

APPENDIX B

Shellfish Data

The following identification and habitat data come primarily from the references by Morris (1966), Keen (1963), Cornwall (1955), and Griffith (1967). Dr. John Chronic, University of Colorado (geology), helped with the preliminary identifications. All subsequent work was done by the writer.

Table XXXII Archaeological shellfish species

TAXON	COMMON NAME	HABITAT
PHYLUM: Mollusca		
CLASS: Gastropoda		
FAMILY: Acmaeidae		
	<i>Acmaea</i> spp.	limpets
		intertidal
FAMILY: Haliotidae		
	<i>Haliotis kamtschatkana</i>	northern abalone
		low tide & below
FAMILY: Littorinidae		
	<i>Littorina sitkana</i>	Sitka littorine
		intertidal
FAMILY: Cerithidae		
	<i>Bittium eschrichtii</i>	threaded bittium
		low tide
FAMILY: Thaisidae (Purpuridae)		
	<i>Thais lamellosa</i>	wrinkled purple
	<i>Thais canaliculata</i>	channeled purple
		intertidal
		intertidal
FAMILY: Neptunidae		
	<i>Searlesia dira</i>	dire whelk
		low tide & below
plus — one or two species of land snails, possibly <i>Haplotrema</i> or <i>Vespericola</i> (<i>Polygyra</i>)		
CLASS: Pelecypoda		
FAMILY: Mytilidae		
	<i>Mytilus edulis</i>	edible (bay) mussel
	<i>Mytilus californianus</i>	sea mussel
		intertidal rocks
		intertidal rocks
FAMILY: Cardiidae		
	<i>Clinocardium nuttallii</i>	cockle
		intertidal
FAMILY: Veneridae		
	<i>Saxidomus giganteus</i>	butter clam
	<i>Protothaca staminea</i>	little-neck clam
		intertidal sand
		intertidal sand
FAMILY: Mactridae		
	<i>Schizothaerus capax</i>	horse clam
		intertidal sand
PHYLUM: Arthropoda		
CLASS: Crustacea		
FAMILY: Balanidae		
	<i>Balanus altissimus</i> (?)	acorn barnacle
	<i>Balanus nubilus</i> (?)	acorn barnacle
	<i>Balanus cariosus</i> (?)	acorn barnacle
	<i>Balanus balanus</i>	acorn barnacle
		low tide
		below low tide
		intertidal
		intertidal
FAMILY: Coronulidae		
	<i>Coronula reginae</i> (?)	whale barnacle
		flesh of whale
PHYLUM: Echinodermata		
CLASS: Echinozoa		
FAMILY: Strongylocentrotidae		
	<i>Strongylocentrotus</i> spp.	sea urchin
		tide pools

Table XXXIII Ecniche data for molluscan and crustacean species recovered during project excavations

