



Studying Long-term Patterns of Bering Strait Cultural Interaction and Exchange Through Archaeological Ceramic Analysis

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The study of ceramic technology expands what we know about the extent of social networks over time. This work is exploring the mobility of social networks across Beringia and how people adapted to changing environmental and social circumstances.

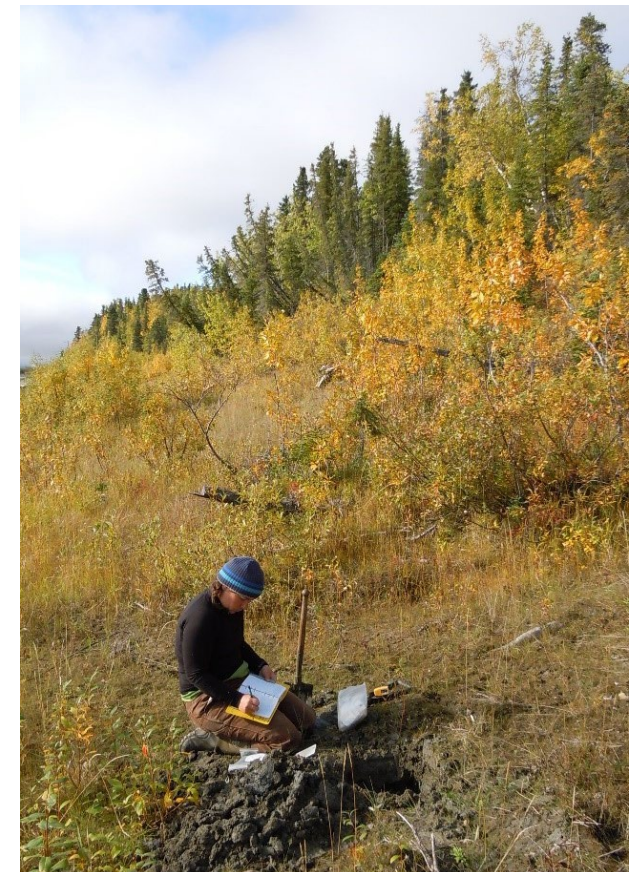
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The Bering Strait region was a critical pathway for the initial peopling of North America and has since continued to be a source of ideas, technology, and human movement for thousands of years. While archaeologists have established broader patterns of past interaction and migration, many questions remain about the ways that people, ideas, and technology moved and interacted across the Bering Strait in the past. Our research is directed at studying pre-18th century mobility and cultural interaction in Beringia through analysis of archaeological ceramic technology. The questions we seek to address are: *What is the geography of Beringian mobility and social networks over the past 2,500 years and how did these patterns change over time? How does changing mobility relate to other significant social and environmental changes during the mid-late Holocene?*

Our previous study of ceramic technology across the Russian Far East, the Chukchi Peninsula, and Alaska (e.g., Anderson et al. 2017, Anderson 2016, Ponkratova 2006, Zhushchikhovskaya 2010a and 2010b) established that ceramics were part of northwestern Alaskan mobility, and interaction networks over the last 1,000 years. These patterns changed over time in relationship to shifting settlement locations (Anderson et al. 2016). The research also indicated the existence of long-term social networks between people living in northwest Alaska and across the broader Bering Strait region (Figure 1). Despite decorative and technological similarities in the pottery found across the region

(Dumond and Bland 1995, Ponkratova 2006, Zhushchikhovskaya 2010a), ceramics were not used to explore cross-continent connections in depth until recently (e.g., Anderson et al. 2011).



Collecting clay samples on Kobuk River.
PHOTO COURTESY OF ROSS SMITH



Figure 1. Map of the Bering Strait region with the project area indicated.
FIGURE BY JOHONNA SHEA

Bering Strait Pottery

Cooking vessels (the focus of our current work) are the most common ceramic material recovered from sites in the study area, but there are also ceramic bowls, cups, lamps, small clay balls that are likely game pieces (Fienup-Riordan 2005), and figurines reported in small numbers from sites across northern and western Alaska. Ceramic cooking vessels were used in, or suspended above, a small fire or oil lamp to parboil foods, make broths, and for other cooking activities (Anderson 2019). Indirect heating, the placement of rocks heated in a fire or lamp into the ceramic vessel rather than placing the vessel in/above a fire or lamp, is also reported in the ethnographic literature (Anderson 2019; see also Frink and Harry

2008). Clay and stone lamps are found in the study region, and were important for providing both heat and light for homes in the dark months (Lucier and Vanstone 1991). Thus, ceramics were a key technology in a variety of ways for cooking, light, ceremonial practices (Spencer 1959), entertainment, and other activities.

