Collaborating for First Foods: Archaeological Investigations of Chinookan and Lower Chehalis Foodways in Willapa Bay, Washington

by

Anna Antoniou

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Anthropology)
in the University of Michigan
2021

Doctoral Committee:

Professor Jason De León, University of California Los Angeles, Co-Chair
Professor Henry Wright, Co-Chair
Professor John D. Speth
Associate Professor Michael Witgen

Anna Antoniou

asanton@umich.edu

ORCID iD: 0000-0002-5680-2382

Dedication

This dissertation is dedicated to the Lower Chehalis and Chinookan peoples—past, present, and future. I hope I've done right by you.

Acknowledgements

The path I took to conduct this research and write this dissertation was not linear. For years, it felt more like a Möbius strip, an impossible journey. Yet here I am "on the other side." I find myself here only because of the people who believed in me when I didn't believe in myself, who lifted me up when I found rock bottom, and who filled me with encouragement, guidance, and fortitude when I was running on empty. Words seem like an inadequate medium to express my gratitude for these individuals (in my culture, we most often convey our appreciation through food). But I will try, nonetheless.

Thank you to those who first showed me the power of archaeology over a decade ago. Anthony "Boss" Graesch gave me my first paid research job, taught me to find joy in the tedium that is methodological rigor, showed me that archaeology can tell us as much about ourselves as it does about past peoples, and introduced me to the majestic landscape of the Pacific Northwest. Greg Schachner patiently listened to me when I was a wide-eyed and bushy-tailed undergraduate overeager to pursue this degree and calmly discouraged my romanticism, giving me a more measured understanding of what exactly such a path would entail. Both were brutally honest in their guidance and gave me advice that I still live by today: if there is anything else you can envision doing with your life, do that instead. I heeded their advice, but I never found anything that fulfills me in the same way that archaeology does. Despite this, both continue to show me kindness and unwavering support. I thank them for that.

The five years I spent on campus at the University of Michigan shaped me as a scholar, thanks to the amazing network of colleagues and friends I had there. The universe blessed me

with a tight-knit cohort in Anthropology. The immense diversity of interests and lived-experiences in my cohort shone through during our very first class, Traditions of Ethnology (and our post-class escapades at Circus Bar), and shaped my four-field approach to anthropology. I am particularly grateful to Allison Caine, Alex Skylar, Nik Sweet, Maire Malone, Aaron Sandel, and Drew Haxby for their friendship and intellectual inspiration. My archaeo-cohort, Chelsea Fisher and Travis Williams, were a steadfast source of support, often seeing my potential when I could not see it myself. Chelsea is one of the most innovative archaeologists I know, and I was lucky to learn alongside her. Travis quickly became like a brother to me. His empathy and kindness got me through difficult times.

The network of Michigan graduate students that I am indebted to extends far beyond my cohort. My research benefited from the countless conversations I had in the Coffee Range and during 007 with other archaeology graduate students, in particular, Jordan Dalton, Tim Everhart, Elspeth Geiger, Christina Perry Sampson, and Nick Trudeau. Two older graduate students—Ashley Shubert and Colin Quinn—gave me formative field experience in North Carolina and Romania. Each experience taught me invaluable lessons on field logistics and methodologies that I take with me today.

Three other graduate students deserve special mention, who formed the tireless support system I so desperately needed during this process. Bree Doering started as my mentee, but in reality, mentored me. I am constantly impressed with Bree as a scholar, and I look back on our time sharing an office as one of the best parts of my stint in Ann Arbor. Chris Sargent is a tenacious friend. Her constant care kept me grounded during a very turbulent time. Finally, Jess Beck has guided me through every facet of the academy, from funding to publishing. Without her, I would not know up from down in academia. She has been so generous with her time,

reading many drafts and calming me down during countless meltdowns. She is a true friend who routinely puts up with my fondness for ridiculous clothing and taught me much about organization and twitter. More than anything, Jess provided near-daily championing and reminded me of my skills as an archaeologist even when I was certain I could not continue down this path. These three women have been a constant in my life for almost a decade and despite the considerable geographic distance between us. From the UK, Jordan, Alaska, and many places between, these women guided me when I needed it most, and I am forever indebted to them.

Henry Wright and Jason De León, my co-advisors, have my utmost gratitude for their endless encouragement and limitless insights. Henry, thank you for taking me under your wing early on and always going to bat for me. You encouraged me to think about archaeology creatively and never batted an eye when my research took some unusual turns. The depth of your archaeological knowledge never ceases to amaze me, and I am so lucky to have benefited from it. Jason, no one has influenced my approach to anthropology more than you. Since our reading class during my second semester at Michigan, you have shown me all the ways archaeology can shine a light on injustice and do good in this world. You gave me the courage to do heart-forward archaeology, and I take your lessons with me every day. Occasionally, a kind soul will favorably compare my work to yours, and it is the best possible compliment.

Thank you to my other committee members, John Speth and Michael Witgen. If this dissertation is at all coherent, it is because of John Speth, who provided thoughtful comments on the form and content of every chapter. John, you are an absolute role model of mentorship, and I strive to someday offer the same amount of unwavering support, energy, and strategic planning to my students as you have given to me. Michael Witgen graciously provided a much-needed Indigenous perspective on my work. Michael, thank you for taking a chance on me.

Many Michigan faculty and staff outside of my committee bettered my research through their encouragement and insights and deserve acknowledgment. Thank you to Raven Garvey for her exhaustive mentorship while I was developing my dissertation project. No one has ever challenged me the way Raven did, and I learned so much from it. She also shared her deep appreciation of the most versatile punctuation mark—the em dash—and it is now one of my favorite grammatical tools. I am forever grateful to Carla Sinopoli for her support and guidance, and for advocating on my behalf on more than one occasion. Thank you to Krisztina Fehervary for being the best possible DGS and stepping in when I needed her the most. Lisa Young was hugely influential to the direction of this project, always encouraging me to find new ways to connect community needs and interests to archaeological research. Lisa, thank you for dangling all those carrots over the years and always reminding me to "just show up."

I developed this project with the help of three incredible Northwest Coast scholars who deserve immense praise for their generosity: Liz Sobel, Ken Ames, and Lyle Nakonechny. This project would not have happened if it weren't for Liz Sobel's willingness to help a stranger. Liz, I am so glad I found your dissertation hiding on the shelves of the Museum seminar room and that you were kind enough to reply to a young graduate student looking for a dissertation project. Thank you for being a thoughtful community-engaged scholar because your relationships with the descendant communities paved the way for my own. I hope someday we finally meet in person so that I can thank you properly. I wish I could have known Ken Ames longer. My interactions with Ken were few and far between but impactful. Early on, Ken encouraged me to pursue a research project in Willapa Bay and made me acutely aware of the need for archaeological research in this overlooked area. To have support from such a well-known and inspiring Northwest Coast scholar was hugely motivating. Although I could have benefitted

from many more years of his mentorship, I appreciate his prolific scholarship and the model he created for which all Northwest Coast archaeologists can aspire.

The fieldwork part of this research would not have been possible without the help of Lyle Nakonechny. Lyle found me sniffing around his neighborhood when I was first setting up my research and immediately lent a helping hand in setting up field logistics. He knows more about Willapa Bay archaeology than anyone and put in countless hours sharing that knowledge with me. Lyle, thank you for giving me a home in Willapa Bay, literally and metaphorically. Your generosity is limitless, and I am so fortunate to have benefited from it.

Two other Northwest scholars deserve acknowledgment for teaching me critical field methodologies. Anna Marie Prentiss allowed me to work with her for a season at Bridge River and showed me the enormous logistical feat of whole-house excavation. Julia Jackley let me tag along for her kayak survey of Heiltsuk territory. Although I didn't know it at the time, I would use her method of kayak survey in Willapa Bay only a year later.

When I first traveled to Willapa Bay, Washington, I soon realized that the residents of this quiet, often overlooked bay were generous, kind, and held deep pride in their history. Many Willapa Bay residents and institutions helped me set up my research, and their generosity reinforced my conviction do research there. I am thankful to Tony Kangas, Jim Kemmer, Kathleen Sayce, Alan Trimble, and Jennifer Ruesink for offering their time, resources, and invaluable local knowledge. Thank you also to the Columbia Pacific Heritage Museum, the Pacific County Historical Society, the Port of Peninsula, the Sou'Wester Lodge, and the USFWS Willapa National Wildlife Refuge for their help in the early stages of this work.

Many people volunteered their time (to say nothing of their blood, sweat, and tears) to help me in the survey and excavation part of this research. Thank you to Michelle Croft, Elliott

Deal, Hannes Mack, and Joey Lange. I could not have done this work without their assistance. Two people deserve special mention because of their tireless help. Felix Hall took months away from his husband to work alongside me for two seasons of fieldwork. I am so thankful for his assistance, determined attitude, and immense intelligence. Paul Skomsvold also helped me for two seasons of fieldwork. Paul was there for two of the roughest days in the field—days that would make most people swear off archaeology forever—and still returned to help me the following season. His calm demeanor was invaluable during those challenging days, and he has continued to help me in every stage of this project, from lab work to writing. A very special thank you to Paul for creating a 120-track playlist to get me through the laborious writing process. I am listening to it as I write this.

Finally, I appreciate the institutions that funded the fieldwork part of this research, the American Philosophical Society, and the University of Michigan Museum of Anthropological Archaeology.

After fieldwork, I did my lab work, analysis, and writing in various places around California. There I found many scholars and institutions willing to help me see this project to completion. Greg Wilson and Jon Daehnke saw that I was an isolated graduate student in need of local support and mentorship. I am grateful to both of them for providing this. The Anthropology Department of the Santa Barbara Museum of Natural History gave me a place to do my analysis and access to vital comparative collections. I am forever thankful to Paul Collins, Tacy Kennedy, John Johnson, and Jan Timbrook for sharing their space and knowledge with me. Thank you to Sergio Garcia, Martin Hutchinson, and Ashton Roberts, who helped me with the tedious task of sorting screen residue while I was at the Santa Barbara Museum of Natural History. Thank you also to the UCSB Department of Anthropology and the California

Academy of Sciences for access to their comparative ichthyology collections, and to Ken Gobalet and Gabriel Sanchez for sharing their ichthyological knowledge with me. Rebecca Tarvin at UC Berkeley's Department of Integrative Biology generously provided the use of her lab for growth-stage analysis and I am so thankful to her for this. Finally, I am very grateful to the Rackham Program in Public Scholarship, which funded portions of the lab work.

I thank my family and community for their support during every stage of my very long education. The path I chose was not one familiar to my parents, Marie and Tony. They envisioned a different career for me. Despite this, they supported me through thick and thin. I know this was not easy, and my gratitude goes out to them. To my siblings—Andriana, Anona, and Alexi—thank you for all the laughs and for being there for mom and dad when I couldn't come home for months on end. I want to thank Elliott Deal, my "person." He's been beside me every step of the way. When I was in Michigan, Elliott put in hours of long-distance phone calls (and he very much dislikes talking on the phone). In Washington, he quickly discovered he was too tall to provide accurate profile measurements. In California, he unknowingly offered to share his studio apartment with me for six months (sorry). He's always been there to dry my tears, listen to my frustrations and insecurities, walk me through statistical methods, and crack my back after long days of sitting at a computer. I could not have done this without him.

Thank you to those that inspired me who are no longer with us. My yiayia and papou, Anona and Frank, filled their home with Indigenous art from around the world. They taught me to admire and respect all cultures and ultimately sent me down this path. I wish they were still around to see what they inspired.

And last, my heartful gratitude goes out to the communities who embraced me and allowed me to do this work: the Shoalwater Bay Indian Tribe and the Chinook Indian Nation.

Words don’t exist that properly convey my endless gratitude to Earl Davis and Tony Johnson. I am forever humbled by their depth of knowledge and feel so very lucky that they have shared even the smallest bit of it with me. I appreciate their humor and that they’re never afraid to laugh with or at me (it makes me feel like part of the family). Their passion for their culture and their determination to uplift their communities is infectious. A special thank you also go out to Jesse Downs, Pam Drake, Mechele and the entire Johnson family, Jennifer Taylor, Krissy Torset, and Kenny Waltman for their support and help. When I was struggling through the most difficult moments in this process, it was these communities and their desire to see this dissertation come to fruition that kept me going. This research is not mine. It belongs to them, and I am deeply honored that they chose me to produce this dissertation on their behalf. To the Shoalwater and Chinook Nation communities, from my culture to yours, ευχαριστώ πολύ.

Table of Contents

List of Tables

List of Figures

List of Appendices

List of Acronyms & Abbreviations

AAR	**Amino-Acid Racemization**
AIM	**American Indian Movement**
BIA	**Bureau of Indian Affairs**
CBPR	**Community-Based Participatory Research**
Chinook Nation	**Chinook Indian Nation**
CRM	**Cultural Resource Management**
FAP	**Federal Acknowledgement Process**
FDPIR	**Federal Distribution Program on Indian Reservations**
FMR	**Fire-Modified Rock**
GPR	**Ground-Penetrating Radar**
HSI	**Habitat Suitability Index**
IBIA	**Interior Board of Indian Appeals**
IRA	**Indian Reorganization Act of 1934**
MNI	**Minimum Number of Individuals**
NAGPRA	**Native American Graves Protection Act**
NCD	**Non-communicable Disease**
NHPA	**National Historic Preservation Act**
NISP	**Number of Identified Specimens**

NRE	**Non-Repetitive Element**
PSP	**Paralytic Shellfish Poisoning**
PSU	**Practical Salinity Unit**
Shoalwater	**Shoalwater Bay Indian Tribe**
UNDRIP	**United Nations Declaration of Rights of Indigenous Peoples**

Abstract

In the U.S., Indigenous communities often suffer poor health at greater rates than non-Native populations. This is due, in part, to economic stresses, restricted access to food sources, and the colonization of Native American territories that physically severed the ties between Indigenous peoples and their land, weakening or destroying their culturally informed subsistence practices. To remedy these health disparities, many Indigenous communities are reviving traditional foodways, establishing food sovereignty, and reclaiming their rights to local food sources. This dissertation explores collaborative and applied methods of archaeological research and argues that an archaeological understanding of past foodways can help Indigenous groups accomplish these community-set agendas. When conducted in collaboration with the community, in adherence to their values, and motivated by their interests, archaeology can be a useful tool in cultural revitalization efforts.

To illustrate this point, this dissertation describes archaeological research conducted with two communities on the Northwest Coast—the Shoalwater Bay Indian Tribe and the Chinook Indian Nation—and how such research contributes to their fight for sovereignty as it relates to food systems and community health. Investigations focused on Nukaunlth, a Lower Chehalis and Chinookan village occupied during the Late Pacific, protocontact, and postcontact periods. As the descendant communities are most interested in revitalizing marine-based foodways, this project sought to ascertain (1) the importance of marine resources among Chinookan and Lower Chehalis peoples living at this ancestral village, and (2) the makeup of the larger subsistence system within which marine resource use was situated. More specifically, this study addresses

whether shellfish was a key resource that was managed, and/or harvested intensively to meet important dietary needs of the community, or a low-priority resource that was harvested and consumed only opportunistically.

While many other resources, such as plants, were likely consumed at this village but are underrepresented in the archaeological record currently available, zooarchaeological analysis demonstrates that marine resources—shellfish (cockles, mussels, and various species of clam, in particular), marine mammals (especially whale), and fish (salmon, flounder, and sturgeon, most notably)—were key food resources for those who lived at Nukaunlth and were arguably indispensable to their lifeways. Such marine resources may have been good sources of essential caloric and noncaloric nutrients such as fat, protein, iron, and omega-3 fatty acids. By all measures, shellfish dominate the faunal assemblage and makes up the largest portion of edible food reflected by the archaeological record. Shellfish, while providing fewer calories and less fat than other food sources, could have been a critical source of vitamins and minerals that were difficult to obtain from other food sources.

This dissertation concludes by outlining the community-enriching programs and public goods the Shoalwater Bay Indian Tribe has created using the outcomes of this research. Through these initiatives, the descendant community is using Western scientific data to corroborate a long-held Indigenous understanding that local natural resources, especially marine, were indispensable to life before European settlement and that the right to access these resources is an inherent right of Indigenous peoples. In this way, archaeology that is done in tandem with descendant communities and motivated by their interests and needs can be more than the data it generates; it can be a creative process by which Indigenous communities can explore their history on their own terms and craft possible futures that champion culture, health, and wellness.

Chapter 1 Introduction

The Living Meaning of Traditional Foodways

On a late summer morning in 2017, 10 citizens of the Shoalwater Bay Indian Tribe and the Chinook Indian Nation[1] and I piled into a van and headed north from na·′mst'cat's[2] to Grays Harbor, Washington. We were on our way to an ancestral harvesting place within Lower Chehalis territory to gather Indian tea (*Rhododendron groenlandicum*).[3] Collecting this tea, like other traditional food practices within this community, was grounded in three principles: reciprocity, communalism, and health.

Tony Johnson, Chairman of the Chinook Nation Tribal Council and Education Director of the Shoalwater, explained to the youngest members of the group how reciprocity guided their practices: as we were taking something from the plant, we must give something in return. Tribal members sang during our drive and while harvesting tea leaves. Tony referred to these songs as necessary preparation for the harvest, work that was essential to the process. When we picked

---

1 Henceforth referred to as the Shoalwater and the Chinook Nation, respectively. Throughout the dissertation, I use the terms "Chinookan peoples" and "the Chinook" to distinguish the ancestral Lower Chinookan peoples and communities from the contemporary Chinook Indian Nation.

2 A Lower Chehalis ancestral village, now the site of the Shoalwater Reservation. Also referred to as Georgetown.

3 Formerly *Ledum groenlandicum* or *Ledum latifolium.* Also known as swamp tea, bog tea, or Labrador.

from a plant, we were careful to leave the flowers, buds, and new leaves intact, taking only the bottom-most leaves. Tony explained that these plants would continue to offer the community tea through the years if they were treated with respect and not overexploited. To those plants that we took from, we offered coins in return; something of value to replace the value we had taken.

Each person collected individually, taking their own path through the bog to gather the leaves. But at the end of the day, we pooled our harvest so that we could distribute the tea to tribal members. Elders, specifically those with limited mobility who could not gather themselves, were given the tea first. Some tea was then saved for guests who visited the community. The rest was divided among tribal members; a good reminder to the younger harvesters that, contrary to the Euro-American notions of personal property and individualism that are present throughout their daily lives, Indigenous traditional foodways are steeped in communalism. What we picked as individuals that day was not ours alone but belonged to the community as a whole.

Our task for the day was to collect enough Indian tea to last through the winter. Indian tea has numerous properties that promote the health of those who consume it. Across North America and for centuries, Indigenous communities used this native plant to treat a variety of ailments, from bacterial infections to rheumatism. Recent pharmacological research has confirmed the anti-inflammatory, analgesic, antimicrobial and antioxidant properties of the plant (Dufour et al. 2007). Most notably Indian tea is rich in many vitamins and minerals, including high concentrations of vitamin C, as well as B_1, B_2, B_3, calcium, magnesium, iron, and zinc (Dampc and Luczkiewicz 2015). During the cold, wet, winter months of this region, it is common for tribal members to have a pot of Indian tea simmering day in and day out. This

traditional beverage was crucial to Chinookan and Lower Chehalis peoples, past and present, in fighting off winter colds and other illnesses.

The ancestral harvesting site that we were traveling to that day was not on property owned by the Chinook Nation or the Shoalwater and neither community has off-reservation legal rights to hunt, fish, or gather their traditional foods. As such, we were taking a necessary risk by trespassing to access this cultural landscape. When we reached our destination, we saw that the owners had placed a new road through the bog, decimating the vegetation. Just as the Shoalwater and Chinook Nation do not have the legal right to practice their traditional foodways, they also lack the legal power to protect the resources their foodways rely on. We left the area with our annual batch of tea, but with no way of ensuring that this cultural staple would be available next year or for future generations. Three years later, the land was sold, leveled, and developed, destroying this ancestral harvesting site.

This outing illustrates how traditional foodways have living meaning and promote reciprocity, communalism, and health within Indigenous communities. It also illustrates the daily impediments to these communities' sovereignty and their ongoing struggle to maintain cultural practices in a modern system that denies them access to the resources they need to do so.

This dissertation tells the story of collaborative and applied archaeological research conducted with two communities on the Northwest Coast, the Shoalwater and the Chinook Nation, and how these communities are using these investigations to revitalize traditional practices. This research started well before the Shoalwater, Chinook Nation, and I gathered Indian tea on that summer's day in 2017. However, this experience, while seemingly unrelated to archaeological research, fundamentally shaped the direction of our project and helped to ground our work in issues of food sovereignty, Indigenous rights, and community health. Most

importantly, it helped me to conceptualize the role that archaeological research might play in ensuring the inherent right of Indigenous peoples to practice culturally appropriate, healthy foodways.

While this dissertation describes research built upon a localized agenda, I see the methods, motivations, and approaches used in our project as applicable elsewhere. Collaboration with descendant communities is in many ways in its infancy in archaeology. While each collaborative partnership is necessarily unique, significant space is given to the collaborative methods used in this project in the hope that others looking to conduct research with Indigenous communities will draw inspiration from it and adjust what is put forward here to meet their own particular situations and circumstances.

In describing this research conducted with the Shoalwater and the Chinook Nation, I present one of many possible answers to the question: how can archaeological research contribute to the well-being of Indigenous communities? The answer arrived at here is grounded in the belief that archaeological data is a useful tool for the revitalization of traditional foodways, and the repossession of legal entitlements to culturally relevant resources. As such, I see this dissertation as contributing to an emerging global dialogue about methods of and approaches to decolonizing diet and food sovereignty. However, it also contributes to the broader dialogue of how an archaeological approach to heritage can push beyond preservation, look towards the future, and be a tool wielded by the communities whose heritage is under study for the betterment of their daily lives.

Indigenous Rights, Health, and Food Sovereignty

Economic stresses and restricted access to traditional land and food sources means that the Shoalwater and the Chinook Nation, like most other Native American communities in the U.S., suffer lower life expectancies and greater disease burdens than non-Native populations (Anderson et al. 2016; Espey et al. 2014; Gracey and King 2009; Gundersen 2007; King et al. 2009; Kuhnlein et al. 2013; Lemke and Delormier 2017). With the arrival of Europeans to the Americas came numerous epidemics and devastating population losses (Boyd 1985, 1990, 1999). And while many of the infectious diseases that decimated populations at the onset of colonization have now subsided, Indigenous communities are still affected by infectious and non-infectious diseases at greater rates than non-Native populations (Power et al. 2020). Indigenous communities around the globe are rapidly acquiring non-communicable diseases (NCDs) such as obesity, cardiovascular disease, and type-2 diabetes (King et al. 2009). Native households in the U.S. are also significantly more food insecure than non-Native households and are more likely to suffer from calorie and nutrient deficiencies (Gundersen 2007; Gracey and King 2009). Today, as the COVID-19 pandemic wreaks havoc globally, the health disparities of Indigenous communities are all the more worrisome. Historical data show that Indigenous communities suffer higher infection rates and more severe symptoms and death during pandemics due to poor health, poverty, and lack of political power (Clay et al. 2019; Power et al. 2020).

The prevalence of NCDs among Indigenous groups "result from a combination of classic socioeconomic and connectivity deficits as well as Indigenous-specific factors related to colonization, globalization, migration, loss of language and culture, and disconnection from the land" (King et al. 2009:76). The colonization of Native American territories physically severed

the ties between Indigenous peoples and their land, weakening or destroying their culturally informed subsistence practices and necessitating dependence on government rations and state-funded commodities programs (Chino et al. 2009; Grey and Patel 2015). The forced adoption of a Westernized diet "deculture[ed] people from the inside out" (Grey and Patel 2015:438) with nutrient-deficient, industrial food that harms the health of peoples and lands while ignoring the relationship between the two. This layering of circumstances produced and sustains the health disparities plaguing Indigenous communities globally.

To remedy these health disparities, Indigenous communities are revitalizing traditional foodways and reclaiming their rights to local food sources (e.g., Coté 2016; Desmarais and Wittman 2014; Satterfield et al. 2014; Wesner 2013; Vernon 2015). If the aforementioned consequences of colonization negatively affect Indigenous peoples' health, then increased access to traditional lands and revitalization of cultural practices may help improve the holistic health of these communities (Elliott et al. 2012). A growing number of Indigenous communities are turning towards the Indigenous rights and food sovereignty movements to meet these ends. The Indigenous rights movement seeks economically, environmentally, and culturally viable means of asserting rights that are grounded in the Indigenous reciprocal relationship to the natural world while promoting their political power within a state-centered system (Corntassel 2008). The food sovereignty movement calls for the rights of all people to healthy and culturally appropriate food produced through self-determined, ecologically sound, and sustainable methods (Patel 2009). These movements promote access to traditional territories and food sources because Indigenous communities, like all communities, have the right to healthy, culturally appropriate foods.

Applying Archaeological Data to Contemporary Context

In this dissertation, I argue that an archaeological understanding of past subsistence practices can help in an Indigenous rights-based approach to establishing food sovereignty, revitalizing traditional foodways, and reclaiming rights to culturally relevant resources. When conducted in collaboration with the community, in adherence to their values, and motivated by their interests, archaeology can be a useful tool in cultural revitalization efforts. While the discipline is still struggling to come to terms with its roots as a colonialist endeavor—"the study of the ancestors of the conquered by the descendants of the conquerors" (McGuire 2008:78)—archaeological research can provide tangible evidence of past lifeways which can assist Indigenous communities in reclaiming the knowledge and rights that were stripped away by colonialism, population decline, and centuries of government assimilation programs.

Archaeological data can serve in Indigenous communities' fight for rightful legal entitlements and help to increase their political maneuverability (e.g., Cleland 2011; Hogg & Welch 2020; McClurken et al. 2000). The U.S. and Canadian legal systems prioritize archaeological data based in Western science over traditional knowledge and oral histories (Charlton 2015:152; Mitchell v. M.N.R 2001). Archaeological evidence is thus useful in legal cases that contest treaties and define the content and scope of off-reservation procurement rights because U.S. law sources these entitlements in the historical use, occupation, and possession of territory by tribal entities (Charlton 2015:103).

For many communities, the past "serves as a potent resource for crafting identities in the present" (Wesson 2013:116). This is frequently the case for groups affected by colonization. Archaeological projects can serve these communities in their cultural revitalization and identity-building efforts by bolstering traditional knowledge with scientific data that serve as a productive

translator for a public steeped in a Western value system. The physicality of the archaeological record can also be beneficial to these efforts because place-based knowledge is often highly valued within Indigenous communities and the appeal of seeing and touching history is undeniable and universal (Kealiikanakaoleohaililani and Giardina 2016; Schaepe et al. 2017). Archaeology is particularly suitable when relating Indigenous identities and rights to traditional foodways because the archaeological record is often composed heavily of evidence of food systems, especially when working with coastal communities.

Marine Resource Use Among Chinookan and Lower Chehalis Peoples in Willapa Bay, WA

> *But the Shoalwater environment was mainly water – the sea, the tidal waters, the rivers, the wetlands, and the rain! If the Shoalwaters weren't in the water, or being rained on, the chances were good that they were on the water.*
>
> *- Heritage Committee, Shoalwater Bay Indian Tribe. Old Shoalwater World. (1984a)*

The marine landscape is essential to the identity of the Shoalwater and the Chinook Nation. Water surrounds these communities residing on the coast of the Willapa Bay in southwestern Washington. Oral histories say that before the animals and people took their current physical forms everyone was essentially a similar entity in time and space. The first humans emerged out of the eggs of Huhness (thunderbird) from his nest on top of Saddle Mountain, near the mouth of the Columbia River. These first five people became the tribes of the Lower Chehalis and Chinookan peoples (Earl Davis, personal communication). This origin story shows the Shoalwater and Chinook Nation's deep-rooted connection to and reliance on these landscapes since time immemorial. During low tide it is obvious that the waters of Willapa Bay provided food for their ancestors—the remnant posts of ancient fish weirs dot the tidal flats

and shell middens spill from cut banks. Today, though fishing boats drop nets into the bay daily, none of them belong to Shoalwater members. This is because, despite federal recognition, the Shoalwater does not have the legal right to gather, hunt, and fish traditionally.

The research described in this dissertation uses archaeological data from Nukaunlth village (45PC19) to help the Shoalwater establish food sovereignty, revitalize traditional foodways, and reclaim rights to culturally relevant food sources, and contributes to the Chinook Nation's fight for federal recognition. The Shoalwater and Chinook Nation have highly valued traditional sources of knowledge but view Western scientific ways of knowing the past as a valuable second line of evidence in their fight for sovereignty and self-determination. Therefore, the objective was to use the archaeological record of traditional foodways to "mak[e] truth claims that are stronger than they would be without engagement with the material record" (Hauser et al. 2018:546) and to use the "hardness" of material evidence to witness the past.

As the Shoalwater and Chinook are most interested in revitalizing food practices related to the marine environment, research on Nukaunlth sought to ascertain (1) the importance of marine resources among Chinookan and Lower Chehalis peoples living at this ancestral village, and (2) the makeup of the larger subsistence system within which marine resource use was situated pre- and post-European contact.

Residents of Nukaunlth likely utilized many resources, such as plants, that are underrepresented in the archaeological record currently available. However, the zooarchaeological analysis discussed in this dissertation demonstrates that marine resources—particularly shellfish (cockles, mussels, and various species of clam, in particular), marine mammal (specifically whale), and fish (salmon, flounder, and sturgeon, most notably)—were key food resources used by those living at Nukaunlth and arguably indispensable to their

lifeways. By all measures, shellfish dominate the faunal assemblage and make up the largest portion of edible food reflected by the archaeological record at Nukaunlth. Overall, zooarchaeological analysis suggests that between 93% and 99% of the animal food sources for those living at this ancestral village came from the marine/estuarine environment. Such marine resources may have been good sources of essential caloric and noncaloric nutrients such as fat, protein, iron, and omega-3 fatty acids. Shellfish, while providing few calories and less fat than other food sources, could have been a key source of vitamins and minerals that are difficult to obtain from other food sources.

Analysis of the seasonal distribution and habitat requirements of the species found at Nukaunlth suggests that many of the food sources used by those living at Nukaunlth could have been procured nearby and were available year-round. The tidal flats around the village may have been particularly rich in the most commonly recovered shellfish species at Nukaunlth, cockles (*C. nuttallii*), as a study of the local environment and the habitat requirements of shellfish suggests this area of Willapa Bay is highly suitable for *C. nuttallii* populations (Lewis et al. 2019). Other resources found at Nukaunlth—sturgeon, spiny dogfish, skates, and gray whale—suggest that those at Nukaunlth likely traveled westward towards the mouth of the bay or coastal beaches to access some food sources. In all cases, evidence at Nukaunlth suggests an emphasis on locally available marine resources.

Cockles were the most utilized species, and likely the most abundant and accessible species around Nukaunlth; however, I have no evidence that they were harvested intensively to the point of resource depression. Instead, preliminary growth-stage analyses on a small sample suggest that those residing at this village may have been practicing some selective harvesting or resource management. While further analysis is needed, preliminary data suggest that Nukaunlth

may adhere to a trend seen elsewhere on the Northwest Coast; villages often exhibit less intensive shellfish harvesting than short-term encampments and perhaps active conservation efforts to protect nearby resources from over-harvesting (Cannon and Burchell 2009). The picture that is painted by this archaeological investigation of Chinookan and Lower Chehalis foodways at Nukaunlth is one of a community that was deeply connected to their local environment. Theirs is a community that relied upon and lived in harmony with locally available marine resources.

Organization of the Dissertation

In addition to this introduction (Chapter 1), this dissertation contains seven additional chapters. These chapters do three primary things: 1) provide the necessary history and background to make the arguments throughout this dissertation intelligible to the reader, 2) elucidate a process of carrying out a collaborative and applied research agenda for the benefit of the Indigenous communities whose heritage is under study, and 3) present the archaeological research itself and how it contributes to the Shoalwater and Chinook Nation.

Chapter 2 provides the reader with the broad environmental and cultural background necessary to understand the research outlined in this dissertation. I begin with a focused description of the geographic and environmental setting of Willapa Bay and the resources that characterize the region, with particular emphasis on the natural resources pertinent to traditional foodways. I then introduce the Northwest Coast Culture Area and the broad cultural patterns that define the region. Next, I provide a general overview of the subsistence practices characteristic of the Northwest Coast before European arrival, and what we know about the subsistence systems of the southern Northwest Coast Culture Area. This is followed by an outline of the

trajectory of Indigenous foodways after European arrival and the devasting effects of settler colonialism on the Native diet. Finally, I give a brief discussion of previous archaeological research in Willapa Bay.

In Chapter 3, I explore the interwoven cultural geographies of the Lower Chehalis and Lower Chinook culture areas from the Late Pacific period[4] until today. I focus on what we know of the social organization of these two groups broadly. I then discuss our understanding of these two communities in Willapa Bay specifically and describe the profound effects of colonial invasion on their lives and well-being. Finally, I introduce the two contemporary communities of Lower Chehalis and Chinookan peoples that are most important to the research presented in this dissertation: the Shoalwater Bay Indian Tribe and the Chinook Indian Nation. I describe the series of false promises and mistreatments on the part of the U.S. government that shape both their history and their present. Most importantly, I describe their strength in the face of centuries of abuse and how their fight for sovereignty is firmly rooted in the Willapa Bay landscape.

Collaborative and applied research design is the focus of Chapter 4. In it, I describe the method of collaboration used by the descendant communities and myself, how we developed our collaborative partnership, and how we used that partnership to design a research agenda that meets community-defined needs. I outline the principles that guide our interactions: (1) prioritizing long-term relationships that extend *beyond* research settings, (2) communicating with compassion and humility, and (3) recognizing the expertise and skills of each partner. Adhering to these principles allowed us to develop a relationship that facilitated the creation of research questions, methods, and end products through an approach I call a "continual loop of

[4] AD 200/400 – AD 1750

engagement." A continual loop of engagement is a cyclical approach to research design that reorders the procedural steps to prioritize community impact and repeatedly re-tether the archaeological research to community needs. I describe this process and outline the development of our research project within this framework.

Chapter 5 details the archaeological investigation of the Nukaunlth village site. I begin by describing why the descendant communities chose this site for archaeological investigations. I then lay out the objectives for the archaeological fieldwork based on the research agenda described in Chapter 4 and lines of evidence investigated to meet these ends. Next, I provide some background knowledge of the site, outlining the historical ownership and industry of Kindred Island, where Nukaunlth is located. I summarize the methods and results of the systematic probe survey and excavations of Nukaunlth village and then detail the materials, arrangements, and physical characteristics elucidated from excavations. I organize this descriptive summary first by unit, presenting a brief description of the location, cultural materials present, stratigraphy, and cultural features of each. Then, I present the general characteristics of the village made apparent by archaeological testing in detail, including site size, physical characteristics, site stratigraphy, and overall site condition. Finally, I use this information to analyze aspects of site use including chronology, village organization, house size, population estimates, and material culture.

As the Shoalwater and Chinook Nation are most interested in using archaeology to revitalize their traditional foodways, Chapters 6 and 7 are dedicated to the diet composition and subsistence practices of those living at Nukaunlth. Chapter 6 explores the diet composition of those living at Nukaunlth through faunal and macrobotanical analyses. The bulk of Chapter 6 is a detailed faunal analysis of recovered materials from Nukaunlth. The goal of the faunal analysis

is to identify specimens to the finest taxonomic level possible and to relate, when possible, analytic results to past human activities and the animal resources used by Willapa Bay Lower Chehalis and Chinookan peoples. I begin by describing the methods used in this analysis, including field recovery methods, sampling strategy, quantification methods, and statistical approaches. In the descriptive summaries for each taxon, I provide species-specific ecological information and describe ethnographic and oral historical accounts of species use in the region when possible. Macrobotanial analyses of samples from Nukaunlth were also analyzed and are discussed in this chapter to provide insights into the vegetal foods consumed. Putting it all together, I then compare the relative abundance of broad faunal classes at Nukaunlth and provide information on general diet composition given the available archaeological record. Finally, I briefly explore the nutritional contributions of the food sources identified in the assemblage through the lens of nutritional ecology and argue that a focus on marine resources could provide essential nutrients that contributed to human health, growth, and development.

In Chapter 7, I enrich our understanding of Lower Chehalis and Chinookan traditional foodways by relating the archaeofaunal and archaeobotanical data presented in Chapter 6 to subsistence practices, both at Nukaunlth and regionally. I investigate three dimensions of subsistence: seasonality, procurement locales, and selective shellfish harvesting strategies. To determine the importance of marine resources, particularly shellfish, among those who lived at this village, I evaluate whether midden composition faithfully tracks the natural variability of shellfish (and other marine species) distribution conditioned by the environment or if such composition differs significantly from that expected under natural conditions. I then situate our understanding of subsistence practices and the importance of marine resources at Nukaunlth in a

regional perspective by comparing this information with Lower Chehalis and Chinookan subsistence practices from other archaeological studies on the southwest Washington coast.

Chapter 8 details how the Shoalwater and Chinook Nation are using the outcomes and information stemming from the archaeological investigations at Nukaunlth to impact their communities. The first half of this chapter details the health disparities that plague Indigenous peoples today and the Indigenous rights and food sovereignty movements that have arisen to combat these issues. I then situate our work within this framework, detailing how archaeological data can serve an Indigenous rights-based approach to food sovereignty, community health, and sustainable practices broadly. I then detail how our work is doing so specifically through four public goods and programs: (1) an exhibit in the Shoalwater Heritage Museum, (2) an accompanying education kit for K-12 classrooms, (3) a module for the Shoalwater Adult Diet and Nutrition course, and (4) evidence for the Shoalwater's upcoming legal case to reclaim access to traditional food resources.

I conclude this chapter and this dissertation by highlighting some of the creative ways the community is using this research to drive health and wellness initiatives, assert sovereignty, and reinvigorate Indigenous foodways in ways that go beyond the initial scope of the project. I argue that when archaeology is done in tandem with descendant communities and is concordant with their interests and needs, it becomes more than the data it generates; it is transformed into a creative and speculative process by which Indigenous communities can explore their history on their own terms and craft possible futures that champion culture, health, and wellness.

Chapter 2 "We are the Bay": The Environmental and Cultural Setting

Introduction

The research described in this dissertation takes place at a series of confluences. The region of focus, now called Willapa Bay, lies at the southwestern border of present-day Washington state. This is a geographic area of awestriking beauty where the coniferous rainforests and imposing mountains of the Coast Range meet the tumultuous Pacific Ocean creating extensive bays, fjords, and riverways. It is also where the ancestral land of the Chinookans of the Lower Columbia and Lower Chehalis peoples converge. The Chinook and Lower Chehalis cultural regions are nested within the greater Lower Columbia Region of the southern Northwest Coast Culture Area. Combined, they extend along the coast of Washington as far north as the Quinault River and as far south as Tillamook Head and follow the Columbia River east to just beyond The Dalles (Figure 2.1). Today, the coastal sections of this geographic zone are scarcely populated by modern standards with an average of 30 people per square mile.[5] But, before European arrival and the preceding waves of epidemics that decimated Native populations, this area was one of the most densely populated in pre-Columbian times with an estimated 22,000+ individuals living on the southern Washington and northern Oregon coasts (Boyd 1990).

[5] For Pacific County, Washington, and Clatsop County, Oregon.

Figure 2.1 Early 19th-century Southwestern Coast Salish territory (denoted in shades of blue) and Chinookan territory (denoted in shades of red).
Overlap denotes shared territories.

Willapa Bay is a small subsection of the vast Chinookan and Lower Chehalis regions. And while we still have much to learn about the demographics of the region before European arrival, it is unlikely that Willapa Bay was the center of either group before European arrival. Instead, Willapa Bay and the extensive cultural heritage that exists there is important because it is the current home of the largest populations of Chinookan and Lower Chehalis peoples today. Settler colonialism of the recent past pushed Native populations to "out-of-the-way places and it is in such communities that [they] live today—communities like Bay Center, Altoona, and South Bend, Washington and Astoria, Clatsop Plains, and Seaside, Oregon" (Johnson 2013:6). First Euro-American maritime traders, then Methodist missionaries, and finally settler colonialists claimed progressively more land, initially along the Columbia River and expanding outward (Lang 2013). By the 1840s Euro-Americans had parceled out vast swaths of Chinookan land to migrants looking to transform the Lower Columbia into an agrarian landscape and forced Native communities to less-desirable areas. The largest of these Native communities exist along the shores of Willapa Bay and these have been home to many prominent individuals from all corners of the Lower Columbia Region.

Most notably, both the Shoalwater Bay Indian Tribe (Lower Chehalis/Chinook) and the Chinook Indian Nation (Chinook) have their tribal offices in Willapa Bay. In this sense, it is yet another confluence. In Willapa Bay, these two communities of interrelated ethnicity (one federally recognized and one not)[6] interact and cooperate to maintain their shared identity. The term Shoalwater Bay Indian refers to "those of Lower Chehalis and Lower Chinook descent and

[6] See Chapter 3 for a discussion of the Shoalwater Bay Indian Tribe and Chinook Indian Nation's recent history and differing treatment by the U.S. federal government.

other Indians whose primary home was and is on the bay… known as Ats-mitl to the Indians" (Heritage Committee 1984a). The Shoalwater Bay Indian Tribe is the only group of downriver Chinookans that currently have a formal government-to-government relationship with the United States. On September 22, 1866, President Andrew Johnson established the 340-acre (138 ha) Shoalwater Reservation by executive order as land for "miscellaneous Indian purposes" (Johnson 1866). Since then, a small subset of the greater Chinookan and Lower Chehalis have called this reservation their home.

Willapa Bay is where the majority of Chinookan and Lower Chehalis peoples live today. It is where some fight for government recognition, and all fight to preserve, restore, and practice their heritage in a modern world that ignores their existence. The ancestral places of Willapa Bay are in the backyards of these communities. People interact with these places daily; they see them from their office windows, pass them on their drive home from work, or visit them on their weekend jaunts. These places, therefore, possess an unmatched relevance, as they are the confluence of past and present for the Willapa Bay Chinook and Lower Chehalis peoples. It is for this reason that I selected Willapa Bay as the focus of this research.

The following chapter details the environmental and cultural background of the research outlined in this dissertation. It begins with a description of the geographic and environmental setting of Willapa Bay and the resources that characterize the region, with particular emphasis on the natural resources pertinent to traditional foodways. I then briefly introduce the Northwest Coast Culture Area and the board cultural patterns that define the region.[7] Next, I provide a

[7] A more thorough discussion of the Lower Chehalis and Chinook culture, past and present, is the focus of Chapter 3

general overview of the subsistence practices characteristic of the Northwest Coast before European arrival, and what we know about the subsistence systems of the southern Northwest Coast Culture Area. This is followed by a brief outline of the historical trajectory of Indigenous foodways after European arrival and the devasting effects of settler colonialism on Native diet. Finally, I give a brief discussion of previous archaeological research in Willapa Bay.

Geographic and Environmental Background

> *Picture the Shoalwater Bay of old…like today, almost deserted, where land and sea alike occupy vast expanses in their turn, day and night. But in the former age there was an abundance of luxuriant plant and animal life on every side and underfoot, underneath the moving waters.*
>
> *- Heritage Committee, Shoalwater Bay Indian Tribe. Old Shoalwater World, (1984a)*

The Willapa Bay estuary is located in Pacific County, in the southwestern-most corner of Washington state (Figure 2.2). Willapa Bay is one of the few bays and estuaries that break up the straights of coast that span Washington, Oregon, and northern California and typify the southern half of the broader Pacific Northwest Coast region. This estuary is the second largest on the west coast of the United States; the bay itself is approximately 24 miles (39 km) long and ranges in width from approximately 4 miles (6 km) to 12 miles (19 km). The mouth of the bay is in its northwest corner, between Cape Shoalwater to the north and Leadbetter Point to the south. Within the bay, there is one large river mouth—the Willapa river—and numerous smaller channels. There are six islands located within the bay, but only two of a substantial size; Long Island and Kindred Island.

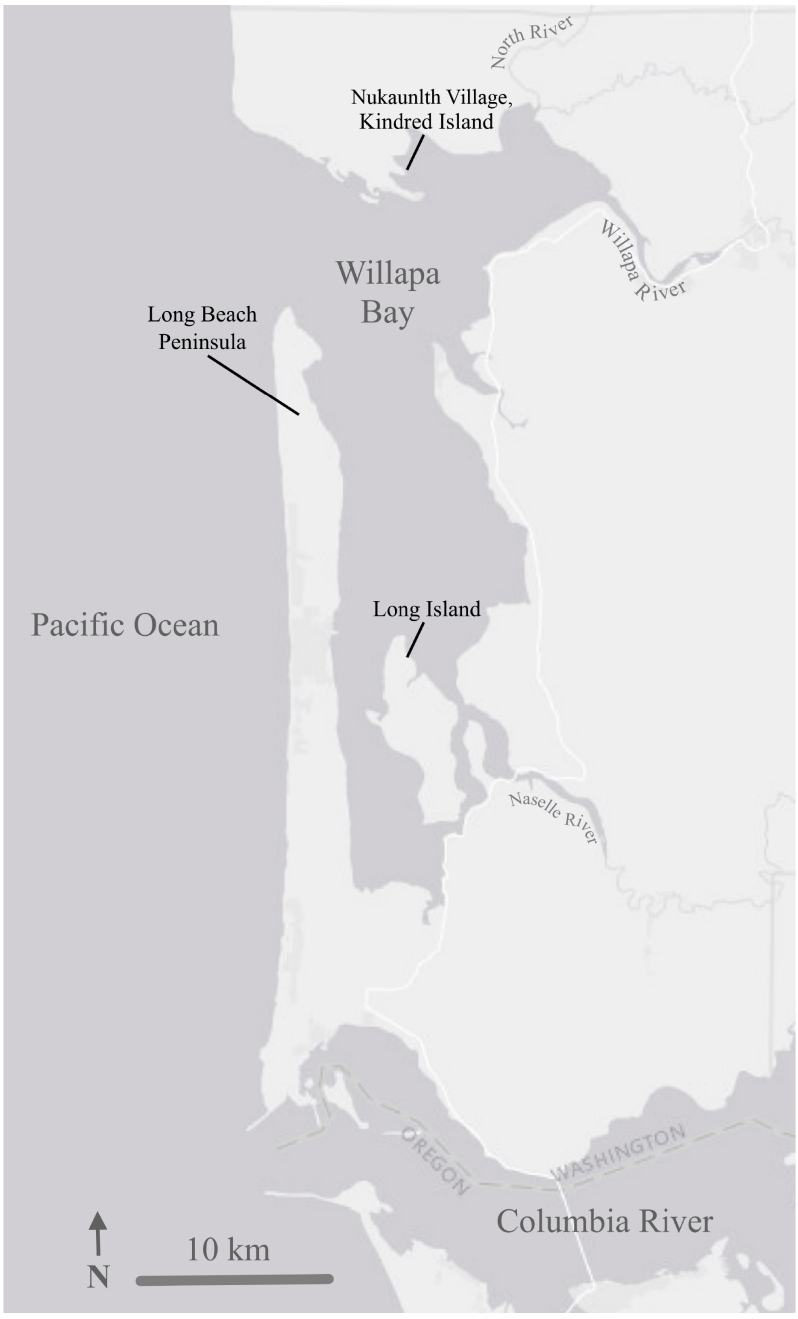

Figure 2.2 Willapa Bay, WA

The Long Beach Peninsula is the most notable feature of the area and serves as the western margin of the bay, separating it from the Pacific Ocean. This long, narrow, and low sandy barrier beach is approximately 20 miles (32 km) long and averages under 2 miles (3 km) in width. Geologists say it was formed by the ocean currents carrying Columbia River sediments

northward. However, oral histories suggest a different formation process: "a big canoe of Indians, not daring to cross the dangerous river bar, moored to the north alongside the coast and thus over time formed the peninsula" (Heritage Committee 1984a). Most of the peninsula is less than 20 feet (6 m) above sea level at its highest point, consisting of a series of ridges and swales oriented parallel along its long axis. Many of these troughs contain small lakes and bogs, some that had access points to the bay before modern modification of the landscape.

The eastern margin of Willapa Bay is a mix of coastal flood plains, salt marshes, and steep banks where coastal foothills abut the shoreline. Set back from the flood plains, rocky ridgetops within a few miles of the bay can reach an elevation of 250 feet (76 m) above sea level. The largest floodplain and river of the region, the Willapa River, is the bay's northeastern border. Other sizeable channels and floodplains are present at the Palix, Nemah, and Naselle Rivers farther to the south.

The south end of the bay is where it is at its most narrow, approximately 4 miles (6 km) wide, and gives way to relatively low-lying ground. Five miles (8 km) directly south of the southernmost extent of Willapa Bay is Baker Bay, in the mouth of the Columbia River. The Wallacut and the Chinook rivers that flow into the Columbia reach northward towards Willapa Bay, but do not connect the two drainages. Still, portage between the mouth of the Columbia and southern Willapa Bay was frequent in the pre- and postcontact periods and considered relatively easy (Swan 1857).

In contrast, the northern end of Willapa Bay is where it's at its widest and is a diverse landscape. This area extends approximately 12 miles (19 km) from the mouth of the bay at Cape Shoalwater to the mouth of the Willapa River near Ranger Point and includes dune fields, the outer edges of coastal foothills similar to those on the eastern shore, and a few small river

channels and floodplains (notably, the North and Cedar Rivers). Landforms north of the northernmost shoreline are a series of rocky ridges that rise to over 400 feet (120 meters) above sea level within a few miles.

The two islands of substantial size present in Willapa Bay are worth extra consideration. Long Island, located in the southern half of Willapa Bay, is considerably larger than any other island in Willapa Bay, approximately 5,000 acres (2,000 ha) in area extending 12 miles (19 km) north-south and reaching 250 feet (74 meters) above sea level. It is primarily a coniferous forest, with salt marshes and a series of inlets along its eastern shore, and pebble beaches and cliffs along its western shore. After a brief stint of historical logging on the island, it was designated a Wildlife Refuge by the United States Fish and Wildlife Service in 1983 (Wessen 2008). As such, modern industry has minimally impacted archaeological resources on the island. Kindred Island, located in the north of Willapa Bay, is a fraction of the size of Long Island; approximately 150 acres (61 ha), extending approximately 1 mile (1.6 km) east-west. A series of modern industries including farming, logging, and cattle-rearing occurred on the island; however, the most archaeologically relevant section of the island—the eastern tip—was minimally impacted by these activities. The historical use of Kindred Island is discussed further in Chapter 5.

