AN IPIUTAK OUTLIER:
A 1,500-YEAR OLD QARIGI
AT QITCHAUVIK
ON THE GOLOVNIN LAGOON
THE GOLOVIN HERITAGE FIELD SCHOOL, 1998-2000

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SHARED BERINGIAN HERITAGE PROGRAM

Twelve – fifteen thousand years ago Asia and North America were joined by a massive “land bridge” in the region now popularly called “Beringia.” In order to promote the conservation of the unique natural history and cultural heritage of this region, the presidents of the United States and Soviet Union (now Russia) endorsed in 1990 a proposal to establish an international park in the Bering Strait area. The Shared Beringian Heritage Program of the National Park Service, established in 1991, recognizes and celebrates the contemporary and historic exchange of biological resources and cultural heritage in this region. The program seeks local resident and international participation in the preservation and understanding of natural resources and protected lands and works to sustain the cultural vitality of Native peoples in the region. To these ends, the Beringia Program promotes the free communication and active cooperation between the people and governments of the United States and Russia concerning the Central Beringia region.
Ipiutak: a culture of people who lived on the Alaska mainland by Bering Strait about 2,200-1,100 years B.P. (Before Present)

Outlier: a portion existing apart from its main body or system

Qarigi: a men’s house

Photograph on front cover:
Plate XVII, Wood figurine (98-288)

January 16, 2009

Dear Colleague:

The National Park Service’s Shared Beringian Heritage Program is pleased to add another volume to the growing body of work on the prehistory of Beringia. Enclosed please find An Ipiutak Outlier: A 1,500-Year Old Qariqi at Qitchauvik on the Golovinn Lagoon by Owen K. Mason, Matthew L. Ganley, Mary Ann Sweeny, Claire Alix, and Valerie Barber.

An Ipiutak Outlier presents the results of archeological investigations that were carried out by the Golovin Heritage Field School from 1998 through 2000. These three archeological field school sessions were sponsored by the Golovin Native Corporation and funded by the Shared Beringian Heritage Program of the National Park Service. Both Alaska Native and Russian Native students participated in the field school. The National Park Service’s Beringian Heritage Program was established to promote scholarly and cultural exchanges between Russia and the United States as the two nations move forward to cooperatively establish the Beringian International Park. The Golovin Heritage Field School exemplifies the type of projects that are made possible through this Beringian partnership program.

The report presents exciting new archeological findings from the Golovin area which is located beside Norton Sound on the south side of Alaska’s Seward Peninsula. The Golovin vicinity has received only limited archeological attention over the years although this geographical area is thought important to building a coherent picture of cultural and societal interactions in the Eskimo past of Northwest Alaska. Golovin Heritage Field School focused its attention on a qaurigi (men’s house) at Qitchauvik that was in use between A.D. 550 and A.D. 750. Finds from the structure suggested influences from both the Old Bering Sea and Ipiutak cultures. In an effort to construct a cultural chronology of the Golovin area four other sites were investigated. Shovel tests at these additional sites yielded valuable radiocarbon dates ranging from the twelfth century up to the early nineteenth century.

If you have any questions about the program or wish to obtain additional publications, please contact me at (907) 644-3601 or via email at peter_richter@nps.gov.

Sincerely,

Peter Richter
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Enclosure
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EXECUTIVE SUMMARY

From 1998 to 2000, the Shared Beringian Heritage Program of the National Park Service funded the Golovin Native Corporation to undertake three field schools for Golovin high school students, with several student participants from Nove (New) Chaplino, Chukotka (Russian Federation) in 1999 and 2000. Excavation at the looter-disturbed Qitchauvik site (SOL-143) produced a collection of nearly 1,000 artifacts from 15 square meters (an 18.75% sample), excavated from 50 to 100 cm deep. The Qitchauvik feature, 10 x 8 m, contained structural wood useful in reconstructing its original configuration. Stratigraphic observations indicated the presence of two components.

The inventory from Qitchauvik Feature 1 documents the operation of a community structure or qarigi (men’s house) between A.D. 550 and 750, based on the average of six calibrated radiocarbon ages on hearth charcoal and the end rings of structural timbers. Stone tool manufacture debris indicates that the resharpening and maintenance of hunting arrow points were a focal point for men’s activities, although the absence of wood debitage implies that possibly woodworking was not. In addition, the carving in wood of numerous shafts, bow parts, small human and animal (caribou) figurines and maskettes occupied some of the inhabitants, possibly outside or in an unexcavated part of the qarigi. A handful of decorated items or harpoon heads with diagnostic cultural features were recovered. Decorations on several pieces show the influences of Old Bering Sea and Ipiutak cultures.

Two other archaeological sites were briefly recorded during 1998 and 1999; radiocarbon dates were obtained from Uiaalik and Kuvrawik. Artifacts from subsurface at Little Rocky Point, Uiaalik date to the 13th century A.D., similar in age to the earliest occupation at Kuvrawik occupation, where a sample obtained in 1998 recorded a younger episode of occupation less than 200 years old.

