-30 | 2.8 | 1 | Pacific Herring | Cleithrum | Central | 1 | | | | |
| 4 | 5W25N | 20-30 | 2.8 | 5 | Pacific Herring | Prootic | Central | | | | 5 | |
| 4 | 5W25N | 20-30 | 2.8 | 26 | Pacific Herring | Unidentified | Fragment | | | | 26 | |
| 4 | 5W25N | 20-30 | 2.8 | 28 | Pacific Herring | Vertebra | Centrum | | | 28 | | |
| 4 | 5W25N | 20-30 | 2.8 | 23 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 23 | |
| 4 | 5W25N | 20-30 | 2.8 | 5 | Unidentified | Unidentified | Fragment | | | | 5 | |
| 4 | 5W25N | 30-40 | 2.8 | 1 | Flatfish | Vertebra | Fragment | | | 1 | | |
| 4 | 5W25N | 30-40 | 2.8 | 1 | Pacific Herring | Maxilla | Central | | | | 1 | |
| 4 | 5W25N | 30-40 | 2.8 | 1 | Pacific Herring | opercle | Anterior | | 1 | | | |
| 4 | 5W25N | 30-40 | 2.8 | 5 | Pacific Herring | Pharynogobranchial | Complete | | | | 5 | |
| 4 | 5W25N | 30-40 | 2.8 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 4 | 5W25N | 30-40 | 2.8 | 29 | Pacific Herring | Unidentified | Fragment | | | | 29 | |
| 4 | 5W25N | 30-40 | 2.8 | 8 | Pacific Herring | Vertebra | Centrum | | | 8 | | |
| 4 | 5W25N | 30-40 | 2.8 | 1 | Unidentified | Rib | Shaft | | | | 1 | Medium; Burnt |
| 4 | 5W25N | 30-40 | 2.8 | 1 | Unidentified | Unidentified | Fragment | | | | 1 | Small |

# DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 5W25N | 30-40 | 2.8 | 10 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 10 | |
| 4 | 5W25N | 30-40 | 2.8 | 6 | Unidentified | Unidentified | Fragment | | | | 6 | |
| 4 | 5W25N | 40-50 | 2.8 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 4 | 5W25N | 40-50 | 2.8 | 1 | Pacific Herring | Ceratohyal | Central | | | | 1 | |
| 4 | 5W25N | 40-50 | 2.8 | 1 | Pacific Herring | Pharyngobranchial | Complete | | | | 1 | |
| 4 | 5W25N | 40-50 | 2.8 | 6 | Pacific Herring | Prootic | Central | | | | 6 | |
| 4 | 5W25N | 40-50 | 2.8 | 4 | Pacific Herring | Unidentified | Fragment | | | | 4 | |
| 4 | 5W25N | 40-50 | 2.8 | 17 | Pacific Herring | Vertebra | Centrum | | | 17 | | |
| 4 | 5W25N | 50-60 | 2.8 | 1 | Pacific Herring | Angular | Posterior | | 1 | | | |
| 4 | 5W25N | 50-60 | 2.8 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 4 | 5W25N | 50-60 | 2.8 | 5 | Pacific Herring | Ceratohyal | Central | | | | 5 | |
| 4 | 5W25N | 50-60 | 2.8 | 1 | Pacific Herring | Epihyal | Complete | | 1 | | | |
| 4 | 5W25N | 50-60 | 2.8 | 2 | Pacific Herring | Exoccipital | Central | 1 | 1 | | | |
| 4 | 5W25N | 50-60 | 2.8 | 2 | Pacific Herring | Maxilla | Central | | | | 2 | |
| 4 | 5W25N | 50-60 | 2.8 | 6 | Pacific Herring | Pharynogobranchial | Complete | | | | 6 | |
| 4 | 5W25N | 50-60 | 2.8 | 11 | Pacific Herring | Prootic | Central | | | | 11 | |
| 4 | 5W25N | 50-60 | 2.8 | 1 | Pacific Herring | Quadrate | Anterior | | 1 | | | |