Pottery was made by adding a variety of mineral (sand) and organic (feathers, fur/hair, grass, other fibers, etc.) material to clay to create a paste that was formed using a variety of techniques into the desired shape for the cooking vessels. Formed vessels were air dried and then fired in simple pits. Vessels were sometimes further treated with blood or oil to increase their ability to hold water (Anderson 2019).

Bering Strait ceramic technology likely has its origins in earlier Russian Far East traditions that spread to the Chukotka Peninsula, the Kolyma River basin, and the Okhotsk Sea coast by 5,000 years ago (Ackerman 1982, Dumond and Bland 1995). People adopted ceramic technology in Alaska between 2,500 and 3,000 years ago and ceramic traditions subsequently spread north and south along the coasts of Alaska (Anderson et al. 2017). By 1,000 years ago, pottery was in use as far east as the Mackenzie River in the western Canadian Arctic and as far south as the Kodiak Archipelago.

Bering Strait ceramic technology can be classified broadly as falling into two traditions: Paleo-Inuit (pre-1,500 years ago) and Neo-Inuit (post-1,500

years ago) ceramic traditions (Figure 2). While early Paleo-Inuit ceramics are relatively rare, 105 known sites are dated to before 1,500 years ago (Anderson et al. 2017). Neo-Inuit ceramics are more common and are found at most residential sites in the western Arctic dated after 1,000 years ago.

There are regional differences within Paleo- and Neo-Inuit traditions in terms of surface decoration, common temper types, and vessel shapes. Generally, Paleo-Inuit pottery vessels are thinner and harder than Neo-Inuit vessels, which tend to be thick and crumbly. Although sample sizes are small, the earliest Paleo-Inuit pottery vessels appear to have had a rounded bottom and various types of cord marked, linear, or check stamped surface treatments. Later Paleo-Inuit vessels have more of a barrel shape with a flat bottom, although this sample is skewed toward southwest Alaska and may represent a regional variant rather than a broader evolution in Paleo-Inuit ceramic form. There are both flat- and round- or pointed-bottom Neo-Inuit vessels that range in shape from cylindrical to an everted flowerpot shape (Figure 2). In northern and northwest Alaska, organic and mineral temper are common in both Paleo-Inuit and Neo-Inuit vessels, although Neo-Inuit vessels have a much coarser paste texture and higher temper content. Surface treatments include various check, corrugated, and curvilinear stamped patterns, as well as line-dot designs and textile impressions (Oswalt 1955, Dumond 1969, Anderson et al. 2011, Anderson 2019; Figure 2). Changes in ceramic character over time from a higher investment to lower investment (expedient) technology could be related to changing cooking practices. Alternatively, earlier Paleo-Inuit ceramics may have had greater importance in a social context (e.g., as prestige items) than later Neo-Inuit ceramics.

