

Journal Of Northwest Anthropology

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Reflections on the State of Northwest Archaeology: Essays in Honor of Virginia Butler

Shelby L. Anderson, Jeremy Spoon, Michele Ruth Gamburd, Madonna L. Moss, Patrick (Pat) Lubinski, Dana Lepofsky, Gary Wessen, Douglas Deur, Perry Chocktoot Jr., Elizabeth (Betsy) J. Reitz, Dave Ellis, Julie K. Stein, Douglas Wilson, Virginia Parks, Lyssia Merrifield, Scott Thomas, Kelly Cannon-Miller, Chelsea Rose, Amanda Taylor, Bob Kopperl, Ross Smith, and Virginia L. Butler.....203

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Reflections on the State of Northwest Archaeology: Essays in Honor of Virginia Butler

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Introduction

Shelby L. Anderson and Jeremy Spoon

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Dr. Virginia Butler is an inspirational force. She guided and mentored us as junior scholars, helping us actualize our visions for an equitable, community-engaged anthropological practice. We organized this compilation to honor the depth and breadth of Virginia Butler's contributions to Pacific Northwest archaeology, past and present, and to encourage our colleagues to look to the future and consider where we are, or should be, headed in Pacific Northwest Archaeology. We solicited essays from friends and colleagues of Virginia who teach and practice archaeology and archaeology in environmental anthropology and cultural resource management; their responses are compelling, instructive, and inspiring. The contributors identified three overlapping areas in which Virginia has made significant contributions to our field both regionally and much further afield: zooarchaeology, interdisciplinary research on human ecodynamics or human-environment interactions, and public/collaborative archaeology (Table 1).

Virginia is well known for her substantive contributions to the methods and practice of zooarchaeology, specifically in the analysis of fish bones. She is an adept practitioner of scientific archaeology focused on zooarchaeology from

an evolutionary perspective, and she is known for her excellent mentorship of zooarchaeology students (Gamburd; Taylor, below). Despite ample ethnographic information and descendent knowledge about fish and fishing, there was very little archaeological information on fish and fisheries prior to the 1970s. Virginia's early zooarchaeological work emerged during an era of increased specialization in archaeology. Archaeologists increasingly applied methods and concepts from other scientific fields to our work, and also developed methods and techniques specific to archaeology; of paramount importance was the development of a strong scientific argument that could be evaluated through carefully collected evidence (Ellis; Taylor, below). As part of this scientific archaeology, Virginia developed cutting-edge and innovative methods in zooarchaeology that brought increased rigor and knowledge to the study of fish remains (Lepofsky; Lubinski; Moss; Reitz, below) (Butler 1987; Smith et al. 2011; Hofkamp and Butler 2017; Nims and Butler 2017; Nims et al. 2020).

Virginia has published more than 20 peer-reviewed articles and book chapters on Pacific Northwest fish and fisheries alone.

Her efforts have changed what we know about the relative importance of different fisheries to past people, and provided unique insights into the health and distribution of past fish species. These findings have important implications for archaeology, but also for reconstructing past environments, and for modern policy, fisheries management, and conservation biology efforts (Butler; Lepofsky; Lubinski; Moss; Reitz, below) (Moss et al. 2011; Thornton et al. 2011; McKechnie et al. 2014). Deur and Chocktoot (below) detail how their collaboration with Virginia and others in a study of Klamath River fishes has provided information important for Tribal conservation efforts. Virginia's research on past human-animal interactions and conservation biology issues extends beyond fish to other animal populations and to larger anthropological questions. For example, she collaborated on research on past Oregon sea otter populations (Valentine et al. 2008), pre-contact dogs (Ames et al. 2015), and late Pleistocene megafauna (Gilmour et al. 2015). Most recently, Virginia led a large collaborative project at the Číx^wicən site, located near Port Angeles, Washington (Butler et al. 2019). Virginia and colleagues studied the ways people were affected by environmental change over the last 2,000 years through analysis of a variety of animal remains, more than 100 radiocarbon ages, and stratigraphic records. Driving this work is a larger interest in better understanding the resilience of the Číx^wicən people to various catastrophic events (e.g., earthquakes and climate change). The Číx^wicən research team synthesized a large and complex dataset, perhaps the largest archaeological collection ever generated by excavation in the Pacific Northwest (Butler et al. 2019). In addition to scientific goals, this project was, and continues to be, directed at addressing concerns and interests of the Lower Elwha Klallam Tribe (descendants of Číx^wicən village inhabitants) about archaeological research at the site.

The Číx^wicən Project demonstrates Virginia's ability to bring together diverse groups of people to work toward a common goal, and

also her increased focus on public, community, and collaborative archaeology in more recent years (Stein, below). Virginia excels at building rapport and in bringing people together to address tough problems and to share knowledge and experiences. She has been personally and professionally community-oriented throughout her career, which is reflected in her teaching and mentoring (Kopperl and Smith; Taylor, below), extensive service record at Portland State University (PSU) (Gamburd, below), and the development and expansion of the PSU Archaeology Roadshow (Gamburd; Parks et al., below). Butler collaborated with Deur and an undergraduate student to identify municipal government policies and approaches that might improve policy and public attitudes towards archaeology in the Portland area (Deur and Butler 2016). From this study, Virginia identified the need to engage the public more deeply in local archaeology in order to bring about awareness and change in local and regional archaeology and heritage policy. To that end, Virginia initiated what is now an annual event, the Archaeology Roadshow (Gamburd; Parks et al., below). The Archaeology Roadshow is an all-day celebration of archaeology that brings together PSU faculty and students, Tribes, federal and state agencies, private companies, and avocational organizations to create exhibits and hands on-activities that showcase our local heritage (<https://www.pdx.edu/anthropology/archaeology-roadshow>). The Roadshow combines interactive exhibits and activities presented by partners and students; it includes artifact identification where the public brings personal treasures for expert review. The project has grown in many ways over the years, with the tenth event taking place virtually in spring of 2021. The Roadshow started in the basement of Cramer Hall, then moved to the Oregon Museum of Science and Industry (OMSI) for two years, and now has a home at Hoffman Hall on the PSU campus. There are also two satellite events held annually in collaboration with the communities of Burns (2018–2021) and Bend (2019–2021), Oregon. The event has

INTRODUCTION

grown from 150 visitors in 2012 to 1,000 visitors in 2018; by 2019 the event drew more than 1,000 people, and the exhibits expanded from approximately 10 activities to approximately 40 at the last in-person event in 2019. In 2020 and 2021, the Roadshow was held virtually due to COVID-19 safety requirements, which led to an innovative virtual interactive format. The ultimate goal is to promote stewardship of Oregon's heritage and educate about the value of archaeology and history to people's everyday lives; this mission aligns with Virginia's other work and collaborations (Wilson, below).

Virginia's career is an example of how the practice of archaeology has changed over time, which mirrors broader trends in our discipline (Butler; Lepofsky; Stein; Taylor, below). There has been a movement over the last 40 years from an archaeology operating separately from Tribes and other descendant communities (and from anthropology more broadly) toward a more collaborative archaeology where archaeologists/anthropologists work in partnership with Tribes toward shared goals and community priorities. As Butler points out, these changes were brought about in large part by Tribal efforts to assert sovereignty over cultural resources work in the Pacific Northwest, as well as the development and expansion of national and local legislation that enforced a new way of working together. In this sense, Tribes are co-producing knowledge with archaeologists and often are educating archaeologists to improve our practice. As collaboration and applied archaeology (in academia, not just in cultural resource management) becomes normalized in Pacific Northwest archaeology and in archaeology more broadly, where will Pacific Northwest archaeology go in the future? Many of the trends identified by contributors—and exemplified by Virginia's work—are the necessary building blocks for the archaeology and anthropology we (Anderson and Spoon) are working for in the future. Cross-training students across the sub-fields of anthropology, and in other fields such as Indigenous Studies, in addition to the

classic archaeological specializations in biology, geology, and chemistry, will do much to move our discipline towards the goal of a better, more ethical anthropological practice. The pressures of cultural resource management, where work is driven by development rather than pursuit of knowledge, will also have to be addressed (Kopperl and Smith, below).

That future is a more diverse, inclusive, and collaborative (or co-produced) anthropology; an anti-racist archaeology and anthropology that recognizes and disrupts white supremacy and is fully engaged in the present-day issues and priorities of descendent communities and broader society. Influencing this future are the current discussions on social justice related to the MeToo, Black Lives Matter, and other social movements (Franklin et al. 2020; Hodgetts et al. 2020; Flewellen et al. 2021; Voss 2021). Creating a more just and equitable future includes elevating different ways of knowing in order to address complex multifaceted problems, such as anthropogenic climate change (Fatorić and Seekamp 2019). Further, representation has also been central to discussions of equity. As a female archaeologist in a white male-dominated professional landscape (Fulkerson and Tushingham 2019; Heath-Stout 2020), Virginia led the way for future female representation in the field. She has also increased Indigenous authority in her research projects, challenging the colonial roots of anthropology where host communities were seen merely as informants from whom to extract knowledge. There are many challenges to achieving a more just and equitable anthropological future, including the forces in both academia and the public/private sector that reproduce existing, problematic structures and practices. Virginia's career journey helps to guide us on how archaeological practice evolves over time depending on the state of the world. She has now inspired the next generation to push for more progressive changes to archaeology and anthropology more generally, making it practical and useful to the world as we learn about and honor our past for a more equitable, sustainable, and resilient future.

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Virginia Butler: Commitment, Service, and Mentoring at Portland State University, 1993–2020

Michele Ruth Gamburd

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One day in the late 1990s, Dr. Virginia Butler invited me to join her and her husband Andrew for the Monster Cookie Metric Century, a 60-mile bike ride starting from the State Capitol building in Salem and winding through the Oregon countryside. Lean and fit, they both cycled long distances regularly. On the day of the event, I was scheduled to drive over to their house so they could load all three bikes on their red Subaru. That early fall morning, the weather looked about as wet as it gets in the Pacific Northwest. I called Virginia, and she talked me into coming over despite the gray. When I arrived, it was raining even harder. Both Virginia and I hesitated, but Andrew said we should at least drive down to Salem and see what the weather looked like there. We loaded the bikes and drove through the downpour. When we got to the parking lot in Salem, the unrelenting rain still fell. Andrew suggested that we should go find a nice place to have a hot breakfast. But I said, “Let’s at least bike the first mile and see how it goes.” With our episodic but well-timed optimism, the three of us made our way through the entire 60-mile ride, which included a roadside stop for enormous cookies along the way.

Virginia, my colleague for a quarter century at Portland State University (PSU), is undaunted by bad weather or hard work, and those qualities shine through in her academic life as well as her leisure time. A curriculum vitae (CV) is academia’s short-hand format for keeping track of accomplishments. Virginia’s CV is 23 pages

long. The CV lets one know the bare bones of her career, such as that Virginia came to PSU in 1993, with a Ph.D. from the University of Washington. She earned tenure in 2000 and was promoted to full professor in 2006. But a CV omits the adjectives. Let me provide a few.

Although many readers of this compilation doubtless know Virginia from her outstanding scholarship, she also performed a great deal of service to the Anthropology Department at PSU. Showing courageous leadership, she served as chair of the department for her last three years at PSU, 2017–2020. She advocated passionately for the university to hire another archaeologist to continue the strong tradition of that subfield in our program. She guided the department through challenges and adversity, including the beginning of the COVID-19 pandemic and the sudden pivot to remote learning in March 2020.

In a small department, faculty members share a great deal of work. Virginia was a collaborative colleague. She served on the yearly admissions committee and graduate review committee, engaged in annual assessment activities, and helped keep the curriculum up to date (Figure 1). She also added her visionary contributions to hiring committees and supported colleagues through their promotion and tenure process and their post-tenure reviews. She tended carefully to the department’s social interactions; she hosted many of our fall welcome-back parties at her beautiful home in northeast Portland. We all shed our shoes at the door and entered a



Figure 1. Virginia, second from right in facing row, at anthropology faculty teaching workshop with other faculty, Melanie Chang, Charles Klein, Jeremy Spoon, Mrinalani Tankha, and Doug Wilson ca. 2019 (Photo by Michele Gamburd).

well-cared-for, warm, bustling space filled with good food to meet friends new and old.

Virginia was widely respected across campus. For the College of Liberal Arts and Sciences, Virginia served on the college Curriculum Committee and on a search committee to choose a new dean in 2011. For the university, colleagues twice elected her to the Faculty Senate. She demonstrated her strong social networks while on the influential Senate Committee on Committees, which designates individuals to serve on other Constitutional committees. Virginia chaired the Task Force on Academic Quality, and she demonstrated compassionate yet fair decisions about degree requirements while on the Academic Requirements Committee. She also served at various times on the Graduate Council, the Library Committee,

and the Faculty Development Committee. The work of the university moves forward through this sort of exemplary engagement in shared governance.

When I was new to the Pacific Northwest, Virginia invited me to her home to watch an October baseball game, introduced me to Ichiro and the rest of the Seattle Mariners, and infused me with her love of the team. Virginia brought the same enthusiasm to her teaching. A virtuoso instructor, Virginia taught students from freshmen to graduate students. She won the coveted John Eliot Allen Teaching Award in three decades (1998, 2005, and 2012). She showed faith, perseverance, and personal investment in her graduate mentoring. She presented papers and posters at professional conferences and co-authored articles and book chapters with her students, creating a

rich network of archaeologists around the state and country. She served as chair to 17 students (with 3 more in process at the time of this writing). In addition, she served as a committee member for 27 additional graduate students in anthropology, 28 M.A. and Ph.D. committees in other departments, and 10 at other universities. She regularly contributed to high-impact practices for undergraduates, for example by mentoring three honors theses. In addition, as part of the Anthropology Department's contribution to the University Studies General Education Program, she taught a collaborative, interdisciplinary course for freshmen on the Columbia River Basin theme and coordinated at the junior level the Archaeology Cluster (since folded into a larger cluster, *Interpreting the Past*). She poured her heart into her relationships with her students (Figure 2).

Throughout her career, Virginia engaged in outreach to the community, exemplifying the spirit of PSU's motto "Let knowledge serve." She created the First Thursday Archaeology Lecture Series in 1997 and ran it for over 20 years, building community between local practitioners and PSU students. She also made over 70 presentations to the community and engaged in media outreach. Of particular significance was the inception of the Archaeology Roadshow in 2012. This event drew together natural and social scientists around issues of local archaeology (precontact, contact, and historical) and brought archaeology to life for thousands of visitors (Figure 3). Held during the first week of June, the Roadshow grew in size and scope year-by-year, adjoining the Portland State Farmers Market and drawing the curious shoppers to explore the wonders of the buried past. Virginia's efforts included envisioning the possibility, persevering to bring it to life, persuading others to join the endeavor, and bringing to bear the managerial capacity of the circus ringmaster to keep many plans and projects in motion over extended period of time, despite adversity and challenges.

Virginia is a respected and beloved colleague who welcomed me to this department when I first arrived in 1995, and whose wise counsel and steadfast presence I will miss greatly in the future. It is difficult to imagine our department without her passion, her precision, her optimism, and her energy. I wish her joy in all that comes next.



Figure 2. Virginia, third from left, with students (Photo by Michele Gamburd).



Figure 3. Virginia, center, at the 2017 Archaeology Roadshow with students (Photo by Michele Gamburd).

Virginia L. Butler—Friend and Colleague; Lover of Fish and their Remains

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I first met Dr. Virginia Butler in Seattle in the mid-1980s, at a time when we were both Ph.D. students, Virginia at the University of Washington and me at the University of California, Santa Barbara (Figure 1). At the time, I was working “remotely” before that had become routine. Virginia was generous enough to invite me to help her recover naturally deposited salmon remains from the Cedar River Point Bar site she was studying for her dissertation. Since then, I have been privileged to enjoy hundreds of conversations with Virginia, during which we have delved into a variety of “fishy” (and other) topics. Virginia’s work and enthusiasm have continued to inspire me over the last 35 years. I am blessed to have counted her as a loyal friend and brilliant colleague throughout the course of my career.

Virginia has maintained a career-long trajectory of cutting-edge research that has advanced archaeological knowledge in multiple locations of worldwide significance. Her work helps illustrate the main developments in our field over the last more than 30 years. Virginia trained at the University of Washington in an interdisciplinary program that encompassed anthropology, archaeology, and fisheries sciences; she has been a pioneer working through many of the key methodological, technical, and interpretive issues regarding how fish remains in archaeological sites can inform us about past human behavior but also about human relationships with aquatic resources. Starting with her dissertation, which focused on The Dalles Site, located along the Columbia River,

Virginia developed methods to distinguish natural from cultural deposits of salmon bones, and demonstrated conclusively that salmon were a key resource used by Early Holocene Native Americans over 9,000 years ago. Over the past 30 years, she has continued to study Columbia River archaeological assemblages, but she has also analyzed fish remains from elsewhere in the Columbia Plateau, in Puget Sound, and along the Strait of Juan de Fuca in Washington. In addition, Virginia has analyzed fish bone assemblages from Great Basin sites (in Oregon, Nevada, and California), in addition to sites in Oceania (Polynesia to New Guinea). As a fellow zooarchaeologist who works in a single world region (the Northwest Coast of North America), I must emphasize how unusual it is for one person to learn fish bone anatomy of such a large array of fishes from such different environments. These skills cannot be learned from books; Virginia has literally spent thousands of hours collecting comparative specimens (skeletonizing modern fish) and teaching herself fish bone anatomy of hundreds of species. The caliber of her expertise is internationally recognized.

Beyond identifying, quantifying, and analyzing fish bone assemblages, Virginia has been on the leading edge of developing new analytical methods and contributing to theory-building in archaeology. She was the first to develop absolute measures of bone density to better gauge its effects on the representation of fish skeletal elements, and her work has set the standard for subsequent studies. Virginia was the first to pursue analysis of ancient DNA in archaeological salmon bones



Figure 1. Virginia at Mt. Saint Helens, 1988 (Photo by Madonna Moss).

in the Pacific Northwest, which led the way for studies by many others, including myself. Virginia has also developed morphometric methods of fish bone identification while working with fisheries biologists. She has conducted meta-analyses of faunal assemblages from large regions, looking for evidence of evolutionary change in the use of animal resources and indications of paleoenvironmental shifts. Some of her work has drawn on historical records along with archaeological studies to address contemporary issues in conservation biology and fisheries management. Virginia's work is widely cited across the world; she has published 49 journal articles and 22 book chapters, as well as a slew of technical reports.

Virginia's work has inspired the work of many other investigators, including her peers. Her work has examined patterns and trends in fisheries, offered strategies for evaluating different explanations of archaeologically observed variability, and assessed the relative importance of different species in different world regions. She has creatively employed a wide range of methods in her studies of fish remains and has shown how the archaeological record of fish reveals new knowledge about ancient lifeways and knowledge relevant to understanding the long-term histories of key species. This historical ecological knowledge can, in turn, contribute to informed management, to sustain both fish and fishing in today's rapidly changing environments.

One of Virginia's most recent accomplishments is her collaborative research at the 2,700-year-old archaeological site of Číx^wicən, located in Port Angeles, Washington, along the Strait of Juan de Fuca. This site was excavated in the mid-2000s, but its faunal remains were never studied. Virginia (along with Sarah Campbell, Western Washington University) brought together a team of researchers to study the enormous quantities of animal bones from the site. Virginia was the Principal Investigator of the substantial National Science Foundation grant that was needed to support the analyses. Over time, the archaeologists worked closely with the Lower Elwha Klallam Tribe, whose ancestral village and burial ground had been badly damaged by construction. The results of this multi-year project have appeared in the *Journal of Archaeological Science* in 2019 and have set a new standard for archaeological studies on the Northwest Coast. In addition, the project demonstrated how archaeology can play a role in reconciliation and learning between Tribes and archaeologists and the broader public.

Virginia has a truly extraordinary record of public outreach that has brought the content of her research (and that of her colleagues and students) to a range of audiences both inside and beyond the academy. She has actively shared her research at professional meetings and at universities across the world, but also with broader audiences. She has organized three professional conferences in Portland, each of which was a resounding success. In addition, she developed and coordinated the Archaeology Roadshow, a truly unique Portland event with more than 40 exhibitors, 150 volunteers, and thousands of attendees. The Roadshow brings together professional archaeologists working in academic and government settings along with private contractors to offer to the public hands-on experiences drawn from the results of archaeological research. This event has been held in Portland over the last eight years (prior to the COVID-19 pandemic), and the Roadshow also traveled to Burns and Bend, Oregon, over the past

few years. Virginia's commitment to sharing the best of archaeological research with the public demands tremendous devotion, organizational skill, and hard work. The Roadshow, along with Virginia's "First Thursday" Archaeology Lecture Series at Portland State University (going strong and in its 24th year), has built a community in Portland that encompasses all who are doing archaeological research in the region.

I am genuinely in awe of Virginia's numerous achievements. Virginia's research will continue to have a lasting impact on archaeology and she has already contributed significantly to public awareness of archaeology in Oregon and beyond. Her love of fish (live, cooked, as well as archaeological) has been a passion and a calling. Her research and teaching have motivated her students and colleagues to aspire to her rigor in analyses and her clarity in all that she writes. Throughout it all, Virginia has conveyed her love and respect for the natural world to all of us in ways that have profoundly enriched our lives. Thank you, Virginia.

Contemplating Fish Bones: Contributions by Virginia Butler

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I am honored to be able to write a few words about the many contributions Dr. Virginia Butler has made (and will continue to make long after this compilation is published!) to archaeology writ large and the Pacific Northwest. Many of the other authors have more direct experience with Pacific Northwest archaeology, so my thoughts will be through the eyes of a fellow (but less knowledgeable) fish zooarchaeologist (ichthyoarchaeologist?). Here is a highly idiosyncratic summary.

My first interaction with Virginia was when she was a reviewer on my first (1994) publication on the topic of fish bone taphonomy. This began a long series of peer reviews and other communications where I was continually impressed with her razor-sharp intellect, attention to detail, and ability to connect with larger research issues. She sees it as her job to provide constructive criticism, some of it tough, but directed to nudge work to a higher standard and benefit the field as a whole. Given her stature in zooarchaeology, she could easily have acted as a “gatekeeper” of knowledge, but she is not dismissive of the works of others, instead seeking out useful information even in places it is challenging to find.

Our paths began to intersect more once I started at Central Washington University in 2000, where I began seeing her more regularly at the Society for American Archaeology meetings and Northwest Anthropological Conferences, and observed her strategy of trying to ask one good (thoughtful, sometimes difficult) question of each speaker. In my opinion, this helps to

broaden and explore the topics of the paper, and improves the professional skills of all of us, student and senior investigator alike. Her solo work and close collaborations with her students have produced groundbreaking work on Pacific Northwest zooarchaeology, and the intersections of it with modern fisheries management and connections to descendant communities. These contributions, on Columbia River fisheries, Číxwícən, and more, are discussed by others in this compilation.

I spent more time with Virginia at several meetings of the International Council for Archaeozoology (ICAZ), especially in 2002 and 2014, and was able to see her contributions to the international community of zooarchaeologists, both in scholarship and in service to the profession. Outside of her considerable work in the Pacific Northwest, including now-classic systematic zooarchaeology reviews (Butler 2000; Butler and Campbell 2004), her scholarship contributions have included innovative works on taphonomy, identification, and other methods in zooarchaeology (Butler 1987, 1993; Butler and Chatters 1994; Butler and Bowers 1998; Butler and Schroeder 1998; Smith and Butler 2008; Huber et al. 2011; Nims and Butler 2017), as well as important works on fish zooarchaeology in the Great Basin (Butler 1996, 2001a; Butler and Delacorte 2004), and Polynesia (Butler 1994, 2001b). Many of us consider her a leading international expert on fish taphonomy, as well as the leading authority on fish zooarchaeology in the Western United States.

CONTEMPLATING FISH BONES

More recently I have been collaborating closely with Virginia on fish bones from the Paisley Caves, in the Great Basin of southern Oregon. We began with a joint analysis of a small sample of fish remains from this site at her Portland State University lab in 2015. After completing this work (Hockett et al. 2017), we started a larger and more interdisciplinary project on the local paleoenvironment with a larger fish sample (Figure 1), plus collaborators in ancient DNA, archaeochemistry, geochemistry, paleontology, and statistics. Here I was able to really see her incredible energy which I had only suspected before—I know for a fact that she is still going strong with her brain fully engaged well after 1 a.m.! And her ability to think broadly about not just archaeology topics, but also about all other facets of the work is just amazing; she often has thoughtful suggestions on a wide range of related topics. Her generosity was equally impressive, as now I was invited to stay with Virginia and Andrew at their house when in Portland. We are currently working on three manuscripts related to this project, and I hope for additional collaborations in the future.

In some ways the ICAZ Fish Remains Working Group conference she organized in Portland in summer 2019 was classic Virginia.

She poured incredible energy and thought into the conference, with the goal of providing the best experience possible for the international group of attendees, both professionally and personally, and connecting with regional communities. Not surprisingly, she also contributed some of her own money to the event. The conference began with a welcome and introduction to the place by the Chinook Indian Nation and Confederated Tribes of Grand Ronde, and papers were spaced out to provide time for thought and discussion on each. Meals were designed to sample local flavors and provide good opportunities for collaboration. Two field trips showcased regional Tribal fisheries, hosted by the Confederated Tribes of the Siletz Indians, and the Confederated Tribes and Bands of the Yakama Nation. It was one of the best organized, collaborative, and fun conferences I have ever attended.

This 2019 conference stands as a good symbol of the many strengths of Virginia, combining robust scholarship, professionalism, thoughtfulness, collegiality, and other features in a memorable way. In scholarship, she has been providing innovative thinking to the archaeological community for more than 30 years, with plenty more to come. It has been an honor to work with her and to provide these comments.



Figure 1. Virginia Butler sorting Paisley Caves fish bones from other fauna in December 2016 at the Museum of Natural and Cultural History Archaeological Research Lab, Eugene, Oregon.

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From Comprehensive Exams to a More Comprehensive Archaeology: A Tribute to Virginia Butler

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I am a bit dismayed, but also so pleased to be writing this short piece in honour of Dr. Virginia Butler. I am pleased because I am part of a very large group of Virginia's admirers. She has made significant and lasting contributions to our understanding of how Indigenous peoples of the Northwest Coast interacted with each other and their animal neighbours. I am dismayed, however, that this collection of essays is prompted by Virginia's retirement from Portland State University. Though Virginia is by no means walking away from her scholarly endeavours, it seems like a significant loss to the community to have her leave her teaching duties—which I know she loves and at which she is so gifted.

I am also dismayed because it makes me realize I have known Virginia for a very long time. And at the risk of saying something old lady-ish, I'm unsure how the time has gone by so quickly. Virginia and I were in graduate school together in the 1980s. She was a few years ahead of me, and as you can imagine, I was wowed (and yes, a bit intimidated) by her insight and intelligence. How was it that she could identify all those little bone bits and then in the end say something meaningful about human behaviour?

At that time and place, Virginia and I were being schooled in a tradition where people's intentions, motivations, and emotions were considered irrelevant to the study of past human behaviour. Instead, physical processes (e.g., the ways a stone tool broke under different kinds of impact) were fair game as was the evolutionary importance of passing on adaptive behaviors.

But the human side of these actions, such as whether a toolmaker felt joy in seeing these physical processes enacted, or pride when passing along their craft—whether adaptive or not—were not part of the discussion. It seemed that the past was not one of people, but rather of things.

It was a heated time, when practitioners had to proclaim themselves as either a "processualist" or some kind of "post-processualist." The literature, our discussions, and our comprehensive exams were replete with ongoing debates that polemicized our discipline. From my perspective, at least, crossover between camps was not encouraged.

Although I wouldn't have dared to say it at the time, I never understood what the fuss was about. In my career, I have had the great privilege of working with and learning from Indigenous people in whose territory I worked and whose past I studied. Writing an unpeopled past just did not jibe with my daily experience of the archaeological record or the people whose ancestors created that record.

Much has changed since Virginia and I were in school together. Since that time, the discipline of archaeology has largely and thankfully caught up with the then "fringe" discussions about personal histories and agency, the importance of place, and so on. By and large, our discipline is embracing the fact that we can apply cutting edge methods, ask hypotheses (if we so choose), and conduct highly rigorous research, and at the same time tell a story about that past that has heart (Supernant et al. 2020), recognizes the social-political and ecological contexts of

our work (Perring and van der Linde 2009; Shaw 2016; Armstrong and Brown 2019), celebrates the voices of descendent communities (Atalay 2012; Martindale and Lyons 2014), allows for political activism (McGuire 2008), applies the archaeological past to understanding our social-ecological present and future, and in general understands the overall importance and privilege of our craft.

This welcome maturation of our discipline is reflected in the trajectory of Virginia's scholarship. At a foundational level, archaeological inquiry that is grounded in rigorous methods and analyses will have the most significant and lasting positive influence on our discipline. This is true no matter the theoretical orientation in which the analysis is couched. In Virginia's case, this methodological rigor has been a hallmark of her career as a zooarchaeologist, beginning during her graduate education under the tutelage of Donald Grayson. (Don, as I remember it, told us in class that he had to re-learn how to do faunal analyses to account for the many post-depositional processes that influence the zooarchaeological record [N-transforms].) From that time forward, Virginia's scholarship has been characterized both by her mastery of the identification of zooarchaeological remains and fish bones especially, as well as her exploration into the myriad site formation processes that influence the faunal record. Such consistently solid contributions have laid the foundation for countless discussions about human behavior on the Northwest Coast and in the South Pacific. For instance, Virginia's 1994 paper with Jim Chatters documenting how salmon bone density influences bone preservation was a central part of the debate about when Northwest Coast peoples started preserving salmon en masse (where the absence of the head bones was used as an indicator of preservation). Similarly impactful methodological contributions pepper Virginia's career and range from vertebra morphometrics to aDNA.

Based on this solid record of methodological research, Virginia also contributed significantly

to our conceptual understanding of past lives lived on the Northwest Coast; tracking these contributions also illustrates the evolution of our discipline. In graduate school and in the decade following, both Virginia and I were influenced by the compelling literature on resource intensification and resource depression. In my case, this body of work was foundational to my dissertation research in the South Pacific. In Virginia's case, it played a significant role in her thinking about human-animal interactions on the Northwest Coast. Often implicit in this body of literature, however, was a belief that humans were compelled, unthinkingly, to increasingly exploit resources at significant environmental costs. That is, human-environmental relationships were seen as a one-way destructive path; human agency, other than the desire for "more," was not often fully considered. Harkening back to the relatively narrowly defined and mostly unpeopled histories touted in our graduate school years, I, at least, did not consider whether people learned from their mistakes (Turner and Berkes 2006) or whether the goal to maximize gain at all costs might not be the only way to relate to the environment.

By the early 2010s, I began observing a shift in archaeological scholarship in many regions, including on the Northwest Coast. Although this trend started decades earlier (Lepofsky and Lertzman 2018–2019), by this time a significant number of projects were community based and collaborative efforts, and many of these were set in applied contexts that focused on the application of archaeology to larger social-ecological concerns. This trend is beautifully reflected in Virginia's contributions over the last decade. In fact, Deur and Butler (2016) and Campbell and Butler (2010) are two of my favourite examples of this broadening and nuancing of archaeological inquiry. In the latter piece, and continuing in Virginia's latest magnum opus (Butler et al. 2019), Virginia focuses not on negative environmental impacts but rather on a full complement of social-ecological interactions and how these played (and play)

into the overall resilience of Indigenous cultures of the Northwest Coast. In these works and others, she starts with the strong empirical foundation that has always been the hallmark of her research, and ends with crafting a picture of the past that is about people—their choices and their relationships to each other, to their homes, and to their animal neighbors.

Hands down, it is a much more exciting and promising time to be an archaeologist than when Virginia and I were taking our comprehensive exams. I witness many archaeologists proudly exploring the full breadth and potential of our discipline and I see an increasing number of meaningful academic-community partnerships that are designed to serve the needs of descendent communities. I see scholars willing to stand alongside communities as they struggle to preserve their heritages, and have those heritages understood on their terms. I see how far we have come, but also that we have a long way to go. Virginia played an important role in making these positive changes happen; I thank her for her leadership in helping us create an impactful and meaningful archaeological practice going forward.

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Virginia Butler and her Contributions to Southern Northwest Coast Archaeology

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I have known Dr. Virginia Butler since 1983, when she identified some fish bones from a site I was working at Vancouver Lake in Clark County. Unfortunately, beyond that, I have never had the opportunity to work with her on an interesting site or assemblage. Nevertheless, as someone active in southern Northwest Coast archaeology since the early 1970s, I can easily speak to the impact she has had. In this regard—and recognizing the compilation editor’s request to “examine where we have been in Northwest archaeology and also where we are going in the coming years”—I would like to offer some thoughts about “the coming years” and how Virginia’s ideas and efforts exemplify what needs to be done. I should add here that my perspective of both “where we have been” and “where we are going” is heavily biased toward the archaeology of marine shorelines and their nearby lowland coastal areas. I suspect that much of what I have to say is more broadly relevant, but will leave that for others to decide.

I believe that precontact archaeological resources in much of western Washington face a grim future in the 2020s. While the results of the 2020 election are a very positive change, the economic impacts of the COVID-19 pandemic are likely to be with us for years. Among other effects, they are likely to cause dramatic reductions in the federal and state budgets that support the protection of archaeological resources. Thus, I think we need to recognize that the amount of support for both cultural resource management (CRM) mitigation and broader archaeological

research, from federal, state, and private sources, will be significantly reduced in the coming years. In the marine areas of western Washington, this comes at a time when sea levels are rising and archaeological deposits throughout the region are increasingly threatened by shoreline erosion. How to address this increasing loss of precontact archaeological resources would be a difficult and culturally sensitive question at the best of times, and these are not the best of times.

I believe that the coming years will see fewer large-scale data recovery excavations and increasing frequencies of small-volume sampling aimed primarily at supporting CRM determinations of National Register of Historic Places eligibility. If you are thinking, “Well, that’s already been happening for a while,” then I agree with you. I think that this will become even more common in the coming years. The combination of these conditions will impose restrictions on what archaeologists can do and push us further in some things we are already doing. A resource frugal approach to sampling—imposed by both the declining availability of coastal archaeological deposits and the reduced funds available to either preserve or study them—will put an emphasis on “getting more with less.”

In the earlier years of research in coastal Oregon, Washington, and British Columbia, archaeologists were primarily focused on the recovery of artifacts. The abundant quantities of faunal remains in these sites were either wholly ignored or described no further than in a simple species list. Recognition of their

great potential to reflect cultural behaviors and past environments was only beginning in this region in the 1970s. In this light, Virginia's many contributions working with faunal assemblages are important for both the insights and the analytical advancements they offer. I will not take the time to list them all here—as I am sure that someone else in this compilation will—but let me note a few highlights. Virginia's work with the identification and taphonomy of salmonid bones has influenced much subsequent thought and work with salmon (Butler 1993, 2000; Butler and Chatters 1994; Butler and O'Conner 2004; Campbell and Butler 2010; Huber et al. 2011; Smith et al. 2011). Her 2004 paper (co-authored with Sarah Campbell) using faunal data from more than 60 sites to examine resource intensification broadly across the Pacific Northwest is also an important work that has positively influenced subsequent thought and practice. Virginia has also joined other researchers in the effort to broaden our appreciation of other fish in precontact Northwest Coast economies including herring (Moss et al. 2011), Pacific cod (Smith et al. 2011), and black cod (Nims and Butler 2019). Most recently, Virginia (again in collaboration with Campbell and many others) oversaw the extensive study of faunal assemblages from the Čixwícən site in Port Angeles (Butler et al. 2019), offering many new and important insights.

Beyond their implications for our ideas about past cultural behaviors on the Northwest Coast, all of the above-noted accomplishments have served to improve both the quality of information and broaden the appreciation of how faunal assemblages can inform us about the past. These ideas are now widely accepted by many archaeologists working in coastal areas on the southern Northwest Coast. Analyses of faunal assemblages—beyond simply generating a species list—have become both a standard and an increasingly sophisticated field of research in the last 30 years. I believe that this expanding use of faunal assemblages is among the most important things that has happened to archaeology in this region since the invention of radiocarbon

dating. Virginia has been an important figure in this movement.

This trend of expanded and increasingly sophisticated use of faunal remains is right for the times and should be exploited still further. Faunal materials are present in much greater densities than artifacts in most coastal sites, and thus small-volume efforts will produce faunal assemblages that are significantly larger than the associated artifact assemblages. I am confident that the full potential of faunal assemblages—both vertebrate and invertebrate—has yet to be achieved, or even understood. Thus, we need to learn more about how to draw inferences from these materials, from both individual assemblages and from groups of assemblages. This is an important aspect of what I mean by “getting more with less.” Faunal studies are opportunities to increase what we can learn from the excavation of relatively small volumes, thereby reducing our impact on irreplaceable precontact archaeological deposits.

Broadly, I think Virginia's work as a zooarchaeologist may be her most important contribution, but hardly her only one. In closing I would like to briefly touch on a few more. Another characteristic of her work that will be increasingly important in the coming years is furthering the analysis of collections which already exist, as opposed to generating new collections. The Čixwícən work is an important example of this approach. Excavations and analyses at this site were prematurely halted when the construction plans for this location were abandoned. While Virginia and her colleagues were not involved in the field work, their decision to undertake study of the faunal assemblages ensured that these materials were not abandoned as well. (In fact, there are already more than a few un- or under-described faunal assemblages from sites in western Washington, if anybody is interested.)

Beyond research, the grim conditions facing archaeological resources are a very real threat, and I believe that the most important thing that these resources need to survive them is a constituency. Moreover, I do not believe that

the actions and appeals of Native American communities and archaeologists will be enough. Increasingly, protecting archaeological resources during these challenging economic times will require developing broader coalitions of people who will express their concern. In this regard, I believe that the Archaeology Roadshow created by Portland State University has become an important vehicle for education and outreach to the broader public. Hopefully, it will both continue and be adopted more widely. I should add here that I am not familiar with the details of the Roadshow's creation, and so I do not know what role Virginia played in that effort. I do, however, know that she has been a strong advocate for it for many years.