The analysis of wood artifacts by Claire Alix (Alaska Quaternary Center) represents part of an ongoing set of comparisons across northern Alaska, emphasizing the selection criteria employed by Qitchauvik residents. Dendroclimatological studies by Valerie Barber (University of Alaska Fairbanks) involved a sampling transect across the Cape Darby Peninsula that provides a yardstick for assessing the fossil wood from Qitchauvik. By establishing a floating tree ring chronology, Barber supplemented Giddings’ (1952b) tree ring sequence by several hundred years and provides the first proxy record for the first several centuries A.D.
Introduction

By Matt Ganley

This report summarizes the archaeological and paleoclimatological research completed with funding to the Golovin Native Corporation from the National Park Service (NPS) Shared Beringian Heritage Program. The report begins by recounting the efforts of the Golovin community in cultural and historic preservation. Subsequent sections describe and analyze the data collected during the 1998-2000 field schools. Following 2000, Dr. Owen K. Mason (Geoarch Alaska) completed the archaeological analysis, incorporating and revising a preliminary report on the 1998 field season by Mary Ann Sweeney, submitted to NPS in 1999.

The student participants in the Golovin Heritage Field School included: Dorothy Amarok, Dale Aukongak, Renee Brown, Chris Dexter, Eddie Fagerstrom, Justin Fagerstrom, Larry Fagerstrom, Charles “Chuckie” Lewis and Darby Moses.

Several individuals served as archaeological field supervisors: Mary Ann Sweeney in 1998, Dr. Owen K. Mason in 1999 and Mike Koskey in 2000. Stacie McIntosh was the archaeological field assistant in 1998 and 1999. In 1998, Gary Selinger, aka “Running Bear,” (UAF Museum) coordinated the laboratory as the UAF Museum liaison. Jack Fagerstrom acted as the Golovin Native Corporation community facilitator. Vice President for Lands, Bering Straits Foundation, Matt Ganley, has worked on the project since its inception. Then Curator of Archaeology, UAF Museum, Dr. S. Craig Gerlach, was Principal Investigator in 1998, while Dr. Owen K. Mason assumed that role in 1999 and 2000.

This project was successful due to the assistance by many people. Special thanks to Agnes Amarok, Bobby Amarok, Gary Amarok, Nuz Doyle, Alice Fagerstrom, Bear Lincoln, Denise Oliver Okleasik, Sean Peterson, Jake Selinger, Dean Sockpealuk and Mary Jane Willoya.

Dr. Claire Alix (post-doctoral researcher, University of Alaska Museum, Fairbanks) volunteered to examine and analyze the wood artifacts; her report forms Chapter 7. Dr. Valerie Barber (then of the Institute of Arctic Biology, University of Alaska, Fairbanks) conducted dendroclimatological research in 2000, assisted with field operations and analyzed tree ring samples both for climatic and chronometric data; her report comprises the Appendix. Dale Slaughter (Boreal Imagery, Anchorage; <http://www.borealimagery.com>) prepared several figures, scanned and photographed the collection, all without compensation.

While the people listed above were closely involved with the field school, the involvement of the whole community of Golovin should be recognized. Without the hospitality of the people in Golovin and, particularly, the support of the students’ parents, the field school would not have been possible.

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1 Matt Ganley has worked with the Golovin Native Corporation and the Chinik Eskimo Community since 1994 in the areas of archaeological site protection, assessment and repatriation. Currently, he serves as executive vice president and staff archaeologist, Bering Straits Foundation, Nome.
Chapter 1

Background:
The Development of a Community-based Heritage Program

Matt Ganley

This report details research conducted on Golovin Native Corporation lands (Fig. 1) through a series of grants awarded to Golovin Native Corporation by the Shared Beringian Heritage Program of the National Park Service. While a primary goal of the 1998 research was to augment our knowledge of the archaeological record in the Golovnin Bay area of the Seward Peninsula, the local tribal and Native corporate entities have mandated that all research on their lands involve local residents and benefit the community's youth. Therefore, in cooperation with Chinik Eskimo Community, Golovin Native Corporation and Bering Straits Foundation (BSF), a proposal was submitted in late 1997 to the National Park Service Shared Beringian Heritage Program. The proposal was funded in 1998, and the first season of the Golovin Heritage Field School was conducted from June 29 to July 15, 1998. Subsequent sessions occurred during the same time frame in 1999 and 2000.

To understand the development of the field school and the goals of the 1998-2000 researches, it is necessary to outline the ongoing efforts of Golovin in heritage preservation and cultural resource management. In 1994, the Golovin Native Corporation Manager, Carol Oliver, contacted the Bering Straits Foundation (BSF) staff archaeologist about excavation occurring at a site 10 km northwest of the community. Here, at Qitchauvik, some Golovin residents found items eroding from a small cutbank just to the east of the Native allotments and fish camps at the mouth of the Kachauik River, a site posted on the AHRS as SOL-058. People subsequently excavated further into the feature and recovered numerous artifacts, retained in private collections. Ms. Oliver asked if Matt Ganley, then BSF staff archaeologist, could come to Golovin to

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2 AHRS=Alaska Historical Resource Survey. Sites are referenced in relation to the 1:250,000 quadrangle map of the U.S. Geological Survey, hence, SOL=Solomon, its 58th site. As part of its federal mandate, the state of Alaska maintains the listing of cultural properties in its archives in its Anchorage office in the Office of History and Archaeology, Department of Natural Resources <http://www.alaska.net/~oha>.
assess the site and determine its land status. The initial assessment of 1994 determined that the disturbed feature was undoubtedly pre-contact in origin, and at least 13 other features nearby were located. Furthermore, inquiries led to the determination that the site was located on Golovin Native Corporation lands. The Corporation Board then asked Mr. Ganley what their options were regarding the management and protection of the site. In the Bering Straits region, as in other areas of Alaska, the destruction of cultural and archaeological resources occurs with some frequency; however, until very recently this had not occurred on Golovin Native Corporation lands. Golovin Native Corporation decided that the sites on their lands should be managed as a valuable resource and should not be subjected to arbitrary or wanton uncontrolled excavation. Flyers were posted in the community requesting that people avoid digging in this site. Subsequent visits to Qitchauvik indicated that Golovin Native Corporation effectively mitigated the impacts through formal and informal methods.

