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A group of people, likely Chukotka, are shown in traditional clothing. They wear green and red tunics with large fur collars and headbands. One person in the center is holding a large wooden drum. The background shows other people in similar attire, suggesting a cultural event or ceremony.

Beringia: A Shared Heritage



Alaska Park Science

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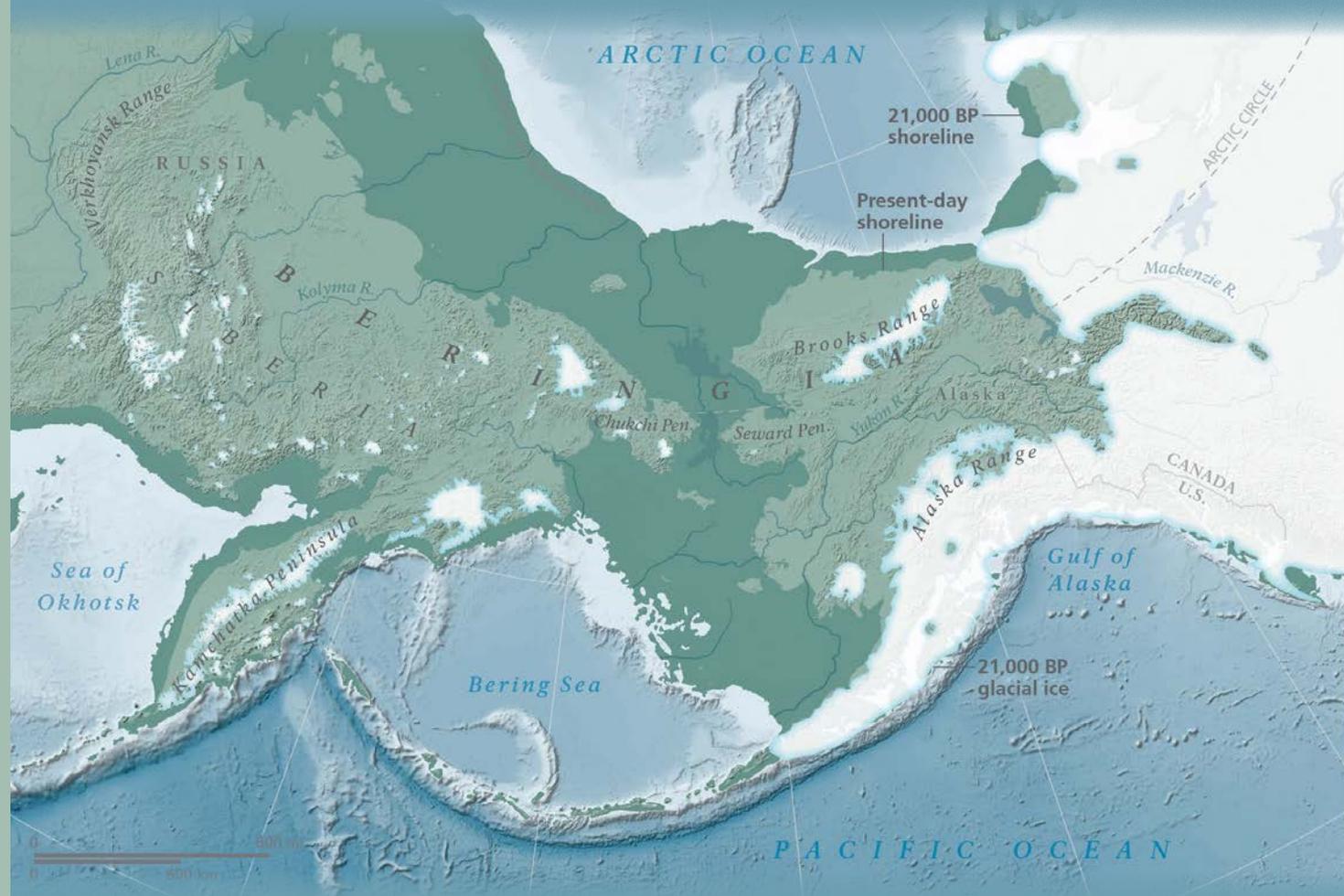


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Beringia: A Region of Collaboration

Evguenia (Jenya) Anichtchenko, Jeanette Koelsch, and Rudy D'Alessandro, National Park Service

This year (2021) is the 30th anniversary of the Shared Beringian Heritage Program. This issue highlights some of the history, intent, and accomplishments of the program. The following articles demonstrate the variety of projects and the values of the program.

Citation:

Anichtchenko, E., J. Koelsch, and R. D'Alessandro. 2021. Beringia: A region of collaboration. *Alaska Park Science* 20(2): 1-3.

2021 is a very special year for the National Park Service (NPS) [Shared Beringian Heritage Program](#). Thirty years ago, at the end of the Cold War, the warming in political relations between the U.S. and (at that time) Soviet Union inspired the leaders of these two countries to sign an [agreement](#) to foster cooperation in the field of environmental protection, cultural preservation, and the study of climate change in the Bering Strait region. Following this agreement, an annual appropriation from the U.S. Congress to the Alaska Region of the NPS established the Shared Beringian Heritage Program and provided funding for natural resource and cultural heritage projects that bridge the Straits. The program's key goals are to promote conservation, sustainability, and increased knowledge of the region's natural and cultural resources; to preserve subsistence opportunities; and to foster cultural connections and the exchange of traditional ecological knowledge in this diverse international area.

During the following three decades, the Shared Beringian Heritage Program has extended over \$12M in funding to 172 U.S.-Russian [collaborative projects](#), selected through an annual call for proposals. These collaborations, some of which are reflected in the articles presented in this volume, were accomplished in very dynamic physical and political environments. Each project pursued its own set of objectives, but also contributed to the overarching goal of bridging political differences and sustaining positive dialogue and interactions between the U.S. and Russia. Thirty years may not seem like a long time, but very few

(if any) U.S.-Russian initiatives besides the two countries' collaboration in space and the Shared Beringian Heritage Program can claim three decades of continuous, mutually beneficial, and productive work.

This achievement would not be possible without the commitment and expertise of the program's staff, interns, volunteers and collaborators. Bob Gerhard, Peter Richter, Katerina Solovjova Wessels, Paul Haertel, Dale Taylor, Bill Welch, Jeanne Schaff, Bruce Greenwood, Janis Kozlowski, Elizabeth Shea, Rebecca Talbott, Vladimir Bychkov, Andrey Khalkachan, Andy Tremayne, Ian Buvit, Leigh Welling, Max Graham, and Peter Neitlich all contributed to the program's work in the past. Presently, the Shared Beringian Heritage Program team includes superintendent of the Bering Land Bridge National Preserve Jeanette Koelsch, Russian language and outreach specialist Evguenia (Jenya) Anichtchenko, cultural anthropologist Nicole Braem, Scientist in the Park intern Megan Withers, and newly hired program manager Jacob Martin.

With 21 [ongoing projects](#), the program is looking forward to the next decade of international dialogue and collaboration. On behalf of the Shared Beringian Heritage Program team, we would like to thank all who contributed to this volume and our projects, as well as our communities at large: local residents, culture bearers, scientists, environmental activists, artists, and educators on both sides of the Bering Strait. Happy anniversary, Shared Beringian Heritage Program, and many more to come!

A November sunrise over the Bering Strait. Insets (top to bottom): traditional dancing in Alaska, granite tors near Serpentine Hot Springs, water tank art on St George Island. NPS/EVGUENIA ANICHTCHENKO (BACKGROUND); NPS PHOTO (INSET TOP); NPS/EVGUENIA ANICHTCHENKO (INSET MIDDLE); NORTAC/RAM PAPISH (INSET BOTTOM)

Celebrating Thirty Years of the National Park Service's Shared Beringian Heritage Program

Rudy D'Alessandro, Office of International Affairs, National Park Service

This special issue of *Alaska Park Science* celebrates the thirtieth anniversary of the National Park Service's Shared Beringian Heritage Program (SBHP). The priorities that the Beringia Program focuses on are those of shared ecosystems, climate change, population migrations, friendship flights, binational rapprochement, family reunions, recognition of traditional ecological knowledge, and cultural resilience. Articles assembled in this issue reflect some of these themes and provide insight into projects recently supported by the program.

During the 1990s, the Shared Beringian Heritage Program was at the forefront of valuing traditional ecological knowledge and instrumental in the thawing of relationships between Alaska and the Russian Far East. According to early SBHP Program Manager, Superintendent Bob Gerhard:

by listening, respecting, and using local knowledge, the program had many notable

achievements, most especially reuniting relatives and colleagues and documenting languages and place names that might have otherwise disappeared.

To borrow from the 2011 report prepared by Kawerak, Inc. and project supervisor Eduard Zdor, *Traditional Knowledge of the Native People of Chukotka About Walrus*:

... it is universally recognized that traditional knowledge of Native people is the result of intellectual activity based on their traditions. It includes ability, skills, innovations, methods that form systems of traditional knowledge, and manifests itself in a traditional way of life ... passed through generations.

The structure of the Beringia program that made it unique and quite successful, is centered on community involvement and projects that reunite people for the wise management and use of shared resources across the Bering Strait.

What we hope to impart with this special issue of *Alaska Park Science* is that the program is alive and well and is a component of a broader effort looking to meet and support the needs of local communities and stakeholders for whom Beringia is more than just a concept. It is an ongoing way of life that links two continents and their people, shared habitats, and species. In light of the existing tensions between the national governments on either side of the Bering Strait, the Shared Beringian Heritage Program is as vital today as it ever has been in providing common ground for two countries and their people to honor the land that gives them sustenance and a shared heritage.

The Shared Beringian Heritage Program staff (left to right): Jeanette Koelsch, Evguenia (Jenya) Anichtchenko, Jacob Martin, and Megan Withers (Nicole Braem is also on staff but not pictured).
NPS/MICHAEL THOMPSON





CHAMPIONS KOTZEBUE HUSKIES

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1st PLACE KOTZEBUE HUSKIES

CHAMPIONS KOTZEBUE HUSKIES

2nd PLACE KOTZEBUE HUSKIES

Tagiugmiut
Dancers

Qikiqtarug
Northern Lights
Dancers
QATNUT

KING ISLAND
DANCERS

UTUQQAĠMIUT
DANCERS

PLAY

ED

SA

Qat̕ut: Celebrating the Legacy of Trade, Dance, and Connection at Sisualik

Hannah Atkinson, National Park Service
Alisa Chen, Student Conservation Association
Caelie Butler, Portland State University
Justin Junge, National Park Service

Qat̕ut is a traditional trade fair that celebrates dance, food, culture, connections, and trade among peoples. The fair has its roots in the exchange between Indigenous communities on both sides of the Bering Strait. The Beringia Shared Heritage Program has played a key role in supporting and continuing this tradition.

Citation:
Atkinson, H., A. Chen, C. Butler, and J. Junge. 2021. Qat̕ut: Celebrating the legacy of trade, dance, and connection at Sisualik. *Alaska Park Science* 20(2): 4-11.

In Kotzebue, Alaska, community members come together every other summer to host Qat̕ut, a cultural celebration rooted in one of the oldest and largest gatherings in Iñupiaq country: the Sisualik Trade Fair. Qat̕ut today is the result of a cultural revitalization effort in 1996, led by Iñupiaq leaders, which set out to improve current life and wellbeing through a relearning of Native traditions in response to social ills brought by ongoing colonization (McNabb 1991, NPS 2019). Trade fair organizers searched for an Iñupiaq term to describe the event, initially calling it *Kattivik*, and settling on *Qat̕ut*, which translates to a gathering of people from different nations (Burch 2006). In 2019, the National Park Service (NPS) joined the Tribal leaders of the northwest Arctic in planning and carrying out the event, while at the same time researching the history of the Sisualik Trade Fair and adding to the oral history record.

The past and present prominence of the Sisualik Trade Fair in international networks of economic, social, and cultural exchange is evident in archaeological research (Giddings and Anderson 1986), ethnohistoric accounts (Lucier and Vanstone 1992, Burch 2005) and oral histories (Green and Abbott 1959, Seveck et al. 1973, Sykes 1996, Hamilton 2005). The trade fair took place annually until the late 1800s at Sisualik (also spelled *Sheshalik*, *Sesolik*, and *Sesualik* by different sources), a fishing camp and traditional settlement located

on the northern coastline of Kotzebue Sound at the confluence of the Noatak, Kobuk, and Selawik Rivers, and since the passing of the Alaska National Interest Lands Conservation Act (ANILCA 1980), within the boundary of Cape Krusenstern National Monument (NM). The biennial celebration of Qat̕ut is an opportunity for the NPS to preserve and interpret historic Native culture alongside the Iñupiat as is mandated in the enabling legislation for Cape Krusenstern National Monument (ANILCA, Title II). The fair is a cultural exchange and heritage preservation project supported by the NPS Shared Beringia Heritage Program (SBHP).

This study focuses on interviews with seven participants and organizers of 2019 Qat̕ut. The interviewees shared stories about Qat̕ut that had been passed on to them, as well as their experiences with the fair. The combined record substantiates the continuity of Qat̕ut: every generation of Iñupiat has celebrated Qat̕ut. The history of the event is entwined with colonization; despite this, Qat̕ut is continually revitalizing trade, dance, and connections between Inuit nations.

History of the Trade Fair

The archaeological record shows that trade networks have connected the ancestral Iñupiat of Northwest Alaska to distant parts of Alaska, Siberia, Europe, and Asia for well over two thousand years (Cooper et al. 2015, Rasic 2016). Sisualik was the

site of one of several major trade fairs that occurred throughout the year (Figure 1). While the majority of written accounts describing the Sisualik Trade Fair are from the 19th and 20th centuries, local oral tradition and archaeological findings both suggest the event predates the colonial period; an archaeological field survey at Sisualik identified evidence of the trade fair dating to the late Thule period (1400-1750 CE; Giddings and Anderson 1986).

In the 18th century, the 15 Iñupiat nations that inhabited Northwest Alaska and the Seward Peninsula incorporated the trade fair into their seasonal patterns of hunting and gathering. The fair drew in people from outside Northwest Alaska,

including Chukchi and Siberian Yupik from across the Bering Strait, the Iñupiat of the North Slope, the Koyukon Athabascans, and Yup'ik traders from south of the Seward Peninsula. As many as 22 nations participated in some years, bringing up to 2,000 people through Sisualik for trade and celebration (Burch 2005). The trade fair usually took place from late June to August but was subject to the break-up of river and ocean ice, which often determined the seasonal harvest patterns of each group in attendance (Figure 2).

In the 19th century, Russia and the U.S. expanded fur trade across the Bering Strait. At the same time, scarcity and famine in Northwest Alaska impacted

the existing trade routes (Burch 2005, Grover 2016). Trade relations shifted away from inland-coastal exchanges to focus on trade with outside merchants (Foote 1961). In 1884, the Trade Fair was held on the shore of Baldwin Peninsula, what would become the village of Kotzebue, so that the large foreign trade ships could participate (Burch 2005). This era was characterized by massive economic and social changes; the Sisualik Trade Fair was transformed in-kind.

In the late 19th century, Christian missionaries also used the trade fair to preach to a large audience of Iñupiat (Burch 1994a). Uyaraq, one of the first Iñupiat people to be converted, reached many

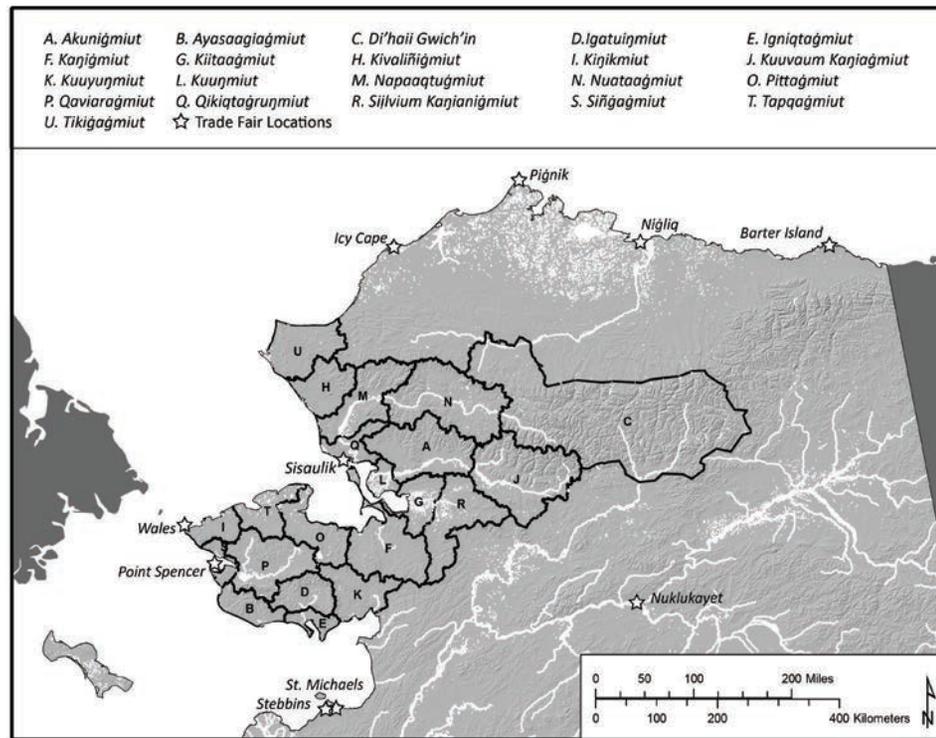


Figure 1. Map showing the Iñupiat nations of northwest Alaska and the Seward Peninsula and major trade fair locations (adapted from Burch 1998, 2006).

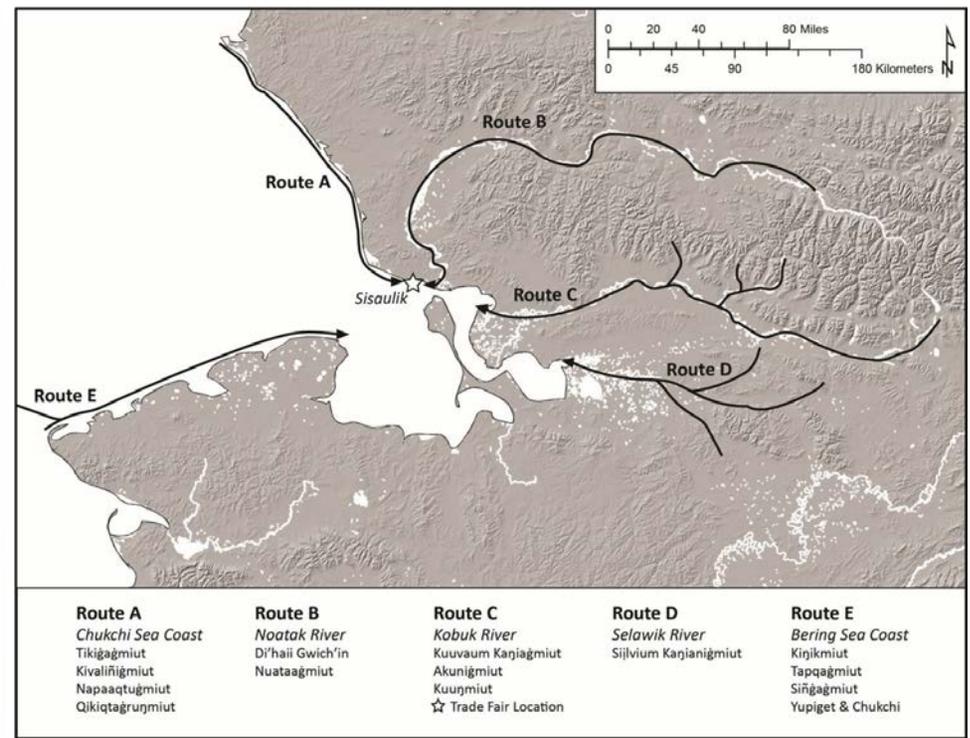


Figure 2. Map showing routes travelled by the Iñupiat to reach the Sisualik Trade Fair (adapted from Burch 2006).

others by preaching at the trade fair in 1896. Quaker missionaries, who would build the church in Kotzebue, arrived in July of 1897. Upon their arrival, they

...found natives gathered from all parts of this northern country—from as far south as what is now Nome, from Point Hope on the north, from Siberia on the west, and from Koyukuk on the east (Burch 1994a).

While the missionaries were welcomed, they responded harshly to Iñupiaq cultural practices like dancing, connecting it to devil worship and banning it from the church community (NPS 2019).

Because the suppression of cultural practices impacted many families, the oral history record of the trade fair in the 20th century is unclear. The record suggests the trade fair continued in Kotzebue in some form because respondents as old as 80 years old remember continued celebration of the event. The Kotzebue Sound Iñupiat continued to gather and celebrate in July when the ice cleared and perhaps a connection to a uniquely Iñupiaq Fourth of July celebration was beneficial, Martha Siikauraq Whiting shared:

Our people got together to celebrate in the summertime with a big celebration. And then we got together in the wintertime to celebrate as well. And it just so happens that it coincides with Independence Day and the Christmas holidays. But our people have been celebrating those times. (NPS 2019).

In 1996, local organizations joined together to bring dance groups from tribes throughout the region traditionally associated with Qatñut to Kotzebue. Maija Katak Lukin, former superintendent for Western Arctic National Parklands, was a part of the

1996 effort and links several major events in the late 20th century as the catalysts for revitalization:

It was sort of just momentum from the Alaska Native Claim Settlement Act, then the Alaska National Interest Lands Conservation Act, and then the Spirit Movement, and then taking Qatñut and just trying to get back what we lost when this area was colonized (NPS 2019).

In the last 25 years, rekindling relationships with relatives in Chukotka is one of the highlights of the modern Qatñut. The Cold War cut off most interactions between Russian and Alaskan Natives, severing cultural and familial ties. Contact between Natives of the two countries did not resume until after the fall of the Soviet Union. The ties are strengthening now, a dance group from Uelen participates in Qatñut whenever travel is possible, either crossing the Bering Strait by boat or chartered plane.

Local organizations such as the Tribal Government, Borough government, NANA (Alaska Native Claims Settlement Act corporation) and Maniilaq (Tribal health care provider) work together to support the logistics of the event, with assistance from the NPS. The 2019 Qatñut, held in Kotzebue, Alaska, had the theme *Celebrating Through Changes*. Dancers from Noatak, Nome, Wainwright, Utqiagvik, and Kotzebue performed traditional Iñupiaq dances. There were tables for artists to sell their crafts. People competed for best hand sewn parka, fastest to fillet a fish, as well as competing in World Eskimo Indian Olympic (WEIO) events. The final event was a potluck with foods brought and shared from all the communities. Although the event has taken on different forms over time due to the significant social and economic changes brought about by colonization, the central themes of trade, dance, and connection persist.

