

RETHINKING SUBSISTENCE IN SOUTHEAST ALASKA: THE POTENTIAL OF ZOOARCHAEOLOGY

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ABSTRACT

Subsistence use of fish and game in Alaska is tangled in a web of contradictory and complex state and federal legislation and regulation. The institutional structures that have metastasized with subsistence regulation illustrate how technologies of government have restructured people's lives and livelihoods. I argue that zooarchaeological research can help Alaska Natives assert their rights to continue to use resources as they have for thousands of years in an increasingly bureaucratic world. Use of fish and wildlife is central to Alaska Natives' ongoing struggles to retain their cultures and identities. Subsistence is very much about race and the struggle of Alaska Natives to maintain their cultures in the face of global homogenization. This article points to ways archaeologists, especially zooarchaeologists, can re-evaluate our social roles and contribute to the decolonization of subsistence.

KEYWORDS: Tlingit, historical ecology, resource management, subsistence

INTRODUCTION

The term "subsistence" is routinely used by archaeologists to refer to how a group of people obtain basic food and shelter. In North America, the focus of most subsistence studies has been on how people acquire food, whereas studies of "shelter," focusing on dwellings, houses, other domestic architecture, village layout, etc., fall within the realm of spatial, household, or community archaeology. In zooarchaeological and paleoethnobotanical studies, the term "subsistence" is frequently used; "subsistence" is also commonly used as an adjective, as in "subsistence strategies," "subsistence pattern," "subsistence economy," or "subsistence-settlement system." Reitz and Wing (1999:28) state that "[s]ubsistence research requires study of both the biological needs that diets meet and the strategies by which humans procure dietary components." They also state that "[s]ubsistence strategies are the target of most current zooarchaeological research" (Reitz and Wing 1999:28), although in 2008, they qualified this to say that

[s]ubsistence strategies are the target of *much* research" (Reitz and Wing 2008:28; emphasis mine).

To speakers of English, "subsistence" is understood as the means of making a living. Despite its superficial simplicity, the term actually has multiple meanings in different contexts. For example, "subsistence" is often assumed to mean the bare minimum necessary to survive economically. For example, a subsistence economy is defined as one:

in which a group attempts to produce no more output per period than they must consume in that period in order to survive, but do not attempt to accumulate wealth or to transfer productivity from one period to the next. In such a system, a concept of wealth may not exist, and there is a reliance on renewal and reproduction within the natural environment. For this reason subsistence economies are often lauded by environmentalists who consider investment economies to be too much of a strain on the environment (Wikipedia 2009).

While the minimalism or marginality of subsistence is recognized as difficult and challenging, at the same time it can be valorized, as in the above quote in which a subsistence economy is praised for its low impact on the environment. Anything beyond the bare minimum is not really “subsistence” by these definitions. In this paper, I suggest that the precontact Tlingit and Haida economies—and perhaps those of other Northwest Coast groups—were not merely “subsistence” economies. Members of these societies worked hard to acquire wealth, above and beyond what was necessary to merely survive. This is just one of many complications in debates over the varied meanings of “subsistence” and how the term is used today.

The term “subsistence” has an interesting history in anthropology and an even more convoluted history in Alaska. Today, it is a term embraced by some Alaska Natives as denoting a lifestyle worthy of legal protection. It is a term rejected by other Alaska Natives because of pejorative connotations, some of which can be traced back to its nineteenth-century usage by social scientists. Some people believe that subsistence is under threat in Alaska; others believe that fish and wildlife are under threat by subsistence uses. The specific threats to subsistence, or to fish and wildlife, are perceived differently in different communities.

In this paper, I deconstruct the term “subsistence” for the ultimate purpose of showing how received knowledge and conventional ways of thinking limit the impact archaeology can have in the modern world. I start by discussing the origins of the term “subsistence” in anthropology to show how the term is burdened with cultural evolutionary, ethnocentric, and racist connotations that remain with us today. I then focus on subsistence in Alaska, where the term occurs in both federal and state laws. “Subsistence” in Alaska has been a site of considerable political struggle, between state and federal governments, between rural and urban communities, and between Alaska Natives and non-Native Alaskans. The laws, and the regulations that have been developed to institutionalize them, have evolved over the last thirty-plus years into a complex maze that Alaska Natives are forced to navigate. Many cultural anthropologists are now employed by state and federal governments, and they play key roles in the documentation, legitimization, and bureaucratization of subsistence. Although cultural anthropologists have contributed to knowledge and management of subsistence, the work of archaeologists—and for the purposes of this paper, the work of zooarchaeologists—has

heretofore not made a significant impact. Contemporary struggles over “subsistence” reflect both the colonialist history of the term and how anthropologists have mediated between Native and government interests. I then illustrate some of the diverse perspectives on subsistence in Alaska Native communities and how archaeological perspectives on “subsistence” are too narrowly conceived to make much of a difference in contemporary struggles. “Rethinking subsistence” involves evaluating the results of our work in ways that can help bridge the gaps between Native and non-Native perspectives and between fishers, hunters, collectors, and regulators.

SUBSISTENCE AS AN ANTHROPOLOGICAL CONCEPT

Even before anthropology developed as a discipline, European thinkers used subsistence to classify “others.” Stages of social evolution based on subsistence date at least to the mid-eighteenth century. As Pluciennik (2001:741–742) has shown, “philosophies of history, concepts of property and the idea of improvement” underlay the idea that humans progressed from savage hunters to barbarian pastoralists to civilized farmers, and ultimately, to the age of commerce. Agriculture was viewed as the main source of wealth, and colonial conflicts were largely about seizing land and converting it to property. Making productive use of land through agriculture was thought both rational and moral, hence appropriation of lands in the Americas and elsewhere became moral imperatives. Without colonial invasions, the “fertility and abundance” of the Americas could not reach its God-given potential, since the indigenous people would continue to leave it “unmanaged and unimproved” (Pluciennik 2001:742). From Thomas Jefferson onward, the introduction of farming was meant to “civilize the Indians.”

In Lewis Henry Morgan’s (1877) treatise *Ancient Society*, he identified seven “ethnic stages” including lower, middle, and upper stages of savagery, lower, middle, and upper stages of barbarism, and civilization. Morgan also specified seven “constants” of society: Subsistence, Government, Language, Family, Religion, House Life and Architecture, and Property. Morgan dedicated an entire chapter to the “successive arts” of subsistence; these were “Natural Subsistence,” “Fish Subsistence,” “Farinaceous Subsistence” (cultivation of cereals), “Meat and Milk Subsistence,” and “Unlimited Subsistence through Field Agriculture.” In such a scheme, hunters were fully depen-

dent on nature, while farmers had cultural means—technical, social, mental, and moral—that placed them in a superior position to nature. Morgan’s thinking was highly influential during the nineteenth century and beyond—it was required reading for all staff of the Bureau of American Ethnology (Pluciennik 2001:747). Such thinking was embedded in the archaeology of the day by Worsae, de Mortillet, and Childe, who tried to correlate technological ages, such as the Paleolithic, Mesolithic, and Neolithic, to subsistence stages (Pluciennik 2001:747–748). These notions of subsistence informed the development of the concept of mode of production developed by Engels in *The Origins of the Family, Private Property and the State* and all that followed in Marxism. Peake (1927) went on to use subsistence to distinguish “producers” from “exploiters” (Pluciennik 2001:749). While producers raised crops or domestic animals, exploiters hunted game and birds and collected shellfish, nuts, and berries. Peake (1927:21–22) wrote that producers “had started on the road to civilization,” while the exploiters are “clearly uncivilized, even if we hesitate to call them barbarous or savage.”