From 1994 to 1997 the community of Golovin became involved in the repatriation of ancestral remains removed from their lands during the early part of the 20th century (Mudar et al. 1996). From 1929 to 1930 Henry B. Collins, working under the auspices of the Smithsonian Institution, removed numerous human remains and burial items from cemeteries in the Bering Straits region (Hrdlička 1930). Dr. Collins removed at least 120 sets of remains and associated burial items from areas now within Golovin Native Corporation lands. The repatriation of these remains to their rightful resting places was fraught with reversals and complications (Mudar et al. 1996). Perhaps the most difficult situation involved the National Museum of the American Indian’s (NMAI) reluctance to provide logistical support to return the remains to their original burial places. Rocky Point, the land form where many of the remains were removed, is a high cape jutting into northern Norton Sound. Access to the original cemetery locations is difficult, at best; but Golovin insisted that the remains be reburied at the place where they were removed. The NMAI would not provide the necessary funding for shuttling the remains to the site by helicopter. Unwilling to accept reburial at an inappropriate location, Chinik Eskimo Community, through its representative Jack Fagerstrom, was able to enlist the support of the United States Army National Guard. The remains were shuttled to the burial spot

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3 “Looting” can be a matter of perspective. Collins’ removal of human remains and burial items in 1928-29 is viewed as “looting” by Golovin residents. In Bering Straits communities artifact sales by residents are a means of obtaining cash in a low unemployment region, “subsistence digging” (Staley 1993). Archaeologists term this “looting,” but considering local ownership, this attitude may limit constructive dialog. [Nonetheless, “looting” denotes a lack of documentation during removal activities and does not contribute to the knowledge of the past—OKM]
by two Blackhawk helicopters on August 14, 1997. High School students from Golovin assisted in the reburial of the remains as did Joe Dexter (Chinik Eskimo Community), Jack Fagerstrom, Gary Selinger (UAF Museum) and Matt Ganley (BSF). The following day the National Guard shuttled nearly 40 elders and tribal representatives from the villages of Golovin, White Mountain, Elim and Koyuk to one of the reburial spots for a memorial ceremony. All public relations and press coverage of the event were restricted.
The events leading to the development of the Heritage Field School are significant for a number of reasons. Of primary importance is the understanding that Golovin residents, the corporation and tribal representatives have of their lands and history. Since 1994, events have unfolded that required both the corporation and the Chinik Eskimo community to grapple with difficult decisions regarding the past and how to effectively ensure that scenarios like Collins' collecting forays do not happen again. Long before the development of the field school, people were concerned about the education their children were receiving and the pressing, and often unmet, need to cultivate a sense of local and cultural pride within the school system. To meet all of these needs and also contribute to the general knowledge of the Bering Straits region required not only an innovative approach, but also one firmly grounded and guided by the community. Hence, the Heritage Field School was born.

Legal Context

*Matt Ganley*

The Village Native Corporation owns most of the area surrounding the community of Golovin (Fig. 1). Village Corporation land selections encircle Golovnin Bay, a large embayment that empties into northern Norton Sound. Situated on both sides are distinctive landforms – Rocky Point on the west and Cape Darby on the east. Except for individual Native allotments located at points along the coasts, Golovin Native Corporation owns the majority of land on both of these capes. The final disposition of the collections is under negotiation with NPS; renovations to the high school are planned as a repository in order to house the collections.¹

Field School Narrative

Six sites were visited and/or tested during the three seasons of the field school (Fig. 1), including: (1) Qitchauvik, the primary focus of the field methods instruction, at the mouth of the Kachauik River; four sites located on Rocky Point’s outer shore, including: (2) Ikñiittuq (Koutsy 1981:42), (3) Kuvrawik, (4) Ipnachuaq and (5) Chiukak;

¹In the decade since the start of the project, the application of the Cultural Resource Management laws has shifted. In 1998, the project was undertaken without direct input from the Alaska Office of History and Archaeology, despite the provision of federal funds through the National Park Service, which requires such oversight. In 2006 a Memorandum of Agreement would be required to firmly delineate the disposition of the collection — OKM.
with other short visits to sites near (6) Cape Darby. At all locations, the students conducted pedestrian surveys to locate house pits and other cultural features. Test excavations at three sites produced samples for radiocarbon ($^{14}$C) dating.\(^5\)

On June 29, 1998, University of Alaska Museum and Bering Straits Foundation personnel landed in Golovin, though low clouds and fog nearly delayed their arrival. Housing was set up in the pre-school, and the students gathered at the facility. After introductions, plans were initiated for work in the Golovnin Bay area. On June 30, the students and crew boated to Qitchauvik to evaluate the disturbed feature and determine the placement of test units. Students walked over the rest of the site, observing additional features. Excavation on the test units commenced later on June 30. Work continued at Qitchauvik throughout the field school, except on days off and on days that other sites were visited.