Trade

Trade is an integral part of past and present celebrations of Qatñut. As Iñupiaq culture has changed, the goods traded have changed in response to colonization. For pre-contact communities around Kotzebue Sound, trade was predominately based on the exchange of non-local goods, such as raw materials, finished items, furs, and subsistence foods (Table 1). Through these long-established trade networks, the Iñupiat also gained access to Asian and European trade goods prior to widespread European contact in Alaska (Grover 2016). The rise of the international fur trade further integrated non-local technologies and materials into Iñupiaq trade networks, with the goods exchanged at Siberian trade fairs flowing across the Bering Strait into Northwest Alaska, where they were exchanged at Sisualik for local and European items (Bockstoce 2009).

Some of the European goods traded at Sisualik and Kotzebue in the 19th century included glass beads, metal pots and kettles (Lucier and Van Stone 1992), tobacco, coffee, alcohol, flour, sugar, guns, and knives (Bockstoce 2009). In an interview, Maija Katak Lukin discussed Russian items traded with her ancestors: *cotton flour sacks were used to make atikluks for summertime. (NPS 2019)*

These items were either received directly from Europeans, who sailed to the trade fair and anchored just off the coast, or from traders arriving from the Russian side of the strait. In return for these goods, Europeans wanted whalebone, ivory, and furs, including marten, fox, and beaver (Bockstoce 2009).

Exchanges between inland Iñupiat, Yup'ik, and Athapaskan people played an important role in the Sisualik Trade Fair, especially in the period before significant European contact. The 2019 interviewees

Table 1. Archaeological evidence for non-local material types and their sources.

Material Type	Archaeological Site/Region	Date	Source	Reference
Obsidian	Cape Espenberg, Cape Krusenstern	13 th century	Koyukuk River, Lake Krasnoye	Griffen et al. 1969, Slobodina et al. 2008
Nephrite (Jade)	Cape Espenberg, Cape Krusenstern	15 th - 18 th centuries	Kobuk River	Neff 2015
Clay (Pottery)	Norton Sound, North Slope, Kobuk Valley	17 th - 19 th centuries	Non-local clays identified, changes in decorative types	Anderson et al. 2011, Lucier and Van Stone 1992
Smelted Copper	Cape Espenberg	17 th century	Asia, possibly China	Cooper et al. 2016
Iron	Cape Espenberg	11 th century	Siberia	Cooper et al. 2016

gave detailed insight into items traded by coastal communities and agreed with the older record that marine mammal products were essential. Sara Evak, interviewed in 1996, explained:

Those from the coast had seal oil, ugruk (bearded seal) skins for mukluk bottoms and skin ropes, natchiq (seal) skins for waterproof mukluks, these are items for trading and from upriver, skins like beavers and other kinds of items like birch bark and lots of other variety of things (Sykes 1996).

Caribou hides were perhaps the most common trade item provided by inland hunters, along with dried fish, birch bark baskets, Dall sheep horns, chert for stone tools, and other furs (Burch 1994b).

Today, much of the same resources are celebrated and exchanged at the contemporary Qatñut. Craftsmanship from traditional materials and designs is promoted within craft competitions

and niqipiaq (traditional foods) competitions. In addition to showcasing these historic skills, Qatñut invites vendors from across the region to sell handmade items such as art, jewelry, and food. One 2019 interviewee also saw an opportunity for trade:

My daughter was selling a bunch of stuff. And I told her if you could trade for earrings and anything, trade for whatever you want (NPS 2019).

The potluck is the culminating event of Qatñut and provides an opportunity for attendees to exchange traditional food products that are not usually accessible to everyone, such as *maktak* (bowhead whale) from Utqiaġvik, or akutuq made from blackberries and muskox fat sourced from a family hunting camp located within Cape Krusenstern NM. Plastic buckets of seal oil made in Kotzebue are placed out for attendees to add the nutritious and tasty staple to all their soups and meats.

Dance

When asked about the origins of Qatñut, Martin Woods, leader of the Kotzebue Northern Lights Dancers, shared this story:

In one Iñupiaq origin story, the Eagle Mother teaches an Iñupiaq hunter how to hold a feast, make a drum, and dance, then instructs him to share this knowledge with his community to avoid future harm (NPS 2019).

Dance forms an integral part of Iñupiaq cultural life. The dances are specific to each community. Many tell stories, while others are performed to welcome guests. In the earlier days of the Sisualik Trade Fair, people went out to greet the arrival of every new boat with dancing. Dances and athletic competitions went on throughout the duration of the gathering (Burch 2005). The significance of dancing to the Iñupiaq celebration suggests that the Christian ban on dancing during the 20th century would have impacted the Trade Fair greatly. The revitalization of Iñupiaq dance parallels the revitalization of Qatñut because the exchange of Iñupiaq dance has kept the tradition alive.

The oral history does not describe the Trade Fair in detail during the 20th century. In 2019, four of seven interviewees spoke of how dancing was suppressed by the Quaker church and revitalized in recent years. One individual explained that she did not participate in Qatñut because of growing up in the church. Another of the eldest interviewees, Willie Argāġiaq Goodwin, shared

My generation is the one that suffered the most because we didn't learn how to dance (NPS 2019).

Traditional dancing was never fully eradicated in Kotzebue due to continued cultural exchange

with other communities, established under different Christian missions, which did not experience the same cultural losses. Individuals from Point Hope and Kivalina relocated to Kotzebue or worked in Kotzebue seasonally and taught and performed Native dance (Seveck et al. 1973, Green and Abbot 1959). One such individual is Paul Ağnik Green who moved to Kotzebue from Kivalina in 1938 when there was very little Iñupiaq dance. He started teaching his relatives and community members at the school house:

Every year at Kotzebue we make new Eskimo song and put new motion dance on them (Green and Abbot 1959).

As a result, Kotzebue residents began practicing Iñupiaq dance again, forming a dance group called the Qikiqtaġruk Northern Lights Dancers in the 1990s. This group held regular performances at the NANA Museum of the North and continue to attend Qatġut today, still performing the dances developed by Paul Ağnik Green, and the dances of Kivalina and Point Hope (Hamilton 2005).

The intergenerational effects of the suppression of dance by the Quaker Church are still felt. One of the organizers, Martha Siikauraq Whiting, told the story of her mother refusing to allow her to dance throughout her childhood and her feelings participating in Qatġut now:

I'm almost free... to dance like my forefathers are watching. I'm not there yet. I still feel stiff. You know, I still don't feel like I'm wide open to dance (NPS 2019).

Today, there is dancing on all three days of Qatġut, providing visiting dance groups opportunities to

perform multiple times. This cultural exchange helps to share and rebuild knowledge lost during the upheavals of colonization. In the case of the Chukchi dance groups attending Qatġut since the 1990s, they bring dances and other cultural practices that have been forgotten by the Kotzebue Sound Iñupiat (Hamilton 2005). Reclaiming traditional dance has become one of the central parts of the broader Iñupiaq cultural revival movement, aided by the dance exchange that takes place at Qatġut every other summer.

Connection

They welcomed relatives and everyone here with their open hospitality. Bonds were strong among our Iñupiaq forefathers, said Lena Suuyuk Sours of Kotzebue, who lived from 1883-1993 (NPS 2019). Connections between Indigenous peoples attending Qatġut have adapted and endured. Interviewees in the 2019 study shared stories about seeing family members at Qatġut and hosting attendees in their homes (NPS 2019). During Qatġut, connections are still created through international travel and relationships are still maintained through trade of goods as well as dance and competitions.

Prior to the 1800s, trade routes were part of a yearly subsistence cycle. In one example of a route traveled to the trade fair, members of the Napaaqtaġmiut and Qikiqtaġruġmiut journeyed down the coast from their sealing camps at Rabbit Creek (Figure 2). They would stop at the numerous settlements that dotted the shores of present day Cape Krusenstern NM to collect people from different nations headed to the trade fair, forming a large flotilla with the *umiat* (skin boats) by the time they reached Sisualik (Burch 1994b).

Vika Owens described travelling to Alaska in 1994. They started out in Uelen, Russia, travelling first to Little Diomedede, then Shishmaref, and then to

Kotzebue. In each community they stopped to dance and visit. Owens explains:

It took us three days, and all the three days we slept in the boat, and it was calm, [like] glass. All those three days. It was nice weather. When we came to Kotzebue, it was real nice. People, lots of people were on the beach where there were dancers meeting us. We started dancing with them, it was a real nice warm welcome (Hamilton 2005).

The structure of trade relationships also reflected this emphasis on connection. The exchange of goods took place between individuals instead of nations, making partnerships—known long ago as *niiviq*—central to the Sisualik Trade Fair (Burch 2006) and expanding relationships across regions. Partnerships were often developed between people living in different ecological zones, such as coastal and inland. These expanded relationships allowed participants to procure scarce or regionally unavailable materials (Burch 2006). Willie Argaglia Goodwin provided a story about the trade partnerships forming and special requests. In the story, a person from Diomedede, an island with no trees, met with an upriver inland trader and requested that he bring tree gum to the trade fair the following year so that the Diomedede's granddaughter could have a taste. Willie described the gratitude for the trade made that following year:

The Diomedede took him to his boat and he had all these pokes of seal oil and walrus and ugruk and seal, and he was so happy for the tree gum that he told the guy from the upper Kobuk: "take whatever you want!" (NPS 2019).

The exchange of goods and ideas is very much alive in the modern celebration of Qatġut.

Lena Suuyuk Hanna commented on the bonds formed during Qatjut that maintain Iñupiaq cultural practices such as sewing:

We have family that comes from Canada, which has happened before. It's good to meet new people and get ideas on how they make their parkies and I get a lot of ideas from ladies that come in with their regalia. And I love to skin sew (NPS 2019).

Future Research

Analysis of interviews completed in 2019, along with past oral history, ethnographic, and archaeological research, suggest that Qatjut has been taking place continually for at least 2,000 years. The focus of the most recent research was to understand the experience of participants and organizers, their knowledge of the history of Qatjut, and how the event has changed. The results showed that trade, dance, and connection between Inuit communities has changed significantly and remains the motivation for this event. Interviewees shared visions of future Qatjut celebrations and there is much still to document about the heritage of the Sisualik Trade Fair.

Our research was limited to the organizers and participants from the host community of Kotzebue. The oral history could be extended by interviewing dancers and crafters from participating communities, as the event has significance for up to 22 traditionally associated groups (Burch 2005). To better understand relationships across the Bering Strait in particular, we recommend partnering with Russian researchers.

The 20th century celebration of Qatjut is still a gap in the record. Several 2019 interviewees said they did not participate in Qatjut until later in their life due to discouragement from the Quaker Church. The literature review gives some clues as to how dance



and the trade fair continued through the period of cultural suppression. More specific questions about that time-period as well as interviewees from a variety of communities could fill in the timeline.

Some have called for Qatjut to physically return to Sisualik and an attempt was made in the 2000s. Martha Siikauraq Whiting spoke of the potential significance:

We almost did go back to the homeland of the original trade fair to really make it more like a trade fair where we're dancing, celebrating, trading (NPS 2019).

Superintendent of Western Arctic National Parklands Maija Katak Lukin sews beaver fur into clothing using traditional patterns between events at the 2019 Qatjut celebration.
NPS/ALISA CHEN

The future of Qatjut will be determined by the contributing organizations led by the Iñupiat. There will continue to be opportunities for NPS to support a living cultural event that perpetuates many ethnographic resources. NPS support can range from funding travel through grants, planning logistics, offering housing, and further cultural research.

Acknowledgement

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Ocean Currents and Food Security: The Crucial Role of Bering Strait Traditional Knowledge

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Knowledge of ocean currents is critical to the food security of Indigenous Peoples of the Bering Strait. This knowledge can mean life or death for fishermen and hunters and is passed down from Elders to youth.

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The Elders told me about currents, and also showed them to me from the boat. I learned more by example. I have been on the water since childhood and I learned everything from observation.

–Evgeny Siv-Siv, Inchoun, Chukotka, Russia

Learning these things young will feed you and your family for the rest of your life.

–Gilbert Oxereok, Wales, Alaska, USA

There are numerous ocean currents operating in the Bering Strait region (the area including the Strait itself, as well as the northern Bering and southern Chukchi Seas adjacent to it). Some currents flow for long distances, some are small and more localized, like eddies. Other currents are impacted by the tides, either temporarily switching direction (e.g., at channels leading into inlets), or changing their speed (e.g., becoming slower or “weaker” at high tide). Seasonal currents appear only during certain times of the year and under certain environmental conditions. Currents can also dramatically decrease in speed of flow, and even reverse or temporarily stop flowing, under the right conditions. The ability to identify and read the behavior of currents in the Bering Strait is something residents of the region have depended on for millennia.

The Importance of Ocean Currents Knowledge

Knowledge of ocean currents is critical to the food security of Indigenous Peoples of the Bering Strait. Ocean currents knowledge is intimately tied

to individuals’ and communities’ knowledge and understanding of animal behavior and migrations, sea ice movements, the best and safest times to travel on the ocean, navigation, weather prediction, and much more. This information is a crucial part of a larger system of knowledge that Indigenous communities hold known as Traditional Knowledge (Kawerak Social Science Program 2017). The depth and complexity of an experienced hunter’s knowledge is virtually impossible to describe. Hunters, boat captains, and other marine experts have learned about currents through direct experience on the water, by watching more experienced people when they are out on the water, and through direct instruction from Elders and others. This includes learning how to describe ocean currents and their behavior in Indigenous languages, which is often is more expedient and more richly detailed than describing them in English. The following table has some examples of Iñupiaq terms related to ocean currents.

An ocean current that is often visible between Big (background) and Little Diomed Islands (foreground).
KAWERAK, INC/JULIE RAYMOND-YAKOUBIAN

Iñupiaq Term	English Translation
saġvaq	Ocean or river current
asaanaaġuk	Very fast current going outward at the channel
asaanaaq	Slow current going outward at the channel
ayaktaq	Person that floats away on ice, boat, etc.
itiqsaanaaq	Slow current going into/toward the channel
itiqsaanaġuk	Very fast current going into/inward at the channel
saġvaatuzruaq samna	That one out there that has a very strong current (referring to the strongest current running north between Wales and Pt. Hope)
tuluqtitaq (sing.) tuluqtitat (pl.)	Ice pushed over shore ice or on to the beach by a strong current/wind

Food security has many components, including access to healthy, culturally appropriate foods. For Bering Strait Indigenous communities, this includes the means and ability to harvest marine and other foods, as they have done for millennia. Food security as defined by ICC Alaska (2020) includes:

... the right of all Inuit to define their own hunting, gathering, fishing, land, and water policies; the right to define what is sustainably, socially, economically, and culturally appropriate for the distribution of food and to maintain ecological health; and the right to obtain and maintain practices that ensure access to tools needed to obtain, process, store, and consume traditional foods. Within the Inuit food security conceptual framework, food sovereignty is a necessity to support and maintain the six dimensions of food security.

Hunters and others traveling on the ocean must be able to quickly and accurately interpret the interactions of wind, ice, and currents and

anticipate the behavior of both marine animals and humans in order to maintain safety and to successfully harvest animals (Kawerak, Inc 2013). Successful harvests are crucial to the food security of communities, to individual and community well-being, for intergenerational knowledge sharing, the continuation of spiritual practices, and for other important aspects of contemporary Indigenous lifeways (e.g., Gadamus and Raymond-Yakoubian 2015, B. Raymond-Yakoubian et al. 2014, J. Raymond-Yakoubian et al. 2014, ICC Alaska 2020).

Ocean currents knowledge is critical for communities to maintain unique and living bodies of Traditional Knowledge and distinctive subsistence practices. Some Indigenous ocean currents experts have concerns about the contemporary challenges of passing on this body of knowledge and experience to younger generations, a lack of Indigenous language skills related to the marine environment, and the safety of young boaters and boat captains. Some see an over-reliance on GPS and satellite technology as

He's the captain, that's his boat. He's the person that is very responsible. He's making sure that no one forgets anything. He's a big man there. He's the man that takes care of everything; food, animal, whatever you need, make sure you are dressed properly and what not. He knows the weather. He knows the current. He knows everything. Even in conditions where it gets so bad when we are hunting. He's got to know this stuff, he got to know what to do, what to expect and what not to expect.

–Robert Soolook, Diomedede, Alaska, USA

And then, first of all, we try to look for where we think the game is. ... we estimate how long it will take from where we see it, then get ready, and how long we think it will drift – head to that spot. ... And then at the same time you're doing that, you as a captain have to try to calculate how much gas to carry to reach that area, and come back. Course you're gonna be fighting against the current, you must figure that part out, too. It's a serious calculation. You have to be serious about it. And then you have to communicate with other captains that are going out there, too. Communication is very important.

–Luther Komonaseak, Wales, Alaska, USA



Young people from Lorino with a skin baidara.
CHUKOT TINRO



Edward Soolook and Robert Soolook, Jr. of Diomedes
discussing ocean currents.
MEGHAN SIGVANNA TOPKOK

a detriment to learning from traditional knowledge. In order to stay safe and be successful, younger generations must continue to learn and older generations must continue to teach.

Being a boat captain in an Indigenous community is a substantial responsibility. Captains are boat owners who train and work with skilled hunters as their crew. These crews, under the direction of the Captain, hunt for marine mammals such as whales, walruses, and seals, obtaining large amounts of food for their communities. Without successful hunts, the food security of a whole community may be at risk. Captains have the safety of their crews, as well as the welfare of their communities, weighing on them. If they make an error, other crews may have to risk their lives to rescue them. If they are not successful finding animals, the community may not have enough food. Additionally, gasoline and motor oil are very expensive in all Bering Strait region communities (gasoline may be \$5 a gallon or more). Hunters must have the knowledge needed to calculate their fuel needs, including knowing how much more fuel is used when traveling against currents or strong winds or in rough seas. Miscalculations can lead to crews becoming stranded. Good boat captains recognize all of these factors and use their knowledge to understand weather and ice conditions, the effects of climate changes, crewmember skills and abilities, and other factors that must be considered before heading out on to the water.

Marine Animals and Ocean Currents

Just like humans, marine mammals and other animals use ocean currents for a variety of purposes. One of the primary reasons animals spend time near ocean currents is because the currents are a source of food. Marine mammals, birds, and fish use ocean currents and currents bring other important resources, like driftwood and clams, to Bering Strait communities.

Importantly, the currents are also one of the things that influence sea ice movement. Ice-associated mammals such as walruses and ringed, bearded, spotted, and ribbon seals, use the ice and the currents. These animals pup, calve, mate, and rest on ice and use ice as a platform to escape predators. When using the ice for these purposes, the animals are moved along with the currents.

Hunters know that if animals cannot be found near the ice edge that they are probably out in the current. There are some areas, such as eddies and leads, places where there will be open water maintained by the current, where hunters will also look to find animals. Additionally, hunters have such

That was one story my dad told me one time. ... he said even if you can't find walrus or anything out here, always check out this ... big eddy in there [pointing to the map]. ... So we found walrus there one time.

–Curtis Nayokpuk, Shishmaref,
Alaska, USA

We have always used currents when harvesting marine mammals. Old people would go from Nunyamo towards Yandagay. They would go out to sea, search for walruses on ice, kill them, and while they butchered them, they would drift with the current back to the village. Now they no longer use this trick – there are few walruses, and we have motors.

–Evgeny Einycheivun, Lavrentia,
Chukotka, Russia



Clams collected on the beach at Wales in the fall. Ocean currents, as well as storms, shape the nearshore ocean bottom, influencing where clams may wash ashore. BRENDEN RAYMOND-YAKOUBIAN

detailed knowledge of currents that they can often predict where a struck and lost animal may drift to or come ashore and are then able to recover it.

Pollution Also Moves on Ocean Currents

Trash, while not a desired resource, is something else that ocean currents bring to the Bering Strait shoreline. Like any other form of pollution, trash is a concern for communities because of the potential impacts it could have on subsistence resources like marine mammals, birds, and fish. People are concerned about past and future increases in vessel traffic through the Bering Strait and the possibility of trash and dangerous materials, such as an oil spill, being transported to their communities by ocean currents. The summer of 2020 unfortunately brought a large marine debris event to the region's Alaskan shores (Kawerak, Inc 2020).

Safety

Safety is a major concern when traveling on the ocean and expert hunters shared information about how to stay safe. No one should ever underestimate the power of the environment, especially the currents. Ocean currents are perceived by some as being one of the more consistent features of the marine environment. But, the ice and the currents cannot be separated from each other. One Diomede Elder, Arthur Ahkinga, Jr., explained that: *the currents, they operate the ice.*

A warming climate has led to thinner ice that behaves differently than thicker, older ice. For example, the ice in front of the village of Diomede (on the west side of Little Diomede Island) would often freeze flat in the past. These conditions allow easier access to hunt by foot on the ice and easier transport of boats to the ice edge for hunting. Today, while the ice initially freezes flat, it is often “crumbled up” and piled by the currents and the winds because it is thinner and can be pushed around more easily. The force of currents and winds pushing on thin ice pans causes them to pile, ice pan upon ice pan, creating jumbled, “crumbled” ice. This can be very dangerous, particularly on the south side of the island (see also Iyahuk 1987).

Driftwood and other floating debris can create hazards and boaters should always be scanning to identify and avoid debris. At certain times of the year, there can be large amounts of driftwood and debris transported by the currents. This debris can damage or destroy outboard motors or cause damage to boats.

When on the ice hunting or butchering an animal, it is important to move quickly. Weather conditions can change unexpectedly and the current is always moving. Hunters should identify a “marker” when hunting on the ice, such as finding a landmark, like a



Chukotkan hunters on the ice edge. ANDREI STEPANOV

building or mountain and memorizing its location. If the marker has moved, the ice you are on is moving and may not be safe.

In addition to monitoring landscape features and other environmental indicators, marine current experts observe the currents themselves to try and predict impending weather conditions. If signs indicate changing or bad weather, one should head to safety immediately (see also Okpowruk 1983). It is also important to have an Elder or a very experienced person in the boat whenever possible to ensure that someone on the boat has the knowledge or experience to deal with any situation that a crew may encounter (see also Jones 2003). While the safety and success of the crew is ultimately the responsibility of the boat captain, all the crew members on the boat are expected to have knowledge of the ocean currents, navigation landmarks, and other relevant information.

We used currents during marine mammal harvest to determine whether it was safe to walk on ice, or to tow harvested animals without the risk of being carried off by the sea. The current may carry you off if you disregard it, especially in the old days when we had no motors. When we sailed we headed half way into the current to make up for the drift. I don't know [whether currents were used] for harvesting other resources. They were not used for travel, only for hunting ... and also for weather forecasting. If a current flows that way – the weather will change. If a current flows south, then it will blow from the north, so the weather will change. We watch the current, the wind and the mountains – all together they give us the weather forecast.

–Nicolay Ettitegin, Lavrentia,
Chukotka, Russia

Conclusion

There are many ongoing challenges for Bering Strait communities related to Indigenous food security and the marine environment including climate changes, sea ice loss, and increasing vessel traffic. The deep understanding of how and where currents operate, which resources they may bring during different seasons, and how to safely navigate currents and use them to your advantage supports other knowledge that hunters and communities collectively maintain and utilize as part of their food security (e.g., Kawerak, Inc. 2016). This living

body of knowledge, including the cultural values embedded within it, provides strength and flexibility to communities as they work to successfully lead the way through challenges.

