SQUAXIN ISLAND INDIAN SHELLFISH USE

Report Submitted by

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My name is Eugene S. Hunn. I earned a Ph.D. degree in Anthropology in 1973 at the University of California, Berkeley. I have taught on the faculty in the Department of Anthropology at the University of Washington since 1972 and have held the rank of Full Professor since 1983. My special expertise is in ethnobiology, the comparative study of cultural systems of knowledge and use of plants and animals. Since 1975 I have studied Columbia Plateau Indian ethnobiology with a special focus on the Sahaptin language community of the lower mid-Columbia basin. I have published a number of articles on various aspects of Sahaptin ethnobiology and cultural ecology as well as a book-length ethnography with James Selam, Nch'i-Wána "The Big River": Mid-Columbia Indians and Their Land (Hunn 1990). Mr. Selam is a John Day River elder enrolled with the Yakima Nation. He and his family were primary consultants for the research on which the book is based.

GOALS OF THIS STUDY

The goals of this report are:

1) To characterize who were the people now known as the Squaxin Island Tribe, with particular reference to the time of the the signing of the Treaty of Medicine Creek (December 26, 1854), which established three reservations - at the mouth of the Puyallup River, at the mouth of the Nisqually River, and on Squaxin Island in southern Puget Sound.

2) To determine the role of shellfish - understood here to mean aquatic invertebrates, particularly marine molluscs and arthropods - in the economies of the ancestors of the Squaxin Indians of today at the time the treaty was signed; this includes

a) determining which species of shellfish were culturally important for the ancestors of the present-day Squaxin Island tribe and in what manner they were used, and

b) determining specific locations where these species were harvested by the ancestors of the present-day Squaxin Island tribe.

SOURCES CONSULTED

Relevant sources are of several types:

1) Ethnographic sources are those based on testimony of living Indian people recorded by individuals with academic

training in cultural anthropological methods and theories. Key sources consulted here include Waterman (1920), Haeberlin and Gunther (1930), Smith (1940), Taylor (1974), and Elmendorf (1960). Suttles and Lane (1990) provide a comprehensive ethnographic review for the Puget Sound region in general. A detailed ethnographic study of shellfish use by the Manhousat of the west coast of Vancouver Island (Ellis and Swan 1981) provides a useful comparison.

2) Linguistic sources describe language and dialect distributions and report indigenous language names for plants, animal, places, tools, and verbs descriptive of indigenous economic practices, as well as grammatical and semantic information that may shed light on how the language of the treaty might have been understood in translation by non-English speaking Indians present at the treaty council. The key source in addition to those noted above is Hess's Puget Salish Dictionary (Hess 1976).

3) Ethnohistorical sources are written records based on first-hand observations by individuals with no formal anthropological training, particularly reflecting observations during the early decades of Euro-American contact with local indigenous peoples. Some sources considered ethnohistorical might also be deemed ethnographic, such as Gibbs (Gibbs 1855; Gibbs 1877; Gibbs 1967) and Eels (Castile 1985). Other sources are summarized by Riley (1974) and Taylor (1974) for the Indian Court of

Claims and by B. Lane (1993) for this proceeding.

4) Archaeological sources are based on survey and excavation of sites used by indigenous peoples prehistorically and during the early contact period. Site surveys of the southern Puget Sound region include Howard (1949), Winterhouse (1948) and Wessen (1993).

5) Biogeographical sources characterize the distributions in time and space of species of interest, with notes on their life histories, nutritional values, etc. For basic information on local species including latin names I follow Kozloff (Kozloff 1983). Much additional information is summarized by Armstrong et al. (1993). Morris (1966) describes all mollusc species of the Pacific coast of North America.

It is essential to note that no single source of information is either necessary or sufficient to answer the questions this report addresses. Rather, it is important to integrate all available information from these sources in the light of theories of culture to achieve our best approximation to the truth.

WHO ARE THE SQUAXIN INDIANS?

It is clear that the present-day Squaxin Island Tribe was created by the Treaty of Medicine Creek (signed December 26, 1854; ratified March 3, 1855) by virtue of its creation of a

Squaxin Island reservation. The ethnographic sources agree that there were no "tribes" in the Puget Sound area prior to the treaty era. Rather, what are referred to as "tribes" (and "bands") in the treaties are politically autonomous winter villages, or clusters of neighboring villages sharing a compact river drainage basin or contiguous stretch of shoreline. T. T. Waterman, commenting on Curtis's delineation of tribal territories in southern Puget Sound, asserts: "A complete list of the 'tribes' would be nothing more than a list of villages, and the tribal boundaries would be marked by artificial or imaginary lines running somewhere between these villages..." (1920:21). Smith notes that,

> From the geographical concept of the drainage system they derived their major concept of social unity.... (1940:3) The Indians of the area came together during the winter months, when the life was sedentary, at certain sites which may be conveniently called "villages." ... The village frequently consisted of only one house, large enough for four or six families, and never more than three such houses. (1940:4)

Riley agrees that, "Throughout all the area [of western Washington] the political and landholding unit was the village" (1974:43). When more than a single village was located within a drainage basin, those adjacent villages were often grouped under the heading of the most prominent village of the basin. Smith describes the situation as follows:

A particular village site and the drainage connected with it bore the same name. The people called themselves by the name of the village site plus a suffix meaning "people of". When they spoke of themselves in relation to other peoples of the area they might use the term for the larger drainage of which their stream was a part, plus the same suffix. (1940:6)

Ethnographers further agree in denying the existence of any clearly defined political or social groupings superordinate to the village. Smith observes that, "the Puget Sound villages formed a continuous series criss-crossed by many line of conflicting affiliation according to any one of which different villages may be grouped together...[emphasis added]" (Smith 1940):23. Nevertheless, it is recognized that language and dialect groupings were significant in establishing a sense of kinship among groups over large regions.

Smith suggests that though:

There was no term which designated all the peoples of the Sound, yet the feeling of unity which functioned among individuals of the village drainage operated over the ramified system, even though it became more and more tenuous as it spread out from the home village. (pg. 6)

This larger grouping corresponds very well with the Lushootseed or Puget Salish language spoken in all the villages covered by the Treaty of Medicine Creek. Hess describes the distribution of Lushootseed as follows (Hess 1976):

Puget Salish is the American Indian language spoken in the vicinity of Seattle, Washington. Its domain encompasses all the Puget Sound watershed... (It

> does not include the area around Hood Canal. This is the Twana language territory.) (pg. xi)

Hess notes further, "that slight differences existed from village to village," but that "a major set of differences separates Skagit and Snohomish in the north from the others to the south" (pg. xii). This southern dialect group corresponds rather well with the "Nisqually nation" defined in terms of the Medicine Creek treaty, together with the "tribes" covered by the Pt. No Point Treaty. Taylor's ethnographic evidence supports this view: "All of the informants (except the Chehalis informants who did not speak Nisqually) agree that the Steilacoom, Puyallup, Sahehwabc, Nisqually and Squaxin spoke the same language without any dialectical variations" (Taylor 1974:458).

An "Indian Nation" then was a group of contiguous "tribes," i.e., villages, treated as a unit and acting in concert for the purpose of the treaty negotiations:

> Articles of agreement and convention made and concluded... by Isaac I. Stevens, governor and superintendent of Indian affairs of the said Territory, on the part of the United States, and the undersigned chiefs, headmen, and delegates of the Nisqually, Puyallup, Steilacoom, Squawksin, S'Homamish, Stech-chass, T'Peeksin, Squi-aitl, and Sa-heh-wamish tribes and bands of Indians, occupying the lands lying round the head of Puget's Sound and the adjacent inlets, who, <u>for the purpose of this treaty, are to be regarded as one nation</u>, on behalf of said tribes and bands, and duly authorized by them. (Treaty of Medicine Creek, emphasis added)

This principle is explicitly recognized in the <u>Corpus Juris Secundum</u>:

> When used in connection with Indians, especially in their original state, the word 'nation' indicates little more than a large tribe or group of affiliated tribes possessing a common government, language, or racial origin, and acting for the time being in concert. (42:658)

It is noteworthy that major language boundaries generally follow larger drainage units. For example, the Twana language (with Lushootseed a member of the large Salish language family) is confined to Hood Canal, even though the Lushootseed village **Tuxsqwa'ksud**, home of the "Squawksin" of the treaty, at the head of Case Inlet was a scant two miles overland from the nearest Twana-speaking village on Hood Canal (Elmendorf 1960). The adjacent Chehalis River basin was home to Chehalis (also Salishan) speakers who visited Eld Inlet to harvest clams as guests of the "Squi-aitl" (Waterman 1920):26.[1] Only in the upper reaches of the Nisqually and Puyallup River basins in the Cascade foothills do we find villages occupied by speakers of more than one language, Lushootseed and Sahaptin (not Salishan) (Smith 1940):13. This appears to have been a recent development, perhaps attributable to the introduction of horses among Sahaptin speaking peoples east of the Cascades.