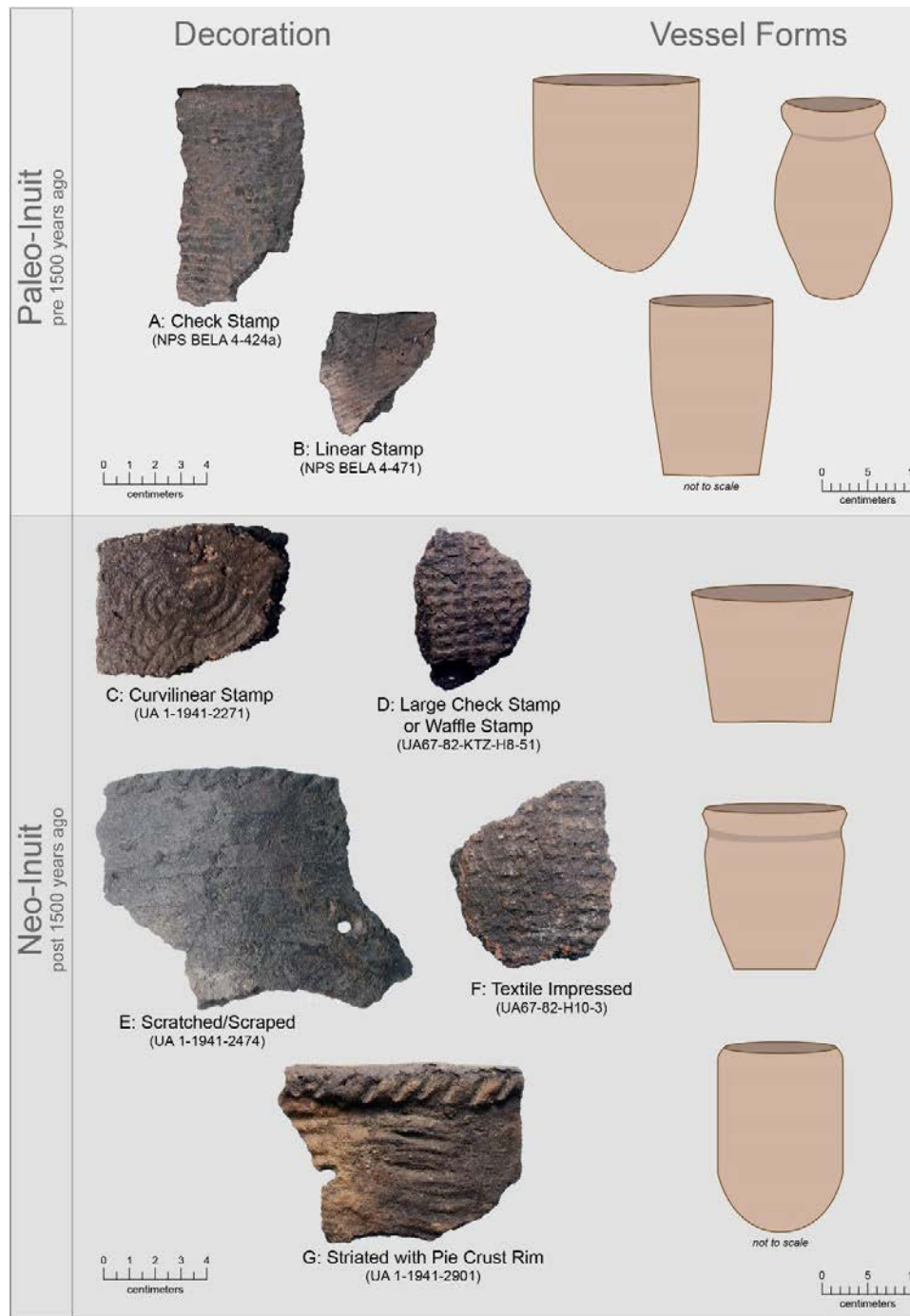


Figure 2. Comparison of Paleo- and Neo-Inuit pottery. FIGURE BY JOHONNA SHEA



Measuring ceramic sherds.
PORTLAND STATE UNIVERSITY/CAELIE BUTLER



Documenting ceramics at the University of Alaska Museum of the North (Flat-Bottom Pottery Bowl, St. Lawrence Island, Accession 223, University of Alaska Museum of the North).
PORTLAND STATE UNIVERSITY/SHELBY ANDERSON

Studying Past Beringian Social Networks through Ceramic Analysis

Social networks were, and continue to be, essential to sustained human occupation of Arctic environments. Individuals and groups with wider social connections were more resilient during periods of increased environmental variability and uncertainty, and in the face of social change (Fitzhugh et al. 2016). Social relationships and access to goods, materials, information, and opportunities they create help people cope with environmental and social stresses. This was particularly true in the highly variable mid-late Holocene environment of the Bering Strait region (Tremayne 2018, Minc and Smith 1989, Sheehan 1995, Mason 1998, Rasic 2016). Alaska Natives were connected to the Indigenous exchange systems of Chukotka and Kamchatka prior to Russian entry into Northeast Asia (Bockstoe 2009).