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The experts who collaborated on this project shared the sophisticated decision-making calculus that they engage in each time they contemplate taking their boats on to the ocean to hunt, travel,

or for other activities. Their understandings of a complex ecosystem, and a changing ecosystem, along with other community-held knowledge, has allowed communities to thrive for millennia in the Bering Strait region.

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Nome Archaeology Camp: Using Place-based Education to Inspire the Next Generation of Stewards in the Bering Strait Region

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National Park Service
Lisa Ellanna, Kawerak, Inc.

Nome Archaeology Camp engages high school students from across Alaska in learning about the cultural heritage of the Bering Strait—past and present. They practice archaeological survey techniques, learn from elders and local experts, work with museum collections, and more.

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Nome, known locally as *Sitnasuaq* [Iñupiaq], lies at the southern edge of the environmentally and culturally diverse Seward Peninsula, the westernmost extension of the North American mainland. During the Last Glacial Maximum 24,000-15,000 years ago, sea levels were about 400 feet (120 m) lower than today, making the Seward “Peninsula” landlocked within the Bering Land Bridge. This swath of land connected Alaska to Asia and most archaeologists agree that it facilitated human migration to the American continents at the end of the Pleistocene, around 14,000 years ago. Ancestors to the contemporary Indigenous residents in the Bering Strait region are thought to have arrived around 4,000 years ago (e.g., Anderson 1984, Anungazuk 2009). Today the region is home to three primary cultural groups, Iñupiat, Central Yup’ik, and Siberian Yupik, and 20 communities.

Visible reminders of the area’s long human history—archaeological sites and heritage resources—are recognized and protected at local, tribal, state, and federal levels. However, the region’s archaeological sites are threatened by natural and human forces. Deeply rooted traditions and subsistence practices are also affected by the ebb and flow of ongoing cultural and technological changes. Local leaders are concerned about these changes to traditional ways of life and have also detected a growing need to support the next generation of youth with activities that encourage cultural preservation and stewardship.

The Nome Archaeology Camp was conceptualized by local cultural resource specialists driven to create opportunities to address heritage preservation concerns. More than 50 high school students from 14 Alaskan communities participated in the week-long camps held annually between 2015-2019. While at camp, students worked with scientific and conservation professionals from the National Park Service; Kawerak, Incorporated; Bering Strait Native Corporation; Alaska Geographic; and the City of Nome, as well as local experts and Elders from the Bering Strait region.

The cultural heritage of the Bering Strait is best understood through multidisciplinary methods and sources. The Nome Archaeology Camp was planned, and evolved, with that multifaceted approach in mind. From hands-on activities and experiments in the fields of archaeology and museum studies, to decolonizing methods of anthropology and community based participatory research, the camp outcomes were determined by the place and the people connected to it. By empowering the next generation of Bering Strait cultural heritage stewards, the camp serves the enabling legislation for Bering Land Bridge National Preserve: “to provide archaeological and paleontological study, in cooperation with Native Alaskans” (ANILCA 1980).

Ways of Understanding the Past

From their basecamp at Salmon Lake students were first taught to recognize human impacts on the



Jennifer Smith (left) and Martin Hadley (right), students of the 2015 Nome Archaeology Camp, help record an archaeological site near Salmon Lake.
NPS PHOTOS

environment. The area is popular for local recreation and subsistence and contains the spawning grounds for the northernmost run of sockeye salmon in the United States. Here, modern, historic, and ancient material culture dot the tundra providing a long record of land use, and an interactive learning opportunity for students of the Nome Archaeology Camp.

Guided by professional archaeologists and equipped with handheld GPS devices, measuring tapes, cameras, and field notebooks, students conducted an archaeological survey at small village site. One major departure from other archaeological camps or field schools is that the Nome Archaeology Camp is not centered on excavations. After identifying and recording visible features, students were taught

to use a minimally invasive soil probe to assess subsurface remains. In 2015, students employed the probe to collect a small piece of charcoal from the center of a large circular depression, the remains of a semi-subterranean house. The sample was then prepared for radiocarbon dating, sent to a laboratory for professional analysis, and determined to be nearly 1,000 years old. Discussion of the site connected past land use to current land use and explained that destructive methods such as excavation are not required to learn more about the past.

In addition to contributing systematic observations and scientific data to the long-term archaeological record, many students connected with this experience on a personal level.

[Recording the archaeological site was] ... very enjoyable to me ... to even get a glance at how our ancestors lived and [see] all the stories I had been told of come to life as I saw the kinds of places they lived.

—Caitlin Tautuk Hanna,
a 2016 camp participant

Just beyond the village site, students investigated a caribou “drive line,” stacks of rocks or inuksuk strategically positioned into two, gradually converging rows. These lines of rock are a traditional technique used to help funnel caribou into a corral where they can be harvested. Once the students identified the drive line using archaeological survey techniques, they reenacted a community hunt described in Lewis Binford’s, *A Corporate Caribou Hunt*. With the archaeological drive line as their stage and an ethnographic text as their script, students brought this traditional hunting method to life as they rotated through roles of both the community and the caribou. A favorite character to play was the rhythmic driver, a human mimicking a caribou that guides the herd to the waiting hunters by “move[ing] their upper torsos in a circular, up and down motion, and dip[ping] their heads as they lower their bodies” (Binford 1991: 38).

In all five seasons of camp, students learned from the experiences and wisdom of Elders and local experts. Some of these honored guests described their upbringings and long-told family tales from the region. Others shared their knowledge about the uses and names of traditional plants, and many highlighted the intersection of oral history and science.



Students re-enact traditional hunting methods at a caribou drive line in 2018.

NPS PHOTO



Each evening, students take turns reading aloud from *People of Kauwerak*.

NPS PHOTO



Elders share stories with the students of the Nome Archaeology Camp in 2016.

NPS PHOTO

In 2016, elder Guy Martin from Nome described a story, also detailed in *People of Kauwerak*, in which oral history played a key role in both relocating a long-lost stone monument and confirming the monument's continuing cultural importance (Oquilluk and Bland 1973, Ganley 2009).

When scientists give a timeline and Elders give a timeline with their stories and when they mesh, they complement each other and there's a period of veracity, a period of truth, which is gratifying to the memory of our Elders and a complement to the scientific community, Martin explained in an interview with *The Arctic Sounder* (Grove Oliver 2016).

After listening to and recording oral histories, students reflected on their roles in continuing the tradition: to ask questions, show respect to Elders, and most importantly, share the stories.

Bringing the Past into the Present

The relationship of the Nome Archaeology Camp to Nome's Carrie M. McLain Memorial Museum and Katirvik Cultural Center has presented opportunities for students to learn cultural heritage preservation from community experts. Museums and cultural centers are a key source of interpreting the past and sharing information with the public. Camp activities developed each year as the local centers have grown. Such facilities in Nome are uniquely positioned to create environments, exhibits, and projects that are based on the priorities and cultural values of the region.

The Carrie M. McLain Memorial Museum experienced a significant upgrade during the span of the Nome Archaeology Camp. In 2016, the museum's 15,000 historical and cultural objects, 12,000 photographic prints and negatives, and several hundred boxes of historical documents were transported to a new facility in Nome's Richard Foster building, where they could be better housed

and exhibited (Phillips-Chan 2020). Students of the Nome Archaeology Camp enjoyed behind-the-scenes insights as the collections moved to the new building. They also helped catalog and 3D scan a collection of ethnohistoric artifacts from Nome. When the new museum opened, students toured curatorial facilities and exhibits.

One artifact I'll never forget is the tool that catches fish called naquq. It's a beautiful little object and it is so intelligently put together. I think this tool took some time to perfect and hopefully in my future as an archaeologist I'll find many other versions. Being here has really inspired me to do research of my own.

—Daphne Stein, a student from Kotzebue, explained what working with museum collections meant to her.



Elders and youth work together at the 2015 Nome Archaeology Camp to catalog artifacts donated to the Carrie M. McLain Memorial Museum.
NPS PHOTO



Students enjoy a behind-the-scenes tour of the Carrie M. McLain Memorial Museum in 2016.
NPS PHOTO



Students practice traditional drumming with Lisa Ellanna at the Katirvik Cultural Center in 2016.
NPS PHOTO

Next door to the museum is the Katirvik Cultural Center [*Katirvik* in Iñupiaq, Siberian Yupik, and Central Yup'ik is literally translated as “Gathering Place”], a facility designed to celebrate and share Indigenous knowledge and cultures from the Bering Strait region. Here, students participated in shaping the space as a place of learning and gathering. This included interacting with exhibits, traditional drumming and dancing, enjoying Indigenous foods, and participating in thoughtful discussions.

From Learning to Action

The content and instruction style of the camp evolved over the years to meet the unique needs and interests of the students in attendance. Social issues linked to self-identity and culture loss from western colonization are part of many Indigenous Alaskans' experience. The individuality of students is deeply entwined with their ethnic identity and cultural socialization, and that identity may be strongly bound to a place, environment, or landscape

(Nordström 2008). Through place-based education opportunities presented during Nome Archaeology Camp, instructors and mentors showed students that the revitalization and preservation of culture can be a healthy coping strategy.

As a final project, students summarized their experiences through presentations on the core subjects explored during camp. In addition to sharing what they learned, presentations were encouraged to include a direct action. Students advocated for public schools to include courses in Alaska studies, Native drumming, Alaska Native arts, and Indigenous language classes. Further, they supported a growing effort to use traditional place names and argued that state and federal regulations should enable local residents to harvest traditional foods.

Results, experiences, and action items from the five years of the Nome Archaeology Camp have been shared in classrooms, professional conferences, local

newspapers, social media posts, newsletters, and in many conversations across Alaska and beyond. Students leave camp with academic credit through University of Alaska Fairbanks - Northwest Campus, competency in basic field science techniques, and an expanded understanding of the history and culture of the Bering Strait region. Many of the take-home lessons, however, are more connected to the future than the past. Instructors hope that after their time camp, the next generation of Bering Strait stewards feel empowered to ask questions and participate in cultural preservation efforts in the region they call home.

Acknowledgements

The Nome Archaeology Camp is a collaborative effort, made possible with support from Alaska Geographic, Bering Straits Native Corporation, Bureau of Indian Affairs, Carrie M. McLane Memorial Museum, City of Nome, Katirvik Cultural Center, Kawerak, Inc., Murie Science and Learning Center, National Park Service, Norton Sound Economic Development Center, Shared Beringian Heritage Program, and University of Alaska Fairbanks-Northwest Campus. Special thanks to Julie Raymond-Yakoubian, Amy Russell, Charlie Lean, Jeff Rasic, Matt Ganley, and the many Elders, guest presenters, mentors, and experts who generously shared their knowledge and time. Thank you to the students of the Nome Archaeology Camp, and the families and communities who supported their participation.

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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.

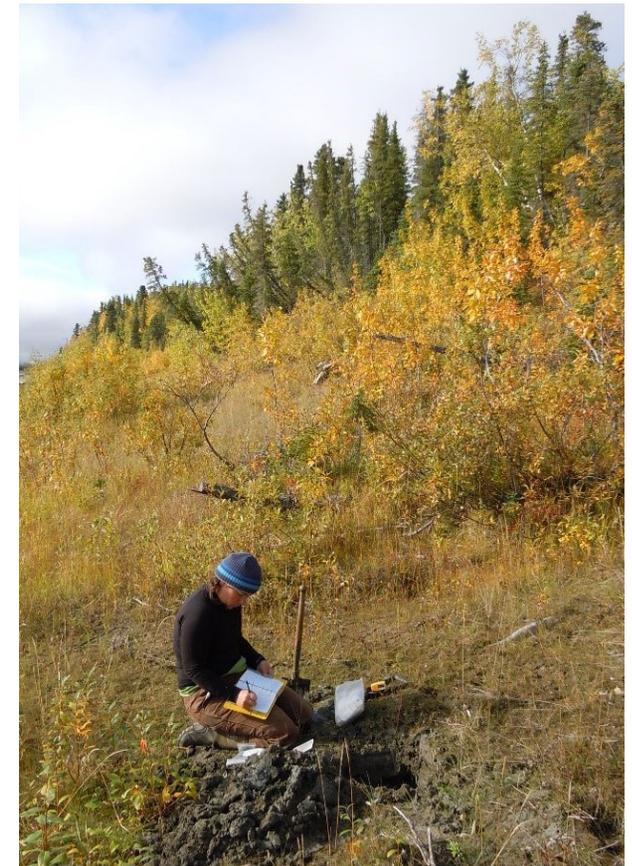
Citation:

Anderson, S., I. Ponkratova, and I. Zhushchikhovskaya. 2021. Studying long-term patterns of Bering Strait cultural interaction and exchange through archaeological ceramic analysis. *Alaska Park Science* 20(2): 26-35.

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.

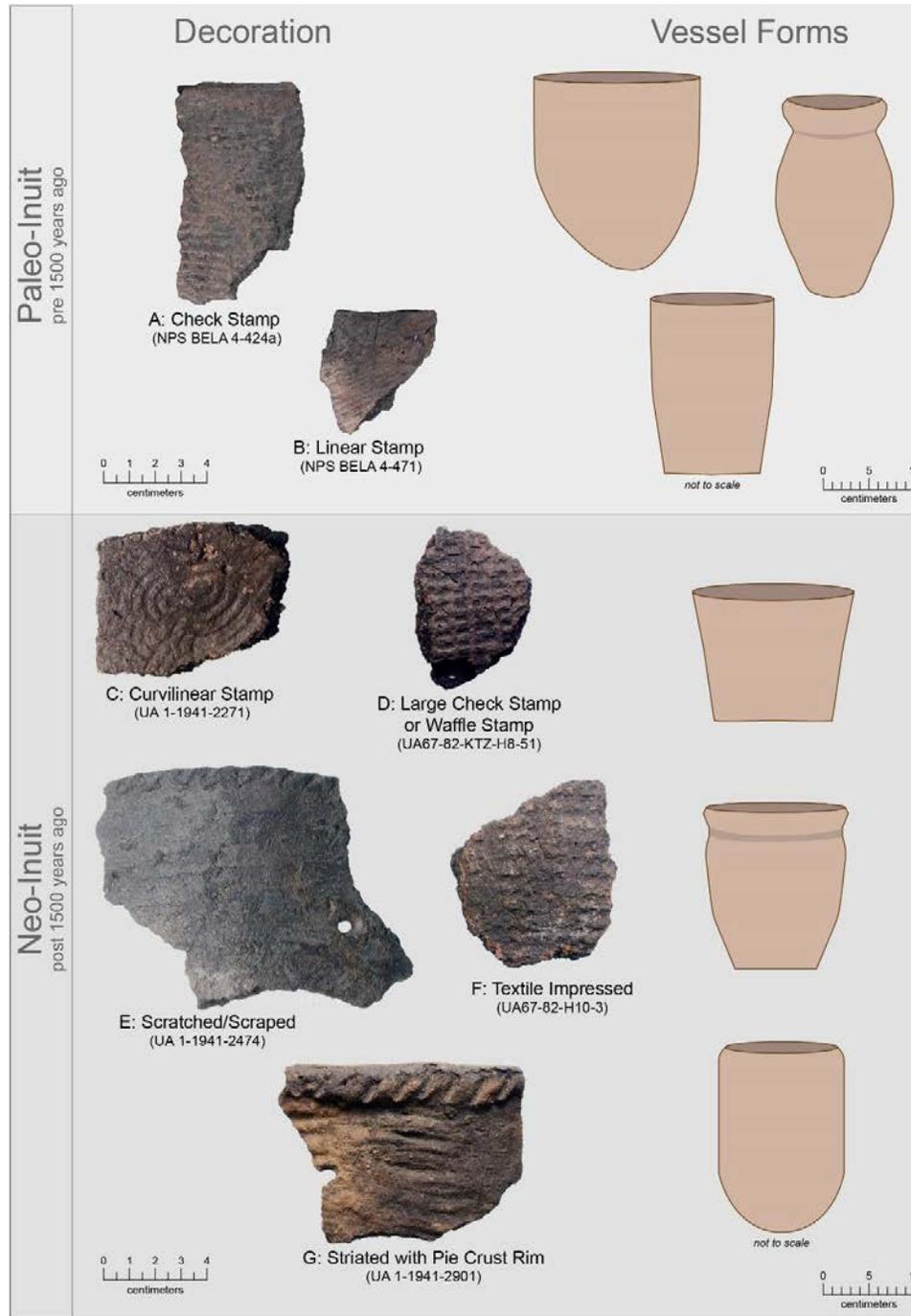


Figure 2. Comparison of Paleo- and Neo-Inuit pottery. FIGURE BY JOHONNA SHEA



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

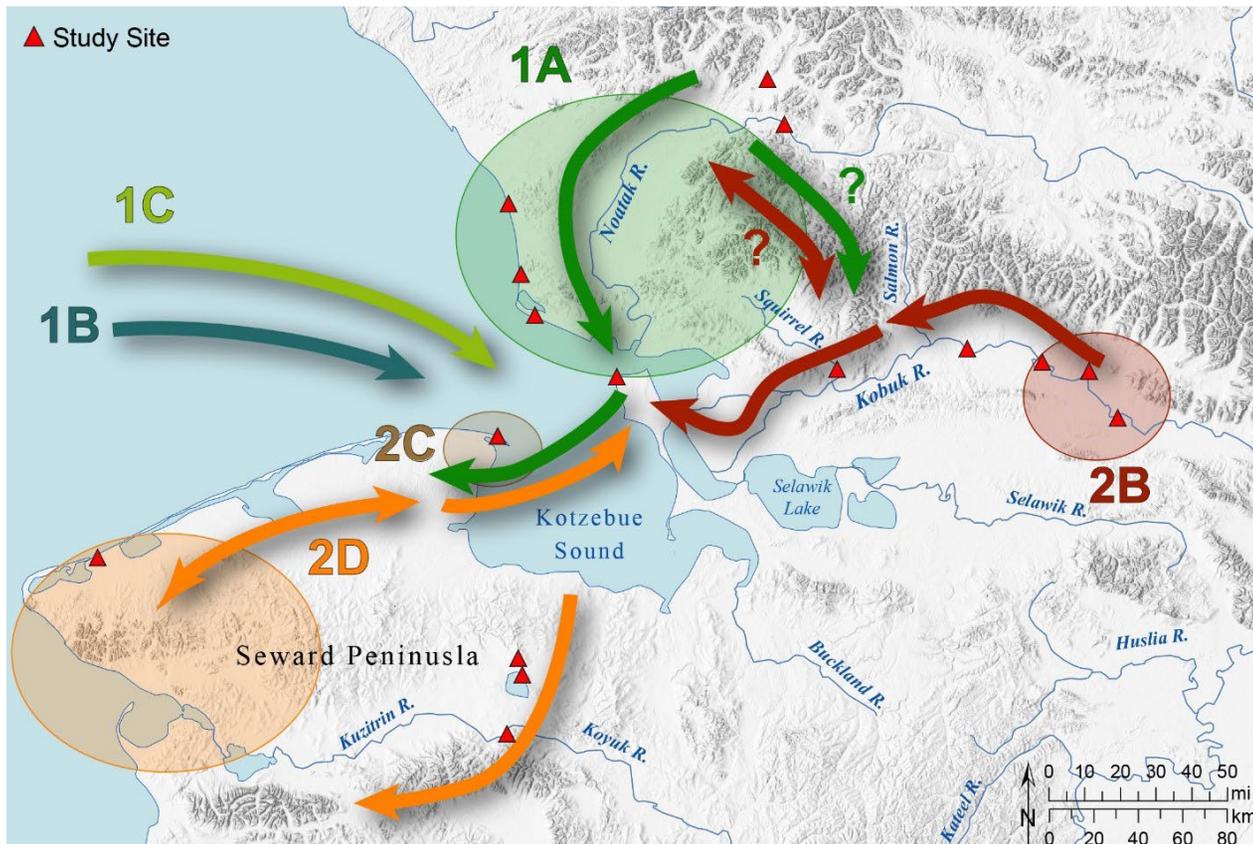


Figure 3. Possible northwest Alaskan ceramic circulation patterns identified by geochemical analysis of sources (e.g., source 1A, 1B, 1C, etc.). Source 1A is in the northern part of Kotzebue Sound, perhaps on the Noatak River. Source 2B is on the upper Kobuk, source 2C is near the northeast tip of the 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

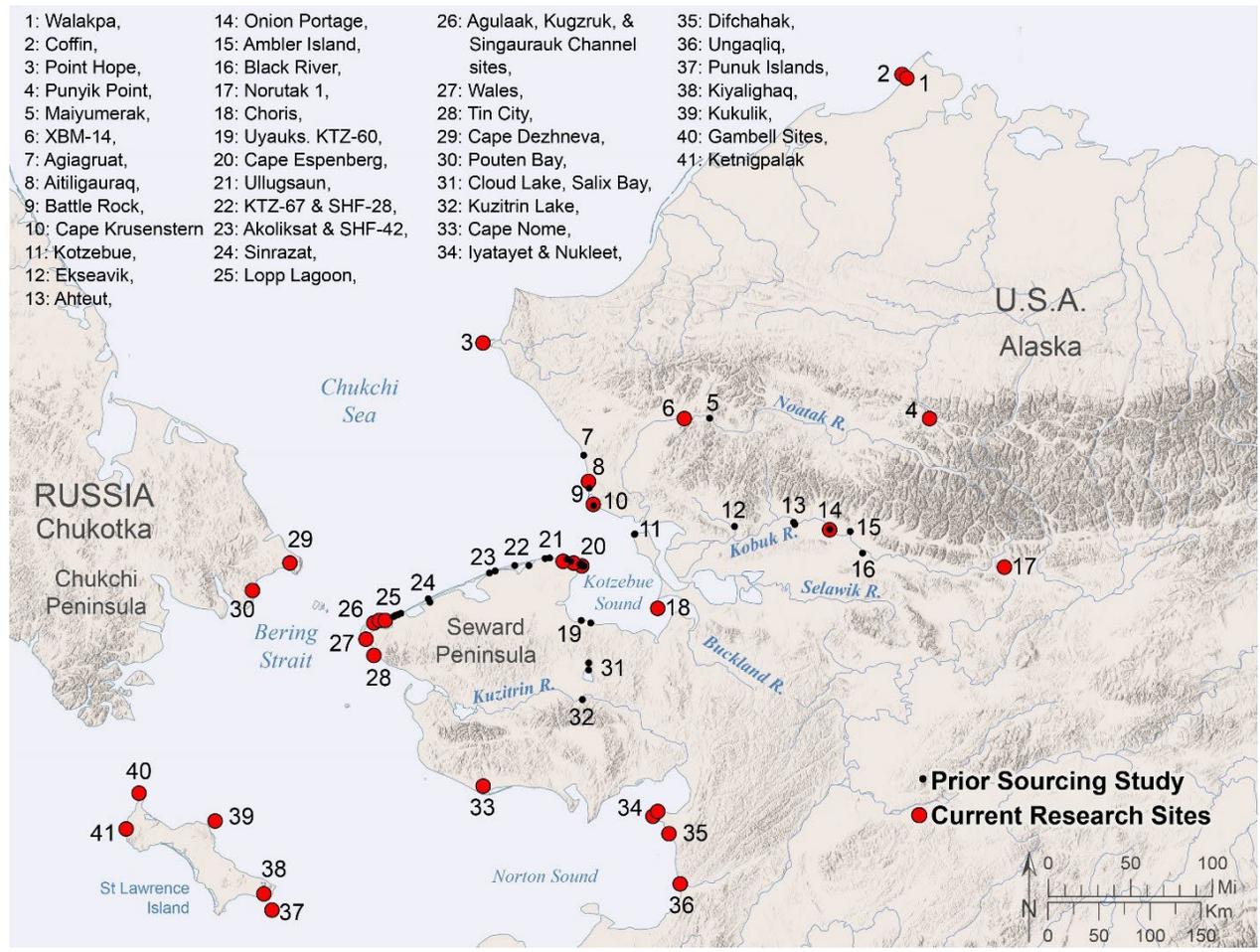


Figure 4. Geographic distribution of study sites. FIGURE BY JOHONNA SHEA

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

This project is funded by the National Park Service (NPS) through a cooperative agreement between the Shared Beringian Heritage Program and Portland State University. We are studying archaeological collections from the traditional lands of the Iñupiat, Yup'ik/Cup'ik, Aivuqaq (St. Lawrence Island) Yupik, Ungazigmit (Chaplino) Yupik, and the Nyvukagmit (Naukan) peoples of northern Alaska and Bering Strait region. The Museum of the North, the Danish National Museum, the Haffenreffer Museum, the Maxwell Museum, the NPS Regional Archives in Anchorage, the Bureau of Land Management, and NPS Western Arctic Parklands staff are supporting this project through collections access and other research support. The Missouri Research Reactor Archaeometry Lab is carrying out geochemical sourcing. Collaboration with the community of Igiugig was funded by the National Science Foundation Archaeology and Arctic Social Sciences Programs Award #1749078 to Shelby Anderson, and supported by the community of Igiugig and Monty Rogers of Cultural Alaska. Caelie Butler, Kathryn Berg, and Annalisa Heppner all made significant contributions to this project.