In sum, Virginia has had an important positive impact in many ways. And, while I understand that this compilation is being prepared on the occasion of her retirement, somehow I have the feeling that we haven't heard the last from her yet.

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Recovering Salmon: Zooarchaeology and Oral Tradition in the Documentation of Extirpated Cultural Keystone Species in the Upper Klamath Basin

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As this special issue attests, Dr. Virginia Butler and her students have made significant and lasting contributions to the study of human-environment relationships over deep time in the Pacific Northwest. Beyond this, their contributions suggest the potential of archaeological research to engage the public and to address pressing natural resource issues of our time. Their investigations of Pacific salmon harvests in the Klamath River Basin are an important case in point. Applying the methods of zooarchaeology to the study of anadromous fish in the Upper Klamath Basin, Butler and her students provide clear corroboration of Tribal oral tradition. In turn, their research has helped support restoration of fish passage on the Klamath River—historically the third most productive salmon-producing river in the United States.

While salmonids are well documented as biological and cultural keystone species in rivers throughout the Northwest, the study of Klamath River salmon presents unique challenges (Garibaldi and Turner 2004). The Klamath Basin is vast, at some 15,751 square miles (40,790 square km) (Figure 1). Yet, near its midpoint the river passes through a geological bottleneck. Here, the river descends through the steep and deeply incised Klamath River Canyon as it makes its way through the northern Californian Cascade Range toward the sea. A private energy conglomerate, the California Oregon Power Company (COPCO), constructed the first COPCO hydroelectric dam on the lower end of this canyon between 1912

and 1916, without facilities allowing for fish passage. Three other dams followed as part of the Klamath Hydroelectric Project on the river's main stem: COPCO 2, Iron Gate, and J.C. Boyle, compounding obstacles to fish passage. While the biota of the upper and lower river were always somewhat distinct, the conditions of the upper river changed dramatically over a century ago. Reconstructing precontact conditions above the dam, in particular, requires the interdisciplinary study of past environments.

Researchers widely accept that the comparatively arid Upper Klamath Basin abounds with lake, marsh, and stream habitat suitable for desert fish like minnows (*Cyprinidae*) and suckers (*Catostomidae*). Yet, some academic sources have questioned whether the Upper Klamath Basin ever had harvestable quantities of Pacific salmon due to the geological obstacles presented by the Klamath Canyon. Anthropologists Alfred Kroeber (1925: 325) and Gordon Hewes (1947) even suggested that the Upper Klamath Basin was devoid of anadromous fish, apparently extrapolating fish distribution from the much-eroded habitat conditions at the time of their writing. In turn, these accounts hampered proposed salmon habitat restoration in the Upper Klamath Basin in recent times, and gave leverage to organizations and political figures citing the purported lack of Upper Klamath Basin salmon in their cases against dam removal and river restoration. These claims prompted a number of detailed historical investigations

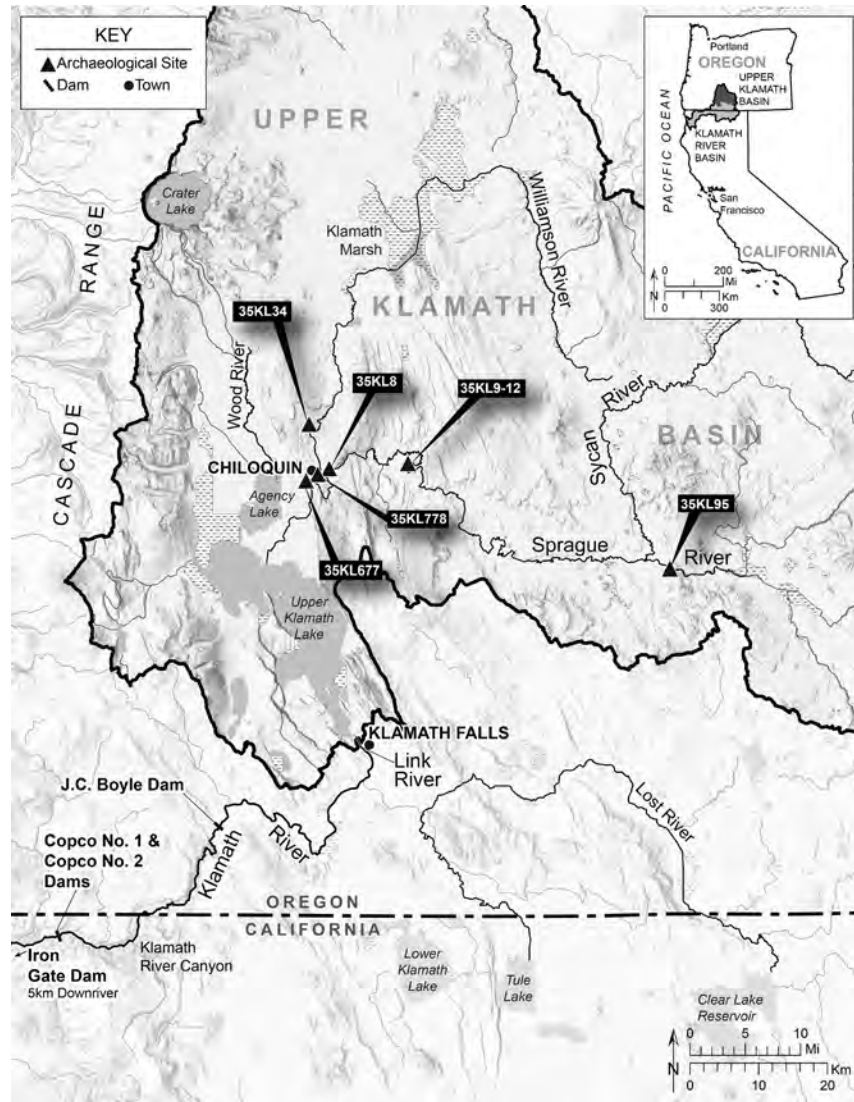


Figure 1. Map showing archaeological sites with verified Pacific salmon remains in the Upper Klamath Basin as documented in the works of Stevenson and Butler (2015) (Figure by Johonna Shea).

simply to substantiate the existence of the fish upstream from the canyon (Hamilton, Curtis, et al. 2005; Hamilton, Rondorf, et al. 2016).

The Klamath and Modoc people long knew better. Chinook salmon (*Oncorhynchus tshawytscha*) and anadromous steelhead (*Oncorhynchus mykiss*) served as a staple food, of keystone significance, traditionally greeted upon the fishes' return with reverence and ceremony. Geological obstacles and droughts may have temporarily impeded salmon passage to the upper basin, as oral tradition suggests,

but in time they would surely return. Prior to Euro-American contact, this pattern persisted for countless generations, a point suggested by early historical writings and classic ethnographic accounts (e.g., Spier 1930:145). Due to the dams, however, memories of salmonid fishing within the Upper Klamath Basin are embedded in the oral traditions of the Klamath Tribes rather than in the lived experience of any Tribal member. Klamath elders describe the loss of salmon as an apocalyptic moment—the loss of a cultural keystone species and a key dietary staple; they

report that the loss compounded growing food insecurity and brought myriad shocks to the health of families and traditional economies in the years that followed. Downstream from the dams, too, depressed fish numbers and impaired water quality were felt by all Klamath River Tribes.

On several occasions, Tribes attempted to seek redress, including unsuccessful 1930s federal litigation on behalf of the Klamath Tribes and a series of claims addressing both water and fishing rights by the Klamath and the Bureau of Indian Affairs into the late twentieth century (Lane and Lane, Associates 1981). Former salmon fishing stations still served as sites for harvesting locally secondary resources such as freshwater trout and suckers, as berrying and hunting camps, and as places of historical commemoration. In many cases, former salmon fishing stations became places where people go to “pray that the salmon will come back” (Deur 2003:45). To the extent that salmon fishing could persist within the Tribe after 1916, it occurred in abbreviated visits to traditional outlying fisheries alongside members of other Tribes, in such places as the Rogue River Basin, the lower Klamath River, and Celilo Falls.

Discussions of dam removal in recent decades made this an issue of pressing interest to many parties. Competing interests embraced the ambiguity in the available written record in opposing decommissioning and removal of the Klamath dams. This came to the fore in the early 2000s, when the Federal Energy Regulatory Commission license for the dams was due to expire, raising the question of whether the dams were to be relicensed or decommissioned. In response to these regulatory questions, the Klamath Tribes enlisted Deur to carry out systematic ethnographic interviews with Tribal members from 2001–2003, to see what they could recall relating to salmonid harvesting sites and practices. Among our tasks was to identify fishing stations that might still warrant consideration as Traditional Cultural Properties (TCPs)—places of enduring cultural significance eligible for the

National Register of Historic Places (King 2003). We systematically interviewed no fewer than 40 elders, most of whom had little or no knowledge of the written ethnographic and archaeological record, but who were fluent in the oral tradition of the Klamath and Modoc people.

This research documented several key findings, including the identification of specific salmon fishing stations within the Upper Klamath Basin. Above the traditional fishing stations of Link River (modern-day Klamath Falls) interviewees consistently described these stations at certain points along the Sprague and Williamson rivers and their tributaries, with almost all of them corresponding to known archaeological sites (Deur 2003). Interviewees reported key salmon fishing stations at Bezuksewas Village near the Williamson-Sprague River confluence; at shallows along the Williamson River, including places in the vicinity of Collier State Park, at the Williamson River Bridge; and at places on the Sprague River, especially including Beatty Curve but also minor stations in the lower Sprague River, including shallows immediately east of modern Chiloquin. Elders identified a few other smaller and ephemeral sites too. Interviewees also reported salmon fishing at Kawumkan Springs on Sprague River, but did not identify it as a potential TCP because of private ownership and access issues precluding ongoing use of the site. We were able to demonstrate that the continued absence of fish passage still eroded cultural uses of these sites—each potentially eligible as a TCP—and these adverse effects were still admissible as evidence of the adverse effects of salmon extirpation. Still, doubts persisted among certain opponents of river restoration as to the presence or significance of salmonids in the Upper Klamath Basin.

A few years later, Butler and students, including Alexander Stevenson, carried out their own independent and systematic zooarchaeological assessment of available collections containing fish bones. They analyzed all sites with curated fish remains throughout the Upper Klamath Basin, seeking to identify

salmonid remains. They found diagnostic bones in abundance, including those of Chinook salmon and anadromous steelhead or “redband” trout. Butler et al. (2010) summarized the findings. Later, Stevenson completed a Master’s thesis (2011) fully substantiating these results with reference to mitochondrial DNA and geochemical analyses. Together, Stevenson and Butler (2015) published a groundbreaking article summarizing these findings in the *Journal of California and Great Basin Anthropology*.

Inadvertently, their findings provided impressive corroboration of veracity of Tribal oral tradition. The list of places with confirmed “salmon presence” presented by Stevenson and Butler (2015) based on fish bone samples produced an almost identical match with those sites reported by Tribal members on the basis of their oral tradition in the 2003 Deur study. This was true even though the salmonid remains were often of considerable antiquity, with the earliest salmon remains in their samples dating from ca. 5,300 years before present. Klamath Tribal members greeted these results with great pride and enthusiasm, as an affirmation of the wisdom of the elders and as testament to the enduring knowledge of Tribal members in spite of generations of forced displacement.

Specifically, Stevenson and Butler reported salmonid remains at the Bezuksewas Village (35KL778), Collier State Park (35KL34), Williamson River Bridge (35KL677), and Beatty Curve (35KL95) sites. They also recovered salmonid remains at Kawumkan Springs Midden (35KL9-12). And just east of Chiloquin on the Sprague River, Stevenson and Butler reported a single salmon bone found in a cave (35KL8) adjacent to an ethnographically reported fishing site. Though the cave itself was not reported as a fishing site, it was reported to Deur (2003) as a location related to first fish ceremonies.

The departures between the ethnographic accounts of twenty-first century elders and the available zooarchaeological record were few. Certain ethnographic sites reported by Deur (2003) but not also reported by Stevenson and Butler

(2015) did not have zooarchaeological collections available for analysis, such as locations in the Wood River Basin. Also, interviewee accounts in Deur (2003) suggest dynamic intermittent salmon passage into unexpected places like the Lost River Basin and possibly Klamath Marsh—drainages only connected to the larger Klamath River drainage through geologically dynamic canyons or linked by ephemeral channels during high water events. These departures between ethnographic and archaeological data in atypical environments provide archaeologists with working hypotheses—each suggesting possibly underappreciated dynamism in the geographical extent of salmonid passage over millennia due to changes in riverine morphology and stream flows.

With a satisfying alignment of archaeological and ethnographic outcomes, these findings underscore the veracity and value of Native oral tradition in understanding environmental phenomena over time. The results also point to the opportunity for further inter- and intra-disciplinary cooperation in illuminating correlations between Native oral tradition and the archaeological record. Butler and her students have always been champions of such collaborations, illuminating our shared past while answering questions of enduring significance to the present and future of our region. Together, their studies have provided a deeper context to discussions of dam removal and environmental restoration proposals, in turn sustaining the long-term environmental and cultural integrity of the Pacific Northwest.

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Managing Coastal Fisheries: The Georgia Connection

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Dr. Virginia Butler and I share more than research interests in zooarchaeology and coastal fisheries. We share a Georgia connection. Although she left Georgia after receiving her B.A. in anthropology from the University of Georgia (UGA) in 1977, two years before I joined the UGA faculty, her analytical approach to big research themes guides much of my research.

Papers co-authored by Virginia and Sarah Campbell (Butler and Campbell 2004; Campbell and Butler 2010) are important syntheses that led me to consider fisheries and social complexity from a different perspective. Some archaeologists approach coastal history assuming that marine resources could not support sedentism or complex social organizations. This is particularly true in Georgia, where little ethnohistoric and ethnographic evidence survived the slaving raids, epidemics, labor and tribute requirements, territorial demands, and warfare that decimated coastal communities after European-sponsored exploration began there in the early AD 1500s (Reitz et al. 2010). Indigenous population decline accelerated after Spain established two coastal towns and a mission chain in 1565, further limiting reliable ethnohistoric information. Strong evidence for fisheries, sedentism, and social complexity survives, however, in the form of species-rich coastal sites. Butler and Campbell's research provides an interpretive framework for applying zooarchaeological data from these sites to elaborate upon ties among Georgia's fishing traditions, residential patterns, and cultural institutions.

The Georgia Bight is a large embayment on the eastern edge of the southeastern Atlantic coastal plain of North America. The coast is characterized by a series of barrier islands behind which lie 8–11 km of shallow marshes, mud flats, oyster bars, and tidal creeks locally known as estuaries. A twice-daily tidal cycle has an average range of 2.4 m, but tides and their biogeochemical effects are highly variable on daily, seasonal, and annual scales due to the complex physical configuration of each estuary. Estuarine fishes are spatially and temporally flexible, highly mobile, and patchy. Many are young members of species more frequently encountered offshore as adults or adults tolerant of dramatic and frequent biogeochemical changes. This nursery function is critical to the health of the fishery and dominates the zooarchaeological record.

This record begins ca. 2700 BC, suggesting a well-established fishing tradition existed earlier, though the evidence may be submerged on the continental shelf. The matrix of the surviving sites consists largely of eastern oysters (*Crassostrea virginica*), other molluscs, and crustaceans. This enhances preservation of vertebrate materials and degrades most plant remains, though cultivation of domestic plants likely began ca. AD 1000. Isotopic evidence indicates that even the earliest known sites were used throughout the year. Direct archaeological evidence of fishing gear is rare; the habits and habitats of the fish in zooarchaeological assemblages suggest several different strategies were used, however. Over time, coastal sites grow more numerous, larger, and more complex, but they consistently demonstrate the role of fishing in daily life.

Fish dominate most coastal assemblages in terms of the number of taxa, number of specimens, and minimum number of individuals. Sea catfishes (Ariidae), mullets (*Mugil* spp.), and drums (Sciaenidae) form a highly ubiquitous, dominant core group whose members generally are present in estuaries throughout the year, though the population structure changes seasonally. Anadromous and catadromous fish are extremely rare. The generalist behaviors of the core fish and the high richness of the overall catch suggest that mass-capture facilities such as weirs and seine nets were the primary fishing technologies. Such devices yield a wide range of fishes from several different age groups and feeding behaviors instead of a limited number of species, a restricted age/size range, and high-trophic-level feeding behaviors such as we prefer today. Despite heavy use, this fishery persisted with minor variations for millennia, raising the question of whether the fishery was managed.

I was encouraged to consider this possibility by the criteria Campbell and Butler (2010) provide for assessing whether management is likely: (1) access to resources that can be controlled; (2) the presence of resilient resources likely to respond to management; and (3) small human group size with a stable membership that can be monitored. Not all of these criteria are met in the Georgia Bight, but this perspective enabled me to evaluate whether the persistence of the core fishery was due to resilience drawn from the inherent flexibility that all life in the region, including people, must display in order to live in a complex ecosystem experiencing dramatic changes with each tidal cycle. It is likely this resilience and flexibility extended to aspects of social life. The continuity of the fishery over millennia demonstrates that people in these fishing communities were not random scavengers living a hand-to-mouth existence. They were skillful, prudent people using social institutions to manage their use of animals upon which they relied and to identify who had the authority to monitor and enforce common rights and obligations.

As this example shows, Virginia's work has broad temporal and spatial implications. Her interdisciplinary contributions cover most of the zooarchaeological spectrum, from taphonomy, sampling strategies, and identification challenges to stable isotopes and archaeogenetics. They also reflect her commitment to conservation biology and engaging a diverse public in her important work. Her contributions to the International Council for Archaeozoology extend her insights and talents to the international stage, ably demonstrated when she hosted the 2019 ICAZ Fish Remains Working Group in Portland, Oregon. Her dedication to teaching and her generosity were revealed again when she shared her fish comparative collection with Georgia graduate student Justin Cramb, linking the present to her Georgia roots and to her earlier work in the Pacific. Thus, her ties to Georgia persist decades after she moved west, demonstrating, "You can take the girl out of Georgia, but you cannot take Georgia out of the girl." Virginia's influence extends far beyond the Pacific Northwest, for which we are all grateful.

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Oncorhynchus virginiana: A Rare and Exceptional Species

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I first had the pleasure of working with Dr. Virginia Butler in the mid-1990s, when she was initially asked to identify fish remains from excavations at a couple precontact sites I was working on. Foolishly, I thought this would be a relatively limited effort; i.e., she would provide a list of taxa, some notes about evidence of use or processing, and that would be about it. That used to be the standard routine of faunal identification.

I was fortunately badly mistaken. Among the remains were those of three-spined stickleback, a species I was not familiar with at the time. At least some of the remains were calcined or burned, indicating they did not represent incidental loss. This led to further conversations with Virginia about the sticklebacks and what they were doing mixed with other fish remains from an archaeological site. This was my introduction to the depth of Virginia's knowledge and observations, not just about fish but the broader cultural context of fish, a very important topic in the precontact history of the Pacific Northwest. I do not think we ever came to any definitive understanding of what those remains represented, but I was impressed by Virginia's willingness—if not enthusiasm—to use the results of analyses to further explore how we interpret or understand the past.

One of her greatest contributions has been to refuse to be viewed as a niche specialist; i.e., someone who contributes only data for others to interpret. I think this perspective has been pervasive for decades in our region and even continues to some extent today. When you work with Virginia, she is at her best as a partner

in understanding site data—for example, as a whole, especially in integrating everything we have gathered from a site into a single coherent picture. This means going beyond the local context. Site-specific reconstructions that contribute little or nothing to our understanding of broader patterns have little merit for Virginia.

For almost 25 years, our conversations have continued, often expanding on very basic data to revisit and rethink our standard models. I believe Virginia's perspective is that models are always subject to further assessment and refinement. And in some instances, subject to discard—but only if you have something as good, if not better, to replace the old model. She insists on rigor in any proposition or conclusion. Not just in the data used to support the conclusion but in how the data are used to do so. Sloppy or lazy inferences—regardless of the quality of the relevant data—are just as bad as lousy data.

It is this rigor applied to understanding and interpreting data that is one of her great strengths. Virginia's insistence on the systematic analysis of data and a clear and explicit discussion of the application of the data to the findings is a hallmark of both her own work and her assessment of the research of others. She has passed this perspective on to her students, contributing to a new generation of archaeologists working in this region and elsewhere.

An older model Virginia has been instrumental in replacing is that we archaeologists generally only speak to other archaeologists or colleagues in other disciplines. Most of us have had the opportunity to give public talks and presentations. There is an incredible public

interest in our field. But it has typically been a one-way conversation; i.e., we give our talk, answer questions, and leave. We have learned to be much better listeners in working with Tribes. Virginia has been opening the door to a two-way conversation with the public in general. We have a responsibility to the communities in which we work for them to be active partners. Opening that door has been one of Virginia's most important contributions.

Opening this door has been most evident in the Archaeology Roadshow. The Roadshow provides an opportunity to expand public understanding of archaeology well beyond pyramids and mummies. More importantly, it is a critical expression that the archaeological past is here in our backyards and can contribute to a sense of place and community.

Having worked in the lower Mississippi River area prior to coming to the Pacific Northwest in 1976, I expected to see the same caliber of fieldwork and research and a well-developed theoretical framework here, especially for the Columbia River drainage. With some exceptions, those were missing. Development of local culture histories was the focus of much of the research, and placing those local chronologies into a regional context was rarely undertaken. We have evolved considerably over the past 45 years, and Virginia deserves recognition for her contributions to that evolution. We are much better archaeologists, thanks to her.

On a final, personal note, working with Virginia is a joy. Her engagement on the personal level is one of both friend and colleague. Anyone who has not had the pleasure of experiencing Virginia at the social level over a beer is missing a lot. Cheers, Virginia!

Archaeology as a Team Sport

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As archaeologists, we look back through the archaeological record to see the past. And the introspective ones among us may also look back to understand the twisting paths of our careers. One wonders, however, if these paths were planned with strategic precision, or if they were created somewhat randomly as we impetuously responded to new and exciting opportunities. I would like to suggest that our paths have not formed through myriad random choices—but instead, choices influenced strongly by our personalities and learning styles. Thus, when we consider the lives and works of our colleagues, we may discover windows into who they are. As evidenced by our respective career choices, Dr. Virginia Butler and I seem to enjoy similar professional personalities, ones focused on “the team.” As I share a brief examination of my career, perhaps you will discern similarities to Virginia, and perhaps even to yourself.

First, I believe that one trips upon their passion. When I first entered college, I loved geology and therefore studied it intensely. I could instantly see topography from topographic maps, and wondered why others couldn’t see it. Structural geology with its cross-cutting relationships also came naturally, and reconstructing ancient three-dimensional landscapes from oil-well logs was something I could have easily done for the rest of my life. Virginia’s passion is fish (Figure 1) (Butler 1993), the old skeletonized ones found in middens and along rivers. Yours might be lithic artifacts, charcoal, or shells. As I said, a career usually starts with a passion.

But I did not particularly enjoy the way geologists worked. Many work independently, such as on a project of their own conception that arouses their great personal passion, and perhaps with just enough external input or collaboration to get the job done. This style of work enables a person to focus intensely and productively without the distractions that often accompany collaboration. And typically, without the need for discussion and consensus, results come fast. Many geologists choose to work alone or in small groups—in the field, in offices, on computers, or huddled over aerial images.

When I joined my first archaeological excavation, however, I discovered that I love working in large groups, focusing together on complicated problems, trying to feed ourselves and stay alive, all the while drinking beer together. This became my new passion and *second* influencer of my career—working in groups—on teams. Thus, I discovered that I prefer archaeology to geology, largely because of the collaborative nature of the field work. And what a bonus to learn that geoarchaeology allows me to combine both the spatial nature of geology with the collaborative fieldwork ethos of archaeology (Stein 2005). Virginia also seems to have been drawn inexorably to the archaeological-style passion of field work and team-based research (Chatters et al. 1995; Kirch et al. 1995) and the joy and excitement of collaboration.

The *third* element that characterized my personal career choices was revealed when I unfortunately found myself working in an unsafe situation. When I first joined the faculty



Figure 1. Left to right: Virginia Butler, Susan Frieberg, and Eric Gleason at 35WS05, the 5-Mile Rapids Site, in 1993.

at the University of Washington, I began a new collaboration with a few University of Minnesota colleagues who were re-examining Dennis Puleston's work in Belize. Denny was working on the origins of Mayan agriculture and identifying raised fields in wetlands (Stein 1990). Our work focused on Rio Hondo, which forms the border between Mexico and Belize. Although our passports said we were working in Belize, some Mexican soldiers, traveling on the river with machine guns strapped across their chests, confronted us, and we were forced to hide in the mangrove swamps. There were snakes, malaria-carrying mosquitoes, and illegal smugglers. A simple personal rule of mine: do not risk your life for anything other than your family. I do not know if Virginia works in the relative safety of the Pacific Northwest for the same reason as I do, and I don't know how many of you work here because it is close to home, with few mosquitoes, fewer machine guns, and no poison ivy. But for many of us, the choice to work locally influences our careers significantly.

Fourth, I love working in shell middens, essentially because I love being near the water—any water. Rivers are really desirable field sites (Kentucky's Green River will always be my first love) (Stein 1982), but coastal shell middens are the most complicated landscapes I can imagine. The volume of shell represents long and successful settlements, shorelines migrate in and out, tectonics raise and lower land levels, and intertidal areas transform from rocky to muddy with erosion from forest removal or lahars. It is absolutely wild, and shell middens present a great challenge to decipher (Stein 1992). These coastal accumulations of rich subsistence practices can be investigated by coring rather than destructive excavations—which for me was just like reading oil-well logs (Stein 1986). All of these compelling attributes come together to rigorously test all of my and my collaborators' geologic and archaeological faculties (Stein 1987). Did Virginia's career follow the same path to shell middens for similar reasons? I do not know, but the preservation qualities of shell middens did influence her ability to find fish bones, as many

kinds of materials to which archaeologists are drawn are preserved within the shell (Butler and Campbell 2004; Campbell and Butler 2010).

Fifth, I like to teach. I love to break down a complicated issue and explore it with students and the community, often learning more from them than I ever could have known from books. The San Juan Island Archaeological project was really about creating an excellent nationally recognized field school (Stein 1992). It was about teaching field methods, and while San Juan Island archaeology may not have been as worthy of headlines, in contrast to the origins of Mayan agriculture, it involved a rich and complex history of technologically advanced people (Stein 2000), and a large group of extraordinarily talented students who came together to solve challenging problems while focusing on how best to teach archaeology in the field (Taylor and Stein 2012). I know that I share a deep love of teaching and community collaboration with Virginia (Moore et al. 2012).

This field school also taught me to embrace opportunities to share my love of archaeology with all sorts of communities and the public. I love to listen to Native American scholars and learn from these knowledge holders, identify objects brought by the public, invite people to share the origin stories of their rocks (even the mundane and incorrect ones), and help individuals assess their sometimes bizarre and naïve explanations of the land around them (Stein et al. 2003; Taylor et al. 2011).

For these very reasons, I also love museums because they too focus on communities and the public. Museums do not apologize for meeting the public where *they* are, using words they can understand, and slowly building their appreciation and vocabulary toward greater comprehension. Museums share stories by letting the communities whose ancestors made and used these precious objects, do the explaining. Teaching is not something done only at universities. Teaching is at the heart of museums, cultural resource management, and public archaeology. It is archaeologists'

way of showing funders and taxpayers why the archaeological record and collaboration with Indigenous peoples are important.

Lastly, in the Pacific Northwest, I discovered, like Virginia and many of you, that I love working with our local Tribes. I came to understand the trauma that anthropologists and archaeologists caused the region's Native people. I love learning from them how we might go forward together as we seek to preserve their and our cultural heritage (Stein and Phillips 2002). I have learned how to relinquish control and power, and simply stand back to let the rightful owners of these artifacts and antiquities—the descendants of the people who crafted them—work to honor and preserve their cultural heritage. This partnership has been very special and has influenced my choices profoundly. Virginia's and her colleagues' work at Číx'wícən Village (Butler et al. 2018), in collaboration with the Lower Elwha Klallam Tribe in Port Angeles, Washington, is the premier Pacific Northwest example of such collaboration, and sets the standard for respectful sharing of the control to determine how we work together to preserve the cultural heritage of Native people. I believe that this is a choice we must all make in our careers in the future.

To summarize, the characteristics that consistently influence my career choices:

Research about which I am passionate. For me it is to interpret and reconstruct three-dimensional settings preserved in the archaeological record—mostly through application of geoarchaeological methods.

- Projects that emphasize working with teams to solve challenging problems
- Locations that are safe
- Sites with abundant shell that are near the water
- Opportunities to teach with and learn from students and communities
- Opportunities to interact with and enlighten the public
- Opportunities to work with Tribes to achieve decolonization and inclusion.

Our careers—Virginia’s and mine—can be examined by looking back and identifying the myriad choices that guide our respective professional journeys. I encourage us all to reflect on and acknowledge the choices made and realize that we act strategically and in concert with our passions and our personalities. I whole-heartedly applaud Virginia Butler for her marvelous journey and her thoughtful community-centered choices. I know that she has, and will, influence hundreds of students and our entire extant archaeological and Indigenous community. It is an honor to be one of many whom she has influenced. And I thank her deeply for sharing her professional journey with me.

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Public and Community Archaeology in the Pacific Northwest

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Public archaeology in the United States' Pacific Northwest entangles academics, public and Tribal agency archeologists, contractors, educators, students, museum curators, and volunteers. While the connections between these players have changed through time, the regulatory, research, and community aspects of public archaeology have always been linked in some fashion. The foundation of this connection is the laws and policies that protect archaeological resources at the federal, state, and Tribal levels, and through local city, county, and Tribal ordinances (Griffin and Churchill 2003; Deur and Butler 2016). The practitioners give agency to public archaeology, including the many who contribute to research in public spaces and interact with the public in a variety of ways. Museum curators and exhibitors also have embraced public archaeology, highlighting artifacts and belongings of past generations, and interpreting them in anthropological and other ways (Moyer 2006; Flexner 2016; Kale 2017).

While published programming on public archaeology is rare in urban settings in the Pacific Northwest (Warner et al. 2014; Wilson 2015), there has been a continuous, albeit sporadic, program of public engagement tied to archaeology. Some of the earliest historic preservation work in the Pacific Northwest was tied to the Smithsonian Institution's involvement in the planning of Bonneville Dam, which led directly to the founding of the Oregon State Museum of Anthropology and the first archaeological permitting law in Oregon (Griffin 2009:92). This connection among cultural resource management (CRM),

the public, and museums, carries through to the present, although with changes in attention to the curation crisis, collections management, and other issues (Moyer 2006; Childs and Benden 2017). Further, the ways in which archaeologists have interacted with the "public" has changed with shifts from more educational and public outreach to increasing critical and multivocal approaches (Richardson and Almansa-Sánchez 2015). The development of American Indian tribal capacity to provide CRM services including archaeology has increased dramatically over the past 30 years, and partnerships among agencies, academics, and Tribes are now more common.

An excellent example of the integration of multiple communities of Pacific Northwest archaeological practitioners in a single setting is Portland State University's (PSU) Archaeology Roadshow. Pioneered by Dr. Virginia Butler, since 2011 this program has integrated agencies, tribes, museums, private-sector CRM firms, archaeology volunteers, elementary schools, and the students of PSU's Public Archaeology class, to provide exhibits, hands-on activities, and an opportunity for collectors to interact with experts in artifact identification. The author and other National Park Service (NPS) archaeologists and curators have participated as exhibitors and experts every year in the Portland, Oregon, version (Figure 1). The one-day event has also been held in Burns and Bend in eastern and central Oregon. As an archaeologist who straddles the academic and agency sides, I believe the Roadshow is an invigorating arena that allows cultural resources specialists and



Figure 1. The author and Amy Clearman at the National Park Service booth at the 2017 Archaeology Roadshow, Portland State University (Portland State University, Anthropology).

volunteers to engage in outreach with the public while visiting with the many friends and colleagues who attend as exhibitors and experts. Its outward educational and interpretive goals reinforce the building of a diverse community of archaeologists, cultural experts, and museum practitioners. In a microcosm, it is the breadth of archaeological performance and practice in the Pacific Northwest.

Another important focus of archaeological outreach occurs at protected historical sites throughout the region. Fort Vancouver has a long history of public archaeology, including the integration of multiple communities of practitioners within a program of research guided by professional archaeologists (Wilson et al. 2020). While theoretical and methodological approaches have changed, the connection to the public at Fort Vancouver has continued. Archaeology was initiated by NPS archaeologist Louis Caywood in 1947. Caywood employed unskilled laborers and university students in his search to relocate and document the fur trade fort (Wilson et al. 2020:49). Caywood's explorations garnered considerable

newspaper buzz and stimulated public interest (Wilson 2015:225). Kardas and Larrabee's 1969 excavations at the Fort Vancouver Village included professional archaeologists and students of Bryn Mawr and the University of Washington (Kardas 1971). The massive excavations in the 1970s by Hoffman and Ross included the use of volunteers as laborers, including students from the Multnomah School of the Bible and the Oregon Archaeological Society. Lester Ross (1975) even tried his hand at interpretive writing during this project exploring a "hypothetical narrative" of the gentleman's dining customs at Fort Vancouver for the sesquicentennial edition of *Clark County History*.

The massive contract archaeology project associated with the Interstate 5/State Route 14 Project integrated university salvage/contracting arms with federal transportation archaeology. David and Jennifer Chance wrote their first report on the excavations at the Fort Vancouver Village and Vancouver Barracks with the "lay public" in mind, suggesting a desire for public outreach (Chance and Chance 1976). Many university

students participated as paid workers in this project and much of the artifact identification work was conducted by students at the University of Idaho.

Avocational archaeologists have had a major role in public archaeology at Fort Vancouver. Harvey Steele and Charles Hibbs (1985:1) identify the Jail Project as a “milestone in citizen archaeology,” with the role of direct public involvement identified as necessary to garner public support for archaeology, including legislative funding of programs related to archaeological sites. Another field school in the 1980s was conducted at the Carpenter Shop by Oregon State University. The current NPS public archaeology program began in 2001 with a field school that embraced interactions with the visitors to the park. The Northwest Cultural Resources Institute (NCRI) was created as a cooperative partnership based at Fort Vancouver and its affiliated properties. NPS staff, university professors, and subject matter experts facilitate research and training, offer expertise, and support other educational endeavors using National Parks and other protected spaces as laboratories.

An important partnership of the NCRI is with PSU, for cooperative research and training. This partnership conducts research that contributes to the public understanding of Oregon’s and Washington’s historic period (including at Fort Vancouver National Historic Site and other NPS parks); develops public understanding of archaeology and history; and stimulates scientific research on NPS-protected sites and areas. It expands the education of students in historical archaeology and heritage management (Wilson 2015:231).

As part of the development of the NCRI, the public archaeology field school was created. NPS interpreters and archaeologists trained students in public interpretation, using NPS guidance and a unique model of public engagement (Marks 2011; Wilson 2015). As part of this program, NPS staff developed a “Kids Dig!” program that introduced children to archaeological field

work and interpretation, using a mock dig site. Field school students served as assistant interpreters in this program (Wilson 2015). In addition, students engaged with the visiting public to share with them the academic research goals, field methods, and educational values of the work. They were encouraged to develop a dialogue with the visitors to seek their personal connections to the site (Marks 2011; Wilson 2015). A variety of partnerships with educators, disadvantaged communities, and Tribes has brought different stakeholders into contact with archaeology as members of the public or as heritage interpreters (Figure 2). Of note, the use of archaeology to explore the Fort Vancouver Village has brought new perspectives on this essential and diverse community of fur traders (Wilson 2015, 2018). Sixteen field schools have been run with numerous partners and anchored by its academic partners: PSU and Washington State University Vancouver.

While there are many other public and community archaeology examples in the Pacific Northwest, the Archaeology Roadshow and Fort Vancouver’s public archaeology programs demonstrate the entanglement of government, agency, academic, and private sectors in connecting archaeology to the public. These public partnerships with agencies, universities, Tribes, and community partners can improve understanding and stewardship of heritage sites and their constituent archaeological resources. These partnerships can engage many diverse stakeholders tied to traditional, Indigenous, and other narratives about place (Wilson 2015, 2018). Partnerships allow archaeologists to bridge gaps between stakeholders and archaeology and create new means to interpret and discuss objects.

Increasingly, interpretation of archaeological resources emphasizes the role of audience-centered interpretation and the engagement of diverse audiences as “stakeholders and primary contributors to the meaning-making process, rather than as passive consumers” (NPS 2017:1). Archaeologists should embrace this goal in public



Figure 2. Portland State University student, D. Woolsey, interpreting to visiting children at the 2010 Public Archaeology Field School at the Fort Vancouver Village (National Park Service).

archaeology to explore different meanings and the truth of past historical narratives. Plumer (2018) has found that the public in the Portland, Oregon, metropolitan area has a high awareness of archaeology but with varying perspectives on its relevance or how they connect with it. Archaeologists are well positioned to explore how the past has relevance to different segments of the population. As students of people's past practices based on their belongings, archaeologists can explore contemporary significance and diverse audience perspectives recognizing that historical, cultural, and environmental legacies evolve through time.

Beyond exposing myths associated with social/collective truths, archaeologists should have a stronger role in connecting people's history, identity, and perspectives to the social practices of ancestral peoples and illuminating aspects of heritage that have been silenced or are hidden (Colwell-Chanthaphonh 2012). Archaeologists have begun and should continue to directly engage with Indigenous and other stakeholder communities to decolonize interpretation,

seek social justice and equality, and address shared research goals (Kryder-Reid et al. 2018; Cody 2019; Gonzalez and Edwards 2020). Other projects should build on the engagement of artifact collectors and private property owners to aid in CRM, like Tipton's (2020) recent study. Others should explore the heritage values of communities tied to colonial sites like Clearman (2020) has done at the "first" Fort Vancouver.

