Appendix A:
Vertebrate Fauna from the Huu-ay-aht Archaeology Project: Results from the 2006 Huu7ii Village Excavations and Summary of 2004 and 2006 Data

Gay Frederick

Pacific Identifications Inc.
6011 Oldfield Rd., R.R. 3,
Victoria, V9E 2J4

Introduction

Huu7ii Village, DfSh-7, is a large village site located on Diana Island in the Deer Group Islands at the southern entrance to Barkley Sound on the west coast of Vancouver Island (Fig. 1). The 2004 archaeological excavations at the site recovered large quantities of faunal remains, some of which have been analyzed and summarized in the 2006 report to the Huu-ay-aht First Nation (Frederick et al. 2006). Excavations at the site were resumed in the summer of 2006, directed by Dr. Alan McMillan and Denis St. Claire, in association with the Huu-ay-aht First Nation. This report summarizes the identification and analysis of selected samples of the level vertebrate faunal remains from excavation units within House 1 and an excavation unit in the older back terrace deposits. The results from the two years' excavations are then combined and discussed.

As in 2004, two types of faunal samples were collected from Huu7ii Village during the 2006 field season: 1) fauna from *excavation units* handpicked from ¼" screens in the field, and 2) fauna recovered from bulk sediment *column samples.* Only the level fauna from the screens are reported here.

Site Context and Excavation

The site of Huu7ii is an extensive shell midden village site with numerous rectangular house depressions arrayed along a beach on the northeast portion of Diana Island (Fig. 2). Excavations in 2006 focused on the central and southeastern portions of the largest house depression, House 1, extending the horizontal coverage within this house feature (Fig. 3). One 2 m by 2 m unit, N18-20 E 34-36, was excavated to the base of cultural deposits, a depth of about two metres. The other fourteen 2 m by 2 m and six 1 m by 2 m units within the house depression were excavated down to the base of identified house floor layers, roughly 60 cm to one metre below surface. In addition, a second excavation unit was excavated down to the base of cultural deposits on the older back-terrace portion of the site, to the west of the unit completed in 2004.

Stratigraphy similar to that described in the report on the 2004 excavations was encountered within House 1 in 2006, with an upper unit of ash spreads, hearth areas, fragmented and diffuse shell in a dark soil matrix overlying a lower unit of much more concentrated shell dump layers. Vertebrate remains were recovered throughout the sequence.

Site Chronology

Radiocarbon age estimates from the excavations of the House 1 area place the age of these deposits between 330 and 1560 cal yr BP. A date of 920 ± 50 (930–730 cal years BP) was obtained from unit N18-20/E6-8 at a depth of 4.20–4.25 D.B.D. This date fixes the occupation of House 1 beginning at about 800 BP with a terminal date between 300 and 400 BP The date for abandonment of the site is partially based on dendro-chronological dates obtained from trees growing on and within the house depressions at the site. Dates from the back terrace portion of the site span the period of 3090 to 4980 cal yr BP., placing its occupation at a time when sea level in the area was 3 to 4 metres higher than today (Frederick et al. 2006).

Methods

Field Recovery Proceedures

Excavation Units

Cultural deposits were removed from the 2x2 m excavation units in arbitrary 5 cm levels. Each unit was further subdivided horizontally into 1x1 m

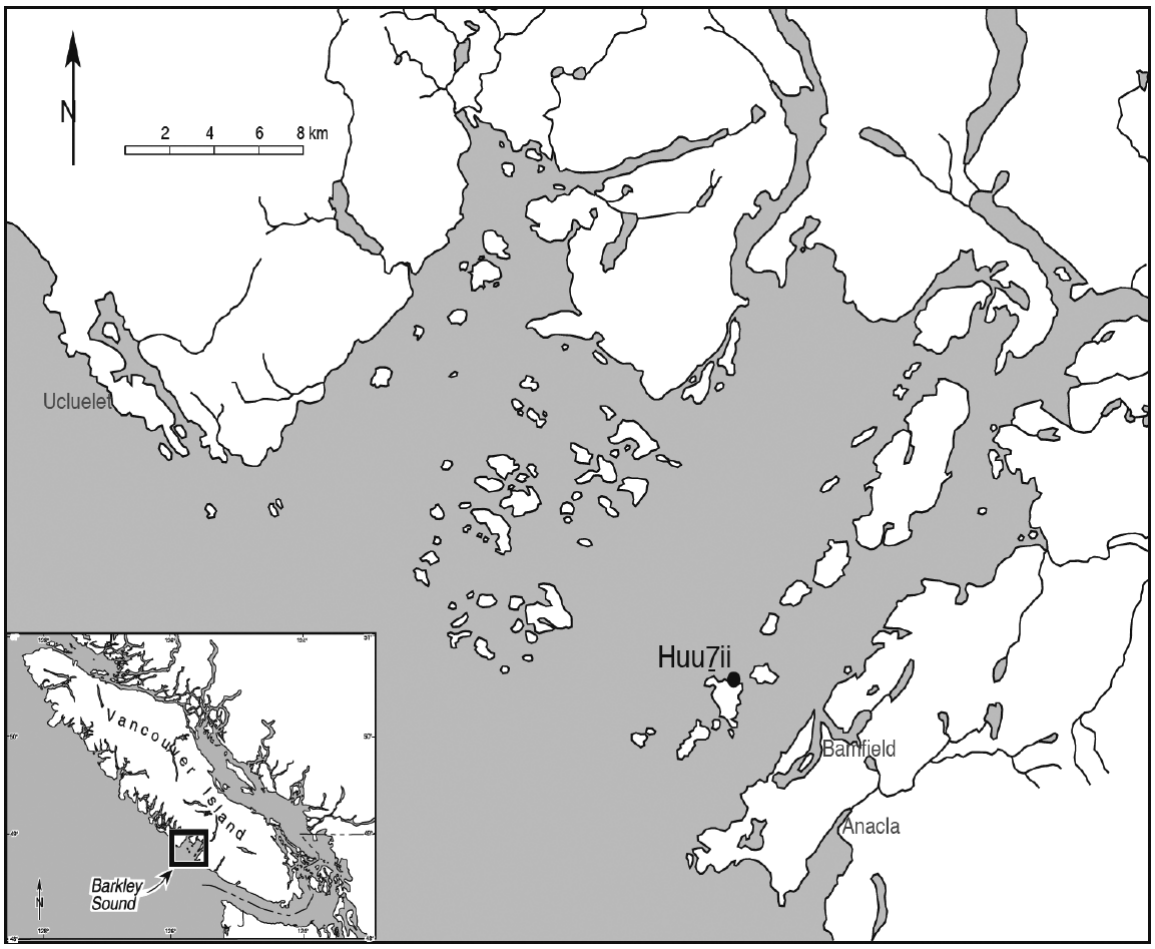


Figure 1. Map of Barkley Sound showing the location of Huu7ii village (DfSh-7).

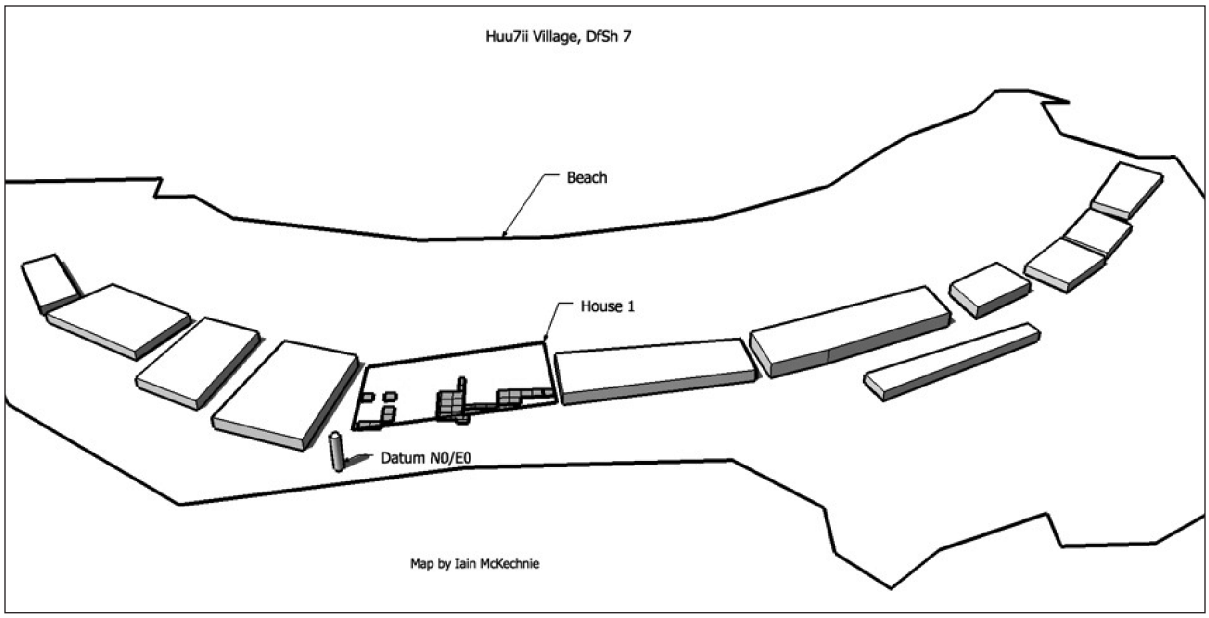


Figure 2. Map of Huu7ii village showing the probable placement of houses and the locations of 2004 and 2006 excavation units in House 1. (Map by Iain McKechnie.)

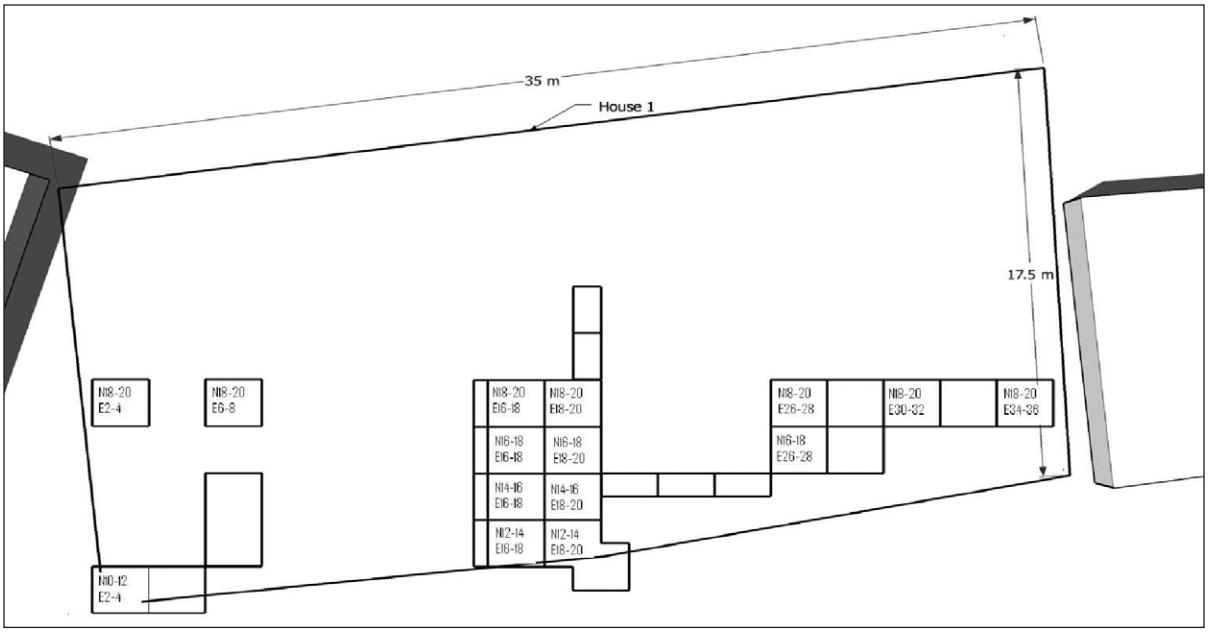


Figure 3. Excavation units, House 1. (Map by Iain McKechnie.)

quadrants (i.e., NW, NE, SW, SE). In addition, sediments from broadly defined stratigraphic 'layers' were excavated and screened separately. Numbered arbitrary levels are referenced to the horizontal datum plane and layers are given letter designations, beginning at the surface. All deposits were put through ¼" mesh screens in the field and all visible vertebrate fauna collected.

Column Samples

Column bulk samples were recovered from the side walls of excavation units. As in the excavation units, individual column sample levels were removed in 5cm arbitrary increments referenced to the site datum plane and stratigraphically distinct layers were kept separate. These samples were analyzed separately and are reported by Iain McKechnie (this volume).

Faunal Identification Procedures

Vertebrate fauna from the 2006 excavation unit samples were identified by Gay Frederick, using the comparative skeletal collection at the University of Victoria Zooarchaeology Laboratory. Identification data were recorded by skeletal element in a *Paradox 35* database, noting relevant osteological and provenience information. This database was then converted to a *Quattro Pro* and/or an *Excel* spreadsheet. With the exception of fish spines, ribs, branchials, and scales, identification was attempted for all skeletal elements recognizable to species, genus or family level. Confidence codes were assigned to each examined specimen to indicate the certainty of identification (for criteria, see Frederick and Crockford 2005). Briefly, Code 22 indicates certainty to species, Code 21 certainty to genus and probable species, Code 20 certainty to genus. Codes below 20 reflect less and less certainty. Identifications for rockfish (*Sebastes* sp.) and salmon sp. (*Oncorhynchus* sp.) were rarely attempted beyond genus level. Identifications are conservative.

Results

Vertebrate Faunal Sample

Vertebrate faunal remains from selected levels of twelve 2006 excavation units within House 1, and the 2006 unit on the back terrace have been identified. Figs. 3 and 4 show the House 1 units and their relation to features identified in the house floor. The intent was threefold.

Firstly, we wished to further examine the shifting pattern of fauna, especially fish species, utilization through time seen in the 2004 sample. To this end, bird, mammal and fish remains from selected levels in units N14-16/E16-18, N16-18/E26-28 and N18-20/E34-36 in the house were identified (Fig. 3). The first two units were excavated to the base of the house floor deposits while the third was excavated to the base of all cultural

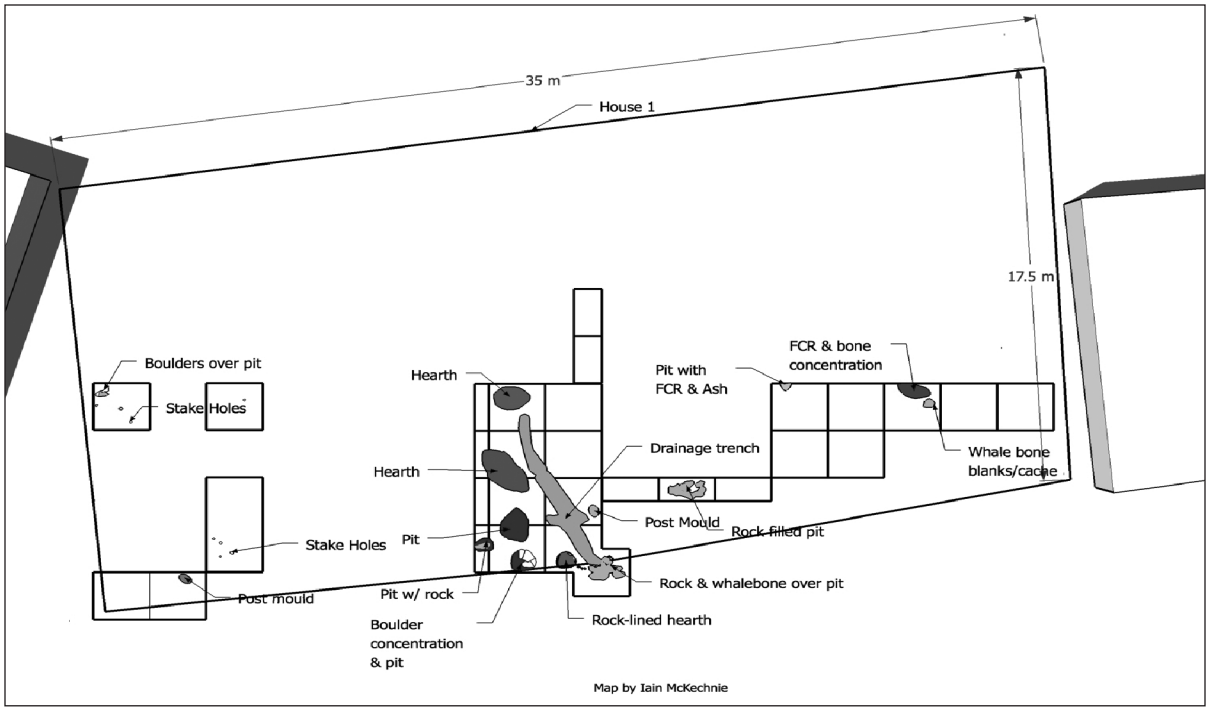


Figure 4. Excavation units and features, House 1. (Map by Iain McKechnie.)

deposits, reflecting the full period of occupation for this lower area of the site. Bird, mammal and fish remains from alternate levels of the 2006 back terrace unit down to sterile deposits were identified to compare with the 2004 sample patterns from this area of the site.

Secondly, we wished to increase the sample size of bird and mammal remains to better examine their patterns of exploitation. To this end, the bird and mammal sample from the above four units was augmented with the identification of only bird and mammal remains from house floor deposits of an additional six units: N12-14/E18-20, N16-18/E18-20, N18-20/E16-18, N18-20/E18-20, N18-20/E26-28 and N18-20/E30-32 (Fig. 3). This additional bird and mammal sample was intended to elucidate horizontal patterning of the much less frequent bird and mammal remains within House 1 floor deposits with the dampening effect produced by the overwhelming amount of fish bone removed.

Thirdly, to further examine the horizontal distribution of bird, mammal and fish remains across the house floor, the faunal samples for the single level DBD 3.80–3.85 m, associated with features in the main block excavation area within the house, were augmented. Bird, fish and mammal remains from this level only also were identified from units N12-14/E16-28, N14-16/E18-20 and N16-18/E16-18. Only bird and mammal, not fish, remains were also identified from units N12-14/E18-20 and N18-20/E26-28 for this level (Fig. 3).

A total of 35,044 specimens was examined from the 2006 level samples, with the majority being fish. The NSP (Number of Specimens) for fish is 24,506 (70%), for bird 1,480 (4%), and mammal 9,058 (26%). Of the 35,044 vertebrate specimens (NSP) examined, 14,782 specimens were identified to species, genus or family (Identification Code 20 and above). The NISP (Number of Identified Specimens) for fish is 12,426 (84%), for bird 544 (4%), and for mammal 1,815 (12%), including 1,035 (7%) marine mammal, 587 (4%) commensal mammal and 193 (1%) land mammal specimens. Table 1 lists the taxa identified in the 2006 unit samples and Table 2 presents the quantified 2006 data.

