

Contact Period Earth Ovens in the San Juan Islands, Washington

Stephanie A.E. Jolivette and Amanda K. Taylor

During the summer of 2008 the San Juan Islands Archaeological Project (SJI-AP) investigated two archaeological sites, one containing circular depressions whose dimensions and content suggest their use as earth ovens by past native peoples (Figure 1). It is known from historical and ethnographic sources that camas and other vegetal resources were roasted and steamed in earth ovens by Coast Salish peoples at contact. This study provides the first archaeological dates for the use of such ovens in the San Juan Islands, Washington.

Historically root crops such as camas (*Camassia sp.*) were harvested in bulk by native families and then processed by placing them in earth ovens, often adjacent to the collecting location. Bernard Stern noted the importance of camas to Lummi groups, describing how the women of the tribe gathered large numbers of these roots at harvest in order to insure a year-round supply (1934:42). Wayne Suttles provides evidence that the Saanich and Samish had plots in the San Juan Islands that were owned by specific families (1951:60). More recent interviews of Lummi elder Herman Olsen has verified the importance of this crop to the native diet even after European foods were introduced to the region (Nugent 1999:56).

This wild root crop has been so important to native groups that it has been managed through such horticultural practices as replanting bulbs and burning off the prairies to encourage renewed growth in the following year (Deur 2002, Storm & Shebitz 2006). Recent work on prairie management on Yellow Island in the San Juan Islands, Washington has shown that camas plants increase in abundance when their landscape is managed with fire; however the time depth of such fire regimes is only partially understood (Dunwiddie 2005).

Ethnographic studies have detailed

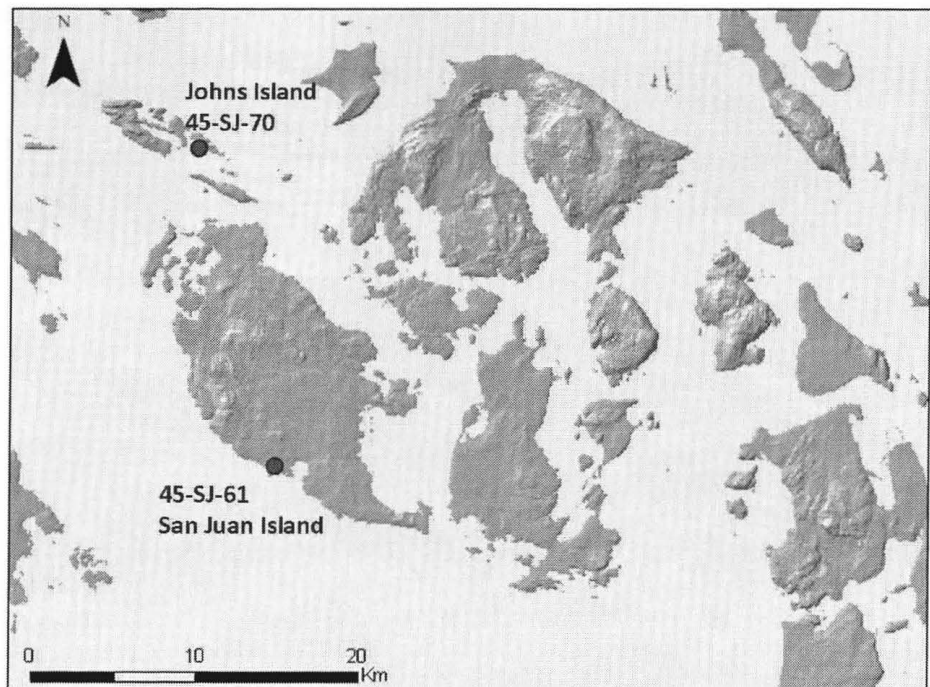


Figure 1. San Juan Islands, Washington map with archaeological sites sampled for study; Figure 2 (above). Graduate Students Amanda Taylor and Emily Peterson standing in circular depressions on San Juan Island.