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

PHOTO COURTESY OF NICK TREINEN





Frank Churchill's 1905 Documentation of the Reindeer Service in Alaska

Amber Lincoln, *The British Museum*
Varpu Lotvonen and Patrick Plattet, *University of Alaska Fairbanks*

The photographic collection and historic account of an audit of the U.S. Reindeer Service undertaken in 1905 documents the sociopolitical context of early years of Native reindeer herding in Alaska.

Citation:
Lincoln, A., V. Lotvonen, and P. Plattet. 2021. Frank Churchill's 1905 documentation of the Reindeer Service in Alaska. *Alaska Park Science* 20(2): 36-45.

The Smithsonian's National Museum of the American Indian (NMAI) houses a historic collection of photographs from 1905 taken by Special Agent for the Department of the Interior, Frank C. Churchill. These photographs provide a glimpse into the daily lives of reindeer herders in northwest Alaska. The photos show reindeer herders and their families, reindeer herding activities, seasonal camps, and reindeer stations. The collection also documents early territorial schools and government buildings in Alaska as well as maritime life aboard the U.S. Revenue Cutter *Bear* (*Bear*). There are a smaller number of photos from East Cape, Chukotka depicting village life scenes, including butchering reindeer and unloading shipping freight.

The photographs that pertain to the U.S. Reindeer Service and herders are of interest because they were taken at a critical period in the Alaska Education and Reindeer Service history. Frank Churchill visited six of fourteen reindeer herding locations, including Teller, Deering, Kivalina, Point Barrow, Gambell, and Golovin. The photographs from his travels provide visual documentation of the territory's early years of Alaska Native reindeer herding and identify locations of herds in the summer of 1905. By exploring this photographic collection, cross referencing it with Churchill's final report (1906) and the travel log of the *Bear* in the summer of 1905 (*Log Book of the U.S. Revenue Steamer Bear*, July-December 1905), we provide the historical and political context in which the collection was made. In some cases, we identify

people, places, and dates in the photographs. We also highlight the challenges Churchill confronted when inspecting the reindeer stations, which ultimately led to his recommendations for new management of the Reindeer Service, as described in the 1906 report.

How Reindeer Herding Got its Start in Alaska

By the time these photos were taken in 1905, reindeer had been herded in Alaska for twelve years. In 1892, domestic reindeer were brought from the Russian Far East to the Seward Peninsula through the efforts of General Agent of Education and Presbyterian Minister Sheldon Jackson. He argued that pastoralism was more valuable than subsistence hunting and that introducing reindeer herding in the new U.S. district of Alaska would improve the economic and societal welfare of Alaska Natives (see Ellanna and Sherrod 2004, Olson 1969, Schneider et al. 2005, Simon 1998, Stern et al. 1980). After unsuccessfully using Chukchi herders to mentor Iñupiat, Sámi herders from Norway were recruited in 1894 and again in 1898 to move to Alaska and teach Alaska Natives herding practices (Fjeld and Muus 2014, Lincoln 2014, Vorren 1994). Reindeer populations increased within the Alaska territory and herds ranged between the Kuskokwim River and Point Barrow (Ellanna and Sherrod 2004, Henkelman and Vitt 1985).

Although reindeer populations were increasing in Alaska, Alaska Native ownership of reindeer was not. By 1904, the vast majority of 10,234 reindeer



Figure 1. Map of the maritime route followed by Frank Churchill in the summer of 1905 (Churchill 1906: 86).

were owned by missionary societies. General Agent of Education Jackson had appointed missionary societies the dual task of delivering education and managing reindeer operations. The abundance of reindeer owned by missionary societies, however, raised suspicions among U.S. Congress members over the management of the government program. There was Congressional concern that

the U.S. Reindeer Service was neither helping the Indigenous Peoples of Alaska nor creating a good return on the government's financial investment, but only generating income for missionary societies operating in the region (Churchill 1906: 8). The Secretary of the Interior wanted to know whether loaning government reindeer to missions was placing missions in competition with government and Indigenous herding industries (*ibid*: 115). To answer these questions, and to assess the conditions and management of the territory's schools, Congress sent Department of the Interior Indian Agent Frank Churchill to Alaska to audit the reindeer stations, record conditions, and document how Alaska Natives were profiting from the industry.

Documenting Reindeer Herding in Alaska Territory

Churchill and his wife Clara traveled to Alaska from Seattle for four months in the summer of 1905. On a Washington-Alaska Military Cable and Telegraph System map (Figure 1), Churchill drew his maritime route for his audit of the "Reindeer Service in the District of Alaska." Starting in Seattle, they traveled to Nome, arriving in July where they boarded the *Bear*. The *Bear* made a brief stop in Chukotka, then traveled back to Alaska along the Alaska Peninsula, Kotzebue Sound, and as far north as Utqiagvik (Barrow; Lincoln et al. 2019). They visited coastal communities and what were in name reindeer stations, but, in reality, varied widely in terms of infrastructure. Most stations were simply camps and rangeland. On her return journey, the *Bear* retraced her route, stopping where possible at reindeer locations missed on the outbound trip due to weather. The Churchills remained on the *Bear*, heading south to Unalaska where they boarded the *SS Dora* after September 5th. They continued to travel along the Alaska Peninsula before heading back to Seattle through the Alaska panhandle.

Along the way, through documentation and photography, Churchill tried to quantify herd numbers, record the names and backgrounds of reindeer owners and apprentices, and assess the management of the U.S. Reindeer Service. He met with reindeer agents, teachers, missionaries, and postal service agents, many of whom he and his wife maintained correspondence with beyond their voyage. Some of them shared photographs with the Churchills in the years after their journey north. This communication, particularly with William Thomas Lopp (a teacher and missionary in Wales starting in 1890, and by 1904 the superintendent of government schools and reindeer of the northern district of Alaska), was instrumental in Churchill's understanding of and position on the future management of reindeer herding. Quotes, documentation, and letters from these settlers were taken as testimony and evidence for Churchill's *Reports on the condition of educational and school service and the management of reindeer service in the District of Alaska*, which was delivered to the U.S. Congress in 1906. What is less clear from Churchill's reports and photographs is how much he spoke directly with herders. He certainly had some level of interaction with them during his visits to reindeer herds and stations as well as aboard the *Bear*, as the photographs indicate (Figure 2 of Churchill posing in photo with herding families at Kivalina), but unlike the government officials, Alaska Native and Sámi herders are never quoted or credited in his report.

Churchill's ethnocentric views, typical of the time, hindered his investigation. He missed important information by neither quoting Alaska Natives directly, nor presenting their knowledge and perspectives. Perhaps Churchill did not feel their words would carry weight with the U.S. Congress members for whom he was writing. Despite Churchill's colonial biases, the report he delivered



to the U.S. Congress was sympathetic to concerns of Indigenous Peoples of Alaska, critical of the role of missionary societies in the reindeer project, and critical of the Bureau of Education's handling of both education of Alaska Native students and their management of reindeer. His report had immediate impact. It is unclear if Churchill's investigation led to the resignation of General Agent for Education in Alaska Sheldon Jackson. However, it did result in the complete overhaul of the U.S. Reindeer Service and the Alaska Bureau of Education, which was fulfilled by Jackson's successor, Lopp. As part of new regulations recommended to Congress in 1906, missionary societies were no longer allowed to profit from reindeer herding and they were removed from both the management of Alaska Native territorial schools and the Reindeer Service.

The Photographic Documentation

The NMAI collection emerges from these interactions and investigations. It is composed of 285 photographs taken by Churchill from June through

Figure 2. Kivalina, Kotzebue Sound, Arctic Ocean. Churchill is second to the right, third to the left is likely reindeer herder Electroona. PHOTO BY WILLIAM HAMILTON (COL. FRANK C. AND CLARA G. CHURCHILL COLLECTION, NMAI. AC.058, ALASKA [P23369], 1905 JULY-SEPTEMBER, BOX 20: 058_020_019).

October 1905. These photos were supplemented by an additional 44 photographic prints taken by William Hamilton of the Bureau of Education, who also traveled on the *Bear* with the Churchills from July to September 1905, and 71 photographic prints taken by Lopp in 1906 and 1909-1910. They contain images of reindeer herding activities that the Churchills could not experience during their short summer trip.

It is very likely that Churchill took the photos in order to jog his memory when he needed to write his report. There are several photographs of government-funded buildings (Figure 3). A major criticism from Congress was that funds allocated to build schools

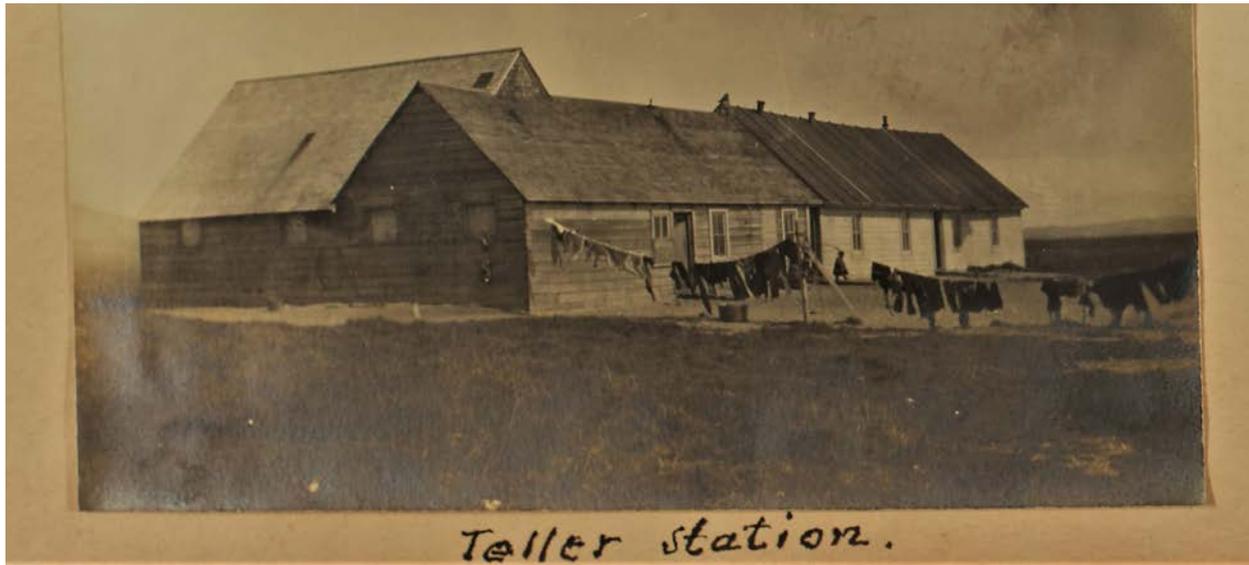


Figure 3. Teller Station.
 PHOTO BY FRANK CHURCHILL (COL. FRANK C. AND CLARA G. CHURCHILL COLLECTION, NMAI. AC.058, ALASKA [P23379], 1905 JUNE-OCTOBER, BOX 18:058_018_036).

and reindeer stations were not used for those purposes (1906: 65-70). Certainly, the photographs would help Churchill, who had an extraordinary task. Not only was he charged with auditing herd sizes and assessing the management of the Reindeer Service, but also with documenting methods of management and conditions of the territory schools. In 1905, schools in Alaska were segregated as a result of the Nelson Act. Non-Native students were placed in separate schools administered locally, under the jurisdiction of the Governor of Alaska, while Indigenous Alaskan students were placed in federally administered schools, run by the Department of the Interior. Churchill's written observations and photographs no doubt served as evidence and

enabled him to record and remember information in order to make such assessments.

Clara Churchill used these photographs to create annotated albums. The phrases captioning some of the photos are more from a personal rather than technical perspective, and hence indicate that the albums served as memorabilia. She also gifted albums. During their tour, she gave O. C. Hamlet, Captain of the *Bear*, an album entitled *Reminders of the Cruise of U.S.S. Bear 1905*, which is now in the Bancroft Archives, University of California Berkeley Library.

The Journey and its Impact on Churchill's Thinking

Although Churchill only spent a few weeks visiting the region of Alaska where reindeer were herded, his experiences on the *Bear* and landing to inspect herds, stations, and schools quickly laid bare fundamental problems with the reindeer project. His experience in Teller, Wales, and Kivalina serves as examples of the challenges he observed.

Teller

In Teller, the first reindeer station he visited, Churchill confronted the challenges of herd management. The *Bear* arrived on July 19th and left two days later. During that time, despite the opportunity to get close to the reindeer, he lamented that, *it was impossible to count them or to tell to whom they belonged* (Churchill 1906: 56). In his introductory comments about herding in Alaska, Churchill explained:

The first question to answer is, what is the number of deer in Alaska; the second, where are they located; the third by whom are they owned. Strange as it may appear, these questions can not be answered with exact figures, either by the local custodians in Alaska or by the tables found in the annual report of the Bureau, and it is suspected that accuracy in the deer account has never been looked upon as essential, and even a return of loaned deer appears to have been purely a matter of bookkeeping by the Bureau (ibid: 46-47).

This might indicate that Churchill did not meet with herders at Teller. Had he spoken directly to them, they likely would have been able to quantify their own deer or identify who owned the deer they were herding. It was not until the *Bear's* return trip through Teller on August 10th that Churchill acquired reindeer estimates and names of owners from the local reindeer superintendent Rev. T. L. Brevig, who had been out of the territory on Churchill's first stop in Teller. Brevig, a Norwegian-born missionary and teacher, reported the following numbers, but admitted they were estimates based on a count done the previous year by Lopp. According to Brevig, five Alaska Natives owned reindeer: 15-year-old Ab Likak owned 254, Dun Nak and Se Keog each had 113, Se Raw Look 11, and Koy Look, 10. The Lutheran mission had the largest number at 404, while the government owned 130 (Churchill 1906:

56). Lopp photographed a working dog tending to a herd near Teller (Figure 4), perhaps belonging to the Sámi herder, I. A. Bango, who was paid \$500 a year and was fed by the mission in exchange for managing the mission herd.

In addition to understanding firsthand the difficulties of counting and identifying reindeer owners from a large herd, Churchill's experiences in Teller readily exposed a second major problem of the Reindeer Service: No one understood or agreed on the remuneration of apprentices or who was to pay for their food supplies. Stressing that Brevig had only given out 25 deer to Alaska Natives in the last five years, Churchill criticized:

There seemed to be a lack of knowledge everywhere as to the number of deer that an apprentice would have at the end of his five years' service; also whether deer turned over to apprentices would come from the mission herd or the Government herd. Then again the matter of who is to furnish the herders with rations does not appear to be settled, and this adds more to the tangle (Churchill 1906: 57).

Teller was the oldest and original reindeer station in Alaska, and as such, Churchill was disappointed that it was not the model for the rest of the industry. He stressed:

Teller is situated on the only harbor in these northern waters; hence ships can safely remain at anchor, and this being the parent station it is only fair to expect that it should have been so conducted that the management should be safely taken as a model in the development of the deer industry (ibid: 57).



Wales

The *Bear* passed Wales July 21st and again on August 9th during her return trip from Utqiagvik, but was unable to land. For this reason, Churchill relied entirely on Lopp's knowledge for the documentation of the Wales herd. Churchill wrote:

Mr. W. T. Lopp, now a district superintendent under the Bureau, was a passenger on the ship for several days, and through him I was enabled to obtain the information that would have been sought on shore, and very much more in detail than I could have hoped to secure had I made the landing (ibid: 53).

Figure 4. Reindeer herd near Teller, Seward Peninsula. PHOTO BY W.T. LOPP (COL. FRANK C. AND CLARA G. CHURCHILL COLLECTION, NMAI. AC.058, ALASKA [P23364], 1906, 1909-1910, BOX 21: 058_021_010).

Lopp was engaged with the reindeer project in Alaska almost from the beginning. Based on numerous quotes, concerns, and testimony from Lopp documented in Churchill's 1906 report, and based on photos he shared with the Churchills, Lopp had considerably influenced Churchill's perspectives on both the management of the schools and the Reindeer Service (see also Willis 2006: 291).

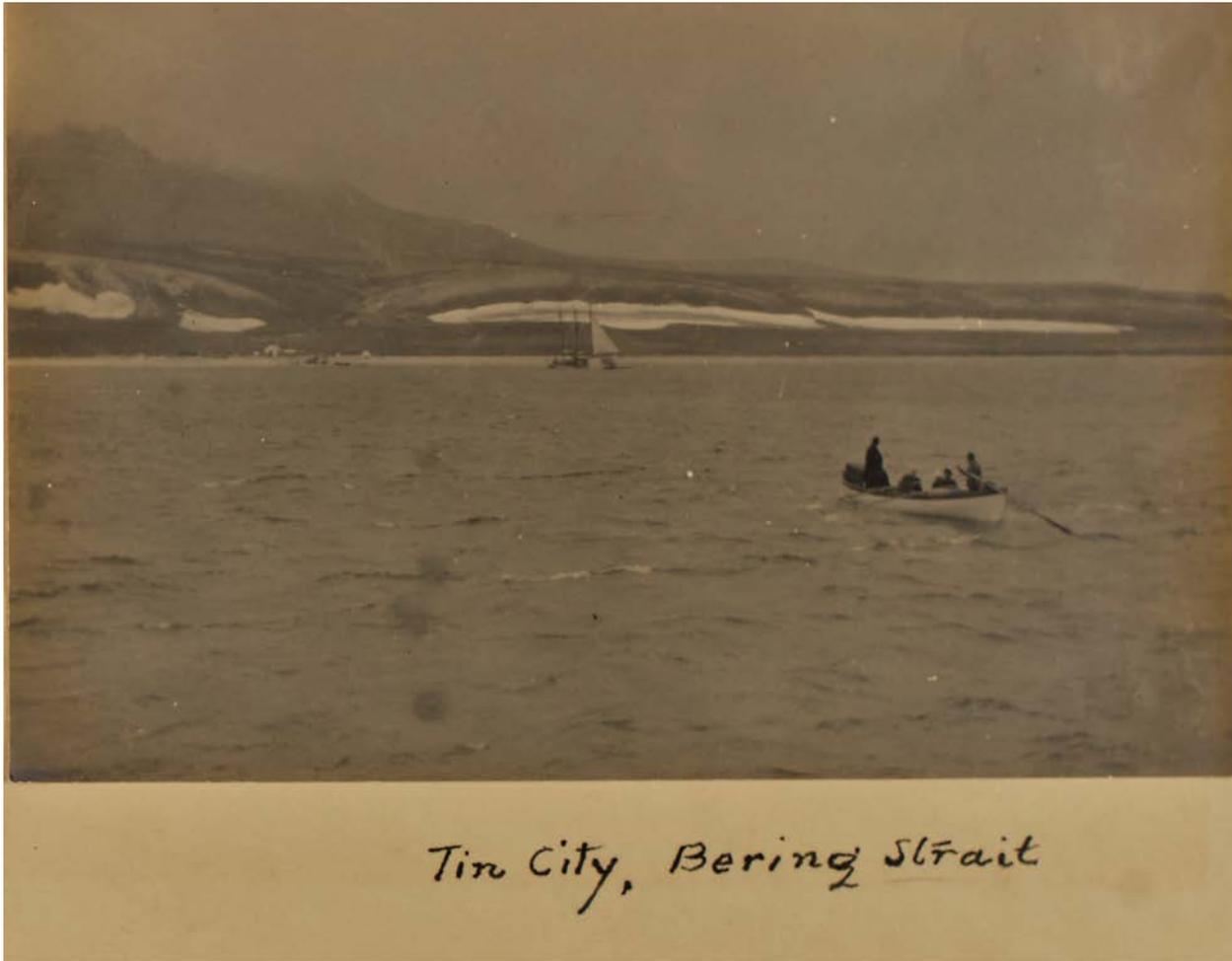


Figure 5. Tin City, Bering Strait.
 PHOTO BY FRANK CHURCHILL (COL. FRANK C. AND CLARA G. CHURCHILL COLLECTION, NMAI. AC.058, ALASKA [P23379], 1905 JUNE-OCTOBER, BOX 18: 058_018_045).

They spent extensive time together. According to the *Bear's* logbook, Lopp boarded in Teller on July 19th and he and the commanding officer joined Churchill to inspect the Teller herd the following day. Lopp stayed on the *Bear* with the Churchills until August 9th when he disembarked at Tin City (southeast of Wales; Figure 5). He also visited and inspected the reindeer stations and herds, when possible, with Churchill throughout Kotzebue Sound and the north slope of Alaska.

