

REVIEW

CARIBOU HERDS OF NORTHWEST ALASKA, 1850–2000

Ernest S. Burch, Jr., edited by Igor Krupnik and Jim Dau, 2012. University of Alaska Press, Fairbanks; 203 pages, photos, maps, tables, appendices, index. ISBN: 978-1-60223-178-8, \$45.00 (cloth); ISBN 978-1-60223-179-5, \$29.95 (paper).

Reviewed by Dale C. Slaughter

906 W. 56th Avenue, Anchorage, AK 99518; archdles@ak.net

This small but important work was unfinished at the time of Ernest S. Burch's death in 2010. It might have languished indefinitely except for the determined efforts of a small group of Burch's colleagues and friends who assumed the task of publishing the manuscript. We should thank them for bringing the volume to fruition. The book contains seven chapters, two postscripts, and five appendices. The first five chapters and the appendices are in Burch's hand. The final two chapters, unfinished by Burch, are synopses gleaned from his notes by the editors, Igor Krupnik and Jim Dau.

Chapter 1 describes the geographic and methodological parameters of the book. The study area includes the Alaska mainland north of the Yukon River and adjacent portions of Canada; the study period is 1850–2000. Burch formulated two hypotheses: (1) the same four caribou herds present today were present throughout the period of study; (2) wolf predation was the primary factor limiting caribou numbers. In response to the first hypothesis, Burch developed models of annual caribou movements based on modern biological research and tested them against data obtained from historical records and Native historians. The second hypothesis was similarly tested. Burch, a master at working with Native historians, acknowledges that many view Native observations as anecdotal and thus unreliable. To those critics, he replies that if Native observations were empirically unsound Native societies would have perished millennia ago.

Chapters 2 (Caribou versus Reindeer) and 3 (Predators) are essentially primers intended for those lacking northern

expertise. Although reindeer and caribou are the same species (*Rangifer tarandus*), there are critical differences between the two. Reindeer are part of the discussion because their introduction profoundly influenced the fate of caribou and thus the path of Burch's story. Chapter 3 discusses caribou predation, focusing primarily on humans, wolves, and brown bears, but other predators are discussed as well. For example, sled dogs, which Natives preferred over reindeer as draft animals, were serious reindeer predators.

Chapters 4 and 5 summarize the history of caribou during the "traditional period," which Burch defines as the period immediately prior to about 1850. Chapter 4 discusses the Western District, which extends from Harrison Bay to the Chukchi Sea and southwest to the Yukon River delta, an area coinciding with the contemporary range of the Western Arctic caribou herd. Burch's data suggest that the southern portion of the district was occupied by at least one and possibly as many as three herds in addition to the Western Arctic herd. Caribou numbers fell precipitously during the latter half of the nineteenth century, and the additional herds ceased to exist by 1900. Only the Western Arctic herd remained, albeit in greatly reduced numbers. Similarly, the caribou population of the district's northern section crashed in the 1880s. Severe famine was felt first at Kivalina but soon spread throughout the area, leading to starvation and human relocation.

Chapter 5 discusses the Northern District that comprises the remainder of the study area and is currently occupied by three contemporary herds (Teshekpuk Lake, Central Arctic, and Porcupine River) cumulatively

containing about 200,000 individuals. Unfortunately Burch was unable to obtain oral history data for this region. West of the Colville River mouth, caribou appear to have been relatively abundant until the late nineteenth century. Charles Brower, a long-time resident of the region, claimed there were more caribou in the area in the winter of 1897–1898 than he had ever seen before, but they were virtually absent there afterward. East of the Colville River, early reports suggest caribou were abundant until about mid-century when there was a sharp population decline. The population had rebounded by the time commercial whalers began overwintering at Herschel Island in 1890, however. The overwintering whalers depended heavily on caribou, largely supplied by Native hunters, for meat. Although it is not possible to plot the decline of caribou during this period, it is clear that by 1908 caribou were practically absent from all of northern Alaska. Burch vigorously argues that the decline was largely caused by overhunting.

Chapter 6 addresses the introduction of reindeer to Alaska. Unfortunately, only a single page of this chapter was written before Burch's death. The editors wisely, I think, chose to present a synopsis of the chapter based on Burch's notes rather than to complete it on the author's behalf. From the introduction of about 1,300 reindeer during the decade following 1892, the herd grew to 600,000 by 1930, slightly more than half of which occupied the study area. Unfortunately, Burch didn't live to fully present the fascinating relationship between reindeer, wolves, and caribou. That relationship can be briefly summarized as follows: wolves selectively preyed on reindeer because they are more easily captured than caribou; reindeer have the proclivity to join caribou herds; reduced wolf predation allowed caribou numbers to increase, thus providing more opportunities for reindeer defection. The net result of this was that reindeer numbers declined precipitously while caribou numbers slowly increased.