1. Haeberlin reports that the "Satsep" were "a group of Nisqually on Satsep [= Satsop] Creek, [who] have intermarried with the Chehalis and Skykomish" (Haeberlin and Gunther 1930:11). Haeberlin is unique in this opinion, as well as in placing Hammersley, Case, and Carr Inlets within the range of the Twana-speaking "Skokomish" (see his Fig. 1, pg. 8). Since Dr. Haeberlin worked in 1916-1917 primarily with Snohomish and Snoqualmie Indians on the Tulalip Reservation, his information on the situation in southern Puget Sound is suspect.

It seems reasonable that this close correspondence between linguistic relationships and the hierarchy of drainage basins throughout the region is a consequence of the fact that western Washington Indians preferred to travel by water rather than overland. Smith describes this preference as follows (Smith 1940):

> In such a country the rivers not only furnished the all-important salmon but also formed the only continuous lanes of communication.... It was almost physically impossible to cut directly across country.... (pg. 2) ...the village... was also the center from which radiated all of the year's food gathering and similar activities.... (pg. 4) As a matter of convenience expeditions [to gather food] kept fairly close to the village site. Since travel was along the waterways, they had a choice of two directions, up-stream along the smaller water course [the stream to which the village was oriented], and down-stream or along the shore of the Sound. Even locations not bordering upon a beach were reached by following the water to a point opposite them and then cutting inland to save as much cross country travel as possible.... Due to the radial nature of the Puget Sound drainage, the smaller village systems converged, finally joining that central current which united the headwaters of the Sound with Skagit Bay. (pg. 5-6)

Thus the characteristic preference for canoe travel led to a convergence of geography and social contacts and thus of linguistic affiliations.

In sum, Smith's drainage basin principle accounts for both the "tribes and bands" and the "nation" referred to by the Medicine Creek treaty.

IDENTIFICATION OF THE SQUAXIN ISLAND VILLAGES

Establishing a correspondence between the nine "tribes" named in the Medicine Creek treaty and village groups known to have existed at the time of the treaty is relatively straightforward. Table 1 locates the village groups identified in various ethnohistorical and ethnographic sources in southern Puget Sound. It can be seen that in most if not all cases the treaty "tribes" are Lushootseed village names, to which the suffix **-absh** (usually corrupted in English to "-amish") 'people of' may be attached (Hess 1976):41. (Many also have prefixed **s-** , a grammatical particle indicating "absolute modality" (Hess 1976):435.) Two of the nine cited tribes include this suffix, the "Sa-heh-wamish" (> suxwe' + absh; sδhí?wδbsh [[Hess, 1976 #157:441]), people of the village at Suxwe' at the head of Oyster Bay on Totten Inlet (Waterman 1920):25,[2] and S'Homamish (> sqwapa'bc = sqwap + a'bsh), people of Smith's village #12 on Gig Harbor (Smith 1940:11).

In Gibbs 1854 report which informed Gov. Stevens' negotiations at Medicine Creek, the "Skwawksnabsh," "Stehtsasamish," "Skwalliahmish, Steilakumahmish," and the "Puyallupahmish" are noted (Gibbs 1855), cleary the

2. Smith locates the "sahe'wabc" at Arcadia on the point of land between the mouths of Totten and Hammersley Inlets (Smith 1940:14). However, Waterman and Taylor (Taylor 1974) find no evidence of a village at this location. She subsequently locates this group, the "Sahehwamish or s hew bc" on "Shelton [Hammersley] Inlet" (Smith 1941).

Skwawksin, Steh-chass, Nisqually, Steilacoom, and Puyallup of the treaty with the -absh suffix added. The "Skwawksnabsh" (s.q^{w}axsδdδbsh (Hess 1976:412)) are certainly the people of "tuxsqwa'ksud," "#1. Village site at the mouth of the creek at the upper end of Case's Inlet" (with "tux-" most likely the derivational suffix "**dx^{w}** 'toward' (Hess 1976:146ff; Waterman 1920:22); cf. the Twana formative "dux^{w}-, a prefix common on names of places" (Elmendorf 1960:48)).[3] The "Stehtsasamish" (s.t'δch'ásδbsh (Hess 1976:524)) are the people of "Olympia," which by then had come to be referred to as "StEtc!a's" (Waterman 1920:30). The "Skwalliahmish" are the **s.q^{w}áli?absh** 'people of the grassy land' (Hess 1976:410), as the prairies near the mouth of the Nisqually River were known (in this case only, not named for a specific village). The "Steilakumahmish" are the people of Smith's village #18, and the "Puyallupahmish" are the people of Smith's village #1 (Smith 1940:9, 12).

This leaves two treaty "tribes" to account for: the T'Peeksin and the Squi-aitl. Waterman locates "a large and thriving village" at the mouth of "a large creek at the head of Mud Bay" (i.e., Eld Inlet) called "Sqwaya'itL"; he

3. Note: In 1877 Gibbs' tribal list grouped the "Skwawksin" with the Twana-speaking Skokomish on Hood Canal, locating them on "the isthmus between Hood Canal and Case Inlet," a most unlikely locale for a village. However, he adds the disclaimer that "in some respects [they] more properly belong.. to the Sound Indians" . It seems he had to move the Skwawksin to make room for the S'Hotlemamish on Case Inlet (rather than Carr Inlet, where he had located them correctly in 1854) (Gibbs 1877).

remarks that, "for some reason the present name has NOT been metamorphosed into a "tribal" name, so far as I know" (i.e., by means of the suffix **-absh**) (Waterman 1920:28). Finally, "T'Peeksin" is Smith's village #30 "tapi'qsdabc," which she locates "on Oyster Bay or Totten Inlet, below the town of Oyster Bay.... The term given me derives from tapiqsed, the name of the [Totten] inlet" (Smith 1940:14). It is perhaps equivalent to Gibbs's earlier "Sawamish." See also Riley: "2. t'pIxIt--The name of the village and also of Oyster Bay. The settlement was spread from New Kamilche, along the north side of the bay, to John Slocum's old house. These people are probably the T'peeksin listed in the treaty" (Def. Exh. 1, Squaxin Tribe, Docket No. 206, pg. II-12). Waterman lists no village by this name but has for his site #45, "Simmon's creek, at the head of Oyster bay, TEpi'lkwtsid,..." (Waterman 1920:25).

It is curious that neither the "Nusehtsat" (misspelled "Musehtsat" in (Gibbs 1855)) nor the S'Hotlemamish of Gibbs' 1854 list were cited in the treaty preamble. Perhaps no one at the council claimed to represent either group. Nevertheless, it is clear that both should be included in any inventory of the southern Puget Sound village groups. The "S'Hotlemamish" are clearly the people of Waterman's village of "Tusxo'tlEb," the people of which are known as "s.xo'tleb-absh" (Waterman 1920:31) and the same people as Smith's "sxo'tlbabc" (= sxo'tlb + absh) of her village #15,

"located on Carr Inlet above the town of Minter" (Smith 1940:12).

One question remains: How are the nine "tribes" of the Medicine Creek treaty to be grouped vis-à-vis the three reservations set aside in that document? The treaty is silent on this point. However, Gibbs in 1877 explicitly defines three sub-divisions of the "Nisqually Nation" corresponding with the three reservations set aside in 1854 (Gibbs 1877).

> A division might be made of these into three subtribes [sic., rather than "sub-nations," as the units grouped are called "tribes and bands" in the treaty], the first consisting of the S'Hotlemamish of Case Inlet [not mentioned in the treaty and sic., cf. footnote #1], Sahehwamish of Hamersley Inlet, Sawamish of Totten Inlet [i.e., the "T'Peeksin" of the treaty], Skwai-aitl of Eld Inlet, Stehtsasamish of Budd Inlet, and Nuschtsatl of South Bay or Henderson Inlet [not mentioned in the treaty]; the second consisting of the Skwalliahmish or Niskwalli, including the Segwallitsu [of Sequalitchew Creek, not mentioned in the treaty], Steilakumahmish, and other small bands; the third of the Puyallupahmish, T'Kawkwamish [of the Carson River basin; not mentioned in the treaty], and S'Homamish of the Puyallup River and Vashon Island.

Thus, we may conclude that the Squaxin Island Tribe of 1993 is the direct descendant of Gibbs's "sub-tribe" #1, the collective territory of which encompasses all of Puget Sound above Nisqually including Carr Inlet[4] with the lands draining into this area of the Sound.

4. Smith groups the "sxotlbxbc" of Carr Inlet with the Puyallup in her 1941 analysis (Smith 1941), but see Taylor (Taylor 1974:455-457) for a critique of her analysis.