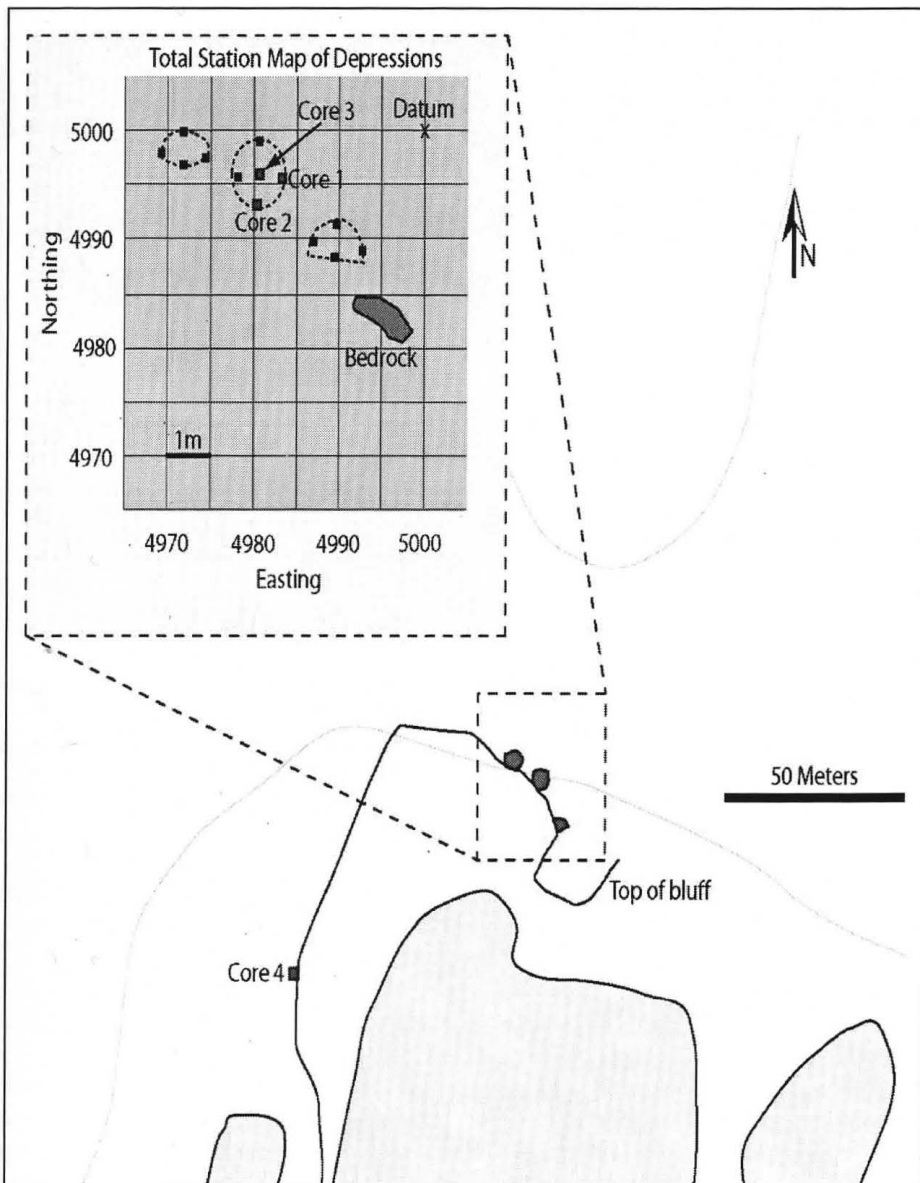


Figure 3. Site Map of 45-SJ-61, San Juan Island.

the historic and modern system of building and firing camas ovens (Downing & Furniss 1968, Stern 1934, Suttles 1951), and archaeological experimental studies have outlined the basic characteristic of camas ovens (Smith & Martin 2001, Wilson & DeLyria 1999). A Saanich informant described the roasting oven as a roughly circular hole dug two feet deep and four feet across which contained rocks heated by fire within the pit and then covered by wood and vegetation to impart flavor while steaming the camas bulbs (Suttles 1951:61). This description very closely fits the depressions investigated on Johns Island and San Juan Island by the SJIAP that are described below.