At the beginning of each day, students gathered at the pre-school for breakfast and to plan the coming day’s activities. On many days, the footage from the previous day’s video recordings was reviewed at this time. When the students and crew completed breakfast and attended to other duties, people headed to the beach to board the boat for the trip to Qitchauvik. Dean Sockpealuk was the primary boat captain during the field school. Two trips were required to get the entire crew to the site, and work began before noon and continued until around 6:00 p.m. Fortunately, the weather for 1998 and 1999 field schools was unseasonably sunny and warm.

Even with warm, sunny weather, the breeze often caused Golovnin Bay and Norton Sound to become choppy and unpleasant for extended boat trips. Because of this, trips to the other sites on the outer shore of Rocky Point were necessarily scheduled when weather permitted and often at the last minute.\(^6\) At least three evenings were spent on these trips, and most of the crew and students would not return to Golovin until well after 1:00 a.m. Sites visited and inspected during these trips included Ikpiituuq, Ipnachuaq, Chiukak and Kuvaraikuq. In 2000, the crew and a number of students also took a trip across Golovnin Bay to Cape Darby.

These trips served many purposes and were planned as an integral part of the field school. They were important for two diverse, yet indivisible reasons: one purpose of the grant was to gather samples for the dating of the sites, and the other purpose was to

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\(^5\) $^{14}$C assays reflect past $^{14}$C concentrations, and require calibration to infer calendar ages (cf. Gerlach and Mason 1992).

\(^6\) As is the case in many places along Norton Sound, late evenings in June and July tend to be the calmest times to travel by boat.
bring the youth to sites that were the birthplaces of the their grandparents and great grandparents. While the former will let us begin to establish a chronology for the occupation of the sites, the latter offers the youth of Golovin an opportunity to see and visit the ancestral villages of the contemporary communities of Golovin, Elim, White Mountain and Koyuk. While at the sites the students compared the features they discovered with the site maps compiled by the Bureau of Indian Affairs Alaska Native Claims Settlement Act Office (BIA/ANCSA) as part of the 14(h)(1) program. Students also had an opportunity to research data from the 1910 census from these villages to discover if any of their family members were living at any of the sites at the beginning of this century.

A critical experiential component of the field school involved the repatriation of human remains from the Golovnin Bay area. After a lapse of nearly 75 years, Henry Collins' collections (cf., p. 15) were repatriated to the community during the late 1990s. Reburial in 1997 served as a crucial and cathartic experience for the Golovin field school participants in procession up the promontory north of Rocky Point.

The Golovin Heritage Field School had an exceptional start during the 1998 season and efforts continued in 1999. Golovin Native Corporation Board of Directors requested and obtained further funding until 2000. The community continues in its effort to secure a local repository for the artifacts from the excavation; it is hoped that the National Park Service will contribute to support this facility.
Chapter 2

Ecological and Archaeological Contexts for the Golovin Field School

Owen K. Mason and Matt Ganley

Geographic and Ecological Constraints

Indigenous hunters and gatherers in the Golovnin Bay region (Maps 1, 2 and 3, Fig. 1) depend for subsistence on several protein sources; principally, seals, beluga whales (prehistorically), caribou and a host of other resources. A variety of geographic and ecological factors constrain the availability of prey species. One crucial resource, caribou, are hunted in the hills landward of Golovin and on the Fish River flats, as are moose, bears and fur bearers; other resources used by local people include herring roe, clams, crabs and migratory and non-migratory birds. A subsistence lifestyle of land-based and ocean-based resources typified the area in the past as it does today.

The northeast Norton Sound presents a unique and productive configuration of terrestrial and marine resources. The boreal forest extends nearly to Cape Darby, and the shallow embayments of Norton and Golovnin Bays provide nurseries for thousands of herring and cod, as well as the belugas that feed on them. The entirety of Golovnin Bay, as well as that of Norton Bay (Map 1, Fig. 2 below), is enclosed in fast ice throughout the winter (Fig. 2, cf. Stringer 1980:Figs. 11-7, 11-8, 11-10 and 11-13). The annually variable extent of sea ice influences the distribution of sea mammals, i.e., ringed seals, belugas, etc. (Fay 1974). The number of ringed seals resident in Norton Sound during winter remains uncertain, due to sampling constraints (i.e., residence under ice). In cold years with stable ice, the ringed seal population is probably considerable (cf. Hazard 1988) but may be adversely affected by the lessening persistence of fast ice, as in the late 20th century A.D. (Tynan and DeMaster 1997).

Despite the advantages of the Norton Sound littoral, the region lies in the lee of the intense geostrophic currents that produce upwelling and nutrient hotspots off the Chukotka coast and adjacent Bering Sea (Coachman and Hansell 1993, Mason and

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7 Hood and Calder (n.d.) provide a review of the physical and biological oceanographic setting for Norton Sound.

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Gerlach 1995a). Instead, eastern Norton Sound lies within a zone of warm, nutrient-sapped fresh water introduced by the Yukon River.

The rivers feeding into upper Golovnin Bay (Fig. 1) include the Fish River (the largest), the Skookum River and the “Kachauik” or Qitchauvik River. Salmon, trout and other anadromous species migrate into these rivers seasonally; and fish camps located at the river mouths and along their lower courses attest to the importance of subsistence fishing. While the size of the salmon runs in these streams is not substantial, in comparison to Gulf of Alaska or Bristol Bay standards, the salmon resource is locally significant. Salmon abundance reflects changes in sea surface temperature and the intensity of upwelling; in general, fish numbers increase with colder water temperatures and the intensified amount of upwelling associated with greater storminess (Laevastu 1993, Finney et al. 2002).