The prospects for public archaeology in the Pacific Northwest are great. The community I see at the Archaeology Roadshow is the core of a growing movement. By engaging in partnerships with diverse stakeholders and increasing the connectivity of these practitioners and segments of the public, archaeology will continue in its varied roles and likely become more relevant in the future. Archaeologists will address, in a material way, the changing notions of what is important about heritage, what is worth telling, and what should be preserved.

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An Idea that Took Root: Archaeology Roadshow in Oregon

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The Archaeology Roadshow is one of Dr. Virginia Butler's considerable contributions to the stewardship of Oregon's cultural heritage, and it is arguably one of the most remarkable public archaeology programs in the country. Over the past decade, an inspired idea that took root in Virginia's fertile brain grew into a network of public outreach events spanning the state of Oregon. The Roadshow has become a popular, free, annual celebration promoting conservation of Oregon's history and educating the public about the value of archaeology to people's everyday lives.

Throughout her career, Virginia has advocated that archaeologists engage with the public to foster appreciation and respect for diverse cultures and peoples, as well as to encourage public discourse on the ethical

issues surrounding the destruction of the archaeological record (Deur and Butler 2016). To that end, she set out to identify meaningful ways to fulfill this responsibility while giving Portland State University (PSU) students real world experience developing public engagement skills. Simultaneously, her efforts began to address the scarcity of existing opportunities for individuals and organizations engaged in public history in the region to work together and forge stronger connections. Ultimately convening a diverse partnership of students, avocational archaeology groups, and heritage preservation professionals, Virginia spearheaded the planning and implementation of the event dubbed the Archaeology Roadshow (Figure 1).

The Roadshow started as a modest effort. In 2011 and 2012, Virginia worked with her PSU



Figure 1. Virginia speaks with visitors during the 2019 Portland Archaeology Roadshow (Photo by Kathryn Berg).

AN IDEA THAT TOOK ROOT: ARCHAEOLOGY ROADSHOW IN OREGON



Figure 2. Students at the first event at PSU in 2011 (top), and (bottom) volunteers at 2019 Portland Archaeology Roadshow (Photos by PSU Anthropology Department, Brian Crabtree, Scott McKenzie, and Lyssia Merrifield).



Figure 2. (cont.) Central Oregon Sister Archaeology Roadshow (top), and Harney County Sister Archaeology Roadshow (bottom) (Photos by PSU Anthropology Department, Brian Crabtree, Scott McKenzie, and Lyssia Merrifield).

students to research different types of archaeology outreach events; students then developed and hosted their own events on PSU campus and in Portland's Pioneer Square (Figure 2). The first Roadshows featured an artifact identification element as well as exhibitions created by students and several community partners. Encouraged by the positive responses to the first two years, Virginia and the 2013 Public Archaeology class aimed to grow the event through increased community participation and engagement with a larger audience. The Roadshow moved to the Oregon Museum of Science and Industry's auditorium to capitalize on the museum's foot traffic. With more than 20 community partners and nearly 600 visitors attending, it was clear the program had momentum. The event continued to grow over the next six years, and by 2019, it hosted around 40 exhibits and more than 1,000 visitors at its current venue on the PSU campus (Figure 2).

Each year the Roadshow has focused on a theme such as Archaeology of Food, Archaeology of Dwellings, Archaeology of Trade and Travel, and Archaeology of Change. This structure offers both students and local partners a lens through which to highlight stories that are unique to the area and to the organization's mission. Not only that, the changing theme makes the event exciting and different every year, incentivizing visitors to return and learn more.

In 2016, the Roadshow was awarded a Phi Beta Kappa Arts & Sciences City of Distinction prize, "because of its cross-disciplinary efforts to nurture fascination with archaeology among new and diverse audiences in Portland by showcasing local history, paleontology, geology, and more. In the process, the Archaeology Roadshow fosters stronger connections and knowledge exchange among individuals and organizations across Oregon: universities, federal and state agencies, tribes, archaeology companies, and nonprofits."

This award was a direct result of Virginia's dedication and her hard work to turn the bold concept into a successful long-term heritage outreach program that had never before been achieved in Oregon.

After several years of well-received events in Portland, the next step in the evolution of the Roadshow was to figure out how to take it on the road, literally. Having envisioned similar self-contained and self-sustaining events in every corner of Oregon, Virginia and the Portland Roadshow planning team began researching communities that might be interested in hosting sister events in partnership with the Portland-based community. One evening in 2016, Virginia connected with Scott Thomas, the Burns District Archaeologist for the Bureau of Land Management (BLM), after a talk he presented to the Oregon Archaeological Society in Portland. Scott recalls Virginia's enthusiasm as she persuaded him to consider bringing the Roadshow to Harney County. He polled his local historic preservation community, who welcomed the collaboration and hosted their first sister Roadshow in 2017, with subsequent events in 2018 and 2019. Virginia's students and other Portland Roadshow partners traveled to Harney County to participate in the events (Figures 2–4).

The second sister event evolved when Kelly Cannon-Miller, executive director of the Deschutes County Historical Society (DCHS), learned about the Roadshow during a statewide historic preservation meeting. It struck her that the premise of the Roadshow felt like a perfect fit for a central Oregon audience, so she pursued bringing the event to Bend. As the impetus for involvement, Kelly points to central Oregon's rapid population growth over the past two decades with its added pressure on neighboring public lands that protect important archaeological sites. The Roadshow provided a vehicle to communicate messages about protecting and understanding the archaeology of the region. The first sister Roadshow in central Oregon in 2019 drew a few hundred folks to the museum, many for the first time (Figures 2 and 4).

Both sister events are planning for the future in ways that meet the needs of their communities, with the Portland planning team playing a support role. The Harney County planning team has scheduled their event later in



Figure 3. Virginia examines an artifact during the 2017 Harney County sister Archaeology Roadshow (Photo by Greg Shine).

the spring when the weather is more predictable and combined it with another local heritage event that features food vendors, live music, and local tradition keepers. This group of artisans braid rawhide, build saddles, weave wild cordage, reenact nineteenth century lifeways, and create silver objects the old fashioned way. In central Oregon, Kelly notes that even though the 2020 follow-up event had to be canceled due to the global pandemic, the partnership forged among DCHS, the Archaeological Society of Central Oregon, and Central Oregon Community College is looking forward to bringing back the Roadshow in the future.

Visitors to all these events have gained a sense of place as well as an appreciation of their local archaeology and their own role in stewardship. Moreover, community members have met and come to know the heritage specialists in their area with whom they can communicate as they have concerns and questions about heritage. At the same time, the collaboration between professionals and students that involvement in

the Roadshow engenders has provided invaluable experience for the future historic preservation professionals. None of this would have happened without Virginia's extraordinary leadership, contagious enthusiasm, and profound vision for the future of public archaeology in Oregon.

Southern Oregon University's Chelsea Rose has been a partner in the Roadshow for many years, traveling up to Portland to be a speaker or staff an activity. With so many sustaining public archaeology programs linked to place-based resources, Chelsea appreciates the unique flexible, portable, and inclusive infrastructure of the Roadshow that can be mobilized in a variety of heritage landscapes. This allows for cultural resource stakeholders to educate and engage the public wherever they may be. While future events will look different now that Virginia has retired and the world has shifted to a model that embraces the virtual alongside the in-person, the evolution and expansion of the Roadshow is far from complete.

AN IDEA THAT TOOK ROOT: ARCHAEOLOGY ROADSHOW IN OREGON



Figure 4. Harney County Archaeology Roadshow, 2017 (top); Portland Archaeology Roadshow, 2016 (bottom) (Photos by Patrick Rennaker, Jonathan Duelks, Beverly Clement, and Shelby Navarone).



Figure 4. (cont.) Central Oregon Archaeology Roadshow, 2019 (top); Portland Archaeology Roadshow, 2019 (bottom) (Photos by Patrick Rennaker, Jonathan Duelks, Beverly Clement, and Shelby Navarone).

We who have had the opportunity to work with Virginia honor her significant contributions to public archaeology in Oregon. Not only did she use all the resources at her disposal to create a long-term public outreach program, she also trained a generation of scholars how to mobilize, collaborate, engage, and speak confidently to the public about the science of archaeology. Her leadership in founding the Roadshow allowed her to gather—under the shared umbrella of archaeology—a capable group including students, Tribes, federal agencies managing archaeological sites in the region, private archaeology firms working in the field, museums, and universities. The event simultaneously introduces audiences to the field and highlights exciting new research and developments, while at the same time educating the public on the laws that exist to protect archaeological sites and heritage. That is a tremendous gift to our discipline as a whole, and will have an impact far beyond Oregon.

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Models of Science, Role Models, New Roles for Archaeologists

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An introverted undergraduate who loved philosophy of science, I was (popular!) fascinated by Thomas Kuhn's *The Structure of Scientific Revolutions* (Kuhn 1970). The release of *The Matrix* (Wachowski and Wachowski 1999) was contemporaneous with this coursework, and I may have conflated the two, but my understanding was that you are indoctrinated into an explanatory framework through education and training. You and your colleagues happily conduct "normal science," failing to notice underlying flaws in the theories that guide you. Only the bravest, most perceptive souls figure it out, revolt, and construct a new paradigm. From a vantage point of the early 2000s in graduate school at the University of Washington, I assumed that the revolution ended in the 1960s and scientific archaeology was the truest way to understand the human past. Dr. Virginia Butler's work was held up as a model of robust scientific method. Her investigations of human-animal-environment interactions were based on rigorous identification of taxa and elements. Then, and now, her work has demonstrated the profound potential of quantitative analysis of faunal remains. It answers the question archaeologists are so often asked, why is it worth collecting all these samples from archaeological sites? As researchers increasingly question *when* it is ethical to collect those samples, Virginia's work and public outreach have also supported the paradigm shift towards a decolonized precontact archaeology. Finally, she has provided support and inspiration for gender equality in our field.

Virginia's work has provided me and so many of my peers a model of scientific research that values precise research questions, thorough

examination of data, and humility to admit the limits of that data. One example is a powerful study on resource depression in the Pacific Northwest (Butler and Campbell 2004). Most readers will be familiar with this paper, which took on the assumption that control and increasing use of salmon and other high-ranked resources led to socially ranked societies in the Pacific Northwest. Grand, sweeping, social complexity models built on this idea rarely examined the data on whether intensive hunting, fishing, and gathering depressed the populations of the most desirable animals. Butler and Campbell examined collections and previously published data from 63 archaeological sites that spanned over 10,000 years of history. Their painstaking research revealed overwhelming stability of animal populations within sub-regions of the Pacific Northwest. Following this example, my dissertation research used toolstone and lithic data to investigate assumptions about territoriality that underly Pacific Coast social complexity models (Taylor 2012).

I have been equally inspired by Virginia's archaeological research as by her grappling, in a fully transparent manner, with the ethics of a colonialist and elitist archaeological discipline. She has centered her recent work on public outreach with the Archaeology Roadshow, explored past and modern Tribal sustainability practices (Campbell and Butler 2010), and amplified Tribal voices in her Číx'icən village work. At the 2017 Society for American Archaeology Meeting in Vancouver, B.C., Virginia's organized symposium "Human Ecodynamics at Tse-Whit-Zen, a 2,800 Year Old Lower Elwha Klallam Coastal Village in Washington State, USA"

invited a meaningful conversation about the hurt caused by the excavation and study of the village with Lower Elwha Klallam Tribal discussants Carmen Watson-Charles, Arlene Wheeler, and Frances Charles. Butler and her colleagues expressed tremendous gratitude for the involvement of and the opportunity to learn with Tribal partners. These conversations and others like them supported the paradigm shift already underway (Atalay 2006; Schaepe et al. 2017), the necessary end of an extractive research model that builds careers on data taken from descendant communities.

Beyond the clarity of her scientific research and interrogation of research ethics, Virginia has been unfailingly kind and supportive to researchers coming up in the field and has helped so many women become confident archaeologists. My earliest interactions with Virginia were at conferences where she would stand in front of my poster, focus with greater attention than anyone else had all day, and zero in on the doubt I'd been wrestling with for months. She seems to find joy in research, teaching, and assembling an intellectual community. I remember that during one visit to the University of Washington for an invited talk, Virginia toured the gloomy basement of Denny Hall with horror stories of her own and encouragement that we, too, could make it through the program. She is one of a handful of inspiring Pacific Northwest archaeology female role models who helped build a more inclusive model of scholarship. Out of a tradition of mostly white male archaeologists hurriedly excavating sites (and sometimes graves) and spouting off theories about past inhabitants, Virginia and her colleagues showed us how to break down the dominant narratives of the patriarchs with data and analysis. Women might need more data and better data to find a place at the panel discussion table (Hengel 2017), but with enough tolerance for evenings in the lab and χ^2 tests, we could persist.

My generation of archaeologists in the early 2000s came of age in a culture where young women were told we could “do anything” but

our confidence might be called a less positive adjective; topics of sexual harassment or worse were avoided more often than confronted. Like today (but without #metoo), by far most mentors were wonderful and supportive, with notable, terrible exceptions. I wonder if we will ever know the full impact of that cocktail of toxic masculinity, power dynamics, and remote field locations on the field of archaeology. Women left archaeology, or they stayed and decided, “this is a story that I’ll never tell.” In this context, Virginia effortlessly modeled confidence and created a network of Northwest Coast archaeologists who treated each other well and helped new archaeologists find their way.

I am so grateful for Virginia’s warmth, enthusiasm for research, and efforts to build up generations of archaeologists who are critical thinkers who do careful, thoughtful work. Her example has moved us toward gender equality in the field and shined a light on the fact that scientific practice alone will not suffice, but can serve larger social and environmental justice goals. Archaeology by and for descendant communities (Gonzalez and Edwards 2020) will look different from the practices of scientific archaeology of the last half-century, but the rigorous analysis that Virginia has practiced and taught will find a valuable role in a decolonized archaeology.

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The Struggle is Real, Not a Red Herring: Practicalities of Scholarly Motivation in the CRM Industry

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Dr. Virginia Butler is not easily forgotten by anyone who has met her. She cares deeply about the people and the world around her. She is focused and driven to always do her best, and she expects the same from her students and collaborators. Her face at conferences and other presentations can be a barometer for when a speaker is on the right track or has taken a serious detour into the brambles—a reflection of her honesty; wherever the path has led, she always has an insightful and probing question to follow up. Her drive to find meaning from small, easily overlooked materials and to share that knowledge with others is inspiring and can sometimes be a little intimidating. Virginia was a mentor for both of us as we developed into working professionals, and through it all Virginia has always been a true friend.

Bob first met Virginia in 1996 after participating in a shell midden excavation on Vashon Island. After this Burke Museum dig, he was the last to respond to Julie Stein's call for grad students to help analyze its constituents. He was horrified, at first, to be "stuck" with the fishbone assemblage. However, Julie arranged a crash course for him on fishbone analysis from Virginia that summer. Her enthusiasm for fishbones and the questions to which they could provide answers grew on him as well. It was the basis for Bob's Master's research, and Virginia subsequently and willingly served on his dissertation committee. Although she was a non-University of Washington committee member, her critical and technical review was instrumental to its completion.

Sarah Campbell introduced Ross to Virginia when he was an undergraduate student at Western Washington University in Bellingham. He became interested in working with fishbones after he spent hours sorting coastal midden samples in Sarah's lab and puzzling over the identification of tiny bone and shell fragments. When Ross began thinking about graduate programs, Virginia was extremely supportive and encouraged him to pursue a project that integrated his interests in North Pacific fisheries and coastal archaeology. Virginia was the chair of Ross's Master's thesis committee; she was generous with her time and provided invaluable support and feedback as his thesis project developed and was completed. Throughout this process Virginia helped Ross keep focused on his research goals, but also encouraged him to engage in collaborative projects, volunteering, presentations, and other opportunities to interact with working professionals and the public.

As academics by nature, Bob and Ross flew from their respective Ivory Tower nests for livelihoods in the cultural resource management (CRM) sphere in the mid-2000s. We were suddenly faced with the prospect of making our homes in an industry that often only pays lip service to the integration of meaningful and current research questions and analytic techniques utilizing best practices established in the academic sphere. This industry also emphasizes regulatory compliance that uses a definition of "significance" ostensibly meant to account for what is important in those faunal remains—not just to archaeologists but to the Native people whose past we are studying.

Like most in this situation, it was an adjustment for us. The firm where we landed, at slightly different times and from different origins, was Northwest Archaeological Associates. We were exceedingly lucky to make the transition to a CRM consulting firm that valued this integration at a high level.

CRM is, for better *and* worse, a space that can be an easy one in which to settle. This is where the jobs are. This can be where the good pay can be found. This is where a graduate degree, obtained after a lot of time and money are spent, can be put to specific use. A common mantra for those of us entering the CRM world from a research-oriented graduate program is, "It's what you make of it." Finding a space within CRM consulting that accomplishes the goals and meets the standards in which we were mentored, and still jibes with the often-conflicting priorities of regulatory compliance and business survival, is anything but easy.

Almost two decades later, we have been "making it" into something we feel is fulfilling by keeping our eyes open for those opportunities that put *meaning*—pretty broadly defined—into the work we do. As CRM consultants we make sure the boxes are checked, our clients are following pertinent regulations, and that we can make a living doing some semblance of archaeology. And as zooarchaeologists mentored by Virginia, we cannot help but keep our research antennae calibrated: for interesting opportunities to direct the data we generate towards something meaningful, for adding to our comparative skeletal collections, and for situations where we can say with ease that an archaeological site truly is significant under Criterion D of the National Register of Historic Places. To be able to do this requires research with questions and answers that are *meaningful* to someone—archaeologists, Tribes, fisheries biologists, habitat restoration professionals, and so on.

We find a lot of opportunities in extracurricular professional service, such as active participation in the Association for Washington Archaeology and other organizations.

We find ourselves saying "yes" to many things—looking at someone's fishbone assemblage, serving on a graduate student thesis committee, writing articles, giving guest lectures, etc. These opportunities have nothing to do with the 9-to-5 job, so we sometimes run into bandwidth issues with loved ones and our own personal even-keels. But if we do not do these "extra" things, then why bother doing archaeology at all? We have had to learn, sometimes the hard way, that while we keep looking for those opportunities to thrive as researchers it is also OK to say "no" sometimes for the sake of all the aspects of our lives aside from the professional sphere.

Directing casual criticism against CRM of the lowest common denominator is directing it at low-hanging fruit, but unfortunately such CRM work is likely to persist regardless of what the rest of our professional community thinks. It will persist as long as historic preservation regulations are implemented and enforced in ways that devalue the *meaning* of CRM work. It is seen in the games played by some CRM practitioners to get by with the bare minimum of attention paid to the cultural resources that they are ostensibly tasked to manage. It is seen not just in the work of the bottom-feeders in our small network of professionals, but also when any of us gets pinched in a particular project in terms of our scope of work relative to that of other disciplines in the environmental permitting process. The practice of archaeology in the CRM context has a self-esteem problem that often puts us at some distance from what we have learned from our mentors in terms of our importance as archaeologists. When we allow the scope of the work we carve out within interdisciplinary environmental permitting projects to be compromised to the extent that it just becomes perfunctory, we are devaluing our whole discipline relative to the fields of all of the biologists, hydrologists, and other applied scientists out there, one project at a time. CRM archaeology also has a bandwidth problem, where practitioners feel they must prioritize some aspects of our work that may

THE STRUGGLE IS REAL, NOT A RED HERRING

be procedurally important over aspects that contribute to the fulfillment we also need personally and professionally.

Again, this off-the-cuff, anecdotal assessment of one aspect of the practice of CRM archaeology is nothing new or profound. We do not know the solution for somehow finding more bandwidth to do the things within and without our day-to-day jobs in CRM. If you find one, please let us know! However, being approached by Shelby to write this essay gave us the opportunity to reconsider what kind of mentor Virginia has been both before and after making our transitions to CRM, and that putting in the effort to be more engaged in the archaeology within and beyond CRM makes us better CRM practitioners. We have also had opportunities to be mentors to others down this road. The “research angle” is not necessary every time we engage in a CRM-based project. If archaeologists begin to view the CRM process as just a series of bureaucratic critical path items, then we cannot expect lawmakers, project proponents, and the general public to see the value of the work we do either. Conveying excitement about what we do is something Virginia has always been very good at, so let us follow suit.

On the Past 40 Years of Archaeology in the Pacific Northwest

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I was asked to write a short essay reflecting on key changes I have seen in Pacific Northwest archaeology over my approximately 40-year career. I have settled on one main thing: the growth in Tribal sovereignty over archaeology, which parallels a shift towards a broader conception of what archaeology *is*, or at least how it is practiced by academics and in cultural resource management (CRM). What I highlight of course reflects what has changed the most in my thinking and practice. So, I will use some of my own history to illustrate these changes.

I came to archaeology as an anthropology major at the University of Georgia, and I graduated in 1977. I loved anthropology—for teaching me about cultural relativism, belief systems, biological and cultural evolution, the extraordinary diversity in humanity across all time scales. I gravitated towards archaeology in particular, since it joined subjects I'd always liked—history and geology. I ended up in the Pacific Northwest by chance. While at field school in central Washington in 1975, I bonded utterly with the region, through weekend road trips to the Washington Coast (including to Ozette), the Puget Sound, Vancouver Island, and the Canadian Rockies. We all know the feeling when a place *feels right*; that is what I felt all the time that summer. Thus, when I was considering graduate schools—I only applied to one program, the University of Washington (UW). I was accepted, then enrolled in 1979.

The UW archaeology program had a very particular bent, with a strong focus on science and evolutionary models, which was very much in the processual mold. As an undergraduate I

had been taken with Lewis Binford and the “New Archaeology,” which emphasized archaeology as a science, seeking generalizations about human behavior, past and present. I was especially drawn to ecology and exploring long-term human-animal relationships, which led me to zooarchaeology, and ultimately fisheries (Figure 1). I appreciated statistics, logic, answering questions with a cool analytic gaze—all of it. My advisor, Don Grayson, faculty Robert Dunnell, Julie Stein, and Pat Kirch—and fellow graduate students—together greatly influenced my intellectual development, and gave me models for teaching and mentoring, which continue to influence me as a professor and researcher at Portland State University.

Besides the science emphasis, the sub-fields in the UW anthropology program were extremely isolated—socially and intellectually. For archaeology students, this meant we had very little exposure to theory and method in cultural anthropology. Moreover, we were disconnected from ethnography—and especially local Native American Tribes in course work and research. The reasons for this are complex. I suspect the lack of engagement with Indigenous people and Tribes more generally was because of the legacy of university scholarship tending to operate in isolation. Of course, academia carries the weight of colonialism in general that privileges the academy (with Western traditions of knowledge) over Indigenous voices and needs, then and now. I also think the science emphasis of UW archaeology helps explain the lack of connection with Tribes. During the 1980s, the



Figure 1. Virginia taking soil samples for fish bone study from a profile at Mohenjodaro, Indus River, Pakistan, Winter, 1983.

post-processual paradigm was starting to take off, which was a direct critique of processualism and the science focus of UW archaeology. Post-processualism is an umbrella for a range of theoretical frameworks including structuralism, feminism, Marxism; it highlighted the political nature of archaeology, and, at least in early days, was strongly critical of western science (Earle et al. 1987). The post-processual program also called for greater inclusion of diverse voices—including Indigenous ones. This basic case for fairness and equity resonated with me and others at the UW. However, the post-processual critique against science was too much for most of us to take.

Whatever the reason, and it pains me to say now because of how narrow and restrictive it sounds, throughout the 1980s the UW program largely could (and did) operate independently of Tribal interests or concerns. Perhaps the UW was more extreme than other academic archaeology programs in the region. There were exceptions. For example, archaeologists from Washington State University worked closely with the Makah Tribe in the 1970s and 1980s as part of the Ozette (Samuels 1994) and Hoko projects (Croes 1995). And as part of the Chief Joseph Dam Project, the Confederated Tribes of the Colville closely worked with the archaeology

contract office of the UW (Campbell 1985). These and other interactions notwithstanding, before the 1990s, Indigenous people had very little say regarding the practice of archaeology in the Pacific Northwest.

All this began to change in 1990 with the passage of the Native American Graves Protection and Repatriation Act (NAGPRA), the watershed federal legislation, which provides for the repatriation of certain Native American human remains or ancestors, funerary objects, and objects of cultural patrimony to lineal descendants or affiliated Tribes. NAGPRA redressed the long history of unequal treatment of Native American human remains, but also increased Tribal sovereignty more generally over their past—how it would be studied and shared. NAGPRA forced archaeologists for the first time to work with Tribes and in so doing, it created opportunities for Tribes and professional archaeologists to simply engage one another across a range of issues. The law also forced archaeologists to deeply reflect on the discipline's colonial history; it directed us to find ways of reconciling professional interests and a concern for basic fairness with Tribal concerns and goals.

As part of increased Tribal control, the 1990s also saw the establishment of Tribal Historic Preservation Offices (THPOs) to support Tribes in managing cultural resources on Tribal lands, which began to take control of certain duties carried out by the State Historic Preservation Offices (SHPOs). Slow to develop in the beginning, as of 2018, there are 180 THPOs across the country (National Park Service 2020). In fairness, many THPOs are challenged to keep up with the demands put on them, given funding and staffing issues, but still, their presence is indicative of increasing Tribal power in CRM. With these changes has come a change in taxonomy, in the classification of our identities. Twenty or so years ago, there were “archaeologists” and “Tribes,” where there is now a growing number of “Tribal archaeologists” or “Indigenous archaeologists.” Stapp and Burney (2002) provide an in-depth discussion on the history of Tribal CRM.

Importantly, shifts in CRM, which gives Tribes greater authority over their past, are consistent with aspects of the post-processual program with its call for diverse voices participating in archaeology. CRM laws themselves incorporate language which supports the protection of places holding cultural values, independent of physical traces of archaeology, such as stone tools, animal bones, or house features (see Moss 2005 for discussion). Thus Criterion A of the National Register of Historic Places (NRHP) nomination process (of the National Historic Preservation Act, 1966) stipulates that sites may be deemed significant if they are “associated with events that have made a significant contribution to the broad patterns of our history” (National Park Service 1990:2). Moreover, the 1990s amendments to the NRHP nomination process created a way to document and evaluate Traditional Cultural Properties (TCPs), holding values that were important to a community such as “beliefs, customs, and practices, of a living community that have been passed down through the generations, usually orally or through practice” (Parker and King 1998:1). Although, as Barcalow and Spoon (2018) point out, the TCP framework has not fulfilled all its promise, they suggest ways to address these constraints. The takeaway here is this: CRM laws that guide decisions about what our society wants to protect for future generations encompass more than information relevant to science or academic research questions.

I agree with Moss (2005) who argues that shifts in the practice of CRM in the 1980s to 1990s—especially in regards to increased Tribal involvement—had the effect of shifting the theoretical landscape in which academic archaeology operated. At least some of us who had positioned ourselves as independent scientists working in the processual paradigm realized that these goals were simply too narrow. In the late 1990s, I started to fundamentally “get” that archaeology had value besides what it could objectively tell us. I began to reconnect with the humanities side of archaeology, both in support

of Indigenous values, but also broader society. What this has meant to me practically is increased comfort and ability to hold simultaneously different viewpoints about something—an artifact (or *belonging* as many Indigenous peoples prefer), a site, a landscape. I can appreciate the scientific insights from study of a stone tool (its age, role in trade networks or measure of social status); but I respect and moreover wish to understand what Indigenous people may draw from that object and that this material culture is living and not stuck in the past.

Besides appreciating that we can use different lenses to understand the human past and its connections to us today, increasingly scholars working in the Pacific Northwest have shown the power of integrating knowledge from Western science and traditional knowledge holders (Figure 2). Much of this work has focused on human-environmental relationships, such as in coastal areas where scholarship has examined the long history of human management of

shellfish beds (Deur et al. 2015; Lepofsky et al. 2015); or landscapes more generally such as through fire, transplantation, coppicing, etc. (see papers in Deur and Turner 2005). All of this work has challenged deep-rooted western views that see Indigenous people in our region as passively foraging, lightly living on the landscape, rather than actively managing it (Campbell and Butler 2010).

Beyond this, our region has seen an increase in community-based and collaborative projects where Tribal and other archaeologists co-create knowledge through a collective view of goals and objectives. Just to name a few examples, Gonzalez et al. (2018) showcase a collaboration between the UW and Confederated Tribes of the Grand Ronde designed to serve a range of goals including to highlight the history of settler colonialism on the reservation, with the broader purpose of supporting Tribal survivance and cultural renewal. A long history of collaboration among Portland State University, led by Kenneth



Figure 2. The Čixwicən project team, from left to right, Michael Etnier, Virginia Butler, Sarah Sterling, Kris Bovy, and Sarah Campbell at the mouth of the Elwha River, Washington, August, 2011 (Photograph by Kathryn Mohlenhoff).

M. Ames; the U.S. Fish and Wildlife Service; and the Chinook Tribe focused on the Lower Columbia River, generating a rich body of knowledge about social complexity, human-environmental relationships and more; but as important, supported tribal revitalization (Boyd et al. 2013; Daehnke 2017; Friends of Ridgefield National Wildlife Refuge 2020).

Thus, from my perch 40 years on, much has shifted in Pacific Northwest archaeology, with an increasing role for Tribes, and an increasing commitment from academia and CRM to support that role. There is much more to do. We are dealing with a deep and tenacious history of settler colonialism and systemic racism. And

like most cultural-political transformations, change is uneven and slow. But there is change. My efforts to build relationships with Tribes and other community partners as part of my own and student projects have been the most rewarding experiences of my career. I am grateful to have lived as these changes have taken place. Collaboration is the right thing to do in support of justice, equity, and inclusion. Moreover, enlarging the scope of “who” does archaeology gives us new and important insights about our collective human past, which we would not have otherwise.

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Kelly Cannon-Miller is a public historian and the Executive Director for the Deschutes County Historical Society and Deschutes Historical Museum in Bend, Oregon. A graduate of Portland State University with an M.A. in History, she has worked in Oregon museums for the past 20 years. A contributor to the Oregon Encyclopedia and Oregon Historical Quarterly, she currently serves on the Editorial Board of the Oregon Encyclopedia and the Deschutes Cultural Coalition.

Perry Chocktoot is currently the Director of the Culture and Heritage Department for the Klamath Tribes and was raised locally, with having the benefit of a traditional practitioner as a father learned many things that he passes on to the general Tribal public. He continues to interact with State and Federal agencies as well as the general public to preserve cultural resources and to preserve the culture and traditions of the Klamath Tribes.

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David V. Ellis is president emeritus of Willamette Cultural Resources Associates in Portland. He has worked throughout the Pacific Northwest for 45 years at archaeological sites ranging from 10,000-year-old seasonal camps in the Great Basin to an early twentieth century Chinese laundry in downtown Portland. Originally interested in the West African precontact history, fieldwork along the Columbia refocused him on the Columbia Plateau. Much of his career has been dedicated to the Portland Basin, an important area often overlooked in the past research. He was the first archaeologist to be appointed by the governor to the Oregon Heritage Commission and served as its chair from 2000 to 2006. David was president of the Association of Oregon Archaeologists from 2006 to 2009.

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Virginia Parks has been an archaeologist with the U.S. Fish and Wildlife Service (FWS), Pacific Northwest Region, in Portland, Oregon for 25 years. After earning a B.A. in Classical Archaeology from Bryn Mawr College and a MAT in Museum Education at George Washington University, she headed west to develop teaching curriculum and resources focusing on the site of Cathlapotle at Ridgefield National Wildlife Refuge in Washington. She has been conducting cultural resource compliance and public education and outreach for the FWS ever since.

Elizabeth J. Reitz (Betsy) served on the faculty of the University of Georgia's Department of Anthropology for 39 years before retiring. Betsy studies archaeofaunal remains from sites located throughout the Americas and occupied between the Late Pleistocene into the twentieth century. Her research focuses on human use of coastal resources covering topics such as climate change, fishery management, and symbolism. She is a Fellow in the American Association for the Advancement of Science and the American Academy of Arts and Sciences, a member of the International Council for Archaeozoology's Committee of Honor, and the 2016 recipient of the Society for American Archaeology's Fryxell Award for Interdisciplinary Research.

Chelsea Rose is an historical archaeologist with the Southern Oregon University Laboratory of Anthropology who focuses on the settlement and development of the American West. Rose regularly works with the media, students, and community volunteers in an effort to promote archaeological awareness and encourage heritage stewardship. Rose is a principal investigator in the Oregon Chinese Diaspora Project (OCDP), which won the 2020 Oregon Heritage Excellence Award, and she serves on the board of the Oregon Historical Quarterly and is currently chair of the governor appointed Oregon Heritage Commission. Rose has been featured in books and magazines promoting STEM education, and her recent publication, *Chinese Diaspora Archaeology in North America*, is available from the University Press at Florida.

Ross Smith is an archaeologist with the Washington Department of Fish and Wildlife. He obtained his B.A. from Western Washington University and M.S. in archaeology from Portland State University in 2008, working with Virginia Butler. He has more than 20 years of experience working as a professional archaeologist and a zooarchaeologist in the Pacific Northwest and Alaska, and he enjoys working with Tribes, agencies, and other stakeholders in his cultural resource management work.

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Julie K. Stein was appointed Executive Director of The Burke Museum of Natural History and Culture in 2005, and helped build the New Burke, which opened in 2019. Since 1980, she taught archaeology at the University of Washington in the Department of Anthropology, and served as the Museum's Curator of Archaeology from 1990 to 1999. She then served as Divisional Dean of Research, Facilities and Computing in the College of Arts and Sciences. Stein received her M.A. and Ph.D. degrees from the University of Minnesota, with research interests in geoarchaeology. She has examined Northwest Coast shell middens on Washington's San Juan Islands since 1983, and continues to give public lectures about their age and the role of collections and tribal consultation in understanding their meaning.

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Scott Thomas retired in 2018 after 24 years as the Burns District Archaeologist for the Bureau of Land Management. With a B.S. in Zoology from Oregon State University and an M.A. in Anthropology from Portland State University, his archaeological research interests include Clovis age sites, buffalo hunting in Harney County circa 1500 AD, edible plant harvest in Harney County, Rimrock Draw Rockshelter 17,000 years ago in Harney County, Prehistoric pottery manufacture in Harney County, and public archaeology.

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Conceptualizations of Coast Salish Wealth through the Spatio-Temporal Distributions of Ground Stone Disk Beads in British Columbia, Canada

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Abstract *Precontact Coast Salish society is marked by divisive social inequality through the use of wealth items. Knowing the appropriate situation to display wealth by using specific items reflected well on the individual. Ground stone disk beads (beads) provide a unique opportunity to theorize about how Coast Salish peoples in British Columbia used wealth items. Unlike other rare items and features indicating wealth, beads are an abundant artifact appearing in several types of archaeological sites in the Salish Sea region. Their persistence across the broader Salish Sea landscape and time is due to Coast Salish communities adapting a universal item to conform to localized traditions. An inherent symbolic grammar exists for the use of these beads and is understood at a local level. The differing proportion in their recovered context within specific areas, consistency of those contexts over time, and frequency reflect the knowledge of the use of these beads.*

Keywords

Ground stone disk beads, Coast Salish, spatial and temporal studies

Introduction

The term “Coast Salish” denotes a large and diverse group of cultures occupying the area around the Salish Sea (Kennedy 2007; Miller 2007). Coast Salish peoples in British Columbia have certain universalizing features but still exhibit a high degree of individualized identity and autonomy amongst themselves. Communities adapt universal features to their own group. Barnett (1955) and Suttles (1987) note clear cultural differences between groups in ceremonial activities. Angelbeck (2016) supports Barnett’s and Suttles’ observations through a regional synthesis of rituals and artifacts (i.e., mortuary practices, rock art practices, origin

stories). Both Angelbeck and Suttles conclude that there is an underlying structure and principles (a symbolic grammar) common to all expressions of rituals and artifacts. That symbolic grammar underwrites all aspects of precontact Coast Salish society. Individual communities localized those expressions for their own needs within their community (Angelbeck 2016). The adaptation of universal structures and principles extends to internal conceptualizations of wealth.

Wealth for precontact Coast Salish peoples functioned as an expression of status. Status could be negotiated through tangible (i.e., material items) or intangible (i.e., specialized knowledge) wealth. The use of wealth fostered social competition among Coast Salish peoples, institutionalizing

social inequality (Elmendorf 1971:366; Suttles 1987:8; Ames 1995; Angelbeck and Grier 2012). Wealth was meant to be known; individuals displayed wealth in order to communicate their status. An individual's status derived from the appropriate context to display or showcase wealth. An embedded symbolic grammar determined the appropriate context for that wealth item (Suttles 1987, 1990). Irresponsible or displaying wealth in an inappropriate manner led to the humiliation of an individual and a decrease in their social status (Suttles 1987). Oral traditions documented the importance of knowing the appropriate contexts for displays of wealth and the consequences of inappropriate uses (Barnett 1955).

Communication of wealth and status included ornamentation objects (i.e., beads, labrets, ear spools), physical modifications (cranial deformation), ornately carved objects (i.e., spoons, bowls, and copper), and ritual/grave goods associated with suspected high ranking individuals (Duff 1956; Beattie 1981; Keddie 1981, 2003; Carlson 1990, 2005; Carlson and Hobler 1993; Cybulski 1994; Dahm 1994; Weston 1994; Matson and Coupland 1995; Hannah 1996; Ames and Maschner 1999; LaSalle 2008; Hunt 2015). Some of these items (i.e., labrets, bowls, copper) are rare in the archaeological record, both in terms of frequency and across time. Their relative paucity in conjunction with the ethnographic record defines the above items as tangible wealth (Suttles 1987, 1990). Inherent within all of these items was an embedded symbolic grammar.