Willapa Bay is predominately composed of three soil map units: Ocosta, Yaquine-Netards-Dune land, and Willapa-Newskah. The floodplains and deltas that are protected from tidal overflow correspond to the Ocosta general soil map unit (Pringle 1986:5–6). They are typically silty clay loams that formed in alluvium deposited in coastal bays. These soils are found on the floodplains of the lower Cedar, North, Willapa, Palix, South Nemah, Naselle, and Bear Rivers. The coastal dunes correspond to the Yaquina-Netarts-Dune land soil map unit

(Pringle 1986:6–8). The two major soils in this group are both fine sands. Some areas near Cape Shoalwater contain soils of this group. The marine terraces of Willapa Bay correspond to the Willapa-Newskah soil map unit (Pringle 1986:11–12). Willapa soils are silt loams that formed in stratified marine sediments on wave-cut terraces. Newskah soils are loams that formed in sandy marine sediments on broad ridgetops and the back slopes of marine terraces. They occur widely in the areas between coastal floodplains on the northern and eastern sides of Willapa Bay.

Hydrology and Water Resources

Arguably the most influential environment of the Willapa Bay region is that of the Willapa Bay itself and its tributary streams. The hydrology of the region is affected by a complex system of rivers and streams that drain into the bay from the north, south, and east, and the churlish winds and currents of the Pacific Ocean to the west. The entire Willapa Bay watershed contains approximately 745 rivers and streams, comprising nearly 1,500 miles (2400 km) of channels. The majority of these are relatively small. The Willapa River is the largest in the area. Other relatively large drainages include the Cedar, North, Niawaikum, Palix, Nemah, Naselle, and Bear Rivers. None of the rivers that drain into Willapa Bay carry a significant volume of winter snowmelt. Therefore, seasonal patterns of precipitation heavily influence the amount of water flowing from all of these rivers and streams.

Tidal fluctuations markedly effect Willapa Bay and the mouths of the rivers that drain into it. Originally called Shoalwater Bay, due to its shallow character, Willapa Bay sees dramatic changes in its volume of water during tidal cycles. More than half of its surface area lies in the intertidal zone and almost half of the bay's total volume enters and leaves with every

tide. Likewise, seasonally changing ocean currents and wind patterns can significantly affect the movement of nearshore marine waters near Willapa Bay.

Seasonal interactions between tides, winds, ocean currents, and the discharge of fresh water from rivers and streams have important impacts on the water composition of Willapa Bay. Seasonal and annual variation in the amount of fresh water that flows into the bay affects the salinity of the water. The nutrient content is also influenced by the interchange of water between the bay and ocean during tidal fluctuations. Nutrients that are important to the marine and estuarine species of the bay are derived from ocean sources. During periods of reduced circulation between the ocean and the bay, such as during periods of coastal downwelling or plumes of water traveling northward from the mouth of the Columbia, the productivity of the bay can be negatively affected. Conversely, summer upwelling and winter storm events can promote thorough mixing of the waters and bring important nutrients into the bay.

For the last 20,000 years changes in the landscape of the Willapa Bay area have largely been due to changes in sea level. Reconstruction of Late Pleistocene and Holocene shorelines in this area suggests that the ca. 18,000 BP shoreline was approximately 17 miles (27 km) to the west of its current position. The shoreline was within approximately 10 miles (16 km) of its current position by ca. 10,000 BP, and within ~1 mile (1.5 km) by ca. 7,500 BP (Espey et al. 1990). This means that during the Late Pleistocene and Early Holocene there was a broad coastal plain to the west of and encompassing present-day Willapa Bay. Rivers and streams that now drain into the bay flowed across this plain, reaching the ocean farther to the west. As the ocean rose, this coastal plain flooded. Likely, much of what is now Willapa Bay was finally filled by sea-level rise between ca. 5,000 and 7,500 years ago (Ballard 1964; Woxell 1998).

Willapa Bay lies just east of the Cascadia Subduction Zone. As such, it is believed that periodic earthquakes over the last 5,000 years have caused sudden drops in the ground surface and tsunamis during some of these events (e.g., Atwater 1987; Atwater and Hemphill-Haley 1997; Atwater et al. 1991; Benson et al. 2001). Stratigraphic studies of the Naiwaikum and Willapa Rivers show up to seven separate seismic events that have lowered the ground surface in the last ca. 3,500 years, three of which show evidence of a concurrent tsunami (Atwater and Hemphill-Haley 1997:77–79). The last major tsunami to hit the region was the Cascadia tsunami on January 26, 1700, with an estimated magnitude of 8.7-9.2 (Atwater 2016). It is reasonable to believe, therefore, that Holocene seismic events, including the 1700 Cascadia tsunami, had a significant impact on the Native peoples of Willapa Bay.

Marine Life

> *Though some oyster and clam beds remain, the shellfish population is only a shadow of its former size, and the oysters are mostly from imported seed stock. As recently as 150 years ago, many beds were multi-layered and from one to three feet deep…The salmon and fish are still with us, but only a tiny fraction of the incredible runs and quality species of old. The native fish population has suffered almost irretrievably from the pressure of too many fisherman and fish eaters, destructive logging practices that have ruined spawning grounds, widespread pollution, and scores of dams and other obstacles on traditional spawning rivers.*
>
> *- Heritage Committee, Shoalwater Bay Indian Tribe. Old Shoalwater World, (1984a)*

Wide-scale availability of marine and riverine resources is a hallmark of the Northwest Coast region, although species availability can vary locally in dramatic ways. The nutrient-rich waters of Willapa Bay support an abundance and diversity of marine, foreshore, and anadromous fish as well as shellfish and other invertebrate populations, and marine mammals. Today, Willapa Bay is most known for its shellfish populations, as it is responsible for 25% of

Washington state's aquaculture yields (Washington Sea Grant 2015). The extensive intertidal flats and nutrient-rich deep ocean upwelling characteristic of the bay makes it particularly habitable for invertebrate populations. In its current state, the bay is best known for its productive Pacific Oyster beds, a species introduced by commercial aquaculturists early in the 20th century (Steele 1964). However, before European commercial harvesting and overexploitation in the late 1800s, Willapa Bay had extensive populations of the Native or Olympia oyster (*Ostrea lurida*), bay and California mussel (*Mytilus trossulus*, *Mytilus californianus*), basket cockle (*Clinocardium nuttalli*), and several species of clam (*Tresus* sp., *Protothaca staminea*, *Macoma nasuta,* and *Saxidomus giganteus*) (Gonor 1989). All of these species can still be found in the bay today, albeit in smaller quantities. The historical extent of oyster beds in Willapa Bay may have been as great at 27% of the bay bottom (Blake and zu Ermgassen 2015). Dungeness crab (*Cancer magister*) is another important invertebrate population in the bay.

Perhaps the most emblematic marine resources of the Northwest are the six species of salmon (*Oncorhynchus* spp.) that spawn in the rivers and streams of the region. Early anthropologists and archaeologists of the region, such as Alfred Kroeber and Clark Wissler, lionized salmon as a key resource that was inextricably interwoven into the economic, social, and political systems of Indigenous Northwest Coast peoples, so much so that it inspired the neologism "salmonopia"—an inability to see anything but salmon as relevant to Northwest Coast livelihoods (Monks 1987). In fact, the Northwest Coast, Willapa Bay included, is home to a wide variety of anadromous and marine fish. Willapa Bay is home to four species of salmon—chinook (*Oncorhynchus tsawytscha*), coho (*Oncorhynchus kisutch*), chum (*Oncorhynchus keta*), and steelhead (*Oncorhynchus mykiss*)—and a sea-run of cutthroat trout (*Salmo clarki*) (Phinney

and Bucknell 1975:1–6). The bay also supports populations of partially anadromous fish including white and green sturgeon (*Acipenser transmontanus* and *A. medirostris*) and longfin smelt (*Spirinchus thaleichthys*); and marine fish including the Pacific herring (*Clupea harengus pallasi*), northern anchovy (*Engraulis mordax*), western spiny dogfish (*Squalus acanthias*), and red-tailed surf perch (*Amphistichus rhodoterus*). The seasonal availability and abundance of select species are discussed further in Chapter 7.

Marine mammals have been less commonly seen within Willapa Bay in modern times. However, it is usual to see Gray whales (*Eschrichtius robustus)* traveling near the mouth of the bay, or close to shore along the Long Beach peninsula. Other marine mammals lived near or in Willapa Bay in the past are the northern fur seal (*Callorhinus ursinus*), Steller sea lion (*Eumetopias jubatus*), California sea lion (*Zalophus californianus*), harbor seal (*Phoca vitulina*), northern sea otter (*Enhydra lutris kenyoni*), and harbor porpoise (*Phocoena phocoena*).

Vegetation

> *Look at the landscape again. A few hundred years ago, there were stands and groves of trees, much larger than we see today, creating microenvironments of silence, deep shade and echoes. Sitka Spruce and Western Hemlock were most common, with Western Cedar and Lowland White Fir. In the sand dunes just back of the beach and in bogs and burned-over areas Lodgepole Pine took hold. Just inland Douglas Fir replaces the spruce and hemlock.*
>
> *- Heritage Committee, Shoalwater Bay Indian Tribe. Old Shoalwater World, (1984a)*

Willapa Bay has only limited intra-regional climatic variation with mild, wet winters and cool, dry summers. It is a part of the *Picea sitchensis* Zone of western Oregon and Washington (Franklin and Dryness 1972:58–63). This is a dense coniferous forest dominated by Sitka spruce (*Picea sitchensis*), western hemlock (*Tsuga heterophylla*), and western red cedar (*Thuja plicata*).

These mature forests typically have a dense understory containing a mix of shrubs, dicotyledonous herbs, ferns, and cryptogams. In particular, Salal (*Gualtheria shallon*), oval-leaf blueberry (*Vaccinium ovalifolium*), red huckleberry (*Vaccinium parvifolium*), false azalea (*Menziesia ferruginea*), sword fern (*Polystichum munitum*), deer fern (*Blechnum spicant*), and wood sorrel (*Oxalis oregano*) are all abundant in the understory. Historical logging activities removed almost all of the original old-growth *Picea sitchensis* Zone forests in the area. Currently, most of Willapa Bay's forests are disturbed second-growth forests containing a similar set of species as described above in addition to large quantities of red alder (*Alnus rubra*). Willapa Bay also contains extensive salt marshes and tide flats. Sedges are particularly common in marsh areas along the bay, including slough sedge (*Carex obnupta*) and Lyngbye's sedge (*Carex lyngbyei*). Sea arrow grass (*Triglochin maritimum*) and native eelgrass (*Zostera marina*) are also very common.

Pollen studies from nearby Lewis County and Clark County suggest that tundra and subalpine parkland plants dominated southwestern Washington between ca. 20,000 and 15,000 years ago (Heusser 1977; Whitlock 1992). After ca. 15,000 BP, trees such as Sitka spruce, mountain hemlock, and western hemlock became more prevalent on the landscape. Early Holocene times exhibit high percentages of Douglas fir (*Pseudotsuga menziesii*), red alder (*Alnus rubra*), and bracken fern (*Pteridium aquilinum*), while the second half of the Holocene sees the rise of forest communities like those of the early postcontact period. At this time prairies became less common and forests of predominately western hemlock and western red cedar (*Thuja plicata*) dominated parts of the landscape. Sitka spruce has probably been an important part of the Willapa Bay lowland forest community since the second half of the Holocene.

Wildlife – Avian and Terrestrial Mammalian Populations

> *Waterfowl were so numerous that their flocks darkened the sky at moments, when they took flight, and catching numbers of them was quite easy, compared to today. Meat, feathers, bones, and even the pelt of certain larger birds were used, and eggs as well.*
>
> *- Heritage Committee, Shoalwater Bay Indian Tribe. Old Shoalwater World, (1984a)*

Willapa Bay is home to a diverse and abundant group of birds—over 260 species of birds have been reported on or near the bay (USFWS 1991). The United States Fish and Wildlife Service created the Willapa National Wildlife Refuge to provide habitat for the large populations of migratory birds that pass through the region. The majority of these birds are associated with marine habitats, including 31 types of sea birds, 45 types of waterfowl, and 35 types of shorebirds. As the above quote illustrates, waterfowl are particularly abundant seasonally, most notably black brant (*Branta bernicla*), Canada goose (*Branta canadensis*), northern pintail (*Anas acuta*), and American widgeon (*Mareca Americana*). Likewise, more than 100,000 shorebirds are also present in the spring and fall (Strickland and Chasan 1989:109), most notably black-bellied plover (*Squatarola squatarola*), western sandpiper (*Ereunetes mauri*), sanderling (*Crocethia alba*), and short-billed dowitcher (*Limnodromus griseus*). Species associated with terrestrial settings include 58 types of small perching birds, 26 types of owls and raptors, five types of woodpeckers, and five types of gallinaceous birds.

Forty-six species of terrestrial mammals have been reported on or near Willapa Bay (USFWS 1991). Most of these are small mammals such as bats, rodents, shrews, and moles. Of these, the majority of species belong to the order Rodentia. The mountain beaver (*Aplodontia*

rufa), beaver (*Castor canadensis*), and porcupine (*Erethizon dorsatum*) are the most notable terrestrial mammals from this order. There are also several large terrestrial mammals in the area that are common throughout western Washington including the Roosevelt elk (*Cervus elaphus roosevelti*), black-tailed mule deer (*Odocoileus hemionus columbianus*), black bear (*Ursus americanus*), and cougar (*Puma concolor*).

The Northwest Coast Culture Area

The Pacific Northwest Coast of North America is considered a place of natural beauty and abundant natural resources and is known for its steep mountain ranges, thick coniferous forests, and wet climate. It is also known for some of the most iconic and distinctive Native American cultures in North America. These cultures, while each possessing their unique attributes, can be broadly classified within a Northwest Coast pattern—a suite of characteristics that, to one degree or another, are shared by the Native communities that called this part of the world their home and distinguishes them from other Indigenous groups in North America. Generally speaking, the area within which this Northwest Coast pattern can be found is referred to as the Northwest Coast Culture Area and encompasses the section of the Pacific coast of North America that stretches roughly 1200 miles (1900 km) from Yakutat Bay in the Alaskan panhandle to Cape Mendocino in northern California and extends inwards along major rivers like the Columbia, the Fraser, the Skeena, and the Nass (Figure 2.3) (Kroeber 1939; Matson and Coupland 1995; Wissler 1914, 1917).

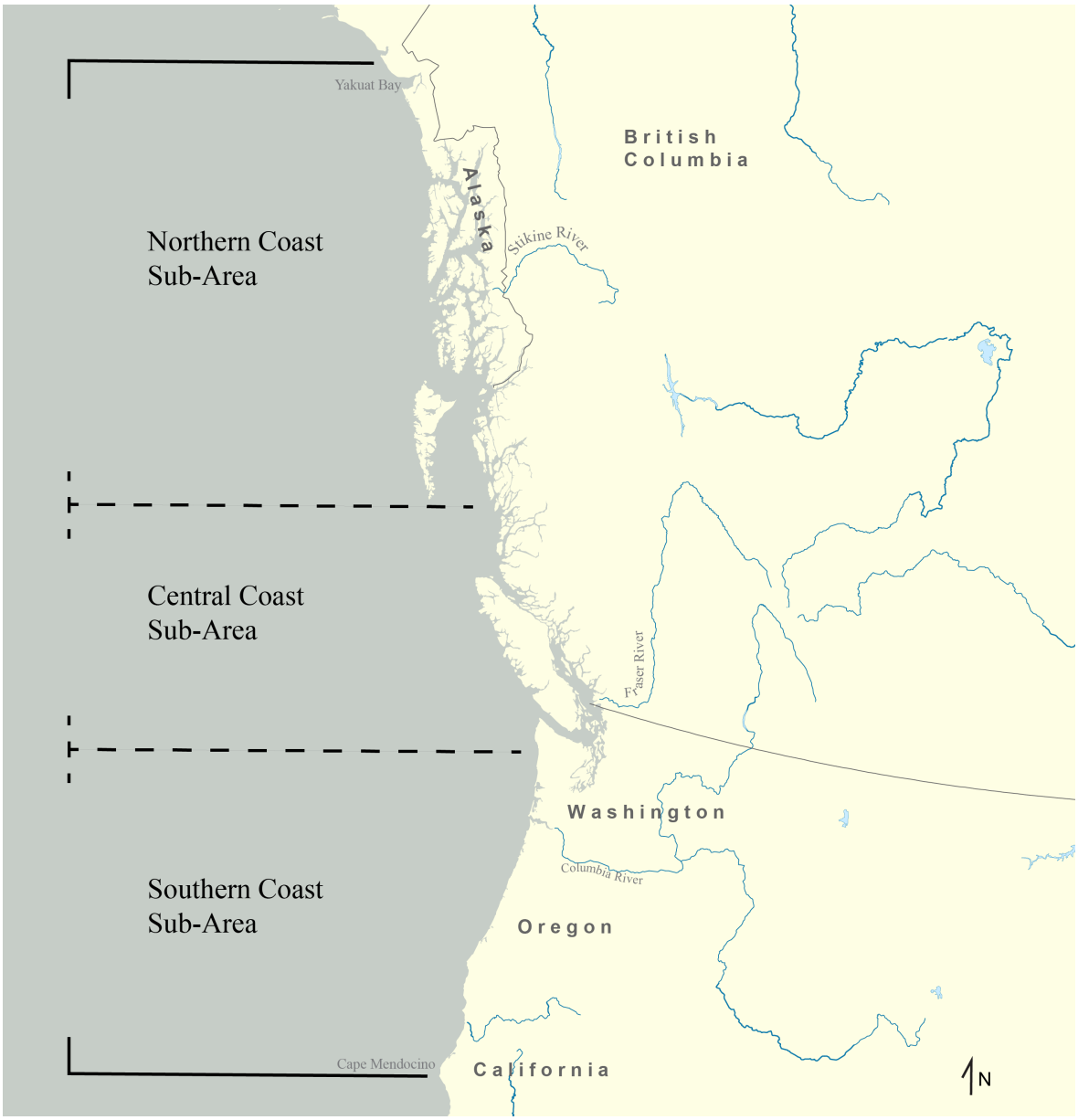

Figure 2.3 Northwest Coast Culture Area

Over the years, there have been numerous attempts by anthropologists and archaeologists to refine the categorization of the Northwest Coast Culture Area, and over time the defining traits have shifted (e.g., Ames 2003; Donald 2003; Drucker 1955; Kroeber 1939; Matson and Coupland 1995; Suttles 1990; Wissler 1914). Of these, Leland Donald (2003) has provided the most succinct list of features that are shared among the coast's cultures. He isolates nine key

traits: (1) marine/riverine orientation in subsistence, ideology, and "outlook"; (2) highly sophisticated technology for exploiting marine and riverine resources; (3) highly developed woodworking and basketry technology, most notably the construction of plank houses, canoes, art objects, and watertight storage boxes, (4) some of the densest human populations in North America, at times surpassing agricultural areas; (5) emphasis on property, ownership, and control of wealth (both tangible and intangible) as central to social importance and success; (6) a system of social stratification that most often includes nobles, free commoners, and slaves; (7) true slavery in which, in some cases, the owner determines whether the slave lives or dies; (8) the typical largest political unit being that of the village and a lack of intercommunity political organization; and (9) no formalized political offices (Donald 2003:297–298). To this list, Ken Ames adds a tenth: large coresidential and corporate households as the basic social and economic unit (2003:19). And more recently, Jon Daehnke adds an eleventh: emphasis and reliance on complex and extensive trade networks (2017:30). It is important to reiterate that, while these commonalities are clear when looking across the entire region and comparing this region to other parts of the Americas, local expression of these traits varied. There exists considerable variability at sub-regional and local levels.

The label that is perhaps most encompassing of these traits and generally synonymous with Northwest Coast cultures is that of "complex hunter-gatherer"—communities that are socially ranked and politically autonomous without any formal system of agriculture, horticulture, or herding (Kelly 2013). Like the Calusa of Florida (Marquardt 1986), the Chumash of the Santa Barbara Channel Islands (Arnold 1993, 1996), the Jomon of Japan (Habu 2004), and other complex hunter-gatherer societies, Northwest Coast groups differ from many known hunter-gatherer communities in their degree of sedentism, high population counts, and

stratified social systems. In his paper "Coping with Abundance: Subsistence on the Northwest Coast", now a staple of Northwest Coast archaeology courses, Wayne Suttles describes Northwest Coast peoples as having "attained the highest known levels of cultural complexity achieved on a food-gathering base and among the highest known levels of population density" (1968:56) and as a source from which to refute generalizations about the complexity (or lack thereof) of societies without agroeconomic lifeways.

While there is no archaeological evidence in Willapa Bay of the earliest peoples known in North America, a growing catalog of archaeological sites suggests humans were present in the Americas by at least ~14,500 years ago (Braje et al. 2017; Williams and Madsen 2020). These sites include Monte Verde on the Pacific Coast of Chile (~18.5–14.2 ka;[8] Dillehay et al. 2015), Paisley Cave in southcentral Oregon (~14.2 ka; Gilbert et al. 2008; Hockett and Jenkins 2013), Page-Ladson in Florida (~14.5 ka; Halligan et al. 2016) and Huaca Prieta in Coastal Peru (~15 – 14.5 ka; Dillehey et al. 2012, 2017). Most archaeologists now agree that the earliest Americans used a coastal migration to enter the continent, utilizing the rich and productive coastal environment along the way (Braje et al. 2017; Erlandson et al. 2015).

If the first Americans moved southward along the North American coastline from the southern coast of Beringia, as the coastal migration hypothesis suggests (Davis and Madsen 2020), then the coast of Washington was most certainly passed through. Willapa Bay was unglaciated and presumably habitable at this time. In such a coastal migration, pre-Clovis peoples likely spent time in Willapa Bay and used the resources therein. Furthermore, the Columbia River would have been one of the first available routes into the continental interior

[8] *Kilo annum*, i.e., thousand calendar years ago

during the initial migrations (Sobel et al. 2013). If the coastal migration hypothesis is correct, then pre-Clovis sites in the intermountain West like Paisley Cave suggest people had moved inland by ~14,200 years ago and were utilizing the coast well before that (Davis and Madsen 2020). Unfortunately, evidence of this is presumably buried far below sea level (likely under more than 100 meters of ocean), and at some considerable distance off the coast (Maschner 2012).

Archaeological evidence is limited for the Archaic period (10,500–4,400 BC). Sites that would have been near the coast in the Archaic period would now be underwater. Those that have been found tend to be small and ephemeral, likely representing short-term habitation or "camps" (Sobel et al. 2013:30). These sites lack evidence of many of the traits that define the Northwest Coast Culture Area and instead suggest that people lived in small, mobile groups with low population density (Ames and Maschner 1999:123–127; Maschner 2012). However, several archaeological sites from this period contain subsistence remains that indicate people exploited a similar set of terrestrial, wetland, and marine resources as is characteristic of the historic period (Butler and O'Connor 2004; Campbell and Butler 2010; Dixon 1999). So, while the complex social systems we often associate with Northwest Coast peoples may not have been in place during the Archaic period, the basic subsistence system of historically known groups was likely established at least 9,000 years ago (Maschner 2012).

The traits characteristic of the Northwest Coast Culture Area did not develop until the Pacific Period (4400 BC – AD 1750). During this time, significant changes took place in the lifeways of Native communities including increased population densities, sedentism, and household and community size, escalated warfare, and a shift to a subsistence economy based on storing large volumes of food (Sobel et al. 2013:31). Over the 1500 years before European

arrival, Northwest Coast societies continued to develop the Northwest Coast pattern leading to the cultures first encountered by European and Euro-American settlers. It is estimated that at its precontact demographic peak— just before the numerous and devasting European-introduced epidemics of smallpox, malaria, viral influenza, and measles—the Northwest Coast was home to more than 200,000 Native peoples (Boyd 1990, 2013), making it one of the most densely populated regions of North America before contact.

The Lower Chehalis and Chinookan peoples reside in an area that most anthropologists (e.g., Erlandson et al. 1998; Jorgensen 1980; Kroeber 1939; Wissler 1917) refer to as the southern Northwest Coast, although some place the border between the central and southern coast within the territory of these two groups (e.g., Matson and Coupland 1995:3). The southern Northwest Coast is characterized by the straight coasts of Washington, Oregon, and northern California, making it environmentally divergent from the archipelago-like coast of islands, bays, deep fjords, and sheltered coves of the "classic" Northwest Coast of British Columbia and southern Alaska (Ames 2003:20). This difference in environment results in a more abundant and diverse range of edible biomass, especially terrestrial, on the south coast (Schalk 1981; Suttles 1962). This is often cited as the reason that variation in culture occurs on a north-south gradient. South coast communities have both overall higher and more evenly-spaced population density than their northern counterparts (Kroeber 1939). South coast villages tended to be smaller, more numerous, and relatively closely spaced, perhaps because resources were less patchy, more diverse, and more abundant (Schalk 1981; Suttles 1962). South coast communities are also considered to have less rigidity in their social organization than their northern neighbors, again perhaps because a rigid social organization was not necessary in an environment with a more diverse (and therefore more reliable) resource base.

Subsistence Practices on the Northwest Coast

> *The Northwest Coast was an area where one could find, on a single occasion quite literally tons of food. Salmon ran into the smaller streams by the thousands and into the large streams by the tens and hundreds of thousands. Waterfowl came to the marshes by the tens and hundreds of thousands. A single sturgeon can weigh nearly a ton, a bull sea lion more than a ton, a whale up to 30 tons.*
>
> *- Wayne Suttles, Coping with Abundance: Subsistence on the Northwest Coast (1968:58)*

The Northwest Coast is an environment best characterized as one of abundance. The copious provender (plant life, sea life, wildlife) available in this region is often thought to have made possible the cultural richness seen throughout the region. As such, Native Northwest communities had diverse and intricate cuisine. As a case in point, in the early 20th century an anthropologist recorded a Kwakwaka'wakw woman's some 150 different recipes without exhausting her repertoire (Drucker 1955:54).

Of the available resources, none are discussed more than fish, in particular, salmon. Despite being referred to by anthropologists as complex *hunter-gatherers*, exploitation of marine resources was the basis of the Native Northwest Coast economy (Drucker 1955) and salmon was considered by anthropologists to be the most important resource (Ames 1994; Coupland et al. 2010; Kelly 2013; Wissler 1917). Intensive salmon procurement and storage begin to appear around 1500 BC and was common among most groups of the region by at least AD 450 (Matson and Coupland 1995:303). Seasonal runs of salmon were exploited intensively when available, then processed for exchange and storage, and consumption through the winter months. While salmon is the most widely discussed fish species (i.e., salmonopia), other important fish species

of the region include halibut, sturgeon, flatfishes such as starry flounder, Pacific cod, Eulachon, surf smelt, and rockfish (McKechnie and Moss 2016). Numerous technologies and tactics were employed to catch fish including the seine, gill net, dip net, bag net, weir, dam, spear, harpoon, rake, and hook and line (Sobel 2004).

By the Late Pacific (AD 200/400 – AD 1750), marine mammals were of particular importance on the Northwest Coast. Among them, harbor seal, fur seal, California sea lion, Steller sea lion, and gray whale were most commonly exploited. While some groups were known as whale hunters (the Makah and Nootkan are the best known of these groups) and had rich cultural and spiritual practices concerning this activity, many other groups more often opportunistically exploited beached whales. Crabs, sea urchins, and a variety of shellfish were part of the Northwest Coast diet, where available.

Most Northwest communities practiced limited land mammal hunting (Drucker 1955). Elk, deer, and black bear were the species that were most widely hunted. Bows and arrows were the most common hunting implement, but pits and snares were also used. Likewise, bows and arrows were used to catch waterfowl, as were nets. Early anthropologists in the area believed plants, like land mammals, were "comparatively few and unimportant in Native diet" (Drucker 1955:53). However, more recent studies have suggested otherwise (see Deur and Turner 2005; Darby 2005, 1996; Turner and Kuhnlein 1982). Relative few starchy foods were available, especially in the north where camas prairies and oak groves were nonexistent. Berries such as huckleberries, blackberries, bearberries, salal berries, cranberries, and gooseberries were present in abundance throughout the Northwest, however, and provided a substantial quantity of storable foods (Boyd 1996; Hajda 1984; Ray 1938; Spier and Sapir 1930; Stern 1998). Available for

only a limited time each year, berries were mixed with eulachon oil or pounded into cakes and dried for storage.

Food and Social Structure

Northwest Coast Indigenous societies first captured the interest of archaeologists, ethnographers, and social theorists because, from these scholars' perspective, the non-agrarian food systems typical of the region were seemingly insufficient to achieve and sustain the complex social structures also characteristic of the region. The prevailing view for much of the history of archaeological thought was that sedentism, high population counts, and stratified social systems—all hallmarks of "socially complexity"—were exclusively concomitant with and dependent upon agriculture (Ames 2005:68; Price and Brown 1985). Yet, Indigenous Northwest Coast societies invalidated this seemingly absolute link (Suttles 1968). As such, the Northwest Coast Culture Area has often been a laboratory for exploring the relationship between food production and "social complexity" and the causes for and development of social inequalities (see Ames 1994; Ames and Maschner 1999; Hayden 2009; Kelly 2013:261-268; Matson and Coupland 1995).

In the 60 or so years that this topic has dominated discussions within Northwest Coast archaeology, scholars have put forward many final and proximate causes for the origins and development of social inequality and culture complexity but have not reached a consensus. Ken Ames provides a thorough overview of these posited causes in his chapter *The Archaeology of Rank* (2008b). A complete summary is unnecessary here and well beyond the scope of this dissertation. However, those directly relating social structure to food production warrant some discussion.

Scholars have suggested numerous interrelated causes for the origins and development of complex social structures that directly involve food systems including **feasting, productive subsistence bases and surpluses, storage, patchy heterogeneous environments, aquatic/maritime economies, and subsistence intensification**. In his discussion of complexity, Brian Hayden has suggested that **feasting** was the mechanism by which aggrandizers competed for and gained followers and resources (1994, 1995, 2001, 2009). Hayden shows that competitive feasting is a way for ambitious figures to create relationships of inequality through the buildup of debt, social obligations, and the exchange of prestige goods (1996). Hayden cites numerous ethnographic examples of this including potlatches on the Northwest Coast and funeral feasts in Polynesian chiefdoms (2009). Of course, more is involved in these feasts than food alone. However, the production of food surplus for redistribution is thought to be central to the process.

A broader, but similar, cited cause for complex social structures is **productive subsistence bases and surpluses**. Surplus production has been widely cited as the ultimate cause of permanent inequality in societies. When the subsistence base is productive enough to build up surpluses, aggrandizers can manipulate the distribution and access to stores to further their own ends (Hayden 1995). Control of surplus production can be direct or indirect, such as through the control of labor (Arnold 1993, 1996), or through debt (Gosden 1989).

Surplus production is closely linked to **storage**, another often cited cause of increased social complexity. Storage is necessary for aggrandizers involved in prestige competitions, as described above. Stored foods can lead to and support more populous communities and a more sedentary lifestyle (Wesson 1999). Stored items are also, to some extent, property that can be defended and, in most cases, require considerable labor to accrue and process.

Some have posited that variability in the environment, in particular a reliance on **patchy heterogeneous environments**, precipitated and/or necessitated more complex social structures. Ames suggests there are generally two versions of how such environments could have caused complexity (2008b). In one version, variation in the environment results in some resource patches being of higher-quality and/or more predictable in their output. As such, those who have access to these patches have an advantage that they feel the need to defend, and which they can use to further their own community (Matson 1985; Coupland 1985). In the second proposed scenario, fluctuation in local resources necessitates long-distance social ties. Maintaining such ties ensures access to distant resources should local ones fail. Leaders arise to facilitate the development and continuation of these social relationships (Kelly 2013).

Other scholars have taken a more straightforward ecological approach, suggesting that those with **aquatic/maritime economies** are more likely to develop permanent inequalities than those who rely on terrestrial resources (Renouf 1989). This is usually thought to be because aquatic environments are highly productive sources of food. Hunter-gatherers living near aquatic or maritime environments tend to have higher population densities, be more sedentary, and possess more sophisticated technologies and mobility patterns (Arnold 2004; Gwynne 1982; Perlman 1980).

Lastly, **subsistence intensification** (i.e., increased food production) is sometimes suggested as the impetus for increasing social complexity. More food through intensification means the ability to sustain population growth (at least for a time) and produce surpluses. It is also thought to necessitate organizational changes that lead to inequality (Price and Brown 1985).

Looking at Indigenous Northwest Coast societies, one can see the many ways these suspected causes for the development and maintenance of complex social structures may have played out. While abundant resources may have been a hallmark of the Northwest Coast environment, these resources were not *always* available in ample quantities. Instead, copious resources were available only at certain times of the year, in confined locales, and associated with certain costs and the probability of failure, i.e. they existed within a patchy heterogeneous environment (Grier 2006; Hajda 2013; Kelly 2013; Suttles 1968). Salmon, argued to be the most important resource at a regional scale, for example, are only available in limited runs over a few months. Each run only lasts a few weeks and can be exploited at specific points on the landscape. Additionally, the productivity of these runs varies from year to year. Therefore, gathering high-return-rate resources in bulk when available at specific times of the year and storing these resources for later use helps to cope with the variable "abundance" characteristic of much of the Northwest Coast.

However, it also carries with it both the seeds of conflict (Coupland 1985; Hayden 1994; Matson 1985) and the need for considerable labor (Ames 2005; Arnold 1996). In a place of limited habitable areas and high population densities, responding to resource fluctuations by moving to another area is less likely because there may not be another unoccupied habitable area with access to resources. As such, devoting time to warfare (or defense of resources that other communities may need) may become a possibility, as the potential benefit (of keeping what one has or gaining what others have) may be worth the potential cost (of time taken away from other activities as well as the risk of injury or even loss of life).

Gathering and processing resources in bulk require substantial labor. Fishing, either by fish weirs, gill netting, or dip netting, requires a considerable workforce in the moment, as well

as in the creation of the tools needed beforehand, and the immense amount of labor needed to process foods in such large quantities (Ames 2008b). Even resources that seemingly require no active investment of labor to procure, such as a beached whale, require considerable labor in the processing of that resource. Furthermore, efforts to secure food from localized, temporally-abundant resources for a delayed-return, can do more than protect the community from times of scarcity; any quantity of foods beyond what is necessary to sustain the community can be converted into wealth through competitive feasts (as is more common in the northern Northwest Coast), trade, or alliance building (Hayden 2009).

Both conflict and labor of production require substantial numbers of people and the organization of those people. A storage economy, therefore, requires that someone coordinate and/or control the efforts of a large number of people (Hayden 1994:234). This is a context within which efforts to control non-kin labor, and the cost of slavery (either risking your own life by raiding other villages or spending a considerable amount to buy a slave through trading) becomes worth the benefit. Recognized leaders arise, then, when the community benefits from the coordination of individuals in the labor of production or defense of resources more than they suffer from a loss in autonomy. Following this, inequality characteristic of Northwest Coast communities arises when high population pressure incentivizes individuals to join groups with leaders that coordinate labor and control access to resources even if they have to give up some of their labor and autonomy or assume a second-class status (Andrews 1994; Keen 2006). The resulting larger communities mean more labor and some of this labor can be further diverted to the pursuit of prestigious activities that allow elites to demonstrate their power and perpetuate the cycle.

While the general relationship between elaborate nonegalitarian social relations and the food resources available described above holds throughout the Northwest Coast, variation can be seen in the ways and extent to which this relationship plays out. Sedentism, high population density, resource defensibility, and storage are all associated with the social complexity seen in Northwest Coast societies. The variability seen throughout the region in these dimensions is related, at least indirectly, to the particular temporal and spatial distribution of "abundant" resources (Ames 1981) and how people intensified the production of food from such resources (Ames 2005).

As mentioned earlier, there exists an environmental gradient in the Northwest Coast by which resource fluctuations shift from being spatially in-sync to spatially out of sync as one moves south to north (Kelly 2013). From south to north, food resources are increasingly localized (Richardson 1982), and therefore the chance that one community's resource base is not linked to that of another's increases. Additionally, the north coast has a more rugged terrain that makes transportation more difficult and habitable space more limited. As resources are more localized in the north and mobility more restricted, they also become more defensible and warfare becomes a more viable option relative to its alternatives. As such, north coast communities tend to have larger groups (in a single locale) associated with defensible and owned resource areas, more defined social alliances and hierarchy structures, and women valued more as alliance builders than as producers. In contrast, among south coast communities, where resource fluctuations are more in-sync across the landscape, social relationships act less as risk-reducing measures because the "host is always doing as poorly as the visitor" (Kelly 2013:261). Focus is then placed on increasing household productivity and stores of food to control access to resources.

From this brief discussion, it is perhaps obvious that scholars have yet to agree on an all-encompassing explanation of how food systems relate to social structures in hunter-gatherer societies on the Northwest Coast and beyond. Indeed, the only real consensus I have seen recently is that there exists cultural and geographic variation in the impetus and perpetuation of social structures and how these relate to food systems. In all likelihood, there is no single causal tie between food systems and social structure. Instead, variation likely occurred throughout the region and according to specific local factors. As such, I now turn my attention to the south coast, where this research takes place.

Diversity in Diet – A South Coast Staple

The south coast is characterized by a richness in the quantity and variety of edible biomass. For communities residing here, "access to a diversity of resources was a hallmark of wealth and well-being" (Gahr 2013:64). Diets composed of diverse foods help individuals obtain difficult to acquire but essential nutrients that lower infant mortality rates and increase life spans. For optimal health, modern humans require dozens of essential nutrients, such as various vitamins, minerals, and amino acids, that the body itself cannot manufacture but are required for normal bodily function (Hooshmand 2013; Johns and Eyzaguirre 2006; Shashikantha et al. 2016). These nutrients are rarely found in one food group or food item. Diverse diets also provide stability in the food resource base—when one resource has low yields, there are others available to exploit (Turner 1996). The high population counts on the south coast, therefore, may not be due just to the abundant resources available, but also the positive effects of diverse diets on community demography.

Many key resources were only available for limited times and in limited places. The temporally and spatially confined availability of these key resources is closely related to the

patterned yearly round of subsistence activities and settlement patterns. For example, Darby (2005) identified wapato (*Sagittaria* spp.) as a primary resource for intensive production and trade through evidence of resource ownership, specialized harvesting tools, and settlement patterns concomitant with wapato distributions. Times of low food yields were reserved for other important activities. Winter, for example, was considered the ceremonial season where people did not seek food but concentrated on important spiritual business and household production and maintenance tasks like weaving, and net-mending.

Chinookan Foodways

The Chinookan peoples, specifically, had access to more than 80 faunal taxa and 75 species of edible plants and they utilized virtually all of them (Gahr 2013). Archaeological studies of Chinookan subsistence, predominantly at sites in the Portland Basin, identified salmon, cervids (elk and deer), seals, sea lions, sturgeon, berries, wapato ('Arrowhead'), and camas as key resources (Croes et al. 2009, Darby 2005, Turner et al. 2005).

Overall, Chinookan fisheries were both highly seasonal and localized. Butler and Martin (2013:104) reviewed all fish records reported in archaeological sites from the Greater Lower Columbia; while their work shows that salmon was important to subsistence, they also concluded that "the Indigenous fishery on the Lower Columbia targeted virtually all native fish species in the river." Fishing areas were controlled by a given group that would travel there during peak seasons. Most speculate that these areas were restricted more by usufruct rights than ownership, while permission was still required to access areas controlled by other groups (Silverstein 1990:536). Different locales were used for different seasonal runs of fish. There were different fishing places for the spring chinook salmon run and the fall run, just as there were several specific spots for sturgeon fishing. For both Lower Chehalis and Lower Chinook peoples,

fishing spots for the first salmon run were typically on the Columbia, whereas the second run was typically in Willapa Bay (Frost 1934:55; Lee and Frost 1844:99). Other seasonal migrants such as sturgeon, steelhead trout, eulachon, and herring were eaten both fresh and smoke-dried in the winter. Larger fish were taken in nets and seine near the mouth of the Columbia River. Gaff hooks were commonly used for taking sturgeon (Swan 1857:245-246). Sturgeon was considered a delicacy and was steamed in an earth oven and smoke-dried for later consumption. While seasonal fisheries are the most commonly addressed in ethnographic accounts, several species of year-round residents like minnows and suckers were found in assemblages associated with backwater areas of the Columbia River floodplain. While available year-round, spring floods would sweep these fish into backwater areas, stranding them in a confined and easily accessible area (Butler and Martin 2013).

Seals and sea lions were hunted with spears. Whales, when washed up on shore, were exploited as well. These marine mammals provided large quantities of meat, blubber, and oil. Oil was extracted by boiling the blubber and skimming the oil from the surface. The Shoalwater Chinook, the Clatsops, and the Tillamooks were the primary communities to procure these items and trade them with upriver peoples (Silverstein 1990:537). Chinookans also hunted elk, deer, and bear for meat, and small land mammals such as raccoons, squirrels, beavers, rabbits, and otters for food and skins for making robes. Bow and arrow was the primary means of hunting, but deadfall and pit traps, snares, and spears were also used. Fowl, namely ducks, swans, and geese were eaten and traded as well (Henry et al. 1897:756, 765). Meat, feathers, bones, and eggs were all used (Heritage Committee 1984a:4).

Gathered foods, such as berries, wapato, and camas, also played an important role in the Chinookan subsistence system and were collected and processed *en masse* for trade and

exchange. Tubers and roots, including camas, edible thistles, lupine, bracken fern, horsetail, and cattail roots were gathered using a hardened digging stick. There are many recipes for the use of these tubers, but the most common preparation was to steam them in an earthen oven lined with hot stones and fragrant leaves. Shoots of young leafy greens, like horsetail, salmonberry, cow parsnip, and water parsley, were eaten raw. Salmonberry, cranberry, strawberry, blueberry, huckleberry, salal berry, and bearberry were all gathered. Huckleberries, salal berries, and bearberries were dried or pounded into cakes for winter use (Franchère 1854; Lewis and Clark 2002)

Lower Chehalis Foodways

As is the case for the Chinook, salmon is the most discussed dietary resource among the Lower Chehalis. Runs of sturgeon and salmon on the Columbia River drew Lower Chehalis people south. Also like the Chinook, the beginning of the salmon season was marked by the First Salmon Ceremony. Other fisheries include summer sturgeon fishery in Willapa Bay and on the Columbia river, surf smelt and herring on the coast (Olson 1936:40–41), and lampreys inland (Wilkes 1845:313). On streams entering Willapa Bay salmon were speared or gaffed, and sturgeon were taken with gaff hooks (Olson 1936:34; Swan 1857:38–41). Fish were eaten fresh or preserved by drying over a fire. Dried fish could be eaten as is, boiled, or roasted. Fish oil was extracted, fermented, and stored for later use.

Sea mammals—fur and hair seals, porpoises, sea lions, and sea otters—were all hunted. Beached whales were very important, enough that families had usage rights, and stretches of beach were demarcated to indicate who was entitled to the washed-up whale. Families inherited rights to use particular parts of a whale (Hajda 1990:507). Elk, deer, bear, and small mammals like beaver, land otter, and rabbit were all hunted in the highlands. Geese, swan, pelicans, and

gulls were especially common in Willapa Bay and were hunted using bow and arrow, snare, noose, and nets (Swan 1857:29; Olson 1936:41–44).

Of the plant foods available to the Lower Chehalis, berries seemed to be the most extensively gathered. Like the Chinookan peoples, Lower Chehalis communities ate berries fresh or dried them for storage (Jacobs 1934:25). Other plant foods included crabapples, fern roots, clover roots, cattail roots, salmonberry shoots, cow parsnip, and wild celery roots (Olson 1936:53–55; Van Syckle 1982:76; Swan 1857). Hazelnuts and camas were collected in inland areas by other southwestern Coast Salish peoples, the latter were obtained via trade by the Lower Chehalis.

The role of shellfish in the larger subsistence system of both the Lower Chinook and the Lower Chehalis is largely undocumented. The lack of information regarding the role of shellfish may be due in part to a focus on sites along the Columbia River, and a limited investigation of coastal and island habitats. However, some inferences can be made from Chinookan texts and ethnohistorical records. One Chinookan text suggests that shellfish-rich beaches may have been under the control of families and villages, or "owned" by individuals. In this text, a Chinookan myth is described in which Gull is angered that Raven has been using the beach that he had inherited (Boas 1894:88–91). A Euro-American settler who resided on Willapa Bay from 1852 to 1855, James Swan, noted that shellfish-gathering season began in spring and peaked in summer and that, during this season, large groups of Indigenous people would come to Willapa Bay to procure clams for personal consumption and oysters to sell to Euro-American settlers (1857). Swan (1857:86) also notes that dried clams were an important item for trade with Native groups in the interior and that large quantities were often carried from Willapa Bay up the

Columbia. Verne Ray's (1938) report corroborates some of the trends in marine-resource exploitation described by Swan. While the Olympia oyster (*Ostrea lurida*) was the most abundant shellfish species in Willapa Bay, Ray suggests that other shellfish species including cockles (*Clinocardium nuttaili*), and clams (various species) were more important. Together, these lines of evidence suggest that shellfish exploitation may have played an important role in Chinookan and Lower Chehalis lifeways, and a shellfish-focused research agenda can strengthen our understanding of regional subsistence systems previously gleaned from archaeological investigations of sites along the Columbia River.

The Five White Sins: The Destruction of Native Diet in a Settler Colonial World

The subsistence patterns described in the preceding sections are vastly different from the food systems present in most Native communities today. Over the past 150 years, a suite of interlinked social, political, and environmental factors has resulted in the decreased availability, use, and knowledge of traditional foodways. The colonial invasion of the Northwest Coast profoundly changed the diet of Native communities within a span of only a few decades. A diet that was heavily dependent on nutrient-laden foods—fish rich in omega-3 fatty acids, lean game, shellfish, berries, and tubers—was supplanted by "the five white sins: flour, salt, sugar, alcohol, and lard" (Elliott et al. 2012:5; see also Cordain 1999; Cordain et al. 2002, 2005). Such precipitous changes concomitant with coercive sociopolitical, environmental, and economic pressures have had serious repercussions for Indigenous peoples' health and well-being and has undermined their food sovereignty and food security (see Chapter 8 for further discussion of the deleterious effects of dietary change for Native peoples, as well as Barsh 1999; Compher 2006;

Damman et al. 2008; Greenwood et al. 2018; Kuhnlein and Receveur 1996; Kuhnlein et al. 2013).

The nutritional transition away from traditional foodways to a westernized diet of primarily high-calorie, nutrient-poor, processed, and packaged foods has a complicated colonial history. In many ways, the destruction of the Native diet was a purposeful and concerted effort by colonizers to "civilize" Indigenous peoples. Euro-American settlers "largely and conveniently ignored the sophisticated and complex land and resource management systems of First Peoples, particularly with respect to practices regarding plants" (Turner and Turner 2008). The image of the simple hunter-gatherer was vital to portraying Indigenous communities as "primitive" and framing the appropriation of land for farming and the enlisting of Native peoples into the industrial workplace as a moral colonial mission (Turner and Brown 2004; Turner et al. 2005). Government policies were designed to "make farmers out of the American Indians and thereby to help assimilate them into white society" (Hurt 1987:96). However, inadequate funding, placement of Native communities on unproductive lands, and cultural resistance prevented these policies from ever producing lasting results. Instead, the government became the chief foodstuff provider on many reservations, providing rations of food deliberately deficient of any Native staples to further the government's "civilizing" goal (Vantrease 2013). Most foods distributed were non-local items that were highly processed and preserved to endure long-haul shipping. An 1832 treaty outlines the typical low-cost and shelf-stable provisions given out to communities: "thirty-five beef cattle; twelve bushels of salt; thirty barrels of pork; and fifty barrels of flour" (US Department of State 1832).

The attack on traditional foodways continued as, starting in 1860, Native children from across the country were torn from their families and placed into Indian boarding schools. These

schools, designed to assimilate Native peoples into settler society, took aim at all aspects of Native cultural identity, including traditional foods. Children were fed European style foods, including potatoes, porridge, bread, and garden produce, and were taught that the foods of their parents and grandparents were inferior and wrong (Turner and Turner 2008). The off-reservation boarding schools further displaced traditional food systems, as children were forcibly removed from their communities and therefore were not around to the learn the cultural knowledge necessary to carry out these foodways—the location and placenames of crucial food resources, techniques for gathering, hunting, or fishing, and complex food processing practices.

Settler colonialism restricted access to or diminished the productivity of many of the landscapes necessary to hunt, gather, fish, and otherwise perform Native subsistence practices. As Whites moved into Native territory, they often took the most productive lands for settlement and agriculture. Native communities were no longer allowed to move freely around the landscape, conduct their seasonal rounds, or tend to their intricate relationship with the natural world. Instead, their territory was taken from them and they were sequestered onto small reservations.

The industrial development that accompanied settlement caused deterioration in the food resources themselves. Overgrazing by cattle and other livestock and the introduction of invasive species thinned the native plant populations that Northwest communities maintained and relied on (Turner 1999; Turner and Kuhnlein 1982). Splash-damming and the historical oyster industry drastically changed the makeup of the Willapa Bay estuary and undoubtedly had enormous environmental effects on the habitat suitability for fish, invertebrate, and marine mammal populations of the region. For example, between 1851 and 1915 European settlers removed more than 5 billion oysters (*O. lurida*) from Willapa Bay, without replacement of shell (White et

al. 2009:44). Shell beds are a necessary part of the oyster habitat, and critical to the recruitment and maintenance of populations. The removal of shells from the substrate led to rapid overexploitation and the decline of native oyster populations in Willapa Bay. At the same time that overharvesting of native oysters was drastically changing the landscape of the bay, so too was splash-damming. Splash-damming was a method of transporting logs to the bay by creating log drives and dams along major rivers and then "releasing" them into the bay (Wendler and Deschamps 1955). This method simulated large flood events year-round, moving sediment-storage structures (such as natural logjams and associated sediment) from river channels into the bay, drastically altering the fluvial landscape that marine and riverine species rely on (Massong and Montgomery 2000:593). Eventually, even the establishment of parks and protected areas aiming to conserve these precious resources further restricted access to these lands for hunting and resource gathering by Native communities.

Restricted access to the landscapes necessary for traditional subsistence practices drew (or forced) Native peoples into the wage economy, including oyster harvesting, cannery work, and farm labor. This, in turn, made practicing traditional food garnering techniques even more difficult, as such work often involved long hours and occurred during the same season as traditional food harvesting practices (Turner and Turner 2008:103). And as Indigenous peoples were swept into a wage economy and distanced from their traditional livelihood, this became an additional justification for the settler's invasion of land—Native presence on the land was less frequent and therefore less obvious. This vicious cycle intensified people's reliance on money and the purchase of easily accessible Euro-American staples as a means of food security (Duff 1997:126).