A final note: Prior to the treaty, Squaxin Island was known as "Klahshemin Island" (Stevens 1900), which may be a corruption of some unknown Indian term. Neither Waterman nor Smith cite any villages on the island itself, though Waterman lists 16 named cites on the island and leaves open the possibility that an indigenous name for the island as such might have existed, to wit, "HwEtsEl tc, Hewa'bis, or Qwa'tsl tc" (Waterman 1920:26). The island was apparently utilized jointly by all the adjacent groups, as it was not located within the predominant range of any one village. Why the island and reservation came to be known by the name of the one village group, **Squawksin**, as opposed to another of the treaty "tribes" is not clear, as no special priority is suggested in Gibbs' 1854 listing of tribes (Gibbs 1855):

Quak-s'n-a-mish	Case's inlet, &c	40		
S'Hotle-ma-mish	Carr's inlet, &c	27		
Sa-heh-wa-mish	Hammersly's inlet, &c	23		
Sa-wa-mish	Totten's inlet, &c	3		
Squai-aitl	Eld's inlet, &c	45		
Steh-cha-sa-mish	Budd's inlet, &c		20	
Noo-seh-chatl	South bay		12/	170
Squali-ah-mish, 6 bands	Nisqually River and vicinity	184		
Steila-coom-a-mish	Steilacoom creek and vicinity		25	/209

The fact that Squaxin Island was "home" to none of the groups for which it was reserved may help account for the fact that today no Squaxin tribal members live on the island itself, though many have inherited shares in the 23 original allotments (1884) on the island. Instead, after 1880 we find the descendants of such village groups as the Sa-heh-

wa-mish, T'Peeksin, Squai-aitl, and Steh-cha-sa-mish of the treaty filing for homesteads and claiming tidelands closer to "home," e.g., in Eld, Totten, and Hammersley Inlets (Lane 1979) and contributing to the early commercial oyster harvests in Budd Inlet.

HOW IMPORTANT WERE SHELLFISH TO THE "SQUAXIN"?

I take it as well demonstrated that those who composed the language of the Medicine Creek treaty understood "fish" and "fishing" to include "shell fish" as a subcategory (testimony of Ronald R. Butters in this proceeding). The specific caveat in Article III implies as much, to wit:

> ARTICLE III. The right of taking fish, at all usual and accustomed grounds and stations, is further secured to said Indians, in common with all citizens of the Territory,... *Provided, however*, That they shall not take shell fish from any beds staked or cultivated by citizens,...

I will thus concentrate on the question of the relative importance of shellfish vis-à-vis other subsistence resources. Were shellfish an important resource for the people of upper Puget Sound in the early 1800s. Were shellfish a staple in the diet, of particular ritual or mythological significance, and/or the focus of substantial interest and effort? Or, were shellfish harvested incidentally? Could these people have done as well without shellfish as a resource?

It must be noted that there is very little direct evidence, i.e., written testimony of eye witnesses, to support a judgment at to the relative importance of shellfish or any other resource to the way of life of the south Sound Indians in the period immediately preceding the treaty. The earliest report is that of Menzies, botanist with Vancouver's voyage of exploration. Menzies travelled with Peter Puget through the region in question in late May 1792 (Anderson 1939; Newcombe 1923; Vancouver 1984). He reported observations of local Indians harvesting clams at Wollochet Bay near the mouth of Carr Inlet and described the great extent of tidelands in Totten Inlet. There was no sustained outside contact with local Indians until 1833, when Nisqually House was established by the HBC at the mouth of the Nisqually River (Anonymous n.d.). The Wilkes expedition left a valuable record in 1841, including the earliest scientific collections of molluscs and crustaceans from this region (Cooper 1860; Cooper 1860; Meany 1926). The first actual settlement within the specific region considered here was not until 1846 when a Mr. Sherwood dammed Mason Creek at the upper end of Case Inlet, in the process destroying the only sockeye salmon run in the area.

CULTURAL RECOGNITION AND USE OF SHELLFISH

IN SOUTHERN PUGET SOUND

In the absence of direct evidence of quantities of shellfish harvested, I will suggest several indirect methods of estimating the relative economic and cultural importance of shellfish for the indigenous peoples of the south Sound. These indirect methods include:

1) The degree of elaboration of traditional knowledge of shellfish including the number of named categories of shellfish recognized in the local Indian language. It is a truism that nomenclatural elaboration tends to reflect the importance accorded a given realm of experience within a culture. We may refer to this as "lexical density" (Hunn 1994), that is, the degree of elaboration of vocabulary within a given semantic domain compared to the size of the domain, as for example, the number of named categories of molluscs divided by the number of mollusc species known to occur in the region in question or the number of named places per square mile of territory utilized. Our working hypothesis is that lexical density within a semantic domain is an indication of the relative cultural significance of that domain for the speakers of the language in question. Thus, a culture oriented toward fishing should have developed a more elaborate vocabulary about fish and fishing

than would a culture oriented toward farming.

Hess's Puget Salish Dictionary (Hess 1976) represents an extensive sample of native vocabulary without obvious bias toward one or another semantic domain, though it is of course not exhaustive. Hess lists by my count 25 named categories of fin fish (plus two general higher order categories and perhaps another 10 synonyms and variant terms) and 19 named categories of "shellfish" (plus one general category), of which 14 are molluscs. Smith lists five additional Lushootseed shellfish taxa, including three additional molluscs (1940:234-235, 245, 320-321), for a total of 24 shellfish taxa named in Lushootseed, including 17 molluscs. This admittedly crude comparison nevertheless suggests that the importance of shellfish is not greatly overshadowed by that of fin fish from the perspective of a native Lushootseed speaker.

A second indirect estimate of the relative significance of shellfish on southern Puget Sound is the archaeological record. This evidence is "indirect" in that the relationship between the quantities of prehistoric shellfish remains discovered - or as in the present instance, the number of sites at which a particular species of shellfish has been documented - and the quantities actually consumed on an annual basis within a particular region is complex and subject to a variety of poorly understood biases (Wessen 1993). We can safely conclude, I believe, that shellfish

species that are frequently noted in many local sites were regularly harvested by locally resident peoples. Drawing inferences from the absence or scarcity of such remains, however, is more problematical. For example, there are no documented remains of either abalone or dentalium from the 63 southern Puget Sound sites which have identified shellfish remains. Yet ethnographic evidence suggests that the shell of both species was considered "wealth" and important elements in regional commerce. Why, then, is there no evidence in the middens of this? The answer is obvious. Middens are trash heaps. One is not likely to find quantities of such valuable materials in a trash heap.

Other species of cultural or economic significance may not be present in these midden samples because the organisms lack durable remains, e.g., shrimp, crab, octopus, squid, and sea cucumber. Other species may have been overlooked due to their small size or friability, especially in light of the cursory nature of the investigations at the majority of sites. The absence or scarcity of other species could be due to a strategy of removing the animal from the shell at the point of harvest (likely for geoducks and horse clams) or smashing the shell in the process of removing the meat (e.g., chitons), as will be argued below. In fact, Wessen judges that only a single site (PI-50, Chambers Creek) within the area of the Medicine Creek cession has been subjected to systematic analysis for shellfish remains

(Wessen 1993:13).

The 63 midden sites within the Medicine Creek cession boundary (of which 37 fall within the Squaxin Island Tribe's portion) yield evidence of use of at least 18 species of marine invertebrates (14 withing the Squaxin territory), which include one barnacle and 17 mollusc species. The molluscs remains include nine bivalve species (eight withing Squaxin territory), seven gastropods (five within Squaxin territory), and one chiton (see Table 3). Several species stand out as particularly prominent. These are the Olympia oyster, found at 32 (51%) sites, the blue mussel at 29 (46%) sites, the butter clam at 28 (44%), little-neck clams at 24 (38%), basket cockles at 18 (29%), Lewis' moon snails at 16 (25%), acorn barnacles at 14 (22%), horse clams (Mactridae sp.) at nine (14%), and dogwinkles (Nucella sp.) at seven (11%). Scallop remains (Pectinidae sp.) were noted in only two sites, perhaps indicative of the fact that these shells are reported to have been highly esteemed as dance rattles, thus not likely candidates for the midden heap. That the 18 species documented archaeologically for southern Puget Sound is a low estimate is suggested by the fact that 114 species have been documented from 458 midden sites throughout western Washington, with no fewer than 90 species identified at the Ozette site (Wessen 1993).

If we pool the information from the archaeological record with the ethnographic evidence of Haeberlin and

Gunther (1930) and Smith (1940) and the linguistic evidence from Hess's dictionary (1976), we may conclude that at least 33 species of marine invertebrates were culturally recognized in southern Puget Sound. In particular, it is noteworthy that all the shellfish species that occur frequently are known to have been named with the exception of the Lewis' moon snail and the dogwinkles. The fact that the two species of horse clams (Tresus) known to occur were nomenclaturally distinguished and carefully differentiated by both Lushootseed and Twana consultants (though they were not distinguished in the archaeological record), indicates that southern Puget Sound Indians were expert malacologists. It is highly likely, therefore, that all useful species accessible to them were culturally recognized and systematically utilized.