Although Boas and his students turned away from such unilinear schemes of social evolution in the early twentieth century, subsistence remained important as a trait to be compared cross-culturally, within and between culture areas. The importance of subsistence was reinvigorated in the work of neoevolutionists Leslie White and Julian Steward by the mid-twentieth century. Steward (1955:37) saw subsistence activities as the center of the cultural core of societies. Attention to subsistence and its ecological context were used to rehabilitate social evolution.

The word subsistence thus carries a great deal of social evolutionary baggage. Even today, anthropologists and archaeologists devote considerable energy to comparing and contrasting types of people: we study hunter-gatherers and compare them to farmers; for some, the term “forager” has replaced hunter-gatherer. Archaeologists talk about the subsistence base of an economy, the subsistence pattern people use to obtain food and other necessities, or the subsistence-settlement systems people develop to use land and resources. Many archaeologists obsess about the origins of agriculture and domestication and the transition from foraging to farming. Unfortunately, we are not always aware of the cultural evolutionary, ethnocentric

and, some would claim, racist origins of these anthropological constructions. This is essential background for understanding part of the context underlying the term subsistence as used by social scientists. But subsistence has additional meanings in Alaska.

SUBSISTENCE REGULATION IN ALASKA¹

With regard to resource management in the United States, both the federal government and the governments of each of the 50 states have their own authorities and jurisdictions. In Alaska, subsistence is regulated by both federal and state laws, depending on land status and the resource in question. Over time, federal and state responsibilities have shifted with political struggles played out in Washington, D.C. and in Juneau. Between 1959 and 1978, all fish and game were open to all Alaska residents on a “first come, first served” basis. As populations grew, subsistence-dependent Native villages struggled. In 1971, to facilitate construction of the Trans-Alaska Oil Pipeline, Congress passed the Alaska Native Claims Settlement Act (ANCSA). ANCSA extinguished “any hunting or fishing rights that may exist” for almost \$1 billion and forty-four million acres of land in compensation. Although it didn’t explicitly protect Native subsistence, a conference report that accompanied the law stated that subsistence resources on state and federal lands would be protected. Native communities made many right-of-way and other concessions that allowed the pipeline to be built. They did so in return for promises of subsistence protections. In 1978, the State of Alaska enacted its first subsistence law that required boards of fish and game to give preference to subsistence uses over commercial and sports uses.

In 1980, the U.S. Congress passed the Alaska National Interest Lands Conservation Act (ANILCA) which created new national wildlife refuges and public recreation lands. ANILCA mandated that the state maintain a subsistence hunting and fishing preference for rural residents and allow them customary and traditional use of federal lands or forfeit its management of subsistence uses there. Even though ANILCA does not provide for subsistence preferences based on ethnicity, it acknowledges a difference between Native and non-Native subsistence. ANILCA states that subsistence is “essential to Native

1. This section was compiled largely from Alaska Federation of Natives (1998), Case and Voluck (2002), and United Fishermen of Alaska (2008). The Alaska Federation of Natives is the largest statewide Native organization and includes 178 villages (both federally recognized tribes and village corporations), 13 regional Native corporations and 12 regional nonprofit and tribal consortia. The United Fishermen of Alaska is a statewide organization composed of 32 commercial fishing organizations, as well as individual and business members.

physical, economic, traditional and cultural existence, but only to non-Native physical, economic, traditional and social existence” (Wheeler and Thornton 2005:70). This is a fairly subtle distinction, with the words “cultural existence” reserved for Alaska Natives.

Between 1981 and 1989, the state struggled to comply with ANILCA, and some non-Native Alaskans became vehemently “antisubsistence.” In 1986, the Alaska legislature amended state law to limit subsistence uses to residents of rural areas, but in 1989, the state supreme court found that the rural preference violated the Alaska constitution. At that point, the state was clearly not in compliance with the federal law, ANILCA. After special legislative sessions and other failed attempts, the federal government seized authority for subsistence on federal land in 1990. In 1995, the U.S. Ninth Circuit Court of Appeals ruled that the ANILCA subsistence priority extended to rivers, streams, lakes, and other freshwater bodies within and adjacent to federal lands. Between 1997 and 2001 various efforts to try to bring state fisheries law into compliance with ANILCA failed, and the federal government took over subsistence fishery management.

Federal management of subsistence is administered by the Office of Subsistence Management (a branch of the U.S. Fish and Wildlife Service) in Anchorage and regulated by the six-member Federal Subsistence Board. The chairman of the board is appointed by the U.S. secretary of interior; the other board members are the regional directors of the federal agencies that manage ~60% of Alaska land: U.S. Fish and Wildlife Service, Bureau of Land Management, National Park Service, Bureau of Indian Affairs and U.S. Forest Service. The federal regulatory process begins with an annual call for proposals from the public. Proposals are reviewed by ten regional advisory councils around the state that consider proposed changes. Regional advisory council members are local residents appointed by the secretaries of interior and agriculture. A proposal recommended by a regional council can be rejected by the Federal Subsistence Board only if it is not supported by substantial evidence, violates principles of wildlife conservation, or would harm subsistence. The regional councils meet twice a year: once in the fall, to recommend subsistence fish proposals and again in the winter, to recommend wildlife proposals. Proposals are forwarded to the Federal Subsistence Board, which meets in a public venue twice a year. Other legal mandates regulating subsistence are the Marine Mammal Protection Act and the Migratory Bird Act. Subsistence fishing for halibut is further regulated by the North Pacific

Fisheries Management Council. Besides considering proposals to change regulations, making “customary and traditional” determinations, and deciding rural and nonrural designations, the board is authorized to close federal lands to nonsubsistence uses and take actions necessary to provide for subsistence outside of the proposal process. The multimillion-dollar Fisheries Resource Monitoring Program was initiated in 2000, in response to the federal takeover of subsistence fisheries (Wheeler and Craver 2005:15).

While the federal government manages subsistence on federal lands, the state government has a separate program for managing subsistence on state lands, encompassing about 40% of Alaska, including most marine waters. The two programs differ in who is eligible for subsistence, where subsistence is allowed, how uses are defined and how decisions are made. The state does not allow subsistence fishing or hunting in nonsubsistence areas around Anchorage, Fairbanks, Juneau, Ketchikan, and Valdez.

Under federal law, rural Alaska residents are eligible for the subsistence priority. Rural residents make up about 20 percent of Alaska’s population. Rural residents are defined as all Alaskans except those living in and around Anchorage, Fairbanks, Juneau, Ketchikan, Adak, Valdez, Wasilla, Palmer, Homer, Kenai and Soldotna. Under state law, all Alaskans are potentially eligible for the subsistence priority.

State management is administered by the Alaska Department of Fish and Game, particularly its divisions of Subsistence, Commercial Fisheries, and Wildlife Conservation. Under state management, a subsistence decision begins with a determination that a portion of a fish stock or game population can be harvested for subsistence consistent with sustained yield. The Board of Fisheries or Board of Game then determines how much of the harvestable portion of the population is “reasonably necessary for subsistence uses.” Regulations are then adopted that provide a “reasonable opportunity for subsistence uses” (Alaska Statute 16.05.258).