Chapter 7, presented as a synopsis, summarizes the volume and presents conclusions. Burch maintains that the primary cause of the caribou population crash was human overhunting. Only two of the historic caribou herds survived, the Western Arctic and Porcupine River herds, and these gradually expanded to occupy the ranges of the nineteenth- and early twentieth-century herds. The principal cause of caribou population increase was the shift of wolf predation from caribou to reindeer.

The idea that overhunting was the primary cause of the caribou population crash has been disputed for years and warrants critical examination, although spatial constraints preclude all but the briefest scrutiny here. In the discussion of the Northern District (Chapter 5), Burch accepts Bockstoe's careful argument that whalers overwintering on Herschel Island between 1890 and 1908 bartered for 12,308 caribou carcasses. Burch contends that this figure is accurate but fails to reflect the overall caribou kill because it overlooks the Native consumption of caribou. Although not discussed by Burch, Bockstoe (1986:275) indicates that whalers consumed only slightly more than one percent of the herd annually. Even if whalers and Natives were present in the region in equal numbers, which seems unlikely, the consumption of caribou would have been no more than three percent of the herd per annum. It is difficult to see how a harvest of this size could almost completely destroy the herd(s) in nine years.

Similarly, Burch quotes Charles Brower regarding the large number of caribou present in the Barrow area during the winter of 1897–1898 and an estimate that 1,200 caribou were required that winter to sustain the whalers stranded there. Brower also commented that the following year there were no caribou in the area. It is simply inconceivable that harvesting 1,200 caribou beyond the requirements of local residents would exterminate the herd. Clearly, heavy hunting pressure reduces animal populations. It is equally clear, however, that other factors must have been responsible for the sudden and catastrophic decline in caribou numbers and that one of these factors, or perhaps several in concert, were far more destructive than overhunting alone.

In conclusion, this is an excellent volume. I have focused on parts of the text of interest to anthropologists, but there is a great deal here for biologists as well. The volume is meticulously researched, thoroughly documented, and well thought out. It is... well, classic Burch.

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REVIEW

VEKHI NA MYSAKH [LANDMARKS ON CAPES]: PAPERS IN HONOR OF SERGEI ARUTYUNOV ON HIS EIGHTIETH BIRTHDAY

Edited by Mikhail Bronshtein and Igor Krupnik, 2012. Moscow State Museum of Oriental Art. Paper, 180 pages, photographs, drawings. ISBN 978-5-903417-33-9; approx. \$40.

Reviewed by

Oksana Yashchenko

University of Alaska Fairbanks, Department of Anthropology, P.O. Box 757720, 310 Eielson Building, Fairbanks, AK 99775;
oyashchenko@alaska.edu

Sveta Yamin-Pasternak

University of Alaska Fairbanks, Department of Anthropology, P.O. Box 757720, 310 Eielson Building, Fairbanks, AK 99775;
syamin@alaska.edu

Igor Pasternak

University of Alaska Fairbanks, Department of Art, P.O. Box 755640, Fairbanks, AK 99775; pasternakigor@gmail.com

Editors Mikhail Bronshtein and Igor Krupnik present this volume in recognition of Sergei Arutyunov's efforts to advance the study of arctic societies. The volume focuses almost exclusively on Chukotka but also features a broad view of the peopling of the Arctic in the context of world civilizations and trade (Plumet, pp. 114–119). It includes contributions by thirteen authors and drawings by two artists. Among other visual materials are depictions of museum objects, images pertaining to the themes of individual articles, and photographs of Arutyunov at different stages in his career. The book is in Russian, with a volume overview and brief descriptions of most chapters in English, offered at the end (pp. 178–179). The main contents feature archaeological investigations (Bronshtein and Dneprovsky; Dneprovsky and Lopatin; Lopatin; Mikhailova), analyses of museum objects (Sukhorukova), description of a Yupik language archive (Vakhtin), and several detailed ethnohistorical reconstructions (Chlenov and Krupnik; Nefyodkin; Weinstein-Tagrina). The cover photograph shows a prehistoric maritime residence in the process of being excavated. Evoking fairytale imagery, the back cover simulates the feel of Soviet-era children's books, set in Chukotka.