Sites Investigated

Although the presence of potential camas oven sites in the San Juan Islands has long been noted, with the circular depressions on Johns Island being reported as early as 1947, none of these features had been directly dated prior to our study. In 1986 the Johns Island site (45-SJ-70) was revisited and it was noted that the site "contains at least 4 areas with clusters of circular depressions (as many as 20 may be present)" (Wessen 1986b). In 2008 only two clusters of a total of 8 depressions remained, the rest lost to erosion or landscape modification. The circular depressions at site 45-SJ-61 on San Juan

Island were not previously reported and thus it is unknown if additional ovens once existed in the area (Figure 2). However, at least one of the ovens at this location has partially eroded off of the edge of the cliff and thus it is likely that others in the area may have been destroyed.

At site 45-SJ-61 on San Juan Island samples were taken from both the center (core 3) and the edge (core 2) of the earth oven from both a top and bottom depth (Figure 3). Ethnographically such ovens were reused annually and thus top and bottom dates allow a measurement of use over time (Suttles 1951). Samples from the center and edge of the oven were taken to control for oven cleaning practices, since between uses of the oven they may have been cleaned and the resulting refuse piled on the edge of the oven. A sample from the adjacent shell midden (core 4) was also taken to determine if the oven and midden were in use during the same time period. Only a single sample was taken for dating due to the highly eroded nature of the midden.

At 45-SJ-70 on Johns Island samples were taken from the center (core 1) and edge (core 2) of one circular depression. Charcoal samples from core 1 were submitted for radiocarbon dating (Figure 4). However, midden samples from two distinct areas of archaeological site were dated to determine whether the depressions might have been used at the time of either midden occupation. The project emphasized this comparative approach in order to determine whether native peoples visited the site solely to process camas or if earth oven use was contemporaneous with midden accumulation.

Bulk soil samples were collected using a manual auger and, in the case of midden samples, directly from the eroding bank. Charcoal samples were later screened from the soil samples taken from the depressions, and large, complete shells were taken from the midden bulk samples for radiocarbon dating. While augering the depressions it was noted that they primarily contained loose, sandy soil and large quantities of fire modified rock. At both sites the ovens were found to contain neither shell nor bone, which further supports the idea that the ovens were used primarily to roast and steam vegetal matter.

Auger samples were taken up to 60cm below surface at the site on San

Juan Island where the loose soil prevented sampling to the bottom of the feature. Augering at the site on Johns Island was halted when a large number of rocks were encountered at a similar depth. A larger excavation of one of these features could yield potentially older dates if deeper samples could be obtained. However, the overlap in age of both top and bottom dates within the ovens suggests that they accumulated very rapidly and thus samples collected below the 60cm mark might fall within a similar age range (see below).

Analysis

Prior to radiocarbon dating, charcoal samples were identified to species by Paleoresearch, Inc. to identify shorter-lived taxa to avoid dating wood from the inner part of longer-lived taxa. Categories of shorter lived species that were selected for dating include alder (*Alnus sp.*), aspen/cottonwood (*Populus sp.*), maple (*Acer sp.*), and aspen/cottonwood/willow (*Salicaceae*).

Total analysis of the charcoal samples from each bulk sample indicated that local vegetation in the vicinity of both sites at the time of occupation was characterized by coniferous forests dominated by douglas fir (*Pseudotsuga menziesii*), pacific madrone (*Arbutus menziesii*), shore pine (*Pinus contorta*), western red cedar (*Thuja plicata*), and bigleaf maple (*Acer macrophyllum*). At 45-SJ-61 alder (*Alnus sp.*), douglas fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), aspen/cottonwood (*Populus sp.*), and maple (*Acer sp.*) were used for fuel in the roasting ovens. At 45-SJ-69 on Johns Island fir (*Abies sp.*) and other conifers, aspen/cottonwood/willow (*Salicaceae*), madrone (*Arbutus menziesii*), douglas fir (*Pseudotsuga menziesii*), and western red cedar (*Thuja plicata*) were utilized.