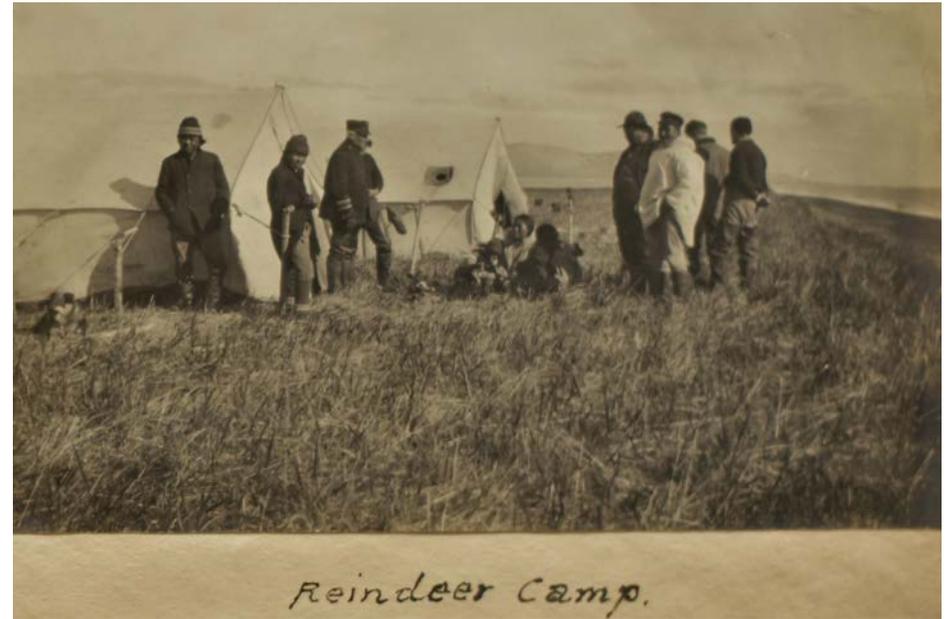
Amid his discussions with Lopp, Churchill identified unclear record-keeping, a third major problem with the Reindeer Service. Conflicting Bureau of Education reports obscured whether or not Sheldon Jackson gave the Wales Congregationalist Mission 118 reindeer as a gift or a loan. In his *Twelfth Annual Report on Introduction of Domestic Reindeer into Alaska*, Jackson indicates that ... [t]his mission has long since returned to the Bureau of Education 118 deer ... that were loaned to them (Jackson 1903: 13, see also Churchill 1906: 53). Conversely, Lopp, who was the teacher and reindeer superintendent in Wales at the time, insisted that these animals were a gift to the mission. Churchill writes,:

Mr. Lopp said, however, that there was never any uncertainty about the question, and that the deer were actually given to the mission, and that he never knew why they were carried on the books as a loan (Churchill 1906: 54).

Of concern to Churchill and the U.S. Congress was that the missionary societies were making considerable money from a government loan without repayment. These loans carried no interest; 100 deer were loaned to missions, and usually five years later, 100 deer were returned. In some cases, the missions were asked to provision apprentices, but agreements were loosely formed. Protective of government resources and the appearance of fairness, Churchill wrote:

The mixing up of interests to the extent that we find here must be regarded as unwise in the long run, as it tends to conflict of authority and to stir up jealousies and antagonisms that were better avoided (ibid: 54).

This example of unequal distribution of government resources shaped the conclusions of Churchill's report, whereby he advised the U.S. Congress to



eliminate loans of reindeer to missionary societies and to remove them from reindeer management.

Kivalina

The *Bear* travelled along the Seward Peninsula, stopping at the Deering reindeer station and Kotzebue. On the 26th of July, the *Bear* landed at Kivalina, called Corwin Lagoon at the time. There, Churchill met with and photographed two herders and their families, Electoona who has 172 deer, and Otpella with 48 deer (ibid: 52; Figure 6). According to earlier Bureau reports, Electoona and Otpella had affiliations with the Kotzebue herd but had moved their deer to Kivalina either temporarily (for summer rangeland) or permanently, perhaps due to competing access to rangeland near Kotzebue. Countering the narrative that Jackson promoted in Bureau of Education reports that schools and herds were only successful when managed by the missionary societies, Electoona and Otpella were successful independent herders despite the fact that

there was neither Bureau of Education infrastructure, nor missions in the region to “manage” their herds. Because he was neither an employee of the Bureau of Education nor a proponent of missionary societies, Churchill’s direct observations offered Congress a fresh perspective, which complicated and often contradicted the scenarios that Jackson had been presenting to the government for over ten years.

Churchill’s experience in Alaska and direct observations of reindeer also identified several instances of what Churchill considered wasteful uses of government funds. Churchill wrote:

The Department authorized, April 18, 1905, the expenditure of \$5,000 to establish a schoolhouse and dwelling at Kivalina... After a personal inspection nothing was seen nor heard to warrant the establishment of a school at this place. There is no village, and the only natives found were Electoona...and Otpella...with their families on

Figure 6. Reindeer Herders (above left) and Reindeer Camp (above right).

PHOTO BY FRANK CHURCHILL (COL. FRANK C. AND CLARA G. CHURCHILL COLLECTION, NMAI. AC.058, ALASKA [P23368], 1905 AUGUST-OCTOBER, BOX 19: 058_019_005).

the beach... It is possible that the establishment of the school may result in a few Eskimo families building huts in the vicinity, but it is hardly probable, for a long time at least (1906: 52-53).

Churchill’s oversight sought to ensure that the herding situation and local educational needs matched the Bureau’s policies and justified government expenditures. In the case of Kivalina, Churchill struggled to understand why the Bureau allocated funds to build a school and pay a teacher when he could find no pupils and could see no work being done. He wrote:

Carrying out the declared policy of the Bureau of arbitrarily establishing deer stations so as to make a complete chain on the Arctic coast, must be the only excuse for putting in this school (ibid: 52-53).

Under Jackson, the Bureau sought to build numerous reindeer stations regardless of need or suitable rangeland. Churchill's statement reveals a second more implicit policy, whereby the Bureau of Education established reindeer stations and schools in the same locations. This policy continued as reindeer herding was introduced through western Alaska and in the Alaska Peninsula and Iliamna regions such that in some cases there were schools built where no children lived and reindeer stations built near inadequate rangelands (see Lincoln 2014).

Conclusion

Though Churchill had never been to Alaska before 1905, he had years of experience as a U.S. government agent negotiating with Native North American Tribes. He understood treaty relationships between the U.S. and Tribal governments and recognized the legal obligations to Indigenous Peoples residing in the United States. With this background, and his protection of government resources, Churchill identified essential problems with the Reindeer Service, such as inadequate bookkeeping and misinformed policies. His experience in Alaska helped him understand the concerns of Alaska Natives. He wrote:

Herding requires a tenacity of purpose wholly new, and even if the natives took willingly to the new order of things, where is the food for himself and family coming from if he spends his time watching deer? The answer comes at once. They must be fed by those who put them into their new environment (Churchill 1906: 62).

He even confronted Jackson's most significant tenet that Alaska Natives should turn away from hunting to become "civilized" herders. Churchill writes:

as for supplanting the present principal occupation of Eskimo in deriving the most of his living from hunting and fishing, nobody believes it possible or desirable. Fish, blubber, oil, and wild fowl are necessary articles of food in the Arctic (ibid: 36).

Despite identifying problems and limits of the herding industry, Churchill supported its continuation, stating:

I beg leave to refer to the general trend of this report, throughout which the general policy of getting the animals into the hands of the natives as fast as their capacity for caring for them can be developed has been made prominent (ibid: 63).

The Churchill report and associated archives add to this important facet of Alaska's history. It offers alternative and critical perspectives of government programs, their employees, and missionaries. Such investigations not only add to our collective understanding of history, but also, investigating these archival sources illuminates the history of land use from which the National Park Service and other government agencies define their current management policies. Perhaps even more importantly, these investigations shed light on the historical engagements between Alaska Natives and U.S. government administrators that continue to frame contemporary relationships today.

Acknowledgement

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Moving the Needle: Enhancing the Conservation of Iconic Shorebird Species of the Beringia Region

Daniel Catlin, Virginia Tech University

The Beringia region's Arctic and subarctic habitats are globally important nesting areas for shorebirds. But shorebird populations are declining, especially along the East Asian-Australasian Flyway. This article looks at two species and the conservation of their habitat.

Citation:

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The Beringia region of the Arctic and Subarctic supports a disproportionate amount of global nesting shorebirds abundance (Bart et al. 2013) and diversity (Gill et al. 1994). Arctic Alaska is particularly important, providing habitat for nearly half (49%) of all shorebirds breeding in North America (Andres et al. 2012).

Unfortunately, many shorebird populations throughout the world are declining. Shorebirds migrating along the East Asian-Australasian Flyway (EAAF), of which Beringia is part, are perhaps declining at the highest rates (Szabo et al. 2016). Shorebirds face intense pressure from habitat loss and degradation, human disturbance, illegal and unsustainable legal harvest, increasing predator numbers, disease, and contaminants throughout their annual life cycle (Butler et al. 2004, Johnston et al. 2015, Pearce-Higgins et al. 2017). Even within the relatively pristine Arctic, shorebirds face increasing resource development, pollution, and other changes in habitat and the timing of life cycle events (Perkins et al. 2016, Wauchope et al. 2016, Saalfeld and Lanctot 2017, Kwon et al. 2019).

Increasingly, federal, state, and private organizations have recognized that shorebirds, as well as other waterbirds, represent a shared international resource worth conserving. This realization has led to several international agreements and designations that seek to conserve, and where possible, manage human impacts on shorebirds throughout their annual

cycles (e.g., Boere et al. 2006, Johnston et al. 2015). Our ability to manage these species is limited by a lack of sufficiently detailed, scientifically rigorous, and spatially comprehensive population assessments and demographic data. Our study, planned to begin in 2022 will focus on habitat needs and demographics for two shorebirds, the spoon-billed sandpiper (*Calidris pygmaea*) and a subspecies of red knot (*Calidris canutus roselaari*). These two populations breed only in Beringia and their critical conservation status reflects existing threats in their respective flyways. Hopefully, our research will identify critical habitat components and demographic information for both species that will help in future management.

Spoon-billed Sandpiper

The spoon-billed sandpiper (SBS) is a critically endangered species and is listed in the Russian Red Data Book, an evaluation of the conservation status of Russian birds (Tomkovich 2001). The species breeds in Far East Russia and migrates along the EAAF to winter in Southeast Asia. This species is at the cusp of extinction with fewer than 725 individuals, and only about 200 pairs are thought to breed, principally in the northeast Arctic and subarctic zones of Chukotka and Kamchatka, Russia (Zöckler et al. 2010, Clark et al. 2018). Dramatic declines (as much as 50%) have been documented during the past 30 years at all breeding concentrations where repeat counts were conducted (Figure 1; Zöckler et al. 2010). Unfortunately, no information is available

The spoon-billed sandpiper is an iconic species and, in some ways, the conservation status of this species reflects the success of conserving the entire flyway.
PHOTO COURTESY OF IOSIF KAUROV

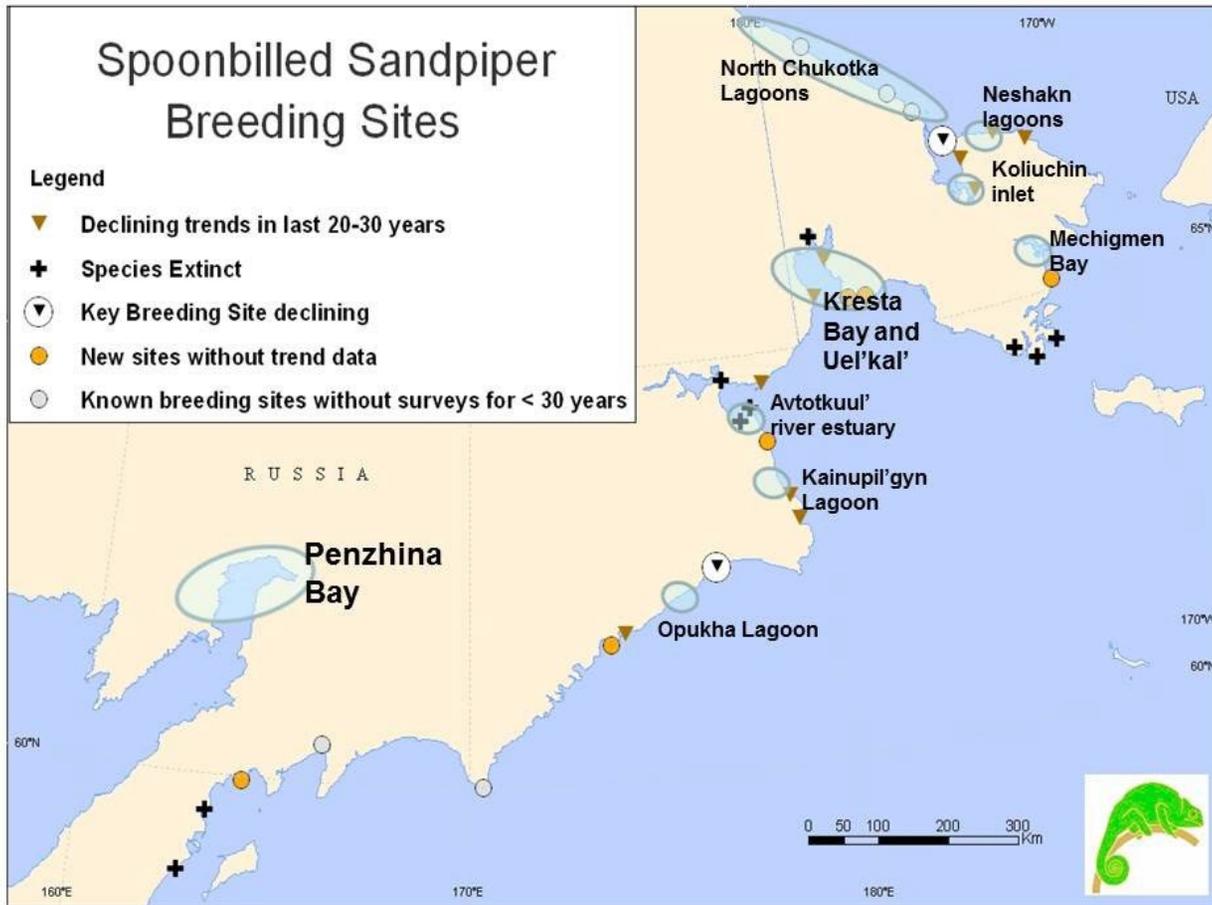


Figure 1. Patterns of abundance of spoon-billed sandpipers in Russian Beringia. Large oval areas represent sites that need to be visited to verify occurrence and abundance of the species.
BIRDS RUSSIA/EVGENY SYROECHKOVSKIY

on where 75% of the SBS breed. One of the few known breeding sites for the SBS is near the village of Meinypil'gyno in Chukotka, Russia, whereabout fewer than 13 pairs are thought to breed. The other known breeding sites have only a handful of pairs and most have not been visited for several decades. It is thought that the species might have also previously bred in Alaska, but there are no recent records (Saalfeld et al. 2020).

Since 2001, BirdsRussia, a Russian non-governmental organization, has been monitoring SBS at Meinypil'gyno. In 2012, this group, together

with the Wildfowl & Wetlands Trust (WWT), Royal Society for the Protection of Birds, and others began a program that involves collecting and incubating eggs, raising chicks in a large outdoor aviary with minimal human interference, and then soft releasing them (into an enclosed outdoor pen) at fledging. The collection of eggs allows birds to re-nest and avoids heavy predation of wild eggs and chicks. Efforts to date have yielded about five times more birds fledged per clutch than would otherwise have happened. BirdsRussia and WWT also collected eggs in 2011 and 2012 to establish the first and only captive [breeding program for the species](#). In addition, BirdsRussia is conducting surveys at different locations of the Chukotka and Kamchatka coasts in an attempt to find remaining breeding grounds. This effort has discovered several new locations with small numbers of birds and also documented the disappearance of others. Many sites remain to be surveyed, but most are difficult to reach. Knowing where the key breeding areas are is the first step in protecting them because we can conserve the habitat they depend on. Public outreach and awareness programs are also an important component in the conservation of endangered species. The Meinypil'gyno site visits conducted by BirdsRussia have led to the soon finalized first shorebird-based nature park in Russia, called "The Land of Spoon-billed Sandpiper."

Red Knot

There are six subspecies of red knot that breed throughout the circumpolar Arctic (Figure 2). The *roselaari* subspecies (hereafter red knot) breeds in northwestern Alaska and Wrangel Island, Russia, and migrates along the Pacific Flyway of North America to reach nonbreeding/wintering grounds in California and Mexico. The red knot is designated as endangered by Mexico's federal government, threatened in Canada, and is listed by the U.S. Fish and Wildlife Service (USFWS) as a species of High



The iconic red knot.
USFWS/GREG BREESE

Conservation Concern and a Tier 1 Priority Species within the U.S. With an estimated population size of 22,000 individuals (Lyons et al. 2015), the *roselaari* subspecies of the red knot is one of the rarest shorebirds known to breed in North America (Andres et al. 2012). Declines have been documented at stopover sites in Washington (Buchanan et al. 2010), and there is evidence that the Wrangel Island, Russia breeding population has declined since the 1990s (Tomkovich and Dondua 2008).

Much of the focus on this subspecies in recent years has been on determining the migration routes and important nonbreeding sites. Indeed, identifying autumn migration sites used in preparation for non-stop flights to wintering areas was identified as a critical information need. Ongoing work will also help unravel recent genetic findings that suggest that *roselaari* is actually two subspecies—one that breeds in northwestern Alaska and the other on Wrangel Island in Russia. A goal of this current study is to determine if there are actually two subspecies.

If confirmed, then these two subspecies will be even rarer and in need of even more conservation action.

The next most crucial information need identified by the red knot research community is to generate demographic data that can identify whether factors such as predation on the breeding grounds are limiting population growth. Also, it is critical to determine where in the annual cycle the birds are suffering the highest mortality. Such information is essential for monitoring the *roselaari* subspecies



Figure 2. Migration routes of the six subspecies of red knot that breed in the circumpolar Arctic. The subspecies are: blue – *rufa*, orange – *roselaari*, purple – *rogersi*, green – *piersmai*, yellow – *canutus*, and red – *islandica*.

but can also inform population models of the five other subspecies where these data are more difficult or impossible to collect. With this goal in mind, the USFWS initiated a breeding study along the road system of the Seward Peninsula, Alaska in 2010 (Figure 3). This study area represents the only location across the Arctic where breeding red knots can be investigated in sufficient numbers at a reasonable cost. Research effort has varied between 2010 and now due to intermittent funding dependence on grants, but some data exist for each year. Adult survival estimates from breeding areas in Alaska will be combined with survival estimates modeled from resighting birds at wintering and stopover sites along the flyway (e.g., Guerrero Negro and Alto Golfo,

Mexico and Grays Harbor, Washington). Thus, it will be possible to partition annual survival estimates into seasonal estimates (i.e., breeding, wintering, and migration) to determine when disproportionately high mortality rates may occur. Our work proposed here and starting soon should help to provide some of the information needed to conserve these two iconic Beringia species and the resources upon which they depend.

Acknowledgements

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Figure 3. Location of *rose/laari* red knot breeding territories on the Seward Peninsula, Alaska.

USFWS/JIM JOHNSON

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A Thousand Miles of Islands: Building Relationships Between Young People of the Commander and Pribilof Islands

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Natalia Fomina, Aleut National Local History Museum

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United by natural and human history but separated by nations and an expansive geography, youth from the islands in the Bering Sea are brought together to share their connections.

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St. Paul Island lies amid a cluster of five volcanic islands in the Bering Sea, some 300 miles (483 km) west from the Alaska mainland. Built along the rocky shores on the largest of the Pribilof Islands, the village of St. Paul is near the planet's largest haul-outs of northern fur seals (*Callorhinus ursinus*). In summer, these boulder-strewn beaches fill with thousands of fur seals and, on the cliffs rising from the sea, millions of seabirds call out in tremendous cacophony from nests built on rock ledges. For the people who live on St. Paul Island and on its sister island, St. George Island, the rich and biodiverse marine life of the Bering Sea has contributed to shaping life here throughout history.

Far from the Pribilof Islands, a thousand miles away in the most distant reaches of the Aleutian Islands near the Russian mainland, another community shares similar relationships with the marine environment at their door. On Bering Island, the largest of the Commander Islands (Russian: Командорские острова, Komandorskiye ostrova), a traditional way of life draws from the same cultural threads that give the islands of St. Paul and St. George a distinct identity. Though the International Date Line and an international boundary lie between these two far-flung communities, the people on the Pribilof Islands and the Commander Islands share a common Unangan ancestry.

The Pribilof Island [Seabird Youth Network](#) has been helping reestablish connections and build

new relationships between the youth and wildlife biologists from both island groups. The Pribilof Island Seabird Youth Network is a partnership between the Pribilof School District; St. George Island Traditional Council, a federally recognized tribe; the Pribilof Islands Aleut Community of St. Paul Island, a federally recognized tribe; the St. George Island Institute; Alaska Maritime National Wildlife Refuge, and the wider scientific community. The Seabird Youth Network was designed in 2012 to support and encourage community awareness of the global importance of the local breeding seabird populations.

Pribilof Islands

The Pribilof Islands lie about 30 miles (50 km) north of Alaska Peninsula. St. Paul Island (population 480) and St. George Island (population 100) are the two largest islands. The three small outer islands of Otter, Walrus, and Sea Lion Rock are uninhabited.

The Pribilof Islands have close historical links with Russia. Gavril Pribylov, a Russian navigator searching for breeding colonies of fur seals was the first westerner to set foot on the Pribilof Islands in 1786 (Pierce 1990). Russian fur traders and hunters established the first permanent settlements on the islands in the early 1800s to harvest fur seal pelts for the Russian fur trade. There was no Indigenous permanent settlement on the islands prior to Russian colonization. Establishing the settlements included forcefully relocating Unangan (Aleuts) from the

Aleutian Islands to work on an assembly line that involved driving, slaughtering, and skinning fur seals (Jones 1980). Confinement to the islands and industrial labor was a sharp contrast to the marine hunting and gathering way of life the Pribilof Islands Unangan previously cultivated in their Aleutian Islands homelands. They were restrained from practicing valuable skills such as securing and processing subsistence foods and materials for the renowned bentwood hats, hunting implements, clothing and the infamous watercraft, the *iqyaġ* (Jones 1980). This is a difficult history and understanding historic events in this region is important context for today. The documentary [People of the Seal](#), through the family tree of a sixth-generation Unangaġ of the Pribilof Islands, reveals ways that exploitation of a natural resource caused irreversible cultural and ecological deviations of a people, a fur bearing animal, and a place from their natural selves.

Both terrestrial and aquatic habitats surrounding the Pribilof Islands are characterized by high productivity and biodiversity. Marine mammals and seabirds bring a remarkable abundance of life to the islands' beaches and cliffs during the summer months. An estimated 2.8 million seabirds nest in the Pribilof Islands, including the largest thick-billed murre (*Uria lomvia*) colony in the Pacific, with an estimated one million birds and 80% of the world's population of red-legged kittiwakes (*Rissa brevirostris*; Will et al. 2018). These globally important seabird colonies are part of the [Alaska Maritime National Wildlife Refuge](#).

Commander Islands

When the United States reached an agreement to purchase Alaska from Russia in 1867 (Shiels 1967), the sale did not include the Commander Islands, the westernmost islands in the Aleutian Islands Archipelago. Separated by only 207 miles (333 km)

from the closest U.S. island, Attu, and the rest of the Aleutian Islands Archipelago, the Commander Islands have remained in Russian possession (Shiels 1967, Zhdanov and Polevoy 1997).