Native communities are often among the poorest populations in the United States and are heavily reliant on the most affordable foodstuffs, fast-food services, and supplemental food programs like the Food Distribution Program on Indian Reservations (FDPIR) (Dillinger et al. 1999). While programs like FDPIR are meant to provide supplemental foods, they are often used as "the primary source of food" (U.S. Congress, Senate, Committee on Indian Affairs and Senate Committee on Nutrition and Forestry 1993). The food items available from these sources are frequently highly processed with the lowest nutritional value and leave these communities vulnerable to the consequences of an unhealthy diet. Today, Native communities are over-represented in rates of non-communicable diseases, including heart disease and type-2 diabetes (Elliott et al. 2012; Gracey and King 2009; Young et al. 2000). As a result, Indigenous peoples have higher mortality rates and are more likely to die from cardiovascular disease (Espey et al. 2014). A more thorough discussion of the health consequences of the demise of traditional foodways is presented in Chapter 8.

The Archaeology of Willapa Bay

> *With its high mountains, rugged coastline, dense foliage, and wet climate, the Northwest Coast has never been an easy place to do archaeology.*
>
> *- R.G. Matson and Gary Coupland, The Prehistory of the Northwest Coast (1995:37)*

Willapa Bay is no exception to the above statement. Locals joke that you could hide the White House in the impenetrable forests that surround the bay. By the turn of the 20th century, splash-damming had brought large amounts of loose sediment into the bay, and the early oyster industry had hauled away the oysters that made up the hard substrate of the bay. This caused the

tidal flats to become increasingly muddy, giving them a quicksand-like quality and making it nearly impossible to travel across the bay near low tide. This is all to say that archaeology is an especially difficult task in Willapa Bay.

Archaeological investigation in Willapa Bay did not begin until the late 1940s, and since then has been limited despite a well-preserved archaeological record (Wessen 2008). However, this is not due to a lack of awareness of the area's importance before colonial invasions by Euro-Americans. As early as 1857, James Swan commented on the archaeological resources in the area, saying "the relics of old lodges, canoes, heaps of shells, and other remains, give evidence that at some period there must have been a large body of Indians around Shoalwater Bay" (Swan 1857:211-212). Unfortunately, this was a passing comment and Swan gave very few specifics regarding the archaeological sites of Willapa Bay. The only location that Swan gives any noteworthy detail of is 45PC28 on Bone River, an ancestral village site that Swan then made his residence (Figure 2.4):

> "Two acres of this land was clear of trees and had been formerly the site of an Indian Village…This place, from its peculiar position, had always been a favorite residence with the Indians; but the chief having died, the village was deserted, the houses burned down, and the whole grown over with rose-bushes, blackberry vines, wild gooseberry, and a most luxuriant crop of nettles and ferns" (Swan 1857:77).

Figure 2.4 Sketch of the residence of J.G. Swan
Located at 45PC28. From "The Northwest Coast" (Swan 1857:75).

Of the limited archaeological investigations of Willapa Bay, surveys have occurred far more frequently than excavations or other subsurface investigations. There are currently 60 recorded archaeological sites in Willapa Bay, the vast majority located through exploratory survey—efforts that occurred outside the context of cultural resource management. In 1947, Richard Daugherty conducted the first and most prolific modern archaeological survey of the region. At the time, Daugherty was a graduate student at the University of Washington and his work in Willapa was a small part of a much larger exploration of the Washington coast. The resulting report of his survey (Daugherty 1984) is brief and provides little information pertaining to methods or coverage. During this survey, Daugherty recorded 16 sites in Willapa Bay. From his site records, it appears that many of these sites were located through information provided by local informants and as many as seven were likely sites known from ethnographic sources.

Daugherty's survey and recordings appear to be cursory—his site reports are brief and based solely on inspections of exposed surfaces. He did not use any type of subsurface probing nor did he collect any materials during the survey.

Following Daugherty's 1947 survey until 1990, an additional 17 sites were recorded in Willapa Bay. All sites save one were located through exploratory surveys. In 1953 Douglas Osborn recorded five sites. Osborn was a professor of anthropology, and in the following years, his students conducted exploratory surveys and recorded nine sites in total: Alan Bryan, Gerald Gould, and Mike House recorded three sites in 1954; Robert Cook recorded three sites in 1955; Harold Nelson recorded two sites in 1965; Gerald Schrodel recorded one site in 1967 (Wessen 2008:54 & Table 4). Unfortunately, these individuals did not prepare survey reports which described methods, or the amount of area investigated. Like previous survey work in Willapa Bay, only site inventory forms were created. Therefore, we have little information on how these sites were located. However, based on the site inventory forms, two of these sites (45PC26 and 45PC28) may have been located through an inadvertent discovery of cultural deposits during road construction, plowing, or some other type of subsurface disturbance. In two other cases (45PC30 and 45PC31), sites were located through information given by local informants. It appears that Osborn and his students used only inspections of exposed surfaces to locate sites and did not collect much cultural material. The remaining three sites found before 1990 were the results of efforts by Rick Minor, Robert Kavanaugh, and Richard Daugherty. Rick Minor and Robert Kavanaugh each recorded one site as a part of exploratory efforts. Again, only site inventory forms were created. In 1982, Richard Daugherty recorded 45PC68 during the first fruitful CRM survey in Willapa Bay. This also marks the first survey conducted in the region with clearly delineated methods and extent of coverage.

Since 1990 there has been a rise in the frequency of archaeological surveys in the region. In particular, the number of surveys conducted as a part of CRM has increased significantly. At least 20 CRM surveys have been conducted in Willapa Bay since 1990. Most of these surveys have been small scale, however. In addition, there have been significant exploratory surveys in the last 30 years. As a part of his work investigating late Holocene seismic events, Brian Atwater and his colleagues identified two sites in the mid-1990s (Cole et al. 1996). In 2005 and 2006, Robert Losey identified seven fish weir sites as part of his research associated with the University of Alberta. In 2008 Elizabeth Sobel of Missouri State University undertook survey efforts on Long Island. During this survey, Sobel updated descriptions of seven sites previously recorded in the late 1940s and early 1950s and located an additional two sites. Most recently, Lyle Nakonechny of Transect Archaeology has located two more archaeological sites along the coast of Long Island.

While this is a considerable amount of work, especially in terrain as difficult to navigate as Willapa Bay, it is unlikely that the approximately 40 archaeological surveys conducted in the region have examined any significant portion of the bay. Brian Wessen estimates that the 33 CRM surveys conducted between 1976 and 2008 examined as little as 10% of Willapa Bay (2008:58). Given the poor documentation of survey efforts during the 1940s and 1950s, when the majority of the exploratory surveys were conducted, it is impossible to summarize the actual coverage area of non-CRM related survey work. Still, I suspect it is a very small fraction of the total region. Likewise, the majority of these efforts relied exclusively on the inspection of exposed ground surfaces. Given the dense foliage, tall grasses, and thick layers of humus that cover almost all ground surfaces in the region, this type of survey is unlikely to detect all archaeological resources. Despite these limitations, at least 60 locations containing (or formerly

containing) archaeological resources have been reported. This suggests that the actual number of sites in Willapa Bay may be considerably higher.

Prior to the work associated with this dissertation, only three sites in Willapa Bay have been the subject of controlled archaeological excavations. One site, the Martin site (45PC7), has been sampled during four different archaeological investigations.

The first archaeological excavations in Willapa Bay were undertaken in 1957 by James Alexander III, an anthropology student at the University of Washington at the time. Alexander investigated two sites previously recorded by Daugherty: 45PC7 and 45PC9. At 45PC9, Alexander collected the remains of as many as six individuals that were eroding from the shoreline. These remains were in poor condition and, determining that they were too deteriorated to be of any analytical value, were returned to the site at a later date. An unknown quantity of artifacts was recovered as part of this effort. Alexander later excavated two 3-by-5-foot test pits at the Martin site (45PC7), a shell midden deposit located on the Long Beach Peninsula near the community of Nahcotta. Alexander sampled approximately seven cubic meters. Unfortunately, there is no detailed account of Alexander's excavations, nor has the collection resulting from this effort been described in any detail. Following these efforts, Alexander determined there was little archaeological materials of scientific value in Willapa Bay and pursued other research interests.

Following Alexander's efforts, a much larger excavation of the Martin site was conducted in 1959 by Robert S. Kidd. Kidd excavated six 1.5-by-1.5-meter units and two small trenches. No radiocarbon dates were obtained during this project, but a comparison of projectile point styles suggests that it was a Late Pacific site. Kidd thought the recovered materials represented a relatively brief occupation between 800 to 900 years ago (1960:11). In 1974,

Robert Shaw of Washington State University again undertook investigations at the Martin site with three backhoe-dug trenches and 17 2-by-2-meter excavation blocks placed within a 75-by-74-meter area (Wessen 2008:61). The total volume excavated by Shaw is approximately 60 to 70 cubic meters. Two radiocarbon dates were produced by these investigations and suggest two distinct occupation periods—the first occupation at around 1,860 ± 100 B.P and the second at around 1,440 ± 100 BP. Shaw suggests at least a brief hiatus in occupation between these two periods (Wessen 2008: 62). Christopher Brown of Washington State University conducted the final episode of archaeological excavations at the Martin site in 1976. Unfortunately, Brown never produced a written account of his investigations, nor did he undertake any analysis of the materials recovered. Therefore, the location and size of his excavation units are unknown.

The best-documented excavations in Willapa Bay occurred at 45PC101 in 1991 and were conducted by Eastern Washington University's Ray DePuydt and Vera Morgan (DePuydt 1994). This large-scale data recovery effort resulted in the excavation of 136 1-by-1-meter units clustered in two large blocks. The total volume sampled was approximately 68 cubic meters. These excavations revealed extensive evidence of residential structures thought to be associated with short-term seasonal occupations dating from 2,140 ± 60 BP to 190 ± 80 BP. This work represents the most extensive, thorough, and best documented archaeological research in Willapa Bay before 2015.

Most recently, the archaeological survey and excavations associated with the research outlined in this dissertation represent the first archaeological excavations conducted as a collaborative endeavor and represent the beginnings of Indigenous archaeology in Willapa Bay.

Of all the archaeological sites identified in Willapa Bay, shell midden sites are, by far, the most abundant site type. Wessen estimates that 53% of all recorded sites in the region are shell

midden sites, and when taking into account the sites identified in the last decade, it is probable that this proportion is even higher (2008:67). The second most common site type in the area is fish weirs and account for only 14% of the sites in Willapa Bay. Other site types known in Willapa Bay include burial grounds, lithic sites, culturally modified trees, and early postcontact sites.

It's not surprising that shell midden sites dominate the Willapa Bay archaeological record, as this is the dominant site type in every county in coastal Washington (Cannon et al. 2008, Wessen 2008). In Willapa Bay these sites tend to be highly linear with their long axis oriented parallel to the shoreline; most are abutting the modern protected shorelines of the bay, but some have also been found near lakes on the Long Beach Peninsula. Although most shell middens that we know of in Willapa Bay were recorded in the 1940s and 1950s with limited details provided, these records suggest that the typical shell midden in this region contains a moderate density of marine shells, bones of mammals, fish, and birds, bone artifacts, and lithic cultural materials in a matrix of soils in the fine sand to silt range.

If site types as classifiers are to denote the function of the location, then the term shell midden may be misleading. In reality, sites dominated by marine shell remains may represent any of several different types of settlements within which shellfish were harvested, processed, and/or consumed. Some shell midden sites in Willapa Bay are undoubtedly large multi-season settlements or 'winter villages' where people once resided in large houses and conducted a wide range of activities, of which the use of shellfish was undertaken to varying degrees. Other shell middens are small, more seasonally focused "camps" where a limited range of economic activities took place. Some of the latter were probably locations where collecting and processing shellfish was the primary activity, but others could be locations where shellfish harvesting was

not the primary activity but still took place. Short-term "camps" used primarily for fishing, for example, often have a significant shell fraction and are considered shell midden sites. Regardless of site function, the sheer omnipresence of shell middens permits us to reasonably speculate that shellfish harvesting was a well-established activity in the lives of the Chinookan and Lower Chehalis peoples of Willapa Bay.

The Northwest Coast is a place of majestic beauty. Its cultural and environmental settings are rich, diverse, and inextricably connected. In the past, the old-growth forests provided Native peoples planks for their houses, bark for their clothing, and medicine for their health. The ocean, bays, fjords, and rivers provided abundant food and easy transport by canoe. Such an environment provided the resources for the development of a rich cultural life, classified as the Northwest Coast pattern. In this chapter, I have summarized the broad environmental and cultural backdrop of the region. I did so because such information is needed to contextualize the archaeological research outlined in this dissertation. As this research aims to assist the descendant communities in their efforts to restore food sovereignty, I focused on the natural resources pertinent to traditional foodways, the subsistence systems of the southern Northwest Coast Culture Area, and the concerted effort of settler colonialism to disavow Indigenous peoples of their Indigeneity through the forced adoption of a Western diet. In the following chapter, I turn my attention to Chinookan and Lower Chehalis heritage. I trace the history of these communities from before European settler colonialism to today, elucidating their centuries-long struggle for sovereignty and self-determination.

Chapter 3 The Chinookan and Lower Chehalis Peoples: Past & Present

In this chapter I describe the interwoven Lower Chehalis and Lower Chinook culture areas from the Late Pacific period (AD 200/400 – AD 1750) until today. I focus on what we know of the social organization of these two groups before Euro-American influence. I then discuss our understanding of these two communities in Willapa Bay specifically and describe the profound effect of the colonial invasion of the region on the lives and well-being of these communities. Finally, I introduce the two contemporary communities of Lower Chehalis and Chinookan peoples that are most important to the research presented in this dissertation: the Shoalwater Bay Indian Tribe and the Chinook Indian Nation.[9] I describe the series of false promises and mistreatments on the part of the U.S. government that shape both their history and their present. Most importantly, I describe their strength in the face of centuries of abuse and the how their fight for sovereignty is firmly rooted in the Willapa Bay landscape.

Lower Chehalis Social Organization

The Lower Chehalis peoples are one of four closely related groups on the south coast speaking languages from the Tsamosan Branch of the Salish Language Family (Thompson and Kinkade 1990): Quinault, Lower Chehalis, Upper Chehalis, and Cowlitz. Together these

[9] Henceforth referred to as the Shoalwater, and the Chinook Nation, respectively.

communities are referred to as Southwestern Coast Salish and resided in a territory that stretched along the coast of Washington from north of the Queets River to Willapa Bay and extended along drainages of the Queets, Quinault, Chehalis, and lower Cowlitz rivers (Figure 2.1).

Politically independent communities within this territory referred to themselves by their village names but generically grouped distant villages based on common speech. In treaty times, Europeans used these generic groupings to create names for tribes and bands. Therefore, Lower Chehalis refers to the nonpolitical groups speaking the Lower Chehalis language: the humtulips on the north shore of Grays Harbor and Humptulips, Hoquiam, and Wishkah rivers; the Wynoochee on the Wynoochee River; the Chehalis on the south shore of Grays Harbor and the Chehalis River; and the Shoalwater Bay people on the north end of Willapa Bay and the lower Willapa River (Curtis 1913a:6–9; Gibbs 1877:171; Olson 1936:16–17; Ray 1938:36).

For the Lower Chehalis, like all of the Southwestern Coast Salish, the basic social distinction was between slave and free (Hajda 1990:510). Slaves were captives of war or purchased from northern communities for 20 to 100 blankets (Swan 1857:166). They were most often from distant communities among whom relations could not be traced and were typically forbidden to flatten the heads of their children so thay they could distinguish them from the upper echelon (Swan 1857:168). This taboo was less common among the Quinault and northern groups of Southwestern Coast Salish and they were more likely to have flatheaded slaves from neighboring groups (Olson 1936:97). Similar to their neighbors to the north and south, they also recognized "nobles" or people of inherited status and wealth, in addition to free commoners, and the poor. However, as most free people could trace some kind of familiar relations to noble families, class distinctions were not entirely absolute. The accumulation of wealth and external contacts likely factored into the maintenance and/or loss of status (Hajda 1990:510).

As was typical on the southern Northwest Coast during the Late Pacific period (AD 200/400 – AD 1750), the winter village was the largest organized sociopolitical unit. The "tribe" was a group of people who shared at least one language and lived in a certain winter territory but shared no other distinguishable social cohesion. A winter village consisted of one to possibly 10 houses, each house holding on average four nuclear families, amounting to villages ranging in size from as small as 25 people to perhaps as large as 300 (Hajda 1990:511). Larger semi-permeant settlements were reported from post-treaty times but may represent sites for fishing or other seasonal activities (Curtis 1913a:5–6; Elliott 1912:206–207; Olson 1936:89). The village was conceived of as a group of relatives but was not always a patrilocal extended family. Village leaders were generally from certain families of high status and succession followed from father to eldest son or down to other male relatives. These leaders needed to distribute wealth and would lose status if they were unable to. The Southwestern Coast Salish practiced village exogamy and, as a result, children growing up in one village had relatives living in others. A child's maternal and paternal relationships were equally valued. As much of the year was spent away from the winter village participating in regional networks based on activities such as marriage, ceremonies, resource-gathering, and fishing, this familiarity with other villages proved useful later in life (Adamson 1926:26; Elmendorf 1960:302; Hajda 1984:124–132; Olson 1936:40).

Winter houses were cedar, gable-roofed structures with doorways at one or both ends. The house was typically 20-30 feet wide by 40-60 feet long (Olson 1936:61). Lower Chehalis houses were excavated slightly to a depth of about a foot or deeper. The walls were sometimes lined with mats. Summer dwellings were built of pole frames covered with mats or boughs.

Planks from winter houses were sometimes moved to other sites in the summer (Adamson 1926:116, Olson 1936:65).

While the precontact population for the broader south coast region is estimated to have been approximately 22,000 individuals, population numbers of the Lower Chehalis, specifically, are unknown. In 1805, Lewis and Clark stated that 1,300 people belonged to Lower Chehalis communities. This is the earliest available population estimate. Over the next 50 years, various population counts by fur traders and Euro-American settlers range from 217 to 1,400 (Morse 1822; Stuart 1935; Swan 1857).

Lower Chinookan Social Organization

The Chinookan peoples were those who spoke languages of the Chinookan family, a branch of the Penutian phylum (Sapir 1921:60), and resided roughly south of the Lower Chehalis on the coast from Willapa Bay to Tillamook head, along both banks of the Columbia River, from its mouth to just past the Dalles (Figure 2.1). Based on dialect, Chinookans are typically divided into "lower" and "upper" groups. The Lower Chinook spoke Chinook "proper" and consisted of the Lower Chinook, Willapa Chinook, and the Clatsop. These communities resided near the Columbia River mouth and along the coastal areas of Chinook territory. The Upper Chinook spoke dialects of Cathlamet, Multnomah, and Kiksht and resided along the Columbia River from Grays Bay and Tongue Point to the Dalles (Silverstein 1990:533).

Chinookan peoples followed a similar organizational structure as their Lower Chehalis neighbors. They recognized a hierarchy of statuses consisting of chiefs, commoners, and slaves where the term "chief" does not refer to tribal chiefs, but rather heads of villages or extended families. Chiefs had to be of high ranking, but chieftainship did not pass automatically from father to son. Many potential candidates might be available, all being male relatives of a chief,

but the man who could best "render service to the community" (Lewis and Clark 2002:222) through the redistribution of food and goods would likely be chosen. Like the Lower Chehalis, slaves were from distant places where no relatives would be found and acquired either through raids of these groups, trade with neighboring groups, or through the exchange of valuables at various social events (Bishop et al. 2010:127; Hajda 2013:158; Stuart 1935:11). Slaves were typically from south or east of the Lower Columbia where head flattening was not practiced and therefore made them distinguishable from the free population (Bishop et al. 2010:167; Franchère 1854:241; Lewis and Clark 2002:365; Stuart 1935:11).

Like the Lower Chehalis, the village was the largest sociopolitical unit, consisting of one or more households with connections to other villages through kinship ties. Winter villages were the most permanent residences and these communities typically consisted of a single to 20 households, or 40 to 500 individuals (Ames and Sobel 2013:126). Chinookan villages maintained economic and political alliances through the exchange of wives and marriages to non-Chinookan peoples were common. Descent was traced bilaterally through both parents among the Chinook, as it was elsewhere in this region. As such, the networks of kin created among the Chinook (and Lower Chehalis, for that matter) were extensive. Village exogamy was practiced among the Chinook, as it was the Lower Chehalis, because villagers tended to be related. This created a vast regional network that extended from the Quinault to the Alsea along the coast and upriver to The Cascades and groups bordering the lower Willamette and Clackamas Rivers (Hajda 1984; Suttles 1987, 1990).

Winter and summer structures both resembled those constructed by the Lower Chehalis in many ways. Winter houses were gable-roofed, cedar-plank houses (Ray 1938:124–126) and ranged in size from 12 by 30 feet for single-family dwellings, to 40 by 100 feet for extended-

family chiefly dwellings (Silverstein 1990:538). The interior of these houses was excavated deeper than what was typical for Lower Chehalis houses, three to four feet throughout, and a further foot for the central hearth. The summer house was a smaller temporary mat lodge with a pole frame. Like the Lower Chehalis, planks from winter houses were sometimes borrowed for temporary summer homes.

Chinookans had some of the highest population counts at the time the earliest European settlers began recording demography, even as they suffered from waves of devasting epidemics introduced at least 20 years before European arrival (for further debate as to precisely how and when the earliest epidemic reached to the Northwest see Cook 1973; Fenn 2001; Fortuine 1989; Harris 1994). During the fall of 1805 and spring of 1806, Lewis and Clark provided the first estimation of populations for the lower Columbia River, giving an estimate of 7,560 core residents of the area, and 14,640 with those visiting for fishing periods (Boyd and Hajda 1987). Boyd amends these numbers, estimating a more accurate count of up to 10,000 core residents of the Columbia up to the Cascades (Boyd 2013:242). In 1825, as the third documented epidemic of smallpox had just ravaged the lower Columbia, it was said by the HBC Governor Simpson that "the population on the banks of the Columbia River is much greater than in any other part of North America that I have visited…it may be said that the shores are actually lined with Indian Lodges" (1968:94). Working backward from what is known of early contact demography and population loss, Boyd estimates precontact Lower Columbia Chinookans to have a minimal aboriginal population of 15,000 individuals.

The Lower Chehalis and Lower Chinookan Peoples in Willapa Bay

Ethnographic and historical accounts of the Willapa Bay Lower Chehalis are limited. Edward Curtis provides the first and most extensive (despite only being a few pages long) ethnographic account of the Willapa Bay Lower Chehalis:

> "In their own language they are known as Cht`átsmihlch, that is, People of the Enclosed Bay. Their villages were situated on the shores of the bay from the present town of Northcove down to the mouth of Palux river, and on Willapa river up to the present town of Raymond… Unlike the Cowlitz and other river-dwelling tribes, these were essentially 'salt-water Indians', dwelling for the greater part in places adjacent to the extensive mud flats of the bay, with their inexhaustible beds of clams and oysters. Salmon were obtained near the mouth of the streams, and berries in abundance were found near the settlements, so that inland journeys were unnecessary. Few of the men hunted. Most of them, in fact, would easily have lost their way in the woods" (1913a:6–8).

Curtis also provides information on 10 villages along the northern shoreline of Willapa Bay and along the lower Willapa River, including village names, the number of houses, and 19th-century chiefs for each village.

There are only slightly more ethnographic descriptions of the Chinook communities residing on Willapa Bay. The term "Shoalwater Chinook" used to describe Lower Chinookan communities of Willapa Bay was first used by Spier and was coined as a "convenient geographical distinction" (1936:37) to differentiate the Willapa Bay communities from those whose winter villages were located at the mouth of the Columbia River. The earliest information about Lower Chinook people more broadly comes from early Euro-American explorers, fur traders, and visitors but these accounts make no mention of Willapa Bay, nor those living on it.

The first Euro-American documentation of the Chinookan presence on Willapa Bay is from James Swan's account of his residence there (1857). By the time of his residence (1852-1855) the area had experienced serious population loss and lifeways had changed dramatically because of such devastation. However, James Swan's account provides thorough detail of his

time in Willapa Bay and is considered the earliest and most accurate description of Native life in the area. Swan was not trained as an anthropologist, however, and as such, it is difficult to say with certainty what the ethnic affiliations were of the Willapa Bay residents he was describing. When listing the Indian tribes from the Columbia to Fuca Strait he calls those residing in Willapa Bay "Kar-wee'wee, or Arts'milsh, the name of the Shoalwater Bay tribes, which are nearly extinct, and are usually considered as Chenooks" (1857:210). This is a somewhat perplexing statement, however, because it is thought that the term "Arts'milch" is the same as "Cht'atsmîhlch", the term Curtis uses for the Willapa Bay Lower Chehalis (Spier 1936:31).

The next person to document Lower Chinook language and tradition in Willapa Bay was Franz Boas in the 1890s. Boas spent considerable time documenting the Chinookan knowledge of Charles Cultee, a Lower Chinook Indian who was living at Bay Center, Washington. Cultee, however, had only partial Shoalwater Chinookan ancestry (the rest being Kawlhiokwa, Clatsop, and Kathlamet) and therefore Boas' resulting document (1894) contains a dearth of information specific to Chinookan life on Willapa Bay. The account, then, that best described Lower Chinook communities on Willapa Bay comes from Verne Ray's 1938 report. For this report, Ray interviewed two Lower Chinook informants with Willapa Bay ties—Emma Luscier and Mrs. Bertrand in 1931 and 1936. In this report, Ray describes Shoalwater Chinook territory as extending north to Grayland (1938:41), well into what Curtis calls *Cht`átsmihlch* territory.

As the above summaries illustrate, the territories of both the Lower Chehalis and Lower Chinookan communities encompass Willapa Bay. Several anthropological studies have considered the relationship between these two groups, their territory within Willapa Bay, and the character of their presence in the area, but each has offered differing conclusions. Most authorities, including Ray (1938), Swanton (1952), and Spier (1936), agree that Chinookan

groups occupied the southern half of Willapa Bay. However, the territorial division of the northern parts of Willapa Bay (where the primary site discussed in this dissertation is located) is ambiguous and the existence of permanent long-standing Chinookan settlements north of the Nemah River in precontact periods is very much disputed (Curtis 1913a:9; Ray 1938:36; Spier 1936:29–31).

Some anthropologists maintained that well-defined boundaries existed and designated this area as *either* Chinook *or* Lower Chehalis territory. Specifically, Swanton suggests that portions of northern Willapa Bay were formally Chinookan territory and later occupied by the Chehalis, presumably in the early 19th century after the Chinook suffered incredible population loss due to introduced European diseases. Ray speaks of this dispersal explicitly:

> "[P]eoples of Chinookan speech also held Willapa Bay including the northern shore. Before 1850, when the Chinook numbers were already thinning, Chehalis began to drift into the northern bay region…but Chinook chiefs continued to represent the various villages and to the Native mind it remained Chinook territory without question. My informants were unanimous and emphatic on this point, including Chehalis now living at Bay Center" (1938:36).

In general, most agree that many parts of northern Willapa Bay had a "mixed" population—communities that were, at the very least, bilingual, and likely integrated through Lower Chehalis/Chinook marriages. This accords with the fact that there are both Salish and Chinookan names for villages throughout. Extensive intermarriage is cited throughout the documentation of both Chinook and Lower Chehalis peoples. Curtis, speaking specifically of the Willapa Bay Lower Chehalis states "many of these Salish people were married to Chinookan inhabitants about the southern end of Shoalwater Bay" (1913:7). Marriage was an act of alliance between two unrelated families and created a regional system of class or rank. Early documented kin networks of the Lower Chinook show that numerous Chinook chiefs took wives from Lower Chehalis communities, and likely vice versa (Hajda 2013). By 1812, intermarriage

between the two communities was common and likely was taking place long before then (Boas 1894:273; Seton 1993:92). As wives often came from outside groups speaking different dialogues or languages entirely and slaves were almost always from distant groups, multilingualism was "rampant"—so much so that Hajda (1984) suggests that "in some villages speakers of the 'native' language were in the minority" (14).

By all accounts of Willapa Bay and the surrounding regions, interactions between groups of different ethnic affiliations (for the most part given to them by white colonists) was prevalent and multilingualism common. Hajda's 1984 dissertation outlines the complex networks of marriage, visitation, resource collection, conflicts, and food trade within the southern Northwest Coast from 1795 and 1830. Her work shows that the Chinook and Chehalis linguistic groups were connected most strongly by these networks, having bidirectional links in marriage and visitation networks, and unidirectional links in all the remaining categories except food trade. Marriage, as already discussed, was a central link between communities. Visitation networks are often concomitant with marriage—marriage was considered alliance building and that alliance was said to be maintained through visitation. Important seasonal resources drew vast numbers of people from all over the region together during peak season. The summer sturgeon fishery in Willapa Bay and near the mouth of the Columbia and the late spring-early summer run of chinook on the Columbia were particularly known to draw people from the north, including Lower Chehalis communities (Franchère 1854:88–89; Swan 1857: 242-243).

These integrated communities were certainly present during or after the period of epidemic diseases and very likely were numerous before as well. It is important to note that the two primary Native communities currently residing in Willapa Bay, the Shoalwater and the Chinook Nation, generally agree with this notion of ethnic integration between communities

residing on the southern Northwest Coast before European arrival. This is especially true among members of the Shoalwater community, as their modern territory lies specifically within the areas of Chinook/Lower Chehalis integration in the past. This precontact interconnection proves important for maintaining ties between the Shoalwater and Chinook Nation communities today; they are connected today just as they and their neighbors were in the past. It is also central to linking heritage sites and information gleaned from archaeological investigations to the descendant communities.

Colonial Invasions of Willapa Bay

Protocontact: shipwrecks, disease, and European manufactures

The introduction of non-Native influences to this area occurred in three waves. As far as we know, before AD 1788 any Euro-American and Asian influences came through shipwrecks, diseases, and the trade of European manufactures. Diseases of European and Asian origins had already thinned the southern Northwest Coast when Lewis and Clark first documented Chinookan epidemics in 1806 (Boyd 1999). The precise date of when these diseases first penetrated the Northwest is unknown and hotly debated. Some argue the first great American smallpox epidemic brought by Cortez to Mexico in 1520 spread throughout the Americas (Campbell 1989; Dobyns 1966). Others think it is more likely that wrecked vessels from smallpox-source areas may have found their way to the Oregon or Washington coasts before any European explorers had actually set foot in the region. Chinook tradition gives mention of occasional shipwrecks and survivors that were enslaved by or married into Native communities (Boas 1894; Minto 1915). Likewise, shipwrecks of Japanese origin are well documented in this area in the late 19th century (Brooks 1876) and it's reasonable to assume Japanese ships were

washing up centuries earlier. With these shipwrecks, it also reasonable to assume, came manufactures of foreign origin that Native peoples used to their advantage.

Just as foreign manufactures came to Willapa Bay through wrecked ships, Euro-American goods likely traveled through Native exchange networks. By AD 1774, Euro-American explorers and traders had reached other parts of the Northwest Coast and were interacting with Native communities. Even well before that time, Euro-Americans interacted directly with Native communities in eastern North America. Thus, through local and extended exchange networks, Willapa Bay communities likely obtained European manufactures well before direct contact. Northwest Coast peoples possessed extensive kin networks and were highly mobile, often traveling extensively throughout the region (Stern 1998). Therefore, during travels to regions already visited by whites, Willapa Bay communities may have obtained goods directly from them.

First Contacts: Explorers and Fur Traders

The first known European to cross the mouth of Willapa Bay was Lieutenant John Meares commanding the East India Company's Ship Felice on July 5, 1788. Meares describes meeting the Native residents of Willapa Bay immediately upon entering the watershed:

> "We concluded that this wild and desolate shore was without inhabitants, but this opinion proved to be erroneous; for a canoe now came off to us from the point, with a man and boy. On their approach to the ship, they held up two sea otter skins…We then fastened several trifling articles to a cord, and threw them over the side of the ship, when they were instantly and eagerly seized by the boy, and delivered by him to the man; who did not hesitate a moment to tie the two otter skins to the cord, and waved his hand as a sign for us to take them on board…Their curiosity was in short time entirely transferred to the ship…while their actions expressed such extreme admiration and astonishment, as gave us every reason to conclude that this was the first time they had ever been gratified with the sight of such an object…We observed no ornaments about them which could lead us to suppose that they had ever before communicated with Europeans" (1790:164–165).

While Meares concludes that the Lower Chehalis and/or Chinookan individuals he met had never before seen a European, he also gives evidence to the contrary—by stating that they understood that these visitors were interested in sea otter pelts. So, while Meares may be the first European to write about visiting Willapa Bay, there may have been others before him.

Between AD 1788 and 1841, several European exploring parties and maritime fur traders began passing through the area, including the Lewis and Clark Expedition in 1805-1806. However, most of these men were in search of the mouth of the Columbia River and the best trading routes to the interior. Interactions at the mouth of the Columbia River in the late 1700s and early 1800s were therefore narrow in cultural scope. These encounters were episodic and single-minded in their desire to trade and considered to be purely a source of new material wealth for all parties (Lang 2013). At this time, the aims of Natives and whites were fairly aligned. There was minimal conflict as each group saw their trading relationship as beneficial:

> "Chinook had been the majority population in the area and the source of most of the economy and labor for non-Native enterprises. We were not discounted or taken lightly. Many Chinooks who had survived the earlier epidemics temporarily prospered from these relationships" (Johnson 2013:7).

For Euro-American fur traders, Natives were sources of information, furs, wives, labor, and food. Native communities viewed their new trading partners as one of the numerous social groups comprising the Columbia River exchange network. Trading with Euro-Americans provided valued foreign goods and enhanced Chinookan social, political, and economic standing vis-à-vis other Native groups in the surrounding regions (Sobel 2004:110).

The majority of trading interactions occurred at the mouth of the Columbia River and despite these individuals passing by Willapa Bay and noting in their records the presence of a possible estuary, there is no additional mention of the bay itself until 1824. At this time the

Hudson's Bay Company sent an expedition from Astoria to the Puget Sound basin. A record of the trip was kept by John Work but gives little information regarding Native people in Willapa Bay, stating only that "there is a small village of Chenooks consisting of five inhabited and one uninhabited house" (Elliott 1912:202) referring to a village near present-day Oysterville. Another expedition crossed the bay in 1841 but makes no mention of the Native peoples living there, nor do they make a map of the area.

Settler Colonialism, the Donation Land Act of 1850, and the Oyster Industry

Euro-American settlement on Willapa Bay was very limited until the Donation Land Act of 1850. This is the third wave of non-Native influences in the area, fundamentally changing the relationship between Euro-Americans and Natives, creating an environment in which interests were generally opposed. As the fur trade declined, Euro-American settlers wanted permanent access to lands and believed more strongly than before in their right to use the land without regard for Native peoples (Beckham 1984).

When Oregon[10] became a U.S. territory in 1848, the legality of settlers' claims to land was not confirmed. Instead, the Act to Establish the Territorial Government of Oregon required the federal government to enter into treaties with local Indigenous tribes before settlers could claim any Indigenous land, stating that "nothing in this act contained shall be construed to impair the rights of person or property now pertaining to the Indians in said Territory, so long as such rights shall remain unextinguished by treaty between the United States and such Indians"

[10] Now Oregon, Washington, Idaho, and sections of Montana and Wyoming west of the Rocky Mountains.

(Coleman 2019:423). To remedy this, Oregon voters (i.e., adult White males) sent Democrat Samuel R. Thurston to convince Congress to extinguish Indian title to Oregon lands and entirely remove Indigenous communities from the territory. Two years later, Thurston had successfully lobbied President Zachary Taylor to sign his "Indian Bill" into law, nominate Oregon's first superintendent of Indian Affairs, Anson Dart, and charge him with the task of negotiating with Indigenous communities to void their claims to their lands (United States 1850).

In the same year, Thurston also lobbied Congress to pass the Donation Land Claim Act of 1850. The bill called for a 320-acre land grant to each White male or "American half-breed" who had resided in the territory before December 1, 1850, and 160 acres to any White male who arrived in the territory after 1850 but before 1855 provided they cultivate the land for a minimum of four years. This act gave settlers massive grants of land that were already held by legally recognized sovereign nations—a clear violation of federal law— and "in effect gave official sanction to the formerly illegal activities of white settlers" (Daehnke 2017:47). The abandonment of federal policy allowed settlers to lay claims to land without Oregon tribes having ceded their territory through a negotiated settlement and ignored legal precedent by dismissing any concept of tribal sovereignty. In fact, the act itself makes no mention of Indigenous-owned land at all.

Under this act, 31 claims were filed for lands in Willapa Bay between 1850 and 1856 (Freeman et al. 1980). Undoubtedly many other settlers established residency in the area without bothering themselves with this formal process. Decimated by epidemics, Native communities were often too diminished to mount any significant opposition to Euro-American settlement (Daehnke 2017:48). Instead, many surviving populations were excluded or chased from winter villages, fishing sites, and hunting grounds (Ruby and Brown 1976:215–251).

Around the same time, the California gold rush began dramatically influencing the populations of Willapa Bay through the nascent oyster business:

> "The California gold rush in 1849, though it occurred hundreds of miles from the bay, was a critical factor in the rapid alteration of Shoalwater life. Shipment of bay oysters to the gold-rich and luxury-hungry city of San Francisco started in November 1851, and marked the beginning of intensive white exploration, exploitation, and settlement around the bay. Shoalwater Indians provided much of the labor for the early oyster industry and were usually paid in goods. Within a few years, white oystermen drew up a resolution 'declaring the trade with Indians for oysters shall cease'. However, some Indians continued to be employed in harvesting oysters" (Heritage Committee 1984b).

Certainly, Willapa Bay's abundant natural populations of shellfish were the driving force for the Euro-American habitation of the region. By 1869, at least five oyster companies were operating on the bay (Allen 2004:168) and by the early 1890s, there were seven main Euro-American communities: Bruceport, Oysterville, Bay Center, North Cove and Tokeland on the bay itself, and South Bend and Raymond along the Willapa River (Wessen 2008). Today, Willapa Bay continues to be one of the largest hubs of shellfish aquaculture in the United States and thousands of Euro-American settlers have come to live on its shores. Yet even still, Willapa Bay remains where many Chinookan and Lower Chehalis people call home.

The Chinookan and Lower Chehalis Peoples Today

The Shoalwaters are still on the bay, and not only surviving, but growing, and working to retain something of the old heritage. Changes are coming, and future years will see a renaissance of Shoalwater ways, with economic independence and initiative.

- Heritage Committee, Shoalwater Bay Indian Tribe. Shoalwater Bay Traveling Exhibit (1984b)

When Franz Boas arrived in the Lower Columbia region in the 1890s, he surmised that those few Indigenous peoples he encountered were "the last survivors of the Chinook" (1894:6).

Indeed, most anthropology practiced in the region at this early date was "salvage anthropology" with the explicit goal of preserving and collecting remnants of what they thought to be dying Indigenous cultures (Daehnke 2017:32). In reality, the Indigenous communities they encountered—while having been subjected to immense colonial pressures, disease-driven decimation of populations, and forced assimilation—were durable and persistent. They still exist today; they are active in their efforts to maintain their culture and are a visible and well-known part of contemporary Pacific Northwest culture. Chairman of the Chinook Indian Nation, Tony Johnson, says of their treatment: "We have been relegated to out of the way places. We have been uprooted from where we once flourished. We have been driven to the very edge of extinction" (Johnson in Daehnke 2017:forward, xi).

But they are still here. They survive. And of all places in the Greater Lower Columbia region, they are perhaps most rooted in Willapa Bay, Washington. Considered "out of the way" to those living in the metropolises of Portland and Seattle, Willapa Bay is part of the Chinook and Lower Chehalis territories that was an important place of refuge for Indigenous peoples retreating from the influx of non-Natives. It is now the hub of two Lower Chehalis and Chinook communities.

The Shoalwater is a federally recognized community of people descendant from 35 families of mixed Lower Chehalis, Chinook, and Clatsop ancestry. Seventy-five of the approximately 350 people enrolled live on a modest-sized reservation near Tokeland, Washington. The reservation is situated on the postcontact era Lower Chehalis/Chinook village, na·′mst'cat's (Ray 1938). Today, it provides numerous facilities for tribal members including a wellness center, community garden, museum, library, and housing.

The Chinook Nation is a politically united community of people who descend primarily from the five westernmost groups of Chinookan-speaking people: Lower Chinook, Clatsop, Willapa, Wahkiakum, and Kathlamet (Johnson 2013:5). While the Chinook Nation is not federally recognized, its members are descendants of those who signed the unratified Tansy Point Treaty. Their tribal offices are in Bay Center, Washington and most members reside near traditional Chinookan lands in Pacific and Wahkiakum counties in Washington and Clatsop and Columbia counties in Oregon. As the Chinook Nation is not federally recognized, they are an entirely volunteer-based organization. The five acres of land they own have been acquired through donations by members; "not a single acre has been set aside by the federal government for us within our aboriginal territory" (Johnson in Daehnke 2017:forward, xi).

Treaty Times: 1850 – 1887

The Shoalwater and Chinook Nation are ethnically and culturally related communities. Their beginnings as separate entities are due to the misguided, hapless, and often malicious processes by which the U.S. government negotiated treaties with and forced assimilation of Indigenous peoples in the region in the second half of the 19th century and early 20th century.

Shortly after the passage of the Donation Land Act of 1850, Oregon Superintendent of Indian Affairs Anson Dart was sent to negotiate treaties with several groups of Chinookans residing near the mouth of the Columbia River. Dart was meant to resolve escalating conflicts over land and resources that developed as Euro-American endeavors in the region shifted from primarily a trading economy to settler colonialism in the early 1840s. Treaty negotiations took place at Tansy Point, on the south bank of the mouth of the Columbia in early August of 1851. The treaty that was developed through these negotiations was signed by seven Lower Columbia

Chinookan groups including the Wheelappa (Willapa) Band of Chinook on August 9th, 1851 (Beckham 1987; Coan 1921; Deloria and DeMallie 1999). The treaty stipulated that land within their traditional territory was reserved for these communities. It allowed them to retain their right to harvest and hunt within their traditional territories, offered them access to goods and services through the federal Office of Indian Affairs (later the Bureau of Indian Affairs), and secured annuity payments for 10 years for any lands they relinquished (Coan 1921).

Unfortunately, the U.S. Congress never ratified the treaty. Two Oregon territorial delegates, Joseph Lane and Samuel Thurston, blocked the treaty upon its arrival in Washington, D.C. These delegates were dissatisfied with the treaty because it allowed Chinookan people to stay on their traditional territory (now a valuable stretch of land) rather than being removed to east of the Cascades. They were also disapproving of the annuity payments. Ultimately, the treaty was "too generous" to Native peoples (Johnson 2013:8). The unratified treaty left the Chinookan peoples with little political or legal power to fight the escalating colonial invasion of their homelands by white settlers.

After failing to get the Tansy Point treaty ratified, Washington Territorial Governor Isaac I. Stevens attempted to negotiate another treaty in February of 1855. Negotiations took place on the Chehalis River near Grays Harbor, Washington, and were attended by over 350 Natives representing seven communities: Chinook, Upper and Lower Chehalis, Quinault, Satsop, Queets, and Cowlitz. Discussions broke down, however, when plans were revealed to place all communities on Quinault land. Moving to the territory of the Quinault, being a historical enemy of Lower Chehalis and Chinook peoples, was an unacceptable term for most parties present. Chinookan peoples present at these negotiations were dissatisfied with the government's unwillingness to honor the Tansy Point treaty and ultimately the Chehalis River Treaty was

never signed. A year later, Puget Sound Indian Agent Michael Simmons met separately with the Quinault and Quileute and negotiated a new treaty, the Treaty of Olympia, establishing the Quinault Reservation in 1856 (Fisher and Jetté 2013:292).

In 1861, non-Natives living on the Lower Columbia wrote a letter to the federal government urging that they honor the treaty that the U.S. government negotiated with the Chinookan peoples, citing their generous and convivial nature:

> "These Indians have remained peaceable and have not engaged in hostilities or caused alarm to the settlers or expense to the government, but on the contrary have sometimes saved the lives and often contributed to the safety and comfort of persons wrecked upon their shores or otherwise cast upon their hospitality, and this is notwithstanding the whites are directly incroaching [sic] upon and driving them from their homes under the authority of Congress until at least they have not an acre of uninhabited land remaining" (Anon 1861).

Unfortunately, this letter did little to sway the federal government. Only modest efforts were put forth to redress the status of the Chinook. In 1864, the Chehalis Reservation was created near the Chehalis and Black Rivers. This reservation was placed in Upper Chehalis territory but intended to serve the Upper Chehalis, Cowlitz, and other nontreaty tribes of southwestern Washington Territory including the Lower Chehalis and the Chinook. As it was not in their traditional territory, few Lower Chehalis and Chinookan people ultimately lived there, however (Ruby and Brown 1976:243).

As many Lower Chehalis and Willapa Chinook insisted on remaining on their aboriginal lands, President Andrew Johnson created the Shoalwater Reservation by executive order. On May 2, 1866, Giles Ford reported to the superintendent W. H. Waterman that he had visited the place that the communities wished reserved for them on Willapa Bay. He confirmed that it was a suitable place for the local Indigenous communities to call their own, "being situated in close proximity to fishing, hunting, and grazing grounds" (Ford 1866) and advised that this spot be

immediately reserved from sale. He included a map of the area suggested for Indian use, demarcating around the postcontact village, na·′mst'cat's (Figure 3.1). Superintendent Waterman forwarded that letter to the Department of Interior Secretary with a letter of his own. In it, he recommended that the designated tract of land "be reserved for the use of the Indians" and stated:

> "These Indians said to consist of some 30 to 40 families have always lived upon the beach and subsisted upon fish, clams, oysters, and sea animals. They are unwilling to abandon their former habits of life and turn their attention to agriculture. They desire a place upon the shore where they can fix their homes, without being exposed to or supplanted and driven off by white men" (Waterman 1866).

The Commissioner of Indian Affairs agreed with this recommendation and asked the president to reserve this land for "certain Indians upon Shoalwater Bay" (Cooley 1866). At this request, on September 22, 1866, President Johnson created the reservation by signing the executive order which he inscribed on a copy of Ford's map (Figure 3.1) (Johnson 1866). Neither the executive order, nor the correspondence leading up to the executive order stipulate a specific tribe or community that the reservation was intended for. However, federal authorities, including the Indian Claims Commission concluded that this small reservation was intended to serve Lower Chehalis and Chinook groups living in Willapa and the surrounding areas (Beckham 1987:13; Hajda 1990:514–15; Indian Claims Commission 1958; Johnson 2013; Marino 1990:171). However, as discussed below, poorly crafted census rolls and enrollment requirements restricted access to the reservation for many local Indigenous people.

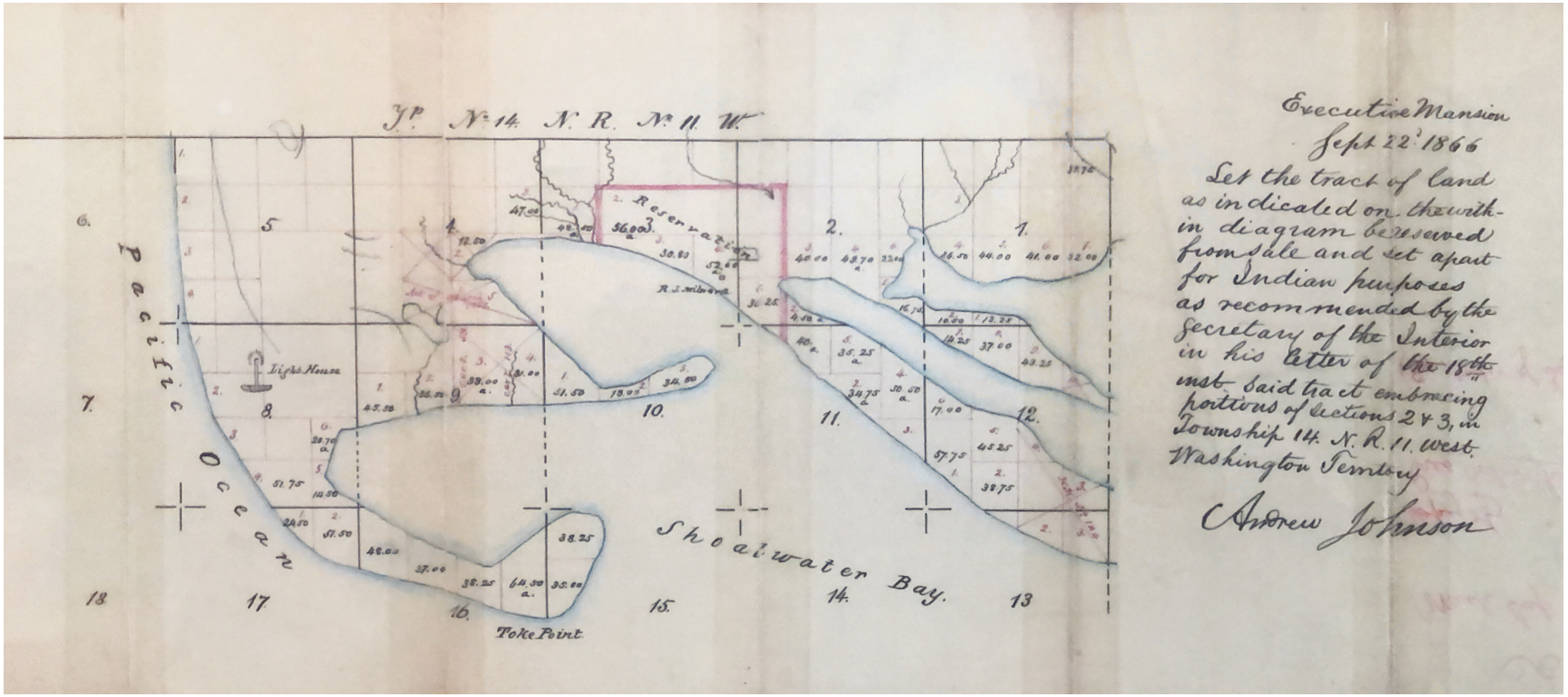

Figure 3.1 Map by Giles Ford, 1866. Executive Order from President Andrew Johnson
Courtesy of the Shoalwater Bay Indian Tribe

More modest efforts to compensate Chinookan peoples were made in 1873 when the Quinault Reservation was extended by executive order to provide allotment for "other tribes of fish-eating Indians on the Pacific Coast" including the Chinook and Lower Chehalis, thereby giving the "benefits, rights, and privileges, and immunities of the Treaty of Olympia" to these communities (Beckham 1987:14; Marino 1990:171). R.H. Milroy, the superintendent to request this expansion, claimed he was not aware of the existence of the Shoalwater Reservation until 1874. This may explain why this expansion was granted to the Quinault Reservation, and not the reservation more closely associated with the communities they wished to include. In any case, this expansion of the Quinault Reservation proved to be redress for the Chinookan peoples in words only. Only some Chinookan and Lower Chehalis people became affiliated with the Quinault Tribe and Quinault Reservation (Ruby and Brown 1976:241). Those who did, in effect, became "minorities within minorities" which at times led to further cultural dissolution (Daehnke 2017:51). Ultimately, many Chinookans never entered into federally recognized tribes, particularly those whose ancestors signed the unratified 1851 Tansy Point Treaty (Ruby and Brown 1976:232–51; Silverstein 1990). These modest attempts to remedy the situation for Chinookan peoples had neutral effects at best. In all cases, these "solutions" either affected only a small portion of the population or forced individuals to move away from their homelands.