Species named in Lushootseed but not recorded archaeologically include geoduck, dentalium, jingle shell, two species of chiton, two species of cephalopods, crab, sea cucumber, sea urchin, jellyfish, and a "beach worm." It is understandable that the soft-bodied species and shells used for ornament or as "money" (e.g., dentalium, abalone, jingle shell, scallop) would have left no trace in the midden record, but the absence of geoduck remains is less readily explained. Perhaps, being readily removed from their shells without prior cooking, the shells were discarded at the harvest site rather than with other species in the middens.

The three bodies of evidence so far considered indicate the cultural recognition and/or use of nereid worms, acorn barnacles, jellyfish, sea cucumbers, sea urchins, crabs, and 26 molluscs (12.4% of the 210 marine mollusc species known from Washington state), including 13 bivalves, seven gastropods, three chitons, two cephalopods, and the tusk or dentalium shell.

A further comparison is helpful at this point. As we have noted, shellfish use has never been the subject of a systematic ethnographic study in western Washington. However, such a study was conducted among the Manhousat, close linguistic kin to the Makah of Washington's outer coast and occupying a comparable habitat. This study was a collaborative effort by David Ellis, an ethnobiologist, and Luke Swan, a Manhousat elder born in 1893 who grew up in the traditional territory of his people on the outer coast of Vancouver Island (Ellis and Swan 1981). Mr. Swan recalls names for 33 categories of marine invertebrates and has forgotten the names of four more. These 37 culturally recognized categories refer in the aggregate to at least 43 species, including one annelid worm, six species of arthropods (barnacles, crabs, and shrimp), two jellyfish, seven echinoderms (seastars, sand dollar, and sea cucumber), and 24 molluscs. The molluscs are classified in 18 named categories (see Table 4). Lushootseed names have been

recorded for 18 mollusc categories also.

Mr. Swan knew more than just the names of these creatures. Some indication of the relative importance of these species from the Manhousat cultural perspective is the fact that the account of traditional use of the two local mussel species is four pages long, that seven pages are devoted to the harvest and preparation of the two largest chiton species, five pages on the butter clam, four pages about the octopus (the bulk devoted to mythical exploits of Miss Octopus and Mr. Raven), four pages on sea urchin cuisine, even one full page on sea cucumbers. Some indication of the intensity of local interest in these species is the fact that the three species of sea urchins found in the local waters (Strongylocentrus droebachiensis, S. franciscanus, S. purpuratus) are each named separately and carefully differentiated by habitat and mode of preparation. Swan discusses the difference of opinion among Manhousat elders as to whether the sea urchin gonads more effectively enhanced a man's virility if eaten when a clear orange color of when "milky."

Though the ethnographic record of southern Puget Sound mollusc ethnobiology is incomplete, the available evidence strongly suggests that the ancestral Squaxin peoples had developed a body of empirical knowledge about the most conspicuous and useful of the marine invertebrate species available within their range (in addition to a few exotic

species acquire in trade, such as dentalium and abalone) comparable in detail to that of the Manhousat of western Vancouver Island. I believe there were many Luke Swan's among the "Squaxin" Indians in the mid-1880s. Unfortunately there were no David Ellis's available to record in detail the traditional ecological knowledge, or TEK (Williams and Baines 1993), of shellfish accumulated by southern Puget Sound Indians during the millenia of their occupation of this territory nor the intricacies of local harvest practices with respect to those resources.

AN INVENTORY OF SQUAXIN SHELLFISH USE

Major Food Sources

1. Butter clam (Saxidomus giganteus, Veneridae), aka. "Washington clam." Known in Lushootseed as **ts'q^{w}ðt'** or sðx^{w}úb (< sðx^{w} 'grease, fat); considered a kind of **s.?áX^{w}u?** 'clam' (Hess 1976). The butter clam is a sturdy clam that grows to over 5" long (commonly 4"): "intertidal and subtidal, typically buried up to 30 cm in mud, muddy sand or muddy gravel" (Armstrong et al. 1993, Ch. 6, pg. 1), "but it is often much closer to the surface [than 30 cm]" (Kozloff 1983:294). Butter clams in the shell average 113 grams; shucked they average 33 grams (29% edible fraction). Thus, 7.6 butter clams would provide 200 calories, 10% of

the average minimum daily requirement. That number of clams would supply 28 grams of protein, 69% of the average minimum daily requirement.[5] It is far less common today than formerly, when the "canning industry was based" upon it. Introduced Manila clams (Tapes philippinarum, Veneridae) and soft-shelled clams (Mya arenaria, Myacidae, known in Lushootseed at **hí?ha?c**, literally, 'eastern horse clam') have displaced it over much of its 19th century range.

According to Armstrong et al. (1993, Ch. 6, pg. 12),

> "'the most extensive beds' of indigenous species [of hard-shell clams] occurred in bays radiating from the southern end of the Sound, the same general area that now produces most of the crop of introduced Manila clams.... 'beds of immense extent', highly productive, were reported for Hood Canal; south of Seabeck littlenecks were exceedingly abundant; north of Seabeck there were immense beds, mostly of butters [sic.] clams, 'extending for miles toward the mouth of the [Hood] canal.'"

Commercial hard-shell clam harvests were estimated at 3,000 sacks or 300,000 pounds/yr, "which were sold by the Indians at one dollar per sack" (Armstrong et al. 1993, ch. 6, pg. 7). Indians were soon displaced as harvesters: One early observer noted that "[In Olympia] many [littlenecks and butter clams] are dug by the whites who find this profitable employment" (Kershaw 1904). The first clam canneries were

5. Nutrient values are based on the Atlantic coastal quahog (Mercenaria mercenaria), which is the most similar species listed in Watt & Merrill (1963). Caloric and protein composition of the various molluscan species listed in this reference vary but little.

established in Puget Sound in 1897...; "non-Indian harvesters entered the trade, starting in the southern part of the Sound" (Armstrong et al. 1993, ch. 6, pg. 8). Excessive commercial harvests soon resulted in declining yields: "Even the abundant 'little necks' and 'butter clams' are yearly becoming less abundant; many beds that were once wonderfully productive, yielding little or nothing at present" (Kershaw 1904). The concentration of early commercial harvests of butter and littleneck clams in the south Puget Sound region - precisely the area home to the ancestors of the Squaxin Island Tribe - strongly suggests that butter clams were an abundant and widely distributed resource there.

Ethnographic evidence supports the assertion that butter clams were considered an important food resource by the Puyallup-Nisqually [inclusive of the Squaxin]. For example, Smith notes that,

"Butter clams and cockles were cured separately by the same process. They were first steam-baked, then removed from the shells and strung on thin, single cooking sticks.... Butter clams were pierced only once, the stick running through the body but not breaking the stomach itself; the head was then turned over and the stick run through the strap on the neck to hold the clam in position. A low rack made of a pole supported on forked sticks was built the length of an extended fire, the cooking sticks were stood up along this with one end on the ground and the other resting on the rack. The fish [i.e., butter clams and cockles] were cooked before the fire for an hour or less during which time the position of the cooking sticks was shifted four times.... When the fish were cooked thoroughly all the way through, they were removed from the sticks and, while still warm, strung by

> the same holes on strips of tanned cedar bark. They were then hung on the smoking racks and within one night or longer, depending on the fatness of the clams, became dry and hard" (1940:244).

Such carefully preserved shellfish would remain edible for a long time and were important items of interregional trade. In particular, Sahaptin speakers ("Klickitats" or Yakima Indians) from east of the Cascades were eager to trade their own surplus products for these smoked clams. The Sahaptin word for [salt water] clam is **sháxu** (Hunn and Selam 1990:312), clearly borrowed from Coast Salish (cf., the Lushootseed general term for clam **s.ʔáxʷuʔ**, which referred prototypically to the butter clam).

Archaeological evidence suggests that butter clams were among the most important and widely available shellfish species in southern Puget Sound. Remains identified as butter clams are reported at five Puget Sound sites in Mason County, at 17 sites in Thurston County, and at two more on the east side of Carr Inlet in Pierce County, for a total of 24 sites within the Squaxin Island Tribal territory. An additional 23 sites in the Squaxin region contained unidentified "venus clam" remains (i.e., butter or littleneck clams) (Wessen 1993).

2. Native littleneck clam (Protothaca staminea, Veneridae), also known as "Pacific littleneck," "steamer clam," "rock clam," and in some local communities as "butter clam," not to be confused with the preceding. Known in

southern Lushootseed as **k^{w}'úx^{w}di?;**[6] considered a kind of **s.?áX^{w}u?** 'clam'. Length about 2"; average gross weight in a mature local population was 28 gms. (Armstrong, Dinnel et al. 1993, vol. 2, pg. 5), for an approximate net weight of 10 gms. Thus 25 native littlenecks could provide 200 calories and 28 grams of protein, 10% and 69% of an average daily nutritional requirement. Kozloff describes their habitat as follows:

> "In protected situations where the substratum is composed largely of gravel mixed with sand or mud, certain clams reach their peak of abundance. First in order of importance, at least in the lower reaches of the intertidal region, is the littleneck clam, *Protothaca staminea*.... The population density of this species is sometimes so heavy that several specimens will be turned out in a single shovelful of gravel. Actually, it is hardly necessary to dig for this species, for it can be scratched out" (1983:292).

