
Alaska Journal of Anthropology

Volume 12, Number 2

2014





Alaska Journal of Anthropology

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Design and layout by Sue Mitchell, Inkworks

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INTRODUCTION TO REINDEER HERDING ON THE ALASKA PENINSULA

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This special issue of the *Alaska Journal of Anthropology* has emerged from close working relationships developed during a research project pertaining to the histories and legacies of reindeer herding on the Alaska Peninsula. In order to better understand the role of reindeer in the region, the National Park Service (NPS) committed to a Cooperative Ecosystem Studies Unit (CESU) designed and organized by Katmai Lake Clark Historic Preservation Coordinator Dale Vinson and Patrick Plattet and Amber Lincoln of the Anthropology Department, University of Alaska Fairbanks. Known as the DEER Study, this research **Documents the Ethnohistory and Ethnoarchaeology of Reindeer on the Alaska Peninsula**. While working on this project, we have encountered a diverse range of community reindeer projects and research, which have enabled us to work with various leaders, elders, and scholars in the communities of Igiugig, Levelock, King Salmon, Naknek, South Naknek, Pilot Point, Port Heiden, Kokhanok, Iliamna, and Newhalen. Having grown up hearing stories pertaining to reindeer herding, many of these residents are dedicated to seeing these stories and experiences compiled and shared. This volume is an initial step in fulfilling these research agendas.

This special issue also results from the 2013 Alaska Anthropology Association meeting theme “Back to the Source,” which tasked participants with showcasing work that demonstrated the value of collaborations between researchers and members of source communities. The theme resonated particularly well with us because of the working partnerships we had developed as part of the DEER

Study. We thought a panel at the meeting that would represent some of the research and community projects we had encountered would not only enrich our study but might also be useful for participants of different reindeer projects. As a result, we organized a panel entitled *Ranges of Uncertainty: Reindeer Herding Strategies for Dealing with Instability*, which attempted to reflect the diversity of past and present herding practices by bringing together people with a variety of expertise. Panel participants included mother and son Faye and Davis Ongtowasruk, who own and operate their family’s reindeer herd in Wales in northwestern Alaska; UAF anthropology Ph.D. student Tayana Arakchaa, who is working with Tozhu herders of southern Siberia; administrators of the Native Council of Port Heiden Gerda Kosbruk and John Christensen, who are interested in initiating reindeer herding around Port Heiden; and President of Igiugig Tribal Council AlexAnna Salmon and her grandmother and respected elder Mary Ann Olympic, who have documented their family’s involvement in reindeer herding at Kukaklek Lake.

This issue elaborates on the initial presentations by these experts and reveals unique aspects about Alaska reindeer herding. With its focus on the Alaska Peninsula and Lake Iliamna regions, we hope this volume adds a new comparative perspective through which to examine reindeer herding in Alaska and more generally worldwide. We also hope that the DEER Study contributes to developing existing research networks that help us all gain an awareness of current reindeer work in Alaska and beyond. Understanding the histories and legacies of reindeer

herding is important because history tends to repeat itself. Reindeer herding was introduced in Alaska over 120 years ago. It continues in places like the Seward Peninsula; the Ongtowsruk herd is one example. But herding ceased by 1950 on the Alaska Peninsula. Today the community of Port Heiden is making significant efforts to initiate herding again, and they are not the only community that has considered this option. Understanding the historic processes that led to the development and to the end of herding on the Alaska Peninsula is valuable in light of contemporary developments.

We feel such work is also valuable for scientific communities and natural resource managers. Project collaborator Dale Vinson encouraged the DEER Study in part because he understands that in order to manage parklands, NPS must appreciate the history of resource use within the lands it manages. Understanding the history of reindeer herds, where they ranged, what their population numbers were, and possibly how they mixed with wild caribou gives biologists useful information about rangeland carrying capacities and factors influencing caribou population peaks and declines.

While community connections and resource management are tangible applications of the work in this volume, we certainly feel that all of these papers contribute to wider discussions in anthropological debates. This volume offers a comparative perspective for understanding different types of pastoralism, herding challenges, uncertainties associated with natural environments and political atmospheres, and creative solutions that communities have found to reduce levels of economic risk. Reindeer herding is a way of securing meat, milk, clothing, and transportation. For communities interested in maintaining, initiating, or reinitiating herding, food security is always a main objective. As members of the Kawerak Reindeer Herders Association, the Ongtowsruks work to promote their shared goal of developing a viable reindeer industry. But of course, reindeer herding is more than just an economic value, and anthropologists and community collaborators are particularly well suited to demonstrate this point.

For those communities that have subsisted for centuries on local fish and meat such as caribou, moose, sea mammals, and small game, beef is not a ready replacement. The activities, practices, rituals, memories, and stories that are part of herding are essential to the way people understand themselves and make sense of the world. As people satisfy nutritional needs with reindeer meat, they

also remember and discuss the past activities that led to eating the meat, such as traveling and processing food. Individual memories are built on top of stories that one hears from older family members while engaging in these activities. Both knowledge and history are transmitted in this way. Thus, stories and knowledge are layered upon physical activity and upon sensuous memories like the taste of reindeer meat or the feel of a fawn parka. Using the same resources that past family members used to prepare cuisine, tools, and clothing gives one a historical perspective. It develops an appreciation for those who came before you. And for these reasons, we agree with those who feel that reindeer are not only good to eat but also good to think and live by. The papers that follow are illustrations of this point.

In the first article, Plattet and Lincoln explore the legacies of reindeer herding on the Alaska Peninsula. By incorporating information from historical archives with contemporary interviews and ethnography, we demonstrate how this short but intensive pastoral tradition has given rise to residents' expectations about their environment, relationships with caribou, and responses to restrictions associated with obtaining *Rangifer* products. In particular, we describe how many residents conceive of the Northern Alaska Peninsula caribou herd today as hybrid *Rangifer*, caribou mixed with reindeer.

Amber Lincoln provides a historical overview of reindeer herding in the Alaska Peninsula from Lake Iliamna to Port Heiden between 1905 and 1950. Tracing oral history and archival records, Lincoln examines the establishment of government reindeer stations and the development of private herding enterprises by families. This paper facilitates comparisons between the history of herding on the Alaska Peninsula with that elsewhere in the state. It also sheds light on the many individuals, both Native and non-Native, who devoted much of their lives to reindeer herding in this region.

AlexAnna Salmon traces the history of one particular reindeer station on the Alaska Peninsula—that of her great grandfather, Alexi Gregory, at Kukaklek Lake. Through the vivid stories of her grandmother, Mary (Gregory) Olympic, Salmon highlights the herding pattern used by her great-grandfather, which incorporated hunting, fishing, and trapping activities. Salmon then shows how these historical experiences and stories of herding played a role in determining how individuals and village corpo-

rations choose lands as part of the Alaska Native Claims Settlement Act in 1971.

Broadening the scope of this special issue, herder Davis Ongtowsruk of Wales gives his own account of day-to-day reindeer operations in contemporary Northwest Alaska. In a group discussion with his mother Faye and UAF researchers Lincoln and Plattet, Ongtowsruk details herd management in Wales, including protecting reindeer from predators, corralling, counting and marking reindeer, and preparing and selling reindeer products. While reviewing his family's history of acquiring the herd, Ongtowsruk also describes various reindeer technologies. He highlights herding innovations developed in collaboration with the University of Alaska Fairbanks Reindeer Research Program and discusses his aspirations for the future.

In a comparative report, Tayana Arakchaa looks at the reindeer herding practices of the Tozhu in the Republic of Tyva (South Siberia, Russian Federation). More than a source of meat, reindeer are hunting partners and facilitators; they are used for riding and as pack animals. Reindeer are at the core of the Tozhu *aal*, or nomad's camp, in the mountainous taiga of northeastern Tyva. On the basis of her ethnographic fieldwork in several *aal* in the summers of 2012 and 2013, Arakchaa shows how critical the articulation between hunting (for sable and musk deer) and reindeer herding is for examining how the Tozhu are coping with social and climate change in post-Soviet years.

“WE TAKE WHAT WE CAN GET”: THE LONG-LASTING APPETITE FOR *RANGIFER* ON THE ALASKA PENINSULA

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INTRODUCTION: STUDYING REINDEER ON THE ALASKA PENINSULA

The story of why and how reindeer herding began and developed in Northwest Alaska from the 1890s to the present is well documented in the anthropological literature (Ellanna and Sherrod 2004; Fair 2003; Finstad et al. 2006; Koskey 2003; Olson 1969; Schneider 2002; Schneider et al. 2005; Simon 1998; Stern et al. 1980). Domestic reindeer were brought from the Russian Far East under the supervision of Sheldon Jackson, general agent of education in Alaska, who “argued before Congress that the reindeer would provide a source of meat and economic development for the Inupiaq” (Finstad et al. 2006:34). At a time when caribou (or wild reindeer as they are called outside of North America) were vanishing in Northwest Alaska (Burch 2012; Skoog 1968), Jackson’s initiative was meant to stave off regional food shortages and acculturate subsistence hunters into entrepreneurial pastoralists (Ellanna and Sherrod 2004:67–113). In contrast to this documented history, relatively little scholarly work has been done on reindeer herding in the Lake Iliamna and Alaska Peninsula regions (Morseth 1998:134–140; Partnow 2001:233–235; Ringsmuth 2007:103–111; Unrau 1994:309–317), which were also administered by the U.S. Reindeer Service. Reindeer were introduced on the Alaska Peninsula in 1905 from Bethel, with the first reindeer station established at Kokhanok on the southern shore of Lake Iliamna. When the industry reached its peak in the early 1930s, approximately 10,000 domestic reindeer (Lincoln, this issue) were

grazing on the Alaska Peninsula. In the northern and central sections of the peninsula, government stations were also started in Eagle Bay, Koggiung, South Naknek, and Ugashik, from where reindeer herding spread to the Port Heiden Bay area (Map 1, color plates).¹ Economically, however, herding could not compete with the greater earning potential of commercial fishing. Herders spent less time with reindeer, leaving them open to mixing with caribou herds and to predation by wolves and humans. By the end of the 1940s, the U.S. Reindeer Service no longer maintained official reindeer counts and the industry ceased by 1950.

Following ethnographer Michelle Morseth’s (1998:147–148) and historian Katherine Ringsmuth’s (2007:244) call for focused research on this topic, our paper documents the history and legacies of reindeer herding in the Lake Iliamna and Alaska Peninsula regions. Building on insights from ethnohistorical and cultural anthropological research we have conducted since 2011, this paper has two objectives. First, it analyses the development of reindeer herding within the broader context of regional caribou hunting. Drawing on recent research on human-reindeer-caribou interactions in Northwest Alaska (Burch 2012; Finstad et al. 2006; Schneider et al. 2005) and the North Slope of Alaska (Mager 2012), as well as on human-animal relations in arctic pastoralism (Beach and Stammer 2006; Stammer 2010; Takakura 2010), we suggest that the lasting “taste” for reindeer (*Rangifer tarandus tarandus*) on the Alaska Peninsula is best understood in connection to an older “appetite” for caribou

(*Rangifer tarandus granti*). By reviewing the short history of reindeer herding in light of the longer history of caribou hunting, we seek to understand how reindeer pastoralism was received on the Alaska Peninsula, and how “the socio-economic relationship of the local people with *Rangifer*” (Finstad et al. 2006:34) evolved after Alutiiq, Yup’ik, and Inupiaq herders developed “familiarity” with reindeer (Takakura 2010:26–35). Examining how reindeer herding was adapted to, and to some extent reinvented, within the broader sociocultural environment of the Alaska Peninsula is important because this past continues to inform the lives of residents today. Consistent with findings among former herding families on the Seward Peninsula (Schneider et al. 2005; Simon 1998) and in the Barrow region (Mager 2012), a second objective of this paper is to demonstrate how a cultural appreciation for reindeer and reindeer herding continues to inform the lives of the Alaska Peninsula’s residents today, sixty-five years after the demise of the Reindeer Program. Stories of herding reindeer are shared as people browse historic photographs, display herding artifacts, navigate through local landscapes, trace ancestors, and encounter and hunt caribou. Engaging in these practices, while hearing stories of the past, according to cultural anthropologist C. Nadia Seremetakis (1996:33), “glues past generational and collective history onto present biographical experience,” thereby informing the contemporary experiences, aesthetics, and worldviews of individuals today. This paper shows how the region’s historical forms of reindeer herding, informed by a history of hunting caribou, have given rise to the way residents build expectations about their environment, engage in relationships with *Rangifer*, and respond to restrictions associated with obtaining *Rangifer* products (meat and hides).

In order to address these objectives, we begin by examining how different indigenous groups of the Lake Iliamna and Alaska Peninsula regions maintained a strong connection to caribou and caribou hunting during the Russian fur trade (1780–1867) and the early American period until the introduction of reindeer (1867–1905). We then explore the history of reindeer herding on the Alaska Peninsula (1905–1950) through the perspective of those who experienced it first-hand or grew up hearing stories about it. Finally, we provide ethnographic examples of the legacies of reindeer herding after the demise of the reindeer industry on the Alaska Peninsula (1950s–present). Part of the information pertaining to the 1905–1950 time frame was produced by researching private and pub-

lic collections² (photographic, museum, oral history, and archival records). As cultural anthropologists, we also engaged in ethnographic research, which included oral history interviews, photo elicitation interviews, site surveys with local guides, and participant observation in the daily life of Alaska Peninsula residents. Our approach of augmenting historical sources with first-hand ethnographic accounts helps to understand how the past is lived in the present and continues to shape people’s expectations for the future. It also allows for a better comprehension of how this lived and narrated past is differentiated from recorded history (Schneider et al. 2005; Tonkin 1994).

One problem that arises when studying reindeer herding in Alaska is distinguishing reindeer from caribou. On the one hand, *Rangifer tarandus tarandus* and *Rangifer tarandus granti* belong to the same biological species (*Rangifer tarandus*), can interbreed, and “[b]ecause of their social nature . . . are apt to mingle and travel together” (Schneider et al. 2005:47n1). On the other hand, reindeer and caribou are recognized as different subspecies and, as such, display “certain physical and behavioral differences” (Burch 2012:17). In any case, reindeer and caribou in Alaska “have played important roles in each other’s affairs [. . . and] the history of one cannot be understood without knowledge of the other” (Burch 2012:17). Therefore, simply referring to “reindeer” as the animals imported from the Russian Far East and their descendants, and to “caribou” as animals with ancient Alaska ancestry is not without limitations and ambiguity.

The U.S. Code, which reproduces the definition found in the Reindeer Act of 1937, stipulates that “Reindeer’ . . . shall be understood to include reindeer and such caribou as have been introduced into animal husbandry or have actually joined reindeer herds, and the increase thereof” (25 U.S. Code § 500j).³ As cultural anthropologist Hugh Beach (1985:10) notes, this definition implies that “there must be some attempt to *domesticate* a caribou before it can be defined as a reindeer, but just what this might mean is not clear, since the reindeer themselves are so frequently left to roam unattended.” According to the Alaska Administrative Code (5 AAC 92.029 (d)(2)(C–D)), reindeer that leave state or federal leased rangelands are considered feral and presumed to be game. Thus, depending on the land it grazes on, a reindeer “turns into” a caribou unless a clear identifier is retained (permanent brand, ear tag, owner’s mark). Accordingly, neither federal nor state laws account for mixed caribou-reindeer animals and their descendants.

Specialists from different fields are tackling this omission in various ways. Biologists are testing the “genetic connectivity” (Mager et al. 2013) between caribou and reindeer, a task that requires access to scientific resources and confirms the view that wild and domestic *Rangifer* can “hybridize” (Colson et al. 2014; Mager et al. 2013). As anthropologists we pay special attention to local definitions and terminologies used by past and present residents of the Alaska Peninsula, which highlight the history of interactions between reindeer and caribou. We focus on local terms coined during or after the reindeer experiment on the Alaska Peninsula such as “marked caribou” (feral reindeer with an ear mark), “mixed” (a caribou with reindeer ancestry) or “reinbou” (a regionally common and apropos mistake of speech denoting either a reindeer or a caribou).⁴ As we will see, these terms not only suggest contiguity and connectivity between reindeer and caribou, they also invite us to think of *Rangifer* identities as interlocking along a continuum of practices and representations. To reflect these views in our analysis, we use *Rangifer* (italicized) to refer to biological categories, and Rangifer (nonitalicized) to refer to cultural representations. This analytical distinction allows us to better investigate local perceptions about animals whose qualities fluctuate between “caribou-like” and “reindeer-like.”

BEFORE REINDEER HERDING: A GROWING APPETITE FOR CARIBOU MEAT

Unlike early herders on the Seward Peninsula (Northwest Alaska) who knew about reindeer herding from contacts with Siberia across the Bering Strait (Schneider et al. 2005:40; Simon 1998:75–92), the first apprentice herders on the Alaska Peninsula had no background in reindeer pastoralism. *Rangifer tarandus*, however, was not unfamiliar in the region. From the time of Russian penetration in the late 1750s, herds of wild caribou have occupied lands all the way to Unimak Island (Black 1999a:8, 11), suggesting long histories of human-*Rangifer* relations.⁵ Among the various indigenous groups on the Alaska Peninsula, interactions with caribou were traditionally established and mediated through hunting (Liapunova 1996:106; Morseth 1998:5–26; Reedy-Maschner 2012:119).⁶ In the northern section of the peninsula (northern and eastern shores of Lake Iliamna), Dena’ina Athabascans lived in an environment where “hunting and fishing were of the utmost importance [and where] [c]aribou, sheep, brown and black bear were usually stalked in the fall” (Dissler

1980:10). South of Lake Iliamna, the Severnovski (or Savonoski⁷) people living east of Naknek Lake relied on salmon, caribou, and bear (Clemens and Norris 1999:6), while the Aglurmiut established west of Naknek Lake as a result of a migration from Kuskokwim Bay around 1750 (Pratt 2013) were hunting caribou “rather extensively [...] not only for their meat but even more for their skins, which were much used in making clothing and as articles of trade” (Hussey 1971:75).⁸ In the northeastern and central parts of the Alaska Peninsula, Alutiiq (or Sugpiaq) coastal populations inhabited small settlements and hunted and fished in seasonal rounds on both land and sea (Clemens and Norris 1999:8; Johnson 2006:69; Morseth 1998:13–15). Discussing the social ramifications of the tradition of caribou hunting in the Aniakchak region in early contact times, historian Katherine Johnson (2006:73) notes that Alaska Peninsula Alutiit “exchanged sinew and caribou skin for amber and bone ornaments, which they received from the Koniags from Kodiak Island” [or Kodiak Alutiit].⁹ Trade and gift exchanges were overseen by a family or village *anayugak*, or chief, whose inherited status was fully granted only after he demonstrated leadership in different activities, including hunting (Morseth 1998:16; Johnson 2006:74–75). As German-born physician and traveler G.H. Langsdorff, who visited Russian America in 1805–1806, argued, the capacity to hunt and use “reindeer” (i.e., caribou) as a resource was the main difference between Alutiiq culture on Kodiak Island and on the Alaska Peninsula:

The customs, habits and, in part, the clothing, even the language of the inhabitants of [the Alaska Peninsula], are the same as in Kodiak. Only in food is there a noticeable difference, since the peninsula is connected to America where there are quantities of reindeer and wild sheep. The inhabitants usually hunt them in the fall for use as food and clothing (Langsdorff 1993:141; see also Clemens and Norris 1999:8).¹⁰

A similar marker of cultural distinction existed between Alutiiq and Aleut populations living on the central and southern sections of the Alaska Peninsula and their Aleut (or Unangax) neighbors west of Unimak Island, who lived in an environment free of large terrestrial mammals and were heavily engaged in sea-mammal procurement.

Interactions with caribou on the Alaska Peninsula were affected by the development of the Russian fur trade (1780–1867), which targeted sea otters, seals, and foxes. When they first encountered Alutiiq hunters, Russians

considered them to be the “best hunters of sea otters in the world” (Johnson 2006:74) and pressed them to ignore hunting big game on land. As Alutiiq families started to resettle near the sea-mammal hunting camps (*artel'*), established between 1795 and 1799 by the Russian-American Company at Katmai and Sutkhum along the Aniakchak coast (Clemens and Norris 1999:13–14; Johnson 2006:85–87), “small Alutiiq villages that once facilitated hunter-gatherer seasonal rounds during pre-contact times gradually disappeared” (Johnson 2006:88). Significantly, however, the socioeconomic and political changes brought about by the colonial activities of the Russian-American Company did not diminish the value of caribou. On the contrary, caribou remained central to Alutiiq material and spiritual culture.¹¹ Thus, as the working conditions for Native hunters improved within the company after 1821 (Black 1999b:130) and as the sea otter population started to decline, Alutiiq hunters used their “free time” to reactivate precontact patterns of resource use, which included hunting caribou and bear in the fall, trapping fur-bearing animals in winter, digging for clams in the spring, and fishing for salmon all summer (Johnson 2006:94, 122).

Caribou, however, were not always readily available. Historically, caribou populations have fluctuated and migration patterns have shifted on the Alaska Peninsula (Colson et al. 2014; Skoog 1968; Valkenburg et al. 2003) as well as in northwestern and northern Alaska (Burch 2012; Finstad et al. 2006; Mager 2012:168; Skoog 1968). The same “fundamental aspect of caribou biology: the plasticity of caribou herds through time” (Dau 2012:xvi), characterizes what are now called the Unimak, the Southern Alaska Peninsula (SAP), and the Northern Alaska Peninsula (NAP) caribou herds.¹² Regarding the history of the Unimak and SAP herds, anthropologists Lydia Black and Natalia Taksami (1999:83) estimate that during Veniaminov’s time as Russian Orthodox priest in the Unalaska District (1824–1834) “caribou were scarce due to ashfalls and predation by wolves and humans.” Major volcanic eruptions on Unimak had greatly diminished the caribou that were abundant earlier at the western end of the Alaska Peninsula and on the surrounding islands of the Pacific Ocean—including Unimak, Unga, Deer, and Popof Islands (Black 1999b:131; Black and Jacka 1999b:181; Black and Taksami 1999:83; Jacka and Black 1999:146). However, instead of precluding Alutiiq hunters from hunting caribou, their scarcity seems to have contributed to the growing appetite for a rarefied good. Caribou were hunted by select marksmen; meat and skins

were transported to the mining village of Unga and to Unalaska (Black 1999b:133; Osgood 1904:28). As trade administrators began to develop their own taste for caribou, hunting this animal became increasingly encouraged and even commissioned by the company (Black and Jacka 1999b:173).

After the purchase of Alaska by the United States in 1867, American trading posts replaced the Russian *artels* (Johnson 2006:103) and further stimulated the demand for caribou. Ronald Skoog’s (1968) analysis of caribou populations over time suggests that the need for more caribou products during the early American period was satisfied due to sufficient *Rangifer* numbers. According to Skoog (1968:219), “during the early 1870s, and before, the caribou were numerous and utilized the entire Peninsula.” Initially estimated to number around 20,000 animals in the early 1800s, Alaska Peninsula herds were migrating both southward to Unimak Island and northward, crossing the Kvichak River, into the Nushagak and Mulchatna River drainages where they were hunted as early as mid-August by the Central Yup’ik-speaking Kiatagmiut and Aglurmiut (Fall et al. 1986:15; VanStone 1984:232). Following these movements, the Ugaassarmiut of the Ugashik region “were reported to travel north and inland to get to the herds in August of 1866” (Morseth 1998:61).¹³ However, by the 1890s, there were no more observations of caribou crossing the Kvichak River, suggesting that this migration pattern stopped (Skoog 1968:221). Major segments of caribou remained around Unimak Island (Black and Jacka 1999b:174) and north of the Kvichak River and “[a]fter 1890 the center of caribou abundance shifted to the southwest” (Skoog 1968:221). Attracted by the presence of caribou, as well as by the restoration of fur trading posts in the Aniakchak region (Johnson 2006:104–105), Ugashik people moved south between the foothills of Mount Veniaminov and Bristol Bay, establishing the village of Unangashak by 1889 (Morseth 1998:61–63; see also Luehrmann 2008:50–51) (Map 2, color plates).

At the turn of the twentieth century, the industrial landscape on the Alaska Peninsula started to change. As a result of low fur prices and decimated sea otter populations, the Alaska Commercial Company pulled out of the region (Black and Taksami 1999:93; Johnson 2006:112). New economic opportunities arose, including fox farming, gold mining, and commercial fishing. While some Aleut, Alutiiq, and Yup’ik individuals worked in these industries, employment was not secure. The canneries hired Chinese, Japanese, Filipino, and Mexican workers as

fishing and canning crews (Moser [1902] 2006; Selkregg [1974] 2006:7) and targeted Scandinavians for the highest-paid (and more pleasant) jobs, such as making and watching over fish traps (Jacka and Black 1999:160). Even though locals eventually came to work at the canneries, many Native residents had no choice but to return to older subsistence practices and patterns (Johnson 2006:122). This allowed them to sell caribou hides and meat to the trading posts supplying the growing number of mining operations and fishing camps (Osgood 1904:28). Caribou hides had already been actively marketed at the Ugashik and Nushagak posts under Russian rule in the mid-1800s (Hemming 1971:39). At Nushagak, the establishment of a Russian Orthodox mission in 1841 (Selkregg [1974] 2006:5; B. Smith 1980:122) stimulated the trade for caribou skins until the 1870s (VanStone 1967:58), while in the early 1900s “[t]he mail steamer which runs along the south side of the peninsula [took] on a supply of caribou meat on nearly every trip” (Osgood 1904:28). According to biologist Wilfred Osgood (1904:29), who was commissioned by the Bureau of Ornithology and Mammalogy, U.S. Department of Agriculture, to conduct animal surveys, 500 caribou hides were sold in seven months between 1902–1903 to the trading post that was established in Unangashak in 1902. Despite (or because of) such demand, the Alaska Game Act of 1902 halted further expansion of the market for caribou products on the Alaska Peninsula.

News of the caribou abundance as well as the booming market around the canneries in the late 1800s spread widely. Inupiat of the Seward Peninsula were recruited to work in the canneries because they were believed to be more “reliable” than the local Aleuts who “were considered unsatisfactory both at the King Cove and Port Moller canneries” (Black and Jacka 1999a:102).¹⁴ Inupiaq immigrants were doubly marginalized: first, by the members of local communities who could not join them as cannery employees; second, by Asian workers who maintained exclusive kitchens in the canneries and were eating imported pork and chicken (Black and Jacka 1999a:101). As the King Cove cannery superintendent’s wife candidly remembered, Inupiaq newcomers, like Alutiiq and Yup’ik residents who settled around the canneries, “lived very simply on fish and caribou meat, which they dried during the summer” (Black and Jacka 1999a:102). Inupiaq immigrants were not the only group of people settling on the Alaska Peninsula by the early twentieth century. The changing economic and political landscape brought about

by the Americanization of the Alaska Peninsula led to a demographic explosion. Johnson (2006:222) explains that “[t]he largest number of Russians ever in America at one time was a mere 823 [while in] 1890, there were 8,000 non-Natives in Alaska.” The demand for caribou products followed this population expansion; it became so high that by 1904 Osgood (1904:29) warned that “if the wholesale traffic in meat and hides... is not checked, the animals are surely doomed to speedy extinction.” Osgood’s warning was almost realized by the early 1900s when caribou products became unavailable due to decreasing herds. U.S. Geological Survey researchers in the 1920s continued to note the scarcity of caribou across the peninsula (Skoog 1968:222) as the NAP herd reached a population low (Valkenburg et al. 2003:138). Oral history corroborates these records. In a 1985 interview, the late Rose Hedlund, born 1917 in Chekok, near Lake Iliamna, discussed the lack of caribou and moose available when she was a child. Hedlund remembered that “[t]here was nothing to hunt in those days. There was no moose, no caribou. Ducks, spruce hens, and rabbits was the only meat animals around” (Hedlund and Hedlund 1985). People were not starving, however. As Hedlund’s statement suggests, other food resources such as birds and small mammals were available (see also Partnow 2001:234). Moreover, people took advantage of the large and numerous runs of salmon moving up many of the rivers from Bristol Bay (Morseth 1998:11). Nevertheless, the problem was that by the early 1900s, neither indigenous people nor the growing number of settlers to the region could satisfy their appetite for caribou meat.

It would be misleading, however, to suggest that the timing of the arrival of the reindeer in 1905 was a direct response to declining caribou numbers, and that *Rangifer tarandus tarandus* was introduced as a substitute for *Rangifer tarandus granti*. In fact, as historian Harlan Unrau (1994) and cultural anthropologist James VanStone (1967) explain, the implementation of reindeer herding on the Alaska Peninsula was an accident. The Bureau of Education hired Saami Hedley Redmyer in 1904 “to transfer 300 deer from the Kuskokwim to the Copper River” (VanStone 1967:86). The difficult mountainous terrain and lack of adequate lichen for the reindeer contributed to the expedition’s failure to cross the Alaska Range. Redmyer ended up on the southern shore of Lake Iliamna, establishing Kokhanok Reindeer Station with the approval of Sheldon Jackson (Unrau 1994:311). Nonetheless, 1905 was a fortuitous time for launching the

herding industry on the Alaska Peninsula because reindeer did not have to compete with as many caribou for rangelands and food.¹⁵ This contributed to initial rapid expansion of the reindeer industry, enabling residents of the Alaska Peninsula to fulfill their taste for “caribou” meat. As Rose Hedlund’s narrative illuminated, “[e]very fall dad bought two reindeers. They brought it up and took care of it right there. I mean they butchered it right in our own yard” (Hedlund and Hedlund 1985). Thus, those who had access to money and herding networks now had the option of purchasing reindeer meat. And those who had access to domestic reindeer now had the opportunity to develop new relations with *Rangifer*.

FORTY-FIVE YEARS OF HERDING: REMEMBERING CLOSE CONNECTIONS WITH REINDEER

The establishment of the first reindeer station with 300 reindeer on the southern shore of Lake Iliamna was the starting point of an intensive period of reindeer herding in Southwest Alaska lasting between 1905 and the late 1940s (Map 1, color plates). Herding in the Bristol Bay and Alaska Peninsula regions was an extension of the reindeer program that began in Teller in 1892. The Kokhanok reindeer were the progenitors of the animals that spread herding throughout Lake Iliamna, the Kvichak, Alagnak, and Naknek River drainages as well as into the Ugashik, Pilot Point, and Port Heiden regions (Map 2, color plates). In many places, reindeer herds grew so successfully that by the 1920s reindeer meat was a significant source of food for local people and was even sold to the region’s canneries (Unrau 1994:315). Despite initial success, however, Alaska Peninsula herders faced challenges similar to those encountered by herders throughout the state, including wolf predation, emigration to caribou herds, overgrazing, and management issues (see Beach 1985; Finstad et al. 2006; Koskey 2003:257–259; Mager 2012; Rattenbury et al. 2009; Schneider et al. 2005; VanStone 1967:83–88). In addition, the fishing industry in Bristol Bay impacted the economic viability of reindeer herding on the Alaska Peninsula. By the 1930s, as commercial salmon prices rose and Native residents could secure seasonal employment within the industry, few herders could afford to give up the opportunity to earn more in one season than herders could make in a year (Atwater 2012:117–119; Nicholson 1995:110). Not unlike what happened elsewhere in the circumpolar North, the herding industry on the Alaska

Peninsula suffered from what cultural anthropologist Michael Koskey (2003:245) calls a “dissonance between reindeer herding and market capitalism.” For all these reasons, reindeer herding ceased in the region by 1950.

Before its termination, however, the production of reindeer meat came with a new multicultural and administrative structure. Reindeer herders and owners represented people from many different linguistic and cultural groups, including long-established Dena’ina, Yupiit, and Alutiit, as well as Inupiat, Euro-Americans, Scandinavians, and Saami settlers. Saami herders arrived in Alaska in the late nineteenth century to teach Alaska Natives herding techniques and reindeer management.¹⁶ Such cross-cultural initiatives were neither new nor unusual on the Alaska Peninsula (Branson and Troll 2006; Ringsmuth 2007:238), and all worked together despite linguistic and cultural barriers. Diverse groups of people were brought together through a specific instructional system applied at the government reindeer stations. Professional Saami and Yup’ik herders from the Kuskokwim River drove reindeer to new locations, establishing reindeer stations in Kokhanok, Eagle Bay, Koggiung, Wood River, and Ugashik (Map 1, color plates), typically with 200 to 500 reindeer. These chief herders then trained Yup’ik, Dena’ina, and Alutiit residents through a system of apprenticeship. Schoolteachers, who also served as local reindeer superintendents, nominated “promising” young men to work as apprentices with the government herd. In exchange for four years of work with the herd, these apprentices earned a small number of reindeer yearly. By 1907 each apprentice would receive four female and two male reindeer after one year of satisfactory service (based on the local superintendent’s assessment). This number increased to a total of eight reindeer after the second year and ten after the third and fourth years with a three-to-one ratio of female to male reindeer (Unrau 1994:311). By the end of a four-year cycle, these apprentices could have earned 34 reindeer plus all of their offspring. With successful training in reindeer husbandry and barring unexpected losses, this was enough reindeer to leave the government herd and start one’s own operation as a private herder. In contrast to government herds, private herding enterprises received no government resources. Profits were derived only from selling reindeer products, and chief herders used these earnings to hire relatives or seasonal herders (see Lincoln, this issue).

Herders who eventually managed their own herds as private enterprises gained esteem for their skills and suc-

cesses. Because they were exemplary at the time, they have since become founding ancestors in local genealogies. AlexAnna Salmon (this issue) describes how this transition from government to private herding took place and impacted her own family history. Many current residents of Igiugig and Levelock remember Alexi Gregory, Salmon's great grandfather, as "Big Alexi," and school children in Igiugig can trace their family ancestry to the prominent figure. Similarly, Evon Olympic, who operated reindeer herds throughout the Alaska Peninsula and died in the 1970s at the reported age of "well-past 100," is widely known even today among Alaska Peninsula residents. Several people we interviewed identified him as a young man in a historic photograph that had no associated information. Evon's daughter, Akelena Holstrom of South Naknek (born 1922) continues to tell stories of her father's role as a herder at Naknek Lake. Evon's portrait is prominently displayed in the home of Annie Zimin, granddaughter of Evon, of South Naknek, who also remembers him fondly as a herder. Other communities build relatedness to respected individuals and respected activities through similar processes. In Pilot Point and Naknek, local oral history programs of the 1980s feature prominent herders. The Igiugig hangar and community center exhibits historic photographs of respected kin engaging in various culturally significant practices, including reindeer herding. More than just individuals relating to their past, these local initiatives show the need for entire communities to not only feature those figures but to understand how they are connected to them and their way of life. Thus, histories of reindeer herding affect the way residents imagine relatedness.

People demonstrate pride in these herders, in part because of the skill set (lassoing, marking, corralling, castrating, predator management, rangeland management, traveling great distances, etc.) that was required of them. These skills were used not only for producing reindeer products but also for training sled deer for transportation. Recollections from young herders suggest that observing experts was a common strategy for learning these skills. In 1989, Evan Apokedak explained during a Bristol Bay High School oral history program how he learned to "break" a reindeer as a teenager around Kokhanok by watching his uncles:

Everybody all together got over a thousand [reindeer]. I stayed there and helped them with the reindeer. Sometime the reindeer move around and we stay with them in a tent. Mostly we live in the

tent, even in the wintertime. Usually three young men would herd the reindeer. The rest of the people and the families would stay in the village. We train them first, then let them pull. I watch them and that's how I learned. . . . Lasso first, tie them up to a tree, short line, not long. The next day make the line longer. If too long, he is going to run over himself, fall down and break his neck. For starting off use short line. Easy to break them in, chase them from other side [of the corral]. If they charge you, that's a good one. Easy to break that cranky kind (Wilson 1989:18–19).

For herding families like the Gregorys at Kukaklek Lake (Map 2, color plates), close interaction with reindeer was an integral part of the socialization of children (Fig. 1). Mary (Gregory) Olympic remembers lassoing reindeer calves for fun with her childhood playmate when she was very young (Salmon, this issue). The reindeer of her life formed her world of play and "make believe." In addition to lassoing calves, Olympic also recalled a story of "playing reindeer" with her friend, in



Figure 1. Frank Taller and his daughter sitting on a reindeer, Levelock area, circa 1930. Courtesy of Alex Tallekpalek and the National Park Service, Museum Management Program and Katmai National Park and Preserve; H-410.

which they ate mushrooms pretending to be reindeer. Laughing at herself while telling the story, Olympic recalled how sick she and her friend became after eating too many mushrooms (Olympic et al. 2012). This kind of play and socialization with reindeer lasted for only a limited time. Between the 1910s and 1930s, the calves and children of herding families grew up playing and interacting together, quickly developing the same kind of close personal ties that Chukchi herders used to develop with their “favourite [rein]deer” (Gray 2012:32) in the Russian Far East, or the same kind of “intimate familiarity” that Eveny pastoralists perpetuate with some of their reindeer (Takakura 2010:27) in northern Yakutia. Reflecting this closeness, as an adult, Olympic refers to the reindeer she once herded as her “pets”—a familial designation also used on the North Slope of Alaska by those who herded in the first half of the twentieth century (Mager 2012:171).¹⁷

Like in Barrow (Mager 2012) and on the Seward Peninsula (Schneider et al. 2005; Simon 1998), working and living closely with reindeer became a source of pride on the Alaska Peninsula for individuals involved in the herding industry at large. In particular, descendants of herders admire those individuals who were skilled at taming reindeer. Brothers Eli and Nick Neketa from Pilot Point, whose family spoke Alutiiq, recalled that their father owned and herded between ten and twenty reindeer before he married and had children. These animals were also considered pets. Eli explained that his father would travel up to Egegik for short weekend visits. Upon his return, the deer would come running to him like dogs greeting their owner. In an interview in 1997 with Morseth, spouses Valentine and Pauline Supsook, both Inupiat of Pilot Point, praised Pauline’s father, Willie Zunganuk, for his especially tame animals. Not unlike Tozhu herders in southern Siberia who attract reindeer with salt (Arakchaa, this issue), Pauline “used to feed them with [her] palm and a little sugar” (Supsook and Supsook 1997). But while the Tozhu milk their reindeer, Pauline simply “tried to pet them [because] they were very tame” (Supsook and Supsook 1997). Pilot Point and Port Heiden resident Andrew Matson, who learned some Alutiiq from his mother, also admired Zunganuk’s ability to train animals. In 2013, he recalled Zunganuk’s dog team:

Zunganuk had 13 dogs. He talk[ed] to them in Inupiat and they listened. [He’d] put out his harness and call their names and they go sit by each one, go by their harness. [You] don’t have to tell

them, I mean he tell them but they know where it’s at. Then he goes over and harness them up, [the dogs] stay there. Before he get ready to go, he get in the sled, talk to them, and then they go. Easy. Ours, we had to just tie...breaking ropes and everything, they always want to go (Matson 2013).

Elderly Naknek residents in particular remember and respect the skills of the Saami herders who were based in South Naknek in the 1930s, comparing them to “cowboys.”

The late Carvel Zimin explained in 2012,

When they first brought the deer in, they were just like cowboys, they stayed with the reindeer all summer... they lived with them, they walked and they had trained reindeer that carried their luggage or groceries and stuff like that (Zimin and Zimin 2012).

Although too young to remember the Saami working intensively with their reindeer, Ted Melgenak of King Salmon recalled in 2012 that the animals once herded by the Saami “hung out behind Savonoski” and contrasted them with the wild caribou: “they were just like dogs... reindeer never run away... those Laplander herders, they somehow take care of them, they keep an eye for them, they go out camping and all that” (Melgenak 2012). In describing the Saami herders’ skills in an interview in 2012, Alvin Aspelund of Naknek also focused on the time the herders spent with the reindeer: “they traveled with them all the time, they had reindeer pulling sleds with their tents and equipment, and when the reindeer move, they move with them. That’s pretty much how they kept them in line” (Aspelund 2012). All these storytellers admire the individuals who traveled and worked closely with reindeer.

At the same time, residents commonly understand the demise of the herding industry as resulting from the lack of both close herding and travelling with the herds. For example Andrew Matson told us in 2013 that herding ended in Pilot Point because “they just never took care of them, keep them herded... they never cowboied them. They were just wild” (Matson 2013). Akelena Holstrom, daughter of Evon Olympic, said there was no one left to take care of the reindeer and so the animals just scattered. Alvin Aspelund understood the end of herding similarly as a lack of staying close to the reindeer:

[T]he government bought them out and turned them over to the natives but the natives didn’t

know what to do with them. Some of the guys up Kokhanok, they were old reindeer herders, they travel with them, but the new guys that came around here that took over from the Laplanders they didn't follow the herds. The herds scattered and the wolves started mingling with them and pretty much mixed in with the caribou, with caribous around, they just spread (Aspelund 2012).¹⁸

As the size of the commercial fishing industry increased and more Alaska Natives were able to participate in it, fewer people were available to take care of reindeer. Reindeer herding could not compete with the greater earning potential of commercial fishing. Herders traveled less with the reindeer, leaving the herds more vulnerable to wolf predation and mixing with caribou. The last private herder on the Alaska Peninsula abandoned his remaining reindeer in 1947 (Salmon, this issue), and by the early 1950s, the U.S. Reindeer Service no longer maintained remunerative records for the region.