Allotment and Assimilation: 1887 to 1934

In 1887, the issue of territory was again brought into question when Congress passed the General Allotment Act (also known as the Dawes Act) with the "intention of assimilating Indians into mainstream American society by turning them into farmers and property owners" (Fisher and Jetté 2013:296). Congress believed that the concept of tribe was an obstacle to the cultural

and economic development of Native communities, and if Native individuals were given plots of land to cultivate, they would accept a sedentary Euro-American lifestyle (Canby 1998). The General Allotment Act divided reservations into plots of a specific size that were allotted to individual tribal members. "Excess" lands remaining after allotments could then be made available for non-Native settlement, subsequently creating a checkerboard of Native and non-Native-owned land within reservations. The breaking up of communally owned land in this way was imposed without any requirement of consent and ultimately intended to destroy tribal tradition and influence. It also resulted in 65% of Native land nationwide being dispossessed between 1887 and 1934. In 1887, 134 million acres belonged to Native communities in the United States. By 1934, only 48 million acres were under Native control. Twenty million of the 48 million remaining was desert or semidesert (Canby 1998:22).

The subsequent Quinault Reservation Allotment Act of 1911 implemented the policy on the Quinault Reservation. When creating the allotment census rolls, the Chinook, the Chehalis, and other landless groups referred to as those "fish-eating Indians" in the 1873 executive order were included. However, during the 1910s and 1920s, Chinookan peoples could not secure their allotments on the Quinault Reservation, as they were either unable to gain adoption by the Quinaults or to secure allotments through the Indian Office (Beckham 1987:83). The Chinook, Chehalis, and the Cowlitz filed suit to gain allotments on the Quinault Reservation under the General Allotment Act. In 1931, after years of litigation, the U.S. Supreme Court ruled that members of the Chinook, Cowlitz, and Chehalis tribes were legally entitled to allotments on the Quinault Reservation. Several hundred Chinook tribal members received allotments and soon held the majority stake in the allotted lands. Despite this, they did not enroll in the Quinault

Tribe. Instead, they retained their aboriginal identity and appeared in the Indian Office records as "Chinooks" or "Quinault-Chinooks" (Fisher and Jetté 2013:298).

The allotment system attempted to sever Indigenous ties to territory, resources, and kin. However, it was not the only agent of cultural genocide used by the U.S. government during this period in its attempts to eradicate aboriginal peoples. In use for over a century—beginning in the second half of the 19th century and lasting until the latter half of the 20th century—Indian Boarding Schools nearly finished the job that settler colonialism started. With the explicit mission to "kill the Indian, save the child" (a phrase coined by Indian Boarding School founder Richard Pratt), these institutions forcibly removed children from their families and homelands in an attempt to purge them of their indigeneity. The fact that most Chinookan and Lower Chehalis communities in Willapa Bay never signed a ratified treaty did not protect them from having their children taken away. Generations of Indigenous children from Willapa Bay were taken to distant Indian Boarding Schools and forcibly assimilated into Western life:

> "It is remembered that wagons would arrive in the Pillar Rock area to take the Indian children to boarding school at Chemawa, near Salem, Oregon. Wagons also arrived in the north part of the bay, at Bay Center and the Shoalwater Bay Reservation, to take tribal youth to Cushman, near Tacoma, Washington…our oldest elders never spoke of their time in these schools, so negative were their experiences there" (Johnson 2013:16).

As discussed in the previous chapter, the forced removal of children from communities had devastating effects on traditional food systems and stifled the dissemination of cultural knowledge crucial to sustaining these systems for generations to come.

The Origins of the Shoalwater Bay Indian Tribe

After the executive order establishing the Shoalwater Reservation in 1866, the story of tribal recognition for the 35 ancestral families that make up the Shoalwater Bay Indian Tribe

deviated from that of other Indigenous peoples in the region. Theirs is a slightly more positive story that ultimately led to federal recognition, albeit not with the ensuant rights that one might expect.

After 1866 and until 1934, the Native community in Willapa Bay was largely ignored by the U.S. government, save a few instances in which the utility of the Shoalwater Reservation was called into question. The reservation itself was entirely forgotten about, only to be "rediscovered" in 1874 by superintendent R.H. Milroy. At that time, Agent H.D. Gibson visited the reservation and recommended that, as only a "small number of Indians" resided there and it was "mostly a poor sand beach", it should be vacated and withdrawn as a reservation (United States. Office of Indian Affairs 1874:328). Fortunately, this recommendation was never taken up and subsequent Indian agents saw that, while most Native families residing in Willapa Bay did not use the reservation as their year-round home, it was used seasonally for oyster harvesting and was therefore essential to the economic well-being of the community (Office of Federal Acknowledgment 1997a:22). While oyster harvesting is named specifically in the historical documents, it's reasonable to assume all manner of shellfish harvesting occurred here, as it is well-documented in ethnographic records and oral histories that a wide range of shellfish was exploited by Indigenous communities in Willapa Bay. Most likely, oyster harvesting was primarily conducted for trade or sale to white settlers, while other shellfish species were harvested for personal consumption.

In 1876, superintendent R.H. Milroy paid a visit to the Shoalwater Reservation and noted that only two families were living there, although approximately 60 other Indigenous people were living in the area and asked to be allowed to take claims on the reservation (United States.

Office of Indian Affairs 1876:141). By 1879, the reservation had been surveyed into lots and some 20 houses had been built.

In 1881, 28 lots on the reservation were assigned to specific individuals. These assignees were from several different tribes: Chinook, Chehalis, Kathlamet, Wahkiakum, and Clatsop (Office of Federal Acknowledgment 1997a). Milroy's notes from 1877 state that the lots created at that time were assigned to over 30 people (United States. Office of Indian Affairs 1877:192). Given that lots were assigned again in 1881, I surmise that the assignments were designated by the residents of the reservation in 1877 and the subsequent 1881 assignments were conferred by the presiding Indian agent at the time. This 1881 official assignment marks the first distinction between those residing on the Shoalwater Reservation and elsewhere in Willapa Bay in the eyes of the U.S. government. It is also the earliest indication of the individuals who had become known as "Shoalwater Bay Indians." In subsequent reporting by the Bureau of Indian Affairs (BIA), this lot assignment list is used to infer that the Shoalwater Reservation was intended for "full-blooded Indians living in towns at the north end of Shoalwater Bay (primarily in Bay Center)" (Office of Federal Acknowledgment 1997a:18).

While lots were assigned in this period, they were never actually allotted to individuals. The 1919 Commissioner of Indian Affairs Report indicates that the land tracts assigned in 1881 were still unallotted at that time (U.S. Bureau of Indian Affairs 1919). In 1977, a report of the BIA Planning Support Group confirmed that all land was tribally owned on the Shoalwater Reservation (Office of Federal Acknowledgment 1997b:44).

From roughly 1888 to 1920, census records indicate that the Shoalwater Reservation and Bay Center was a single community and families often split time between the two locations. For example, a family recorded as living on the reservation in the 1888 census might be recorded as

residing at Bay Center in the 1900 census, only to be recorded back at the reservation in the next census (Office of Federal Acknowledgment 1997b). Between 1888 and 1920, Indian agents recorded migration between the two locations, often noting that many families used Georgetown[11] as a temporary residence for oyster harvesting and resided more permanently at Bay Center. In 1888, the Commissioner of Indian Affairs Report states that there were 102 "Georgetown Indians", however Indian Agent Edwin Eels reports that only eight nuclear families (26 individuals) were living on the reservation. In this case, "Georgetown Indians" likely referred to those living on the reservation and at Bay Center. By 1890, BIA records indicate that most Indigenous peoples in Willapa Bay were residing at Bay Center and by 1893, Indian Agent Eels reports that the reservation was "nearly abandoned" because most had moved to Bay Center (United States. Office of Indian Affairs 1893:320).

The 1900 Indian Census states that 112 people lived on the reservation, but by 1910 only four families were reported to live there year-round and only a few more used the reservation seasonally, while the majority resided at Bay Center. At this time, the function of the Shoalwater Reservation was again called into question. Special allotting agent Finch B. Archer once again requested that the reservation should be restored to public domain because so few people lived there. Again, this request was declined by the Indian Office, saying "as this reservation is so small in area and the benefit given to prospective homesteaders by restoring it to the public domain so slight, it would appear advisable to allow it to continue as it now stands" (United States. 1979:333). Ten years later, the U.S. Commissioner of the General Land Office asked

[11] Another name for na·′mst'cat's or the Shoalwater Reservation, after Chief George Charley.

again that the U.S. Indian Office look into opening the reservation to entry stating low population, and again the Indian Office rejected this request.

The census data that show migration between Bay Center and Georgetown during this time may not reflect permanent changes in residence. Instead, it may reflect the seasonal cycles by which Indigenous peoples used the bay and its surrounding landscape in their daily lives. Ethnographic records and oral histories note frequent movements through the bay and beyond, often associated with seasonal hunting, fishing, and gathering practices (Heritage Committee 1984; Ray 1938; Swan 1857). For example, it was common to spend considerable time at the mouth of the Columbia River to fish for salmon and sturgeon. Therefore, the fluctuations present in the census data may reflect seasonal changes in residence more than any long-lasting migration event. Shoalwater oral histories also speak of this period as one of starvation and neglect on the reservation. So, while Georgetown was never abandoned, many families faced with starvation were forced to move more permanently to Bay Center (Earl Davis, personal communication).

Despite its inconsistencies, the census data from this period do corroborate what is known about past Indigenous populations of Willapa Bay—that they largely formed a single community. These data show that this continued to be the case well into the 20th century. This only began to change starting in 1934 with the Indian Reorganization Act (IRA). The IRA reversed the assimilation policy of the allotment period, taking the position that tribes would and should exist indefinitely. With the IRA, the United States sought to protect the land base of tribes and permit them to set up legal structures designed to aid in self-government. It ended allotment, extending trust for existing allotments, and allowed tribes to restore ownership of surplus lands that had not been acquired by third parties. It also authorized tribes to organize and

adopt constitutions and by-laws. Most notably, tribal entities were allowed to vote for or against the act, and its provisions would not apply to tribes that voted against it in a special election (Canby 1998:23–25).

While the IRA broadly succeeded in impeding the further erosion of Native land that was driven by the policies of the allotment period, it was less successful in encouraging tribal self-government. Critics of the IRA contend that this policy was limited in its recognition of the tribal right to self-govern, citing that the policy stipulated that the constitution, by-laws, and counsel were subject to approval by the Secretary of the Interior (see Deloria and Lytle 1984; Taylor 1980). This necessitated, to a certain extent, that tribal constitutions adhere to a Western model, often dividing executive, legislative, and judicial authority. As such and despite its good intentions, the IRA in many ways ignored Indigenous political structures and hierarchy. Often, the resulting structures of tribal "self-government" were unsuited to the needs and conditions of the tribe (Canby 1998:25). In many cases, the tribal governments established under this act "are today focal points of rivalry and contention among Indians rather than spokesman for their aspirations" (Taylor 1980:xiii). In total, 189 tribes accepted the IRA, and 77 rejected it (Nash et al. 1938). Some tribes rejected the IRA fearing additional federal direction. Others, like the Colville Tribe of Washington, were misinformed about the voting procedure and were led to believe that a "no show" would be considered a vote in favor of the IRA, resulting in an unintended rejection of the act (U.S. Congress, Senate, Committee on Indian Affairs 2011).

On April 13th, 1935 the Shoalwater voted against the IRA. It was determined that, despite evidence that Bay Center and Georgetown formed a single community at least a decade earlier, the vote would be organized by reservation and not tribe. Only those currently residing on the reservation were allowed to vote. The BIA established a list of eligible voters on the

Shoalwater Reservation. At the time of the election, only 11 eligible voting adults were living on the reservation. These eligible voters were the descendants of only three men: Chief George Charley, Robert Silackie, and Chief Satsop. No information was given as to the protocols used to establish this list by the BIA. As it was springtime, one is left to wonder how many families may have temporarily moved elsewhere to exploit seasonal resources, such as to the mouth of the Columbia River to exploit the seasonal runs of salmon and sturgeon. In the end, only eight of the eligible voters cast a ballot; three in favor and five against the IRA (Office of Federal Acknowledgment 1997b:43).

In the late 1960s, the Shoalwater and its reservation was once again under threat. Because the Shoalwater rejected the IRA, the BIA threatened to terminate the tribe claiming that they had no "formal government" (Earl Davis, personal communication). This threat was likely related to the 1968 Civil Rights Act. This act imposed upon tribal governments most of the requirements of the U.S. Bill of Rights. While it at least acknowledged that those governments should continue to exist (and is thus an improvement from earlier termination policies), it represented "a federal incursion upon the independence of tribes, and some tribal members have opposed it upon that ground" (Canby 1998:29). Most notably for the Shoalwater, the Indian Civil Rights Act of 1968 required constitutional procedures by tribal governments. Thus, it set in motion what the Shoalwater had avoided doing by rejecting the IRA nearly 30 years earlier; the creation of a constitution that conformed to the structure, expectations, and formalities of the U.S. government. On March 10, 1971, the constitution of the Shoalwater Bay Indian Tribal Organization was approved by the Commissioner of Indian Affairs, thereby conferring formal recognition to the tribe by the federal government (Office of Federal Acknowledgment 1997b:44).

The consequences of rejecting the IRA varied from tribe to tribe. There was no clear prescription as to how non-IRA tribes would be treated by the U.S. government and for many "the ability to utilize certain IRA authorities remained in limbo for decades, or in some cases, still remain unclear" (U.S. Congress, Senate, Committee on Indian Affairs 2011:72). For the Indigenous peoples of Willapa Bay, the eligible voter list that was created for the IRA election had profound and lasting impacts. This list provided the basis to divide the Georgetown and Bay Center communities, legally speaking, and continues to divide the community to this day. It is not known whether the BIA's decision regarding who could vote in the 1935 IRA election was a consequence of a new division between Georgetown and Bay Center that did not exist as recently as 1920, or if it helped to create this division. Regardless, this list of eligible voters set the division in stone, at least in the eyes of the U.S. government, as it was the only tribal enrollment roll that the BIA accepted when the Shoalwater received formal federal recognition in 1971, thereby precluding their Bay Center neighbors (i.e., the Chinook Indian Nation) from their recognized status. As such, the enrollment of the Shoalwater is restricted to the descendants of those 11 men who were themselves descendants of only three. For many years, only direct descendants were allowed enrollment, however recently this has been opened to lateral descendants (i.e., descendants of the siblings of the original 11).

Without ever signing a treaty, and through executive order, the Shoalwater is a federally recognized tribe. For over two centuries of Euro-American colonization, the U.S. government has repeatedly called into question their status. But they have fought hard to keep their reservation and their identity as a community. And through federal recognition, they have been granted access to resources that have helped them slowly build an infrastructure that provides safety and support for their members. However, because the Shoalwater is a small tribe, an

executive order tribe lacking a ratified treaty, and as a tribe that rejected the IRA, they do not possess the same ensuant rights as other federally recognized tribes. Namely, without a treaty, they do not hold the right to hunt, gather, and fish on their traditional territory.[12]

The Chinook Indian Nation's Fight for Recognition

As difficult and impenetrable as the fight has been for the Shoalwater to keep their rightful land and status, it has been arguably worse for the Chinookan peoples whose ancestors signed the Tansy Point Treaty. Today, the descendants of the communities that came together to sign the unratified treaty at Tansy Point are collectively the Chinook Indian Nation. Their story is one of immense struggle, amazing victories, and subsequent heartbreak. One of their primary aims is to "tell the story about what happened [to them] and to preserve and strengthen their culture through family and tribal relationships" (Daehnke 2017:54). They seek to maintain their traditional relationships with the environment and to preserve traditional subsistence and material culture. Despite their unratified treaty and non-recognition status they actively do this every day: "We live up to our obligations with the natural world. We acknowledge our t'amanawas (spirits), the gifts of the plant people, and we welcome the first salmon, even while we are denied the right to take a single fish from the waterways of our ancestors" (Johnson in Daehnke 2017:forward, xii).

[12] The current legal rationale behind this exclusion and the effects of such are further discussed in Chapter 8.

Still, federal recognition and the sovereignty that comes with it is vitally important for the future of the Chinook Nation. They have been relegated to the outskirts of society, pushed aside by settler colonialism, and generally disregarded by the U.S. government. And so, their fight for federal recognition is "nothing less than a fight for survival" (Johnson 2013:6). Tony Johnson sums up what federal recognition means to the Chinook Nation:

> "Many consider formal recognition to be the only way to guarantee our existence as a cohesive community into the future. It is essential for the economic development, the establishment of a land base, the preservation of our culture, the reinstatement of fishing and hunting rights, the ability to repatriate our ancestors' bones and sacred items from museum collections, and the ability to better care for our community's health and well-being" (2013:19).

Many of the things the Shoalwater has built to improve their community over the years—the health clinic, nutrition programs, and economic opportunities—are unavailable to the Chinook Nation because they have not been afforded the same government status. Without federal recognition, there is no way that the Chinook Nation is assured their right to hunt and fish, consultation on archaeological and cultural resource projects, and the financial backing for community health and well-being programs.

The Chinook Nation's efforts to clarify their status to and relationship with the U.S. government have been nearly continuous since the 1851 Tansy Point Treaty. In 1899, they hired an attorney to help them in this endeavor, and for nearly a hundred years few gains were made. Renewed hope came in 1978 when the Federal Acknowledgement Process (FAP) was established. The FAP petition provided an avenue for federal recognition and was intended to "make tribal acknowledgement more expeditious and more objective than in the past" (Miller 2004:4). The Chinook Nation filed a petition through the FAP in 1987, after nearly a decade of research and amassing the required documentation. A preliminary finding against the Chinook

Nation was given 10 years later, but they did not give up. They quickly submitted more documentation to argue their case. Decades of work culminated in federal recognition through FAP under the Clinton administration on January 3, 2001. However, on the 89th day of the 90-day comment period, the Quinault Indian Nation sent a letter to the Interior Board of Indian Appeals (IBIA) arguing that the Chinook Nation had not met certain standards of the FAP requirements and asked IBIA to reconsider recognition. The arguments put forth by Quinault were handed over to the new assistant secretary of Indian affairs in the Bush administration, Neal A. McCaleb.

The Chinook Nation had 18 months of federal recognition until, in a document dated July 5, 2002, McCaleb concluded that the Chinook Nation failed to meet three of the seven mandatory criteria and denied them formal recognition. The tragic irony of the situation is that the criteria put forth by FAP demands that the petitioners show continuity as a tribal body in historical times. Yet, our colonial legacy is one of "that tended to invent, shatter, and reassemble the very groups from which the FAP demands an unbroken record of cohesion" (Fisher and Jetté 2013:289). After years of forced assimilation policies, theft of land and children, and the disruption of social networks caused by population declines through European-introduced diseases, it's no wonder that historical documentary evidence supporting the "cultural cohesion" of the Chinook Nation is sparse.

Following the devastating reversal of federal status by McCaleb, the Chinook Nation continued in their struggle for recognition. Efforts were made to pursue recognition through an act of Congress. They found an ally in this path forward in U.S. Congressman Brian Baird. On July 31, 2008, Baird introduced H.R. 6689: "A Bill to Restore Federal Recognition to the Chinook Nation, and for Other Purposes". Unfortunately, even after several modifications and

reintroductions, the bill never moved forward in Congress, and with the retirement of Baird in 2011, they lost a crucial voice in Washington. Even after years of setbacks such as these, they continue to fight every day. They survived over two centuries of cultural genocide and continue to demonstrate their strength in the face of persistent colonial legacies.

"We are the Bay": Willapa Bay in the lives of the Shoalwater and Chinook Nation

For both the Shoalwater and the Chinook Nation, the fight for sovereignty is firmly rooted in the Willapa Bay landscape. Willapa Bay was—and continues to be—an important place of refuge for these communities. Before the arrival of Europeans, Willapa Bay sheltered people from the harsh winter storms that beat against the open coast. During the times of epidemics, islands in Willapa Bay remained disease-free and some members of the Shoalwater and Chinook Nation cite this as the reason for their ancestors' survival (Johnson 2013:8). Willapa Bay was one of the few parts of the vast Lower Chehalis and Chinook territory that Euro-American settlers did not immediately consider valuable, and thus it was the one part of their territories in which these communities were most able to maintain their connections.

The marine landscape, in particular, is vital to the Lower Chehalis and Chinookan identity. "We were and are a water people," says Chairman Tony Johnson (2013:7). The Shoalwater and Chinook Nation have maintained strong connections to the water, even though traditional fishing spots have been removed from their control and they no longer have the right to fish, hunt, and gather from the water as they once did. Today, while it's becoming financially more difficult given increasing permit and equipment costs, a few tribal members are still a part of the local industrial fishing fleet. The waterways in the bay also provided travel, and therefore connection, for the various communities that inhabited the bay. The bay is navigable by canoe

when the ocean is not, and therefore is a critical means of maintaining cultural connections through social visits. Even today, the Shoalwater and the Chinook Nation use the "traditional water highway" to unite the two closely related communities. The Shoalwater and Chinook Nation celebrate this relationship and open the waterway with an annual Georgetown-Bay Center paddle. The Cultural Director of the Shoalwater, Earl Davis, describes the communities' connection to this landscape:

> "The bay is and always has been extremely important to our community. Indeed, the reason we are an executive order tribe and not a treaty tribe is because our leaders refused to leave. When treaty negotiations were being held with Isaac Stevens, our leaders told him that we wished to live out our days in our homeland and be buried with our dead. Even in modern times, with the threat of erosion, we refuse to leave the shores of the bay. It is a connection deeper than I think most modern people can understand. We can look at our house and in our cemetery and know that for thousands of years our grandparents down the line have been in the same place. It is a connection so deep that many of us consider it a part of our DNA. We are the bay" (Antoniou and Davis 2018).

In this chapter, I have attempted to summarize at least 270 years of cultural life for Lower Chehalis and Chinookan peoples living in southwestern Washington. Life for these communities changed dramatically within that time. Epidemics reduced their population by at least 87% (Boyd 1990). Relations with Euro-Americans—initially welcomed as new trading partners in the Columbia River exchange network—quickly soured as settler colonialism disregarded Indigenous rights to land, resources, and self-determination. Unratified treaties, false promises, and mistreatments by the U.S. government divided Lower Chehalis and Chinookan communities from their land and kin.

But despite all that change, some things have remained the same. Lower Chehalis and Chinookan communities in Willapa Bay have always been highly connected and integrated; sharing territory, resource collection sites, trade networks, and kinship (Hajda 1984). This is true

of the Shoalwater and Chinook Nation today. And it was true of Lower Chehalis and Chinookan communities at least at the time of the first introduced diseases, likely well before. The Indigenous peoples of Willapa Bay are, and always have been, generous neighbors to the Euro-American community. They have honored the treaties they signed, despite the U.S. government's unwillingness to do the same. Despite centuries of abuse, they have continued to fight to maintain their sovereignty. In this struggle, they have made some gains and suffered terrible losses. And through all this, they have maintained their connection to the Willapa Bay landscape as a quintessential part of their identity. In the following chapter, I describe how archaeological research—conducted at the behest of and in collaboration with the Shoalwater and Chinook Nation—contributes to their fight for sovereignty and reinforces their connection to Willapa Bay.

Chapter 4 Collaborative and Applied Archaeology: Community-Based Research Design with the Shoalwater Bay Indian Tribe

This chapter describes the research agenda for the archaeological investigations of the Nukaunlth village site conducted in collaboration with two Indigenous communities on the Northwest Coast of North America, the Shoalwater Bay Indian Tribe and the Chinook Indian Nation,[13] and how that research agenda contributes to their fight for sovereignty as it pertains to food systems and community health. This chapter also details the method of collaboration used by myself and two representatives from these communities: the Shoalwater Cultural Director, Earl Davis, and Shoalwater Education Director and Chinook Nation chairman, Tony Johnson. I discuss not only the collaboratively defined objectives, research questions, and methods for the project, but how we developed our partnership, and how we used that partnership to design a research agenda that meets community-defined needs. An objective of this dissertation is to present one possible answer to the question: how can archaeological research use scientific data to serve Indigenous groups in their efforts to enhance community well-being? This chapter details part of that answer and argues that thoughtful and respectful collaboration is essential to the process. The particulars of this answer are context-specific, as each collaborative partnership is necessarily unique. However, I see the methods, motivations, and approaches laid out here as adaptable to other circumstances, particularly when those other circumstances involve the

[13] Henceforth referred to as the Shoalwater and the Chinook Nation, respectively.

cultural heritage of Indigenous communities affected by settler-colonialism. Significant space is given to the collaborative methods used in this project in the hopes that others looking to conduct research with Indigenous communities will draw inspiration from it and adjust what is put forward here to meet their own particular situations.

The Shoalwater's mission to "become self-sufficient and provide for the spiritual, social, economic, and health of tribal members, while honoring traditions of the past and leaving a responsible legacy for future generations" [14] inspired and continues to drive this research. The Shoalwater want to tell the story of living history where traditional foodways sustained healthy communities. In particular, the Shoalwater stipulated that, in an ideal scenario, the archaeological research conducted at Nukaunlth would help the community regain legal rights to culturally relevant food sources and help to revive traditional foodways in the daily lives of community members. The Shoalwater believe that doing so is crucial to remedying the health disparities plaguing their community and promoting the holistic health of their peoples.

While the primary impetus of this research came from the Shoalwater and their efforts to revitalize traditional foodways, the Chinook Nation also has a stake in this project as it is their shared cultural heritage—the knowledge generated from this project reflects the lifeways of their ancestors just as much as it does the ancestors of the Shoalwater. The Chinook Nation has persistently fought for federal recognition for over a century (see Chapter 3). As they continue to struggle against a U.S. government that refuses to recognize their legitimacy as a people, the

[14] https://www.shoalwaterbay-nsn.gov/home/about-the-tribe/our-mission/

archaeological data from Nukaunlth are yet another source from which the Chinook Nation can show their deep connection to the place they've called home for thousands of years.

The Shoalwater and Chinook Nation have highly valued traditional sources of knowledge and while they have a good understanding of their history, they see scientific ways of knowing the past as a valuable second line of evidence. Therefore, our mutual objective was to use the archaeological record of traditional foodways to "mak[e] truth claims that are stronger than they would be without engagement with the material record" (Hauser 2018: 546) and to use the "hardness" of material evidence to witness the past. Through this research, the Shoalwater and Chinook Nation hope to find supplemental information about past foodways through details generally not found in their oral histories and to use archaeological evidence as a new and exciting way to disseminate this information.

To help the Shoalwater and Chinook Nation tell the story of traditional foodways sustaining Chinookan and Lower Chehalis peoples in the past, our research considers the role of marine resources in the subsistence base of these peoples in Willapa Bay, Washington in the Late Pacific, protocontact, and postcontact periods (AD 200/400–1850). Specifically, we developed a research agenda that centers on a detailed analysis of the shell midden associated with the Nukaunlth village site to determine 1) the makeup of the larger subsistence system within which marine resource consumption was situated before European arrival and into the early postcontact period, and 2) the importance of marine resources, particularly fish and shellfish, among Chinookan and Lower Chehalis peoples living at this ancestral village.

This research agenda was born out of a collaborative partnership built on three guiding principles. They are as follows:

1. Long-term relationships between researchers and communities must extend beyond purely research-based encounters to create a more equitable relationship and produce

more nuanced and impactful research (e.g., Angelbeck and Grier 2014; Atalay 2012; Colwell and Ferguson 2008).

2. Successful communication within a collaboration relies on a sense of compassion, and a willingness from all partners to be humble (e.g., Martinez 2006; Zimmerman 2004).
3. Collaborators must recognize the value of each partner's skills and knowledges while giving primacy to the rights and ownership of descendant communities (e.g., Brady 2009; Ferguson et al. 2015; McNiven and Russell 2005; Stump 2013)

Adhering to these principles allowed Davis, Johnson, and I to develop a partnership that facilitated the creation of research questions, methods, and objectives through an approach I call a "continual loop of engagement". A continual loop of engagement is a cyclical approach to research design that reorders the steps in the process, beginning first with identifying the community's objectives, interests, and desired end products, to prioritize community impact and repeatedly re-tether the archaeological research to the needs of the community.

I argue that by adhering to these principles and using a continual loop of engagement to define our research agenda, we successfully employed a collaborative approach to archaeology to produce scientific data that benefit the descendant community. Designing a research agenda that attends to the needs of the descendant community in this way does not entail displacing scientific inquiry for a subjective manipulation of the past. Like others before me, I argue for empirical integrity, maintaining that archaeologists can "simultaneously take sides and be fair to the evidence" (Blakey 2008:19). Reorganizing the process of designing research does not change the scientific attributes of the project. Instead, the "tools of scientific inquiry are put to work in new ways" (Wylie 2008:206) where objectivity is increased by revealing biases in the process of doing archaeology and rejecting the assumption that the scientific ownership of the past is free and clear of the social and political contexts that surround the discipline (Kristensen and Davis 2015; La Salle 2010; Meskell 2002; Moss 2005).

Methodological rigor is upheld, as Indigenous communities often see the benefit of scientific ways of understanding the past (Croes 2010; Ferguson et al. 2015). Instead, many communities wish to make that scientific research work for them, to further their well-being by enriching their cultural life, reclaiming legal rights to landscapes and resources, presenting accurate portrayals of their peoples to the general public, and bringing their narratives to a wider audience.

What is Collaborative Archaeology?

Collaborative archaeology strives for a more ethical praxis that treats the communities whose heritage is under study as important agents in the development, implementation, and dissemination of research and recognizes the critical and beneficial role that archaeological research can have in these communities (Nicholas et al. 2011). Archaeology, like all disciplines, is not devoid of influences from its socio-political setting. Particularly in North America, it is part of a knowledge system with deep colonial roots (Smith and Wobst 2005). As European colonization was decimating Native North American populations through the spread of disease, warfare, and forced assimilation, anthropologists and antiquarians were following close behind, malapert in their desire to classify and record the "vanishing Indian" and most often seeking to justify the seizure of land and the exploitation of Indigenous peoples (Trigger 2007:114). While archaeology has matured as a discipline, advancing from pothunting to culture history, and into the modern era, it still often neglects the interests, needs, and perspectives of those whose ancestors are under study, distancing these communities from the study of their past.

Collaborative archaeology is part of a larger historical effort to decolonize the discipline and bring communities into the fold (Martinez 2006; Nicholas et al. 2011; Wilcox 2010). It

strives to create a counter-discourse that emphasizes reflexivity and the social landscape that contextualizes the discipline. The decolonizing process starts by generating an awareness of how archaeology's colonial legacy influences the questions asked and distorts interpretations of Indigenous people's past (Smith and Wobst 2005; Trigger 2008; Wylie 2008). Decolonizing archaeology also necessitates an understanding of how archaeological knowledge, once gained, is used to the benefit or detriment of Indigenous communities, and affects their ability to govern, control, and manage their own cultural heritage. It means acknowledging that archaeology is a social practice and the knowledge it generates is the history and heritage of living communities (Colwell 2016). With this comes complex contemporary repercussions, both positive and negative, and direct relevance for people in their daily lives. For collaborative archaeologists, decolonization centers on correcting power imbalances through directly and meaningfully empowering Indigenous communities in archaeological work, the production of knowledge about the past, and the creation of objectives that benefit the community (Martinez 2006).

Collaborative archaeology owes its beginnings in part to the National Historic Preservation Act (NHPA) of 1966. NHPA precipitated an interest in public archaeology throughout the 1970s, and the rise of the CRM industry to comply with NHPA demanded a reorientation of the discipline towards engaging the general public (McGimsey 1972). In many cases, this reorientation silenced the perspectives of Indigenous groups by mandating a Western approach to knowing the past through legislative obligations. However, laws such as NHPA and the National Environmental Protection Act were the first instance in which, under specific circumstances, consultation with descendant communities before conducting archaeological work was compulsory. So, while Indigenous communities weren't necessarily the driving force behind the public archaeology of the 1970s, nor were their voices included in the interpretations

of the past stemming from these endeavors, archaeologists were legally required to acknowledge the connection between modern Indigenous communities and their ancestral and cultural remains.

Protests by the American Indian Movement (AIM) and other Indigenous activist groups in the 1980s made very obvious Indigenous groups' desire to maintain control over their own heritage and forced archaeologists to be more self-reflective while thinking critically about their relationship with Native peoples (Anderson 1985; Atalay 2006; Buikstra 1983; Echo-Hawk 1986; Nassaney 2012; Tymchuk 1984; Vizenor 1986; Zimmerman et al. 1986). Paralleling the AIM, a theoretical shift in archaeology called postprocesualism (Earle and Preucel 1987; Leone et al. 1987; Shanks and Tilley 1987), inspired by the rise of postmodern critical theory, "paved the way for greater receptivity, respect, and appreciation of Indigenous activism that attempted to bring concepts and experiences of Indigenous people into archaeological practice" (Atalay 2008:32). Indigenous activism coupled with the rise of postprocessualism urged a dialogue within archaeology about who owns the past and who has the right to tell the stories of the past (Gero and Root 1990; McGuire 1992; Trigger 1984; Ucko 1986). In 1990, decades of Indigenous activism bore fruit in the form of the Native American Graves Protection and Repatriation Act (NAGPRA). NAGPRA solidified the role of Native Americans in U.S.-based archaeology by giving lineal descendants and tribes the right to claim certain kinds of cultural items and human remains. The consultation that began in the 1970s with public archaeology, CRM, and NHPA grew in the 1990s as NAGPRA established consultation as a legal minimum (Fine-Dare 2002; McKeown 2012; Mihesuah 2000). NAGPRA compelled archaeologists and museum professionals to engage with Native American tribes and facilitated the exchange of

ideas. This judicial leap finally wrote the interconnectedness of archaeologists, material culture, and contemporary communities into law (McAnany and Rowe 2015).

Since then, many archaeologists successfully pushed the discipline from consultation to collaboration (Brady 2009; Brighton 2011; Geurds 2008; Okamura and Matsuda 2011; Shackel and Chambers 2004). In the process, some archaeologists (e.g., Colwell 2016; McAnany and Rowe 2015) argue that the discipline underwent a transformational paradigm shift in which more inclusive epistemologies and the engagement with descendant communities fundamentally altered the basic concepts and practice of archaeology, expunging the position of archaeologists as the sole architects and stewards of the past.[15] A particularized notion of collaborative archaeology is just emerging, and the values of the archaeological community continue to shift as the connection between descendant communities and their archaeological heritage solidifies in the discipline and inspires new ways of transforming archaeology into an ethically engaged science.

Scholars use numerous terms when discussing the practice of collaboration within archaeology. Collaborative archaeology (Chilton and Hart 2009; Colwell and Ferguson 2008), community-based archaeology (Greer et al. 2002), Indigenous archaeology (Atalay 2006; Nicholas and Andrews 1997), public archaeology (Shackel and Chambers 2004), applied archaeology (Brighton 2011; Stump 2013) and a litany of other names all refer to a related suite of discourses and practices within the discipline. Bollwerk et al. (2015) rattle off an inventory of 20 types of archaeology that all fall within this same vein, and astonishingly add a twenty-first to the list. In fairness, I noticed two or three missing from their catalog.

---

[15] See Atalay et al. 2014, Colwell and Ferguson 2008, Silliman 2008 for prime examples of such reorientation.

The fact that collaboration within archaeology goes by so many different names is evidence of the practice's infancy. Archaeologists are still working out how to talk about what this practice entails. Collaboration is also difficult to define, because, by its very nature, it is fluid and open-ended (Halperin 2017)—so difficult that Colwell posits that it "will always elude absolute definitions" (2010:59). Some argue that, perhaps because of the term's nebulous definition and certainly because of the movement's infancy, archaeologists use the term too loosely to blanket very different projects; from those that are fully driven by the community, to those with just the slightest shred of community outreach (Colwell 2016; La Salle 2010). But linking all these practices are two main priorities: ethical obligation and social justice (Atalay et al. 2014; Little 2009; Little and Shackel 2007; McDavid 2002). Collaboration in archaeology gives primacy to ethical obligations that take seriously Indigenous peoples' concerns regarding their heritage. It also positions archaeology within social and political movements promoting change that empowers underserved, marginalized, and/or disenfranchised groups.

It was difficult to determine the correct term for our research when positioning it within this set of practices. Is it collaborative, community-based, Indigenous, or public? I argue it is all of the above. Therefore, I chose the terms collaborative and applied (the latter being discussed in Chapter 8) over others because, simply put, I found them to be the most all-encompassing. After presenting a cornucopia of nomenclature for this type of archaeology, Bollwerk et al. (2015) remedy the situation somewhat by insisting that these practices are not mutually exclusive, nor should they be singularly used. Instead, they represent a toolkit whereby an archaeologist employs multiple "tools" and the appropriateness of each varies by situation and context. I chose the term "collaborative" archaeology because, while I draw on community-based, public, or other archaeologies as "tools", collaboration is the broadest theme of our work.

Within the list of preferred nomenclature for this dynamic constellation of ethical and socially just archaeology, the term Indigenous archaeology may seem more applicable to this project than collaborative archaeology. In 1997, George Nicholas defined Indigenous archaeology as "archaeology with, for, and by" (85) Indigenous people. Over a decade later, he provided a more thorough definition:

> "Indigenous archaeology is an expression of archaeological theory and practice in which the discipline intersects with Indigenous values, knowledge, practices, ethics, and sensibilities, and through collaborative and community-originated or -directed projects, and related critical perspectives. Indigenous archaeology seeks to make archaeology more representative of, relevant for, and responsible to Indigenous communities. It is also about redressing real and perceived inequalities in the practice of archaeology and improving our understanding and interpretation of the archaeological record through the incorporation of new and different perspectives" (Nicholas 2008:1660).

By and large, the archaeological research described in this dissertation conforms to both definitions put forth by Nicholas. It is, as I describe in detail later in this chapter, archaeology very much *with, for, and by* the descendant community. Likewise, this project is collaborative and community-originated and aspires to create an archaeology that is representative, relevant, and responsible to the community while redressing very real inequalities relating to access to traditional foodways. My collaborators and I most certainly sought to incorporate Indigenous values, knowledges, practices, ethics, and sensibilities into the project. However, there is another tenant of Indigenous archaeology that is not mentioned in Nicholas' definition, and it is vis-à-vis this tenant that this project does not *yet* live up to the term Indigenous archaeology.

Sonya Atalay convincingly argues that Indigenous archaeology should incorporate the practice of "braiding knowledge". Braiding knowledge is the process by which "Indigenous forms of science, history, and heritage management would be researched and then blended with Western concepts to produce Indigenous archaeology methods, theories, and practices"

(2006:297). This is where our project falls short. While the work described in this study satisfies most aspects of the definition of Indigenous archaeology given by Nicholas and includes Atalay's concept of braiding knowledge in respect to the research questions, methods, and dissemination of results, it does not incorporate Indigenous concepts directly into data analysis. This is not because I am uninterested in doing so. But, to do so requires an understanding of culturally specific Indigenous forms of science that comes from an intimacy with the Indigenous community that I have yet to develop. I hope that as we continue to collaborate, I will gain this understanding and be allowed to incorporate it into future research. However, we simply aren't there yet. Instead, I use the term collaborative archaeology, not to merely quibble over terminology, but to describe this project as a nascent form of Indigenous archaeology.

The Descendant Communities

Today's Indigenous communities of Willapa Bay are both a reflection of past ethnic and political alliances and the product of an imperialist U.S. government in the second half of the 19th century. Before the disturbing effects of colonization, Lower Chehalis and Chinookan peoples called the watersheds of Grays Harbor, Willapa Bay, and the Columbia River home (Hajda 1990; Silverstein 1990). This area was a hotbed for trading, alliance building, and intermarriage between residents and neighboring groups (Boyd et al. 2013). The cultural milieu characteristic of the centuries before European colonization persists and is reflected in the makeup of these communities today. However, due to nearly two centuries of imprudent government policies regarding Native peoples, the Indigenous communities of Willapa Bay are politically divided into two groups: the Shoalwater Bay Indian Tribe (Shoalwater) and the Chinook Indian Nation (Chinook). The circumstances that produced this division historically

and sustain it today have been discussed in detail in Chapter 3. Relevant here are the current priorities of these communities as they relate to their cultural heritage.

The archaeological remains discussed in this dissertation are the cultural heritage of both the Shoalwater and the Chinook Nation because the division between them is governmentally contrived and culturally inaccurate. However, because the archaeological site of primary importance in this research, the Nukaunlth village site, is adjacent to the Shoalwater Reservation and on land owned by the Shoalwater, I focus my discussion of collaboration on this community. The Shoalwater spearheaded this research with the blessing of the Chinook Nation and it was the Shoalwater who asked me to come on board to conduct archaeological investigations of this site. However, it is important to stress that the Chinook Nation, although not the primary driver of the project, was an active partner and a vital part of this research. Because the two communities are so interconnected, I hope that both see fruits from this labor.

Andrew Johnson created the Shoalwater Reservation because the 30-40 families who occupied the ancestral village of na·′mst'cat's refused to relocate. The strength of those unyielding families lives on in the contemporary community. But reservation life for the Shoalwater was historically one of hardships and difficulties. Until the 1950s, the reservation did not have regular running water and electricity and up until the 1980s, there were only around half a dozen houses with minimal tribal services. In the 1990s, a surge of momentum brought about increased infrastructure and housing. Today there are roughly 30 homes, a small complex for elder housing, a tribal wellness center, education department, cultural department, tribal gymnasium, community garden, a convenience store/gas station, upland tsunami evacuation and multipurpose building, and a new museum dedicated to tribal culture and history.

The swell in structural growth of the 1990s and the Shoalwater's current prioritization of holistic community health was precipitated, in part, by a horrific episode of infant mortality among the Shoalwater—from 1988 to 1992, 10 out of 19 pregnancies occurring on the reservation ended in miscarriage, ectopic pregnancy, stillbirth, or the death of the baby within the first year. State and federal epidemiologists who studied the problem found no single cause other than the staggering lack of healthcare access. Fearing for the future of his community, the Shoalwater tribal chair at the time, Herbert Whitish, went directly to Washington D.C. to plead for governmental assistance. Aid from the Indian Health Services and two loans later, the Shoalwater now runs a wellness center that offers medical services, behavioral health counseling, addiction treatment, and nutritional guidance for tribal members and their non-tribal neighbors. Since 1992, over 40 healthy children have been born on the reservation.

After ensuring the survival of their community, the Shoalwater now strives to improve the health of tribal members by embracing the traditions of their ancestors. While great strides have been made, the Shoalwater is not exempt from the health disparities endemic to Native communities in the United States. The average life expectancy for a tribal member is between 60 and 65 years, nearly 20 years below the national average (Jesse Downs, Tribal Administrator, Personal Communication). Diabetes, heart disease, obesity, and addiction threaten the well-being of the community. This is largely because many of the problems that began over 150 years ago—forced relocations, government boarding schools, unratified treaties, the fight for recognition, starvation, and epidemics—persist and continue to shape the Shoalwater world today. The average income for a tribal family is in the low/poverty bracket. Unemployment rates are high, and services are minimal—the nearest grocery store is a 25-minute drive. The Pacific Ocean, one of the world's richest food sources, surrounds the community. Yet they live

in a food "desert" because the government-required recreational fishing licenses are prohibitively expensive. Instead, most families live off of foodbank donations or whatever is cheapest at Walmart (Earl Davis, personal communication).

The Shoalwater seeks to reinvigorate a living culture and incorporate traditional ways of being back into daily life. This is part of their holistic approach to health and their remedy for the void those 150 years of colonization and rapid cultural change left in the collective consciousness of their community. For the Shoalwater, so much change in such a short period means that the practices of many deeply meaningful traditions and lifeways have vanished from daily life. In recent years, community members and cultural staff attempted to resurrect many cultural practices but limited access to traditional food sources and landscapes, and a declining tribal fishing fleet hampered their efforts. As recently as the 1980s many Shoalwater members still made their living on the ocean and connected to ancestral traditions and landscapes through this practice. Today, the modern generation of the Shoalwater, while healthier than some past cohorts, desire a deeper cultural connection and sense of history in their lives.

An old Chinookan teaching states it takes three times longer to fix something than it did to break it (Johnson 2013). With that in mind, the Shoalwater hopes to swing the pendulum back to center and create a community that lives with one foot in tradition and the other in modernity. The tribe sees this as the key to a healthy community. In particular, the Shoalwater Education Program seeks to preserve, protect, and promote the heritage and history of their members and to actively promote and facilitate the ability of the tribe to engage in cultural activities. To do so, the Shoalwater recognizes the need to preserve traditional knowledge about Native food and ancestral diet as local food sources including several species of native shellfish (e.g., Olympia oyster) and various native plants (e.g., camas and wapato) become increasingly rare. Through

our collaboration, the Shoalwater Education Program aims to use data from the Nukaunlth site to further their efforts to establish food sovereignty, revive traditional foodways, and reclaim legal rights to culturally important food resources, particularly fish and shellfish. They view this research as contributing to both the revitalization of cultural life and the lessening of the health disparities that burden their people, culminating in a wholly healthier community.

Building a Collaborative Relationship: Three Guiding Principles

In the following section, I describe the particular ways in which Shoalwater Cultural Director, Earl Davis, Shoalwater Education Director and Chinook Nation chairman, Tony Johnson, and I built our collaborative relationship and illustrate why it is successful for us. I frame this discussion using three principles that guide our interactions and work to shift power from archaeologist to community. Collaborative endeavors can only be implemented locally whereby individuals and institutions discover their own workable solutions—there is no one definitively effective collaborative practice and each circumstance will require its own strategy (Angelbeck and Grier 2014; Colwell-Chanthaphonh 2010; Guilfoyle and Hogg 2015). Therefore, I put forth this collaborative relationship not as a "universal prescription," but as a model that archaeologists and Indigenous communities might adapt to fit their own needs. Because, while collaborative relationships are highly situational, building a collection of detailed accounts of successful and unsuccessful collaborative projects will help move the discipline towards a praxis steeped in reciprocity.

Community-Based Participatory Research and the Host-Guest Model

Our approach to collaboration blends community-based participatory research (CBPR) and the host-guest model of interaction (Atalay 2012; McNiven and Russell 2005). CBPR endeavors to "break down the distinction between the researcher and the researched, the subjects and objects of knowledge production by the participation of the people-for-themselves in the process of gaining and creating knowledge" (Gaventa 1988:19). As a theoretical underpinning, CBPR posits that research must benefit society. As a methodology, it democratizes research through power-sharing to ensure that all people are involved in the process of knowledge production while simultaneously building capacity within their communities. CBPR projects are community-based in that community members develop the research agenda so that it helps to address the interests and needs they identify. These projects are conducted in adherence to community values and are motivated by what the community wants to examine, to produce knowledge that is shared by and useful to them. This orientation ensures that the community is invested in the project from the start and promotes long-term engagement in the process and outcomes of the research because the project is relevant to the community from its very conception. CBPR is participatory in the sense that community members are partners in all/any aspects of the research process. When done correctly, CBPR is an "empowering process that attends to social inequalities" (Israel et al. 1998:179) between the researcher and the researched whereby the research works to benefit the community.

The host-guest model of interaction between researchers and Indigenous communities whose heritage is under study explicitly acknowledges Indigenous power and the Indigenous communities' right to control archaeological research conducted on their heritage (McNiven and Russell 2005:236). This model of interaction recognizes the sovereignty of Indigenous

communities and considers archaeologists guests who obtain consent to undertake research with and for the community (Brady 2009:49). This may seem bombastic; however, I regard this approach as a necessary shift away from a form of community-based programs that position archaeologists as the saviors, agents of change, and the source of Indigenous empowerment. This model also rejects the stakeholder paradigm and works against the externalization of Indigenous people to their own heritage (McNiven and Russell 2005). While the stakeholder paradigm recognizes an array of equally invested groups with an interest in Indigenous heritage, the host-guest model refutes the notion that outside groups hold just as much say in Indigenous heritage as descendant communities and accepts the *primacy* of the Indigenous voice in the treatment, study, access, and use of and benefits from their cultural heritage. As such, research agendas designed under this model place community benefits above those conveyed to the archaeologist or other stakeholder groups.

Among many approaches to collaborative archaeology there is a struggle to achieve, and even define equal benefits for all participants. The difficult reality is, as Colwell-Chanthaphonh points out, "that there are no easy formulas to generate mutually beneficial projects" (2010:53). The important distinction here, one that is often lost in discussions of collaborative archaeology, is between *equal* and *mutual*. Although reciprocity exists in the host-guest model, *equal* benefits for all partners is not the primary goal—tangible and explicit community benefits motivate the research while efforts are made to ensure the project is advantageous to some degree or another for all parties involved, that is, *mutual* benefits are conferred. Most often, reciprocity exists in the exchange of intangibles such as social relationships, credibility, and prestige. Archaeologists are furthering their careers by engaging in these types of research projects. They gain credibility in the eyes of funding agencies and academic institutions when they cite their partnership with

Indigenous groups. This, in turn, helps them gain prestige as they accrue grants. There is no doubt that archaeologists, museums, and other researchers receive benefits, often simply as a byproduct, from conducting ethical, community-engaged research with Indigenous groups. All the more reason, then, that researchers concentrate on ensuring that real benefits are also conveyed to the peoples whose heritage is under a microscope.

Principle One: Comprehensive Long-Term Relationships

Many collaborative archaeologists (e.g., Angelbeck and Grier 2014; Atalay 2012; Colwell and Ferguson 2008) advocate for long-term partnerships between archaeologists and communities. By its very nature archaeology is extractive. Unless working with existing collections, archaeologists destroy the very record they study. They often do so under significant time constraints—excavating typically needs to happen in warmer, dryer seasons and industry and climate change often pose a threat to cultural heritage, demanding quick action by archaeologists. In most cases, descendant communities do not employ archaeologists directly, and thus archaeologists have obligations and deadlines imposed by others, be it a university, CRM firm, or government agency. This further limits the time communities and archaeologists can spend developing long-term and large-scale projects. Instead, a series of short-term projects that are more typical for archaeological research can form the basis for a longer-term collaborative relationship (Angelbeck and Grier 2014:525). This allows the collaborators to build upon knowledge and shared experiences and facilitates ongoing negotiations regarding techniques, methods, and interpretations.