| 4 | 5W25N | 50-60 | 2.8 | 34 | Pacific Herring | Unidentified | Fragment | | | | 34 | |
| 4 | 5W25N | 50-60 | 2.8 | 27 | Pacific Herring | Vertebra | Centrum | | | 27 | | |
| 4 | 5W25N | 50-60 | 2.8 | 5 | Unidentified | Unidentified | Fragment | | | | 5 | Small |
| 4 | 5W25N | 50-60 | 2.8 | 1 | Pacific Salmon | Vertebra | Fragment | | | 1 | | |
| 4 | 5W25N | 50-60 | 2.8 | 5 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 5 | |
| 4 | 5W25N | 50-60 | 2.8 | 2 | Unidentified | Unidentified | Fragment | | | | 2 | |
| 4 | 5W25N | 60-70 | 2.8 | 1 | Flatfish | Unidentified | Fragment | | | | 1 | |
| 4 | 5W25N | 60-70 | 2.8 | 1 | Flatfish | Vertebra | Fragment | | | 1 | | |
| 4 | 5W25N | 60-70 | 2.8 | 3 | Pacific Herring | Atlas | Centrum | | | 3 | | |
| 4 | 5W25N | 60-70 | 2.8 | 1 | Pacific Herring | Exoccipital | Posterior | 1 | | | | |
| 4 | 5W25N | 60-70 | 2.8 | 2 | Pacific Herring | Maxilla | Central | | | | 2 | |
| 4 | 5W25N | 60-70 | 2.8 | 2 | Pacific Herring | Prootic | Central | | | | 2 | |
| 4 | 5W25N | 60-70 | 2.8 | 14 | Pacific Herring | Unidentified | Fragment | | | | 14 | |
| 4 | 5W25N | 60-70 | 2.8 | 36 | Pacific Herring | Vertebra | Centrum | | | 36 | | |
| 4 | 5W25N | 60-70 | 2.8 | 6 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 6 | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 5W25N | 60-70 | 2.8 | 3 | Unidentified | Unidentified | Fragment | | | | 3 | |
| 4 | 5W25N | 70-80 | 2.8 | 1 | Pacific Herring | Ceratohyal | Central | | | | 1 | |
| 4 | 5W25N | 70-80 | 2.8 | 1 | Pacific Herring | Preopercle | Central | | | | 1 | |
| 4 | 5W25N | 70-80 | 2.8 | 3 | Pacific Herring | Prootic | Central | | | | 3 | |
| 4 | 5W25N | 70-80 | 2.8 | 1 | Pacific Herring | Scapula | Complete | | | | 1 | |
| 4 | 5W25N | 70-80 | 2.8 | 5 | Pacific Herring | Unidentified | Fragment | | | | 5 | |
| 4 | 5W25N | 70-80 | 2.8 | 17 | Pacific Herring | Vertebra | Centrum | | | 17 | | |
| 4 | 5W25N | 70-80 | 2.8 | 1 | Unidentified | Hypohyal | Complete | 1 | | | | Small |
| 4 | 5W25N | 70-80 | 2.8 | 8 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 8 | |
| 4 | 5W25N | 70-80 | 2.8 | 5 | Unidentified | Unidentified | Fragment | | | | 5 | |
| 4 | 5W30N | 0-10 | 2.8 | 1 | Pacific Herring | Hyomandibular | Superior | | | | 1 | |
| 4 | 5W30N | 0-10 | 2.8 | 2 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 2 | |
| 4 | 5W30N | 0-10 | 2.8 | 7 | Unidentified | Unidentified | Fragment | | | | 7 | |
| 4 | 5W30N | 10-20 | 2.8 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 4 | 5W30N | 10-20 | 2.8 | 2 | Pacific Herring | ceratohyal | Central | 1 | 1 | | | |
| 4 | 5W30N | 10-20 | 2.8 | 1 | Pacific Herring | Dentary | Anterior | | 1 | | | |
| 4 | 5W30N | 10-20 | 2.8 | 1 | Pacific Herring | Hyomandibular | Superior | 1 | | | | |