Once abundant in southern Puget Sound, the native littleneck clam has been largely displaced by the introduced Manila clam (Tapes (Venerupis) japonica), a close relative.

According to Anderson et al. (1993, ch. 6, pg. 16),

> "To a large extent, aquaculture has largely consisted in the *substitution* of natural stocks of native species (mostly native littlenecks) by culture of an introduced species (the Manila clam). It should be noted that the main producing area of Manila clams was also the main producing area of native species."

The following ethnographic evidence is from Smith:

> "Rock clams [i.e., native littlenecks] were steam-baked and eaten in great quantities at feasts. They

6. The northern Lushootseed term is **s.Xá?a?** (Hess 1976).

were, also, cured occasionally and would keep for a few weeks or even months. In curing they were steam-baked, removed from the shells and placed on drying racks in the sun. They were not strung on cedar bark and no smoke entered into the curing process" (1940:245).

Native littleneck clam remains are also widely reported from Squaxin area middens, where they have been noted in two Mason County sites, 16 in Thurston County, and at two additional sites in Pierce County on the east shore of Carr Inlet, for a total of 20 sites. Twenty-four additional sites in this area report unidentified "venus clams" remains, i.e., either butter or littleneck clams (Wessen 1993).

3. Heart cockle (Clinocardium nuttallii, Cardiidae), aka. "Pacific cockle," "Nuttall's cockle," or "basket cockle." Known in Lushootseed as **s.xδp'ab**; considered a kind of **s.?áXʷu?** 'clam'. A rather stout, thick shell to 4" long; common (Morris 1966). Kozloff notes that it "seems to prefer those portions of quiet bays in which the substratum consists of muddy fine sand" (290). It is versatile, however, and occupies a wide vertical range, from high intertidal to deep water. It is "found buried close to the surface (even exposed) in tidal flats of bays and estuaries" (Armstrong, Dinnel et al. 1993, ch. 6, pg. 1). As noted above, it was dried in much the same fashion as were butter clams and was an important item in the

trans-Cascade trade (Smith 1940).

Cockles are common and widespread in Squaxin area middens, having been recorded from 18 sites, 14 in Thurston County and 4 on the east shore of Carr Inlet in Pierce County (Wessen 1993). Cockles today have no commercial value but are an important component of the recreational catch (Armstrong, Dinnel et al. 1993).

4. Horse clams (Tresus capax and Tresus nuttallii, Mactridae), aka. "gaper clam" and "black-nosed clam" (specifically, T. capax). Native consultants speaking Straits Salish, Twana, and, Lushootseed were unanimous in distinguishing two species of "horse clams," one of which (T. nuttallii) - called **s.tδbcδ?** in Lushootseed - was described as "intermediate" between the common horse clam (i.e., T. capax) - called **ha?δc** - and the geoduck (Panope abrupta). T. nuttallii was longer and more given to accumulating "a growth of barnacles and seaweed" on the shell (Elmendorf 1960:125). This agrees well with Western scientific accounts which describe the more abundant T. capax as having the shorter shell and, though often sporting organisms growing on its siphons, "not to the extent characteristic of T. nuttallii" (Kozloff 1983). The two species also differ in distribution and life cycle. T. capax spawns February-March while T. nuttallii may spawn all year around, but does so most often in summer

at this latitude. This affected the season of native harvests and preferred processing techniques, at least for the Twana, as Elmendorf notes:

> "The meat of [T. nuttallii] was good at any time of the year.... [The] meat [of T. capax] was best in summer, poor in winter. This type was most often dried and strung on looped cedar-bark as with cockles" (1960:124).

T. capax occurs higher in the intertidal zone than does T. nuttallii. Both species attain a maximum weight of two kg (4.4 lbs.). If the edible portion of an average horse clam weighed 500 grams (25% of maximum gross weight), a single clam would provide 400 calories and 70 grams of protein, 20% and 175% respectively of the average minimal daily requirement.[7]

Horse clams of both types were cured and stored. Smith describes the process for the Puyallup-Nisqually (including the Squaxin) as follows:

> "It was not necessary to steam-bake horse clams to remove them from the shells.... Horse clams were strung... on flat cedar splints of the same length. It took four or five hours to cook them thoroughly, during which time the position of the splints was changed eight times.... The clams were left on the splints and laid across the smoking racks. When they were completely cured the splints were removed and the clams were strung by the same holes on tanned cedar bark. Twelve or fourteen horse clams were cooked upon one cedar splint.... One strip of tanned cedar bark was made to hold the clams from two splints.... The ends were tied tightly together, forming a sort of semi-pliable ring. Strings of horse clams were stored without further treatment

7. Based on reported values for eastern soft-shell clams (Mya arenaria).

> in large loosely woven baskets....
> The strings, intact, formed an important item of exchange.... Peoples from east of the mountains are said to have been very fond of these clams and one is given a particularly vivid picture of Sahaptin visitors wearing precious necklaces of clams which they munched on the homeward journey" (1940:244-245).

Given the elaborate processing described in the ethnographic record, it is curious that no horse clams are reported from Squaxin area middens. As with the geoduck, this may be attributable to the fact that the animals could be removed from their shells without steaming. Thus the heavy shells may have been discarded at the harvest site rather than on the midden.

5. Geoduck (Panope abrupta, Hiatellidae), aka. "giant clam" and "king clam." The odd English name is a corruption of the Salish term, which in Lushootseed is **gʷídδq**, said to mean in the Nisqually dialect "dig deep" (Morris, Abbott et al. 1980). Though the shell of the geoduck is no larger than that of the horse clams, its body is substantially heavier with a much longer siphon. Geoducks average a gross weight of 1-2 kg. but may attain 7 kg. A 1.5 kg. geoduck yields ca. 750 gms of meat. Thus one geoduck provides about 615 calories and 105 gms. of protein, 31% and 263% respectively of the average minimum daily nutritional requirement.

Some doubt has been expressed that Native Americans harvested geoducks on the basis of the fact that today the vast majority are harvested subtidally, to depths of 20 meters. However, the dearth of subtidal geoducks is a consequence of commercial overharvesting since the last century (Armstrong, Dinnel et al. 1993, ch. 5, pg. 2). Observers in the last century describe Indian harvests of geoducks from intertidal areas:

> "The boys at Olympia call them 'Geoducks'; they dig them on a certain sand bar at extreme low tide, and sell them to a merchant who ships them to Portland, Oreg., where they sell at fair prices. The boys inform me that the Indians on the Sound call them Quenux, and dry them for food with the other clams" (Ryder 1882).

Historically, the largest geoducks were found in southern Puget Sound; densities were also maximal here at 2.0/m^2; meat quality (tenderness and whiteness) was also judged best in the south Sound (Armstrong, Dinnel et al. 1993, ch. 5, pg. 3).

Smith notes for the Puyallup-Nisqually that, "The neck if the gwiduck was occasionally cured" (1940:245). Elmendorf notes that the geoduck "was obtainable in the southern Hood Canal region only at very low tides" (1960:123). It should be noted that ancestral Squaxin people frequently visited this portion of Hood Canal and had intermarried with the local Twana-speakers and thus would have had access to the area mentioned. As noted above,

there are no geoducks reported from Squaxin area middens, despite the evidence for their historical abundance there and cultural recognition. As noted for horse clams, this may be due to differences in processing between the large and smaller bivalves.

6. Olympia oyster (Ostrea lurida, Ostreidae), aka. "native oyster"; known in Lushootseed as **tɬ'úXtɬ'úXʷ** and carefully distinguished from **s.ʔáXʷu?** 'clam', since "oysters are on top of the ground, while clams are buried" (Hess 1976). Squaxin territory appears to have been the stronghold of the Olympia oyster. The largest beds in the 19th century were "in southern Puget Sound near Olympia"... and "the most productive area was Totten Inlet (Oyster Bay), followed by Eld Inlet (Mud Bay), Skookum Inlet [a branch of Totten Inlet], Hammersley Inlet, Oakland Bay [at the head of Hammersley Inlet], and South Bay [= Henderson Inlet]" (Armstrong, Dinnel et al. 1993, ch. 7, pg. 1). Commercial harvests began here in the 1850s, reached 100,000 kg. annually in the 1890s, and 358,000 kg. by 1905 under intensive cultivation. Pollution - especially from the sulfite pulp mill opened in Shelton on Oakland Bay in 1927 - and overharvesting led to the demise of the native oyster fishery and its replacement by introduced species such as the large Pacific oyster (Crassostrea gigas) and Kumamoto oyster (C. japonica).

The Olympia oyster is small. A bushel (ca. = 64 lbs.)

contains 2000-2500 shell oysters which yields approximately 8.75 lbs. or 4 kg. of meat. That is, each oyster yields just 1.8 gms. of meat. At that rate, 124 Olympia oysters provide 200 calories and 23 gms. of protein, 10% and 58% respectively of average daily nutritional requirements. Though small, Olympia oysters were locally abundant and needed only to be picked up off the mud at low tide.