AFTER THE END: REINVENTING HUMAN—RANGIFER RELATIONS

Although the herding industry on the Alaska Peninsula was discontinued by 1950, the animals once herded did not disappear. Hunters confirmed the presence of reindeer among caribou herds into the late 1960s. Levelock residents Howard Nelson and Peter Apokedak, son of Evan Apokedak, reported taking reindeer while hunting caribou into the 1950s and 1960s. Apokedak explained, “The way they know is by the ear marks. Every herder had his own mark. One time John D got one and cut off the ear and brought it to my dad. It had two notches. Yes, it was Big Alex’s [former reindeer]” (Apokedak 2012). The late Gabby Gregory of Kokhanok, son of Alexi Gregory, also recalled catching reindeer while hunting caribou. In a 1999 interview, he explained, “They were marked on there, now you can’t even get that kind, maybe all gone. When we used to drive dogs too, those days, that’s when we used to catch some, marked caribou, we call them” (Gregory 1999). Those reindeer that survived predation and changing foraging conditions were thought by local residents to have “run off with the caribou.” The late Carvel Zimin of South Naknek (born 1931) described how the reindeer mixed with caribou:

Some of them [reindeer] went wild and they went out to the country and they had their young and then all of a sudden they started calling them cari-

bou. But years ago when I was a little kid, there weren’t any caribou in this country and after the reindeer were here for quite a while, all of sudden, you started getting caribou. Hell, they were actually reindeer but they were a mixture (Zimin and Zimin 2012).

Ambiguity lies in how those animals were referred to and perceived. What one sees in Rangifer is determined by one’s experience with and knowledge of the history of reindeer herding, a characteristic also noted by Mager (2012) in her analysis of herding histories in the Barrow region. On the Alaska Peninsula, biologists quickly ignored reindeer in their reports of post-1950 NAP herd characteristics (numbers, migration patterns, behaviors, etc.). A 1950 office memorandum from Don C. Foster, superintendent for the Alaska Native Service, to Mr. Mountjoy, special agent of the Department of Justice, illustrates this shift:

There is a report . . . that there are several thousand reindeer, probably 4 or 5 thousand reindeer in the Pilot Point area, probably 75–80 miles to the south and west of Pilot Point. The FWLS [Fish and Wildlife Service] call them caribou, but Bill Smith, the pilot with whom we flew to Pilot Point, says they are mostly reindeer . . . that drifted away from the herds after they were neglected and have accumulated in the swampy areas below Pilot Point some 80 miles, or possibly 100 miles. He said these deer come back up towards Pilot Point in the winter and early fall (Foster 1950).

According to local residents who had routine interaction with the animals, feral reindeer were being counted as members of the NAP herd by state and federal resource management agencies. In contrast to these biological assessments, local residents systematically accounted for reindeer histories in their explanations and conceptions of Rangifer. Place names, genealogies, photographs of herders with their reindeer, and the stories revering those involved in herding worked to remind residents of past interactions with domestic herds.

As herding ceased and left the way open to hunting feral reindeer or “tame” caribou, hunters explained Rangifer behavior in terms of a (brief) history of pastoralism. Around the Naknek River John Knutsen remembered being confronted by Rangifer that acted differently from Rangifer of today. Hunting in the early 1960s, he recalled an unusual hunting experience:

I remember wounding one and being able to run it down because it was never really afraid of me

and I ran out of bullets and I had to kill it with an ax. . . . You just can't do that with wild animals. . . . that could have been why they were reindeer, they were familiar with humans (Knutsen 2012).

From this history of reindeer herding and subsequent experiences hunting and observing animals, residents of the Alaska Peninsula recognize the descendants of reindeer in contemporary wild herds. Ralph Angasan thought that the best eating caribou were short and squat ones, "probably the reindeer-like ones," he concluded (Angasan and Angasan 2012). "Reindeer-like" is commonly considered to include shorter legs, stockier bodies and thinner antlers. On the other end of the spectrum, "caribou-like" is considered to include taller bodies with thicker antlers. Residents also distinguish these animals behaviorally: caribou scatter when confronted by prey, while reindeer cluster.¹⁹ With the exception of Angasan, few people noticed differences in the meat, hide, or sinew characteristics. Because opportunities to hunt caribou have decreased since the mid-1990s, due to declining caribou herds and resource management strategies, most hunters do not have the opportunity to choose particular animals. A common response to questions about stalking reindeer-like versus caribou-like animals while hunting is, "We take what we can get."

In addition to physical traits, locals identify behavioral traits that distinguish animals with more reindeer or more caribou ancestry along "a broad continuum from great tameness to great ferality" (Beach and Stammer 2006:10). Such beliefs or explanations stress that reindeer do not migrate, they do not run from wolves, and they do not fear or try to elude hunters. In the early 1950s, when Ted Melgenak of King Salmon was around twenty years old, he would haul wood with his dog team. He remembered:

I used to see reindeer like that. I'd go right by them and my dogs go crazy. . . . we'd go right beside them, they never go away, they just move around you. . . . Now, today, they [caribou] spot you a mile away, they take off. They're pretty wild. Those days, they were just like dogs, they go right by them, reindeer never run away (Melgenak 2012).

In his explanation of a resident caribou herd south of Pilot Point, Eli Neketa explained, "Caribou got reindeer blood in them and that is why they don't migrate. Reindeer don't migrate" (Neketa 2013). Howard Nelson of Levelock explained physical differences among different caribou herds as the result of different degree of

mixing with reindeer. Nelson said that fifteen years ago the Mulchatna herd moved north and the NAP herd also moved north into places where Levelock and Igiugig residents could access them (Nelson 2012). There are subtle differences, Nelson said, but Mulchatna caribou are considered to be much larger animals than the NAP animals. He and Peter Apokedak, also of Levelock, thought this was the case because the NAP herd bred with so many reindeer, causing them to be smaller. Aware of the region's herding past and of the history of the herds, local residents recognize more or less caribou-likeness and reindeer-likeness in the region's contemporary *Rangifer*. This consciousness of history is reinforced by all the reindeer photographs, stories, place names, and herding genealogies, which continue to occupy a central place in peoples' daily lives.

Many residents of the Alaska Peninsula who were too young to have been directly exposed to reindeer herding still identify specific reindeer traits. Such ability derives from older generations willing to pass down the memories of their herding experiences and from younger generations eager to hear about reindeer pasts (see Mager 2012). The ability to identify reindeer traits also affects the relationship people have with *Rangifer* today. This can be seen in how hunters occasionally draw on the repertoire of herding while hunting. In a story told in 2013, Emile Christensen from Port Heiden remembered a hunting trip he took with four other men at Caribou Cabin in the 1990s. Caribou Cabin is a prominent site in the region. It is located along Barbara Creek (Map 2, color plates) and "sits in the middle of the flat, on probably about like a fifty foot hill, [where] you could see everywhere, and the creek runs behind so you get fresh water" (E. Christensen 2013). In the past, this made Caribou Cabin a great location for hunting as "the main migration for the [Northern Alaska] Peninsula herd passed right there" (E. Christensen 2013). At the same time, the cabin is also associated with Nick Meticgoruk, a prominent "big" herder in the 1930s in the Pilot Point and Port Heiden area who used it periodically. The mixed caribou/reindeer and hunting/herding foundation of the cabin provides the context in which Christensen's story becomes meaningful:

We woke up in the morning, and it was a white-out condition. And it cleared up, you know, and one of the guys looked out and said "hey there is a whole herd of caribou right behind the cabin!" So we get our snowmachines, we ran across [. . .], we get there and it's zero, zero [visibility], but we

know where they are, they weren't far away, I mean within maybe like 400 yards of the cabin. So we get there and we stop and it clears up and shoulder-to-shoulder, in a semi-circle, all around us, was that herd of caribou. I mean one of the guys sort of freaked out [laughs]. It was like out of the twilight zone, that kind of stuff you know [laughs]. But we shot four of them. They decided it wasn't a good tactic I guess, then took off [laughs] (E. Christensen 2013).

The identity of both animals and humans is uncertain in Christensen's story. Instead of fleeing like people expect of caribou, the animals chose to stay, surrounding the men on snowmachines. The hunters were perplexed and slow to respond to prey animals that were pursuing, rather than fleeing, interactions with humans. Only after the hunters overcame their confusion and started shooting did the animals flee from the men. Emile could not explain what happened at Caribou Cabin other than by seeing in these animals the descendants of the family and government herds from the 1920s–1940s. Since that time, due to declining SAP and NAP herd numbers, Port Heiden residents have had fewer opportunities to hunt Rangifer. The state's game management units nearest to Port Heiden were closed to caribou hunting in 2006, and have remained closed since then. Without fear of being shot, groups of Rangifer with "less caribou in them" started to move closer to the village, seeking refuge from the growing number of predatory wolves. This created a situation in which residents were forced to interact with these animals, but not as hunters. Emile Christensen's brother, Jimmy Christensen (2013), casually reflected about village driving conditions, "You have to stop on the road going to school and let them cross... they got tame in just a little while. In over a period of ten years they went from being wild, as soon as they saw you they took off, to now, they let you honk the horn to get them out of your way."

Sharing such close residential space has become mutually beneficial; each partner helps the other against the common threat of wolf predation.²⁰ "The herd" feels protected by the presence of humans and, in turn, the herd moving closer to the houses signals the threat of nearby wolves for the community. Such "symbiotic domesticity" (Stammler 2010) emerges at the confluence of caribou hunting regulations and reindeer herding legacies. As a result of hunting permits currently not being granted, as well as Rangifer acting more reindeer-like than caribou-like, interactions between Rangifer and humans can be reinvented in a mutually beneficial way. Unexpectedly,

Port Heiden residents find themselves caring for animals in herder-like ways. For example, Jimmy Christensen explained that when inhabitants see wolves trying to separate the herd by "pushing" the young ones out of the village, they often respond by jumping on their snowmachines and driving the young ones back "into the pile" in a manner reminiscent of historical herding techniques (J. Christensen 2013). Far from revealing a loss of tradition, this practice demonstrates that reindeer-like caribou, in some ways, can be herded. Just as varieties of Rangifer conform to a continuum of local representations, it can be suggested that various modes of interacting with Rangifer "are considered continuous in the subsistence pattern," regardless of the degree of domestication (Takakura 2010:22; see also Ventsel 2006). This adds nuance to studies of adaptations of reindeer herders to caribou on the Seward Peninsula in Northwest Alaska where "reindeer and caribou like to mix but reindeer herding and caribou don't mix" (Schneider et al. 2005:47n1). In Port Heiden, depending on the situation, residents demonstrate an ability to engage with Rangifer both as experienced hunters and as those who inherited the legacy of herding.

CONCLUSION: THE COLLECTIVE IMAGINARY AND THE FUTURE OF *RANGIFER* ON THE ALASKA PENINSULA

Examined within a broader historical and cultural perspective, reindeer herding on the Alaska Peninsula was not a complete shift from hunting to pastoralism. In contrast to the official discourse, which considered the reindeer program central for transforming and modernizing Alaska, unofficial accounts of reindeer herding highlight the continuity with preexisting patterns of social life. Local inhabitants were already familiar with components of the herding enterprise, including its multicultural dimension and *Rangifer*-oriented basis. As a result, people had a repertoire of resources at hand to receive, and later reinvent, reindeer herding in a way that would help meet local expectations (see also Simon 1998 in the case of the Seward Peninsula). The hope for a more regular and more certain presence of *Rangifer* in the landscape was certainly not the least of these prospects.

This, of course, does not mean that reindeer herding did not affect individuals and communities. To fit reindeer herding into existing livelihood patterns, people had to adapt. By including reindeer herding in their yearly cycle at Kukaklek Lake, the Gregorys developed connections

with both this rangeland and the reindeer. Herding became valuable for the entire family: Alexi, Marsha (Alexi's wife), their seven children (including Mary Olympic), as well as their descendants. The impact of the industry was significant at many levels of the social fabric, in part because what started as economic initiative became so much more "total." Other domains developed in conjunction with the economic transaction. Herding had an impact on subsistence patterns and cycles, on land uses and land-use choices (developing new routes and going to new places), on essential skills and valued practices (learning to lasso, tame a reindeer, and travel), and on choices of tools and technology. Herding also reshaped community structures (with the establishment of government reindeer stations), village demographics (through Inupiat and Saami immigration), local politics (through the emergence of new specialists and new forms of prestige), and even ritual life (reindeer meat became a legitimate substitute for caribou meat during Russian Orthodox celebrations, spring carnivals, and funerary rites).

In contrast, some critical aspects of reindeer herding were not transmitted. In general, people could not tell us how and where herding was done exactly. No one remembers how lassos, harnesses, and sleds were made. The history was too short. One-and-a-half generations of local herders were not enough to make reindeer *herding* an integral part of the cultural skill set passed down to present generations. The system of apprenticeship, which favored transmission of herding skills to nonrelatives, did not last long enough to develop mechanisms for transferring deer ownership, learning to use and make new technologies, and establishing multiyear grazing itineraries. Other external factors contributed to limiting the potential for transmitting particular herding skills and technologies. The 1919 influenza epidemic that devastated the entire Bristol Bay coastline killed many herders in the Koggiung and Ugashik/Pilot Point regions, most likely leaving the reindeer to scatter. High flu mortalities may have reduced the focus on reindeer and limited communication between administrators and herders. Today, only a few elders, like Mary Olympic, who lived with "real" reindeer and "big" herders, have knowledge of herding practices.

Nonetheless, reindeer herding survived, if not as an industry, at least as a powerful marker of collective identity and imaginary. The old days of herding endured in stories that maintain their power over time until they release it again to new listeners in different contexts. AlexAnna Salmon and her grandmother Mary Olympic

went back to Kukaklek with a group of elders and teenagers to "perform the past" in situ, at a culture camp. For Olympic, this was a trip back "home." For others, it was a short visit to a place of significance. The 2012 Kukaklek Culture Camp gave participants an opportunity to converge in a common space, where they could represent and reshape not only reindeer historicity but also "the historical as a sensory dimension" (Seremetakis 1996:3; see also Dudley 2010:91). Similar kinds of heritage gatherings take place outside of the Alaska Peninsula. In the Anchorage area, descendants of Inupiat families who were involved in the reindeer industry have a yearly family reunion during which they remember and pass down their relation to herding and the Inupiat who immigrated to Pilot Point. Those from Kukaklek and Anchorage who inherit this bond put great effort into preserving a knowledge of family names, place names, objects, stories, and values that are rooted in reindeer herding pasts. Reindeer and herding continue to shape people's sensory experience. The old appetite for caribou products expanded into a durable taste for reindeer. Photographs of "big herders" and retired reindeer equipment are displayed in classrooms, homes, and community centers and fondly demonstrate sources of belongingness and relatedness. Sixty-five years after its official end, reindeer herding still occupies a central place in domestic and public spaces.

Reindeer also survived in the broader environment of the Alaska Peninsula. In Igiugig, Kokhanok, Pilot Point, Port Heiden, Naknek, and Levelock, residents concur that a significant portion of the animals released from government/family control throughout the 1940s did not vanish. Big game hunters consider that domestic reindeer adapted to the wild as "feral reindeer," "reinbou," "marked caribou," or "mixtures" who seek out, or at least do not quickly flee, interactions with humans.²¹ According to our estimate, 4,000 to 6,000 reindeer were abandoned during the 1940s. In comparison, NAP population numbers decline from 20,000 to 8,000 from the late 1930s to the late 1940s (Valkenburg et al. 2003:134, 138). How many reindeer were counted as caribou in this decade and beyond remains unclear. Recent genetic analysis of caribou populations in southwestern Alaska suggests "widespread but low levels of domestic introgression into wild herds approximately 70 years after the end of managed reindeer herding in the region." (Colson et al. 2014:593). For local inhabitants, reindeer-caribou "mixing" has a genetic (i.e., blood) and a social basis. Mixing implies more than interbreeding. It also indicates the capacity of *Rangifer*

tarandus tarandus and *Rangifer tarandus granti* to live together and share connections to humans. Such an interpretation complicates the notion of mixing. For hunters and others, “mixing” brings together the best of “reindeer-like” and “caribou-like” animals. “Mixing” also consolidates the ties between the short history of reindeer herding and the longer history of caribou hunting in a time when, once again, *Rangifer*’s future is uncertain on the peninsula. From the beginning, the history of the reindeer herding industry in Southwest Alaska was part of a larger discussion about sustainability. This discussion continues as communities pay great attention to their food security and more generally to their socioeconomic viability. In this context, it is no surprise that the idea of bringing reindeer back is gaining support on the Alaska Peninsula. These initiatives reflect broader discussions about sustainable reindeer herding throughout the circumpolar North (see, e.g., Koskey 2003:244–270) and in Alaska (Finstad et al. 2006; Schneider et al. 2005). At a time of low NAP numbers again in Southwest Alaska, their focus is not so much on reestablishing reindeer as a large-scale enterprise as it is on reintroducing small herds kept close to villages and capable of supplying local demands. Proposals are heard in places where the memories of the (not so) old days of herding are strong and where the short history of reindeer pastoralism has proven to be long lasting. Concrete plans are being devised and imagined by young people who have never herded reindeer (Murray 2015) and who do not necessarily want to, but who have taken great care of their connection to big herders and significant herding places. That so many contemporary residents on the Alaska Peninsula miss caribou and regret the absence of reindeer shows how critical it is for them to live in a place where the “appetite” for *Rangifer* remains.

ACKNOWLEDGMENTS

We are thankful to the U.S. National Park Service for sponsoring the research that led to this paper (Research Agreement #P11AT36177 and subsequent modifications). We would also like to thank the following people for their generous contributions to the research, including James Simon of the Alaska Department of Fish and Game, Dale Vinson, Troy Hamon, and Diane Chung of the National Park Service; AlexAnna Salmon and Mary Ann Olympic of Igiugig; Gerda and Mark Kosbruk, John and Jaclyn Christensen, Emile and Jimmy Christensen of Port Heiden; Eli Neketa, Rick Reynolds, and Greg Kingsley

of Pilot Point; Akalena Holstrom and Alvin Aspelund of Naknek; and the three anonymous reviewers of this paper. Finally, we are grateful to Michael Wendt for creating the maps for this paper.

NOTES

1. Reindeer were transferred to Unimak Island (Burdick 1941), but we could not determine when this took place, how many animals were transported, or whether the reindeer were actively herded.
2. We consulted the following archives: records of the Bureau of Indian Affairs, Alaska Division [microform]: general correspondence, 1908–1935, University of Alaska Anchorage/Alaska Pacific University Consortium Library; RG 75 Bureau of Indian Affairs, Alaska Division: records relating to reindeer in Alaska, National Archives, Washington, DC; RG 75 Bureau of Indian Affairs, Alaska Reindeer Service, boxes 44, 45, 47, 53, National Archives, Anchorage. The National Archives at Anchorage closed in 2014 and records are now located at the National Archives in Seattle. We consulted the following museum collections: University of Alaska Museum of the North Ethnology and History Collection; Anchorage Museum of History and Art; Burke Museum of Natural History and Culture. We consulted the National Park Service, Alaska Regional Office Photo Collection; the Igiugig Village Council Collection; and the Judy (Monsen) Foster Collection.
3. Passed by the U.S. government in 1937, the Reindeer Act restricted reindeer ownership to Alaska Natives and required non-Native herders to sell their reindeer to the U.S. government.
4. Although we have encountered Native terms for “caribou” and “reindeer,” we are unaware of Native terms denoting the idea of a “mixture” between reindeer and caribou, which is the primary focus of this paper.
5. Archaeologists have shown that this tradition extends to prehistoric times on the Alaska Peninsula (Dumond 1981; Yesner 1985:57–59).
6. Many cultural groups occupy the study area. Throughout history, these groups have self-identified and sought affiliation with other groups in various ways (see Morseth 1998:5–10; Partnow 2001:27–31). When citing historical sources, we have followed anthropological and linguistic designations, including Dena’ina Athabascan, Alutiiq/Sugpiaq, Yup’ik,

and Aleut/Unangax. When citing contemporary residents of the Alaska Peninsula, we have used the ethnic designation they use to refer to themselves. For example, many residents of Naknek, Pilot Point, and Port Heiden refer to themselves as Aleut (Morseth 1998:8–10).

7. According to Clemens and Norris (1999:7),

The native word(s) for the people living around the eastern Naknek Lake region is unknown. The Russians called the villages Severnovsk or Severnovskoe settlements and the inhabitants the *Severnovskie Aleuty* or *Severnovsk Aleuts*. The inhabitants' ethnic and linguistic affinity is not clear. While the literature shows inconsistent references to Savonoski's population as either predominantly Aglurmiut or Sugpiat/Alutiiq, there are a few other clues. The Russian application of the term Severnovskie, which means "northerners," explains that these were the northernmost "Aleut" (meaning Alutiiq or Sugpiat) speakers.

8. According to John Hussey,

caribou were sometimes plentiful in the valley of the Ukak River (the present Valley of Ten Thousand Smokes), and the residents of the settlement at the head of the Naknek Lake frequently hunted there. At times, however, it was necessary to make long journeys to obtain sufficient skins. One of the favorite hunting grounds for the Naknek Lake Eskimos was on the upper waters of the King Salmon River, in the extreme southwestern portion of the present National Monument (Hussey 1971:75).

9. Such trade practices occurred prior to the historic period. Contacts were made through trade, immigration, and warfare (Dumond 2005; Liapunova 1996:150–154; Morseth 1998:20–26; Pratt 2013; Selkregg 2006:4–5).
10. In this quote, "reindeer" is a translation of the German *Rentier*, which is a generic term for different subspecies of *Rangifer tarandus*. Here, Langsdorff means "wild reindeer" or "caribou." Hussey (1971:69) notes that there was also a demographic difference between Kodiak Alutii and Alaska Peninsula Alutii in the nineteenth century: "6,500 Koniags lived on Kodiak and its neighboring islands, but only about 500 inhabited the opposite shore of the Alaska Peninsula."
11. A particularly illuminating example of the importance of caribou and caribou hunting during the Russian period can be seen in the Alutiiq artifacts collected

on the Alaska Peninsula by Russian explorers and scientists in the first half of the nineteenth century for the Peter the Great Museum of Anthropology and Ethnography (Kunstkamera) (Korsun 2012:4–54).

12. According to Valkenburg et al. (2003:134):

the NAP occupies the Alaska Peninsula from Lake Iliamna south to Port Moller. Previously, all caribou on the Alaska Peninsula south to, and including, Unimak Island were considered 1 herd, but by the early 1960s, Skoog (1968) considered them to be divided into 3 populations. However, [the Alaska Department of Fish and Game] continued to consider all the caribou on the Alaska Peninsula as 1 herd until about 1980 (C. Smith 1981). During the early 1980s, [the Alaska Department of Fish and Game] began differentiating between the caribou living north of Port Moller and those occupying the Alaska Peninsula and Unimak Island south of Port Moller, and since the mid-1990s, the caribou on Unimak Island have been considered a separate herd because of their geographic isolation and lack of interaction with SAP caribou.

Recent genetic analysis by Colson et al. (2014) suggests long-term separation—in terms of average genetic exchange over time, not necessarily representative of contemporary patterns of exchange—between these three caribou herds. We are thankful to one of the reviewers of our paper for this comment.

13. According to Morseth (1998:5),

Ugaassarmiut designates people of the Ugashik River drainage who speak a dialect mutually intelligible to both Yup'ik and Sugtestun [Alutiiq] speakers. While linguists have classified their language as Central Yup'ik, they have aligned themselves with Sugpia[q] or, in current usage, Alutiiq.

14. These Inupiat immigrants, like the Saami newcomers, would soon become important players in the emergent industry of reindeer herding on the Alaska Peninsula.
15. NAP herd numbers peaked at approximately 20,000 in the late 1880s and again in the late 1930s, and declined between the 1890s and the late 1920s (reaching a population low of approximately 2,000 caribou), according to Valkenburg et al. (2003:134, 138).
16. In addition to the Scandinavians who came to work in the canneries, some were hired by Sheldon Jackson to supervise the U.S. Reindeer Service in Alaska. According to Nathan Muus ("Alaska Chronology" online at <http://www.baiki.org/content/alaskachron/pre1890.htm>), one of them was William Kjellmann,

a Norwegian from Wisconsin who had worked with reindeer in Finnmark (Norwegian Lapland) and who became superintendent of the Teller Reindeer Station in 1893. Under Kjellmann's supervision, Saami herders were recruited in Finnmark and brought to Alaska in 1894. Four years later, another epic expedition, known as the "Manitoba Expedition" (1898) brought "113 Saami men, women and children, as well as 539 draft reindeer, 418 sleds, a number of herd dogs and a supply of lichen" to Alaska. According to the same source, only 114 reindeer survived the journey.

17. Tommy Pikok Sr. of Barrow noted how reindeer became "pets" in a short amount of time: "Reindeer are just like a pet when you stay with them after two, three months. They just like a family" (Mager 2012:171).
18. See Mager 2012 and Finstad et al. 2006 for a discussion of reindeer emigration to caribou herds in northern and northwestern Alaska.
19. These distinguishing qualities resemble those observed by residents of the North Slope of Alaska as reported by Mager (2012).
20. This threat is perceived as very real. In 2010, two wolves killed a jogger on a road near Chignik Lake. Biologists attributed the attack to aggression (Joling 2011).
21. This is not unique to the Alaska Peninsula. To mention just one other example, Gwich'in people in northeast Alaska/northwest Canada tell similar stories about "caribou hanging around" humans (Robert Wishart, pers. comm., 2014).

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THE HISTORY OF REINDEER HERDING ON THE ALASKA PENINSULA, 1905–1950

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INTRODUCTION

The stories of reindeer herding on the Alaska Peninsula illustrate a vibrant period of transition and economic innovation, but few of these stories have been widely shared (Morseth 1998:134–140; Partnow 2001:233–235; Ringsmuth 2007:103–111; Unrau 1994:309–317). This history began thirteen years after General Agent of Education Sheldon Jackson introduced reindeer herding among Inupiat of the Seward Peninsula as an economic development and acculturation project to “improve” the welfare of Alaska Natives (see Ellanna and Sherrod 1994; Olson 1969; Schneider et al. 2005; Simon 1998; Stern et al. 1980). The industry extended onto the Alaska Peninsula in 1905 when reindeer from Yup’ik and Saami managed herds around Bethel were driven to the southern shore of Lake Iliamna, establishing the first regional reindeer herd (Jackson 1906). These introduced reindeer rapidly propagated and became the progenitors of the herds that were used to establish five government reindeer stations on the Alaska Peninsula and Bristol Bay (Kokhanok, Eagle Bay, Koggiung, Ugashik, and Choggiung¹ [Wood River]) (Map 1, color plates) and several private herding enterprises, within the rangelands between Lake Iliamna and Port Heiden (Map 2, color plates).

The reindeer industry in this region was culturally and linguistically diverse: three local cultural groups—Dena’ina, Yupiit, and Alutiit—were working with Saami,² Inupiaq, and Yup’ik immigrant herders. Saami and Yup’ik herders from the Kuskokwim River region worked as chief herders with local Yup’ik and Dena’ina apprentices around Lake Iliamna, which marked the historical boundaries between Dena’ina and Yupiit (Dissler 1980:5–11). Dena’ina occupied the northeastern part of the lake, including the contemporary village of Iliamna. Yupiit lived along the southern and western shoreline of Lake Iliamna, including Newhalen, the mouth of the Kvichak, and over to Kokhanok. Yupiit also occupied regions along the Kvichak and Alagnak Rivers. Residents at Naknek Lake and those who moved into the Naknek River region after the 1912 Katmai eruption (see Feldman 2001; Pratt 2013) referred to themselves as Alutiit or Aleut, as did residents of Egegik and the central Alaska Peninsula, including Ugashik,

Pilot Point, and Port Heiden. In the early 1900s, several Inupiaq families immigrated to the Alaska Peninsula and eventually managed herds in Ugashik, Pilot Point, and Port Heiden with local Alutiit apprentices and herders (Morseth 1998:131–140). This diversity adds to the historical richness and distinguishes it from herding done elsewhere in Alaska (e.g., Burch 2012; Ellanna and Sherrod 2004; Fair 2003; Finstad et al. 2006; Koskey 2003; Mager 2012; Olson 1969; Schneider et al. 2005; Simon 1998; Stern et al. 1980).

In addition to its rich cultural diversity, Alaska Peninsula herding was marked by its variation in herd sizes. Herd numbers on the peninsula ranged from as few as ten to fifteen animals to as many as 4,000 to 6,000. In the early 1930s, based on archival sources, reindeer numbers reached their peak for the study area with approximately 10,000 reindeer. Within two decades, however, the region’s herding industry ceased. Because of its low reindeer

population (compared to Northwest Alaska), its short history (forty-five years), and distance from the center of reindeer affairs (Nome), Alaska Peninsula reindeer herding has received much less scholarly attention than herding in other parts of Alaska (Morseth 1998:147–148).

Drawing on archival sources,³ oral histories, site surveys, and interviews with residents of the Alaska Peninsula, this paper documents some of these stories. By following reindeer movements to and across the Alaska Peninsula (Map 1, color plates), I make an initial foray into the region's herding practices, describing herding origins and developments within the region of Lake Iliamna, along the Kvichak, Naknek, Egegik, and Ugashik rivers and south to Port Heiden. I also delineate boundaries of the rangelands used by both government and private herding operations (Map 3, color plates). I review how government reindeer stations spread throughout the region, how Alaska Native independent herding enterprises emerged, and compare the two different herding structures and patterns. As a broad history of the region's reindeer industry, this paper serves as a comparison to herding done in other parts of Alaska.

U.S. REINDEER SERVICE POLICIES

Although herding on the Alaska Peninsula was likely inevitable, driving reindeer to the southern shore of Lake Iliamna was not planned (Unrau 1994:309). In February 1905 when Saami-American Hedley Redmyer ended up in “one of the finest reindeer countries” (Redmyer 1906:163) with 300 reindeer from Bethel, he had no idea that he was at Lake Iliamna. Sheldon Jackson had tasked Redmyer to drive reindeer from Bethel to Copper Center, north of Valdez, in order to establish a reindeer station and extend the reindeer program in Alaska. But finding a passable route through the Alaska Range proved more difficult than Redmyer predicted. He wrote:

As a rule, people who have had no experience with reindeer only by reading are always led to believe the reindeer capable of more than they really are. They are in fact far ahead of any animal to go through a wilderness, but there is a limit to all (Redmyer 1906:160).

Still hundreds of miles from Copper Center, in wolf country and with no reindeer lichen in sight, Redmyer and his crew of Finnish men from northern Michigan (including Louis Karbum, Erick Lampela, and John Wuori

and Peter J. Hatta, a Saami man) retreated to the southern shore of Lake Iliamna with the reindeer (Jackson 1906). With Jackson's approval, the herders established the first reindeer station on the Alaska Peninsula at Reindeer Bay, called “Iliamna No. 1” or “Kokhanok Station at Reindeer Bay.” This original station was located less than fifteen kilometers from the Yup'ik fishing village Kokhanok, which was at or very near the Yup'ik village of Isigiug, first recorded by the U.S. Census in 1890 (Dissler 1980:8).

Jackson's approval of the station's location was his parting influence on the region's reindeer affairs. Based on concerns that the reindeer program had lost sight of its original intention, which was to improve economic conditions for Alaska Natives, in 1905 the Department of the Interior launched an investigation. The lead investigator, Indian Agent Frank Churchill, identified Jackson as the main culprit, arguing that his dual role as reindeer superintendent and agent for the Presbyterian missions was a conflict of interest and benefitted the missions at the expense of Alaska Natives. Churchill recommended secularizing Alaska's reindeer affairs (Willis 2006:291). With the mounting pressures from Churchill's report, Jackson resigned in 1906 and William Lopp, who had been involved in Alaska herding since the beginning in Teller, replaced him.

In his new position as superintendent of both Alaska schools and reindeer, Lopp initiated a major overhaul of the reindeer policies with his formation of the U.S. Reindeer Service. These new policies focused on increasing Alaska Native reindeer ownership and empowering Alaska Native herders (Willis 2006:292). The regulatory structure of the program also changed; no longer would missions administer reindeer affairs. The U.S. Reindeer Service was part of the Bureau of Education of the Department of the Interior. In Southwest Alaska, school buildings would be jointly established with government reindeer stations and teachers would both teach and administer reindeer affairs as local superintendents (Unrau 1994:312). This led to the parallel development of reindeer stations and schools in the Yup'ik villages of Kokhanok and Koggiung and in the Alutiiq village of Ugashik. Unlike herding on the Seward Peninsula among the Inupiat, missions and missionaries would play no role in the development of the industry in Southwest Alaska. The new Reindeer Service policies and the firmly rooted Russian Orthodox Church in the Alaska Peninsula ensured that other churches had limited influence in the region.

The system of apprenticeship used to train Alaska Natives in herding techniques was also revised for the U.S. Reindeer Service after complaints from prior apprentices that the program was controlling and confusing. Local teachers would employ “promising” young Alaska Native men to work with chief herders at government herds for four years. The apprentices were also promised some school education. Hannah Breece, the teacher at Old Iliamna from 1909–1912, wrote about the Yup’ik and Dena’ina apprentices she taught (Fig. 1):

My most unusual pupils were six young men apprenticed at the reindeer station. . . . These youths were entitled by the government to two months’ schooling a year. They came to us two at a time. They brought their own food and lived in a small, comfortable cabin built for them near the schoolhouse. I sent books and writing materials back with the first pair so they could teach the third pair what they had learned and give them a good start before they reached us. The third pair, with

that good start, took back more advanced work to teach the others. They were bright and diligent and eager to teach each other, so they advanced almost as much as pupils able to attend school all winter (Jacobs 1995:110).

The apprentices also earned reindeer for each year of training they completed, progressively earning more deer each year. Apprentices earned six reindeer the first year (four females, two males), eight reindeer the second year (five females, three males), and ten reindeer the third and fourth years (six females, four males) (Unrau 1994:311). At the end of four years, they might have as many as thirty-four reindeer plus offspring—enough to generate a private herd.

GOVERNMENT VERSUS PRIVATE HERDING

After graduating from their apprenticeship, some individuals remained with the government station as hired



Figure 1. Reindeer apprentices from Kokhanok Reindeer Station arriving at Old Iliamna, 1909–1912. Courtesy of Jane Jacobs and the National Park Service, Museum Management Program and Katmai National Park and Preserve, cat. no. H-1853.

herders and maintained their reindeer within the government herd. Others left the government stations with their reindeer, establishing a private enterprise. This created an additional herding structure. One major difference between the two operations was that government stations were financially supported. Government herders were paid and supplied with sleds, ropes, and lumber for corrals in exchange for providing pastoral care for government and some privately owned reindeer. Government apprentices earned reindeer but were inconsistently supplied with provisions. For example, Kokhanok apprentices received yearly supplies but those in Koggiung needed to seasonally fish or sell their earned reindeer in order to buy yearly provisions. In contrast, the government provided no resources to private herding operations, even though the Reindeer Service attempted to retain some control over independent herders. For example, Reindeer Service local superintendents discouraged herders and owners from killing any female deer. Through policies of the Reindeer Service, superintendents also pushed independent herders into the formal apprenticeship system; “the herder must then in turn train and reward apprentices in accordance with the provisions of the rules and regulations” (Updegraff 1908a:399). In reality, however, few private herders maintained official apprenticeships. Some family members learned the trade by participating (see Salmon, this issue) but most herders who worked for private enterprises were

employed seasonally and were compensated with money, reindeer products, or trade goods. Different herding patterns emerged from these two different structures.

ILIAMNA REINDEER STATIONS AT KOKHANOK AND EAGLE BAY

In 1905, the first reindeer station on the Alaska Peninsula, Kokhanok Reindeer Station, or what was originally called the Iliamna Herd at Reindeer Bay, became the testing grounds for the U.S. Reindeer Service and its new set of policies. Some of the men who originally drove the reindeer to Kokhanok stayed on as herders. Hedley Redmyer became chief herder. The station also employed two Yup'ik apprentices, who were likely brothers Pete and Evon Olympic.⁴ Additional apprentices, some of whom were Dena'ina, joined the following years, including Pete S. Gregory, who started his apprenticeship with the Kokhanok herd in 1906 (U.S. Reindeer Service 1913a). The original 300 reindeer driven to Kokhanok flourished in the lichen-covered tundra of Lake Iliamna, Big Mountain, and Kukaklek Lake. By 1908, the herd had increased to 720 deer (Unrau 1994:312) (Fig. 2).

Recognizing these initial successes, reindeer officials wanted to extend the reindeer programs in Bristol Bay. Earlier in the summer of 1908, Commissioner of Education Dr. Updegraff had traveled between Iliamna



Figure 2. Kokhanok Reindeer Station, circa 1910. Courtesy of Bert and Edna Foss and the National Park Service, Museum Management Program and Katmai National Park and Preserve, cat. no. H-921.

Bay and Bristol Bay, obtaining reports and inspecting the potential for expanding herds. Updegraff (1908b) reported excellent rangelands and was told there was no greater concentration of lichen than around the Nushagak and Wood rivers. He wrote, "Dr. Romig says that thirty miles above Nushagak on Wood River there is the best place for . . . a reindeer station he has ever seen. It will be easy to reach with provisions and they may be placed there at a low rate" (Updegraff 1908b).

Based on these reports, Superintendent Lopp wanted a reindeer station established within the Nushagak River region (Henkelman and Vitt 1985:310). He also had plans for expanding the industry into the Aleutian Islands. Lopp and other reindeer officials likely concluded that a reindeer station in Bristol Bay would be an accessible location from which to supply other regions with reindeer. So in 1909, while Lopp was in southwestern Alaska to move Kuskokwim area herds to Quinhagak, near Kuskokwim Bay, he also traveled to the Kokhanok Reindeer Station (Henkelman and Vitt 1985:310). He and several of the Kokhanok herders divided the herd and drove 500 reindeer from the station, down the Kvichak River, and into Bristol Bay to establish the Koggiung Reindeer Station.

This herd division came on top of employment changes at Kokhanok Station. The Saami herder Peter Hatta replaced Redmyer as chief herder after suspicions surfaced surrounding Redmyer's management practices. Reindeer Service officials questioned Redmyer's shipping charges, while Lake Iliamna residents accused him of stealing station supplies and selling them locally at inflated prices (Young 1908). Graduating from their apprenticeships, the Olympic brothers took up full herder positions. Pete moved with the 500 deer to the Koggiung Station. Evon stayed in Kokhanok with the remaining 336 reindeer, and became chief herder in 1910. As locals came to know about the reindeer program, new apprentices were appointed to the station, including Kavelilla Olympe (1908) (likely the brother of Pete and Evon Olympic), Matfe Bavel (1910), Wassilie Dehkittie (1910), and Ivan Kaloviaslak (1910) (Unrau 1994:312).

The initial promise of Kokhanok's herd productivity was relatively short-lived. By 1912, the herd had increased to 467 reindeer, a gain of only 131 deer after the initial herd split in 1909. J.L. Brown, who started teaching in Old Iliamna in 1911 and was assigned reindeer superintendent duties, complained of general herd mismanagement by the chief herder, reporting that the herd was largely scattered (Jacobs 1995:227). Perhaps to mitigate

these troubles, the Reindeer Service determined to split the Kokhanok herd again (Unrau 1994:314). In 1913, a second station at Lake Iliamna, called Kenai Reindeer Station (so named for the Dena'ina ("Kenai Indian") herders who would be operating it), was established on the north shore of Iliamna, at Eagle Bay, hereafter called the Eagle Bay Reindeer Station (Map 1, color plates). Many of the Kokhanok herders and apprentices drove the majority of the Kokhanok reindeer to the new station at Eagle Bay. In 1913 Eagle Bay Reindeer Station had a total of 240 reindeer of which the government owned 67; herder Pete S. Gregory owned 49; Dena'ina apprentices Wassillie Dehkittie, Hamoska Zackarr, and Ivan Kalovislak owned 26, 20, and 30 reindeer respectively; and owners Zimion Nehkittie and Zackar Zacharusky owned 9 and 39 respectively (U.S. Reindeer Service 1913b). Willie Kasayuli, a Yup'ik from Bethel, was chief herder. After reindeer were moved to Eagle Bay, only 99 reindeer remained at the original Kokhanok Station. These reindeer were owned by Evon Olympic, Kavelilla Olympe, Matfa Bavel, and John Kelwack. No government reindeer remained at the Kokhanok Reindeer Station.

The government's involvement in the Eagle Bay Reindeer Station was limited. Only one year after the Eagle Bay Station was established, chief herder Willie Kasayuli and the station's apprentices moved all Eagle Bay government reindeer to the Koggiung Station, leaving no government reindeer in the Iliamna region by the winter of 1914–1915. Government financial support for apprenticeships and herding provisions ceased as well. Perhaps during his visit in 1909, Superintendent Lopp decided to shift U.S. Reindeer Service resources to the Nushagak and Ugashik regions. Local teachers, however, continued to carry out limited superintendent duties such as counting reindeer and supplying annual reports. In 1917, superintendent Fred Phillips reported 157 reindeer at Eagle Bay, which were owned by only four Dena'ina Natives (chief herder Pete Siwa, herder Hamoska Zackarr, owner Zimion Nehkittie, and apprentice Pete Simion) (U.S. Reindeer Service 1917a). The small herd size reflects the government pull-out of Iliamna, but adding to the small herd size at Eagle Bay was the fact that private herders moved to different rangelands, spreading into the Newhalen, Talarik Creek, and Kaskanak regions. Local superintendents likely could not reach these areas to count reindeer and might not have even known about these private herds.