Presented in a less-expected format are two contributions by Charles Weinstein: excerpts from his diary

chronicling experiences in Chukotka from 1993–1999 (pp. 130–141) and the Chukchi-Russian-French-English dictionary of the Chukchi lexicon pertaining to cosmology and shamanism. A number of Weinstein's diary entries mourn the decline of indigenous language use, while the appended vocabulary manifests the semantic and cultural richness of what is being lost. Some terms are followed by an expression or a sentence in Chukchi, further elucidating their cultural context. The introductory narrative explains that the material is actually a small part of the thematic dictionary (yet to be published in its entirety), in which Weinstein organizes the linguistic and interpretive material he has assembled into a total of thirty-seven themes, each illuminating a particular domain of Chukchi indigenous knowledge as expressed through language.

On a similar topic in Chukchi spirituality, but focusing in depth on its specific expression, is the article by Zoya Weinstein-Tagrina, which takes on the challenge of reconstructing the tradition of shamanic family singing. Weinstein-Tagrina chooses the type of celebration called Mn'egyrgyn, a thanksgiving to and for the animals that are central to Chukchi livelihood, as an example of a cultural milieu where the shamanic family singing is performed. The author synthesizes Bogoras's documentation of the Chukchi ceremonial celebrations

with her own analyses of rhythmic structure, content, sound qualities, and the performance context of select songs. She succeeds in simulating an immersion experience for the reader.

The reconstruction of Mn'egyr̥gyn and Weinstein's shamanic vocabulary could assist in developing teaching materials for secondary and higher education curricula in Chukchi studies. Due to a lack of access to newer instructional aids, Native language teachers in Chukotka are constrained by the use of Soviet-era books, which are deprived of such content. If properly adapted for local educational needs, the work of Weinstein-Tagrina and Weinstein could help connect such contemporary aesthetic expressions as indigenous dances to the worldview that forms their ancestral foundation. Similarly, the description of "lullaby" singing to polar bears unveils the sentience ascribed to bears and speaks to the kind of human-animal relationship that is being disrupted by the denial of polar bear quotas for Chukotka hunters.

Vakhtin's review of material collected by Ekaterina Rubtsova on Yupik language and lore may serve a similar educational purpose. The article describes Yupik texts, currently being prepared for publication, according to the author (p. 94), assembled into a nearly five-hundred-page reference. Vakhtin comments on the linguistic geography of the Chukotka Yupik (usually called "Asian/Asiatic Yupik" in Russian literature and "Siberian Yupik" in most English language sources). He lauds the progressive and "brave" (p. 92) foresight of Rubtsova to have documented regional diversity in Yupik speech. Interwoven with the archive review is a very moving and admiring portrait of Rubtsova, one the first Soviet teachers in Chukotka and a dedicated scholar of Yupik language and storytelling. Vakhtin is critical of the tendency to overlook the seminal contributions of ethnolinguists like Rubtsova to ethnographic studies (and vice versa).

Scholars of archaeology may benefit from the methodological insight provided by Dneprovsky and Lopatin's overview of best practices in excavating permafrost-embedded semisubterranean dwellings, such as modifying the quadrant method and implementing conservation steps between excavation seasons. In a separate chapter, Lopatin analyzes the pottery from the Ekven and Paipelghak sites, establishing a typology based on five criteria—shape, slab mold, texturing, edge thickness, and molding technique. In part through the lens of his own experimentation with locally harvested clay, Lopatin comments on the relative homogeneity of prehistoric pottery on the peninsula, in con-

trast to claims of diversity in shape and technique made by previous authors.

Chlenov and Krupnik provide an account of the last voluntary Soviet-era Yupik migration. The experience of the Ungazmiut, the Chaplino Yupiget, migration to the shores of Kresta Bay and Gulf of Anadyr illuminates the centrality of cohesive hunting crews in the social system of arctic maritime societies. Another ethnohistorical reconstruction in the volume is Nefyodkin's article on Chukchi maritime warfare of the mid-seventeenth to mid-nineteenth centuries, which offers a condensed version of the author's book on this subject.