Table 3 presents the combined level sample data from both years of excavation. A total sample of 80,308 vertebrate specimens has now been examined from the 2004 and 2006 unit level samples. The sample includes 12,378 mammal specimens (15%), 2,275 bird specimens (3%) and 65,655 fish specimens (82%). Of these, 43,833 (55%) have been identified to species, genus or Family. Of the identified specimens (NISP) 353 are land mammal (1%), 782 commensal mammal (2%), 1693 sea mammal (4%), 859 bird (2%) and 40,146 fish (92%).

Table 1. Species and genera identified from DfSh-7, Huu7ii village, 2006 level sample.

Common Name	Scientific Name
Land and Commensal Mammals	
Deer mouse	*Peromyscus* sp.
Beaver	*Castor canadensis*
Mule deer	*Odocoileus hemionus*
Elk	*Cervus elaphus*
Dog	*Canis familiaris*
Wolf	*Canis lupus*
Black Bear	*Ursus americanus*
Raccoon	*Procyon lotor*
Mink	*Mustela vison*
Sea Mammals	
River otter	*Lontra canadensis*
Sea otter	*Enhydra lutris*
Fur seal	*Callorhinus ursinus*
Northern sea lion	*Eumatopias jubata*
Harbour seal	*Phoca vitulina*
Elephant seal	*Mirounga angustrostris*
Harbour porpoise	*Phocoena phocoena*
Dall's porpoise	*Phocoena dalli*
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*
Humpback Whale	*Megaptera novaeangliae*
Whale sp.	Cetacea
Birds	
Canada goose	*Branta canadensis*
Cackling Canada goose	*Branta canadensis minima*
Snow goose	*Chen caerulescens*
Surf scoter	*Melanitta perspicillata*
White-winged scoter	*Melanitta fuscus*
Mallard	*Anas platyrhynchus*
Goldeneye	*Bucephala clangula*
Bufflehead	*Bucephela albeola*
Old squaw duck	*Clangula hyemalis*
Harlequin duck	*Histrionicus histrionicus*
Common merganser	*Mergus merganser*
Red-breasted merganser	*Mergus serrator*
Common loon	*Gavia immer*
Pacific loon	*Gavia pacifica*
Western grebe	*Aechmophorus occidentalis*
Red-necked grebe	*Podiceps grisegena*
Short-tailed albatross	*Phoebastria (nee Diomedea) albatrus*
Black-footed albatross	Phoebastria nigripes
Northern Fulmar	*Fulmarus glacialis*
Sooty Shearwater	*Puffinus griseus*
Fork-tailed storm petrel	*Oceanodroma furcata*
Double-crested cormorant	*Phalacrocorax auritus*
Pelagic cormorant	*Phalacrocorax pelagicus*
Cormorant sp. (medium)	*Phalacrocorax pelagicus*\ *penicillatus*

Common Name	Scientific Name
Birds continued	
Bald eagle	*Haliaeetus leucocephalus*
Sharpshinned hawk	*Accipiter striatus*
Gull sp.	*Larus* sp.
Black-legged Kittiwake	*Rissa tridactyla*
Great blue heron	*Ardea herodias*
Common murre	*Uria aalge*
Marbled murrelet	*Brachyrhamphus marmoratus*
Northwestern crow	*Corvus caurinus*
Common Raven	*Corvus corax*
Turkey Vulture	*Cathartes aura*
Fox sparrow	*Passerella iliacum*
Varied Thrush	*Ixoreus naevius*
Surf bird	*Aphriza virgata*
Shorebird	Charadriformes
Fish	
Dogfish shark	*Squalus acanthias*
Skate	*Raja* sp.
Ratfish	*Hydrolagus colliei*
Anchovy	*Engraulis mordax*
Herring	*Clupea pallasi*
Salmon	*Oncorhynchus* sp.
Chinnok Salmon	*Oncorhynchus tshawytscha*
Sablefish	*Anoplopoma fimbria*
Pacific cod	*Gadus macrocephalus*
Hake	*Merluccius productus*
Rockfish sp.	*Sebastes* sp.
Plainfin Midshipman	*Porichthys notatus*
Cabezon	Scorpaenichthys marmoratus
Irish lord sp.	*Hemilepidotus* sp.
Red Irish lord	*Hemilepidotus hemilepidotus*
Buffalo sculpin	*Enophrys bison*
Spinyhead Sculpin	*Dasycottus setiger*
Great Sculpin	*Myoxocephalus polyacanthocephalus*
Striped seaperch	*Embiotica lateralis*
Pile perch	*Damalichthys vacca*
Lingcod	*Ophiodon elongatus*
W-S Greenling	*Hexagrammos stelleri*
Rock greenling	*Hexagrammos lagocephalus*
Kelp greenling	*Hexagrammos decagrammus*
Bluefin Tuna	*Thunnus orientalis*
Halibut	*Hippoglossus stenolepis*
Petrale sole	*Eopsetta jordani*
Rock Sole	*Lepidosetts* sp.
Dover sole	*Microstomus pacificus*
Pacific sanddab	Citharichthys *sordidus*

Table 2. DfSh 7, vertebrate fauna, selected level samples, 2006 sample.

Common Name	Scientific Name	NISP/NSP
Land Mammals		
Mule deer	*Odocoileus hemionus*	120
Elk	*Cervus elaphus*	10
Beaver	*Castor canadensis*	4
Black Bear	*Ursus americanus*	1
Canid	Canidae	1
Wolf	*Canis lupus*	1
Raccoon	*Procyon lotor*	5
Mink	*Mustela vison*	24
River otter	*Lutra canadensis*	27
	Land Mammal NISP	193
	Unidentified Land Mammal NSP	650
	Total Land Mammal NISP/NSP	**843**
Commensal Mammals		
Dog	*Canis familiaris*	583
Deer mouse	*Peromyscus* sp.	4
	Commensal Mammal NISP	587
Sea Mammals		
Sea otter	*Enhydra lutris*	28
Northern sea lion	*Eumatopias jubata*	57
Fur seal	*Callorhinus ursinus*	169
Otarid	Otaridae	33
Harbour seal	*Phoca vitulina*	78
Elephant seal	*Mirounga angustirostris*	1
Pinniped	Pinnepedia	40
Harbour porpoise	*Phocoena phocoena*	83
Dall's porpoise	*Phocoena dalli*	24
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*	45
Porpoise/Dolphin sp.	Delphinidae/Phocoeinidae	131
Whale sp.	Cetacea	320
Large whale	Cetacea	23
Humpback Whale	*Megapters novaeangliae*	3
	Marine Mammal NISP	1,035
	Unidentified Sea Mammal NSP	2,483
	Total Marine Mammal NISP/NSP	**3,518**
Undetermined Mammal	Undetermined NSP	4,110
	Total Mammal NSP/NISP	**8,471**
Birds		
Canada Goose	*Branta canadensis*	4
Cackling Canada goose	*Branta canadensis minima*	5
Snow goose	*Chen caerulescens*	1
Goose sp.	*Anser/Branta/Chen* sp.	18
Mallard	*Anas platyrhynchus*	1
Surf scoter	*Melanitta perspicillata*	4
White-winged scoter	*Melanitta fuscus*	2
Scoter sp.	*Melanitta* sp.	12
Goldeneye	*Bucephela clangula*	2
Bufflehead	*Bucephela albeola*	2
Common Merganser	*Mergus merganser*	2
Red-breasted Merganser	*Mergus serrator*	2
Merganser sp.	*Mergus* sp.	1
Oldsquaw Duck	*Clangula hyemalis*	1
Harlequin duck	*Histrionicus histrionicus*	2
Duck sp.	Anatidae	25
Common Loon	*Gavia immer*	7
Pacific loon	*Gavia pacifica*	4
Loon sp. (medium)	*Gavia pacifica\stellata*	27

Table 2 continued.

Common Name	Scientific Name	NISP/NSP
Loon sp.	*Gavia* sp.	4
Western grebe	*Aechmophorus occidentalis*	2
Red-necked grebe	*Podiceps grisegena*	2
Grebe sp.	*Podiceps/Aechmophorus*	8
Short-tailed Albatross	*Phoebastria albatrus*	16
Black-footed albatross	*Phoebastria nigripes*	1
Albatross sp.	*Phoebastria* sp.	1
Northern Fulmar	*Fulmarus glacialis*	2
Sooty Shearwater	*Puffinus griseus*	13
Shearwater sp.	*Puffinus* sp.	35
Fork-tailed storm petrel	*Oceanodroma furcata*	1
Double-crested cormorant	*Phalacrocorax auritus*	13
Pelagic cormorant	*Phalacrocorax pelagicus*	17
Cormorant sp.	*Phalacrocorax* sp.	22
Turkey Vulture	*Cathartes aura*	1
Geat blue heron	*Ardea herodias*	3
Shorebird, large	Scolopacidae	1
Shorebird, small	Scolopacidae	1
Surfbird	*Aphriza virgata*	1
Gull, large/very large	*Larus* sp.	22
Gull, medium/large	*Larus* sp.	10
Gull, medium	*Larus* sp.	16
Gull, small/very small	*Larus* sp.	24
Gull sp.	*Larus* sp.	8
Black-legged Kittiwake	*Rissa tridactyla*	5
Common murre	*Uria aalge*	71
Murre sp.	*Uria* sp.	8
Marbled murrelet	*Brachyrhamphus marmoratus*	13
Bald eagle	*Haliaeetus leucocephalus*	16
Sharpshinned hawk	*Accipiter striatus*	1
Hawk sp.	Accipitridae/Falconidae	1
Northwestern crow	*Corvus caurinus*	33
Common Raven	*Corvus corax*	2
Varied Thrush	*Ixoreus naevius*	9
Fox sparrow	*Passerella iliaca*	2
Songbird	Fringillidae/Turdidae	1
	Identified bird NISP	544
	Unidentified Bird NSP	936
	Total Bird NISP/NSP	**1,480**
Fish		
Dogfish shark	*Squalus acanthias*	1,100
Skate	*Raja* sp.	5
Ratfish	*Hydrolagus colliei*	248
Anchovy	*Engraulis mordax*	3
Herring	*Clupea pallasi*	407
Salmon	*Oncorhynchus* sp.	3,214
Chinnok Salmon	*Oncorhynchus tshawytscha*.	16
Sablefish	*Anoplopoma fimbria*	1
Pacific cod	*Gadus macrocephalus*	141
Hake	*Merluccius productus*	1,932
Gadid, not Hake	Gadidae	6
Rockfish sp.	*Sebastes* sp.	2,450
Plainfin Midshipman	*Porichthys notatus*	4
Cabezon	*Scorpaenichthys marmoratus*	88
Red Irish lord	*Hemilepidotus hemilepidotus*	80
Buffalo sculpin	*Enophrys bison*	3
Great Sculpin	Myoxocephalus polyacanthocephalus	7

Table 2 continued.

Common Name	Scientific Name	NISP/NSP
Spinyhead Sculpin	Dasycottus settiger	2
Sculpin sp.	Cottidae	4
Striped seaperch	*Embiotica lateralis*	49
Pile perch	*Damalichthys vacca*	99
Perch sp.	Embiotocidae	120
Lingcod	*Ophiodon elongates*	226
W-S Greenling	*Hexagrammos stelleri*	1
Rock greenling	*Hexagrammos lagocephalus*	22
Kelp greenling	*Hexagrammos decagrammus*	1,053
Greenling sp.	Hexigrammidae	327
Bluefin Tuna	*Thunnus orientalis*	18
Halibut	*Hippoglossus stenolepis*	22
Petrale Sole	*Eopsetta jordani*	646
Rock Sole	*Lepidosetts* sp.	13
Dover sole	*Microstomus pacificus*	1
Pacific sanddab	*Citharichthys sordidus*	3
Flatfish sp.	Pleuronectiformes	115
	Identified Fish NISP	12,426
	Unidentified Fish NSP	12,080
	Total Fish NISP/NSP	**24,506**

Table 3. DfSh 7, vertebrate fauna, selected level samples, 2004 and 2006 combined sample.

Common Name	Scientific Name	NISP/NSP
Land Mammals		
Mule deer	*Odocoileus hemionus*	202
Deer sp.	*Odocoileus* sp.	1
Elk	*Cervus elaphus*	16
Ungulate sp.	*Cervidae*	3
Beaver	*Castor canadensis*	5
Black Bear	*Ursus americanus*	2
Canid	*Canidae*	3
Wolf	*Canis lupus*	1
Raccoon	*Procyon lotor*	6
Mink	*Mustela vison*	71
Marten	*Martes Americana*	6
River otter	*Lutra canadensis*	37
	Land Mammal NISP	353
	Unidentified Land Mammal NSP	926
	Total Land Mammal NISP/NSP	**1,279**
Commensal Mammals		
Dog	*Canis familiaris*	773
Deer mouse	*Peromyscus* sp.	9
	Commensal Mammal NISP	782
Sea Mammals		
Sea otter	*Enhydra lutris*	45
Northern sea lion	*Eumatopias jubata*	117
Fur seal	*Callorhinus ursinus*	285
Otarid	Otaridae	42
Harbour seal	*Phoca vitulina*	125
Elephant seal	*Mirounga angustirostris*	1
Pinniped	Pinnepedia	95
Harbour porpoise	*Phocoena phocoena*	114
Dall's porpoise	*Phocoena dalli*	59

Table 3 continued.

Common Name	Scientific Name	NISP/NSP
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*	69
Porpoise/Dolphin sp.	Delphinidae/Phocoeinidae	236
Whale sp.	Cetacea	479
Large whale	Cetacea	23
Humpback Whale	*Megapters novaeangliae*	3
	Marine Mammal NISP	1,693
	Unidentified Sea Mammal NSP	4,121
	Total Marine Mammal NISP/NSP	**5,814**
Undetermined Mammal	Undetermined NSP	5,080
	Total Mammal NSP/NISP	**12,378**
Birds		
White-Fronted goose	*Anser* sp.	1
Canada goose	*Branta Canadensis*	7
Cackling Canada goose	*Branta canadensis minima*	8
Snow goose	*Chen caerulescens*	1
Goose sp.	*Anser/Branta/Chen* sp.	24
Mallard	*Anas platyrhynchus*	1
Duck, Diving	*Aythya* sp.	2
Surf scoter	*Melanitta perspicillata*	9
White-winged scoter	*Melanitta fusca*	14
Scoter sp.	*Melanitta* sp.	14
Goldeneye	*Bucephela clangula*	3
Bufflehead	*Bucephela albeola*	2
Common Merganser	*Mergus merganser*	6
Red-breasted Merganser	*Mergus serrator*	2
Merganser sp.	*Mergus* sp.	1
Oldsquaw Duck	*Clangula hyemalis*	1
Harlequin duck	*Histrionicus histrionicus*	2
Duck sp.	*Anatidae*	42
Common Loon	*Gavia immer*	15
Pacific loon	*Gavia pacifica*	7
Loon sp. (medium)	*Gavia pacifica/stellata*	41
Loon sp.	*Gavia* sp.	4
Western grebe	*Aechmophorus occidentalis*	4
Red-necked grebe	*Podiceps grisegena*	5
Horned grebe	*Podiceps auritus*	2
Grebe sp.	*Podiceps/Aechmophorus*	10
Short-tailed Albatross	*Phoebastria albatrus*	29
Black-footed albatross	*Phoebastris nigripes*	1
Albatross sp.	*Phoebastria* sp.	3
Northern Fulmar	*Fulmarus glacialis*	3
Sooty Shearwater	*Puffinus griseus*	25
Shearwater sp.	*Puffinus* sp.	49
Fork-tailed storm petrel	*Oceanodroma furcata*	1
Storm petrel sp.	*Oceanodroma* sp.	1
Double-crested cormorant	*Phalacrocorax auritus*	19
Pelagic cormorant	*Phalacrocorax pelagicus*	28
Cormorant sp.	*Phalacrocorax* sp.	32
Geat blue heron	*Ardea herodias*	4
Shorebird, large	*Scolopacidae*	1
Shorebird, small	*Scolopacidae*	2
Shorebird, medium	*Scolopacidae*	1

Table 3 continued.

Common Name	Scientific Name	NISP/NSP
Surfbird	*Aphriza virgata*	1
Western sandpiper	*Calidris mauri*	1
Gull, large/very large	*Larus* sp.	33
Gull, medium/large	*Larus* sp.	17
Gull, medium	*Larus* sp.	35
Gull, small/very small	*Larus* sp.	48
Gull sp.	*Larus* sp.	8
Black-legged Kittiwake	*Rissa tridactyla*	9
Kittiwake sp.	*Rissa* sp.	1
Common murre	*Uria aalge*	94
Murre sp.	*Uria* sp.	9
Marbled murrelet	*Brachyrhamphus marmoratus*	32
Rhinoceros auklet	*Cerorhinca monocerata*	1
Turkey Vulture	*Cathartes aura*	1
Bald eagle	*Haliaeetus leucocephalus*	28
Sharpshinned hawk	*Accipiter striatus*	1
Hawk sp.	*Accipitirdae/Falconidae*	1
Osprey	*Pandion halaietus*	3
Northern pygmy owl	*Glaucidium gnoma*	1
Western screech owl	*Otus kennicotti*	5
Great horned owl	*Bubo virginianus*	1
Northwestern crow	*Corvus caurinus*	44
Common Raven	*Corvus corax*	3
Spotted towhee	*Pipilo maculates*	1
Varied Thrush	*Ixoreus naevius*	11
Fox sparrow	*Passerella iliaca*	2
Songbird	*Fringillidae/Turdidae*	4
	Identified bird NISP	859
	Unidentified Bird NSP	1,416
	Total Bird NISP/NSP	**2,275**
Fish		
Sevengill shark	*Notorynchus cepedianus*	1
Dogfish shark	*Squalus acanthias*	2,224
Skate	*Raja* sp.	19
Ratfish	*Hydrolagus colliei*	508
Anchovy	*Engraulis mordax*	10
Herring	*Clupea pallasi*	996
Clupeid sp.	Clupeidae	1
Salmon	*Oncorhynchus* sp.	7,882
Chinnok Salmon	*Oncorhynchus tshawytscha.*	16
Salmon/Trout	*Omcorhynchus/Salvelinus* sp.	1
Sablefish	*Anoplopoma fimbria*	3
Pacific cod	*Gadus macrocephalus*	229
Hake	*Merluccius productus*	17,583
Gadid, not Hake	Gadidae	41
Gadid	Gadidae	4
Rockfish sp	*Sebastes* sp.	5,185
Plainfin Midshipman	*Porichthys notatus*	12
Cabezon	*Scorpaenichthys marmoratus*	149
Red Irish lord	*Hemilepidotus hemilepidotus*	118
Irish lord sp.	*Hemilepidotus* sp.	31
Buffalo sculpin	*Enophrys bison*	7

Table 3 continued.