Shell dating work for the project was conducted by Beta Analytic and a marine reservoir correction was applied to the shell samples to make them comparable to the charcoal samples following values established by Deo et al. (2004) and refined by Daniels (2009). The regional correction value (ΔR) established by these studies at 0-600 BP and 1000-3000 BP is 400 years, while the ΔR for 600-1000 BP is 0 years. All date results are presented in calibrated years before present.

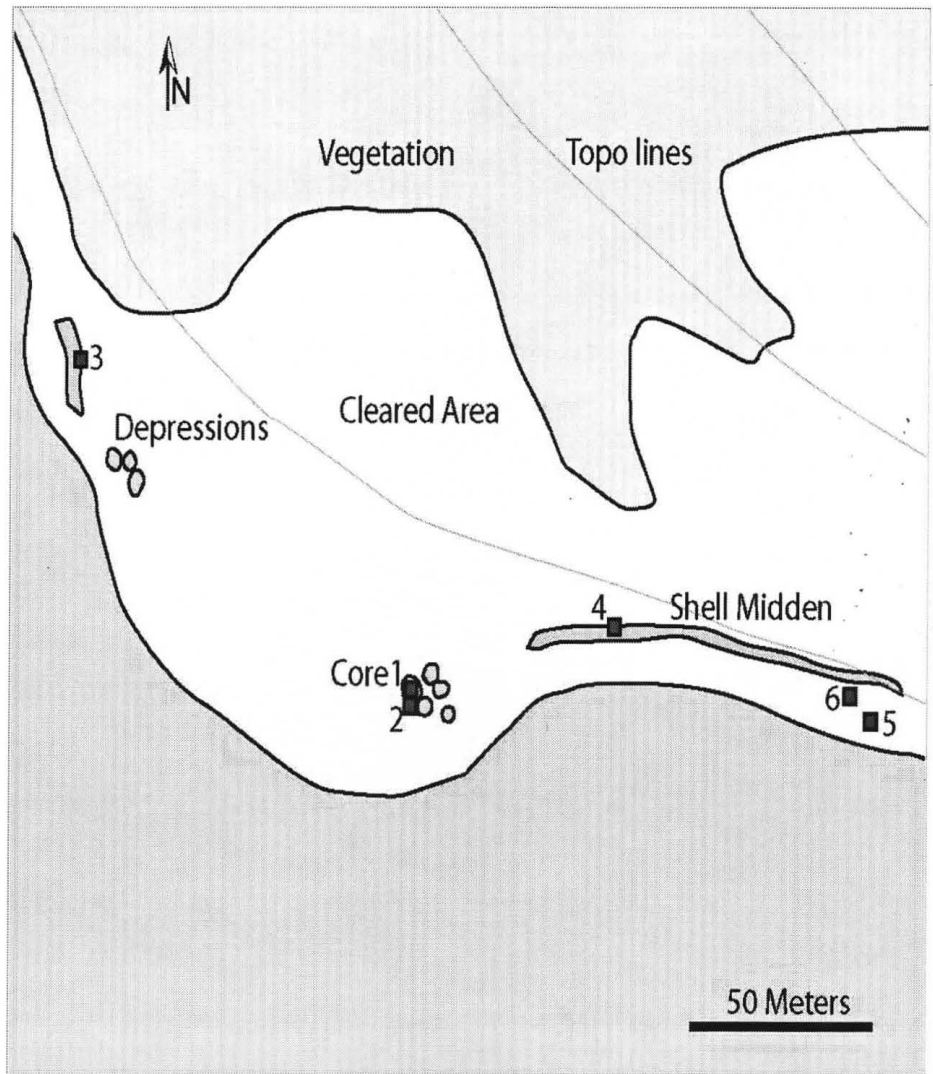


Figure 4. Site Map of 45-SJ-70, Johns Island.