Despite the government's absence, both reindeer population numbers and Alaska Native ownership of reindeer steadily increased in the Iliamna region in the late teens and early 1920s. By 1925, there were 2,094 reindeer around the rangelands of Lake Iliamna. Reindeer meat became an important food source for those who could afford it, since big game was scarce (see Plattet and Lincoln, this issue). The Annual Reindeer Report for Iliamna lists 2,118 reindeer in 1929. That same year, the secretary of the interior shifted responsibility for the reindeer program from the Bureau of Education to the governor of the Alaska Territory (Willis 2006:297). Transitions took place for the Iliamna herds as well. Smaller private herds ranged in Eagle Bay, Newhalen, Big Mountain (southwest shoreline of Lake Iliamna), and Kukaklek Lake to the south (Unrau 1994:315). These herds were owned by several individuals who hired herders and elected a chief herder to manage their enterprises. The chief herder drove reindeer to more productive rangelands and/or to flee predators. For example the late Mary Tallekpalek, born 1915, discussed her father's move from Kokhanok to Big Mountain with his herd. He was the chief herder at Big Mountain into the 1930s:

My dad got reindeer [a] long time ago, before I was born. He got reindeer, up [the] other side of Kokhanok. First he got them from the government, right there. Mamma told me. Then he moved down—too many wolf—moved down reindeer, in about Kvichak, before I was born (Tallekpalek and Tallekpalek 1998).

Private reindeer herds of the Iliamna Lake region continued to increase in the early 1930s as herders spread out and ranged their deer away from the once central government stations (Fig. 3). Herders sold reindeer meat both locally and to the canneries. For example, the late Rose Hedlund (born in 1917 in Chekok on the north shore of Lake Iliamna) grew up eating reindeer. Her father purchased two reindeer each year from the Eagle Bay herd (Hedlund and Hedlund 1985). Herders also trained sled deer to transport supplies along the Kvichak River, stopping at trade stores in Igiugig, Levelock, and the Alaska Packers' Association cannery, Diamond J, near the mouth of Bristol Bay. In 1930, fifty-three reindeer were butchered out of Newhalen's 422 reindeer, and twenty-six were trained as sled deer (Unrau 1994:315). Under chief herder Simon John, the Newhalen herd reached 1,008 reindeer



Figure 3. Reindeer in corral at Eagle Bay Reindeer Station, circa 1930. Courtesy of Gladys Evanoff and the National Park Service, Museum Management Program and Katmai National Park and Preserve, cat. no. H-976.

by 1936, but quickly declined after his death. Lack of management of the herd, fueled by overgrazing and disease, led to rapid depletion of reindeer numbers. By 1938, a portion of the Newhalen herd was driven to Kukaklek Lake, where Alexi Gregory herded his privately owned reindeer until 1947 (see Salmon, this issue). The remaining Newhalen reindeer scattered and either joined the Mulchatna caribou herd or were killed by wolves (Unrau 1994:315–317). This diffusion of reindeer made tracking their numbers difficult for superintendents, but based on discussion with descendants of herders it appears that other Iliamna herders experienced similar rapid declines of their reindeer. With the exception of Kukaklek Lake, and perhaps smaller unknown private herds, reindeer herding ended around Lake Iliamna by 1938.

KOGGIUNG REINDEER STATION

The initial successful propagation of reindeer in Lake Iliamna nourished the optimism of reindeer superintendents. Not only were officials such as Updegraff confident about the region's grazing potential, but they also saw a market for meat in the region's growing workforce. Since the 1880s, the Alaska Packers Association and other fisheries companies operated salteries and canneries along the Nushagak, Kvichak, Naknek, and Ugashik rivers, which brought a number of Asian, American, European, and Scandinavian workers to the region seasonally. Reindeer officials acted quickly to bring government stations to these regions. Koggiung was an ideal location from which to expand operations in Bristol Bay. Thus, shortly after Kokhanok herders drove 500 reindeer down the Kvichak River to establish the Koggiung Reindeer Station in 1909, this group of animals was again subdivided and used to establish reindeer stations on the Wood River, near Dillingham and south to Ugashik. In March 1910, newly appointed Koggiung teacher and local superintendent Rudolph Ramslund reported helping regional reindeer superintendent Dr. Henry Schaleben and the herders secure the deer prior to their transport. Ramslund (1910) wrote, "A corral had been erected before we arrived and to secure the necessary number it was necessary to lasso all the deer required for the two herds." Herder Robert Eqsack, whom Lopp had appointed chief herder for the herd at Nushagak in 1909, drove 165 reindeer to the Wood River, while Schaleben and other herders drove 190 reindeer to set up the Ugashik Reindeer Station.

Koggiung had long been a seasonal Yup'ik settlement. The prospect of cannery employment and the newly built school offered additional incentives for Yupiit to remain in the community. Ramslund and the herders recruited Yup'ik apprentices from Koggiung, Levelock, and the Alagnak River to manage the 150 reindeer that remained at the Koggiung Reindeer Station, which was located on the Alagnak River, just up from Bristol Bay. These apprentices included Andrew Koghanoak, Andrew Noatak, Wassillie Pangolukpalik, Zaccha Paingiluguk, Alexi Gregory, and Miska Apoulooks (U.S. Reindeer Service 1913c). By the winter of 1912–13, the Koggiung herd had increased to 247 animals but faced a number of challenges. In the late winter of 1913, wolves began attacking the reindeer. Herders reported that wolves killed thirty-six reindeer in one night, leaving much of the meat to rot. That winter and spring wolves attacked the herd four times, killing fifty-six reindeer (French 1913). These attacks were in fact so frequent that government doctor L. H. French (1913) requested poison from Superintendent Lopp to bait the wolves. The most serious threat to the herd, however, was ash fall from the 1912 Katmai volcanic eruption. As Koggiung teacher/superintendent G. A. Barton described in a letter:

Great showers of ashes fell on the moss, and other vegetation, and when the deer were grazing they got so much of the ashes in their food that they became very sick and died. We examined the jaw of one of the deer that died while we were at camp and found that its teeth were all worn off entirely so it was impossible for it to chew the moss even if it did succeed in getting it into its mouth (Barton 1913).

In an effort to find lichen free of ash, chief herder Andrew Kogkhanoak moved the reindeer to the banks of Kvichak River, between Kaskanak and Levelock, just below Kaskanak Flats. The herd benefited from the move up the Kvichak and the new rangeland was timely as more reindeer arrived for Koggiung in 1914. As mentioned previously, Eagle Bay Reindeer Station chief herder Willie Kasayuli and the station's apprentices drove all of the government reindeer to Koggiung. They intended to continue their travels to Wood River, but by the time they arrived in Koggiung it was almost fawning season. It was not until the next winter that Kasayuli and the apprentices from the Eagle Bay and Koggiung stations drove all government reindeer from Eagle Bay and most of the government reindeer from Koggiung to the Wood River (Map 1,

color plates). This left five government reindeer and only four Koggiung herders with their privately owned deer at the Koggiung Station (Barton 1914, 1915).

Over the next few years, Koggiung herders moved their reindeer to different areas, searching for ash-free rangelands. In 1916, herders Andrew Noatak with 79 reindeer, Wassillie Pangolukpalik with 41 deer, Alexi Gregory with 45 deer, and Miska Apoulooks with 71 deer moved their herds “up to the lakes” (probably referring to Lakes Iliamna and Kukaklek) according to schoolteacher/superintendent Preston Nash. Nash wrote no official report, explaining that he could not get up to the “lake” where the herds resided (Nash 1916). The succeeding teacher/superintendent T. R. Glass also had trouble completing his annual reindeer report. He had no boat or guide to reach the herd, which had moved up a creek “in the foothills about twenty or thirty miles from [Iliamna] lake” (Glass 1917). As reindeer populations owned by Alaska Native herders increased, the influence of reindeer superintendents and other reindeer officials declined. Although superintendents tried to maintain some control over herders and their reindeer once they were privately owned, archival documents demonstrate their ineffectiveness. Communication was limited, as local superintendents could not physically locate or reach herds and generally did not have the knowledge to advise chief herders.

Reports and communications about reindeer affairs are limited after 1917. Influenza hit Koggiung severely in spring of 1919, and a large number of Alaska Natives died, further adding to disruption in official reindeer reporting. We know that one Koggiung herder, Alexi Gregory, moved his herd to Kukaklek Lake where he herded with his family until 1947 (Salmon, this issue). It appears that Miska Apoulooks herded in Ugashik at a later date. The other herders, if they kept herding, operated private herds. It is likely that official reindeer business ended for the Koggiung Reindeer Station in 1917–1918. There are two archival references, however, from the late 1930s indicating that herding persisted in the region. The first reference is a 1938 Reindeer Service map depicting the Koggiung Reindeer Station. The second is a 1941 report that states, “This village [Koggiung] formerly had a large reindeer herd but due to wolves molesting the herd and injury to the chief herder who had long taken an interest in the herd, the herd was abandoned three years ago according to the reports of the chief herder who now works at the Feldner-Gals Trading Post” in Bethel (U.S.

Reindeer Service 1941:3). These references were likely to a private herd.

UGASHIK REINDEER STATION: PILOT POINT AND PORT HEIDEN

Establishing a government station at Ugashik was the continuation of the plan by reindeer officials to spread herding throughout the Alaska Peninsula and into the Aleutian Islands. Superintendent Lopp (1909) recommended a herd should be based at the Alutiiq village of Ugashik so the Reindeer Service could easily move reindeer to other locations from nearby Port Heiden. Ugashik reindeer were sent to at least three islands. An unknown number of reindeer were established on Unimak Island (Burdick 1941). In 1914, forty reindeer were shipped to Atka Island.⁵ Seven years later, fifty-four deer were sent to Kodiak Island. The Ugashik Station, however, did more than supply other regions with reindeer. The original 190 reindeer driven south in 1910 from Koggiung by Schaleben and Kuskokwim Yup’ik herder “Jesse,” developed into a herd of almost 4,000 by the mid-1930s. All of these animals descended from the original 190 reindeer from Koggiung and not from reindeer shipped on a U.S. Revenue cutter, as suggested by Morseth (1998:134).

Over the years, the Ugashik herd was managed by nonlocal chief herders, which was a constant source of tension for the Ugashik residents who considered themselves to be Alutiiq. Jesse stayed on as the first chief herder after helping move the reindeer to Ugashik. Before the end of the year, however, he returned to the Kuskokwim because he was at odds with the local Alutiiq. According to Schaleben (1910), as Russian Orthodox believers, the locals felt superior to Jesse, who was likely Moravian. Pete Olympic, a Yup’ik from the Iliamna region, replaced Jesse—but he would eventually suffer similar complaints since, even though he was Russian Orthodox, he was not Alutiiq. It is not clear why the Reindeer Service continued to appoint nonlocals as chief herders in Ugashik but this pattern continued into the 1920s. Andrew Krause, another Yup’ik herder from the Kuskokwim River, replaced Pete Olympic. Later on in the 1920s, after Inupiat immigrated to the Alaska Peninsula (Morseth 1998:131–140), Inupiat herders managed many of the herds in the Ugashik and Port Heiden regions. In an attempt to resolve cultural conflicts between locals and Inupiat, herders eventually consolidated their herds into

one of two reindeer companies. Alutiiq locals worked for the Ugashik Cooperative Reindeer Company, started in the early 1930s, and the Inupiat immigrants formed the Peninsular Eskimo Reindeer Company in 1936. Ethnic group tensions may have been the result of controlling of local resources as much as cultural or religious conflicts. The relationships between local residents and the reindeer superintendents were also often strained. Local superintendent J. C. Laur (1911) wrote to Lopp, “The apprentices say they desire to take their deer to themselves and be independent of government aid as soon as they serve their apprenticeship.”

Long before consolidation of the Ugashik reindeer into two companies, however, the herders and reindeer superintendent of the Ugashik Reindeer Station had difficulty tracking the herd’s population growth. In 1909, teacher/superintendent H. G. Davis reported that the herd increased by almost fifty animals. In his Record of Herders, Apprentices and Owners report (U.S. Reindeer Service 1909), Davis listed the first five apprentices, all of whom were from Ugashik: Nicolía Engiak, Alexie Johoktike, Apaluk Miska (perhaps Miska Apoulooks from the Koggiung Station, who was likely misidentified as from Ugashik), Samilo Jacowan, and Zachar Chicali. Following the U.S. Reindeer Service’s procedures, each apprentice had earned six reindeer. The government owned the remaining 238 deer. Three years later, teacher/superintendent J. B. Laur reported 446 reindeer, of which 330 belonged to the government (U.S. Reindeer Service 1912). As the herd grew over the years, the lack of trees or driftwood to build corrals added to the difficulty of systematically counting and marking reindeer each year. The herd was not counted again until 1916 when teacher/superintendent W. A. Wilson, the Ugashik herders, and Dr. French drove the herd to Naknek temporarily—within range of trees—to make a corral and count the herd. According to Wilson’s Annual Reindeer Report, 380 reindeer were counted; the government owned 131 of them while Pete Olympic owned 67 (U.S. Reindeer Service 1917b). The remaining animals were owned by the apprentices who had completed their training: i.e., Nake Engiak (likely Nicolian Engiak), 47 reindeer; Samilo Jacowan, 54; Yerman Amanquishkok, 46; and Alexie Golohan, 35. Wilson wrote at the time, however, that he knew of “two bunches of reindeer” that they had been unable to bring in with the larger herd.

After the corralling in 1916, the Ugashik herd was separated into two locations. The first apprentices (who by 1916 had become full herders), including Engiak, Jacowan, Amanquishkok, and Golohan (as well as Alexie Paming), took their reindeer to Dago Creek. They continued to herd around Dago Creek until the late 1930s at what was called “Reindeer Camp” (E. Neketa 2013). Chief herder of the Ugashik Station Pete Olympic left government work and independently herded reindeer north of Ugashik. The government reindeer and the newly appointed apprentices were sent to herd around the Ugashik Lakes under the leadership of chief herder Andrew Krause from the Kuskokwim region. The 1917 Ugashik annual report lists 502 reindeer (U.S. Reindeer Service 1917b).

In 1919, influenza hit Ugashik and Pilot Point very hard, claiming the lives of many adults. From the two communities, thirty-two children were sent on the steamer *Kodiak* to an orphanage in Kanakanak (Morseth 1998:69). Herders at Dago Creek survived the epidemic because they were separated from the villages. Pilot Point resident Gust Griechen intercepted the Dago Creek herders before they entered the village and could contract the influenza. Nick Neketa of Pilot Point relayed how his great uncle, Yako (Nake) Engiak, herded at Dago Creek and raised his father, Nefutie Neketa, after his parents died from influenza (N. Neketa 2013). Nefutie Neketa learned herding and earned reindeer from his uncle and eventually owned a small number of reindeer, between ten and twenty, which he herded at Reindeer Creek with collie dogs before he married and had children (E. Neketa 2013; N. Neketa 2013). Eli Neketa (2013) recalled that the location was ideal for herding reindeer, trapping, and traveling between Egegik and Pilot Point.⁶

While the Dago Creek herders survived the influenza devastation, the fate of the herders who ranged around Ugashik Lakes after they split from the Dago Creek herd in 1916 is less certain. One speculation is that they perished in the influenza outbreak of 1918–1919 and the Reindeer Service hired Inupiat settlers to manage their reindeer. Inupiat had immigrated to the Alaska Peninsula in the early 1900s seeking hunting grounds and employment in the canneries (Morseth 1998:131–140). While a few families traveled by umiat, eleven families and two single men traveled aboard the U.S. Revenue Cutter *Bear* in 1911 (Ducker 1996:55). John Kigolnok, originally from Wales, traveled south aboard Nome-based fur trader Charley

Madsen's *Challenger* (Madsen and Douglas 1957). A 1937 report to General Reindeer Superintendent Sidney Rood from Ugashik Superintendent Samuel Hanson suggests that in the 1920s the government had hired Kigolnok as chief herder (Hanson 1937). Kigolnok apparently retired in 1930 after several years of service because he could secure no apprentices. Some Pilot Point residents today also remember Kigolnok as a chief herder.

Sometime in the 1920s, other Inupiat also started herding reindeer around Port Heiden and Pilot Point. It is unclear how they obtained reindeer but Inupiat ranged deer around Port Heiden, Hook Lagoon, Cinder River (Shegong), and Ugashik. These herds, however, were never reported as government herds. Somehow, the Inupiat obtained the reindeer immediately as owners and not through the standard apprenticeship program. Perhaps because many of them had been herders on the Seward Peninsula before moving to the Alaska Peninsula, they did not need training, but the government needed herders. Or perhaps they simply purchased reindeer outright from local owners.

William Zunganuk, originally from Mary's Igloo, was chief herder of the Port Heiden herd in the 1920s and early 1930s and grazed his deer on lands south of Cinder River, past Port Heiden, as far south as Unangashak (Morseth 1998:141–45) (Map 2, color plates). Elizabeth (Zunganuk) Risch (2013) explained that her father worked the Teller herd before moving to the Alaska Peninsula. Zunganuk had two cabins up North River, near Aniakchak, which were likely used when trapping and herding in the Aniakchak pastures. With the help of local Inupiaq families and well-trained herding dogs, the herd was corralled at the mouth of Reindeer Creek, on the north side of the river. The Supsook family, also Inupiat, had a cabin nearby and would help the Zunganuks corral and mark the deer each year (Morseth 1998:146). Other Inupiaq herders included Nikavak, who ranged his herd around Cinder River (Morseth 1998:147–148). He had married Sam Supsook's daughter. Valentine Supsook explained that during winter corralling five or six young men would camp "back of Cinder River" (Morseth 1998:146). The whole lagoon would fill up with reindeer as men moved them to the corral. The settlement established at the location where Nikavak's herd was corralled was known as Shegong. Nick Meticgoruk, perhaps a relative of Nikavak, also herded at Cinder River. He might have been employed by Nikavak or took over the herd at

a later date. Nick Meticgoruk had a cabin at the mouth of Cinder River and a cabin near Aniakchak on "the plateau" where he moved his deer seasonally. Today, this cabin is called "Caribou Cabin" by Pilot Point and Port Heiden residents.

Like many residents of Pilot Point, Ugashik, and Port Heiden, the Inupiat herders spent summers commercial fishing in Pilot Point. Zunganuk's eldest daughter, Pauline Supsook, remembered that her family would leave the deer near Unangashak in the summer to fend for themselves while her father fished in Pilot Point to earn money for their yearly provisions (Morseth 1998:146). Limited oversight of the herds during fishing season and the general increase in reindeer led to individual herds mixing in the late 1920s and into the 1930s. This caused growing tensions between owners. In fact, Eli Neketa remembers these times as "the herding wars," explaining that many of the problems stemmed from the fact that the Inupiat and local Alutiit could not communicate well because they did not share a common language (E. Neketa 2013). Disputes often erupted for economic reasons; by 1932, the estimated number of reindeer in the Ugashik region was 3,665 animals. With locals owning over 2,814 of those reindeer, losses could have been financially significant (Hanson 1937). As evidence of these disputes, cairns that demarcated rangeland boundaries remain on the landscape today (E. Neketa 2013) (Fig. 4). These disputes culminated in the formation of the Ugashik Cooperative Reindeer Company (UCRC) and the Peninsular Eskimo Reindeer Company (PERC) in 1936.

Despite this new organizational structure, the reindeer herds around Ugashik faced a number of challenges. Because trapping and fishing were so much more lucrative, the two reindeer companies could not retain enough herders, which led to scattered reindeer. By 1937, UCRC and PERC reindeer had completely mixed. To reduce friction between the two companies and keep a more accurate count of reindeer, a roundup was planned to separate the herds. Superintendent Hanson described the February 1937 roundup in a report to Rood:

Two weeks the Native Aleuts and Eskimos were out hunting for deer. . . . Finally, however, we had the deer down on Pike Lake . . . we let them spread out in a crescent, over the surface of the Lake—a crescent about a mile long. . . . The plan was to see from the "hill" where to divide the herd. It had been agreed by all that the Eskimos were to have 400 deer over half the herd, to compensate for



Figure 4. Eli Neketa pointing out a historic cairn outside of Pilot Point, Alaska, in June 2013. Photo: Patrick Plattet.

the 400 that weren't rounded up. I had previously calculated from the original ownership certificates and the estimated yearly increase, that the herd would be pretty nearly equally divided between Eskimos and Aleuts. I then told the two presidents where to split the herd, and Willie Zunganok, the president of the PERCo, and Charley Johnson, the president of UVRCo [UCRC] approached the herd from opposite directions, and the herd was easily divided (Hanson 1937).

According to Hanson's estimate, the UCRC received approximately 1,100 reindeer and were to occupy the Dago Creek Range. The PERC received around 1,500 reindeer and were to graze their deer on the south side of Ugashik River. Despite tremendous efforts to keep the herds separate, they quickly reunited. Participating in the division, Valentine Supsook (Supsook and Supsook 1997) recalled that the herders stayed with the reindeer as long as they could but all of them needed to earn money trapping so they left the PERC herd. Shortly afterwards, their reindeer rejoined the UCRC herd on the north side of the river.

Keeping the two herds separated was a constant problem. During the fawning season, the reindeer would crave salt-water and would cross the river and join the Dago Creek herd by the coast (Hanson 1937).

The mixing of the herds was not the only challenge facing the Ugashik reindeer herds. Hanson complained in his reindeer reports of alcohol abuse among herders and of poaching by trappers from Egegik, Kanatak, and Becharof Lake who were using deer meat as bait for their traps. Wolves also heavily preyed on the herds. Hanson (1937) wrote to Rood:

The wolves are running in small packs and are pulling down and scattering the Ugashik herd of reindeer. They kill the big deer, and tear out their tongues, and the carcasses. Then the coyotes follow up the wolves and feed on the dead carcasses. There are a lot of ravens, too, and eagles, that are bothering the new-born fawns...there were as many as five wolves seen at one time.

The herds were also hit by both environmental and volcanic conditions that depleted their numbers. Three difficult winters in the 1930s took their toll on the reindeer population. Deep thaws followed by freezing made ice so thick that reindeer could not dig for lichen, and major die-offs resulted (Skoog 1968:218–222). Moreover, the 1931 eruption of Aniakchak left ash-covered lichen, limiting reindeer rangeland.

The UCRC did not make it through these challenges. The company dissolved before 1940. The PERC, however, applied for a Reindeer Grazing permit in 1941, which included the rangelands once used by the UCRC; a clause in the permit allowed Ugashik Natives to range their deer within PERC's rangeland boundaries, paying no fees, as long as they participated in herding activities. Unit Superintendent Opland approved of PERC's application but it seems that if the PERC carried on herding, it was only for a few more years. In 1944, Opland recommended that a northern government reindeer herd at Egegik expand into the Ugashik River since, he concluded, there was no active herding at Ugashik. Upon his departure from Ugashik and Pilot Point in 1945, longtime reindeer superintendent of the Ugashik herd Hanson lamented that he really tried to make herding viable but he had little success: "I had hoped that I could do something toward putting this herd on a sound basis; I have worked at it for years" (Hanson 1945). His succeeding teacher, Laura Buchan, had no reindeer duties (Buchan and Allen 1952). By 1945, Ugashik herders had shifted back to hunting caribou and wild reindeer, a transition that had been taking place since the 1930s.⁷

REINDEER STATION AT NAKNEK LAKE

The Naknek drainage supported two private reindeer herds in the 1920s and 1930s. By 1922, and possibly earlier, Pete Olympic and his extended family stationed their herd at the mouth of Naknek Lake at what was locally referred to as "Reindeer Station," until the mid- to late 1930s. Pete's brothers Nick and Evon also lived at Reindeer Station with their families. In 1931, a second herd moved into the region. Saami herders from the Kuskokwim drove reindeer to South Naknek in the hopes of supplying meat to the growing Naknek community. The Saami herders, who had formed the Pioneer Reindeer Company, were an extension of the Saami herd of Akiak near Bethel. They ranged their herd between South Naknek and Egegik.

After passage of the 1937 Reindeer Act, which restricted reindeer ownership to Alaska Natives and required non-Native herders to sell their reindeer (McAtee 2010), the Saami herders were bought out by the government, which in turn transitioned the Pioneer Reindeer Company into the Egegik Government herd.

Brothers Pete, Evon, and Nick Olympic operated Reindeer Station at Naknek Lake with their privately earned reindeer. Few government documents reveal the activities of the station, but the biographies of Pete and Evon and interviews with descendants of the Olympic brothers offer clues to the station's history. After apprenticing in Kokhanok, moving to Koggiung and then Ugashik, Pete retired from government work in 1916. During his extensive travels throughout the Alaska Peninsula, he likely identified productive lands in which to range his own reindeer. Before moving to Naknek Lake, he ranged his herd between the Naknek and Egegik rivers, near Becharof Lake (Olympic et al. 1932). Evon Olympic had also traveled as a herder. According to his daughter, Akelena Holstrom of Naknek, after serving as chief herder in Kokhanok, Evon and his first wife, Agrifina, herded at Big Mountain, where one of their daughters was born sometime after 1914. They then moved to Naknek Lake sometime before 1922.

By the time Akelena Holstrom was born at Reindeer Station at Naknek Lake in 1922, her father and her uncles had a well-established private herding operation. During interviews in 2012, Holstrom explained that her uncle Pete had both a house and shop near her parent's mud house and her other uncle Nick lived in a house farther away. Her account is supported by Pete Olympic's 1932 reindeer rangeland permit record. When the Alaska governor's office took over reindeer affairs in 1929, it instituted rangeland permits. The Olympic permit lists four cabin structures and two reindeer timber corrals built by the herders (Olympic et al. 1932). Holstrom explained that the herders used the corrals to mark ears and butcher reindeer. Her family consumed reindeer products and "people from Naknek used to come up and get some meat, reindeer meat . . . what they want to eat. [They would] buy some from the family, maybe my uncle or dad's reindeer" (A. Holstrom 2012).

There is some discrepancy in the number of reindeer in the Olympic herd. A telegram from April 1931 estimates the Olympic herd at 2,000; however, the 1932 Olympic grazing permit reports a much smaller number. This application lists the number of reindeer as 398, bro-

ken down by individual owners as follows: Pete Olympic, 250; Eli or Elia [Evon] Olympic, 50; Nick Melonlak [Melgenak], 50; Deacon Fred, 40; Nagaly Dvitikof, 6; and Driffen Ungsaiknak, 2. Their reindeer ranged in the northwest region of what is now Katmai National Park and Preserve, within the boundary of Kvichak Bay drainages between Naknek River and Naknek Lake on the south; and the Alagnak River, Nonvianuk, and Kulik Lakes in the north. When the Olympics formalized their rangelands in 1932 with the rangeland permit, it is likely they felt threatened by the Saami-owned Pioneer Reindeer Company, which moved approximately 2,000 reindeer in close proximity to them in 1931.

It is not known to what extent the Saami herd influenced the health of the Olympic herd, but by the late 1930s, the Olympics were no longer herding. As with other reindeer herds on the Alaska Peninsula, a number of factors reduced reindeer numbers, both personal and economic. Pete Olympic died sometime in the 1930s. Evon's wife also became very ill in the mid-1930s and Holstrom took care of her when they moved to South Naknek with no reindeer. Annie Zimin, granddaughter of Evon, who lived with her grandparents as a child at Reindeer Station, could not remember when they moved to South

Naknek, but she did recall attending the "New Territorial School" by age seven, which would have been 1937. In an article published as part of a Naknek High School journalism project, Holstrom's daughter June wrote that Holstrom and her family moved to South Naknak in 1929 (J. Holstrom 1982). That date seems too early since both Holstrom and Annie Zimin have memories of playing at Reindeer Station, but Zimin was not born until 1930. They may have had seasonal residency in both places, however. When Zimin asked her grandfather what happened to the reindeer, Evon told her that the wolves scattered and destroyed them (Zimin and Zimin 2012). Holstrom emphasized the fact that there was no one left to take care of the animals since everyone was gone or fishing.

THE PIONEER REINDEER COMPANY AND THE EGEGIK GOVERNMENT HERD

With the Olympic herd gone, the Pioneer Reindeer Company herd could expand without the concern of mixing reindeer. And there was a justification for this growth. Naknek was rapidly becoming the region's economic and transportation hub. When the Saami drove roughly 2,000 reindeer to South Naknek in 1931 from the Kuskokwim,



Figure 5. Saami herder Pher Thuuri around Naknek drainage, circa 1940. Courtesy of Dorothy Berggren and the National Park Service, Museum Management Program and Katmai National Park and Preserve, cat. no. H-798.



Figure 6. Saami herders Lars Nelson and Matt Anderson in South Naknek, circa 1930s. Courtesy of Dorothy Berggren and the National Park Service, Museum Management Program and Katmai National Park and Preserve, cat. no. H-782.

herders Pher Thuuri, Matti Anderson, Lars Nelson, and Ole Polk sought to supply local residents and cannery workers with fresh meat (Figs. 5, 6). Despite some concern that their herd might be too close to the Olympic herd, the Reindeer Service granted Thuuri and the others a grazing permit, the boundaries of which were south of Naknak River to the Egegik River and Bristol Bay to the easternmost point of Becharof Lake. While there is some discrepancy in the numbers of reindeer within the Pioneer Reindeer herd at Naknek, archival documents indicate that Thuuri and his partners were earning \$4,000 annually in the late 1930s from meat sales at 13 and 14 cents

per pound; thus, they were butchering approximately 300 reindeer per year (Rood 1940).

Many Naknek residents still remember the Saami men who quickly became part of the community and supplied the region with fresh meat. Naknek resident Alvin Aspelund explained in an interview:

Pher Thuuri was pretty much what they call the honcho, he was in charge of them. . . . They were stationed here . . . but each one had an interest in [the herd]. They'd tag their ears and each guy would know which was his when they had young ones. They traveled with them all the time, they had reindeer pulling sleds with their tents and equipment, and when the reindeer move, they move with them. . . . They had collie dogs that helped them, you know, and they used skis in the wintertime. What they did in the summer, I don't know. It'd be pretty swampy, they'd travel and then, sometimes in the summer, they must have got them located in good feeding areas because they'd go fishing for a month and then they'd go right back to them (Aspelund 2012).

Oscar Monsen of Naknek recalled in an interview that his parents ordered meat from the "Lapps." He explained:

They kind of took orders so they knew how many to kill off, and maybe one family would order a whole one and somebody else might want a half of one and somebody else [would] want a quarter. We always seemed to have enough of it though . . . that's where your meat supply would come from, cause [we] didn't have as many freezers around then so when the time came to kill them, and you put your order in and they cleaned them and brought the meat to you (Monsen 2012).

According to the late South Naknek resident Carvel Zimin, the herders would butcher the reindeer right in South Naknek (Zimin and Zimin 2012).

In accordance with the 1937 Reindeer Act, the U.S. government purchased most Saami reindeer for \$3 a head. The Pioneer Reindeer Company at Naknek, however, received \$6 for each of their 6,000 reindeer and Pher Thuuri received \$8 for his privately owned herd of 540 animals (Burdick 1941:14). The higher Naknek acquisition price for reindeer was justified, according to DOI administrator Charles G. Burdick, because "in that locality it [the reindeer industry] has a bright future. Meat prices of 13 to 15 cents per pound and \$3.00 to \$5.00 for adult skins to be used as mattresses by fishermen would allow the operation of the herd at a good profit" (Burdick

1941:14). The government assumed control over the same rangeland and also purchased the structures built by the Saami herders (which included one corral, one butchering corral, two cabins, and a cabin warehouse) for \$2,575.00. In total, the government purchased 6,540 reindeer from the Saami herders of Naknek, but some reindeer officials later argued that the herd was never this large, since by 1943 a count of the reindeer produced only 2,100, a loss of over 4,000 animals in four years (Geeslin 1944).

After the Pioneer Reindeer Company was forced to sell its herd to the U.S. government, reindeer administrators struggled over who would manage the herd, which was renamed the Egegik Government herd. Part of the confusion resulted from yet another transfer of administrative control. The Bureau of Indian Affairs (BIA) took over reindeer affairs in 1941. The BIA had high financial expectations for the herd, which they estimated to be worth \$50,000. Naknek was favorably located and had adequate transportation networks to supply meat to Egegik and Dillingham. Furthermore, a local market for deer meat was bound to grow. A 1941 report pertaining to North and South Naknek explains that, "Because of the large numbers of canneries, that are bound by Union Agreements to furnish meat to fishermen, an insured meat supply provided by cold storage facilities would be in demand to that consumer" (U.S. Reindeer Service 1941). Securing a local food source was also a government priority during World War II.

Out of their concern over inexperienced managers jeopardizing reindeer profits, in February 1941 the U.S. Reindeer Service contracted Pher Thuuri to manage the Egegik Government reindeer herd (the same herd that he was forced to sell in 1938), even though he was not an Alaska Native. His tasks included marketing reindeer meat, managing meat storage, property upkeep, and hiring butchering help. Andrew Krause, who had worked in Ugashik and Ekwok, was hired as chief herder and was responsible for the herd as well as employing herders. This proved especially difficult in the 1940s because so many young men were drafted for military service. One herder who was regularly employed with the herd was Jimmy Crow. These men and hired help filled orders for meat and hides in the early 1940s. Thuuri and Krause butchered reindeer at Johnson's Hill and often shipped the meat via airplane to the Wood River Cannery and the Dillingham hospital for 17 cents a pound. They also supplied meat and hides to locals in Naknek. Davy's, the lo-

cal Naknek store, purchased meat at 14 cents a pound. In two-and-a-half years, Thuuri and Krause sold \$6,839.01 worth of reindeer products (Geeslin 1944). This arrangement lasted until September 1944 when Thuuri requested to be released from his contract in order to seek health treatment "outside." Pher Thuuri died in South Naknek in 1949.⁸

After Thuuri's retirement, archival reports indicate that Krause took over his responsibilities and Crow continued to work for Krause. In 1944 the reindeer dispersed. A small number of animals grazed around Johnson's Hill while the larger portion grazed at Blue Mountain, near Becharof Lake. Opland complained that the herd split as a result of neglect; herders left the reindeer during fishing season. Fishing remained a constant source of frustration for the reindeer officials who could neither compete with fishing wages nor prevent herders from participating. In 1944, the Egegik Government herd rangeland expanded to include rangeland as far south as Ugashik (Opland 1944) (Map 3, color plates).⁹

While the Reindeer Service records for the Egegik Government herd drop off by 1945, some local residents remember the herding activities of Krause and Crow. King Salmon resident Ted Melgenak (born in 1937) knew them from when they visited his home in Savonoski. He explained in 2012:

They used to come visit at the house at Savonoski . . . in the wintertime, just taking care of reindeer, but I never watched how they do, but they're [reindeer] loose out there, when I travel with my dog team, I used to pass right by them and my dogs go wild. They're just moving around, never run away, maybe 50 some[times] 100, and them guys [herders] they know which reindeer they own. I don't know if they own them but they herd them anyway, and some . . . [reindeer] end up down Savonoski, and down towards Johnson's Hill, way back Reindeer Creek and some up at the lake [Naknek Lake], and these people take care of them during the wintertime (Melgenak 2012).

It is not clear how long Krause and Crow continued managing the Naknek government herd.¹⁰ According to Melgenak, who would have been ten years old in 1947, Krause and Crow may have maintained the herd into the late 1940s. As with other herds on the Alaska Peninsula, it appears that herding gently subsided as herders spent less and less time with the reindeer and locals began hunting the resident reindeer (Plattet and Lincoln, this issue). The

Alaska Peninsula herding industry finally succumbed to its many challenges and ceased by 1950. Many variables contributed to its demise. The multiple and detailed descriptions of wolves depleting reindeer in the 1920s and 1930s cannot be ignored. The Aniakchak volcanic eruption and the three severe winters in the 1930s also decreased the reindeer population. The greatest challenge to herding, however, was its limited economic return for herders. Reindeer became vulnerable to wolves and mixing with caribou when herders were not present to care for them.¹¹ But close-herding techniques meant missing out on necessary remunerative activities such as trapping and fishing, which took up much less time than herding. As one superintendent put it, herders could earn more in one month of fishing than in herding reindeer all year (Unrau 1994:316–317). The industry simply did not offer a sustainable economic return.

Caught up in the rhetoric of the industry as an economic development project for the welfare of Alaska Natives, many of the local superintendents bemoaned the loss of herding, accusing herders of laziness or worse. Schoolteacher/superintendent of Newhalen John Gordon recognized the inability of herding to compete with fishing but still complained of herders' negligence after reindeer joined caribou herds. In a report to General Reindeer Superintendent Rood in Nome, Gordon wrote:

I feel very put out about the whole matter because I had planned to ask your office to secure several hundred reindeer for us to re-stock and strengthen the herd. Large earnings in Bristol bay and drinking has caused this disastrous depletion and disappearance of our herd. The herders received no compensation for their services hence cared less. "Gone with the caribou," is their easy answer (cited in Unrau 1994:317).

Charged with overseeing the government's plan to turn subsistence hunters into entrepreneurial pastoralists (Ellanna and Sherrod 2004), local superintendents criticized Alaska Natives for not working to make that plan a reality, even when it meant losing profits or opportunities to harvest traditional foods. Although difficult for superintendents to understand, herding did not support families, and so herders abandoned their reindeer, which they eventually began to regularly hunt as "wild" game.

CONCLUSION

Detailing the various histories of the government stations and some of the larger private herding enterprises on the Alaska Peninsula gives us the opportunity to contrast the two herding structures as well as compare them to herding in other parts of Alaska. Relying on both archival records from the U.S. Reindeer Service and oral history accounts from herders or their descendants to understand reindeer affairs brings to light how the policies and expectations of reindeer officials were in fact practiced by the residents of the Alaska Peninsula. Local and regional superintendents intended for the herding industry to reduce financial insecurity among Alaska Native households and replace subsistence hunting. Even in the 1940s, as herding all over the peninsula had failed, General Reindeer Supervisor Sidney Rood expressed his belief (shared by a number of reindeer officials) that herding would have been lucrative if only herders had applied themselves. He wrote:

I feel that if the Ugashik and Pilot Point Natives had expressed a real interest in managing a reindeer herd, and had cooperated with Mr. Hanson, they would have a tame herd of excellent animals in custody today, the crop from which could have been a very valued resource, and would have provided a good income for herders (Rood 1943).

Rood could not fully appreciate the herding obstacles that included the difficulties of moving meat to markets, the Great Depression, predators, the intermixing of reindeer with wild caribou herds, the limited materials available to make corrals in order to count and mark animals, and the freeze/thaw winter conditions and volcanic eruptions leading to reindeer starvation.

At the best of times, herding was at most only ever supplemental income. Government reindeer stations offered two to four professional positions with a livable salary at any given time. In many cases, herders were prohibited from harvesting their own reindeer and apprentices needed to secure their own provisions, which often required commercial fishing in the summer. In later years, as commercial fishing expanded, the only way Reindeer Service officials could employ herders was if they allocated one month off each year for fishing. Private herders incorporated reindeer into their yearly subsistence livelihood, which included trapping and, for most private herders, also commercial fishing by the 1930s.

Where herding lasted longest and was most successful, it was part of an indigenized and independent herding pattern. These kinds of operations incorporated reindeer activities into a yearly subsistence cycle. AlexAnna Salmon (2008) characterizes this form of herding structure in the Lake Iliamna region as a transitional economy from a subsistence-based livelihood to a settled, wage-labor economy. Reindeer herding became incorporated into a mixed economy of subsistence hunting and gathering, trapping, and commercial and subsistence fishing. For instance, in his description of herding on Big Mountain, Mike Andrew stressed that his mother was taking ground squirrels for hides and food while others managed the reindeer (Andrew and Andrew 2012). His sister, the late Mary Tallekpalek, elaborated on her family's pattern of herding:

[We] moved up on the Big Mountain, my dad and my family, all of 'em, my uncle, too, my *apa*, too, [the] only full house. I [was] born right there on the Big Mountain. I know, we got reindeer [around] all the time... Spring was spent below Kokhanok. Mama hunt[ed] squirrel at the same time. Around November they would sell the reindeer skins, in the [late] spring, they would move up and reindeer would have calves (Tallekpalek and Tallekpalek 1998).

The yearly routine for the Olympics at Naknek Lake also included hunting and fishing. Akelena (Olympic) Holstrom (2012) explained that her family hunted beluga in the fall as the whales followed the fish up Naknek River. They also traveled up Katmai for late season "red fish" and beaver.

These private herds contrasted with the government herds in that they tended to have fewer reindeer, thus requiring a smaller rangeland and allowing greater flexibility in where they could travel. These private owners consumed reindeer meat and hides, used sled deer for transportation, and sold small numbers of deer annually. Herders would trap throughout the winter and sell fur when they were also selling reindeer products to the canneries and larger villages, such as Koggiung and Naknek. Many herders in the Lake Iliamna and Kvichak River region (where trees were available) protected their herds from wolves with fences. Deer roamed free in the daytime but were gathered up each night behind the protection of a fence. Howard Nelson (2012) of Levelock heard stories when he was young of reindeer being so well trained that a herder could whistle and the deer would return to their fenced-in

corral. Private herders had more agility with smaller herds and would protect their reindeer with physical barriers rather than through constant surveillance.