GENERIC UNIT	NICHE DATA:	GENERIC UNIT	NICHE DATA:
<i>Acmaea</i>	Several species are probably present, most too fractured and weathered for species assignment. Limpets are herbaceous gastropods. All in the collection are less than 1 inch in greatest dimension. The animals live attached to stones and grasses in the intertidal zone, with some species ranging well above the high tide mark and others occurring out to 35 fathoms in depth.	<i>Protothaca</i>	The species <i>staminea</i> grows to 2-1/2 inches, living in the intertidal zone of gravel-to-mud beaches in protected bays and is particularly abundant halfway between high and low tide marks. It reaches maximum size at age ten years, and grows very slowly. Breeding is in summer. The clam is a burrower. Edible.
<i>Bittium</i>	The species here seems to be <i>eschrichtii</i> , a tiny spiralled snail occurring on rocky beaches in lower portions of the intertidal zone. It may also occur in salt marshes, among algae, and on oyster beds.	<i>Saxidomus</i>	A deeper burrower than <i>Protothaca</i> , the species <i>giganteus</i> occurs in the intertidal zone's lower third, on sandy or gravelly beaches. It prefers well protected beaches and is stunted if grown on exposed beaches. It may occur as deep as 30 feet. It grows to 5 inches in good habitats, breeds in summer, and is edible.
<i>Haliotis</i>	The species identified is <i>kamtschatkana</i> , an herbivorous gastropod living in colonies on rocky beaches or surf washed rocks, at and below low tide mark. Some occur out to 6 fathoms. Length averages 6 inches, and the species is edible.	<i>Schizothaerus</i>	The species <i>capax</i> grows to 8 inches and is nearly equilateral. Spawning is in winter. This clam is also a burrower, preferring gravelly bottoms in the intertidal zone. Edible.
<i>Littorina</i>	Species <i>sitkana</i> identified. This small, herbivorous snail grows up to 3/4 inch, living on rocks, pilings, kelp or eel grass throughout the intertidal zone. Many species are semi-aerial and able to spend about half their time out of the water. Also edible.	<i>Dentalium</i>	The species <i>pretiosum</i> (= <i>indianorum</i>) may be the one present. It occurs in sheltered bays from 5 to 650 fathoms, shallowly buried in the sea floor. South of Puget Sound the animal is narrower, more fragile, and more curved. Was a trade and monetary item. Must be dredged up from the bottom.
<i>Thais</i>	The species <i>lamellosa</i> is the most common whelk in British Columbia's intertidal zone today. It grows to 1-1/2 - 3 inches in height, with the shell exterior reflecting its habitat: thick and smooth for rough-water dwellers, and delicate and many-frilled for animals in sheltered waters. It prefers rocky beaches in the intertidal zone, and is usually found among barnacles and mussels. It is carnivorous, living on other molluscs. Breeding is in winter, at which time the animals congregate at the low tide mark. Eggs, called "sea oats", are laid on undersides of rocks. Animal is edible. The different species <i>T. canaliculata</i> is smaller (to 1 inch in height), also carnivorous, with much the same habits and preferences. Shell sculpture is made up of alternating large and small spiral cords.	<i>Balanus</i>	The species <i>cariosus</i> and <i>nubilus</i> both large acorn barnacles—the former growing to 1-1/4 inches in diameter and 2-1/2 inches in height. <i>Cariosus</i> has a membranous base and grows much crowded on rocks in the intertidal zone. Sculpture of exterior responds both to exposure to rough water and to crowding: the shell has many downward-pointing spines and a "thatched" appearance in favorable conditions, and tends to lose both spines and its conical shape when crowded. The species <i>nubilus</i> is the largest found on the North American Pacific coast. It occurs below low tide, usually in 10 to 20 feet of water, and occasionally down to 30 fathoms. The base is calcareous and porous. The rib sculpture is eradicated by erosion in adults. Often found in large colonies of individuals growing on one another; frequently grows on the holdfasts of kelp. It was the edible barnacle eaten by aboriginal inhabitants after fire roasting. An environmental variant of <i>nubilus</i> , <i>B. altissimus</i> , occupies the rocks above low tide and may also have been eaten aboriginally. Smaller acorn barnacle species also seem present, including the species <i>crenatus</i> (growing below low tide and occasionally into the tidal zone, on rocks, mussels, larger barnacles), and the species <i>balanus</i> (growing to 1-3/8 inches in height and diameter, in the intertidal zone), and the tiny species <i>glandulus</i> (to 1/2 inch in height and abundant on rocks on the intertidal zone). The remains of these smaller species are badly fragmented and difficult to identify.
<i>Searlesia</i>	The species <i>S. dira</i> is a carnivorous scavenger living on rocks of rocky beaches at the low tide mark and below. Height up to 1-1/2 inches.		
<i>Clinocardium</i>	The species is an equivalved mollusc growing to 4-1/2 inches in greatest dimension. It rarely lives more than seven years, with a summer breeding season, beginning at age two years. It prefers sand-to-mud beaches in both deep water and in the intertidal zone, and is often found in eel grass flats and near the surface of tidal flats, where it is a shallow burrower. Edible.		
<i>Mytilus</i>	The species <i>edulis</i> is an inequilateral bivalve, growing to 2 inches. It breeds from May to December particularly during the warm months. It lives in dense patches in the intertidal zone, attached to rocks or gravel by strong byssal threads. Edible. The species <i>californianus</i> grows to 10 inches, occurs in rocky or surf-washed areas of the open coastline, or in sheltered arms adjoining the sea. Edible, BUT can cause paralytic shellfish poisoning. The species is also inequilateral.	<i>Coronula</i>	This barnacle grows imbedded in the skin of whales (particularly the humpback variety). Species possibly present include <i>reginae</i> (with size of up to 2-1/2 inches in diameter and 3/4 inch in height), and <i>diadema</i> (growing up to 3 inches in diameter, and are small in early summer, larger in late summer, with a life cycle of less than one year).