| 4 | 5W30N | 10-20 | 2.8 | 1 | Pacific Herring | Maxilla | Central | | | | 1 | |
| 4 | 5W30N | 10-20 | 2.8 | 1 | Pacific Herring | Quadrate | Complete | | 1 | | | |
| 4 | 5W30N | 10-20 | 2.8 | 21 | Pacific Herring | Unidentified | Fragment | | | | 21 | |
| 4 | 5W30N | 10-20 | 2.8 | 2 | Pacific Herring | Vertebra | Centrum | | | 2 | | |
| 4 | 5W30N | 10-20 | 2.8 | 6 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 6 | |
| 4 | 5W30N | 10-20 | 2.8 | 5 | Unidentified | Unidentified | Fragment | | | | 5 | |
| 4 | 5W30N | 20-30 | 2.8 | 3 | Flatfish | Unidentified | Fragment | | | | 3 | |
| 4 | 5W30N | 20-30 | 2.8 | 6 | Pacific Herring | Angular | Posterior | 4 | 2 | | | |
| 4 | 5W30N | 20-30 | 2.8 | 2 | Pacific Herring | Atlas | Centrum | | | 2 | | |
| 4 | 5W30N | 20-30 | 2.8 | 3 | Pacific Herring | Basioccipital | Complete | | | 3 | | |
| 4 | 5W30N | 20-30 | 2.8 | 15 | Pacific Herring | Ceratohyal | Central | 6 | 7 | | 2 | |
| 4 | 5W30N | 20-30 | 2.8 | 8 | Pacific Herring | Cleithrum | Central | | | | 8 | |
| 4 | 5W30N | 20-30 | 2.8 | 4 | Pacific Herring | Coracoid | Central | | | | 4 | |
| 4 | 5W30N | 20-30 | 2.8 | 7 | Pacific Herring | Dentary | Anterior | 3 | 4 | | | |
| 4 | 5W30N | 20-30 | 2.8 | 10 | Pacific Herring | Epihyal | Anterior and Central | 5 | 4 | | 1 | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 5W30N | 20-30 | 2.8 | 14 | Pacific Herring | Exoccipital | Central | 7 | 4 | | 3 | |
| 4 | 5W30N | 20-30 | 2.8 | 3 | Pacific Herring | Exoccipital | Central | 2 | 1 | | | |
| 4 | 5W30N | 20-30 | 2.8 | 4 | Pacific Herring | Lacrymal | Central | | | | 4 | |
| 4 | 5W30N | 20-30 | 2.8 | 3 | Pacific Herring | Maxilla | Central | | | | 3 | |
| 4 | 5W30N | 20-30 | 2.8 | 8 | Pacific Herring | Mesopterygoid | Fragment | | | | 8 | |
| 4 | 5W30N | 20-30 | 2.8 | 15 | Pacific Herring | Metapterygoid | Fragment | | | | 15 | |
| 4 | 5W30N | 20-30 | 2.8 | 21 | Pacific Herring | Pharyngobranchial | Complete | | | | 21 | |
| 4 | 5W30N | 20-30 | 2.8 | 9 | Pacific Herring | Preopercle | Central | | | | 9 | |
| 4 | 5W30N | 20-30 | 2.8 | 29 | Pacific Herring | Prootic | Central | | | | 29 | |
| 4 | 5W30N | 20-30 | 2.8 | 9 | Pacific Herring | Quadrate | Anterior | 4 | 3 | | 2 | |
| 4 | 5W30N | 20-30 | 2.8 | 5 | Pacific Herring | Quadrate | Complete | 2 | 2 | | 1 | |
| 4 | 5W30N | 20-30 | 2.8 | 1 | Pacific Herring | Scapula | Complete | | | | 1 | |
| 4 | 5W30N | 20-30 | 2.8 | 869 | Pacific Herring | Unidentified | Fragment | | | | 869 | |
| 4 | 5W30N | 20-30 | 2.8 | 10 | Pacific Herring | Vertebra | Centrum | | | 10 | | |
| 4 | 5W30N | 20-30 | 2.8 | 3 | Pacific Herring | Vomer | Complete | | | 3 | | |
| 4 | 5W30N | 20-30 | 2.8 | 13 | Unidentified | Unidentified | Fragment | | | | 13 | |