Results

On Johns Island (45-SJ-70) the top and bottom dates for the center of the oven overlap to such an extent that they are contemporaneous from approximately 300 years to present (Table 1). On San Juan Island (45-SJ-61), the earth oven also dates to this time period. The calibrated dates overlap to such an extent that it is impossible to determine if post-depositional disturbance was a significant factor affecting the stratigraphy at the site.

The charcoal samples from the earth ovens both on San Juan Island and Johns Island date to within the last 300 years, making them contact period features. The shell dates from the shell middens located adjacent to the earth ovens, on the other hand, are in both cases older than the depressions and thus are not likely to be con-

temporaneous with these features (Figure 5). Why such a disparity exists between the dates for midden and oven deposition at both locations can only be speculated upon at this time. However, Wayne Suttles' insight that as "white settlers began encroaching upon the mainland prairies... the islands became the only source of bulbs" for tribal peoples may provide an explanation for the contact period use of ovens on these islands (1951:59).

Additional dates from middens elsewhere on Johns Island (45-SJ-71 and 45-SJ-72) fall within the date range established for 45-SJ-70 and thus are not contemporaneous with the use of the earth oven, even though it has been established by the SJIAP that midden occupations during the contact period exist (Taylor et al. In Prep). It is, however, possible that contemporaneous occupations in the area

Table 1. Charcoal and shell dates from San Juan Island (45-SJ-61) and Johns Island (45-SJ-70).

Site	Feature Type	Core	Depth (cmbs)	Sample Type	Sample Identification	AMS 14C Date (RCYBP)	2-sigma Calibrated Date BP	$\delta^{13}C$ (o/oo)
45-SJ-61	oven	2	0-30	Charcoal	<i>Alnus</i>	140 ± 20	280-0	-20.6
45-SJ-61	oven	2	50-60	Charcoal	<i>Alnus</i>	105 ± 20	270-220, 150-20	-29.2
45-SJ-61	oven	3	0-20	Charcoal	<i>Populus</i>	205 ± 20	300-260, 140, 20-0	-18.4
45-SJ-61	oven	3	30-40	Charcoal	<i>Acer</i>	155 ± 20	290-250, 230-130, 120-70, 40-0	-19.7
45-SJ-61	midden	4	0-10	Marine Shell		1140 ± 40	465-293	-0.2
45-SJ-70	oven	1	0-20	Charcoal	Salicaceae	145 ± 20	290-60, 40-0	-28.0
45-SJ-70	oven	1	45-rock	Charcoal	Salicaceae	155 ± 20	290-250, 230-130, 120-70, 40-0	-25.4
45-SJ-70	midden	3	50-60	Marine Shell		1430 ± 40	660-530	-0.6
45-SJ-70	midden	4	30-45	Marine Shell		2160 ± 40	1851-1621	-1.3

may exist that have not yet been sampled and dated.

Discussion

The antiquity of the earth oven tradition in the San Juan Islands is unknown. Although neither of the sites sampled revealed oven dates older than contact period, it is possible that evidence of depressions dating to prior to 300 years ago at these sites has been erased by post-depositional processes. Numerous other depressions reported in a similar manner to these earth ovens have been reported elsewhere in the San Juan Islands in site reports on file at the Department of Archaeology and Historic Preservation and should be investigated (Wessen 1986a).

Additionally, paleobotanical research on the bulk soil samples collected from the earth ovens as part of this project would provide new data on plants being utilized in the area. Both of the sites sampled in this study are on prime camas growing locations typified by being on grassy meadows on the edge of rocky slopes (Pojar and MacKinnon 1994:108) on the "bare southern faces" of the islands (Suttles 1951:59). However, the potential that the ovens were also used to roast and steam other vegetal foods such as tiger lily, chocolate lily, rice root, carrots, clovers,

and braken ferns, among others, could also provide important information about past Coast Salish diet.