Adding to this, I stress that this relationship needs to extend beyond purely research-driven interactions. Engaging with the community outside a research setting, by volunteering at

community events or participating in cultural activities, shifts the power dynamic and creates a more equitable relationship because these non-research settings are created, driven, and controlled by the community. This is unlike typical research settings in which archaeologists control the interaction and are considered the "experts." Furthermore, for many descendant communities, an understanding of the past, its living meaning, and its importance does not exist solely within an archaeological context but permeates throughout daily life. Long-term relationships that extend beyond a research setting can give archaeologists a better understanding of these meanings. In turn, this allows archaeologists and their collaborators to produce more pertinent research agendas with nuanced interpretations of the past (e.g., Croes 2010; Martinez 2006; McNiven and Russell 2005).

My long-term relationship with both the Shoalwater and the Chinook Nation began in 2014. Elizabeth Sobel, an archaeologist who previously worked in the region, introduced me to Earl Davis and Tony Johnson after I expressed interest in working in the area. My first interaction was with Johnson when we visited archaeological sites on the Long Island Wildlife Refuge. This was an opportunity for me to see the types of archaeological sites characteristic of Willapa Bay, but more so it was a chance to hear Johnson explain the cultural importance of these sites to the contemporary community. Johnson outspokenly advocated for the living meaning of these places in his community. He spoke freely about the Chinook Nation's fight for federal recognition, and how archaeology might help demonstrate the Chinooks' rightful place in Willapa Bay both historically and presently. During this visit and over lunch afterward, he also conveyed the curiosities he and other members of the descendant community had regarding their cultural heritage on Long Island. These curiosities motivated the two seasons of fieldwork I

conducted on Long Island and were the springboard for the research agenda that unfolded over the ensuing years.

I met Davis shortly afterward, when I went to speak with him at his carving studio on the Shoalwater Reservation. Although we discussed the archaeological resources of Long Island, the relationship between the Chinook Nation and the Shoalwater, and other directly pertinent details, we spent most of our time talking about Native carving and woodworking techniques. Davis showed me his carvings and outlined the history and symbolism of the motifs, techniques, and arrangements woven throughout his work. In doing so, Davis elucidated living meaning by describing how Shoalwater cultural activities elaborate on Chinookan and Lower Chehalis heritage.

Over the next five years, Johnson and Davis welcomed me at numerous community events—from the Winter Ceremony to tribal nutrition classes. On each occasion, I witnessed how the Shoalwater and Chinook Nation embedded these activities in their Chinookan and Lower Chehalis cultural heritage and how archaeology might strengthen the connection. In these situations, I was a novice and I learned more about the community and their connection to their heritage than I ever could in an excavation unit. In particular, the community showed me how traditional foodways play an important role in their cultural life but are impeded by their restricted access to local food sources. The community outing to harvest Indian tea, described in Chapter 1, was one of the most elucidative of these events. This experience exemplified the Shoalwater's struggle to maintain traditional foodways and was crucial to developing a research strategy that might aid in this endeavor. I saw that archaeological investigations of traditional foodways could provide supplemental data for their health and nutrition course and help reverse

the onslaught of diabetes, cardiovascular disease, and obesity in their community through reviving traditional food practices.

Principle Two: Communicating with Compassion and Humility

In our collaborative partnership, we strive to communicate compassion, humility, and mutual respect. Davis identified a key problem common in their collaborations with outside groups, explaining that "one thing that has often bothered us and at times shuts us off from working with outside sources is the often sterile, clinical approach to the sciences" (Antoniou and Davis 2018). Our second guiding principle endeavors to correct this sterility.

While we recognize that objectivity should be strived for when interpreting and explaining the archaeological record, Davis and I jointly argue that compassion is a needed component of communicating when developing a collaborative partnership because it conveys an understanding that archaeology is the study of a living record for living people. The Shoalwater has current and strong connections to the sites and materials their ancestors created, but archaeologists have long ignored these ties. Communicating compassion recognizes both the connections archaeologists have long ignored and archaeology's complicity in the marginalization of Indigenous communities. Likewise, collaborative partners, especially archaeologists, need to communicate humility. Doing so expresses a consciousness and criticism of the typical power imbalance of research endeavors that place outsider academics as the possessors of authoritative knowledge of Indigenous history. Communicating with humility recognizes that collaboration is the co-creation of knowledge intended to benefit the community but valuable to all parties.

Davis illustrates this concept through the analogy of a stranger visiting your home:

> "If they walk into your living room sit abruptly on your couch and start asking you about your family history and what's in your closet you will most likely give them the absolute bare minimum amount of information and then ask them to leave, no matter how good their intentions are. Now if that same person first asks if they can chat with you at another time, gives you some space and time to process, then takes an interest in who you are as a human being…You may be more likely to answer their questions. This is especially true amongst our community; we are quite wary of outsiders and their intentions. It takes time and a bit of trust. Come to a public event and just observe. Ask the simple questions first. How are your kids? Is everyone doing well on the reservation? Be humble; if you attend a public event ask to help clean up or serve food. Show you can be a team player. Most of all don't be an Eyeye. Eyeye is an expression we use for someone that is the opposite of humble. 'I did this… I have this credential…I hold this office...I, I, I,' Rather say 'how can I help?'" (Antoniou and Davis 2018).

Communication with compassion and humility breeds mutual respect. It demonstrates that each partner is aware of the contemporary context of archaeological research and is critical of the historical inequities of the discipline. Collaboration, where partners communicate in this way and utilize empowering tools like CBPR, can repair this damage and be "a mechanism through which communities can claim research as a tool that they can conduct in harmony with core tribal values" (Atalay 2012:27).

Principle Three: Mutual Recognition of Skills and Knowledges

In our collaborative partnership, we recognize and value each person's unique set of skills and knowledges while simultaneously accepting the proprietary rights of Indigenous communities. Broadly speaking, this guiding principle echoes the sentiments of horizontalism, a form of decision-making that rejects hierarchy and works as an ongoing process in which each party is recognized as essential to the project despite possessing distinct skills and knowledges (Angelbeck and Grier 2014; Sitrin 2006). The term was first used to describe the bottom-up approach to the organization of modern social movements borne out of the global financial crisis

and later brought to archaeology by Angelbeck and Grier (2014). The benefit of horizontalism in collaborative archaeology is that it stresses the clear delineation of each party's distinct but valuable set of skills and knowledges that contribute to our understanding of Indigenous heritage. Each party has a distinct set of skills, ways of knowing, and perspectives that can benefit a project.

In our work, we recognize that the Shoalwater and Chinook Nation have a specific set of knowledge and skills pertaining to their oral histories, cultural practices, and traditional values spanning generations (Angelbeck and Grier 2014; Ferguson et al. 2015; Stump 2013). They also often have a clear vision of how an understanding of their history can be put to use within their community today. Davis, as the Cultural Director for the Shoalwater, and Johnson, as the Chairman of the Chinook Nation, represent the communities in this regard. I bring to the project my training and experience with archaeological theory, methods, and interpretation, including documenting the archaeological record through excavation, profiling, and mapping, technical skills in handling artifacts made of various materials and at various stages of decomposition, and interpreting an imperfect material record through statistical analyses and modeling.

At the same time, we work on the traditional territory of the Shoalwater and give priority to the rights and ownership of the community. Following the host-guest model, this guiding principle specifically speaks to Indigenous peoples' ownership of their cultural heritage and their rightful role as the stewards of that heritage. Indigenous peoples were the custodians of their cultural materials for thousands of years before colonization forcefully expropriated this stewardship and bestowed it upon archaeologists (Martinez 2006). This principle, therefore, gives equal consideration and respect to the skills and knowledges of each partner while viewing the stewardship role as one that Indigenous communities hold but may be willing to share with

archaeologists. This is the Shoalwater's home and history. We accept their sovereignty and view the archaeologist as a guest who obtains consent to undertake research with and for the community (Brady 2009; McNiven and Russell 2005). While we strive for reciprocity and believe we can meet the needs of all parties, our priority is to transform a scientifically rigorous understanding of the past into something that serves the community's goals.

This position also stems from legal considerations and the political rights of dependent sovereign nations (La Salle 2010). Indigenous communities, especially those that are federally recognized like the Shoalwater, are not just ethnic groups but political bodies and should be treated as such:

> "federally recognized tribes have rights to cultural property and heritage sites that are not ethnically-based special rights, but long-established legal rights derived from the unique political status that Indian tribes have in the United States formed over the centuries" (Colwell-Chanthaphonh et al. 2010:232-233).

This particular guiding principle, and the host-guest model more broadly, follows the cultural practices of the Shoalwater. Davis explained that this idea reflects how one should act when entering another person's home: as an archaeologist is often an outsider in the traditional territory of a descendant community, they are essentially a guest in a person's home and should act accordingly. In the recent past, the Shoalwater has not been afforded this consideration: "in tribal dealings with the outside world, especially cultural dealings, the other side has historically lacked the notion that this is us. We are the experts in content" (Antoniou and Davis 2018).

In our work, we attempt to rectify this historical omission by privileging the descendant's voice when deciding the subject matter of our research, how the knowledge garnered from our research will be disseminated, and how both the project and its outcomes relate to the cultural life of the community and can be used for capacity building. By capacity building, I mean the

process of developing, improving, and/or retaining skills, knowledges, tools, equipment, and other resources that help the community meet specified goals effectively and sustainably.[16] On the other hand, we privilege the archaeologist's voice on topics of assessing archaeological remains, documenting the archaeological record, and generating and interpreting archaeological data. In this way, the archaeologist is not the primary authority providing privileged information of all things cultural heritage, but a provider of a service based on their specific set of knowledge and skills, who works alongside the community to meet their needs (Angelbeck and Grier 2014; La Salle 2010; Little 2007; Sabloff 2008). Davis, Johnson, and I jointly decided and implemented this based on explicit discussions and view it as critical to a holistic study of the past.

The three principles outlined above guide our relationship because they clearly and continually delineate power and priorities. These principles are deeply intertwined and are at times difficult to parse out—each builds off the other to create a stronger, better-defined relationship. They are important, not because they are rigid in their definitions but because they place community benefit as the central priority of the relationship, reinforce the power of Indigenous communities, and produce mutual respect. They ensure that our interactions work towards shifting power and control back to the communities from which they have been stripped. Building a relationship using these guiding principles can be time-consuming, costly, and

[16] See Chapter 8 for a discussion of the specific ways in which our project helps build capacity for the Shoalwater and Chinook Nation.

complicated but it facilitates the process of collaboratively defining the archaeological research, methods, and objectives, as described below.

"This is Us": Collaboratively Defining Objectives, Research Questions, and Methods

When conducted in collaboration with the community, in adherence to their values, and motivated by their interests, archaeology can be a potent tool in cultural revitalization efforts. Here, I present the process by which Davis, Johnson, and I developed a research agenda using what I call a "continual loop of engagement" to persistently re-tether the research questions, methods, and objectives to community needs. I argue that designing our research using this process allowed us to craft a project that supports the communities' efforts to enhance well-being through the revitalization of cultural practices. Furthermore, I argue that through this process archaeologists can still conduct rigorous scientific research while being held accountable to the communities within which their research is situated.

This process involves reimagining the order of operations used in designing archaeological research. I suggest that when working with descendant communities, an archaeological project can be molded to community needs by changing the order of operations so that community objectives, that is the explicit ways in which the community would like to put the results of research to work, are identified first. These then determine the research questions, which then determine the methods. This process occurs cyclically, where the intended objectives, research questions, and methods are continually revaluated and adjusted vis-à-vis how they can benefit the community. They continue to inform each other as new things are uncovered (sometimes quite literally) and new connections to the community are made possible (or, in other cases, expected things are not uncovered, and anticipated connections cannot be

made). In this process, the steps remain very much the same as any typical scientific research design, but the order in which they are taken changes substantially.

Continual Loop of Engagement

Chip Colwell first used "continual loop of engagement" as a one-off term to describe the process by which Sonya Atalay carried out CBPR (2016:116). Although Atalay does not use the term herself, I like this term to describe the process the Shoalwater and I used to collaboratively define our research agenda for two reasons. First, it evokes a cyclical process, similar to that of a feedback loop in control engineering. When designing a control system, engineers use feedback loops to consider the system output, allowing the system to adjust its performance to meet the desired output response. Control engineers often work on devices that contain a closed system that they cannot adjust from the inside; modifications need to be made external to the system to direct the system to meet their objectives. This is an apt metaphor for the process of regularly reevaluating and modifying a research agenda about a finite and unalterable archaeological record based on its success in meeting the needs of the community. Second, the term engagement is particularly useful in that it has multiple meanings relevant to this process. Engagement is typically used in discussions of collaborative archaeology to mean *the action of establishing a meaningful contact or connection with.*[17] But, to continue the engineering metaphor, when in reference to a part of a machine or engine, engagement also means *the action*

[17] Engage (n.d.) 2nd definition in *New Oxford American Dictionary*

of moving into position so as to come into operation.[18] A continual loop of engagement references both of these definitions. A research agenda designed through this process reinforces meaningful connections between the archaeologist, the material past, and the community while simultaneously positioning specific parts of the research design so that they are best put into operation for the community.

Our continual loop of engagement utilized casual discussions of interests, priorities, and relevancy of archaeological research, among other things. We did not restrict our conversations to topics directly related to archaeology—interwoven were discussions of everything from family life, to the high school football team's new quarterback, to manifest destiny. I believe this was beneficial to the process because it opened up the dialogue to unexpected and fruitful connections between the research and the daily life of the community. Through these meandering discussions, we communicated with compassion and humility and allowed conversations to reflect the full spectrum of community priorities. This was also not a fast process. Our discussions would often last two or three hours; Davis often quips that his community is stoic initially but when they open up, it's nearly impossible to keep them quiet. I am also from a particularly discursive community and so this type of communication feels most comfortable for me as well. These conversations would often be long and informal but through them, I learned about the community and we communicated ideals, priorities, and approaches to knowing the past.

---

[18] Engage (n.d.) 4th definition in *New Oxford American Dictionary*

Defining Community-Centered Objectives

In my first conversation with Davis, he asked me bluntly: what do you want to get out of working with us? Years later, he revealed that this question was a test and that my answer determined whether the Shoalwater would collaborate with me. I passed the test by explaining to him that I wanted to get out of it whatever *they* wanted to get out of it. I explained that, of course, in working with them I would be furthering my career and benefiting in innumerable ways but ultimately the archaeological record represents their history and therefore they should be directing the research agenda so it best works for them. My hope, I clarified, was that together we could devise a project that used a scientific understanding of the archaeological record to help the community in some way. Davis was right to start the conversation this way, not with research questions or methods but with the crux of it all, how this work might be used by myself and by the community.

Davis and Johnson identified that revitalizing traditional foodways, reclaiming rights to local food sources, and establishing food sovereignty were objectives within the community; objectives that are essential to the health and well-being of their peoples, and that archaeological research might help them achieve. By engaging the archaeological record of past subsistence practices, we sought to use scientific ways of knowing the past and the "hardness" of the material record to supplement traditional knowledge and to strengthen the communities' connections to traditional foodways.

The Shoalwater and I developed our collaborative relationship through two years of exploratory research on the Long Island Wildlife Refuge. Through this work and our conversations about this work, we delineated our general intentions, interests, priorities, and values. So, in 2017, when the Shoalwater purchased Kindred Island, where the Nukaunlth

village site is located, we were well prepared to collaboratively define a research agenda for archaeological investigations of this site. Davis and Johnson recognized the importance of the Nukaunlth village site to the cultural patrimony of the community and, on behalf of the community, invited me to collaboratively conduct research there. Kindred Island is a mere stone throw away from the Shoalwater Reservation, therefore Nukaunlth is a piece of history that the community sees daily. Purchasing the island allowed the Shoalwater to conduct research on their own terms, to tell their own story. Based on the exposed midden deposits at the site, Davis and Johnson saw the site's potential to answer questions about traditional foodways and meet the communities' objectives. They also recognized that the archaeological evidence uncovered at Nukaunlth would be more valuable to the community than evidence uncovered from other sites because the Shoalwater oral histories do not specifically mention this village. Therefore, archaeological investigations of this site had the potential to reveal new insights supplemental to their oral histories.

Of course, when we began this process, we did not know precisely what we would find when excavating and were aware of the possibility that we wouldn't find the archaeological evidence needed to contribute to the identified community objectives. This is why the cyclical nature of the continual loop of engagement is so important. At this point in the process, it is of little consequence if the objectives that motivated the project cannot be derived from the archaeological record that is uncovered. This is because the objectives and/or the research questions will be reevaluated and adjusted to re-tether the project to community needs in some fashion or another (even if the initial fashion is deemed untenable). The important thing is to start the continual loop of engagement with the community-defined objectives because it ensures that the project is molded to community needs and not vice versa.

Defining Research Questions

When Davis first visited Nukaunlth after the Shoalwater purchased Kindred Island, he literally tripped over a whale bone that was exposed in surficial shell midden deposits. We let this opportune discovery influence our research agenda and took this as a sign that the site contains shell midden deposits rich in subsistence refuse that can address both shellfish specific research interests and those pertaining to the broader ancestral foodways. We were fortunate that surface exposure revealed portions of the midden deposits at Nukaunlth; these exposures hinted at the type of material culture lying beneath and informed our research questions, knowing that it was important to the Shoalwater that our work be done at this culturally important site.

When defining our research questions, we used a continual loop of engagement to take into consideration the community-defined objectives, as well as the materials of the past available for investigation. To help the Shoalwater tell the story of traditional foodways sustaining healthy Chinookan and Lower Chehalis peoples in the past, our research considers the role of marine resources in the subsistence base of these peoples in Willapa Bay, Washington in the Late Pacific, protocontact, and postcontact periods (AD 200/400–1850). Specifically, I focus on shellfish, which are abundant, reliable, and available year-round in this region. Many archaeologists view shellfish as merely a starvation food (Chilton and Hart 2009; Colwell and Ferguson 2008) and, despite their having been harvested in substantial numbers, dried, and traded in many parts of the greater Northwest Coast region (Cannon et al. 2008, Wessen 2008), archaeologists have not incorporated shellfish into broader theoretical modeling. Ethnohistorical and oral historical accounts suggest that, among Willapa Bay Chinookan and Lower Chehalis peoples, shellfish may have been an important resource that people managed, controlled, and/or

harvested intensively to meet important dietary and/or economic needs of the community rather than a low-priority resource, consumed only opportunistically. However, there are currently too few archaeological data to determine the true nature and extent of Late Pacific/early postcontact shellfish use in the region. To address this knowledge gap and advance the Shoalwater's efforts to revive traditional foodways, we developed a research agenda that centers on a detailed analysis of the shell midden associated with the Nukaunlth village site to determine (1) the makeup of the larger subsistence system within which shellfish consumption was situated before European arrival and into the early postcontact era and (2) the importance of marine resources, particularly fish and shellfish, among ancestral Chinookan and Lower Chehalis peoples.

More specifically, I test two alternative explanations for the shellfish species composition and midden characteristics of this site:

1. Midden composition reflects natural variability in shellfish species distribution and abundance. That is, the midden composition at Nukaunlth faithfully tracks natural spatial and temporal shellfish distributions that are primarily conditioned by water temperature, water chemistry, salinity, and substrate type. Changes in midden characteristics through time owe primarily to macro- and micro-environmental fluctuations. Composition does not, therefore, indicate selective harvesting, management, or control of shellfish resources, and this pattern would suggest shellfish did not play a significant role in the economic, or social systems of those living at Nukaunlth. Shellfish may have been gathered in significant quantities, made up a significant portion of the diet, and acted as a staple resource of subsistence but, when collected, were taken opportunistically and at a low level of investment.

2. Midden composition differs significantly from that expected under natural conditions. Characteristics including species richness and evenness and age profiles indicate

selective and/or intensive harvesting, which may reflect changes in harvesting technologies, intensities, and/or management strategies. While some temporal changes in shellfish consumption may be partly in response to natural fluctuations in shellfish availability, variability in midden composition is primarily due to the increased (or decreased) importance of shellfish at Nukaunlth. Shellfish were a key resource, either for subsistence or for its role in Chinookan/Lower Chehalis economic systems.

These alternatives are not mutually exclusive. Midden composition may simultaneously reflect both low-level and intensive harvesting, perhaps according to species since shellfish species differ in their abundance, accessibility, predictability, and nutritional value. Harvesting intensity might also have changed through time. Multiple lines of evidence are used to evaluate the alternatives outlined (described in detail in Chapter 5). Studying these lines of evidence at Nukaunlth alone cannot define the role of shellfish harvesting among the Chinook/Lower Chehalis people writ large. However, the product of these investigations can contribute significantly to the Shoalwater and Chinook Nation's revitalization efforts and be evaluated against patterns previously identified throughout the region to construct a more holistic representation of change and continuity in Chinookan/Lower Chehalis subsistence.

Historical accounts and limited archaeological investigations show that Willapa Bay Chinookans/Lower Chehalis had a similar socioeconomic framework to Columbia River Chinookans. Archaeological investigations at the Middle Village/McGowan, Martin, and Minard sites hint that the Chinookans/Lower Chehalis had a similarly diverse and inclusive diet in Willapa Bay, and that they may have practiced some resource control and management. Given that shell dominates the assemblages at the nearby Martin and Minard sites, I expect that midden composition differs significantly from that expected under natural conditions and that the

abundant shellfish resources available in Willapa Bay were harvested intensively, incorporated heavily into Chinookan/Lower Chehalis diet, and played a similar role to other gathered foods. More specifically, I expect to see the management of specific shellfish resources, and variable intensity of harvest across shellfish species.

This hypothesis is supported by several late 19th- and early 20th-century ethnohistorical sources. One Chinookan text suggests that beaches where shellfish might be gathered may have been under the control of families and villages, or "owned" by individuals (Boas 1894:88–91). James Swan (1857) noted that large groups of people came to Willapa Bay in the spring to procure clams for their own consumption and oysters to sell to Euro-American settlers. Swan (1857:86) also notes that dried clams were an important item for trade with Native groups in the interior and that large quantities were often carried from Willapa Bay up the Columbia River. Verne Ray's (1938) report corroborates some of the trends described by Swan. While the Olympia oyster (*Ostrea lurida*) was the most abundant shellfish species in Willapa Bay, Ray suggests that other shellfish species, including cockles (*Clinocardium nuttaili*) and clams (various species), were more important to subsistence. Together, these lines of evidence suggest that shellfish exploitation may have played an important role in Chinookan/Lower Chehalis lifeways, and a shellfish-focused research agenda can strengthen our understanding of Chinookan subsistence systems previously gleaned from archaeological investigations of sites along the Columbia River.

Following the premise that "archaeological research should create usable pasts and sustainable presents" (Hauser et al. 2018:546), Johnson, Davis, and I established this research focus by bringing our unique areas of knowledge and expertise together to identify the research

questions that could best benefit the community and achieve their self-defined objectives. The focus on shellfish was, in large part, my doing. I suggested this focus for several reasons. As mentioned above, I saw that there was a general disregard for shellfish in the archaeological understanding of subsistence. This seemed contrary to what I knew to be the Indigenous understanding of past foodways in the region. I believe this is due not to a conflict between the two ways of knowing, but a knowledge gap that exists in current archaeological research. From our research on Long Island, I saw that the ancestral places of the Lower Chehalis and Chinookan peoples contained rich shell midden deposits that had the potential to address this knowledge gap while shedding new light on the foodways that are so important to the Shoalwater. While I proposed a focus on shellfish, Johnson and Davis urged that we expand this research to address the role of marine resources more generally within the larger subsistence system. In this way, the continual loop of engagement helped to tie the research questions back to the community objectives. Through this process, it became apparent that a purely shellfish-focused research agenda was too narrow a scope to properly contribute to the communities' objectives; such a focus would perhaps help the community regain shellfish harvesting rights and be useful in encouraging the consumption of shellfish, but it would not help the community revitalize their traditional foodways more broadly, nor would it help them reclaim rights to other crucial marine resources. Instead, contextualizing marine resource use would help us address questions about the *relative* importance of shellfish in the broader subsistence system and provide archaeological evidence of traditional foodways writ large that is maximally useful to the Shoalwater's revitalization efforts.

Defining Methods

Johnson, Davis, and I chose methods that would best address the research questions, described above, according to scientific ways of knowing while complementing the Shoalwater's traditional ways of knowing and conceptions of their ancestral landscape. The methods themselves are described in detail in chapters 5, 6, and 7. Relevant here is the process by which we defined the methods.

The Shoalwater and I agreed that I would take the lead in defining appropriate methods. We recognized that my training has equipped me to do so. And contrary to the common narrative, I used that authority to limit the amount of the site we excavated. I was highly conscious of my capacity to catalog and analyze the large volume of data that was uncovered when excavating a shell midden, and I felt it was my responsibility to only excavate what I could manage given time constraints and funding. Although Johnson and Davis understood my position, agreeing to a small-scale methodology involved using a continual loop of engagement to frame numerous reoccurring discussions that we constantly brought back to the feasibility of meeting community needs and addressing the research questions. Ultimately, we decided both were possible without site-wide exposure if we used fine-scale techniques that could extract the most amount of information from limited materials.

While I was largely responsible for determining how and how much we excavated, where we excavated was an on-going negotiation between Davis, Johnson, and myself. These negotiations involved walking the site for hours, bringing together our different ways of knowing to discuss site formation processes, past coastlines, access to crucial resources, and oral histories of village organization and house size. These discussions were critical to our understanding of the site, house location, and activity zones. Because there have been so few archaeological

investigations in Willapa Bay, and no house structures excavated before our work, we could not rely on previous archaeological knowledge as to the structure or location of houses. The Shoalwater, however, has abundant knowledge on the organization of their ancestral villages and houses and by accessing this knowledge we had an advantage when interpreting the organization of the village to best place excavation units. Placement of excavation units happened piecemeal using a continual loop of engagement as we searched for the maximally useful unit placement. When excavating we learned new information about site contents and organization, and we evaluated that information based on its pertinence to the research questions and its ability to contribute to the community's understanding of past foodways. This information then informed the position of the next excavation unit so that it built upon information gathered from previous units.

Discussion

Collaborative archaeology calls for an approach that starts with the community to create a more ethical, respectful, and reciprocal practice of archaeology that is situated within social and political movements promoting community well-being. In this chapter, I put forth how the Shoalwater, Chinook Nation, and I worked together to create a collaborative partnership and used that partnership to jointly devise our research strategy that uses scientific data to meet the needs of the descendant community.

The principles that guide our collaborative relationship ensure compassionate communication, breed mutual respect, and foster long-term investments between partners. They represent our values, workflow, and communication styles. Yet, each collaborative partnership is necessarily unique, and so the model described in this chapter is not meant to be prescriptive.

Instead, it is put forth so that scholars and Indigenous communities might draw inspiration from it and adapt it to fit their own needs. Likewise, just as each collaborative relationship differs based on its unique set of circumstances, defining a research agenda through a continual loop of engagement will look different for each project. Some collaborative projects may use formal interviews, focus groups, and community meetings. They may choose to schedule structured meetings to reevaluate the process at regular intervals. Others may choose a more fluid approach. As the collaborative relationship develops, each partner will get a feel for each other's preferred communication style, pace of communication, workflow, and what feels most comfortable for everyone involved. For us, we allowed the process to develop organically, but others may find a different approach more appropriate. Again, I describe in detail what this process looks like for us in the hopes that others will be able to draw inspiration from it and adjust what is put forward here to meet their own specific situation.

I recognize that our circumstances differ from others, and in many ways, we have not faced the same obstacles other collaborative partnerships might encounter. The Indigenous communities of Willapa Bay have an excellent working relationship and support each other's cultural endeavors. This is an enormous benefit to our research. Furthermore, our research takes place on tribal land and deals with the relatively recent past. Therefore, there is little argument over "who owns the past," as is typical when studying deeper history on contested land. There is also little argument within the tribe over how their cultural program should be run. The Shoalwater Bay Tribal Council gave Earl Davis and Tony Johnson complete control over this program and this largely eliminated inter-tribal bureaucracy. Furthermore, the federally recognized status of the Shoalwater is undoubtedly an advantage that unfortunately many other Indigenous communities do not have. On a more personal level, I recognize that my status as a

graduate student, and not a tenured professor, means that I have less influence in our political economy of knowledge and therefore lessens the traditional power-imbalance between the tribe and myself. Likewise, Davis and I are of the same generation and are in many ways peers. For these reasons, we started on a more equal footing as partners than may be common among other collaborative relationships.

Our biggest challenge has been in working within multiple jurisdictions. Our approach does not always fit neatly into the model put forth by permitting or funding agencies. Developing a collaborative relationship using the three guiding principles put forth here is time-consuming, as is devising a research agenda using a continual loop of engagement. Permit and funding applications often require projects to adhere to a specific structure and tight timeline more typical of standard research design. The fluidity entailed in conducting research in the way I described in this chapter does not always lend itself to these parameters. This necessitates some in-depth negotiations and explanations, and thus far, we've been able to overcome these challenges by presenting a unified voice and mutual support.

Whatever challenges we tackled in conducting this work collaboratively are vastly outweighed by the benefits. When done ethically and with community well-being in mind, archaeology can be an act of survivance—that is, an active sense of presence, a continuation of stories, and "renunciations of dominance, tragedy, and victimry" (Vizenor 2010:vii). When Indigenous communities combine archaeological data with their Indigenous ways of knowing, it is an "act of proclaiming their relationship with homelands and ancestors" (Atalay 2018:544) and it bears witness to their history. Collaboratively designing the archaeological research agenda pushes forward the Shoalwater's efforts to revive traditional foodways by ensuring that our research produces public goods and lends credence to the tribe's battle for legal rights to

resources (described in detail in Chapter 8). Overall, the Shoalwater and Chinook Nation believe this collaboration is repairing the damage done by past archaeologists. Davis summarized their sentiments, saying:

> "While we often shy away from shovels in the ground, the approach of enlisting us to work side by side has already generated a sense of pride and ownership in the community. That combined with a site on land currently owned by the tribe has given us a feeling that for the first time in a long time we are in control of our story. That is hugely empowering to a culture that is struggling to survive in modern times" (Antoniou and Davis 2018).

Chapter 5 Archaeological Investigations at Nukaunlth Village

The Shoalwater chose Nukaunlth village as the focus of archaeological investigations pertaining to ancestral Lower Chehalis and Chinookan subsistence practices because of its particular cultural importance. Nukaunlth is ideal for community-based archaeological research in four ways. First, the site is nearly adjacent to the Shoalwater Reservation, a mere 1.25 miles (2 km) from tribal headquarters (Figure 5.1). It is visible from many people's backyards. It is, therefore, a familiar place to the community, a landscape seen daily, and a constant reminder of their ancestors. The geographic proximity of the site to the reservation cements the connection between those living at Nukaunlth in the past, and those living on the reservation today.

Second, in 2017, the Shoalwater purchased Kindred Island, the land on which Nukaunlth sits. This provided an opportunity for the Shoalwater to conduct research at this site on their own terms and motivated by community needs. Research initiated by the Shoalwater at this site, following the purchasing of the land, is in and of itself an act of sovereignty.

Third, Nukaunlth is rich in data pertaining to subsistence practices. As a village site with substantial shell middens, it contains abundant subsistence refuse that can be systematically analyzed and lend insight into the traditional foodways that the Shoalwater were eager to learn more about and adapt to fit the current needs of the community. Lastly, Nukaunlth was occupied in the Late Pacific, proto- and postcontact eras. This could prove important when making legal claims pertaining to the traditional practices of the Shoalwater around the time of the executive order that gave the Shoalwater their reservation and subsequent federal recognition.

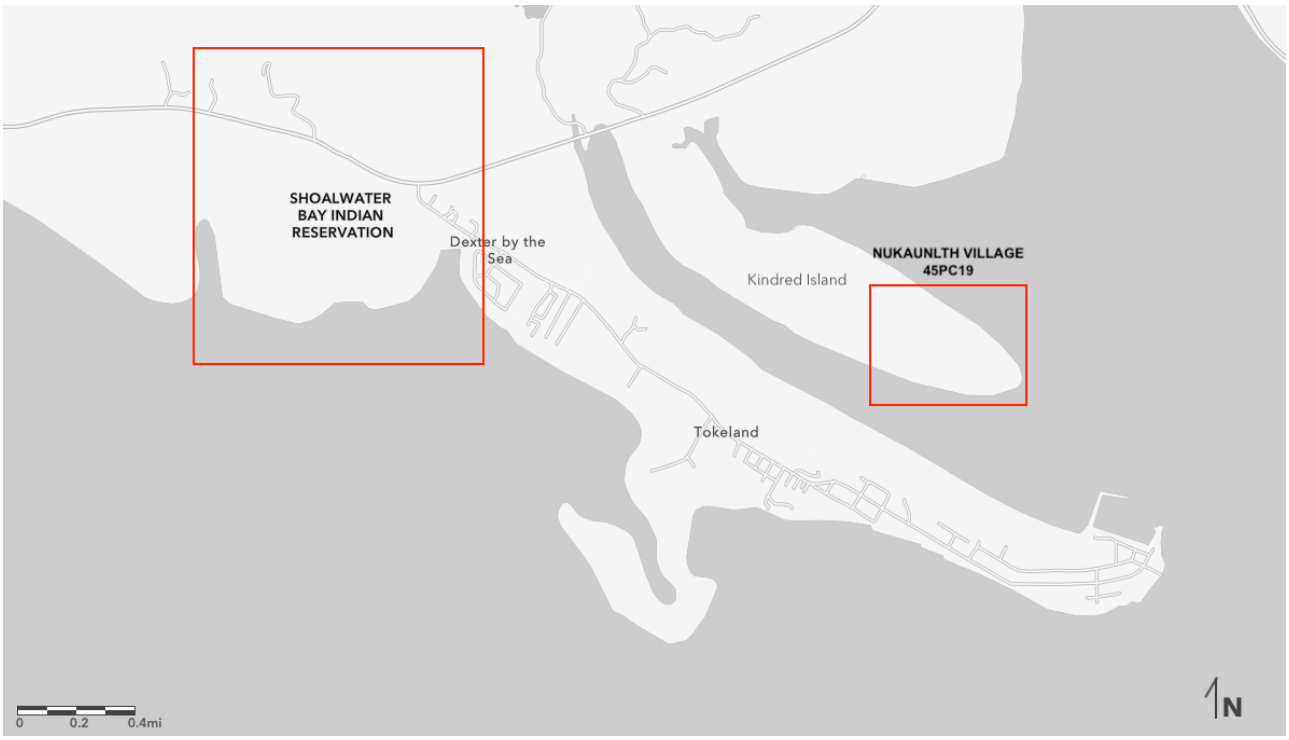

Figure 5.1 Location of Nukaunlth in relation to the Shoalwater Reservation

In its broadest sense, archaeology is the study of our ancestors and predecessors through the materials that they left behind. It is useful in that it provides tangible and direct evidence of past human behavior. Other documentation of the past, such as written or photographic records, present history through the lens of the recorder, replicating their sentiments, positionality, and decisions on what, exactly, merits remembering. Such filtering is often summed up by the adage: *history is written by the victors*.

Archeologists study the material remains of the past because they are devoid of that filter. However, archaeology is not without limitations. Instead, the archaeological record is subjected to environmental conditions that preserve some materials—for example, bone, shell, and stone—better than others—such as wood, fiber, fabrics, and leather. Precisely what stands the test of time, physically, depends on the environment within which it is embedded. Fortunately for our investigations of Nukaunlth, the materials that reflect ancestral subsistence practices—food

remains and tools of food production—are those that typically survive the damp and cool Northwest Coast environment.

Archaeology is also limited by the fact that the very act of collecting past materials through excavation destroys the context in which they were discarded. This contextual information can be critical to understanding past human behavior. Archaeologists, therefore, try to mitigate this as much as possible by using precise methods of recovery, observation, and documentation. That is why throughout this chapter and those that follow it, I document the archaeological investigations at Nukaunlth in exhaustive detail, through recording site characteristics in three dimensions, presenting photographs of items as they were found (i.e., *in situ*), etc.

The materials left behind by past peoples do not speak for themselves. Researchers ask questions and answer them with the careful study of these items and their context. The questions that researchers ask can come from common sense (e.g., are these shells the byproducts of making food?), Indigenous knowledge and frameworks (e.g., were these shells harvested from nearby?), or based on theoretical ideas about the development of hunter-gatherer societies (e.g., were they harvested sustainably?). In this dissertation, research questions are rooted in all of the above. The methods used in hopes of answering our research questions come from a wide range of fields. Throughout this discussion, I touch on methods from physics (radiocarbon dating), ecology (marine species habitat requirements), marine biology (shell growth patterns and rates), nutritional science (the food value and health consequences of consuming local resources), and many other fields.

The foundation of interpretations created by laboratory research grounds both the testing of both anthropological theories and the legal understandings of Shoalwater and Chinook Nation

usufruct rights. Archaeology is one of many ways of knowing the past. It is imperfect, as all ways of representing the past are, and is arguably no better than oral histories and traditional knowledge at doing so. But it can serve descendant communities in their cultural revitalization efforts, particularly when such efforts must be negotiated within a Western system that prioritizes this type of knowledge.

Objectives

To assist the Shoalwater and Chinook Nation in telling the story of traditional foodways sustaining Chinookan and Lower Chehalis peoples in the past, archaeological investigations at Nukaunlth primarily sought to gather evidence to determine 1) the importance of marine resources, particularly shellfish, among Chinookan and Lower Chehalis peoples living at this ancestral site, and 2) the makeup of the larger subsistence system within which marine resource use was situated before Euro-American influence in the area and in the proto- and postcontact periods. Specifically, archaeological investigations at Nukaunlth centered on a detailed analysis of shell midden deposits to test two alternative explanations for the species composition and midden characteristics of the site, described in Chapter 4. In Chapters 6 and 7, I address these objectives explicitly. Chapter 6 details insights into the diet composition as evidenced through faunal and macrobotanical analyses. Chapter 7 outlines information on the seasonality, procurement locales, and shellfish harvesting strategies inherent the subsistence practices at Nukaunlth and compares this information to what is known of subsistence practices from other sites in the region.

As no previous archaeological work has been conducted at Nukaunlth, basic information about the use of this site is valuable to the Shoalwater and Chinook Nation and crucial to contextualizing subsistence practices and marine resource use in the past. As such, this chapter

describes the methods and results of archaeological testing at Nukaunlth, and the information gleaned from such endeavors pertaining to site dimensions, physical characteristics, stratigraphy, and disturbances, as well as chronology, village organization, household size, population estimates, and cultural activities.

Lines of Evidence

To meet the objectives and test the hypotheses described in Chapter 4, the following aspects of Nukaunlth must be evaluated.

Chronology: A reliable chronology (i.e., an understanding of the age of items and features) is requisite for understanding whether the shell midden at Nukaunlth represents a single event or multiple events. Furthermore, precise chronology situates Nukaunlth village in Chinookan and Lower Chehalis cultural history and facilitates comparisons with sites in the Greater Lower Columbia region. An understanding of chronology is also critical to using evidence from Nukaunlth in the Shoalwater and Chinook Nation's legal endeavors, as the U.S. judiciary emphasizes the historical activities of Indigenous groups when determining legal entitlements.

Rate of Deposition: Shell midden depositional sequences provide insights into the intensity of shellfish harvesting and other subsistence related activities. Diachronic changes in the intensity of subsistence-garnering activities (i.e., shellfish harvesting, fishing, hunting, etc.) may be influenced by changes in availability, need, harvesting technologies and strategies, or social factors such as changes in dietary preference. Environmental, species composition, and artifactual data (discussed below) will help evaluate each of these possible explanations.

Material Culture: While the other lines of evidence described here will help determine the extent to which cultural factors influenced midden composition, information regarding material culture—such as FMR (Fire-Modified Rock), lithics and chipped-stone tools, prestige and European manufactured trade items—helps to identify particular cultural factors and link shell midden data to the larger social and economic systems of Chinookan/Lower Chehalis life. Non-faunal material culture is a relatively small portion of materials recovered. However, typological differences in these artifacts can substantiate trends exhibited in other dimensions of the analysis. For example, the variable presence (or absence) of prestige and/or exotic goods associated with patterned shellfish consumption within the household middens at the Nukaunlth village may hint at the social significance of shellfish harvesting and the maintenance of lineage-owned resource locales. Conversely, the absence of significant material culture may substantiate other lines of evidence that indicate shellfish to be a low-priority resource. Furthermore, material culture such as FMR, tools, and tool manufacturing byproducts elucidate the household activities that occurred at Nukaunlth, giving insight into the daily lives of those who resided there.

Diet Composition: Critical to understanding the importance of marine resources, specifically shellfish, in Chinookan and Lower Chehalis foodways is understanding the extent to which other food resources were utilized. Faunal and archaeobotanical analyses of other subsistence remains combined with archaeomalacological data will determine the relative proportions of shellfish, fish, mammalian, avian, and botanical species within the site assemblage. Analyses of diet refuse within the household middens at the Nukaunlth village will contribute to an understanding of the other foods that were consumed and situate shellfish and marine species consumption within the broader subsistence system. Detailed information about

the types of resources consumed and the degree to which they were utilized will help establish a spectrum on which to place shellfish harvesting relative to other subsistence practices. Diet composition is specifically addressed in Chapters 6 and 7.

Age and Size of Exploited Shellfish Species: The age profiles of exploited species—as determined by growth-stage profiles—should reflect the selective harvesting and management of these species and the harvesting technologies used by the Chinook/Lower Chehalis. Intensive management of populations (e.g., selective harvesting of senile-stage specimens) indicates that shellfish were not consumed opportunistically (Cannon and Burchell 2009). Targeted exploitation of a single age class may reflect a particular management strategy, whereas indiscriminate harvesting of all age classes suggests shellfish intensification (e.g., bed "stripping" versus selective plucking; Whitaker 2008). Further information on the intensity of harvesting and the material culture associated with production at sites will help determine the impetus for any (synchronic or diachronic) differences in age-selection.

Growth-stage profiles (age) can also be used in conjunction with shell size to reveal changes in species life histories. Size-at-age can, in turn, indicate changes in the intensity of procurement and/or the environments from which shellfish were procured (e.g., changes in climate, sediment, salinity, etc.). A decrease in size-at-age of species being harvested coincident with an increase in the rate of deposition would indicate a more intensive use of those species. However, if the deposition rate remains constant, this may suggest that environmental factors are the more likely explanation. Few analyses have been performed on Willapa Bay shell assemblages. However, marine ecology research in Willapa Bay over the last 30 years provides the fundamental ecological information needed for this high-resolution archaeomalacological

growth-stage profiling and size-at-age analysis (Banas 2005; Banas et al. 2004; Pritchard et al. 2015). I address this line of evidence in Chapter 7.

Site Background

The Nukaunlth village site is located on Kindred Island in the northwest corner of Willapa Bay, Washington (

Figure 5.2). Kindred island is protected from the open Pacific Ocean to the southwest by a finger of land on which the Shoalwater Reservation lies. Over at least the last 250 years, erosion has drastically changed the topography of northern Willapa Bay. Historical maps indicate that Kindred Island was once much farther away from the open ocean, perhaps as far as 4 miles (7 km) (Figure 5.3). The island is approximately 150 acres (60 ha), extending roughly 1 mile (1.6 km) southeast–northwest, and rises minimally above sea level. It is flat land that was once forested with spruce. The northwestern half of the island is surrounded by marsh, making it appear as if it is a part of the mainland. However, this thick marsh is due, in part, to the diking of Kindred Slough to the south and Teal Duck Slough to the north of the island. This marsh was likely significantly reduced when the sloughs were allowed to flow naturally. Numerous small creeks flow near Kindred Island, and there is a natural spring on the mainland, approximately 2,000 feet (600 m) from Kindred Island. There no known surface source of freshwater on the small island itself. The mouth of Cedar River, one of the larger rivers flowing into Willapa Bay, is approximately 1.5 miles (2.5 km) away.

Figure 5.2 Willapa Bay and Nukaunlth village

Figure 5.3 Erosion from 1852 to present at the mouth of Willapa Bay
The red dashed line indicates the current coastline. Base map from Google Earth. Top map from Giles Ford, 1866.

Since the arrival of Euro-Americans in the area, Kindred Island (and consequently Nukaunlth village) has seen several different owners. The first name attached to Kindred Island, H.S. Gile, can be seen on an 1858 Cadastral Survey Map (Figure 5.4). Henry Smith Gile was a Euro-American surveyor and oyster farmer who spent considerable time in Pacific County from 1854 until 1883. Gile was known for owning extensive property in the region and having a keen interest in land claims (Anon 1903:835). The historical records do not suggest that Gile resided on Kindred Island or conducted any business there. It is more likely that this property was one of Gile's many realty investments. The next known owner, Dennis Norris, purchased this land from the General Land Office on May 15, 1869. From 1869 to 1892, there is a gap in the deed records; however, we know that in 1893, L.N. Eklund sold the property to W.S. Kindred from which the island gets its modern name. In 1941, N.S. Kindred sold the land to M.A. Peterson,

and in 1943 it was sold to the Nelson family. The Nelson family then sold the property to the Shoalwater in 2017.

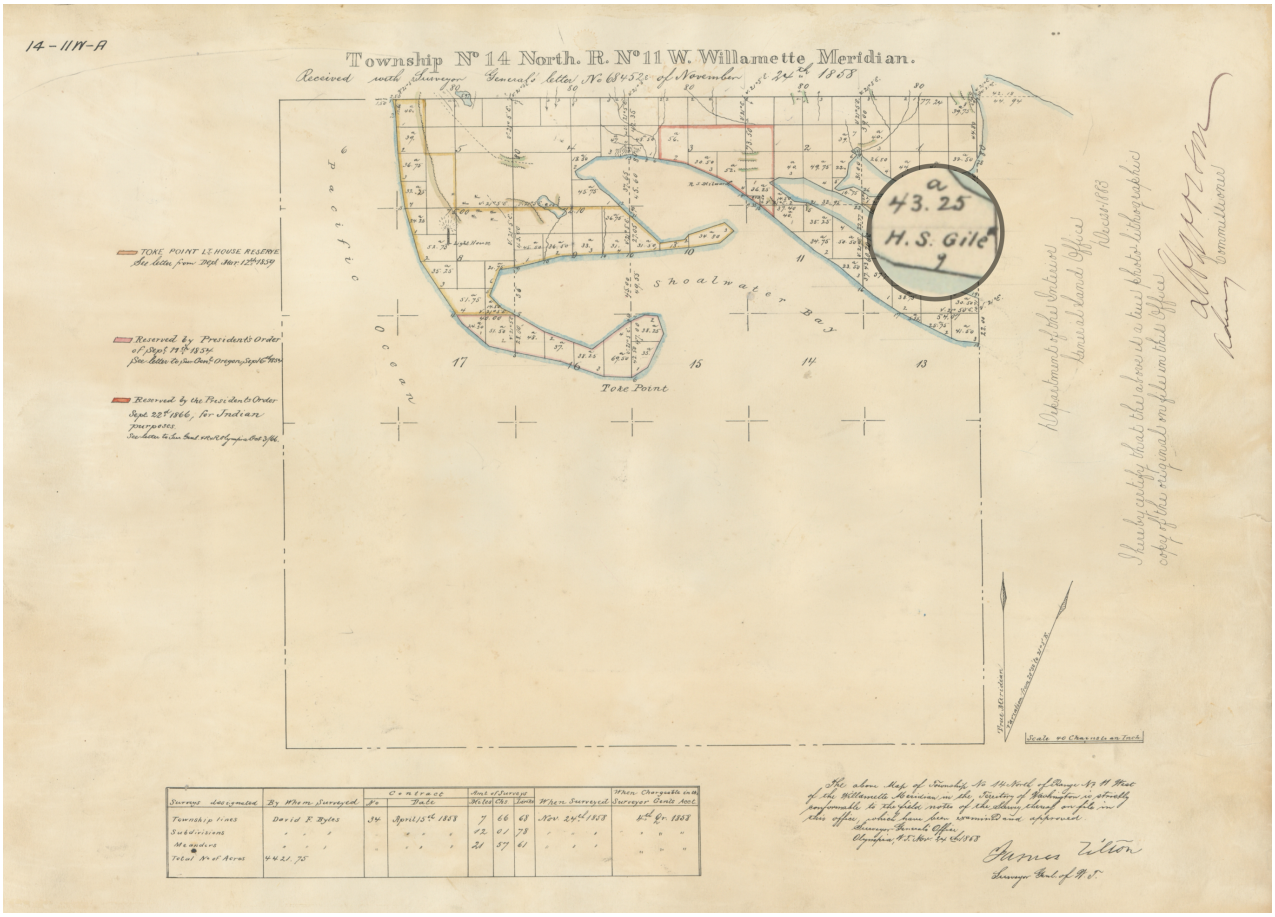

Figure 5.4 1858 cadastral survey map Showing H.S.Gile associated with Kindred Island
Source: Bureau of Land Management – Oregon State Office

Limited information is available regarding the historical industries that occurred on the island, and most of what is known is from speaking to members of the local community. Knowledge of Kindred Island industries begins with the Nelson family. In recent history, the Nelson family owned a crabbing and fishing business, and they used the west end of the island for processing. Locals also indicate that the west end was used for farming. The topography of the west side of the island confirms this, as this section has been plowed. We also know that the

Nelson family used this island as a stock ranch; however, there is some debate over how much they utilized the east end of the island for these activities. Most notably, the Nelson family logged the island around 1947, and very few large trees exist on the island today.

Historical maps of the island do not indicate that any substantial structures were ever built on top of the site. Members of the Nelson family mentioned some improvised structures used for the ranching and crabbing businesses on the western half of the island and remnants of these buildings can be seen today. The most substantial modification is the gravel road that travels north-south across the center of the island. This road was constructed at some point during the Nelson's tenure on Kindred Island.

R.D. Daugherty first recorded 45PC19 on Kindred Island in 1947. In his report, he describes the site as a "slight shell deposit covering most of [the] interior of [a] small island in [the] bay." At the time of recording, Daugherty estimated that the site extended intermittently for half a mile in its longest axis and 100 yards in width with deposits of shell up to 0.5 meters (2 ft) in depth (Figure 5.5). While his site report stated that no artifacts indicative of habitation were observed at the time of recording, he did suggest that the potential for habitation was excellent at this site.