The two names appended to the volume contributor list (pp. 176–177) are those of the artists Sergei Bogoslovsky and Nina Survillo. Numerous drawings of Old Bering Sea artifacts are incorporated as visual aids in Sukhorukova's article, which analyzes the transition from object ornamentation to a stylized visualization of narrative composition between the early and later periods of the Old Bering Sea (pp. 42–51). We deduce from the specialization mentioned in Survillo's bio-sketch that these illustrations should be credited to her. The featured field drawings by Bogoslovsky were created over the course of his expeditions to Chukotka between 1980 and 1988. Choosing to emphasize what he perceived as the significant features of each place, the artist sheds many details of the physical environment while retaining recognizable likenesses of each location. The artist's hand elevates the atmosphere of the drawing's content, triggering a different feeling in the viewer than would a photographic depiction. Readers would benefit from a professional critique of this impressive body of work. However, the drawings are marginalized by their presentation at the beginning of each chapter—seemingly at random and unconnected with the chapter contents. They function decoratively, merely as part of the layout.

We save our concluding remarks for the volume's lead article: "Sergei Arutyunov: A Scholarly Portrait in the Setting of Eskimology," by Bronshtein and Krupnik. Written affectionately by close colleagues, this reverent account of Arutyunov's career "landmarks" takes the reader to the most significant "capes" of Chukotka's cultural legacy. Arutyunov first came to Chukotka when he was 26, to work on an Ekven excavation with his graduate advisor Maksim Levin. The "commute" entailed a train trip across country, a steamship voyage from Vladivostok to Provideniya, and passage by whaleboat along the coast of the Chukotka Peninsula. Members of this 1958 expedition

had the good fortune to visit Chaplino and Naukan in the final year before these communities were subjected to forced closure and relocation. The trip laid the groundwork for over sixty contributions to arctic scholarship, noted in the bibliographic compilation of Arutyunov's select works (pp. 172–175). "Everyone has their own Arutyunov," say Bronshtein and Krupnik (p. 9). "Goosyaba," "Goosiaplik," and "Little Goosyik" (lit. "little gosling") are among the nicknames mentioned in the book (pp. 71, 72). Still thinking of him as "Sergei Aleksanrovich," we join the volume contributors in sending best wishes to Professor Arutyunov on his eightieth birthday.

REVIEW

HAA LÉELK'W HÁS AANÍ SAAX'Ú / OUR GRANDPARENTS' NAMES ON THE LAND

Edited by Thomas F. Thornton. 2012. Sealaska Heritage Institute, Juneau, and University of Washington Press, Seattle. Paper, 254 pages, photos, maps, tables. ISBN: 978-0-295-98858-0, \$30.00; ISBN: 978-0-295-99217-4 (hardcover), \$60.00.

Reviewed by Patrick J. Moore

Department of Anthropology, University of British Columbia, Vancouver, BC, Canada V6T 1Z1; patrick.moore@ubc.ca

Haa Léelk'w Hás Aaní Saax'ú / Our Grandparents' Names on the Land, edited by Thomas Thornton, is an encyclopedic resource that focuses on Tlingit knowledge of place as maintained in place names. This is the most detailed documentation of Tlingit place names available, and it will attract readers who are interested in Tlingit traditions of place or the cultural history of Southeast Alaska. Thornton makes excellent use of earlier sources on Tlingit place names, while also updating earlier spellings to the contemporary standard of the Naish/Story orthography (1963; Story and Naish 1973). In his introduction, Thornton provides an overview of the sounds of Tlingit and common components of Tlingit place names, as well as the range of semantic referents found in the names. In his introduction and throughout the work, he shows how place and culture are intertwined in Tlingit place names and associated oral traditions. Each section also has black and white photos showing Tlingit elders, community members, ceremonial objects relating to place traditions, including poles, blankets, and house panels, as well as pictures of significant geographic features.

The volume organizes Tlingit place names in broad regions associated with the main Tlingit settlements, proceeding from Yakutat territory in the north to the Hydaburg region in the south. It was nice to see even place names from Tlingit regions in the Yukon, such as Deisleen (Teslin) and Taagish Áayi (Tagish Lake) included. In each section, Thornton provides an overview that includes some of the main physiographic features, archaeological data, and the cultural history of the region. He

also identifies the Tlingit elders, community members, researchers, and non-Tlingit scholars who assisted him with various aspects of his studies and who are the main sources of the place names that he documents.