| 4 | 5W30N | 20-30 | 2.8 | 1 | Pacific Salmon | Vertebra | Centrum | | | 1 | | |
| 4 | 5W30N | 20-30 | 2.8 | 113 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 113 | |
| 4 | 5W30N | 20-30 | 2.8 | 2 | Unidentified | Unidentified | Fragment | | | | 2 | |
| 4 | 5W30N | 30-40 | 2.8 | 6 | Pacific Herring | Angular | Posterior | 4 | 2 | | | |
| 4 | 5W30N | 30-40 | 2.8 | 4 | Pacific Herring | Atlas | Centrum | | | 4 | | |
| 4 | 5W30N | 30-40 | 2.8 | 3 | Pacific Herring | Basioccipital | Complete | | | 3 | | |
| 4 | 5W30N | 30-40 | 2.8 | 21 | Pacific Herring | Ceratohyal | Central | 9 | 7 | | 5 | |
| 4 | 5W30N | 30-40 | 2.8 | 1 | Pacific Herring | Cleithrum | Central | | | | 1 | |
| 4 | 5W30N | 30-40 | 2.8 | 3 | Pacific Herring | Coracoid | Central | | | | 3 | |
| 4 | 5W30N | 30-40 | 2.8 | 2 | Pacific Herring | Dentary | Anterior | | 2 | | | |
| 4 | 5W30N | 30-40 | 2.8 | 14 | Pacific Herring | Epihyal | Anterior and Central | 3 | 7 | | 4 | |
| 4 | 5W30N | 30-40 | 2.8 | 6 | Pacific Herring | Epihyal | Fragment | | | | 6 | |
| 4 | 5W30N | 30-40 | 2.8 | 11 | Pacific Herring | Exoccipital | Central | 7 | 4 | | | |
| 4 | 5W30N | 30-40 | 2.8 | 4 | Pacific Herring | Exoccipital | Central | 2 | 2 | | | |
| 4 | 5W30N | 30-40 | 2.8 | 10 | Pacific Herring | Hyomandibular | Superior | 6 | 2 | | 2 | |
| 4 | 5W30N | 30-40 | 2.8 | 13 | Pacific Herring | Maxilla | Central | | | | 13 | |

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 5W30N | 30-40 | 2.8 | 2 | Pacific Herring | Mesopterygoid | Central | | | | 2 | |
| 4 | 5W30N | 30-40 | 2.8 | 7 | Pacific Herring | Metapterygoid | Central | | | | 7 | |
| 4 | 5W30N | 30-40 | 2.8 | 3 | Pacific Herring | opercle | Anterior | 1 | 2 | | | |
| 4 | 5W30N | 30-40 | 2.8 | 22 | Pacific Herring | Pharyngobranchial | Complete | | | | 22 | |
| 4 | 5W30N | 30-40 | 2.8 | 5 | Pacific Herring | Posttemporal | Inferior | | | | 5 | |
| 4 | 5W30N | 30-40 | 2.8 | 7 | Pacific Herring | Preopercle | Central | | | | 7 | |
| 4 | 5W30N | 30-40 | 2.8 | 48 | Pacific Herring | Prootic | Central | | | | 48 | |
| 4 | 5W30N | 30-40 | 2.8 | 8 | Pacific Herring | Quadrate | Anterior | 3 | 4 | | 1 | |
| 4 | 5W30N | 30-40 | 2.8 | 1 | Pacific Herring | Scapula | Complete | | | | 1 | |
| 4 | 5W30N | 30-40 | 2.8 | 3 | Pacific Herring | Subopercle | Central | | | | 3 | |
| 4 | 5W30N | 30-40 | 2.8 | 2 | Pacific Herring | Unidentified | Fragment | | | | 2 | |
| 4 | 5W30N | 30-40 | 2.8 | 941 | Pacific Herring | Unidentified | Fragment | | | | 941 | |
| 4 | 5W30N | 30-40 | 2.8 | 49 | Pacific Herring | Vertebra | Centrum | | | 49 | | |
| 4 | 5W30N | 30-40 | 2.8 | 1 | Pacific Herring | Vomer | Complete | | | 1 | | |
| 4 | 5W30N | 30-40 | 2.8 | 12 | Unidentified | Rib | Fragment | | | | 12 | |