The Commander Islands are named after Captain Commander Vitus Bering whose crew charted the islands on return from the Great Northern Expedition that had encountered the land and people of Alaska in 1741 (Ford 1966, Zhdanov and Polevoy 1997). Their ship, the *Svyatoy Pyotr* (St. Peter), was thrown over the Bering Island reefs in a storm and destroyed (Ford 1966, Zhdanov and Polevoy 1997). Commander Bering and many of his men died, but the remaining crew under the authority of Lieutenant Sven Waxell managed to survive on the island for nine months (Zhdanov and Polevoy 1997). After establishing they were on an island and not the mainland of Kamchatka, the surviving crew built a new ship and left the island to return to Petropavlovsk, on the Kamchatka Peninsula, loaded with valuable sea otter pelts (Zhdanov and Polevoy 1997). Before sailing, the survivors marked the grave sites of their captain and comrades. Later, the island received their commander's name, Bering Island (Zhdanov and Polevoy 1997).

There are four main Commander Islands: Bering and Medny (Copper), and the smaller islands of Ari Kamen and Toporkov. The only remaining village is called Nikolskoye (Russian: Никольское), on Bering Island.

Unangan were also brought from the Aleutians to work in the Commander Island fur seal harvest and permanent villages were established by the mid-1820s (Lyapunova 1987). There are 688 people living in Nikolskoye today (2010 Census: Russian Federal State Statistics Service 2011), and the population is divided roughly equally between Russians and Unangan (2010 Census: Russian Federal State

Statistics Service 2011). An active group of Russian Unangan on Bering Island are working to revive elements of the culture through the school and a village museum. The current economy is based primarily on fishing, especially the harvest of salmon, and government services.

The [Commander Islands Nature and Biosphere Reserve](#) (CINBR) was created in 1993 and is the second-largest marine nature reserve in Russia with a total area of over 11,500 square miles (3 million ha). About 300,000 marine mammals and over one million birds live on the reserve. The fauna and flora of the Commander Islands is very rich and the islands are home to most of the seabird species occurring in the Pribilof Islands, with the addition of pigeon guillemots (*Cephus columba*).

In 2002, the nature reserve was designated as a UNESCO (The United Nations Educational, Scientific and Cultural Organization) International Biosphere Reserve to promote the ideas of harmonious relationships of people and nature, sustainable use of local resources and respect for natural and cultural heritage.

Island Ties

Strong historic links between the Commander and Pribilof Islands involve an almost parallel story of the relocation of Unangan to serve as the labor force in the Commander and Pribilof Islands fur-seal trade tied together via the movement of people between the Commander, Aleutian, and Pribilof Islands (listen to the [recorded story](#)).

In addition to the strong cultural and natural ties between the Commander and Pribilof Islands, the Alaska Maritime National Wildlife Refuge, and the Commander Islands Nature and Biosphere Reserve share a common goal: the protection of marine resources on lands and waters within both areas.

There are strong ecological similarities between the island groups, and together these two reserves are home to almost the entire world population of breeding red-legged kittiwakes, an endemic seabird, and most of the breeding population of northern fur seals. The areas also share common threats of climate change, oil spills, and other contaminants, invasive species, and changes in marine food webs.

Despite the recognition of shared interests in marine conservation and the formal “Sister Refuge” agreement in 2008 between the Alaska Maritime National Wildlife Refuge and the Commander Island National Biosphere Reserve, international cooperation has been a challenge. There has always been a strong interest in collaboration between colleagues on both sides of the border, but the challenges of diplomatic barriers between the countries and the language barrier have made interchange difficult to establish and maintain.

Connections between the communities have been made in the past, but before internet service reached these remote communities, there was previously no easy way to maintain relationships. Both the Pribilof Islands and Nikolskoye now have sufficient internet connections and the Pribilof Island Seabird Youth Network has helped to reestablish connections and build new relationships between the youth and biologists on both island groups.

The Seabird Youth Network has worked closely with the Aleutian Municipality in Nikolskoe and marine biologists on the Commander and Pribilof Islands since 2016 to develop an understanding of the close similarities (and differences) of the wildlife and traditional subsistence practices on both island groups and develop inter-island community relationships.

On-going sharing includes [pen pal letters](#), shared [artwork](#), Unangan dance, songs, language (Unangan Tunuu), and recipes. Recipes from St. Paul Island included meatballs and hearts and livers, both made with northern fur seal. Translated recipes from the Commander Islands included: *kilikil* (boiled fish with berries), a favorite recipe for boiled gull, and *kvas* (a traditional Russian drink similar to root beer) made from *tukal* (cow parsnip, *Heracleum* genus). A [seabird curriculum](#) was also designed for students in grades 5 and 6 and is available in both English and Russian.

The pen pal letters were a great way of sharing among students. One student from the Pribilof Islands wrote: *I can not wait for summer and your arrival. Some Russian words I would like to learn are “best friends.”* From the Commander Islands, a student shared:

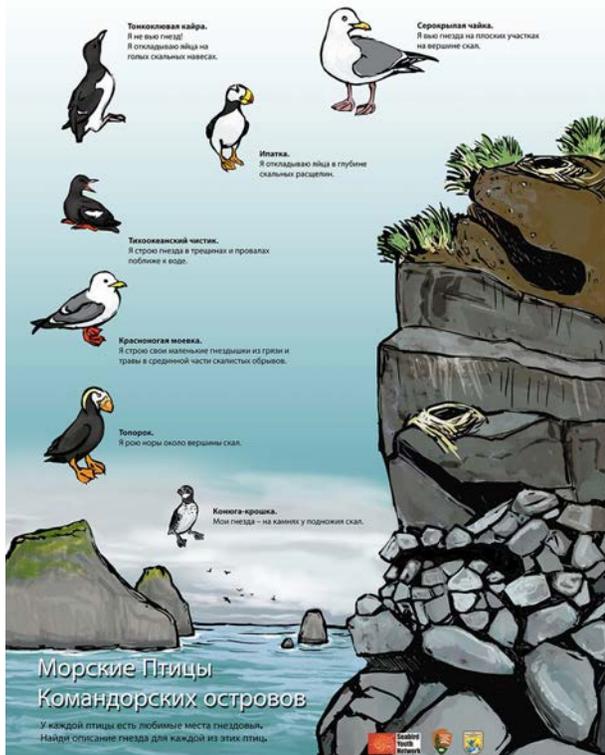
...you write that you go anywhere on the island without your parents worrying about your safety. We also don't have restrictions. We have a huge coastal strip, which stretches

in the zone of visibility of the village for several kilometers and we are allowed to walk there. In our village we also know each other and live together doing no harm to anyone.

Youth Seabird Camps are held annually on both sides of the Bering Sea. On Russia's Bering Island, the ethnoecological camp called *Aglakh* is an annual summer event. Camp *Aglakh* invites 13-16 year-old youth on an impressive 75 mile (120 km) long trekking adventure across Bering Island, accompanied by immersive lessons in history and wildlife. Seabird Camp activities on St. Paul and St. George Islands in the Pribilofs focus on learning about local seabirds and marine conservation using a variety of tools including art and theater. Activities have been shared among the three camps and a special joint Seabird Camp was held on St. Paul Island in 2017 with students from both St. George Island and the Commander Islands. The team from the Commander Islands included three students and Natalia Fomina, Consultant of the Aleutian Municipality Region.



Students from St. George Island and the Commander Islands attended Seabird Camp on St. Paul Island in 2017. SEABIRD YOUTH NETWORK/RAM PAPISH



Poster showing the nesting habitats of different seabird species breeding in the Commander Islands. This poster is part of a series designed by Ram Papish to be used at the Commander Island Nature and Biosphere Reserve.



Seabird Camp T-shirt logo: The Commander Islands, the Pribilof Islands, a tufted puffin, red-faced cormorant, and a bent-wood hat. Logo outline was designed by Ram Papish, with students each coloring their own t-shirt.

The visiting Commander Island team traveled on the Research Vessel *Tiglax* (the Alaska Maritime National Wildlife Refuge’s research and support ship) from Homer to St. Paul Island. They stopped en route at different refuge monitoring sites and visited St. George Island before making the final crossing to St. Paul Island for Seabird Camp. This journey provided an incredible opportunity to experience the scale of the Aleutian chain and observe the differences and similarities in vegetation, birds, and marine mammals between these Alaskan islands and their home on the Commander Islands. Time spent together on St. Paul Island was packed with activities including learning about local seabird research, field trips, art, music, Unangan Tunuu language, and sharing information about genealogy and history.

The week culminated in a community theatrical production of *The Odd Sea* that told a fictional story of a lost hunter who makes his way across the Bering Sea from the Commander Islands to the Pribilof Islands, having many strange encounters along the way. The play featured whimsical papier-mâché masks made during Seabird Camp. After the theater production, campers from the Commanders shared four songs (two Unangan and two Russian), and one of the students performed a dance accompanying a song about a chick that leaves his nest to explore. The chick grows and grows, and eventually flies from the nest. The second Aleut song was the dance of different animals and plants that live on the Commander Islands. The Russian songs were about the youth summer camp, the nature and beauty of the Commander Islands, and how much they are loved. The audience cheered for an encore and was treated to a fourth song! Fomina shared a presentation about their ethnoecological summer camp and the history of the Unangan on Bering Island. Everyone loved seeing the commonalities with the Pribilof Islands,

especially archival images of Unangan people in both places.

Aquilina Lestenkof (Unangan Tunuu Teaching and Learning Team) presented a moving talk about the connection and shared history of the Commander and Pribilof Islands, emphasizing how wonderful it was for people on both island groups to be back together again. Lestenkof and members of the language intensive workshop followed with some powerful dancing, drumming, and singing. One song told of the fur seal harvest, scraping two seal scapula bones together to add some beat as they mimed the knife sharpening. A beautiful handmade Unangan bent wood hat was presented to Fomina to take home for the museum in Nikolskoye. It was a moving end to an incredible week of camp.

Communication and sharing continues among communities and we hope that a biologist from the refuge, Seabird Camp leaders, and students from the Pribilof Islands will be able to visit the Commander Islands and attend Camp Aglakh in the near future. In addition to a joint camp, the visit will include meetings between biologists from the CINBR and the refuge, a field trip to a seabird colony, a shared community event in Nikolskoye, and the creation of a public mural symbolizing the unity between people of the Commander and Pribilof Islands. Meetings between biologists from the Commander Island Nature Biosphere Reserve and Alaska Maritime National Wildlife Refuge will foster the connections essential for a more global understanding of seabird conservation. Our hope is that this project will enable a deeper understanding of cultural traditions between communities on both the Pribilof Islands and the Commander Islands, and an increased knowledge of shared seabird species and conservation concerns.

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The Aleutians: Observing Recent Floristic Changes Along the Stepping Stones of the North Pacific

Eric G. DeChaine and Michael P. Williams, *Western Washington University*

The islands of the Aleutian Archipelago emerge like stepping stones across the North Pacific, linking Asia and North America. These stepping stones have provided a migration route for plants, but conditions and plant communities have changed over time.

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The islands of the Aleutian Archipelago emerge like stepping stones across the North Pacific, linking Asia and North America (Hutchinson 1937; Figure 1). The associated peninsulas and islands of these North Pacific Stepping Stones (NPSS), including Kamchatka in the far west, the Commander (Komandorsky)-Aleutian Islands, and the Alaska Peninsula to the east, have provided a migration route for terrestrial taxa between the continents since the Tertiary Period. The Kamchatka Peninsula juts out roughly 775 miles (1,250 km) from the Russian mainland southward into the western Pacific Ocean, dividing the Okhotsk and Bering seas. The Commander Islands, located in the northwestern Pacific Ocean, 100 miles (175 km) east of the Kamchatka Peninsula, are somewhat isolated at the western extreme of the Aleutian Islands. The approximately 300 islands of the Aleutian Archipelago arc across the North Pacific between 51° and 56° N latitude. The mountainous Alaska Peninsula extends southwest roughly 500 miles (800 km) from the Alaska mainland. Kodiak Island, the 2nd largest island in the U.S., sits about 25 miles (40 km) to the south of the peninsula.

The NPSS would have persisted above sea level throughout both warm and cold periods of the Pleistocene epoch, though never as a continuous bridge (Figure 1). During warm periods, sea levels rose, islands shrank, and the archipelago became more fragmented with greater distances between landmasses. But those inter-glacial periods provided

more suitable environmental conditions for most species. Alternatively, with the lowered sea levels of glacial periods, neighboring islands would have been connected into larger, though mostly glaciated, landmasses (Hamilton 1994), separated only from the mainland and other island groups by deep waterways (e.g., Hultén's line, Commander Gap, Buldir Gap, Amchitka Pass, Amukta Pass; Lindroth 1961, Hultén 1937, Garrouette 2016, Heusser 1990, Tatewaki and Kobayashi 1934). At such times, the central Aleutians (Rat and Andreanof Islands) may have been a refugium (Frenzel et al. 1992, Pruett and Winker 2007), an ecologically stable area that could have provided suitable habitat throughout the glacial cycles. The eastern Aleutians were connected to the heavily glaciated Alaska Peninsula, though Kodiak Island was unglaciated on its northwestern side and harbored a glacial refugium (Karlstrom and Ball 1969). In the west, Kamchatka was partially glaciated, but still distant from the Commander Islands (Frenzel et al. 1992). Thus, the stepping stones would have persisted across the North Pacific throughout the glacial cycles, but migration and the potential for refugia along the NPSS route would have varied depending on oscillations in island size, distance between landmasses, and the extent of glaciers.

Indeed, the Aleutian Islands (what we refer to as the North Pacific Stepping Stones) have been a critical route across the North Pacific for the migration and diversification of flora and fauna, including humans, since the last glacial maximum (LGM). Human

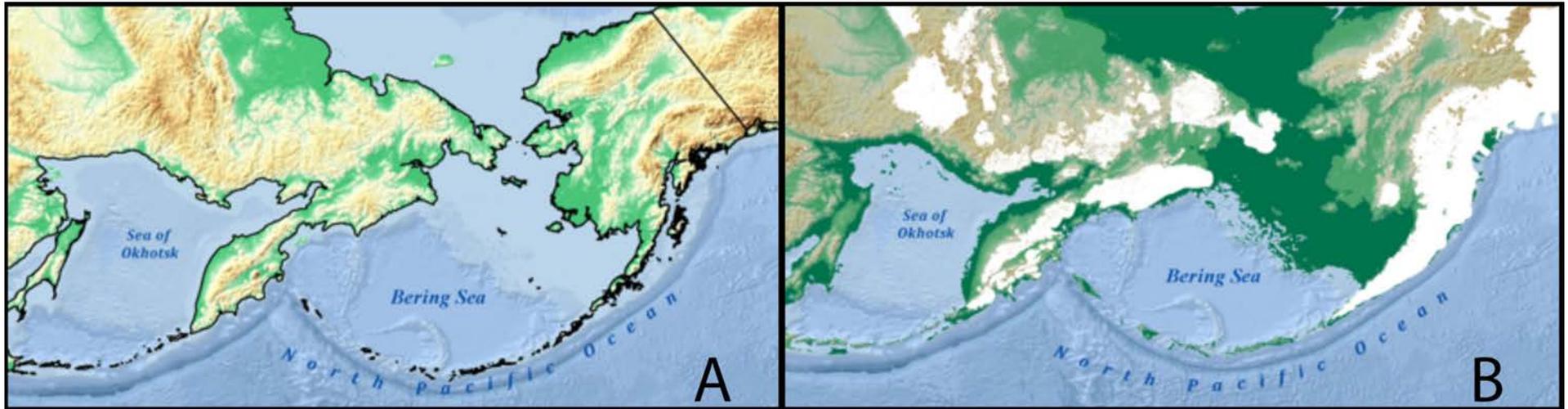


Figure 1. The North Pacific Stepping Stones (NPSS) and Beringia. The NPSS forms the arcing boundary between the north Pacific Ocean and the Bering Sea. It is comprised of the Kamchatka Peninsula, the Commander Islands, the Aleutian Islands, and Alaska Peninsula and Kodiak Island. A. Current sea level (blue) with degree of shading indicating bathymetry. B. Glacial extent (white) during the last glacial maximum (LGM, about 18,000 years ago) when sea level was approximately 400 feet (120 m) below current levels (green and blue shading).

movement through the Aleutian Archipelago may have facilitated the earliest expansion of human populations into North America, especially along a sea route (Erlanson et al. 2007, Wade 2017). En route, local island floras provided food and material for the early colonists (Veltre et al. 2006). And with humans came the potential movement of additional important edible and medicinal plants. Occurrences of such species on certain islands may be closely tied with Indigenous settlement of those islands or proximity of village sites where frequent collection and gathering enhanced plant populations (Bank 1953).

Flora of the North Pacific Stepping Stones

Today, the NPSS hosts a subarctic maritime tundra flora that overlaps with, but differs from, that in the more continental Beringia region due to a long history of a warmer, wet, and windy climate. The paleogeographic history of the NPSS has promoted a relatively diverse flora, for the latitude, with defined geographic distribution. Descriptions of the Kamchatka (Hultén 1927), Commander (Hultén 1968), Aleutian (Hultén 1960, Tatewaki and Kobayashi 1934), Alaskan (Hultén 1968), and Kodiak (Karlstrom and Ball 1969) floras illustrated the basic plant distributions for identifying patterns across the region.

Hultén (1927) described the Kamchatka Peninsula as an “island” of temperate vegetation, ranging from coastal woodlands to tundra, with about 1,100 species of vascular plants including over 40 that are now considered rare or endangered, and several endemics. The treeless Commander Islands host 432 species and subspecies of vascular plants in an area of disputable phytogeographic affinities (Hultén 1960, Volkova et al. 2016). Likewise, the Aleutian

Islands are treeless (with isolated introductions of Sitka spruce), but more diverse, including about 520 species, 37 of which are endemic (Lindroth 1961, Golodoff 2003, Garrouette 2016, Tatewaki and Kobayashi 1934). Approximately 685 species inhabit the diverse landscape of the Alaska Peninsula, which is one of the richest communities in Beringia (Hultén 1968, Ickert-Bond et al. 2013). On the nearby Kodiak Island refugium, over 450 species of vascular plants can be found (Karlstrom and Ball 1969).

And yet, our understanding of Aleutian flora remains limited. Present day flora is inadequately documented and thus the past and potential future of plant distributions across the bioregion remain uncertain. The remoteness and difficult conditions across the Aleutian chain and adjacent continental areas have reduced the level of scientific inquiry along this route. Botanical surveys have been focused on specific areas, with opportunistic sampling due to logistical issues (Yakubov 2007). We know little about historic and contemporary species distributions across the archipelago, where they occur on each island, and whether they are abundant or rare, cosmopolitan or endemic.

Recent Human-induced Disturbances

Ever since the description and mapping of the island chain by the European explorer, Captain Vitus Bering, in the 18th century, the Native peoples living there have experienced substantial change to the native animals and plants which share their homeland (Bank 1953, West 2012). Other examples of disturbances brought along with European hunters to the Aleutian ecosystems exist. Europeans overhunted Steller's Sea Cow (*Hydrodamalis gigas*) into extinction by 1741 (Murie 1959). Russian conscription of the Unangan (Aleut) people during the sea otter and fur seal harvests and later fox "farming" decimated many of the Unangan communities (Hutchinson 1937, Collins et al. 1945) and led to disruption of their land use and ethnobotanical needs. The sea otter (*Enhydra lutris*) populations collapsed from over-hunting. Russians introduced blue fox (*Alopex lagopus*) from the mainland for fur production to islands previously lacking foxes, which devastated seabird colonies (Murie 1959). The fur trade, as well as naval traffic, also brought Norway rats which have decimated bird and plant populations on previously rat-free islands (Murie 1959).

A number of the larger central and western islands in the Aleutians were ravaged during World War II, beginning with the invasion of Attu, Kiska, and Agattu by the Japanese Imperial forces in 1942-43, and the subsequent U.S. response through the remaining islands leading up to the western points of conflicts (Morgan 1980). The Attu villagers were taken to Japan as prisoners of war (Golodoff 2012, Morgan 1980). Those few that survived the war years returned to the Alaskan mainland and later to Unalaska, Atka, and other eastern villages. Attu has not been resettled (Morgan 1980).

The Unanga to the east were moved to avoid any exposure to military actions during the Japanese



View of the Gareloi Volcano from Tanaga Island, Central Aleutian Islands.

PHOTO COURTESY OF ERIC DECHAINE

occupation and subsequent U.S. military responses, this time by the U.S. Army, 1,500 miles (2,400 km) from their homes to mainland Alaska. Relocations after the war were attempted by the government and Native communities, but previous village populations were permanently disrupted in many cases (Morgan 1980, Golodoff 2012). Nuclear tests were performed on Amchitka Island for the U.S. Atomic Energy Commission (AEC) in the late 1960s through early 1970s with potentially catastrophic environmental impacts (Morgan 1980).

The township of Adak, a previous U.S. Navy base, closed in 1994 and ownership of the northern island

and built facilities were transferred to the Aleut Corporation. Clean-up work continues on the base closure at Adak as well as at numerous past military sites throughout the Aleutian chain (USFWS, Lisa Spittler, personal communication). Many of these clean-up projects involve removal of stored hazardous waste and other contaminants, with follow-up revegetation work as needed. Pre-1970s restoration or land stabilization efforts associated

with the military base on Adak did not require native species to be used in plantings and inadvertent naturalization occurred among the non-native species used, such as white clover and numerous fescue and blue grasses. In 1977, an executive order (Carter 1977) required use of native species in restoration plantings on all federal lands. Since this time, it is apparent that native species as well as some introduced species have been used as needed for restoration associated with on-going clean-up activities (observations from Williams in the 2019 field season). These are but a handful of examples of factors that have confounded our understanding of the original pre-disturbance flora.

**Comparing the Flora of Adak:
The Late 1970s to 2019**

We targeted the island of Adak for a comparative botanical investigation, given Williams’s work there in the late 1970s (Williams 1980). The collections and identifications from 1977-78 (Williams et al. in prep.) and 2019 bring the vascular flora of Adak Island to around 220 native taxa (Williams et al. in prep), almost twice what was previously thought (Garrouette et al. 2018). This includes 49 families (219 taxa) of vascular plants (Williams et al. in prep). Approximately 20 plants are new records to Adak, 10 or so new to central Aleutians, and a few even new to central and northern Alaska (Table 1).

Not all of our findings are promising however, because of the introduced non-native species. On Adak, Williams collected what might be established populations of a non-native perennial grass, *Elymus dahuricus*, of Asian origin and not previously known from the Aleutian Chain (Hultén 1968, 1973). It was found growing with the native American dunegrass, *Leymus mollis*, at a number of inland remote sites away from any recent restoration plantings. This species has been listed for reclamation plantings in the U.S. (plants.usda.gov as Dahurian Wildrye) and

Table 1. New records of vascular plants found on Adak Island discovered through 2019 collections and previous undocumented collections by others (from Williams et al. in prep).