Archaeologists interpret the broad geographic extent of particular cultural traits, such as tool styles and artistic traditions, as evidence of ongoing interaction across the Arctic and Subarctic throughout prehistory (Rasic 2016). For example, the pottery associated with Early Neo-Inuit or Birnirk migrations into Alaska has distinct decorations. Iron used for carving intricate bone and ivory decorations over the last 2,000 years is cited as evidence of long-term international trade networks (Mason 1998). The distribution of locally rare materials like ivory and jade (i.e., nephrite) is often considered evidence of exchange across the coast and interior of the Bering Strait region (Alix et al. 2015, Arutiunov et al. 2006, Giddings 1952, Neffe 2015). Sourcing of obsidian (Cook 1995, Reuther et al. 2011), chert (Malyk-Selivanova et al. 1998), metal (McCartney 1986, Cooper and Bowen 2013 Cooper et al. 2016), and glass beads (Kunz and Mills 2021) from northern Alaska indicates pre-18th century networks extended

to Chukotka and far beyond. Recent sourcing of ceramics indicates that ceramic vessels were also included in regular, ongoing patterns of mobility and social/technological exchange across the region (Anderson et al. 2011, 2016).

Results of Prior Research

Prior research demonstrated that ceramics were incorporated into pre-contact mobility/exchange networks and ceramic research has significant potential for understanding past cultural exchange and interaction in the Arctic (Anderson et al. 2011, 2016). Over the last 1,000 years, people in northwest Alaska were tightly connected within the region and probably maintained regular ties with groups living to the north and south, and likely Indigenous peoples of Chukotka as well (Anderson 2016, Anderson et al. 2016). Prior analysis identified intriguing geographic patterns to these interaction networks. People brought their ceramic vessels with them, and/or may have exchanged vessels, as they moved seasonally upriver and downriver between large coastal sites and smaller coastal and interior sites. Ceramics from the central part of the Kobuk River appear to have spread extensively across the region. It is possible that ceramics were regularly moving across mountain ranges and between river valleys as part of exchange and/or seasonal movements (Figure 3). The mobility patterns indicated by ceramic sourcing are interesting because they provide more specific information about how people moved seasonally around the region than was previously available for the pre-Colonial period.

Pottery surface decorations also show connections across the region and beyond. For example: corrugated decorative type is from northern Kotzebue Sound and horizontal lined type is from Norton Sound; Both decorative types are found at sights across Northwest Alaska and the Bering