Ground stone disk beads (referred to as beads in this article for simplicity) provide an interesting contrast to other wealth items. These beads are small (3–10 mm in diameter) discoidal beads made from a soft sedimentary lithic raw material (Figure 1). They are abundant in the archaeological record throughout the Salish Sea region but are rarely mentioned in the ethnographic literature. The only mention of beads in the ethnographic record is an aside that Saanich (a community on the southeastern

tip of Vancouver Island) women “occasionally wore strings of small stone beads” (Jenness 1974:35). Other ethnographies do not mention beads when describing ornamentation, clothing, or wealth (Hill-Tout 1904, 1978a, 1978b, 1978c; Barnett 1938, 1955; Duff 1952; Suttles 1955, 1987, 1990; Elmendorf 1971).

When these beads are recovered from archaeological sites, their frequencies range from scattered instances of a few beads in either intact or disturbed contexts, to a few thousand beads, to a few hundreds of thousands of beads across various archaeological site types (Patenaude 1985; Arcas 1992; Grier 2001; I.R. Wilson Consultants Ltd. 2004, 2007; Wilkerson 2010; Coupland et al. 2012; Golder 2012). Any analysis associated with the beads recovered from these sites is limited to frequency counts. These frequency counts do not offer a deeper understanding of how these beads were used within precontact Coast Salish communities. Recent investigations (Wilkerson 2010; Coupland et al. 2016; Harris 2017) have sought to move beyond frequency counts and aimed to understand what beads mean to precontact Coast Salish communities. Coupland et al. (2016) defined beads as the first instance of tangible wealth in the Salish Sea region. Beads appeared abruptly around 4500 BP during a time of marked social differentiation (Ames et al. 2010; Coupland et al. 2016). Interest in beads beyond frequency demonstrated that they can be used as a lens to explore larger social phenomena.

Beads represented an expression of tangible wealth. The symbolic grammar embedded within the use of these beads communicated the appropriate time to use these beads as a means to showcase wealth. The symbolic grammar of these beads was expressed locally within specific communities and reflected in the archaeological record through the recovered context, quantity and abundance of beads, and over time. An overview of beads throughout the region over time established that beads were a staple to display wealth in particular instances. A microregional approach under the broadest



Figure 1. Photograph of selected ground stone disk beads recovered from DgRr-1 (Crescent Beach).

conditions demonstrated localized regional adaptations in order to communicate wealth and status for individuals.

Location

The rich and diverse landscape of the Middle and Late Holocene in the Salish Sea region allowed for the development of socially stable and stratified groups (Ames 2003; Butler and Campbell 2005:346–375). This transnational region is defined as the waterways of the Strait of Georgia, Strait of Juan de Fuca, Puget Sound, and includes the Fraser Delta and River Valley extending to the confluence of the Fraser and Harrison Rivers. This article focuses on the parts of the Salish Sea region in British Columbia, Canada. Extensive archaeological investigations as a part of academic research and development-based cultural resource management have been conducted throughout the area. As a result, the archaeological record is well documented (Borden 1970, 1983; Carlson 1970; Patenaude

1985; Arcas 1992; Grier 2001; McLaren et al. 2003; Katzie Development Corporation 2010; Coupland et al. 2012).

To better understand the region's diversity, and for further analysis, it is crucial to subdivide the larger Salish Sea region into six microregions. These divisions are based on cultural and linguistic differences and geographical features (e.g., island groups vs. the mainland, watersheds) (Mitchell 1971, 1990; Suttles 1987). Table 1 summarizes the division of the landscape into six microregions and the definition of each microregion.

Differentiation and Determination of Context and Quantity

The Salish Sea region has several types of archaeological sites with cultural material present. These sites can range from single-occupation sites, seasonal campsites to complex, multicomponent village sites. The variety and complexity of archaeological site types in which beads are recovered forces a high level

Table 1. Each Microregion in the Salish Sea Region Determined on the Basis of Geography.

Mircoregion	Geographic Definition
Fraser Delta/Burrard Inlet	The area encompassing the Fraser Delta and Burrard Inlet. The Delta area includes the portion of the Fraser River to the confluence with the Pitt River. Peoples in this microregion primarily speak downriver Halkomelem dialect and the Sk̓wx̓ú7mesh sníchim language.
Fraser River	The area from the confluence of the Fraser and Pitt Rivers to the confluence of the Fraser and Harrison Rivers. Peoples in this microregion primarily speak upriver Halkomelem dialect.
Gulf Islands	Includes all the Gulf Islands. Peoples of this microregion speak a mixture of Straits Salish and the Island Halkomelem dialect.
Sunshine Coast	The area along the Sunshine Coast. Peoples of this microregion speak Sháshísháhlh and Sk̓wx̓ú7mesh sníchim languages.
Southern Nanaimo Lowlands	The area along the eastern coast of Vancouver Island within the southern part Nanaimo lowlands from Nanaimo to Victoria. Peoples of this microregion speak the Island Halkomelem dialect.
Northern Nanaimo Lowlands	The area along the eastern coast of Vancouver Island within the northern part of the Nanaimo lowlands from Nanaimo to the Comox Habrour area. Peoples of this microregion speak the Comox and Pentalatch languages.

of detail of analysis for each site. Differences in archaeological site type may not fully encapsulate the provenience of these beads. Some archaeological sites may have beads recovered in a single feature within a complex site or from multiple features and different components of a continuously occupied site. Provenience of these beads is important, but trying to categorize the recovered context of these beads based on provenience introduces a level of complexity beyond the scope of a regional focus. A provenience based analysis approach would be appropriate for a more detailed study of each particular microregion or even a single site if beads were recovered from different proveniences. A broad approach of looking at a generalized recovered context over provenience within an individual site gives a macroscopic means of categorization appropriate in drawing regional scale conclusions.

In order to categorize the appearance of beads across the landscape, three contexts are described: burial, non-burial, and overlap. Each context captures the general provenience of these beads, but may not fully represent the archaeological site typology or explore the differences in proveniences at each site. The purpose of categorizing sites into three contexts is to provide a generalized view of possible localization in the use of beads. Each context is described in detail below.

Beads recovered from a burial context denote beads found in direct association with ancestral remains. In many cases, these beads are usually found in large numbers (4,000–350,000+ beads). They were likely strung together as a part of either a blanket or necklace resting over the individual (Arcas 1999). Their association with ancestral remains indicates the use of these beads as a status item for elite

individuals based on expected manufacturing labour (Arcas 1992; Coupland et al. 2016).

Beads recovered from a non-burial context indicate that beads were not found in direct association with ancestral remains. Beads from this type of context are found in caches, thermal pit features, and/or scattered about the site in small clusters (Matson 1976; Murray 1982; Grier 2001; Wilkerson 2010). Small clusters of beads recovered from this context may represent secondary deposition of cultural materials.

Beads recovered from an overlap context signify instances where beads are directly associated with ancestral remains and in other non-burial proveniences within the same archaeological site (e.g., in clusters separate from the burial(s) or scattered around the site). The binary division of contexts in terms of burial vs. non-burial is not always appropriate, and there are several instances where an overlap context category is appropriate. An overlap category shows the general differences in recovered context without having to delve into the distinction of archaeological site typology and provenience within a site. The overlap context category is also helpful for large, heavily impacted complex sites where beads were recovered with no real provenience (e.g., DgRr-2, DgRr-6, and DhRs-1), and where there was anecdotal evidence of beads interred with individuals (Loy 1972).

The quantity of beads at each archaeological site is categorized in terms of a number range, increasing in an increment magnitude of ten. The range is meant to give a general idea of the relative abundance of beads without specific counts. The number of beads recovered from an archaeological site may be underreported based on several factors (i.e., improper/inadequate recovery techniques, unauthorized collection of artifacts, delays in entering data into museum databases).

Temporal Delineation

In order to assess changes over time, each archaeological site with a radiocarbon (^{14}C) date

is assigned to a 500-year time period ranging from pre-4500 to post-500 BP. A 500-year incremental scale is discrete enough to see changes over time, but broad enough to discuss any temporal changes. There were instances where specific radiocarbon dates could be applied to specific proveniences where beads were recovered (e.g., burials, individual features). However, this was not the case for most archaeological sites and the radiocarbon date corresponded to the archaeological site as a whole.

Relative dating through the use of temporally diagnostic artifacts and dating based on local culture history was not used. Temporally diagnostic artifacts correspond to a date range within local culture history sequences, which do not have a detailed enough resolution to look at change over time. Additionally, beads had been previously associated as a temporally diagnostic artifact of one period (Marpole) of the local culture history (Mitchell 1971; Burley 1980). This has since been disproved (Ames et al. 2010; Wilkerson 2010; Coupland et al. 2016). Archaeological sites dated to the Marpole period based on the presence of beads alone may or may not have been occupied during that time.

Quantifying beads over time cannot be adequately done with the present data. An archaeological site may have beads across different potential temporal components. Some observations can be made about the number of beads present in certain time periods, specifically between 4500–3500 BP. During this time period, over 500,000 beads were present across the region in several different contexts (Coupland et al. 2016). The study of beads during that time period was used as a means to address questions of wealth during that time period. That data has an inherent higher resolution of detail beyond what is currently available. In order to have that same resolution of data for the entirety of the occupation of the Salish Sea region, an extensive amount of work would be required to date every temporal component of each site.

The Dataset

An exhaustive search of Provincial databases (Provincial Archaeological Report Library and Remote Access to Archaeological Database), repository databases (Royal BC Museum and the Reciprocal Research Network), and engaging with professional archaeologists in the region reveals at least 85 archaeological sites with beads present in their assemblages out of approximately 2,863¹ archaeological sites with cultural material present. A microregion, a context, a quantity, and a range or absence of dates were assigned to each site with beads present.

Results

Spatial Distribution: Microregion

From the available data, archaeological sites with beads represent about 2.9% of sites in the region (n=85 of 2863). Beads are present in all microregions (Figure 2; Table 2) with the greatest number of archaeological sites in the Fraser River microregion (n=19 of 394; 4.8%), followed by the Gulf Islands (n=18 of 814; 2.2%), the Southern Nanaimo Lowlands (n=16 of 811; 2.0%), and the Fraser Delta/Burrard Inlet (n=15 of 204; 7.4%) microregions. The Northern Nanaimo Lowlands and the Sunshine Coast microregions have the fewest number of archaeological sites with beads (n=9 of 220; 4.1% and n=8 of 420; 1.9%, respectively).

Spatial Distribution: Context

Non-burial archaeological sites are the most common site type across the region (n=2372) and beads recovered from a non-burial context are the most prevalent across the Salish Sea region, appearing in every microregion (Figure 3). They are most frequently observed in the Fraser River (n=19), Gulf Islands (n=15), and Southern Nanaimo Lowlands (n=12) microregions; the Northern Nanaimo Lowlands, Fraser Delta/Burrard Inlet, and the Sunshine Coast has the least number of beads from a non-burial context

(n=8, n=7, and n=6, respectively). The Fraser River microregion only has beads recovered from a non-burial context.

Beads recovered from burial and overlap contexts are unequally distributed across the region. They do not occur in the same frequency as beads from non-burial contexts (Table 3). There are 18 total instances of beads recovered from these two contexts. In most cases, if a microregion had either a burial or overlap context present, it had all three.

A total of 491 sites across the region have ancestral remains present. In total, nine archaeological sites have beads recovered from a burial context. Burial contexts are present in the Fraser Delta/Burrard Inlet, Gulf Islands, Sunshine Coast, and Southern Nanaimo Lowlands microregions. Southern Nanaimo Lowlands has the most instances of beads recovered from a burial context (n=4) followed by the Gulf Islands and the Fraser Delta/Burrard Inlet (both n=2), and finally the Sunshine Coast (n=1).

Nine archaeological sites have beads recovered from an overlap context. Instances of beads recovered from overlap contexts are observed heavily in the Fraser Delta/Burrard Inlet (n=6). The other instances include singular occurrences in the Gulf Islands, the Sunshine Coast, and the Northern Nanaimo Lowlands microregions.

Quantity

The quantity of beads recovered from archaeological sites occurs mostly in the category of 1–100 (n= 57) and 1,001–10,000 (n= 13); the other quantity categories (101–1,000, n= 8; 10,001–100,000, n= 6; 100,001+, n= 1) are less common (Table 4). Beads from non-burial contexts have a range of 1–100,000 beads being recovered with the most occurrences between 1–100 beads (n=52) and lesser instances between 101–1,000 (n=7); 1,001–10,000 (n=7); and 10,001–100,000 (n=1). Burial contexts have a range of 1–10,000 beads, but with the most frequent occurrences between 10,001–100,000 (n=4); 1–100 (n=3); and

1 As of June 2019.

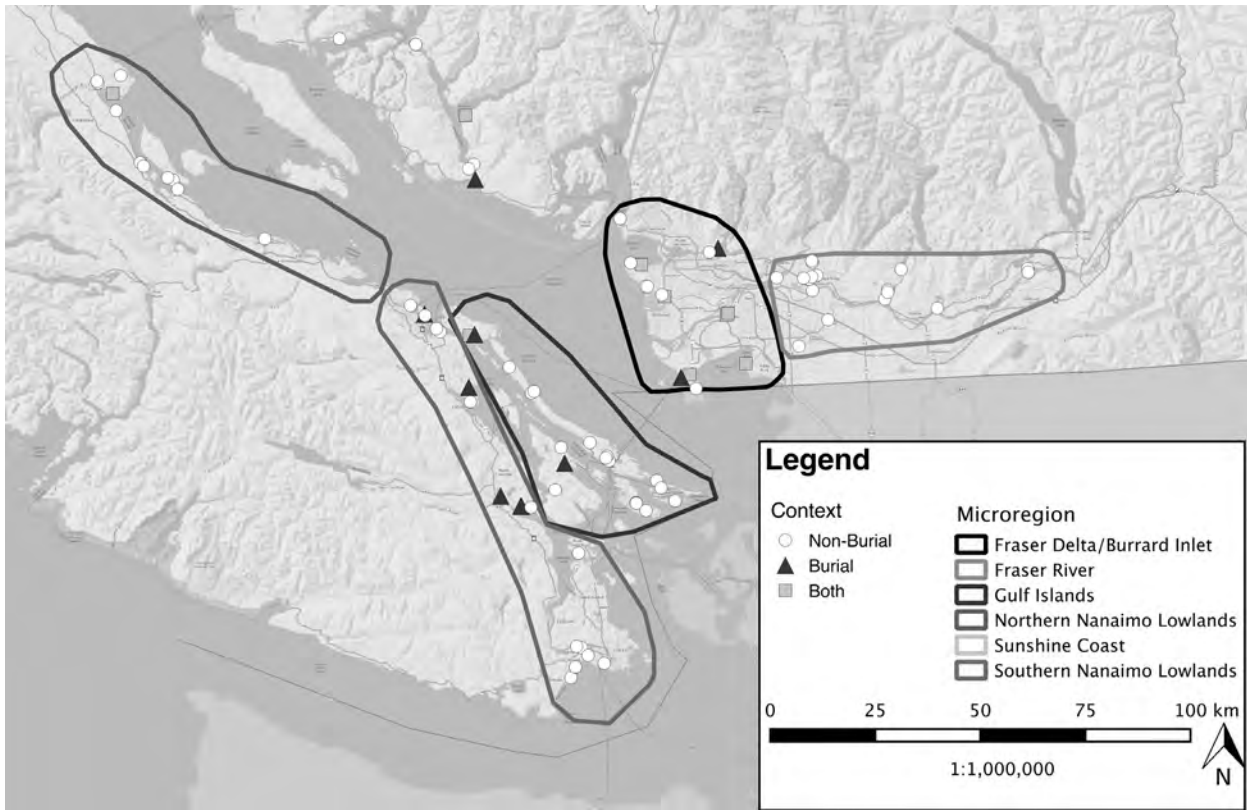


Figure 2. Map showing archaeological sites with beads present in their assemblages.

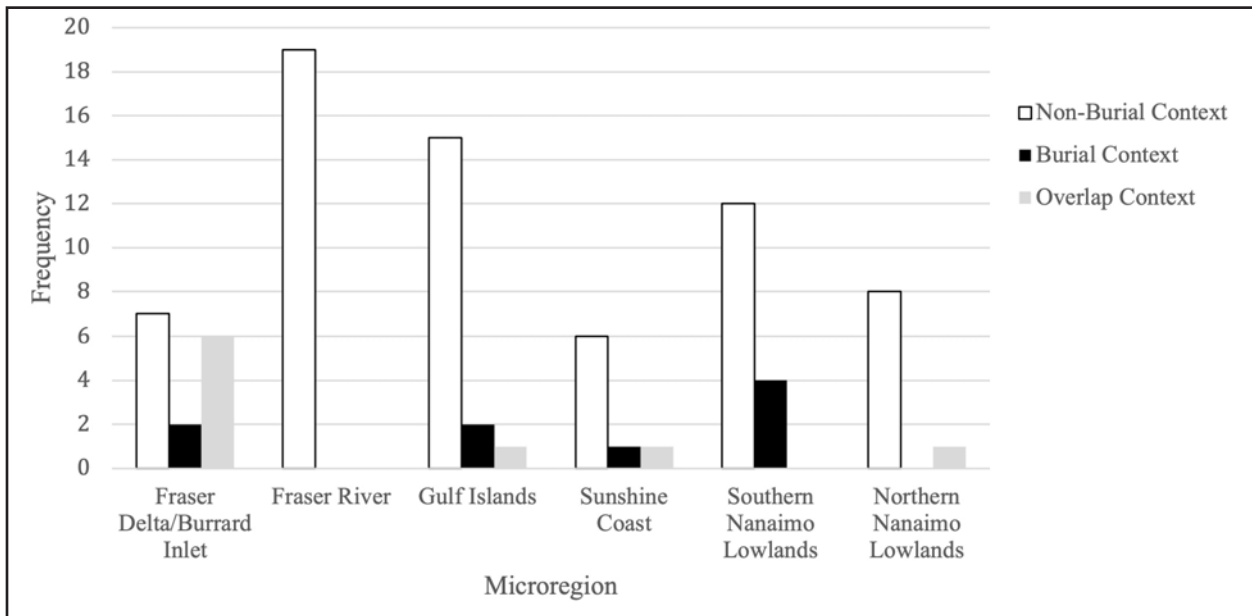


Figure 3. Graph showing the distribution of archaeological sites with beads by microregion.

Table 2. Archaeological Sites with Beads Present in their Assemblages.

Region	Site Number	Site Name (if Applicable)	Site Context	Quantity of Beads at a Site (Range)	Age Range (BP)	Source
Fraser Delta/ Burrard Inlet	DgRr-1	Crescent Beach	Overlap	1,00–10,000	4500–1500	Percy 1974; Trace 1981; Ham 1982; Matson et al. 1990
Fraser Delta/ Burrard Inlet	DgRr-2	St. Mungo's	Overlap	1,00–10,000	Pre 4500–Post 500	Calvert 1970; Boehm 1973; Eldridge 1984; Ham et al. 1986
Fraser Delta/ Burrard Inlet	DgRr-6	Glenrose	Overlap	1,001–10,000	Pre 4500–1500	Matson 1976; Shine 1976
Fraser Delta/ Burrard Inlet	DgRs-1	Beach Grove	Overlap	1–100	Pre 4500–Post 500	Smith 1963; Lawhead 1980; Arcas 1996
Fraser Delta/ Burrard Inlet	DgRs-2	Tsawwassen	Burial	10,001–100,000	4000–3500	Arcas 1992, 1999
Fraser Delta/ Burrard Inlet	DgRs-14	Whalen Farm	Non-Burial	1,001–10,000	3000–1000	Borden 1949; Thom 1992a
Fraser Delta/ Burrard Inlet	DhRr-8	Whey-Ah-Wichen/ Cates Park	Burial	10,001–100,000	n/a	Alexander and Grier 2000; Jesse Morin pers. comm. 2015
Fraser Delta/ Burrard Inlet	DhRr-230	n/a	Non-Burial	1–100	n/a	Reciprocal Research Network 2014
Fraser Delta/ Burrard Inlet	DhRs-1	Marpole	Overlap	10,001–100,000	2500–1000	Burley 1980; Arcas 1989
Fraser Delta/ Burrard Inlet	DhRs-19	Liquid Air	Non-Burial	1,001–10,000	n/a	Davis 1972; Percy 1977
Fraser Delta/ Burrard Inlet	DhRt-3	Old Musqueam	Non-Burial	1–100	2500–2000	Reciprocal Research Network 2014
Fraser Delta/ Burrard Inlet	DhRt-4	Musqueam Northeast	Non-Burial	1–100	3500–2000	Reciprocal Research Network 2014
Fraser Delta/ Burrard Inlet	DhRt-5	Point Grey	Non-Burial	1–100	2500–1500	Coupland and Unfreed 1988
Fraser Delta/ Burrard Inlet	DhRt-6	Locarno Beach	Overlap	1,001–10,000	3500–1500	Arcas 1993; Nick Weber pers. comm. 2015
Fraser Delta/ Burrard Inlet	DiRt-1	n/a	Non-Burial	1–100	n/a	Reciprocal Research Network 2014
Fraser River	DgRn-23	Hatzic Rock	Non-Burial	1–100	Pre 4500–4000	Mason 1994
Fraser River	DgRp-18	n/a	Non-Burial	1–100	n/a	McLaren 2002

Table 2. (cont.)

Region	Site Number	Site Name (if Applicable)	Site Context	Quantity of Beads at a Site (Range)	Age Range (BP)	Source
Fraser River	DgRq-8	n/a	Non-Burial	1-100	n/a	Arrowstone 2010
Fraser River	DhRl-16	Scowlitz	Non-Burial	1-100	3000 - 500	Blake 1995; Brown and Lepofsky 1998; Morrison and Blake 1998; Lepofsky et al. 1999; Lepofsky et al. 2000
Fraser River	DhRl-25	Spirit Camp	Non-Burial	101-1000	Pre 4500-500	David Pokotylo pers. comm. 2011-2015
Fraser River	DhRo-4	n/a	Non-Burial	1-100	3000-Post 500	McLaren et al. 1998
Fraser River	DhRo-13	n/a	Non-Burial	1-100	n/a	McLaren and Owens 2000
Fraser River	DhRo-29	n/a	Non-Burial	101-1,000	Post 500	McLaren et al. 1998
Fraser River	DhRo-59	n/a	Non-Burial	101-1,000	Pre 4500-Post 500	Gray et al. 2010
Fraser River	DhRp-11	Caruthers	Non-Burial	1-100	n/a	Crowe-Swords 1974
Fraser River	DhRp-16	n/a	Non-Burial	1-100	n/a	Katzie Development Corporation 2009
Fraser River	DhRp-17	Port Hammond	Non-Burial	1-100	2500-1000	Antiquus 2001
Fraser River	DhRp-35	Telep	Non-Burial	1-100	3500-2000	Peacock 1982
Fraser River	DhRp-50	n/a	Non-Burial	101-1,000	3500-1500	Antiquus 2015
Fraser River	DhRp-51	n/a	Non-Burial	1-100	n/a	Minni 2005
Fraser River	DhRp-52	Katzie Village	Non-Burial	10,001-100,000	4500-3000	Katzie Development Corporation 2010; Wilkerson 2010
Fraser River	DhRp-83	n/a	Non-Burial	1-100	n/a	Katzie Development Corporation 2009
Fraser River	DhRq-21	Pitt River	Non-Burial	1,001-10,000	4500-500	Patenaude 1985
Fraser River	DhRq-22	Park Farm	Non-Burial	1,001-10,000	4500-Post 500	Spurgeon 1994

Table 2. (cont.)

Region	Site Number	Site Name (if Applicable)	Site Context	Quantity of Beads at a Site (Range)	Age Range (BP)	Source
Gulf Islands	DeRs-1	Bruce Bight	Non-Burial	1–100	n/a	Royal BC Museum 2015
Gulf Islands	DeRt-1	Pender Island	Non-Burial	1–100	3000–1000	Carlson 1985, 1986
Gulf Islands	DeRt-2	Pender Island	Non-Burial	1–100	2500–2000	Carlson 1985, 1986
Gulf Islands	DeRt-4	Poet's Cove	Non-Burial	1–100	4500–500	I.R. Wilson 2006
Gulf Islands	DeRt-9	Saturna Island	Non-Burial	101–1,000	n/a	Grant Keddie, pers. comm. 2015
Gulf Islands	DeRt-20	n/a	Non-Burial	1–100	n/a	Royal BC Museum 2015
Gulf Islands	DeRu-14	n/a	Non-Burial	101–1,000	n/a	Reciprocal Research Network 2014
Gulf Islands	DfRu-4	Hill	Burial	10,001–100,000	n/a	McCauley 1973; Hall and Haggarty 1981
Gulf Islands	DfRu-8	Helen Point	Non-Burial	1–100	n/a	Royal BC Museum 2015
Gulf Islands	DfRu-13	Montague Harbour	Non-Burial	1–100	3500–500	Mitchell 1964, 1965
Gulf Islands	DfRu-23	n/a	Non-Burial	1–100	n/a	Royal BC Museum 2015
Gulf Islands	DfRu-24	Georgeson Bay	Non-Burial	1–100	3000–500	Haggarty and Sendey 1976
Gulf Islands	DgRv-2	Shingle Point	Non-Burial	1–100	n/a	Matson et al. 1999
Gulf Islands	DgRv-3	Dionisio Point	Non-Burial	1,001–10,000	2000–1500	Grier 2001
Gulf Islands	DgRv-9	Xwiyalek	Non-Burial	1–100	4000–2500	Apland 1981
Gulf Islands	DgRv-10	n/a	Non-Burial	1–100	n/a	Pratt et al. 2011
Gulf Islands	DgRw-4	False Narrows	Overlap	1,001–10,000	2000–1500	Burley 1989
Gulf Islands	DgRw-199	Gabriola Island	Burial	1–100	3000–1500	Curtain 1998
Sunshine Coast	DiRw-28	Trail Bay	Burial	1–100	1500–1000	Bilton 2014
Sunshine Coast	DjRw-1	Porpoise Bay	Non-Burial	101–1,000	4000–2500	Bilton 2014
Sunshine Coast	DjRw-14	Bible Camp	Overlap	100,000+	4000–3500	Bilton 2014; Coupland et al. 2016

Table 2. (cont.)

Region	Site Number	Site Name (if Applicable)	Site Context	Quantity of Beads at a Site (Range)	Age Range (BP)	Source
Sunshine Coast	DkSb-30	Saltery Bay	Non-Burial	1–100	Pre 4500–Post 500	Golder 2007
Sunshine Coast	DkRs-1	Rock Woman	Non-Burial	1–100	n/a	Reciprocal Research Network 2014
Sunshine Coast	EaRw-3	T'saunay	Non-Burial	1–100	n/a	Peter Merchant pers. comm. 2015
Sunshine Coast	n/a	Silvery Property	Non-Burial	1,001–10,000	n/a	Peter Merchant pers. comm. 2015
Sunshine Coast	n/a	swik'als	Non-Burial	1–100	n/a	Peter Merchant pers. comm. 2015
Southern Nanaimo Lowlands	DcRu-12	Maple Bay	Non-Burial	1–100	3000–500	Grant Keddie, pers. comm. 2015
Southern Nanaimo Lowlands	DcRu-33	Raymurs Point	Non-Burial	1–100	n/a	Hewer 1998a
Southern Nanaimo Lowlands	DcRu-74	Cable Bay	Non-Burial	1–100	3500–2500	Mathews and Dady 2004
Southern Nanaimo Lowlands	DcRu-140	n/a	Non-Burial	1–100	n/a	Golder 2012
Southern Nanaimo Lowlands	DcRu-572	n/a	Non-Burial	1–100	3500–3000	Millennia Research Ltd. 1997
Southern Nanaimo Lowlands	DdRu-5	n/a	Non-Burial	1–100	n/a	I.R. Wilson 2007
Southern Nanaimo Lowlands	DeRv-1	Genoa Bay	Non-Burial	1–100	2000–1500	Simonsen 1988
Southern Nanaimo Lowlands	DeRv-107	Cowichan Bay	Burial	1,001–10,000	4500–4000	Margaret Rogers pers. comm. 2015
Southern Nanaimo Lowlands	DeRv-151	Khenipsem (Hinupsum in Halkomelem), Green Point	Burial	10,001–100,000	4000–3500	Cybulski 1992; Coupland et al. 2016
Southern Nanaimo Lowlands	DeRw-18	Somenos Creek	Burial	101–1,000	2000 – 1000	Brown 1996
Southern Nanaimo Lowlands	DfRw-1	Thuq'min/Shell Beach	Non-Burial	1–100	n/a	British Columbia Archaeology Branch 2015
Southern Nanaimo Lowlands	DgRx-5	Duke Point	Non-Burial	1,001–10,000	4500–500	Murray 1982
Southern Nanaimo Lowlands	DgRx-36	n/a	Non-Burial	1–100	2000–1000	Murray 1982
Southern Nanaimo Lowlands	DhRx-5	Protection Island	Non-Burial	1–100	Post 500	Millennia Research Ltd. 2009
Southern Nanaimo Lowlands	DhRx-6	Newcastle Island	Burial	1–100	n/a	Royal BC Museum 2015

Table 2. (cont.)

Region	Site Number	Site Name (if Applicable)	Site Context	Quantity of Beads at a Site (Range)	Age Range (BP)	Source
Southern Nanaimo Lowlands	DhRx-16	Departure Bay	Non-Burial	1-100	2000-1000	Royal BC Museum 2015
Northern Nanaimo Lowlands	DiSe-5	Metcalf Bay	Non-Burial	1-100	n/a	Engisch 2004
Northern Nanaimo Lowlands	DiSe-7	Deep Bay	Non-Burial	1-100	1000-500	Monks 1977; I.R. Wilson 2004
Northern Nanaimo Lowlands	DiSe-10	Denman Rockshelter	Non-Burial	1-100	n/a	Eldridge 1987
Northern Nanaimo Lowlands	DjSf-13	Buckley Bay	Non-Burial	1-100	2500-2000	Mitchell 1974
Northern Nanaimo Lowlands	DjSf-14	Tsable River	Non-Burial	1-100	n/a	Mitchell 1974
Northern Nanaimo Lowlands	DkSf-3	Constable Property	Non-Burial	1-100	1500-1000	Capes 1964, 1977
Northern Nanaimo Lowlands	DkSf-10	n/a	Overlap	1-100	1500-Post 500	Hewer 1988b
Northern Nanaimo Lowlands	DkSf-20	Calamity Site	Non-Burial	1-100	2000-500	Wright 1982
Northern Nanaimo Lowlands	DkSf-26	J. Puddleduck	Non-Burial	1-100	3500-2000	Royal BC Museum 2015

Table 3. Distribution of Recovered Context of Beads Based on Microregion.

Microregion	Non-Burial Context	Burial Context	Overlap Context	Total Contexts
Fraser Delta/Burrard Inlet	7	2	6	15
Fraser River	19	0	0	19
Gulf Islands	15	2	1	18
Sunshine Coast	6	1	1	8
Southern Nanaimo Lowlands	12	4	0	16
Northern Nanaimo Lowlands	8	0	1	9
Total	67	9	9	85

Table 4. Distribution of Quantity of Beads Based on Recovered Context.

Quantity of Beads at a Site (Range)	Non-Burial Context	Burial Context	Overlap Context	Total Contexts
1–100	52	3	2	57
101–1,000	7	1	0	8
1,001–10,000	7	1	5	13
10,001–100,000	1	4	1	6
100,001+	0	0	1	1
Total	67	9	9	85

singular instances of 101–1,000 and 1,001–10,000 beads. In the overlap context, 1,001–10,000 beads are the most recovered (n=5), with two instances of 1–100, and singular instances of 10,001–100,000 and 100,001+ beads.

Instances of sites with 1–100 beads are the most common across all microregions (Table 5). Microregions with sites that have less than 1,000 beads are most common in the Fraser River microregion (n=16). The Gulf Islands (n=15), Southern Nanaimo Lowlands (n=13), Northern Nanaimo Lowlands (n=9), and the Sunshine Coast (n=6) also have a higher proportion of archaeological sites with less than 1,000 beads. In cases where there are more than 1,000 beads present, they occur predominantly in the Fraser Delta/Burrard Inlet microregion with instances in the Fraser River, Gulf Islands, Southern Nanaimo Lowlands, and Sunshine Coast microregions. The only instance of 100,001+ beads occurs in the Sunshine Coast.

Temporal Delineation

Beads have a deep temporal history in the region. They have been recorded in the

Salish Sea region since 4500 BP, and they have been a persistent component to assemblages since (Ames et al. 2010:54). Even with their temporal pervasiveness, there is relatively little understanding of the temporal distributions of these beads including the changes in context, quantity, the first appearances of beads in the Salish Sea region, and spread of beads over time. The population of Coast Salish peoples and subsequent distribution of archaeological sites mirrors the distribution of beads presented below. Population increased steadily over time with a greater trend towards sedentism. The population reached a maximum between 3000–1000 BP before a decline after 1000 BP (Matson and Coupland 1995).

Time vs. Context

Beads appeared consistently in the Salish Sea region from a period predating 4500 BP to after 500 BP (Figure 4; Table 6). Figure 4 summarizes the temporal distributions based on context with the available data. There is a steady rise in archaeological sites with beads in

Table 5. Distribution of Quantity of Beads Based on Microregion.

Quantity of Beads at a Site (Range)	Fraser Delta/Burrard Inlet	Fraser River	Gulf Islands	Northern Nanaimo Lowlands	Southern Nanaimo Lowlands	Sunshine Coast
1-100	6	12	13	9	12	5
101-1,000	0	4	2	0	1	1
1,001-10,000	6	2	2	0	2	1
10,001-100,000	3	1	1	0	1	0
100,001+	0	0	0	0	0	1
Total	15	19	18	9	17	8

Table 6. Distribution of Recovered Context of Beads over Time.

Date (BP)	Non-Burial Context	Burial Context	Overlap Context	Total
Pre 4500	4	0	2	6
4500-4000	8	1	4	13
4000-3500	9	2	5	16
3500-3000	16	0	6	22
3000-2500	21	1	5	27
2500-2000	21	1	6	28
2000-1500	22	2	6	30
1500-1000	21	2	4	27
1000-500	14	0	3	17
Post 500	6	0	3	9

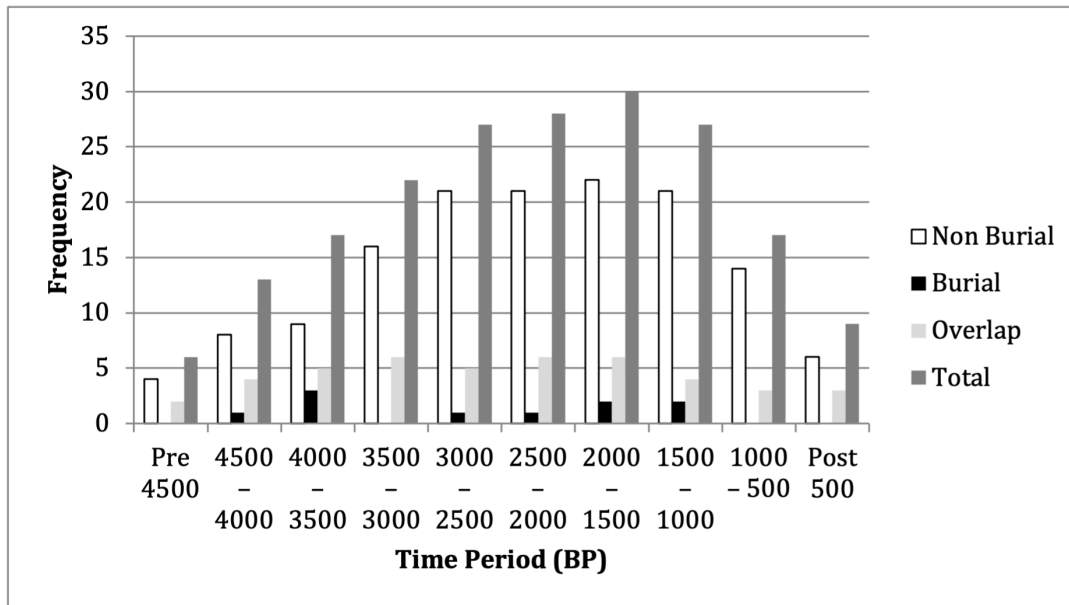


Figure 4. Graph showing the temporal distribution of archaeological sites with beads based on context.

non-burial and overlap contexts with a period of “peak bead” from 3000–1000 BP. Peak bead does not represent the number of beads present in the archaeological record during the time, but reflects the number of archaeological sites with beads present. However, burial contexts do not follow the same distribution as non-burial and overlap contexts; beads from burial contexts remain fairly constant from 4500–1000 BP. The most frequent time period for burial contexts is between 4000–3500 BP. The most instances of burial contexts falls within the peak bead period, but there is not a gradual increase and then decrease like the other two contexts.

Time vs. Microregion

Beads first appear in the Salish Sea region in the Fraser Delta/Burrard Inlet, the Fraser River, and the Sunshine Coast microregions before 4500 BP. The oldest instances of beads appear between 7190 +/- 50 BP and 6090 +/- 50 BP at archaeological sites DhRo-59 and DkSb-30 (see Gray et al. 2010:28, 77 and Golder 2007:90, respectively) and more sites appearing between

4800 +/- 70 and 4420 +/- 180 BP (see Mason 1994:37–40; Pokotylo 2004) in the Fraser River microregion and the Fraser Delta/Burrard Inlet microregion. During this time, beads are recovered from non-burial and overlap contexts. The overlap contexts concentrate in the Fraser Delta/Burrard Inlet microregion while the non-burial contexts become more prevalent in the Fraser River microregion.

By the time of 4000 BP, more sites with beads appear on the landscape. Archaeological sites in the Gulf Islands and Southern Nanaimo Lowlands microregions begin to have beads in their assemblages. The period between 4500–4000 BP also sees the first instance of beads recovered from a burial context, dated to 4170 +/- 40 BP at site DeRv-107 (Margaret Rogers, pers. comm. 2016). There is also an overall increase in non-burial and overlap contexts from the previous time period.