Figure 2. Bering Sea and Norton Sound ice cover. Note the polynya (black) off Cape Darby and the fast ice within Golovnin Bay [Source: Stringer (n.d.)].

In the 19th century, belugas frequented the bay, tracking spawning herring (Nelson and True 1887:289), although only a few belugas have been observed in recent years (Amarok, Fagerstrom 1998, pers. comm.). Modern informants report that

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5 The site of Qitchauvik is located at the mouth of the ‘Kachauik’ River, along the northeast shore of Golovnin Lagoon (Fig. 1).
6 The aboriginal size of salmon runs in Norton Sound remains problematic; data from the 1970s-1990s suggests a persistent decline (cf. Technical reports of Alaska Dept. of Fish and Game. Golovin fishers took ca. 15,000 chum salmon in 1991, roughly 10% of the total Norton Sound commercial harvest [Lingau 1992]).
7 Local informants attribute this to the use of a diesel-powered generator to provide electricity: the vibrations through the underlying bedrock creating too much noise in the bay.
belugas were often stranded in Golovnin Lagoon, as a consequence of chases by killer whales. Belugas were critical to most 19th century Norton Sound communities (Ray 1984, Zagoskin 1967:101). The upper Golovnin Lagoon, with its shallows and high sediment influx, resembles Eschscholtz and Norton Bays and would seem to offer good habitat for belugas (cf. Lucier and Van Stone 1995:15). Two migrations of belugas in the adjacent Norton Bay occur in April and August/September (Huntington and Mymrin 1996, Huntington et al. 1999:51). While several factors influence beluga distribution, including the persistence of ice cover in spring and mass mortality by stranding in shallow water, the availability of food is crucial. Belugas consume a variety of invertebrates and fish, principally tomcod, salmon fry and herring (Braham et al. 1984:29; Seaman et al. 1982; Seaman et al. 1985). High river levels, due to increased precipitation or snow melt, serve as positive influences on fish populations (Kleinenberg et al. 1969:216), as are heightened storm frequency and high tides (Huntington and Mymrin 1996:14-15). The appearance and disappearance of sand and gravel bodies offshore and river channels may exert geomorphic control over access to belugas (Lucier and Van Stone 1995:21), circumstances that respond to climate.

The availability of caribou in the Golovnin Bay vicinity is a critical variable in any archaeological reconstruction. At present, the Western Arctic Caribou herd (WACH) winters on the eastern portion of the Seward Peninsula. The WACH has expanded from its 1960 range in the Baird and DeLong Mountains to the north, to reach as far as Kougarok near Nome by 1996 (Hicks 1999:168; WACH Working Group 2000, 2001). Caribou were apparently abundant in the late 1860s during the Alaska Telegraph survey (Nelson and True 1887:285), but by the late 1880s, their numbers had dropped so precipitously that reindeer were introduced as a replacement (Lent 1966:482 ff.; Ray 1975; Stern et al. 1983; Simon 1998). Caribou were largely absent from Northwest Alaska from 1890 until the 1920s (Murie 1935); populations increased in the 1930s and 1940s. The causes for the downturn in caribou demography cannot be established; some commentators favor the catastrophic impact of gun-equipped human predation (cf. Murie 1935 or Burch 1994) while others favor disease or climatic factors (Lent 1966).

While the contemporary community of Golovin is located on a spit (termed GOL-A, cf. Figs. 1, 4) at the juncture of Golovnin Bay and Golovnin Lagoon, numerous other locations were settled on the open ocean-coasts of Cape Darby and Rocky Point (Fig. 1).

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11 The boundary of the WACH is mapped considerably differently since 1965; compare Lent (1966:Fig. 1, p. 486) and Hicks (1999:Fig. 1, p. 178).
The sites are still used when people are crabbing, collecting bird eggs, seal hunting or simply as rest stops; but the old sites are no longer permanently occupied. The infrequent use of the sites is not only the result of the movement of populations to larger more centralized communities; it is also caused by the perilous ocean conditions along the outer shores of the capes. The beaches are rocky; and even moderate seas can pose a threat of grounding, or worse, for the large 6 m to 8 m long (18-25 ft.) wood and aluminum boats used by local hunters and fisherman. Deep waters along the outer coast account not only for the rough seas, but also for ideal crabbing and sealing conditions.

The resources on the outer coast that attract modern residents are likely the same as used in the past. Reliable sealing spots, close access to Norton Sound for spring ugruq (bearded seal) hunting, as well as cliffs for collecting bird eggs and areas for collecting greens and berries, would have sustained permanent or semi-permanent residents when augmented by fishing and caribou hunting. In addition, people probably did not have to travel far for hunting if they lived on Rocky Point or Cape Darby. Elders report that their parents told them that caribou occasionally traveled to the tip of Cape Darby and onto Rocky Point.

The locales occupied on the outer shore of Rocky Point share particular features (Fig. 1). Ipnachuaq and Chiukak are located on relatively low areas, less than 10 meters above sea level. Fresh water is available at all of the sites. Ikniituq and Kuvrawik are located on flat areas along the steep slope of the southwest shore of Rocky Point. These sites are situated well above, but adjacent to the sea. While site access is restricted by the impact of storm waves from the Bering Sea, most sites lie above the 4 m storm surge limit recorded in the late 20th century (Sallenger 1983). Until 1918, viable communities dotted the coastline along Rocky Point's outer coast, and the community of Atnuq was located northeast of Cape Darby. Before 1900, lighter boats were used; these could be hauled well above the rough beaches, alleviating the problem now faced by boaters and campers in heavier, motorized boats. In the past, the outer coasts of Rocky Point and Cape Darby were well suited to the needs and lifestyles of the local population.