Given the abundance of Olympia oysters in the Squaxin territory, it is not surprising that they are the most frequently noted shellfish species in local middens, reported from 13 sites in Mason County, 13 in Thurston, and three from the east shore of Carr Inlet in Pierce County (Wessen 1993). Ethnographic detail on the use of native oysters is scant. Smith notes only that, "Oysters were never eaten raw" (1940:242). Elmendorf provides a bit more information for the neighboring Twana. "The indigenous Oylmpic oyster (tusa'yad) was gathered in lagoons, tidal pools, and at the mouths of streams. It was eaten steamed, often with clams, or boiled (1960:124).

7. Edible mussel (Mytilus trossulus, Mytilidae; = M. edulis), aka. "blue mussel"; known in Lushootseed as **sctitc'** (Smith 1940:245). The large California mussel (Mytilus californianus) was available only on the outer coast. Introduced Mediterranean mussels (Mytilus galloprovincialis) - very similar to the native edible mussel - now hybridize with it in Puget Sound. Edible mussels occur in dense

masses attached to pilings or rocks and may grow to 6 cm. in length. It is "characteristic of quiet waters and of estuaries where the salinity is relatively low" (Kozloff 1983:137). Given the relative scarcity of rocky shorelines in Squaxin territory, this mussel was probably only locally abundant. It is nevertheless commonly reported from middens in the area, having been reported from 24 Squaxin area sites, including 11 in Mason County, eight in Thurston, and five on the Pierce County shore of Carr Inlet (Wessen 1993).

Ethnographic detail is limited: For the Puyallup-Nisqually (inclusive of the Squaxin), we are told that, "Mussels only took ten or fifteen minutes to cook. Sometimes they were laid on hot coals and eaten as soon as they opened" (Smith 1940:243). For the neighboring Twana, we learn that, "One kind of mussel (t'a'w') was gathered as food. It was never dried, and was prepared by roasting in the shell on a "grate" of sticks over hot coals. Mussels were regarded as unfit to eat at certain seasons" (Elmendorf 1960:124).

Shellfish Species of Secondary Nutritional Value

The following species are noted in one or more ethnographic sources - typically either Haeberlin and Gunther (1930), Smith (1940), or Taylor (1974) - as having been harvested and eaten by Indian peoples of southern Puget

Sound, or their remains have been noted in Squaxin area middens.

1. Sea urchins (Strongylocentrotus spp,), aka. "sea eggs"; known in Lushootseed as **sqʷéqʷetc** (Smith 1940:235). Three species of sea urchins are common in Washington marine waters, but only two occur in the upper Sound, the green (Strongylocentrotus droebachiensis) and the red (S. franciscanus). The green sea urchin is the dominant species within Puget Sound. It grows to 100 mm in diameter. "Highest densities occur in shallow subtidal areas on rocky, gravelly, or shelly substrates; occasionally found on sandy bottoms" (Armstrong, Dinnel et al. 1993, vo. 2, pg. 63). The larger red sea urchin is partial to "hard substrates, especially rock shelves, ledges, crevices, and boulder fields. Often highly aggregated" (Armstrong, Dinnel et al. 1993, vo. 2, pg. 63). The red sea urchin was thus less likely to have been commonly harvested in Squaxin territory than the green. Smith notes only that, "Sea eggs were eaten raw" by the Puyallup-Nisqually (1940:235). Taylor reports that "sea eggs" were eaten by the Medicine Creek Treaty tribes but that they occured only in the Clallam area (Taylor 1974:440). The Manhousat of the west shore of Vancouver Island distinguished all three species nomenclaturally and considered the gonads to be a delicacy and to boost the virility of men (Ellis and Swan 1981). Sea urchin roe are in high demand in Japan and commercial

harvests in Puget Sound today are near maximal sustainable yields (Armstrong, Dinnel et al. 1993, vo. 2, pg. 66).

2. Red sea cucumber (Stichopus californicus), known in Lushootseed as **tδjábac**. Adults "generally prefer mud and sand bottoms" (Armstrong, Dinnel et al. 1993, vo. 2, pg. 69). Adults may be 60 cm. long and weigh 500 gms. Smith reports only that, "The sea cucumber was boiled." Ellis and Swan describe several means of eating sea cucumbers among the Manhousat. Elders noted that sea cucumbers were, "food which because it is only occasionally eaten, tastes especially good" (1981:59).

3. Mud clams, sand clams, and tellins (Macoma nasuta, Macoma secta, Tellin sp., Tellinidae). These smallish clams are common intertidally in southern Puget Sound. No names have been recorded for them in any Puget Sound Indian language, though they have been reported from a handful of Squaxin area middens (Wessen 1993). Snyder (1968) provides the only ethnographic evidence that these clams were eaten, noting that Macoma sp. was eaten by Puget Sound Salish peoples.

4. Scallops (Pectinidae). Several species of scallops occur in Puget Sound, including the spiny scallop (Chlamys hastata), the pink scallop (Chlamys rubida), and the weathervane scallop (Patinopecten caurinus). The rock scallop (Hinnites giganteus) is common in the Straits of Juan de Fuca but rare in the more sheltered waters of the

Sound (Armstrong, Dinnel et al. 1993, vo. 2, pg. 29-34). Scallops are mostly subtidal, occuring in waters 5-200 meters deep. They are thus not likely to have been readily harvested in quantity. Taylor reports the use of scallops as food by the Squaxin, but notes that they were "found only in Clallam waters" (Taylor 1974:440). He notes also their use as rattles in spirit dancing (see below). Two Thurston County middens within the Squaxin area report unidentified species of scallop (Wessen 1993).

5. Lewis's moon snail (Polinices lewisii, Naticidae). No Puget Salish name has been recorded. It is, however, rather frequently reported from middens in the Squaxin area, from 12 Thurston County sites and one on the Pierce County shore of Carr Inlet. This giant marine snail may grow to 12 cm. high (Kozloff 1983:284). It favors shallow water and sand flats (Morris 1966:78). According to Luke Swan, , "it was thought that anyone who ate it would become "stupid"; the moon snail was not utilized in any way [by the Manhousat]" (Ellis and Swan 1981:29). It such were also the case with the Squaxin, it remains to be explained how it get in so many middens.

6. Miscellaneous gastropods (Gastropoda). A single Lushootseed term, **q'δyátɬ'δd**, is noted for "snail, slug" (Hess 1976); Smith notes that a black-shelled fresh water snail called **kʷayetsks** was used as an ornament and wealth object as was an unnamed pale-colored marine snail. This

could be the "olivella" (most likely the purple olive, Olivella biplicata, Olividae) mentioned by Taylor as sometimes "used as money and ornaments" by the Medicine Creek Treaty tribes (Taylor 1974:439). Middens in the Squaxin area yield several small gastropods, including unidentified limpets (Acmaeidae), finger limpet (Acmaea digitalis), northern chink shell (Lacuna vincta, Lacunidae), unidentified dogwinkle (Nucella [Thais] sp., Thaididae), and emarginate (Nucella [Thais] emarginata) and frilled (Nucella [Thais] lamellosa) dogwinkles, suggesting that they were in fact occasionally eaten. The Manhousat occasionally ate limpets (e.g., Tectura scutum and Lottia pelta; both common in Puget Sound) and black turban snails (Tegula funebralis, Trochidae; confined to the outer coasts).

7. Chitons (Polyplacophora), especially the black katy or "black chiton" (Katharina tunicata, Mopaliidae) and the gumboot or giant chiton (Cryptochiton stelleri, Acanthochitonidae). The black katy grows to over 35 mm. long, while the gumboot chiton, largest in the world, may reach 330 mm. These two large chiton species are distinguished nomenclaturally in Lushootseed, Straits Salish, and Manhousat. The Lushootseed and Straits Salish terms are cognate. Lushootseed: black katy = **t'ənsəwíc** (Hess 1976), gumboot chiton, aka. "Chinese slipper" = **ok's** (Smith 1940:245). Smith describes how, "Chinese slippers were taken at low tide from the deep water rocks. They grew

to be eight inches long and were eaten when they were soft." Ellis and Swan describe elaborate processing techniques lavished on both these species by the Manhousat (Ellis and Swan 1981:34-48). Only a single midden within the Medicine Creek treaty area turned up a chiton, of unidentified species (Wessen 1993). Again, the absence of chiton remains may be more indicative of the mode of processing than of any lack of interest in this species by the ancestors of the Squaxin. The Manhousat immediately cut through the foot, then pound the animal to break up the plates, after which they are removed. This quick action prevents the chiton from curling tightly into a ball, which would make processing more difficult. Black katies were also pounded in this way, shattering the plates. Even if then deposited in the middens, they would be hard to recognize at a casual glance.