State of Alaska subsistence regulations are developed by the Board of Fisheries and the Board of Game at their annual meetings. Each board is comprised of seven citizens appointed by the governor and confirmed by the legislature. Each board meets several times a year to consider proposals and take other action. The boards have authority to close and open seasons, set bag limits, and establish methods and means of subsistence harvest. They determine what fish stocks or game populations are customarily

or traditionally taken for subsistence. The Boards consider subsistence proposals alongside proposals to change regulations for commercial, sport, and personal uses. The state boards receive recommendations from about eighty local advisory committees across the state. The committees are “grass roots” groups that have as many as fifteen members, each elected by their community or region of jurisdiction.

Under the federal program, rural residents may take fish or game for subsistence on federal lands and waters unless prohibited by federal regulation. That general allowance for subsistence is narrowed by “customary and traditional” use determinations, which limit subsistence uses of fish stocks or game populations in a particular location to a specific subgroup of rural residents. Customary and traditional use is defined as “a long-established, consistent pattern of use, incorporating beliefs and customs which have been transmitted from generation to generation (and) plays an important role in the economy of the community” (United Fishermen of Alaska 2008). In making a customary and traditional use determination, the federal board considers eight factors: a long-term and consistent pattern of use, uses recurring in specific seasons, uses involving methods of harvest that are efficient and economic, harvests and uses that are related to past ones and are reasonably accessible to a community, methods of handling and preserving resources that are traditional, allowing for some alteration for technological advances, uses involving the handing down of knowledge of harvest skills, values and lore from one generation to the next, uses in which harvests are shared within a defined community, and uses that involve reliance on a wide variety of resources and provide an area with cultural, economic, social, and nutritional elements. A use does not have to meet all factors to be determined “customary and traditional” by the federal subsistence board.

In state law, “customary and traditional” means “the noncommercial, long-term and consistent taking of, use of, and reliance upon fish or game in a specific area and the use patterns of that fish or game that have been established over a reasonable period of time, taking into consideration the availability of the fish or game” (United Fishermen of Alaska 2008). Under state law, the boards of fish and game identify stocks with customary and traditional uses, using eight criteria similar to those under federal regulation. Under state regulation, all eight criteria must be met to establish a customary and traditional use. The state then establishes an

amount necessary to provide a reasonable opportunity for subsistence harvests of each stock with a customary and traditional designation.

Federal law allows subsistence managers to differentiate among subsistence users when fish stocks or game populations are not sufficient to meet subsistence demand. To determine subsistence eligibility at such times regulators consider: (1) customary and direct dependence upon the populations as the mainstay of livelihood, (2) local residency, and (3) availability of alternative resources. Under state law, if a harvestable portion of a fish stock or game population is not adequate for all subsistence users, the state differentiates users based on: (1) customary and direct dependence on the fish stock or game population by the subsistence user for human consumption as a mainstay of livelihood, and (2) ability of the subsistence user to obtain food if subsistence use is restricted or eliminated. In the case of competing demands or shortages, we see the minimalist and marginal definition of subsistence reaffirmed. Even as regulations have proliferated, anthropologists Wheeler and Thornton (2005:70) have observed that “the subsistence issue remains unresolved and is perhaps the most contentious, intractable public policy dilemma Alaska has faced in its history as a state.”

CULTURAL ANTHROPOLOGISTS AND SUBSISTENCE MANAGEMENT

Cultural anthropologists have been involved in subsistence research in Alaska for more than 30 years (Wheeler and Thornton 2005). Even though state regulations emphasize rural, rather than Native or indigenous use, I believe that most research conducted to date focuses on indigenous resource use. Cultural anthropologists recognize subsistence not just as an economic system, but as a cultural system. They point out that subsistence was/is foundational to cultural identity, physical and mental health, cultural survival and political sovereignty. Yet neither federal nor state laws explicitly define subsistence, and Wheeler and Thornton (2005:73–74) stress that subsistence is not synonymous with hunting and fishing rights; subsistence is far more. Analogously, the laws do not protect specific places, only customary and traditional “uses” (Wheeler and Thornton 2005:76). Yet biological paradigms still dominate fish and game management and traditional ecological knowledge (TEK) is rarely considered (Wheeler and Thornton 2005). TEK combines both technical knowledge about resource availability and

distribution, as well as procurement strategies, but also information about the worldviews of subsistence users. Presenting TEK in a way that provides a useful repository of information is one of the many challenges of contemporary researchers (Wheeler and Craver 2005).

Since 1978, anthropologists with the Subsistence Division of the Alaska Department of Fish and Game have been working to “document all aspects of subsistence hunting and fishing so that the provisions of state and federal law can be implemented” (Wheeler and Thornton 2005:74). Across the state, Subsistence Division anthropologists have studied more than 190 communities. In 1994, R.J. Wolfe estimated that Alaskans harvested 53.5 million pounds of wildlife resources, with rural harvests comprising 80% of this total (Leask et al. 2001). For southeast Alaska, Subsistence Division anthropologists have published 35 technical reports since the early 1980s. State and federal cultural anthropologists have employed census surveys and key informant interviews and they have gathered oral histories and place name data in GIS systems in efforts to quantify subsistence (Callaway 2001; Wheeler and Craver 2005). These researchers have also participated in subsistence activities themselves. Federal cultural anthropologists are involved with collecting and analyzing data used for Customary and Traditional (C&T) Use Determinations that give community residents status as federally qualified rural subsistence users (Mason and Cohen 2001). To obtain subsistence resources from national parks, rural residents must apply for 13.44 permits (under ANILCA) or be members of a so-called “park resident zone” eligible to participate in subsistence. National Park Service anthropologists also write ethnographic overviews and assessments and collect TEK to document subsistence.

As described in the previous section, state and federal laws regulate the harvest of wild foods for personal or family consumption (Mason and Cohen 2001). In my view, this alone represents an intrusion into a way of life that has an antiquity of over 10,000 years. Hensel and Morrow (1998) describe how many Alaska Native hunters and fishers have been unaware of or uninterested in regulations and have simply tried to live their lives. In some cases, people persist in noncompliance with laws and regulations; in other cases, laws and regulations are actively resisted. Although researchers may have sought to document TEK,

Hensel and Morrow (1998:70) warn that “decontextualizing pieces of local knowledge and reincorporating them as information in scientific reports seriously misrepresents indigenous perspectives.” Thornton (2001:95) has written that “agencies tend to pursue TEK in an acquisitive and colonizing manner not unlike that of artifact hunters in the nineteenth and early twentieth centuries.” Hensel and Morrow (1998:70) show how different worldviews lead managers and Alaska Natives to talk past each other: “Conservation for biologists concerns population numbers and future reproduction. For traditional Yupiit, it concerns proper human behavior.” In this way, biological discourse itself, such as an announcement that “no fish are available” can become a self-fulfilling prophecy as it upsets the animals upon which the Yupiit depend (Hensel and Morrow 1998:70). Attempts at “co-management” may be well-meaning, but power inequalities inhere in the relationship between managers and Native communities.

In southeast Alaska, clear-cutting old growth forests by Native corporations created under ANCSA has had severe ecological impacts to the region that threaten both subsistence use of fish and wildlife and the populations themselves (Dombrowski 2007:3).² Over 275,000 acres of forest will eventually be clear-cut on corporation lands that overlap with the subsistence territories used by residents of Hydaburg, Klawock, Craig, and Kasaan (Dombrowski 2007:12). Dombrowski believes that the reports of cultural anthropologists working for the ADF&G Subsistence Division systematically underestimate harvest levels by the most active subsistence users. For example, while George and Bosworth’s (1988) study reported no Angoon household harvested more than twelve deer per year (the legal limit for a two-adult household), the deer hunters Dombrowski worked with took as many as thirty to forty deer per year (Dombrowski 2007:16). These deer hunters obviously will not report such numbers to ADF&G researchers; while the ethnographers seek actual numbers, ADF&G enforcement personnel could arrest, fine, or confiscate equipment of such deer hunters. Yet these are the deer hunters whose families rely on subsistence for their livelihoods, since a full commitment to subsistence living precludes regular employment. At the same time, subsistence hunters and fishers require access to cash—usually through other family members—to purchase gas and maintain their boats and other equipment.