Qitchauvik, located along the inner coast of Golovnin Lagoon (Fig. 1), is more protected but is less well situated in regard to marine resources, than the sites on Rocky Point and Cape Darby. Throughout living memory, since A.D. 1900, the site has served

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12 Caribou are presently hunted by Golovin residents in the Fish River Flats and in the hills near the headwaters. People also pursue this species in the area just north of Cape Darby. Small herds of caribou often spend the winter in these areas.

13 This information regarding the extent of the caribou range relates to the mid-late 19th century.
only as a fish camp, well located for harvesting various species of salmon and trout. Little is known of the 19th century use of Qitchauvik, although it seems reasonable to expect that fish camps existed at the locale if the salmon runs were reliable. Archaeological data concerning the use of Golovnin Bay before the historic period were non-existent before the Golovin Heritage Field School.

Previous Archaeological Research on the Southern Seward Peninsula

Owen K. Mason

Several titans of Alaska archaeology inaugurated the study of prehistory in the Golovin and eastern Norton Sound region with the aim of elucidating the origin of Native Americans. In 1926 Aleš Hrdlička (1930), affiliated with the Smithsonian Institution, undertook the first reconnaissance of the Seward Peninsula for archaeological remains. Uncharacteristically, Hrdlička (1930:196 ff.), a fervent skull collector, had minimal impact on the Golovnin Bay area, noting only several sites and collecting skeletal remains from four “fairly recent” burials “near a late Eskimo house” east of Rocky Point. Three years later, in 1929, Henry B. Collins, also of the Smithsonian, conducted a series of archaeological “campaigns” in search of evidence of Eskimo origins. This effort preceded his thorough and seminal work on St. Lawrence Island; and, unfortunately, Collins labored under the influence of Hrdlička, then a well-respected physical anthropologist. More than 120 sets of human remains were removed from cleft burials in the rocky cliffs west of Rocky Point with only limited provenience data and with no permission or consultations with local residents.

The first intensive scientific archaeological excavation was launched in the 1940s with the efforts of J. Louis Giddings, who selected northeast Norton Sound in reference to tree line near Elim and the prospect of lengthy tree ring records within archaeological sites. Based on four seasons of excavation (1948-1950 and 1952) on the Cape Denbigh peninsula, Giddings (1960, 1964) proposed a cultural chronology for the Seward

14 Recent restrictions on the harvest of silver salmon have reduced the total salmon harvest of some Golovin families by as much as 30% (Fagerstrom 1999, personal communication). These families commonly harvested salmon at the mouth of the Qitchauvik River or along the shores of Golovnin Bay and Lagoon.

15 In compliance with NAGPRA, these collections were measured, analyzed and described in the mid 1990s by Mudar et al. (1996).
Peninsula, using regional localities\textsuperscript{16} to define successive phases of occupation. The earliest microlithic occupation occurred between 5,000 and 4,000 \(^{14}\text{C}\) years B.P. at Iyatayet and was named Denbigh (after Cape Denbigh) by Giddings (1964). Subsequent phases were termed Norton (after Norton Bay) and Nukleet (after a site east of Iyatayet). Extensive collections from several houses date between 1000 B.C. to A.D. 500 and after A.D. 900-1500. Geoarchaeological research conducted by David M. Hopkins produced one of the earliest paleoclimatic sequences for Alaska (Hopkins and Giddings 1953, Mason and Gerlach 1995b). Giddings' report, published in 1964, has become a near classic of site reportage. In the late 1940s, Giddings (1964:176-183) also surveyed a substantial portion of the southern Seward Peninsula coast and recorded several sites of Norton and Denbigh affinity at the mouth of Golovnin Bay; all remain undated.

The interior of the Seward Peninsula attracted attention from Danish archaeologist Helge Larsen in 1949. Native hunters from Deering had obtained end blades and bone projectile points (later termed Ipiutak) from Trail Creek Caves; Larsen (1968) conducted two seasons of excavation and recovered evidence of numerous visits to the caves during the Thule, Ipiutak, Choris, Denbigh periods and possibly earlier during the early Holocene.

Several research projects were conducted during the 1960s and early 1970s; both fueled dissertation theses for Ph.D. degrees. A visit in 1960 by Frederick Hadleigh-West (then at the University of Alaska) involved the excavation of two houses at Safety Sound; as described by Bockstoce (1979:39). In 1968-1969, five houses on the Unalakleet spit formed the subject of Ph.D. investigations by Bruce J. Lutz (1972) at the University of Pennsylvania. The artifacts from the houses indicate that Norton occupation spanned the last three centuries B.C. and continued between A.D. 100 and 620; over 200 houses were constructed during the millennium of the Norton occupations. An oblong depression longer than 10 m with two hearths is a qarigi, as inferred by Lutz (1973) based on the tool classes associated with men's tool maintenance activities. At least one occupation of the Unalakleet qarigi occurred contemporaneously (A.D. 410-620) with Feature 1 at Qitchauvik.