Between 4000–3000 BP, the number of archaeological sites with beads in their assemblages increases across the Salish Sea region. During the time period of 4000–3500 BP, the Gulf Islands and the Sunshine Coast

microregions see an increase in archaeological sites with beads present in their assemblages. In terms of recovered context, non-burial and overlap contexts continue to grow while the number of burial contexts remains the same. By 3000 BP, beads are present in every microregion, with the exception of the Northern Nanaimo Lowlands, across the Salish Sea region. During the period of 3500–3000 BP, the number of instances of beads from non-burial contexts increases, but the number of beads from overlap contexts remains the same, and there are no instances of beads recovered from a burial context.

The period between 3000–1000 BP can be defined as “peak bead.” This 2,000 year time period has the most instances of beads with the definitive peak between 2000–1500 BP. Beads continue to be present in all microregions and all recovered contexts are represented.

Following the “peak bead” period, there is a sharp decline in the number of archaeological sites with beads. The time period between 1000–500 BP still has beads present in all microregions, but the density of the previous time periods decreases sharply. During this time period, there are no burial contexts and fewer overlap contexts. After 500 BP, there are even fewer archaeological sites with beads. Beads are absent in the Gulf Islands but present elsewhere. During this time, beads recovered from non-burial and overlap contexts are present with the last dated instance around 200 BP from DhRq-21 (Patenaude 1985).

Discussion

The term “Coast Salish” is a broad, universalizing term that incorporates several different communities (Elmendorf 1971). There is a high degree of heterogeneity between communities. Early ethnographers have noted the differences between communities, but emphasized commonalities among them (Barnett 1938, 1955; Duff 1952; Drucker 1955; Suttles 1955, 1987, 1990; Elmendorf 1971; Hill-Tout 1978a, 1978b, 1978c). Ethnographically and archaeologically, Coast Salish peoples have transformed those

universalities in order to adapt to the needs of their communities over time. Ethnographically, the First Salmon Ceremony provides an example of localized adaptation. This ceremony was seen throughout the region. It involved the acknowledgment of the first salmon caught during the season to ensure continued salmon runs for the future. Cowichan (Vancouver Island) and Sts’ailes (Fraser River) communities had elaborate ceremonies, while Puget Sound communities had simple ceremonies where the person who caught the first salmon held a feast to distribute it to everyone (Gunther 1926). Additionally, the Sts’ailes practiced other seasonal resource ceremonies that were not observed in neighboring groups (Hill-Tout 1904).

Localized adaptations of universal features in the archaeological record included mortuary practices and rock art within the Salish Sea region and labret usage along the coast of British Columbia. Angelbeck (2016:36) demonstrated a division between mound and cairn burials split along cultural-linguistic boundaries of Vancouver Island versus the Mainland of British Columbia. Angelbeck (2016:37) also demonstrated a similar division with pictograph and petroglyph sites. The majority of pictograph sites concentrated within Chehelis (Fraser River), *shishálh* (Sunshine Coast), and Klahoose/Sliammon (Sunshine Coast) territory; petroglyph sites clustered along the eastern coast of Vancouver Island.

Labrets were seen universally along the coast of British Columbia. There were differences in distributions of types of labrets with certain forms and sizes common to larger geographical areas (North Coast, i.e., Haida Gwaii, Prince Rupert Harbour, the Skeena River, vs. the Salish Sea region) and even within subregions (i.e., Fraser Delta vs. Gulf Islands) (La Salle 2008). The differences in types of labrets communicated status (and by extension individual wealth) and inclusion within particular groups. It was likely that labrets additional embedded meanings within them (Rorabaugh and Shantray 2016:11). The symbolic grammar of these ornamental objects determined where an individual stood within the local social landscape.

Social stratification and differentiation was a universalizing feature among precontact Coast Salish peoples. Increased sedentism in the region overtime amplified the desire for differentiation among individuals (Matson and Coupland 1995; Coupland et al. 2016). In order to adapt social stratification on a local level within communities, certain forms of wealth (both tangible and intangible) were adopted (Suttles 1960). The determination of what defined wealth was expressed through a symbolic grammar that bound and cemented social stratification.

Beads provided the best medium to communicate stratification for precontact Coast Salish communities. They acted as a means to showcase wealth because of their pervasiveness in quantity, but rarity in terms of number of sites with beads present. Beads were a universal artifact across the landscape and throughout time. The ever presence of beads across the landscape and time demonstrated that they were a key component in the symbolic grammar of the communication of wealth and status for precontact Coast Salish peoples. Although there was no direct ethnographic evidence to indicate that beads were a wealth item, the archaeological evidence heavily suggested otherwise from their inclusion with burials in large numbers (Coupland et al. 2016).

The only ethnographic source discussing beads in any detail briefly mentions them: women “occasionally wore strings of small stone beads” (Jeness 1974:35). Jeness’ use of the word occasionally implied that wearing necklace of stone beads was not a habitual occurrence; it was out of the ordinary and was worth commenting on. It was likely that those necklaces were no more than 1,000 beads.² Wearing those necklaces of stone beads, occasionally, and necklaces of a certain number of beads meant that there was an appropriate time to wear those necklaces. The appropriate time was dictated locally and for certain circumstances.

Recovery of beads in broad contexts and quantity over the broader region demonstrated the adoption of localized traditions of using beads for specific situations. The microregions with the most archaeological sites having beads included the Fraser River, Gulf Islands, Southern Nanaimo Lowlands, and Fraser Delta/Burrard Inlet microregions. The Sunshine Coast and Northern Nanaimo Lowlands microregions had less sites than the others. General trends in the distribution of archaeological assemblages with beads present include a higher proportion of beads associated with non-burial context over burial and overlap contexts. In terms of quantity, there were more archaeological sites with 1–1,000 beads present, but the quantity depended on the context. In instances where there were ancestral remains present, there were more instances where the quantity of beads exceeded 1,001.

Across the Salish Sea region, definitive patterns of context emerged on a microregional scale. The Fraser River microregion was the only microregion to have just non-burial contexts present. The Southern Nanaimo Lowlands had the most burial contexts, and the Fraser Delta/Burrard Inlet microregion had the most overlap contexts. The difference in the frequencies of context types demonstrated that there was a locally preferred situation where beads were appropriate to be displayed as wealth.

Divisions between the Southern Nanaimo Lowlands and Fraser Delta/Burrard Inlet microregions could be an early and continued expression of the bifurcation between the Locarno Beach (3500–1100 BP) and Marpole (2000–1100 BP) cultural sequences emerging around 2000 BP (Clark 2010). The differences in the distribution of contexts was continuous across time. Following the Marpole cultural sequence, the Gulf of Georgia/Developed Coast Salish (1100–200 BP) cultural sequence emerged. This cultural sequence was more uniform across the region with smaller cultural differences noted

² This is based on an average weight of 0.17g of approximately 4,000 beads from DhRp-52 (Wilkerson 2010). A 1,000 bead necklace would weigh around 170g.

(Suttles 1951; Thom 1992b). The uniformity in cultural expression could also be seen by the drop off of archaeological sites with beads present after 1000 BP across the region.

Linguistic division could explain the difference in contexts between the Fraser River and Fraser Delta/Burrard Inlet microregions. There is a linguistic division between Hul'quim'num speaking groups with an upriver dialect in the Fraser River microregion and a downriver dialect in the Fraser Delta/Burrard Inlet microregion (MacLachlan 1998). The linguistic division could also reflect social division.

It was clear to precontact Coast Salish peoples that the abundance of beads carried more information than the individual beads themselves. When combined, it expressed group ideology tied to affiliation and/or identity (i.e., wealth or social standing) (Stiner 2014). There was a connection between the relative abundance of beads and the context and microregion. In every microregion, the most common quantity of beads was 1–100, and it often appeared in a non-burial context.

The existence of smaller quantities of beads testified to a mode of visual communication that had flexibility and range. The instances of smaller numbers of beads (i.e., less than 1,000) could have been used to express identity as someone with status and knowledge of the appropriate time to display wealth while simultaneously excluding those with a lower status. Larger quantities of beads were primarily observed in burial and overlap contexts. Instances of these larger quantities of beads in specific contexts evoked a visceral demonstration of wealth.

Conclusion

Wealth was an important component of precontact Coast Salish communities. It was meant to be known. It was meant to be displayed and showcased in the appropriate manner. Inappropriate displays of wealth led to shame and a decrease of social status of an individual (Barnett 1955; Suttles 1987). Management of

wealth and status for Coast Salish peoples did not happen on a regional level but occurred within communities. Localization of universal activities and phenomena are not uncommon to present day Coast Salish peoples and extends into how they managed a universal wealth item, like beads, archaeologically.

The presence of a wealth-based inequality social system fully began around 4500 BP and continued in the archaeological record until the time of contact. Conceptualization of what equated to wealth for the Coast Salish peoples occurred on a regional scale, but it was local communities who determined how individuals used wealth and what it meant to them. Beads acted as a means to display and to communicate wealth. They offered the best medium to explore conceptualizations of wealth in the Salish Sea region given their ubiquity in the archaeological record across the landscape and the rich temporal depth in the region.

The symbolic grammar embedded within beads translated to how individuals negotiated the appropriate display of wealth. Beads could be showcased in small numbers as a part of a non-mortuary, everyday context; they could be included as a part of elaborate grave inclusions. The abundance of beads depended on a relationship between context and location. There was a degree in flexibility in how specific precontact Coast Salish communities determined how beads could be used to communicate wealth.

In order to understand how specific Coast Salish communities used these beads, more nuanced investigations into the provenience of these beads is required. Categorization of the bead recovery context over archaeological sites provides a generalized interpretation in how Coast Salish peoples used beads as a wealth item on a large-scale regional level; however, more attention should focus on the recovered provenience of these beads within each microregion or within the territory of specific Coast Salish communities.

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The Use and Cultural Importance of Suckers (*Catostomidae* Cope, 1871) among the Indigenous Peoples of Northwestern North America: An Ethnographic Overview

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Abstract *Suckers (Catostomidae Cope, 1871) are a diverse family of freshwater fishes native to North America and East Asia. Ethnographic data indicate suckers were harvested by Indigenous peoples throughout the region and frequently of comparable importance to salmon. Suckers were taken at various times of the year through angling, netting, spearing, and other methods. Once harvested, they were, depending on local tastes and customs, consumed fresh and/or dried. As evidenced by the existence of First Sucker Ceremonies, the taxon's presence in myths, and descriptions of suckers as being a source of spiritual powers, catostomids were also spiritually important to some Indigenous peoples. The variability in the dietary and spiritual importance, capture, and preparation of suckers that is evident in the ethnographic record underscores the dynamism of human-sucker interactions in northwestern North America.*

Keywords

Ethnobiology, fisheries, subsistence practices, symbolic systems

Introduction

Suckers (*Catostomidae* Cope, 1871) are a diverse family of fishes that includes 84 species native to North America and East Asia (Figure 1) (Harris et al. 2014:451–454; Fricke et al. 2020). Members of this family are resident freshwater species that can be found in both rivers and lakes and are characterized by a downward facing mouth with plump lips that is the source of their Linnean name (*κατά*[Greek]/kato/down and *στόμα*[Greek]/stoma/mouth) (Figure 2) (Harris et al. 2014:451). Today, Euro-North Americans often mistake suckers for invasive species and malign the taxon as a ‘trash fish’ that negatively impacts game fish (i.e., salmonids) through competition and the consumption of their

eggs and fry (Holey et al. 1979; Foster 1996:31; Harris et al. 2014:499; Miller 2015). Because of these negative perceptions, suckers are often exterminated by both private individuals and government-sponsored programs (Holey et al. 1979; Miller 2015). Being a ‘trash fish,’ members of this family are currently of relatively little economic importance. In 2015, the value per ton of sucker was the lowest among the freshwater taxa landed by Canadian commercial fisheries for which Fisheries and Oceans Canada (2017) keeps individual records. During that year, only 2,119.561 metric tons of sucker worth CA\$1,021,881 or CA\$482 per metric ton were landed by Canadian commercial fisheries (Fisheries and Oceans Canada 2017). In comparison, the 6,648.472

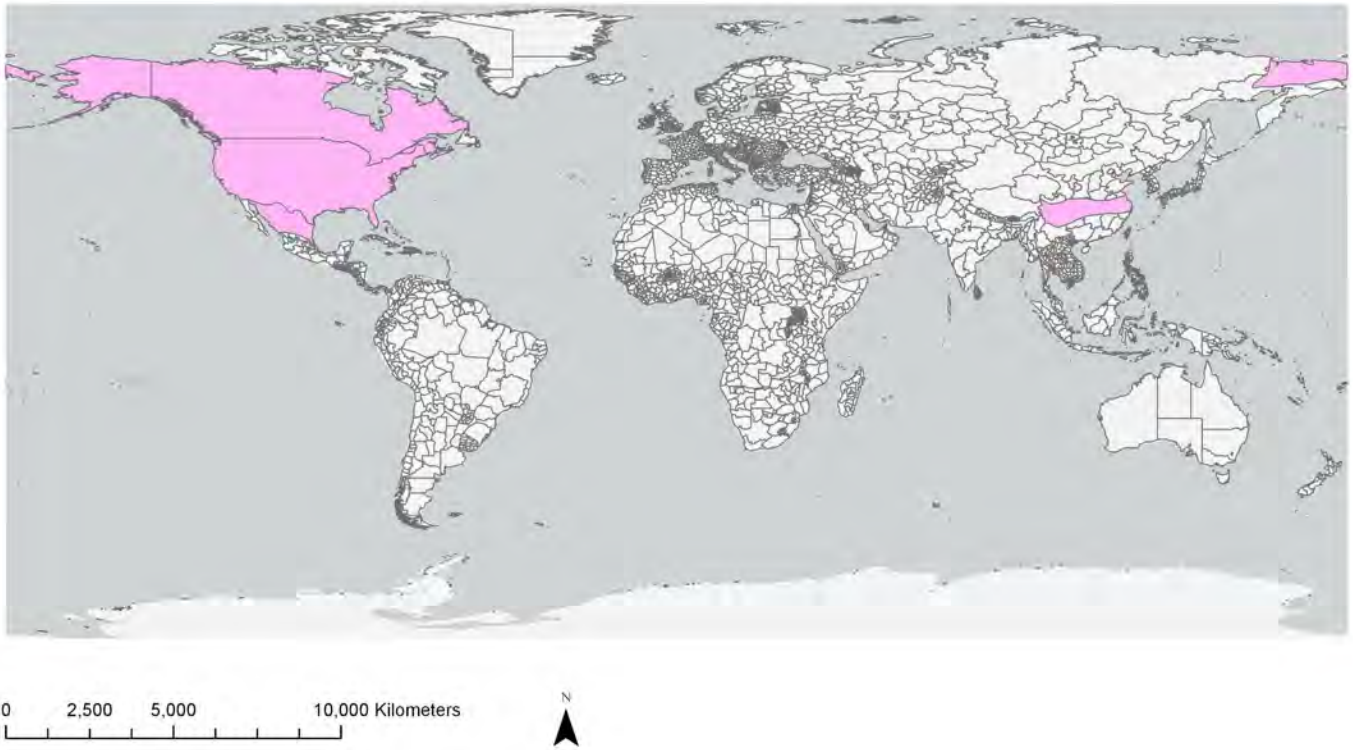


Figure 1. Global distribution of suckers (*Catostomidae*), shown by shaded areas. Range data are from Chang et al. (2001).

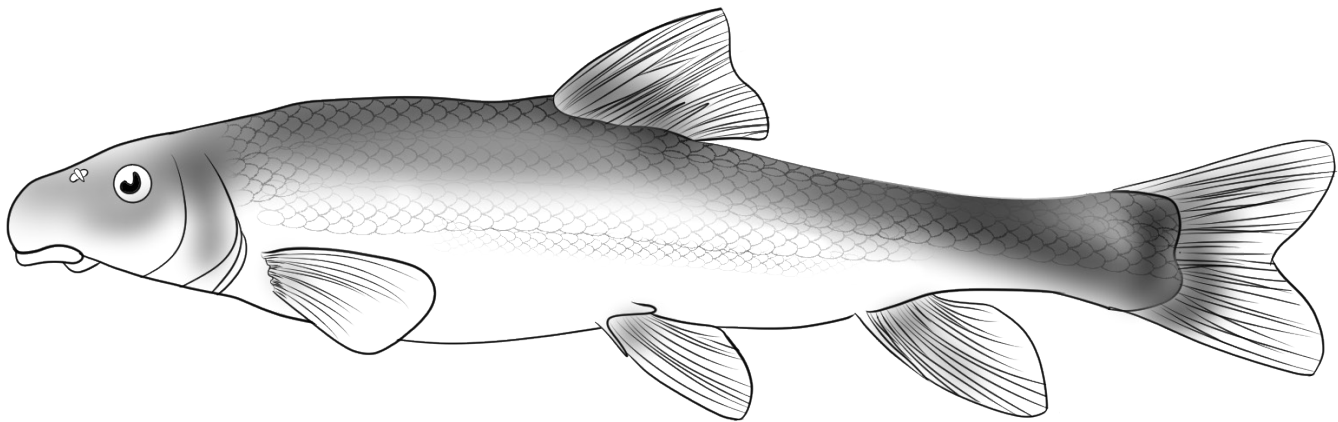


Figure 2. Longnose sucker (*Catostomus catostomus*). Note the downward facing mouth with round plump lips from which the family's Linnean name is derived (Redrawn from Evermann and Goldsborough 1906:231).

metric tons of yellow pickerel or walleye (*Sander vitreus*) harvested by Canadian commercial fisheries in 2015 constituted the largest catch, by weight, of any freshwater species and was valued at CA\$26,951,658, or CA\$4,054 per metric ton (Fisheries and Oceans Canada 2017).

Sucker's status as a trash fish within Euro-North American culture contrasts starkly with its importance among Indigenous peoples in northwestern North America. The recovery of catostomid remains from Late Pleistocene and Early Holocene deposits at Marmes Rockshelter, Washington (45FR50) (Butler 2004), and Tse'K'wa, British Columbia (Charlie Lake Cave; HbRf-39) (Frederick 1990; Testani 2020), highlight the taxon's long history of use in the region. An abundance of sucker remains at various Middle and Late Holocene faunal assemblages from the region demonstrates the fish's economic importance to many of the region's peoples during the succeeding periods. Middle and/or Late Holocene faunal assemblages with a high relative abundance of sucker remains have been documented in many areas of northwestern North America, including the Upper Klamath River Basin in Oregon (Stevenson and Butler 2015); the Lower Columbia River Basin in Oregon and Washington (Butler and Martin 2013; Rosenberg 2015; Stevenson and Butler 2015); and the Peace and Thompson river basins as well as the Choelquoit Lake area in British Columbia (Frederick 1990; Matson and Magne 2007; Royle 2014; Testani 2020).

While these data attest to Indigenous peoples' enduring use of suckers, archaeological interpretations concerning the dietary importance, capture, use, preparation, and cultural meanings of suckers has at times been hindered by a lack of ethnographic data (e.g., Butler and Martin 2013; Rosenberg 2015:28–29). In this article, I seek to address this issue by using ethnographic sources to document the varied dietary and symbolic roles suckers played within Indigenous cultures in northwestern North America. For the purposes of this article, I considered ethnographic data concerning Indigenous peoples residing in the

Plateau and Northwest Coast culture areas, as well as peoples in the California culture area with territories north of Humboldt Bay, and Subarctic peoples with territories west of British Columbia's and Yukon's eastern borders. In addition to documenting the cultural importance of suckers, these ethnographic data are used to provide a synthetic overview of the methods used to harvest and prepare the taxon, its non-dietary uses, and the seasonality of sucker fisheries. By compiling this ethnographic data, this article hopes to provide a framework that can be used to shed light on past and present sucker use in the region.

Dietary Importance

Reflecting both their widespread distribution and dietary importance on a regional level, suckers were traditionally harvested by Indigenous peoples throughout northwestern North America (Figure 3, Table 1). Suckers were particularly important among peoples residing in areas that lacked salmon (*Oncorhynchus* spp.) runs or had a limited number of salmon-bearing watercourses (Hewes 1998:620–621). For instance, the Dane-zaa (Ridington and Ridington 2013:238, 261) and Modoc (Ray 1963:193), both of whom had territories lacking salmon runs, primarily fished for suckers. In the case of the Dane-zaa, the dietary importance of suckers is reflected in the endonym for the band residing near Charlie Lake, British Columbia—Lhuuge Leḡ—which can be translated as sucker fish people (Ridington and Ridington 2013:3). Both the Klamath and Ajumawi also had fisheries dominated by suckers, while the Kalispel targeted both suckers and other resident fishes (Evans 1990:51; Hewes 1998:623; Lahren 1998:286). Although salmon run within these three groups' territories, they only ascend into a limited portion of their territories (Kniffen 1928:302, 311–312; Hewes 1998:623).

Although suckers were traditionally a significant component of many Indigenous fisheries in the region, the family's dietary importance has in some instances been

Table 1. Indigenous Peoples in Northwestern North America who are Ethnographically known to have Harvested Suckers. Culture Area Assignments follow those of the *Handbook of North American Indians Series* (Sturevant 1978–2008).

Group	Representative References
<i>California</i>	
Ajumawi	Kroeber 1925:309; Evans 1990
Chilula	Hewes 1947:79
Hupa	Goddard 1903:26
Karuk	Kroeber and Barret 1960:6
Shasta	Kroeber and Barret 1960:6
Whilkut	Hewes 1947:79
Wintu	Du Bois 1935:15,17
Wiyot	Kroeber and Barret 1960:101
<i>Northwest Coast</i>	
Coast Salish	Duff 1952:62; Suttles 1990:457; Galloway 2009:456; Ritchie and Springer 2010:59
Coos	Byram 2002:108–113
<i>Plateau</i>	
Bitterroot Salish	Weisel 1955:347
Kalispel	Lahren 1998:286
Klamath	Jordan and Evermann 1908:56–57; Spier 1930:147–151
Ktunaxa	Turney-High 1941:44; Ray 1942:104; Smith 1984:80, 82, 143; Brunton 1998:226
Middle Columbia River Sahaptins	Hewes 1947:105, 1998:625–626; Hunn 1990:155; Hunn and French 1998:382; Schuster 1998:331; Stern 1998a:396; Close et al. 2004:146
Modoc	Ray 1963:193
Middle Columbia River Salishans	Miller 1998:255–257
Nlaka'pamux	Ray 1942:104; Wyatt 1998:192
Nez Perce	Walker 1967:24–25, 1998:420

Table 1. (cont.)

Group	Representative References
<i>Plateau (cont.)</i>	
Syilx	Ray 1933b:57; Post 1938:17–18; Arrow Lakes Historical Society 1991:12; Kennedy and Bouchard 1998:242
Secwepemc	Kennedy and Bouchard 1975; Compton et al. 1994; Ignace and Ignace 2017:166, 199; Fontaine 2020:61
Spokane	Ross 1998:274
Stl'atl'imx	Kennedy and Bouchard 1992:179
Wasco-Wishram	Spier and Sapir 1930:174; French and French 1998:364
<i>Subarctic</i>	
Ahtna	de Laguna and McClellan 1981:646–647; Simeone and Kari 2004:7
Dakelh	Smith 1920-1922
Dane-zaa	Ridington and Ridington 2013:238, 261
Deg Hit'an	Osgood 1958:276, 1940:244
Gwich'in	Osgood 1936:24, 33; Balikci 1963:13; Nelson 1986:70
Hän	Mishler and Simeone 2004:58
Inland Tlingit	McClellan 1975:195
Kaska	Honigmann 1954:37, 42, 45
Koyukon	Nelson 1983:75-76; Andersen et al. 2004:63–67
Slavey	Honigmann 1946:38
Tagish	McClellan 1975:190
Tsilhqot'in	Lane 1953:43, 1981:405; Tyhurst 1984:59–60
Tutchone	O'Leary 1992:96; Legros 2007:294
Upper Kuskokwim	Williams et al. 2005:52–53
Upper Tanana	Allen 1887:76; McKennan 1959:35
Wet'suwet'en	Daly 2005:125,141; Johnson 2010:142



Figure 3. Distribution of Indigenous groups within the study area (shaded) that are ethnographically known to have harvested suckers.

challenged by anthropogenic ecological changes. Algal blooms, increased water temperatures, pollution, low water levels, overfishing, and/or the introduction of invasive species during the twentieth and twenty-first centuries have caused sucker population collapses in some areas. These population declines have resulted in a decreased reliance on suckers among some groups, notably the Dane-zaa, Klamath, and Modoc, all of whom were historically heavily reliant on the taxon (Foster 1996; Treaty 8 First Nations Community Assessment Team and The Firelight Group Research Cooperative 2012:75). In the case of the Klamath and Modoc, sucker fishing on the Lost River was banned by tribal elders in 1986 in response to declines in Lost River (*Deltistes luxatus*) and short-nose (*Chasmistes brevirostris*) sucker populations (Foster 1996:32).

In areas where anadromous salmonids were abundant, suckers were, by contrast, often of secondary importance. For example, among the Ahtna, suckers were historically of minimal importance relative to salmon and regarded by some as a famine food (Simeone and Kari 2004:36, 51; Simeone and Valentine 2007:10–11). Similarly, Wayne Charlie, a member of the Sts'ailes First Nation—a Coast Salish people—notes that “when less salmon ran people would eat smolts and resident fish such as: suckers and chubs and steelhead and sturgeon” (Ritchie and Springer 2010:59). Among some Coast Salish, the relative lack of sucker fishing was attributed to the interference of other beings. Some Upriver Halkomelem speaking Coast Salish elders note that suckers could not be harvested at Sqw'exwáq on the Coquihalla River, British Columbia, as water-pygmyies (*s'ó:lmexw*) grabbed their fishing spears (Galloway 2009:192, 538). A similar relationship between the availability of salmon and the relative importance of salmon is evident in the Plateau. For example, while suckers were harvested by the area's Wasco-Wishram peoples, they primarily targeted salmon, which could be locally caught in substantial numbers at Celilo Falls (French and French 1998:364; Hewes 1998:625). Suckers were also a secondary

resource among many Subarctic peoples, such as the Upper Tanana (McKenna 1959:35) and Teet'it Gwich'in (Osgood 1936:23–24), who reside in areas with large populations of whitefish (Coregoninae), a resident freshwater salmonid.

The negative correlation between the dietary importance of sucker and the abundance of salmonids was not universal. For instance, suckers were a significant dietary resource among the Sahaptins occupying the salmon-rich Middle Columbia River region and were regarded as being almost as important as salmon (Hunn 1990:155; Hunn and French 1998:382). Other peoples' whose fisheries had access to and primarily targeted salmonids, but also harvested significant quantities of suckers, included the Ktunaxa (Turney-High 1941:44; Brunton 1998:226), Tsilhqot'in (Lane 1953:43, 1981:405), Syilx (Kennedy and Bouchard 1998:242), and the Middle Columbia River Columbia Salishans (Miller 1998:255–257). Among the Ktunaxa, suckers, and other resident fish, were particularly important to the Lower Ktunaxa relative to salmon which were more readily available to the Upper Ktunaxa in the Columbia River (Turney-High 1941:44).

Harvest Methods

A variety of techniques were traditionally used by Indigenous peoples to catch suckers. Most of the techniques used to harvest members of this family fall into one of four broad categories: angling, netting, spearing, and traps and weirs.

Angling

Angling was used by a limited number of groups in northwestern North America to harvest suckers. In the Subarctic, the Ahtna (de Laguna and McClellan 1981:647), Kaska (Honigmann 1954:42), Tsilhqot'in (Tyhurst 1984:61), and Tutchone (Legros 2007:302, 312) all harvested suckers through angling to some degree. Outside of the Subarctic, references to the angling of suckers are scarce. The Middle Columbia River Sahaptins of the Plateau harvested suckers

using set lines with bone gorges or fishhooks fashioned out of deer nasal bones or lines with three-pronged hooks (Hewes 1947:105, 1998:626; Hunn 1990:155). Historically, the importance of angling among Middle Columbia River Sahaptins relative to other fishing techniques was negligible (Hewes 1998: 625). However, during the twentieth century, angling displaced basket traps as the primary harvesting method for suckers (Hunn 1990:155).

Netting

Gillnets were one form of net that Indigenous peoples in northwestern North America traditionally used to harvest catostomids. Gillnetting for suckers was particularly common in the Subarctic where the Dakelh (Smith 1920–1922), Koyukon (Andersen et al. 2004:25–26, 65–66), Inland Tlingit (McClellan 1975:195), and Tsilhqot'in (Tyhurst 1984:60) all used this form of net to harvest the taxon. However, according to Tsilhqot'in elders, gillnetting was a recent innovation among them (Lane 1981:405). As was the case with angling, few groups outside of the Subarctic are recorded as having harvested suckers through gillnetting. While rare, the gillnetting of suckers was not unknown outside of the Subarctic. Unpublished field notes written by J.P. Harrington in the early twentieth century describe the Ajuwami harvesting suckers with stone weighted gillnets (Barter 1990:41–42). The paucity of descriptions of non-Subarctic groups gillnetting for suckers may reflect this technology potentially being a recent introduction into some areas, including the Plateau (Hewes 1998:622).

The way in which gillnets were operated varied between groups. In the case of the Ajuwami, gillnets were operated by two-person teams (Barter 1990:42). One of these individuals would drag one of the net's ends as they swam, while the second individual would hold the other end, anchoring the net (Barter 1990:42). The Ajuwami operated these gillnets at night and were used in conjunction with a pit-lamp consisting of a small fire (Barter 1990:42). Conversely, the Inland Tlingit and Tsilhqot'in gillnetted for suckers

with stationary gillnets that were set in lakes during the taxon's spawning runs (McClellan 1975:195; Tyhurst 1984:57, 60). Suckers were also commonly caught as bycatch in gillnets targeting other species. Although the Koyukon deliberately targeted suckers in the past, many of the suckers harvested by the group today are incidentally caught in gillnets and seines set for whitefishes (Andersen et al. 2004:25–26, 66). Similarly, suckers were often caught by the Tsilhqot'in as bycatch in gillnets set for trout (Tyhurst 1984:60).

Within the region, Indigenous peoples also commonly used dip nets to harvest suckers. In the Subarctic, both the Upper Tanana (Allen 1887:76; McKennan 1959:62) and Vuntut Gwich'in (Osgood 1940:74) used dip nets with circular frames to harvest suckers trapped by weirs. In the Plateau, the Sanpoil, a Syilx group, harvested suckers from turbid rivers using circular frame dip nets that were operated from fishing platforms or steep riverbanks (Figure 4) (Ray 1933a:67). As fish entered these dip nets, they hit a net positioned above their openings, which caused a slack cord held by the operator to tense, signaling the need for the net to be withdrawn (Figure 4) (Ray 1933a:67). The Klamath similarly used a circular frame dip net to capture suckers that had washed into river pools (Spier 1930:151). An A-frame dip was also used by Klamath as well as the Ajuwami and Modoc to fish for suckers from canoes (Curtis 1924:136; Hewes 1998:623). The Ajuwami also used these A-frame dip nets alongside circular- and bow-frame dip nets to harvest suckers while shore fishing or wading through watercourses (Curtis 1924:136). Dip nets of unspecified design were used by the Middle Columbia River Sahaptins, Coast Salish, and Shasta to harvest suckers (Kroeber and Barrett 1960:6; Hewes 1998:625; Galloway 2009:456).

The ethnographic record indicates that other types of nets were also used to harvest suckers. In one of the few references to sucker fishing in the Northwest Coast culture area, Suttles (1990:457) documents

the Coast Salish's use of trawl nets to harvest suckers and other freshwater taxa. Coast Salish trawl nets consisted of large triangular nets with stone net weights and wooden floats (Duff 1952:68–69; Stewart 2008:92). These nets were trawled along shallow river bottoms by two canoes and could be closed with lines or poles affixed to the net (Duff 1952:69; Stewart 2008:92). In the case of the Wet'suwet'en, willow bark nets were used to ice fish for suckers (Johnson 2010:142). The Tutchone used an unspecified type of net to mass harvest suckers during their spawning period (O'Leary 1992:96; Legros 2007:302, 309).

Spearing

Indigenous peoples in northwestern North America traditionally used various types of spears to harvest suckers. Three-pronged leisters armed with bone and/or wooden points were perhaps the most common type of spear used for sucker fishing. Groups that used such leisters to harvest suckers included the Dakelh (Smith 1920–1922), Ktunaxa (Smith 1984:147), Middle Columbia River Sahaptins (Stern 1998a:396), Neskonlith Secwepemc (Kennedy and Bouchard 1975:19–20, 26–27), and Syilx (Post 1938:18). Presumably to lure or drive suckers, the Dakelh used leisters in conjunction with salmonid decoys crafted from bone or antler (Smith 1920–1922). Among the Syilx, suckers were speared with leisters from canoes while pit-lamping as well as from fishing platforms and the shore (Post 1938:18).

Suckers were also traditionally harvested with other types of spears. Among the Ajuwami, suckers were taken with spears with one or two prongs tipped with non-detachable bone, wood, or more recently iron points (Barter 1990:42–43; Evans 1990:53). In contrast, a two-pronged spear with detachable bone points anchored to the handle with a cord was one of two spear types used by the neighboring Modoc to gig suckers (Ray 1963:194–195). This type of spear was primarily used by the

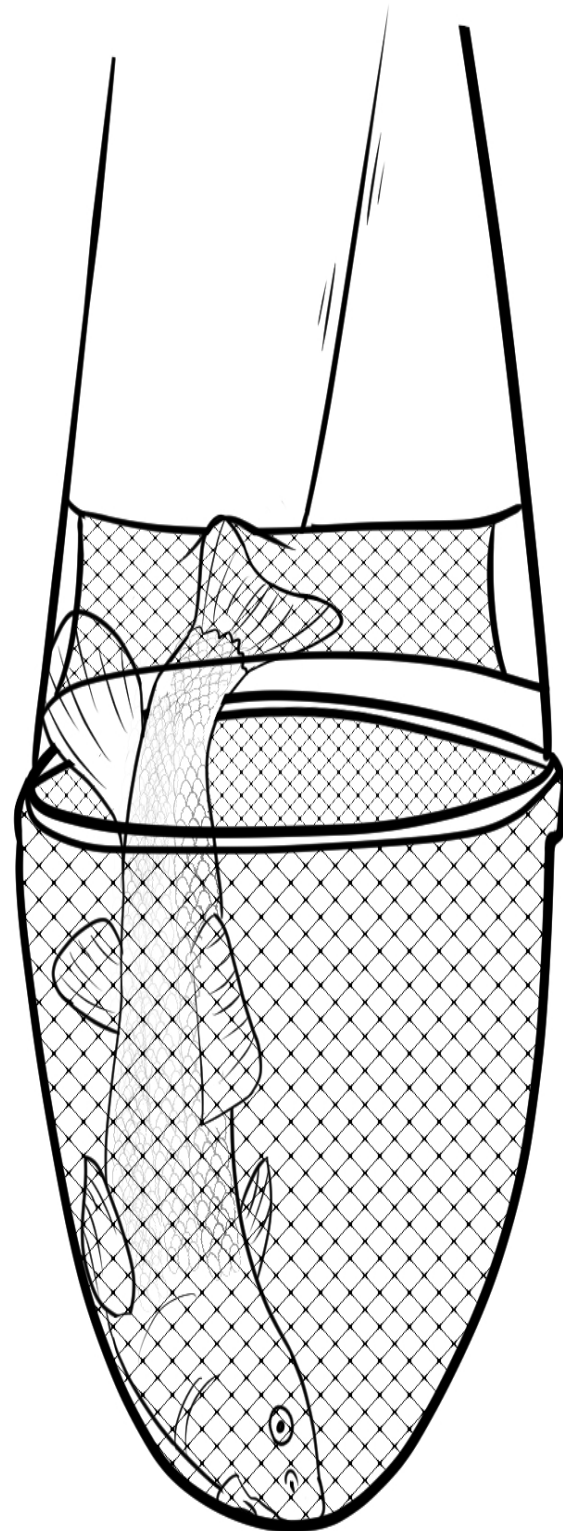


Figure 4. Sanpoil dip net used for sucker fishing (Modified after Ray 1933a:67).

Modoc to spear suckers from shore but was also used for ice fishing and taking fish while wading (Ray 1963:194–195). In lake shallows, the Modoc as well as the Klamath also used spears with 4–20 bone, iron, or hardwood points arranged in a circle supported by a wooden ring to pin suckers to the lake bottom (Barrett 1910: 251; Spier 1930:153; Ray 1963:195; Hewes 1998:623). Among the Modoc, these multipronged spears were only used for sucker fishing conducted from canoes (Ray 1963:195). In the case of the Klamath, these multipronged spears were used in tandem with gaff hooks, which were used to retrieve speared fish from the lake bottom (Barrett 1910:251; Spier 1930:153). Among the Coast Salish, specifically the Stó:lō, suckers were speared from canoes with harpoons (Duff 1952:62). Ostensibly to practice fishing, miniature harpoons were used by Wintu children to spear suckers (Du Bois 1935:17). Adult Wintu used spears to harvest the taxon more sparingly and limited their use to areas where fish were not abundant (Du Bois 1935:17). In the Subarctic, both the Kaska (Honigmann 1954:42) and the Ahtna (de Laguna and McClellan 1981:647) giggered for suckers. Among both the Ahnta (de Laguna and McClellan 1981:647) and Secwepemc (Fontaine 2020:61), spears were used to ice fish for suckers.