Alaska Native-owned herds were organized around family households and often around extended families; thus, herding was commensurate with the yearly cycle of subsistence and commercial activities. For example, Alexi Gregory's private herd at Kukaklek Lake would move with the family during their seasonal routine. They spent the majority of the year at their winter settlement. Before Christmas, Gregory would drive a portion of the herd to the trading posts at Igiugig and Levelock in order to sell the meat (Salmon 2008:98–101). He hired men to care for the reindeer while he trapped during the late winter and early spring. The whole family traveled to the east end of the lake in summer. The men would tend to the reindeer as they grazed on surrounding hillsides while the women put up sockeye salmon. In later years, Gregory and the other men traveled down the Alagnak River to Bristol Bay and Naknek to commercial fish. Mary Olympic and her childhood friend would take care of the reindeer. By the middle of September, they would move with the reindeer to their fall camp (near Battle Lake) in order to get "red fish." Mary's mother would trap ground squirrels, while her father would hunt bear. Alexi would use the bear hide to make a boat, which would transport their gear and fish to their winter settlement (Gram-Hanssen 2012; Olympic 1995). This land-use pattern resembled pre-herding Yup'ik ways of life—reindeer were simply being incorporated into it. Extended families worked together to manage the herd, living semipermanently at the herding station.

The U.S. Reindeer Service's dismissal of the family structure was one of its greatest administrative failures. They hired bachelors, discouraging the participation of families, and only reluctantly employed married apprentices, thereby creating an unsustainable herding structure. These herders and apprentices rotated between the reindeer stations and the herds, but for the most part they were removed from family and village life. Many of the professional government herders remained bachelors until late in life. Others quit herding once they married because they could not support a family on the government herding wage. Peter Apokedak (2012) of Levelock explained that his father Evon herded around Iliamna and Koggiung in the 1920s and 1930s but when he got

married, he quit herding: “He got married to my mom, he wanted to go fishing and support his family, he wanted to start being on his own . . . he was a good provider” (Apokedak 2012). The system of apprenticeship was also incommensurable with local inheritance practices. Local superintendents appointed apprentices to learn the trade, but children of herders inherited reindeer. One result was that descendants who inherited reindeer did not always know how to take care of them because they neither served an apprenticeship nor were they incorporated into a herding lifestyle.

These two different types of herding were coexisting simultaneously on the Alaska Peninsula, and certainly there were variations of private and government herding patterns, which were shaped by herd sizes, available rangelands, and personalities. For example, the Pioneer Reindeer Company operated by the Saami herders was something of an anomaly. Though it was a private enterprise, the herders worked full time, with limited engagements in other livelihoods. These various modes of herding were certainly not practiced in isolation. Since apprentices had to learn how to herd reindeer in large government herds before starting their own private operations, and since private reindeer were often kept in government herds, high levels of communication and interaction took place between these two herding structures. In the end, neither private nor government herding structures withstood the test of time, but both left a durable mark on the landscape of the Alaska Peninsula and upon its residents.

Despite its relatively short duration, specific events from herding history and policies of the U.S. Reindeer Service permanently shaped the region. Alaska Peninsula herding made a lasting impact on the region’s landscape and village demographics. The region is littered with place names associated with herding and the reindeer stations. Since schools were established at the same time as government reindeer stations, often placed in locations more amenable to herding than schooling (see Jacobs 1995), communities grew up around both institutions. Most of these communities remain today, long after herding ceased. For instance, Kokhanok originated as a permanent village due to reindeer herding. Movements of people and reindeer during the first part of the twentieth century also shaped the contemporary demographics of these communities. Herders, like the Olympics, who started as apprentices in the Lake Iliamna region, moved into Naknek rangelands

and married locals from Savonoski (Feldman 2001). Many of their family members remained and now call these places home. Moreover, reindeer herding attracted and retained Inupiaq immigrants from Northwest Alaska to Pilot Point and Port Heiden. While there are a few Inupiat still living in the region, there are many more living elsewhere who consider their family histories to be rooted in communities of the Alaska Peninsula. The reindeer herding industry added to the region’s long history of multiculturalism and the vibrant stories still told among residents today.

ACKNOWLEDGMENTS

This research was made possible by generous funding from the U.S. National Park Service (Research Agreement #P11AT36177, and subsequent modifications). I am grateful to Alvin Aspelund, John Branson, Troy Hamon, Akelena Holstrom, Gerda Kosbruk, Nick Neketa, Mary Gregory Olympic, Elizabeth Risch, Richard Russell, AlexAnna Salmon, Dale Vinson, and two anonymous reviewers for contributing to this research. Many thanks to Michael Wendt for creating the maps for this paper.

NOTES

1. Choggiung Reindeer Station at Wood River near Dillingham is outside of the regional scope of this paper (see Nicholson 1995:109–112; O’Leary 2009; VanStone 1967:83–89).
2. Sheldon Jackson brought Saami reindeer herders from Norway to Alaska in 1894 and 1898 to teach Alaska Natives reindeer husbandry. Initially, the Saami were able to own reindeer and were very successful at developing and propagating herds throughout northwestern, western, and southwestern Alaska.
3. In keeping with the style of the journal, I have used in-text citations of archives when directly quoting from and summarizing archival documents. I consulted the following archives for this article: Records of the Bureau of Indian Affairs, Alaska Division [microform]: general correspondence, 1908–1935, University of Alaska Anchorage/Alaska Pacific University Consortium Library. Record group 75 Records of the Bureau of Indian Affairs, Alaska Division: Records relating to reindeer in Alaska, National Archives, Washington, DC. Record group 75 Bureau of Indian Affairs, Alaska Reindeer Service, boxes 44, 45, 47, 53,

National Archives, Anchorage. The National Archives at Anchorage closed in June 2014 and records are now located at the National Archives at Seattle.

4. The spellings of names in historical documents are inconsistent. The contemporary name “Olympic” was often historically spelled “Olympe.” Likewise, “Evon” was often written “Ivan” and in one case “Elia.” Citing a personal communication with K. L. Arndt, Feldman (2001:109) writes that “Evon Olympic was born ‘Ioann Kuliliuk’ of Kiatagamiut descent in 1880 at or near Kashkinak in the Lake Iliamna area. . . . He was recorded as a Church member at ‘Alagnak’ from 1894 through 1899, and at ‘Kakhonak’ from 1903 through 1910.”
5. It is not clear if people ever herded these reindeer. In the 1950s, the community of Atka offered butchering licenses, similar to those in Ugashik in the 1930s. By the 1970s they tried to corral the animals to sell antlers.
6. A recent site survey of Reindeer Camp with Eli Neketa and Patrick Plattet documented the remnants of thirteen barabaras and cabins (E. Neketa 2013).
7. Resulting from the pressures of local residents who wanted to harvest reindeer from the growing herds, the Reindeer Service issued harvest permits to residents, which allowed them to hunt reindeer in the government herd.
8. South Naknek residents remember that Pher Thuuri also worked as the local postmaster shortly after he sold his herd to the government. Alvin Aspelund thought he started in 1940 and worked for a few years.
9. Thus, Ugashik/Pilot Point herding ended before 1944. Certainly some of the Ugashik reindeer remained and were wild. It is likely that some of them joined the Naknek herd.
10. See also Feldman (2001). One of Feldman’s anonymous informants stated, “There were still a couple (Native) guys being paid to be herders when I came in 1945” (2001:112).
11. Similar challenges for herders are described by Mager (2012) in the Barrow region and by Schneider et al. (2005) on the Seward Peninsula.

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THE KUKAKLEK REINDEER STATION

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Flying over Kukaklek Lake, *Qukaqliq*, provides a bird's-eye view of rivers choked with sockeye salmon, grizzly bears wading in the water, and pods of sport fishermen casting fancy fly rods. The remoteness of the lake, the lack of visible "improvements," and the sheer beauty of the land earned its inclusion within the renowned Katmai National Park and Preserve. The people of Igiugig Village, however, see an ancient homeland, layered in rich cultural history, the most recent of which revolved around reindeer herding.

The elders of Igiugig are descendants of herders and the last generation of people who were raised on the land and then settled into modern villages. The connections to the places where they were born, subsisted, herded reindeer, or lived set the stage for the era of land claims when families chose allotments and villages chose corporation lands that reflected personal and family connections. Beginning in 2007, my grandmother, Mary Gregory Olympic (born 1931), a former reindeer herder and esteemed Igiugig elder, began telling me stories about the early years of the Kukaklek Reindeer Station, helping me to understand its importance today.

A case study of the Gregory family and the Kukaklek Reindeer Station demonstrates that reindeer herding in the Bristol Bay region served as a transitional economy. While transitioning from a subsistence-based livelihood to commercial fishing, reindeer herding families maintained traditional hunting, fishing, and gathering ties to landscapes while generating income at a time when people in the region were increasingly relying upon commercial products and mechanical transportation. Reindeer herding and fur trading supplemented household incomes until the fishing industry began to dominate.

Reindeer were introduced to the Iliamna Lake area in 1904 by accident when Norwegian Saami-American Hedley Redmyer attempted to transport 300 deer and

four herders from Bethel to Copper Center, a 600-mile trek that proved to be too long and difficult to complete. Sheldon Jackson, general agent of education in Alaska, commissioned Redmyer to establish a reindeer station at Copper Center, but after Redmyer could not find a passable route through the mountains, Jackson gave him permission to settle at Kokhanok Bay and establish Kokhanok Reindeer Station (Morseth 2003:98). Redmyer writes: "I made up my mind to return to Iliamna Lake, which is one of the finest reindeer countries I have seen in Alaska" (Unrau 1994:470). It is from this Kokhanok herd that most Bristol Bay and Alaska Peninsula herds originated (Macnab 1996:96n80) (Map 1, color plates).

My grandmother's father, Alexi Gregory, managed one of the herds originating from the Kokhanok Reindeer Station. He was born on March 17, 1894, most likely on the Alagnak River. When he was sixteen years old, in 1910, he started a herding apprenticeship at the Koggiung Reindeer Station. Four years later, he advanced to become a full herder, owning forty-three reindeer. A 1917 annual reindeer report from Koggiung indicates that he left Koggiung for Lake Iliamna in 1917 with forty-five deer (U.S. Reindeer Service 1917). He then met Marsha Wassillie (born 1897) and they had several children together (Fig. 1). They eventually married in 1926. In the 1920s, they moved to Kukaklek Lake where they continued to pursue herding. *Qukaqliq* means "middle one" in Central Yup'ik, and it is named for its location between Lake Iliamna to the north and Nonvianuk Lake to the south.

Around Kukaklek Lake, the Gregory family incorporated reindeer herding into their nomadic subsistence lifestyle. May through September were spent at a fish camp at the east end of Kukaklek. Over 2,000 sockeye salmon were split, dried, and smoked each year to feed the dogs and family over the long winter. The women split fish during the day while the men took the reindeer out to



Figure 1. Alexi and Marsha Mary (Wassillie) Gregory at home in Kukaklek Lake, circa 1940s. Courtesy of Igiugig Village Council.

roam the mountainsides and eat willow leaves and lichen. During the hot days the reindeer migrated towards the snow patches to cool off and get away from biting insects. By mid-September the family moved farther east to their fall fish camp at the outlet of Battle River to put up “red fish” (sockeye salmon that are about to spawn) until late October. Alexi hunted brown bears, often traveling days to find one, while his wife trapped ground squirrels. After the red fish dried, the family would move back to “Winter Camp” where they lived seven to eight months of the year. Alexi spent the winter trapping for fox, otter, mink, wolf, wolverine, lynx, and beaver using a nine-dog sled team (Salmon 2008:106). At the end of the season, the furs were brought to the Igiugig trading post and exchanged for food and cash (Olympic 1995). Supplies were hauled from the Koggiung cannery and included window panes and a wind-operated battery unit for the radio (Salmon 2008:106).

While trapping, Alexi depended on hired help to maintain his reindeer herd. Relatives came from the surrounding villages, and a settlement called Reindeer Village was established at Kukaklek (Fig. 2). One of the men hired was Evan Apokedak (born 1911 in Clarks Point), the father of Igiugig elder Annie Apokedak-Wilson (Wilson 1989:16). He described his youth to his grandson, George Wilson:

We moved this way to Diamond J [cannery on the Kvichak River]. From Diamond J, we go up to Reindeer Valley. We lived in a lot of different places. We moved in 1924 to Kaskanak and after that we used reindeer, no dog team. I never school, no place. One time we stayed at Kukaklek in 1930. We got no church when we stayed up at Reindeer Valley. So we couldn't have holidays. . . . Everybody all together got over a thousand [reindeer]. . . . Sometimes the reindeer move around and we stay with them in a tent. Mostly we live in the tent, even in the wintertime. Usually three young men would herd the reindeer. The rest of the

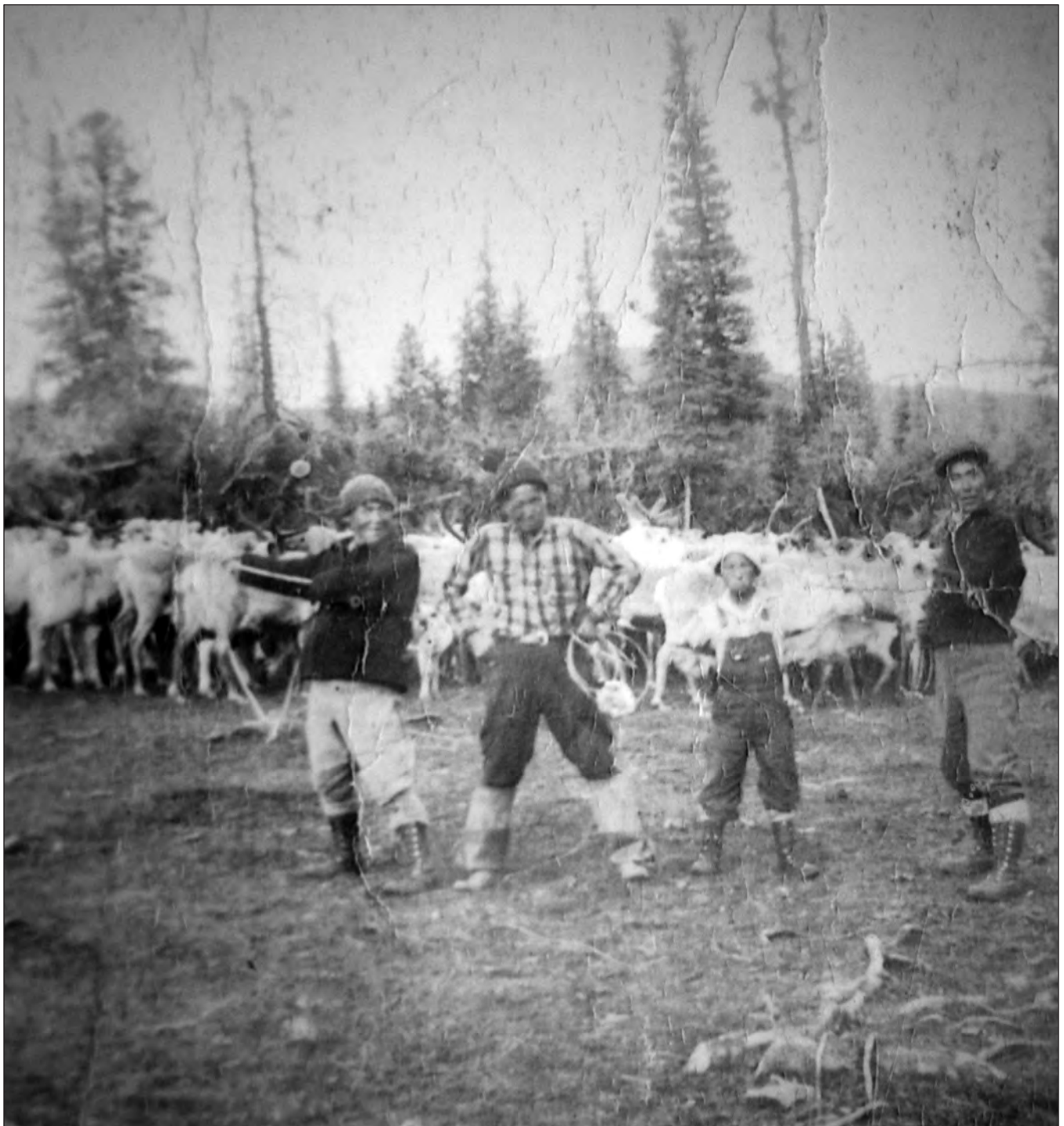


Figure 2. Marking reindeer at Kukaklek Lake in 1933 with Kasyulie, Feenie Andrew, Mike Gregory, and Old Pete Mike. Courtesy of Igiugig Village Council.

people and the families would stay in the village. We train them first, then let them pull. I watch them [his uncles] and that's how I learned. First time I see reindeer I scared. The guys lassoed the reindeer and it charged this way and I go in the house. I figured it come right [in] the house after me. After a couple of days, I get use to it (Wilson 1989:17–18).

At least three extended families lived at Reindeer Village who took care of the reindeer herd and the forty-plus sled dogs. On November 21, 1931, Alexi and Marsha Gregory had their seventh child, Mary Ann Gregory, my grandmother. Mary became responsible for the reindeer herd at age thirteen, along with Elia Eknaty, an orphan taken in by the Gregory family. Alexi no longer relied on hired help because Mary and Elia became full-time herders. My grandmother has described how the reindeer were taken to the hills for grazing in the second half of each day, between four and eleven o'clock at night. The reindeer had to be watched carefully so they would not be killed by wolves or absorbed by migrating caribou herds. Mary Gregory Olympic recalls her work as a young herder:

Boy lots of work to do [with] reindeer. They let us go four o'clock evening time, let them eat, [the] reindeer out in the bushes. After they start, when they full they start [to] sit down. [We] let them stand up, let them keep on eating the white moss. . . . When a wolf start howling around, [we] burn a Christmas tree [spruce tree]! [The] whole thing [to scare the wolves away]. [Our] reindeer dog watch the wolf, and chase them away. We [didn't] see caribou, [only] once in awhile. [My dad] [killed] them right away, because they might make [the reindeer] wild, take them away. Sometimes three, four [he would kill them all] (Olympic 2005a).

These “reindeer dogs” were specially trained dogs brought from the Nushagak area. The Gregory family had two, Puscatnaq and Mulchatna, named after the river from which Mary's dad brought them.

Mary remembers reindeer being used for food, transportation, and hides. Her mother made mattresses, sleeping bags, and *kameksiik*, or skin boots, with the hides. However, Mary regarded the reindeer as her “pets.” Following a common pastoral practice introduced by Saami herders in the region, Mary's reindeer were marked on their ears with special cuts that identified her as the owner. Her mark looked like the spade found on playing cards. Mary's most cherished memories of Kukaklek Lake are of playing with the reindeer. She tells a story about the time they tried

lassoing reindeer for fun. Mary's hardy laughter augments her animated narrative in Yup'ik and English:

Me and Elia Eknaty used to lasso little tiny kind, *nuriaq* [yearling reindeer calf]. They call them *nuriaq*. *Lassu-artukuk* [we would lasso] when we got them, we take it off. One time Elia Eknaty mistake with a big one. Mistake with a big one, we can't handle them. When he hold them both of us [were dragged] around. Can't handle the big, big mama one. She got spotted [fur] white, gray. Some of them fancy. That one, we got them. Try to hold it but we can't. Both of us hold them, he dragging around.

Finally, Elia tell me, “*Malia Apatiiq aqvau!*” He tell me to “Mary go get Apatiiq!” [an elder her parents were taking care of]. I [ran] down, [went] in there. [He was] usually in a little bed by the door. Apatiiq [was] lay[ing] down, relax[ing].

I didn't tell my mom.

I [went] in there: “*Apatiiq! Tai-tai!*” [Apatiiq, come!]

“*Ciin?*” [Why?]

“*Tai-tai, ciin apnuq, tai-tai. Qanemcikukamken.*” I [told him], “You come, I wanna tell you something outside.” He walk[ed] out. “*Apatiiq, alartuk tuntumun.*” We [mistook] a reindeer when we play lasso. “*Ikayuryugtukuk*” [We want you to help].

He [went] back in, put *paallaguaq* and coat and gloves. He walk[ed] with me. We walk up there. He take the lasso, he take them. Apatiiq can't drag [it] around. [He] tie[d] it around a tree, Christmas tree. [He took them by the antlers] and let them lie down, and took the lasso [off]. *Iiiiiiii!* [expression of amazement]. After that he tell us:

“*Ukuk lassuaralungituaq angtuaneq. Akngirci qaicetuaq.*” [He] tell us “Don't lasso big one, we [you] might [get] hurt” (Olympic 2005a).

Through “playing out with reindeer” and growing up outdoors, Mary gained an encyclopedic knowledge of her homeland. In describing her diverse education, Mary explains that she was “raised both ways”: “I am glad my parents [taught] me both ways. My daddy—outdoors, hunting, trapping. My mama—indoors, cleaning, sewing. . . . I'm happy, that's why I am not lazy” (Olympic 2005b).

The late 1930s saw the downfall of the reindeer herding industry in the Iliamna Lake region. Part of this was due to predators, but mainly it was due to the rise

of commercial fishing. John G. Gordon, a teacher at the Newhalen Native school, wrote:

The real problem is this: how are we going to make it worthwhile for the herder to stay with the herds? The herders are able to make eight to fourteen hundred dollars during the fishing season in Bristol Bay and that is more than enough for buying all their needs from the local trader. If they want fresh meat they go on a short hunt and get moose. In the fall and spring geese and ducks are plentiful in these parts and the natives manage to get all they need (cited in Unrau 1994:474–475).

Reindeer Village at Kukaklek Lake was one of the last remaining reindeer stations in the Lake Iliamna area, but by the 1940s Alexi Gregory and his sons, like many men in the region, also turned to commercial fishing in the summer months. They would travel by boat down the Alagnak River to Bristol Bay and Naknek to work for the Red Salmon Cannery. Mary and Annie Ekmaty-Zackar were left to care for the remaining reindeer. In 1947, at sixteen years old, Mary's younger brother Alix died. His death was so tragic for her parents that they decided to release the reindeer and move the whole family to Igiugig on the Kvichak River.

The connections to land made during the reindeer-herding era created a strong basis for individual land claims (Salmon 2008:89–116). In accordance with the Alaska Native Allotment Act of 1906—an act designed to enable Alaska Natives to protect their lands from encroachment by non-Natives—Alexi Gregory filed an allotment application in 1960 for land adjacent to Kukaklek Lake. He and his family had used this land as early as 1922 (Olympic v. United States, Alaska District Court 615 F. supp. 990:992, August 8, 1985). After a ten-year legal battle, Mary Olympic inherited her father's 160-acre allotment at Winter Camp, although she refers to the entirety of Kukaklek Lake as *nunaka*, “my homeland.”

In 1971 the Igiugig Native Corporation (INC) was formed under the Alaska Native Claims Settlement Act. The corporation actively manages the surface estate of 66,000 acres surrounding Igiugig, including land around the shores of Kukaklek Lake and the Kvichak River. Mary Olympic was very influential in the land selection around the lake. In part, it is through her life history and the stories she tells that the place has become meaningful for the residents of Igiugig. Anthropologist Keith Basso (1996:106) writes, “dwelling is said to consist in the multiple ‘lived relationships’ that people maintain with places, for it is

solely by virtue of these relationships that space acquires meaning.”¹ Mary's stories of learning from elders, playing with her reindeer and friends, caring for reindeer, and of being “raised both ways”—learning sewing and cooking as well as hunting and trapping—around Kukaklek Lake have given those sites significance. As oral historian William Schneider (2004:25) writes, “stories ma[k]e the sites come alive with meaning.” In this way, Mary's stories have linked the community and history of Igiugig to Kukaklek Lake.

NOTE

1. As an example of the ongoing “lived relationships” (Basso 1996) with Kukaklek Lake, residents of Igiugig have recently recognized a need to connect youth with the land base to gain a more comprehensive understanding of local history. For this reason, the first “culture camp” was hosted at Kukaklek Lake in October of 2012. Students and elders along with chaperones and teachers filled their days with learning to prepare traditional foods, tools, and crafts, hearing place names, and practicing storytelling. This enabled youth to develop a deeper relationship with their homeland.

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THE ONGTOWASRUK HERD OF WALES, ALASKA¹

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with contributions by Faye Ongtowasruk, Amber Lincoln, and Patrick Plattet

ABSTRACT

The Kinigmiut, or Wales people, have played a leading role in Alaska reindeer herding since the late nineteenth century. When reindeer were first brought to Port Clarence in 1892, territorial schoolteacher Tom Lopp encouraged the new industry and found ways to involve young Inupiaq men he knew from Wales (Fair 2003:49). In the first three decades of herding in Alaska, young Kinigin leaders, among others, worked as apprentices first to Saami herders from Norway who immigrated to Alaska to teach reindeer husbandry and then to Inupiaq herders who had been promoted to chief herder positions. The apprentices earned reindeer for each year they worked and built up their own herds. In 1927, the U.S. Reindeer Service implemented a new policy in which individual reindeer owners were encouraged to incorporate and form large reindeer companies (Simon and Gerlach 1992). The Cape Reindeer Company was incorporated in the Wales region. But like other reindeer cooperatives in the 1940s, the Cape Reindeer Company suffered reindeer losses and overvalued ownership shares (Olson 1969). After the company disbanded in the 1940s, reindeer herding ceased in Wales for over two decades. In the mean time, the Bureau of Indian Affairs (BIA) assumed responsibility for herding range management and implemented the Reindeer Revolving Loan program, in which deer were loaned and grazing permits allocated to Alaska Native individuals. As part of this program, the BIA established a “model herd” in Nome in 1965. Davis Ongtowasruk’s brother, Norman Ongtowasruk, participated as an apprentice and received a loan of 500 reindeer in 1971.

THE BEGINNING OF REINDEER HERDING IN WALES

Davis Ongtowasruk (DO): Back when reindeer were first introduced, the people did use sled deer. My cousin in Wales does have a harness that was made by his grandfather, which his father kept. Skis and snowshoes were also used, as well as dog teams. In the history of herding in Wales there were many different owners in the community with different earmarks. Everyone had their own earmark. The more time they spent with the reindeer, the more they earned. That’s the way I understood it. That was how they kept the reindeer company, the Cape Reindeer Company.

Traditional food from the sea always subsidized [reindeer herding], and this also played a role in losing the herds in the past. They [Inupiat reindeer herders and owners] were gatherers of subsistence food. They would do a lot of migrating with the seasons, to where wildlife was. People would be in between marine mammal hunting and fawning season. They would have played a bigger role [in the herding] if they had [had] a larger ownership [of the herd]. But there might be other subject matters that played a role [in the decline of the Cape Reindeer Company]. I think caribou had a big impact also. Once the caribou

start coming in, there's nothing we can do to stop them and I think that's what happened in the past.²

Faye Ongtawasruk (FO): A long time ago, when Clarence [Faye's late husband] was a little boy, [his] parents used to [live] year-round in the tent, near Ikpik, Alaska. He used to tell me. I think that's why they survived from epidemic flu—those who took care of the reindeer—because they never mixed up with the people from the village. Lots of people died [from the 1918 influenza epidemic].

DO: [In Clarence's time] the reindeer were always with humans. Deer were also more tame from being with the people twelve months a year. But interbreeding with caribou did happen, and to this date, we do have some half caribou and half reindeer. So I noticed a change in the herd's bloodline due to interbreeding. Even though we have [snow]machines, the interception of caribou cannot be controlled.

Amber Lincoln (AL): Do you think that the reindeer are less tame because of inbreeding with caribou?

DO: It's probably because we're not with [the reindeer] more, like we should be. Because we could just go

out there, ride, check on them, look at them. It's [from] not being with the human herder. [Being] with [reindeer] is most important to making them used to being around people.

DEVELOPMENT OF THE ONGTOWASRUK HERD

DO: Over the years the Ongtawasruk herd had three owners, my late brother Norman, my father Clarence who passed in 1992, and my mother Faye. Due to her age she transferred ownership to me in November 2012 (Fig. 1). Our herd had two different types of ear tags, but the earmark never changed. Our first color tags were white, then pink Temple Tags were issued.

How my family acquired the reindeer was through the BIA Reindeer Loan Program, which was 500 deer. I thought 500 was a fair number for our family and that was the number the BIA gave to every loan. If [any reindeer] dies on the trail to Wales, that [reindeer], they don't return. I think they just lost a couple. It was a revolving loan



Figure 1. Davis Ongtawasruk handling a reindeer in his family's corral in Wales, Alaska, 1993. Courtesy of Faye Ongtawasruk.

program. When we returned the loan, Tom Gray was the next person applying for it and he got the loan.

FO: When [Norman] was growing he stayed in Nome with Johnson Stalker family, he was in training.

DO: They used to have a model herd in Nome, owned by the BIA, and in that training, the herders learned to take care of the reindeer and they would spend time with them. There are even old posts that trainees used to use. They had a rope corral, that's how tame, how controllable, the reindeer were. Whenever it got foggy he would put the reindeer in the rope corral and they would stay there. That's what my other brother told me because he used to go spend time with my oldest brother [Norman] in Nome. That old rope corral is between Nome and Teller on the highway. You can see it from the road. I don't know if the posts are still standing or not but I've seen them there before. Right at Tissuk River.

AL: And how many years did he do that?

DO: I have no idea. I can barely recall Norman spending time there. I was little but he had to spend a year or two training, and everything they did was by foot. When my oldest brother first started herding his main transport was walking during the summer months and snowmobiles in the winter. In the winter, he still had to walk home due to unreliable machinery. Nowadays we have GPS technology, satellite phones, more reliable snow machines, four-wheelers, and if available, helicopter charters for summer round-ups.

USE OF TECHNOLOGY

Herders in Northwest Alaska have worked with reindeer biologists and specialists from the University of Alaska Fairbanks to develop technology to assist the herders, including use of satellite collars so herders and biologists can track reindeer and caribou (Finstad et al. 2006). Davis describes how he uses this technology to herd.

AL: Do you guys use GPS on your snow machine? Or do you know where to go?

DO: I know where to go. I usually don't turn on my GPS unless I feel lost. I know where that signal is, it will show on the map, we've got different signals for each collar: triangle, square, circle, octagon, and star.

AL: So you can look at the computer and check the GPS and drive right up to the herd?

DO: Yeah.

AL: How many [reindeer] are collared?

DO: Seven.

AL: So even when you're not physically out there, you're still tracking them?

DO: I figure out the location of the herds when I'm not able to visually see them. I could monitor their location as far as whatever data I've got on the computer. We've got to have a password to receive this [information] and only the reindeer herders have that password. It's not publicly [available].

I usually like to keep updates on them, their location. Even right now, when I can't get out there, I got them. Basically they're down on the southern part of our coast, and that's usually a pretty safe area for us.

Each collar gives out a signal every five days and they're within a quarter mile of that GPS location. They could move because our data is one day behind.

AL: Do they often move within a day?

DO: [It] depends on predators [or if they] look for good feeding areas. One day I noticed, they moved 15 miles just looking for food. I think that was after a good rainfall this winter. They were looking in the higher elevations.

AL: How's the vegetation?

DO: It's pretty good; the only thing is that we're getting more and more late rainfalls that will freeze up their grazing areas.

Patrick Plattet (PP): So you were saying that you prefer to travel at night because it's easier.

DO: In the spring, when we have twenty-four hours of daylight, I travel at night. That's when the temperature drops and the snow gets more compact. When you get sunshine like this, it will start melting and it gets really hot. It puts a lot of stress on the machine and it tends to make the track spin out. I use more gas during the days when the snow gets soft and I've also got to cross creeks, water starts running. I've been lucky so far. I've even used a snow machine without snow on the ground. I travel 100 miles; I used to go 30 miles up, 70 miles back, zigzagging. When the deer start to get tired, I've got to be careful how much gas I have in my tank. I don't try to use a sled, because the snow is so soft. That really bogs me down, soft snow.

[Today, Davis mostly relies on tracking collared animals through GPS technology on his computer and by following them physically with snow machine. But when the herd numbers were as high as 2,000 animals—when his father was alive—they would hire helicopters to round up the reindeer for corralling in June (Fig. 2). After the Western Arctic Caribou Herd migrated into the Seward Peninsula and Norton Sound (Burch 2012), the



Figure 2. Donny Olson and Davis Ongtowsruk taking a break from flying in the helicopter around Wales, Alaska, 1993. Courtesy of Faye Ongtowsruk.

Ongtowsruks lost a number of reindeer to the caribou herd. This migration of caribou had devastating effects on many of the region's reindeer herders (Finstad et al. 2006; Schneider et al. 2005). Davis remembers when the caribou began entering the Wales region.]

DO: We used to own over 2,000 at one time before the caribou took the remainder of what we had. We were down to 400 at one time. In recent years caribou migration has wiped out neighboring herds in my area. Somewhere in the 1990s or late 1980s, because I remember telling my dad there were caribou in the herd. One or two I exterminated. They'd be the ones always leading the herd. Usually they'd be on the left side, running single file.

AL: And can you tell them apart, physically?

DO: Yeah, their ears are real pointy and depending on the age of the animal, they're taller. You could see they don't have earmarks. They're real easy to [spot] because they don't seem to want to run in a bunch. When we're driving reindeer, they like to band together and run as a whole herd. It seemed like the leader of the caribou will be standing single file by itself. When they're fresh and strong, ready to run full power, they would be the fastest ones within the herd and they wouldn't have earmarks. That's how I pretty much know.³

AL: So do you shoot those ones?

DO: Yep. Protection of the herd, we can do that, as far as wildlife goes.

AL: So what's the biggest challenge right now?

DO: Caribou and wildlife. We get more wolves and everything else following the caribou, different types of animals. One time I found one wolf and all it did was eat the tongue [of one of our reindeer], I found the wolf tracks and I almost got it, but it ran away.

FO: Even sometimes ravens kill the young fawns. Those ravens are no good for fawning; they eat the eyes. I was so sorry for the fawns when ravens play with the fawns. You know when they're young they're really helpless.

PP: Among the 800 reindeer you have now, are there any special ones? Do you recognize them or give them names?

DO: You got to be with them day after day to do that. But I do recognize some of them. I gave one old bull a name, Thumper, because it had a limp on the right side. My dad or my oldest brother used to have one named "Ear Mountain Bull." We used to always notice that one because of its color and size. And we had another one named "Willy," darker color. He was standing out in the herd; a good-size animal, a good breeding animal.

HERD MANAGEMENT

PP: You mentioned the size of your herd, I think you said about 800?

DO: Yeah, by approximate guess.

PP: Do you keep a count? Do you try to keep a good count?

DO: Yeah, we try to if they can get in the corral. But without the helicopter, we aren't going to get everything in, the way our corral is designed.

PP: What is your corral made of?

DO: Driftwood and wire fence, about 4-by-4-inch mesh.

AL: Who made that?

DO: Dad made the basic rebuilt, but my oldest brother made the first one. If you go to Wales you would see where the first corral was placed by the different color of the grass, in the pattern of the growth.

PP: And then it was rebuilt in another location?

DO: No, just a little bit [farther] down the beach. And our chute did wear out so my other brother he had to make a new one. My first brother, he somehow made it [the chute] fluted on the bottom, at the ankle, so the reindeer had less chance of turning around. We had to skip [shuffle] through that chute, [you could not lift your feet out of it]. That was how good of a design he made. Now days, we've got our problems, they always turn around when they see our heads or bright-colored jackets or something (see Fig. 3).

PP: They would try to escape.

DO: They'd try to go back in the pocket, making it a little bit more of a chore.

PP: Does the whole herd fit in the corral at once?

DO: No, we need to cut the herd in half. Because my father did make it more oval instead of round, we can't put any more than 500 in there or we try not to, especially in the past few years. But I did put a few posts in there, so I'm going to try a bigger herd, if we can drive them in there. I might phone a helicopter service, but it's [expensive].

AL: And you guys corral in June, right?



Figure 3. Ongtawasruk corral chute with crew in Wales, Alaska, 1993. Courtesy of Faye Ongtawasruk.



Figure 4. Ongtawasruk corral crew in Wales, Alaska, 1993. Courtesy of Faye Ongtawasruk.

DO: Middle of June or any time after middle of June when the corral is free of snow.

AL: And how long does corralling take usually?

DO: Depends on how many animals we put in the corral. We'd have a line of boys ready to wrestle, when they're too many [reindeer], too many to wrestle, or if we're short on help, we utilize the squeeze chute but it's a little slower. We usually wrestle the fawns, though.

But just over night. Sometimes six hours. I think I used to calculate, 100 [reindeer] an hour. A little slower if we use that squeeze chute. My father used to always charter a plane and get help from different villages, mostly from Teller. He'd send for at least five guys. We still send for a couple of people from Teller and Brevig from time to time (Fig. 4).

[A number of tasks take place during corralling, including counting, castrating, tagging, and "de-horning" the reindeer. Vaccinations and other veterinary care are also given to reindeer at this time.]

AL: Do you guys hire people or you pay them with meat?

DO: Usually, the younger ones nowadays just prefer cash. Some older people, long ago, they'd be paid with meat because that was their staple food.

SELLING MEAT

AL: How many reindeer do you sell, how many do you cull, you said before maybe 20 [to] 50?

DO: It depends on orders, so I really couldn't give a real number. We used to have a meat buyer based in Nome, a reindeer plant but they shut down and sold that processing plant to the fish company.

AL: So now you could only sell meat in the village [i.e., Wales]?

DO: I do take orders from other villages.

AL: How does that work? Would they come and get the animal from you and process it after it was killed?

DO: Yeah, we'd gut it out, skin it out, we'd package it with meat wrap, put it on a plane and send it freight collect. Everything goes freight collect that they order.

PP: What reindeer do you choose when you slaughter?

DO: I would prefer a steer, a castrated bull.

PP: How old?

DO: Usually I try to get them less than a year or two years. And some of them prefer to eat the female meat over the male [meat]. They do have a different flavor. It's

noticeable, even my mom knows it. She'd always ask me, is that a bull?

PP: And of course you have to be careful because you can't take too many female reindeer out of the herd, if you want to regenerate.

DO: I always [take the] older females, I don't want to exterminate the fertile ones.

PP: Is the price the same?

DO: They're all the same, except the antlers. Depends on the time of the season, when we ship out the antler to the Koreans. We've got our buyer in Anchorage.

[Velvet antlers are harvested in June, immediately frozen, and then shipped to buyers who sell the product to Asian markets (Bucki et al. 2004). It is then processed into a tonic, which is considered by some to restore the body and reduce signs of aging (Robbins 1997).]

PP: When you have to sell meat, take a reindeer and slaughter it, how do you do that? Do you use a firearm?

DO: Yeah.

PP: So you first take that reindeer out of the herd?

DO: Scope them out and shoot them. I prefer to get them in the head, no body shots. I'll waste the meat if I get a body shot and they'll be all bloody. Some of them do not appreciate it, bloody meat.

PP: Do you use a lasso?

DO: In the corral. If we're going to try and get meat, then when they first come in the corral, we take them. Otherwise, the flavor changes the longer they stay in the corral. They have a bad taste after they sweat, so my dad tells me not to try and run them so hard and make them sweat because their flavor will change.

AL: So you shoot the animal and you cut it up and you give them cut up meat?

DO: Yeah, or we just sell it by whole, half, sometimes they could go quarter.

AL: Do you ship it frozen?

DO: Yeah. For everybody frozen, when it start[s] warming up in April, it would be soft but I would just cut it into smaller pieces, box it up and cellophane bag it, tape over it and the airline would take care of it. I did that a few times in April.

AL: You don't kill them in June?

DO: We could.

AL: How do you keep them cool?

DO: Freezer, chest freezer, I usually cut them up and put them in Ziploc bags. Package them and freeze them.

USING REINDEER MEAT AND HIDES

AL: And how many do you guys eat just for your family?

DO: I don't know, it depends on what we want to put in our stomach, I guess. I like to change my diet, instead of reindeer day after day. But I could eat it every day if I have to. Right now, I could eat quite a bit of it. I was at Nome before I came here and I said, "I want to have reindeer soup. Go get some" and I made some.

PP: How do you eat reindeer meat, how do you prepare it?

DO: We boil and roast it and cut it into steak, make soup out of it. We boil bigger chunks and dip it in seal oil.

PP: Do you do anything with the bones? Do you eat the marrow?

DO: Oh yeah, that's a delicacy.

AL: What about the heart and liver? Those are special foods?

DO: Yeah, heart, liver, tongue.

FO: Seems like I fry liver.

DO: And that stomach, the "bible" or the "book," it's got a lot of folds in there. It's their digesting part, right next to the rumen, attached to the rumen. It used to be a delicacy for elders. They try and save them for older people. They used to call it "old people's food." I know you got to clean it out before you boil it.

PP: Do you eat some parts raw, sometimes?

DO: Yeah. You could eat them raw, frozen. We use fat for Eskimo ice cream, you might have heard about that.

FO: Out of reindeer fat, I make Eskimo ice cream. I mix it with salmon berries, sometimes just the blackberries or blueberries mixed with blackberries and cranberries. We mixed them up with our hands, that reindeer fat is really good.

PP: And do you do that for special occasions?

DO: The reindeer fat is used for Eskimo ice cream, *gamaamaq*. Seal oil and water is whipped into a cream, [and] berries or plants are added to the cream. We use it for special occasions like birthdays, feasts, or gatherings.

PP: Do you keep the fur?

DO: I do sometimes, there really doesn't seem to be a market for that. But I do dry some out and keep some handy just in case somebody wants some.

PP: Do people still process the fur?

DO: Nope, I haven't seen that introduced to the herders. I'm pretty sure they could make some good deer hide, though.