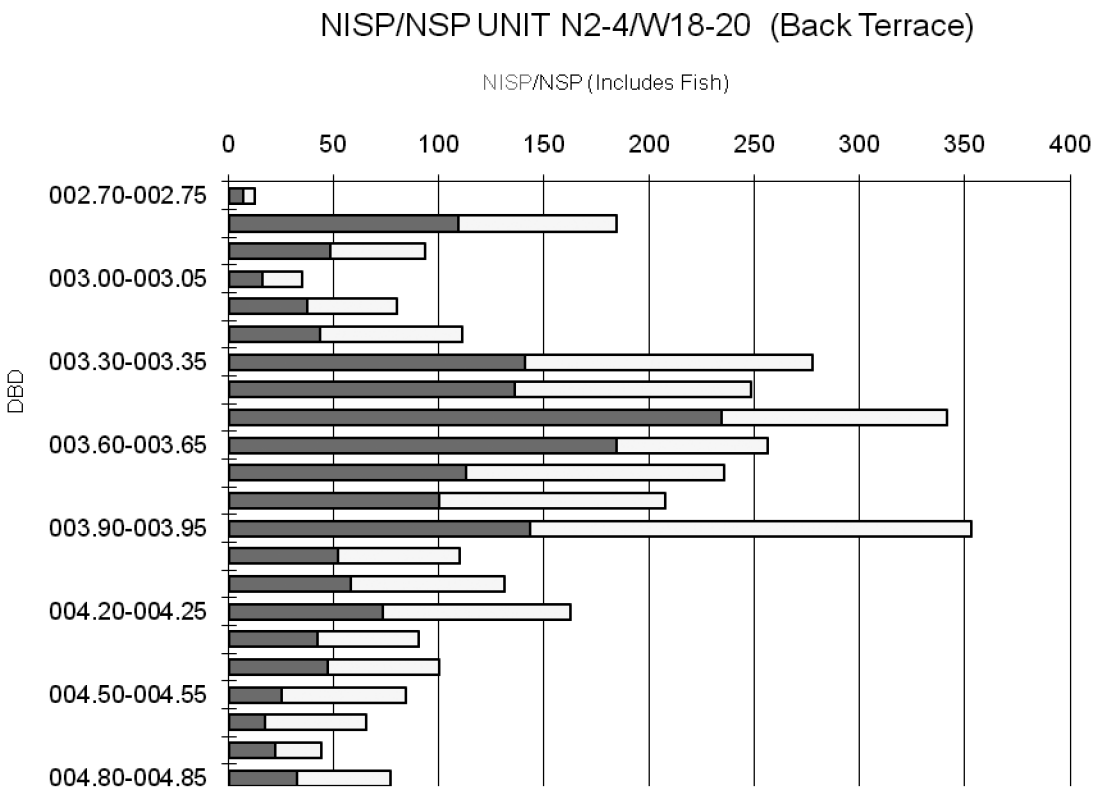
Common Name	Scientific Name	NISP/NSP
Great Sculpin	*Myoxocephalus polyacanthocephalus*	7
Spinyhead Sculpin	*Dasycottus settiger*	2
Sculpin sp.	Cottidae	8
Striped seaperch	*Embiotica lateralis*	74
Pile perch	*Damalichthys vacca*	201
Perch sp.	Embiotocidae	285
Lingcod	*Ophiodon elongates*	504
W-S Greenling	*Hexagrammos stelleri*	4
Rock greenling	*Hexagrammos lagocephalus*	52
Kelp greenling	*Hexagrammos decagrammus*	1,192
Greenling sp.	Hexigrammidae	1,324
Bluefin Tuna	*Thunnus orientalis*	32
Halibut	*Hippoglossus stenolepis*	74
Petrale Sole	*Eopsetta jordani*	1,073
Rock Sole	*Lepidosetts* sp.	18
English sole	*Parophrys vetulus*	1
Sand sole	*Psettichthys melanostictus*	1
Starry flounder	*Platichthys stellatus*	1
Dover sole	*Microstomus pacificus*	1
Pacific sanddab	*Citharichthys sordidus*	3
Flatfish sp.	Pleuronectiformes	264
	Identified Fish NISP	40,146
	Unidentified Fish NSP	25,509
	Total Fish NISP/NSP	**65,655**

Each year's sample contains a few very low frequency species that were not identified in the other year's sample, primarily flatfish, ducks, shorebirds and raptors/owls. The basic patterns otherwise are little changed, except for the overwhelming frequency of hake in one particular 2004 unit.

Discussion

Before looking at the three questions, some general observations are worth making. It is clear that there is generally a much higher concentration of total bone in the levels associated with the house floor surfaces than in the midden levels or in the back terrace units. This can be seen in Figure 5. In some units there is also more unidentified relative to identified bone in these levels, indicating higher fragmentation, something one might expect in house floor deposits. Although the level D.B.D. 3.80–3.85 was chosen to examine in close detail across the 2006 block excavation, as this level is most nearly associated with a series of features including hearth, pit and trench areas (Fig. 4), the actual peak in bone density varies among units depending on the location, from as high as D.B.D. 3.55–3.60 in one unit to as low as D.B.D. 4.10–4.15. The level D.B.D. 4.10–4.15 was used as the final level of the house floor deposits for the 2006 sample. While it is obvious that the division is not exact and there may be some mixing of lower deposits with the house floor deposits, those deposits below 4.15 D.B. are clearly midden not floor deposits. The pattern is not as clear for the 2004 units. One shows a more diffuse concentration between D.B.D. 3.29–3.83 (Unit N2-4/E18-20). Another shows one peak between D.B.D. 3.90–4.05 and a more exaggerated one at level D.B.D. 4.55–4.60 likely related to the frequency of hake remains in the sub-floor midden, while in the third unit the overwhelming concentration of hake between D.B.D 4.50–4.70 masks all other patterns, making the peak at D.B. 3.95–4.00 seem minimal. (Note: Figure 5 bar graphs for units N14-16/E16-18 (2006), N18-20/E34-36 (2006) and N2-4/W18-20 (2006) include NISP/NSP for fish as well as bird and mammal.)

The following paragraphs discuss the 2006 sample and the combined 2004 and 2006 sample in relation to the three questions of interest. In each category of fauna, the data are presented for the 2004 and 2006 full units in one table and the total 2006 sample, including all partial unit samples, in another table.



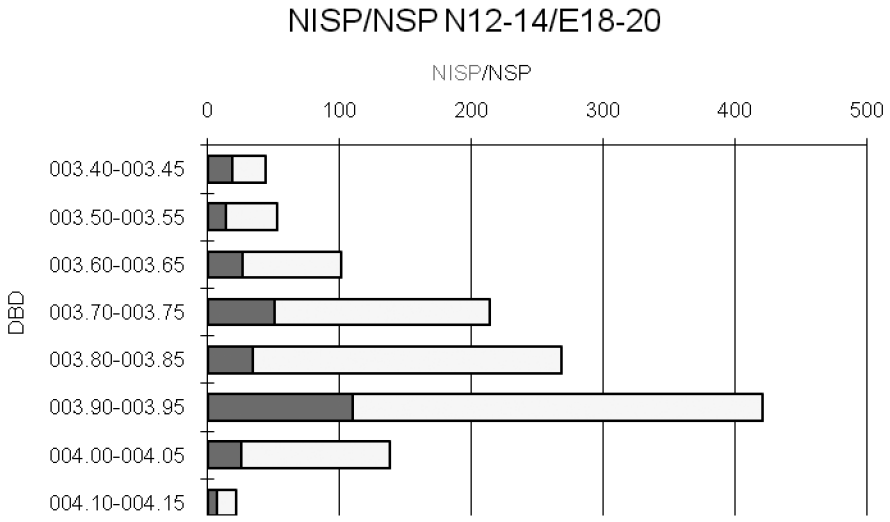


Figure 5. Vertebrate density by level in selected excavation units.

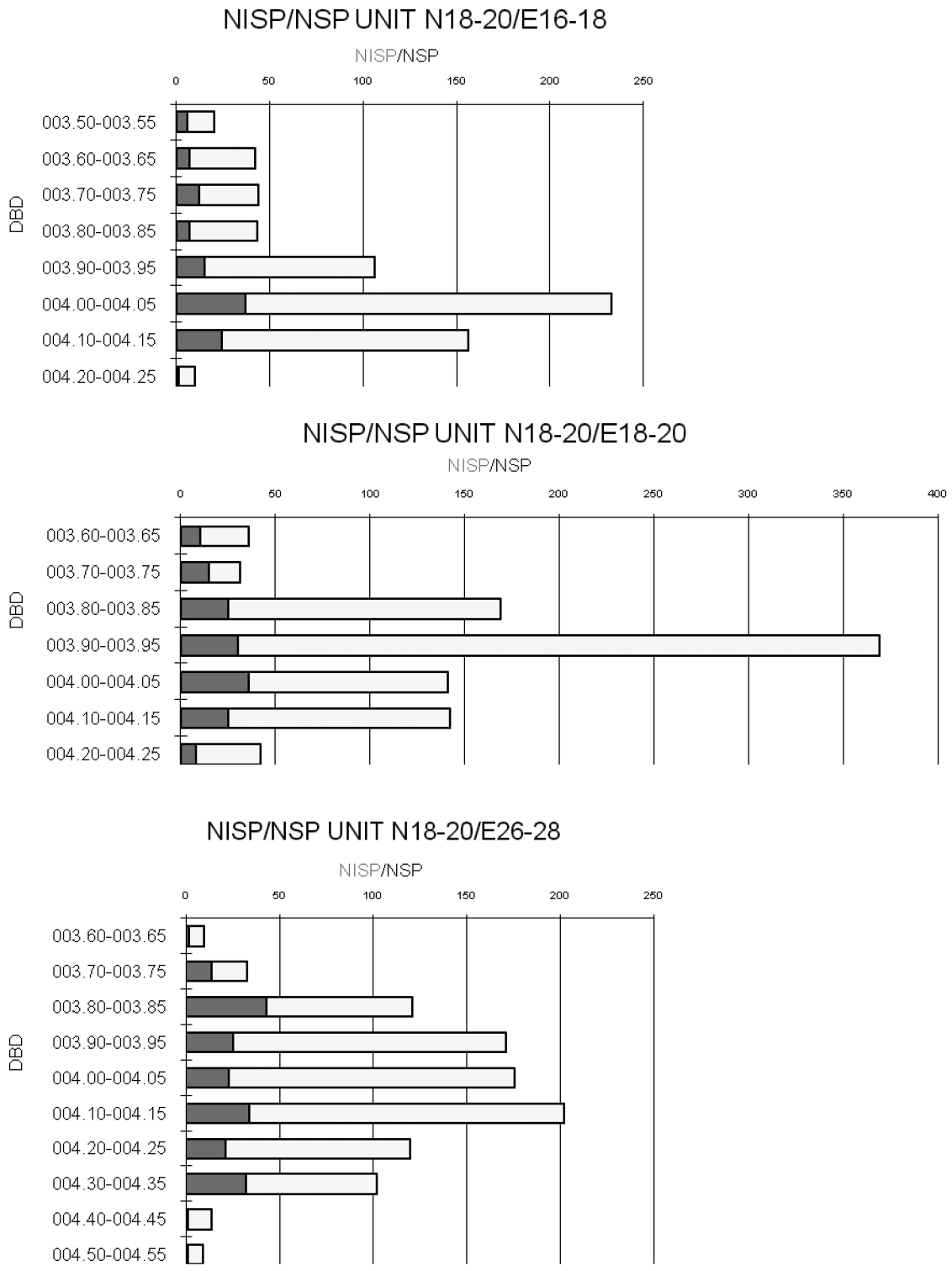


Figure 5 continued.

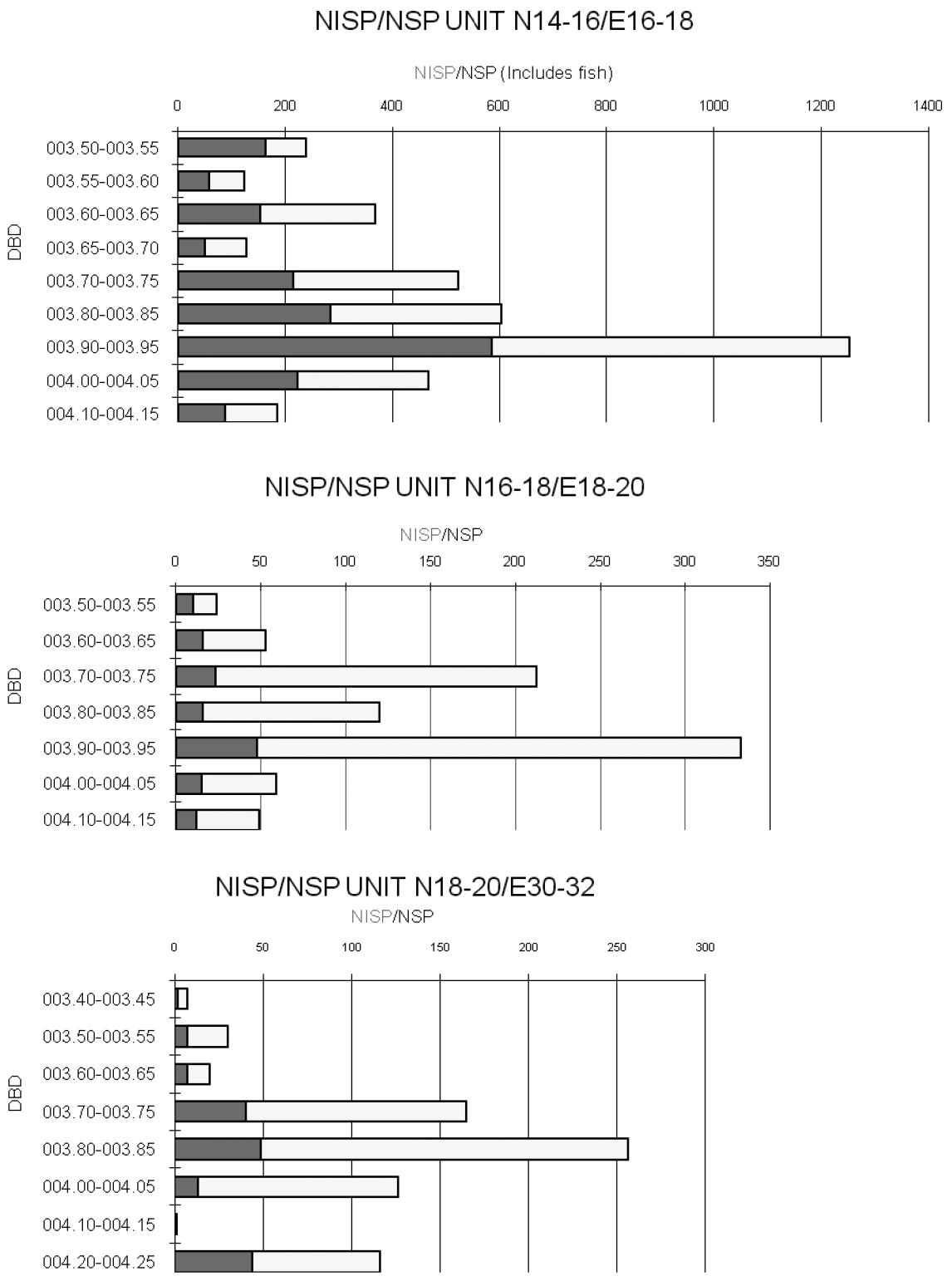


Figure 5 continued.

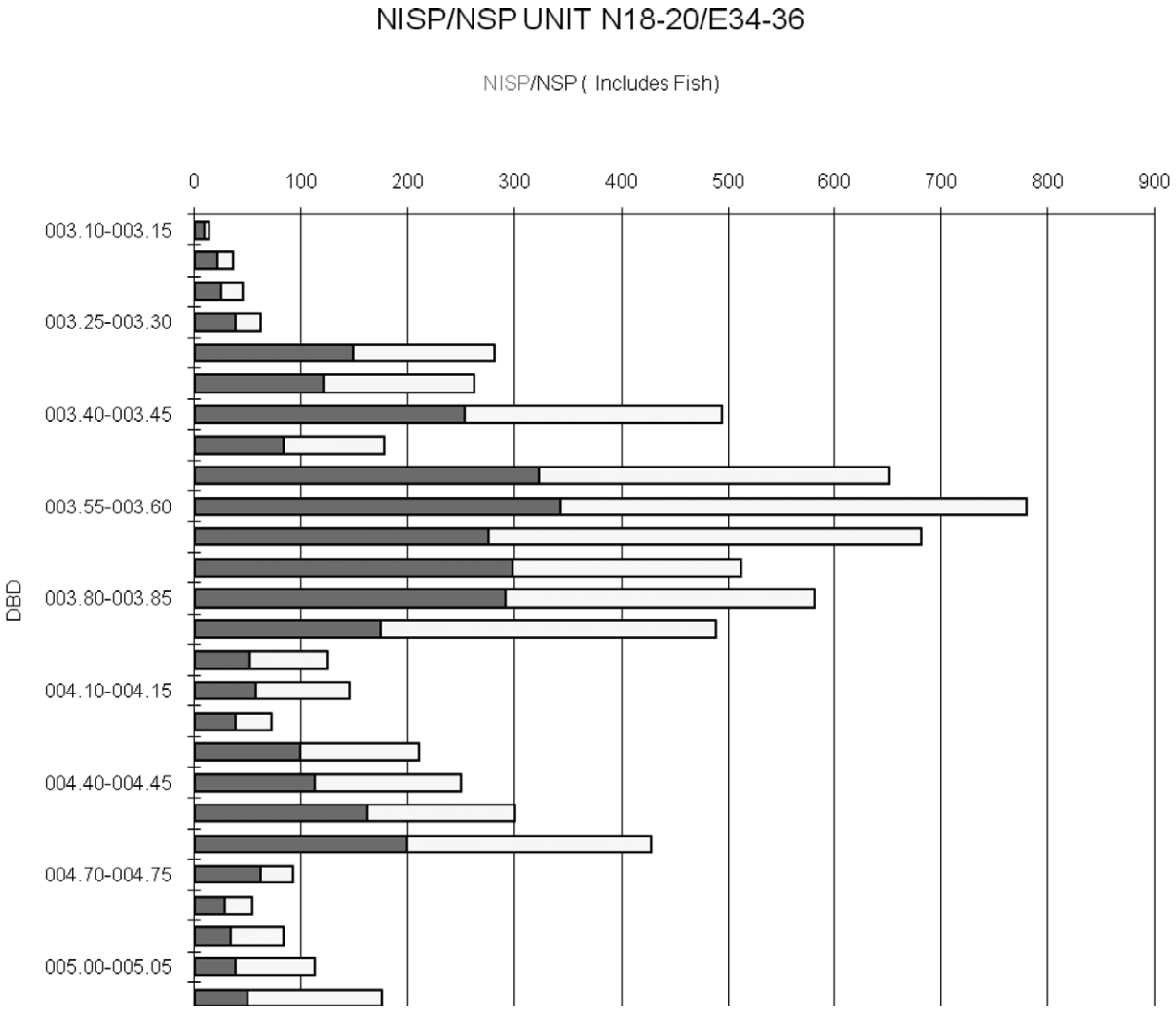


Figure 5 continued.