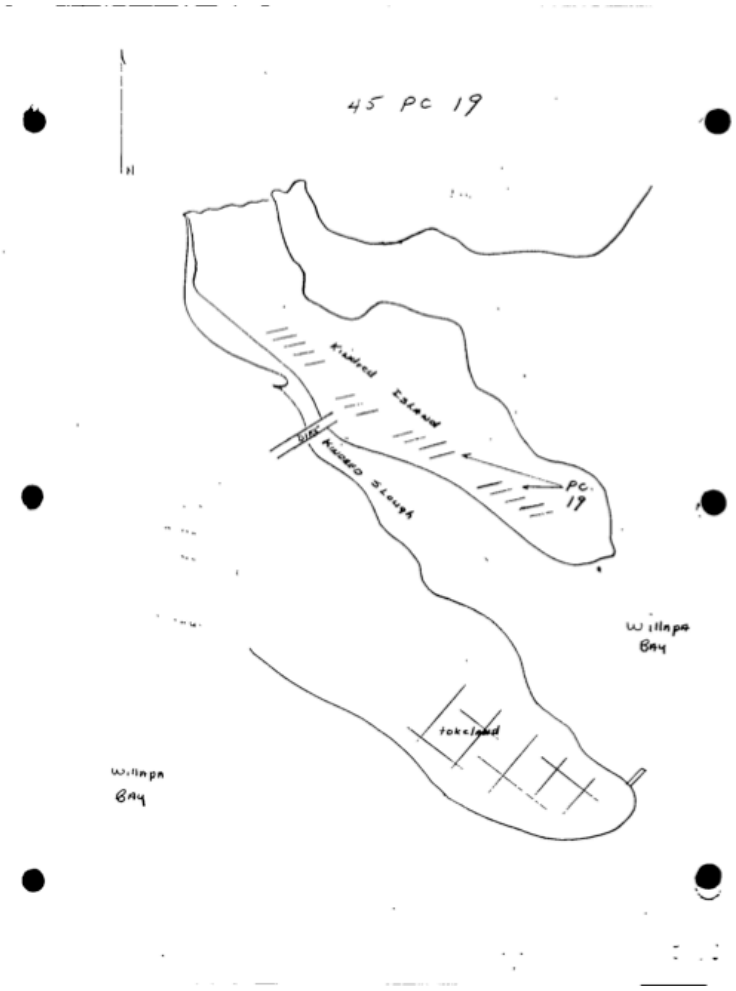

Figure 5.5 R.D. Daugherty's 1947 site map of 45PC19

Prior to the archaeological investigations discussed below, no formal fieldwork had been conducted at Nukaunlth beyond Daugherty's initial site description. Shortly after the Shoalwater purchased this land, Earl Davis, the cultural director for the tribe, went to the site and identified surface materials including considerable exposed midden deposits, fire-modified rock, numerous faunal specimens, and a possible stone tool. Jon Daehnke from the University of California, Santa Cruz later visited the site with the Shoalwater and wrote a letter recommending further

study there. In particular, Daehnke suggested that the several depressions within the site might be house depressions.

The ethnographic records of the region, while relatively robust, make no mention of an Indigenous village or archaeological site at this location. James G. Swan, who resided in Willapa Bay from 1852 to 1855, took particular care to document Native villages in the area, but none of his accounts can be firmly linked to this site. Oral history from the Shoalwater suggests that 45PC19 corresponds to the ancestral Nukaunlth village. However, other than a place name, the oral histories do not speak directly of this village. Many locals residing near Kindred Island know of the "shell piles" on the island, and through the years, artifact collectors and looters have likely taken interest in the site. However, the lack of any obvious Euro-American artifacts on the surface possibly deterred people from disturbing the site, and no looting holes were present when the Shoalwater purchased the land.

Archaeological Investigations

Surface manifestations of the Nukaunlth village site included patches of exposed midden deposits (likely from rodent burrows, animal trampling, and/or road in-cuts) in two areas of the island and a possible house depression in one of the two areas (Figure 5.6 & Figure 5.7). Exposed midden deposits included shell, bone, FMR, and possible stone tools in a dark soil matrix. Based on these manifestations, fieldwork at Nukaunlth was designed in two parts: (1) systematic probe survey and (2) sampling of shell middens and household deposits, the specific goals of which were:

1. **Systematic Probe Survey:** to determine the horizontal and vertical dimensions of the site, along with basic data pertaining to the soil and stratigraphy across the entire site.
2. **Sampling via excavations:** to obtain data and samples for analyses from shell middens and household deposits that pertain to the lines of evidence described above.

Probe Survey

Before starting the systematic probe survey, Dr. Lyle Nakonechny, volunteer Paul Skomsvold, and I established a site datum and mapped the site via transit level and handheld GPS. This process established a site grid from which to base survey transects and test excavation locations. The placement of site datum (designated 400N400E) was based on surface finds, exposed midden deposits, and the location of possible house depressions. To ensure that the site datum could be identified in future field seasons, steel rebar was embedded in the ground at the precise location of the datum. The steel rebar was then encased in PVC pipe and spray-painted orange. In addition to the primary site datum, we placed a sub-datum towards the center of the site. This sub-datum was marked by aluminum tubing embedded in the ground and spray-painted orange.

The probe survey portion of the fieldwork was carried out between August 30, 2017, and September 6, 2017, and with the help of members of the Shoalwater and Chinook Nation and volunteers.[19] This survey used three-quarter-inch–diameter probe samples taken at 10-meter intervals in 10-meter transects in two distinct areas of the site (Figure 5.6). I chose a ¾" probe, as opposed to one with a larger diameter, based on my positive experience with this method during other exploratory surveys in Willapa Bay (see Antoniou 2014). There are several advantages to using a probe of this size. First, such a probe is less labor-intensive, which allows for a more rapid assessment. Second, it is less likely to be blocked by large rocks or other

[19] Thank you to Earl Davis, Tony Johnson, Lyle Nakonechny, Paul Skomsvold, and Kenny Waltman for your generous help.

obstructions. Third, a probe of this small size can more easily hold sandy sediments in place. In my experience using larger augers in the region, sandy soil can slip from the auger. This is not a problem I have encountered with a ¾" probe. Lastly, while probe samples rarely contain larger cultural materials such as large FMR (Fire-Modified Rock), lithics, or faunal remains, they often contain stratigraphical layering of soils, charcoal, and other small pieces of cultural materials. Probe samples containing such materials allow one to quickly determine site boundaries and whether the site contains intact stratigraphic layering. In previous surveys of sites in Willapa Bay, I tested whether false negatives (i.e., that a sample missed cultural materials) occurred due to the small size of the probe. I did so by taking samples using a 4"-diameter, hand-cranked auger adjacent to probe samples and comparing the contents of the two samples. In all cases, the auger samples corroborated what was revealed with the smaller probe (Antoniou 2014).

Each probe was recorded as strong-positive, weak-positive, weak-negative, or strong-negative. A strong-positive reading indicated the presence of cultural materials (usually shell, FMR, and/or charcoal) and cultural soil. Soil that is considered cultural is typically very dark (Munsell color 10YR2/1–black) with a "greasy" texture. A weak–positive reading indicates the presence of some cultural materials in a soil that was not Munsell color 10YR2/1 with a "greasy" texture. A weak–negative readings denote an absence of cultural materials other than charcoal, but a soil color and texture dissimilar to the sterile subsoil. A strong-negative was recorded when the probe contained only sterile sub-soil. The location (GPS coordinates), depth, stratigraphy, soil color (using a Munsell soil color chart), soil type (based on Hester et al. 2009), and inclusions (such as FMR, charcoal, shell, and bone) were recorded for every probe. In addition, every probe was photographed. For each probe, locational photographs (i.e.,

photographs of the marked probe location from 10 meters in each cardinal direction) and a photograph of the profile of deposits while embedded in the probe were taken.

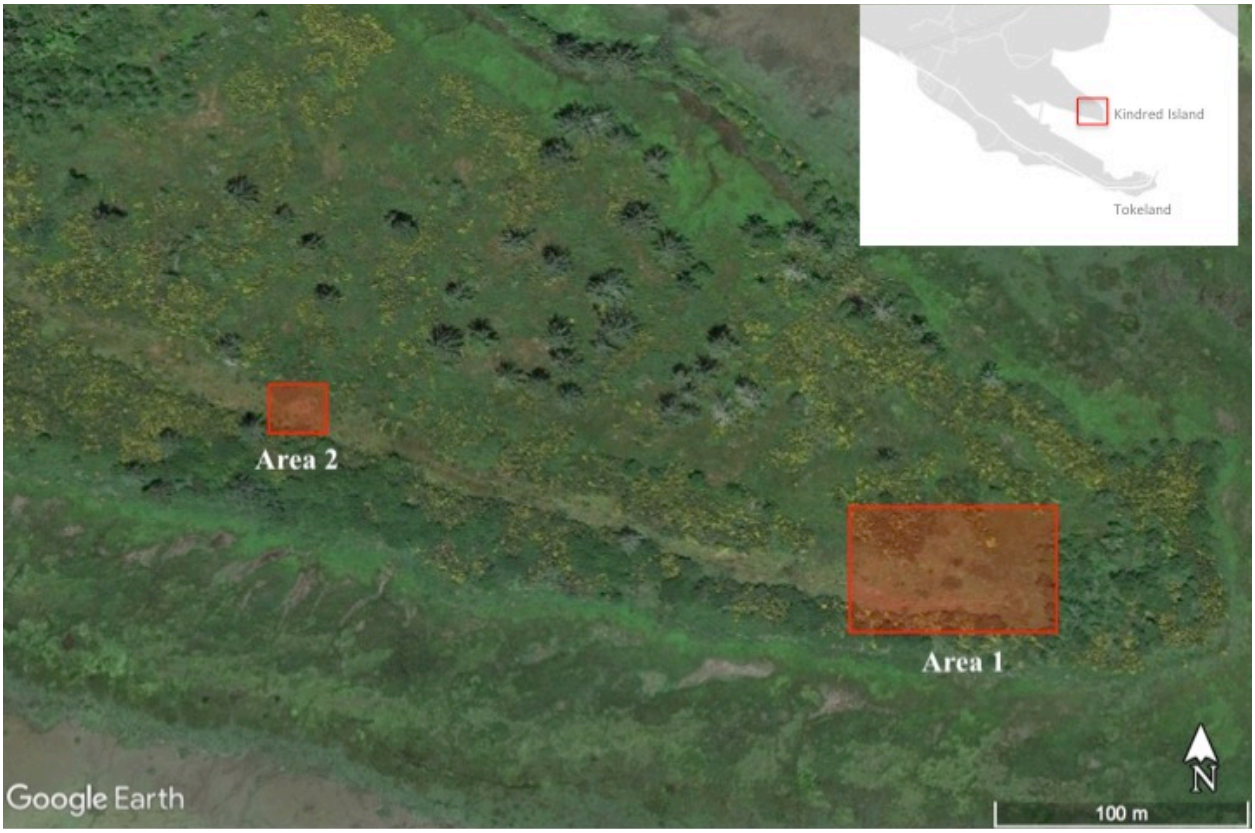

Figure 5.6 Areas targeted for probe survey

Area 1 was identified as a location to be investigated using a probe survey due to a high quantity of exposed shell midden in this area. Twenty-five ¾"-probe samples were taken, at 10-meter intervals across eight 10-meter N-S transects (Figure 5.7). The length of these transects was determined by field conditions and probe readings. An additional seven probes were taken following a NW-SE transect to test midden boundaries. Of all probes in Area 1, eight probes showed strong–positive results for cultural materials, three showed a weak–positive reading, 10 probes showed a weak–negative reading, and 11 probes showed a strong–negative reading for

cultural materials (Figure 5.8, Appendix A). The maximum depth of cultural deposits spanned from 12 cm to 64 cm below the surface. Positive probes in this area showed intact stratigraphic layers (Figure 5.9). Based on the probe sampling, Area 1 was identified as containing intact cultural deposits that warranted further archaeological testing via excavation.

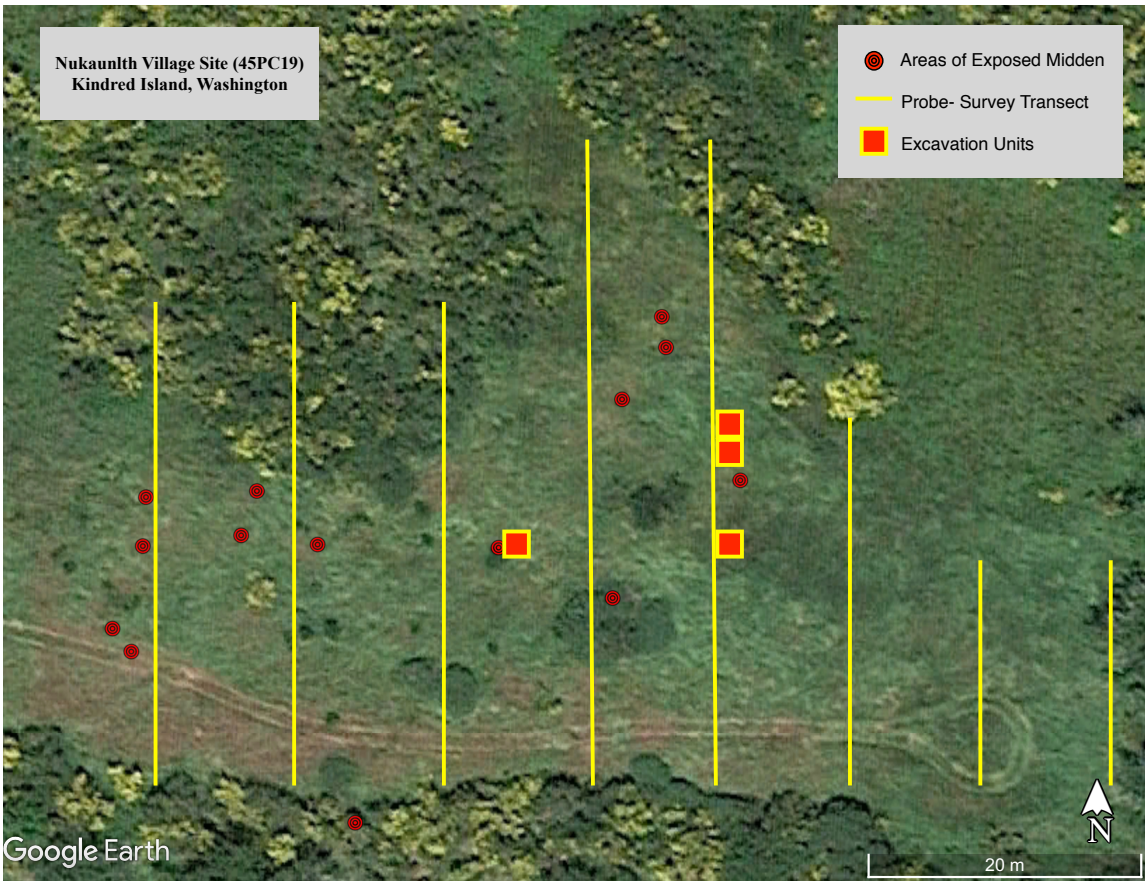

Figure 5.7 Area 1 probe transects

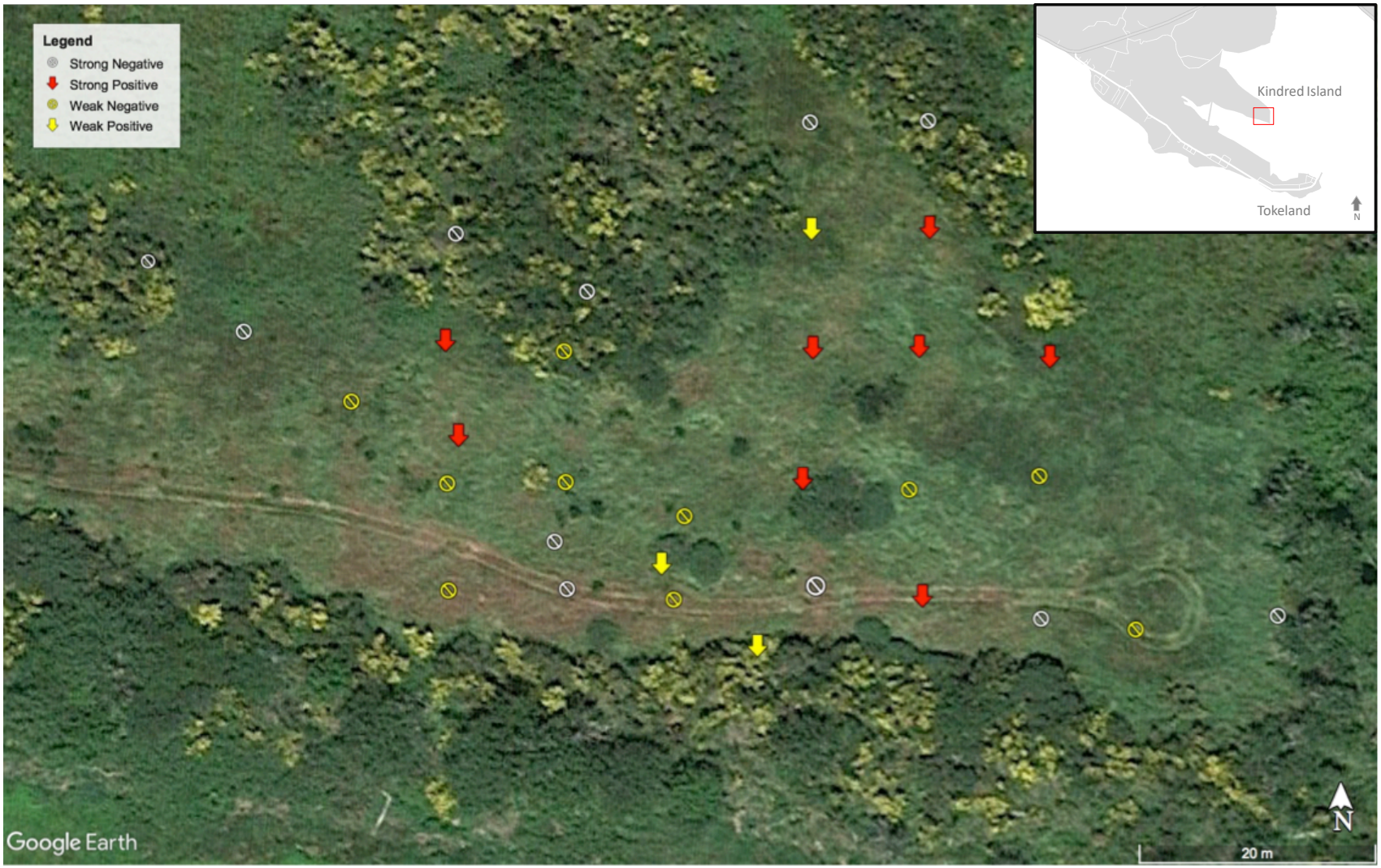

Figure 5.8 Area 1 probe readings

Figure 5.9 Soil from probe sample PC19-P4 showing intact stratigraphy

Area 2 was chosen to investigate using a probe survey because of a large patch of midden exposed by a rodent burrow in this area. Eleven ¾”- probe samples were taken at 10-meter intervals across three 10-meter transects. In addition, a single probe was placed adjacent to the rodent burrow. Of the probe samples extracted, only two probes had a strong–positive reading and one sample had a weak–negative reading. All other probes in this area were strong–negative (Figure 5.10, Appendix A). Of the positive probes, the maximum depth of cultural materials was approximately 30 cm below the surface. From these results, it appears that the positive samples had likely migrated from other areas of the site via rodent burrowing. It was concluded that Area 2 did not contain cultural deposits that warranted further excavations given the research agenda.

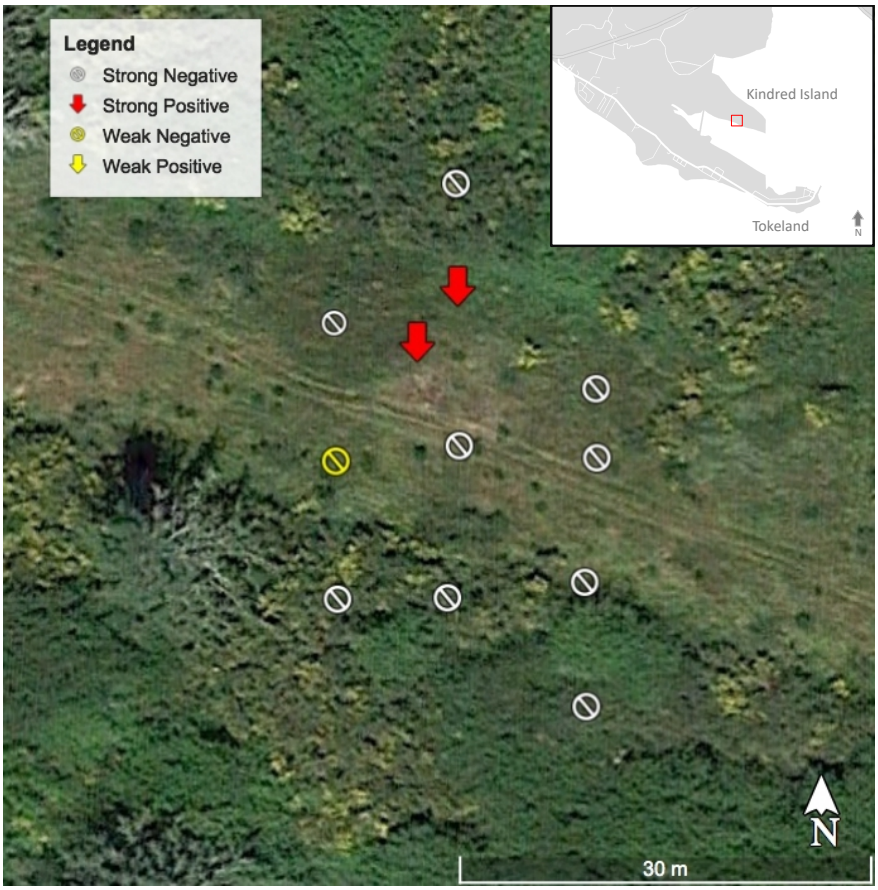

Figure 5.10 Area 2 probe readings

Sample Excavations

With help from members of the Shoalwater and Chinook Nation and volunteers,[20] I excavated one-by-one meter units to target distinct shell midden areas and possible household deposits based on the results of the probe survey. We excavated using standard trowel excavation techniques. In previous probe sampling of sites on nearby Long Island, I found that midden sites in the area can contain fine stratigraphy that can be more easily interpreted when

[20] Thank you to Earl Davis, Elliott Deal, Ferrill Johnson, Sam Johnson, Tony Johnson, Michelle Kawaguchi, Hannes Mack, and Lyle Nakonechny for your generous help.

removing sediment in smaller increments (Antoniou 2014). Therefore, we excavated in combined natural layers and arbitrary five-centimeter levels after the removal of the non-cultural humus layer. After removal, we used graded ¼-inch and 1/8-inch mesh to recover all pertinent cultural materials. Nearly all cultural material was saved and sorted in the lab. However, we did not collect fire-modified rock (also known as TAR, FAR, FCR, etc.) greater than 1-inch in size. Instead, we weighed, counted, and recorded this FMR by level and added it to the backfill pile. FMR and features located *in situ* were mapped.

We recorded, mapped, and photographed characteristics of soil, elevation, artifacts, profiles, spatial distribution, and any structural features using standardized field forms. Additionally, we used standard recording techniques including excavator notes, level forms, photograph log, daily catalogs, and detailed stratigraphic profiles with pedological data. We stopped excavating after we reached 10-15 cm of sterile sand. At this point, we sank a ¾-inch probe into the bottom of each quadrant of the excavation unit and assessed whether there was cultural sediment buried below the sterile sand. If this probe was negative, excavation was terminated. Upon completion of the excavation, we drew profiles of at least one wall of the unit (sometimes three). We then lined the units with perforated plastic and backfilled them using soil removed from the units and cut logs to fill space left from midden removal. Coins from 2017 were placed at the bottom of each excavation unit. These coins will help date the fieldwork if ever re-excavated. Placing coins at the bottom of the unit also adheres to the Chinook and Lower Chehalis cultural practice of leaving something of value behind when removing something from the landscape.

Four 1 x 1-meter test units were placed in Area 1 of the site (Figure 5.7, Figure 5.11). The placement of these units was based on surface finds, probe survey results, site topography,

and in-depth conversations with tribal representatives. The maximum depth excavated was 72 cm below datum. The maximum depth of cultural deposits excavated is approximately 52 cm below unit datum. A total of 2504.5 liters (approximately 2.5 m^3) of sediment was passed through 1/8" and ¼" graded mesh to recover all pertinent cultural materials. Table 5.1 summarizes basic excavation unit information.

Figure 5.11 Unit locations, photograph taken facing SEE

Table 5.1 Basic excavation unit information

Unit ID	*Location (UTM: zone 10T)*	*Max. Depth Excavated*	*Depth of Cultural Deposits*	*Volume of Sediment Excavated (L)*
418N400E	425000m E, 5174157m N	66 cm BD	Surface to 50 cm BD	430.5
418N385E	424985m E 5174157m N	72 cm BD	Surface to 52 cm BD	859
423N400E	425000m E 5174162m N	56 cm BD	Surface to 49 cm BD	690
424N400E*	425000m E 5174163m N	48 cm BD	Surface to 50 cm BD	525
				Total: 2504.5

*423N400E datum used for all measurements on this excavation unit

During excavations, we piece plotted and collected samples to facilitate analyses that pertain to the lines of evidence described above (i.e., chronology, diet composition, rate of deposition, etc.). Each sample was recorded on the level form. Below and in Table 5.2**,** I describe these samples, the collection methods, and the analyses for which they were collected.

AMS Radiocarbon Dating: We obtained 67 charcoal samples for possible dating. At least one charcoal sample was recovered from each stratigraphic layer per excavation unit for AMS radiocarbon dating. We took care to obtain charcoal samples from subsistence-related features, whenever possible. In some cases, we paired charcoal samples with shell samples (*C. nuttallii* specimens that showed no signs of heat alteration) for possible amino-acid racemization (AAR) dating by ensuring that both these samples were from the same stratigraphic context, in the same level, of the same excavation unit. We took these samples to ensure AAR dating would be possible following AMS radiocarbon dating if the results of the latter were determined to be unreliable.

Faunal Analysis: While the majority of faunal remains were collected from the screen, saved, and sorted in the lab, some specimens were piece-plotted *in situ* to aid in faunal analysis. In particular, we piece plotted larger non-shell faunal remains whenever possible. When it appeared that faunal remains may be part of a feature, they were also piece plotted *in situ*. Only shells that appeared to be part of a feature or were related to other analysis (potential AAR dating, diatom samples, and growth-stage profiles) were piece-plotted.

Botanical Analysis: We obtained nine one-liter bulk samples from well-preserved stratigraphic layers for flotation. We took at least one sample from each excavation unit. We took care to take samples from subsistence-related features, whenever possible. Each flotation sample was taken from a specified quadrant of the unit and recorded in the field log.

Growth-Stage Analysis: Twenty-two whole bivalve shells were piece plotted *in situ* for potential growth-stage profiling. We targeted whole valves with intact ventral margins for growth-stage analysis, as extracting the thin-section from the edge of the umbo to the ventral end allows one to easily assess the organism's growth (Pierce 2011). I describe the process by which growth-stages were identified and analyzed in Chapter 7.

Diatom Analysis: We collected 37 diatom samples from Nukaunlth for future analysis. Soil adhering to the surface of shell specimens that were piece plotted as *in situ* specimens was dry brushed into vials and taken as diatom samples. Although beyond the scope of this dissertation, future analysis of the diatoms recovered from the surfaces of shells deposited in middens can indicate the specific environmental characteristics (water temperature, salinity, oxygen levels, etc.) of the habitat from which individual shellfish specimens were obtained. This is possible because diatom species have narrower environmental tolerances than most shellfish species (Battarbee 1988; Juggins and Cameron 1999; Mackay et al. 2003; Meeker 2003;

Ognjanova-Rumenova 2008). Comparing diatoms and their environmental tolerances within and between sites can then address very specific issues regarding site use and procurement locales.

Micromorphology: We took six samples for future micromorphological analyses from the walls of the excavation units. At least one sample was taken from each unit. We collected these samples using a gang box (a cost-effective version of the Kubiena box, see Josephs and Bettis 2003). Upon removal, we wrapped the sample tightly with aluminum foil and plastic wrap. Future analysis of these samples will elucidate microstratigraphy and lend insight into periods of abandonment and intensive episodes of site use.

Table 5.2 Samples extracted from Nukaunlth

Analytical Method	*Line of Evidence*	*Sample Type*	*Samples Obtained*	*Samples analyzed*	*Conducted by*
Faunal Analysis	Diet Composition	All avian, mammalian, and fish remains; 25% sample from the ¼" sieve & 10% sample from the 1/8" sieve of archaeomalacological remains recovered	40,128	40,128	Author
Botanical Analysis	Diet Composition	Flotation soil samples	9	9	Subcontracted
Artifact Analysis	Material Culture	All artifactual remains recovered	1,342	1,342	Author
Age & Growth-Stage Profiling	Age & Size of Shell Species	Whole shells with intact ventral margins	38	10	Author
AMS Radiocarbon Dating	Chronology	Charcoal, at least one charcoal sample was recovered from each stratigraphic layer per excavation	67	33 submitted, 8 analyzed	Subcontracted
Diatom Analysis*	Procurement Environment	Soil adhering to dorsal surface of intact shell	37		
Micromorphology*	Rate of Deposition	Gang box soil sample	6		

* Samples taken for future analyses beyond the scope of this dissertation.

Site Attributes and Arrangements

The following section details the materials, arrangements, and physical characteristics of Nukaunlth observed in each excavation. I organized the first part by unit and present a brief description of the location, cultural materials present, stratigraphy, and cultural features of each unit. I also describe, in detail, the general characteristics of the site made apparent by archaeological testing, including site size, physical characteristics, site stratigraphy and temporal context, and overall site condition.

Unit 418N400E

Location

Unit 418N400E was placed at 425000m E, 5174157m N (UTM Zone 10T), 18 meters (59 ft) north of the site datum at 400N400E. The unit is on the east-facing slope of the small mound near the center of the densest area of the shell midden in Area 1; approximately 16 meters (52 ft) south of the marsh on the northern edge of the island, approximately 30 meters (98 ft) west of the apple trees that flank the eastern tip of the island, and approximately 28 meters (92 ft) north of the southern edge of the island (Figure 5.7 & Figure 5.11). We placed the unit here to investigate the mound, as a strong positive probe reading was found on the southern facing slope, approximately 5 meters to the north.

Cultural Material

Cultural materials were present at the surface of this unit and continued uninterrupted to approximately 22 cm below the surface (maximum of 54 cm below unit datum). Materials present in this unit included charcoal, fire-modified rock, water-worn pebbles, avian, fish, and

mammalian faunal remains, lithics, shell, Chinese stoneware, copper fragments, and Euro-American metal. All artifacts of suspected European origin were found in "layer 2" of this unit, described below.

Stratigraphy

Intact stratigraphic layering was present in this unit. Three primary cultural layers were revealed (Figure 5.12, Figure 5.13, & Figure 5.14) with minimal disturbances from rodent burrowing. I summarize the characteristics of these layers in Table 5.3. Layer 1 consisted of 3 to 9 centimeters of culturally rich, dark, sandy silt. Below layer 1 in the western half of the unit, layer 2 consisted of a dense, highly fragmented shell midden that reached a maximum thickness of 15 cm. This layer was primarily silt, nearly white in color, and contained abundant charcoal and shell and moderate amounts of other cultural materials. While the top portion of this midden was highly fragmented, a series of whole shells laid flat at the transition between layer 2 and layer 3. Layer 3 was a living surface 4 to 10 cm thick of very dark gray sediment containing equal parts sand and silt with a moderate amount of cultural material. Layer 4 was sterile subsoil—primarily light yellowish brown but with a mottling of gray and brownish yellow sediments—with minimal cultural inclusions likely from rodent burrowing. Some decomposing organic materials in layer 4 likely contributed to the mottling.

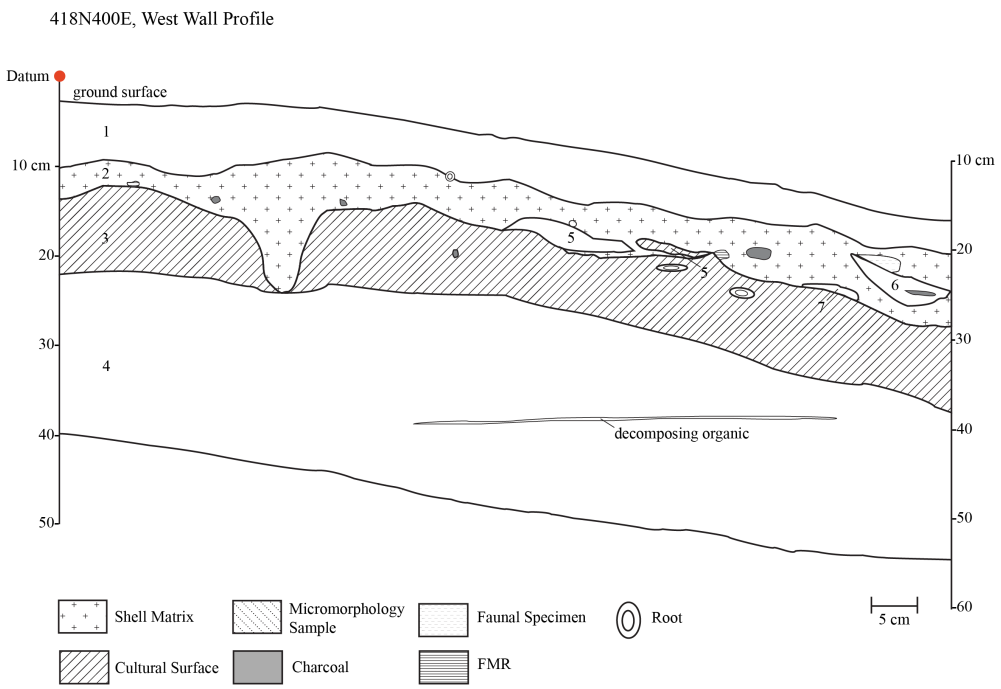

Figure 5.12 Unit 418N400E, west wall profile

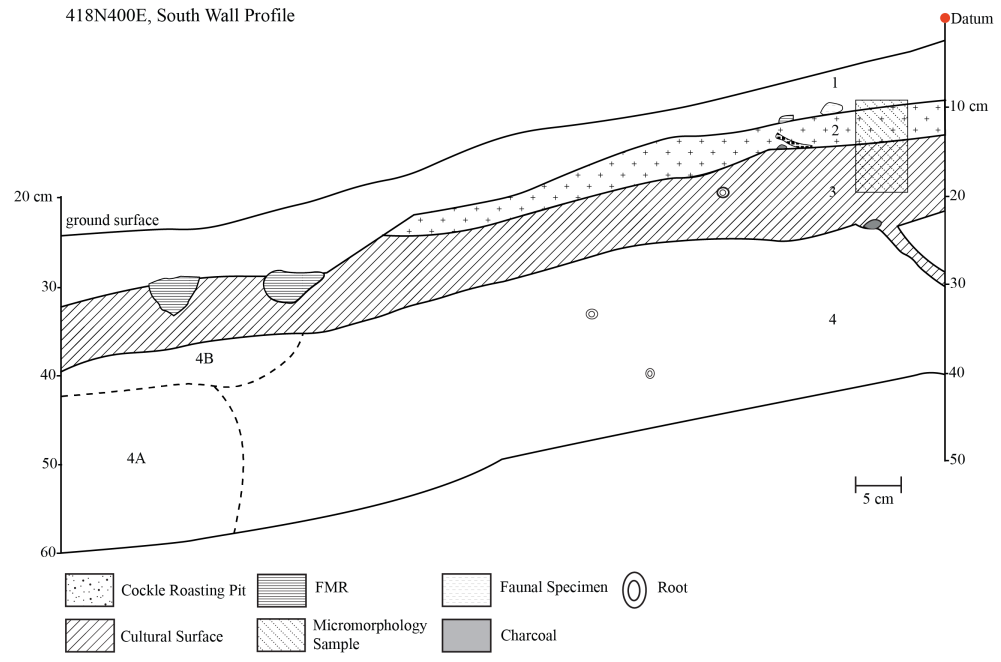

Figure 5.13 Unit 418N400E, south wall profile

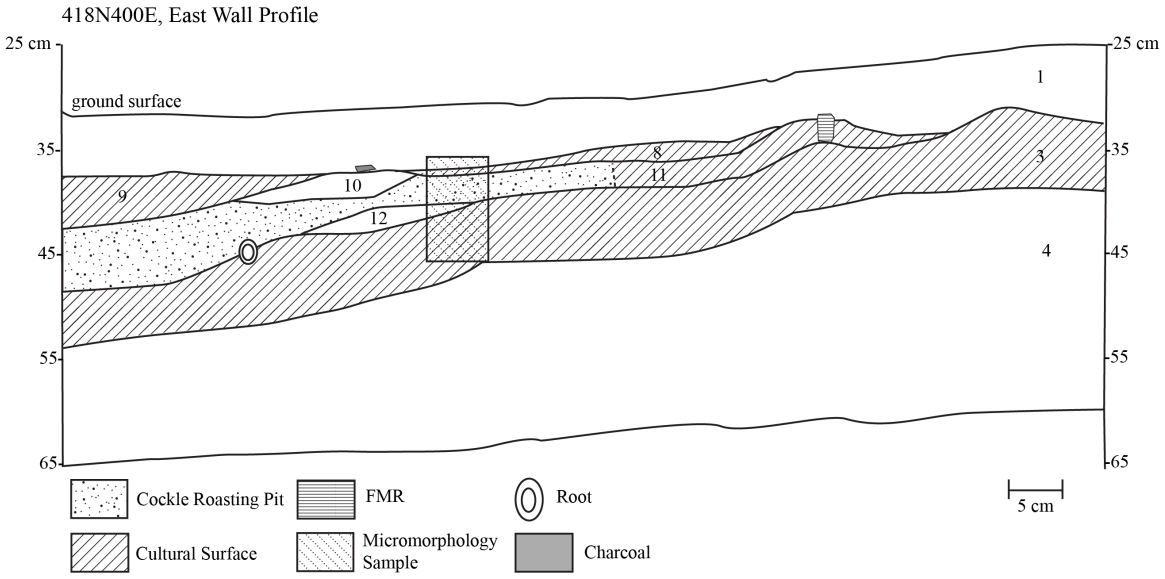

Figure 5.14 Unit 418N400E, east wall profile

Table 5.3 Stratigraphic details of 418N400E profiles

Layer	*Soil Fraction*	*Soil Color*	*Quantity of Shell*	*Notes*
1	40% silt, 60% sand	10YR 2/1 – Black	Moderate	Surface/sod layer with cultural materials.
2	Silt and shell	10YR 5/1 – Gray	Abundant	Shell-heavy midden matrix.
3	50% sand, 50% silt	10YR 3/1 – Very dark gray 10YR 3/2 – Very dark grayish brown	Abundant	Mottled cultural/living surface.
4	Sand	10YR 6/4 – Light yellowish brown 10YR 7/6 – Yellow	Trace	Sterile Subsoil with possible tsunami-related deposits mixed in.
4A	Sand	10YR 5/4 Yellowish brown	Trace	Sterile Subsoil with possible tsunami-related deposits mixed in.
4B	Sand	10YR 6/1 Gray	Trace	Possible tsunami-related deposits.[a]
5	95% silt, 5% sand	10YR 5/4 – Yellowish Brown; 10YR 4/4 – Dark yellowish brown	Absent	
6	85% sand, 15% sand	10YR 4/2 – Dark grayish brown	Trace	
7	95% silt, 5% sand	10YR6/4 – Light yellowish brown	Trace	
8	Sandy silt	2.5Y 2.5/1 – Black	Absent	
9	Clay-y silt, trace sand	2.5Y 2.5/1 – Black	Absent	Caps cockle roasting pit.
10	Silty sand	7.5YR 2.5/2 – Very dark brown	Trace	
11	Sandy silt	10YR2/1 – Black	Abundant	Cockle steaming pit; charcoal rich.
12	Sand	10YR 5/3 – Brown	Trace	

a: Sterile gray sand sediments, aeolian or alluvial, that were likely deposited during or after the 1700 Cascadia earthquake & tsunami. See *Unit 418N385E – Stratigraphy* for further discussion.

Features

In addition to the recognizable midden observed in this unit, we revealed several cultural features while excavating. At 22 cm below datum in the northwest quadrant of the unit, we isolated a concentration of subsistence refuse that was distinct from the surrounding midden layer. This feature consisted of a partially intact salmon skeleton, a concentration of whole clam

shells (*T. capax* or *T. nuttallii*), FMR, a cougar metacarpal, and lithic shatter (Figure 5.15). In the northeast quadrant of the unit, a hearth feature demarcated by stones was uncovered and appears to be a cockle-steaming pit (Figure 5.16, Figure 5.17). A thin black layer capped this feature. The feature itself was filled with primarily cockle shells (*C. nuttallii*) and charcoal. It began at 38 cm below datum and continued until a depth of 48 cm below datum.

Figure 5.15 Concentration of subsistence refuse in NW quadrant of Unit 418N400E

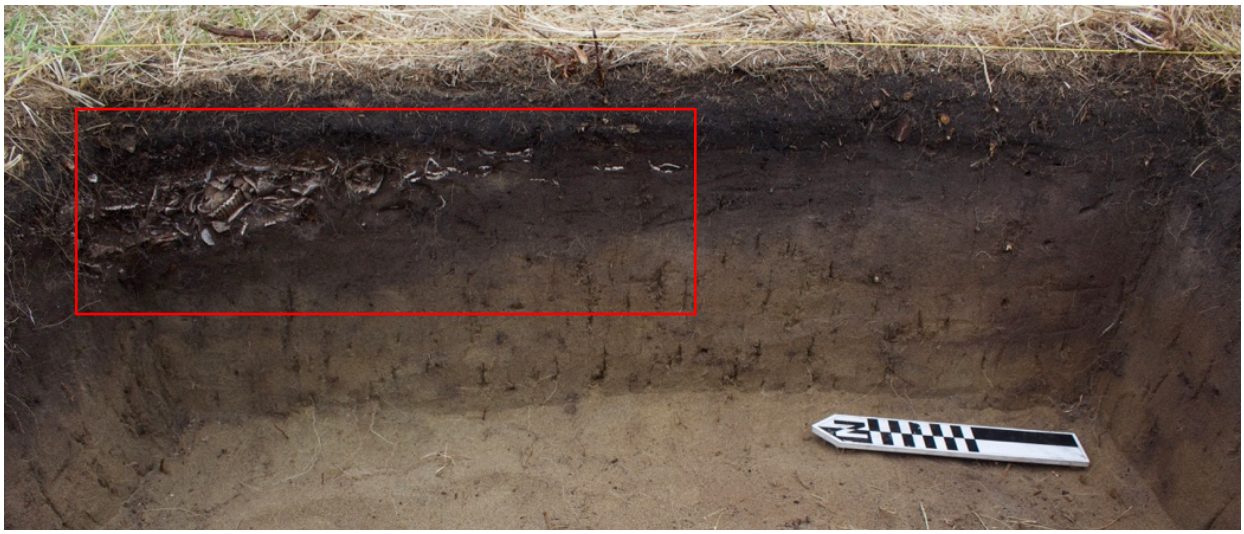

Figure 5.16 Cockle steaming pit seen in east wall profile of Unit 418N400E.

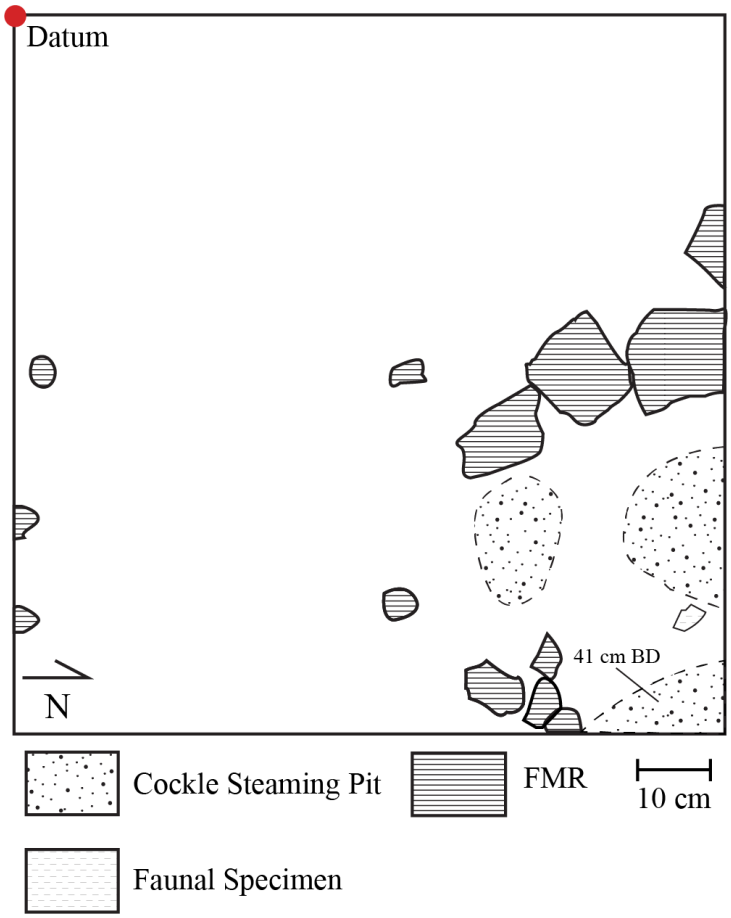

Figure 5.17 Cockle steaming pit, plan view.

Unit 418N385E

Location

Unit 418N385E was placed at 424985m E 5174157m N, 15 meters (49 ft) east and 18 meters (59 ft) north of the site datum. The unit is approximately five meters (16 ft) southeast of the large rise of dense scotch broom located to the west of the midden locale, and approximately 25 meters (82 ft) from the southern coast of the island (see Figure 5.7, Figure 5.11). We chose to investigate this area because it was near an area of exposed sea mammal bone and lies within a suspected boundary between midden locales within Area A.

Cultural Materials

Cultural materials were present upon the removal of topsoil and continued intermittently until approximately 45 cm below datum. Cultural materials present in this unit included charcoal, fire-modified rock, water-worn pebbles, avian, fish, and mammalian faunal specimens, lithics, and shell. We found no Euro-American items in this unit.

Stratigraphy

This unit exhibits intact stratigraphy that represented two distinct cultural episodes (Figure 5.18 & Figure 5.19, Table 5.4). A sod/surface layer (layer 1) containing cultural materials in very dark gray silty sand persisted intermittently for three to eight centimeters. Below this layer, a series of complex stratigraphic layering characteristic of midden deposits is present from the ground surface[21] to a depth of 25 cm below datum. Within this banding, I noted

[21] In the southwest corner of the unit. In all other areas of the unit the midden layers begin 3-8 cm below surface.

two primary configurations. The uppermost midden deposits, although they varied in soil composition and color, exhibited a high concentration of bone and relatively low quantities of shell. The lower midden deposits again exhibited various soil color and composition but contained fewer bones and high quantities of shell. Shell fragmentation varied throughout all deposits and I attribute this variation more to the varied fragility of shell according to species than to trampling.[22] This surface layer and subsequent midden deposits represent one cultural episode.

Below this banding of cultural layers is a deposit of nearly sterile gray beach sand (layer 6), followed by an additional cultural surface. The stratigraphic layer of sterile gray sand (layer 6) ranged in thickness from three cm to 25 cm; it is thickest in the southeast corner of the unit and gradually thins to 3 cm in the northwest corner. This layer is likely sediments—aeolian or alluvial—that were deposited during or after the 1700 Cascadia earthquake & tsunami, although further testing is needed to conclusively determine the origin of these sediments. The bottommost cultural surface (layer 7) consisted of mottling of charcoal-stained dark gray soil approximately 5 cm thick with charcoal and FMR lying on top of this surface (Figure 5.20). This cultural surface represents the other cultural episode. Below this cultural surface is sterile subsoil (layer 8)—light yellowish-brown sand with minimal cultural inclusions from rodent intrusions.

[22] See Chapter 6 for further discussion.