AL: Shishmaref never tanned reindeer hide?

DO: One time I brought 30 hides. My brother-in-law, he was managing the plant over there.

FO: When my mother was alive, she used to make mukluks out of sealskin for reindeer herders.

PP: And those are particularly useful in spring. When the snow melts, the boots done out of sealskin?

DO: Yeah the bottoms, the soles, Mom used to use male sealskin, for the purpose of waterproof boots. Sealskin is more waterproof than reindeer. And then the upper part would be sealskin or reindeer, if they do have the fur. They used to even use calfskin. In them days, they preferred the white or spotted [reindeer fur] for mukluks.

[But today], I use boots made by manufacturers instead of mukluks.

AL: Would that mobile slaughterhouse be useful for you?

[The reindeer herders of Northwest Alaska have worked with University of Alaska scientists to develop a mobile reindeer-processing unit. This mobile slaughterhouse would enable herders to butcher reindeer that could be U.S. Department of Agriculture (USDA)-inspected and approved meat, which is worth more money and can be sold commercially.]

DO: I'm thinking about it but I sure hate to see higher priced meat for Native people. I see this processed meat on the market that's inspected in our village. They'll have bags, \$17 a pound. I know it's just so ludicrous though because [reindeer herding] is supposed to be there to help our people, not make them pay such a high price for our product. And I feel bad for our people when they buy that inspected meat for just stew meat.

I brought the price of meat up a little bit over the years as the cost of living increases because I'm not even getting a gallon of gas per pound of meat. [But] I think the product helps them [Wales' residents]. They'll buy it in our community anyway; they don't need to pay the freight. They make a request for an order and I try and get it if I can.

ASPIRATIONS FOR THE FUTURE

AL: So, Davis, what do you hope will happen with the herd?

DO: I just want to try and keep it continued at least in our community, even if we lose our herd. I would want to see somebody try and obtain reindeer if anything is lost. Either here or another village, we could try to re-establish a herd. Try to keep [reindeer] in the communities with some

type of product [that] they can buy and hopefully save a little bit. Without having to fly food in, they could save a little bit of money and it might be a little bit more healthy.

AL: Who will herd after you?

DO: I'm not real certain, as long as I have somebody interested that could fix things and make sure the corral is operable. They have to do it at their own willingness. That's pretty much what I was trying to do. I wasn't the owner when my parents had the herd. I did it for them, because I had interest. Hopefully, I can find another person who would have the capability to do things on their own without being told. If they will enjoy it. Probably one of my nephews. But I would prefer our herd name not to change. I would always like it to be Ongtowsruk. That would be my request for our future, if the herd will survive in the long term.⁴

NOTES

1. This paper is compiled from three sources (listed at the end of this note), primarily Davis Ongtowsruk's memories and experiences of working with his family's reindeer herd in Wales, Alaska. He is the current owner of the herd. In March 2013, Ongtowsruk gave a presentation in the *Ranges of Uncertainty* panel at the Alaska Anthropological Association meetings in Anchorage. Ongtowsruk outlined the history of his family's involvement with herding and described contemporary herding techniques, innovative technology, and corralling methods. He also highlighted challenges facing herders in Northwest Alaska. Shortly after the meetings, Ongtowsruk and his mother, Faye Ongtowsruk, sat down with panel conveners Plattet and Lincoln in Anchorage to elaborate on these topics. This paper is excerpted from this ninety-minute discussion. To elaborate on topics within the discussion, Lincoln added sections of Ongtowsruk's public presentation. In April 2014 in Wales, Alaska, Lincoln and Ongtowsruk made corrections to the compiled paper and added details for clarity. Lincoln's editorial additions are indicated with brackets.

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2013 "The Ongtowsruk Herd." Paper presented at the Alaska Anthropological Association meetings, Anchorage.

2014 Taped interview. A. Lincoln, interviewer. Wales, Alaska. 3 April. Transcribed by A. Lin-

coln. Transcription on file with interviewer, University of Alaska Fairbanks.

Ongtowsruk, Davis, and Faye Ongtowsruk

2013 Taped interview. A. Lincoln and P. Plattet, interviewers. Anchorage, Alaska. 25 March. Transcribed by A. Lincoln. Transcripts on file with interviewers, University of Alaska Fairbanks.

2. Discussing early twentieth-century reindeer herding in the Barrow region, Karen Mager (2012) demonstrates that herders identified reindeer emigrating to caribou herds as the most serious challenge to herders. Focusing on the Seward Peninsula, Schneider et al. (2005) also stress the difficulty caribou herds pose to past and current reindeer herders.
3. Descendants of herders in the Barrow region also distinguish caribou from reindeer based on certain traits (Mager 2012). Many of these traits are similar to the ones noted by Ongtowsruk.
4. Davis Ongtowsruk's discussions demonstrate the breadth of knowledge required of modern reindeer herders in Alaska and highlight the challenges they face. Many of the topics touched on in this paper warrant more attention. We hope that Ongtowsruk's perspectives add to the conversations about indigenous strategies for ensuring sustainable northern communities.

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REPORT

THE EFFECTS OF CLIMATE CHANGE ON HUNTING AND REINDEER HERDING PRACTICES AMONG THE TOZHU OF SOUTHERN SIBERIA

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ABSTRACT

The effects of climate change on reindeer herding and human communities relying on it have been well-documented in the circumpolar North. By contrast, very little attention has been paid to the degree to which climate change has affected the mixed economy of southern Siberian native communities. This report describes the observations and experiences of climate change made in recent years by Tozhu herder-hunters in southern Siberia. Among the Tozhu, climate change is not necessarily seen as a serious threat compared to economic and social issues. However, the effects of climate change, including hotter, rainier summers, weather unpredictability, and increasing numbers of predators and parasites, have been observed since the mid-2000s and put additional pressure on Tozhu hunting and reindeer herding.

The Tozhu live in the northeastern part of the Tyva Republic, located in southern Siberia not far from the Mongolian border (Fig. 1). They are the only group who practice reindeer herding in Tyva. Tozhu people, however, are also known in the anthropological literature as “territorial hunters” (Khazanov and Schlee 2012:12) who practice reindeer herding “as a secondary activity that facilitate[s] the principal economic and productive activity of hunting” (Donahoe 2012:100). In other words, they are best described as “hunters with reindeer” (Andreeva and Leksin 1999:92).

Tozhu people are a subgroup of the Tyva and have been recognized as an “indigenous small-numbered people of the North, Siberia, and the Far East” by the Russian government since 1993. According to the 2010 census, their population is 1,858 (Federal'naya Sluzhba Gosudarstvennoi Statistiki 2010). They speak Tyvan, a Turkic language and the second official language of the Republic of Tyva after Russian. The Tozhu have a long history of reindeer herding and a deep understanding of their natural environment. They have lived for thou-

sands of years as nomadic or seminomadic “herders and hunters” (*olenevody i okhotniki*) in the mountainous taiga (boreal forest) of the Academic Obruchev Range, in the western fringes of the mountains (Fig. 2).

In *Rangifer* typology, Tozhu reindeer are classified as forest reindeer or *Rangifer tarandus valentinae* (Flerov 1952; Ingold 1980; Klovov and Krushchev 2004; Mukhachev 1976). Forest reindeer are the largest and tamest among all species of domestic reindeer (Kertselli 1925). Known today as the Tofalar breed (Baskin 2009), these animals were once referred to as the Karagas breed (Petri 1928). Anthropological research suggests that reindeer were first domesticated in Central Eurasia, more particularly in the Sayan Mountains on the border between Siberia and Mongolia (e.g., Vitebsky 2005). In the mixed taiga-tundra environment of southern Siberia, the Tozhu have developed the so-called Sayan- or taiga-type of reindeer herding, which a number of scholars recognize as the oldest form of reindeer herding (Kyzlasov 1952; Laufer 1917; Mänchen-Helfen [1931] 1992; Vainshtein 1961, 1971, 1980). Distinct features of Sayan reindeer herding include small herds,



Figure 1. The Republic of Tyva in the Russian Federation.

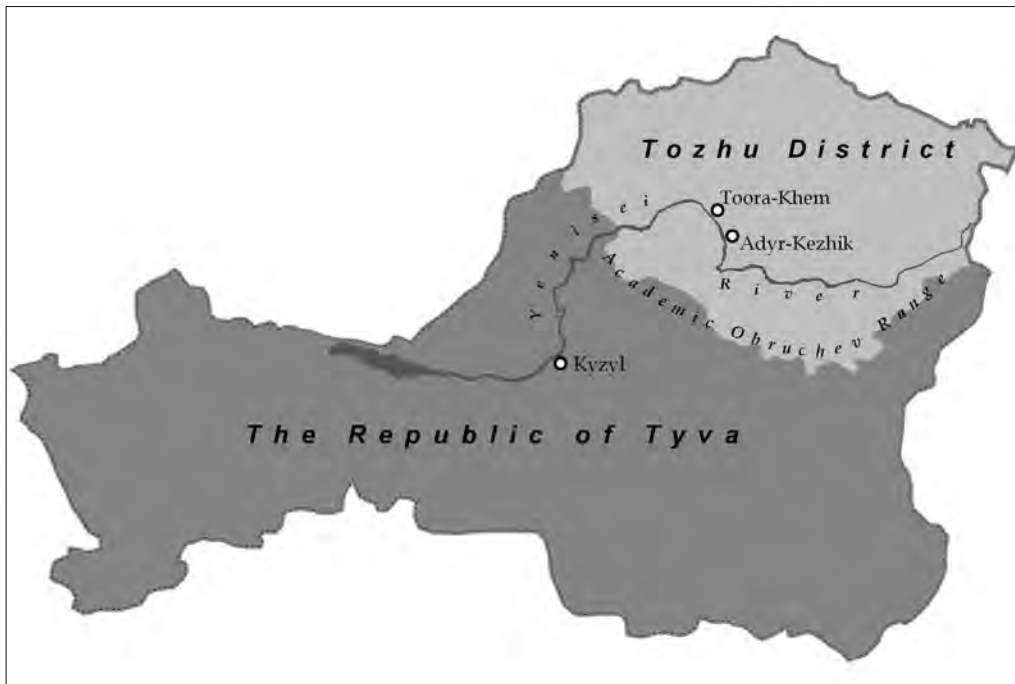


Figure 2. The Tozhu District and the Academic Obruchev Range in the Republic of Tyva.

free-range herding, short-distance seasonal migrations, use of dogs for hunting, use of reindeer for carrying packs, riding, and (occasionally) sled pulling (Anderson 1991; Anderson et al. 2014; Donahoe 2004; Fondahl 1998; Klokov and Krushchev 2004; Petri 1930; Shirokogoroff 1933; Stépanoff 2012; Vainshtein 1961). Because reindeer are used for transportation and hunting, the Tozhu usually avoid slaughtering them (Stépanoff 2012:291).

There is insufficient information about the number of reindeer kept by the Tozhu before the Soviet period. The figures published before 1917 are contradictory, ranging from 25,000 to 78,000 head of deer. The 1931 census data lists roughly 10,000 reindeer in Tyva (Vainshtein 1980). According to local scholar Kyzyl-ool (1971), 524 households owned 6,354 reindeer in 1930. In the next years the number of reindeer increased. Thus, in 1936 their number was 11,557 head; in 1939, 16,555 head; and by 1941, 19,000 head (Kyzyl-ool 1971). Today, the total number of reindeer has dropped significantly. The latest count by the agricultural department of the Tozhu District in October 2014 gives a total of 2,880 reindeer owned by the government in the district (SOATK 2014). The official number of private reindeer in 2014 was 1,000. The government-owned reindeer herding enterprise Odugen manages the largest number (1,880) of public reindeer. Thirty-five Tozhu families are members of this enterprise. The main goal of Odugen is to secure the present and future of reindeer herding in Tyva by providing government subsidies and veterinary help. In 2012–14, around one hundred people were actively engaged in reindeer herding in the district (SOATK 2014).

The Tozhu District covers almost one third (44,800 km²) of the republic's territory. The district is situated in the Todzha basin. The climate is continental and moderately humid. According to long-term meteorological data gathered at Toora-Khem station in the district's center (Fig. 2), the average temperature in January is -28.7°C and 14.6°C in July. The average annual temperature is 5.5°C . (State National Park "Azas" 2013). Rainfall is frequent in July and August, particularly in the highlands, which leads to good grazing conditions in summer. Average annual precipitation in the highlands of the Sayan Mountains (1,400–2,000 m) ranges from 700 mm to 2,000 mm (Muranova 1973:66). Snow starts falling in October, with an average winter snow depth of 25–30 cm in the lowlands to more than 100 cm in the highlands (State National Park "Azas" 2013).

The Sayan-type of reindeer herding practiced by the Tozhu relies on a specific social unit called an *aal*, or no-

mad's camp. An *aal* usually consists of several economically independent households, which are often related by kinship (descent) or marriage (alliance). While the individual families disperse in winter, they regroup in summer and set up their tents about twenty to forty meters apart. The success of an *aal* depends on the ability to help each other during seasonal migrations and joint efforts in carrying out different tasks. Also, "the demands of a severe climate require the people to be united" (Arakchaa 2009). Despite the enormous historical and social changes that occurred in Tyva throughout the twentieth and early twenty-first centuries, the basic social structure of the Tozhu *aal* has not undergone major transformations (Kuzhuget 2006). A main difference is that nowadays *aals* are more often composed of a single household, as the number of reindeer herder-hunters has declined drastically since 1991. That being said, the number of members of a given *aal* typically varies seasonally. In the fall, when fur hunting season opens, men typically leave the village and join the *aal*. Among them are young men and teenagers coming to help train young bull reindeer to be ridden and work as draft animals. Women and children usually join their *aals* during summer break.

Tozhu herders do not use sleds because the landscape is heavily forested and mountainous. They migrate several times a year depending on weather and pasture conditions, reindeer behavior, and hunting and fishing seasons. Even though a few families have managed to buy a snowmobile,¹ reindeer remain the most reliable means of transportation. The Tozhu keep small-scale herds of reindeer (typically forty to sixty animals of mixed ages and sexes) and do not use them as food except for their milk, with the exception of sick or old animals, which are slaughtered for meat. Today, herders usually slaughter three to five reindeer per year for cash. Herds are moved across grazing areas throughout the year. In summer, herds are taken into mountain pastures and then back to the valleys in the fall. Herder-hunters live in canvas tents in summer and in log cabins in winter. Reindeer graze freely very close to the *aal*, especially in summer when pastures are full of different grasses. In order to keep the reindeer close or make them come back to the *aal*, herders attract them with salt (Stépanoff 2012:292). Human urine is sometimes used as a substitute.

As with the Evenki, and many other southern taiga peoples, Tozhu have ridden their reindeer to hunt big game and fur animals, as reindeer can move swiftly through the taiga year-round (Fig. 3; see also color plates). In addition to keeping reindeer, dogs are considered the

best hunting partners (Davydov 2011; Petri 1928, 1930; Tugolukov 1969). In the context of an *aal*, both reindeer herding and hunting are important. During my interviews and conversations with *aal* members, I asked questions such as: What activity is most important for you—herding or hunting? Do you consider yourself more a hunter or more a herder? Some participants replied that reindeer herding is more important. Others responded that both activities are important. A majority of answers, however, made clear that “*bis anchylar ives, ivizhiler bis*” (“we are not hunters, we are herders”). I suggest two reasons for this preference. The first reason is that large-scale reindeer herding with its meat-oriented production was imposed during the Soviet era, and reindeer herding became the primary activity in the Tozhu District. The level of production was so high that “herders” had to constantly look after the reindeer and had much less time to go hunting. The second reason is that reindeer are not the only animals that have been domesticated in Tyva. Sheep, goats, cows, horses, yaks, and camels are also culturally valued as “herdable” species. While some indigenous groups in the Republic of Tyva herd more than one animal species, the Tozhu have always relied predominantly on reindeer. Their herding culture also differs in that reindeer are not so much treated as a source of meat, as they are as providers of transportation and milk. Reindeer are the means and the *sine qua non* for hunting. Reciprocally, hunting requires the mobility skills and “flair” of reindeer. This explains in part why my research participants call them-

selves *ivizhiler* (“reindeer people”) and not *malchynnar* (“herders”) (see also Donahoe 2012:111–113).

ETHNOGRAPHIC FIELDWORK IN THREE *AAL*

I carried out fieldwork among Tozhu reindeer herder-hunters in August 2012, July 2013, and November–December 2014. Even though I am originally from the Republic of Tyva, I am not Tozhu, and it took time to gain access to the sites where reindeer are kept in summer. Besides lengthy administrative procedures, I had to find a local guide willing to take me from the village of Adyr-Kezhik to the highlands. Fortunately, a married couple of reindeer herder-hunters happened to be in Adyr-Kezhik in the summer of 2012—babysitting their newborn granddaughter—and agreed to take me to their camp (Fig. 4). Sayzana Kol and Andrey Baraan have been reindeer herding and hunting for the last twenty-two years. They have a good reputation in Adyr-Kezhik and other herder-hunters describe them as very mobile, often migrating to explore the land. Sayzana and Andrey also helped me rent a horse, as this was the only way to get to their *aal* through the mountainous taiga.

Tozhu families that are involved in reindeer herding and hunting divide themselves into two geographical areas: the Serlig Khem region and Odugen taiga. The natural border between these two areas is created by the Serlig Khem River. This river is a southern spur of Bii-Khem



Figure 3. Riding reindeer across the Obruchev Mountains, Tozhu District, summer 2012.

(Big Yenisei) River. The Serlig Khem region lies in the central part of the Academic Obruchev Mountains. Odugen taiga lies to the north of the Serlig Khem River. I visited Sayzana and Andrey's camp in Serlig Khem for the first time in August 2012. It took us five days on horseback to reach their *aal*, located 93 miles from Adyr-Kezhik. From there we took a short trip (two hours by reindeer) to the camp of their neighbors, Cheinesh and Galin-Kys Baraan. That same summer, I also stopped at Sergey Kyrganay's *aal* on my way back to Adyr-Kezhik. It took us two days of reindeer-riding to reach Sergey's camp. I chose to visit him again in July of 2013 because he is a respected elder and has a great knowledge of animals and the environment. Younger people often visit him to ask for advice about animals, herding, and hunting. Finally, I visited Sayzana and Andrey in November–December 2014.

I had never ridden a horse or a reindeer before and my horse ignored most of my commands. Even the relatively simple task of mounting my gelding was difficult for me. While Sayzana and Andrey easily hopped on their horses, I could not hoist myself onto mine. We rode between six and nine hours per day, which left me sore and in pain. When we stopped for breaks, I could not walk normally for ten to fifteen minutes and could not help my

guides gather firewood. Riding a reindeer was even more challenging. I had trouble maintaining my balance in the saddle, which wiggled side-to-side with each reindeer step, leaving me on the ground several times a day.

In the camps, I interviewed eight herders from four households in Russian and Tyvan. My interviews focused on climate change. I asked research participants to reflect on climate change—how is climate change affecting reindeer herding, hunting, fishing, and gathering activities? A basic understanding of human-reindeer relations, as well as human-horse relations, was necessary before I could evaluate the local impacts of climate change.

It is impossible to understand current reindeer behavior and ecological conditions in Tyva without a knowledge of the Tofalar subspecies, one of the tamest reindeer in the world. I quickly noticed that Sergey's reindeer were tamer than those I saw at Sayzana's and Andrey's *aal*. As of 2013, Sergey had fifty reindeer that were not afraid of people. Some of them would even try to enter the tent. Accustomed to receiving salt before being milked, female reindeer were particularly good at sniffing around and sticking their muzzles into people's pockets. They sometimes even tolerated being petted without running away. According to Sergey, this taste for salt has a direct impact on herding



Figure 4. Anoka Kol, Sayzana Kol, Vika Kol, and Andrey Baraan having a lunch of red deer dumplings in Saryp Salyg Bazhy, Tozhu District, August 2012.

practices. “We do not use a lasso. We use only salt to catch a reindeer. You don’t need to use a lasso because if you use it reindeer will be afraid of humans and it will be difficult to catch them. Why do you need to use a lasso? It is enough to use salt to catch them” (Kyrganay 2013).

Tozhu herder-hunters also rely on horses. Usually each family has one or two horses. Horses are important, especially in summer, when herders come down from the mountains and cannot use reindeer to go back to the village. It is impossible to ride reindeer for long periods of time when the temperature exceeds 30°C. While not as suitable as reindeer in the mountainous taiga, horses are extremely valuable when commuting to and from urbanized environments. In August of 2013, Sergey Kyrganay described how convenient it is to have horses for the management of the *aal*:

We kept horses together with reindeer even during the Soviet period. Each family had two to three horses. My father had 400 to 600 reindeer and 20 to 30 horses. If reindeer are missing in the taiga, it is more convenient to look for them with a horse. It is so challenging when you do not have a horse. What are you going to do? Just walking! Also, a horse is very good for pack-riding. It is better than a reindeer while we migrate to another place because it can carry a load of 50 to 60 kg. A reindeer can carry much less. I had three horses in the past. My last gelding was stolen while I was in Adyr-Kezhik three years ago. It is so challenging to get to the village now. Recently we ran out of salt and it took me almost a week to walk to Adyr-Khezhik and come back to the *aal*. We very much need horses (Kyrganay 2013).

No more than forty to sixty reindeer per family are needed to sustain the *aal*. This number provides a cluster of households with milk and milk-based products such as *byshlak* (cheese), *aarzhy* (cottage cheese), *süttug shai* (salted milk tea), *süttug bydaa* (milk soup), *kasha* (gruel), and *galдан* (fry bread), all of which are integral to the local diet. Female reindeer are milked twice a day from April to the end of June and once a day from July to September or the beginning of October (Fig. 5). If a family, particularly one with young children, has very productive hinds, milk will be drawn until the end of December. In June–July when pastures are in very good condition, hinds give about 400 to 600 mg of milk in one milking. Reindeer milk is thick and creamy and contains 15 to 24.7% fat (Kertselli 1925; Sjenneberg et al. 1979).²

CLIMATE CHANGE DATA

Recent studies on climate change have shown that south-eastern and central Siberia is warming (Andreychik 2012; Andreychik et al. 2008; Baranov et al. 2013; Cheredko et al. 2014). Warming poses serious threats to herder-hunters, such as melting snow patches, decreasing depth of snow cover, warming and decreasing water levels in rivers, and increasing forest fires (Baranov et al. 2013). Different areas of Siberia are affected in different ways. Thus, according to Cheredko et al. (2014), the average temperature has increased by 0.3°C per decade for the years 1961–2012 in the neighboring Republic of Altay. Winters have become colder and summers cooler for the last fifteen years in the republic. The only research on climate change in Tyva was done in the Ubsu Nur Basin, located in the dry mountainous steppe zone in the south (Andreychik 2012; Andreychik et al. 2008). Since 1976, temperatures have been warming by 0.4°C per decade in Russia (Rosgidromet 2011). While the warming rate in Tyva decreased by 20% in the years 1991–2006 (Andreychik et al. 2008), temperatures in the Ubsu Nur Basin have increased by 1.8°C for the last decade and by 2.2°C in the last thirty years. At the same time, precipitation decreased by 3.4%. According to Andreychik (2012:28), climate change in the Ubsu Nur Basin is reaching a near-critical level. No research has been done on climate change in Tozhu District. Data on temperatures in the highlands of the district are not available. The only meteorological station in the district is situated in Toora-Khem village, in the lowlands. One cannot compare the Tozhu District, with its taiga and forest tundra climate, to the Ubsu Nur Basin, with its dry steppe climate. However, the warming trend observed in the Ubsu Nur Basin in the last decade is not unique. According to the predictions of Alexey Kokorin, head of the World Wildlife Fund climate division, climate change in southern Siberia will increase desertification, thus limiting access to water and pasture for animals (Stracansky 2014).

RESULTS

When the research participants talked about how changes in weather and environment affect their everyday lives, they related their concerns to their work and well-being as reindeer herders and hunters. These concerns include (a) hotter summer days, (b) rainier summers, (c) greater



Figure 5. Sayzana Kol milking a female reindeer in Saryp Salyg Bazhy aal, Tozhu District, August 2012.

weather unpredictability and not enough snow, and (d) an increasing number of predators and parasites.

HOTTER SUMMER DAYS

All herder-hunters reported changes in the weather patterns observed in the last decade, particularly in the last six to eight years; the changes were seen as having a negative effect on *aal* communities and activities. As mentioned above, the average temperature in July in Toora-Khem is 14.6°C. A common observation is that summer days have become hotter, rainier, and wetter. Hot weather has impacted migration routes, as herders were forced to migrate higher and deeper into the Academic Obruchev Range in order to find summer pastures with cooler winds and fewer mosquitoes. In the past, summer camps could be set up at middle altitude. However, for the last several years, summer camps were established at the very top of the mountains, at altitudes of 2,500–2,800 m where reindeer may enjoy snow patches. The camp is usually established on an alpine plain in order to help herder-hunters check for their reindeer at pasture.

According to herders, the high temperatures of 2008–2012 also brought stress to animals and people. According

to Sergey Kyrganay (2013), hot summer days increased the number of mosquitoes and horse flies, which are serious pests that harass the reindeer. From June to August reindeer are particularly vulnerable to biting insects because they shed hair and are not heavily coated. Blood-sucking horse flies usually come out in the middle of July. They relentlessly attack the reindeer, exhausting them by making them run constantly. When reindeer experience heat stress and insect harassment, they become more vulnerable to diseases (Dieterich and Morton 1990), which in turn impacts the herd. When the weather is too hot, herders avoid riding reindeer for long distances. According to them, the most common disease affecting reindeer in these changing conditions is foot rot (Russ. *kopytka*) caused by a bacterium (*Fusobacterium necrophorum*; Dieterich and Morton 1990). On hotter days the reindeer suffer a great deal from insect harassment. Sayzana Kol described the situation in the following terms:

I noticed that the weather has changed in the last five to seven years. The summers became hotter. It is bad for reindeer because they become sick when it is hot. Usually they are limping or they have pulmonary disease. We give them injections such as gentamicin, penicillin, and bicillin for three to five

days as the vet prescribes. That is how we treat our reindeer in order to prevent suffering and death (Kol 2012).³

Welaji et al. (2003) found that insect harassment has a negative impact on the weight of reindeer calves as well as on milk production due to reduced grazing time and higher energy expenditure. More generally, reindeer do not receive sufficient nutrition from summer foraging, which is critical for accumulating enough fat for the rest of the year (Baskin 2009). According to Baranov et al. (2013), population dynamics of big mammals have changed due to global warming. In particular, the number of reindeer living in the mountainous areas of southern Siberia has been decreasing.

RAINIER SUMMERS

Seven research participants suggested that the summer season in the Obruchev Range was not only becoming hotter, but also rainier and wetter. As far as they remem-

ber, summers have always been rainy in the mountainous area. However, heavy rains now seem to be more frequent. The weather in general and the winds in particular have become more humid. As a result, hunting is more challenging. The Tozhu persistently hunt for roe deer (*Capreolus capreolus*), red deer (*Cervus elaphus*), elk (i.e., moose; *Alces alces*), wild boars (*Sus scrofa*), and brown bears (*Ursus arctos*) (Fig. 6). Thus, wild game is the main source of food for Tozhu reindeer herders as well as for their dogs (who are not used as shepherds but as hunting partners to track game animals). In August 2012, when I arrived at Sayzana and Andrey's *aal*, Sayzana's brother, Anoka, had just killed a young red deer. As Anoka told me (pers. comm. 2014), such a catch feeds a family of four people, as well as four dogs, for four to five days. Unfortunately, heavy rains prevent herders from traveling to distant areas where they could spend more time hunting. Elders such as Sergey Kyrganay consider it more challenging to lead a nomadic life today due to increased humidity. Two other research partners, who are retired and stay in the village,



Figure 6. Sergey Kyrganay departing for hunting Siberian red deer (*Cervus elaphus*) in Aaldyg Azhyk, July 2013.

believe that rainier summers are not good for the health and well-being of humans, particularly elders.

GREATER WEATHER UNPREDICTABILITY

Seven research participants noted that it is becoming difficult to predict the first snowfall. According to Sayzana Kol (2012), in the past, the first permanent snow usually used to occur between October 15 and 20, which marked the beginning of the winter hunting season. As Sayzana and others explained to me, this time frame is not certain anymore:

In the past, the hunting season usually started on October 20. Now we hunt in November. But we do not know when the first snowfall will fall: Early November, as in recent years? Mid-November? Late November? We ask each other about [the timing of] the first snow, and nobody can predict it. The first snowfall used to bring a lot of snow immediately. Now it brings less snow (Kol 2012).

Hunting fur-bearing animals and musk deer (*Moschus moschiferus*) are the most important economic activities for the members of an *aal* because furs and glands are the only source of cash. Sable and musk deer are the main targets, and permanent snow cover is critical to catch them. For instance, in November and mid-December of 2014, the snow cover was not deep enough. The depth of snow was less than 10 cm in many places, particularly in the barren, stony places where sable take cover from hunting dogs. It was an unusual situation as the average snow depth for this season is 30 cm. With a snow depth of 20 cm or less it becomes quite challenging to catch fur animals who run faster on shallow snow. As the process of chasing and hunting fur animals becomes longer (Anoka Kol, pers. comm. 2014), herder-hunters can be heard complaining *Khar chok, khar chok* (“No snow, no snow”). In 2014, the snow finally came in the middle of December. Hunting conditions were good only for a couple weeks, after which sable became scarce. Typically, herder-hunters hunt every day until the end of December. But by the end of the month in 2014, they were hunting only a few times a week (depending on weather and camp location).

Sable and musk deer are distributed throughout much of southern Siberia and are highly valuable animals in the Russian and Asian fur markets. Historically, sable in Tyva have been harvested for Chinese and later Russian colonizers who cherished the softness of their

fur. Today, Tozhu herders sell them primarily to *kommer-santy* (“traders”), receiving between 700 and 5,000 rubles (\$10–\$53) for a sable pelt, depending on its size, color, and quality.⁴ Musk deer are highly prized for their musk glands. Herders receive up to \$199 for a large gland (20 grams at about \$10/gram).⁵

Aal members do not consider the (slightly) delayed first snow to be a very serious issue. However, they consider it “annoying” to wait without knowing exactly when enough snow will cover the ground. As the hunting season becomes more challenging, fewer animals are taken, which means less cash for the *aal* economy. That being said, some individuals are taking a proactive approach to environmental change and are adjusting their hunting practices. Sergey Kyrganay and his son Danil, for example, decided to start hunting on October 20, whether or not snow permanently covers the ground:

We do not wait for snow to come. We do not need snow to go hunting because we have very good hunting dogs. Why do we need to wait for snow? Our dogs are the best in this area. They track animals and we follow them, and we find animals. They are so good when all three of them trace a musk deer. They always find it. Just train the dogs properly and you do not need snow to go hunting (Kyrganay 2013).

INCREASING NUMBER OF PREDATORS AND PARASITES

Sayzana reported that there are now many ticks, especially at the bottom of the mountains, and that she was bitten in April 2012. It took her two days on horseback to get to the hospital in Toora-Khem. She completely recovered from the infection after two months of treatment, but she had to stay away from her *aal* for three months. Sayzana’s case is not isolated and “ticks are currently considered to be second only to mosquitoes as vectors of human infectious disease in the world” (Parola and Raoult 2001:897). According to Revich (2012), the increase in the number of ticks, as well as their longer activity period, may be related to global warming. In the 1960s and 1970s there was an average ratio of forty to fifty ticks per square kilometer in southern and eastern Siberia. Since the late 1970s, however, that ratio went up to 500–900 ticks per square kilometer in taiga forests (Encephalitis.ru 2013). Consequently, the risk of tick-borne encephalitis in southern Siberia (including Tyva) has also increased.

Another concern noted by the research participants is an increase in the number of bears and, more significantly, wolves, which sometimes attack the herd. More often than in the past, Tozhu herders have to abandon pastures and change their migration routes to avoid high numbers of wolves. I was told that wolves living close to the camp cannot be killed because they would come back, seek revenge and take even more reindeer.⁶ Moreover, killing wolves just because they show up is seen as a “stupid” idea. Herders prefer to migrate as a response to the wolves in their pasturelands, even if that involves adding a few segments to the annual itinerary of migration.

Although global warming may contribute to the trend, *aal* members do not think that the increase in the number of predators is a direct effect of climate change. More commonly, they point out that wolves were eradicated in Tyva during the Soviet period (by professional state hunters who received money for every wolf killed, typically by poison or firearms), and that the dissolution of the Soviet Union in 1991 put an end to this program. According to the Ministry of Agriculture of the Tyva Republic, there were 2,397 wolves in Tyva as of 2011 (Murygina 2012). According to the administration of the Tozhu District, these wolves were responsible for killing fifty-seven reindeer in 2011. A bear attacked Sayzana and Andrey’s *aal* during the summer of 2013, and another bear attacked Sergey near his *aal* four days before my visit in 2013. More than climate change, Tozhu herders were blaming the lack of effective predator management by the local and/or federal authorities for these attacks and the harms and worries they caused.

CONCLUSION

From the perspective of *aal* members, climate change is one of the many issues they face in their everyday lives (in addition to shortage of cash, lack of salary, retirement plan, and management within the Odugen enterprise). However, observations made by Tozhu reindeer herder-hunters over the last six to eight years provide evidence of climatic changes. This preliminary study suggests that the effects of climate change have been observed in the Academic Obruchev Mountains and their lowlands and are considered to have a negative impact on the mixed economy of the Tozhu reindeer herder-hunters. In particular: hotter summer days force the Tozhu to migrate deeper and higher across the mountain range and expose reindeer to more heat-related stress and diseases; rainier summers

and delayed snow cover make hunting more challenging; and a higher number of parasites (ticks) and predators (wolves, bears) complicate the already complex pattern of seminomadic reindeer herding and hunting in the Academic Obruchev Mountains. All research participants agreed that these changes have occurred within the last six to eight years and affect their main activity—hunting for subsistence and cash.

The observations made by Tozhu reindeer herder-hunters can help raise the public and scientific awareness of global warming and climate change in Russia. In order to support reindeer herding and hunting traditions in the Tozhu District in a sustainable manner, local and regional decision-makers must take into consideration the pressures recently experienced by the members of *aal* communities. Their concerns, as well as their unique first-hand observations of sociocultural and environmental changes, should be at the core of any government-sponsored program related to reindeer herding and hunting in the Tozhu District.

ACKNOWLEDGMENTS

I would like to thank the University of Alaska Fairbanks Center for Global Change for supporting my research through their student research grants. I also extend my thanks to my research partners Sergey Kyrganay, Danil Kyrganay, Sayzana Kol, Andrey Baraan, Anoka Kol, as well as all the Tozhu reindeer herder-hunters who agreed to share their stories with me.

NOTES

1. A limited number of Tozhu families bought snowmobiles in the last two years. Despite their high purchase price and maintenance costs, these vehicles provide an easy means of transportation to the village. They save time and effort travelling, especially if someone needs to stay in the village for several days or months. In such cases, it does not make sense to ride a reindeer to the village because someone needs to bring the reindeer back to the camp as soon as possible. With a snowmobile, herders can travel whenever they need and bring supplies with them during winter. Owning a snowmobile is now a dream for many Tozhu herder-hunters, and some of them work hard during the hunting season to make enough money to buy one.

2. During the Soviet era, state farms (*sovkhov*) provided regular food supplies, which were brought into the taiga by tractors. State farms were also responsible for the social security of their employees (including a decent retirement plan). The amount of retirement money usually depended on years of employment and earned income. Nowadays, herder-hunters receive some retirement money when they reach the age of 50 (women) and 55 (men), but the amount is minimal (6,354 rubles per month, or about \$97 as of December 2014). This sum is not enough to make ends meet.
3. Seven other participants also supported Sayzana's observations that summer days have become hotter and animals suffer from heat.
4. From 2014 to 2015 the prices dropped by almost half in November 2014 due to the current conflict.
5. Since November 2014 the U.S. dollar has been getting stronger against Russian currency. Herder-hunters have been receiving \$199 instead of the usual \$350 for the same amount of gland.
6. Vainshtein (1961) reported similar findings from his fieldwork among the Tozhu in the 1960s.

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REPORT

STRATIGRAPHY, DATING, AND LITHIC ASSEMBLAGES FROM MIDDLE TO LATE HOLOCENE SITES IN THE EWE CREEK DRAINAGE, DENALI NATIONAL PARK AND PRESERVE

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ABSTRACT

In 2010, Texas A&M University archaeologists conducted limited subsurface testing at three prehistoric archaeological sites along Ewe Creek, a tributary of the Savage River, in Denali National Park and Preserve. The goals of this research were to assess the potential for buried, datable cultural deposits and determine their significance. We excavated three 1 m² test units and recovered cultural material in primary context from two buried surfaces, the oldest of which is associated with a radiocarbon date of approximately 2700 cal BC. Only a small amount of lithic material was collected during this research, most from surface contexts. Despite these limitations, the data suggest that the three sites represent Middle to Late Holocene (MH to LH) occupations of the Ewe Creek drainage by hunter-gatherers who procured locally available toolstone from secondary stream-rolled gravel beds. Micromorphological analyses indicate cooler, drier conditions associated with middle Holocene site occupation and warmer, wetter conditions associated with late Holocene site occupation. Lithic technological activities focused on informal cryptocrystalline flake core reduction and manufacture, maintenance, and use of cryptocrystalline and rhyolite bifacial projectiles. With further research, the Ewe Creek sites have the potential to contribute to our understanding of changing subsistence and land-use patterns in Middle and Late Holocene central Alaska, an under-studied but important period in the prehistory of the region.

INTRODUCTION

Current models of landscape use in central Alaska predict that the Middle Holocene (MH) (6000–1000 years ago) and Late Holocene (LH) (<1000 years ago) was a time of significant change in hunter-gatherer subsistence and settlement patterns, including increased use of upland landscapes (Dixon et al. 1985; Esdale 2008; Potter 2008a, 2008b). This shift has important implications for lithic technology; assemblage data from central Alaska suggest

that during the MH, microblades (presumably for inset-microblade projectiles) are more commonly associated with sites in lowland ecological regions, while bifacial projectiles are more commonly associated with sites in upland ecological regions. In the LH, organic and copper technology is more common than lithic technology in both the uplands and lowlands (Potter 2008b; Shinkwin 1975; Vanderhoek et al. 2012). However, the current archaeological record of

central Alaska makes it difficult to fully assess these models, because we know very little about the MH and LH record in comparison to the well-documented Late Pleistocene/Early Holocene record of the region (e.g., Goebel 2011; Holmes 2001; Potter 2005; Potter et al. 2011; Potter and Reuther 2012; Powers and Hoffecker 1989).

In summer 2010, archaeologists from Texas A&M University conducted archaeological survey and test excavations along the Savage River in Denali National Park and Preserve (DENA), to add to our knowledge of prehistoric upland use in the central Alaska Range (Blong 2011). As part of this research, we conducted initial investigations at HEA-263, 264, and 265, three sites along Ewe Creek in the Savage River basin (Fig. 1), to assess their

condition and significance, collect material to date cultural components, collect micromorphological samples, and recover lithic artifacts that could inform on lithic technological activities of the sites' occupants. In addition, we conducted a toolstone survey of the Savage basin to assess local toolstone resources. We collected lithic artifacts from surface contexts at the three sites and excavated test units at HEA-264 and HEA-265, recovering lithics from subsurface contexts, the oldest of which contained dispersed charcoal radiocarbon dated to the Middle Holocene, approximately 2700 cal BC.