A. Changes Through Time in Taxa Frequencies

A major finding from the 2004 sample was the difference in taxa frequencies among the back terrace unit, the House 1 floor deposits and the sub-floor midden deposits of the main site area. These differences were especially marked for fish with some differences among mammal and bird frequencies. The increased bird and mammal sample helps to clarify these latter differences while the retrieval of a sub-floor midden sample from the other end of the house clarifies the shifts in fish frequencies. .

To see if the data from the one 2006 house unit taken to sterile deposits, N18-20/E36-38, and the second Back Terrace unit, N2-4 /W18-20, confirm or change the broad patterns observed in the 2004 samples, tables present the 2006 full unit data, and compare and then combine these data with the 2004 sample data. Note that the back terrace sample includes one unit from each year but the 2004 house floor and sub-floor midden sample is from three excavation units, while the 2006 sample is from only one unit. Note also that not every species found in very low frequency was recovered from the full unit samples (e.g., vulture, elephant seal). Tables 4 through 17 present these data.

Land Mammal

While the sample sizes for land mammal are still so small that sample error must be considered a factor in some frequencies, it is interesting to note that the relative frequency of land mammal bone in the back terrace units does seem considerably higher than in the younger deposits.

Three patterns observed in the 2004 samples are supported and strengthened with the addition of the 2006 samples: deer is clearly the most important land mammal in the later deposits and

also important in the back terrace deposits; the overwhelming preponderance of mink in the back terrace units compared to a much lower frequency in the younger deposits is confirmed; and there are a greater number of species represented in the house floor deposits relative to the other two stratigraphic divisions. Elk, black bear and marten occur only in these latest deposits. Deer remains are correspondingly relatively less frequent in the house floor deposits. The sub-floor midden deposits are particularly low in land mammal remains. The increased House 1 floor deposit sample from 2006 does not appreciably change the relative importance of the land mammal species (Tables 4 and 5).

Commensal Mammals

The high frequency of dog remains in the Huu7ii site is fully confirmed with the increased sample size. Dogs are by far the most frequently occurring mammal taxon at this site. The 2004 samples suggested a weak association of deer mouse with only the house floor deposits (Table 6). The larger sample does not confirm this association. On the other hand, the 2004 pattern of a higher frequency of dog remains in the house floor deposits relative to the sub-floor midden deposits and the very high frequency of dog remains in the back terrace is confirmed and strengthened. The average number of dog specimens per unit (for the four excavated to sterile deposits) in the sub-floor midden deposits is 20.5 as compared to 29 for the house floor deposits and 113.5 for the back terrace units. While some of this difference might be accounted for by the differing number of levels sampled in the three subdivisions and/or greater fragmentation of bones in some areas, the difference is still marked, given that the back terrace sample comes from only two excavation units while the younger

Table 4. Land mammal fauna, 2004 and 2006 full unit samples.

	2004			2006			Combined 2004/2006		
Taxa	House Floor	SubFloor Midden	Back Terrace	House Floor	SubFloor Midden	Back Terrace	House Floor	SubFloor Midden	Back Terrace
Deer (%)	44	92	34	85	60	43	**59**	**89**	38
Elk (%)	10.5	0	0	3	0	0	8	0	0
Ungulate sp. (%)	4	3	0	0	0	0	2	1	0
River Otter (%)	14	5	0	6	20	8	11	7	3
Mink (%)	14	0	61	0	0	43	9	0	**55**
Marten (%)	10.5	0	0	0	0	0	7	0	0
Raccoon (%)	0	0	2	3	0	3	1	0	2
Black Bear (%)	2	0	0	0	0	0	1	0	0
Wolf (%)	0	0	0	0	0	3	0	0	1
Canid sp. (%)	2	0	1	3	0	0	2	0	1
Beaver (%)	0	0	2	0	20	0	0	2	1
Total %	**101**	**100**	**100**	**100**	**100**	**100**	**100**	**99**	**101**
NISP	**57**	**39**	**64**	**33**	**5**	**37**	**90**	**44**	**101**

Table 5. Land mammal fauna, 2006 total sample.

Taxa	House Floor	Sub-Floor Midden	Back Terrace	NISP
Deer (%)	66	**71**	43	**120**
Elk (%)	7	0	0	**10**
River Otter (%)	**16**	8	8	**27**
Mink (%)	6	0	**43**	**24**
Raccoon (%)	3	0	3	**5**
Black Bear (%)	1	0	0	**1**
Wolf (%)	0	0	3	**1**
Canid (%)	1	0	0	**1**
Beaver (%)	1	**21**	0	**4**
Total %	**101**	**100**	**100**	
NISP	**142**	**14**	**37**	**193**

Table 6. Commensal mammal fauna, 2004 and 2006 full unit samples.

Taxa	2004			2006			Combined 2004/2006		
	House Floor	SubFloor Midden	Back Terrace	House Floor	SubFloor Midden	Back Terrace	House Floor	SubFloor Midden	Back Terrace
Dog (%)	92	100	99	100	94	99	97	96	99
Deer Mouse (%)	8	0	1	0	6	1	3	4	1
Total %	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
NISP	**50**	**32**	**113**	**66**	**50**	**111**	**116**	**82**	**224**

Table 7. Commensal mammal fauna, 2006 total sample.

Taxa	House Floor	Sub-Floor Midden	Back Terrace	NISP
Dog (%)	100	87	99	**583**
Deer Mouse (%)	0	13	1	**4**
Total %	**100**	**100**	**100**	
NISP	**442**	**34**	**111**	**587**

deposit samples are from four excavation units. The high overall frequency of dog remains in the floor deposits relative to the sub-floor midden deposits in the total 2006 sample (Table 7) also reflects the greater number of house floor levels represented in this sample. All age groups of dogs are present in each of the major stratigraphic units and both small and large dogs are represented in the sample, with small dogs comprising by far the larger proportion, particularly in the back terrace deposits (Frederick et al. 2006).

Sea Mammals

The general pattern of a higher frequency of sea mammal remains associated with the sub-floor midden deposits is confirmed by the additional 2006 full unit sample, but some specific patterns seen in the 2004 sample are not supported (Tables 8, 9, and 10).

The high frequency of fur seal remains in the 2004 back terrace sample is not replicated in the 2006 back terrace sample and while the increase in whale remains from the back terrace through the sub-floor midden to the house floor deposits seen in the 2004 sample is not supported by a similar increase in the 2006 sample, whale remains are more frequent in the more recent deposits than in the back terrace deposits in the combined sample. However the lower frequency of porpoise remains (all species together) in the house floor deposits relative to the sub-floor midden and the back terrace deposits seen in the 2004 sample is supported by both the increased full unit 2006 sample and the total 2006 sample. Additionally, of the specifically identified porpoise and dolphin, the Pacific white-sided dolphin is seen to be more frequent in the back terrace deposits than in the younger deposits (Table 8). Sea otter remains, though not frequent in any stratigraphic unit, are more common in the house floor deposits.

These patterns are more clearly seen in Table 10 which groups taxa to increase individual sample size. It should be remembered that whale bone in particular tends to fragment into many pieces and is therefore clearly over-represented by NISP. Balancing this is the likelihood that very little of a whale skeleton actually ends up in the site. What is clear is the importance of porpoise at this site. In both the midden and the back terrace deposits porpoise as a group is the most frequently occurring sea mammal taxon by NISP, while in the house floor deposits it is either equal to or second in importance to whale remains by NISP. The increased house floor samples (Table 9) do suggest that fur seal may be slightly more frequent in the house floor deposits than is suggested by the full unit samples.

Mammal Age Classes and Body Part Distribution 2006 Sample

When possible, mammal specimens were given an age designation, then grouped into age categories of Adult, Adult/Sub-adult/Older Juvenile, and Juvenile/Young Juvenile/New Born/Foetal. Age class percentages were established for the mammal taxa deer, mink, river otter, dog, northern fur seal, harbor seal, northern sea lion and porpoise as a group. Table 11 presents these data. The patterns found are similar to those observed in the 2004 samples.

It is clear that for deer, mink, river otter, harbor seal and northern sea lion, adult animals were

Table 8. Sea mammal fauna, 2004 and 2006 full unit samples.

Taxa	2004			2006			Combined 2004/2006		
	House Floor	SubFloor Midden	Back Terrace	House Floor	SubFloor Midden	Back Terrace	House Floor	SubFloor Midden	Back Terrace
Sea Otter (%)	4	2	3	16	0	1	**7**	2	2
Northern Sea Lion (%)	8	9	12	8	2	5	8	7	8
Northern Fur Seal (%)	15	15	31	11	3	8	14	12	18
Ottarid (%)	0	0	0	4	1	0	1	<1	0
Harbour Seal (%)	10	6	8	9	8	13	10	6	11
Pinniped (%)	16	7	8	6	1	5	13	5	6
Harbour Porpoise (%)	4	6	5	7	39	3	5	**14**	4
Dall's Porpoise (%)	7	5	3	3	10	2	6	6	2
Pacific W-S Dolphin (%)	3	3	10	4	0	15	3	2	**13**
Porpoise Sp. (%)	9	18	8	10	14	26	9	17	19
Whale Sp. (%)	24	30	12	21	22	21	**23**	**28**	17
Humpback Whale (%)	0	0	0	0	1	0	0	<1	0
Total %	**100**	**101**	**100**	**99**	**101**	**99**	**99**	**100**	**100**
NISP	**192**	**320**	**106**	**89**	**101**	**136**	**281**	**421**	**242**

Table 9. Sea mammal fauna, 2006 total sample.

Taxa	House Floor	Sub-Floor Midden	Back Terrace	NISP
Sea Otter (%)	3	4	1	28
Northern Sea Lion (%)	6	3	5	57
Northern Fur Seal (%)	**20**	10	8	169
Harbour Seal (%)	6	9	**13**	78
Elephant Seal (%)	<1	0	0	1
Ottarid/Pinniped (%)	9	1	5	73
Harbour Porpoise (%)	5	**21**	3	83
Dall's Porpoise (%)	2	6	2	24
Pacific W-S Dolphin (%)	3	2	**15**	45
Porpoise sp. (%)	10	11	26	131
Humpback Whale (%)	<1	<1	0	3
Whale Sp. (%)	**35**	**34**	21	343
Total %	**99**	**101**	**99**	
NISP	**701**	**198**	**136**	**1,035**

Table 10. Sea mammal, grouped taxa, 2004 and 2006 full unit samples.

Taxa	2004			2006			Combined 2004/2006		
	House Floor	SubFloor Midden	Back Terrace	House Floor	SubFloor Midden	Back Terrace	House Floor	SubFloor Midden	Back Terrace
Sea Otter (%)	4	2	3	16	0	1	**7**	2	2
Northern Sea Lion (%)	8	9	12	8	2	5	8	7	8
Northern Fur Seal (%)	15	15	31	11	3	8	14	12	18
Harbour Seal (%)	10	6	8	9	8	13	10	6	11
Pinniped/Ottarid (%)	16	7	8	10	2	5	14	5	6
Porpoise Sp. (%)	23	32	26	24	63	46	23	**39**	**38**
Whale Sp.	24	30	12	21	23	21	**23**	**28**	17
Total %	**100**	**101**	**100**	**99**	**101**	**99**	**99**	**99**	**100**
NISP	**192**	**320**	**106**	**89**	**101**	**136**	**281**	**421**	**242**

Table 11. Age classes, selected mammal taxa, 2006 sample.

Taxa	Age Class			Total %	NISP
	Adult (%)	Adult/Subadult/ Older Juvenile (%)	Juvenile/Young Juvenile/ New Born/Foetal (%)		
Deer	**75**	13	12	100	107
Mink	**100**	0	0	100	23
River Otter	**90**	3	7	100	29
Dog	40	18	42	100	543
Northern Fur Seal	39	31	31	101	154
Harbour Seal	**69**	10	20	99	74
Northern Sea Lion	**75**	25	0	100	54
Porpoise	35	55	10	100	239

targeted. For the deer, this would maximize both meat and raw materials, while for both river otter and mink it would provide the best pelts. Similarly, for harbor seal and northern sea lion, adult animals provide the most return for effort in terms of both meat, and hides and bone for manufactures.

For harbor seals, there are no newborn animals in the 2006 sample. Young juvenile animals are more common, though still rarer than older animals, in the older deposits than in the house floor deposits. Eleven percent (total NISP 18) of the remains in the back terrace deposits, 29% (total NISP 17) of those in the sub-floor midden deposits, but only 5% (total NISP 39) of the remains in the house floor deposits are classed as young juvenile. As in the 2004 sample, the focus is clearly on the older animals. None of the 2006 sea lion remains are young juveniles and of the older animals assigned to a sex category (NISP 41), only one is female. This strongly suggests that adult male animals are being specifically targeted throughout the time span of the site.

Dog and northern fur seal age class data stand in contrast to this pattern. There are as many puppies as adult dogs in the 2006 sample, indicating a "natural" rather than selected population. As was found in the 2004 sample, juvenile dog remains are particularly frequent in the house floor deposits and the back terrace deposits, with many of those recovered from the house floor deposits in the new born/very young juvenile age range. This suggests a high percentage of young pup deaths.

The fur seal age categories show a differing pattern for a different reason. All three age categories are represented in roughly equal proportions. The youngest age category includes 29 specimens from unweaned rookery animals. This could only happen if the people were exploiting breeding rookeries and taking unweaned juvenile animals (up to four months old) from the rookeries as well as adult animals. Juvenile but weaned animals of four to six months of age would also be found in the general vicinity of a breeding rookery. The pattern of breeding rookery exploitation is strengthened by the presence in the sample of a small number (NISP 5) of adult male fur seal specimens, while most of the adult animal specimens (NISP 50) are female. (Not all adult specimens presented clear evidence of sex.) Rookery age fur seal pups were found in all areas of the site, but the percentage of rookery age to older animals is greater in the younger part of the site, increasing from 8% (total NISP 13) in the back terrace deposits, to 16% (total NISP 19) in the sub-floor midden deposits and 20% (total NISP 122) in 2006 house floor deposits.

The pattern for porpoise is less clear, partly because of the difficulty of distinguishing between adult and sub-adult (i.e., mature and immature) animals, as epiphyseal fusion is delayed in these sea mammals. What is clear is that adult or sub-adult/older juvenile animals, not young juveniles are represented disproportionately in the 2006 sample.

The same taxa were examined for patterns of body part distribution. Table 12 presents these data. The pattern for deer is strongly biased towards limb bones. This could be a result of the whole carcass not being brought back to the site or the curation of long bone elements for manufactures or a combination of the two factors. The relatively even split between the three categories for both dog and fur seal again suggests a similarity but for different reasons. Puppies and dogs appear not to be food animals nor do their bones appear to be favoured for manufactures, resulting in the deposition of more or less complete skeletons. Very juvenile fur seal remains are also unlikely to provide good bone material for manufactures and the skeleton of the female fur seal is gracile, also providing little in the way of strong useful bone for manufactures. All aspects of the skeleton are therefore as likely to end up in the

Table 12. Body part distribution, selected mammal taxa, 2006 sample.

Taxa	Body Part			Total %	NISP
	Skull and Mandible	Axial Skeleton	Limbs		
Deer (%)	5	9	**86**	100	111
Mink (%)	22	**70**	9	101	23
River Otter (%)	14	34	52	100	29
Dog (%)	39	26	35	100	493
Northern Fur Seal (%)	24	32	44	100	154
Harbour Seal (%)	21	31	48	100	75
Northern Sea Lion (%)	11	26	**63**	100	54
Porpoise (%)	18	**80**	2	100	261

deposits. Harbour seal skeletal elements also follow this pattern and again, few if any harbour seal bones seem to have been chosen as artifactual material. The skeleton of a large male northern sea lion on the other hand does provide good strong material for manufactures and this may be reflected in the high proportion of sea lion limb bone specimens in the sample, although the 2004 sample did not show this pattern. The strong emphasis on axial skeleton remains in the porpoise sample is partly a reflection of the greater number of vertebrae and the lack of rear limb elements in this taxon, but also reflects the presence in the site of a number of sections of aligned vertebrae likely representing segments still articulated by the tough horizontal ligaments between vertebrae when deposited. Some of these sections exhibit evidence of tooth punctures, suggesting they were fed to the dogs. Porpoise in the 2004 sample display the same pattern.

Birds

Generally, the marked increase in bird remains seen in the house floor deposits in the 2004 sample is supported by the 2006 additional sample, the back terrace deposits being particularly low in bird remains (Tables 13 and 14).

The small sample sizes for birds, as for the land mammals, urge caution in interpretations of the frequency changes observed for individual species, so taxa have been grouped. Even then, sample sizes are still small, likely affecting patterns seen. Ducks, for example, in the 2004 sample decrease through time in importance, while in the 2006 sample they increase through time. A few patterns do seem supported. A range of ducks was taken, both dabbling and diving species, with the emphasis on the latter. Ducks and geese are emphasized more in the back terrace deposits than they are in the younger deposits. In the younger midden and house floor deposits

Table 13. Bird fauna, 2004 and 2006 full unit samples.

Taxa	2004			2006			Combined 2004/2006		
	House Floor	Sub-Floor Midden	Back Terrace	House Floor	Sub-Floor Midden	Back Terrace	House Floor	Sub-Floor Midden	Back Terrace
Goose (%)	2	6	14	4	0	0	3	5	**11**
Duck (%)	13	8	28	18	12	0	15	9	**21**
Loon (%)	9	8	0	14	6	0	**11**	8	0
Grebe (%)	2	6	0	1	0	0	2	5	0
Cormorant (%)	6	21	4	8	19	0	6	**20**	3
Alcids (%)	17	7	7	9	25	0	**14**	10	5
Albatross (%)	4	4	11	0	6	0	3	5	**8**
Shearwater Petrel Fulmar (%)	13	4	0	21	0	0	**16**	3	0
Gull Kittiwake (%)	25	15	7	15	25	10	**22**	**17**	8
Eagle Hawk Osprey (%)	2	6	18	0	6	10	2	6	**16**
Crow Raven (%)	<1	14	4	5	0	80	2	11	**24**
Owl (%)	3	0	0	0	0	0	2	0	0
Shorebird Heron (%)	1	1	4	1	1	0	1	1	3
Small Forest Bird (%)	2	0	4	5	0	0	3	0	3
Total %	**99**	**100**	**101**	**101**	**100**	**100**	**101**	**100**	**102**
NISP	**215**	**72**	**28**	**114**	**16**	**10**	**329**	**88**	**38**

Table 14. Bird fauna, 2006 total sample.