During 1969 and 1973 John Bockstoce, pursuing a degree at Oxford University, excavated 22 houses at Safety Sound, out of more than 300 on the surface that produced

\textsuperscript{16} Place names currently used in the area reflect the practice of European "explorers," either of Capt. Cook’s visit in the 1770s (Norton Sound, Cape Denbigh, Norton Bay, Safety Sound) and that of the Russians under Lt. Kromchenko in the early 1820s; Golovin is a local variant of Golovnin. Native toponyms are available from Bering Strait Foundation databases (cf. Matt Ganley).

\textit{An Ipiutak Outlier: A 1,500-Year-Old Qarigi at Qitchauvik}
evidence of occupation during several thousand years (Bockstoce 1973, 1976, 1979), possibly as early as 2000-1500 B.C.\textsuperscript{17} The most extensive occupations at Safety Sound derive from the Norton culture, dated between 400-1 B.C. and A.D. 100-600, as well as a purported Birnirk community from A.D. 600 to 900 (cf. Mason 2000 for an alternative view). After a hiatus of several hundred years, Thule people re-occupied the location within the period A.D. 1400-1600. In 1975 and 1976, Bockstoce (1979:29) also conducted several surveys of areas on the southern Seward Peninsula; little is available on these efforts.

Several extensive archaeological surveys across the Seward Peninsula in the 1970s were required by federal land management policies either associated with Native allotment applications or the D-2 land withdrawals, required in 1981. The first endeavors in 1973-1974 were guided by W. Roger Powers \textit{et al.} (1980) and focused on the portion of the Seward Peninsula, north of the Bendeleben Mountains. In the Golovnin Bay region, a brief reconnaissance by BIA archaeologists established that the small site of Kuvarwik, west of Rocky Point was inhabited, perhaps for the first time, in late 12\textsuperscript{th} or early 13\textsuperscript{th} centuries A.D. (Slaughter 1990, 1992). During the last 25 years, cultural resource management assessments in the Golovin area have documented historical, 20\textsuperscript{th} century use in the region [cf. review of the visits by Richard Hoff, Wayne Wiersum, Brian Gannon and other agents, detailed in Shaw (2001:13 ff.)].

In the late 1980s the National Park Service conducted a survey and testing program within the confines of the Bering Land Bridge National Park and Preserve (BELA). The survey focused on interior Seward Peninsula in 1985 and along its north coast in 1986 (Schaaf 1988). This survey was extensive, mapped several hundred sites and obtained several dozen $^{14}$C ages that sketched the broad outline of prehistory in the park. Research by Dale Vinson (1993) for his master’s degree established that late Pleistocene bone in Trail Creek cave were probably deposited and modified by animals. Occupations possibly as old as 3,800 $^{14}$C years B.P. were located at Cape Espenberg, while the barrier islands near Shishmaref yielded nothing earlier than A.D. 1200 (Schaaf 1988). Coastal process studies by Mason (1990) and Mason and Jordan (1997) aimed to correlate archaeological remains with coastal changes. In a subsequent “Data Recovery” project, Harritt (1994, 1998) expanded test excavations at three locations in the Bering Land Bridge National Preserve: Cape Espenberg, Ikpek and Kuzitrin Lake.

\textsuperscript{17} The Arctic Small Tool tradition Denbigh occupation is undated at Safety Sound; its age can be estimated from comparisons with other sites, e.g., Cape Denbigh, Cape Espenberg and Onion Portage (cf. Harritt 1994, 1998, Anderson 1988).
The BIA Archaeology office conducted archaeological research in the Safety Sound region in 1993 and 1995. On the eastern spit enclosing Safety Sound, a handful of artifacts (a flaked stone knife and line/dot ceramics) were recovered from a trench through a house at Mupterukshuk, possibly occupied as early as A.D. 1600 (Biddle and Slaughter 1996).

From 1996-2006, community-based research at Wales pursued the origins of whaling (Harritt and Mason 1997) with expanded excavations by Harritt (2001, 2004). The large middens examined by Collins (1929, 1940) in the 1920s were finally reported in Dumond (2000a). Data from Wales establish that the Punuk culture thrived and, possibly, arrived from elsewhere ca. A.D. 1000 (Harritt 2004). Finally, a large amount of highly significant archaeological data was revealed in 1997 from trenches excavated by back-hoe during the Deering Safe Water Project (Reanier et al. 1998, Steinacher 1998): most noteworthy were a series of Ipiutak burials with elaborate offerings and/or evidence of warfare (Simon and Dale 1998). Subsequent research by the Ukpeagvik Iñupiat Corporation (UIC) and Northern Land Use Research in 1998 and 1999 documented Ipiutak, Punuk and early Thule occupations (Bowers et al. 2000, 2006).