Each section includes engaging discussion of particularly significant locations that were discussed with the elders in detail, as well as tables documenting the place names, English translations, and locations of these features for the entire region. Some sections also include translations of recorded Tlingit narratives concerning place, which are especially interesting for the detailed information they provide, often from elders who have since passed on. Given the endangered status of Tlingit, the Tlingit text of these narratives would be interesting as well, but providing the Tlingit versions may have been beyond the scope of this project or not in keeping with the intended audience. For each of the places identified, only a single Tlingit place name is provided, even though one might expect that there are some places with alternate names or alternate dialectal forms. I found myself wondering whether there was a process by which the Tlingit elders reached consensus about what name to use or whether alternate forms were simply ignored.

Haa Léelk'w Hás Aaní Saax'ú is an amazing work with respect to the breadth and depth of Tlingit knowledge of place that it represents and the work of Thomas Thornton and the Tlingit elders in compiling this knowledge. The book represents a forward-thinking contribution to future Tlingit generations. There are at least two significant ways that this type of research on place names could be

expanded in the future. While place names are indeed a rich index of Tlingit history, values, and cultural practices, the Tlingit sense of place is expressed through multiple linguistic systems, including motion verbs and direction terms. Tlingit texts offer rich examples of the interplay of place names and other terms that conceptualize and evoke a sense of place. While collections of Tlingit texts, such as those by Richard and Nora Dauenhauer, have documented the rich Tlingit oral traditions, there is room for more analysis of how Tlingit senses of place are evoked through multiple linguistic systems. Much of the recent research on place names has also been motivated by the need to record indigenous land use and land rights and to document the Tlingit language in the context of language shift. Thornton necessarily worked mostly with fluent speakers of Tlingit, but it would be interesting to learn more about which names and traditions are being learned by younger Tlingits. It would also be interesting to know what knowledge is being maintained by Tlingits whose first language is English and what place names and other terms they draw on from Tlingit even as they speak English. As language activism assumes greater importance in maintaining and reviving cultural and linguistic traditions, language learners will inevitably turn to resources such as this one to expand their own knowledge of Tlingit, especially when well-informed elders are not available to meet those needs.

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REVIEW

THE PEOPLE BEFORE: THE GEOLOGY, PALEOECOLOGY, AND ARCHAEOLOGY OF ADAK ISLAND, ALASKA

By Dixie West, Virginia Hatfield, Elizabeth Wilmerding, Christine Lefèvre, and Lyn Gaultieri. BAR International Series 2322. Oxford: Archaeopress, 2012. Paper, xiv + 325 pp., illustrations, bibliographies; ISBN 978-1-407309-05-7; £48.00.

Reviewed by Don E. Dumond

Department of Anthropology, 1218 University of Oregon, Eugene, OR 97403-1218; ddumond@uoregon.edu

Embodying work by an international cast of nearly three dozen researchers, in this compendium the Central Aleutians Archaeological and Paleobiological Project (or CAAPP), reports its preliminary brush with the geology, paleoecology, and archaeology of Adak in seventeen interrelated chapters, each a largely self-contained report by separate authors. The specific geographic universe is the north-trending, bilobate peninsula that encompasses about a third of the landmass of Adak Island (Fig. 1)—a tract that formerly included a U.S. Navy base and now is property of the Aleut Corporation. The bulk of the fieldwork was conducted by CAAPP between 2005 and 2007, although there was a two-week stint in 1999 by the crew of CAAPP's predecessor, the Western Aleutians Archaeological and Biological Project (WAAPP) (Corbett et al. 2010). All of these efforts involved sites that had been previously identified by crews of the Bureau of Indian Affairs and through some surveys by the U.S. Fish and Wildlife Service and by Douglas Veltre for the Aleut Corporation (West et al., Chapter 1).

Within this northern Adak tract, research centered around five sites. Human occupation is in evidence at some sites from around 6000 to 5000 RCYBP and during a later period overall from about 2600 to 170 RCYBP, with some shorter breaks. Despite these hiatuses, conclusions from stone artifacts (Wilmerding and Hatfield, Chapter 12), geomorphology (Gaultieri et al., Chapter 3), and ecology (Savinetsky et al., Chapter 5) are that there is no evidence of any significant interruption of occupation during the entire period from 6000 BP onward, although there

were clearly changes in overall ecology to which ancestral Adak people apparently adapted.