8. Cephalopods (Cephalopoda), including the North Pacific octopus (Octopus doefleini, Octopodidae) and the market squid (Loligo opalescens, Loliginidae). The octopus is known in Lushootseed as **s.qδlδch**; a second term, **s.qíbk^{w}'** may be used to refer to both octopus and squid (Hess 1976). The North Pacific octopus are "most abundant in rocky areas..., using crevices or submerged structures ... for shelter (Armstrong, Dinnel et al. 1993, vo. 2, pg. 39). They commonly grow to 45 kg. and three meters in diameter. The south King County beach at Redondo was known as a

particularly good place to hunt them, and Puyallup and Muckleshoot Indians (and perhaps their neighbors) travelled there for octopus. Smith notes that,

> "Devil fish [i.e., octopus] were a favorite food. The people of the upper Puyallup valley made special trips to the Sound in the neighborhood of what is now Rodondo [sic.] Beach, where devil fish were plentiful, in order to secure them. They were picked up while asleep along the shore.... The head, which had to be eaten immediately, was split, opened flat and roasted. But the solid meat of the arms was the favorite portion because of its salt water taste. The arms were sometimes chewed raw, more generally they were boiled until about three quarters done: fully cooked they became dry and tasteless. Chewing the partially cooked arms was highly recommended for an alcoholic hang-over" (1940:233).

Unlike most molluscs, octopi were hunted by men, not gathered by women (Elmendorf 1960:123). Taylor lists "cuttle-fish" as eaten by the Medicine Creek tribes (1974:439). His comment that, "The whale, halibut and cuttle-fish seldom visit the waters of the upper Sound, and hence are used by but few of the Indians living there," suggests that he was refering, in fact, to the squid. Market squid feed in schools offshore, but "move inshore to sandy or muddy shallows (3-40 meters deep) to spawn, generally in late summer but also in early winter in Puget Sound" (Armstrong, Dinnel et al. 1993, vol. 2, pg. 37). Adults are 150-165 mm. long.

9. Acorn barnacles (Balanus nubilus and Semibalanus cariosus, Balanidae), known in Lushootseed as **c'úbc'ub**. "Balanus and Semibalanus are found attached to rocks,

pilings, or other hard surfaces; Balanus primarily in areas with strong currents" (Armstrong, Dinnel et al. 1993, vol. 2, pg. 61). **Semibalanus** grow to 60 mm. diameter; Balanus may reach 100 mm., the largest barnacle in the world. Smith reports that, "There is some indication that barnacles, unlike other shellfish, were eaten raw" (Smith 1940:243). Haeberlin and Gunther report, however, that, "Clams, oyster, mussels, and barnacles were smoked and strung on buckskin or sticks for winter use. None of these were eaten raw" (1930:24). They note also that, "When constantly picked, barnacles became large and juicy and were preferred to the oyster. Only certain places where the beach was clean and the tide ran swiftly were visited for barnacles, for those in sluggish water frequently were poinsonous" (1930:21). The Manhousat likewise believed that continual harvesting of barnacles (and of mussels) improved their quality (Ellis and Swan 1981:85). Acorn barnacles are quite common in Squaxin area middens, having been reported from 2 sites in Mason County, six in Thurston, and three in Pierce County on the eastern shore of Carr Inlet (Wessen 1993).

10. Crabs (Cancer magister and Cancer productus), known in Lushootseed as **bδsqʷ**, likely a general term inclusive of all crabs. The two species cited above are by far the largest crabs available to the Squaxin and likely the "two [species] of crabs" eaten by the Medicine Creek tribes to which Taylor refers (1974:439, 440). Haeberlin

and Gunther report that, "Several kinds of shell fish were used such as: clams, oysters, barnacles and crabs" (1930:21). Elmendorf reports that among the Twana, "Crabs were eaten, boiled; the method of taking them is uncertain" (1960:124).

Shellfish Species Used for Ornament or Money

1. Jingle shell (Pododesmus cepio, Anomiidae), aka. "rock oyster." Hess cites a "very large oyster. The shell was used as 'money'. This shell was Crow's father-in-law in a myth" (1976); called in Lushootseed **x^{w}.ch'íɬqs**. Haeberlin and Gunther describe a form of shell money, "X^{u}tciɬqs was made of the shell of a very large clam found in the north. Since it was not found in the Snohomish territory, it was highly prized by them. Two to four large shells were worth a slave. Pieces of this money were worn at the end of a necklace, or a chief would have a piece in each ear" (1930:29. I surmise that the shell in question may be this species, as it grows to 4".

2. Scallops (Pectinidae). As noted above, several species of scallops occur in Puget Sound, including the spiny scallop (Chlamys hastata), the pink scallop (Chlamys rubida), and the weathervane scallop (Patinopecten caurinus). The rock scallop (Hinnites giganteus) is common in the Straits of Juan de Fuca but rare in the more

sheltered waters of the Sound (Armstrong, Dinnel et al. 1993, vo. 2, pg. 29-34). Scallops are mostly subtidal, occuring in waters 5-200 meters deep. Taylor notes the use of scallop shell rattles in spirit dancing (1974). Smith describes "the fan-shaped, salt water shells known as *sxwaíxwai*" which had economic and decorative value" (1940:320). This could be a scallop. "Bracelets and earrings were said to have been made of *sxwaíxwai*, shaped into flat, pearly circles over an inch in diameter.

3. Abalone (Haliotis kamtschatkana, Haliotidae). I have found no Lushootseed name for this species. It is not native to Puget Sound, but was acquired by trade from peoples to the north. Haeberlin and Gunther report the use by Nisqually women of abalone shell earrings (1930:41).

4. Unidentified gastropods. Smith describes "a small snail-like, black shell found on fresh water lakes and called *kwayétsks;* and a pearly shell similar to the latter but found on salt water beaches.... All of these shells were strung and worn as necklaces" (1940:320). The latter, unnamed marine gastropod could be the purple olive (Olivella biplicata, Olividae).

5. Dentalium (the tusk shell, Dentalium pretiosa, Dentaliidae), referred to in Lushootseed by the general term for shell valuables, **s?úlδX** 'possession' (Hess 1976). Tusk shells were obtained from groups to the north. This term was likewise used for an "unidentified kind of mussel like

'thing from which beads and earrings are made'" (Hess 1976). This is reminiscent of an unidentified exotic shell the Manhousat people prize for its thickness and durability. This may be the California abalone (Haliotis rufescens) (Ellis and Swan 1981:64-66). Haeberlin and Gunther report that high class women wore "shell money" in the septum and as ear ornaments (1930:41).

Miscellaneous Shellfish

1. Jellyfish (Ctenophora; Cnidaria: Hydrozoa & Scyphozoa), known in Lushootseed as **kδlápᵟXʷδlch**. Not known to have been used.

2. Polychaete worm (Nereis vexillosa), known in Lushootseed as **q'iyaw?**, used for bait.

3. Shrimp, no Lushootseed term recorded, used for bait?

SQUAXIN SHELLFISH HARVEST LOCATIONS

There are few references in the ethnohistorical and ethnographic sources to specific sites where ancestors of the present-day Squaxin Inland Tribe harvested one or more of the various species of shellfish they are known to have used. The earliest specific reference is by Menzies May 20, 1792 at Wollochet Bay off Hale Passage within the adjudicated area. He reported an encounter with "... an old

woman... setting near their baskets of provisions & stores, the former consisted chiefly of Clams some of which were dried & smoked, strung up for the convenience of carrying them about their necks, but a great number of them were still fresh in the shell...." (Newcombe 1923:33-34). Puget reports that, "About a mile from Dinner Point we found a small cove at the head of which were a party of ... Indians... drying clams...." (Anderson 1939:1960197). Menzies also reported "two or three families occupied in drying & smoking of Clams skewered upon small rods..." (Newcombe 1923:28) at the mouth of the Skokomish River on upper Hood Canal May 12, 1792. The crew purchased cockles and clams from these Indians. Though the mouth of the Skokomish River is outside the Squaxin Island Tribe's adjudicated area, there is ample evidence that individuals from both upper Case Inlet and upper Hammersley Inlet visited and feasted with kin in this area before and shortly after 1855.[8]

Smith describes, "Meetings,... which occurred at exceptionally good clamming grounds or at locations especially productive of roots and berries ,,, annual, anticipated occurrences.... eight regions used by joint summer expeditions in this fashion and indicating rather

8. Elmendorf mentions a large potlatch given at Inatai [just north of the mouth of the Skokomish River on the west shore of Hood Canal] "... by a group of Skokomish, Duhlelap, and Squaxon sponsors..." (1960:293), in the early 1860s.

permanent family group attachments may be listed as follows: ... d. Fox Island, villages 15-18 [located in upper Carr Inlet; village 13, located at the head of Wollochet Bay, might be included here rather than with the Colvos Passage group]; e. Anderson Island, village 27 [located at the head of Henderson Cove, aka. South Bay]; f. Squakson Island, villages 30 (?) [located on Oyster Bay in upper Totten Inlet], 31-32 [located on Hammersley Inlet]; g. east side of Harstene Island, villages 33-34 [located at the head of Case Inlet]" (1940:26; emphasis added).