| 4 | 5W30N | 30-40 | 2.8 | 73 | Unidentified | Unidentified | Fragment | | | | 73 | |
| 4 | 5W30N | 30-40 | 2.8 | 2 | Pacific Salmon | Vertebra | Fragment | | | 2 | | |
| 4 | 5W30N | 30-40 | 2.8 | 332 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 332 | |
| 4 | 5W30N | 30-40 | 2.8 | 1 | Unidentified | Unidentified | Fragment | | | | 1 | |
| 4 | 5W30N | 40-50 | 2.8 | 5 | Pacific Herring | Angular | Posterior | 3 | 2 | | | |
| 4 | 5W30N | 40-50 | 2.8 | 4 | Pacific Herring | Atlas | Centrum | | | 4 | | |
| 4 | 5W30N | 40-50 | 2.8 | 1 | Pacific Herring | Ceratohyal | Central | | | | 1 | |
| 4 | 5W30N | 40-50 | 2.8 | 6 | Pacific Herring | Coracoid | Central | | | | 6 | |
| 4 | 5W30N | 40-50 | 2.8 | 3 | Pacific Herring | Dentary | Anterior | 2 | 1 | | | |
| 4 | 5W30N | 40-50 | 2.8 | 3 | Pacific Herring | Epihyal | Anterior | 1 | 2 | | | |
| 4 | 5W30N | 40-50 | 2.8 | 2 | Pacific Herring | Exoccipital | Central | | 2 | | | |
| 4 | 5W30N | 40-50 | 2.8 | 3 | Pacific Herring | Hyomandibular | Complete | 1 | 2 | | | |
| 4 | 5W30N | 40-50 | 2.8 | 9 | Pacific Herring | Hyomandibular | Superior | 3 | 2 | | 4 | |
| 4 | 5W30N | 40-50 | 2.8 | 6 | Pacific Herring | Maxilla | Central | | | | 6 | |
| 4 | 5W30N | 40-50 | 2.8 | 10 | Pacific Herring | Mesopterygoid | Central | | | | 10 | |
| 4 | 5W30N | 40-50 | 2.8 | 1 | Pacific Herring | Opercle | Anterior | | 1 | | | |
| 4 | 5W30N | 40-50 | 2.8 | 3 | Pacific Herring | Pharyngobranchial | Complete | | | | 3 | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 5W30N | 40-50 | 2.8 | 2 | Pacific Herring | Posttemporal | Central | | | | 2 | |
| 4 | 5W30N | 40-50 | 2.8 | 6 | Pacific Herring | Preopercle | Central | | | | 6 | |
| 4 | 5W30N | 40-50 | 2.8 | 17 | Pacific Herring | Prootic | Central | | | | 17 | |
| 4 | 5W30N | 40-50 | 2.8 | 1 | Pacific Herring | Quadrate | Anterior | | 1 | | | |
| 4 | 5W30N | 40-50 | 2.8 | 5 | Pacific Herring | Scapula | Complete | | | | 5 | |
| 4 | 5W30N | 40-50 | 2.8 | 4 | Pacific Herring | Subopercle | Central | | | | 4 | |
| 4 | 5W30N | 40-50 | 2.8 | 3 | Pacific Herring | Supraoccipital | Central | | | 3 | | |
| 4 | 5W30N | 40-50 | 2.8 | 128 | Pacific Herring | Unidentified | Fragment | | | | 128 | |
| 4 | 5W30N | 40-50 | 2.8 | 64 | Pacific Herring | Vertebra | Centrum | | | 64 | | |
| 4 | 5W30N | 40-50 | 2.8 | 2 | Pacific Herring | Vomer | Complete | | | 2 | | |
| 4 | 5W30N | 40-50 | 2.8 | 1 | Midshipman | Opercle | Complete | | 1 | | | |
| 4 | 5W30N | 40-50 | 2.8 | 1 | Pacific Salmon | Basipterygium | Anterior | 1 | | | | |
| 4 | 5W30N | 40-50 | 2.8 | 3 | Pacific Salmon | Vertebra | Fragment | | | 3 | | |
| 4 | 5W30N | 40-50 | 2.8 | 2 | Unidentified | Longbone | Shaft | | | | 2 | Small |
| 4 | 5W30N | 40-50 | 2.8 | 74 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 74 | |