Spearfishing for suckers often occurred at night during pit-lamping expeditions. This fishing technique was practiced by the Ajuwami (Barter 1990:39; Evans 1990:53), Ktunaxa (Smith 1984:147), Middle Columbia River Sahaptins (Ray 1942:113; Stern 1998a:396), Neskonlith Secwepemc (Kennedy and Bouchard 1975:26–27), Syilx (Post 1938:18), and Stó:lō Coast Salish (Duff 1952:67). Pit-lamping was typically conducted by crews in canoes who used light generated from pitch torches or small fires (Post 1938:18; Duff 1952:67; Kennedy and Bouchard 1975:26–27; Evans 1990:53; Stern 1998a:396). To prevent the light from blinding them, the individuals wielding spears typically wore blinders made out materials such as tule and buckskin (Kennedy and Bouchard 1975:26; Barter 1990:39). Although pit-lamping

frequently involved spearing fish from canoes, both the Ajuwami and Neskonlith Secwepemc also speared suckers by the light of torches or shoreside fires while wading through rivers (Kennedy and Bouchard 1975:26; Barter 1990:39; Evans 1990:53). In the case of the Ajuwami, spearing with the aid of pit-lamps, either from canoes or while wading, was done to harvest suckers trapped in weirs (Evans 1990:53).

Traps and Weirs

Basket and Box Traps

Ethnographically, Indigenous peoples in northwestern North America often deployed fish traps for the purpose of harvesting suckers. Conical basket traps were one form of trap that was commonly used to capture suckers. This type of trap was used by the Ahtna (de Laguna and McClellan 1981:647), Ajumawi (Curtis 1924:137; Evans 1990:52, 55), Dakelh (Smith 1920–1922), Gwich'in (Hewes 1947:161), Ktunaxa (Smith 1984:143; Brunton 1998:226), Middle Columbia River Sahaptins (Hunn 1990:155), Syilx (Post 1938:18), Tsilhqot'in (Lane 1981:405), and Upper Tanana (McKenna 1959:62). These traps were typically made of woven twigs, sticks, and/or saplings and frequently placed in sucker spawning streams or in lakes with spawning beds (Post 1938:18; Smith 1920–1922; de Laguna and McClellan 1981:647; Lane 1981:405; Evans 1990:55). Box traps with ramps, which directed fish into the trap, were also used by the Ahtna (Simeone and Kari 2004:67–68) and Syilx (Ray 1933a:66–67) to harvest suckers.

In addition to being caught in traps set for the taxon, suckers were also caught in traps set for other taxa. For instance, basket traps set under ice by the Deg Hit'an (Osgood 1940:229–230; Snow 1981:604) and Koyukon (Andersen et al. 2004:65) for burbot (*Lota lota*) also caught a small number of suckers as bycatch. Similarly, Koyukon basket traps set for whitefish and ciscoes also incidentally trapped suckers (Andersen et al. 2004:19).

Weirs

Traditionally, some Indigenous peoples used stone and wooden fish weirs to harvest suckers. For instance, both the Dane-zaa and Kalispel used barrier weirs consisting of fences of sticks that bisected streams to impound suckers (Lahren 1998:286; Ridington and Ridington 2013:261). Although weirs could be used in isolation, they were oftentimes used in conjunction with basket or box traps, which were set in weir openings. The use of a combination of traps and weirs to harvest suckers has been documented among the Ahtna (Simeone and Kari 2004:67–68), Ajumawi (Curtis 1924:137; Evans 1990:52), Coos (Byram 2002:108–110, 113), Ktunaxa (Hewes 1998:631), Middle Columbia River Sahaptins (Hunn 1990:155), Syilx (Post 1938:18), Tsilhqot'in (Lane 1953:43, 1981:405), and Upper Tanana (McKenna 1959:62). Instead of traps, the Wintu placed nets in weir openings and drove suckers into the nets by disturbing the water (Du Bois 1935:17). The Ajumawi also occasionally placed nets in weirs constructed for sucker fishing (Evans 1990:55).

A particularly elaborate type of stone fish weir was constructed by the Ajuwami for the purpose of capturing suckers. These weirs consisted of a stone wall built around gravel beds surrounding spring outflows that were Sacramento sucker (*Catostomus occidentalis*) spawning beds (Voegelin 1942:173; Foster 2000:268). The gravel beds impounded by the weir were routinely cleared of large rocks, which were used to construct a series of walls within the weir (Foster 2000:268). In addition to providing construction materials, this Ajuwami stream-scaping (cf. Thonton et al. 2015) also helped maintain Sacramento sucker populations and harvests by expanding this species' spawning habitat (Foster 2000). The outer wall of the stone fish weir had a small opening that funneled the spring's outflow, which Foster (2000:268) notes lured suckers searching for spawning sites into the weir. After numerous suckers had entered the weir, this opening was shut, and groups of men directed by an elder would then spear

the trapped suckers (Evans 1990:53–54; Foster 2000). Numerous archaeological examples of these Ajuwami stone fish weirs have been identified, suggesting their use has some time depth (Foster 2000). However, as none of these weirs have been dated, the exact antiquity of these weirs is unknown.

Other Fishing Techniques

Fishing techniques that do not fall into one of the above categories were used by some Indigenous sucker fisheries in northwestern North America. During the dry season, the Chilula and Whilkut peoples of northwestern California harvested suckers by poisoning the water with a toxin made from soaproot (*Chlorogalum pomeridianum*) (Hewes 1947:79). Suckers were also occasionally taken by hand, with the Ajumawi hand fishing for suckers during large spawning runs (Evans 1990:54). In the case of the Karuk and Wiyot, they were scooped out of the water with baskets, with the Wiyot driving suckers into the baskets by disturbing the water (Kroeber and Barrett 1960:69). Among the Ahtna, fish snares crafted out of willow or spruce were traditionally used to catch a range of fish, including suckers (Simeone and Kari 2004:71). More recently, the Ahtna have adopted fish wheels, which were introduced into Alaska by Euro-North Americans, and currently use this technology to harvest suckers (Simeone and Kari 2004:110).

Seasonality of Sucker Fisheries

Since suckers are resident fish species, they can potentially be caught throughout the year. However, rather than catching them year-round, many peoples in northwestern North America harvested suckers during the spring to early summer when most sucker species are spawning (Harris et al. 2014:482). In the Subarctic, the Dakelh (Smith 1920–1922), Dane-zaa (Ridington and Ridington 2013:238, 268), and Tsilhqot'in (Lane 1953:42–43, 1981:405–406) caught suckers as they ran up streams during

the spring. Suckers were also caught in the spring by the Hän, who caught them soon after the spring ice break-up, (Mishler and Simeone 2004:62) as well as the Teslin Inland Tlingit (McClellan 1975:195) and Tutchone (O’Leary 1992:96; Legros 2007:301–302, 304), who mass harvested them from lakes during their spawning runs. Nonetheless, the Tutchone also caught smaller numbers of sucker during the summer (Legros 2007:302). The Koyukon and Upper Kuskokwim of Subarctic Alaska traditionally also harvested suckers during their spring spawning runs, but today primarily only catch them in the fall and winter as bycatch (Nelson 1983:75; Andersen et al. 2004:63–66; Williams et al. 2005:52–53). The harvesting of suckers during their spring to early summer spawning runs was also prevalent in the Plateau. In this region, peoples such as the Klamath (Spier 1930:220), Ktunaxa (Turney-High 1941:44; Smith 1984:79–83), Modoc (Ray 1963:181), Middle Columbia River Sahaptins (Hunn 1990:155), Nlaka’pamux (Wyatt 1998:192), Sylix (Ray 1933a:57; Post 1938:17), St’atl’imx (Kennedy and Bouchard 1992:179), and Wasco-Wishram (Spier and Sapir 1930:174), primarily harvested suckers during this time. However, the Sylix also had a smaller sucker fishery in August (Post 1938:17). During this month, the Sylix caught suckers returning from their spawning beds (Post 1938:17). Similarly, while the Middle Columbia River Sahaptins primarily harvested sucker during the spring, they continued to be harvested throughout the year, particularly during the winter (Hewes 1947:105, 1998:625; Stern 1998a:396). In northeastern California, the Ajumawi intensely harvested sucker during their spawning period, which began in January and lasted until March or May (Evans 1990:53). In the case of the some of these groups, such as Dakelh, Klamath, and Tsilhqot’in, the spring timing for their sucker fishery is reflected in their names for the March (Klamath) and April–May (Dakelh and Tsilhqot’in) lunar months, which translate as Sucker or Sucker Fishing Moon (Morice 1893:106; Kroeber 1925:323).

Harvesting suckers during their spawning runs, rather than at other times of the year, had significant benefits. First, spring to early summer sucker fisheries could be used to supplement stocks of stored food, which were often running low by the end of the winter (Nelson 1983:75; Stern 1998b:448; Wyatt 1998:192). Second, as suckers form spawning aggregations (Harris et al. 2014:483–484), they can be mass harvested during their spawning period. By mass harvesting suckers, fishers would increase their foraging efficiency as it maximizes net energy returns by lowering per fish procurement costs (Lindström 1992). Third, during their spawning migrations, suckers typically move into shallower waters, increasing their accessibility to fishers (Post 1938:17; Harris et al. 2014). Finally, suckers could be co-harvested alongside other fish taxa running during the same period. For instance, weirs and traps set by the Ajumawi to harvest suckers also caught trout, which run around the same time as suckers (Evans 1990:52).

Seasonal variations in the perceived taste and quality of suckers also often influenced the decision to harvest the taxon during their spring to early summer spawning runs. Among the Koyukon, spring was viewed as opportune to harvest suckers because during this time females are rich with roe, a delicacy (Andersen et al. 2004:64, 66). Koyukon and Sylix individuals also noted that suckers were particularly fat during their spawning period, which gave them a rich taste and made them easier to catch (Post 1938:18; Andersen et al. 2004:66). In the case of the Sylix, suckers caught after June were considered inedible (Ray 1933a:57). Conversely, the Ktunaxa considered suckers harvested during July to taste the best (Turney-High 1941:44).

Although their spring to early summer spawning runs were an ideal time to catch the taxon, Indigenous peoples also harvested suckers at other times of the year. Among the Secwepemc (Ignace 1998:207) and Tagish (McClellan 1975:190), suckers were harvested throughout the year. Winter sucker fishing was practiced by the Ahtna (de Laguna and McClellan

1981:646), Karuk (Kroeber and Barrett 1960:69), and Wet'suwet'en (Daly 2005:125,141; Johnson 2010:142). The Wet'suwet'en also caught some suckers in the spring while they were fishing for rainbow trout (*Oncorhynchus mykiss*) (Daly 2005:141). On the Northwest Coast, the Coos sucker fishery occurred during the winter and extended into the spring (Byram 2002:113). Like spring-summer spawning season sucker fisheries, winter sucker fishing was used to augment stored food stocks and provide some culinary variety (Hewes 1947:105, 1998:625; de Laguna and McClellan 1981:647; Byram 2002:113). Kroeber and Barrett (1960:69) citing Gordon Hewes' unpublished fieldnotes state the Karuk also thought winter was the opportune time to catch suckers because they took longer to die, and presumably spoil, due to the lower temperatures. In the Subarctic, fishing for suckers during the summer and fall was also common. Suckers were harvested during the summer by the Deg Hit'an (Hewes 1947:162–163), Draanjik Gwich'in (Nelson 1986:60), and the Upper Tanana (McKenna 1959:35). The Draanjik Gwich'in sucker fishery that began during the summer continued until the end of autumn (Nelson 1986:60), which was also the season when the related Vuntut Gwich'in harvested suckers (Balicki 1963:13). In California, the Wintu similarly had a summer sucker fishery, with the taxon being primarily harvested in August (Du Bois 1935:17).

Preparation and Consumption

An array of dishes and preparations that included sucker were traditionally consumed by Indigenous peoples in northwestern North America. Many peoples in the region, including the Ajumawi (Evans 1990:55), Bitterroot Salish (Weisel 1955:347), Coos (Byram 2002:113), Dakelh (Smith 1920–1922), Deg Hit'an (Osgood 1958:276), Klamath (Spier 1930:149), Koyukon (Andersen et al. 2004:66), Syilx (Post 1938:18), Secwepemc (Ignace 1998:207), and Wiyot (Kroeber and Barrett 1960:101), consumed suckers fresh. Among the Dakelh (Smith 1920–1922), and Deg

Hit'an (Osgood 1958:276), fresh suckers were prepared for consumption by boiling them in water. Fresh sucker was also commonly prepared through roasting over fires, or more recently in ovens. Roasted fresh suckers were consumed by the Ajumawi (Evans 1990:55), Bitterroot Salish (Weisel 1955:347), Dakelh (Smith 1920–1922), Klamath (Spier 1930:149), Koyukon (Andersen et al. 2004:66), and Syilx (Post 1938:18). The Ajumawi and Bitterroot Salish also fried fresh sucker (Weisel 1955:347; Evans 1990:55).

Like salmon, suckers were commonly dried and stored for later consumption. Peoples that consumed dried sucker meat included the Ajumawi (Evans 1990:54–55), Dakelh (Smith 1920–1922), Dane-zaa (Ridington and Ridington 2013:236, 268), Klamath (Jordan and Evermann 1908:57; Spier 1930:155; Stern 1998b:449), Koyukon (Andersen et al. 2004:66), Ktunaxa (Hewes 1998:631), Modoc (Ray 1963:181), Syilx (Post 1938:18), Secwepemc (Ignace 1998:207), and Wintu (Du Bois 1935:17). Prior to consumption, the Syilx softened dried sucker meat through boiling (Post 1938:18), while the Ajumawi and Klamath pounded dried sucker into a powder that could be consumed (Evans 1990:55; Stern 1998b:449). In the case of the Ajumawi, powdered dried sucker was used to make soup and gravies (Evans 1990:55).

The process used to dry sucker meat varied to some degree between groups. Prior to drying, Indigenous peoples invariably gutted suckers (Spier 1930:155; Post 1938:18; Evans 1990:54). During this preparation process, the Ajumawi and Klamath also generally removed the head of the fish, with the Ajumawi also removing large bones and a section of the tail (Spier 1930:155; Evans 1990:54). Occasionally, the vertebral column was removed by the Syilx prior to drying (Post 1938:18). Following this preparation process, the Ajumawi, Klamath, and the Syilx, hung suckers from poles or drying racks and left them to dry (Spier 1930:155; Post 1938:18; Evans 1990:54). Instead of using poles or racks to dry suckers, the Modoc suspended fish from the limbs of

pine saplings (Ray 1963:181). Among the Ajumawi and Klamath, the drying of suckers was accomplished through a combination of air and sun drying (Spier 1930:155; Evans 1990:55). Conversely, the Syilx did not sun dry suckers, but air dried them within shelters and occasionally lit fires to hasten the drying process, particularly when it was rainy (Post 1938:18). Fires were also used by the Ktunaxa for both drying and smoking suckers (Hewes 1998:631). To facilitate drying, both the Syilx and Klamath spread the abdomen of drying fish apart with a wooden spreader (Spier 1930:155; Post 1938:18). Following drying, the Dakelh and Klamath stored dried suckers in underground caches that were capped with wood, and in the case of the Dakelh, lined with a basket (Smith 1920–1922; Spier 1930:155). The Syilx wrapped dried suckers in tule, sometimes burying the tule-wrapped fish, and other times storing them on above-ground platforms (Post 1938:18).

By-products obtained or made from suckers were commonly consumed in northwestern North America. Roe in particular was widely consumed in the region and was a prized foodstuff among the Ahtna (Simeone and Kari 2004:24) and Koyukon (Andersen et al. 2004:66). The Ajumawi consumed fresh roe that had been fried, whilst the Koyukon and Syilx consumed both fresh and dried roe (Post 1938:18; Evans 1990:55; Andersen et al. 2004:66). The Syilx prepared fresh roe by boiling and pulverizing it into a mash (Post 1938:18), while the Koyukon either cooked it or served it raw (Andersen et al. 2004:66). Entrails removed from suckers during the gutting process were consumed by the Tutchone, who ate the taxon's stomach (Legros 2007:296), as well as the Syilx, who made a stew from the fish's entrails (Post 1938:18). Soups or stews made from sucker were also consumed by the Ajumawi (Evans 1990:55), Tsilhqot'in (Tyhurst 1984:60), and the Upper Kuskokwim (Williams et al. 2005:52).

Consumption Prohibitions

Sucker flesh contains many small Y-shaped intermuscular bones that make consuming the taxon a challenging task and pose a choking hazard (Jordan and Evermann 1908:36). Due to the large number of these potentially dangerous bones, the Secwepemc barred children from consuming the taxon (Bouchard and Kennedy 1975:7; Ignace and Ignace 2017:166). The Dane-zaa also restricted children's consumption of suckers on account of their bony nature (Ridington and Ridington 2013:261). To mitigate the danger posed by the taxon's intermuscular bones, Dane-zaa children were only allowed to consume parts of suckers, such as eyes, cheeks, and tongues, that are not bony (Ridington and Ridington 2013:261). In the case of the Wintu, children could consume sucker, but only after their teeth had grown in (Du Bois 1935:47). Unlike the Dane-zaa, Secwepemc, and Wintu, the Hän placed limitations on the elderly's consumption of suckers rather than children. Due to the remainder of the fish being considered too bony to be easily consumed, elderly Hän only consumed the anterior half of suckers (Mishler and Simeone 2004:62). Similarly, Ahtna (Simeone and Kari 2004:78) and Koyukon (Andersen et al. 2004:66–67) of all ages only consumed the taxon's anterior half as its posterior end was—on account of its boniness—considered inedible and only suitable for dog food. The Teet'it Gwich'in only consumed the middle portion of suckers as the remaining parts were considered too bony (Osgood 1936:24). In some instances, all of the cuts of flesh that could be obtained from suckers were considered too bony to be consumed. For instance, Williams et al. (2005:52) interviewed one Upper Kuskokwim elder who consumed a soup made by boiling sucker heads but did not eat the taxon's meat due to its "lots of little bones." One Koyukon individual refused to eat sucker as Sucker was a thief in Koyukon mythology and was thus "not well thought of" (Nelson 1983:19).

Non-Dietary Uses

Although the economic importance of suckers was primarily linked to their use as a foodstuff, some groups also used this family of fishes for non-dietary purposes. Among the Ajumawi (Evans 1990:55), Neskonlith Secwepemc (Kennedy and Bouchard 1975:7), and Wintu (Voegelin 1942:144), sucker was valued for its medicinal properties. An Ajumawi cold remedy entailed consuming a soup that included dried powdered sucker (Evans 1990:55). Although this soup was used to treat individuals of varying ages, it was most commonly used to treat children (Evans 1990:55). Ill Neskonlith Secwepemc were similarly administered bridgelip sucker (*Catostomus columbianus*) as its high oil content was thought to imbue the taxon with curative properties (Kennedy and Bouchard 1975:7). Sucker was also used as a medicine by the Wintu, who applied a poultice crafted from sucker skins to snake bites (Voegelin 1942:144).

Other non-dietary uses for sucker are also described in the ethnographic record. In addition to using sucker as a medicine, the Secwepemc also used sucker as a bait to lure fur-bearing animals to traps (Compton et al. 1994:72). Sucker was also used as bait among the Klamath, who used the taxon's liver as fish bait (Spier 1930:154). This bait was secured to a sucker tailbone, which served as hook for hand or set lines used to angle for minnows (Cyprinidae) (Spier 1930:154). However, another Klamath informant told Voegelin (1942:173) that sucker tail bones were not used as hooks, suggesting inter-individual variability in their use as hooks. The use of sucker bones as fishhooks has also been documented among the Hupa, who traditionally used them as hooks for set lines (Kroeber and Barrett 1960:84). Ethnographic data indicates the Middle Columbia River Sahaptins also used sucker bones as tools. For instance, a Yakama individual, Warner Jim, noted his grandmother "used a curved piece of bone from the mouth of a sucker" as a needle for sewing folded cedar bark baskets together (Schlick 1994:128–129).

In the Subarctic, the Deg Hit'an used sucker skins to make pillows and parka overcoats (Osgood 1940:258–259; 1958:162), while the Ahtna (Simeone 2008:9; Simeone and Kari 2004:78), Koyukon (Andersen et al. 2004:66–67), and Upper Kuskokwim (Williams et al. 2005:52) used them as dog food.

Spiritual Importance

The cultural importance of suckers among Indigenous peoples in northwestern North America was not limited to being a source of food and raw material. Among many Indigenous peoples in the region, suckers were also spiritually important. Their spiritual importance is reflected in the First Sucker Ceremony practiced by some of the region's peoples, the prominent role suckers play in some Indigenous myths, and their role as source of spiritual power.

First Sucker Ceremony

Reflecting both their economic and spiritual importance, the Middle Columbia River Sahaptins (Hunn 1990:155, 158), Klamath (Spier 1930:148–149; Voegelin 1942:175), and Syilx (Post 1938:18–19) celebrated the start of the sucker spawning runs with a First Sucker Ceremony analogous to the better known First Salmon Ceremony (Gunther 1926). Among the Middle Columbia River Sahaptins, the First Sucker Ceremony involved "a feast at the Rock Creek longhouse" (Hunn 1990:155,158). The First Sucker Ceremony performed by the Syilx also involved a feast that was preceded by a prayer of thanksgiving recited by a male elder (Post 1938:18–19). At this feast, the first sucker catch of the year was roasted and served alongside bitterroot (*Lewisia rediviva*) and serviceberries (*Amelanchier* spp.) (Post 1938:18). All the attendees would consume the roasted sucker, with any remaining food distributed among the guests for later consumption (Post 1938:18).

Ethnographic accounts provide particularly detailed descriptions of the First Sucker Ceremony

practiced by the Klamath. This ceremony was initiated when a male elder netted the first sucker of the year (Voegelin 1942:175). During the period when the first suckers were being harvested, children were prohibited from going near rivers bearing sucker runs (Pearsall 1950:387). The first two fish harvested by the elder were burned alive in a fire built near the river and left in the fire until they had been rendered into ash (Spier 1930:148–149; Voegelin 1942:175). As they burned, they were closely watched as it was thought the degree to which they struggled and how long they remained alive could be used to predict the success of that year's sucker fishery (Voegelin 1942:175). Following the conclusion of this ritual, the Klamath First Sucker Ceremony continued with a feast. To provision this feast, the remainder of the first sucker harvest was roasted and consumed by the ceremony's attendees, which included men, women, and children (Spier 1930:148–149; Voegelin 1942:175). Unlike the Syilx who allowed leftovers to be taken home, Klamath traditions mandated that all of the suckers caught as part of the first harvest had to be consumed at the ceremony (Spier 1930:149; Voegelin 1942:175). The entrails of the first-of-the-year suckers were also collected and given to children, who deposited them in the river (Pearsall 1950:387). Failure to entirely consume the first sucker harvest or return their entrails to the water was said to presage the collapse of that year's sucker fishery (Spier 1930:149; Voegelin 1942:175; Pearsall 1950:387).

The First Sucker Ceremony performed by the Klamath was only conducted at a single location within their territory: Wo'kstat. Wo'kstat is located along the Sprague River, Oregon, and is associated with a cave that is today known as Medicine Rock Cave (35KL8) (Spier 1930:148; Cressman 1956:398). Medicine Rock Cave is a spiritually significant place for the Klamath because it is the home of the transformer Kemũ'kũmps, who created and peopled the earth (Gatschet 1890:lsxix–lxxx; Spier 1930:148). Within Klamath mythology, Kemũ'kũmps is intricately linked with suckers and the First

Sucker Ceremony. The Klamath believe the stone fish weirs they used to harvest suckers and other fish were originally constructed by Kemũ'kũmps (Spier 1930:149). Moreover, it was Kemũ'kũmps who conducted the initial First Sucker Ceremony and dictated to humans how they were to be conducted (Spier 1930:149). As Kemũ'kũmps conducted this initial ceremony near his home at Wo'kstat, the Klamath were bound to perform subsequent ceremonies at this location (Spier 1930:149).

Archaeological evidence indicates the association drawn by the Klamath between Wo'kstat and sucker fishing has a deep history. Fish remains, including bones identified as sucker, have been recovered from archaeological deposits at Medicine Rock Cave (Cressman 1956; Stevenson and Butler 2015). Although their chronological placement is unclear, these remains are hypothesized by Stevenson and Butler (2015) to date between ~7500 cal. years BP, and the historic period (post-90 cal. year BP). This long-term association between Wo'kstat and sucker fishing evident in the zooarchaeological record suggests the Klamath First Sucker Ceremony may also have a deep history.

Suckers in Indigenous Mythologies

Several myths told by the Indigenous peoples of northwestern North America prominently feature suckers, further highlighting their spiritual importance. One myth centered on suckers that is shared by many Salishan groups in the Plateau, including the Syilx (Hill Tout 1911:146; Gould 1917:107–108; Teit 1917a:85; Ray 1933b:152–153; Bouchard 1978:15–17), Kalispel-Pend D'Oreille (Teit 1917b:118), and Secwepemc (Teit 1909:749; Bouchard and Kennedy 1979:42–44), details Sucker's fall from the Upper World. In this story, the Animal People, including Sucker, ascend to the Upper World by climbing a ladder of arrows, with the intent of stealing fire (Teit 1909:749, 1917a:85, 1917b:118; Hill Tout 1911:146; Gould 1917:107–108; Ray 1933b:152–153; Bouchard 1978:15–17; Bouchard and Kennedy 1979:42). Ultimately, this ladder of arrows was destroyed,

forcing the animal people to return to Earth by jumping from the Upper World (Teit 1909:749, 1917a:85, 1917b:118; Hill Tout 1911:146; Gould 1917:108; Ray 1933b:153; Bouchard 1978:17; Bouchard and Kennedy 1979:43). As a result of his fall, Sucker's bones were broken and his body deformed (Teit 1909:749, 1917a:85, 1917b:118; Hill Tout 1911:146; Gould 1917:108; Ray 1933b:153; Bouchard 1978:17; Bouchard and Kennedy 1979:44). In an alternative Secwepemc account of this myth, Sucker broke his bones following a failed attempt to jump over the moon (Compton et al. 1994:60). According to the Syilx (Hill Tout 1911:146; Gould 1917:108; Bouchard 1978:17) and Secwepemc (Teit 1909:749; Bouchard and Kennedy 1979:44; Compton et al. 1994:60–62), the other Animal People or a man subsequently reassembled Sucker with parts of other animals and/or various items. Although its details are ill-documented in published sources, Middle Columbia River Sahaptins had a similar myth about Sucker breaking his bones after falling from the sky and being reassembled with parts from other animals (Hunn 1980, 1990:158).

According to these myths, the anatomy of suckers has been shaped by Sucker's fall-induced injuries. The Syilx (Gould 1917:108; Ray 1933b:153; Bouchard 1978:117), Kalispel-Pend D'Oreille (Teit 1917b:118), and Secwepemc (Teit 1909:749; Compton et al. 1994:60–62) all attribute the numerous intramuscular bones present in suckers and/or their unfused cranial bones to Sucker breaking his bones upon impact. The Syilx also believed that the taxon's characteristic downward-facing mouth was the result of Sucker hitting his mouth during his fall (Ray 1933b:153). Among the Syilx, Secwepemc, and Middle Columbia River Sahaptins, the shape of the various bones found in suckers, particularly their cranial bones, is said to resemble the animals who helped reconstruct Sucker or the items they used to rebuild him (Hunn 1980:14–16, 1990:158; Compton et al. 1994:61–62, 64–71). The Ahtna (Simeone and Kari 2004:97–100) and Koyukon (Nelson 1983:76; Andersen et al. 2004:67–68) also believed that the shape of sucker bones resembled

various things. However, rather than reflecting the fall and reassembly of Sucker, these groups thought the shape of the taxon's bones resembled various items or body parts Sucker stole from other beings (Nelson 1983:76; Andersen et al. 2004:67–68; Simeone and Kari 2004:97–100). The Dakelh also connected the cranial bones in sucker with various items or animals, but the details of the associated tale are not provided in the published literature (Compton et al. 1994). As such, cross-culturally the taxon's bones served as a visual mnemonic for Sucker's thievery or fall and rehabilitation. This is exemplified by the fact that Middle Columbia River Sahaptin (Hunn 1980:14, 1990:159) and Koyukon (Nelson 1983:76) elders recounted these stories as they removed cranial bones from cooked suckers.

An alternative explanation for the boniness of suckers is provided by the story of 'Sucker and Lamprey (or Eel)' told by the Yurok (Erikson 1943:287; Kroeber and Barrett 1960:105), Lummi Coast Salish (Hillaire 2016:66–67), Wiyot (Teeter and Nichols 1993:18–19), and the Confederated Tribes of Warm Springs, which includes Middle Columbia River Sahaptin and Wasco members (Warm Springs Reservation Committee 1977:7–9). In this story, Sucker and Lamprey are a pair of gamblers who played several matches of a game, often noted or depicted as being slahal (Erikson 1943:287; Kroeber and Barrett 1960:105; Warm Springs Reservation Committee 1977:8–9; Teeter and Nichols 1993:18–19; Hillaire 2016:66–67). Sucker won all the matches they and Lamprey contested, which resulted in Sucker winning all of Lamprey's possessions (Erikson 1943:287; Kroeber and Barrett 1960:105; Warm Springs Reservation Committee 1977:8; Hillaire 2016:67). To win back their belongings, Lamprey bet his bones and challenged Sucker to one last match that was all-or-nothing (Erikson 1943:287; Warm Springs Reservation Committee 1977:9; Teeter and Nichols 1993:18; Hillaire 2016:67). Sucker won and took possession of Lamprey's bones, which is why suckers have so many bones (Erikson 1943:287; Warm Springs Reservation Committee 1977:9; Teeter and Nichols 1993:18–19;

Hillaire 2016:67). Moreover, Lamprey's loss of his bones through gambling provides a cultural explanation for why lampreys lack the bony structures present in bony fish (Erikson 1943:287; Kroeber and Barrett 1960:105; Warm Springs Reservation Committee 1977:9; Hillaire 2016:67).

Another Coast Salish tale that seeks to explain suckers' distinctive anatomy is recorded by Adamson (1934:158–172, 276–285, 379–382) and Amrine Goertz (2018:70, 79–118, 200–204). In this story, Sucker and other fishes are children of Moon or in some versions Qonē' qonē (Adamson 1934:163, 281, 380; Amrine Goertz 2018:70, 110–111, 203). When Moon left one day, his children cried, which affected their anatomy, and in the case of suckers gave them their characteristic mouth (Adamson 1934:163, 281, 381; Amrine Goertz 2018:70, 110–111, 203): To cheer up his children before he left, Moon or Qonē' qonē provided all or some of them with gifts (Adamson 1934:163, 281, 380; Amrine Goertz 2018:203). In all the versions of this story, Sucker is described as receiving the most gifts (Adamson 1934:163, 281, 380; Amrine Goertz 2018:203). As one version recorded by Adamson (1934:281) notes:

He gave more toys to Sucker than to any of the others, for Sucker was his favorite. He also gave many toys to Herring, another of his favorites. He did not give many to Porgy (a salt-water fish) or to Trout, as he did not care much for them. Salmon also received very few. Sturgeon received very few, and those only for his head.

As these gifts would become these species' bones, suckers have a lot of bones, while taxa that received few items, such as sturgeon, have few bones (Amrine Goertz 2018:203). In one telling, Moon later goes on to release his fish children, and instructs them on how, when, and where they are to be caught, with Sucker being told they will be caught with a dip net (Adamson 1934:163).

Other Coast Salish traditions further explore the creation of suckers, but unlike the

stories discussed above, are less centered on its anatomy. In one story, Transformer or Jesus in syncretic versions created suckers and other fish by depositing bones in various water bodies (Adamson 1934:138, 388; Mohs 1994:191). As one Stó:lō version recounts:

Long ago Xa:ls [Transformer] was travelling over this world. He was carrying some little Salmon bones in his hands. He came to a river and dropped in one of the bones. 'You shall become the Humpback and there shall be many of you.' Next Xa:ls came to the great river and travelled far up its course, dropping Salmon bones in many streams and small rivers. 'And you shall be the Sockeye,' he said. He then dropped bones in other lakes and creeks and they became the Suckers, the Trout, and all the other fish. (Mohs 1994:191)

However, one version of this story does seek to explain the boniness of suckers by stating that Transformer tells Sucker he will have many bones (Adamson 1934:138). An alternate Coast Salish account of how Transformer created suckers was recounted by a Katze individual, Old Pierre, and recorded by Jenness (1955:25–26). Here, Transformer came across some followers of Swaneset—one of the Katzie's ancestors—forging in the mud along a slough's banks and transformed them into suckers. This motif of suckers being created through the transformation of people is also present in a story reported by Mary Anne of Sts'ailes (Hill Tout 1904:342–345): Upon finding out his wives had kidnapped him as a child, a man, who in some versions is Moon, wrapped them in blankets:

and then took them down to the lake and said to them, "Go, wade into the water until it is over your heads, then jump up and plunge down again like sturgeons." The women waded into the water and endeavoured to do as

he had bidden them. The younger succeeded, and became thereafter the sturgeon, the elder failed to jump up, and so became the “sucker.” (Hill Tout 1904:345)

In an Upper Chehalis version of this myth shared by Silas Heck, suckers are not one of Moon’s kidnappers or wives, but one his children who were created from mud (Thompson and Egesdal 2008:381–382). This association between mud and the creation of suckers seen in both this Upper Chelalis story, and the Katzie story described above, likely reflect and seek to explain the benthic (bottom dwelling) nature of many sucker species (Harris et al. 2014). Outside of the Coast Salish area, an Ajuwami creation story recorded by Curtis (1924:209), describes how after creating watercourses Ja’mul or Coyote “made salmon, trout, chubs, pike, suckers, and all kinds of fish.”

In the Plateau culture area, suckers play a prominent role in a few other narratives unrelated to their anatomy. In a Wasco-Wishram tale called ‘The Deserted Boy,’ the titular abandoned child grows into an adult after five days of catching suckers, with the number caught increasing day after day (Sapir and Curtin 1909:139–144; Hymes 1976). The character of Sucker also plays a key role in a Ktunaxa myth that describes the capture of Ya-wóo-nik, and a deluge that occurs when Woodpecker rescues Duck and Duck’s wife by slicing Ya-wóo-nik open (Curtis 1911:146–147). Since Ya-wók-nik is a water monster, Woodpecker called a council of fish in order find this monster and rescue Duck–his brother–and Duck’s wife from him (Curtis 1911:146). At this council, Sucker reported “I like to stay in the deep water on the bottom, and there I have seen him [Ya-wóo-nik] (Curtis 1911:146),” setting off a chain of events that leads to Ya-wóo-nik’s capture and a great flood.

Source of Spiritual Power

Among some groups, suckers were a source of spiritual power. For example, one Stó:lō Coast Salish individual told Duff (1952:117) that a shaman who cured him of a childhood ailment

derived his power from suckers. Sucker spirits were similarly a source of healing power for Wintu shamans (Du Bois 1935: 79,93–94,115, 117; Kroeber 1925:361). However, the Wintu believed sucker spirits could also be malevolent. Du Bois (1935:54) describes one woman who as result of breaking the Wintu taboo against fishing while menstruating was possessed by a sucker spirit that distorted her face. Similarly, a man’s face was deformed by a sucker spirit “because he fished in a sucker sacred place (Du Bois 1935:113).” Du Bois (1935:82) also described an account in which a sucker spirit “harbored, for some reason, ill feeling toward a woman. It killed her children one after another.” Due to their spiritual power, the Wintu regarded places inhabited by sucker spirits as sacred (Du Bois 1935:79–80). Further reflecting the taxon’s spiritual power amongst the Wintu, charmstones consisting of pebbles with one concave surface were termed sucker stones and believed to provide fishers with good luck (Du Bois 1935:82).

Summary and Conclusion

Suckers were traditionally harvested by Indigenous peoples throughout northwestern North America. Although widely harvested, the dietary importance of suckers varied considerably between groups. While they were a focal taxon for many Indigenous fisheries, including those of the Klamath, Middle Columbia River Sahaptins, and Dane-zaa, they were regarded as a famine food by other groups, such as the Ahtna and Coast Salish. The ethnographic data reviewed here indicates Indigenous peoples in northwestern North America used a diverse array of methods to harvest suckers. Angling, nets, spears, traps and weirs, poison, hand fishing, snares, fish wheels, and baskets were all used to varying degrees by different groups to harvest this taxonomic family. Although most Indigenous peoples in northwestern North America primarily harvested suckers during their spring to early summer spawning runs, the timing of sucker fisheries was also variable, with late summer, fall, and/

or winter fisheries all existing in the region. In addition to being a foodstuff, some Indigenous peoples also used suckers as medicine, dog food, bait, and/or raw material for tools and other classes of material culture. The celebration of First Sucker Ceremonies by some Indigenous peoples in northwestern North America indicates the taxon was not only economically important but was at times also spiritually important. Sucker's presence in the mythologies of some of the region's Indigenous peoples and the belief among some that the taxon was source of power further attest to this family's symbolic importance. The variability in the dietary and

spiritual importance, capture, and preparation of suckers that is evident in the ethnographic record underscores the diverse nature of the relationships between suckers and Indigenous people in northwestern North America. Equipped with an understanding of the dynamism of ethnographically documented sucker-human interactions in the region, researchers will be able better to document the complexities surrounding the taxon's harvest, use, and cultural meanings in the deep past.