The primary goal of this paper is to present the stratigraphy, radiocarbon date, and lithic assemblages of the three Ewe Creek sites to highlight the research poten-

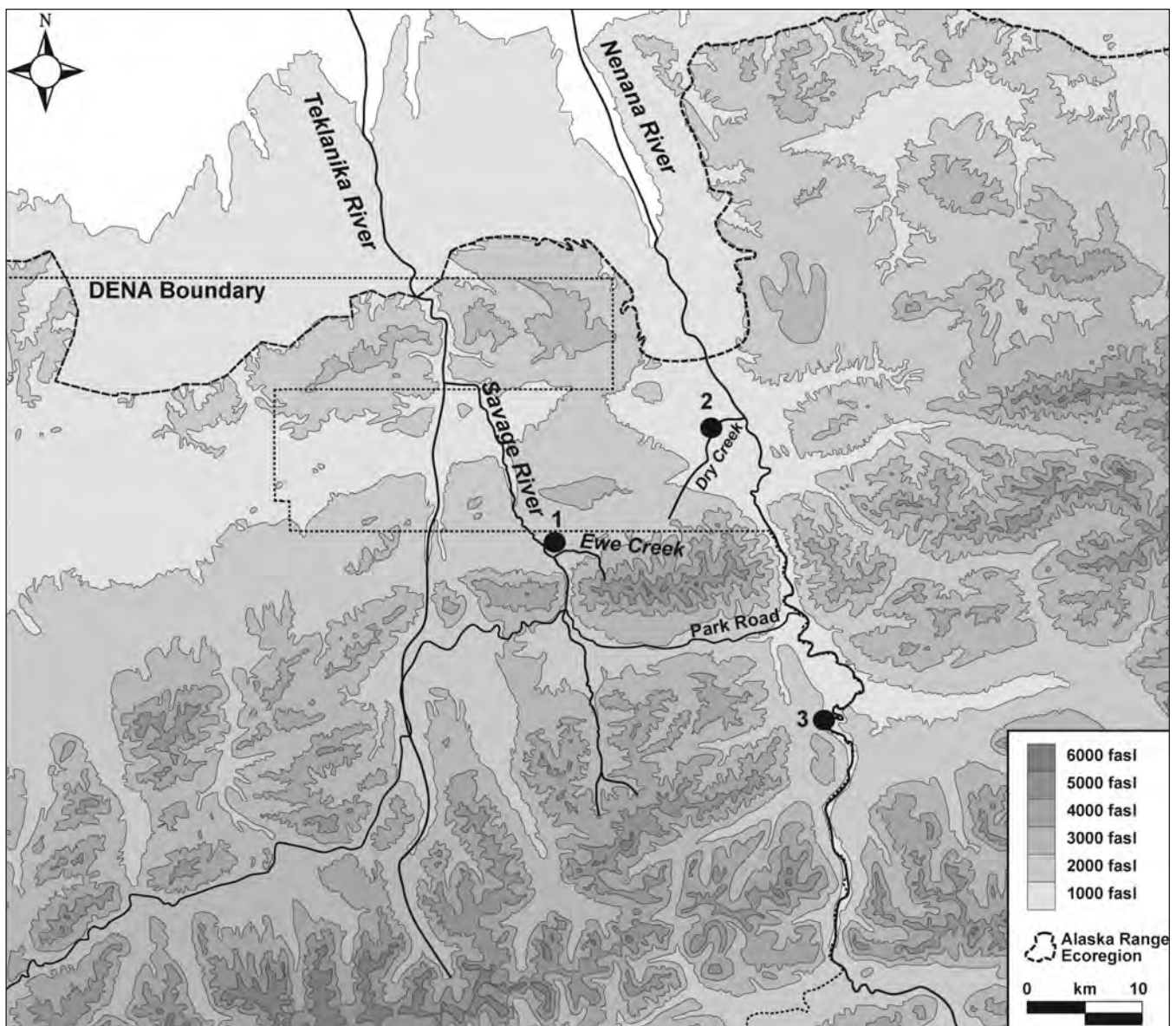


Figure 1. Location of sites mentioned in text: 1 = Ewe Creek study area; 2 = Dry Creek site; 3 = Windmill Lake.

tial of the Ewe Creek drainage for future researchers. A secondary goal is to evaluate local toolstone resources, toolstone procurement, and lithic technological activities in the Ewe Creek drainage. While the test excavations were preliminary and the assemblages recovered from the sites are comprised primarily of surface material, some artifacts were recovered from buried, datable contexts, and with further testing more substantial assemblages may be recovered. This research represents an important contribution to our understanding of prehistoric use of upland landscapes in DENA, as it represents one of the few radiocarbon-dated archaeological sites in the six-million-acre park and preserve (Griffin 1990; Wygal and Krasinski 2010).

This study offers the preliminary conclusion that prehistoric hunter-gatherers occupied the upland Ewe Creek drainage in the MH Neoglacial Period and LH Medieval Warming Period, focusing toolstone selection primarily on locally available cryptocrystalline (CCS) chert and chalcedony from secondary stream-rolled gravel sources. Lithic technological activities focused on informal CCS flake core reduction and manufacture and maintenance of CCS and rhyolite bifacial tools. CCS tools were often invasively and intensively retouched. Lanceolate bifaces appear to be preferentially, but not exclusively, used in hunting toolkits for the occupants of the Ewe Creek drainage, provisionally supporting previous research that found a correlation between upland hunting and use of bifacial projectile technology.

SETTING

The Savage River basin is within the Alaska Range ecoregion (Fig. 1), an area of rugged mountain ridges and broad valleys. Vegetation is predominantly dwarf scrub, with some low or tall scrub communities on moist-to-mesic protected sites and open forest and woodlands in some valleys (Nowacki et al. 2001). The Savage River drains the northern flank of the Alaska Range, flowing north through the Front Range into the Teklanika River. The broad gravel outwash plains and lateral moraines of the Savage basin were created by a series of Pleistocene glacial advances, outwash episodes, and Holocene alluviation (Wahrhaftig 1958).

Ewe Creek is a small tributary of the Savage River that drains the northern slope of the Front Range (Fig. 1), cutting through the Birch Creek schist and Healy Creek outwash geologic formations. The three Ewe Creek

sites are situated on the southern edge of a broad terrace composed of Holocene alluvium and pediment gravel (Wahrhaftig 1970). Modern vegetation in the Ewe Creek drainage consists primarily of a closed, low birch-shrub vegetation community, dominated by dense shrub birch (*Betula glandulosa*) with some willow (*Salix* spp.) and scattered white (*Picea glauca*) and black (*P. mariana*) spruce, some as tall as 8 m. Faunal species in the study area include moose (*Alces alces*), caribou (*Rangifer tarandus*), Dall sheep (*Ovis dalli*), grizzly bear (*Ursus arctos*), and black bear (*Ursus americanus*), as well as various small game species. While conducting our field research, moose were observed on heavily used game trails along the southern edge of Ewe Creek; Dall sheep were observed high in the Front Range and along the steep-sided Savage canyon between the Park Road and the study area. No caribou were observed during our field research; however, the Savage basin is within the herd range of the Denali caribou herd (Adams et al. 2004).

Paleoecological data from central Alaska document Quaternary vegetation change from Late Glacial herb- and forb-dominated tundra to Late Pleistocene/Early Holocene *Betula* shrub-tundra to Early Holocene expansion of first *Populus* then *Picea* lowland forest. In general, the MH and LH climate in Alaska was cooler and wetter than that of the Early Holocene (Anderson and Brubaker 1994; Anderson et al. 2003; Bigelow and Edwards 2001; Bigelow and Powers 2001). The MH and LH vegetation history of the Ewe Creek drainage is likely analogous to the vegetation record from Windmill Lake, at 640 m asl in the nearby Nenana River valley (Fig. 1). By ~5300 cal BC, the vegetation at Windmill Lake was probably similar to the present day, primarily consisting of *Picea* and *Betula* trees and shrubs (Bigelow and Edwards 2001), indicating that vegetation in the region has remained relatively stable throughout the MH and LH. The regional glacial record provides a finer-grained proxy of environmental change, indicating that the MH and LH were a time of climatic fluctuations in central Alaska. Temperatures oscillated between cool and warm with the onset of the Neoglacial Period (NP), ~2000 BC–AD 900, followed by warming in the Medieval Warm Period (MWP), ~AD 900–1350. Temperatures cooled again during the Little Ice Age (LIA), ~AD 1350–1850, before warming to modern levels (Calkin 1988; Hu et al. 2006; Loso 2009; Mann et al. 1998; Mason and Begét 1991). Periods of cooling

during the NP and LIA are correlated with heightened wind intensity and increased sediment deposition in the Nenana Valley, indicating the significant effect that climate fluctuations had on regional landscapes (Bigelow 1991; Mason and Begét 1991; Powers and Hoffecker 1989).

HISTORY OF RESEARCH

In 1964, M. Treganza conducted an archaeological survey in the Ewe Creek drainage as part of a larger investigation of Mt. McKinley National Park's archaeological resources. Treganza's survey of the study area located a single flake on a gravel erosional surface on the northern side of Ewe Creek, which he did not consider significant enough to warrant a site designation (Treganza 1964). In 1984, National Park Service (NPS) archaeologist C. Davis conducted a cultural resource survey along Ewe Creek drainage and recorded a surface scatter at what is now HEA-264, but the site was not registered with the State of Alaska (Griffin 1990). In 1989, NPS archaeologists conducted a cultural resource inventory in the Ewe Creek drainage, recording three prehistoric archaeological sites along a terrace edge on the north side of Ewe Creek (HEA-263, HEA-264, HEA-265). Test excavations at these sites were limited to bank cuts, revealing two paleosols containing charcoal but no in situ cultural material. However, Lynch (1996:117–118) reported that artifacts recovered from deflated gravel surfaces likely eroded from subsurface deposits. In 2009, NPS archaeologists revisited Ewe Creek and successfully relocated HEA-263, HEA-264, and HEA-265, noting artifacts lying on the surface and the high potential for buried cultural materials at all three sites (Wygala and Krasinski 2010:119–124).

There have been many prehistoric archaeological sites identified in DENA; however, few archaeological excavations have been conducted due to a longstanding ethic of nondisturbance. Two exceptions to this are Teklanika West and Bull River II, which have undergone focused archaeological investigations (Coffman 2011; Coffman and Potter 2011; Goebel 1996; West 1965, 1996; Wygala 2009, 2010; Wygala and Krasinski 2010). As a result, there are few prehistoric archaeological sites with radiocarbon-dated deposits in DENA (Griffin 1990; Wygala and Krasinski 2010).

METHODS

FIELDWORK

Fieldwork for this project was conducted in summer 2010. A datum was set at HEA-265 and a grid established across the Ewe Creek terrace using a total station. When located, datum points from previous research were tied into the grid. Surface artifacts were mapped with the total station, then collected. One 1 m² test unit was established at HEA-264 and two 1 m² test units were established at HEA-265; all test units were oriented on the grid. Test units were excavated in 50 cm² quadrants using shovels and trowels. Test units were excavated by natural strata, using 5 cm arbitrary levels if strata reached >5 cm in thickness. Artifacts and charcoal located during excavation were three-point provenienced, and all sediment was screened through 1/8" mesh to recover additional remains. Sediment descriptions and profiles were completed in the field for each test unit at HEA-264 and HEA-265 and for a 50-cm section at HEA-263. Stratigraphic descriptions followed standard conventions (Folk 1954; Waters 1992). Upon completion of the project, all 2010 grid markers, including the site datum, were pulled in accordance with DENA research requirements.

MICROMORPHOLOGY

Oriented micromorphological samples were collected from HEA-265 test unit N1023 E997 by driving plastic conduit boxes into the profile wall. Samples were wrapped in plastic wrap and duct tape, transported back to Texas A&M, air dried for six months, surface impregnated with Hillquist epoxy C/D, and shipped to Spectrum Petrographics Inc., where they were vacuum impregnated and cut into 2x3" slides with a standard thickness of 30 microns for micromorphological analysis. Thin sections were examined using an Olympus BX15 research microscope using plane- and cross-polarized light. Photomicrographs were captured using a Leica DFC450 camera attachment. Thin sections were described following the methodology of Brewer (1976) and Fitzpatrick (1993).

LITHIC ANALYSIS

This study presents the lithic assemblages from the Ewe Creek study area, focusing on assemblage attributes that indicate toolstone procurement (toolstone abundance and

quality, toolstone type, and presence/absence of cortex). Following Graf and Goebel (2009), this study designates toolstone available within 5 km of the sites as local and outside of 5 km as nonlocal. Toolstone types were identified based on composition and texture using a 10x hand lens and on color using a Munsell rock color book. Artifact toolstone types were visually compared to samples collected during our toolstone survey of the Savage basin.

For the lithic assemblages collected during our 2010 research, lithic tools were scored using a standard typology developed for central Alaska (Goebel et al. 1991). Tools, cores, and debitage were analyzed using metric and non-metric attribute analyses (e.g., Andrefsky 2005). Tool retouch type and depth were recorded at most invasive point, and retouch intensity was scored as the number of retouched edge units (Surovell 2003:345–347). Debitage was assigned to cortical spall, flake, biface thinning flake, or retouch chip categories. Cortical spalls were subdivided into three types: primary cortical spall (>50% dorsal cortex), secondary cortical spall (<50% dorsal cortex), and cortical spall fragment (incomplete flake with dorsal cortex). Cortex type was scored as either primary geologic cortex or secondary stream-rolled cortex following Rasic (2008:225). Flakes were subdivided into three types: flake (no cortex, simple platform, greater than 1 cm in size), flake fragment (fragment with no platform and no cortex), and blade-like flake (attributes of a flake but twice as long as wide). Biface thinning flakes have no dorsal cortex, a complex platform, and are greater than 1 cm in size. Retouch chips were subdivided into two types: retouch chip (no dorsal cortex, simple or complex platform, less than 1 cm in size) and retouch chip fragment (no platform, no cortex, less than 1 cm in size). Lithic materials collected during previous research in the study area were not analyzed for this study; however, the lithic assemblages from the 1989 NPS investigations (adapted from Lynch 1996) are presented to add to the discussion of toolstone selection in the study area.

RESULTS

HEA-263 SITE DESCRIPTION

HEA-263 is situated at 715 m asl on a south-facing alluvial terrace overlooking Ewe Creek, approximately 200 m east of HEA-264. In 1989 NPS archaeologists mapped and collected two lithics 30 m apart (Lynch 1996:115).

In 2009, NPS archaeologists observed surface lithics including a black chert retouched blade, a gray chert microblade fragment, and a black chert microblade (Wygall and Krasinski 2010:124).

Our 2010 survey located four lithics in a 4 m² deflated area within a large blowout feature (Fig. 2). Quaternary geology at HEA-263 consists of round to subround, moderately sorted alluvial gravel and sand capped with approximately 50 cm of aeolian silt and sand (Fig. 3). No artifacts were observed while cleaning off this profile, and no test excavations were conducted.

HEA-264 SITE DESCRIPTION

HEA-264 is situated at 710 m asl on a south-facing edge of a steep alluvial terrace overlooking Ewe Creek, approximately 300 m east of HEA-265. In 1984, NPS archaeologist C. Davis mapped more than thirty surface artifacts (Griffin 1990:174; Wygall and Krasinski 2010:122–123). NPS archaeologists returned in 1989, mapping and collecting thirty-nine lithics from two clusters over an 18- by 40-m area along the terrace edge, excavating a bank cut on the edge of a blowout, and recording one paleosol with traces of charcoal. However, they did not find cultural material in a subsurface context. In 2009, NPS archaeologists noted surface lithics, including a retouched tertiary flake

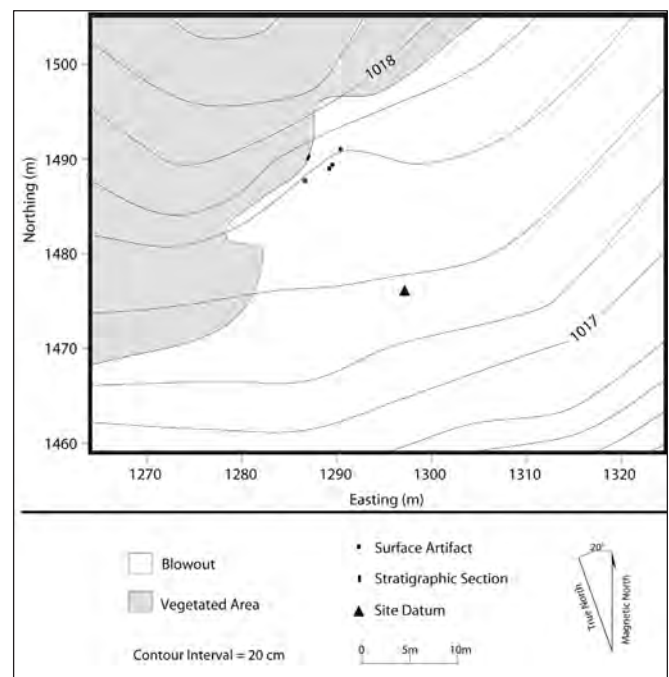


Figure 2. Topographic map of HEA-263 showing location of surface artifacts and stratigraphic section.

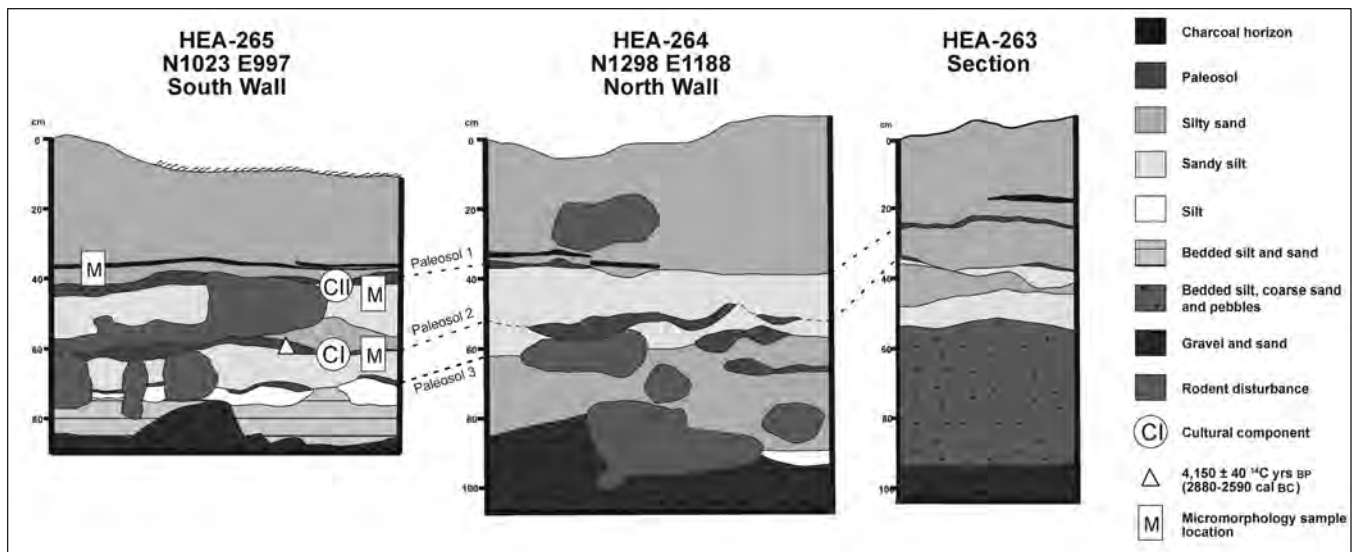


Figure 3. Stratigraphic profiles from sites in the Ewe Creek drainage.

on green to light gray chert, four black chert flakes, and some green chert shatter (Wygala and Krasinski 2010:122).

Our 2010 survey located twenty-one lithics concentrated in two loci, presumably those described by Lynch (1996). In both loci, artifacts were lying on a gravel surface in a blowout feature (Fig. 4). We placed test unit N1298 E1188 on the northern edge of the blowout, near a concentration of lithics on the deflated surface. Quaternary geology at HEA-264 consists of round to sub-round, moderately sorted alluvial gravel and sand capped with approximately 90 cm of aeolian silt and sand (Fig. 3). There is evidence of moderate solifluction and rodent disturbance. A single small flake (2 cm in diameter) was recovered at the base of the uppermost silty sand unit, near two charcoal horizons interpreted as the result of in situ burning of many fine-to-medium-sized roots. Micromorphological analysis of a corresponding stratigraphic unit at HEA-265 (Fig. 5) shows abundant, well-preserved charcoal (Fig. 5a) and what appear to be burned roots (Fig. 5b), supporting the interpretation of in situ root burn. This unit exhibits very little soil development, suggesting that it was deposited relatively recently. The sediment in this unit has abundant pore space and is mineralogically diverse but with little indication that unstable mineral grains have been altered (Fig. 5c), supporting the interpretation of limited pedogenesis. These sediments are poorly sorted (Fig. 5c) and have not traveled far from their source, likely the adjacent blowout. Given these analyses, the single small flake is likely in a secondary context and was not assigned to a cultural component.

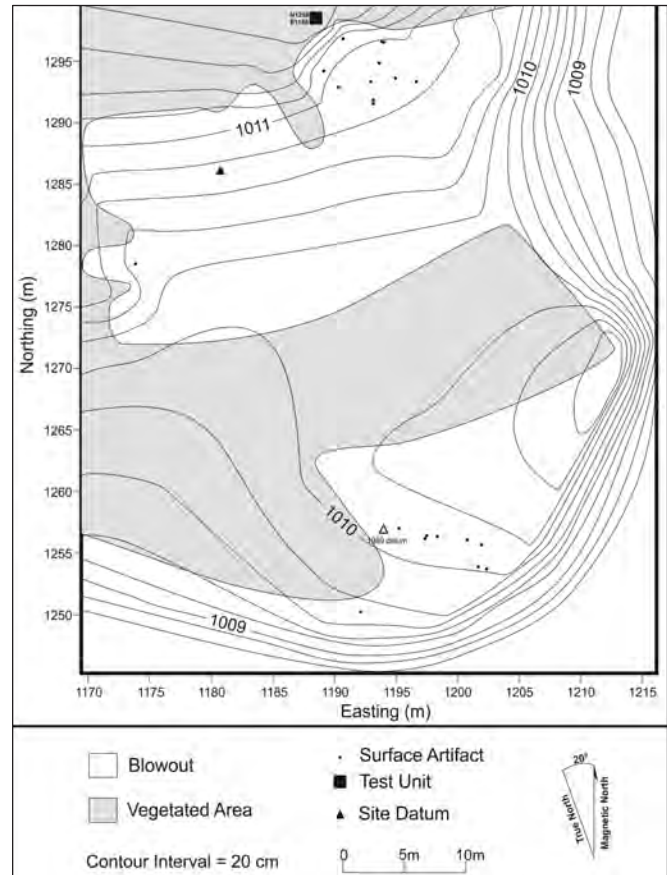


Figure 4. Topographic map of HEA-264, showing location of surface artifacts and excavation unit.

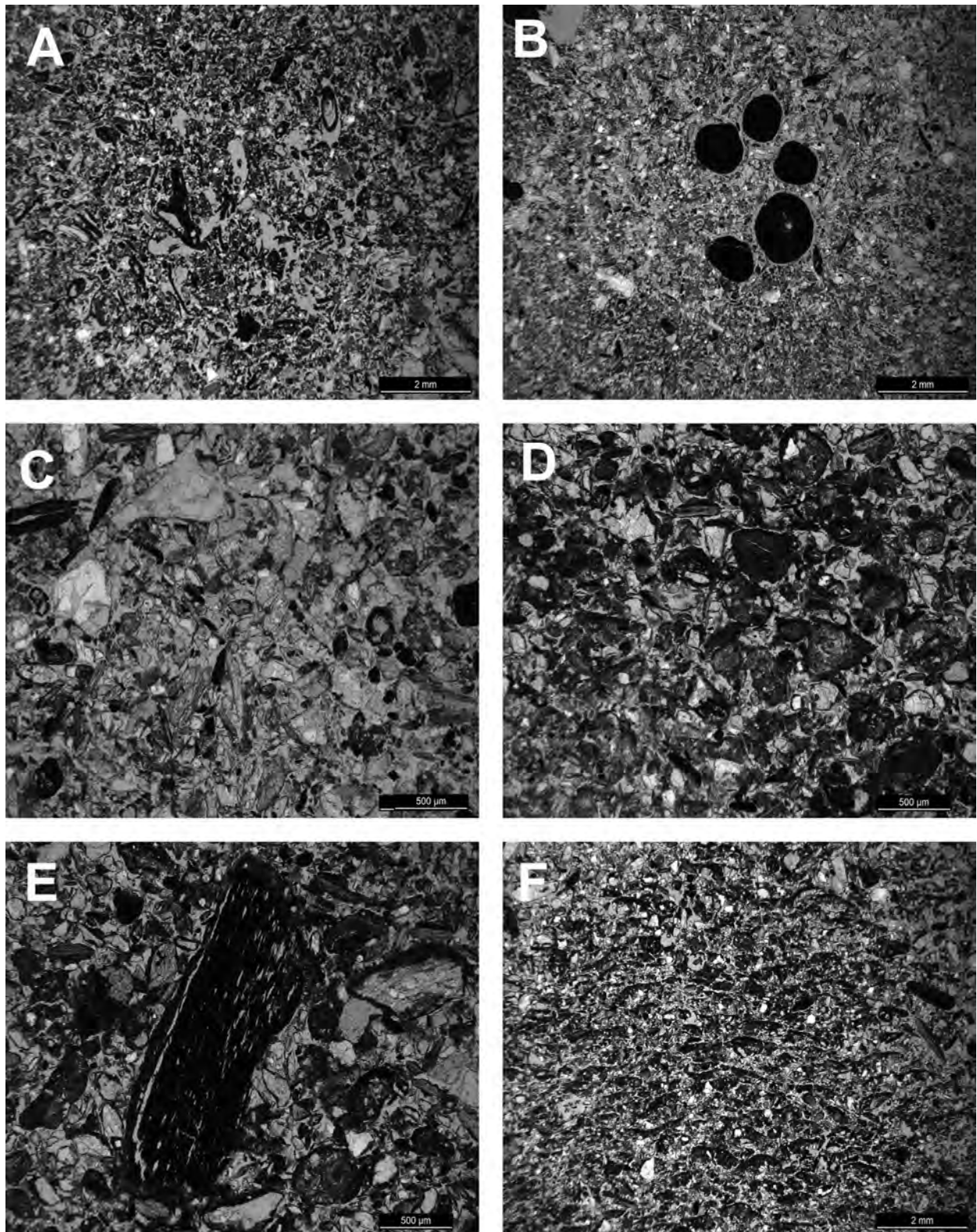


Figure 5. Photomicrographs from HEA-265. A = Charcoal derived from the *in situ* burning of a root-mat layer. Charcoal is well-preserved and abundant, Stratum 7, 1.25x. B = Burned *in situ* roots with cellular structure visible in center, Stratum 7, 1.25x. C = Poorly sorted, porous, mineralogically mature, moderately unweathered sediment, Stratum 7, 4x. D = Pedogenic iron oxides, Paleosol 1, 4x. E = Silt-capped grains, Paleosol 1, 4x. F = Cryogenic microfabric, Paleosol 2, 1.25x. All images taken using plane-polarized light.

HEA-265 SITE DESCRIPTION

HEA-265 is situated at 700 m asl on a south-facing, steep-sided alluvial terrace overlooking the confluence of Ewe Creek and Savage River to the south and west. In 1989, NPS archaeologists mapped and collected forty-five lithic artifacts dispersed over a 10- by 30-m exposure, excavated an 80 cm² bank-cut on the edge of a blowout, and recorded two paleosols, but they did not find cultural material in a subsurface context. Still, the site was considered to have a high probability of containing subsurface deposits, supported by a return trip three weeks later that recovered three newly exposed lithic artifacts on the blowout edge (Lynch 1996:118–120). In 2009, NPS archaeologists observed a few lithic artifacts on the surface, including a green chert flake fragment (Wygala and Krasinski 2010:123–124).

Our 2010 survey located twenty-two lithic artifacts lying on a gravel surface in a blowout along the southern edge of the terrace, concentrated in two locations separated by a stand of spruce trees (Fig. 6). We placed test pit N1023 E997 on the northern edge of a blowout near a large transverse scraper (Fig. 7a) that had recently eroded from the blowout edge. We placed test pit N995 E986 on the western edge of a blowout, near a concentration of surface artifacts.

Quaternary geology at HEA-265 consists of round to sub-round, moderately sorted alluvial gravel and sand capped with approximately 90 cm of aeolian silt and sand (Fig. 3). There is evidence of moderate solifluction and rodent disturbance. Five lithics from two cultural components were recovered from subsurface excavations at HEA-265. Three flakes were recovered from Component II in Paleosol 1, and two flakes were recovered from Component I in Paleosol 2. Dispersed wood charcoal collected from Paleosol 2 yielded an AMS radiocarbon date of 4150 ± 40 ¹⁴C yrs BP (BETA-284746; $\delta^{13}\text{C} = -24.0\text{‰}$), calibrated at 2σ to 2880–2590 cal BC using Calib 7.0. Micromorphological analyses conducted on samples from Paleosol 1 and 2 show that the sediments in both units are texturally immature, suggesting a nearby sediment source. Paleosol 1 shows an abundance of iron oxide formation in pore spaces (Fig. 5d) and silt-capped grains (Fig. 5e). Paleosol 2 displays incipient cryogenic fabrics (Fig. 5f), suggesting repeated freezing and thawing of the sediment over an impermeable permafrost layer (Dumanski 1964;

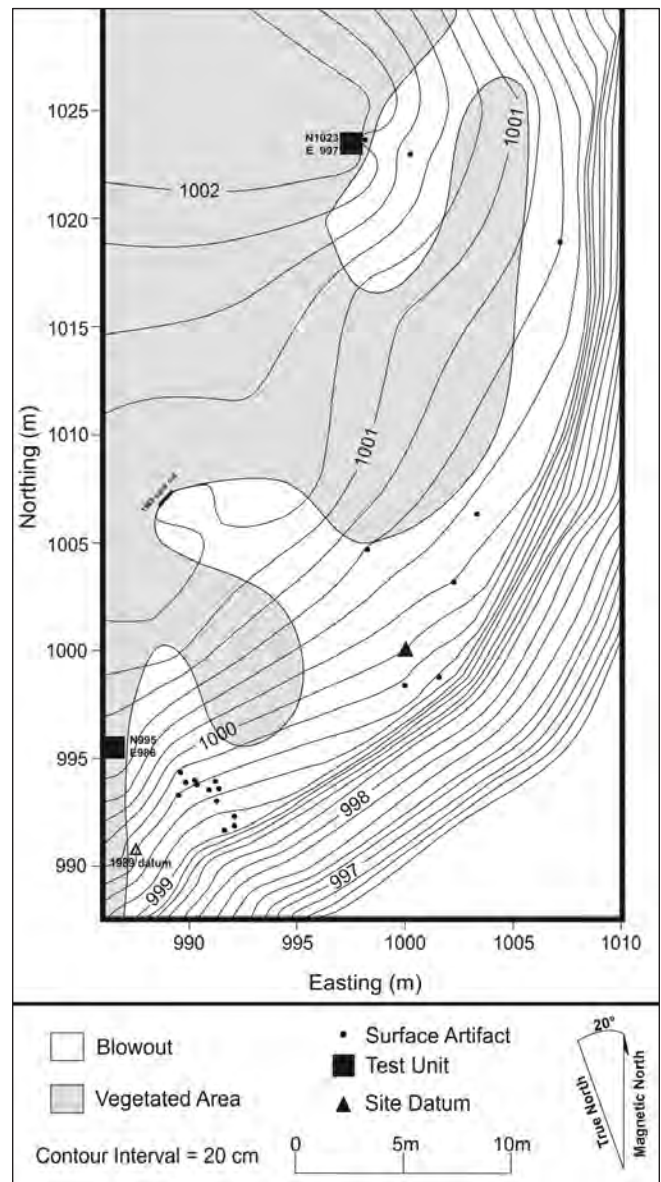


Figure 6. Topographic map of HEA-265, showing location of surface artifacts and excavation units.

Fedorova and Yarilova 1972; Romans et al. 1966; Van Vliet-Lanoë 2010). Silt capping is also indicative of cool, dry conditions, but the absence of cryogenic microfabric and the abundance of iron oxides in Paleosol 1 suggest that the soil environment during formation was somewhat warmer and wetter, with rapid water table fluctuations, in comparison to the soil environment during the formation of Paleosol 2 (Arshad and St. Arnaud, 1980; Richardson and Hole 1979; Schwertmann and Fanning 1976; Van Vliet-Lanoë 2010; Vepraskas 2004).

LITHIC LANDSCAPE

The lithic landscape within 5 km of the Ewe Creek sites consists of abundant gravels available in the unconsolidated secondary outwash and alluvial deposits that blanket the Savage River basin. This includes the Healy Creek and Lignite Creek formations of the Usibelli Group, the Nenana Gravel formation, and various Quaternary formations (Wahrhaftig 1958, 1970). Toolstone available in these formations includes rhyolite, quartzite, basalt, chert, and chalcedony, although these do not always occur in cobble- and boulder-sized packages suitable for knapping (Graf and Goebel 2009; Wahrhaftig 1958). Toolstone also occurs throughout the region in locations more than 5 km away from the Ewe Creek basin. Basalt dikes are common in the Birch Creek schist formation and basalt, rhyolite, and chert outcrop on Sugarloaf Mountain approximately 20 km east of the study area (Wahrhaftig 1958:14, 1970). Coarse-grained chert outcrops near the Teklanika West site in the nearby Teklanika basin, approximately 12 km away (Coffman 2011; West 1996:335).

To obtain a finer-grained approximation of the toolstone resources available in the study area, we conducted a toolstone survey of the upper Savage basin and the Ewe Creek drainage within 5 km of the Ewe Creek sites. Survey consisted of inspecting moraine, outwash, and alluvial gravel formations in the upper Savage basin as well as alluvial gravels on the Ewe Creek floodplain. In the upper Savage basin we recovered knappable-quality CCS chert and chalcedony pebble- and cobble-sized gravels in secondary stream-rolled gravel deposits that were generally dominated by metamorphic rock types and milky quartz. The availability of chert and chalcedony varied considerably across the landscape and can be described as locally abundant, with dark gray to grayish-black chert the most common in the basin. At many locations with knappable-quality raw material, the nodules were predominantly pebble sized, calling into question their usefulness for most lithic reduction activities. Our survey did not locate any rhyolite toolstone described in the coal-bearing formations in the Savage basin (Wahrhaftig 1958). The alluvial gravels of the Ewe Creek drainage contained knappable-quality dark gray to grayish-black chert and dark gray chalcedony, but the material we observed was consistently pebble-sized. Ewe Creek alluvial gravels are dominated by schist (70%), followed by quartz (25%),

lignite (<5%), and porphyritic and phaneritic igneous (<5%) pebbles and cobbles.

In summary, quality toolstone locally available (<5 km) to prehistoric knappers at the Ewe Creek sites include chert and chalcedony stream-rolled pebbles and cobbles available in secondary gravel deposits in the drainage. We recovered locally three varieties of chert (medium dark gray, dark gray, grayish black) and three varieties of chalcedony (medium light gray, medium gray with dark gray banding, dark gray). Geologic maps indicate that basalt, argillite, and quartzite are potentially available in the region surrounding the Ewe Creek basin; however, we did not recover these toolstone types in our survey.

LITHIC ASSEMBLAGES

Six lithic artifacts were collected at HEA-263. The 1989 investigations recovered one retouched chert blade and one chert core; 2010 investigations recovered one chert primary cortical spall with stream-rolled cortex, two chalcedony blade-like flakes, and one chalcedony retouched blade-like flake. Debitage and tools were made of chert (50%) and chalcedony (50%). In the 2010 assemblage,debitage representing blade-like flake production is most common. There is one core in the HEA-263 assemblage. Lynch (1996) reports a dark-gray chert core with three core fronts and remaining cortical surface. There are two tools in the HEA-263 assemblage. Lynch (1996) reports a dark-gray chert medial macroblade fragment with nibbling use-wear along one lateral edge. In 2010, one tool was recovered at the site. Figure 7g is a grayish-black chalcedony retouched flake made on a blade-like flake blank, with unifacial scalar retouch to a depth of 6.9 mm and retouched on seven of ten edge units.

Sixty-one lithic artifacts were collected at HEA-264 in 1989 and 2010 (Table 1). Debitage and tools are primarily made of chert (48%) and chalcedony (21%), with lesser amounts of rhyolite (16%), basalt (12%), and quartzite (3%). Corticaldebitage consists of chert ($n = 2$), chalcedony ($n = 1$), and rhyolite ($n = 2$); all of the 2010 corticaldebitage has stream-rolled cortex. In the 2010 assemblage,debitage representing flake-core reduction is most common. There are six tools in the HEA-264 assemblage. Lynch (1996:170) reports a brown chert end scraper and a dark-gray chert biface tip of unknown reduction stage. In 2010, four tools were recovered at the site. Figure 7c is the distal end of a light-gray rhyolite finished biface with

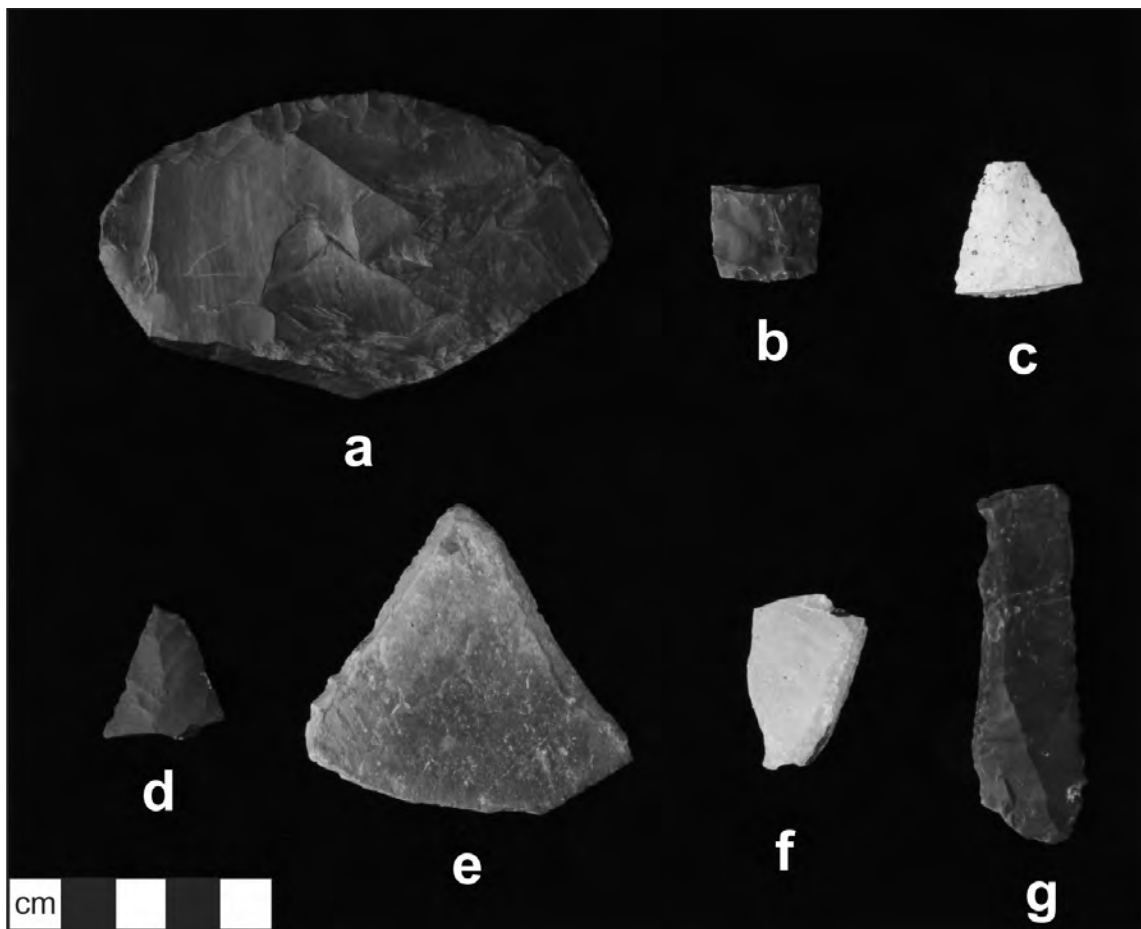


Figure 7. Tools recovered during the 2010 field study: A = transverse scraper; B = proximal hafted biface fragment; C = distal finished biface fragment; D = distal late-stage biface fragment; E = convergent scraper; F = retouched flake; G = retouched blade-like flake.

Table 1. HEA-264 artifact class by toolstone type.

Artifact Class	Toolstone Type					Total (%)
	Chalcedony	Chert	Rhyolite	Basalt	Quartzite	
Flake ¹	3	2	1	0	0	6 (9.8)
Flake fragment ¹	5	0	0	2	0	7 (11.5)
Biface thinning flake ¹	1	1	0	0	0	2 (3.3)
Retouch chip fragment ¹	1	0	0	0	0	1 (1.6)
Cortical spall fragment ¹	1	0	1	0	0	2 (3.3)
Secondary decortification flake >20 mm ²	0	2	1	0	0	3 (4.9)
Tertiary flake <20 mm ²	1	7	3	1	0	12 (19.7)
Tertiary flake >20 mm ²	0	11	3	4	2	20 (32.8)
Other debitage ²	0	2	0	0	0	2 (3.3)
Retouched flake ¹	0	1	0	0	0	1 (1.6)
Endscraper ²	0	1	0	0	0	1 (1.6)
Convergent scraper ¹	1	0	0	0	0	1 (1.6)
Biface ^{1,2}	0	2	1	0	0	3 (4.9)
Total (%)	13 (21.3)	29 (47.5)	10 (16.4)	7 (11.5)	2 (3.3)	61 (100)

1. This study.

2. Lynch 1996.

Table 2. HEA-265 artifact class by toolstone type.

Artifact Class	Toolstone Type			
	Chalcedony	Chert	Rhyolite	Total (%)
Flake ¹	4	1	0	5 (7.1)
Flake fragment ¹	9	1	0	10 (14.3)
Biface thinning flake ¹	4	0	0	4 (5.7)
Retouch chip ¹	1	0	1	2 (2.9)
Retouch chip fragment ¹	0	1	0	1 (1.4)
Cortical spall fragment ¹	0	1	0	1 (1.4)
Secondary decortification flake < 20 mm ²	0	1	0	1 (1.4)
Secondary decortification flake > 20 mm ²	0	5	0	5 (7.1)
Tertiary flake < 20 mm ²	0	14	0	14 (20.0)
Tertiary flake > 20 mm ²	0	20	0	20 (28.6)
Shatter ²	0	3	0	3 (4.3)
Transverse scraper ¹	0	1	0	1 (1.4)
Biface ^{1, 2}	0	1	1	2 (2.9)
Bifacial point fragment ²	0	1	0	1 (1.4)
Total (%)	18 (25.7)	50 (71.4)	2 (2.9)	70 (100)

1. This study.

2. Lynch 1996.

refined edge trimming and a flat cross-section. This piece has an unidentifiable blank type and a feather termination fracture. Figure 7d is the distal end of a dark-gray chert late-stage biface with some refined edge trimming and a relatively flat cross-section. This piece was made on a flake blank and has an irregular fracture pattern. Figure 7e is a medium- to dark-gray chalcedony convergent scraper made on a flake blank, with unifacial invasive scalar retouch to a depth of 4.7 mm and retouched on eight of ten edge units. Figure 7f is a medium-light-gray retouched chert flake made on a cortical spall, with unifacial noninvasive marginal nibbling retouch to a depth of 1.5 mm, and retouched on four of ten retouch units.