2. Dombrowski (2002) shows how the intersection of timber industry politics with those of ANCSA corporations has resulted in the “award” of resources to indigenous groups that are then forced to overexploit them.

While to some, subsistence is a “lifestyle,” to others, it is a “livelihood” in the more marginal, economic sense of the word. In Dombrowski’s (2007:10) words, “subsistence users in every village are now caught between the Scylla of decreasing resources and the Charybdis of intensifying village inequality—both of which have the effect of pushing them into more intense dependence on disappearing subsistence resources.”

Dombrowski argues that ANCSA has intensified local inequalities in Native communities across southeast Alaska. He suggests that cultural anthropologists have failed to capture the important role “Indian foods” play in contemporary ceremonial and political events. At such large gatherings, such foods mark these functions as “Native” and are valorized for their symbolic and social meanings. As Dombrowski (2007:13) states,

‘Indian foods’ come to be seen as icons of Native lifeways, any threat to their viability becomes, by extension, a threat to the community they mark. In this way Native foods and the subsistence practices that produce them become a sign not just of the community, but of its potential dissolution, and hence the need for greater solidarity—even across the economic lines that separate those who supply the food from those who sponsor the events at which they are consumed.

Thornton (2001:90) and others (Wolfe et al. 2007) have shown how individual bag limits and other regulations fail to accommodate the communal aspects of subsistence. Even though subsistence is crucially important to cultural and clan identity, physical and psychological health, and to spiritual balance (Langdon 2000, 2006a, 2007; Monteith 2008; Thornton 1998, 2001; Worl 2002), competing interests within indigenous groups cannot be overlooked.

GOVERNMENTALITY AND TECHNOLOGIES OF GOVERNMENT

Anderson (2001:317) claims that Alaska Natives are subject to more federal laws, regulations, court decisions, and administrative rulings than any other indigenous group in the United States. As has been shown, subsistence use of fish and game in Alaska is tangled in a web of contradictory and complex state and federal legislation and regulation. Laurajane Smith’s (2004) work on archaeological theory and the politics of cultural heritage can help us understand debates about subsistence in Alaska. Smith shows how archaeology has been hijacked by government bureaucrats and unreflective practitioners who don’t fully realize

the role they play in “managing” the “social problem” of descendent communities’ claims to heritage. The governmentality literature (e.g., Burchell et al. 1991) shows how expertise—in this case, anthropological knowledge—can be employed by governments to control and constrain, i.e., to “manage” the social problem of “subsistence users.”

From my years living in Alaska from 1978, when the state subsistence law was passed, through the mid-1980s, I thought I had a fairly good understanding of subsistence. Little did I realize how convoluted the story of subsistence had become. The institutional means that have grown to dictate and document subsistence demonstrate how technologies of power have been wielded to control Alaska Natives. The management of subsistence in Alaska—what Thornton (2001:83) has termed the subsistence crisis—is very much about race and ethnicity. Despite all the discourse about rural residents and “customary and traditional” users, these words are deliberately chosen to obscure racial difference. In this discourse, anthropologists have played roles as “mediators” or “interpreters” between the state and federal governments and indigenous communities. Governmental needs to manage the “social problem” of subsistence are very much entangled with the development of intellectual discourse of anthropology. The institutions, laws, regulations, policies, procedures, and reports are the ways power is and has been used to deny, control, restrict, and constrain the most basic of human rights—the right to obtain food for oneself and one’s family. Yet our roles as professional anthropologists—as producers of technical, rational knowledge—explicitly depoliticize subsistence struggles. Has anthropology simply become just another technology of government used to manage a “social problem” and control Indigenous hunters, fishers, and gatherers? Following Smith’s (2004:77) line of thinking, we must ask: are anthropologists just one more type of “regulatory agent” who function to collect, record, and report information? Is our work just another form of surveillance and enforcement? Are competing interests with stakes in fish and wildlife management (commercial and recreational users, environmentalists, biologists, etc.) so powerful that there is no way out of the monstrous maze that subsistence management has become?

As Korsmo (1994) has explained, Alaska Natives have continued to assert their resource rights. They have lobbied for changes to the Alaska constitution. Some Native corporations have closed their lands to nonshareholders in an attempt to reserve parts of their subsistence territories for themselves. Representatives of

Native organizations serve on the federal regional advisory councils and state local advisory committees. In the face of declining habitat, global warming, and pollution, subsistence will continue to be a site of struggle. At times like this, I recall a Tlingit friend who told me, “I am just a fisherman.” I would argue that being “just a fisherman” in Alaska is a more formidable challenge than anywhere else in the world.

“SUBSISTENCE” TO THE TLINGIT—A WAY OF LIFE IN BROADER PERSPECTIVE

In 2003, I was asked by Lillian Petershoare of the Forest Service to write a new preface for a book coauthored by Tlingit scholar Richard Newton and me, *The Subsistence Lifeway of the Tlingit People* (Newton and Moss 2005). First published in 1984, this was a compilation of information on subsistence Mr. Newton and I gathered from interviews with twenty-three Tlingit culture-bearers. When the Forest Service wanted to print a third edition, Lillian, working with Joanne Wiita (Goldbelt Corporation) and Don Bremner (Central Council of Tlingit and Haida Indian Tribes of Alaska), met with elders in Juneau to receive guidance. They wrote that the elders,

shared the pain they carry in their hearts toward the Forest Service, towards those western ways that attempt to minimize the sacredness of our traditional ways. As Tlingit, Haida, and Tsimshian people, we are taught to have respect for our food; for the animals and plants that constitute our food; and for the teachings of our Elders with regard to the gathering, preparing, sharing and eating of our food. Our respect for our food is evidenced in the beautiful totem stakes that our Tlingit ancestors placed in streams to greet the salmon as they returned to their birth places; in our intricately carved feast dishes; in the stories we teach our young about the relationship between the Tlingit, the Haida, and the Tsimshian and the animals that are our sustainers of life; and in our songs and dances, as is evidenced when our beloved berries are brought in at a *koo.eex'* (memorial party). Each Elder at that first meeting and at successive meetings, passionately objected to having their understanding of Tlingit food reduced to a regulatory word like “subsistence.” (Wiita et al. 2005:viii)

Through consultation with Tlingit community members and Nora and Richard Dauenhauer, the book title was changed to *Haa atxaayi Haa Kusteeyix Sitee*, which translates to “our food is our Tlingit way of life.” This experience demonstrates that while “subsistence” remains a rallying cry for many Alaska Natives, it simultaneously retains pejorative connotations about eking out a meager, marginal, and miserable existence (Wheeler and Thornton 2005:70). By changing the title, Tlingit community members were expressing deep resentment about how their way of life has been regulated, controlled, and devalued over the past several decades. I can empathize with the position that subsistence regulation is a grave insult to the sustainable ways of living that have proven themselves, not just for hundreds, but for thousands of years. Threats to subsistence must be clearly acknowledged as threats to Tlingit cultural survival (Thornton 1998). In effect, the Tlingit advocates for changing the book title were trying to decolonize subsistence.