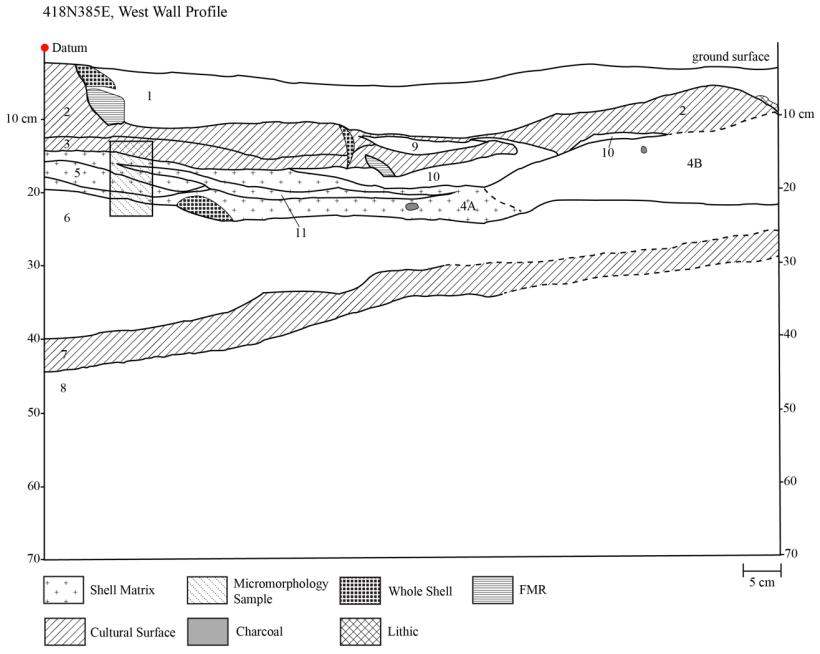

Figure 5.18 Unit 418N385E, west wall profile

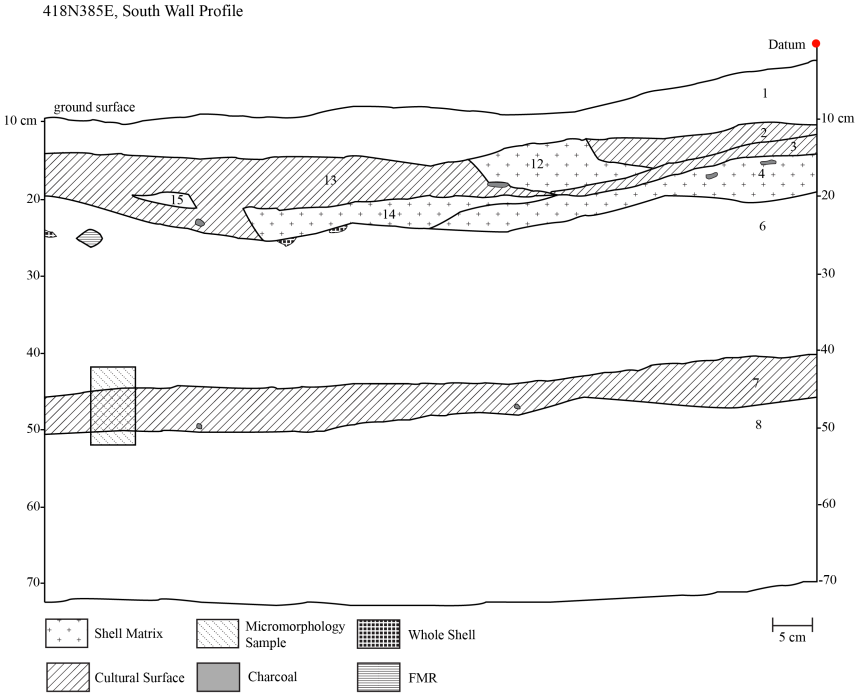

Figure 5.19 Unit 418N385E, south wall profile

Table 5.4 Stratigraphic details of Unit 418N385E profiles

Layer	*Soil Fraction*	*Soil Color*	*Quantity of Shell*	*Notes*
1	Silty sand	10YR 3/1 – Very dark gray	Trace	Surface/sod layer with cultural materials.
2	Silty sand	10YR 2/1 – Black	Moderate	Cultural/living surface.
3	Sandy silt w/trace clay/ash	10YR 2/1 – Black	Diffuse	Cultural/living surface.
4	Silty sand	10YR 3/2 – Very dark grayish brown	Abundant	Shell-heavy midden matrix
4A	Silty sand	10YR 2/1 – Black	Abundant	Shell-heavy midden matrix.
4B	Sandy silt	10YR 2/1 – Black	Diffuse	Cultural/living surface.
5	Loam	10YR 2/2 – Very dark brown	Abundant	Shell-heavy midden matrix.
6	Sand	10YR 6/1 – Gray 10YR 6/2 – Light grayish brown	Absent	Tsunami-related sterile deposits.
7	Sand, trace silt	10YR 4/1 – Dark gray 10YR 3/1 – Very dark gray	Absent	Mottled cultural surface with charcoal flecking.
8	Sand	10YR 6/4 – Light yellowish brown	Absent	Sterile subsoil.
9	Sand	10YR 4/3 – Brown	Trace	
10	Sand	10YR 4/1 – Dark gray	Absent	
11	Sand	10YR4/3 – Brown	Abundant	Shell-heavy midden matrix.
12	Silty sand	10YR 2/2 – Very dark brown	Abundant	Shell-heavy midden matrix.
13	Sandy loam	10YR 2/1 – Black	Diffuse	Cultural/living surface.
14	Sandy silt	10YR 2/1 – Black	Abundant	Shell-heavy midden matrix.
15	Sand	10YR 3/2 – Very dark grayish brown	Trace	

Figure 5.20 Buried cultural layer (layer 7) in south wall profile of Unit 418N385E, indicated by red arrow

Features

Although the upper cultural deposits exhibit complex midden stratigraphy, there were no isolated features to speak of in this unit.

Units 423N400E & 424N400E

Location

Units 423N400E and 424N400E were placed adjacent to each other to create a 2 x 1-meter excavation unit. These units are located at 425000m E, 5174162m N & 425000m E, 5174163m N, 23 and 24 meters (75 and 79 ft) north of the site datum. These units are at the base

of the north-facing slope of the small rise located near the center of the densest midden area. Unit 423N400E contains part of this slope, and unit 424N400E extends into a large shallow depression (Figure 5.7, Figure 5.11). The datum of these units (located at the southwest corner of unit 423N400E) is approximately 10 meters (33 ft) north of the marsh on the northern edge of the island, approximately 30 meters (98 ft) west of the apple trees that flank the eastern tip of the island and approximately 30 meters (98 ft) from the southern edge of the island. We placed the units at this locale to investigate a possible house depression and household midden. Strong positive readings from the probe survey surround these units in all cardinal directions.

Cultural Materials

These units were rich in cultural materials. Cultural materials were present on the surface of these units and continued uninterrupted until 49 cm below datum (approximately 37 cm below surface). Cultural materials in these units included: charcoal, fire-modified rock, water-worn pebbles, avian, fish, and mammalian bone, lithics, shell, copper fragments, ochre, metal, bone arming points, and a glass bead. All artifacts of suspected European origin, except one piece of metal recovered from a rodent burrow, were found in the stratigraphic layers dated to post-European arrival. This confirmed minimal disturbance to the stratigraphy of these units.

Stratigraphy

These units exhibited highly complex stratigraphic layering. Twenty-three distinct layers are apparent in the west and south wall profiles (Figure 5.21, Figure 5.22, Table 5.5). These layers can be grouped into three cultural deposition configurations. From ground surface to between 17 cm and 25 cm below datum are a series of stratigraphic layering that represent intensive cultural use of the area, rich in faunal remains, FMR, and charcoal, but with minimal shell inclusions. While cultural materials were present starting at the ground surface, a possible

living surface where items appear to be *in situ* in a cultural soil does not begin until 12 cm below datum. The cultural materials present in these stratigraphic layers, including numerous fragments of FMR, tools, and faunal remains, were laying parallel in the ground surface, suggesting a house floor or living surface (Figure 5.23). I discuss the features present in these layers below. Below these stratigraphic layers are intermittent deposits of a dense shell midden in the northern half of 424N400E and the southern half of 423N400E. Within the northern half of 424N400E, this midden is highly fragmented and composed primarily of mussel shell. As this area is likely near the center of the house, this fragmentation may be due, in part, to trampling. The layers of dense shell midden sit above another series of dark cultural soils with flat-lying cultural materials and minimal shell inclusions suggesting another possible house floor or living surface (Figure 5.24). These layers give way to a transitional layer before reaching sterile light yellowish-brown subsoil. The stratigraphy of these units indicates the presence of a house with multiple occupations. The material culture, features, and AMS radiocarbon dates attributed to these excavated units corroborate this.

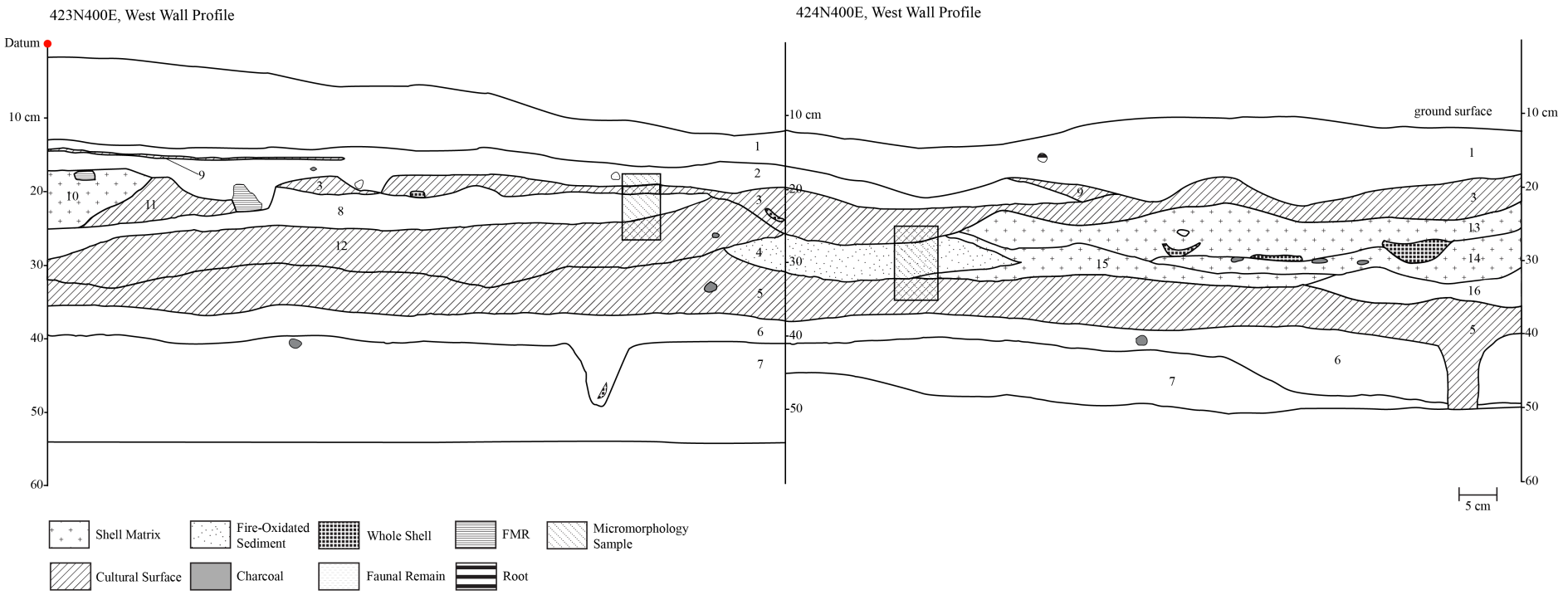

Figure 5.21 Units 423N400E & 424N400E, west wall profile

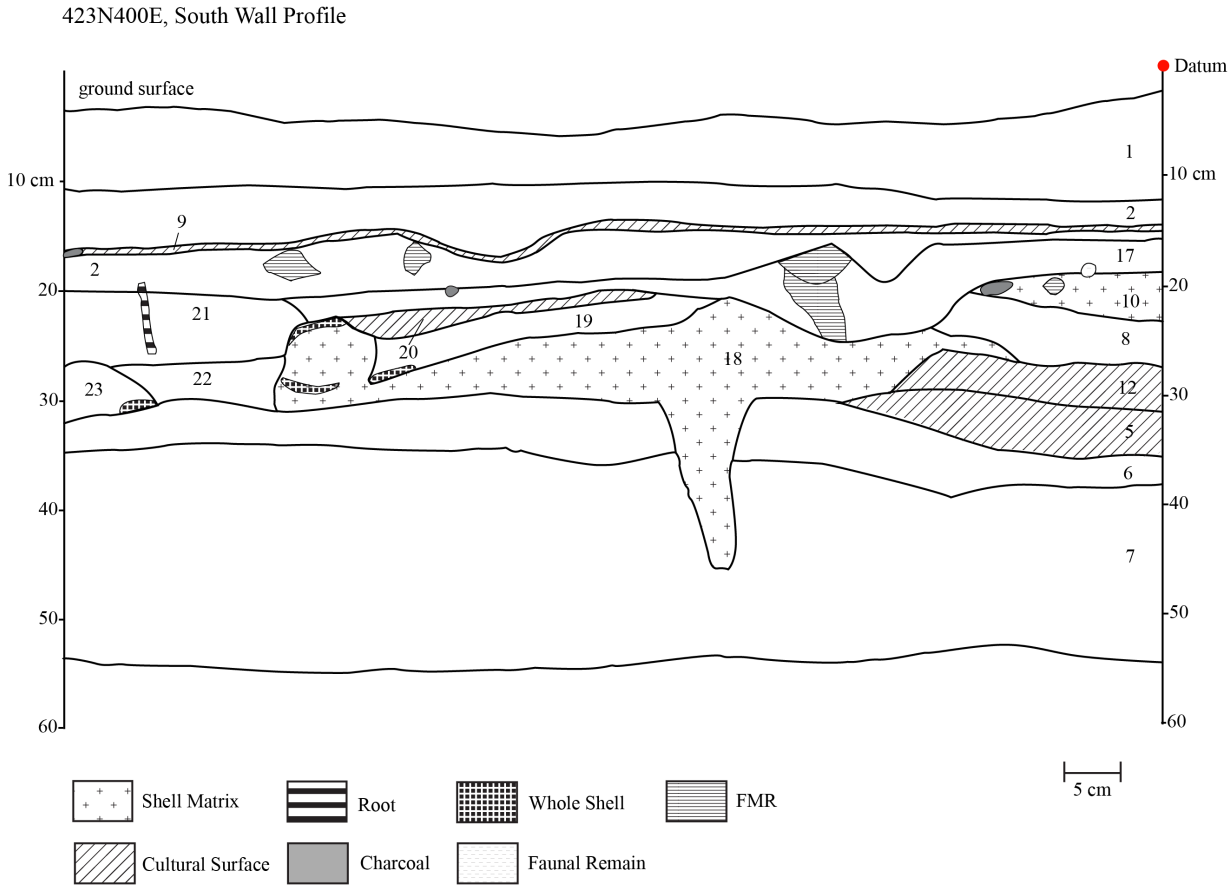

Figure 5.22 Unit 423N400E, south wall profile

Table 5.5 Stratigraphic details of Units 423N400E & 424N400E profiles

Layer	*Soil Fraction*	*Soil Color*	*Quantity of Shell*	*Notes*
1	Silty sand	10YR 3/1 – Very dark gray	Absent	Surface/sod layer with cultural materials.
2	60% sand, 40% silt	10YR 3/1 – Very dark gray	Absent	
3	70% silt, 30% sand	10YR 2/1 – Black	Trace	Cultural/living surface.
4	50% silt, 50% sand	10YR 3/2 – Brown	Moderate	Fire-Oxidized Sediment. Moderate fragmentation of shell.
5	70% silt, 30% sand	10YR 2/1 – Black	Trace	Cultural/living surface.
6	60% sand, 40% silt	10YR 4/2 – Dark grayish brown	Absent	Transition zone.
7	Sand	10YR 6/4 – Light yellowish brown	Absent	Sterile subsoil.
8	60% silt, 40% sand	10YR 3/3 – Dark brown	Diffuse	High fragmentation of Shell.
9	Sandy silt	10YR 2/1 – Black	Absent	Cultural/living surface. Charcoal rich.
10	70% silt, 30% sand	10YR 2/1 – Black	Abundant	Shell-heavy midden matrix.
11	80% silt, 20% sand	10YR 2/1 – Black	Trace	Cultural/living surface. Charcoal rich.
12	70% silt, 30% sand	10YR 2/1 – Black	Diffuse	Cultural/living surface. High fragmentation of shell. Charcoal rich.
13	50% silt, 50% sand	10YR 2/1 – Black	Abundant	Shell-heavy midden matrix. Low fragmentation.
14	50% silt, 50% sand	10YR 2/2 – Very dark brown	Very Abundant	Shell-heavy midden matrix. High fragmentation. Charcoal rich.
15	70% silt, 30% sand	10YR 2/1 – Black	Very Abundant	Shell-heavy midden matrix. High fragmentation. Charcoal rich.
16	80% silt, 20% sand	10YR 3/2 – Very dark grayish brown	Trace	
17	50% silt, 50% sand	10YR 2/2 – Very dark brown	Trace	
18	50% silt, 50% sand	10YR 3/1 – Very dark gray	Abundant	Shell-heavy midden matrix. Moderate fragmentation of shell.
19	80% silt, 20% sand	10YR 5/3 – Brown	Diffuse	High fragmentation of shell.
20	60% silt, 40% sand	10YR 2/1 – Black	Diffuse	Cultural/living surface. Moderate fragmentation of shell.
21	Sand	10YR 5/2 – Grayish brown	Absent	
22	90% sand, 10% silt	10YR 3/2 – Very dark grayish brown	Absent	
23	60% silt, 40% sand	10YR 2/2 Very dark grayish brown	Diffuse	Moderate fragmentation of shell.

Features

Within the complex stratigraphy of these units were several features. Most notably, a large concentration of whale bone was located in the southwest quadrant of 424N400E at 19 cm below datum (Figure 5.23 & Figure 5.25). This concentration consisted of whale bone with trace charcoal and fire-modified rock and is laying on what I believe to be the most recent house floor. Oxidized and charcoal rich soil within the northwest quadrant of 423N400E and the southwest quadrant of 424N400E in the same cultural layer suggest that this whale bone concentration was near a hearth feature to the west of the unit. In addition, a feature of fire-oxidized and–cemented matrix with charcoal flecking and a large charcoal specimen was isolated along the north wall of 423N400E at 36cm below datum and can be seen in the western wall profile as layer 4 (Figure 5.21, Figure 5.24, Figure 5.26). This feature suggests that one or more hearths were likely located near the excavated units. The scattering of FMR, highly burnt shells, and bones in these quadrants help corroborate this. We isolated a concentration of 17 frilled dogwinkle (*N. lamellosa*) in 423N400E at 26 centimeters below datum, at the base of the dense shell midden layer (Figure 5.27). These shells appear to be all broken open at the same spot and angle, suggesting intentional meat extraction. A possible post mold, approximately 12 cm in diameter, was isolated in the center of 423N400E (Figure 5.23). This post mold first appears at 17.5 cm below datum and continues until 56 cm below datum. Lastly, we exposed a pit feature in the northwestern quadrant of 424N400E (Figure 5.24) that appears contemporary with the deepest living surface.

423N400E, 424N400E, Second Occupation House Floor

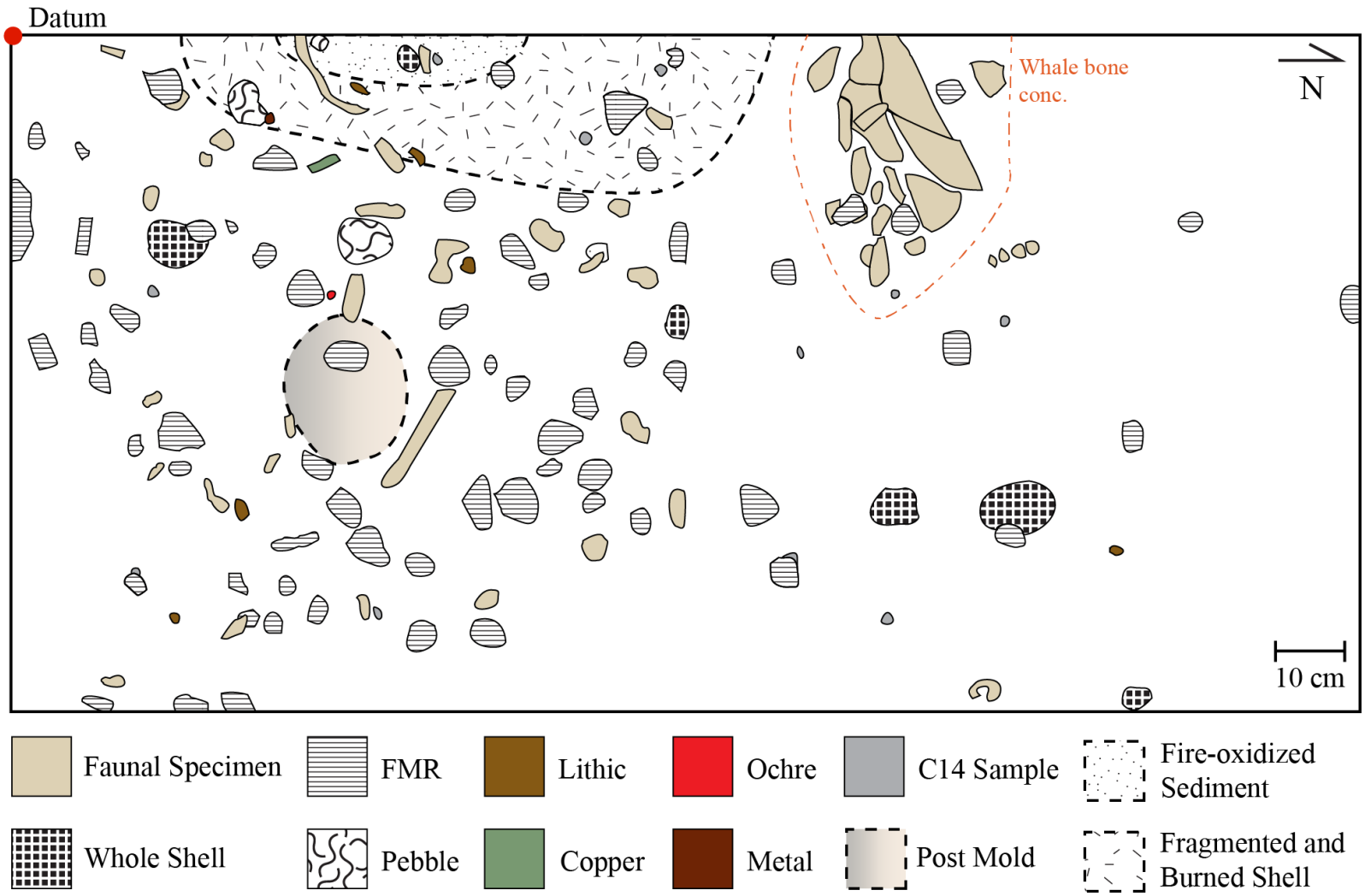

Figure 5.23 Plan drawing of units 423N400E & 424N400E living surface, second occupation (layers 3 & 9)

423N400E, 424N400E, First Occupation House Floor

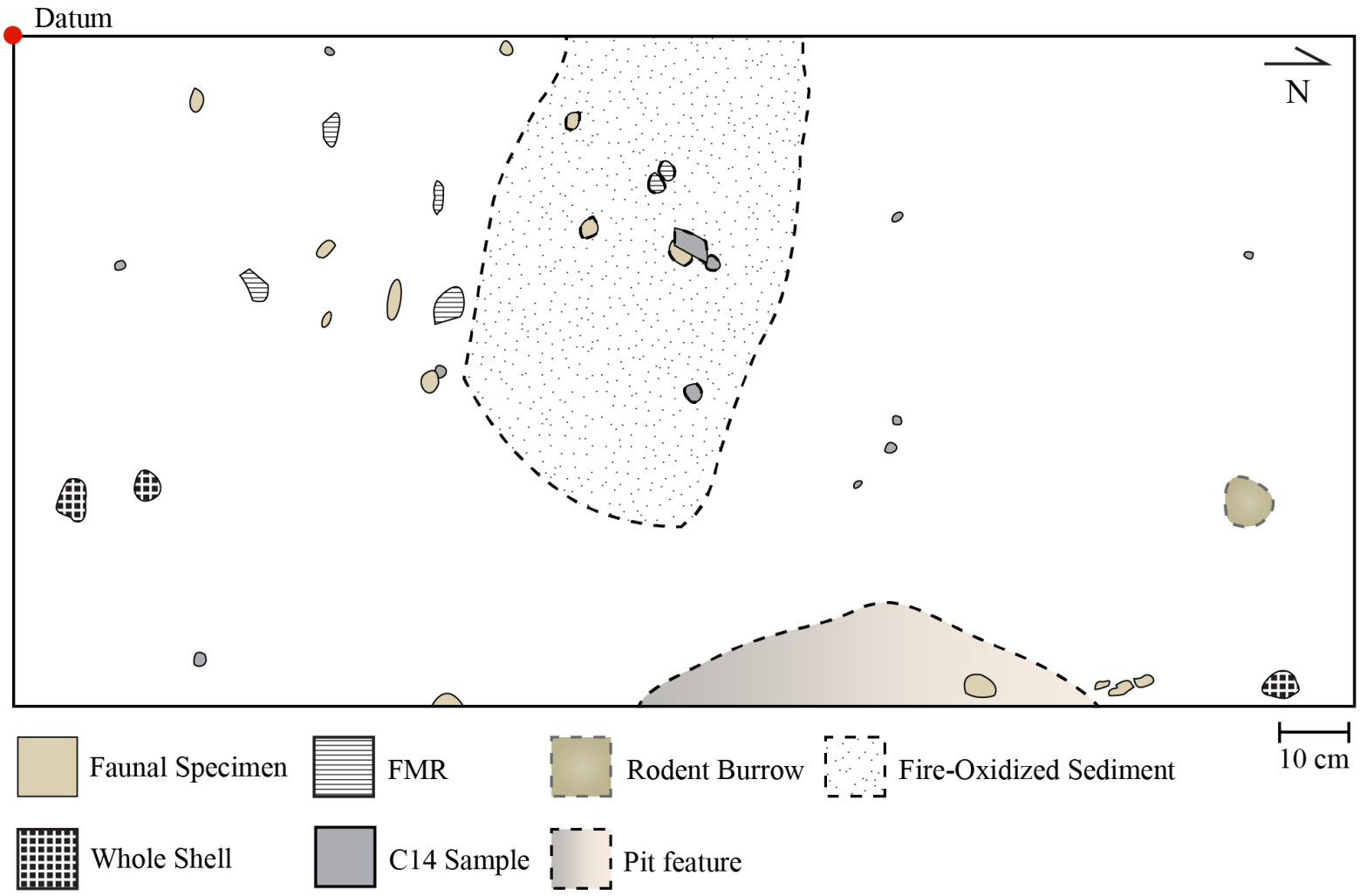

Figure 5.24 Plan drawing of units 423N400E & 424N400E living surface, first occupation (layer 5)

Figure 5.25 Concentration of whale bone in Unit 424N400E

Figure 5.26 Fire-oxidized and -cemented matrix in north wall of Unit 423N400E

Figure 5.27 Concentration of frilled dogwinkle (*N. lamellosa*) in Unit 423N400E

Dimensions and Physical Characteristics

In 1947, Richard Daugherty described 45PC19 as a "slight shell deposit covering most of [the] interior of [a] small island in the bay–site trends NW-SE" in his initial documentation of the site. His map of the site corroborates his narrative (Figure 5.5). However, the archaeological investigations described above suggests that the current horizontal dimensions of the site are much less. Results from the probe survey suggest that the site is, at a minimum, approximately 2,500 m^2 located almost exclusively on the eastern tip of the island and extending 70 m east-west and 45 m north-south (Figure 5.28). I should note, however, that the western half of the island saw significant agricultural disturbances since Daugherty's 1947 survey, and this may have destroyed the "slight shell deposit" in this area. Furthermore, the methodology used in the probe

survey can only investigate approximately one meter below the surface, and deeper cultural deposits may be present on portions of Kindred Island. The likelihood of deeply buried cultural deposits is particularly high in Willapa Bay, as a series of tsunamis throughout history have affected the area, often depositing large quantities of sand well inshore (Atwater and Hemphill-Haley 1997).

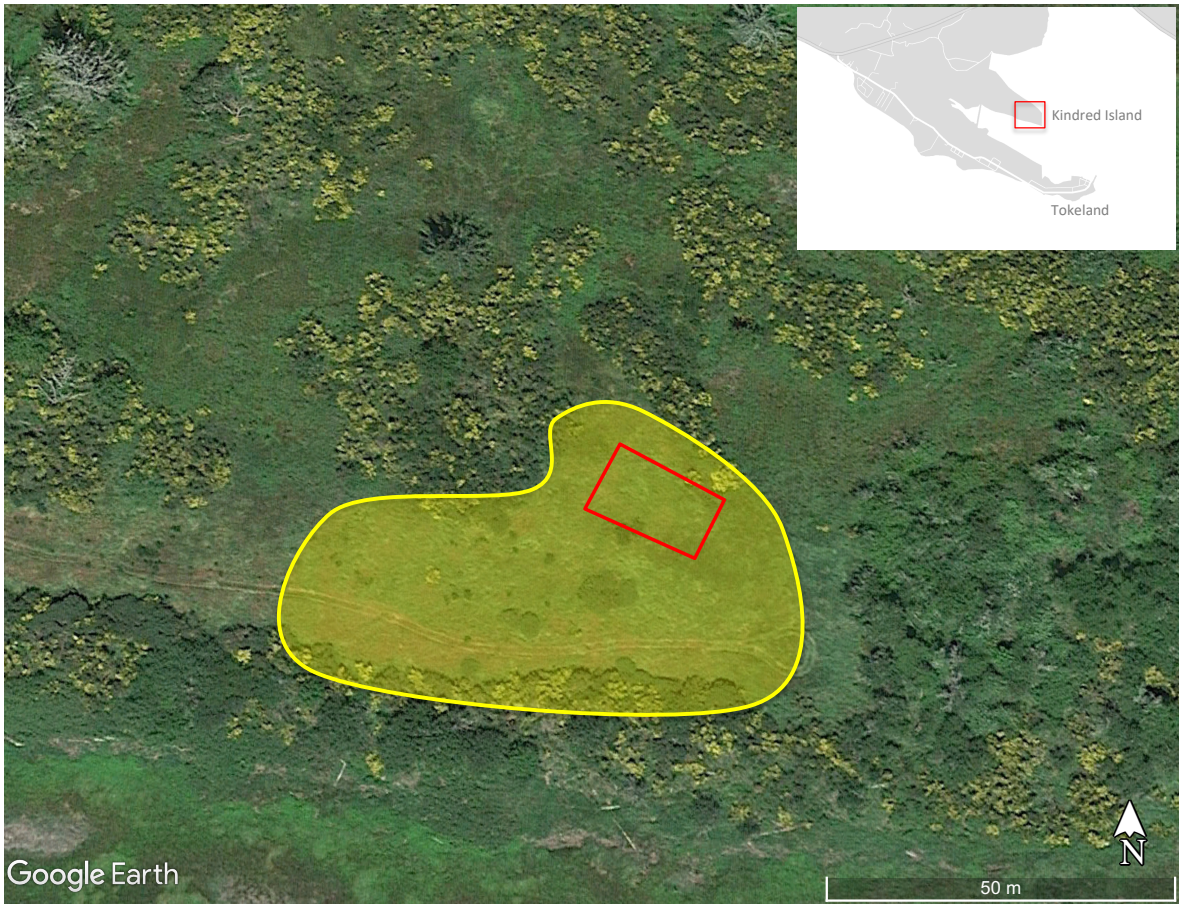

Figure 5.28 Nukaunlth site area
Yellow shading denotes area where positive probe samples were recovered. House depression denoted in red.

Excavations at Nukaunlth indicate that the majority of the cultural deposits are located between the ground surface and 40 cm below surface. Culturally modified sediment was

typically very dark in color (typically 10YR 2/1 – black) and charcoal stained with a "greasy" feel or very light in color due to the high quantity of shell refuse. Cultural sediment was typically sandy silt or silty sand. In contrast, the sterile subsoil is light yellowish brown (10YR 6/4) pure sand. The excavation units display varying subsistence related activities occurring at the site at the time of occupation. While midden makes up the majority of the cultural materials present at the site, the density of material culture and the presence of intact cultural features suggest that 45PC19 may have been a long-term occupation site. Furthermore, the most convincing evidence of long-term occupation of Nukaunlth is the presence of at least one house depression that the midden surrounds. The Indigenous place name "Nukaunlth village" associated with the site supports this.

Stratigraphic and Temporal Context

The cultural stratigraphy of sediments is largely intact with a varying degree of rodent burrow intrusions across the site. All test units excavated exhibited complex layering. Cultural stratigraphic layers occurred continuously until sterile subsoil in all test units except unit 418N385E. In unit 418N385E, stratigraphy indicates a brief occupation of the site followed by a thick deposit of sterile gray sand, then by a more intensive use of the site with similar signatures to those exposed in the other units. The thick deposit of sterile sand may indicate a long period of site abandonment, or more likely, is associated with the January 26, 1700 Cascadia earthquake and tsunami (Atwater et al. 2016). The sudden subsidence caused by the earthquake and the associated tsunami often leave sediments that are dissimilar to sterile subsoil in the region. This thick deposit, although similar in composition (i.e., pure sand), was a markedly different color than the subsoil. Subsoil at Kindred Island was consistently light yellowish brown (10YR 6/4).

In contrast, this deposit was gray (10YR 6/1). This, in turn, would suggest that cultural layers located directly above this deposit are from after 1700. AMS radiocarbon dating, described in detail below, corroborates this.

The presence of the layer associated with the Cascadia earthquake and tsunami in unit 418N385E then calls into question the absence of a similar stratum in the other three excavation units. Why was a clear deposit of tsunami-related sediment found in one unit and not the others? The other units show indication of a reconstruction process in which the house was excavated, rebuilt, and reoccupied post-tsunami. Unit 418N400E, directly outside of the house, exhibits a mixture of light yellowish brown and gray sterile sands in its bottommost layers (layers 4, 4A, & 4b) before sterile subsoil. This could reasonably be remnants of spoil piles from reconstructing the house and adding to the house berm. The units placed within the house (423N400E & 424N400E) contain no tsunami-related deposits. Instead, stratigraphic layering and AMS radiocarbon dating suggested an occupation pre-tsunami, some midden fill, and an occupation post-tsunami. Further testing and AMS dating is needed to validate this. However, Chinook and Lower Chehalis oral histories corroborate this idea, specifying that peoples often returned, rebuilt, and re-inhabited village sites after tsunamis. Furthermore, archaeological investigations from elsewhere in the Lower Columbia region show convincing evidence of remarkable house continuity through time where house features such as wall placement and central hearth features shifted very little spatially, although they were continually used, maintained, and reconstructed through the house's lifespan (Sobel 2004:604).

Site Condition

The Nukaunlth village site appears relatively undisturbed. The most common cause of site degradation in the area is erosion due to wave action and winter storms. However, Nukaunlth exhibits no degradation caused by erosion. This is likely in large part due to its protected location behind Tokeland. Even as recently as the late 1800s Kindred Island was further protected by Toke's point and other landmasses located at the northern end of the mouth of the bay that have since eroded (Figure 5.3). Nevertheless, current conditions and predictions that sea levels will continue to rise (e.g., Titus and Narayanan 1995) suggest that all coastal sites in the area are in danger of erosion unless action is taken to protect them. Rodent activity and animal trails, other common natural causes of site degradation, have only minimally affected the site. Signs of burrowing rodents were seen across the site, however, the majority of the stratigraphic layering appeared intact and was only complicated by the presence of these critters.

Modern human activity likely caused the most degradation of the site. Deforestation is the most obvious human-caused degradation to Kindred Island and the site itself. In 1947, the Nelson family logged the island. This activity occurred at the same time that Richard Daugherty first recorded the site and noted that it was "badly disturbed by present logging operation." Ranching occurred on Kindred Island and likely affected the top deposits as well. However, it is hard to tell the extent of this disturbance. As mentioned above, the stratigraphy seems intact, and we found minimal modern trash below the ground surface. However, the western half of the island has undergone significant agricultural and industrial modifications, and any cultural deposits that were present there at the time Daugherty recorded the site are seemingly destroyed.

Ascertaining Chronology

I submitted 33 charcoal samples to DirectAMS radiocarbon dating service (Appendix B). These samples were grouped into eight stratigraphic contexts, and a laboratory technician chose the best sample from each context for AMS radiocarbon dating to minimize the "old wood problem" (Schiffer 1986). The resulting dates range from 340 ± 22 BP to 89 ± 24 BP (Figure 5.29, Table 5.6). After calibration with OxCal v. 4.32 (Bronk Ramsey 2017), these dates situate the site use in the Late Pacific, protocontact, and early postcontact periods. Earlier dates for each unit are from deeper deposits, suggesting minimal stratigraphic disturbances from burrowing rodents. The two specimens with the earliest dates fall before the January 26, 1700 Cascadia earthquake (highlighted in red in Figure 5.29 & Table 5.6). One such specimen from 418N385E (D-AMS 027931), dated to 298 ± 29 BP, was collected from a cultural layer beneath what appeared to be sterile sand resulting from a major shift in landscape, likely the 1700 Cascadia earthquake and associated tsunami (Figure 5.20). The other specimen, dated to 340 ± 22 BP, was not buried beneath a thick layer of sterile sand like in unit 418N385E but recovered from below the topmost house floor. I recovered this specimen from the unit within the house structure and the numerous cultural features in this unit suggest that significant modification to the landscape post-tsunami may have occurred. The presence of this pre-tsunami radiocarbon date buried within the deeper household deposits corroborates the stratigraphic evidence suggesting that the house had two occupations, an earlier, less intensive occupation that may have been pre-tsunami and a later more extensive occupation lasting into postcontact period. The majority of the specimens date to post-tsunami and indicate that Nukaunlth village was likely most intensely used during the proto- and postcontact periods.

It's important to note that this chronology is based on a limited number of samples, and more AMS radiocarbon dates are needed to further refine and verify what I have put forward here. This is especially true when considering the earliest occupation of the site, and whether this occurred pre-tsunami or perhaps, in the very late precontact and protocontact period. Despite great strides made by geologists working in the region in recent years, there is still much we don't know about how the Cascadia earthquake and tsunami affected sites in Willapa Bay, but it seems that such effects varied depending on local topography. Further radiocarbon dating of early household deposits, lidar data, and additional off-site probing for buried tsunami deposits would go a long way in establishing a precise date of initial occupation for Nukaunlth.

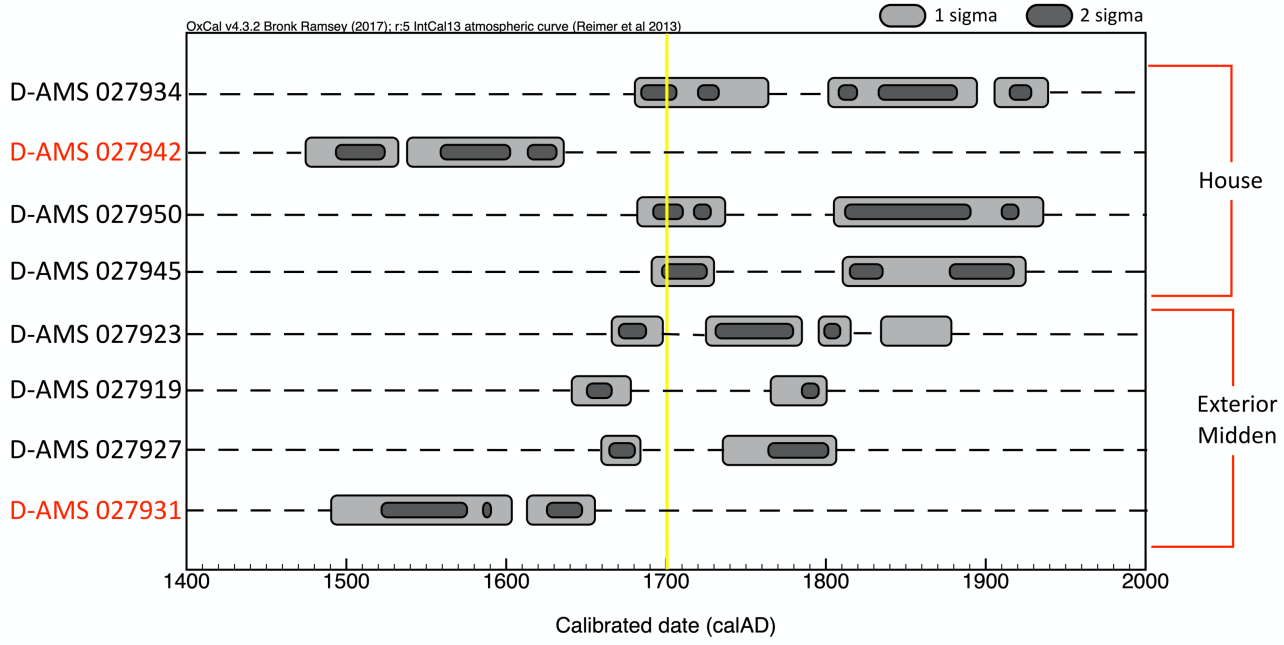

Figure 5.29 AMS radiocarbon dates from Nukaunlth

Table 5.6 AMS radiocarbon dates from Nukaunlth

Unit	*Lab Code*	*Provenience (cm BD)*	*Uncalibrated age (BP, 1σ)*	*Calibrated, 1σ**
418N400E	D-AMS 027923	20	160 ± 23	AD 1670 - 1944
	D-AMS 027919	42	232 ± 23	AD 1650 - 1795
418N385E	D-AMS 027927	26	193 ± 21	AD 1664 - 1950
	D-AMS 027931	48.5	298 ± 29	AD 1522 - 1647
423N400E	D-AMS 027934	16	124 ± 21	AD 1684 - 1929
	D-AMS 027942	26.5	340 ± 22	AD 1493 - 1631
424N400E	D-AMS 027945	19	89 ± 24	AD 1697 - 1917
	D-AMS 027950	32	113 ± 24	AD 1692 -1920

*Using IntCal13 atmospheric curve (Reimer et al 2013)

The relative dearth of Euro-American objects at this site and the minimal oral histories associated with Nukaunlth village suggests that this site was only marginally occupied during the postcontact period. Instead, the Nukaunlth village likely saw its peak habitation in the period directly after the Cascadia earthquake and tsunami but before a strong Euro-American presence arrived in Willapa Bay, a time commonly referred to as the protocontact period. Two non-Native objects provide some clues into the specific timeframe within the proto- and postcontact periods that Nukaunlth village was occupied. The blue-on-white Chinese porcelaneous stoneware recovered from Unit 418N400E (Figure 5.30) most closely resembles the Canton style of Chinese ceramic exports that were manufactured between 1785 and 1853 (Madsen 1995:175). Also, the glass bead found in unit 423N400E is a Variety 1a drawn glass bead (Kidd and Kidd 1983) closely resembling those found at the Fort Vancouver. Given that the fort was in use between 1829 and 1860, it's likely that the bead found at Nukaunlth was acquired at around the same time.

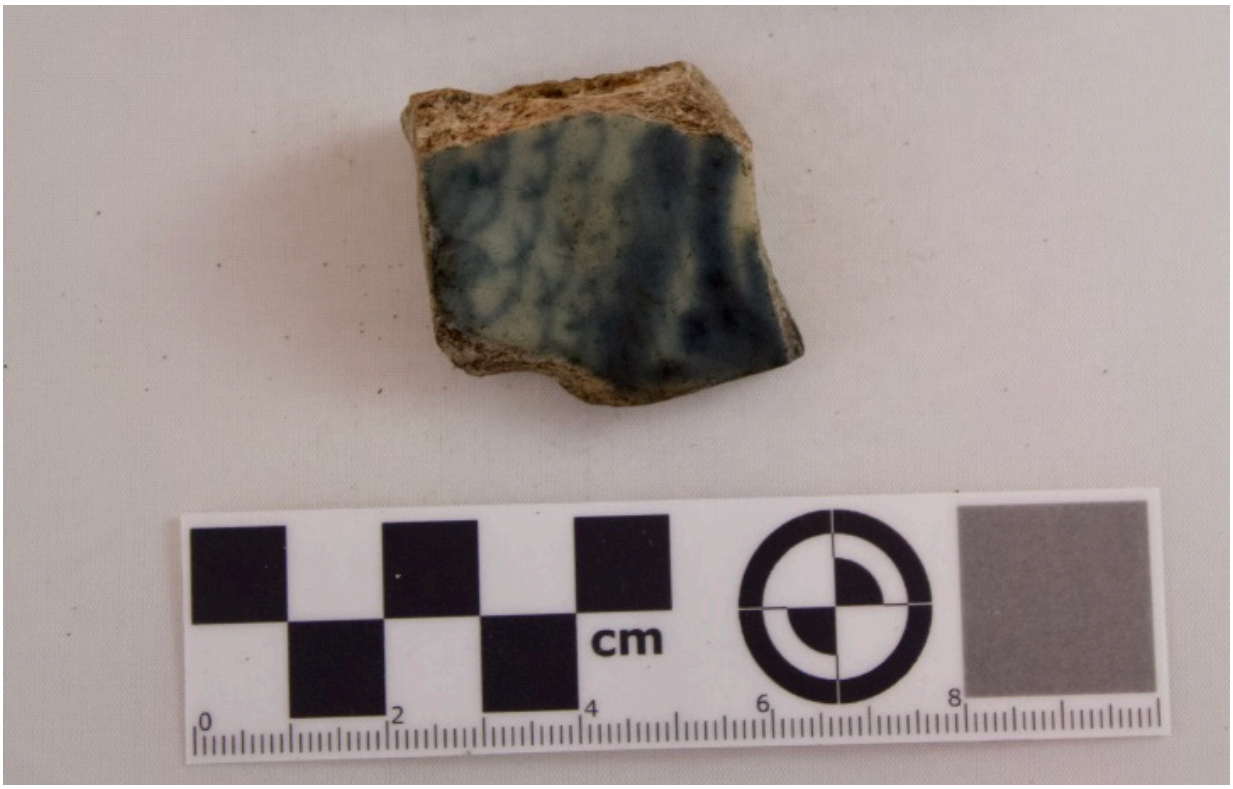

**Figure 5.30 Blue-on-white Chinese porcelaneous stoneware.
Canton style manufactured between AD 1785 and 1853.**

While it is difficult to assign a precise date of site abandonment, several lines of evidence suggest that Nukaunlth village was no longer in use by 1858. The 1858 Cadastral Survey Map (Figure 5.4) makes no mention of a Native American village at the eastern tip of Kindred Island and attributes this land to Euro-American surveyor and businessman, H.S. Gile. An earlier hydrographic survey map drawn by B. McMurtrie in 1852 also makes no mention of this village, despite plotting some houses. Whether McMurtrie took care to plot Native homes or only those of Euro-American settlers is unknown. The few datable Euro-American and non-Native objects described above also suggest the site was occupied in the early 19th century and up until the 1850s or 1860s. While regional ethnographic records are detailed in their accounts of

Indigenous villages inhabited in the second half of the 19th century (see Boas 1894; Curtis 1913; Ray 1938; Swan 1857), there is no mention of Nukaunlth, substantiating that this village was likely not in use at this time.

The chronology of the site suggests that Nukaunlth village, like the majority of sites in the area occupied in the proto- and postcontact eras, was very likely affected by European-introduced epidemics. Villages affected by epidemics were often entirely burned or contain in-ground burials. There is no evidence of this at Nukaunlth village. However, with an estimated 90% population loss for Lower Chehalis peoples (Boyd 1999: 263), and similarly devastating losses among the Chinook during this period, it would seem unlikely that this site remained untouched by these epidemics.

Village Organization, House Size, and Population Estimates

A suite of cultural features uncovered during excavations corroborates the location of a house that the topography of the site hints at. Mapping of the site with a transit confirmed the presence of a rectangular depression that is visible with the naked eye (Figure 5.28). The probe survey shows that the strongest positive readings for cultural materials are within or around this depression. Excavations within the depression revealed multiple house floors, household cooking features, and possible house construction features. Excavations directly outside of this depression revealed midden deposits and external cooking features but lacked evidence of house construction or house floors. Therefore, it is reasonable to assert that this rectangular depression is the remnants of an ancestral plank house.

Orientated parallel to the long axis of the island, the length of the house is positioned east-southeast (approximately 112°). This placement orients the house such that it is aligned

with the prevailing winds and protects the entrances of the house from extreme weather. This arrangement is fairly typical of the region (Ray 1938:124). Located near the southeastern tip of Kindred Island, the house depression is approximately 47 meters (154 ft) from the south shore, 100 meters (328 ft) from the east shore, and 70 meters (230 ft) from the north shore. While these are accurate measurements given the modern environment, it should be noted that the diking of the sloughs to the south and north of Kindred Island in the 1940s likely shifted the shoreline and may not accurately describe the location of the house in relation to the shorelines at the time of occupation. Midden deposits surround the house depression but are primarily to the south and west. Midden deposits are sparse to the north and east of the house depression.

The topography of the house depression suggests that the door(s) to the house were on the ends (i.e., shorter walls) of the house, as is typical of plank houses in the region (Hajda 1984:140; Ray 1938:125). The berms that surround the house to the east and the west dip slightly towards the center of the berm, approximately 4 meters (13 ft) from the corners of the depression. These may have been entrances to the house. This location would be protected from the prevailing wind and would help prevent drafts from blowing through the house disrupting cooking and other activities. Further excavations or a ground-penetrating radar (GPR) survey would confirm the location of the house entrance that the topography of the site suggests.

A conservative estimation of house size is approximately 8.5 m x 15.75 m (26.25 ft x 52 ft) with a total floor area of 132 m^2 (~1420 ft^2). This measurement is based on the size of the house depression, probe survey readings, and excavation data. The elevation change from the top of the berm to the base of the depression is approximately three feet (0.9 m). The elevation change from the ground surface of the island to the base of the lowest point of the house depression is approximately one foot. Both the size and depth of the house fall within reasonable

expectations for house construction given what is known of other Lower Chehalis and Chinook villages and suggests a large household by regional standards (see Chapter 2). The size of the house is more typical of Chinook construction and represents the upper reaches of house size for the Lower Chehalis. However, both the ratio of width to length (i.e., the shape) and the depth is more similar to Lower Chehalis houses. Given that Nukaunlth is located at the confluence of Lower Chehalis and Chinook territory, this hybridity makes sense.

While a house of this size is more typical among Chinook settlements in the Wapato Valley (Hajda 1984; Sobel 2004), Chinook houses around the mouth of the Columbia River and along the coast were generally smaller. Lewis and Clark report that a house near the mouth of the Columbia River was usually 14 to 20 feet wide (~4 to 6 meters) and 20 to 60 feet long (~6 to 18 meters) (Moulton 2018:386). However, Alexander Henry measures a 25 by 75-foot (~8 by 23 meters) house at Chinook Point (Henry et al. 1897:754). Therefore, the ancestral house at Nukaunlth was certainly large for the region, but not an unreasonable size.

Many archaeologists have estimated population counts based on house size, but few have agreed upon a standard and universal method for doing so. Here I discuss four methods used previously to estimate Chinook household size based on house size and present one additional alternative. I then discuss population estimates for the house identified at Nukaunlth based on each of these techniques.

(1) Naroll (1962) uses ethnographic data from 18 agricultural and non-agricultural societies to create a general formula for converting house floor area to an estimated household size: 0.10 x (household floor area) = number of residents. While it's been used to estimated household size in Northwest Coast societies in the past, this technique is generally viewed to be inaccurate for the region (Ames 2008a; Sobel 2004) as it represents a wide range of dwelling and

household organizational styles. The other techniques described below are favored. Using Naroll's technique, I estimate the household size at Nukaunlth is 13 individuals.

(2) Cook and Heizer use ethnographic data from Indigenous communities in California to develop a formula that allocates 13.92 m^2 of floor area to the first six people living in a house and an additional 9.29 m^2 for each additional resident (Cook and Heizer 1968). This formula is considered to be more accurate for Northwest Coast groups than Naroll's as it draws on data from hunter-gatherer societies with similar social structures. Northwest Coast scholars have used this measure in the past (e.g., Ames 1996; Coupland 1996a, 1996b). Using this measure, the house at Nukaunlth was home to about 19 individuals.

(3) In her dissertation, Sobel (2004) evaluates the relevancy of Naroll and Cook and Heizer's formulas for estimate household size and offers an alternative. Combining documentary data on Lower Columbia households and archaeological data from Cathlapotle house features, she estimates the mean household size represented by each house feature. The average size of co-resident families for the region (five individuals) is multiplied by the number of family living areas in a house inferred by architectural house features. This technique gives population estimates similar to, but slightly higher than Cook and Heizer's when applied to houses at Cathlapotle. Sobel's technique requires that the house is fully excavated, and all house architectural features are revealed. Therefore, as is, I cannot use it to estimate household size at Nukaunlth. Instead, I translated the data presented in her dissertation about house size and her household size estimates into a rough m^2 of floor area per person estimate (Table 5.7). According to Sobel's technique, houses at Cathlapotle varied in the amount of space used per individual, ranging from 5.345 m^2 to 7.5 m^2 floor area per person. The mean space allocated per person at Cathlapotle when using Sobel's estimation of household size is approximately 6.3 m^2.