| 4 | 5W30N | 40-50 | 2.8 | 30 | Unidentified | Unidentified | Fragment | | | | 30 | |
| 4 | 5W30N | 50-60 | 2.8 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |
| 4 | 5W30N | 50-60 | 2.8 | 1 | Pacific Herring | Coracoid | Central | | | | 1 | |
| 4 | 5W30N | 50-60 | 2.8 | 2 | Pacific Herring | Epihyal | Anterior | 1 | 1 | | | |
| 4 | 5W30N | 50-60 | 2.8 | 2 | Pacific Herring | Hyomandibular | Complete | 2 | | | | |
| 4 | 5W30N | 50-60 | 2.8 | 2 | Pacific Herring | Maxilla | Posterior and Central | | | | 2 | |
| 4 | 5W30N | 50-60 | 2.8 | 1 | Pacific Herring | Metapterygoid | Central | | | | 1 | |
| 4 | 5W30N | 50-60 | 2.8 | 2 | Pacific Herring | Pharynogobranchial | Complete | | | | 2 | |
| 4 | 5W30N | 50-60 | 2.8 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 4 | 5W30N | 50-60 | 2.8 | 32 | Pacific Herring | Unidentified | Fragment | | | | 32 | |
| 4 | 5W30N | 50-60 | 2.8 | 6 | Pacific Herring | Vertebra | Centrum | | | 6 | | |
| 4 | 5W30N | 50-60 | 2.8 | 3 | Unidentified | Unidentified | Fragment | | | | 3 | |
| 4 | 5W30N | 50-60 | 2.8 | 10 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 10 | |
| 4 | 5W30N | 50-60 | 2.8 | 10 | Unidentified | Unidentified | Fragment | | | | 10 | |
| 4 | 5W30N | 60-70 | 2.8 | 1 | Pacific Herring | Atlas | Centrum | | | 1 | | |
| 4 | 5W30N | 60-70 | 2.8 | 1 | Pacific Herring | Epihyal | Posterior | | | | 1 | |
| 4 | 5W30N | 60-70 | 2.8 | 1 | Pacific Herring | Hyomandibular | Superior | | | | 1 | |

# DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 5W30N | 60-70 | 2.8 | 1 | Pacific Herring | Pharyngobranchial | Complete | | | | 1 | |
| 4 | 5W30N | 60-70 | 2.8 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 4 | 5W30N | 60-70 | 2.8 | 23 | Pacific Herring | Unidentified | Fragment | | | | 23 | |
| 4 | 5W30N | 60-70 | 2.8 | 6 | Pacific Herring | Vertebra | Centrum | | | 6 | | |
| 4 | 5W30N | 60-70 | 2.8 | 15 | Unidentified | Unidentified | Fragment | | | | 15 | Possibly rib fragments of a medium to large mammal |
| 4 | 5W30N | 60-70 | 2.8 | 12 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 12 | |
| 4 | 5W30N | 60-70 | 2.8 | 3 | Unidentified | Unidentified | Fragment | | | | 3 | |
| 4 | 5W30N | 70-80 | 2.8 | 1 | Pacific Herring | Cleithrum | Central | | | | 1 | |
| 4 | 5W30N | 70-80 | 2.8 | 2 | Pacific Herring | Prootic | Central | | | | 2 | |
| 4 | 5W30N | 70-80 | 2.8 | 10 | Pacific Herring | Unidentified | Fragment | | | | 10 | |
| 4 | 5W30N | 70-80 | 2.8 | 2 | Pacific Herring | Vertebra | Centrum | | | 2 | | |
| 4 | 5W30N | 70-80 | 2.8 | 3 | Unidentified | Unidentified | Fragment | | | | 3 | |
| 4 | 5W30N | 70-80 | 2.8 | 3 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 3 | |