To help decolonize subsistence, we anthropologists and archaeologists might consider rethinking application of the terms “hunter-gatherers” or even “foragers” to the Tlingit. First Nations of the Northwest Coast were (and are) food-producing societies. Even though fishing is by convention subsumed under the term “hunter-gatherer,” fishing was and is of such primary importance to the peoples of the North Pacific that the term “hunter-gatherer” misses the point. The Tlingit and other Pacific coast societies practiced many different types of fishing, and social groups maintained control over fishing territories. They were not just fishers, but fisheries resource managers. They successfully harvested a wide range of species, but their management and control of salmon are especially significant. The Tlingit mastered the technologies of fish processing and storage, leading them to accumulate substantial surpluses. They were food producers, even though this term is usually reserved for horticultural or agricultural societies.

The keys to Tlingit food production were both fishing and fish-product storage technologies. They invested in infrastructure—such as building hundreds of wood-stake fishing weirs—and altered their physical environments to promote fisheries production. They managed harvests through systems of territorial ownership³ and control, and restrained uncontrolled resource use through systems of

3. Whereas a clan's territory was held in common, it was divided among its constituent households and inherited matrilineally. Salmon streams, camping areas, house sites, seal camps, sea otter camps, and contiguous waters were all lineage possessions (Emmons 1991:46–47).

social relations. Tribes, clans, and households were caretakers of particular watersheds, fish streams, and stretches of ocean shoreline. Langdon (2006b) has documented how the Tlingit also transplanted fish eggs and modified streams to enhance fish habitat. The Tlingit managed harvests as trustees who had established long-term respectful relationships not only with resource territories, but with the plant and animal persons with whom they shared the world (Langdon 2000; see Easton [2008] and Nadasdy [2003] for descriptions of the relationship between the Dineh and food animals in the Yukon Territory).

In addition to fish, other Northwest Coast societies also produced food surpluses. The Makah and some Nuuchahnulth processed large quantities of whale and fur seal oil that they traded widely (Huelsbeck 1988). The Kwakwaka'wakw, Coast Salish, Nuxalk, Nuuchahnulth, and Haida cultivated plots of Pacific silverweed and springbank clover in estuarine gardens (Deur and Turner 2005). The Coast Salish maintained plots of camas, and the Chinook intensified use of wapato-filled wetlands (Darby 2005; Turner and Peacock 2005). The Haida selectively logged ancient cedar trees and manufactured sea-going vessels that they traded to others. The Tsimshian on the lower Nass River specialized in the large-scale production of eulachon oil. The Kwakwaka'wakw of the Broughton Archipelago practiced mariculture through the construction and maintenance of clam gardens (Harper et al. 2002). The Tlingit grew tobacco and potatoes, perhaps prior to their eighteenth-century introduction by fur traders (Moss 2005). I argue that the ethnographically known societies of the Northwest Coast, and many of their ancestors, are more appropriately conceived of as fishing and food-producing societies than as "hunter-gatherers" or "foragers." Yet we must be careful not to simply exchange one outdated anthropological category for another, fully cognizant of the social evolutionary baggage such typologies carry. The archaeological data we generate also represent important archives of information that can inform societal understanding of the issues at stake in contemporary conflicts over subsistence.

HOW ARCHAEOLOGY AND ZOOARCHAEOLOGY CAN CONTRIBUTE

How can archaeology contribute to efforts of the Tlingit and other Alaska Natives to assert their rights to continue their reciprocal relationships with animals? How can zoo-

archaeology contribute to improved management of fish and wildlife?

The emphasis on fishing in the previous section reflects my experience as a zooarchaeologist. Over 85% of bones in most southeast Alaska faunal assemblages are fish bones, and this also holds for the greater Northwest Coast (Moss and Cannon in press). The most widely recognized fish of cultural importance is salmon, the iconic fish of the Northwest Coast. First Nations have been using salmon on the Northwest Coast for over 7,000 years (Cannon and Yang 2006), yet after just a few centuries of Euro-American exploitation, Northwest salmon are threatened with extinction (Montgomery 2003). Cannon et al. (n.d.) and Campbell and Butler (2010) have identified several different organizational strategies Northwest Coast groups used to obtain and manage salmon. A few of these involve resource ownership, such as that indicated at one of the Coffman Cove sites (49-PET-067), located close to the mouth of Coffman Creek in southeast Alaska (Moss n.d.a). The faunal assemblage, dated 4200–2000 cal BP, is dominated by salmon bones. Salmon cranial bones are represented, as well as vertebrae, indicating on-site butchery of whole fish. The predominance of salmon in the assemblage suggests a group with ownership rights to the local salmon stream over a long period of time. A wood-stake weir has recently been identified along Coffman Creek (Jane Smith pers. comm. 2010), but has not yet been dated. Knowing the age of this investment in infrastructure would help establish the antiquity of resource ownership in the area. Nevertheless, the Coffman Cove example strongly suggests that resource ownership and management is not just an ethnographic pattern, but has significant antiquity in Tlingit country. This is consistent with the age of other fishing weirs and traps in southeast Alaska.

Although focus has often centered on salmon, other taxa occur in abundance in the region's archaeological sites, including codfishes, herring, rockfish, and halibut. Recent examination of records from 181 excavated sites in southeast Alaska reveals that only twenty-eight sites were investigated with methods appropriate for documenting small-bodied herring (Moss et al. in press). Of this subset, twenty-one (75%) contained herring bones, highlighting the consistent use of herring in the past. The earliest herring remains date to 9300–7900 cal BP from Chuck Lake on Heceta Island, but most records date from the last 4000 years. Many long-standing Tlingit towns and

villages are associated with important historical herring stocks. We know Pacific herring is a bellwether species for North Pacific marine ecosystems and that biologists and managers have only a very limited understanding of its long-term population dynamics and ecology. Since herring were overfished in the twentieth century (Funk 2009), archaeology can provide a more complete picture of the spatial distribution and abundance of herring in southeast Alaska. As is the case for many species, herring are being managed in a depleted status that represents a mere fraction of their historical abundance and distribution.

Whereas salmon and herring have been commercially important species for decades, zooarchaeology has the power to reveal information about species that may be of lesser commercial importance. Pacific cod are abundant at Hidden Falls, North Point, Killisnoo Picnicground Midden, Cape Addington, and Coffman Cove. In a recent review, I found twenty-six sites with a minimum of 100 NISP (number of identified specimens) identified to at least the family level. Twelve of the sites contained abundant cod remains (Moss in pressb). Zooarchaeological records can be used to trace past distributions of species such as Pacific cod which may likely gain in commercial and subsistence importance as other fish decline. Future work analyzing the ancient DNA in fish bones—of herring, salmon, and cod—can be used to better understand how representative today's stocks are of those in the past.

We can assume that fish and wildlife abundances in southeast Alaska have changed over the past several thousand years. Elsewhere in the world, resource scarcity or overexploitation of one fish taxon leads to “fishing down the food web” to use smaller-bodied or less optimal species (Reitz 2004). At this time, we have no archaeological evidence of over-exploitation of fish or wildlife in southeast Alaska (see Butler and Campbell [2004] for a Northwest Coast-wide review). This is a significant finding, but how did the Tlingit and others make the necessary adjustments to changes in resource abundances and distributions?