Field recognition of temporal elements is aided by five major tephra deposited at intervals over the past eight or nine thousand years, described in earlier works by the geologist Robert F. Black (1976; see also O'Leary 2001) and others. The latest four of these major deposits—the so-called Intermediate, Sandwich, YBO, and Forty Year ashes—are stratigraphically related to traces of human occupation in one or more of the four sites. The earliest, Intermediate Ash dated at 6000 RCYBP, immediately underlies occupation debris on the earliest site (ADK-171); an apparently wind-blown lens of it also overlies some artifacts. Radiocarbon ages from the occupation itself (among the impressive total of 104 age determinations obtained in this project; West et al., Chapter 1, App. 1B) are concordant. Chemistry and size particles of the three earliest of the four tephra (Intermediate, Sandwich, and YBO) suggest a common source, which the tephra analysts (Okuno et al., Chapter 4) conclude was probably a submerged volcano somewhere near northern Adak.

The principal vehicle for inferring material cultural development is the analysis of stone tools and debitage (Wilmerding and Hatfield, Chapter 12) from three of the five sites, one of which had two temporally distinct components. There is a marked difference in tool sample sizes. The earliest and smallest assemblage (from ADK-171) consists of only twenty-four; the latest and largest (ADK-011, Component 2, 400–170 RCBP) of 403 (Table 12.1). To some extent, the small sample of the earliest tools may