New to Adak (post Hultén 1968, 1973)	Collector and Year Collected
<i>Polystichum aleuticum</i>	D. K. Smith, U. Tenn, 1975
<i>Polystichum lonchitis</i>	M. P. Williams 1978, 2019
<i>Adiantum aleuticum</i>	M. P. Williams 1978
<i>Carex gynocrates</i>	M. P. Williams 1978, 2019
<i>Carex sitchensis</i>	M. P. Williams 2019
<i>Juncus castaneus</i> ssp. <i>leucochlamys</i>	Clebsch 1978
<i>Luzula arcuata</i> ssp. <i>unalaschensis</i>	M. P. Williams 2019
<i>Elymus dahuricus</i> (?)	M. P. Williams 1978, 2019
<i>Torreyochloa pallida</i> var. <i>pauciflora</i>	Clebsch 1978
<i>Cypripedium guttatum</i>	M. P. Williams 1978
<i>Spiranthes romanzoffiana</i>	M. P. Williams 1978
<i>Artemisia tilesii</i>	M. P. Williams 1978
<i>Draba fladnizensis</i>	Clebsch 1978
<i>Moehringia lateriflora</i>	M. P. Williams 1978
<i>Montia fontana</i>	M. P. Williams 2019
<i>Stellaria crassifolia</i>	M. P. Williams 2019
<i>Epilobium leptocarpum</i>	M. P. Williams 2019
<i>Hippuris montana</i>	M. P. Williams 1978
<i>Koenigia islandica</i>	M. P. Williams 1978
<i>Ranunculus eschscholtzii</i>	M. P. Williams 1978
<i>Sanguisorba stipulata</i>	M. P. Williams 1978

Canada (Dobb and Burton 2013). Further analyses are needed to confirm if any such hybrids with the native *Leymus mollis* are present or if this species or any other hybrid-forming grasses have been used in the past for revegetation in the Aleutian Islands. We hope to verify the genetic and relational status of these populations with those of the native dune grass in the near future.

**Observations of the Potential Consequences
of Environmental Change**

We were able to document some of the environmental changes that may have impacted the flora by comparing our 2019 survey data with that from the late 1970s (Table 2, Figure 2). The observed changes are likely a result of several factors, including the ongoing impacts of non-native taxa and global warming.

Table 2. Potential disturbances at mid-elevations on Adak Island over the 40-year timespan from 1977-78 to 2019. Unless otherwise noted, based on observations by Williams.

Change in Organisms	1977-78	2019
Lichen- <i>Empetrum</i> mats	Approximately 30 cm thick in upland swales between ridges	2-3 cm thick
Caribou population (from annual caribou census, USFWS staff, personal communication to M. P. Williams; West 2012, Liebermann et al. 2015)	250-275	1,500-2,500 with some colonization of neighboring Kagalaska Island
Cryptobiotic crusts	Prevalent	Absent or Rare
Hoof action on solifluction terraces	Low	High
Rat population	Moderate	High
Occurrence of introduced foxes from fur trade	High	Believed to be exterminated by USFWS eradication program up to 2018 (from USFWS, Lisa Spittler, personal communication to Williams)

Introduced barren-ground caribou (*Rangifer tarandus granti*) and Norway rat (*Rattus norvegicus*) populations have risen dramatically on Adak since the naval base closure (Table 2). The caribou were introduced to Adak as a game animal in the 1950s and have persisted to the present (Liebermann et al. 2015, Ricca et al. 2014). Simultaneously, globally, summer temperatures have increased (Voosen 2021). Reindeer lichens, cryptobiotic crusts on solifluction terraces (Figure 2), and some vascular plants (Figure 2) have decreased in cover and abundance (Table 2). On Saint Matthew Island, approximate 8° latitude north of Adak Island, it was noted that, in areas of heavy winter utilization by introduced reindeer:

Lichen growth, which formerly occupied the slight depressions between raised hummocks of prostrate willows, had been almost completely removed (Klein 1959).

Mack and Thompson (1982) stated that:

... in communities... in which cryptogram cover is extensive, these slow growing organisms [lichens, algae, and mosses of cryptobiotic crusts] respond adversely to regular grazing by large animals.

They further stated that :

Maintenance of cryptograms in boreal and arctic regions is apparently dependent on comparably low continuous ungulate activity by migratory herds... (Mack and Thompson 1982).

The caribou population on Adak in the last 20 years fluctuated around the highest population observed (West 2012). Individuals even were migrating for the first time to neighboring Kagalaska Island (Liebermann et al. 2015). This strongly suggests that the caribou herd on Adak, introduced in the 1950s, has likely exceeded an ecological carrying capacity for this island as has previously been observed by others (Liebermann et al. 2015, Ricca et al. 2014).

Trampling from caribou and other ungulates at high population density coupled with global warming are both known to detrimentally impact the maintenance and continued growth or persistence of cryptobiotic crusts (Turunen et al. 2009, Concostrina-Zubiri et al. 2014, Olofsson 2006, Ricca et al. 2016). A review of the [July mean temperature collected at the Adak airport](#) for ten-year intervals over the last 70 years suggested an increase from 48°F to 51°F (9.2°C to 10.4°C). In 1978, Williams observed rapid heating on the dark, organic-rich exposed soils of the terraces in excess of 95°F (35°C) within 30 minutes of incubation in nitrogen fixation chambers, with ambient temperatures of 41-45°F (5-7°C; M. Williams, unpubl. data). The denuded dark solifluction terraces likely act to absorb abundant infrared (IR) radiation in the mostly fog-covered landscape. The loss of cryptobiotic crusts, which otherwise hold the open soil surface in place, likely has resulted in increased erosion of the solifluction terraces.

During the 2019 field season we observed abundant “pocketing” or torn openings in the otherwise dense tundra mats throughout central and northern Adak. These pockets, often associated near rat skulls or other skeleton parts, were not observed in any abundance in 1977-78 by Williams. Species of angiosperms showing declines in abundance from 1977-78 to 2019 included *Anemone narcissiflora*, *Dactylorhiza aristata*, *Platanthera convallariaefolia*,

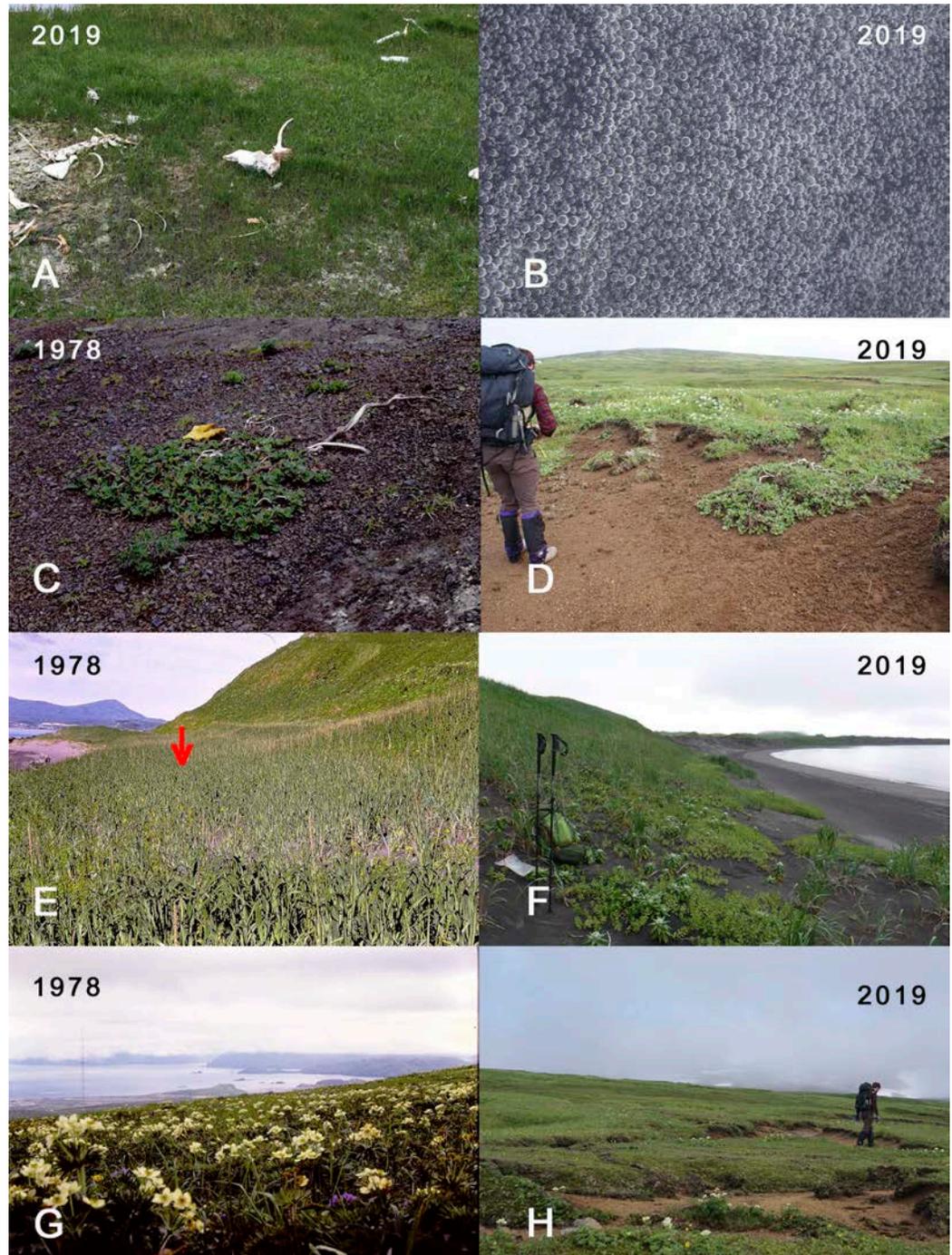


Figure 2. Comparison of environmental observations from 1977-78 to 2019.
A. Caribou carcasses following winter die-off [or population collapse] on ridge between Finger and Thumb bays, July 2019.
 PHOTO COURTESY OF CULLEN WILLIAMS

B. Abundant gas bubbles coating the submerged surface of shallow ponds were frequently observed in the 2019 field season. This was not obvious or commonly seen during the 1977-78 field seasons.
 PHOTO COURTESY OF MIKE WILLIAMS

C and D. Change in cover of cryptobiotic crusts on the southern slopes of Mount Moffett. Note **(C)** presence and **(D)** absence of cryptobiotic crust on the soil surface. Both photographs were taken in July at 365 meters ASL on south-facing slopes with extensive solifluction terraces. In addition, *Salix arctica* mats that commonly extended out on these terraces in 1977-1978 were mostly absent or restricted to the margins of the terraces in 2019.
 C PHOTO FROM 1977 COURTESY OF MIKE WILLIAMS
 D 2019 PHOTO COURTESY OF MATT RICHARDS-PERHATCH

E and F. Shoreline erosion of Kuluk Bay foredune and first terrace/dune swale. **(E)** In this image from 1977, the wide expanse of the first terrace is reduced in 2019 to half the width with no discernable foredune on the beach edge (red arrow denotes approximate edge of erosional face in 2019).
 PHOTO COURTESY OF MIKE WILLIAMS
(F) Dune face towards Kuluk Bay showing erosional loss of foredune and dune terrace/swale.
 PHOTO COURTESY OF MIKE WILLIAMS

G and H. Changes in abundance of *Anemone narcissiflora* on the southern slopes of Mount Moffett in early July **(G)** 1977-78 to **(H)** 2019
 PHOTOS COURTESY OF MIKE WILLIAMS

Spiranthes romanzoffiana, *Fritillaria camschatcensis*, *Streptopus amplexifolius*, and *Caltha palustris* (Williams et al. in prep). Most of these species are edible, or some are at least medicinal, for humans (Veltre et al. 2006). Again, the increased caribou herd size and abundance of introduced rats may explain these plant declines. Murie (1959) specifically noted that on Atka Island:

...we found large areas where the rats had eaten the basal parts of the stems of Anemone narcissiflora.

Gas bubbles observed in ponds of the upland slopes in 2019 may be associated with increased soil decomposition tied to global warming (Figure 2B). Further study is needed to determine if the concentration and abundance of these bubbles may be due to an increased release of organic gases such as methane from increased decomposition of organic-rich soils on Adak and possibly elsewhere in the Aleutian Islands. This pattern was not observed in 1977-78 by Williams. Any loss of stored soil organic matter through increased decomposition from climate warming will likely result in changes to the vegetation structure and diversity on Adak in the future.

By 2019, Williams observed that the erosional face of Kuluk Beach, a sand dune system northeast of the Adak townsite, has steepened and progressed inland, removing most of the foredune and first terrace surveyed in 1977-78 (Williams 1980). This change has resulted in a loss of 33-45 feet (10-14 m) width of the front edge of the vegetated dunes. Also, there is no longer an interdune swale, which in the past had seasonally exhibited a shallow linear freshwater pond on this first terrace (Williams 1980; Figure 2 E and 2F). Such shoreline retreat may signal increased erosion to unique native habitats with climate change.

Further Study is Needed

Our recent observations and collections suggest that we do not have a complete picture of the Aleutian flora and how it is being impacted by environmental changes following European contact. The abundance of many dominant plants and characteristics of vegetation in parts of the landscape observed by Williams in the late 1970s is different than what we saw in 2019. Botanical inventories are needed in high latitudes where the impact of global climate change is especially acute and where development is accelerating in the United States and Russia. Warming is opening up the Arctic to further human use. Shipping traffic in the North Pacific and through the Aleutian Islands is projected to increase dramatically, with an increased probability of introduced species. Invasive species already occur in the islands. Profound warming (IPCC 2014, Voosen 2021) is influencing the geographic distribution of the northern biotic communities. As such, there is a critical need to document the current distribution of species and explore the processes of diversification, colonization, and extinction of native species of plants, as well as animals, around the North Pacific. Also, it is important to recognize that the Unangax' people are resilient and have worked to preserve their technologies of native medical, edible, and other useful plants for future generations (Golodoff 2003, Unger 2014).

Globally, island biota face the highest rates of extinction, where 80% of all recorded extinctions are from islands (Ricketts et al. 2005). Island populations tend to be small, geographically restricted, vulnerable to establishment of invasive species, subjected to higher rates of inbreeding, and lack effective dispersal corridors to track suitable ecological niche space through time. These conditions lead to high vulnerabilities of island biota, particularly when coupled with habitat conversion, harvest, or other

anthropogenic activities. Importantly, 25% of the globally rare to imperiled plant species in Alaska are restricted to the Aleutian and Bering Sea islands (AKNHP 2018) despite the small area. Our findings underscore the need for more thorough surveys, hint at potential novel discoveries, and suggest that more dramatic change is on the way. Informed conclusions regarding human impacts on natural populations and the effects of climate change at high latitudes will require a detailed understanding of the distribution and status of the flora. We cannot manage for future changes without a current understanding of the flora from which to gauge the response of plants to environmental shifts.

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The Fur Seals of Early American Alaska

Amanda L. Shirnina, Historian

Fur seal harvest and industry centered in the Pribilof Islands of the Bering Sea. The industry changed hands between the Russian and U.S. governments until an international convention protected seals in 1911.

Citation:

Shirnina, A. L. 2021. The fur seals of early American Alaska. *Alaska Park Science* 20(2): 68-75.

When the United States Government purchased Alaska from the Imperial Russian Government in 1867, the territory came with a lucrative fur seal industry. American Alaska inherited industrial infrastructure established by the Russian-American Company (Commander Island State Natural Biosphere Reserve 2018). But with the transfer of Alaska, the Russians did not simply disappear from the northern fur seal (*Callorhinus ursinus*) business. The United States's rise as a North Pacific and Arctic authority, through the acquisition of Alaska, shifted the balance of power in the region but did not displace Russian interest in the fur seal resource spread across the North Pacific arc. Russian officials actually hired American hunters to harvest seals on Russia's Commander Islands until, in 1911, the entire industry became too much of a diplomatic headache and Russians, Americans, Canadians, and Japanese came together to put an end to it (Ovchinnikov 1905).

At the time of the Alaska purchase, the American Government anticipated earning revenue through land-based fur-bearing animals (Appletons' Hand-Book 1872). Yet arriving in Alaska by sea as they did, Americans quickly realized that marine mammals held more promise for profitability than land animals. While it is possible to hunt migrating fur seals strictly at sea by boat, mass slaughter is only possible on land, where fur seals gather on island rookeries to mate. The United States entered the land-based fur seal industry using abandoned Russian infrastructure on the Pribilof Islands, St.

Paul and St. George, which included killing grounds and salt houses (Commander Island State Natural Biosphere Reserve 2018). A key element of that infrastructure was the Native workers—Unanga people of the Aleutian Islands, who were forcefully relocated to the Pribilof Islands to hunt seals by the Russian-American Company. Americans came to know and care about fur seals through the purchase of Alaska and its “seal islands,” the Pribilofs, through the three-year process of establishing an American fur seal industry (1867-1870) and throughout its forty-year existence (1870-1910).

The United States becomes a Fur Seal Hunter

Henry Wood Elliott, the first American naturalist to study the Alaskan fur seal herd extensively, wrote that, by 1868, hundreds of Americans raced up to Alaska and “slaughtered over 360,000 young male seals within that season”—only stopping when they ran out of salt to preserve all of the skins so that they could make it out of Alaska and to the markets of the world (Elliott 1907). With no government to speak of, but with the promise of fast wealth, adventurers poured into the new territory (Ovchinnikov 1905). Eventually the U.S. Government—far away from Alaska in Washington, D.C.—learned of the unregulated massacre and declared the Pribilof Islands a reservation in 1869. The summer of 1868 free-for-all was followed by strictly Native subsistence hunting in the summer of 1869 (Elliott 1881). Congressmen in Washington then decided to restrict seal hunting to one entity, leasing the



Seal rookery, circa 1925-1926. ERNEST AND HELEN WATSON ALBUM, 1913-1939. UAF-2002-158-209. ALASKA AND POLAR REGIONS COLLECTIONS, ELMER E. RASMUSON LIBRARY, UNIVERSITY OF ALASKA FAIRBANKS, FAIRBANKS, ALASKA. [ALASKA'S DIGITAL ARCHIVES](#). USED WITH PERMISSION.



Russian Factory Islands. This cropped version of "Northwestern America Showing the Territory Ceded by Russia to the United States," 1867, zooms in on "Russian Factory" and places it at the center of our vision. G4370 1867 U55 MAP. DOCUMENTS COLLECTION. ALASKA STATE LIBRARY HISTORICAL COLLECTIONS, JUNEAU, ALASKA. USED WITH PERMISSION.

Pribilof Island seal fishery to a single company in twenty-year increments. It was such a lucrative industry while it lasted that hunters were unwilling to exercise restraint. This forced the governments of Russia, the United States, Canada (whose foreign policy was controlled by Great Britain), and Japan to reach a diplomatic agreement putting a stop to an unsustainable industry (Dorsey 1998). The fur seals thus organized and formed the basis for multinational relations in the North Pacific from 1867 until 1911, when representatives of the four North Pacific-bordering countries met to save the seals.

The Alaska Commercial Company

Lease: 1870-1890

It took the United States Government three years to decide what to do with its seal islands, their Unangâ residents, and their "factories"—various buildings designed for salting and storing seal pelts. In 1870, the American government brokered a lease with the Alaska Commercial Company (ACC) to hunt seals on the two Pribilof Islands (Busch 1985).

Since the U.S. Government granted twenty-year leases for sealing, American seal history in Alaska is divided into two neat periods, from 1870 to 1890 and from 1890 to 1910. The ACC lease lasted the first twenty years, followed by the North American Commercial Company (NACC), which took over the lease for the second twenty years. American convention delegates were willing to protect seals in 1911 because their country had just reached the end of a lease period (Busch 1985). It was a convenient time to change. Unsurprisingly, Russia was also willing to change, having just ended a lease period on the Commander Islands in 1911, while Canada and Japan were intransigent—not following the same system devised by the former and current owners of Alaska. The ACC paid the U.S. Government about \$500,000 for the right to use government territory and government animals to make money. The company

also paid a rent of \$50,000 per year and a tax of \$2 on each sealskin (Elliott 1881). During the first twenty-year agreement, the ACC collected an annual quota of 100,000 seals on the two islands combined. The quota total was based on an incorrect population count of 4.7 million seals in the 1870s (Elliott 1881). Two marine biologists from the U.S. who reevaluated the count in the mid-twentieth century determined that the real 1870s count was closer to one million (Roppel and Davey 1965). In the first year, the season started quite late, so the ACC only took 23,733 seals in its inaugural year (Busch 1985).

"Strike!"

How did the Americans kill seals on land? It was a procedure co-developed by the Russian foremen and Unangâ hunters who preceded the Americans to the Pribilof Islands. First, during the breeding season, hunters drove the "surplus" male seals (those that were able to reproduce but unable to attract any females) inland from the beaches in a brutal death march. The Unangâ would gather between the seals and the ocean around one or two o'clock in the morning and startle them into running further up the beach. Northern fur seals did not put up a fight this way, so just 3 or 4 Unangâ could send 1,000 seals up to the killing grounds. The drives ranged from 2.5 miles (4 km) to 5 miles (8 km), depending on the nature of the particular beach (Elliott 1881). The drive proceeded at about half a mile per hour; any faster and some seals would die from exhaustion. For the first 100 yards (91 m), a mature male fur seal could run at the same pace as a man. Beyond that, the seal would collapse (Elliott 1881). During the drive, the seals could take breaks to cool themselves with their flippers. These breaks were critical because too much sweat before death would devalue a seal's coat. It would take several hours for the seals to reach the killing grounds. They would arrive worn out by six or seven in the morning. This process occurred

only 40 days per year on the Pribilofs, which was enough time to reach the annual government quota of 100,000 harvested seals (Elliott 1881).

At the killing grounds, most Unangâ men from the Pribilof villages used oak or hickory clubs made in New London, Connecticut, to start the killing process (Elliott 1881). The foreman of the hunting party would yell “Strike!” and the clubs would usually stun, but not kill, the animals. Since the seals outnumbered the men, when the clubs met with the heads of some of the seals, others jumped to attention. Seals that escaped would be safe for that day, but they were likely to be rounded up in the next drive (Elliott 1881). Hunters needed to devote their undivided attention to the animals in front of them since seals occasionally lunged at hunters if the first, stunning blow did not render the animal unconscious. Sometimes, a seal would jump at a hunter and bite him just when the hunter was convinced the animal was dead. The hunters carried knives in case this happened but were discouraged from using them except in extreme cases. A knife mark would ruin the pelt (Elliott 1881). The pelt would also be useless as a coat if the fur stayed on the animal too long after death. It comes out in clumps quickly after death (Elliott 1881). The Unangâ bundled the skins of saleable condition in twos and sent them to an ACC steamship for transport—first to San Francisco, then to New York, then on to London (Elliott 1881). From there, most of them went all the way back to the Pacific region, to China (Elliott 1881).