Recent study of Northern fur seals is revealing how changes in one part of the North Pacific affect other parts. Study of this species also demonstrates how zooarchaeological data can expose genuinely new and unexpected information about biogeography of relevance to fish and wildlife managers. While working on the Cape Addington project, we were surprised to find the remains of Northern fur seal pup bones. Since most Northern fur seals are born in the Pribilof Islands today, and pups don't swim before they are four months old,

and because the Pribilofs are located ~2500 km away from Cape Addington, we wondered whether the fur seal remains were from animals migrating south in the fall, from stranded seal pups, or whether there was a breeding area located somewhere near Cape Addington in the past (Moss 2004). We pursued this question with isotopic and ancient DNA studies of fur seal bones and were able to confirm that at least two Northern fur seal pups and two juveniles were present at Cape Addington (Moss et al. 2006). We pursued this question with isotopic and ancient DNA studies of fur seal bones to see if and how they were related to Pribilof seals and where they foraged in the ocean. We were able to confirm that at least two Northern fur seal pups and two juveniles were present at Cape Addington, but the genetic evidence of their relationship to the Pribilof seals was ambiguous. Even though a Northern fur seal breeding site in southeast Alaska has not been identified, it remains a possibility.

Meanwhile, Gifford-Gonzalez et al. (2005) were causing a stir among marine mammal biologists because they found abundant Northern fur seal remains in California sites dated to the middle and late Holocene. Gifford-Gonzalez suggested that in the past, Northern fur seals had maintained breeding colonies in California. This was a radical idea that at least some biologists adamantly rejected, yet work by Lyman (1988), Etnier (2002), and Crockford et al. (2002) supports the idea that Northern fur seals had breeding colonies along the coasts of California, Oregon, Washington, British Columbia, and locations other than the Pribilofs in Alaska. Crockford and Frederick (2007) have suggested that the Pribilof Islands were not accessible to Northern fur seals for breeding during the height of the Neoglacial, estimated to have been 3500–2500 ¹⁴C yrs BP. They propose that during this period, winter sea ice on the Bering Sea extended farther south than it does now and that ice persisting longer into the summer would have blocked access to the Pribilofs at a crucial time in the reproductive cycle of fur seals. What biologists had thought was a stable pattern of fur seal fidelity to the Pribilof breeding grounds (Gentry 1998) turns out to be a result of post-Neoglacial warming after 2500 ¹⁴C yrs BP. This suggests that Northern fur seals are capable of significant behavioral flexibility over the long term, and certainly the peoples of the North Pacific were just as resilient. Not until fur seals were hit by industrial hunting in the early twentieth century was the species in jeopardy. Understanding the long-term history of this species that adapted not just to environmental change,

but to human hunting pressure, is crucial for understanding how fur seals should be managed today.

My final example concerns seabirds. In today's society, one might think that Alaska Native use of seabirds is unnecessary; after all, any grocery store sells chickens and eggs. Study of the Forrester Islands, however, showed that collecting eggs and birds from this place was an exceedingly important sociocultural practice (Moss 2007). Assemblages from five archaeological sites yielded identifications of eleven seabird taxa. Even though the Kaigani Haida, the Tlingit, and their ancestors had been harvesting seabirds during spring and summer on the Forrester Islands since 1600 cal BP, the Forresters, as part of the Alaska Maritime Wildlife Refuge, are off limits to Native egg collecting and bird-hunting today. One of the ironies is that even though it has been illegal for the Tlingit and Haida to take birds from the Forresters since 1912, in the 1910s through the 1920s, biologists were busy shooting birds and collecting eggs for museums, because this is the way field ornithology was done at the time. This is parallel to the case of the Huna Tlingit, who traditionally collected gull eggs from the Marble Islands, now located within Glacier Bay National Park. Hunn et al. (2003) documented the traditional way the Huna collect eggs; if eggs are taken properly at specific times, the gulls will re-lay, and the number of surviving gulls every year will not be reduced by egg removal. Even though Huna are still prohibited from collecting eggs from the Marble Islands, biologists were allowed to remove gull eggs (following Huna protocols) to test the efficacy of this traditional practice. These ironies notwithstanding, ideally, zooarchaeology can help support claims of Alaska Native resource rights and calm the fears of wildlife managers threatened by traditional uses.

CONCLUSIONS

Zooarchaeology has tremendous potential to contribute new knowledge of Alaska Native use of fish and wildlife over time. This long-term perspective is of crucial importance because it documents times before industrial depletion of fish and wildlife in the twentieth century. It remains true that much ecological research is based on local field studies of relatively short duration, usually since the 1950s. Many fish and wildlife populations in Alaska are still suffering the cumulative effects of earlier over-exploitation. Pauly (1995) pointed out that policy makers and resource managers base many decisions on recent observa-

tions or on historical catch statistics that may span just a few decades (Erlandson and Rick 2008:1). Pauly termed this the "shifting baselines syndrome," where fisheries managers use a relatively recent historical baseline to manage fisheries without full recognition that the baseline itself is a consequence of drastic reductions having already occurred. Decisions continue to be made upon baselines that are not only "shifting," but receding (Stephen Langdon, pers. comm. 2009).

Zooarchaeology has demonstrated that Alaska Natives successfully and sustainably harvested fish and wildlife for thousands of years. Investigations at Coffman Cove suggest not just thousands of years of salmon use, but thousands of years of resource ownership and stewardship of salmon. This helps counter the idea that the landscape of Alaska has been a "pristine wilderness" free from human impacts for over 12,000 years. Southeast Alaska has been a strongly humanized landscape for millennia, and the fish and wildlife of southeast Alaska have been adapting to human activity for a very long time. Resource managers should not expect to return ecosystems to a state of preindustrial equilibrium; such equilibrium may have never existed. Alaska ecosystems have been dynamic systems in which humans have played leading roles for millennia. We should also consider how societies conceived of or failed to recognize environmental impacts they faced, and how they responded or adapted to change (Kirch 2005:432). Zooarchaeology has the potential to reveal genuinely new information about the long-term histories of fish and wildlife.

The word "subsistence" continues to have racial overtones in Alaska. In consideration of its history in anthropology and the way the word has been used to categorize "others" along a social evolutionary continuum, should we simply abandon the term? At least one cultural anthropologist, Stephen Langdon (pers. comm. 2009), goes out of his way to avoid using the word "subsistence" because of its associations. Some Tlingit resent the reductionist use of the term "subsistence" to categorize their way of life and their relationships with food animals. But debate over the term is about much more than politically correct language—the practice and regulation of subsistence have been institutionalized by both state and federal governments in part due to the efforts of anthropologists. Subsistence has been a growth industry for anthropologists who have played the role of mediators to help governments manage the "social problem" of subsistence. From this perspective, anthropologists have

been complicit in the ways the power of the state has been used to deny, control, restrict, and constrain the rights of Alaska Natives to obtain food.

The time has come for anthropologists, including archaeologists, to recognize our privileged positions. Archaeological studies can document subsistence practices of the past and the long-term histories of fish and wildlife, but the results of our work should be widely disseminated so they can be used by Tlingit and other Alaska Natives to assert their resource rights. We must design future work that will yield results that proactively address contemporary struggles over fish and wildlife. We must not only rethink subsistence, but rethink the roles our discipline has played and continues to play in the bureaucratization of subsistence. Even so, it can be argued that “anthropologists are at best secondary players in what remains primarily the domain of biologists, who are also constrained by high-level politically oriented bureaucrats whose commitments to understanding subsistence issues are often questionable” (Ken Pratt pers. comm. 2010). Nevertheless, I sincerely hope that we can work to gain recognition for the Tlingit’s wise use of animal resources, and assist others in working towards reducing the bureaucracy that overwhelms the use of food animals by the Tlingit and other Alaska Natives.