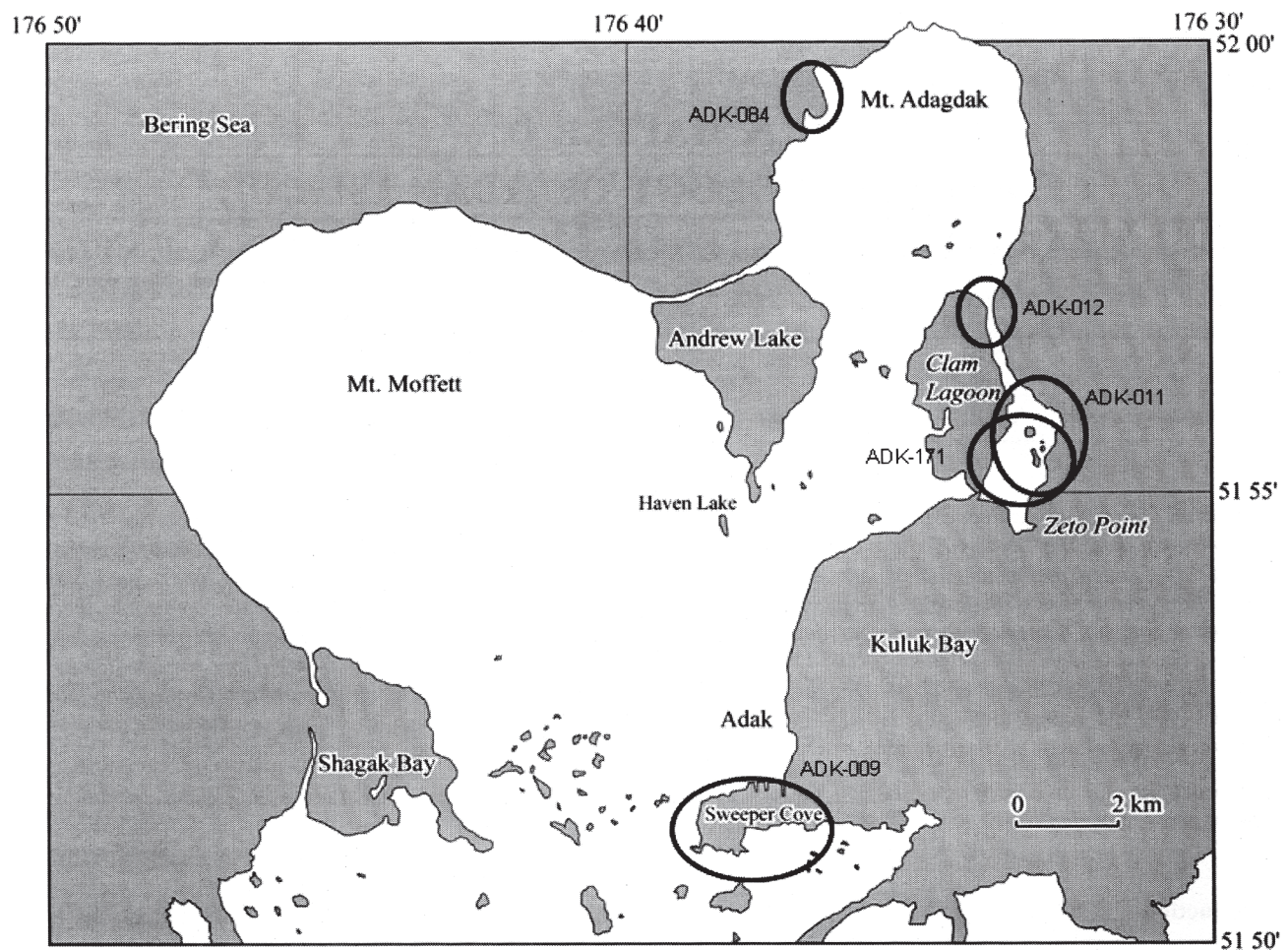


Figure 1. The northern segment of Adak Island, showing the general vicinities of sites studied by CAAPP researchers. From *The People Before*, Figure 6.1, reprinted with permission of Archaeopress and the volume authors.

be offset by the larger debitage sample ($n = 377$ items). The sample size of the debitage ($n = 5,073$) from the latest component again outweighs the earliest (Table 12.2). The general possibilities of uncertainties in analytic conclusions as a result of sample sizes and numerical imbalance is mentioned in the very brief history of archaeology in the Central Aleutians (Veltre, Chapter 2). In any event, the conclusion with regard to the stone assemblages is that the initial occupation of northern Adak at around 6000 BP was by people who favored chert and obsidian for many tools, used biface technology, and depended on irregular flakes as a tool-making basis (see also Wilmerding and Kay 2011). Comparisons are made to the Late Anangula phase of the eastern Aleutians (Knecht and Davis 2001), while noting the absence at ADK-171 of any evidence of blade or microblade technology, although recognizing the possible inadequacy of the Adak sample size. The nearest known sources of both chert and obsidian are well to the

east. Obsidian analysis by a mass spectrometric technique (Nicolaysen et al., Chapter 11) indicates that the most likely known obsidian source is Okmok Volcano on Umnak Island, around 1,000 km distant in the eastern Aleutians.

In contrast to ADK-171, later components indicate a preferential use of basalt and andesite for stone tools. Only in the latest component (ADK-011, Component 2) was there clear evidence of constructed habitations. Although test pits were sunk into a single house at that site, described as a bowl-shaped depression, no complete features were excavated. In addition to chipped stone artifacts, the sample from this latest component included plummets, lamps, and net sinkers. Component 2 was the only one to yield polished ulus. A very few blade-like flakes were presumed to be simply accidental productions from irregular cores (Wilmerding and Hatfield, Chapter 12).

Preservation of bone implements was even less uniform through the sequence than was the incidence of

stone tools. Bone was clearly used, but only—again—in the latest component is the sample adequate to support even minimal discussion (West and Hatfield, Chapter 15).

The evidence of climate and ecology may prove to be the most provocative aspect of this report. Savinetsky et al. (Chapter 5) provide the major basis for conclusions on paleoclimate in their examination of the faunal remains preserved in the sites as well as the soils and diatoms obtained from a peat core at nearby Haven Lake. The earliest levels suggest a climate shift toward boreal conditions, but by about 6000 RCYBP, very low diatom abundance and diversity, with a maximum of cold species, suggests that the most severe climate conditions of the past ten millennia came at this time, with amelioration thereafter. This cold period was confirmed by barnacle species and also by recovered remains of saffron cod (*Eleginus gracilis*), a cold-water species otherwise unknown in the Aleutians, in occupation levels at the earliest site, ADK-171. The conclusion, then, is that the arrival of humans at that site at about 6000 RCYBP occurred during this coldest period sampled.

The later periods of the faunal sequence are filled in with zoological remains preserved in the more recent sites, especially ADK-009 (Crockford, Chapter 6), where the sample was essentially confined to the most recent 2000 years. A note in the chapter deals with the presence of fur seals, including newborn pups and age sets that suggest the animals were not migratory, and other fauna (sea otters, harbor seals, and rock greenlings) in numbers that suggest the presence of kelp forest habitat. This evidence leads Crockford to suggest that before the Russian arrival in the eighteenth century, local fur seal populations were fairly widespread in the Aleutians but were dependent upon mature kelp forest for certain rookery behaviors. The arrival of the Russians and the ensuing reduction of sea otters permitted the explosion of their usual prey, the sea urchin; the resultant increased exploitation of kelp by sea urchins led to destruction of the kelp forest. This spelled the demise of local, nonmigratory fur seals. Speculative, of course, but fascinating.