| 4 | 5W30N | 80-90 | 2.8 | 5 | Pacific Herring | Unidentified | Fragment | | | | 5 | |
| 4 | 5W30N | 80-90 | 2.8 | 1 | Pacific Herring | Vertebra | Centrum | | | 1 | | |
| 4 | 5W30N | 80-90 | 2.8 | 5 | Unidentified | Unidentified | Fragment | | | | 5 | |
| 4 | 5W5N | 0-20 | 2.8 | 4 | Pacific Herring | Vertebra | Centrum | | | 4 | | |
| 4 | 5W5N | 0-20 | 2.8 | 7 | Unidentified | Unidentified | Fragment | | | | 7 | |
| 4 | 5W5N | 20-30 | 2.8 | 3 | Pacific Herring | Unidentified | Fragment | | | | 3 | |
| 4 | 5W5N | 30-40 | 2.8 | 1 | Pacific Herring | Coracoid | Complete | | | | 1 | |
| 4 | 5W5N | 30-40 | 2.8 | 1 | Pacific Herring | Prootic | Central | | | | 1 | |
| 4 | 5W5N | 30-40 | 2.8 | 4 | Pacific Herring | Unidentified | Fragment | | | | 4 | |
| 4 | 5W5N | 30-40 | 2.8 | 50 | Pacific Herring | Vertebra | Centrum | | | 50 | | |
| 4 | 5W5N | 30-40 | 2.8 | 1 | Unidentified | Unidentified | Fragment | | | | 1 | Calcined |
| 4 | 5W5N | 30-40 | 2.8 | 5 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 5 | |
| 4 | 5W5N | 40-50 | 2.8 | 1 | Spiny Dogfish | Vertebra | Centrum | | | 1 | | |
| 4 | 5W5N | 40-50 | 2.8 | 9 | Pacific Herring | Vertebra | Centrum | | | 9 | | |
| 4 | 5W5N | 40-50 | 2.8 | 2 | Unidentified | Cranial | Fragment | | | | 2 | Small |
| 4 | 5W5N | 40-50 | 2.8 | 4 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 4 | |
| 4 | 5W5N | 40-50 | 2.8 | 1 | Unidentified | Unidentified | Fragment | | | | 1 | |
| 4 | 5W5N | 50-60 | 2.8 | 2 | Pacific Herring | Vertebra | Centrum | | | 2 | | |
| 4 | 5W5N | 50-60 | 2.8 | 3 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 3 | |

## DkSf-19 - Q'umu?xs Village Site
## Fish Identfications

| Site Area | Auger Sample | Depth (cm BS) | Mesh Size (mm) | NISP | Common Name | Element | Portion | Left | Right | Axial | Unid | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 5W5N | 50-60 | 2.8 | 1 | Unidentified | Unidentified | Fragment | | | | 1 | |
| 4 | 5W5N | 60-70 | 2.8 | 4 | Pacific Herring | Vertebra | Centrum | | | 4 | | |
| 4 | 5W5N | 60-70 | 2.8 | 2 | Unidentified | Rib/Ray/Spine | Fragment | | | | 2 | |
| 4 | 5W5N | 70-80 | 2.8 | 2 | Pacific Herring | Unidentified | Fragment | | | | 2 | |
| 4 | 5W5N | 70-80 | 2.8 | 1 | Pacific Herring | Vertebra | Centrum | | | 1 | | |
| 4 | 5W5N | 70-80 | 2.8 | 1 | Unidentified | Unidentified | Fragment | | | | 1 | |
| 4 | 5W5N | 80-90 | 2.8 | 6 | Pacific Herring | Vertebra | Centrum | | | 6 | | |
| 4 | 5W5N | 80-90 | 2.8 | 5 | Pacific Salmon | Vertebra | Fragment | | | 5 | | |
| 4 | 5W5N | 80-90 | 2.8 | 1 | Unidentified | Rib/Ray/Spine | Incomplete | | | | 1 | |
| 4 | 5W5N | 80-90 | 2.8 | 6 | Unidentified | Unidentified | Fragment | | | | 6 | |
| 4 | 5W5N | 80-90 | 2.8 | 1 | Unidentified | Unidentified | Fragment | | | | 1 | |