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REFERENCES

- Alaska Federation of Natives
1998 *Subsistence Chronology: a Short History of Subsistence Policy in Alaska since Statehood*. http://www.alaskool.org/projects/anca/subsistence_chron/subchron.htm; accessed February 2009.
- Anderson, Robert T.
2001 *Review of Alaska Natives and America Laws*, 2nd edition, by David S. Case and David A. Voluck. *Alaska Law Review* 18(2):317.
- Burchell, Graham, Colin Gordon, and Peter Miller (editors)
1991 *The Foucault Effect: Studies in Governmentality: With Two Lectures by and an Interview with Michel Foucault*. University of Chicago Press.
- Butler, Virginia L., and Sarah K. Campbell
2004 Resource Intensification and Resource Depression in the Pacific Northwest of North America: A Zooarchaeological Review. *Journal of World Prehistory* 18(4):327–405.
- Callaway, Donald G.
2001 Methods Used in Ethnographic Inquiry in Alaska. *CRM* 5:30–33.
- Campbell, Sarah K. and Virginia L. Butler
2010 Archaeological Evidence for Resilience of Pacific Northwest Salmon Populations and the Socioecological System over the Last ~7,500 Years. *Ecology and Society* 15(1):17. Online at <http://www.ecologyandsociety.org/vol15/iss1/art17/>.
- Cannon, Aubrey, and Dongya Y. Yang
2006 Early Storage and Sedentism on the Pacific Northwest Coast: Ancient DNA Analysis of Salmon Remains from Namu, British Columbia. *American Antiquity* 71(1):123–140.
- Cannon, Aubrey, Dongya Y. Yang, and Camilla F. Speller
in press Site-Specific Salmon Fisheries on the Central Coast of British Columbia. In *The Archaeology of North Pacific Fisheries*, edited by M. L. Moss and A. Cannon, University of Alaska Press, Fairbanks.
- Case, David S., and David A. Voluck
2002 *Alaska Natives and American Laws*, 2nd ed. University of Alaska Press, Fairbanks.

- Crockford, Susan J., and Gay Frederick
2007 Sea Ice Expansion in the Bering Sea during the Neoglacial: Evidence from Archaeozoology. *The Holocene* 17:699–706.
- Crockford, Susan J., Gay Frederick, and Rebecca Wigen
2002 The Cape Flattery Fur Seal: An Extinct Species of *Callorhinus* in the Eastern North Pacific? *Canadian Journal of Archaeology* 26:152–74.
- Darby, Melissa
2005 The Intensification of Wapato (*Sagittaria latifolia*) by the Chinookan People of the Lower Columbia River. In *Keeping It Living: Traditions of Plant Use and Cultivation on the Northwest Coast of North America*, edited by D. Deur and N.J. Turner, pp. 194–217. University of Washington Press, Seattle.
- Deur, Douglas, and Nancy J. Turner (editors)
2005 *Keeping It Living: Traditions of Plant Use and Cultivation on the Northwest Coast of North America*. University of Washington Press, Seattle.
- Dombrowski, Kirk
2002 The Practice of Indigenism and Alaska Native Timber Politics. *American Anthropologist* 104(4):1062–1073.
2007 Subsistence Livelihood, Native Identity and Internal Differentiation in Southeast Alaska. *Anthropologica* 49(2):1–25.
- Easton, Norman Alexander
2008 “It’s Hard Enough to Control Yourself; It’s Ridiculous to Think You Can Control Animals:” Competing Views on “The Bush” in Contemporary Yukon. *The Northern Review* 29:21–38.
- Emmons, George T.
1991 *The Tlingit Indians*. Edited by Frederica de Laguna. University of Washington Press, Seattle.
- Erlandson, Jon M., and Torben C. Rick
2008 Archaeology, Marine Ecology, and Human Impacts on Marine Environments. In *Human Impacts on Ancient Marine Ecosystems: A Global Perspective*, edited by T.C. Rick and J.M. Erlandson, pp. 1–19. University of California Press, Berkeley.
- Etnier, Michael A.
2002 The Effect of Human Hunting on Northern Fur Seal (*Callorhinus ursinus*) Migration and Breeding Distribution in the Late Holocene. Unpublished Ph.D. dissertation, University of Washington.
- Funk, Fritz
2009 Assessing the Impacts of Historical Commercial Fisheries on Herring Stocks. Paper presented at Sharing our Knowledge: a Conference of Tlingit Tribes and Clans, Juneau.
- Gentry, Roger L.
1998 *Behavior and Ecology of the Northern Fur Seal*. Princeton University Press, Princeton.
- George, Gabriel D., and Robert G. Bosworth
1988 *Use of Fish and Wildlife by Residents of Angoon, Admiralty Island, Alaska*. Alaska Department of Fish and Game, Division of Subsistence Technical Paper no. 159. Juneau.
- Gifford-Gonzalez, Diane, Seth D. Newsome, Paul L. Koch, Thomas P. Guilderson, J. Josh Snodgrass, and Richard K. Burton
2005 Archaeofaunal Insights on Pinniped–Human Interactions in the Northeastern Pacific. In *The Exploitation and Cultural Importance of Sea Mammals*, edited by G. G. Monks, pp. 19–38. Oxbow Books, Oxford.
- Harper, John R., James Haggarty, and Mary C. Morris
2002 Broughton Archipelago: Clam Terrace Survey. Coastal and Ocean Resources, Inc., Sidney, BC.
- Hensel, Chase, and Phyllis Morrow
1998 Co-Management and Co-Optation: Alaska Native Participation in Regulatory Processes. *Cultural Survival Quarterly* 22(3):69–71.
- Huelsbeck, David R.
1988 The Surplus Economy of the Central Northwest Coast. In *Research in Economic Anthropology*, supp. 3, edited by B.L. Isaac, pp. 149–177. JAI Press, Greenwich, CT.
- Hunn, Eugene S., Darryll R. Johnson, Priscilla Russell, and Thomas F. Thornton
2003 Huna Tlingit Traditional Environmental Knowledge, Conservation, and Management of a “Wilderness” Park. *Current Anthropology* 44(4):79–103.
- Kirch, Patrick V.
2005 Archaeology and Global Change: The Holocene Record. *Annual Review of Environmental Resources* 30:409–440.
- Korsmo, Fae L.
1994 The Alaska Natives. In *Polar Peoples: Self-Determination and Development*, edited by Minority Rights Group. Minority Rights Publications, London. <http://www.alaskool.org/projects/>