The North American Commercial Company Lease: 1890-1910

When the ACC’s lease expired in 1890, the U.S. Treasury Department gave control of the Pribilof Islands to the North American Commercial Company (NACC). The NACC bought the sealing infrastructure on the Pribilof Islands from the ACC for \$67,264.82. The U.S. Government raised the



THE KILLING-GANG AT WORK.

Method of slaughtering Fur-seals on the grounds, near the village, St. Paul Island.

annual rent from \$50,000 to \$60,000 and the tax per skin from \$2 to \$9.25. Government decisionmakers reduced the quota to a sum under 100,000 that could be changed year by year based on what still seemed sustainable at the time (Busch 1985).

Even in 1890, the government could see that the sealing industry would not survive. According to ACC records, that company harvested 2,006,136 seal skins in twenty years. The NACC, on the other hand, took only 359,462 in the same number of years (Busch 1985). The problem was not that the NACC was less efficient; it was that the Pribilof northern seal herd was rapidly declining. Company profits were not immediately affected since, as supply decreased, demand stayed the same and even increased. Thus, the value of each skin increased. The sealskin coat was very fashionable in the 1870s and continued to

The killing gang at work.

ELLIOTT, H. W. 1881. *THE SEAL-ISLANDS OF ALASKA*.
GOVERNMENT PRINTING OFFICE.

be so in the 1890s. Each coat was worth about \$150-\$200 in the 1880s (Busch 1985). Although each pelt grew in value, company profits remained stagnant and Unangâ workers’ salaries—which actually came in the form of relief payments and not real salaries—declined.

In 1903, the U.S. Government shifted jurisdiction of Alaska from the Treasury Department to the new Department of Commerce and Labor. In 1909, control of Alaska shifted again, to the Bureau of Fisheries within the Department of Commerce and Labor (National Oceanic and Atmospheric Administration Fisheries 2019). These shifts did



American sailors and naval officers gather around a Cossack in East Cape (now Cape Dezhnev), Siberia; an Indigenous man—most likely Chukchi—stands at a distance, circa 1914-1927.

FROM THE COLLECTION OF THE COMMANDING OFFICER OF THE UNITED STATES REVENUE CUTTER *BEAR*. COCHRAN COLLECTION: B1981.164.7. ANCHORAGE MUSEUM LIBRARY AND ARCHIVES, ANCHORAGE, ALASKA. USED WITH PERMISSION.

not change the fact that Alaska's role in the United States in those years was to generate revenue. With each passing year, authorities recognized that the seal islands would not generate revenue forever and would soon cost more to maintain than they produced. When the NACC lease ended on April 30, 1910, the government prohibited seal hunting on the Pribilof Islands indefinitely. This prohibition made it easy to partner with Russia, Japan, and Canada to save the seals via the North Pacific Fur Seal Convention the following year (Nagel 1910).

The ACC Goes to Work for the Russians

Russia retained islands with fur seals even after it sold Alaska, though this is rarely discussed in the English-language literature on the fur seal industry. The westernmost Aleutian islands are actually a part of Russia's Commander Islands, had many resident

fur seals of its own (Elliott 1881). Ironically, Russia offered a lease to the ACC. It began in 1871, the year after the ACC contracted with the U.S. Government to work the Pribilofs. The company paid 5,000 rubles (about \$4,000) annually to the Russian Government for the right to hunt on Bering Island and two rubles, or about \$1.50, per skin (Ovchinnikov 1905). Initially, the ACC called its Russian branch Hutchinson, Kohl, Maksutov and Company, in part named for Prince Dmitrii Petrovich Maksutov, the last governor of Russian Alaska. As soon as the lease began, the ACC took over and Maksutov was barely involved. With that lease, the company had a monopoly over almost every seal residing on land on both sides of the Pacific basin (Busch 1985).

On Russia's Commander Islands, ACC foremen hired Unangaġ laborers to hunt seals in Russian waters, using methods co-created by Russians and Unangaġ and then transferred from the Unangaġ to the Americans. For twenty years, from 1871 to 1891, the ACC harvested 769,893 seals on the Commander Islands (Busch 1985). Although the U.S. Government did not renew its contract with the ACC after the first twenty years, the Russian Government did. Thus, the ACC hunted Russian seals until 1911 (Ovchinnikov 1905). Even the U.S. Treasury benefitted financially from this arrangement, garnering about \$550,000 in tax payments over twenty years from American hunters working in Russia for the Russian Government (Busch 1985).

The End of the North Pacific Conflict over Seals

The United States and Russia saw their land-based seal leases end in 1910 and 1911, respectively. This positioned both countries to lobby for a new normal in North Pacific relations in 1911. Americans, Russians, Japanese, and Canadians knew that they were fighting a losing battle against the fur seal and its population's survival (Ovchinnikov 1905). With

a declining annual yield, the tremendous costs required to patrol the region for illegal hunting, and the costs involved in paying Unanga̅ hunter wages, the American seal industry finally showed itself to have the same failing business plan as the Russian-American Company four decades earlier (Vinkovetsky 2011).

The four-nation North Pacific Fur Seal Convention met in 1911 to put an official end to pelagic sealing, or the hunting of seals on the open sea, in waters north of 30°N latitude. Multinational agreements are needed to manage international waters, whereas countries are free to do as they wish on their own territory. But the United States, Russia, Great Britain (Canada), and Japan voluntarily halted fur seal hunting on land too, for several years after 1911, to allow the population to recover (Dorsey 1998). The convention prohibited all pelagic sealing in the North Pacific for a period of fifteen years—but that period extended much longer because the signatories supported its continuation without controversy (Collection of Laws and Regulations Issued by the Senate 1911).

The participants determined what each country would owe the others on the basis of the size of each country's rookery. Since both the U.S. and Russia had large sealing grounds and Canada and Japan were mostly engaged in pelagic sealing, the former agreed to give the latter fifteen percent of their revenues each (Collection of Laws and Regulations Issued by the Senate 1911). The U.S., having the most successful seal hunt prior to the convention, immediately gave \$200,000 to both Japan and Canada. While Japanese and Canadian seal hunters did not feel lucky to have their livelihoods taken away, their governments were pleased to essentially get something for nothing. The Russians and Americans exchanged nothing because they owed each other nothing as near equals in the fur seal industry (Gay 1987). The North

Pacific Fur Seal Convention was the first of its kind, protecting a single animal species through successful multinational cooperation.

The Evolution of the Industry and Future of the Fur Seal

In the decades after the fur seal convention, Japan was the only signatory to change its mind about saving the seals. It relied economically much more on the wealth of the oceans than did the American, Russian, or British empires whose economic centers were far away from the North Pacific (Tsutsui and Vuorisalo 2017). The Japanese announced that they were backing out of the 1911 convention in October 1940 and the treaty ended one year later, as the convention stipulated a twelve-month advanced warning (Dorsey 1998, Gay 1987, Roppel and Davey 1965). The U.S. and the (by then) Soviet Union resumed limited rookery sealing and continued to send a portion of their land-based seal profits to Canada and Japan until 1940. Sealskin coats eventually fell out of fashion, especially as synthetic alternatives to animal skin coats arose in the twentieth century. The Alaska Commercial Company adapted as well, developing into a retail company. The ACC name lives on today—not for hunting seals, but for selling groceries to residents of twenty-seven small towns and villages across Alaska.

Despite the fur seal treaty's promise in 1911, in 2021 it is clear that, even if hunters stop going after a protected species, the habitat and prey loss caused by rapidly worsening climate change may destroy that population anyway. The most recent estimate of the global northern fur seal population (in 2014) was 1.29 million animals. This includes 650,000 mature individuals (of reproductive age), and the population is in decline. The International Union for Conservation of Nature, which offers the most comprehensive global animal population data,

calls the northern fur seal “vulnerable” (Gelatt et al. 2015). Thankfully, “vulnerable” is several steps away from “extinction,” with “endangered,” “critically endangered,” and “extinct in the wild” between the two categories. There is still time to address the population loss of the animals that northern fur seals eat: walleye pollock, sand lance, herring, smoothtongue, mackerel, and salmon (National Oceanic and Atmospheric Administration Fisheries 2019). Other threats to the northern fur seal population are its tendency to get caught in fishing gear, its role as the ideal meal for killer whales (orcas), its sensitivity to the negative effects of oil spills, habitat degradation, human presence, disturbance by marine vessels or aircraft, chronic pollution, and illegal harvests (Gelatt et al. 2015).

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Northern fur seals in the Pribilof Islands.
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION,
ALASKA FISHERIES SCIENCE CENTER/DAVE WITHROW





Beringia National Park: Preserving the Natural and Cultural Heritage of Eastern Chukotka

Vlada Valchenko, Beringia National Park, Chukotka, Russia

[Translated from Russian to English by Evguenia Anichtchenko.]

Beringia National Park, the easternmost protected area in Russia, is a spectacular example of Arctic biodiversity and vibrant Indigenous culture.

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Among all the territories of unquestionable global significance, Beringia occupies the main place... This is the most important crossroad of migration routes of land and sea organisms, which contributes to the study of Earth's evolution.

– N. M. Zabelina, 1987, *National Parks*

Beringia National Park is the easternmost protected area in Russia. It is located at the meeting point of two continents, Eurasia and North America, and two oceans, the Pacific Ocean and the Arctic Ocean. The park consists of five separate clusters: Kolyuchinsky, Chegitunsky, Dezhnevsky, Mechigmensky, and Providensky, located in the three municipalities of Chukotka. The national park is significant because of its surprisingly rich Arctic biodiversity and wide variety of landscapes (Materialy 2011). It features boundless tundra, high mountain ranges intercepted by fjords, unique sites of ancient maritime hunters, and the vibrant living culture of Chukotka Indigenous peoples (Bogoslovskaya 2009).

History of the Park

Beringia National Park was established on January 17, 2013, but its history goes back several decades earlier. Beginning in the 1960s, different specialists and representatives of environmental agencies of the Soviet Union and the United States of America started discussing the idea of a specially protected territory in the Bering Strait region for the preservation of the rich natural and cultural heritage

of ancient Beringia, which is both globally significant and crucial for Indigenous people on both sides of the strait (Brawn 1990). In 1990, the Presidents of the Soviet Union (Russia) and the United States signed two different memoranda confirming the countries' interest in creating an International Park. The joint statement of the two presidents declared that:

by creating this park, the United States of America and the Soviet Union assume responsibility over the preservation of the region of a planetary significance (Bush and Gorbachev 1990).

The proposed Soviet-U.S. park was to include both land and maritime protected territories on both sides of the Bering Strait and foster collaboration between the people of both countries: scientists, nature protection specialists, tourists, and especially Indigenous people. However, this vision of trans-boundary protected territory was not realized in part because of land management issues.

One of the key roles in the creation of Beringia National Park belonged to Lyudmila Bogoslovskaya. For many years, Bogoslovskaya worked in Chukotka as a biologist, ecologist, and ethnographer, promoting



Ocean and coastal resources of Beringia National Park include walrus (top), seabird rookeries (center), and whales (above).
PHOTOS COURTESY OF MAXIM ANTIPIN (TOP), OLGA TITOVA (CENTER), AND OLGA KUDRINA (ABOVE).

integrated natural and cultural preservation in the Bering Strait region. In 1991, she took the lead in developing the plan for the proposed park in Chukotka.

According to Bogoslovskaya's vision, this specially protected territory should have included coastal zones of the Chukchi and Bering seas because of their importance for natural and cultural heritage. The entire planned park territory was to remain accessible for traditional subsistence activities. Planning was conducted in collaboration with the Indigenous population, who over many centuries accumulated deep knowledge and understanding of their environment and learned how to care for its resources (Tekhnio-ekonomicheskoe obosnovanie 1991).

In 1993, the Russian Government designated a part of the Chukotka Peninsula as a specially protected natural territory of regional importance, a Beringia ethno-natural park. In anticipation of its "international" fate, the regional park began developing expertise in protecting and researching its vast territory.

In the early 2000s, the Russian Government changed the park's status to federal protected area, renaming it Beringia National Park, as intended in the original project. At the same time, its concept underwent significant changes. Most notably, the park's territory did not include coastal and marine zones. The park was established on January 17, 2013. The creation of the national park was not the end, but rather the beginning of a long road to preserve this unique territory.

In 2015, the administration of the park began working on the National Park Regulations, a fundamental document regulating the federally protected natural area, its special protection regimes,

and functional zoning. Work on the regulations lasted two years. Several meetings were held with the villagers and the administrations of the three municipalities bordering the park, where functional zoning was discussed, and the views and wishes of the local population were taken into consideration.

Currently, work is underway to create a marine protection zone as part of the national park, adjacent to the land areas. The creation of this zone will protect marine and coastal ecosystems from industrial fishing, coal extraction and exploration, and marine traffic-related pollution, but will not affect the traditional subsistence and Indigenous lifestyle.

Indigenous Peoples and Beringia National Park

Beringia National Park is on the homeland of the Indigenous Yupik and Chukchi peoples (Bogoslovskaya et al. 2007). Their traditional way of life and strategies for environmental management shaped and preserved the valuable natural and cultural landscapes. Preserving the unique natural and cultural heritage of Chukotka is the main purpose of the national park and cannot be achieved without the people who live there. Since its inception, the national park maintained an active dialogue with local residents. One mechanism for developing mutually beneficial cooperation between the park and the local communities is the Community Council, which creates avenues for the local populations' direct participation in making important decisions about environmental management and conservation. Since 2016, the Beringia National Park Community Council has provided recommendations to ensure optimal solutions for the issues related to the park's development, its integration into the socio-economic structure of the region, and the protection of its natural ecosystems.

Marine mammal hunting has several millennia of history in this region and continues today (Gusev 2009). Traditional Indigenous subsistence activities are permitted in the recreational and economic zones of the national park. Additionally, the park established a zone of traditional subsistence designed specifically to support the livelihood of the Indigenous peoples of the Russian Federation via traditional economic activities and sustainable use of renewable natural resources.

The park collaborates with local residents in the development of educational tourism. Authentic local arts and crafts are one of the park's most important offerings to the tourists. Introduction to the contemporary culture of Indigenous peoples of Chukotka is an important and valued element of the Beringia National Park tourism program. The preservation of traditional, environmentally benign subsistence knowledge and ecological tourism development are strategies recognized world-wide for sustainable development and biodiversity conservation.

In 2020 and 2021, within the framework of the program of the Indigenous population's adaptation to climate change, the World Wildlife Fund (WWF) Russia, in partnership with the Beringia National Park, supported about 50 local residents' projects aimed at developing ecological tourism, preserving the traditions and nature of the region. All projects were implemented in communities bordering the Beringia National Park and most of them involved close cooperation with a specially protected natural area.

As a result of projects implemented in 2020, local communities acquired new cultural venues, workshops, guest houses, recreation areas, and private farms. In 2021, the program supported projects focused on developing dogsledding,

creating of a documentary series about traditional skills, providing equipment for ivory and carpentry workshops, and educating others about local Indigenous cultures.

In 2020, Beringia National Park implemented the project "Ancestral Places" to preserve traditional knowledge about the ancient settlements of the Chukchi coast. Park staff interviewed former residents of the now-abandoned settlements of Unazik, Ukigarak, and Kivak and others collected photographs of these places. Based on the collected data, the staff created and installed interpretive panels about these ancient settlements to share this historic heritage of Beringia with both residents of Chukotka and visitors to the protected area (Beringia 2020-2021).

Beringia National Park Staff

A national park is a fragile world that requires protection and study. It would not have been possible to preserve it for future generations without people who devoted themselves to preserving natural and cultural heritage. The staff of the Beringia National Park is small (only 43 people), but they are entrusted with a huge area—about 6,950 square miles (more than 1.8 million ha). The national park has both permanent staff and specialists who visit for a short time, for example, to conduct research and field work.

Most of the permanent staff live in the village of Providenie, where the park's office is located. The rest reside in small villages along the coast of Chukotka, from the southernmost (Sireniki) to the northernmost (Neshkan), close to all five sections of the national park. These are district inspectors. All of them are locals, most are representatives of Indigenous peoples who know and understand the nature of Chukotka more than anyone else. Their duties are to patrol and improve the infrastructure,



Visitors can hike across the tundra of the park (top); park staff patrol on snowmachines and in remote and frigid conditions (center and above). PHOTOS COURTESY OF OLGA KUDRINA (TOP, ABOVE) AND MAXIM ANTIPIN (CENTER).



Beringia National Park has scenic fjords, mountains, volcanic hills, coastal spits, lakes, and lagoons. Pictured here is Plover Spit.

PHOTO COURTESY OF MAXIM ANTIPIN

conduct observations, collect primary scientific data, and guide visitors.

The work days of the employees of the national park office in Providenie are very similar to the workdays of the “mainland” (as locals call the rest of Russia) residents, if one does not consider that there is snow for 8 months of the year, that getting to work sometimes requires travelling through a snowstorm with 67 mile-per-hour (30-meters per second) winds, that spring does not come until June and winter starts in October, and that the sun does not set in summer

and rises above the horizon only for 2-3 hours in winter. There is still no high-speed Internet and, in general, the cell communication often does not work in the villages and is totally absent outside them. All the necessary supplies, including food, equipment, fuel, office supplies, and clothing are delivered only by sea during the short period of northern navigation. Parts of the national park are not connected by roads and it is only possible to travel by land to all of them in early spring, on ice roads. Many park employees have never met in person and know each other only by photos.

Some of the employees come to Chukotka for a short time to test themselves in the Arctic and learn something new, others work in Beringia for many years, since the park acquired regional protected status, and cannot imagine their life without this extreme place. Some came here because of a dream,

others were brought to the park by a chain of random events, some were born here and lived in this place all their life. The main thing that all have in common is the love for the nature of this amazing land and the dedication to the preservation of nature.

Beringia National Park Programs

The main programs of the national park are the preservation of natural resources, environmental monitoring, scientific research, environmental education, and development of educational tourism.

Preservation of unique natural resources is the priority goal and the main task of the national park, which is entrusted to the park’s department of protection. Federal inspectors have a wide array of responsibilities, including the protection of the territory, ensuring compliance with park’s regulations, preventing violations and poaching, raising public awareness, conducting environmental monitoring, guiding scientists and tour groups, and installing boundary signage.

Beringia National Park is a unique outdoor laboratory. The park’s scientists study the natural environment to develop a scientific foundation for the preservation of biodiversity, unique natural systems, and populations of rare animal and plant species. The Beringia National Park research department monitors ecosystem conditions, assesses the populations of specific animal and plant species, and makes recommendations for maintaining their sustainability. This is achieved through collecting field data on the ecology of marine mammals and seabirds, including population size, age structure, migration patterns, seasonal distribution and behavior, and describing mortality factors in the Bering Strait, Chukchi Sea, and East Siberian Sea, and effects of climate change. This information is processed through GIS mapping of the field

data, including sighting of rare animal species, and geographic distribution and density of key plant and animal species. The park staff maintains and analyzes the inventory of long-term observations and data collected in the Beringia National Park and adjacent areas, compiling, and updating lists of plant and animal species, and refining their distribution maps.

Currently the national park is especially focused on inventorying its flora and fauna. Much of the park's data on species present in the park, quantity and distribution of flora and fauna are outdated. Focused inventories were not conducted for over a decade and some species have never been inventoried. This is why the park staff priority for the next five years is to conduct inventory of flora and fauna of the protected territory. This work will be conducted both by the park staff and specially invited specialists and research organizations.

Starting in 2017, a group of botanists from the same Institute of Biological Problems and from the Institute of Biology of Inland Waters named after I.D. Papanin of the Russian Academy of Science has been working on updating the list of vascular water plants of the Beringia. They study flora of thermal springs, lakes, and lagoons. Their research points out that the distribution of most of the forms of vascular water plants began from Beringia and extended both west towards the European Russia and western Europe, and east toward North America. In Beringian refugia scientists found initial genetic types—proto forms of plants (Bobrov et al. 2021).

Whale researchers from Moscow State University also began working in the park in 2017. Their work resulted in two photographic catalogues of humpback whales and gray whales of Senyavin Strait. Over the last two years, support from the World Wildlife Fund-Russia enabled specialists to study gray whale response to marine traffic noise.



Whale researchers.
PHOTO COURTESY OF TATIANA PRIDOROZHNYAYA

Such studies are particularly important in context of increased Northeast Passage and Arctic navigation (Filatova and Fedutin 2020).

In 2021, park staff conducted survey of wolves, polar and brown bears, and bighorn sheep. Contracted specialists from the Institute of Biological Problems of the North of the Far East branch of the Russian Academy of Science conducted a bird inventory in Providensky cluster of the national park. For the first time in the history of monitoring in Chukotka, the researchers used distant observation units to study birds of prey (rough-legged buzzard).

The environmental education department furthers the park's conservation function by fostering the ideas of nature conservation among the public. Employees of the department organize exhibitions, environmental programs and activities, hold field-themed workshops in educational institutions, organize events for the adults in nearby communities, and develop curriculum for teachers (Zagrebin 2017,



An educational activity for children on marine debris and ocean ecosystems.
PHOTO COURTESY OF VLADA VALCHENKO



An ice road is the way to travel through the park most of the year.

PHOTO COURTESY OF MAXIM ANTIPIN

Antipina 2016; [Определители](#)). In 2021, the park initiated a special educational program, “Experience Beringia,” for the Uelen public school.

The territory of the Beringia National Park is zoned for different levels of public use. A recreational zone was established for the development of educational tourism. Park staff educates visitors about sensitive interaction with nature and wildlife, so that the knowledge and appreciation of the natural and cultural heritage contributes to its preservation. When accompanied by park specialists, the public can also visit a specially protected area. Most of the specially protected area and protected area are untouched, pristine lands.

Most visitors to the national park are, not surprisingly, residents of Chukotka. Cruise ship tourists visiting the Russian Far East are the second-

largest group of visitors. These are mostly foreign visitors from more than 20 countries. Cruise ships bring about 1,000 visitors to the national park annually. The numbers of the park’s visitors from central Russia are small, usually less than 100 people, but increasing every year.

Chukotka and Alaska

Divided by an international border, Chukotka and Alaska share geological and environmental history as well as shared Indigenous cultures. Joint monitoring of environmental conditions and rare animal and plant species, as well as preservation of the Indigenous cultures are promising directions for collaboration between Chukotka and Alaska.

Prior to the creation of the national park, from 1993 to 2013, the regional natural park in Eastern Chukotka participated in international research projects with Alaska partners. For example, Sea Ice as a Cultural and Natural “Scape” focused on marine mammal hunters’ interaction and spiritual ties with Arctic ice and icescapes, which constitute an integral part of Arctic Indigenous peoples’ cultural heritage (Bogoslovskaya and Krupnik 2013).

Every year from 2003-2011, park staff and representatives of local Indigenous communities met at the international conference, *Beringia Days*, alternating locations on the Russian and United States sides of the Bering Strait. After 2013, contacts between the protected areas of two countries became sporadic, but 2021 marked a new period of collaboration. In spring 2021, the first time since the creation of the Beringia National Park, the National Park Service Shared Beringian Heritage Program and the Open World Leadership Center hosted a webinar to connect staff from Beringia National Park and Bering Land Bridge National Preserve that resulted in reinitiated plans for future partnerships.

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