Taxa	House Floor	Sub-Floor Midden	Back Terrace	NISP
Goose (%)	6	4	0	**28**
Duck (%)	11	16	0	**56**
Loon (%)	8	8	0	**42**
Grebe (%)	3	0	0	**12**
Cormorant (%)	10	12	0	**52**
Alcid (%)	19	16	0	**92**
Albatross (%)	3	8	0	**18**
Shearwater/Petral/Fulmar (%)	**11**	4	0	**51**
Gull/Kittiwake (%)	17	**20**	10	**80**
Eagle/Hawk/Osprey (%)	3	4	10	**18**
Crow/Raven (%)	5	8	**80**	**35**
Shorebird/Heron (%)	2	0	0	**6**
Small Forest Bird (%)	3	0	0	**12**
Total %	**101**	**100**	**100**	
NISP	**473**	**25**	**10**	**508**

the focus clearly shifts to sea birds, especially loons, grebes, alcids, shearwaters and gulls. These species all increase in frequency in the younger deposits while eagles, hawks, ospreys, and particularly crows are considerably more frequent in the back terrace deposits. Shearwaters do not occur in the back terrace deposits, although albatross bones are more common in these earlier deposits than in the later ones.

Grouping taxa into larger aggregates helps clarify some possible patterns although it is important to remember that the apparent patterns for the back terrace deposits may be more a function of sample size than cultural selection, as only 38 identified bird bones were recovered from these two units (Table 15).

The focus on ducks and geese (32%) and a range of "forest" birds (42%) is marked for the back terrace deposits. It is possible that if this area of the site was more seasonally occupied, the crow, eagle and songbird remains could represent residents rather than exploited resources, and this might also account for their remains in the younger deposits. Ignoring this part of the sample, there is still a marked shift to exploitation of marine and foreshore birds, especially in the off-shore marine category, in the younger deposits. In the subfloor midden they form 69% of the sample, in the house floor deposits, 74% as opposed to only 27% in the back terrace deposits. The pattern of increase through time is most marked for loons, alcids and shearwaters. The range of species exploited suggests also a range of uses, from food to primarily bone or feathers for manufactures.

Table 15. Bird fauna, grouped taxa, 2004 and 2006 full units.

	2004			2006			Combined 2004/2006		
Taxa	House Floor	SubFloor Midden	Back Terrace	House Floor	SubFloor Midden	Back Terrace	House Floor	SubFloor Midden	Back Terrace
Ducks, Geese (%)	15	14	42	22	12	0	18	14	**32**
Loons, Grebes, Cormorants, Alcids (%)	34	42	11	32	50	0	33	**43**	8
Albatross, Shearwater etc. (%)	17	8	11	21	6	0	**19**	8	8
Gull, Kittiwake, Shorebirds (%)	26	16	11	16	26	10	**22**	**18**	11
Eagle etc/Owl, Crow/Raven, Small Forest Birds (%)	7	20	26	10	6	90	9	17	**42**
Total %	**99**	**100**	**101**	**101**	**100**	**100**	**101**	**100**	**101**
NISP	**215**	**72**	**28**	**114**	**16**	**10**	**329**	**88**	**38**

Fish

In analyzing the fish remains, the data for the sub-floor midden deposits in the 2004 units have again been presented with a choice of percentages, the one in brackets excluding the major dump of more than 12,000 hake bones in three levels of unit N18-20/E6-8. This extremely high frequency of hake is not repeated in any of the other units taken to basal sterile deposits and it is best seen as an anomaly rather than representative of the site pattern. The addition of the 2006 full unit sample fully supports the late shift to a strong focus on salmon supplemented to a lesser degree with rockfish, greenling and herring. One must keep in mind that herring and anchovy definitely and likely also small greenling, are very underrepresented in the level samples. Still, this affects all areas excavated equally and therefore should not affect the relative proportions of other taxa to each other. Salmon make up fully 68% of the combined full unit House Floor sample while they are merely 1% (2%) in the sub-floor midden combined sample (Table 16).

In the 2006 sample, where hake are present at a frequency of only 5% as opposed to the 78% (40%) of the 2004 sample, rockfish, greenling and flatfish, especially Petrale sole, are the most frequently occurring taxa in the subfloor midden. The low frequency of hake in this one 2006 full unit is a bit misleading, as if one includes in the calculations all the 2006 partially excavated units, including the few levels in this area excavated deeper than D.B.D. 4.15, hake is seen to form 32% of the sub-floor midden sample and 16% of the house floor sample (Table 17). Regardless of the "correct" percentage, the more complete sample still shows a marked focus in the sub-floor midden deposits on hake, accompanied by a strong emphasis on rockfish (26%) and both greenling and flatfish.

Table 16. Fish fauna, 2004 and 2006 full unit samples.

Taxa	2004			2006			Combined 2004/2006		
	House Floor	SubFloor Midden*	Back Terrace	House Floor	SubFloor Midden	Back Terrace	House Floor	SubFloor Midden	Back Terrace
Dogfish (%)	2	5 (14)	10	2	3	11	2	5 (13)	**11**
Ratfish (%)	1	1 (2)	6	<1	4	4	1	1 (2)	5
Hake (%)	2	78 (40)	<1	1	5	<1	2	**75 (37)**	<1
Flatfish (%)	1	3 (7)	2	1	17	3	1	**3 (8)**	2
Herring (%)	7	1 (2)	1	3	5	9	6	1 (2)	5
Salmon (%)	67	1	10	71	5	17	**68**	1 (2)	13
Sculpin (%)	1	<1 (1)	1	3	1	3	1	1 (1)	2
Perch(%)	1	<1 (1)	13	1	3	3	1	1 (1)	**8**
Lingcod (%)	2	<1 (1)	5	3	1	2	2	<1 (1)	**4**
Greenling (%)	9	2 (5)	15	10	17	27	9	2 (6)	**21**
Rockfish (%)	6	9 (2)	37	5	37	19	6	**10 (26)**	**27**
Other** (%)	1	1 (2)	<1	<1	<1	<1	1	1 (2)	<1
Total %	**100**	**101**	**100**	**100**	**99**	**99**	**100**	**101**	**99**
NISP	**6,500**	**19,889 (7,343)**	**1,353**	**2,194**	**671**	**1,388**	**8,694**	**20,560 (8,014)**	**2,741**

* Percentages and NISP in brackets exclude the thousands of hake bones in three levels of unit N18-20/E6-8.

** Other includes Bluefin Tuna, Pacific Cod, Pollock, Gadid, Skate, Plainfin Midshipman, Sevengill Shark, Sablefish, Anchovy.

Table 17. Fish fauna, 2006 total sample.

Taxa	House Floor	Sub-Floor Midden	Back Terrace	NISP
Dogfish (%)	9	2	**13**	1,100
Ratfish (%)	2	3	4	246
Hake (%)	16	**32**	1	1,932
Flatfish (%)	6	**12**	3	800
Herring (%)	2	4	9	407
Salmon (%)	**30**	3	17	3,230
Sculpin (%)	1	1	3	184
Perch (%)	2	3	3	268
Lingcod (%)	2	<1	2	226
Greenling (%)	8	13	**27**	1,403
Rockfish (%)	19	**26**	19	2,450
Other (%)	2	<1	<1	178
Total %	**99**	**99**	**101**	
NISP	**9,976**	**1,063**	**1,388**	**12,426**

The marked shift to salmon in the house floor levels is maintained in the full unit 2006 sample but is not as marked in the full 2006 sample (30%). Salmon are supplemented by the lesser focus on greenling and rockfish. In the total 2006 sample there is also a slightly higher percentage of dogfish and hake in the house floor levels. It is possible that this represents also some mixing of the lower deposits.

In the back terrace units, the 2004 and 2006 full unit samples generally agree well (Table 15). Greenling and rockfish are the principal taxa with slightly lesser amounts of salmon, dogfish and perch. Again, it is well to keep in mind that herring are definitely strongly underrepresented in the level samples, as is clearly shown in the 2004 column samples.

The taxa represented by the category "Other" are not present in sufficient quantities to provide reliable patterning. It is, however, worth noting that Pacific cod, bluefin tuna, gadid, plainfin midshipman, skate and anchovy occur in all three stratigraphic subdivisions and pollock in both house floor and sub-floor midden, while a single tooth of sevengill shark comes from the house floor and a single bone of sablefish from the sub-floor midden.

Within the category flatfish, the Petrale sole is the most frequently occurring species and halibut is found in low frequencies in each of the three stratigraphic divisions. Among the sculpins, cabezon and red Irish lord are the most frequently occurring species, among the perch, pile perch and among the greenlings, kelp greenling.

Looking at the overall picture presented by the differing samples, it is clear that in both the back terrace deposits and the sub-floor midden deposits, there is a more broad scale exploitation of near shore fish resources while in the later house floor deposits there is a much more concentrated focus on salmon although other taxa are still exploited in considerable numbers.

Season Markers

Establishing season of occupation for each of the three stratigraphic units at Huu7ii is difficult, but a small number of species with restricted seasonal availability in Barkley Sound and/or clear birthing patterns can be used as markers for season of capture and by extension season of occupation, keeping in mind the potential influence of preservation technology. Seasonality data is from Frederick and Crockford 2005 and Campbell et al. 1997.

Northern fur seals clearly maintained breeding rookeries in the Barkley Sound area in previous times. Northern fur seals pup are today born in June and July, are weaned at about four months and until six months of age remain in the vicinity of the breeding rookeries. Today's rookeries are all north of the Aleutian Islands, except for a small rookery re-established in the 1960s on San Miguel Island off California. Outside the breeding season, fur seals are pelagic, staying well off-shore in the Pacific from the Aleutian Islands to California. It is possible that the more southerly rookeries could have had a slightly earlier birthing period. Recent isotopic data suggest that the northwest populations in the past may have had a longer nursing period and the recently weaned pups fed in the offshore vicinity of the rookeries (Newsome et al.

2007). Nursing pups younger than four months clearly mark a summer season of exploitation, young weaned juveniles a late summer early fall season. The Barkley Sound area would also have had access to the migratory females and older juveniles heading north in the spring to breed on the Pribilof Islands. During the winter and early spring season fur seals today range well off shore, returning to near shore waters around Barkley Sound in April on their way to the northern breeding rookeries. Migratory adult animals and older juveniles, then, would be available late spring through early fall. The presence of very young harbor seals and northern sea lions can also be used to mark the summer season.

While the spring northward migratory movement of the grey whale along the west coast of Vancouver Island is well established, and DNA analysis confirms the presence of this species in the Huu7ii faunal assemblage, some grey whales are recorded off the Barkley Sound area well outside this season. Additionally, the vast majority of the whale bones identified using DNA are in fact humpback whale, a species formerly with a resident population in Barkley Sound.

Among the birds, shearwaters, albatross, turkey vulture, sharp-shinned hawk, bufflehead duck, white-fronted goose, and snow goose are the most useful season markers for the Barkley Sound area. Shearwaters are common off the west coast of Vancouver Island from March through November, with the peak period of abundance May through October. They are absent December through February. Short-tailed Albatross are only present in the Barkley Sound area in the summer months, remaining offshore. The turkey vulture is present mid spring through fall with a well established migratory pattern, gathering in large concentrations to head south in the fall. They are not present on Vancouver Island during the winter months. Bufflehead ducks do not breed in the Barkley sound area but are present there in the winter. The sharpshinned hawk, snow goose and white-fronted goose are fall and spring migrants through the Barkley Sound area.

A number of fish species are also season markers. While some salmon are available year around, the numbers are greatly increased during the late summer through fall spawning season. While there are no sizable streams or rivers on Diana Island, pinks, chum and coho heading for streams draining into Alberni Inlet would be passing by the island in large numbers between August and January. These fish could be taken in marine waters on their way to the spawning grounds, although the site residents may also in later times have had access to a wider territory, including the lower Alberni Inlet region. It is possible that the salmon remains in the Huu7ii site represent dried/smoked fish caught elsewhere and preserved for winter consumption. This interpretation is suggested by the high proportion of vertebral elements to cranial elements in the faunal remains from the site (Frederick et al. 2006). An abundance of salmon remains, then, likely represents the period from late summer through winter.

Herring are also available in Barkley Sound for much of the year, but they are much more abundant from late September through May, with a period of peak abundance close in shore during the February through May spawning season. They too were smoked for later consumption by more recent populations and likely this is a long established pattern. However, their peak availability for capture is certainly spring.

Several species of marine fish recorded in the Huu7ii fauna are only available off the west coast of Vancouver Island during the late spring and summer months. These include hake, anchovy, Pacific sardine (found in the 2004 column samples) and bluefin tuna. The presence of these species is directly related to a complex interplay of environmental circumstances, including the El Nino-Southern Oscillation cycles, resulting in fluctuations in ocean temperatures. These species are good summer season markers.

Summary Discussion of Changes Through Time

The more than 80,000 faunal specimens analyzed from the Huu7ii Village site level samples present a clear picture of a marine focused subsistence pattern, but one which also changed through time. The addition of the 2006 level sample basically confirms the major patterns established in the 2004 sample (Frederick et al. 2006) and clarifies some questions arising from the 2004 results. In general, the fishing activities become more focused and less broadscale through time, while the opposite is so for bird and mammal remains. The most significant shifts through time are summarized briefly.

Back Terrace (5000–3000 BP)

The fauna indicate a broadscale exploitation of local resources. Fish remains are of primarily inshore fish species, most importantly herring, (based on 2004 column data), then rockfish and greenling,

with lesser amounts of salmon, perch and dogfish. Deer is the most important land mammal, with many mink bones also present. There is at present no clear explanation for this high frequency of mink in the older deposits. Dog remains are particularly frequent in these deposits and include a high proportion of small dogs. Sea mammals, especially porpoise/dolphin, then whale and fur seal, with lesser amounts of sea lion and harbor seal, are more frequently occurring than the land mammals, confirming the marine focus of the economy. Bird remains are few, those present being primarily ducks, geese, and forest/forest edge birds, although albatross is represented. The land mammal and most bird and fish remains suggest an inshore focus to the exploitation activities. The focus on white-sided dolphin and whale, however, together with the presence of a few albatross and bluefin tuna bones, clearly indicates the offshore maritime capabilities of the site occupants.

Season of occupation would seem to be broad. The albatross, very young fur seal pups, anchovy (2004 column data), hake and blue-fin tuna clearly mark a summer presence. The focus on geese suggests the fall and spring migratory seasons, spring also being marked by the frequency of herring remains. Salmon remains suggest a fall and possibly winter occupation.

Midden Deposits Below House 1 Floor (c. 1500–800 BP)

The major focus of subsistence activities remains marine inshore fish in these deposits. There is a shift, however, to a greater focus on hake, along with rockfish, flatfish and dogfish. Herring and anchovy remain important (2004 column sample data). While the focus on hake is less marked in the enlarged sample, clearly showing that the "dump" in the one 2004 unit is an anomaly rather than a site wide pattern, hake still figures strongly in the combined data even when this anomaly is removed from consideration. Salmon are less commonly occurring than in the back terrace deposits. As suggested in the 2006 report, hake and anchovy increase in frequency in the upper levels of this stratigraphic unit, suggesting that a period of oceanic conditions more favourable to these species occurred just prior to 800 BP

There are fewer land mammal remains in the sub-floor midden deposits than in either of the other two stratigraphic units. In terms of relative frequency of land mammals, deer are even more frequently occurring than in the back terrace deposits, with few other land mammal species present. Dog remains are still frequent, though less numerous than in the back terrace deposits. The frequency of sea mammal remains increases in the sub-floor midden deposits. Among the sea mammals, there is a considerable increase in whale remains, even though porpoise/dolphin species are still the most frequently occurring sea mammal taxon. Within porpoise/dolphins, there is a shift in focus from the white-sided dolphin to the harbor porpoise. Fur seals and harbor seals decrease slightly in frequency while sea otter and northern sea lion occur in much the same frequency as in the older deposits.

A wide range of bird species was being utilized and the overall quantity of bird remains increased. The more marine focus is also seen here, with cormorants, loons, gulls, and alcids now far more frequently occurring than ducks and geese or forest/forest edge birds. Both albatross and shearwaters are present, also suggesting a more off-shore focus.

As with the back terrace deposits, spring through fall seasons of exploitation are represented but the summer season is more strongly marked. The very young fur seal pups, albatross, hake, bluefin tuna and anchovy are joined by turkey vulture and shearwaters. Of particular importance is the increased frequency of occurrence of hake, strongly marking this season. Herring remain important, marking the spring season. The relative decrease in salmon remains may suggest less winter occupation, if these are preserved fish.

Altogether, there is a suggestion that these deposits are perhaps more strongly focused towards off-shore resources and the summer season.

House 1 Floor Deposits (c. 800–400 BP)

The greatest changes in faunal taxa and frequencies occur with the shift from the sub-floor midden deposits to House 1 floor deposits. Land mammal remains are still not frequent overall, but in these deposits there is a decreased focus on deer, with three taxa present, in very low frequencies, that are not found in either of the other two stratigraphic units: elk, marten and black bear. Although marten and black bear could be found on Diana Island, they and definitely elk are more likely to have been procured on the larger Vancouver Island perhaps representing access to a wider territory of exploitation or increased trade/kin connections. River otter and mink are also more frequent in the house floor deposits than in the midden deposits. Dogs remain important in these deposits, but the proportion of the sample that is young or very young puppies is substantially greater than in the other deposits.

Among sea mammals, whale continues to be important as do porpoise/dolphin species, but the latter are decreased in frequency from the midden deposits. There is a slight increase in the focus on fur seal and harbor seal. The most marked change, however, is a considerable increase in frequency of sea otter remains relative to their presence in older deposits, although they are still few in actual numbers. There is also a decrease in the actual frequency of sea mammal remains from the midden deposits (combined 2004/2006 full unit sample NISP 421) to the house floor deposits (combined 2004/2006 full unit sample NISP 281). This might simply represent patterns of disposal of remains related to an inside the house/outside the house context, or represent a real decrease in exploitation.