Seventy lithic artifacts were collected at HEA-265 in 1989 and 2010 (Table 2). Debitage and tools are primarily made of chert (71%) and chalcedony (26%) with lesser amounts of rhyolite (3%). Cortical debitage consists of chert ($n = 7$); all of the 2010 cortical debitage has stream-rolled cortex. In the 2010 assemblage, debitage representing flake-core reduction is most common. There are four tools in the HEA-265 assemblage. Lynch (1996) reports a dark-gray chert basal biface fragment of unknown production stage and a white rhyolite distal lanceolate biface fragment that she associates with

Denali Complex bifaces in central Alaska. In 2010, two tools were recovered at the site. Figure 7a is a dark-gray chert flake-backed transverse scraper made on a biface thinning flake, with bimarginal invasive scalar retouch to a depth of 10.5 mm and retouched on ten of ten edge units. Figure 7b is the proximal end of a dark-gray chert hafted biface, likely made on a flake blank. There is no edge-grinding present on this piece, but it was basally trimmed to a beveled edge, probably to facilitate hafting. This piece has a transverse-snap fracture.

DISCUSSION

There are obvious interpretive limitations with the Ewe Creek lithic assemblages: they are small in number and consist primarily of surface material. Assemblage diversity is strongly correlated with sample size (Kintigh 1984), so it is likely that the small assemblages presented here do not represent the full range of toolstone procurement and lithic technological activities that occurred in the study area. The large blowouts present at the sites suggest that wind could have affected the integrity of surface cultural deposits. Wind can have a strong sorting effect on surface assemblages (Schiffer 1983), and it

is possible that the predominance of larger flakes and tools in the surface collection represents wind-sorted materials. The presence of a single small flake in redeposited sediment at HEA-264 supports this. There is limited cultural material from buried, datable contexts, so it is difficult to interpret temporal span and changes in lithic technological activities through time. Despite these caveats, this analysis provides an initial interpretation of temporal span and lithic technological activities at the Ewe Creek sites that can be explored further with future research. The results of this analysis are preliminary; larger assemblages need to be obtained from buried, datable contexts at multiple sites in the study area to fully evaluate provisioning strategies, settlement organization, and landscape use.

TEMPORAL SPAN

There are no temporally diagnostic artifacts in the Ewe Creek assemblages. There are two lanceolate biface fragments in the HEA-265 assemblage; however, in central Alaska lanceolate points are found in assemblages spanning the terminal Pleistocene through Late Holocene (Dixon et al. 2005; Esdale 2008; Holmes 1986:158; Powers and Hoffecker 1989). We did not recover notched biface projectiles common at MH sites in central Alaska, but this may not be significant, because lanceolate points are also found at MH sites (Esdale 2008).

There are at least two buried components at HEA-265, the oldest of which dates to the MH, ~2700 cal BC. Stratigraphic analysis suggests that all three of the Ewe Creek sites have a similar depositional history; therefore, we assume that all of the cultural material represents MH or younger occupation of the Ewe Creek drainage. The Dry Creek site, in the adjacent Nenana Valley (Fig. 1), has a similar upper stratigraphic sequence, also containing two prominent upper paleosols. Paleosol 4a produced three radiocarbon dates spanning 3646–1533 cal BC and represents a period of relative warmth during the NP. The overlying paleosol 4b produced three radiocarbon dates postdating ~AD 700 and represents paleosol development during the MWP. Paleosol 4b is capped by a sand horizon representing recent, rapid sediment deposition correlated with the LIA (Bigelow 1991; Powers and Hoffecker 1989; Thorson and Hamilton 1977).

Paleosol 4a at the Dry Creek site contains cultural Component IV, consisting of ~2300 lithics and bone,

most notably side-notched bifacial projectile points attributed to the Northern Archaic period (Hoffecker et al. 1996). Dry Creek Component IV overlaps in time with Component I at HEA-265 and probably represents the same period of NP landform stability, soil development, and human occupation. Given the stratigraphic similarities between Dry Creek and the Ewe Creek sites, undated HEA-265 Component II probably correlates with Dry Creek Paleosol 4b and the MWP and represents occupation of the site within the past 1,300 years.

Micromorphological analysis suggests cooler, drier conditions associated with the Component I occupation and warmer, wetter conditions associated with the Component II occupation, generally supporting the correlation of Component I with the NP and Component II with the MWP. This preliminary information offers insight into the environmental setting for prehistoric activity in the study area and provides important environmental context for understanding changes in hunter-gatherers' landscape use. Further testing by future researchers will allow for a more complete evaluation of the depositional history of the Ewe Creek drainage and may reveal undiscovered sites on the landform or additional buried components at HEA-263, HEA-264, and HEA-265.

TOOLSTONE PROCUREMENT AND TECHNOLOGICAL ACTIVITIES

Toolstone procurement patterns were reconstructed by comparing toolstone abundance and quality in the study area to toolstone type and presence or absence of cortex in the lithic assemblages. There are five toolstone types represented in the Ewe Creek assemblages: chert, chalcedony, rhyolite, basalt, and quartzite; however, our toolstone survey only recovered chert and chalcedony. In the 2010 Ewe Creek assemblages, there are eleven varieties of chalcedony and five varieties of chert. Of these sixteen CCS varieties, six were found in secondary stream-rolled gravel contexts during our toolstone survey. Twenty-five of the fifty-one (49%) lithics from the 2010 assemblages were made on CCS toolstone recovered in our toolstone survey; however, the great variability in CCS toolstone found naturally occurring in the study area suggests that most of the CCS in the assemblages was procured locally. In the 1989 and 2010 assemblages, there are fourteen lithics with cortex remaining. Of these, twelve (86%) are CCS and two (14%) are rhyolite. All of the cortical sur-

faces represented in the 2010 assemblages represent secondary stream-rolled cortex. There is no information on the type of cortex for the 1989 assemblages.

These data suggest that during the MH and LH, toolstone procurement in the Ewe Creek drainage focused primarily on procuring locally available chert and chalcedony from secondary stream-rolled gravel beds. Rhyolite cortical debitage suggests that rhyolite toolstone was locally available, too; however, we did not recover this toolstone type in our survey. There is no evidence in the 2010 assemblages of long-distance transport of toolstone to the Ewe Creek drainage; all of the toolstone represented in the assemblages probably could have been procured within approximately 20 km of the Ewe Creek drainage.

The small assemblages recovered from the study area suggest that core technology focused on informal CCS flake core reduction, with some formal CCS bifacial core reduction. Tool manufacture focused on production of formal CCS and rhyolite bifacial tools, with some informal CCS tool production. Tool maintenance focused on resharping of CCS and rhyolite bifaces, and CCS tools were often invasively and intensively retouched. Lanceolate bifaces appear to be preferentially used in hunting toolkits for the occupants of the Ewe Creek drainage, suggesting a correlation between upland hunting and the use of bifacial projectile technology. However, in 2010 NPS archaeologists observed microblades at HEA-263 (Wygala and Krasinski 2010), suggesting that inset-microblade projectiles also played a role in MH and LH upland subsistence activities. Further research is needed to explore the connection between landscape use, subsistence, and lithic technology in interior Alaska, and the Ewe Creek sites could play an important role in this research (Wygala and Krasinski 2010).

SIGNIFICANCE

It was not possible to fully assess the three Ewe Creek sites given our limited survey and testing research design and DENA management strategies. Even with limited work, the data presented here indicate that the Ewe Creek drainage has intact, datable stratigraphic contexts and lithic debitage and tools. Cultural material has been observed and collected on each successive survey of the drainage, suggesting that buried cultural material continues to erode out of intact sediments on the terrace. It is possible that test excavations at HEA-265 and HEA-264 recovered

minimal in situ cultural material because the majority of buried deposits have been exposed by deflation, but it is likely that there are intact deposits still buried elsewhere along the terrace edge and that systematic testing of the entire landform (as recommended in Wygala and Krasinski 2010) will discover additional sites.

This study necessarily focuses on the MH and LH lithic technological record recovered from the Ewe Creek study area, because in our limited investigation we only recovered lithic materials. Ethnographic accounts of Tanana Athabascans with traditional ties to the study area reveal a more nuanced description of the technological, economic, settlement, and social patterns of people living on this landscape (McKenna 1981). It is possible that with additional research, a richer record of prehistoric occupation of the study area will emerge, adding to our knowledge of the breadth of prehistoric lifeways.

The Ewe Creek sites can potentially make a valuable contribution to our understanding of changes in MH and LH technology, subsistence, and settlement systems in the region. The MH occupation of the Ewe Creek study area could be related to the Northern Archaic occupation at the Dry Creek site and may provide a better understanding of Northern Archaic upland settlement organization and the role of site function in conditioning lithic technology, especially notched versus lanceolate biface technology. The LH occupation at Ewe Creek may provide important information about the role of lithics in a technological system dominated by organic and copper technology (Potter 2008b). Certainly these sites deserve more attention, especially because of their ongoing destruction by high winds.

CONCLUSIONS

This analysis offers preliminary conclusions about hunter-gatherer land use in the upland Ewe Creek drainage, DENA:

- The lithic assemblages recovered along Ewe Creek likely represent Middle to Late Holocene occupations of the upland central Alaska Range.
- Micromorphological analyses indicate cooler, drier conditions associated with the MH occupation and warmer, wetter conditions associated with the LH occupation, suggesting a correlation of Component I with the Neoglacial Period and Component II with the Medieval Warming Period.

- Toolstone procurement in the Ewe Creek drainage during the MH and LH focused on local CCS, available from gravel outwash sources < 5 km away.
- Lithic technological activities focused on informal CCS flake core reduction and manufacture and maintenance of CCS and rhyolite bifacial tools. CCS tools were often invasively and intensively retouched. Lanceolate bifaces appear to be preferentially used in hunting toolkits in the Ewe Creek drainage, supporting previous research that found a correlation between upland hunting and use of bifacial projectile technology. However, inset microblade projectile technology appears to have also played a role in upland subsistence activities.
- Additional research in the Ewe Creek study area should focus on expanded testing to recover lithic assemblages from buried, datable contexts.

ACKNOWLEDGEMENTS

The Murie Science and Learning Center Discover Denali Research Fellowship and Center for the Study of the First Americans Roy J. Shlemon Student Field Geoarchaeology Award funded this research. This project would not have been possible without the hard work of the 2010 Texas A&M field crew: Tom Jennings, Heather Smith, and Angela Gore. Joshua Lynch assisted with the creation of figures used in this publication. A special thank you to Mike Waters for visiting the study area and assisting with geomorphic and geologic interpretations. This manuscript was greatly enhanced by anonymous reviewer comments and guidance from *AJA* editors.

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RESEARCH NOTES

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This edition of Research Notes covers a wide area, from Nunavik, Canada, to Anchorage, Alaska. Although this is the *Alaska Journal of Anthropology*, the questions we are studying are often circumpolar in nature, so contributions from other areas are welcome. They may suggest new approaches or alert Alaska researchers to existing comparative data, which can only benefit our results.

NUNAVIK, CANADA

ARCHAEOLOGICAL FIELDWORK IN NUNAVIK 2014

Submitted by Pierre M. Desrosiers, Avataq Cultural Institute

This summer's archaeological work in Nunavik focused on two areas. Fifty-six years after William Taylor, Elsa Cencig and Tommy Weetaluktuk (archaeologists at Avataq Cultural Institute) went back on Pujjunaq (Mansel Island), a project conducted in collaboration with members of the community of Akulivik. During three weeks of survey, they recorded over 80 new archaeological sites from Pre-Dorset to Historic, covering about one-third of the eastern coast of the island. Among the most important discoveries was a substantial Pre-Dorset campsite containing over 150 tent rings. The team also observed severe erosion on the archaeological sites located at nearby Amulet Creek, particularly two Dorset camp sites, JIGu-1 and JIGu-3, which appeared otherwise amazingly well preserved (Fig. 1). Many aspects of the island remain to be documented, such as the Hudson Bay Company trading post at the northern tip and a shipwreck located along the western coast. The work on Pujjunaq was financed by Makivik Corporation and also was part of the NUNATOP project, which documented place names in Nunavik.

The second area of research was in the region of Inukjuak, on the central eastern coast of Hudson Bay. This work consisted of salvage excavation and archaeological survey related to community expansion. The work

was conducted by Pierre M. Desrosiers (Avataq Cultural Institute) and Tommy Weetaluktuk and included local students who had participated in a field school with Avataq. Krista Zawadski also briefly participated in the salvage excavation. She is a student from Rankin Inlet who was conducting research in Inukjuak, documenting the way people in different areas of the Arctic are managing their cultural resources. Despite the fact that the Inukjuak region had been extensively surveyed before, new sites are recorded almost every time that new roads or facilities are built. This summer, a total of nineteen sites from Dorset to the Historic Inuit period were recorded. One of the sites that will be protected is the IcGm-78 site; this site includes the ninety-year-old grave of Allakariallak, who was the actor who played the main character in Robert Flaherty's 1922 movie *Nanook of the North*. Inukjuak fieldwork was financed by the Kativik Regional Government and by the Pituvik Landholding Corporation of Inukjuak.

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Figure 1. Dorset dwelling on Mansel Island, at JIGu-3 site beside Amulet Creek, summer 2014. Originally recorded by Taylor (1958).

YUKON, CANADA

DISCOVERY OF MID-THIRD-MILLENNIUM BP WOOD AT OGILVIE PASS IN THE ST. ELIAS MOUNTAINS OF CANADA

Submitted by Gerald Holdsworth, Arctic Institute of North America, University of Calgary

Terri Lacourse, Department of Biology, University of Victoria

On 11 May 2005, a site was being prepared for an automatic weather station (AWS) on the end of a rock ridge. This ridge descended from a mountain summit on the west side of Ogilvie Glacier, which descends 1,300 m in 12 km to merge into Logan Glacier flowing west along the north side of Mount Logan. The west end of the West Ridge of Mt. Logan terminates on the other side of Ogilvie Glacier opposite the AWS site (GPS coordinates 60° 37' 07", 140° 47' 00"; 2,930 m asl). To the south, there is a dropoff into Quintino Sella Glacier, which flows southwest into Alaska. Thus the ridge and the surrounding snow-covered glacier ice form a pass between two snow sheds. About

5 m west of the AWS site, located in a slight depression in the ridge, two stick-sized pieces of wood were seen protruding 10 to 12 cm through a patch of gravel exposed after some large boulders had been removed for stabilizing the AWS tripod. On a later visit a third stick 1.32 m long was discovered partly protruding from a surface layer of clear ice. All sticks were lying flat and parallel to the long axis of the ridge within approximately a 1 m² area.

The site has a mean annual temperature of 13 °C with severe winter winds and there are no signs of moss or lichens on any of the rocks, which are sedimentary-metamorphic and highly fractured. There is no possibility that the wood ever grew there or was transported there by ice. Furthermore the thick end of the 1.32 m stick was splintered, as typically results from screwing a branch off a tree by hand or, in this case, likely screwing a stem out of the ground. The evidence strongly suggested the wood was placed there by human hands. On 10 June 2007, after clearing the site of snow and ice, much more than existed in 2005, a sample of the loosened stick (then protected by

rocks) was obtained by the author for dating purposes. A ^{14}C AMS radiocarbon age of 2430 ± 20 yrs BP was obtained in 2010 (ULA-1912/UCIAMS-84618). This places it in the mid-Neo-Glacial interval of the Holocene.

Terri Lacourse identified the wood as the genus *Salix*. No species identification was possible, but it is likely to be (erect) barren ground willow or a similar species that grows today in the vicinity of sheltered glacier termini. The curved nature of the stick and its length is suggestive of this. Bundles of sticks of this size may have been intended for use as “mattresses,” firewood, or trail markers as used on long journeys over ice. The practice of taking firewood on long journeys is described by de Laguna (1972).

The question of the provenance of the wood is of some interest, as is any climatic signal or association. To help answer the first question, samples were collected from modern willows near the end of the Kaskawuksh Glacier, the margin of the Malaspina Glacier, and the terminus of the Logan Glacier for analysis of $\delta^{15}\text{N}$ and $\delta^{34}\text{S}$. It should thus be possible to identify whether the ancient wood came from coastal areas or from inland sites. These analyses have not yet been done. The climatic “connection” may be facilitated by studying sequences of ionic chemistry and stable isotope data in an ice core from Mount Logan (Fisher et al. 2008) and in other paleoclimatic time series that may be available from Alaska or Yukon. There are three possible approaches to the Ogilvie Pass: from the south or coastal route, from the Kaskawulsh and upper Logan Glacier, and from the terminus of the Logan Glacier via the upper Chitina River valley. Any route from the south seems highly unlikely due to topography. If people ever managed to come this far, it would seem that the very presence of abandoned wood signifies a defeat in completing the traverse over ice, which would have involved at least another 70 km of virtually foodless icy terrain just to get to the source of the Chitina River. A route via the Kaskawulsh Glacier also seems unlikely, as any group coming from that direction would logically be heading for the Chitina River valley. Less precarious access to the coast via the Alsek River would likely have been known to any group traversing the ice fields from the Shakwak Valley. The third possibility—from the terminus of Logan Glacier via the upper Chitina River valley—is the most logical one; it would signify a new exploration involving an attempt to get to the coast (Yakutat) by a shorter route than those to the west as known from historical times (Cruikshank 2007:33–36, de Laguna 1972:231–

232, Swanton 1909:347–368). This route to Ogilvie Pass is the same route as that taken by the 1925 expedition that first climbed Mt. Logan (Foster and MacCarthy 1925). An “Observation Camp” located on Ogilvie Pass (an unofficial name) is shown on the inside back cover of this publication (see also facing p. 48). Reference is also made to “willow markers” (Foster and MacCarthy 1925:61), which were planted into the snow-covered glacier surfaces to mark the trail in low visibility conditions.

Two-and-a-half millennia ago, ancient mountaineers might have expected to see the ocean on attaining the pass, just as Israel Russell (1892:199) anticipated seeing forests and rivers upon attaining what is now called “Russell Col” on the northeast flanks of Mount St. Elias in 1891: “I expected to see a comparatively low, wooded country stretching away to the north, with lakes and rivers...but I was entirely mistaken.” What he saw was “a vast snow-covered region, limitless in its expanse, through which hundreds, and perhaps thousands, of barren mountain peaks projected.”

Certain species of birds use Ogilvie Pass to access interior Alaska from the coast. (On 29 May 2006, a V-formation of white birds—possibly tundra swans—going north over Ogilvie Pass was observed from Quintino Sella Glacier.) Any human explorers on the Logan Glacier seeing this would tend to think that the coastal areas were within their exploration range.

The first author thanks Julie Cruikshank for help with researching the anthropological literature.

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ARCTIC ALASKA

WELL-PRESERVED WOOD BOWS DISCOVERED IN THE BROOKS RANGE

Submitted by Adam Freeburg, National Park Service
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Jillian Richie, National Park Service

In July 2014, National Park Service archaeologists discovered two bows and multiple fragments of culturally modified wood in a high pass immediately outside the boundary of Gates of the Arctic National Park. The site, AMR-00215, is located in the Schwatka Mountains, the highest and most rugged portion of northwestern Alaska, on land owned by the State of Alaska. The artifacts were

collected under a permit from the State of Alaska and accessioned at the University of Alaska Museum of the North (acc. no. UA 2014-081).

The bows were located at the base of a bedrock outcrop in Shishakshinovik Pass, which lies at an elevation of 3,050 feet (930 m) and separates the watersheds of the Noatak and Kobuk Rivers. The site vicinity slopes gently to an unnamed tributary of the Kogoluktuk River, which empties in the Kobuk River near the village of Kobuk (Fig. 2). The site affords excellent views downslope (to the south) of the tributary and the valley walls. The rock outcrop at the site is a conspicuous—and the only—natural shelter at the valley head. No permanent snowfields or ice patches are present today, nor seem to have been present in the recent past as indicated by well-developed lichen cover and the high degree of weathering seen on the rocky ground surface. The outcrop provides excellent protection to the north, which may be part of the reason for the remarkable preservation of the wood at this site. Additional characteristics of the Arctic alpine setting, such as low soil accumulation and cold temperatures for much of the year, also likely play a role.

An overland route across Shishakshinovik Pass (*Sisiup Sisiñgʷik* [Burch 2005:286]) was in use by local Iñupiat through the late nineteenth and early twentieth centuries. A travel route through this pass was reported to early

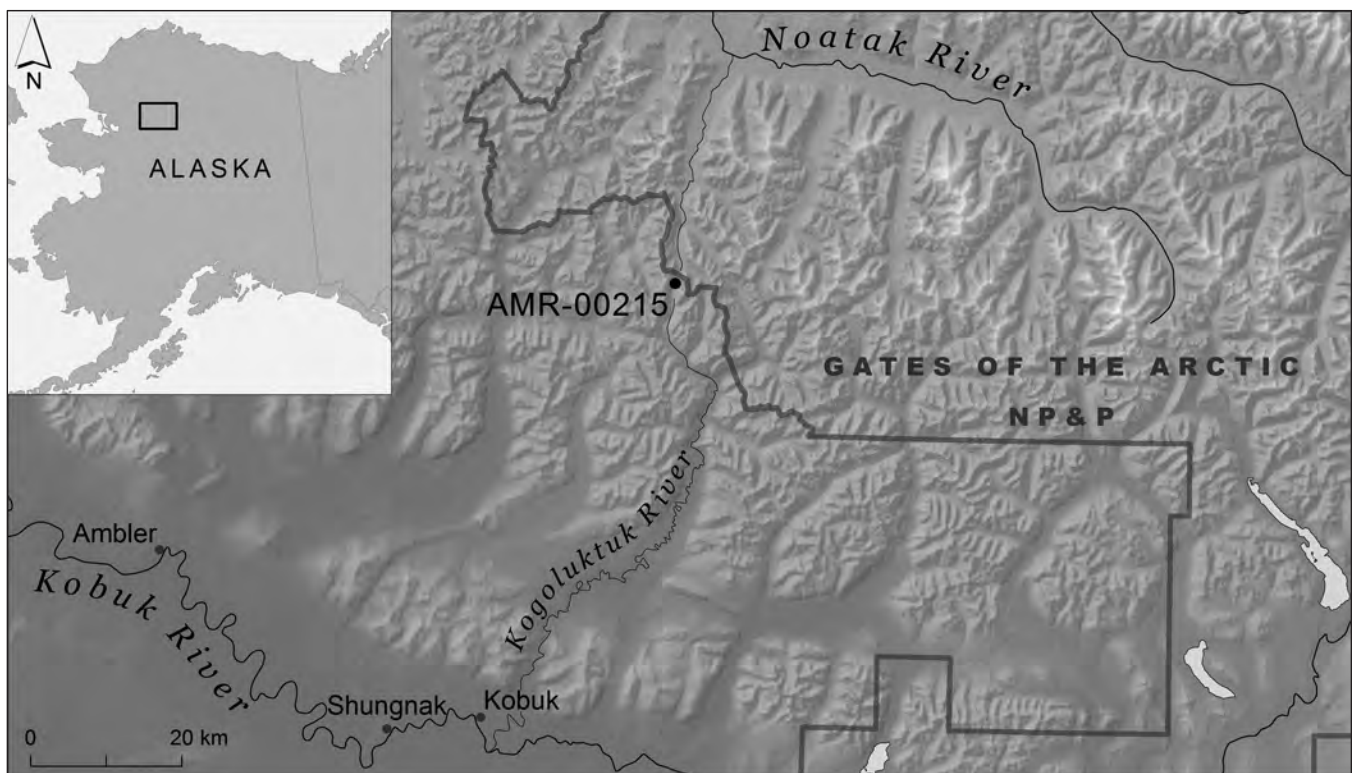


Figure 2. Site location and travel route between the Kobuk and Noatak drainages described by Burch (2005).

European explorers as an “easy” route between the two drainages (Smith 1913:32). While it was passable during winter, avalanche danger was high, and primary use was for summer travel (Burch 2005), although rapids on the Kogoluktuk River are noted to have complicated passage (Mendenhall 1902:26). Foote (1966, cited in Burch 2005) documents a Nuataaġmiut raiding trip through this pass that ended disastrously at the falls in a lower canyon.

The two bows were found touching one another on the surface of a field of boulders and cobbles at the base of the rock outcrop (Fig. 3). The associated wooden fragments were all within a five-meter radius. The bows appear to be very similar in design and manufacture, matching closely, but not exactly, the “Western” type bow described by Murdoch (1885). Both bows have flat bellies and backs that taper toward the nock ends, though not as tapered as Murdoch’s “Southern” type.

With rectangular cross sections but no evidence of recurved ears (siyahs), neither bow matches Hamilton’s (1970) Eskimo bow types. All the limbs’ edges appear to have been squared, though they are somewhat rounded from weathering. Each grip is narrower in width and thicker in depth than its adjoining limbs and is D-shaped in cross section. Only one end of one bow appears to be intact (Fig. 4). This end is squared off and has no indication of a string nock, and no string nocks were visible in any of the other collected fragments. No longitudinal groove for twisted sinew backing is evident on either bow. These characteristics may indicate that the bows were not complete but are instead staves (bow blanks) that had yet to be completed. However, not all bows ultimately received backing (Burch 2005).

The wood has been identified as a gymnosperm—probably spruce, but possibly tamarack. Sections of the artifacts that were exposed to the elements exhibit heavy lichen growth and weathering. A sample from each bow and from the largest wood fragment was submitted to the Center for Applied Isotope Studies at the University of Georgia for radiocarbon dating using the AMS method. Radiocarbon ages of each specimen have multiple intercepts on



Figure 3. Bows in situ, Shishakshinovik Pass; trowel points north. Photo by A. Neffe.



Figure 4. Possible intact end on right side of bow image (acc. no. UA 2014-081-0004). Photo by A. Freeburg.

Table 1. Radiocarbon dating results using the AMS method. All dates derived from wood samples. Radiocarbon age uses a half-life of 5568 years, corrected for isotope fractionation. Calibrated with OxCal 4.2 (Bronk Ramsey 2009) using IntCal 13 (Reimer et al. 2013); multiple intercepts are listed with corresponding probabilities.

Specimen	Lab Number	$\delta^{13}\text{C}$ (‰)	^{14}C Age (years BP; 1σ)	2σ Calibration
UA2014-081-001	UGa-18838	-23.8	110 ± 20 RCYBP	AD 1685–1733 ($p = .274$) AD 1807–1896 ($p = .554$) AD 1903–1928 ($p = .125$)
UA2014-081-004	UGa-18839	-24.3	80 ± 20 RCYBP	AD 1694–1728 ($p = .248$) AD 1812–1919 ($p = .706$)
UA2014-081-005	UGa-18840	-24.8	60 ± 20 RCYBP	AD 1696–1725 ($p = .186$) AD 1814–1836 ($p = .130$) AD 1845–1851 ($p = .012$) AD 1876–1919 ($p = .626$)

the calibration curve. The highest probability age range for each sample falls within the late nineteenth or early twentieth century AD, though possible ages are as early as the seventeenth century AD (Table 1). The largest wood fragment has a 3-cm scalloped cut on an edge that appears to have been made with a metal blade, providing another clue to its age. A bow discovered by National Park Service archaeologists in the Nigu River valley, approximately 80 km to the northeast of Shishakshinovik Pass, also most probably dates to the nineteenth or early twentieth century AD (Ciancibelli 2010).

Archaeological surveys conducted in Gates of the Arctic National Park during the 2014 field season focused on mountain passes connecting the upper reaches of the Noatak and Kobuk River valleys, particularly those spanning documented historic travel routes. Archaeological evidence for human activity in these areas of known use is rare. This suggests, perhaps unsurprisingly, that the nature of human activity in mountain passes was of a brief and temporary nature—travelling through, rather than remaining in place for any duration. Whether the bows found at Shishakshinovik Pass may have been cached or lost—the precise mechanism for their deposition will never be known—they represent a rare glimpse of an otherwise archaeologically invisible phenomenon.

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INTERIOR ALASKA

RECENT ARCHAEOLOGICAL SURVEY AND NEW NON-CULTURAL RADIOCARBON DATES FROM THE TOKLAT RIVER, CENTRAL ALASKA

Submitted by Jake Adams, Washington State University; jsadams@wsu.edu

Nicole Kamp, University of Graz

Sam Coffman, University of Alaska Museum of the North

Recent archaeological survey along the Toklat River in Denali National Park and Preserve identified two new historic archaeological sites and shovel-tested twenty-seven high-probability localities in an attempt to locate prehistoric archaeological sites. The Toklat drainage lies to the west of the Teklanika River valley. The main river is split into two tributaries and joins to form the Toklat River at

Divide Mountain (Sheldon 1930). Minimal archaeological survey has been conducted along the park road and to the mountain area overlooking the Toklat Ranger Station (Davis n.d.); however, the main drainage itself has never been surveyed. Hoffecker (1978) visited the valley as part of the North Alaska Range Early Man Project to determine the potential for “early sites.” He concluded that the Toklat River valley “does possess some potential for Pleistocene sites.” Beyond this, there has not been any additional work conducted in the area.

This project was designed to perform pedestrian survey and shovel tests at previously identified/high probability locations (Fig. 5). Our survey consisted of a four-person survey team that backpacked from the Toklat Ranger Station, along the Denali Park road, to near the confluence of Stony Creek and the West Fork of the Toklat River. Seven days were spent in the field and twenty-seven different localities were tested. These test localities

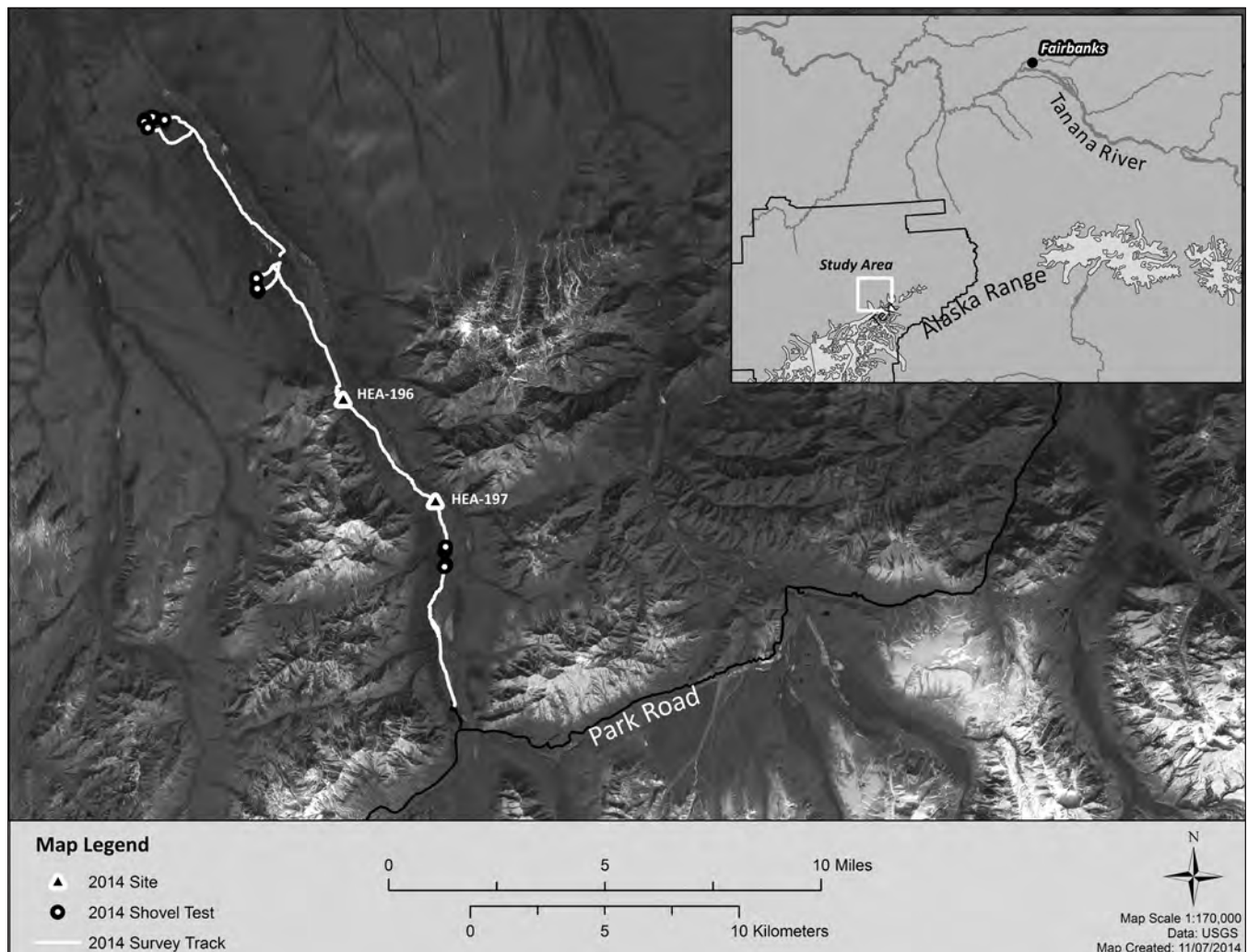


Figure 5. Locations of charcoal samples, shovel tests, and recently discovered archaeological sites.

were based on GIS data and aerial photographs, taking viewshed, proximity to water, and elevation into account. To test the landforms shovel tests (50 cm x 50 cm) were placed arbitrarily to explore the archaeological potential. Over half of our subsurface shovel tests terminated at about 40 cm below the surface due to permafrost. The remaining shovel tests all terminated at glacial till.

Results of the survey were mixed. Two new historic sites were discovered: the Steep Bluff (MMK-196) and River Side Historic (MMK-197) sites. The Steep Bluff site is a historic surface scatter of large items likely associated with mining activities on a gravel spit along the Toklat River. Artifacts at the site included a creosote wooden plank with nails, a corrugated metal pipe, a small wooden plank, a large open-ended drum, a second wooden plank with nails that have rippled ends and a “P” mark on them, and lastly a small plank with a threaded spike with the markings “Jall.” This site is located approximately 8 miles north of the Toklat River Bridge on the west side of the river, along the base of large bluffs

that eventually are directly cut into by the river close to where the site is located. The River Side site is a small historic scatter that included a small wooden plank with nails and a threaded spike with the marking “Jall.” The site is probably associated with the construction of the Toklat Bridge.

No prehistoric archaeological sites were located. However we were able to obtain charcoal samples and subsequent radiocarbon dates from two of our survey locations. The first of these samples came from test locality 19, located along the Toklat River. This locality consisted of a bedrock outcrop approximately 3 m in height, overlain with loess and sand deposits. Shovel testing of the landform yielded no cultural material; however, our shovel test did uncover a layer of tephra. The tephra is situated approximately 72 cm below the surface (Fig. 6). A charcoal sample (Table 2) was collected above the tephra at 70 cm below the surface and yielded a radiocarbon date of 3070 ± 25 (3268–3339 cal BP at 1σ) and serves as an upper bracketing date for the tephra. No charcoal samples were

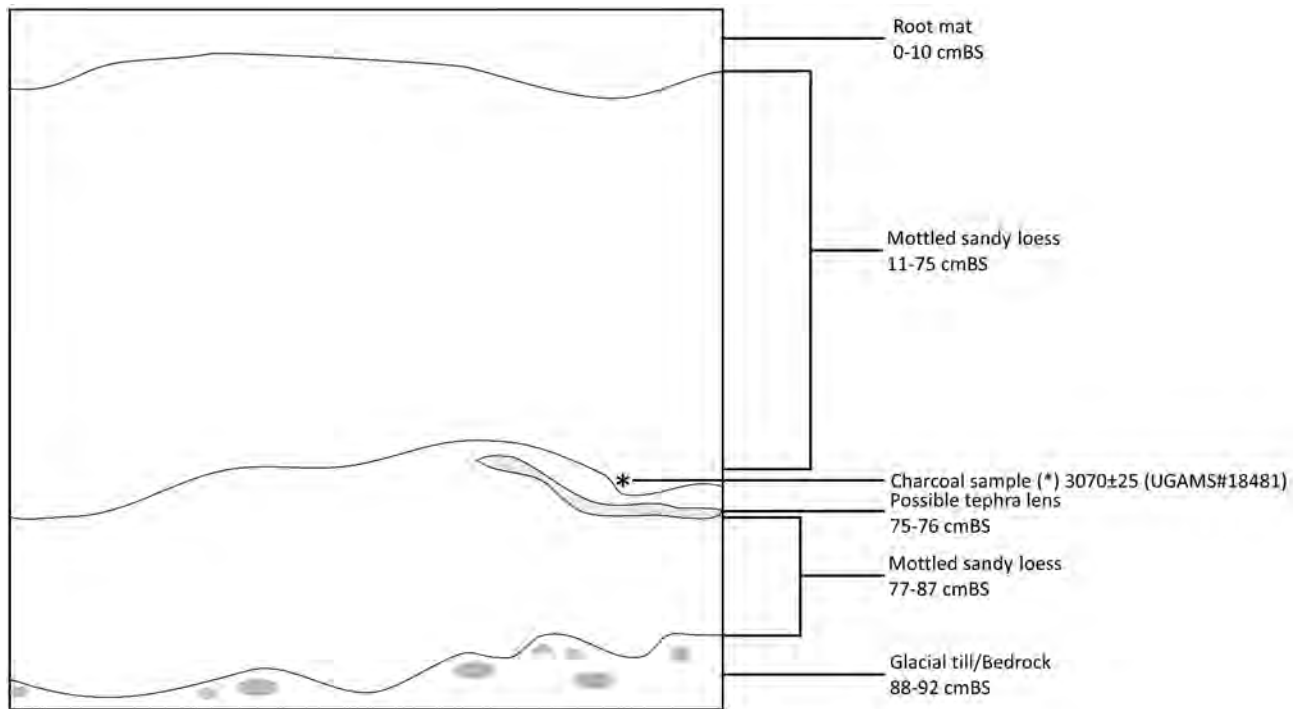


Figure 6. Stratigraphic profile from test locality 19.

Table 2. Radiocarbon dating results. Radiocarbon age using a half-life of 5,568 years, corrected for isotope fractionation. Calibrated with Calib 7.0.2 (Stuiver and Reimer 1993); multiple intercepts listed with corresponding probabilities.

Specimen	Lab Number	Material	$\delta^{13}\text{C}$ (‰)	^{14}C Age (years BP)	2σ Calibration
ST-19-14	UGAMS-18481	charcoal	-26.5	3070 ± 25 RCYBP	3214–3358 BP ($p = 1.0$)
ST-1114 FS1	UGAMS-18482	charcoal	-25.3	570 ± 25 RCYBP	531–564 BP ($p = 0.396$) 589–641 BP ($p = 0.603$)

located under the tephra. This upper date suggests this tephra may be related to the Hayes deposits (~3500–3800 cal BP) (Dilley 1988; Riehle et al. 1990). Microprobe analysis of the tephra samples are planned in the future.

The second radiocarbon date was from test locality 11, situated on a glacial feature overlooking a kettle pond. This charcoal sample was derived from an intact paleosol and was collected 40 cm below the surface (Fig. 7). The sample produced a date of 570 ± 25 (551–628 cal BP at 1σ). Though no cultural remains were identified at this location, the stratigraphic position of this sample and the relatively young date would indicate that there was rapid aeolian deposition in the area during this time. Environmental conditions, such as permafrost, were limiting factors in identifying prehistoric archaeological sites. The potential for prehistoric sites still exists for the area; however, our findings on this survey indicate more historic use of the valley.

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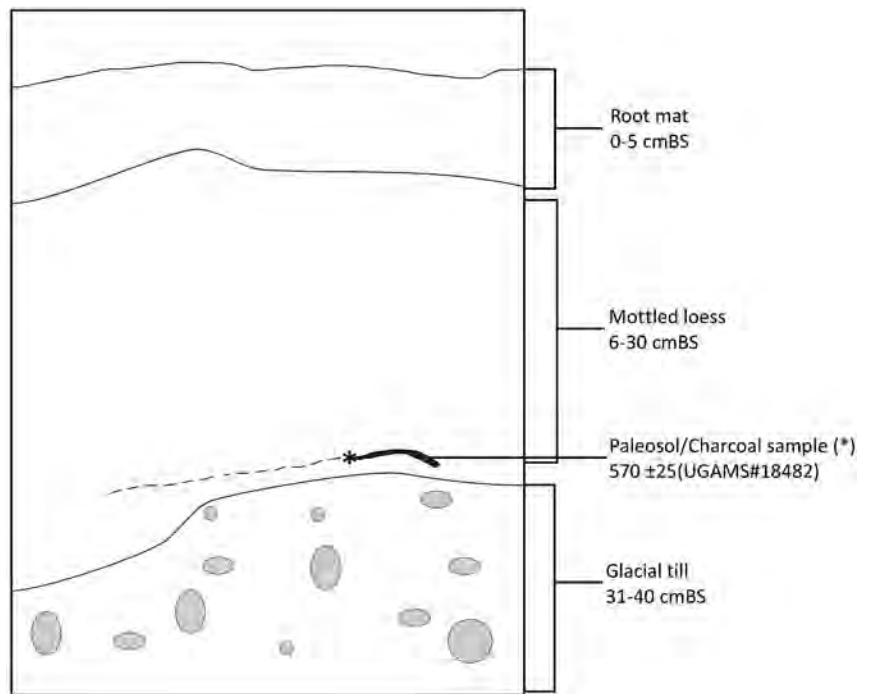


Figure 7. Stratigraphic profile of test locality 11.