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New Light on the Antiquity of Chinook Jargon (Chinuk Wawa) from Francis Drake's Exploration of the Northwest Coast

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Abstract *In the summer of 1579, the Golden Hind was leaking, and Francis Drake and his crew of about eighty men and one woman were looking for a bay or safe harbor where they could make their repairs. They found what they called a fair & good bay on the west coast of America. Most history books tell us Drake landed and repaired his ship on the coast of California. Uncritical acceptance of the dominant paradigm of a California landing is, understandably, the norm. However, the location of Drake's so-called fair & good bay is a question that continues to vex scholars because there is no clear, unequivocal information about the geographical location of this bay, and several maps and manuscript accounts relate that Drake ascended the coast near Cape Flattery at 48° north, and careened his vessel and camped in a bay at 44° north, on the Oregon coast. Presented here is a study of several Native vocabulary words recorded by Drake and his men that are compelling sound and meaning matches for Chinuk Wawa words. Historically, Chinuk Wawa was not spoken by Native people on the central California coast or in the Bay Area. It follows that Drake and his crew met people from the Northwest Coast and that some form of Chinuk Wawa was spoken as early as 1579.*

Keywords

Chinook jargon, Chinuk Wawa, Francis Drake

Chinook Jargon, also referred to as Chinuk Wawa, or just Wawa, was the lingua franca and trade language in the Northwest. Its antiquity has been a long-pondered question. F.W. Howay writing in the 1940s theorized that Chinook Jargon was born with the fur trade in the late eighteenth century as a way for the Chinookans to communicate with their English- and French-speaking trade partners (Howay 1943:51). Over time, more French, English, and Nuuchah-nulth words were added. It is understood that Chinuk Wawa developed into a more fulsome jargon by the 1840s. Howay thought it unlikely that a system of inter-tribal trade and travel existed

among the Native people of the Northwest Coast in pre-Columbia times, and if it did, it must have been rare, so he theorized that there would have been no need for a trade pidgin or jargon. This theory persists even though the underpinnings of Howay's theory about Native travel are not supported by ethnohistoric evidence. By the 1840s Wawa was spoken from Northern California to Southern Alaska, and from the Pacific Ocean to the Rocky Mountains (Holton 2004:1). When Native Americans from different language groups were placed together on reservations in the 1850s, Wawa was a common means of communication.

The prominent anthropologist and linguist Dell Hymes considered that Chinook Jargon developed as a tertiary hybridized language among slaves as a proto-jargon which he characterized as a “stable pidgin” (Hymes in Lang 2008:3). Linguist Sarah Grey Thomason found particular phonological and syntactic features of Wawa that led her to conclude, “The most reasonable historical conclusion is that Chinook Jargon was already in existence as a fully crystallized pidgin—used by the Lower Chinook and their neighbors, by their slaves, and perhaps also by their more distant trading partners—before Europeans arrived in numbers in the Northwest” (Thomason 1983:867). Johnson and Zenk discussed the origins of Chinook Jargon in a co-authored chapter published in 2013. Johnson found the arguments supporting a proto-jargon convincing, while Zenk took the conservative stance. Zenk considered that because Chinookan proper was so difficult for non-Chinookans to speak or understand, a “foreigner Chinookan” may have been spoken that was simplified by stripping it of verb prefixes and other inflections (Zenk and Johnson 2013:281–282).

Whether we call it “foreigner Chinookan,” “stable pidgin,” or “proto-jargon,” I present evidence here that prior to the fur trade, people in the region spoke words to each other during trade and social activities that were unique and understood by people who lived beyond the Chinookan and Nuuchah-nulth heartlands.

The question of the antiquity of Chinuk Wawa is elucidated below in part by an examination of Native vocabulary words recorded by Sir Francis Drake and his crew during the ten weeks or so they spent with the Natives. The relevant linguistic material consists of a total of seven words and phrases and one song heard by Drake and his crew (Table 1). Three of these words may be examples of a proto Chinook Jargon, and three may be English words repeatedly said back to Drake by the people who were asking Drake and his men to “go north” and “not to strike them,” words which make sense within the cosmology of people of the central and southern Oregon

coast. The last word on the list may be Hanis Coos in origin, and may mean “sit down.”

Drake was sent out by Queen Elizabeth I in 1577 on a mission to explore the west coast of America, to look for trade, harry the Spanish, capture their treasure, seek good lands to claim that were not previously claimed by Spain, and to reconnoiter for the western entrance of the Northwest Passage. During the voyage, which became the second circumnavigation of the earth, in the summer of 1579, Drake and his crew landed and repaired the then-leaking *Golden Hind* in what Drake described as a “fair and good bay” somewhere on the coast, generally thought to be around San Francisco. The location of this bay, where they spent most of the summer has been a vexed question since the 1850s when the first federal surveys of the coast were conducted (Davidson 1887).

Though Drake’s logs and charts are long lost, various narratives of the landing survive. Some of the confusion about where Drake landed is because the original sources don’t agree on the location of the fair bay. So the debate has come down to what original source was considered more authoritative: the official account by Queen Elizabeth’s appointed publisher, Richard Hakluyt, who put the bay at 38° north around San Francisco (Hakluyt 1589 in Vaux 1963:115), or the five other contemporary accounts that describe that Drake came in on the prevailing winds and currents at about 48° north where he reconnoitered for the Northwest Passage (Drake 1584:31, 1587:50; Davis 1595:59; Chaplain Richard Madox Diary 1582 in Taylor 1932:369; Hakluyt’s abstract of Fletcher’s account in the Harley MS ca.1588 in Vaux 1963:183–184). These accounts recount that from 48° north, Drake turned south to seek a bay to careen his ship. Two of these accounts were written by men who were on the voyage, John Drake and Chaplain Fletcher, and both recounted that this bay stood at 44° north, which is on the Oregon coast (Drake 1587; Fletcher in Harley MS). The Californians put a lot of stock in the official account edited by Richard Hakluyt, and dismiss the other accounts.

Table 1. Summary of Native Word Matches to the Vocabulary Drake and Company Recorded in 1579.

Word list	Drake's Translation	Probable Actual Language	Meaning
<i>Hióh, Hioghe</i>	king	Wawa (Variants include: <i>hi-you-h, hi-yú, hà-yu, hay-yù</i>)	A formal gathering, several, many
<i>petáh</i>	root	Wawa (Variants include: <i>pota, papato, wapato, wap'tu</i>)	Wapato root
<i>cheepe</i>	Bread or root cake made with <i>petáh</i>	Wawa (Variants include: <i>chap-all-ell, Saplil, chaplil</i>)	Bread or root cake
<i>gnaáh</i>	Sing!	Heavily accented English	Go north
<i>tobâh</i>	Herb (later editions it was called tobacco)	Heavily accented English	Tobacco
<i>nocharo mu</i>	"Tuch me not"	Heavily accented English	No touch me
<i>Huchee kecharoh</i>	Sit down	Hanis Coos <i>hats yî'qa tcī Lōwa 'kats</i> (Lyon 2016:26)	Just there, sit down or just continually there he sat

In the San Francisco Bay Area, there are several groups that promote one bay or another as the geographical location of Drake's fair bay; the three most often mentioned are Bolinas Bay, Drakes Bay, and San Quentin Cove. Historians and anthropologists since the early 1900s have tried to narrow down the location by comparing Drake's cultural observations of the Native people in these accounts to the cultures of the people who occupied their favored bay. Their efforts have been unsuccessful, and the question of the landing is California's longest running historical debate. This debate is what one historian called, "the great-grandfather of all questions [in California history]. Unique, baffling, and highly absorbing, it presents an enigma which concerns the welfare of no one, yet challenges the imagination of everybody" (Hanna 1979:4). Over the last forty years, the study of this vexed question has devolved to become the domain of competing amateur historians; as a result, the question of where Drake landed has

become a quagmire that professional historians and anthropologists have largely avoided.

However, a few years ago the present author began an examination of this question and in the British Library made an important discovery: I found an uncensored handwritten account of the voyage that is a draft of the official account, and this manuscript places the bay at 44° north (see Vaux's transcription of the Harley MS in Vaux 1963:184 or the Harley Manuscript 280—folios 80v-90r in the British Library). The manuscript is known to Drake historians and often referred to as the "anonymous narrative," and the writing and style of the manuscript dates it to the sixteenth century, but it is only a fragment, and its origin up to my discovery had been unknown. Historians have always considered it an important narrative of the small portion of voyage that covers the west coast of America, though it differed from the 1589 Hakluyt printed account on a number

of points. A number of passages are crossed out, and there are editorial notations in the margins for inserting blocks of text from the “memoranda” pages to places here and there in the main text. I compared the manuscript with the Hakluyt’s published account and found that the anonymous author’s editorial instructions were carried out and text was placed where the editor indicated. Therefore, this establishes this manuscript as a draft-in-progress made by Hakluyt while he was working up the official account, and importantly, this draft was made before the censors made their changes. This is important to Drake historians because it means that the “anonymous narrative” is no longer anonymous: it originated from Richard Hakluyt’s desk in ca. 1588.

Two points of importance to the question are that the manuscript related that Drake’s “fair and good bay” was at 44° north, and not 38° north as reported in the subsequent printed official version. The differences between the draft narrative and the published account reveal what information the Queen’s censors wanted publicly known—and what they did not, such as content that was likely considered sensitive or subversive.

In the specific case of the landing latitudes, I posit the latitudes were altered as a trick and ruse in order to claim all the land north of the Spanish colonial border which was at 38° north, leaving no unclaimed land on the west coast of America, and the lion’s share for England.¹

In 1908 Zelia Nuttall, the famous archaeologist from the University of California at Berkeley, found a trove of contemporary manuscripts and maps in the Spanish colonial archive that contained reports to King Philip of Spain about Drake’s voyage (Nuttall 1914). These findings prompted her to search other archives where she found even more documents

on Drake and his movements on the west coast. Nuttall came to the conclusion that the official account published by Hakluyt was incorrect and that the manuscript accounts that place the bay further north were the true latitudes Drake traveled. She presented her findings in 1915 at the Panama Pacific Historical Congress in San Francisco, where she asserted that Drake had landed his ship in a fair bay somewhere on the Northwest Coast, not in California waters after all (Nuttall 1915). Her findings were met with coldness from her fellow Californians, in particular the historians at Berkeley, and her findings were never published.

In 1925 Nuttall’s colleague at Berkeley anthropologist Alfred Kroeber compared the four Native words reported in the official account to the vocabularies of Native languages spoken by people who lived on the west coast (the diary of Chaplain Richard Madox had not yet been discovered, and it contained the additional vocabulary of one more word, two phrases, and a song). Kroeber’s study of the first four vocabulary words was inconclusive, but he hoped the language comparison would be “the final test” to determine what language group Drake encountered (Kroeber 1925 in *Handbook of the Indians of California*, reprint 1976:277). He found one possible match, *Hiogh*, which Drake recorded meant “king,” was a fair to poor sound and meaning match for *Hoi-pu*, which meant leader in Miwok. He suggested that the word Drake recorded for a root, *petáh*, may be referring to the Coast Miwok word for wild onion, *putcu*, though the description of this root did not match Drake’s description of its use. Kroeber concluded that the evidence “is too scant to be conclusive but is at least favorable to the interpretation of Drake’s friends having been Coast Miwok” (Kroeber 1925 in *Handbook of the Indians of California*, reprint 1976:277).

¹ For a full discussion of this manuscript see *Thunder go North, the Hunt for Sir Francis Drake’s Fair & Good Bay*, 2019, University of Utah Press, pages 18–31. The manuscript only details a small section of the journey, but in many places the manuscript text is word-for-word to the chapter, or slightly changed and made better by corrections and clarifications than an editor naturally would make. There are whole passages in the manuscript that are not in the final chapter, but these describe events that would not be necessary to include in the chapter, such as Drake’s troubles with his steward, and the pregnancy of Maria, the Black woman Drake freed from her Spanish master.

In the 1930s Tudor historian at Birkbeck College, London, E.G.R. Taylor published two books on Tudor geography which discussed Drake's voyage, and five articles on Drake, his mission, and his movements on the west coast of America (Taylor 1929, 1930a, 1930b, 1930c, 1932, 1934a, 1934b). New material found by Taylor included one more vocabulary word and two phrases that were supplied by a member of Drake's original crew and recorded in the diary of the Chaplain Richard Madox who was on the follow-up voyage (Taylor 1932:360–367). Taylor showed the now fuller word list to Yale anthropologist Edward Sapir and Berkeley linguist Ronald Olsen, both of whom were familiar with languages on the Northwest Coast. Taylor's quest to narrow down Drake's place of landfall by identifying the language spoken there was partly fruitful, and Olson suggested "a Chinook tribe of the Columbia River area might be in question" (Taylor 1932:365).

Taylor's findings were compelling. By 1936 the paradigm was shifting; scholars were looking to the Northwest for Drake's fair bay. Then seemingly out of the blue, the Drake Plate of Brass, alleged to be the actual land claim plaque created by Drake, was found on a hillside overlooking San Francisco Bay. This fantastic find was trumped by the famous Berkeley historian Herbert E. Bolton, and it ended any further consideration of Nuttall's and Taylor's evidence. It was only in 1977 that the plate was declared a hoax, but by then the question had been mostly forgotten and the paradigm of Drake in California was fossilized. My research has found that it is likely that the plate hoax was designed as a ploy to obstruct the Northwest Coast theory of the location of Drake's fair bay, and that the hoax was perpetrated by the historian who authenticated the plate, Herbert E. Bolton, who uncoincidentally happened to be Zelia Nuttall's nemesis (Darby 2019:79–132).

Below I present some of the specific ethnographic and linguistic data I have gathered that I posit will change this paradigm. For a fuller examination of the ethnographic and linguistic evidence, see Darby 2019, chapters 15–18.

It is not a given that Native traditions recorded by ethnographers in the late nineteenth and early twentieth centuries were practiced in antiquity, but the data below demonstrated that a particular tradition that the people of the Oregon coast practiced while fishing predates the fur trade. The practice is described as being widespread, which speaks to its antiquity. As an analog, Isobel Kelly posits that widespread Native basketry designs such as the quail tip design are considered to be of some antiquity (Kelly 1930:432).

In circa 1900 Oscar Brown, one of anthropologist Leo Frachtenberg's Coos informants, described an interesting use of Chinuk Wawa from the Oregon coast that has been overlooked by theorists considering the antiquity of Wawa. Brown related that while fishing on the ocean, you and your fishing companions only spoke jargon to each other—and to the fish. To lure the fish, they pretended they were playing a ball game called shinny with the fish. Shinny is a Native American field hockey game played throughout North America. It was played with two teams whose goal was to shoot the ball into the opponents' goal with a curved stick (Figures 1 and 2). Brown said that a fisherman would call out game directions to the fish in jargon to bring them to their bait. But, once the fish was on, it was time to be silent, and they said nothing until the fish was brought aboard (Brown in Frachtenberg, SWORP notebook 1.5, folder 9, ca. 1900). Brown described other protocols that were followed while fishing; for example, making jokes was prohibited, as was speaking about women or land animals. The Tillamook informant Louis Fuller affirmed that jargon was spoken among his people at sea, and said that besides not talking about women or making jokes, talking about sea serpents was also prohibited (Barnett 1934:74)

Anthropologist Homer G. Barnett found that this practice of speaking jargon to fish and to your companions while fishing was quite widespread among Native groups on the Oregon coast. In his culture elements distribution list,



Figure 1. Coos children posed with shinny stick and traditional rain capes, photographed about 1900–1920. Oregon State University, Horner Museum Corvallis, no. 6580.

Figure 2. Yaquina Shinny stick collected by Leo J. Frachtenberg, 1900–1910 at the Siletz Reservation. National Museum of the American Indian, catalog 4/7532.



Barnett listed the groups who spoke “Jargon at sea” as the Chetco, Tututni, Sixes River, Siuslaw, and Tillamook (Barnett 1937:171). Oscar Brown’s comments on fishing gives us the understanding that jargon was used to communicate with other groups/teams on the shinny course during real shinny matches. Shinny games and ocean fishing were normal traditional activities that have persisted, but the question is, did the tradition of speaking jargon during these activities have some antiquity?

When anthropologist George Lang addressed the antiquity of Chinook Jargon in his book *Making Wawa, The Genesis of Chinook Jargon* (2008:47–48), he singled out two words to discuss the case for the existence of a proto jargon: *wapato* roots and *saplil*, the cakes made from them and other roots. *Wapato* roots (*Sagittaria latifolia*) were a staple for the people who lived in western Oregon, Washington, and British Columbia. These roots were gathered in both the fall, when the tubers form, and in the spring before they sprout (Darby 1996). The roots can be stored fresh or dried, and in taste and texture, the root resembles a potato. Most of the ethnohistoric accounts relate that *wapato* was typically baked whole in the ashes of a hearth, but it also was made into cakes. This word that had many pronunciation variants including *chaplil*, and *chap-all-ell*, *sahpolel*, *shap-e-lill*. Gorman described the *wapato* cakes as being worked into a dough and formed into roundish cakes about three inches in diameter and one or two inches thick (Gorman n.d.). These were fire dried and put away for winter.

Lang pondered the possibility of the antiquity of *wapato* and *saplil* as jargon words in his comment, “Some have imagined traces of this putative pre-contact pidgin Chinook in Lewis and Clark’s *cha-pel-el* “bread-cakes” and *wa-pa-to*, a comestible root... both entered Wawa (as *saplil* and *wapetu*), or perhaps were already part of the trade jargon before Wawa proper was born” (Lang 2008:47–48).

The descriptions of *wapato* and bread cake provided by Lewis and Clark are important. They

recorded the word *wapato* and various versions of this word (*wap-pato*, *wap-e-to*, *wap-pa-too*, *pota*, *wa-pa-tow*, *papato*) over forty times during their time with the people on the Columbia River and Oregon coast, and versions of the word *saplil* seven times by my count (Moulton 1990). These were not Chinookan proper words. *Chaplill* (*saplil*) is a Wawa gloss of the Chinookan term *a-sáblal* for “bread” (Moulton’s footnote 7 on Clark’s entry November 1, 1805 in the online journals, University of Nebraska Press). *Wapato* is a Wawa word, made up of a Kalapuyan root word *pdu* and an Upper Chinookan feminine singular prefix (Chinuk Wawa Dictionary Project 2012:244). The Corps traded for this root which they highly valued, and Lewis noted that there was a brisk trade of great quantities of this commodity transported in large cargo canoes from the region that they named *Wapato Valley* (the greater Portland Basin) downriver to the people on the coast (Lewis discussing trade, January 24, 1806, in Moulton 1990, University of Nebraska Press, *The Journals of the Lewis and Clark Expedition*, Retrieved May 22, 2021, from <http://lewisandclarkjournals.unl.edu/>).

In 2016 linguist John Lyon revisited the word lists collected by Drake and his men, and compared the seven words and phrases found on the Native vocabulary list with vocabularies of Native languages on the west coast (Lyon 2016). Out of the five single words on the list, Lyon found interesting sound and meaning matches in the vocabulary list for three Wawa words. The word *petáh* was described by Drake as a root that can be eaten raw or made into cakes called *cheepe*. Lyon thought these were good sound and meaning matches for the Wawa words *wapato* root and *chaplill*, bread cakes made from this root (Lyon 2016:41). The word recorded for “king” by Drake was *hióh* (recorded as *hioghe* by Madox). Lyon thought this was a good match for the Chinuk Wawa word *hi-yú*, a word that means “a formal gathering,” but can also mean “much” or “plenty.”

Two authors, Earl Coe and Walter Shelley Phillips, included *hyiu* and *hi-yú* respectively in

their lists of common Chinook Jargon words (Phillips 1913:33–34; Coe 1950:28). Phillips described the pronunciation as [hi] as in “high,” followed by [u] as in “union,” with a slight breath sound of [h] at the end: *hi-you-h* (Phillips 1913:33). This pronunciation is a close match for the spelling found in the Madox diary: *Hioghe*. As a testament to its persistence in the Wawa vocabulary as the word for a gathering, *hi-yú* (*Hiyu*) survives today in a number of iterations, including as the name of a retired Washington State Ferry, a beer brewed in West Seattle, and the name of a Seattle service club established to produce a summer festival (i.e., a social gathering), appropriately called *hy-yú*. In Chinook Jargon *hiyu* has several variations including *hay-yu*, *hà-yu*, *hy-iu*, *hy-yu*, and *hay-yù*, among others (Chinook Wawa Dictionary Project 2012:81–82).

Besides the jargon words, there is one fair match of a possible Native phrase. In his analysis of the phrase Drake recorded for “sit down” *huchee kecharo*, Lyon found that it partially corresponds with the Hanis Coos phrase *hats yí’ qa tcī Lōwa’kats*, meaning “just continually there (he) sat.” In Hanis Coos, the word *hats* is often used at the beginning of a sentence and serves to introduce a new idea and was conventionally translated as “just,” though it has a stronger emphasis than that (Frachtenberg 1922:410). If *huch-* of *huchee* is the Hanis Coos word *hats*, the second syllable *-chee* could be *tcī*, which means “there.” Regarding *tcī*, Lyon thought that this high-frequency particle “could plausibly have been present in a phrase meaning ‘sit down,’” i.e., “sit down over there” (Lyon 2016:28). Lyon considered that the final syllable *-roh* may be the first syllable of the verb *Lō wa’kats* which is the word for “sit” or “sitting,” though this meant that the last two syllables were dropped when the word was recorded on the word list (Lyon 2016:28).

Lyon could not find exact matches for the other words or phrases on the list when he compared them with Native languages on the coast. *Gnaáh*, the word Drake recorded for “sing” was particularly troublesome, and Lyon could not find any close matches. The phrase

no charo mu was interpreted by Drake to mean “tuch me not” was also problematic. In the end Lyon concluded that Coast Miwok was the best match for the language Drake encountered because he believed Wawa did not predate the fur trade. Lyon qualified his findings with the comment that if the group Drake contacted was speaking more than one language and a form of trade jargon that predated Chinook Jargon, “a reasonably full composite list of possible matches may be assembled” (Lyon 2016:2).

The Wawa matches and the Hanis Coos phrase for “sit down” bring us to a list of possible matches, though *Gnaáh* and *no charo mu* are unresolved. However, if we examine the context that these words and phrases were uttered, and the cosmology of the people Drake encountered, we achieve matches that demonstrate that over the ten or so weeks Drake and his men camped on the beach, they met people who lived on the central or southern Oregon coast. These people first spoke to Drake in Chinuk Wawa, and Hanis Coos, and later tried to speak back to them in English, though it was so heavily accented that Drake and his men did not understand what they were saying except for the word for tobacco, which was pronounced as *tobâh*. What follows is a brief description of the events at the landing. For a full narrative of events at the landing written by Richard Hakluyt by abstracting the journals of Drake and Fletcher, see Vaux 1963:115–134.

Drake and his crew of 80 men needed to careen the approximate 120–140 ton, 100-foot-long ship over on both her sides to repair the leak in the *Golden Hind*. In order to do that, they needed a well-protected bay with a sandy bottom. When Drake and his men arrived in the fair and good bay, it was likely they fired their cannon as an announcement and demonstration of their power. Soon, an old man in a canoe left the shore, and even though he was a great way from the ship, he spoke continually as he paddled out to the *Golden Hind* “with great expedition” (Drake and Fletcher in Vaux 1963:119). When he was close, he began a solemn oration accompanied by gestures “turning his head and body many

ways.” When he was finished, he returned to the shore, but shortly came again a second, and then a third time when he brought a gift of a feathered headdress and a basket of herbs (probably tobacco) which he cast into a boat that was tied to the ship (Vaux 1963:119–120).

During the next three days, Drake and his men brought the ship close to shore where they unloaded the treasure they had captured from the Spanish, set up tents, and built an enclosure for protection. After three days, the Natives gathered on a hill, and with the men leading, they proceeded down to the beach to meet the newcomers. Drake and Fletcher related “yet with no hostile meaning or intent to hurt us: standing, when they came near, as men ravished in their minds, with the sight of such things as they never had seen or heard before that time” (Drake and Fletcher in Vaux 1963:120). Drake motioned for them to lay down their bows, and they did. Drake gave them linen shirts and cloth and “good and necessary things to cover their nakedness” (Drake and Fletcher in Vaux 1963:120). The Native people treated Drake and his men with great veneration, as if they were gods, though Drake’s men made a show of eating and drinking in their presence, “giving them to understand that without that we could not live, and therefore were but men as well as they” (Drake and Fletcher in Vaux 1963:120). The Natives brought gifts of feather bundles, hair net cauls, and quivers of arrows made of fawn skin, but they left Drake’s gifts of linen on the beach (Drake and Fletcher in Vaux 1963:121).

Two days later the Natives made another appearance, this time with many women who in a kind of hysteria scratched their faces until they bled, and threw themselves down on “knobby hillocks, stocks of wood, and pricking bushes” again and again (Drake and Fletcher in Vaux 1963:123). The women tried to offer their blood to the Englishmen, trying to clutch them in their arms, and even chased some of the men who escaped into their tents to avoid these bloody embraces. Drake and his chaplain interpreted this behavior as the women offering a “bloudie

sacrifice (against our wills)” to the Englishmen they believed to be gods (Drake and Fletcher in Vaux 1963:123–124).

Three days later, the word of the arrival of the strangers to the bay had spread, and a large group of Natives had arrived and were assembling and coming in a processional down the hill to meet the English. Drake and Fletcher noted that among those assembled was a man that was “the king himself, a man of a goodly stature and comely personage” who was surrounded by one hundred tall and warlike men Drake interpreted to be the king’s guard. The king sent out two messengers who orated, one in a soft voice, the other in a more audible voice, for about half an hour (Drake and Fletcher in Vaux 1963:124–125).

It was likely this occasion that Drake and Fletcher first heard the word *Hióh*, which they interpreted was an announcement of the arrival of their king, and that he was proposing an audience. The Native word *Hióh* (also spelled *Hioghe* in the text) is a good sound and meaning match for the Wawa word *hi-yú*, which in this context may have meant “formal social gathering.” It may be that the Native messengers were uttering this word to Drake and his crew to inform them that a formal social reception was imminent, and in this context, Drake and his fellow Elizabethans misconstrued this word to mean “king.”

When the assembled group arrived and sat down, Drake and his men were given gifts, including what Lyon considered and I posit was the match for *wapato*: “a root which they call *Petáh*, whereof they make a kind of meal, and either bake it into bread, or eat it raw” (Drake and Fletcher in Vaux 1963:126). It follows that *cheepe* the Native word that Chaplain Madox recorded for the cake made from this root was actually the proto Chinuk Wawa word *chaplill* (for the Madox word list, see Taylor 1932:369).

Drake and his crew arrived in this bay in late June and likely announced their arrival with cannon fire, which would have been a startling thing to experience for the people at the bay because it sounded like thunder and looked like

lightening. It was even more shocking because the personage that was responsible for the noise arrived in a huge and strange vessel, and he and some of the men carried arquebuses and were dressed in gilded and polished armor.

The traditional people who lived on the central and southern Oregon coast who heard and saw the cannon fire may have believed that the supernatural being Thunder had arrived. The ethnographic material the present author studied from central and southern coast of Oregon describe Thunder as a supernatural being that needed placating. Sometimes when it thundered, the Native people believed that Thunder was chastising humans for wrongdoing (Driver 1939:401). The Coos people of the southern coast considered Thunder to be the father of all fishes.

Anthropologist Melville Jacobs noted that if people mistreated or disrespected a fish, it would put them in peril because Thunder would roar and destroy things. A storm might come up, for example, if leftover fish was burned or thrown into the fire, and it was important that fish entrails were carefully discarded into the river (Jacobs, Series 10, Box 99, Folder 35: Fishing, n.d.). Tobacco along with miscellaneous things such as paint or things to do with fishing, a paddle or a little part of a fishing net, were thrown into the fire and given to Thunder by the smoke as an appeasement. Then the people would shout, "We are compensating you. Go away! Go on North!" (Jacobs 1939:97).

When it was thundering, it was also important to call out to Thunder not to strike them with lightning: "Don't harm us here!," and to tell Thunder, "Go north! where they mistreat your children (your fish)!" (Jacobs, Series 10, Box 99, Folder 19: Cosmology, n.d.). Also, it was understood that Thunder liked human blood, which explains the behavior of the women who offered Drake and his men their blood as described above. The people believed that the blood sucked from humans by mosquitos was deposited by these insects onto the trees in the mountains, where Thunder would obtain it with his lightning. Jacobs and others recorded several

traditional stories where Thunder asks mosquito or horse fly where they get blood, but mosquito and horse fly do not say because it would be dangerous for people if Thunder knew where blood was obtained (Jacobs, Series 10, Box 99, Folder 19: Cosmology, n.d.; Curtis 1907:206).

Throughout their time onshore, from mid-June to late August, the Natives burned tobacco, feathers, necklaces, and other items in the fire as gifts or sacrifices in smoke to Drake and his crew (Fletcher in Vaux 1963:184). As the *Golden Hind* was sailing out of the fair bay, the Natives "being loath to leave us, they presently ran to the top of the hills to keep us in their sight as long as they could, making fires before, and behind, and on each side of them, burning therein (as is to be supposed) sacrifices at our departure" (Drake and Fletcher in Vaux 1963:134).

With the understanding from the uncensored Harley manuscript account that Drake was on the central and southern Oregon coast and landed at or around 44° north, it follows that Drake encountered people from Native groups who shared an understanding that Thunder was the god of fishes, that he liked human blood, and that when it thundered you were to call out "Don't harm us!" and "Go North!" (Jacobs, Series 10, Box 99, Folder 19: Cosmology, n.d.).

Looking at the remaining words on the word list, it can be worked out that Drake mistook two of the phrases and one of the words for Native words, but they were actually English words said back to Drake and his men. The Natives' accent was too thick, and with the exception of "tobacco," these words were not understood to be English. The Hakluyt account of 1589 described it only as an herb, but in Hakluyt's second edition published in 1600, *tobâh* was corrected to "tobacco."

The phrase *no charo mu* was interpreted by Drake to mean "tuch me not" which is a correct meaning match, but like tobacco, it was English. The phrase *no charo mu* is more likely "no touch me" (don't strike me) in heavily accented English to Thunder. The word which Drake thought meant "entreat to sing," *gnaâh*,

likely was “go north” in English, an imperative to Thunder to “go north where they mistreat your children, the fishes.”² Drake thought this phrase meant “entreat to sing,” and responded by singing hymns and psalms, which appeased the people.

The accounts of the English chronicles at the landing give a presence to the people of the fair and good bay (albeit through the archaic and smoky lens of an Elizabethan). The vivid descriptions and wealth of information present in the Englishmen’s detailed cultural observations,

though naive, offer the first picture of the Native people of this part of the Northwest Coast, and answer the question of the antiquity of Chinuk Wawa. These matches demonstrate that Drake and his men landed on the Oregon coast, rather than the received notion that they were on the California coast. The Native protocol of speaking Wawa to the fish while fishing in the ocean (while pretending to play shinny) seems to have antiquity as well, and it follows that when they first addressed the god of fishes, Thunder, they would naturally speak in Chinuk Wawa.

2 Some English sounds were unpronounceable to the Natives. If the people were trying to tell Thunder to “go north” in English (Thunder/Drake’s native language), it would have sounded like *gnaáh* to the Englishmen. This is because neither the /th/ as in ‘north’ sound [θ] nor the plain alveolar /r/ sound are found in the languages on the central and southern Oregon coast.

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The Social Mechanics of Hop Production: The Relationships Between People and Machines in the Yakima Valley Hops Fields

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Abstract *The Yakima Valley is said to produce more than 75% of hops (*Humulus lupulus*) nationwide; the vast majority of the labor required to ‘train,’ grow, and harvest these hops vines is performed by Mexican farm workers, who interact on a daily basis with industrial machinery. Like the vines, these machines require constant attention and care, propitiating a unique kind of relation between workers and their instruments of work—even if they do not own them. In this presentation we deliver a series of ethnographic vignettes that work as a companion to the visual rendition of the dialogues between workers and their machines at the peak of the harvest season. By personifying the machines, farm workers cultivate and manufacture pride in their labor as well as their identity within society. As a result of our trust relations with these farm workers, we can expose an otherwise vaguely known world of man and machine in the Yakima Valley.*

Keywords

Farmworkers, migrants, machinery, hops, care, Washington state, ethnography

Introduction

Dr. Rodrigo Renteria-Valencia laid the initial groundwork of this project in the summer of 2018. Funded the following year through a Yakima Valley College grant, a team grew with the addition of Jazmin Gonzalez and Mackenzie Stinson. The team of three traveled out to the hop fields of Toppenish in the lower Yakima Valley several times a week at the peak of the harvesting season. Our field site was Cornerstone Ranches, “a fifth-generation commercial hop farm,” operated by the grandson of Amos Gamache (*Cornerstone Ranches* 2020). Our days in the field might encompass as few as two hours or as many as ten. We proudly donned our uniform of starchy, neon vests paired with bright

yellow hardhats on these mornings that would eventually resemble the rest of the clothing in the field—dusty.

Our intent in conducting this research is to build upon the foundation of ethnographic and philosophical research of labor by drawing forth the voices of field workers and their experiences. The chief method performed was participant observation, which is the insertion of oneself into shared activities of a group—activity that was paired with a visual documentation of the people and their work. In this tenet, we aim to pair and complement a visual rendition of our fieldwork experience through a series of themed vignettes. The purpose of each vignette is to provoke a thoughtful reflection on how people take for granted the strenuous labor that is

required for an everyday commodity that we enjoy, such as beer. In the process, we strive to give an account of the close relation workers have with the machines they use during their daily activities on the fields; machines with whom they forge not only a functional alliance, but a personified bond. In their view, a successful harvest season demands everyone, people and machines, to work in synchrony like an acephalus organism; each part is fundamental for the whole. Similarly, our experiences as well as the reality of these workers is produced through detailed personal accounts, quotes, and the story of how we went out into the hop fields to watch, listen, and work alongside these dedicated laborers.

Máquinas en el Campo—“Machines in the Field”

We pulled up at the edge of the field between rows of harvested and uncut hop vines. The lush, readied vines looked regal next to their chopped, prickly counterparts. The air was cool inside the car, however, upon exit the nose and throat were filled with the presence of bitter, citrusy hops.

We arrived during *comida*, a meal break, and the respite paired with food was being enjoyed in silence. Rodrigo eagerly chatted with the lead combine driver, Don Lupulo,¹ who was eating tacos, tortillas, and frijoles in the cab of his truck next to his wife. He spoke about the forty years he had been working here, machinery operation, farm equipment breaking down, and the physical labor involved in fixing them. With a long, gregarious apology, Rodrigo dismissed us from interrupting Don Lupulo's lunch, and we stepped back to examine the behemoth of a harvesting machine—the combine.

“YAKIMA HOP COMBINE” was written in all caps across the side of the faded orange exterior. It rose above the height of a semi-truck. The top supported scaffolding to carry workers whose job was to adjust the wire trellis of the vines as they drove under it to avoid entanglement with

the machine. The vines reach a height of around 15 ft, and the combine would drive a mere 4 to 6 inches below, depending on the shape of the terrain afoot. The front end of the combine drove straddling hop lines. These had been previously cut along their bottom securement by twin blades of a blue tractor equipped with jagged shears. As the combine cuts the top ends of hop vines, they are swallowed by the gaping mouth that simultaneously processes the length of the vine. This is done by a few key components in the combine; *las bandas*, the belts that drag it in, and the rotating wire spur “teeth” that chew the vines and separate the hop flowers from their branches. Then, the remaining chunks of the plant and separated hop cone get chucked out through the hindmost belt into the beds of the attached *tronques*, trucks, waiting below.

The combine reached the end of a line of hops and was thrown into idle, then a guttural snort as it turned off. Men exited from the upper scaffolding and scrambled down the sides. It was time to clean the machine. *La goma*, or gunk, is one of the many hazards in the field—a fire hazard, to be exact. As the hops are processed, splinters, sap, dust, and chunks of drying plant collect in the cracks and crevices of the combine. Constant upkeep is important to avoid *incendios* (fires) to the collecting mulch mix. There are three main parts to upkeep: manual cleaning, pressurized air cleaning, and oiling. The first part consists of pulling larger debris and branches from the machine, followed by a spritzing of air to clear dust and smaller pieces. The finale is oiling the belts and gears to ensure everything will run smoothly. We were blitzed with the air hose, letting out yelps of surprise to the amusement of Don Zeus, a veteran of the field. We watched as he ambled to the back of the machine and, without looking, unearthed a water bottle from a pile of hops in one of the machine's crevices. We assumed that it had gotten covered during the process on accident but corrected this thought after he finished his drink and reburied the bottle with the same nonchalance. This plant

¹ Names have been changed to reflect hops and their varieties.

occupied crevices and space everywhere—dust in the air, leaves tucked into pockets, and sticks poking out of fluorescent vests. There was such an excess that it might as well have held some use for the workers, like shade for a water bottle. The men completed bathing the great orange box with ease and savored the short break that followed—giving us the opportunity to contemplate our own burgeoning relationship to the combine.

The Braceros

The production of hops is a labor-intensive activity, especially during the small window for harvest from August to September. This annual productivity has been traditional for the Yakima Valley since the 1860s, and the region has since become one of the largest hops producers in the United States (Gamboa 1981). The migrant culture has also long been a staple in hops and produce harvesting and was encouraged by the United States government during wartime crises.

The scarcity of working hands during WWII and new technological developments during the mid-twentieth century created vacancies in the productive agricultural economies of the west (Quintana and Rosales 2009). This issue resulted in the Mexican Farm Labor Program Agreement between the U.S. and Mexico signed on August 4, 1942 (Bracero History Archive 2020). It aimed to solve the desperate need for agricultural labor in the U.S. and was a contract to transport seasonal migrant labor (Gamboa 1990). This agreement established the first legalized control of migrant workers from Mexico entering the U.S. More legislation followed with the Mexican Labor Agreement signed into law as PL-45 in 1943 (Bracero History Archive 2020). It guaranteed a minimum wage of 30 cents per hour, which was the same for American citizens at the time. The Bracero Program, as it was informally called, lasted from 1943 to 1964, and it revitalized America's agricultural economy. Washington State's labor

became supplemented by “either *braceros* from Mexico or Chicano laborers from the Southwest” (Gamboa 1981).