Using this measure, the household living at Nukaunlth was 21 individuals. Applying Sobel's data to Nukaunlth requires two assumptions. First, we must assume the average size of a nuclear family among Willapa Chinookan and Lower Chehalis peoples was the same as those living in the Wapato Valley. While this is a reasonable assumption, it is not a given. Second, we must assume that living arrangements and division of household space at Cathlapotle are roughly the same as those at Nukaunlth. In some ways, Cathlapotle is analogous to Nukaunlth. Both villages were inhabited at roughly the same time, with Cathlapotle having a slightly earlier occupation (AD 1450 – 1830). Cathlapotle, however, is a much larger site and was an important site for European contact and trade. These divergent characteristics could have played an important role in the allocation of residential space. It is interesting to note, however, that converting Sobel's formula to a floor area/person estimate produces a similar result to that of Cassellberry's estimation of residential populations in ethnographic New World multifamily dwellings: the population of a multifamily dwelling can be roughly estimated as one-sixth the floor area of the dwelling as measured in square meters (1974:119). That is, approximately 6 m^2 of floor area is allocated to each individual.

Table 5.7 Cathlapotle Household Size Data (Sobel 2004)

House	*Total Floor Area (m^2)*	*Number of Family Living Areas*	*Household Size*	*Floor area per person*
H1B	66	2	10	6.60
H1C	113	3	15	7.53
H1D	187	6	30	6.23
H4	106.9	4	20	5.35
Mean	118.225	3.75	18.75	6.31
St. Dev.	50.38	1.71	8.54	0.91

(4) Ken Ames presents a different estimate of household size at Cathlapotle to accord with Hajda's (1984) much higher household population estimates for the Wapato Valley than is attained using either of three previously described methods. Using the mean of six population estimates made for Cathlapotle between 1792 and 1825 (Boyd 1999), the number of houses, and house sizes at this village, Ames settles on a ratio of 2.42 m^2 roofed area per person (Ames 2008a:152). He then uses this ratio to develop population estimates at the Clahlclellah and Meier sites. Ames' ratio is more compatible with space allocation thought to be typical of Northwest Coast pit houses favored by interior groups—a ratio of 2-3 m^2 of livable space per person is a common formula for calculating household size (Graesch 2006:70; Hayden et al. 1996).

This vastly reduced space allocation would indicate that 54 individuals lived in the ancestral house at Nukaunlth. Like Sobel's formula, Ames developed this formula using data from the Wapato Valley and applied it to other archaeological sites there. Given that the Wapato Valley is known to have larger settlements and larger houses, Ames' ratio may not accurately reflect household spatial allocation in Willapa Bay. While we have ethnographic accounts that compare settlement and house size for the coast and the Wapato Valley, it is unclear from these accounts whether the general size difference in houses between these two sub-regions reflects differences in household size or use of space within the house itself.

However, while Ames' formula produces a much higher prediction than any previous formula, it is not outlandish given some ethnographic records. In 1839, Hinds described the interior of a Chinook chief's house on the mouth of the Columbia. In his description, he states the house had 10 fires and assumes that each large sleeping berth flanking a fire to be the space allocated to a single family (i.e., that each fire denoted two families). Therefore, by Hinds estimates a single chiefly house held up to 20 families or 100 individuals given that the average

Chinook family was five individuals. By this account, a household size of 54 individuals is not unreasonable for the region.

(5) Lastly, I offer one additional formula that may remedy some of the inconsistencies found when applying the methods used elsewhere to estimate household populations in Willapa Bay. I use Lewis and Clark's description of house size and household size to create a ratio ranging from 5.2 m^2 of floor area per person to 5.57 m^2 floor area per person. While residing at Fort Clatsop on the south end of the mouth of the Columbia River, Lewis and Clark describe Chinook houses that are "…14 to 20 feet wide and from 20 to 60 feet in length [and] accommodate one or more families sometimes three or four families reside in the same room" (Lewis and Clark 2002:386). Assuming that the smallest house size possible as indicated by Lewis and Clark (i.e., 14 feet wide, 20 feet long) housed a single nuclear family of five individuals, the ratio of floor space to individual in this dwelling would be 5.2 m^2. If the largest house size possible as indicated by Lewis and Clark housed four families, as they suggest is the upper limits of household size, the resulting ratio is 5.57 m^2. Given that the house at Nukaunlth is quite large, it is reasonable to apply the ratio provided by the larger of Lewis and Clark's estimates. As such, using this measurement the house at Nukaunlth is estimated to have housed 24 individuals. Unfortunately, Lewis and Clark do not explain what they mean by 'family'. Therefore, if their meaning was different from a nuclear family then this would undermine this approach to estimating household size.

Not surprisingly, four techniques for estimating household size using house size produces four different results, ranging from 13 to 54 residents of the house at Nukaunlth (Table 5.8). It is reasonable to suggest, however, that the techniques that draw on regional data or ethnographic accounts of similar communities produce more reliable estimations. As Naroll's formula draws

on ethnographic accounts of agrarian societies, it is likely the least useful in this case and can be reasonably discounted. Cook and Heizer draw on data from similarly structured communities in California and is likely a more accurate representation of household size for coastal Washington than Naroll's. However, formulas presented by Sobel, Ames, and I draw on ethnographic data of Chinookan groups. Therefore, they may be even more applicable than Cook and Heizer's formula.

Table 5.8 Nukaunlth household population estimates

	Number of Individuals	***Number of Families***
Naroll 1962	13	2.60
Cook and Heizer 1968	19	3.8
Sobel 2004	21	4.2
Ames 2008	54	10.8
Antoniou	24	4.8
Mean	**26.2**	**5.24**
St. Dev.	**16.05**	**3.21**

While there is no definite answer as to the total household size at Nukaunlth, by all estimations it is evident that the household residing at this village was large by regional standards. Throughout Chinook territory, the average household size was three or four families (15-20 individuals) (Cox 1957:176), while coastal communities typically had households containing one or two families (5-10 individuals). It is safe to say, then, that the household at Nukaunlth was larger than the typical Chinook household and may have been a substantial population, especially on the coast. Larger households are typically associated with higher status (Sobel 2004:282) and some prestige objects recovered during excavation (discussed below) hint at the household's prestige.

Material Culture

While relatively few and far between, non-faunal artifacts recovered during the excavations speak to the daily activities of those living at Nukaunlth including cooking practices, tool manufacture and use, trade, and interactions with Euro-Americans. During excavations, we mapped larger artifacts *in situ* and bagged them separately to preserve their provenience information. We sieved sediments through ¼ inch (6.3 mm) and 1/8 inch (3.1 mm) graded sieves. All material culture, except shell, charcoal, and FMR, were picked from the screen and bagged separately. Fire-Modified Rock (FMR) larger than approximately one inch in size were counted and weighed on site and discarded in the field. Screen residue (containing primarily shell specimens) were saved, sampled, and sorted in the lab. Volunteers[23] and I sorted a 25% sample by weight of the ¼ screen residue. We counted and weighed all cultural materials. Likewise, we sorted a 10% sample by weight of the 1/8 screen residue.[24] We recorded count and weight for all material culture from the 1/8 screen residue except for FMR and shell specimens, which were too numerous to count, and therefore only weight was recorded. Because a complete identification and recovery of all material culture from the screens in the field was attempted, excluding FMR and shell, only those that were overlooked in this process were identified in the lab. This comprises 20% of the material culture described in the *Tools & Tool Manufacturing Byproducts* and *Euro-American & High-Status Objects* sections below.

---

[23] Sergio Garcia, Martin Hutchinson, Ashton Roberts, & Paul Skomsvold.

[24] I describe this sampling method in detail in Chapter 6, as it pertains primarily to the faunal assemblage.

Fire-Modified Rock

Fire-modified rock (FMR), rock that has been cracked, discolored, or otherwise altered as a result of exposure to intense heating and cooling activities (Graesch et al. 2014), is ubiquitous among Northwest Coast archaeological assemblages and can lend insight into household cooking practices and intensities. I conducted a simple analysis, relying on count and weight information, on the FMR from the site.

I recovered and analyzed a total of 1,241 FMR specimens (16.6 kg) from excavations at Nukaunlth. FMR was most often recovered from the house floors and interior midden deposits, accounting for volume excavated (Table 5.9, Figure 5.31). Within the house, we more frequently recovered FMR from 423N400E, the excavation unit closest to the house periphery, which likely reflects active clearing of central, high traffic areas within the plank house. The cockle steaming pit feature contained the largest fragments of FMR, weighing 23.5 g on average.[25] FMR fragments from elsewhere weighed on average 12 g. Overall, the fragments of FMR are quite small (86% by count and 46% by weight are smaller than 1 in) and appear to reflect a generally intensive use of rock at the site. Those residing at Nukaunlth likely took care to use rock as efficiently as possible, as rock likely had to be brought to Kindred island from elsewhere in Willapa Bay. The density of FMR was much higher in deposits from the later occupation of Nukaunlth (post-AD 1700). Approximately 75% of the FMR assemblage was recovered from stratigraphic layers representing this occupation. This likely reflects the increased use of the site in this later period. No difference between the two occupations exists when comparing fragment size or prevalence of FMR by location.

---

[25] The rocks used to demarcate the cockle roasting pit (shown in Figure 5.17) were excluded from this analysis.

Table 5.9 FMR by cultural deposit

Cultural Deposit Type	*Occupation*	*Qty*	*Weight (g)*	*% Qty*	*% Weight*	*Count per 10 L*	*Avg. Size (g)*
Activity Zone	2nd	58	1365.5	4.7	8.1	4.2	23.5
Exterior Midden	2nd	100	1233.0	8.0	7.4	2.9	12.3
Interior Midden	1st	217	3136.2	17.4	18.7	48.2	14.5
	2nd	40	1076.6	3.2	6.4	2.9	26.9
		257	**4212.8**	**20.6**	**25.1**	**51.1**	**41.4**
House Floor	1st	72	652.9	5.8	3.9	3.5	9.1
	2nd	422	6120.5	33.8	36.5	29.5	14.5
		494	**6773.4**	**39.6**	**40.4**	**33**	**23.6**
Sod/Surface	2nd	299	2768.8	24.0	16.5	6.4	9.3
Other	1st	33	383.9	2.6	2.3	0.7	11.6
	2nd	6	33.6	0.5	0.2	0.2	5.6
		39	**417.5**	**3.1**	**2.5**	**0.9**	**17.2**
Total		**1247**	**16770.9**				
Average						**10.9**	**13.4**

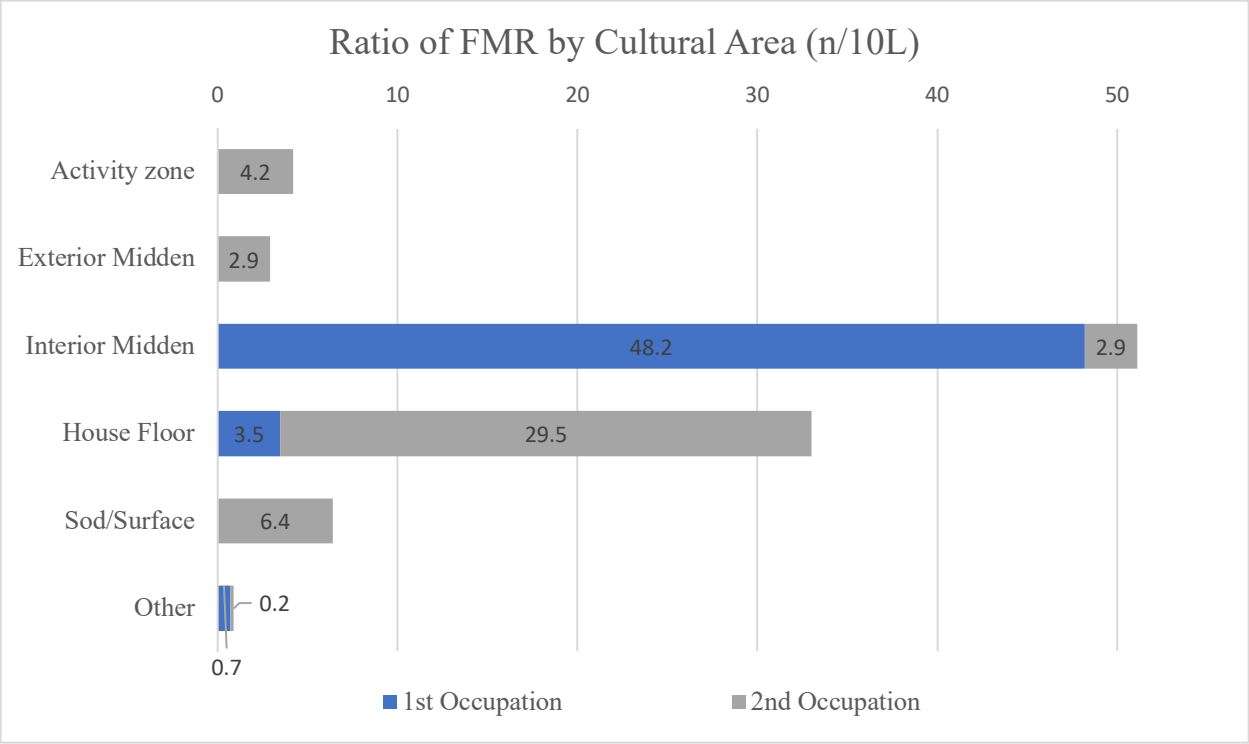

Figure 5.31 Quantity of FMR by cultural area, accounting for volume excavated

Tools and Tool Manufacturing Byproducts

We recovered a relatively small number of formalized tools from excavations at Nukaunlth, only 10 in total: one biface fragment, one projectile point, one hide-scraper, four cobble tool fragments, and three bone arming points. Likewise, debitage from lithic manufacture was few and far between; we recovered only 19 flakes and 12 pieces of shatter. Given the small assemblage, statistical analyses are limited. However, I can glean some information pertaining to household activities and procurement methods from the tools and tool manufacture byproducts from Nukaunlth.

The Nukaunlth lithic, ground stone, and lithic debitage by and large match Greater Lower Columbia assemblages recovered elsewhere. The raw materials represented in the assemblage—agate, chert, quartzite, medium-grained igneous, and large-grained igneous—are common

throughout the Greater Lower Columbia region (Table 5.10). Agates, in particular, are abundant among beach gravels in Willapa Bay and Grays Harbor (Glover 1949). The lithic debitage and non-debitage assemblages are largely corresponding in terms of raw material, however, we recovered no formalized tools made from agate. The three formalized chipped-stone tools recovered were chert. Agate debitage was smaller on average than debitage of other materials, making up 63% of the debitage recovered in the 1/8 in sieve, and were predominately non-cortical flakes. This suggests that, although we recovered no formalized agate tools, at least some secondary reduction of agate nodules and/or maintenance of agate tools took place at Nukaunlth.

Table 5.10 Nukaunlth lithic raw material

	Agate	***Chert***	***Quartz/ Quartzite***	***Med.- Grained Igneous***	***Lrg. - Grained Igneous***	***Unknown***	***Sum***
Debitage – Flake	9	6	-	3	1	-	19
Debitage – Shatter	1	-	7	3	-	1	12
Biface Fragment	-	1	-	-	-	-	1
Projectile Point	-	1	-	-	-	-	1
Hide-scraper	-	1	-	-	-	-	1
Cobble Tool Fragments	-	-	-	1	3	-	3
Total	**10**	**9**	**7**	**7**	**4**	**1**	**38**
%	**26.3**	**23.7**	**18.4**	**18.4**	**10.5**	**2.6**	**100**

Though small, the Nukaunlth debitage assemblage largely resembles debitage assemblages from elsewhere in the Greater Lower Columbia region. It is characterized by small fragments resulting from a three-stage reduction sequence. Looking across material types, cortical flakes and shatter makes up over 65% of the debitage assemblage, indicating that,

despite the small quantity of formalized tools recovered, primary reduction was taking place on-site. The small assemblage size may owe more to the limited scope of excavations than to a lack of on-site manufacturing occurring at Nukaunlth. The debitage to chipped-stone tool ratio (10.3:1) of this assemblage is well within the range seen at other Lower Columbia village sites that were occupied roughly contemporaneously (Figure 5.32). This ratio is roughly equal to or double that of Meier and Cathlapotle, respectively (Wilson et al. 2008:261). Looking at the assemblage in this light suggests tool production at Nukaunlth was occurring at the expected rate for a Chinookan/Lower Chehalis village occupied at this time.

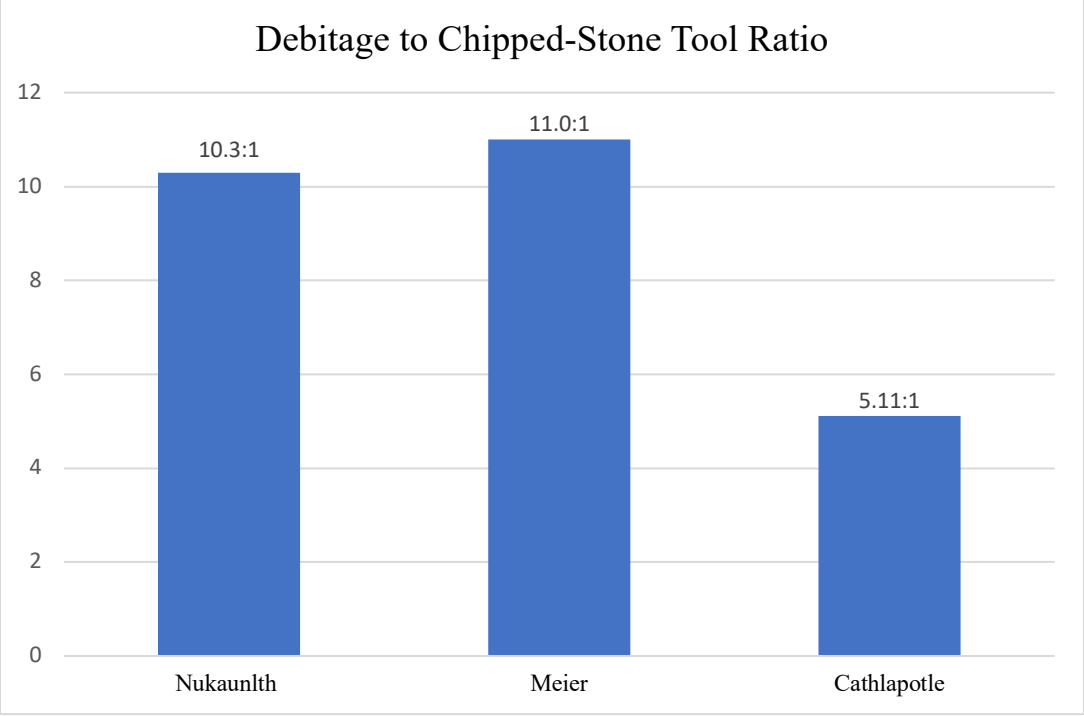

Figure 5.32 Ratio of debitage to chipped-stone tools at Lower Chinookan village sites

Like the FMR assemblage, the bulk of the tools and tool manufacture detritus recovered from excavations at Nukaunlth came from within the house structure, primarily from unit 423N400E. This unit is located on the periphery of the house and away from high traffic, central

areas that were likely regularly cleaned of debris. Also, like the FMR assemblage, we recovered the bulk of this assemblage from stratigraphic layers representing the later occupation; of tool and tool manufacture assemblage, 78% can be attributed to the later (i.e., most recent) occupation. The raw material used in the manufacture of stone tools between the two occupations changes slightly. In the earlier use of the site, chert dominates the assemblage. In the later occupation, agate and igneous become more common. Given the small size of the assemblage, it is difficult to know whether this represents a true shift in tool manufacture. It is possible, however, that given the major changes in the landscape caused by the AD 1700 Cascadia earthquake, there was a shift in the makeup of locally available raw materials. New raw material may have become easily available that was not so in earlier decades and vice versa.

The few formalized tools recovered from excavations at Nukaunlth are worth discussing in detail here, as they reflect the daily activities of those living at Nukaunlth. The one projectile point recovered is made from chert (Figure 5.33). Its small size (less than 1 cm in width, and just over 1 cm in length) makes it clear that it is an arrowhead and not a dart point (Shott 1997). At first glance, this point appears to be a side-notched with one shoulder broken. However, upon closer inspection, this point is unfinished with the intended shape being that of a stemmed point. Both stemmed and side-notched points are common in the region, as is the general production sequence represented by this specimen—the pressure-flake reduction of small flakes struck from small chert cores (Wilson et al. 2008).

Figure 5.33 Projectile point recovered from Unit 423N400E

We recovered two other formalized chipped stone tools. From the exterior midden deposits, we recovered a chert flake bearing unifacial use-related macroflaking along its longest side, likely resulting from hide-scraping. This hide-scraper is morphologically and technologically similar to hide-scrapers from Middle Village, Meier, and Cathlapotle. From within the house, we recovered one chert biface fragment. Based on morphology and thickness, this biface does not appear to be broken from a projectile point. Four fragments of fire-modified rock appear to have use-wear and are classified as possible cobble tools. Three item exhibits ground-stone production pecking wear traces. Another shows signs of anvil wear scarring.

We also recovered three bone arming points from within the house. We found two within deposits dating to the later occupation. The third was recovered from deposits dated to the earlier occupation. All three are elongated and asymmetrically bipointed and exhibit grinding marks that are horizontal to the longitudinal axis. These are part of a composite toggling

harpoon point in which the armament fits between two valves (forming the barbs) and is bound together by twine. The composite toggling harpoon is designed to detach from the spear and turn inside of the body of the prey, thereby allowing for immobilization and retrieval. Variations of single- and double-pronged toggle spears of different sizes were used for a wide range of marine species from salmon to whale. The size of the three bone arming points recovered at Nukaunlth suggests they were used for smaller prey, possibly salmon or sturgeon. In either case, they represent the use of specialized maritime hunting technology by those living at Nukaunlth. The composite toggling harpoon is common throughout Northwest Coast archaeological assemblages, and form varies regionally. The points recovered from Nukaunlth are similar to those recovered from the nearby Minard site (Roll 1974:112).

Lastly, we recovered two mountain beaver (*Aplodontia rufa*) mandibles (MNI = 2) from the house floor corresponding to the first occupation. I discuss these in more detail below and in Chapter 6. However, they are relevant here because a study of assemblages from the up-river Chinookan village site, Cathlapotle, by Lyman and Zehr (2003) suggests that mountain beaver mandibles were used as chisels and/or engravers. Beaver-incisor chisels are an archaeologically and ethnographically well-documented woodworking tool commonly found in the region, including at the nearby Lower Chehalis site, the Minard site (Roll 1974:145). The intricate, triangular motif common on Chinookan decorative woodworking and sheep horn bowls would have required a smaller precision tool (Earl Davis, personal communication). Use-wear present on mountain beaver mandibles from Cathlapotle suggests that the smaller mountain-beaver incisor, when still set in the mandible, was used similarly to beaver incisors, and may have acted as that precision tool. The two mandibles recovered at Nukaunlth show similar use-wear and were likely used as woodworking tools.

Euro-American and High-Status Objects

The few Euro-American trade objects recovered from excavations at Nukaunlth provide some indication of both the time of occupation and the trade networks available to those living at this village. As noted earlier, we recovered two Euro-American trade items that provide chronological information. A single broken, Variety 1a, drawn glass bead (Figure 5.34) was found within the house, in deposits associated with the second house floor. This is a simple, cylindrical royal blue bead that is European in origin, most likely Venetian. Beads of this type were in production for most of the 18th and 19th centuries and have been recovered from mid-18th century contexts. Beads of a similar type were found at both the Middle Village site (Wilson et al. 2008:291) and Fort Vancouver (Ross 1990:35), locales that were in use in the late from 1788 to 1830, and from 1829 and 1860 respectively. Therefore, both the provenience of the bead (recovered from the house floor of the later occupation) and the production period of this bead type confirms a post-AD 1700 use of the site and may suggest that Nukaunlth was in use well into the 19th century. Glass beads constituted wealth goods and currency in the postcontact period, as they were novel yet similar to Native-origin beads such as dentalium, a form of Indigenous wealth (Hajda 1984:230–231).

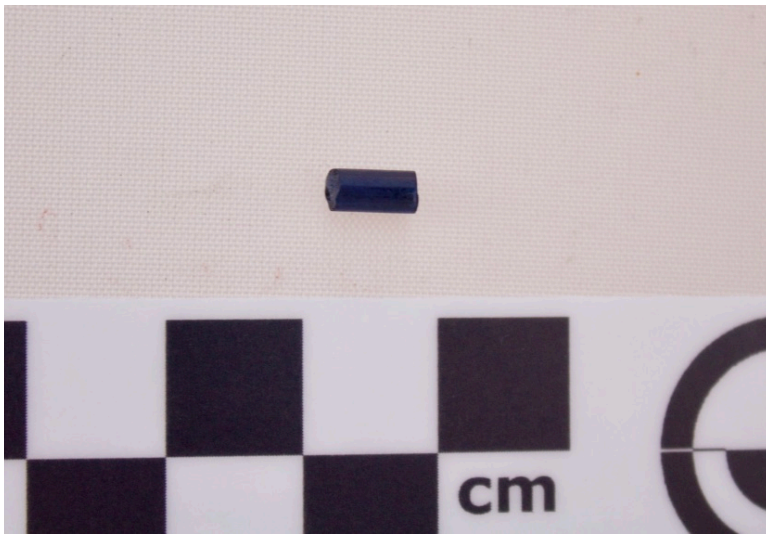

Figure 5.34 Variety 1a drawn bead of European origin recovered from house deposits

We also recovered a single blue-on-white Chinese porcelaneous stoneware fragment from the exterior midden in deposits dated to post-European arrival (Figure 5.30). Chinese, hand-painted porcelain wares were manufactured and exported to the U.S. in abundance between 1780 and 1880. As noted earlier, this fragment most closely resembles the "Canton" style of Chinese ceramic exports manufactured for the American market between 1785 and 1853 (Madsen 1995:175). This is one of two blue-decorated gray-bodied porcelains (the other being the "Nanking" style) common in most early 19th century sites in the Pacific Northwest, including Middle Village (ca. 1788-1830), Fort Vancouver (ca. 1829-1860), Fort Nez Perce (ca. 1818-1855), and Fort Colville (ca. 1826-1871) (Chance 1972; Ross 1976; Wilson et al. 2008). The Chinese export porcelain assemblage from Fort Vancouver is entirely this "Canton" style suggesting that this may have been the predominant style in the region during its occupation (ca. 1829-1860) (Cromwell 2006).

In addition, we found 10 pieces of ferrous metal. We recovered nine out of the 10 fragments from within the house, predominately from the excavation unit at the periphery of the

house. We found all fragments in stratigraphic layers dated to the later occupation, save one. This fragment was recovered in a rodent burrow that reached sterile subsoil and therefore likely does not reflect its original provenience. The highly oxidized ferrous metal recovered was fragmentary and rusted. One artifact resembles a highly degraded nail fragment. Another is similar in shape to metal projectile points recovered from Middle Village. However, in all cases, the artifacts were incomplete, and I could not conclusively identify them.

We revealed five copper artifacts during excavations: three rolled copper beads, and two fragments of copper sheeting. The rolled copper beads vary in length from under 5mm to 28mm. One bead is badly crushed and may instead represent a fragment of a copper bracelet. We recovered the two copper sheets together *in situ.* One copper sheet is trapezoidal: approximately 38mm in length, 12mm at its maximum width, and narrowing to 5mm at its base. The sharp edges, size, and shape suggest that it may have been used as a pendant but there is neither a hole nor any decorative design to confirm this. The other sheet is much smaller, 15mm in its maximum dimension, and does not possess the distinct shape to suggest it was a pendant or any other form of adornment. Four out of the five copper artifacts were in house deposits. Like the metal artifacts recovered, these items came from the periphery of the house and were likely lost or abandoned *in situ* during the use of the house.

All copper artifacts were from deposits associated with the later, post-1700 occupation of Nukaunlth. European smelted copper was a common trade item in the Euro-American fur trade and was likely directly traded for with Euro-Americans and/or obtained through intra-Indigenous trade networks that were in contact with Euro-American traders elsewhere (Cole and Darling 1990; Stapp 1985). It is also possible that copper was obtained from shipwrecks of European vessels. Ships with hulls covered by copper sheathing were introduced into the British navy

starting in 1759. Chinook oral history describes a shipwreck that occurred sometime in the mid-eighteenth century (Boas 1894). The shipwrecked vessel is described as covered in copper and a great source of metal for Chinook communities.

Native copper sources also exist throughout the Pacific Northwest (Patty 1921), and even without smelting and mining technological practices among most Northwest Coast Indigenous groups, native copper could have been utilized when found in nugget form from exposed surface sources. Moreover, Chinookan and Lower Chehalis peoples could have acquired native copper through Native trade networks extending from Alaska and the Great Lakes region (Sobel 2004). However, in general, native copper is far less common in proto- and postcontact archaeological assemblages of the southern Northwest Coast (Cooper et al. 2015; Hunt 2015).

It should be noted that there is much more work to be done on the abundance of native copper vs. European smelted copper in archaeological assemblages from the Northwest Coast. The chemical analyses needed to source copper are relatively new and as they become more common and inexpensive, we will almost certainly learn new insights into native copper production. However, recent analyses of the assemblages from Cathlapotle and Meier revealed that all copper artifacts were made of European smelted copper (Cooper et al. 2015). Given that the copper recovered at Nukaunlth was associated with deposits dating to the later occupation of the site and found in association with other Euro-American trade items, it is reasonable to assume that this copper is European in origin. Future chemical analyses such as x-ray fluorescence would confirm this.

The presence of copper artifacts is fairly common in other Lower Chinook and Lower Chehalis village site assemblages from the postcontact period. However, compared to the larger up-river Chinookan villages such as Cathlapotle and Meier, Nukaunlth contains a much higher

density of copper objects per liter excavated (Table 5.11, Figure 5.35). Even compared to Middle Village, a Chinook site unique in its abundance of fur-trade goods, Nukaunlth contains 1.5 times the copper objects by density. I should note that we excavated a much smaller volume from Nukaunlth compared to these other sites in which excavations were multi-year endeavors. As such, the high density of copper artifacts recovered may not reflect a site-wide pattern. However, these copper artifacts were not recovered from a storage feature, nor do the artifacts represent debris from copper ornament manufacture. Given the present data, there is no indication that this is a skewed assemblage. Further excavations at Nukaunlth will refine these data.

Trade copper was a highly valued prestige good in the Pacific Northwest and was traded extensively throughout the region. Among Euro-American fur traders, copper was a known trade item of high value to Indigenous people, particularly in the late 18th century. Personal adornments made of trade copper, such as beads, bracelets, and pendants were "symbols of prestige" (Ruby and Brown 1976:63) and were incorporated into burial rituals throughout the Northwest Coast and the Plateau. A burial from the nearby Lower Chehalis village, the Minard site, contained a necklace composed of over 250 copper beads (Roll 1974:164). The large amounts of trade copper incorporated into these symbolic systems demonstrates the speed at which trade copper objects were "integrated into [I]ndigenous ideology and value systems as a way to display wealth and prestige" (Cooper et al. 2015:155).

Table 5.11 Comparison of copper/cupreous artifacts for four Chinookan sites

.

	Copper/Cupreous Artifacts (n)	*Excavated Volume (m^3)*	***Density (n/m^3)***
Meier (35CO5)	52	155	**0.34**
Cathlapotle (45CL1)	120	242	**0.50**
Middle Village (45PC106)	83	53.6	**1.55**
Nukaunlth (45PC19)	5	2.2	**2.27**

Meier and Cathlapotle data from Banach (2002), Middle Village data from Wilson et al. (2008)

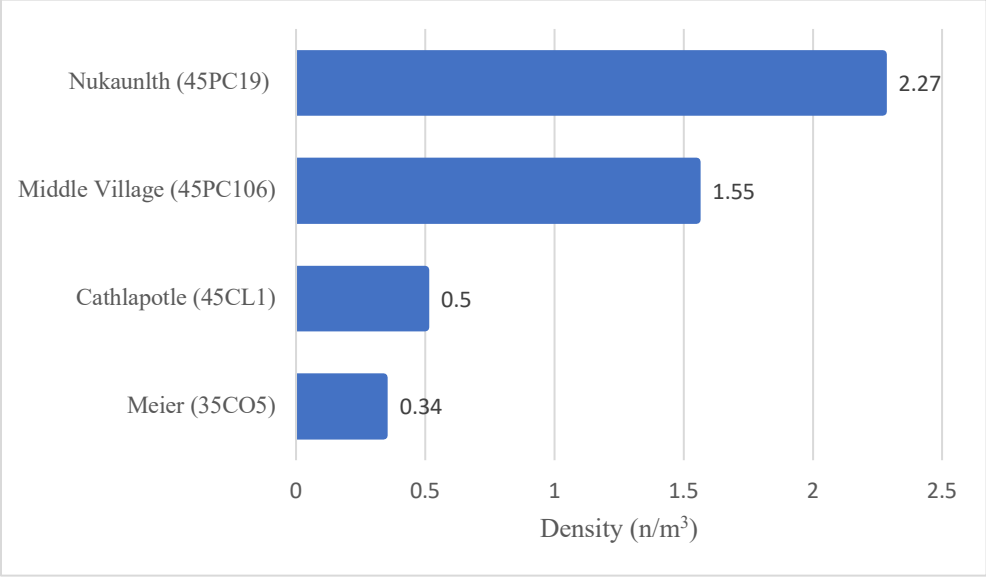

Figure 5.35 Density of copper/cupreous artifacts at Chinookan sites.

While the presence of a single glass trade bead, a single ceramic fragment, several presumed European trade copper artifacts, and several fragments of metal is not unequivocal evidence that residents of Nukaunlth were in direct contact with Euro-American traders, it does suggest that they were at least involved in trade networks that connected them, either directly or through other Indigenous communities, to Euro-American trade items. This, in turn, suggests something about the status and wealth of the household living at Nukaunlth. The linkage between trade and prestige among Northwest Coast cultures has been well-documented in the

ethnohistorical, oral historical, and archaeological records (Ames 1981, 2008; Ames and Maschner 1999; Drucker 1955; Hajda 1984). With the arrival of Euro-American traders and the fur trade networks, new objects of wealth and prestige were incorporated into an already robust Indigenous trade system. These items may have increased the importance of exchange in the process by which wealth, power, and prestige was acquired by Indigenous groups (Acheson and Delgado 2004; Gibson 1992). The ability to control trade between fur traders and other Native peoples increased the importance of regional chiefs on the Lower Columbia (Ames 1995). Therefore, the presence of these Euro-American trade items generally, and specific Euro-American items with known attached wealth such as glass and copper beads, indicate some degree of prestige and possession of wealth among those living at Nukaunlth. In particular, the density at which we found copper artifacts at Nukaunlth when compared to other sites in the Lower Columbia region, if it holds after further archaeological testing, suggests that this household possessed a substantial amount of wealth and prestige.

Excavations also revealed a few other goods of Indigenous origins that denote wealth, access to trade networks, and status at Nukaunlth and corroborate the high status that the Euro-American trade items suggest. The two mountain beaver (*Aplodontia rufa*) mandibles recovered from within the house are relevant here as oral histories and ethnographic records describe blankets made from twisted mountain beaver pelts as one of the highest status objects a person could own. Curtis (1913b:44) describes a blanket unique to Willapa Bay communities that was made in a similar fashion. In his description, he suggests raccoon skins were used. Oral histories from the Shoalwater say that raccoon, beaver, bobcat, mountain beaver, or the skin of any small mammal was used to make this type of blanket, mountain beaver being the most prized (Earl Davis, personal communication). Mountain beaver pelts are said to be very soft but

generally small. This, in turn, makes a mountain beaver blanket costly to produce but highly desirable. Ownership of such a blanket, therefore, was considered a great symbol of prestige (Tony Johnson, personal communication). Ethnographically, the production of mountain beaver "robes" is noted, but these robes are said to be less valuable than those made from sea otter (Ray 1938:136). The mountain beaver bones recovered *in situ* within the house may suggest the production of mountain beaver blankets at Nukaunlth. Likewise, we recovered sea otter faunal specimens (n = 10) from within the house and this may suggest the production of sea otter pelts for trade, a highly valuable trade good, or for clothing. Edward Curtis places a single sea otter pelt at the equivalent value as an "able-bodied slave or a hundred fathoms of dentalium shells" (1913b:43).

In addition, a single dentalium shell bead was recovered from an exploratory 4"-diameter auger placed directly outside the house depression. Dentalium shell was a well-documented form of wealth in the Greater Lower Columbia region. Dentalium are not found locally but were traded southward from the Strait of Juan de Fuca and the west coast of Vancouver Island for cured salmon and dried clams (Ray 1938:99–101; Roll 1974:45). It was highly prized and a principal medium of exchange for Lower Chinook and Lower Chehalis communities, serving as a form of currency among Lower Columbia peoples (Hajda 1984:228–232; Stern 1998). It possessed a high exchange value, was generally exchanged for other forms of wealth, and acted as a visual of the prestige of the owner when worn as adornments (either on the body or attached to clothes) (Boas 1894:209–278; Hajda 1984:228–232; Sobel 2004:195; Swan 1857:158–159). Dentalium was used for pendants, necklaces, armbands, bracelets, ankle bands, earrings, and were hung from thread passed through a pierced nasal septum (Ray 1938:141). Ray (1938) declares that dentalium were the favorite medium of exchange, ornament, and bead among

Lower Chinook groups. While the central role of dentalium in exchange networks is well documented, dentalium are rare in archaeological assemblages.[26] Very few were recovered from Meier and Cathlapotle and none were recovered from Middle Village. The presence of this dentalium at Nukaunlth, therefore, is particularly noteworthy and suggests a household of high status.

Lastly, we found three fragments of red ochre in house deposits. Ethnographic accounts document the use of red ochre for body and facial painting (Curtis 1913:42; Ray 1938:140; Swan 1857:112, 334). Ochre was worn on the face in times of war, ceremony, as relief from illness, or simply for decoration (Ray 1938:140). Ochre was also used to paint the inside of canoes (Swan 1857:82). While ethnographic records cite tattooing as a mark of high status individuals (Ray 1938), no information is given as to whether the use of ochre was reserved for specific ranks.

Miscellaneous Material Culture

We recovered a few classes of artifacts from Nukaunlth that do not fit within the above categories but that are worth mentioning. Five small, rounded pieces of pumice, none exceeding two grams, were recovered. Pumice is naturally occurring in Washington state from both Mt. St. Helen and Glacier Peak. Large pieces of pumice were often used as abraders and bare distinctive use-wear from this process. At Middle Village, abraders and other pumiceous items were the most commonly found non-debitage lithic artifacts (Wilson et al. 2008:273). The pieces recovered from Nukaunlth, however, are neither big enough nor possess the distinctive use-wear

[26] A notable exception is from the Minard site, where burials were excavated. One burial contained a complex necklace consisting of 257 rolled copper beads interspersed between 530 dentalium beads (Roll 1974:164).

to be abraders. One small pumice ball, weighing 0.34 g, was recovered from Middle Village (Wilson et al. 2008:278). Wilson et al. (2008) group this pumice ball with the more ubiquitous clay balls in the Middle Village assemblage, presumably because it is of a similar shape and size. Based on the description of this artifact from Middle Village, the items recovered from Nukaunlth are more convincingly classified as pumice balls than as abraders. However, the function of these is unknown. Wilson et al. (2008:277–278) give some suggestions as to the function of the clay balls with which the pumice ball is grouped. Charcoal staining and darkening on some clay balls is suggestive of polishing. Similar items have been used as "stone" boilers elsewhere, however, given the abundance of rock present at the site, this is an unlikely function for the Middle Village assemblage. Ultimately, they do not suggest a function for the pumice ball specifically.

We recovered two water-worn cobbles[27] from house floor deposits. These cobbles do not show use-wear or evidence of modification. However, their size and provenience suggest that they were curated by those living at Nukaunlth and may have served some unknown purpose. One, in particular, is the appropriate shape and size to be used as a hammerstone and it may have been curated by those living at Nukaunlth for this use. We also recovered 33 (528 grams) water-worn pebbles[28] without use-wear or evidence of modification. Most of these were recovered from exterior midden deposits. While these items had to be imported to Nukaunlth, as there is no indication that the coast of Kindred Island ever had a pebble beach, their function is unknown.

---

[27] 64–256 mm in diameter.

[28] 4–64 mm in diameter.

Residents of Nukaunlth may have unintentionally brought these onto the site with bushels of shellfish and other subsistence goods.

Lastly, we recovered two pieces of Styrofoam from Nukaunlth. However, both pieces were recovered from the sod/surface level. I expect some modern materials at this level and the presence of Styrofoam does not indicate a disturbance to archaeological deposits. In fact, it is quite remarkable that only two modern items were found at Nukaunlth.

Discussion and Conclusion

Before this archaeological investigation, little was known about Nukaunlth village. Indigenous oral histories of the region associated the place name *Nukaunlth* with the location but contained no further details. Similarly, ethnographic records, while fairly robust in their accounting of Indigenous villages occupied in the postcontact era, overlooked this site. When Richard Daugherty recorded 45PC19, his description of the site was equally sparse. Therefore, although the archaeological investigations described in this chapter were modest in scope, they provide substantial new information on this Lower Chehalis and Chinookan ancestral village.

While Daugherty's original report suggests the site was much larger, 1/2 a mile in its longest axis, my work suggests that the bulk of the preserved archaeological deposits at present are located near the eastern tip of Kindred Island. Richard Daugherty's site report also describes 45PC19 as a shell mound. Archaeological probe survey and excavations described above confirm that 45PC19 is the ancestral Lower Chehalis and Chinookan village, Nukaunlth, with significant shell midden deposits. From these investigations, we know that Nukaunlth contains at least one house depression approximately 8.5 m x 15.75 m in size, surrounded by shell middens that extend 70 m east-west and 45 m north-south (approximately 2,500 m^2 in total) (Figure 5.28). Despite logging, cattle rearing, and other historical industry activities that

occurred on Kindred Island, the stratigraphy of the cultural deposits is intact, and the site appears minimally damaged.

The characteristics of the house depression suggest that the household living at Nukaunlth was of substantial size and used both Lower Chehalis and Chinookan construction techniques and customs. Drawing on ethnographic accounts of household size, as well as previous regional archaeological investigations linking house size to population, I estimate that between 21 and 54 individuals or approximately 4 to 11 families lived in the house at Nukaunlth. This range, albeit broad, suggests that the household residing at Nukaunlth was large by regional standards. Coastal communities with Lower Chehalis and Chinook territory typically had households containing one or two families. Therefore, the household residing at Nukaunlth was at least twice the average size of coastal communities. Further investigations at Nukaunlth using GPR may reveal more houses that went undetected given the methodologies used here. However, a single house comprising an entire village is not unheard of for the region and is, in fact, typical for the coast (Tony Johnson, personal communication).

The placement, shape, and size of the house adhere to regional customs and exhibit characteristics of both Lower Chehalis and Chinook house construction practices, indicating the expected cultural hybridity of the village. As is typical for the region, the house is oriented parallel to the long axis of the island and in such a way as to protect the entries into the house from harsh winter winds. Entries to the house were likely at the east and west ends of the structure, as the house berms on these ends dip slightly towards the middle. Like the orientation of the house, the location of the entries seen here is also typical for the region. While the house size is more typical of Chinook construction, both the shape of the structure (i.e., the ratio of width to length) and the depth to which the house was excavated adheres more closely to Lower

Chehalis conventions. Given that Nukaunlth is located at the confluence of Lower Chehalis and Chinook territory, this blend of house construction practices underscores the expected cultural hybridity of the village.

AMS radiocarbon dating, stratigraphic layering, and material culture recovered from the site indicate that Nukaunlth had two periods of occupation; an earlier, less intensive occupation likely before the January 26, 1700 Cascadia earthquake & tsunami (AD 1493 – 1700), followed by a period of rebuilding, habitation, and florescence of activity post-tsunami and into the proto- and postcontact periods (AD 1700 – 1858). Two AMS radiocarbon samples are dated to before the 1700 Cascadia earthquake and tsunami. One such specimen was taken from a cultural surface external to the house structure that was capped by sterile deposits associated with a significant shift in the landscape, such as an earthquake-induced subsidence event or major tsunami. We recovered the other specimen from within the house and associated with the deepest (and earliest) house floor. Given that only two specimens were dated to the pre-tsunami period, and only one was taken from the house, further sampling is needed to refine this chronology. In particular, further dating is needed to confirm that the earlier house occupation is indeed pre-tsunami. The remaining dates are much later than these two and suggest a proto- and postcontact era occupation (Figure 5.29). The presence of Euro-American trade items in the associated deposits, and the dearth of such objects in the deposits associated with the earlier dates, confirm Lower Chehalis/Chinookan peoples inhabited Nukaunlth post-tsunami and likely into the second half of the 19th century.

The cultural layers associated with the earlier radiocarbon samples show a reduced exterior midden size, contain less material culture per volume excavated, and fewer features, indicating that the use of the site before AD 1700 may have been less intensive than that of the

subsequent occupation. It is, of course, likely that the severe and sudden shift in the landscape caused by the tsunami altered the archaeological record in some way that obscured and diminished the record of the earlier occupation of Nukaunlth. However, the intact features revealed during excavations, and the stratigraphic layers associated with pre-tsunami dates did not show signs of orientation shifts due to water flow or other natural transformations. Likewise, there is evidence that the house was in use at this time, including intact house floor deposits and evidence of hearth features. The lack of tsunami-related deposits within the house, the evidence of spoil piles uncovered from the excavation unit directly outside of the house, and the clear tsunami-related sediment capping cultural deposits in the excavation unit further removed from the house depression all point towards the house at Nukaunlth being not only in use pre-tsunami, but returned to, exhumed, rebuilt, and reoccupied post-tsunami. Furthermore, from our limited investigations within the house, the house footprint appears to largely stay the same between the two occupations. Elsewhere in Chinookan territory, there is similar evidence of spatial continuity throughout a house's lifespan, even as they were continually reconstructed (Ames et al. 1992; Sobel 2004:604).

The size of the house at Nukaunlth is indicative of the prestige of the household who resided there. Throughout the Northwest Coast and in the Lower Columbia in particular, larger houses are shown to be associated with higher status households, ethnographically and archaeologically. Houses are costly to build and required considerable labor (Ames 1995, 1996; Ames and Sobel 2013). Larger houses, therefore, stemmed from greater wealth and control over labor, which is a primary determinate of wealth (Sobel 2004:282). Larger houses typically held larger households (i.e., more people), which possessed more productive labor to generate surplus goods. These, in turn, could be channeled into further prestige generating pursuits. Larger

houses also had more space for storage and the accumulation of surplus goods. More space within a large house, in addition to increasing storage capacity, bolstered a household's ability to host large social and ritual gatherings. These gatherings were a key part of maintaining and accumulating prestige among Northwest Coast communities (Ames 1996:145–146; Ames and Maschner 1999:152–153; Coupland 1996a).

Likewise, the material culture present at Nukaunlth reflects the accumulation of wealth by those who lived there. I recovered several objects known to symbolize prestige, both of Indigenous and foreign origin, including a dentalium bead, a glass bead, and copper sheeting and beads. Furthermore, many of these items could not have been attained locally and represent the wide sphere of interaction possessed by those living at Nukaunlth and/or the integration of Nukaunlth into regional trade networks, either Indigenous or Euro-American. In particular, the number of copper artifacts recovered per volume excavated far exceeds other village sites in the Greater Lower Columbia and is suggestive of a household of high status with access to regional trade networks and surplus wealth.

Evidence of daily household activities was apparent from archaeological excavations of Nukaunlth. From the tools and tool debitage recovered, we know that some lithic and ground stone manufacturing was occurring on-site. Evidence from Nukaunlth indicates that residents relied on local raw materials for lithic and ground-stone manufacture and produced these tools in a similar fashion as other Lower Chehalis and Chinook communities. In addition, the tools recovered are suggestive of household production in the form of wood-working and hide-processing activities. The bulk of these materials come from within the house and suggests that these activities were often taking place inside. Some fishing activities are also evidenced from

the tools recovered.[29] Daily cooking practices were apparent as well. FMR and multiple hearth features surrounded by faunal remains were identified within the house structure. External to the house, a cockle steaming pit was isolated. The bulk of the features and material culture representative of household activities were recovered from stratigraphic layers associated with the second occupation of the house. This corroborates other lines of evidence that suggest a florescence of life and culture at Nukaunlth after the 1700 Cascadia tsunami.

The Shoalwater and Chinook Nation have highly valued traditional sources of knowledge but view scientific ways of knowing the past as a valuable second line of evidence. Therefore, archaeological investigations at Nukaunlth sought to "mak[e] truth claims that are stronger than they would be without engagement with the material record" (Hauser 2018: 546) and to use the "hardness" of material evidence to witness the past. These investigations and the attributes of the site described above are relevant to the contemporary community in several ways. As described at the beginning of this chapter, Nukaunlth holds cultural potency for the Shoalwater because it is owned by the tribe, close to the reservation, abundant in information pertaining to traditional foodways, and temporally close to the executive order leading to federal recognition. Furthermore, these investigations represent the first archaeological research conducted at the behest of the Shoalwater and the first community-driven archaeological project in Willapa Bay.[30]

---

[29] Much more evidence of subsistence practices was recovered at Nukaunlth and is the topic of both Chapter 6 and 7.

[30] Archaeologists working elsewhere in the Greater Lower Columbia have long been at the forefront of thoughtfully and respectively engaging Indigenous communities in their work. Archaeological investigations at Cathlapotle and the Middle Village site are prime examples of this. Before this project, however, such community engagement had not occurred in Willapa Bay and with the Shoalwater Bay Indian Tribe.

As such, it is the first instance in which the community has used archaeology in the telling of their own history. This project, then, is nothing short of sovereignty in action.

Because little was known about this particular site from oral histories, the information gleaned from these archaeological investigations was particularly valuable to the Shoalwater and Chinook Nation. Archaeological investigations at Nukaunlth provide tangible evidence of many traits of Chinook and Lower Chehalis communities that are already known according to oral histories: resilience, enduring customs, and connection to place. These attributes are most strongly demonstrated by the persistent use of this landscape despite the indisputable damage caused by the Cascadia earthquake. Evidence suggests that Lower Chehalis and Chinook peoples used Nukaunlth before this event and, shortly after the earthquake, returned and continued a rich cultural life there. Like other sites in the region that show persistent use of houses over centuries, the continued use of Nukaunlth shows that the connection to place and landscape was inalienable to Lower Chehalis and Chinookan communities.