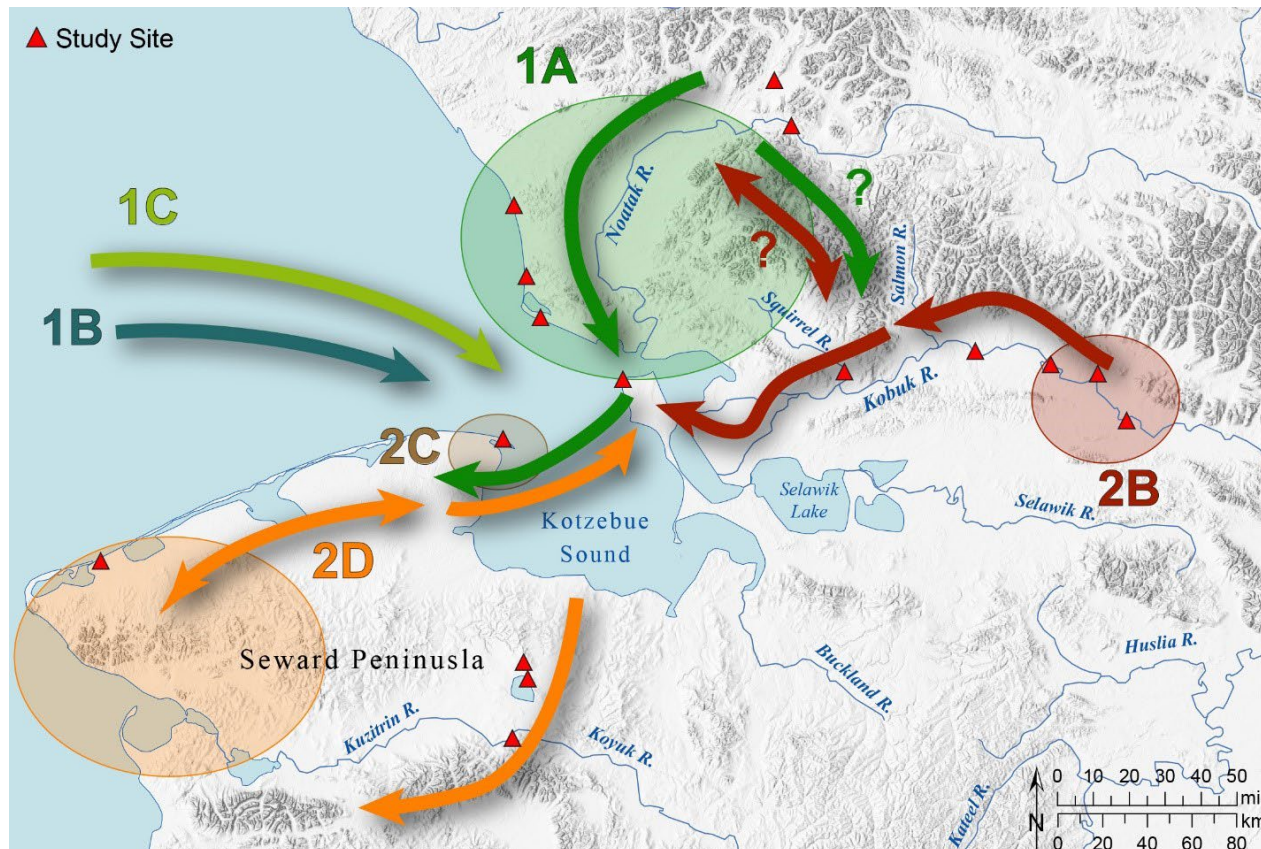


Figure 3. Possible northwest Alaskan ceramic circulation patterns identified by geochemical analysis of sources (e.g., source 1A, 1B, 1C, etc.). Source 1A is in the northern part of Kotzebue Sound, perhaps on the Noatak River. Source 2B is on the upper Kobuk, source 2C is near the northeast tip of the Seward Peninsula and 2D along the northwest area of the Seward Peninsula. Several rare ceramic source groups (Groups 1B, 1C) probably came from outside northwest Alaska, perhaps from Chukotka or the Norton Sound region.

FIGURE BY JOHONNA SHEA

Strait regions. The decorations may have been imitated or the ceramic vessels themselves brought from other areas. Either scenario indicates social ties between these regions. These pre-18th century networks mirror exchange networks reported in the ethnographic literature (Burch 1998 and 2005, Paneak 2004, Lee 1992, Spencer 1959, Spray 2002, Ray 1975). The Seward Peninsula assemblages consist of sources and surface treatments not observed elsewhere within Northwest Alaska, which could be the result of mobility and exchange across the Bering Strait with Chukotka peoples.

Temporal trends in networks are more difficult to assess because of uneven sample sizes over the last

1,000 years. For example, in the northern and central regions of northwest Alaska, there is a reduction in the number of source areas used over the last 1,000 years, and particularly after 500 years ago. There are also changes in the distribution of ceramic samples across sources before and after 500 years ago. These temporal shifts could be related to larger population movements (e.g., Neo-Inuit migration, late pre-colonial/colonial period population shifts). Interpretations of temporal patterns should be treated with caution until the results of additional analysis are available.

To address questions raised by our prior work, we are expanding our study to new locales that will

be key to identifying links across the Bering Strait over the last several millennia (Figure 4). We are also expanding our sample of older Paleo-Inuit ceramics and obtaining new radiocarbon dates for key Paleo-Inuit sites. Paleo-Inuit ceramics in Alaska are thought to date back to 2,500-2,800 years ago.

On-going Work: Contextualizing Past Social Networks with Contemporary Community Knowledge

While archaeologists have established broader patterns of past migration, many questions remain about the ways that people, ideas, and technology moved and interacted across the Bering Strait. New