A second program called PL-78 was started up in 1951 during the Korean War to expand the migrant worker population (U.S. Department of Agriculture, Report 77). This program was originally meant to last just two years but was extended until 1963 and focused on regions in the Southwest like Arizona and Texas (U.S. Department of Agriculture, Report 77). Both programs caused divisive opinions from farmworkers. Some praised the Mexican migrant workers as some of the most diligent they had experienced, while others questioned the migrant workers securing labor positions that became highly coveted after the war ended (Gamboa 1981). The program ended in part due to the *Bracero* strikes from 1946–1947 for better treatment and equal pay to their Anglo-Saxon counterparts (Garcilazo 1991). Many Braceros also stayed in the United States after their contracts ended. The U.S. government retaliated with “Operation Wetback” ran by the Immigration and Naturalization Service. Many American born children of immigrant parents were wrongly repatriated as a result of this operation (Bracero History Archive 2020). This has not stopped the migrant labor culture, however, and there have been thousands of Mexican families migrating to the central valleys of Washington for seasonal work ever since (Gamboa 1981). The workforce provided by migrant laborers has proven to sustain the thriving agricultural economy of the state, and no doubt helped earn one of Yakima's nicknames “The Fruit Bowl of the Nation.”

El Esfuerzo—“The Struggle”

We watched as awed spectators one day as men rushed over to chain a sputtering combine up to a small blue truck. It struggled to pull the bulky machine out of the moist dirt. The scene was messy as everyone shouted across one another, and workers looked helplessly amused

that this situation was occurring (yet again). Some seemed happy at the fact that this was a small break for them, making light jokes while they paused and caught their breath. Those that were struggling to get the combine out of the mud seemed frustrated, their eyes squinting as they fought the reflecting light of the bright white clouds. There were voices in the back saying “*le vamos a seguir?*” (“should we keep going?”) and “*todavía nos falta mucho*” (“we still have a lot left”). The voices spoke in exasperated tones to one another, filled with doubt—would they continue to work for the day? Would their work push further into November? The workers were more worried about the work they needed to finish, rather than their own risk in the mud from the previous night’s rain. The notion of risk was merely a thought. Their occupation was to hustle, they worked for hours—sweat, dirt, and grind. It was chaos in the hops field, people running from *campo* to *campo*, shouting and making sure the machines were functioning. The workers were always switching between crooning the machines and cursing at them. This personification developed with time spent in the field. It was extended to the hops as well, just as hops have different varieties, they also have multiple “personalities.”

Lupulo—“Hops”

Hop plants are a type of climbing vines called bines, which are similar to vines, but without the tendrils. The part used in brewing beer is the hop flower, or cone. This cone-shaped bud has pale green petals with a papery texture and is full of perishable resins. Their aromatic composition creates flavorfully bitter beer when used early in the brewing process, and aroma when added at the end (*All About Beer* 2019).

The drying and baling of hops occurs after hop processing. Cornerstone Ranches Kiln is connected to its main processing plant by a tenuous belt that drops hops right into the belly of the kiln. A quality load of hops is baled right as a batch in the kiln reaches 10–12% humidity.

This is the optimum range they strive toward, according to one of the hops kiln operators on the farm. The humidity of a bale of hops is one of the most important factors in selling, and it ensures freshness and prime flavor upon delivery to a brewery. This is one of the prime reasons that the plant is harvested in as short of a time span as possible, as the longer they dry out, the more variable the humidity becomes. Drying hops can take anywhere from 10–14 hours.

Las Mujeres del fil—“Women of the Field”

“Puedo ir contigo arriba?” (“Can I go with you up there?”); I craned my neck, squinting against the sun, as I sought permission to climb up into the back of the hop truck for the next line of harvesting.² “Si, si quieres...” (“yeah, if you want”) Crystal answered me. She scooted over on the already narrow board that situated her against the upper portion along a boarded wall in the bed. I clambered up the thin metal ladder and flopped over the edge, barely sharing the space on our meager ledge.

“No, no hay espacio, vete pa’ allá” (“No, there’s no room, go over there”), she motioned for me to flip back over the edge of the bed and hold myself up on the ladder. It seemed to me to be a precarious position to be in, hands clenching thin, metal bars, but it was nothing out of the ordinary for her and the rest of her team. For a while I simply watched her work and took one-handed polaroid shots of the view. When the truck filled up about two-thirds of the way, she moved over and waved her hand for me to come in. It was exciting for me, a student, to get to see a live version of “how it’s done.” For Crystal and the others, however, this twelve-hour workday was one of several that stretched into even longer hours. When I situated myself behind her, I admired her aloofness in shuffling hops back farther into the bed of the truck. It was loaded from the front, and hops were shoved toward the back with either the pitchfork, hands, feet, or anything that could

² This vignette is written partially in first person from the perspective of author Mackenzie Stinson.

keep up with the pace of the combine driver. After some time, I offered to grab the pitchfork. She smiled at me with a “you sure?” look, but gratefully situated herself for a short break against the footboard. I am not a stranger to labor, but the back-breaking longevity of hop harvesting is sweaty, unrelenting work. I found my rhythm working the long awkward pitchfork, but soon became sweaty and exhausted. When it came time to switch to an empty truck, I busied myself with taking pictures.

Crystal and one of her day partners, Chinook, shared this shift of driving trucks to and from the hop fields to be filled, emptied, and driven out to fill again. When I asked Chinook how many truckloads they fill a day, she replied “como quince o más por el día” (“like fifteen or more for the day”). The number of truckloads, however, was less important to how many fields they wanted to clear in a day. They strove to empty acres at a time. The rapid culture of harvest labor is exhibited in the frenzy of cutting and transporting hops to the processing plant.

Once we got back to the plant, Crystal took the free time between unloading trucks to poke around the plant for garbage. In total we collected about a quarter of a plastic bag. She has spent the last twenty-three years working in different areas of this ranch. Sometimes seasonal, other times she works year-round. Her family lives in the valley, and her four to fourteen-year-old daughters occasionally come and work the apple fields with her. She shared knowledge about apples, such as the different varieties as we passed a field of them and different seasons for separate produce. While she prefers the work and labor of harvesting apples “es mas fácil, si” (“it’s a lot easier”), she expressed that the pay for hop harvesting is better, usually about twice as much.

Chinook never really complained much on the job. Riding with her in the truck one day, we prompted her with questions about her personal life and what she did outside of the ranch. She said “no tengo la energía para nada... siempre estoy cansada” (“I don’t have energy for

anything... I’m always tired”). The labor during harvest kept her too exhausted to participate in leisure activities. Beyond the peak season she said she liked to float the river and drink beer, but not any craft beer; “no me gusta, me gusta Modelo” (“I don’t like it, I like Modelo”). The preference for imported beer over regional craft beer caused us to chuckle and appreciate her loyalty to the imported Mexican lager.

One day we followed another machine, the top cutter, as it cruised through the fields. This *maquina* was much faster at collecting than the combine. It didn’t need to accommodate for processing time as it drove through; the vines were simply severed from their upper ties along the wire and dropped into the awaiting truck beds below. There were two women who sat in the beds of the trucks that would guide the vines in to avoid spillage.

At one point we heard shouting and whirled around to notice two other field workers, Mosaic and Galena, nonchalantly dangling out the back end of the trucks that preceded the top cutter. Mosaic was gesturing to Cascade, the top cutter operator, with exasperated hands. I couldn’t make out what she was saying, but soon realized she was trying to guide him, shouting suggestions on how far to trail away from the vines.

This young woman was barking orders at someone we had perceived to have higher authority than her. We looked at each other and chuckled, “she’s telling him what to do? Atta girl.” Her confidence came from her experience in the field. There is pride in the labor done by the community of workers during long hours of harvest, and there is the respect earned by those performing the unseen, dangerous tasks for a finished product.

The resilience of these women is incredible. Every summer they come back and perform the same laborious tasks for tedious, hour-heavy shifts. When they go home, they’re exhausted, and when they return the next morning, they are exhausted. Some are mothers, some students, and others are working toward life goals amidst the dust and grime in the hop fields. Their knowledge of the process and the intricacies of hop production is not to be underestimated, for they maneuver effortlessly to

the cadence of the machines they work adjacent to. It is important to note the roles they play in the field as well as those they play at home, and how they often must command respect amongst the machinery.

The work being done in *el campo* was stereotyped as a man's job—a job too dirty, too difficult to handle, and too rugged for a woman. Crystal, Chinook, Mosaic, Galena, and others taught us differently. They had to deal with the obligations of labor and often spoke about their challenges providing for their children. The women's struggle in the field poured into their identity; their stories were their children's dreams. They were not just workers, they were providers—providing support, providing guidance, and providing an image of women in the field.

La Familia Del Campo

El Dorado was a charismatic individual. Our first encounter with El Dorado was witnessing him toiling between the hops lines in his silver truck. With his blasting Banda music, he rolled his window down, peering his face through the window, while he picked up massive dust clouds that trailed behind him. We were informed that he held the field record for zipping along the narrow lanes between hops. El Dorado spoke to us about his time in the fields; he had worked all year long, all seasons, from fruits to hops. But what he spoke most fondly of was his immense pride in his sister.

One day in the fields, El Dorado pulled up to us as we were taking footage of the top cutter crew. He pointed out the young woman in the yellow sweater stained with green hops smears: Mosaic. Her face and her body were completely covered, and she had used socks with holes ripped into them as protection for her hands. In the act to demonstrate her work ethic, El Dorado reminded us she was the hardest worker there, yet the youngest among them all. She was there to make money, but her aptitude to work demonstrated more

than that; she was bold and confident in her tasks. Mosaic's reality differed from her brother's slightly. During the remainder of the year, she would return to Central Washington University, where she was a first-generation student pursuing her bachelor's degree.

Galena, a woman who spoke about her daughters, was full of emotion. She was always attentive, and she spoke of the hard work that her fellow *campesinas* endured:

Veo a Mosaic, y es muy trabajadora, cumpla con su trabajo, nunca se queja, en vez de disfrutar su verano, la muchacha está trabajando como nosotros. Nunca he visto a alguien como ella en el fil. (I look at Mosaic, and she is a hard worker, finishing her job, never complaining, instead of enjoying her summer, the girl is working like us. Never have I seen anyone like her in the field.)

Her young spirit was loud in the field as she navigated difficult tasks. She knew her role, yet she had no fear of correcting someone to effectively help the group. She was youthful and growing, in her own sense.

Her job was to continue shuffling vines into the bed of the truck, amongst the smell of skunk and citrus together. The scent to the workers was haunting and evoked mixed feelings. Many would mention how far it traveled. Chinook was quite disgusted by it, "que rico...y ácida" ("how rich, and acidic"). Crystal had also developed a certain distaste for them; "El olór me enfada" ("The smell makes me mad"). They seemed so tired of the smell, the stains, and the dust, but proud of the earnings that showed they had completed a hard day's worth of harvest. They understood the importance of their role amongst the whole. Labor is something pure and genuine. It's the hands, it's the sweat, and it's the individuality mixed into the monotony of mechanical work.

El Corazón—“The Heart”

We entered the processing plant of Cornerstone Ranches around 6:30 pm. We called it Frankie, referring to the fact that the machine itself was a myriad of parts connected and added at different times for different reasons. Only a few parts remained in the machine that held similar origin stories. It was well-lit in the daytime by large, second floor windows, but during the night shift, it was lit by sharp, fluorescent lamps and light fixtures that delivered an off-yellow glare.

By now we were accustomed to entering at will, as long as we were careful and announced our presence, but this new atmosphere caused us to hesitate as we traversed the stairs. The utter openness of the operating gears, belts, and fans still felt like you had to keep small to avoid being ravaged. Safety precautions, of course, had been installed, like the chunk of wood underneath a belt that only offered a light head whack rather than a face scathing from the moving rubber. It was a *mezcla*, or mix, of wooden, rubber, and metal parts. Some other factories in the region were described to us as “hospital-like, with all that stainless steel.” This was like looking back at the early 1940s hops production processing. Metal was reinforcing wood that supported rubber belts held together by spokes that were interwoven into wooden planks rotating on old, iron gears.

The focal point and pride of the plant, however, is *El Corazón de la Máquina*, the Heart of the Machine. It was a caged section of some of the original hardware used by Graham’s grandfather’s plant during the time when the ranch was called Amos Gamache. This section was the pinnacle of all tours headed by Graham Gamache, the current owner and inheritor, and it was easy to see why. *El Corazón* is a conglomerate of rotating gears and wheels that toss hops to and fro. It separates the stems and leaves from the bud of the hop in one of the many steps designed for processing. Whirs and thumps, snicks, and metallic scraping complete a steady, autonomous beat. There is plenty of

movement to keep the observer engaged, but it is really the beating sounds that provide such a tantalizing effect.

There was a unique section upstairs that displayed a myriad of original art pieces. They were carved, drawn, and sharpied into a rest bench overlooking some of the machinery segments. This retro graffiti was lovingly, and sometimes aggressively, placed on the seat of the bench, consisting of naked women and names of previous workers. There were also pictures of faces, names, crosses, and breasts elsewhere. One of our friends and workers that night, Citra, pointed out her favorite addition: a face drawn over a knot in a board that provided a perfect, surprised pout. We compared each of our favorite lewd drawings, and Citra pointed out her name carved up in the hall of fame. History has been marked into the machine itself, depicting the lives of workers from the past to the present. Boredom, creativity, and safety concerns were etched straight into the wood. If there was a subconscious to the machine, this was its physical location. The bench was the diary upon which people voiced their daily thoughts and marked their existence.

Mezcal and tequila became a topic for discussion (a fine mezcal is Citra’s favorite), as well as her dreams of attending school to become a psychologist. She is concerned with the “problems of people’s struggles, especially the ones we provoke upon ourselves.” It is intriguing how people can oversee complex machines, falling into the rhythm of pressing, listening, and working as machines themselves, yet still dream and aspire about human accomplishments at the same time.

When we asked how it was possible to hear one another during machine hours, we were told that they don’t really have any type of pidgin sign language, but more so the workers memorize both healthy and unhealthy machine sounds. *Los sonidos de la máquina* (“the sounds of the machine”) require workers to develop an acute listening sense for. A healthy sound means everything is operating as it should in the

machine. An unhealthy sound is when something might be operating askew, or there is a jam. They must be quick to notice the different tones in an otherwise cacophonous environment, and sound a buzzer, *la chicharra* (cicada), which will warn that a part of the machine must be shut down. Coincidentally, it also signals break time. Several unmarked sections of railing and floor were the ideal listening zones. We were brought over to a small corner of the floor and told to listen to the wall of fans. If focused, most of the other sounds would drown out and the distinct noise of hops leaves thrown against chicken wire and the whirring of fan motors became present. Another section was for listening to belts; the whipping sound of rubber and the low grinding of revolving wood could be picked out. Chains clanging and plant matter ripping apart was distinguishable at the mouth of the plant. And, of course, *El Corazón de la Máquina*. Even those who consider watching over the machine mundane still show respect for the heart.

Manos de Oso—“Bear Hands”

One day when we went out, we aspired to stretch our comfort zone and find new people to speak with. We shuffled over to the mouth of the fontaine, where workers stoically loaded long, gnarled hop vines onto what looked like iron meat hooks. These hooks slid down from the top level of the plant along a track and crashed into line for loading. Once encumbered, a worker would jerk the hook down, aligning it with a circuit that would mechanically raise the entire vine vertically up to the second floor opening of the processing plant. Vines were slowly pulled through a crevice as metal teeth raked at them continuously, chewing apart the hop buds from their vines. From there the hops are further transported via belts to other mechanisms for separation and refinement.

In order to get a better look, we climbed up a metal support beam to see exactly how the vines were latched to the hooks. Being entangled as much as they are, workers strive to locate a

thick section of vine, about a quarter down the length, to lift and set on the hook. It's important that the vine is fastened securely, because not only does the hook pull the vine (around 12 feet long) vertically, it also detangles it from the rest of the vines in the bed of the truck. Workers must be smart about how they load the vines, as there is little time to scrutinize. A vine that is too tangled below others will jerk its counterparts about, disorganizing them, and this leads to more time spent pulling apart vines and less time loading them. Trucks must be unloaded quickly to keep pace with the machines out in the fields.

After a brief introduction to some workers that were at ground level sweeping, we started chatting about the work with one worker, Simcoe. He was describing how many trucks would come in during the day and how long it takes to unload each one. The labor looked strenuous on the back, and he confirmed this. He also introduced us to another worker after a truck bed was cleared ahead of schedule. *Manos de Oso* was his nickname, meaning “bear hands.” He had developed layers and layers of calluses on his fingers and palms during many seasons of hard labor on the ranch. Several of these were caused by getting nicked by the hook, as well as getting them coated in the sticky secretions from the vine. When he proudly displayed his gnarled fingers and palms to us, it was difficult not to cringe and feel objective towards the way his job tore at his body. He worked a strenuous job, he was aging, he was not secured by any benefits, and here he was, gleefully showing us battle wounds.

El Grito—“The Shout”

On September 14th, just over at Heritage University in Toppenish, the celebration of “El grito” was hosted for the community members of the Yakima Valley. El grito signified the “the battle cry” and was explained as signifying “en el nombre de una mejor vida” (in the name of a better life). There would be a gathering of

locals to yell out “Viva Mexico! Viva Yakima! Viva Wapato!” and any other region that they belonged to. It was humbling to be surrounded by the community members and to learn about the importance of this day, to those who celebrated here in the States carrying their Mexican identity to the Valley.

The night was calm, and everyone was smiling as we passed by. Several colorful banners were hung up and the smell of churros, tamales, champurrado, and other Mexican soul foods filled the air—making it difficult to deny a bite. We³ walked through cement pavement and onto the grass, there we came across tables that had games, events, and raffles in which children were entertained, while the mothers stood laughing and partook in a healthy dose of *chisme* (gossip). The men walked around with their sombreros and pointed boots, many dressed in their stylistic cowboy looks. The students of Heritage and others in the community, Mexican-Americans, were now reproducing a new kind of Mexico. Off into the front of the podium, facing outward to the people in the *plaza*, the Heritage students organized a series of dances: folklorico, *baladas*, and narrations of poems in which they spoke and sung of the Mexico they came to know and its many realities. This night was filled with communal energy, pride, and reflection. Although we enjoyed ourselves being present, the night was contemplating us with ironic realities that we had now immersed ourselves into. When the sun set and it finally grew dark, the moon’s full light illuminated the hops fields. We had then left the celebration and headed to visit the ranch. Our cars pulled up into the gravelly farm to the sounds of machines finishing a day’s work. Now, it was the smells of sour hops filling the air. Everyone was working quickly, trying to finish their day shifts. We got out of the car and walked to the unloading dock where Don Cashmere was still working. He sat on his stool with his back to us, eyes keen on the hops that were unloading from the truck. Both Crystal and Chinook saw us and waved us over.

Rushing over to greet them, we were truly happy to see them on this celebratory night. Grinning, they asked us, “y ustedes que hacen aquí?” (“and what are you doing here?”). We told them that we were over at El Grito and couldn’t leave the area without seeing them and knowing how they were doing. They had told us that they were close to finishing work for the night to finally go home and celebrate with a restful night’s worth of sleep for the following day.

That night we listened to sounds from every corner: the tickering, clanking metal, and the grinding. The workers became anxious to finish, as they began to cover themselves with even more sweatshirts, their hoods tied tightly around their chins. We asked them “why are you still waiting?”

“Los últimos troques” (“the last trucks”), answered Chinook. We sat down next to her and waited in the chilling harvest air, hearing the final *gritos* on the other side of the fields.

Discussion

In *The Cyborg Manifesto* (1991), science philosopher Donna Haraway reflected on the blurred line between humans and machines; in a sense, she would argue that everyone you know is a cyborg. Our world is crafted from the natural into the known. We are as social as we are biological, and the dividing line between one domain and the other is merely political—cultural, that is.

By the late twentieth century, our time, a mythic time, we are all chimeras, theorized, and fabricated hybrids of machine and organism; in short, we are cyborgs. This cyborg is our ontology; it gives us our politics. The cyborg is a condensed image of both imagination and material reality, the two joined centers structuring any possibility of historical transformation. In the traditions of “Western” science and politics—the tradition of racist, male-dominant capitalism; the tradi-

³ This vignette is written from the perspective of authors Jazmin Gonzalez and Rodrigo Renteria-Valencia.

tion of progress; the tradition of the appropriation of nature as resource for the productions of culture; the tradition of reproduction of the self from the reflections of the other—the relation between organism and machine has been a border war. The stakes in the border war have been the territories of production, reproduction, and imagination. (Haraway 1991:151)

Taken seriously, Haraway's provocation to question the arbitrary constructions that divide—in the case that concerns us, farmworkers

and the machines they operate—makes it inevitable to extrapolate poetics and politics as a subversive strategy. From this rationale, the ethnographic vignettes that we present here are not only descriptive attempts, but represent a simultaneous effort to dilute, both politically and poetically, the arbitrary divide erected between people and machines, between migrant farmworkers and their *maquinas*. Only by standing on this heuristic positionality, can we truly interrogate in anthropological terms (and within the same ontological realm) what correlations can exist between humans and machines.

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ABOUT THE AUTHORS

Mackenzie Stinson is a double major undergraduate from Central Washington University. Her studies in biology and anthropology have created opportunities for bioarchaeological research in Peru, environmental ethnography along coastal Mexico, and visual anthropology and ethnography in the Yakima Valley of Washington state.

Jazmin Gonzalez is a graduate student at the University of Arizona pursuing a dual degree in Latin American Studies and Public Health Policy and Management. She earned her B.A. in anthropology at Central Washington University. During her undergraduate studies, she conducted ethnographic field work documenting perceptions of wildlife in Jalisco, Mexico. Later, she conducted fieldwork in Yakima, Washington, with farm workers. Her current research interests include migration, death, repatriations, transnational policy, borders, and health advocacy.

Rodrigo Renteria-Valencia currently serves as an assistant profesor at Central Washington University. He obtained his Ph.D. in cultural anthropology at the University of Arizona. His academic work, articulated at the intersection of environmental and lingusitic anthropology, reflects on the historical and contemporary realities composed by Indigenous and non-Indigenous societies in the Sonoran desert.

Amelia Louise Susman Schultz (1915–2021)

Jay Miller

Amelia was less than five feet tall, and shrinking, over her 106 years, but she was a towering figure in the linguistics, anthropology, and genetics of the Northwest and beyond. Born into a German Jewish family in Brooklyn, her aunts and uncles included Catholics and Protestants, mostly in trades and food service. She entered public school, skipped two grades, graduated valedictorian at 14, studied psychology at Brooklyn College before it had its own buildings, and was advised by Irving Goldman that only Boas and anthropology would accept a woman and a Jew into graduate school. Though, up front, Boas told her he could not guarantee her an academic job, she said she did not care and began a century of devotion to him specifically. He eased her finances by hiring her to analyze data by himself and others using National Youth Administration (NYA) funds, initially in comparative Siouan.

Before she was asked to withdraw it by Ruth Benedict under pressure from irked Ralph Linton, her first finished Ph.D., lacking only publication to make it official, was the eighth chapter in *Acculturation in Seven American Indian Tribes*, where she pioneered what became known as Ethnohistory because Round Valley, California, was so historically traumatized. For her second finished Ph.D., she studied the grammar of HoChunk (then Winnebago) with none other than Sam Blowsnake, a.k.a. Crashing Thunder, as her speaker and guide. They had been eking out a living at the Boardwalk in Atlantic City before she moved the family to Brooklyn and worked out the grammar at their kitchen table.

Confident of her linguistics, in 1939, Boas, with American Council of Learned Societies funds, sent Amelia to work with William Beynon, a fluent Tsimshian speaker, rare high school graduate, and hereditary Wolf chief at Prince Rupert, B.C. They worked together on a published

article and became engaged. When she told Boas, his only words to her were: “You will not be happy.” When she returned to Prince Rupert with bolts of cloth to sew her trousseau, she went to the bank to open an account, where the manager warned her of the suspicious death of Beynon’s wife. She left on the night packet ship and, instead, set down roots in Seattle in 1940, housed by German Jewish families or a biker boyfriend. As WWII began, she served in Women’s Army Corps, 1943–1946 (after the induction nurse “gave” her a ½ inch to qualify for the legal 5 feet). At first, she was an inept radio operator in the Midwest, when, on a furlough home, she visited fellow linguists then producing bilingual materials for troops (phrase books, dictionaries, language courses) at the Army Languages/Morale office on the nineteenth floor of 165 Broadway. She was soon transferred (to general amazement), moved in with her parents, and worked along with Morris Swadesh, Mary Haas (Thai desk), Stanley Newman (Persian desk), Charles Hockett, and other American linguists under the direction of Henry ‘Haxie’ Lee Smith, who had a famous radio program guessing the dialectical background of an English speaker. Later she became a psychiatric social worker for neuropsychiatric discharges at Mason General Hospital, Brentwood, Long Island, New York.

As an aside, Amelia was herself the subject of creative folklore among Tsimshianists, who said that her Ph.D. dissertation (her third by count) was on Tsimshianic and shipped on 7 December 1941 only to be forever lost in the mail. When I arrived in Seattle, I was charged with finding out what happened to her, only to suffer defeat until Viola Garfield told me to look in the University of Washington (UW) staff directory. I did, called her number, and moments later was sitting in her UW hospital office (Figure 1) beginning to get facts straight. As I left, I glanced at her name



Figure 1. Amelia photographed in her office at the University of Washington.

plate and remarked, “Oh, I see you finally got your Ph.D.” It took much longer to understand the puzzled look on her face.

Mustered out of WWII, she returned to Seattle, where, hoping for an academic career, she renewed Tsimshian linguistic work with Mrs Louise Mertz, a bus ride away in West Seattle. When no academic position materialized, despite close friendships with Boasians at “Columbia West” (University of Washington), the only anthropology department (of an original four) long headed by a woman, Erna Gunther, Amelia found a job, 1942–1943, in social work for the state department of Public Assistance at Raymond and Bremerton, Washington. She met and married Elias Schultz, nicknamed Dutch, via Melville Jacobs, a fellow Boasian linguist and folklorist long blacklisted at UW, and his

wife Bess, a psychiatric social worker. To gain necessary credentials, Amelia enrolled in Social Work at University of Washington, earning an MSW, 1946–1947, relying on her anthropology, with a thesis on Indian unmarried mothers, abstracted in *Social Work Review*.

Dutch, a labor organizer, used his GI Bill to study woodcarving in Swiss guilds, while Amelia offered classes in English. She used her training to work on a local ethnography and dialect study, eventually published (2021) as “Brienzer Deutsch” and “Swiss Swear Words; Epithets in the Alps,” which led to a lively correspondence with *Maladicta* editor Reinhold Aman, after he served time in prison. Unpleasant interactions with anti-Jewish Swiss locals, especially landlords, led them to move on to London, 1950–1952, where Dutch studied at Guild Hall while Amelia

took anthropology, archaeology, and linguistics classes at London University through a 1951 grant from the Foreign Service Institute, State Department, during stringent post war conditions. Her parents kept them supplied with items they could not find in England.

Returning to Seattle, Amelia worked as Child Welfare Worker, State Public Assistance, Seattle, 1952–1953; Case Worker, Children's Home Society, 1953–1958; Case Worker, Jewish Family & Child Service, 1959–1960; Social Worker, Research Associate, Clinical Research, Center and Department of Medicine, University of Washington, 1960–1965; Social Worker, Research Instructor, Clinical Research Center and Department of Medicine, University of Washington, 1965–1973; and Social Worker, Assistant Professor, Clinical Research Center and Department of Medicine, University of Washington, 1973–1977, when she retired, though returning faithfully as a volunteer. She also served on committees for human subjects review and medical school admissions, as well as nursing home reforms.

Her association with the medical school was life saving when Group Health, an early Health Maintenance Organization (HMO) whose medical doctors were initially barred from membership in the Seattle medical society, failed in treatment of a cancer. Instead her UW colleagues designed an early radiation treatment that featured a suspended tennis ball.

She was a member of Linguistic Society of America, American Anthropological Association, National Association of Social Workers, and the short lived Seattle Anthropological Society. Throughout her careers, she relied on three of the four fields of anthropology: linguistics, physical, and cultural, but not (quite) archaeology, though she read widely in Classical and Egyptian books.

She and Dutch had a cabin and dock on a lake in the Olympic Mountains, which they generously loaned to colleagues, friends, and family. Before their divorce they intended to retire there, with the lower floor a carving studio and the upper living quarters lined with books, especially Bureau of American Ethnology (BAE) Annual

Reports. There she hosted an early conference of emerging Tsimshianists, sessions of her book club, and fellow mushroomers.

After 1967, she was actively concerned with the Huntington's Disease Society of America as a national trustee for several years in the 1970s, NW Chapter Board to 1999, Area Contact, and coordinator of support groups for those diagnosed by DNA. She has long been involved with the families of Woody and Arlo Guthrie, famous musicians who carry this gene. Woody was famously employed for a very productive month to write songs for the Bonneville Power Administration (BPA).

Amelia took phone calls day and night from Huntington's families in distress. She maintained an extensive card file that enabled her to treat entire families, but, tragically, because it was not part of official medical records, UW sent a truck out to her home to shred all of it.

She also worked with Citizens for Improvement of Nursing Homes and Long Term Care, and Caroline Kline Galland Home, where her younger sister, Harriet (hindered by a botched delivery during WWI, when most doctors were in service) lived after she was moved out from New York with their parents. In her later years, she was involved in tribal and liberal causes, especially restoration of the Duwamish of Seattle, with her companion Roger Anderson, a physicist and descendant of an early Seattle Pioneer family. She was fond of smart dogs, tall men, and draping cats, especially Groucho and Harpo.

For her 100th birthday, her notes from Round Valley and other materials were added to her archive at the American Philosophical Society (APS). When she doubted her own Catawba work archived there, a look at her own bookshelf produced Frank Speck's texts and a PDF sent from APS of one of her file slips, which allowed her to rewrite the word in exactly the same pen(wo)manship, convincing herself of her own early comparative Siouan work. Her correspondence, including a famous letter from Boas explaining his own understanding of emic/etic, will now be added.

Amelia kept healthy through yoga, tai chi, meditation, swimming, and a careful diet, along with wide reading and community volunteering. She maintained a foot-long file of natural remedies and herbal benefits, which she gladly shared. Her professional involvements were sustained by proofreading academic manuscripts (dozens of my own) and enjoying a wide range of family and friends of all ages, interests, and educations, including a lively book group. She was honored by a special 2011 session when the Society for Applied Anthropology met in Seattle (sfaa2011-s33), and postings at the *History of Anthropology Review*, and APS website.

Her last fading days were enthusiastically attended by her very diverse group of friends, decades apart in ages, gathered from mushrooming, tai chi, yoga, reading, hiking, cooking, eating, and fun. Her long and interesting life bespeaks the virtues of a life lived in and out of the university and stifling academia.

When asked for the secret of her longevity, she would reply: boundless curiosity, meditation, exercise, activity, and naps.

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Sharing Cultural and Archaeological
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Edited by Darby C. Stapp and Julia G. Longenecker
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A Conversation Continued From
The Journal of Northwest
Anthropology's
"Why Don't We Write More?
Essays on Writing and
Publishing Anthropological
Research"

Anthropologists, archaeologists, and others working with cultural groups have a long—if inadequate—history of sharing their results with the public, the cultural groups they work with, and others. In this collection of essays from the Pacific Northwest, researchers describe public oriented projects they have been involved with and their perspectives on sharing information with others. Readers will find within a plethora of examples they can draw upon to design their own approaches for working with external audiences.

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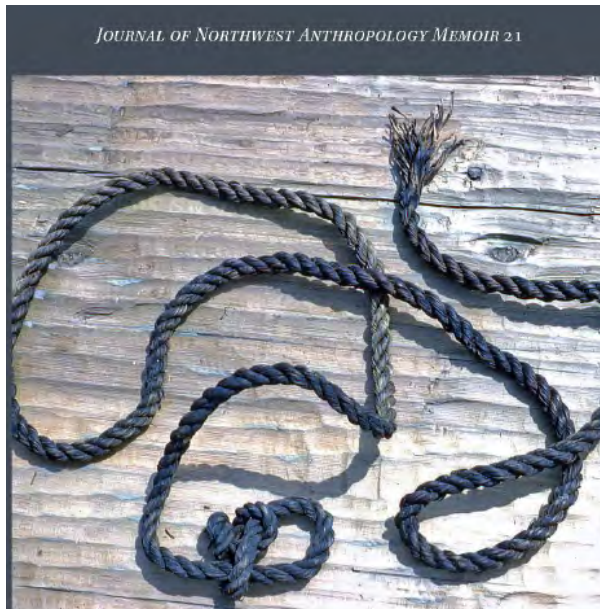
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CORDAGE FROM THE OZETTE VILLAGE ARCHAEOLOGICAL SITE

A TECHNOLOGICAL, FUNCTIONAL, AND COMPARATIVE STUDY

By Dale R. Croes

Darby C. Stapp, Editor & Victoria Boozer, Publications Assistant



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A section of a whaling village, with massive cedar plank long-houses, was engulfed by an enormous clay mudslide over three centuries ago at Ozette. Tens of thousands of wood and fiber artifacts were preserved, including thousands of cordage items (often demonstrating knotting techniques), in a waterlogged environment. Washington State University (WSU) archaeologists, working in equal partnership with the Makah Indian Nation, excavated a section of this site. Being the WSU graduate student who undertook the scientific study of ancient basketry and cordage items, Dale R. Croes worked directly with Makah Master Weavers at the Neah Bay School. The Makah leadership felt he could not fully understand these materials from Ozette unless he got this cultural training, and they were right. Through this approach a unique synergy of cultural and scientific analysis/synthesis is produced, and from these three levels:

- First, Croes defines the diverse array of Ozette cordage attributes (modes; including knots) and statistically compares them to the hundreds of ancient cordage examples that occur from all known Northwest Coast wet sites.
- Second, Croes combines culturally important cordage attributes, as learned from Makah weavers, into cordage types which also are compared to the diverse types found at all other wet sites; the results indicate a continuity of cordage cultural styles in three regions of the Northwest Coast for 2,000 to 3,000 years.
- And third, Croes combines the Ozette cordage types into functional sets, supported by them being archaeologically recovered in their original position in ancient households at the Ozette Village (noting that much of the plank house components were bound together by cordage). Croes computer mapped positions of cordage types in the Ozette House demonstrating the location of different family units and reflecting the activities of household members.

Croes' three-level analysis of cordage from Ozette Village and other archaeological wet sites demonstrates a prominent role for cordage and knotting in the complex maritime adaptations along the Northwest Coast of North America, gaining a new *line* of evidence for this region's dynamic archaeological and cultural past.

RESILIENCE THROUGH WRITING

A BIBLIOGRAPHIC GUIDE TO INDIGENOUS-AUTHORED PUBLICATIONS IN THE PACIFIC NORTHWEST BEFORE 1960

By Robert E. Walls

Darby C. Stapp, Editor and Alexandra Martin & Victoria Boozer, Design

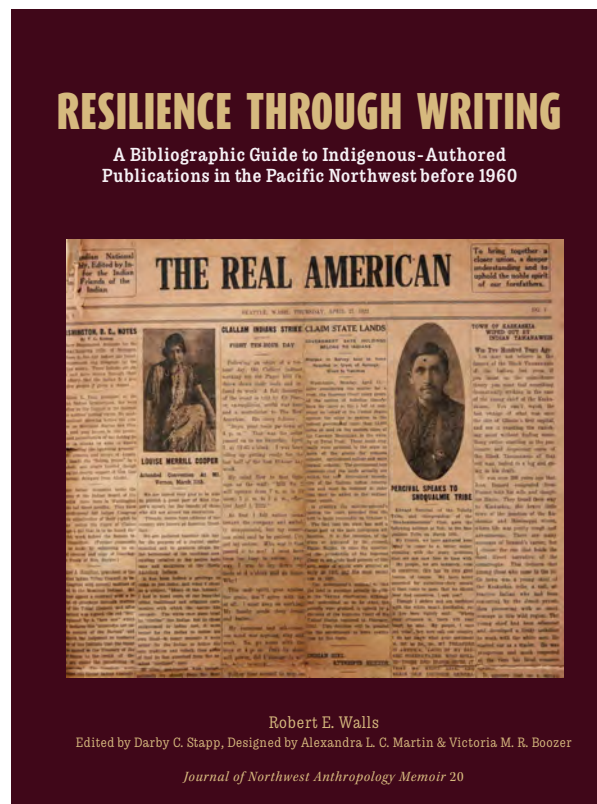
Resilience Through Writing: A Bibliographic Guide to Indigenous-Authored Publications in the Pacific Northwest before 1960 includes nearly 2000 entries by over 700 individuals, 29% of them women, most of which were largely unknown. Coverage has been thorough, with writings from coastal and interior regions of Alaska, British Columbia, Washington, Idaho, Oregon, and northern California. Entries include newspaper letters to the editors, school composition, speeches, legal statements, and articles in miscellaneous relatively obscure publications. These materials thus provide new perspectives on Native American/First Nations cultures in the Pacific Northwest. The potential value of this material to descendants; tribal members; tribal historians; and scholars of Indigenous literature, political science, and culture change is enormous. By producing this bibliography and allowing the Journal of Northwest Anthropology (*JONA*) to publish it in our Memoir series, Robert Walls has given those interested in Northwest Indigenous writings the roadmap to years of research.

With this extensive, meticulous bibliography, Robert Walls has done students of Pacific Northwest indigenous peoples an invaluable service. His well organized, thoughtfully annotated catalog of published writings and speeches by indigenous men, women, and youth is a much-needed resource for scholars in fields such as anthropology, history, literature, and folklore, both professional and amateur. The erudite introduction clearly explains the considerable significance of the publications Walls catalogued, thus confirming that his decades-long labor is an important contribution to knowledge of Northwest America's first peoples.

Alexandra J. Harmon
University of Washington

What Bob Walls has produced here is an indispensable new research tool that will immediately enable Indigenous and settler researchers alike to be better informed about, and able to access, the breadth of pre-1960 Indigenous-authored writings from the Pacific Northwest. But it is much more than that. Each time I turn to it to look up one source I end up finding others that I never anticipated, and each of these, like a portal through time, brings me to another Indigenous voice that offers fresh glimpses into Pacific Northwest Indigenous culture, politics, concerns, and ways of knowing.

Keith Thor Carlson
University of the Fraser Valley



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