Perhaps the most important impact of future research in the area may be the establishment of an archaeological record of the use of plant resources in the San Juan Islands which could be used to encourage the modern harvest of these resources. Modern legislation addressing treaty rights for federally recognized tribes has historically centered on the use of aquatic resources. The 1974 Boldt Decision upheld tribal rights to salmon harvest in Washington State, making tribes and the state equal partners in managing salmon resources and the subsequent Rafeedie Decision of 1994 gave similar treaty rights to tribes for shellfish harvest on both public and private tidelands. Additional legislation temporarily allowed the Makah Indian Tribe the right to hunt eastern North Pacific gray whales (*Eschrichtius robustus*) in 1999 (NOAA NMFS). These decisions have provided important first steps towards providing the access to resources originally offered to native groups in the 1855 Treaty of Point Elliot, a land settlement treaty between the U.S. government and tribes of the greater Puget Sound region, but they have failed to take into account the importance of inland resources to native groups (Kappler 1904).

Traditional camas harvesting areas in the San Juan Islands are now primarily under private non-native ownership and are no longer available for harvesting even though the 1855 Treaty of Point Elliot included provisions for general native hunting and gathering, including the harvest of root crops such as camas. Although no legislation directly pertaining to such land based harvests has yet been presented in the courts, both the Boldt and Rafeedie Decisions relied heavily upon archaeological evidence to make their claims. Through our study of features associated with camas in archaeological sites we hope to add to this body of knowledge in anticipation of future efforts towards legislative reform.

Acknowledgements

This research was made possible through the support of the Institute for Ethnic Studies in the United States, the Quaternary Research Center at the University of Washington, the Raven Foundation, and private donors in the San Juan Islands. Special thanks to Emily Peterson for assisting with the excavation and Julie Stein for her assistance and support in this work.

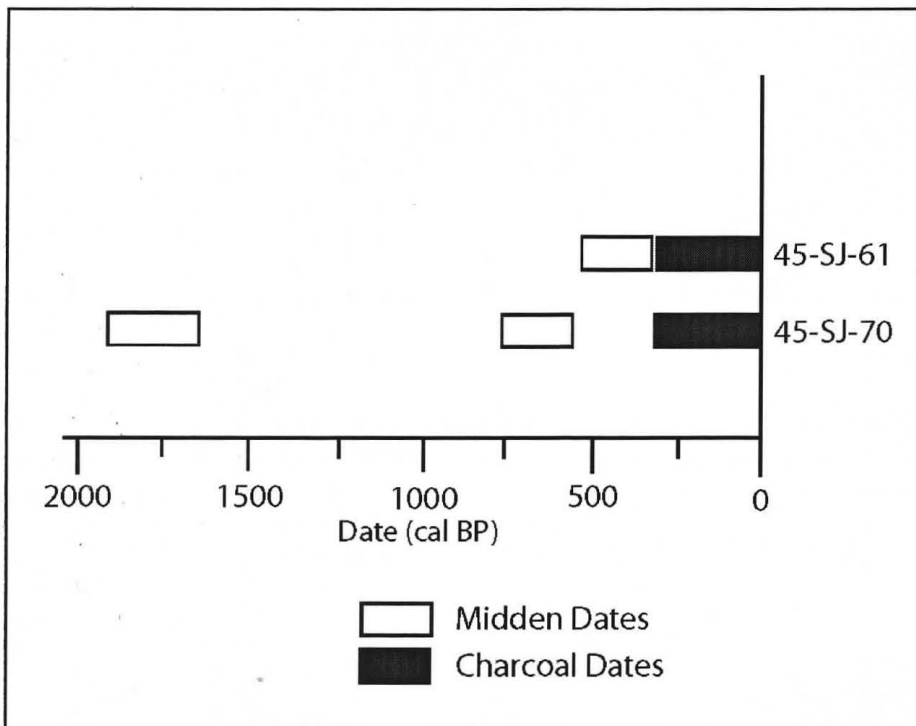


Figure 5. Midden and Oven Radiocarbon Dates.