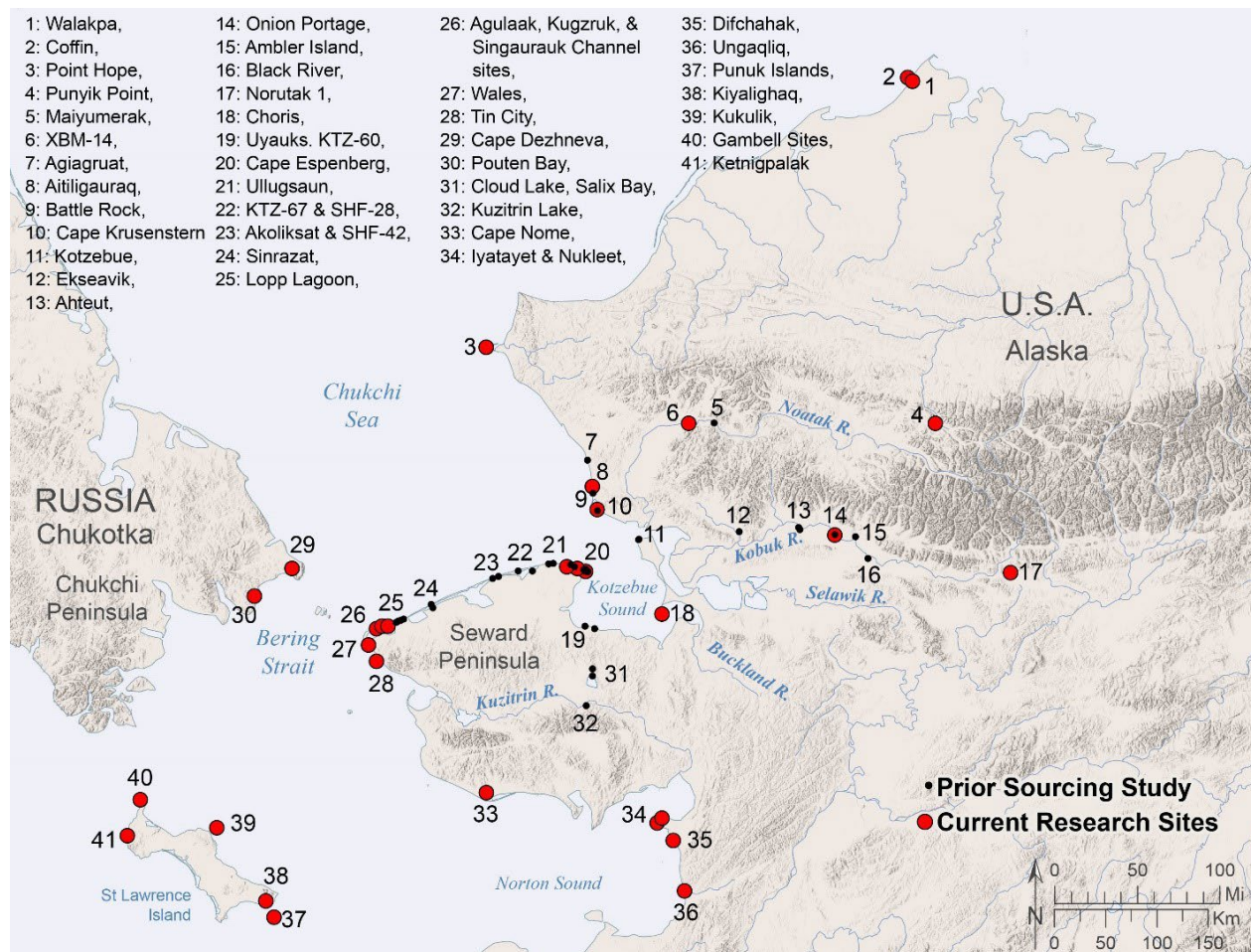


Figure 4. Geographic distribution of study sites.
FIGURE BY JOHONNA SHEA

research is directed at studying pre-18th century mobility and cultural interaction in Beringia through analysis of archaeological ceramic technology. Our study of ceramic technology expands what we know about the extent of social networks over time, and how these networks shifted as people adapted to changing environmental and social circumstances.

Additionally, we are building new connections between archaeologists and Indigenous communities across the Bering Strait region to share knowledge about ceramic traditions and social networks. We are

collaborating in a variety of ways, including creating a database of Alaskan archaeological collections that are housed at museums and other institutions around the world. The database will be shared with communities and will be searchable by the public through a web-based map interface. The goal is to exchange ideas about past and present pottery and food preparation practices across the Bering Strait region. It is only through collaboration that we can contextualize and appreciate how pottery tools were, and are, part of larger shared traditions across the Bering Strait region.

Acknowledgements

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Participants in Nome Archaeology Camp tried their skills in making ceramics and firing them on the beach.

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