In addition to these chapters, which seem especially meaty for anthropologists, there are other reports that provide grist for the future, yet without arriving at real closure on the subjects thus far discussed. Two of these studies involve subjects of archaeological import. One reports an inconclusive attempt to recognize organic residue on the flat “griddle stones,” which are known widely in the Aleutians, to identify foodstuffs (Jeannotte et al., Chapter 14). A second attempts to define an overall stone tool

technological system, including use wear of implements. Although conceptually reasonable, the study is hampered by an inadequate sample of purposeful tools in all stages of manufacture, remanufacture, and use (Kay, Chapter 13; see also Wilmerding and Kay 2011).

Other chapters discuss sea otter remains from the sites. One is an ancient DNA study (Nishida et al., Chapter 7) that concludes that the matriline of sea otters hunted by the prehistoric occupants of Adak do not precisely duplicate those of the present Adak sea otter populations. Another deals with the isotopic composition of bone and tooth enamel of the archaeological sea otter remains (Garong et al., Chapter 8), which indicates there were two probably largely distinct resident populations hunted at the time, one from a kelp-dominated ecosystem, the other from the open ocean. Koike et al. (Chapter 9) report on a study of the cockles recovered at the sites; West et al. (Chapter 10) provide a pan-Aleutian comparison of invertebrate remains. In addition, there is a descriptive analysis of a single juvenile human burial from an unspecified location in the Andreanof group of islands (West et al., Chapter 16), which stands rather aside from the subjects treated in the rest of the book.

These chapters constitute an excellent preliminary approach to a portion of Aleutian Island paleogeography that has been essentially blank in terms of available information, yet a number of questions remain. First, the ^{14}C age obtained for the earliest occupation is in line with information more recently reported for the age of initial occupation of Amchitka in the Rat Islands, the group immediately west of the Andreanofs. Sites on Amchitka Island are reported to have yielded RCYBP of 4500–4800 (e.g., Funk 2011), which places the occupation possibly within a millennium of the Adak occupation reported in *The People Before*. For Shemya Island, at the eastern edge of the Near Island group, occupation is estimated to date as early as RCYBP 2500 (correcting for ages on sea mammal bone) (Corbett et al. 2010), which again is in line with ages obtained from Agattu a half century ago (Spaulding 1962). Thus, the Amchitka ages fall nicely into line with occupation of the Aleutians that proceeded from the east, beginning sometime after 8000 RCYBP and lasting until about 2500 RCYBP.

But this raises a tantalizing question of stone technology, specifically the appearance of bifaces. Wilmerding and Hatfield (Chapter 12) refer to biface technology at the Amaknak Quarry site at Unalaska, citing only a personal communication as their reference. They cannot be

blamed if their chapter was written before a published account of the Amaknak Quarry site appeared. Rogers et al. (2009) reported a single fragmentary biface of obsidian with RCYBP around 6200 to 6000. As noted by the authors, this appears to be the earliest bifacial implement thus far dated anywhere in the Aleutians. Again, this date can be reconciled with that of about RCYBP 6000 on Adak. Nevertheless, the Amaknak Quarry site is described as heavily dominated by blade and microblade technology, in a trend that continued in the Unalaska area (as reported by Rogers et al. 2009 with reference to the Amaknak Bridge site) until about RCYBP 3000. This is some three millennia after the apparent initial occupation of Adak by people lacking blade technology. Notably, no blades are reported anywhere in the Aleutians west of the Fox Islands at the eastern end of the chain. What are the complications, then, if one tries to account for a blade-less biface technology on Adak—and islands west of Adak—by inspiration from the east? As of now, we do not know.

A reviewer can always find things to carp at. There is a sometimes misleading lack of consistency in the use of “BP,” with some authors consistently meaning RCYBP, and others meaning calibrated age before present. But this is trivial stuff. More seriously, as noted earlier, the sample sizes in general tend to be minimal. This is a matter addressed briefly in the final summation, in which West and Crockford (Chapter 17) state the obvious—that if more research at any one site or subject had been pursued, the breadth of overall coverage would have been significantly reduced.

As it stands, the material presented is consistently provocative as an introduction and provides an excellent basis on which to proceed. Thus, the work is of great value for the information it gives us, while it also leads to a variation of that cliché so well known to archaeologists: More work literally *cries* to be done!

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Dale Slaughter
906 W. 56th Avenue
Anchorage, AK 99518
907-562-1907 (h)
907-830-9370
archdles@ak.net

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