Waterman's list of 150+ named places within the Squaxin Island Tribe's adjudicated area rarely implicated shellfish harvesting directly. However, his site #10, Herron Is., located on the east shore of Case Inlet opposite Harstene Island, was called "where the tide goes far out." This would imply an extensive shellfish habitat. His site #107 located near the head of Mud Bay on upper Eld Inlet was named for the fact that visiting Chehalis Indians "wiped the mud from their feet" after harvesting a dinner of clams here. This site is close to the "large and thriving village" of "sqwaya'itL" [cf. the "Squi-aitl" of the Medicine Creek Treaty]. At Waterman's site #145, located on Ellice Bay [aka. Filucy Bay] near Longbranch, "formerly an enourmous quantity of claws [sic.; "clams" is surely intended] & mussels here." Waterman's site #156 was named "steaming place" [on Still Harbor on the north side of

McNeil Island] because "many clams were obtained here, which were cooked by steaming in pits" (Waterman 1920).

Upper Budd Inlet at and north of the present site of Olympia was well known for the abundance of Olympia oysters harvested there at about the time of the treaty. Lane quotes Steele as follows:

> "In those days a wooden bridge crossed Budd Inlet near the location of the present concrete bridge to the Westside district.... Chinatown was located south of this bridge along the east shore; so, in Territorial days the Chinamen took over possession of the oysters south of the bridge [from the local Indians]. North of the bridge and on both sides of the bay, the oysters were claimed by the Indians who had a village on the west side just north of the bridge [presumably the village of the 'Stech-chass" of the Treaty]. The natural oyster beds south of the bridge are now covered by water due to the dam recently constructed to create a lake for capital beautification [i.e., Capitol Lake]" (Lane 1993:139-140).

Tide flats at or very near present-day Olympia were also noted as a place where Indians harvested geoducks:

> "The boys at Olympia call them 'Geoducks'; they dig them on a certain sand bar at extreme low tide, and sell them to a merchant who ships them to Portland, Oreg., where they sell at fair prices. The boys inform me that the Indians on the Sound call them Quenux, and dry them for food with the other clams" (Ryder 1882).

Lane quotes from the testimony of Andrew Lewis, a 77 year-old Upper Chehalis elder, in the Swindell report (1942:127) that "he has heard that it [an abandoned village site on North Bay, upper Case Inlet] always has been used by the Indians to obtain clams" (Lane 1993:141). She cites the Meeker Family Notebook to the effect that,

"At Still Harbor [on the north side of McNeil Island, Waterman's site #156, see above] used to get butter clams";

"[Long Branch, head of Filucy Bay] place for drying clams gathered in Filucy Bay";

"[at Purdy, on Henderson Bay at head of Carr Inlet] clams";

"[on Raft Island, south side, Carr Inlet] clams between island and mainland";

"[Arletta, beach along bight, Hale Passage] butter clams, and, later in season, horse clams";

"[Sylvan Bay to northwest on Hale Passage side of Fox Island] butter clams" (Lane 1993:142-143).

Lane and Lane's report on "Squaxin Indian Trust Lands on the Public Domain: A Preliminary Report" (1979) locate homesteads and oyster beds owned by Squaxin Indians in the 1880s. These are on Totten Inlet in T19N, R3W, Sections 13, 22, and 24; on Eld Inlet in T18N, R3W, Section 12; and in Hammersley Inlet in T20N, R3W, Section 19. The dispute that arose when the new state of Washington attempted to sell off Squaxin Island tideland demonstrates the importance of those areas as traditional Indian shellfish harvesting area.

Lane also cites Collins' 1892 "Report on the Fisheries of the Pacific Coast" that there were "major native oyster beds in the vicinity of Flapjack Point" in Eld Inlet, "along the west side and north of the mouth of Little Skookum Inlet," in "Totten Inlet," in "Skookum Inlet," "on the west

side [of Carr Inlet] between South Head and Glencove," on "Henderson Bay, Carr Inlet," and that there were native oyster beds [not noted as "major"] also in Peale Passage, east of Squaxon Island and in Oakland Bay (Lane 1993:140-142). We may likewise note areas classified since 1980 as "restricted," "conditional," or "prohibited"for commercial harvesting as areas likely to have been productive harvest areas for the ancestors of the Squaxin Island Tribe. Such areas include 194 hectares in Burley Lagoon at the head of Carr Inlet, restricted for Pacific oysters and Manila clams; 38 hectares in Minter Bay on the west shore of upper Carr Inlet restricted for Pacific oysters; 243 hectares in lower Eld Inlet, conditional for Pacific oysters and Manila clams; 121 heactares in Henderson Inlet, conditional for Pacific oysters and Manila clams; 332 hectares in Oakland Bay restricted for Pacific oysters and Manila clams; 255 hectares in Lynch Cove at the head of Hood Canal, prohibited for Pacific oysters and Manila clams [at the site of a recent Twana settlement, but at a location that was likely previously occupied by Lushootseed speaking Case Inlet people]; 561 hectares in North Bay at the head of Case Inlet, prohibited for clams and oysters (Armstrong 1993, Table 6, pg. 41). It is reasonable to assume that those areas restricted for Pacific oysters supported highly productive Olympia oyster populations in the 19th century and that those restricted for "clams" or Manila clams were

rich in the native littleneck clam, which the Manila clam has largely replaced, and/or the larger butter and horse clams. It is striking that these restricted areas are at or very near the sites of six of the seven winter villages of the groups constituting the Squaxin Island Tribe.

Finally, it should be noted that the rich shellfish beds at the head of Hood Canal from the Skokomish River delta to Lynch Cove were accessible to ancestors of Squaxin Island Tribal members by virtue of frequent intermarriage between residents of upper Case Inlet [the "Squawksin" of the Treaty] and Oakland Bay up Hammersley Inlet [the "Sa-heh-wamish" of the Treaty]. According to Elmendorf, "... marriage relations along this axis were intimate with... the Sahewamish and Squaxon... eating contest [with these groups] were a common type of intercommunity activity" (1960:292). Well-used trails joined Case Inlet at Allyn with Lynch Bay and Oakland Bay at Shelton with the region of the Skokomish Delta. A site at the head of Oakland Bay bears a Twana name, while the name of the Twana village at Lynch Cove - said to have been establish after 1800 - is based on a Lushootseed stem. This suggests extensive contact. Thus the known shellfish harvest sites on Hood Canal at and above the "The Great Bend" may be considered traditional sites of the Squaxin as well. Elmendorf notes the following: site #10 on the north bank of the Skokomish River near the mouth of Purdy Creek, "a place where one eats mussels out of the

shell"; site #117, Patricia Beach, a straight stretch about one mile long east from Hillyer's Point, "a camping site for clam digging"; site #129, "... extensive mud flats"; site #139, the name means "having a lagoon", "Oysters were gathered in the lagoon"; #141, "oysters were gathered in the lagoon behind the point,..." [a midden here also]; #151, Ayres Point, "Clam digging was good to the east of the point" (1960:33, 47-51).

I refer the reader to Wessen's map showing the locations of 140 middens within the Squaxin Island Tribe's adjudicated area. Seven additional midden sites are mapped on upper Hood Canal in the area of joint utilization with the Twana. These midden sites cluster as follows: 19 on upper Case Inlet, eight on the west shore of Harstene Island, one on the east side of lower Case Inlet, five on Squaxin Island, eight on the west side of Pickering Passage, three on Hammersley Inlet, 13 on Totten Inlet, 25 on Eld Inlet, seven on Budd Inlet, five on Henderson Inlet, nine in Filucy Bay and the west side of Pitt Passage, ten on the north side of McNeil Island, seven on the west shore of lower Carr Inlet, 15 on Henderson Bay in upper Carr Inlet, and five in Hale Passage. It must be noted that this inventory does not represent an exhaustive nor systematic inventory. Nevertheless, the known midden sites closely reflect the areas documented by other sources as tradtional harvest areas.

CONCLUSIONS

1. The ancestors of the present-day Squaxin Inland Tribe depended upon an extensive body of detailed empirical knowledge of all the larger shellfish species withing their range. They harvested a diverse assortment of available shellfish for food and technological purposes. Key food staples included species such as the butter clam, native littleneck clam, horse clam (two species), geoduck, Pacific cockle, Olympia oyster, and edible mussel, and perhaps the Lewis's moon snail and acorn barnacle (two species) were sytematically harvested in quantity. The larger clams (five species) and the cockle were dried in quantities for the winter food supply and for trade with groups living east of the Cascades in exchange for such prized east-side resources as Indian hemp and bitterroots.

2. Bivalve molluscs were harvested at many locations, perhaps wherever large, accessible populations were found within easy travelling distance of villages or campsites. Winter villages were invariably located adjacent to extensive tideflats, where a variety of bivalves could be harvested in winter during nighttime low tides by moonlight.

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