Among the bird taxa, the shifting focus to more marine birds is strengthened, with shearwaters, alcids, and loons all increasing in frequency. Also apparent is a marked increase in the actual frequency of bird remains in these deposits, with a NSIP of 329 for the combined 2004/2006 full unit sample compared to that of 88 for the midden deposits and only 38 for the back terrace deposits. While the latter figure is impacted by the fact that only two units are represented by this sample, the subfloor midden sample comes from the same number of units and a greater depth of deposit than the house floor sample.

It is with the fish, however, that we see the most marked changes. Fully 68% of the House 1 floor fish remains (combined 2004/2006 full unit sample) are salmon, a huge increase in frequency from earlier deposits, even though the actual number of fish remains differs little between the midden deposits (excluding the anomalous "dump" of hake) and the house floor deposits (Table 16). There is a corresponding decrease in the relative frequency of nearly all other taxa, although greenling and rockfish are still quite important. Anchovy (2004 column data) and hake in particular are decreased in abundance relative to the older midden deposits. Herring remains important (based on the 2004 column sample data). Shifts of this magnitude suggest a major change in taxa exploited, in access to those taxa, a change in season of occupation, or some combination of these factors.

Given the absence on Diana Island of a major salmon spawning stream, an increase of such size does suggest access, either direct or through trade or kin links, to a wider territory of exploitation, one including a major salmon spawning stream or streams. It may also reflect a longer period of winter occupancy, if the salmon remains represent preserved fish. The preponderance of vertebral relative to cranial elements in the salmon sample does suggest that these may be preserved fish remains (Frederick et al. 2006). The marked decrease in both hake and anchovy may also argue for a less intensive occupation during the summer months, but the presence still of albatross, shearwaters, bluefin tuna, unweaned fur seal pups and some hake and anchovy clearly indicates some summer occupation. The occurrence of migratory ducks and geese and the continued importance of herring mark the shouder seasons. It is also possible that the increase in salmon remains and decrease in hake and anchovy reflects a change in availability related to ecological rather than socio-cultural factors. The possibility of such regional shifts in availability related to complex oceanic and climatic variables has yet to be fully explored.

The shifts in mammal taxa combined with the marked focus on salmon in the house floor deposits may also reflect the imprint of a fully realized ranked social system associated with ownership of access to resources and the accumulation of surplus. The increased sea otter and the land mammal taxa found in these deposits but not in earlier ones, elk, black bear and marten, might be considered species associated with the elite, either as preferential food or associated with elite accoutrements. Again, caution is urged in this interpretation as the land mammal samples are small and there is a strong correlation between size of sample and number of species represented.

All these potential explanations of the patterns observed need to be analyzed within a regional context, both that of Barkley Sound as a cultural and ecological area, and the wider context of the west coast of Vancouver Island.

B. Horizontal Patterning of Fauna within 2006 House 1 Floor Deposits

A major question is whether or not there are distinctive and meaningful differences in the horizontal distribution of the fauna within House 1 which might be used to identify activity areas and/or ranked family areas. To examine this question the relative frequencies by NISP of bird and mammal remains from selected levels of nine 2006 excavation units, down to 4.15 D.B.D., are presented in Tables 18 to 27.

Bird, mammal and fish NISP/NSP from the single level 3.80–3.85 D.B.D. are presented following each full house floor deposit table. The sample sizes for bird and mammal from this single level

are often very small, making interpretation difficult, but these more specific data do help to clarify some of the patterns seen in the larger sample.

Figures 6 through 10 also present the actual number of bird and mammal remains in each unit sample of house floor to 4.15 D.B.D, including both specifically identified and unidentified remains. In interpreting these figures one needs to remember that the sample from unit N18-20/E34-36 represents a greater volume of deposit, 16 levels rather than the 6 to 9 levels of the other units, because these deposits begin at 3.10 D.B.D. rather than between 3.40 and 3.60 D.B.D. This presumably represents the buildup at the edge of the house depression.

Major Category Patterns

Looking first at the actual number of all bird and mammal remains recovered from the House 1 floor deposits in these units (Fig. 6), it is apparent that despite the greater depth of deposit in unit N18-20/E34-36, it is unit N12-14/E18-20 on the southern periphery of the house floor that produced the greatest number of bird and mammal remains. Unit N16-18/E18-20 located towards the center of the house floor produced the next highest frequency, then units N18-20/E18-20 and N18-20/E34-36. The concentration in N12-14/E18-20 is produced by land mammal, dog and sea mammal remains, but not bird remains. N18-20/E34-36 has greater concentrations of land mammal, dog and bird remains, while the concentration in unit N16-18/E18-20 is the result of a concentration of sea mammal remains (Figs. 7–10).

Patterning that takes into account the discrepancy in volume of deposit represented and is perhaps more meaningful, is presented in Tables 18–27. Percents in *italics* are the proportion of the taxon NISP in that unit. Percents **not in italics** are the proportion of the unit total represented by the taxon. Note that the higher numbers for unit N18-20/E34-36 result partially from the greater number of levels identified for this unit. Cells with an dark shaded background are those with higher than expected frequencies of that taxon, given both the overall frequency of the taxon and the proportion of the total sample in that particular excavation unit. Those cells with a lightly shaded background have lower than expected frequencies. The relative frequencies of taxa with a very low NISP are not considered in this patterning as the sample size effect is too great.

Looking at the distribution of the major categories including both specifically identified bone and bone only identified to major category (Table 18) it is clear that two units contain a disproportionate amount of the total identified bird and mammal bone sample, N12-14/E18-20 and N18-20/E34-36. Both these units are at the peripheries of the house depression (Fig. 3) and may in fact contain some midden ridge deposits from outside the house. The higher proportion of identified relative to total bone in these units may also partly result from the frequency of dog remains in these units. The greater amount of bone from unit N18-20/E34-36 also results from the greater number of levels identified for this unit, twice the number of levels as for any other unit. This makes the concentration in unit N12-14/E18-20 even more anomalous, especially as this unit also contains considerable disturbance from features. Units N16-18/E18-20 and N18-20/E18-20 also contain higher concentrations of bone, and are positioned just to the east of several hearth features in the contiguous central units (Fig. 4).

It is apparent that there is a higher than expected proportion of commensal mammals in unit N12-14/E18-20, a slightly higher than expected

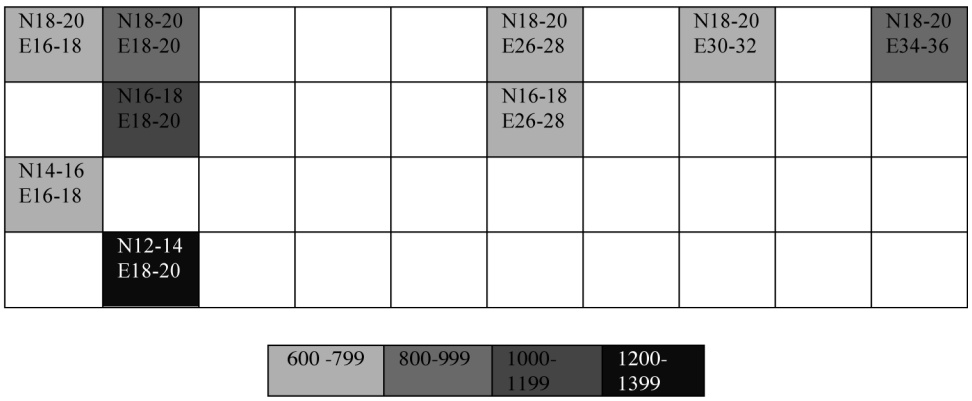


Figure 6. 2006 House 1 floor to 4.15 D.B.D. bird and mammal NSP/NISP.

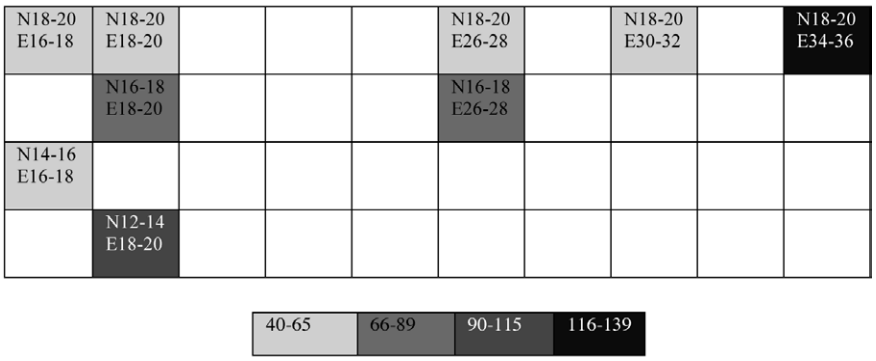


Figure 7. 2006 House 1 floor to 4.15 D.B.D. land mammal NSP/NISP.

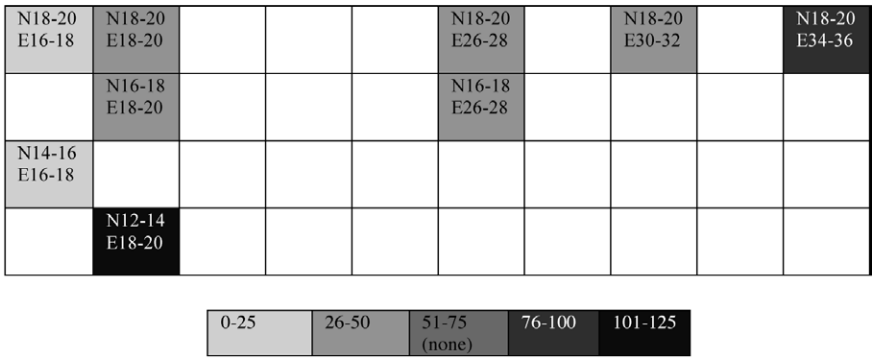


Figure 8. 2006 House 1 floor to 4.15 D.B.D. commensal mammal NISP.

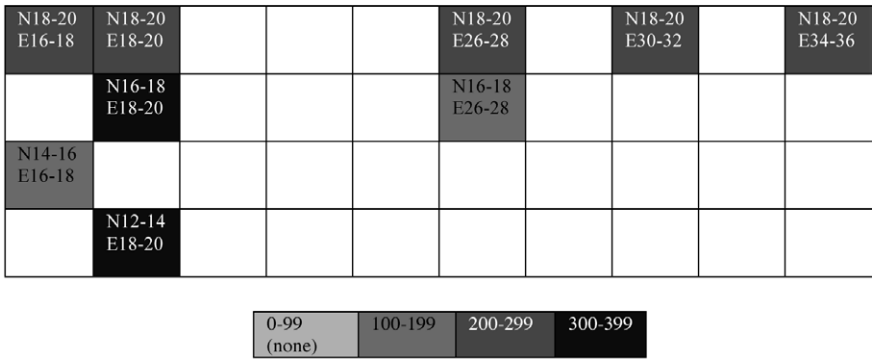


Figure 9. 2006 House 1 floor to 4.15 D.B.D. sea mammal NSP/NISP.

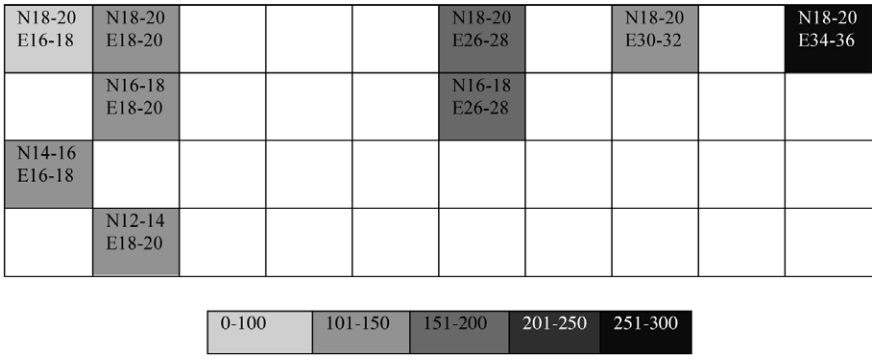


Figure 10. 2006 House 1floor to 4.15 D.B.D. bird NSP/NISP.

Table 18. Horizontal distribution of major faunal categories including unidentifed bone, 2006 House 1 floor deposits to 4.15 D.B.D.

Taxa	Excavation Unit									Tot.%	Total NISP/NSP	Sample % Tot. Bone	Sample % Id'd Bone (Code 20+)
	N12-14 E18-20	N14-16 E16-18	N16-18 E18-20	N18-20 E16-18	N18-20 E18-20	N16-18 E26-28	N18-20 E26-28	N18-20 E30-32	N18-20 E34-36				
Land Mammal (%)	*16* 8	*9* 8	*10* 6	*8* 8	*7* 5	*12* 11	*7* 7	*10* 10	***21*** ***13***	*100*	655	8	8
Commensal Mammal (%)	***29*** ***9***	*5* 3	*11* 4	*3* 2	*7* 3	*11* 6	*7* 4	*7* 4	***20*** ***8***	*100*	413	5	25
Sea Mammal (%)	*16* 28	*6* 19	*14* 30	*10* 34	*12* 29	*9* 27	*11* 34	*9* 33	*13* 29	*100*	2,266	29	40
Bird (%)	*9* 9	*9* 15	*8* 10	*7* 15	*9* 12	***14*** ***25***	***12*** ***21***	*10* 19	***22*** ***27***	*99*	1,278	16	27
Undeter. Mammal (%)	*19* 46	*13* 55	***17*** ***50***	*8* 41	***15*** ***50***	***7*** ***32***	*8* 34	*7* 34	*6* 22	*100*	3,141	41	
Total %	100	100	100	100	99	101	100	100	99			99	100
Total NISP/NSP	1,302	750	1,062	641	954	701	723	651	969		7,753		NISP 1,651
Unit % Total Bone	*17*	*10*	14	8	12	9	9	8	12	99			
Unit % Id'd% Bone (Code 20+)	*18*	*7*	*11*	*7*	*13*	*7*	*9*	*10*	*19*	*101*			
No. of Levels Id'd	8	9	7	7	6	8	6	7	16				

Table 19. Horizontal distribution of major faunal categories, including unidentified bone, 2006 House 1 floor deposits at 3.80–3.85 D.B.D., NISP/NSP.

Taxa	Excavation Unit												Total NISP/NSP	*Sample Taxon % without no fish units*
	N12-14 E16-18	N12-14 E18-20	N14-16 E16-18	N14-16 E18-20	N16-18 E16-18	N16-18 E18-20	N18-20 E16-18	N18-20 E18-20	N16-18 E26-28	N18-20 E26-28	N18-20 E30-32	N18-20 E34-36		
Land Mammal	19	19	13	7	11	21	4	13	7	4	29	16	163	*2*
Comm. Mammal	9	9	2	10	2	16	0	6	1	6	13	31	105	*1*
Sea Mammal	68	75	42	66	56	117	10	46	8	34	74	59	655	*6*
Undet. Mammal	108	173	121	146	45	165	16	80	24	25	120	30	1043	*10*
Bird	20	13	16	13	16	40	15	37	28	51	30	55	334	*3*
Fish	1,449	Not Id'd	428	873	379	1540	291	385	337	Not Id'd	880	383	6,945	*79*
Total NISP/NSP	1,673	289	622	1,115	509	1,899	336	557	405	120	1,146	574	9,245	
Tot. NISP/NSP without Fish	224	289	194	242	130	359	45	172	68	120	266	191	2,300	
Total Unit Sample % Bird And Mammal	*10*	*13*	*8*	*11*	*6*	*16*	*2*	*7*	*3*	*5*	*12*	*8*	2,300	*101*
Total Unit Sample % With Fish	*19*	*Not Id'd*	*7*	*13*	*6*	*21*	*4*	*6*	*5*	*Not Id'd*	*13*	*6*	8,836	100

concentration in N18-20/E34-36 and a lesser concentration in unit N18-20/E16-18. Bird and land mammal remains are present in higher than expected relative frequencies in unit N18-20/E34-36. Bird remains are also more frequent than expected in units N16-18/E26-28 and N18-20/E26-28. The pattern for sea mammals is less strongly marked, but a lower than expected relative frequency is present in unit N14-16/E16-18.

A comparison of identified to unidentified bone reveals that a higher proportion of bird, sea mammal and especially commensal mammal specimens are identified than is the case for land mammals. This may indicate a greater fragmentation of land mammal bones for the production of artifacts with much probable land mammal bone ending up in the Undetermined Mammal category. There does not seem to be any concentration of unidentified bone in a particular unit although there is a suggestion of a slightly lower proportion of identified to unidentified bone in the more central units of the house floor.

Some of these patterns are maintained in the single level sample from 3.80–3.85 D.B.D. but the addition of more units and fish complicates the picture. Here, as in the larger sample, commensal mammals and bird are present in higher than expected frequency in N18-20/E34-36; bird are low in N12-14/E18-20; N16-18/E18-20 is high in undetermined mammal; N18-20/E16-18 is low in commensal mammal; N16-18/E26-28 is low in undetermined mammal. But the strong emphasis on land mammal in N18-20/E34-36 seen in the full house floor sample is not reflected in the smaller sample, nor is the emphasis on commensal mammal seen in N12-14/E18-20. In both samples, units N12-14/E18-20 and N16-18/E18-20 have the two highest concentrations of bone, with or without fish. In the single level, this concentration is driven by greater amounts of either sea mammal and undetermined mammal or just undetermined mammal, suggesting greater fragmentation of bone in these areas. In the larger sample, the high frequency in N12-14/E18-20 is driven primarily by commensal mammal, but there is also a relatively high frequency of undetermined mammal. In the single level sample, unit N18-20/E16-18, vertebrate faunal remains are particularly sparse, especially bird and mammal. This may relate to the presence in this level of a hearth feature taking up much of the unit.

The fish sample is clearly concentrated in two main units in the 3.80–3.85 D.B.D. sample, N12-14/E16-18 and N16-18/E18-20.

Taxa Patterns

These patterns are further elucidated by more detailed breakdown into species and taxa group distributions (Tables 20 to 27). If one looks at the breakdown within faunal categories, it is apparent that the high bone concentration in unit N12-14/E18-20 is driven by the higher than expected amount of dog bone in this unit. The concentration in unit N18-20/E34-36, on the other hand, is driven by higher than expected amounts of land mammal and bird bone. Higher than expected concentrations of sea mammal bone are found in the two central units N18-20/E16-18 and N18-20/E18-20. Figures 6 to 10 also agree with these patterns.

Land and Commensal Mammal Fauna

Land Mammal Taxa

Even with this augmented 2006 sample, the frequencies of identified land mammal remains in the house floor deposits are so small that real patterns of distribution are difficult to substantiate (Tables 20 and 21). There are only 125 bones spread between 7 taxa, with the vast majority (NISP 88, 66%) being deer. River otter has a NISP of 19, while the other five taxa are represented by 10 or fewer specimens. Given this cautionary note, elk remains do seem more concentrated in units N12-14/E18-20 and N14-16/E16-18, towards the southern edge of the house floor. There is in general a strong correlation between sample size and number of species represented, with the chances of rare species showing up greatly increased with larger samples. The unit N14-16/E16-18, although it has one of the smaller samples, still produced four species of land mammal, including two of the less frequently occurring species, elk and mink. This does suggest that the presence of two rare species in this unit is anomalous. Additionally, six of the nine identified specimens from this unit come from the single level 3.80–3.85 D.B.D. This also is an anomalous pattern.