- native_gov/ARTICLES/KORSMO/PolarPpls.htm#Subsistence.
- Langdon, Stephen J.
2000 Subsistence and Contemporary Tlingit Culture. In *Will the Time Ever Come? A Tlingit Source Book*, edited by A. Hope and T. F. Thornton, pp. 117–123. Alaska Native Knowledge Network, Fairbanks.
- 2006a Tidal Pulse Fishing: Selective Traditional Tlingit Salmon Fishing Techniques on the West Coast of the Prince of Wales Archipelago. In *Traditional Ecological Knowledge and Natural Resource Management*, edited by C. R. Menzies, pp. 21–46. University of Nebraska Press, Lincoln.
- 2006b Traditional Knowledge and Harvesting of Salmon by Huna and Hinyaa Tlingit. U.S. Fish and Wildlife Service, Office of Subsistence Management, Fisheries Resource Monitoring Program, Final Report (Project No. 02-104), Anchorage.
- 2007 Sustaining a Relationship: Inquiry into the Emergence of a Logic of Engagement with Salmon among the Southern Tlingits. In *Native Americans and the Environment: Perspectives on the Ecological Indian*, edited by M. E. Harkin and D. R. Lewis, pp. 233–273. University of Nebraska Press, Lincoln.
- Leask, Linda, Mary Killorin, and Stephanie Martin
2001 *Trends in Alaska's People and Economy*. Institute of Social and Economic Research, University of Alaska Anchorage. Online at <http://www.iser.uaa.alaska.edu/Publications/Alaska2020.pdf>.
- Lyman, R. Lee
1988 Seal and Sea Lion Hunting: A Zooarchaeological Study from the Southern Northwest Coast of North America. *Journal of Anthropological Archaeology* 8:68–99.
- Mason, Rachel, and Janet Cohen
2001 The Subsistence-Flavored Ethnography of the Alaska Region. *CRM* 5:33–35.
- Monteith, Daniel
2008 Struggles for Autonomy and Subsistence: An Ethnohistory of Political Issues for Saxman, Alaska. Paper presented at the annual meeting of the American Society for Ethnohistory, Eugene.
- Montgomery, David R.
2003 *King of Fish: The Thousand-Year Run of Salmon*. Westview Press, Boulder, CO.
- Morgan, Lewis Henry
1985 [1877] *Ancient Society*. University of Arizona Press, Tucson.
- Moss, Madonna L.
2004 *Archaeological Investigation of Cape Addington Rockshelter: Human Occupation of the Rugged Seacoast on the Outer Prince of Wales Archipelago, Alaska*. University of Oregon Anthropological Papers no. 63. Eugene.
- 2005 Tlingit Horticulture: An Indigenous or Introduced Development? In *Keeping it Living: Traditions of Plant Use and Cultivation on the Northwest Coast of North America*, edited by D. Deur and N. J. Turner, pp. 274–295. University of Washington Press, Seattle.
- 2007 Haida and Tlingit Use of Seabirds from the Forrester Islands, Southeast Alaska. *Journal of Ethnobiology* 27(1):28–45.
- in press a Cod and Salmon: A Tale of Two Assemblages from Coffman Cove, Alaska. In *The Archaeology of North Pacific Fisheries*, edited by M. L. Moss and A. Cannon, University of Alaska Press, Fairbanks.
- in press b Pacific Cod in Southeast Alaska: The “Cousin” of the Fish that Changed the World. In *The Archaeology of North Pacific Fisheries*, edited by M. L. Moss and A. Cannon, University of Alaska Press, Fairbanks.
- Moss, Madonna L., Virginia L. Butler, and J. Tait Elder
in press Herring Bones in Southeast Alaskan Archaeological Sites: The Record of Tlingit Use of Yaaw (Pacific Herring, *Clupea pallasii*). In *The Archaeology of North Pacific Fisheries*, edited by M. L. Moss and A. Cannon, University of Alaska Press, Fairbanks (submitted).
- Moss, Madonna L., Dongya Y. Yang, Seth D. Newsome, Camilla F. Speller, Iain McKechnie, Alan D. McMillan, Robert J. Losey, and Paul L. Koch
2006 Historical Ecology and Biogeography of North Pacific Pinnipeds: Isotopes and Ancient DNA from Three Archaeological Assemblages. *Journal of Island and Coastal Archaeology* 1(2):165–190.
- Nadasdy, Paul
2003 *Hunters and Bureaucrats: Power, Knowledge, and Aboriginal-State Relations in the Southwest Yukon*. University of British Columbia Press, Vancouver.
- Newton, Richard G., and Madonna L. Moss
2005 *Haa Atxaayi Haa Kusteeyix Sitee, Our Food Is Our Tlingit Way of Life: Excerpts of Oral Interviews*, 3rd ed. USDA Forest Service, Alaska Region, R10-MR-30, Juneau.

- Pauly, Daniel
1995 Anecdotes on the Shifting Baseline Syndrome of Fisheries. *Trends in Ecology and Evolution* 10:430.
- Peake, Harold
1927 The Beginning of Civilization. *Journal of the Royal Anthropological Institute* 57:19–38.
- Pluciennik, Mark
2001 Archaeology, Anthropology and Subsistence. *Journal of the Royal Anthropological Institute* 7:741–758.
- Reitz, Elizabeth J.
2004 “Fishing Down the Food Web:” A Case Study from St. Augustine, Florida, USA. *American Antiquity* 69:63–83.
- Reitz, Elizabeth J., and Elizabeth S. Wing
1999 *Zooarchaeology*, 1st ed. Cambridge University Press, Cambridge.
2008 *Zooarchaeology*, 2nd ed. Cambridge University Press, Cambridge.
- Smith, Laurajane
2004 *Archaeological Theory and the Politics of Cultural Heritage*. Routledge, New York.
- Steward, Julian H.
1955 *Theory of Culture Change: The Methodology of Multilinear Evolution*. University of Illinois Press, Urbana.
- Thornton, Thomas F.
1998 Alaska Native Subsistence: A Matter of Cultural Survival. *Cultural Survival Quarterly* 23(3):29–34.
2001 Subsistence in Northern Communities: Lessons from Alaska. *The Northern Review* 23:82–102.
- Turner, Nancy J., and Sandra Peacock
2005 Solving the Perennial Paradox: Ethnobotanical Evidence for Plant Resource Management on the Northwest Coast. In *Keeping It Living: Traditions of Plant Use and Cultivation on the Northwest Coast of North America*, edited by D. Deur and N.J. Turner, pp. 101–150. University of Washington Press, Seattle.
- United Fishermen of Alaska
2008 Subsistence Management Information – Informing Alaskans. Online at <http://www.subsistmgtinfo.org/index.htm>; accessed February 2009.
- Wheeler, Polly, and Amy Craver
2005 Office of Subsistence Management and Issues and Challenges of Integrating TEK into Subsistence Fisheries Management. *Practicing Anthropology* 27(1):15–19.
- Wheeler, Polly, and Thomas Thornton
2005 Subsistence Research in Alaska: A Thirty Year Retrospective. *Alaska Journal of Anthropology* 3(1):69–103.
- Wiita, Joanne, Donald G. Bremner, and Lillian Petershoare
2005 Acknowledgements. In *Haa Atxaayi Haa Kusteeyix Sitee, Our Food Is Our Tlingit Way of Life: Excerpts of Oral Interviews*, 3rd ed., edited by R. G. Newton and M. L. Moss, pp. viii–x. USDA Forest Service, Alaska Region. R10-MR-30, Juneau.
- Wikipedia
2009 Subsistence economy. Online at http://en.wikipedia.org/wiki/Subsistence_economy; accessed February 2009.
- Wolfe, Robert J. and Cheryl L. Scott, William E. Simeone, Charles J. Utermohle, and Mary C. Pete
2007 The “Super-Household” in Alaska Native Subsistence Economies. Ms. in possession of Robert Wolfe and Associates, San Marcos, CA.
- Worl, Rosita
2002 Alaska Native Subsistence Cultures and Economy. Presented to the U.S. Senate Committee on Indian Affairs Oversight Hearing on Subsistence Hunting and Fishing in the State of Alaska. Washington, D.C. Online at <http://indian.senate.gov/2002hrsgs/041702alaska/worl.PDF>; accessed February 2009.