Stephanie Jolivet and Amanda Taylor are PhD Candidates in the Department of Anthropology at the University of Washington.

References Cited

- Boldt, Hon. George H.
1974 United States vs. State of Washington (384 F. Supp. 312)[<http://nwifc.org/aboutus/documents/BoldtDecision8.5x11layoutforweb.pdf>].
- Daniels, Phoebe A.
2009 *A Gendered Model of Prehistoric Resource Depression: A Case Study on the Northwest Coast of North America*. Unpublished PhD Dissertation, Department of Anthropology, University of Washington, Seattle.
- Deo, Jennie N., John O. Stone, and Julie K. Stein
2004 Building Confidence in Shell: Variations in the Marine Radiocarbon Reservoir Correction for the Northwest Coast over the past 3,000 years. *American Antiquity* 69(4): 771-786.
- Deur, Douglas
2002 Plant Cultivation on the Northwest Coast: A Reconsideration, *Journal of Cultural Geography* 19(2): 9-35.
- Downing, Glenn R. and Lloyd S. Furniss
1968 Some Observations on Camas Digging and Baking among Present-day Nez Perce, *Tebiwia* 11(1): 48-59.
- Dunwiddie, Peter W.
2005 Management and Restoration of Grasslands on Yellow Island, San Juan Islands, Washington, USA, *Douglasia* 29(2): 10-16.
- Kappler, Charles J. (compiler)
1904-1941 Indian Affairs: Laws and Treaties. 5 vols. Washington: U.S. Government Printing Office (Reprinted: AMS Press, New York, 1971).
- National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service, Northwest Region Office, Makah Tribal Whale Hunt: <http://www.nwr.noaa.gov/MarineMammals/Whales-Dolphins-Porpoise/Gray-Whales/Makah-Whale-Hunt.cfm>
- Nugent, Ann (editor)
1999 *Lummi Elders Speak*. Pelican Press, Blaine, Washington.
- Pojar, Jim and Andy MacKinnon
1994 *Plants of the Pacific Northwest Coast: Washington, Oregon, British Columbia & Alaska*. B.C. Ministry of Forests and Lone Pine Publishing, Redmond, Washington.
- Smith, Craig S., and William Martin
2001 Seago Lilies and Prehistoric Foragers: Return Rates, Pit Ovens, and Carbohydrates. *Journal of Archaeological Science*, 28: 169-183.
- Stern, Bernard J.
1934 The Lummi Indians of Northwest Washington. *Columbia University Contributions to Anthropology*, No. 17. New York.
- Storm, Linda, and Daniela Shebitz
2006 Evaluating the Purpose, Extent, and Ecological Restoration Applications of Indigenous Burning Practices in Southwestern Washington. *Ecological Restoration*, 24(4): 256-268.
- Suttles, Wayne P.
1951 *Economic Life of the Coast Salish of Haro and Rosario Straits*, unpublished thesis from the Department of Anthropology, University of Washington.
- Taylor, Amanda K., Julie K. Stein, and Stephanie A.E. Jolivet
(In Prep) Big Sites, Small Sites, and Coastal Settlement Patterns in the San Juan Islands, Washington. *Journal of Islands and Coastal Archaeology*.
- Wessen, Gary
1986a *Prehistoric Cultural Resources of San Juan County, Washington*. Report prepared for the Washington State Office of Archaeology and Historic Preservation by Wessen & Associates, Kirkland, Washington.
- 1986b *Site Report for 45-SJ-69, Johns Island, San Juan Islands*. Manuscript on file at the Department of Archaeology and Historic Preservation, Olympia, WA.
- Wilson, Douglas C., and David V. DeLyria
1999 The Experimental Reduction of Rock in a Camas Oven: Towards Understanding of the Behavioral Significance of Fire-Cracked Rock. *Archaeology in Washington*, VII: 81-89.