SOUTHCENTRAL ALASKA

THE COMPLETION OF THE *YES WE CAN* EXHIBIT

Submitted by Igor Pasternak, University of Alaska Fairbanks

Sveta Yamin-Pasternak, University of Alaska Fairbanks

During October 2014, the International Gallery of Contemporary Art in Anchorage, Alaska, hosted the exhibit *Yes We Can* by Igor Pasternak, Valentina Kilimnik, Sveta Yamin-Pasternak, and Ryan Tinsley. The effort is an artist-led collaboration that explores home pickling from an aesthetic perspective. The show developed in the course of an ongoing ethnographic study that focuses on social and cultural adaptations of settlers from Ukraine, Russia, and Belarus living around Delta Junction, Alaska. Residents of this emerging community usually refer to themselves as “Delta Russians.” Experienced agriculturalists from rural areas and temperate climates, they swiftly learn about cultivating vegetables in northern latitudes. They make vast winter reserves of their foraging and farming products.

During our field research we found ourselves becoming more and more enthused by the fulfillment that Delta Russians draw from various food production activities. Many of our visits involved descending into a home’s

storage space—a cellar or a basement—from which our hosts would select a jar or two to open for the upcoming meal. Upon entering these subterranean spaces we were immediately besotted by the teeming kaleidoscope of jars. Otherwise always fast-paced and working, coming face-to-face with the jars, our Delta Russian hosts tend to pause, displaying visible awe of the beauty they created. During such contemplative moments, their facial expressions resemble those of a roused gallery visitor. The goal of *Yes We Can* was to extend this experience to the public.

Valentina Kilimnik, originally from the Vinnitsa region in Ukraine, was our primary Delta Russian collaborator. Her aesthetic decisions, coordination of efforts by other Delta Russian contributors, and many hours of canning resulted in the jars displayed in *Yes We Can*. Woodwork artisan Ryan Tinsley of Fairbanks led the construction of the shelves for the installation. Our research in Delta Junction is funded through an award from the National Science Foundation Arctic Social Sciences Program. The University of Alaska Fairbanks Institute of Northern Engineering provided administrative support to implement the exhibit. This body of work is testimony to the laborious process behind the jars of homemade products, valued by their makers for their aesthetic qualities and utility. The show incorporated all formal elements of art while celebrating the commonplace processes of growing, harvesting, and preserving food. It also aimed to raise fundamental questions of where we find beauty and what is art.

**MAKING PLACE FOR THE DISPLACED IN ALASKA
ANTHROPOLOGY: RECENT STUDIES OF HOMELESSNESS
IN ALASKA POPULATIONS**

Submitted by Sally Carraher, Department of
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Travis Hedwig, Institute for Circumpolar Health
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Erica Mitchell, Institute for Circumpolar Health
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Bringing anthropological approaches to bear on studies of housing and homelessness offers an opportunity to identify some of the moral contradictions that exist within current political economies of care and inform program and policy with an explicit goal of eliminating homelessness. Increasing numbers of anthropologists are becoming involved in researching, and working with, those experi-

encing homelessness in Alaska. We report here on some of these recent efforts.

The UAA Anthropology Department is currently developing a long-term applied research partnership with Bean's Café, an Anchorage nonsectarian day shelter and soup kitchen. Sally Carraher began working with Bean's Café in January of 2014, as a term project for her Applied Anthropology course in which students conducted an internal needs assessment for Bean's Café. The initial project focused on identifying ways for Bean's Café to improve and expand the services they provide. Based on the initial findings, Carraher and one graduate student are currently working to help Bean's Café build a referral system that incorporates training for staff to better identify underreported needs and successfully connect clients with outside service providers. This project is using a community-based participatory approach, in which we have developed a planning committee bringing together researchers from UAA, Bean's Café staff, and some of their regular clientele. Findings from this effort should be available by next spring.

The Institute for Circumpolar Health Studies (ICHS) at UAA is completing a three-year evaluation of Alaska's Housing First program. Housing First is an evidence-based program that provides permanent supportive housing to the most vulnerable among those who experience homelessness, addiction and severe mental illness, without preconditions of sobriety or treatment compliance. The evaluation of Alaska's first two project-based Housing First sites, Karluk Manor and South Cushman, located in Anchorage and Fairbanks respectively, looks at changes to health, quality of life, service use patterns, social networks and costs both prior to and after being housed. With housing retention rates greater than 80%, significant reductions in frequency and amount of alcohol consumption, opportunities for family reconnection, and less interaction with emergency services, Housing First represents a viable solution to the persistent vulnerabilities associated with street life. Results of this research will help inform future permanent supportive housing solutions in Alaska. The Housing First evaluation team would like to acknowledge Dr. Richard Brown II as the original principal investigator on the project and his unpublished works based on Karluk Manor baseline findings. These include an unpublished manuscript he was writing at the time of his passing, "Development of Alcohol Consumption Measure for Evaluation of Harm Reduction and Health Associations in an Extreme Drinking Population" (2012).

This year's annual Housing and Homelessness conference, sponsored by the Alaska Coalition on Housing and Homelessness, the Alaska Mental Health Trust Authority, and the Alaska Housing Finance Corporation, was held on September 29–October 1 in Juneau. With over 150 attendees, the conference included a diverse group of providers, researchers, and policy makers. The UAA College of Health has funded a cross-disciplinary research project called "Space, Place, and Home: Mapping the Social Environment of Anchorage Homeless Populations," led by Troy Payne (Justice Center) and Donna Aguiniga (School of Social Work) in partnership with a researcher at Covenant House. Other recent work on place and displacement in Alaska has been shaped by Rachel Mason, Don Dumond, Peter Schweitzer, Elizabeth Mikow, Elena Khlinovskaya Rockhill, Becky Saleeby, Hannah Voorhees, Marie Lowe, Cornelia Jessen, Herbert Anungazuk, and Ernest Burch.

THESIS AND DISSERTATION ABSTRACTS

Monty Rogers, editor

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The thesis and dissertation abstracts below describe recent research on the revival of Northwest Alaska Iñupiaq oral traditions and culture, Kodiak Alutiiq language, applying optimal foraging theory to prehistoric hunter-gatherers on the Seward Peninsula, Kachemak fish exploitation on Little Takli Island on the Alaska Peninsula, a zooarchaeological analysis of a late prehistoric Iñupiaq site in the central Brooks Range, documenting stone fish traps on the northwest coast of British Columbia, and an assessment of efforts to include indigenous traditional knowledge in projects and activities of the Arctic Council. These abstracts describe research carried out by students of Lewis and Clark College, University of Alaska Anchorage, University of Alaska Fairbanks, University of British Columbia, University of Edinburgh, and the University of Leicester.

Contact Monty Rogers to submit an abstract of a recently completed thesis or dissertation that deals with topics of interest to *AJA* readers.

ORAL TRADITION AND CULTURAL REVIVAL IN NORTHWEST ALASKA

Hannah Atkinson

B.A. thesis, 2014, Department of Sociology/Anthropology,
Lewis and Clark College

ABSTRACT

This thesis follows the story of three Iñupiat Eskimo communities in Northwest Alaska and their efforts to revive oral traditions using recorded media. In Northwest Alaska, the impacts of the Quakers' systematic inhibition of oral culture and the assimilationist practices of Alaska Native education have lasted generations. As the oldest of the community elders pass away, a century of cultural suppression has resulted in the loss of some Iñupiaq stories and dances.

Growing up in the region, I recognized the importance of oral tradition to the Iñupiaq way of life. I began my research with a selective process of interviewing with community specialists and activists in the field of oral tradition. Those interviews led me to conversations with community elders and youth as well as participant observation as a storyteller, a dancer, and as a part of the audience. Themes of new technology and cultural revival rose

to the forefront of my research into oral tradition. This thesis focuses on three projects that used technology to record stories and dances to preserve the tradition for future generations.

However, secondary orality, defined by Walter J. Ong as the characteristic of being recorded from a single act of orality, is formed in the tension between traditional and modern. Recorded media attempts to recreate the person-to-person interaction that is characteristic of oral tradition, but requires storytellers and listeners to interact in a new way. Acquiring funding, disseminating published materials, and storing recorded media are now necessary parts of practicing oral tradition.

While Northwest Alaska communities struggle with the infrastructure required of secondary orality, in some cases recorded media is teaching young generations the traditional practices and culture. It is providing youth the opportunity to become the teachers. Revival of oral tradition is not only valuable to the Iñupiat but also demonstrates the value of localized history, culture, and ways of knowing to modern society. My hope is that this will begin a conversation about the role of oral tradition in cultural revival and what reproduction of Iñupiaq culture means for those inside and outside of the community.

**COMMUNITY SPACE FOR DECOLONIZATION
AND RESISTANCE:
KODIAK ALUTIIQ LANGUAGE CLUB
PARTICIPANT PERSPECTIVES**

Michael J. Bach

M.A. thesis, 2014, Department of Northern Studies,
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Online at [https://migobach.files.wordpress.com/2014/09/
bach-thesis-2014.pdf](https://migobach.files.wordpress.com/2014/09/bach-thesis-2014.pdf)

ABSTRACT

Language Club is one of many language revitalization initiatives currently being used to reclaim space for Alutiiq, a highly endangered Alaska Native language. Since 2003, Language Club has been a site of learning and sharing for both Alutiiq language learners and elders. The study draws upon eight semistructured interviews, numerous post-data discussions, field notes, and observations in order to understand Language Club participants' spoken and unspoken goals. Data were analyzed using constructivist grounded theory. Themes and subthemes identified include community, family-like structure, culture and tradition, and healing. Using tribal critical race theory (TribalCrit) to better understand these themes, we find that Language Club functions as carved out space within the broader community where participants are able to engage in decolonization and resist hegemonic domination by the broader community.

**KUZITRIN LAKE/TWIN CALDERAS: AN
EXAMPLE OF OPTIMAL LAND USES
DURING THE LATE HOLOCENE IN SEWARD
PENINSULA, ALASKA**

Michael J. Holt

M.A. thesis, 2013, Department of Archaeology and Heritage,
University of Leicester, UK

ABSTRACT

In the northern latitudes of the Western Hemisphere, a region dominated by tundra environments and limited resource variability, human foragers adapted their hunting and settlement strategies to gain advantage over an abundant and highly predictable terrestrial resource (caribou).

The study area's unique landscape character and abundant resources attracted the region's prehistoric inhabitants far from the power centers of their affiliated socioterritories.

This research has applied evolutionary theory to a geospatial analysis of prehistoric hunting features in an effort to identify a link between feature clustering and the proximities of ice/snow patches at Kuzitrin Lake and Twin Calderas, and in doing so, illustrate an undocumented intercept game drive tactic used in the summer when caribou are broadly dispersed. This thesis sought to clarify the spatial distribution patterns of hunting features in the study area and settlements of Seward Peninsula, determine if features and settlements cluster on the landscape consistent with the expectations derived from optimal foraging theory, and explain how their spatial patterns can reveal prehistoric hunter-gatherer land use in the study area. The hypothesis offered at the beginning of this study was that collective hunting tactics employed by prehistoric foraging groups were shaped by a drive to achieve net energy optimality, and that hunting groups would maximize energy and time expenditures to exploit the highest-ranking prey resources within their limits of available travel modes.

The expectations presented in this research have been statistically validated and are premised on optimal foraging. Thus, it is reasonable to deduce that prehistoric foraging groups maximized caribou exploitation by engaging in a unique collective hunting tactic associated with the ice/snow patches at Kuzitrin Lake and Twin Calderas, and that socioterritorial dominion over the area was dictated by available modes of travel and the time and energy costs required to complete a journey.

I offer an alternative model of late Holocene hunter-gatherer land use based on the findings of this research. The static model presented at the conclusion is provided as a heuristic device for future investigation into Late Holocene caribou hunting and settlement in Seward Peninsula.

**KACHEMAK FISH EXPLOITATION AT LITTLE
TAKLI ISLAND, AMALIK BAY, ALASKA:
SIZE ESTIMATES AND TAXONOMIC
DISTRIBUTION**

Rhea E. Hood

M.A. thesis, 2014, Department of Anthropology,
University of Alaska Anchorage

ABSTRACT

Two main aspects of fish remains from the Takli Birch phase/Early Kachemak tradition component of the Little Takli Island site (XMK-031) were examined: (1) taxonom-

ic frequencies, based on numbers of identified specimens; and (2) fish sizes derived from linear regressions applied to dimensions of selected skeletal elements. Taxonomic distributions revealed that Gadidae comprised 77% of the family-level NISP. Size estimates demonstrated that mature *Gadus macrocephalus* (caught with hook-and-line methods and offshore strategy) were the primary target.

Additional tests compared the XMK-031 fish remains to those from Ocean Bay tradition sites and Kachemak tradition sites, primarily the %NISP of Mink Island (XMK-030), Rice Ridge (KOD-363), and Horseshoe Cove sites (KOD-415). These provided a view of fish selection at different locations and insight into the effects of environmental change during the transitional period between the Ocean Bay and Early Kachemak traditions.

CARIBOU HUNTING AT THE HUNGRY FOX SITE (KIR-289): A ZOOARCHAEOLOGICAL INVESTIGATION OF A LATE PREHISTORIC INTERIOR IÑUPIAT SITE IN THE CENTRAL BROOKS RANGE, ALASKA

Kristin Scheidt

M.A. thesis, 2013, Department of Anthropology,
University of Alaska Anchorage

ABSTRACT

The Hungry Fox site is a late prehistoric interior Iñupiat site along the Killik River within the boundaries of Gates of the Arctic National Park dating to approximately 480–550 BP. This thesis describes the analysis of faunal material collected from the 2004 excavation of the site. The purpose of the thesis is to determine site function by identifying taxonomic richness and diversity, season of site occupation, and caribou age and sex demographics. The results of the analysis indicate that the faunal assemblage consists primarily of caribou, ptarmigan, Dall sheep, and ground squirrel, the site was occupied during the winter and spring, and caribou hunting focused on female caribou two to five years of age. I interpret these results to mean that the site was occupied after interior Iñupiat groups split once they had exhausted caribou stores from the fall cooperative hunt and before they congregated to cooperatively hunt caribou during the spring migration.

INSCRIBED ON THE LANDSCAPE: STORIES OF STONE TRAPS AND FISHING IN LAXYUUP GITXAALA

Naomi H. Smethurst

M.A. thesis, 2014, Department of Archaeology and Heritage,
University of British Columbia

ABSTRACT

This thesis examines the nature of an indigenous fishery on the northwest coast of British Columbia, within Gitxaala Nation's territory. To investigate fishing practices, I analyze faunal assemblages from sixteen habitation sites, map and describe two intertidal stone traps, and relate the results to Gitxaala traditional ecological knowledge. I first outline the social organization of fishing in Gitxaala territory and discuss Gitxaala ontology and the connection between family and place. I then discuss the technology and function behind the two intertidal stone traps. I examine archaeological patterning of fish abundances at the habitation sites through various quantitative methods, focusing on three sites associated with the intertidal stone traps. I then argue that Gitxaala traditional ecological knowledge is paramount in understanding and interpreting the archaeological record.

The results of the study reveal a complex portrait of fishing within Gitxaala territory. Faunal analysis data are contradictory to expectations of a connection between fish abundances and site size and typology. Faunal analysis also indicates that differences in mass harvest technologies such as intertidal stone traps reflects differences in use and target species. Gitxaala scholarship on fishing, use, and occupancy acts as an interpretive guide to the archaeological record in that it provides explanations to an otherwise complex data set. The results suggest that fishing practices are not prescribed simply by resource availability. Rather, fishing practices reflect complex cultural processes and decisions of Gitxaala leaders who maintained obligations of a reciprocal relationship between the human and animal world, fish production, and management of important ecosystems.

**ASSESSING THE EFFORTS TO INCLUDE
THE TRADITIONAL KNOWLEDGE OF
INDIGENOUS PEOPLES INTO THE PROJECTS
AND ACTIVITIES OF THE ARCTIC COUNCIL**

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ABSTRACT

The creation of the Arctic Council in 1996 represented a new chapter in Arctic cooperation, and the forum has since been instrumental in efforts to protect the Arctic environment and support sustainable development in the region. It is a unique forum consisting of eight Arctic states (Finland, Sweden, Norway, Denmark, Iceland, Russia, Canada, and the United States) and six indigenous peoples' organizations (the Arctic Athabaskan Council, Aleut International Association, Gwich'in Council International, Inuit Circumpolar Council, Russian Association of Indigenous Peoples of the North, and the Saami Council) that hold the status of Permanent Participants, as well as observers from various non-Arctic states and organizations. The involvement of indigenous organizations to such a degree is unique. With current environmental and geopolitical changes in the Arctic, interest in the Arctic Council has grown in intensity, which places unprecedented pressure on the Permanent Participants. In a world that is already experiencing the effects of climate change, it is critical that the indigenous communities of the North are considered and actively involved in decision-making, policy-making,

and science in the Arctic. As a result, the main goal of this dissertation is to examine the ways in which the participation of the Permanent Participants can be strengthened within this forum. Because sustainable development remains a top priority for the council, the author also examines the way in which sustainable development has been understood by the council, which unearths a number of tensions when attempting to involve indigenous perspectives. Ultimately, this dissertation demonstrates how indigenous participation will require the equal and full inclusion of traditional knowledge into Arctic Council activities. Although this has been a long-term goal of the council, little concrete progress has been made in ensuring the inclusion of traditional knowledge, and the reasons for this are examined. By analysing the existing literature, policy documents, and interviews with experts such as indigenous leaders and representatives from the Permanent Participant organizations and anthropologists, this dissertation demonstrates the need to adopt a fuller understanding of sustainable development that seriously takes into account the perspectives of indigenous peoples in the Arctic. Furthermore, the interviews conducted demonstrate that traditional knowledge is inseparable from the people who hold this knowledge, and consequently the efforts to include traditional knowledge into the Arctic Council can be considered as a part of a much larger project: that of empowering indigenous communities in the Arctic. As a result this dissertation examines themes such as power, hegemony, and representation, all of which are central to the effort to include traditional knowledge into Arctic Council activities and projects.

REVIEW

OUR ICE, SNOW, AND WINDS: INDIGENOUS AND ACADEMIC KNOWLEDGE ON ICE-SCAPES AND CLIMATE OF EASTERN CHUKOTKA

Edited and compiled by Lyudmila Bogoslovskaya and Igor Krupnik, 2013. Russian title: Nashi ldy, snega i vetry: Narodnye i nauchnye znaniia o ledovykh landshaftakh i klimate vostochnog Chukotki. Russian Heritage Institute, Moscow and Washington, DC. Russian with English foreword and summaries; 359 pages, maps, color and b&w illustrations, references. ISBN 987-5-86443-184-9. No price indicated.

Reviewed by Sveta Yamin-Pasternak

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For over forty years, Lyudmila Bogoslovskaya and Igor Krupnik have been collecting oral histories and ethnographic materials that reflect the traditional knowledge and ecological awareness of the Yupik and Chukchi people of Chukotka. Veterans of rigorous field research in Chukotka communities, these two eminent scholars have worked with a number of local experts. Bogoslovskaya and Krupnik have also reached out to a number of ethnologists, climate scientists, and cultural resource managers working at Chukotka-based institutions. The experience of these multidecadal collaborations helped ensure strong Russian participation in SIKU: Knowing Our Ice, an International Polar Year (IPY) project. An unprecedented number of Chukotka researchers have participated in SIKU, of whom the majority worked in and around their home communities, conducting interviews, compiling new and archival photographs, and conducting direct observations of various social and ecological processes.

The results of these efforts appear in the Russian Heritage Institute's publication *Our Ice, Snow, and Winds*. Bogoslovskaya and Krupnik are the compilers and editors of the volume, and the authors of several sections. The book identifies twenty-seven other contributors to SIKU and includes their biographical sketches. It also acknowledges over fifty illustrators whose work is included in the volume. The high-quality paper and printing do justice to the generous and stunning visual material the volume contains.

The book is in Russian but provides English versions of the introductory and concluding narratives (pp. 12–13,

334–339). Although it is more conventional for reviewers to conclude with such recommendations, I am compelled to express a desire to see this book available in English in a near future. This work is likely to draw interest from a wide spectrum of readers and especially Arctic residents and scholars of ethnohistory and climate research.

The main content includes exhaustive vocabulary lists relating to sea ice from several Chukotkan communities, elders' stories offering detailed cautionary advice on ice-based hunting and travel, documentation of contemporary harvesting techniques, climate data assembled by local observers, and a fine-resolution portrait of the cultural and physical geography of Chukotka's ice-scapes through time. In addition to the cited literature, the volume includes a list of publications and conference contributions by SIKU participants produced between 2007 and 2012 (pp. 254–256), and a suggested readings list organized under four themes: people and environment of Chukotka, climate change and ecological knowledge among the residents of the Arctic, Arctic ice-scapes and preservation of cultural landscapes, and the International Polar Year 2007–2008.

Overviews of Project SIKU and eastern Chukotka are presented in Part 1 (pp. 15–38). Parts 2 and 3 focus on the cultural and ecological adaptations of indigenous communities of eastern Chukotka. These parts discuss the continuity of intergenerational knowledge of ice, the shifting seasonal cycle as documented and described by community-based observers, and the relationships between

various ecosystem processes and cultural practices. A reader hungry for ethnographic nuances will be well fed on descriptions of making drinking water on the guts of a freshly harvested walrus, chewing on the stems and leaves of *Rhodiola rosea* to alleviate a dry mouth (Ashkamakin, recorded by Krupnik, pp. 219, 220), and subsisting from the marine “garden” cultivated along the shore of Tkachen Bay (Borovik and Kalyuzhina, pp. 109–113). Natalia Kalyuzhina charmingly narrates the last piece. She provides an ethnoecological manual for *upalovka*—the harvesting of sea peaches, *Halocynthia pyriformis*, around Novoe Chaplino and older settlements where elders and ancestors of current Novoe Chaplino residents lived prior to relocation. Beyond her written contribution, Kalyuzhina is acknowledged for her work with SIKU. While directing the Chukotka regional park-preserve Beringia, which covers the Chukchi Peninsula’s eastern end, Kalyuzhina coordinated community-based observers in such a way that, “they not only made written records but also drew much satisfaction from photographing various environmental phenomena” (pp. 31–32). Land managers can draw valuable insights from this approach.

The lists of Yupik and Chukchi terms for sea ice in Part 2 illustrate the difficulty, even impossibility, of extrapolating indigenous knowledge of sea ice between communities and locales. The lists demonstrate that knowledge of sea ice is highly localized, related to specific regions, and used to assist weather analysis, safe travel, and harvesting activities. Readers will find the lists of terms describing conditions of ice, winds, and currents in “Ice Scapes and Local Cultures of Eastern Chukotka,” compiled with the help of residents from the communities of Sireniki, Yanrakynnot, Uelen, Vaegi, Ungaziq, and Naukan (the last two villages were closed by the Soviet authorities in the 1950s).

Part 4 examines the efforts of climate scientists conducting multiyear monitoring and collection of instrumental data on ice conditions, air temperature, and precipitation. Their observation and measurement logs cover periods of fifteen years or more. These data document emerging patterns of change and draw regional and circumpolar continuities within the Arctic ice and weather systems. Victor Struzhikov, who has been manning the Uelen Research Station since 1988, summarizes his observations of the northeastern end of the Chukchi Peninsula (pp. 300–307). Igor Zagrebin—a geographer with broad interdisciplinary experience in Chukotka—contributed his observations in the Provideniya region from 1997–2011. The analysis of this data by the noted Russian climatologist Boris Vdovin appears in Part 4 (pp. 276–286). Zagrebin’s records of ice conditions in Emma Bay and Provideniya Bay between 2006 and 2009 are featured in their entirety (pp. 309–323), followed by Krupnik’s synthesizing commentary (pp. 324–327). Krupnik contextualizes Zagrebin’s data relative to historical climate records and compares it to the data collected by the Yupik and Chukchi observers for similar periods. Readers can examine the consistency of information and also the differences in the approaches of indigenous observers and other climate monitors. Rather than characterizing ice exclusively in the context of meteorological phenomena, the indigenous scholars and community-based observers Alexander Borovik, Victoria Golubtseva, Arthur Apalyu, Vyacheslav Nuvano, Elizaveta Dobrieva, and Boris Alpyrgin, among many other contributors, demonstrate the inherent connections between the seasonally cycling landscapes and human activity—the central point of *Our Ice, Snow, and Winds*.

REVIEW

HISTORY IN THE MAKING: THE ARCHAEOLOGY OF THE EASTERN SUBARCTIC

Donald H. Holly, Jr., 2013. *AltaMira Press, Lanham, MD. Cloth, 197 pages, photos, line drawings, maps, bibliography, index. ISBN 978-0-7591-2022-8 (cloth), \$70.00; 978-0-7591-2024-2 (electronic), \$69.99.*

Reviewed by Richard O. Stern

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Donald Holly's latest contribution to the prehistory and history of northeast North America is *History in the Making: The Archaeology of the Eastern Subarctic*. The title includes the words "history" and "archaeology," which is appropriate for its contents. Holly weaves the history of anthropological and archaeological research into his descriptions of the prehistory of the region. He also provides an overview of the history of the region itself, including the late prehistoric and historic First Nations peoples and the non-Native settlers of the region. In six chapters, the reader learns about the physical and biological environment of Labrador, Newfoundland, and the adjacent American and Canadian Northeast and how that environment provided challenges and opportunities for human occupation.

Chapter 1, The Lookout Tree, reviews previous research in the region and the intellectual and theoretical positions and biases of pioneer archaeologists and anthropologists. Biographical details of researchers and their theoretical positions and contributions are woven throughout the book as prefaces to the chapters describing culture history. Chapter 2, Driftwood, describes the importance of wood for coastal peoples and how old wood has befuddled the regional culture chronologies. Paleoindian and Archaic occupations of the region are described. Chapter 3, Tuckamore, describes this botanical phenomenon and the difficulties it presents for archaeologists surveying and excavating in the region. Holly details the Paleoeskimo movement into the region occupied at the time by well-established Maritime Archaic people.

Chapter 4, Wildfire, describes the discovery and excavation of important Late Paleoeskimo Dorset sites such as Port aux Choix and Phillip's Garden. The social relations between Paleoeskimo peoples and Amerindians are examined and analyzed, as is the decline and eventual disappearance of Dorset culture. Chapter 5, The Giving Tree, begins with an overview of ethnographic information about the important spiritual role of trees in the Subarctic. The presence of the Norse in Greenland and at L'Anse aux Meadows in northern Newfoundland is presented in the context of trade in metal goods, influences on local peoples, and the arrival of Neoeskimo Thule culture into the Northeast Subarctic. Chapter 6, The Forest for the Trees, summarizes the intellectual history of research in the region, emphasizing that "similar historical processes recurred again and again" (p. 153). Historical event and process are the subjects of "generalizable inquiry, albeit at different scales."

This book makes several important contributions. First, it provides an up-to-date summary of northeastern subarctic prehistory. Second, it provides a guide to the positions and changing interpretations by northern scholars about causes and effects in the region's culture history. Every topic presented takes the form of a few paragraphs that summarize long-standing interpretations of the archaeological record followed by discussion of more recent revisions. I enjoyed the presentation of various interpretations. Third, Holly examines field evidence for its adherence to contemporary excavation standards. He notes when previously excavated sites or site surveys were

done using traditional methods and how careful attention to stratigraphy on notoriously shallow or disturbed sites yields better data for interpretation in the modern era. Finally, Holly writes about social process throughout the book. Prehistory is not just the movement of Ramah chert, or iron, or walrus tusks; prehistory is about people and their social organizations, technologies, and beliefs.

The primary audience for this book will be professional archaeologists and students looking for a contemporary summary of the prehistory of the eastern Subarctic. Faculty may wish to use it as a reader for classes in North American archaeology, either as the main text or as a supplemental area overview. Finally, anyone with an interest in northeastern archaeology will want to read the book to learn about Newfoundland and Labrador. The book is clearly written, using nontechnical language. Holly has an easy writing style, weaving together complex information from a variety of sources. The reference section is robust, making it a wonderful starting point for further reading.

There are a few quibbles. There is no table or graphic of culture history over time and space, which would be helpful for nonspecialists in the area to get a big-picture overview. There is some odd language from time to time, which may reflect deficient copyediting. In one case, there is either text missing, or no period at the end of a sentence, leaving the reader to wonder what the author meant. The map of the study area has the scale bar labeled in meters, rather than kilometers. There is no table of figures at the front of the book. The price for a clothbound book of less than 200 pages at \$70 seems high, but is in line with what current production and marketing costs require.

Overall though, anyone with an interest in the Arctic and Subarctic should have *History in the Making* in their library. Holly has produced a comprehensive, current, and compelling synthesis of the archaeology of the eastern Subarctic, providing both a critical history of research and interpretation and a description of our current understanding of that research.

REVIEW

TRAVELS TO THE ALSECK: EDWARD GLAVE'S REPORTS FROM SOUTHWEST YUKON AND SOUTHEAST ALASKA, 1890–91

By Edward J. Glave. Edited by Julie Cruikshank, Doug Hitch and John Ritter, 2013. Yukon Native Language Centre, Whitehorse. 408 pages, illustrations, 85 maps. ISBN: 978-1552423684 (hardcover) \$60.00.

Reviewed by James Kari

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In 1890 and 1891, a talented Englishman named Edward J. Glave (1862–1894) made two exploratory trips from Chilkat Inlet into southwest Yukon Territory on trade routes that were not known to the outside world. Between 1890 and 1892, Glave published twelve magazine articles offering the first detailed observations of the Native people of the Southwest Yukon Territory. *Travels to the Alseck* is a beautifully produced collaborative book that was first conceived by John Ritter, director of Yukon Native Language Centre. Ritter notes that, “The Glave articles constitute an important reference source for students of Yukon history, and we’ve long needed to have them out and available in an accessible form.”

Glave gave special attention to the recording of Native place names with his Tlingit and Southern Tutchone guides.

Throughout my letter I have retained the native names of geographical points wherever I could learn them. In my opinion this should always be studied. The Indian names for mountains, lakes, rivers are natural landmarks for the traveler whoever he may be; to destroy these by substituting words of a foreign language is to destroy the natural guides. You ask for some point and mention its native name; your Indian guide will take you there. Traveling in Alaska has already sufficient difficulties, and they ought not to be increased by changing the picturesque Indian names. Another very good reason why these native names should be preserved is that some tradition of tribal importance is always connected with them. These people have no written language, but the retention of their native

names is an excellent medium through which to learn their history (p. 77).

Each segment of the 1890 and 1891 trips is presented as a facsimile of the magazine article with Glave’s sketches, photographs, and footnotes for clarification. The articles from the 1891 journey are supplemented with notes, vocabulary, drawings, and native sketch maps from Glave’s 1891 field journals preserved in the Alaska and Polar Regions Collections and Archives at the University of Alaska Fairbanks. Each route segment is scored on color relief maps and landsat photographs that show place names from four or five sources in fonts of contrasting colors (e.g., Glave’s names, recorded Tlingit or Southern Tutchone names, official place names, and names from overlapping primary sources such as the 1869 Chief Kohklux map obtained by George Davidson or from the notes of Aurel Krause in 1880–81). Doug Hitch provides detailed discussions of the geography and landscape changes for each segment, relating Glave’s narrative with first-hand observations of geographic features.

The book is dedicated to two important contributors to Southern Tutchone and Tlingit language materials: Jimmy Kane (1885–1983) and Marge Jackson (1913–2013). It includes several articles written by Julie Cruikshank that provide context on Edward Glave and on inter-cultural relations of the 1890s in Alaska and the Yukon. The book features 112 illustrations and 85 maps with extensive captions of Glave’s photographs, his sketches, and engravings made from his photographs. There are many stunning landscape photographs by Wayne Towriss, some of which

are historic/contemporary comparisons taken at similar locations. A chapter titled “Glave the Scientist” by John Ritter, Jeff Leer, and Doug Hitch presents number-keyed images of Glave’s notes with transcriptions in tabular form. Topics of this chapter are place names, personal names, Tlingit word lists and ethnonyms, the first known Southern Tutchone word list, and a detailed interpretation of a native-drawn sketch map, “the Athabaskan’s Valley.”

In my own ethnogeographic research I have promoted the use and analysis of sketch maps. Glave’s highly refined 1892 sketch maps are juxtaposed with historic maps, modern maps and photographs. The Mount Glave area presentation (pp. 213–220) is a pleasure to study. Glave also solicited native sketch maps, some of which he annotated. Doug Hitch’s analysis of one native sketch map south of Kluane Lake (pp. 292–296) is particularly thorough and shows how accurate geographical detail can be matched between sketch and modern maps, by draw-

ing upon the layers of data and illustrations the editorial team have assembled.

The organization of the book makes this a most informative reference work. The toponymic and linguistic scholarship and the use of historic and contemporary photography and cartography is outstanding. *Travels to the Alseck* will be the major geographical/historical reference work for this part of the world.

As Julie Cruikshank notes in the introduction, Glave had a brief but remarkable career. In the 1880s, Glave spent six years as a junior officer with Henry M. Stanley in the Congo. After his two trips in Alaska and Yukon, he returned to Africa where he died after writing several articles about Belgian atrocities in the rubber trade in the Congo River Lake district. Cruikshank writes, “These materials amply demonstrate the impressive observational and analytical abilities of a young man, not quite thirty, who did not have the benefit of academic training.”

REVIEW

IÑUPIAQ ETHNOHISTORY: SELECTED ESSAYS BY ERNEST S. BURCH, JR.

By Ernest S. Burch. Edited by Erica Hill, 2013. University of Alaska Press, Fairbanks. 247 pages, photos, figures, maps, bibliography, index. ISBN: 978-1-60223-214-3 (paper) \$35.00.

Reviewed by Amber Lincoln

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Iñupiaq Ethnohistory is a compilation of nine previously published seminal articles by the late social anthropologist Ernest S. Burch, Jr. These essays pertain to Iñupiaq notions of being and the social, political and economic conditions of Northwest Alaska in the nineteenth century. While the Iñupiat are the focus of this collection, various essays also describe and draw comparisons between other northern cultural groups, including the Koyukon and Gwich'in Athabascans and Caribou Inuit. Editor Erica Hill's introduction identifies the structural-functional underpinnings of Burch's work and outlines the key debates it contributes to, such as socio-political organization of small-scale societies, warfare, human ecology, exchange systems, and ethnohistory methodologies. Pinpointing the major influences in Burch's work, Hill explains that many of the essays persuasively apply sociologist Marion J. Levy's classificatory approach, in which "analysis proceeds from the definition of an empirical referent, or 'unit'" (p. ix). Hill supplements each chapter with further readings pertaining to theoretical discussions of the essays, thereby demonstrating the continued relevance of Burch's writings to northern anthropology and beyond. All of this makes *Iñupiaq Ethnohistory* not only a comprehensive introduction to Iñupiaq history and culture but also to Burch's impressive body of work.

The book is laid out like a classic ethnographic monologue. Following an essay that positions Burch's approach to investigations, each chapter addresses a common anthropological theme, including: cosmology

and belief, exchange systems, kinship, political and social relations, and economic strategies and conservation. In Chapter 1, Burch details how he came to research and write historical ethnography or "ethnographic reconstruction" and the approaches he developed. Admitting that his own preconceptions initially blinded him to the value of Native historians, Burch explained that he learned about Iñupiaq warfare and the Dinai Kutchin (Dihajj Gwich'in) people from Iñupiaq accounts. These accounts were often corroborated by Iñupiaq historians of different villages and supported in historical documents. This convinced Burch to take Native accounts seriously and verify them through the same rigorous system of oral sources and written documents that he applied to his own analyses. Add on Burch's use of Levy's classificatory approach, which defines and then describes an empirical concept, and you have the signature method that served Burch so admirably for decades.

Following the methodology essay is "Eskimo Worldview," the most general article of the collection, which gently introduces the reader to Inuit societies and Burch's work. This essay offers a review of Inuit cosmology including appropriate treatment of souls and bodies after death, and a discussion of spirits and taboos. Seventeen figures of masks and spiritual objects that are housed in museums supplement this chapter although the essay does not directly refer to them. Chapter 3, "The Nonempirical Environment of the Arctic Alaskan Eskimos," outlines the various beings that populate Iñupiaq landscapes, influencing settlement patterns,

transportation routes, and harvesting locations. Burch organized these beings into three categories, including: those shaped like people, those shaped like animals, and those with no shape. Driven to understand how Iñupiat converted to Christianity so quickly—within 20 years—Burch explored the history of missionaries in Chapter 4. He reconstructed the social, economic, cosmological conditions of Northwest Alaska at the turn of the twentieth century that led to widespread Iñupiaq adoption of Christianity, between 1890 and 1910. While socioeconomic scarcity and syncretism carved a path for immediate conversion, charismatic Alaska Native missionaries also played a major role in converting Iñupiat.

Chapter 5, “Modes of Exchange in North-west Alaska,” perhaps best exemplifies the virtues of Burch’s use of Levy’s empirical classification scheme. Simply by defining and then describing forms of property and the ways property was accumulated, divided, inherited, and exchanged among Iñupiat, Burch undermined the position that sharing or “generalized reciprocity” was the only form of material exchange among hunter-gatherer societies. The precision that Burch brought to the concepts he used pays off in this chapter. Strictly defining the kinds of relationships involved in particular exchanges, Burch was able to identify that in multifamily villages, people distinguished between intrafamily and interfamily exchange relations. Based on this conclusion, he proposed an explanation of why previous accounts of hunter-gatherers missed forms of exchange other than sharing; most were working in single, local-family communities. Chapter 6, “Marriage and Divorce among the North Alaskan Eskimos,” outlines various forms of conjugal relationships including co-marriage, which Burch argued was not scandalous, as it so often is portrayed, but part of a complex and ordered system. Chapter 7, co-authored with Eliza Jones, Hannah P. Loon, and Lawrence D. Kaplan, explores the ethnogenesis of the Kuuvaum Kañiagmiut of the upper Kobuk River. The authors used archival documents, ethnohistory, placenames, and linguistic data to argue that the Iñupiat peacefully assimilated the Koyukon Athabascans over a short period of time between 1860 and 1880.

It is a pleasure to read how Burch used historical ethnography to understand fundamental caribou herd biology in Chapter 8. Relying on the same ethnohistorical approach that he applied to understanding human histories, Burch traced caribou herd histories and

their changes over 150 years, emphasizing “the complex nexus of interactions between caribou, reindeer, wolves and people as a historically changing system of relationships” (Krupnik in Burch 2012: ix). Burch proposed the existence of four caribou herds in Northwest Alaska at the middle of the nineteenth century, including: Andreafsky River, Nulato Hills, Seward Peninsula, and Western Arctic herds. He posited that each herd suffered a crash in the latter part of the nineteenth century, leaving only the Western Arctic herd, which survives today. The final essay critiques the commonly held assumption that indigenous North Americans are in harmony with their environment and questions whether the relationship such people have with their environment changed after European contact. Citing overharvesting examples among Iñupiat and Caribou Inuit, Burch analyzed Inuit subsistence strategies in terms of cognitive aspects, which he categorized into rational, nonrational, irrational, and arational action—a system of classification again borrowed from Levy. No doubt these compelling case studies add nuance to the assumptions about indigenous conservation practices, but the applied framework seems to overstep what can be known. Classifying individual choices and actions based on rationality presumes knowledge of the motivation of individuals—information I do not believe ethnohistorical methods can reconstruct.

This minor critique aside, the collection of essays adds up to more than the sum of its parts with the help of Hill’s editorial direction. No doubt each essay forcefully conveys Iñupiaq life in Northwest Alaska around the early nineteenth century. Burch’s “thick description” leaves the reader with an intimate sense of the possibilities that an individual of this time and place may have confronted or chosen. But in addition to his methodical description of Iñupiaq lives, Hill brings together essays that reveal Burch’s underlying project. This collection clearly shows that Burch spent over 40 years seeking hard facts to dispel misinformation about small-scale societies in general and Iñupiaq culture in particular. Almost every essay begins by identifying a stereotype or generalization that is then refuted by the conclusion. In this collection, Burch contested the notions that without a written language a society cannot have history, that Euro-American missionaries were responsible for converting the majority of Iñupiat to Christianity, that sharing is the only form of exchange among hunter-gatherer societies, that Eskimos

traded wives, that Athabaskan and Iñupiaq groups either avoided or fought each other, that contributions to animal biology are beyond the scope of anthropological approaches, and that indigenous North Americans lived in harmony with their environment. The most widespread generalization that he refuted time and again through his methodological approach was that oral histories and indigenous accounts of history are unreliable. Perhaps the fact that these claims, for the most part, are unchallenged today reflects just how successful Burch was at achieving his aim.

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Boreal Imagery



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Artifact scanning/photography

Photograph restoration

High resolution film
and document scans

Map and profile
drawing

High quality prints from negatives and digital files