Also apparent in both the full house floor sample and the single level 3.80–3.85 D.B.D. sample, is the low frequency of remains in unit N18-20/E16-18. This might relate to the presence in this unit of extensive features, or to the location of the unit towards the center of the house. Again, sample sizes are still too small to present reliable patterning.

Commensal Taxa

Only dog remains, no deer mouse, were found in this portion of the 2006 sample. There are more

Table 20. Horizontal distribution of identified land mammal and commensal mammal fauna, 2006 House 1 floor deposits to 4.15 D.B.D.

Taxa	Excavation Unit									Tot. %	NISP	Sample %
	N12-14 E18-20	N14-16 E16-18	N16-18 E18-20	N18-20 E16-18	N18-20 E18-20	N16-18 E26-28	N18-20 E26-28	N18-20 E30-32	N18-20 E34-36			
Deer (%)	*10* 67	*4* 33	*6* 29	*2* 50	*12* 66	*15* 86	*6* 50	*7* 75	***38*** **86**	*100*	82	66
Elk (%)	***30*** **25**	***30*** **33**	*10* 6	*0* 0	*0* 0	*0* 0	*10* 10	*10* 13	*10* 3	*100*	10	8
River Otter (%)	*5* 8	*5* 11	***32*** **35**	*5* 25	***26*** **33**	*0* 0	***16*** **30**	*0* 0	*11* 6	*100*	19	15
Mink (%)	*0* 0	***25*** **22**	***50*** **24**	***13*** **25**	*0* 0	*0* 0	*0* 0	*13* 13	*0* 0	*101*	8	6
Raccoon (%)	*0* 0	*0* 0	*0* 0	*0* 0	*0* 0	*33* 7	*33* 10	*0* 0	*33* 3	*99*	3	2
Bear, Canid (%)	*0* *0*	*0* 0	*0* 0	*0* 0	*0* 0	*50* 7	*0* 0	*0* 0	*50* 3	*100*	2	2
Beaver (%)	*0* 0	*0* 0	*100* 6	*0* 0	*0* 0	*0* 0	*0* 0	*0* 0	*0* 0	*100*	1	1
Total %	100	99	100	100	99	100	100	101	101			*100*
NISP	12	9	17	4	15	14	10	8	36		125	
Unit Sample %	*9*	*7*	*14*	*3*	*12*	*11*	*8*	6	29	100		
Dog (%)	***29***	*5*	*11*	*3*	*7*	*11*	*7*	*7*	*20*	*100*		
NISP	121	22	44	14	27	45	28	29	83		413	

Table 21. Horizontal distribution of land mammal and commensal mammal fauna, House 1 floor at 3.80–3.85 D.B.D. NISP

Taxa	Excavation Unit												Total NISP	*Sample Taxon%*
	N12-14 E16-18	N12-14 E18-20	N14-16 E16-18	N14-16 E18-20	N16-18 E16-18	N16-18 E18-20	N18-20 E16-18	N18-20 E18-20	N16-18 E26-28	N18-20 E26-28	N18-20 E30-32	N18-20 E34-36		
Deer	2	2	2	1	1	2	0	4	1	0	2	7	24	*60*
Elk	0	0	1	0	0	0	0	0	0	0	0	1	2	*5*
Raccoon	0	0	0	1	0	0	0	0	1	0	0	1	3	*7.5*
River Otter	0	1	1	0	1	0	0	0	0	2	0	0	5	*12.5*
Mink	0	0	2	0	0	3	0	0	0	0	1	0	6	*15*
Total NISP	2	3	6	2	2	5	0	4	2	2	3	9	40	
Id'd Unit Sample %	*5*	*8*	*15*	*5*	*5*	*13*	*0*	*10*	*5*	*5*	*8*	***23***		*100*
Dog	9	9	2	10	2	16	0	6	1	6	13	31	105	
Id'd Unit Sample %	*9*	*9*	*2*	*10*	*2*	*15*	*0*	*6*	*1*	*6*	*12*	***29***		*101*
Unid'd L. Mam. NSP	17	16	7	5	9	16	4	9	5	2	26	7	123	
Total NSP/NISP	28	28	15	17	13	37	4	19	8	10	42	47	268	
Total L./C. Mam. Unit Sample %	*10*	*10*	*6*	*6*	*5*	*14*	*<1*	*7*	*3*	*4*	***16***	***18***		99

Table 22. Horizontal distribution of dog age classes, 2006 House 1 floor deposits to 4.15 D.B.D.

Age Class	Excavation Unit									NISP	Total Sample %
	N12-14 E18-20	N14-16 E16-18	N16-18 E18-20	N18-20 E16-18	N18-20 E18-20	N16-18 E26-28	N18-20 E26-28	N18-20 E30-32	N18-20 E34-36		
Adult/Subadult (%)	*43*	*53*	*53*	*44*	*54*	*53*	*36*	*54*	*36*	73	*49*
Juvenile (%)	*21*	*40*	*37*	*44*	*33*	*47*	*29*	*31*	***63***	52	*35*
Foetal/<12 Weeks (%)	***36***	*7*	*11*	*11*	*13*	*0*	***36***	*15*	*0*	23	*16*
Total %	*100*	*100*	*101*	*99*	*100*	*100*	*101*	*100*	99		*100*
NISP	*28*	*15*	*19*	*9*	*15*	*15*	*14*	*14*	*30*	148	
No. of Levels Id'd	8	9	7	7	6	8	6	7	16		

dog remains (NISP 413) in the House 1 floor deposits than any other mammal taxon. There is a clear concentration of dog remains in unit N12-14/E18-20, at the southern edge of the house floor. This horizontal pattern is not strongly associated with the level 3.80–3.85 D.B.D., just with the full house floor deposit sample. But there is a high frequency of dog remains in the 3.80–3.85 D.B.D. floor level, with 105 specimens associated with this level alone.

One hundred and fourteen of the dog specimens could be confidently assigned to an age class. All age ranges are present from foetal to aged adult, with 49% of the sample Adult/Subadult, 35% Juvenile and 16% Foetal/Newborn <12 Weeks. This follows the pattern identified in the 2004 house floor deposits, although there is in the 2006 sample a higher proportion of juvenile and slightly lower proportion of adult/sub-adult remains. As in the 2004 sample, very young juvenile, new born and foetal remains are strongly represented in the house floor deposits. This contrasts with the subfloor midden deposits where they are in very low frequency. The horizontal distribution of dog age classes in the 2006 house floor deposits is given in Table 22. Two units, N12-14/E18-20 and N18-20/E26-28, contained a higher than expected percentage of foetal or newborn specimens, while unit N18-20/E34-36 has a higher than expected percentage of juveniles.

Fifty-four of the dog specimens were assigned a visual inspection size class. Of these, 67% represent small dogs, 24% represent small/medium dogs and only 10% are clearly larger dogs. These percentages agree reasonably well with those obtained from the measured 2004 dog sample (Frederick et al. 2006). These figures suggest that a large proportion of the dogs present in the house floor deposits represent small dogs.

Sea Mammal Taxa

In the full house floor sample, sea mammal remains are somewhat more concentrated in units N12-14/E18-20 and N18-20/E18-20 (Table 23). There is a noticeable concentration of sea otter remains in N18-20/E34-36. There is a concentration of harbor seal remains in this unit as well. Among the other sea mammals, the northern fur seal remains are more concentrated in three units, N12-14/E18-20, N16-18/E18-20 and N18-20/E16-18, while the porpoise remains are more concentrated in four units, N14-16/E16-18, N16-18/E18-20, N18-20/E28-6-28 and N18-20/E34-36 and whale remains are concentrated in two units, N18-20/E18-20 and N18-20/E30-32. Northern sea lion remains are more concentrated than expected only in unit N16-18/E26-28.

These patterns do not all seem to hold for the single level sample 3.80–3.85 D.B.D. (Table 24). Here, unit N16-18/E18-20 has the greatest frequency of all sea mammal remains (NSP/NISP) while units N14-16/E16-18, N16-18/E18-20 and N18-20/E30-32 have concentrations of identified remains (NISP). In units N14-16/E16-18 and N18-20/E30-32 this is driven by a higher occurrence of whale remains and in N16-18/E18-20 by a concentration of fur seal. No rationale for these patterns is immediately apparent.

Bird Taxa

The sample sizes for bird fauna, as mentioned, are small with only one of the nine units producing more than 50 identified bird specimens. Taxa therefore have been grouped to try to even out small sample size anomalies (Table 25). Bird remains in general are much more frequently occurring in unit N18-20/E34-36 as mentioned above. This concentration is seen to be primarily shearwaters. Goose and duck, on the other hand,

Table 23. Horizontal distribution of sea mammal fauna, 2006 House 1 floor deposits to 4.15 D.B.D.

Taxa	Excavation Unit									Tot. %	NISP	Sample %
	N12-14 E18-20	N14-16 E16-18	N16-18 E18-20	N18-20 E16-18	N18-20 E18-20	N16-18 E26-28	N18-20 E26-28	N18-20 E30-32	N18-20 E34-36			
Sea Otter (%)	*0* 0	*0* 0	*11* 2	*0* 0	*5* 1	*5* 5	*0* 0	*5* 1	***74*** 16	*100*	19	3
Northern Sea Lion (%)	*17* 6	*7* 8	*10* 5	*10* 6	*12* 4	***14*** 29	*14* 11	*0* 0	*17* 8	*101*	42	6
Northern Fur Seal (%)	***27*** 29	*5* 16	***21*** 33	***16*** 32	*9* 10	*2* 10	*10* 23	*2* 4	*7* 11	*99*	127	19
Harbour Seal (%)	*18* 6	*8* 8	*12* 6	*5* 3	*8* 3	*3* 5	***15*** 11	*12* 6	***20*** 9	*101*	40	6
Elephant Seal (%)	*0* 0	*0* 0	*100* 1	*0* 0	*0* 0	*0* 0	*0* 0	*0* 0	*0* 0	*100*	1	<1
Ottarid/Pinniped (%)	*12* 5	*14* 18	*16* 10	*23* 17	*2* 1	*4* 10	*2* 2	*8* 5	*18* 10	*99*	49	7
Porpoise Sp. (%)	*12* 13	***11*** 37	***17*** 26	*7* 14	*15* 15	*4* 24	***13*** 28	*3* 5	***17*** 24	*99*	123	18
Whale Sp. (%)	*19* 42	*2* 13	*5* 16	*6* 27	***29*** 66	*1* 19	*6* 26	***26*** 80	*7* 22	*101*	269	40
Total %	101	100	99	99	100	102	101	101	100			100
NISP	119	38	81	63	117	21	57	85	89		670	
Unit Sample %	*18*	*6*	*12*	*9*	*17*	*3*	*9*	*13*	*13*	*100*		

Table 24. Horizontal distribution of sea mammal fauna, 2006 House 1 floor deposit at 3.80–3.85 D.B.D.

Taxa	Excavation Unit												Total NISP	*Sample Taxon%*
	N12-14 E16-18	N12-14 E18-20	N14-16 E16-18	N14-16 E18-20	N16-18 E16-18	N16-18 E18-20	N18-20 E16-18	N18-20 E18-20	N16-18 E26-28	N18-20 E26-28	N18-20 E30-32	N18-20 E34-36		
Sea Otter	1	0	0	0	0	0	0	1	0	0	0	0	2	*1*
Northern Sea Lion	1	1	0	0	0	1	0	0	0	4	0	1	8	*4*
Northern Fur Seal	3	6	2	2	5	9	1	2	2	7	0	5	44	*23*
Harbour Seal	1	0	1	0	0	2	0	0	0	1	3	1	9	*5*
Elephant Seal	0	0	0	0	0	1	0	0	0	0	0	0	1	*<1*
Ottarid/Pinniped	1	0	0	5	6	4	1	1	0	1	2	1	22	*12*
Porpoise	8	4	3	3	2	2	1	3	1	1	0	4	32	*17*
Whale	0	8	20	9	3	5	0	0	0	1	23	1	70	*37*
Total NISP	15	19	26	19	16	24	3	7	3	15	28	13	188	*99*
Id'd Unit Sample %	*8*	*10*	***14***	*10*	*9*	***13***	*2*	*4*	*2*	*8*	***15***	*7*		*102*
Unid'd Sea Mam. NSP	53	56	16	47	40	93	7	39	5	19	46	46	467	
Total Sea Mam. NSP/NISP	68	75	42	66	56	117	10	46	8	34	74	59	655	
Total Sea Mam. Unit Sample %	*10*	*11*	*6*	*10*	*9*	***18***	*2*	*7*	*1*	*5*	*11*	*9*		99

Table 25. Horizontal distribution of bird fauna, 2006 House 1 floor deposits to 4.15 D.B.D.

Taxa	Excavation Unit									Tot. %	NISP	Sample %
	N12-14 E18-20	N14-16 E16-18	N16-18 E18-20	N18-20 E16-18	N18-20 E18-20	N16-18 E26-28	N18-20 E26-28	N18-20 E30-32	N18-20 E34-36			
Goose, Duck (%)	*5* 10	*8* 15	*7* 11	***11*** **30**	*9* 15	***16*** **29**	*8* 13	*5* 10	*31* 21	*100*	76	17
Loon, Grebe, Cormorant (%)	*12* 27	***15*** 35	*10* 20	*4* 15	*4* 8	*7* 14	*9* 17	*12* 28	*28* 23	*101*	92	21
Alcids (%)	*2* 5	*10* 20	*13* 24	*6* 19	***20*** **35**	*7* 14	*15* 26	***15*** **31**	*12* 9	*100*	83	19
Albatross, Shearwater, Fulmar etc. (%)	*8* 12	*9* 15	*6* 9	*6* *15*	*14* 19	*11* 17	*5* 6	*6* 10	***36*** **21**	*101*	66	15
Gull Kittiwake, Shorebirds (%)	*11* 22	*4* 8	*13* 22	*4* 11	*8* 13	*11* 21	***19*** **32**	*8* 15	*23* 16	*100*	79	18
Eagle, Hawk, Crow, Raven, Forest Birds (%)	***22*** **24**	*7* 8	*13* 13	*7* 11	*11* 10	*4* 5	*7* 6	*4* 5	*26* 11	*101*	46	10
Total %	100	101	99	101	100	100	100	99	101			
NISP	41	40	45	27	48	42	47	39	114		443	100
Unit Sample %	*9*	*9*	*10*	*6*	*11*	*9*	*11*	*9*	*26*	*100*		

are more frequently occurring than expected in units N18-20/E16-18 and N16-18/E26-28, while loons, grebes and cormorants are seemingly concentrated in unit N14-16/E16-18, and alcids in unit N18-20/E18-20 and N18-20/E30-32. Gulls etc are highest in unit N18-20/E26-28 and raptors, crows and forest birds more frequent in unit N12-14/E18-20. Each unit is different.

Some of the patterns seen in the full house floor deposits are more or less mirrored by the single level more extensive sample from D.B.D. 3.80–3.85 (Table 26). In these samples however, unit N18-20/E26-28 as well as N18-20/E34-36 is seen to have a concentration of bird remains in general. Overall, the sample sizes for bird remains in the single level are just too small even grouped into categories to be reliable.

Fish Taxa

Only the single level 3.80–3.85 D.B.D. was examined for the horizontal distribution of fish remains, with only ten rather than twelve units in the sample. As seen in Table 27, for this one level, dogfish, salmon, rockfish and hake are about equally abundant. Flatfish and greenling are also common. All other taxa are present in frequencies of 2% of the level sample or less. Two units, N12-14/E16-18 and N16-18/E18-20, contain 43% of the total fish sample. Units 18-20/E16-18, N18-20/E18-20 and N16-18/E26-28 all show lower frequencies of fish remains than expected. There does not seem to be a consistent explanation for these distributions.

In units N12-14/E16-18 and N16-18/E18-20 the concentration is formed primarily of dogfish, rockfish, hake and especially flatfish, but not salmon. Salmon, on the other hand, are concentrated in units N14-16/E18-20, N18-20/E30-32 and N18-20/E34-36. Greenling are also higher than expected in N18-20/E34-36. Dogfish and hake are also higher than expected in N14-16/E18-20. The tuna remains are concentrated in unit N14-16/E16-18. As with the bird remains, there is no immediately apparent reason for these patterns.

Summary of Horizontal Patterns Including 2004 Data

Few of the observed concentrations of fauna in the 2006 data, whether of general categories or of more specific groupings, form coherent patterns that could be interpreted as related to rank locations or specific activity areas. Comparison with artifact patterns may be more explanatory. Figures 11 to 15 look at the House 1 Floor samples of specifically identified bird and mammal from both 2004 and 2006 excavation units. The few general patterns that do seem to hold are summarized in the following paragraphs.

Table 26. Horizontal distribution of bird fauna, 2006 House 1 floor at 3.80–3.85 D.B.D.

Taxa	Excavation Unit												Total NISP	*Sample Taxon%*
	N12-14 E16-18	N12-14 E18-20	N14-16 E16-18	N14-16 E18-20	N16-18 E16-18	N16-18 E18-20	N18-20 E16-18	N18-20 E18-20	N16-18 E26-28	N18-20 E26-28	N18-20 E30-32	N18-20 E34-36		
Goose, Duck	1	0	1	0	1	2	1	2	1	4	2	7	22	*22*
Loon, Grebe, Cormorant	3	1	1	1	1	3	0	1	1	0	1	3	16	*16*
Alcids	0	0	1	0	0	6	2	2	2	3	1	0	17	*18*
Albatross, Shearwater	0	0	0	0	0	1	1	2	0	2	0	0	6	*6*
Gull, Kittiwake, Shorebird	1	1	1	2	2	2	0	0	2	10	1	3	25	*26*
Bald Eagle, Crow	1	3	2	0	1	2	0	1	1	0	0	0	11	*11*
Total NISP	6	5	6	3	5	16	4	8	7	19	5	13	97	
Id'd Unit Sample %	*6*	*5*	*6*	*3*	*5*	***17***	*4*	*8*	*7*	***20***	*5*	*13*		99
Unid'd Bird NSP	14	8	10	10	11	24	11	29	21	32	25	42	237	
Total Bird NISP/NSP	20	13	16	13	16	40	15	37	28	51	30	55	334	
Total Bird Unit Sample %	*6*	*4*	*5*	*4*	*5*	*12*	*4*	*11*	*9*	***15***	*9*	***16***		100

Table 27. Horizontal distribution of fish fauna, 2006 House 1 floor deposits at 3.80- 3.85 D.B.D.*

Taxa	Excavation Unit												Total NISP/NSP	Sample Taxon%
	N12-14 E16-18	N12/ E18 *	N14-16 E16-18	N14-16 E18-20	N16-18 E16-18	N16-18 E18-20	N18-20 E16-18	N18-20 E18-20	N16-18 E26-28	N18/ E26*	N18-20 E30-32	N18-20 E34-36		
Dogfish	124		62	124	11	120	3	28	0		18	5	495	*15*
Skate	2		0	0	5	17	1	1	2		2	0	30	*1*
Ratfish	20		5	13	0	0	0	0	0		0	0	38	*1*
Flatfish	103		13	42	11	81	2	14	1		1	3	271	*8*
Herring	2		0	5	0	9	14	0	3		9	2	44	*1*
Salmon	10		8	223	9	16	27	29	58		270	113	563	*17*
Perch	22		12	10	10	15	1	6	0		1	0	78	*2*
Lingcod	15		4	8	6	9	2	4	4		1	1	54	*2*
Greenling	31		16	17	11	43	22	26	8		49	70	296	*9*
Gadid	6		1	15	8	28	0	1	0		4	0	63	*2*
Rockfish	215		66	95	60	243	21	23	6		6	16	751	*23*
Hake	123		66	139	25	190	14	5	0		0	3	565	*17*
Sculpin	1		1	0	0	3	2	1	7		1	12	29	*1*
Tuna	1		8	0	0	1	0	0	0		1	0	11	*<1*
Plainfin Midshipman	1		0	0	1	0	1	0	0		0	0	3	*<1*
Total NISP	676		262	491	157	775	110	138	92		364	225	3,294	*100*
Id'd Unit Sample %	21		*8*	*15*	*5*	***24***	*3*	*4*	*3*		11	7		*101*
Unid'd Fish NSP	773		164	382	222	765	181	247	245		516	158	3,651	
Tot. Fish NSP/NISP	1,449		428	873	379	1,540	291	385	337		880	383	6,945	
Total Fish Unit Sample %	*21*		6	13	5	22	4	6	5		13	5		100

* Fish not identified.

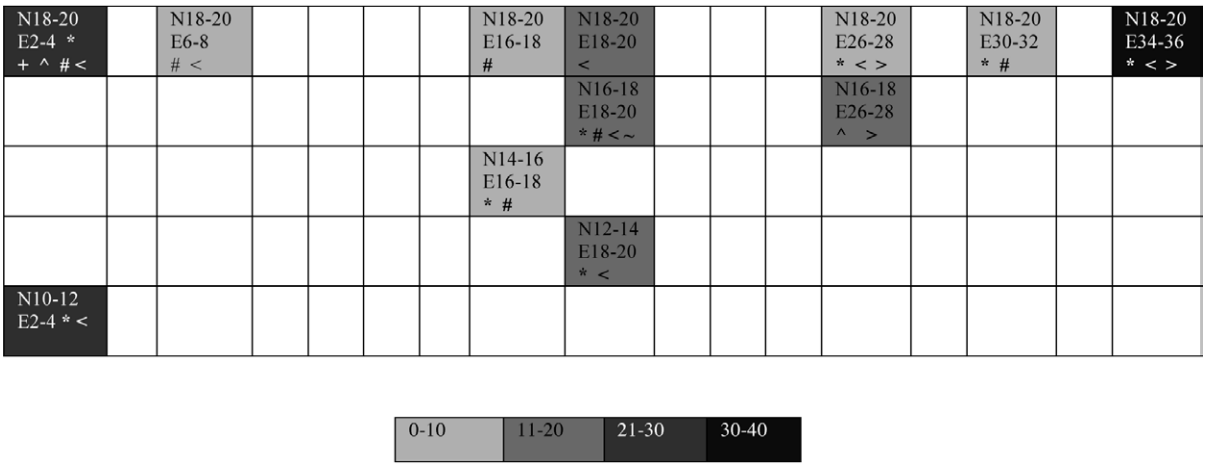


Figure 11. Identified land mammal NISP, 2004 and 2006 House 1 floor. A number of species are present in such small numbers that even their absence should be interpreted with caution. Elk are found in those units with a star (*), mink with a (#), marten with a(+), bear with a (^), river otter with a (<), raccoon with a (>) and beaver with a (~).

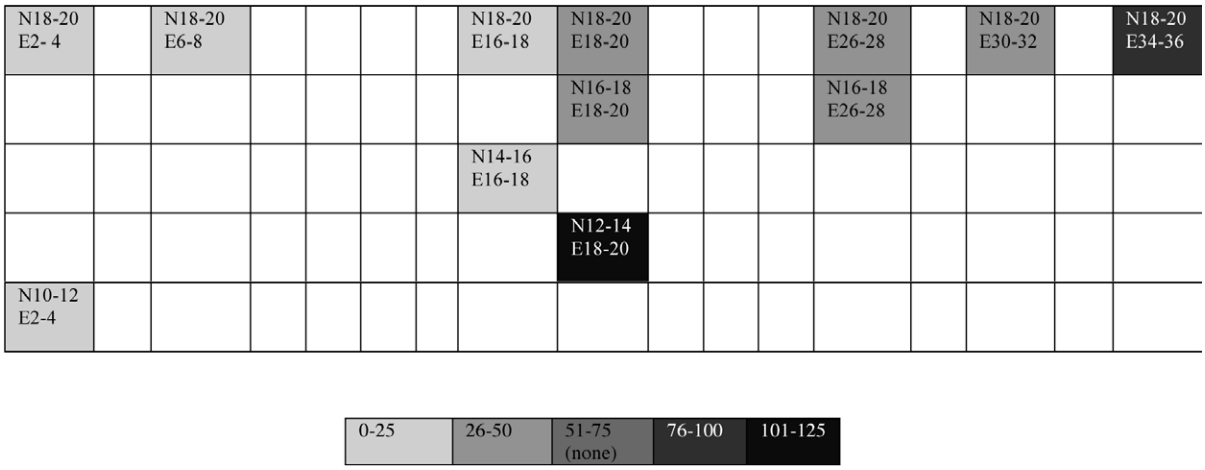


Figure 12. Commensal mammal NISP, 2004 and 2006 House 1 floor.

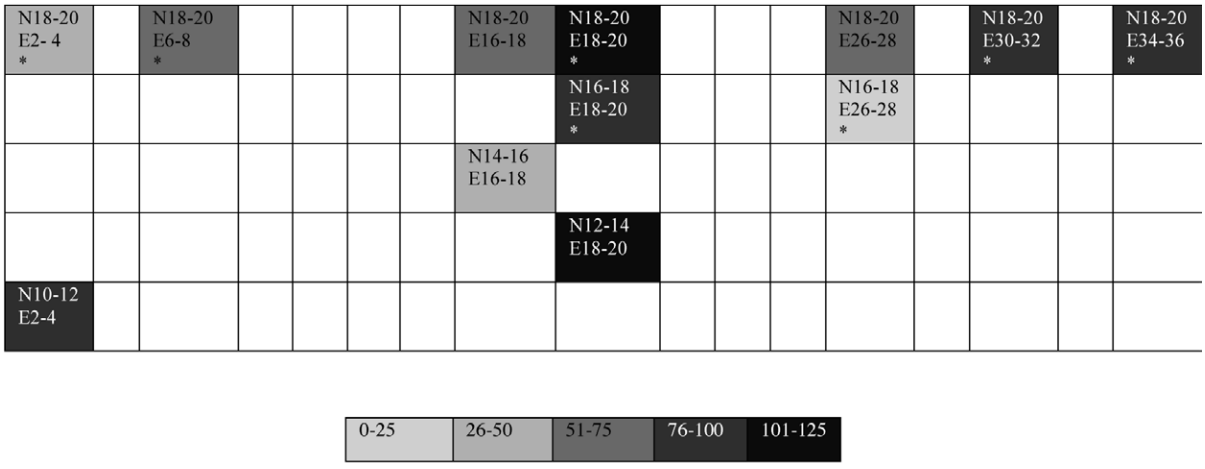


Figure 13. Identified sea mammal NISP, 2004 and 2006 House 1 floor. Sea otter is indicated by an (*).

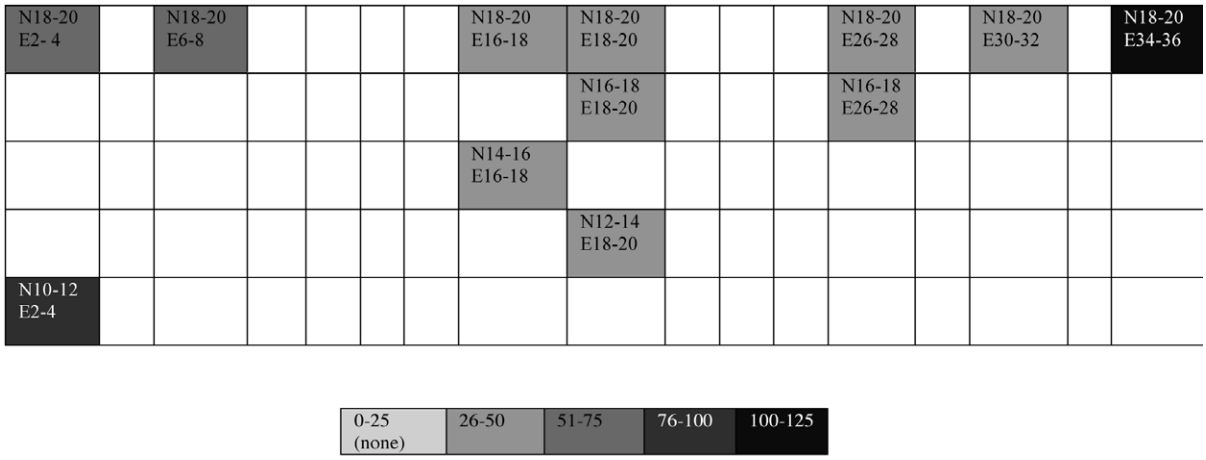


Figure 14. Identified bird NISP, 2004 and 2006 House 1 floor.

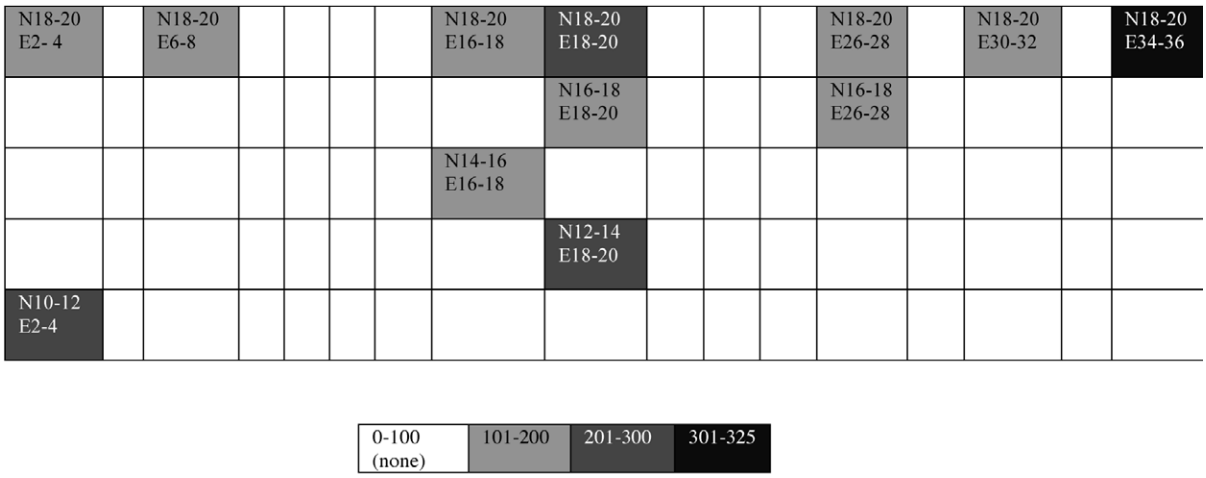


Figure 15. Identified bird and mammal NISP, 2004 and 2006 House 1 floor.

In general, there is a concentration of identified bird and mammal remains in those units at the periphery of the house, N18-20/E34-36, N12-14/E18-20 and N10-12/E2-4 (Fig. 15). The deposits in all three of these units may well contain layers that are actually more associated with house edge build-up than living floor. Units N18-20/E18-20 and N16-18/E18-20 are the only central units to contain a greater proportion of remains. These two units are also next to the main trench and hearth features (Fig. 4).

Identified land mammal remains are so few (NISP 182) that none of the "patterns" observed can be accepted uncritically. The main land mammal resource is deer, and their numbers swamp all other species. It was thought that the distribution of species that could be seen as high rank, such as elk, sea otter, mink, marten and bear, might show a pattern of co-concentration with a specific area of the house (Fig. 11). This is not clearly supported. Elk and mink remains are distributed throughout the units sampled. River otter, a more common species, is also found in all but two of the units. It is true, however, that only unit N18-20/E2-4 contains four of the rare land mammal species, elk, marten, mink and black bear (Frederick et al. 2006).

Identified bird remains are more common (NISP 646). Their distribution follows the general pattern, with most remains occurring in peripheral units, especially N18-20/E34-36 (Fig. 14). This concentration is formed mostly by shearwater remains. Of some interest is the greater than expected concentration of the combined category crow, eagle and forest bird in unit N12-14/E18-20 (Table 25), as this may support the interpretation that these deposits include samples from "outside" the house. Unit N10-12/E2-4 also contains a

greater frequency of songbirds than the other two 2004 units and is similarly a peripheral unit (Frederick et al. 2006).

Commensal mammal remains (NISP 457) are essentially dog remains (Fig. 12). Dog remains are especially concentrated in unit N12-14/E18-20 and secondly in N18-20/E34-36. Again, these are the two peripheral units in the 2006 sample, but this pattern in not found in the 2004 sample, where dog remains are few in the peripheral units at the north west end of the house.

Identified sea mammal remains are the most frequently occurring of the mammal remains in the house floor deposits (NISP 866). While their distribution does follow the general pattern of more remains in the peripheral units, there is also a concentration of remains in the central units adjacent to the main hearth and trench features in the 2006 excavations (Fig. 13). In unit N18-20/E18-20 the concentration is primarily whale bone, remains which may be associated with the features or may be curated for manufactures. This might represent an activity area. The concentration in unit N12-14/E18-20 is primarily fur seal, while unit N18-20/E34-36 has a disproportionate amount of sea otter, porpoise and harbor seal (Table 23). Sea otter remains, which one might have associated with high rank, are found in seven of the units, two central, two at the northwest end of the house and three at the south eastern end of the house. They are not clearly associated with any one location.

Only the 2006 level 3.80–3.85 was presented for fish (Table 27). The areas of concentration here are different from those of the general bird and mammal patterns. Twenty -one and twenty-two percent of the fish sample in this level comes from units N12-14/E16-18 and N16-18/E18-20 respectively. These are not the units that see the highest concentrations of bird and mammal remains. The former is a peripheral unit but the latter is a central unit adjacent to the hearth and trench features. In both units, this concentration is produced by hake, rockfish, dogfish and flatfish remains. In contrast, salmon remains are more common in units N14-16/E18-20, N18-20/E30-32 and N18-20/E34-36. A rational for these patterns is not immediately apparent.

Conclusions

The vertebrate faunal remains from the level samples of the Huu7ii site clearly show changes through time in the subsistence patterns and activities of the site inhabitants. During the earliest occupation, the people are likely using the site throughout the year, perhaps continuously, exploiting a broad range of resources, with a focus on a range of fish and sea mammals, including whales, porpoise/dolphins and seals/sea lions, but a slightly greater emphasis on land mammals than in later times. The majority of bird, fish and mammal species taken suggest primarily an inshore focus, but the white-sided dolphin and whale remains clearly indicate their maritime capabilities and the importance of those species. Fish are the most frequently occurring species as represented by NSP/NISP. The range of species taken is broad, with greenling, rockfish, dogfish and salmon all important. Herring are also very important, based on the column sample data.

Between 3000 BP and 1500 BP there is a period of time when the sampled area of the site was not occupied. With the reoccupation around 1500 BP, there is apparent a more marine focus to the subsistence activities, with whales, porpoise/dolphins and seals/sea lions still important while fewer land mammals are taken, and a shift in the kinds of birds taken from waterfowl to more marine birds. The major focus of subsistence activities, however, remains on a range of fish species. Fish, especially hake and rockfish, are still the most frequently occurring fauna measured by NSP/NISP, while herring and anchovy are also important, based on the column sample data. There is a suggestion in the species present that this occupation may represent a stronger focus on summer residency, but other seasons are represented. It may also be that the greater frequency of hake and anchovy remains in the later layers of these deposits relates to environmental changes associated with broad climatic shifts and/or cyclical oceanic current shifts resulting in changes in water temperatures.

After about 800 BP, with the switch to the house floor deposits, there is a major shift in emphasis within the fish species taken, from the exploitation of a broad range of species to a much more concentrated focus on salmon, although herring, greenling and rockfish remain important. Fish are still the most frequently occurring vertebrate fauna, while sea mammals, including whales, porpoises/dolphins and seals/sea lions, remain important food and raw material resources. Sea otters are more frequently occurring, though still not abundant. A broader range of land mammal species are represented, including three species not found in the earlier deposits, although the actual numbers are low. There is also an increase in the quantity of bird remains, with the focus on marine

and marine off-shore species. Spring through fall seasons are represented in the faunal remains, while winter occupation may be indicated by the salmon remains, if they represent preserved fish. The focus on salmon, together with the presence of elk, black bear and marten also suggests access to a wider territory of exploitation, either directly or through trade or kin relationships. It may also be that these changes relate to an increasingly complex association of rank within the society and territorial ownership.

Dog remains are found throughout the occupation of the site, being especially common in the oldest deposits and the house floor deposits. Puppies are especially well represented in the latter deposits. The majority of the dog remains that could be sized are from smaller dogs.

The hypothesized association of particular faunal concentrations within the House 1 Floor and ranked family locations within the house has not been clearly supported by the faunal data. While the presence at the western end of the house of the rare mammal species which might be associated with a high rank position is demonstrated, the actual numbers of remains are too small to give this pattern much confidence. The major concentrations of faunal remains are in fact found in peripheral units along the margins of the house depression. The exception to this pattern is found in the sea mammal remains, where there is a concentration in the central units associated with the hearth and trench features. This pattern may represent an activity area associated with the hearth areas, or the incorporation of whale remains in the features. It may be of interest that the dog remains are more commonly found in the eastern end of the house, but again an explanation for this pattern is not apparent.

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