**Cultural Chronology of the Seward Peninsula**

Despite its proximity to Bering Strait, the presumed entry point of humans to North America, human occupation on the Seward Peninsula (Maps 1 & 2) may be documented only as early as 9,000 years ago, if evidence of atlatl dart points and microblade insets from Trail Creek Caves 2 and 9 (Larsen 1968:71-72) are attributed to the Denali complex; a circumstance may be problematic due to the complexities of the pathways for clasts and sediments between the large rocks in the caves (Vinson 1993). For the next 4,000 years, little human presence can be documented on the Seward Peninsula until, possibly, about 5,500 \(^{14}\)C years B.P. (ca. 4200 B.C.) with the appearance of caribou hunters who manufactured the finely flaked Denbigh microliths at Kuzitrin Lake (Harritt 1994, 1998). The evidence from Kuzitrin Lake is equivocal because of stratigraphic uncertainties in the association of artifacts with the soil organics submitted for radiocarbon dating.\(^{18}\) The prehistory of coastal occupations is complicated by the comparatively recent, 5,000-4,000 \(^{14}\)C years B.P., stabilization of sea level near present levels (Jordan and Mason 1999, Mason and Jordan 2002). Any earlier sites were eroded

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and/or remain offshore on the continental shelf. The chronological relationships for prehistoric “cultures” recognized by archaeologists on the Seward Peninsula are summarized in Figure 3 (cf. Dumond 1984, 1987, Schaaf 1988, Harritt 1994, Mason 1998, 2000). Some archaeologists argue that the Arctic Small Tool tradition or Denbigh complex represents the first identifiable presence of Inuit peoples (Giddings 1964:242, Dumond 1977:158); however, it is notoriously difficult to infer ethnicity from stone tools.

Figure 3. Generalized cultural chronology for the last 5,000 years in Northwest Alaska; the oldest cultures are on the bottom. An earlier visit to the Trail Creek Caves occurred before 6,000 $^{14}$C years B.P.

At Iyatayet, between 5,000 and 3,500 $^{14}$C years B.P., several Denbigh seal hunting families remained long enough to construct houses. Denbigh tools are meticulously flaked and provide evidence of bone working (i.e., burins) and the throwing board, but little else due to poor organic preservation. Denbigh “people” were mobile hunters, with an equal concentration on land and marine resources; some interest in fish is postulated from lakeside locations that also were used for caribou drives. Denbigh sites consist of only one or two houses: on the Seward Peninsula only the barest of hunting traces are preserved, e.g., only seven hearths, possibly in “tipis” at Cape Denbigh (Giddings 1964:196) and a number of artifacts within the confines of the Trail Creek Caves (Larsen 1968:69 ff.). On the oldest Safety Sound dune ridge, several hundred

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19 The dating at Cape Denbigh remains imprecise because radiocarbon dating was in its infancy during the 1950s, and error estimates associated with solid carbon assays typically ranged from 150 to 300 years.

20 The Choris phase, defined by distinctive round houses and barbed harpoon heads, occurs in Kotzebue Sound (Giddings 1957, Giddings and Anderson 1986), is not reported in Norton Sound. Choris lithics do occur within the interstices of Trail Creek Caves (Larsen 1968:70).
artifacts, including a few microblade fragments are ascribed to the Denbigh complex (Bockstoce 1979:29 ff); these derive from a “buried sod layer,” on a dune surface, 70 cm below surface. Its minimum (upper) age can be estimated because the Denbigh pieces underlie Norton houses dated as early as 600 B.C. The stone tool fragments reveal little more than tool manufacture techniques; their beach location implies a maritime orientation. Similar sparse accumulations of Denbigh stone tools are known from the Trail Creek Caves (Larsen 1968:69 ff.), Lopp Lagoon (Giddings and Anderson 1986), Glacial Lake north of Nome (Ganley, personal communication, 2000) and Cape Espenberg (Schaaf 1988)—dated between 3,900 and 3,500 ¹⁴C years B.P. (Harritt 1994:127 ff.).

The Norton culture (or tradition to some, cf. Dumond 1982, 2000b) marks a drastic transformation in Alaska prehistory associated with economic intensification furthered by the harvest and storage of salmon, likely in considerable numbers (Bockstoce 1979, Dumond 1972, 2000b, Mason n.d.2). While it is tempting to view the several sherds from a house at Tununak on Nelson Island in the Yukon Delta as the earliest Norton community in Alaska, dated between 1200 and 1000 B.C. (Okada et al. 1982), this age is likely too old, due to the imprecise procedures at the Gakushin laboratory (Maschner 2004). On the Seward Peninsula, between 1000 and 800 B.C. Norton people visited at Cape Espenberg (Mason and Jordan 1993, Harritt 1994), north of Wales at Lopp Lagoon and very likely at the approaches to Golovnin Bay.

Norton communities that contain up to several hundred subterranean houses occur at Difchahak (cf. Giddings 1964:183 ff.), Unalakleet (Lutz 1972) and Safety Sound (Bockstoce 1979). However, the size of any one community cannot yet be established. The apparent increased size and complexity within the Norton culture is associated with an increase in population across south and western Alaska (Dumond 1972, 1982). A colder climate associated with increased storminess and Neoglacial expansion co-occurred during the Norton culture although its co-occurrence with a weakly developed buried soil at Cape Espenberg implies that summer temperatures were occasionally warm, at least between 800 and 600 B.C. (Mason et al. 1995, 1997). The effects of the worldwide temperature downturn may have led to increased snowfall in the mountains of Alaska and, according to Lutz (1982:146), limited the size of anadromous salmonids south of Bering Strait. In the assumed absence of dog-traction, decreased mobility and a pressure toward sedentary (fixed) communities were byproducts of the cooling climates. In view of the improved upwelling and productivity that results from heightened
storminess and colder temperatures, Mason and Barber (2003) argue that these conditions fostered sedentism in contrast to high mobility strategies that warmer conditions foster. The presence of net-sinkers in early Norton substantiates this view; conversely, the lack of net-sinkers in its later phases implies the abandonment of salmon fishing (Bockstoce 1979:89), but also may be due to sampling limitations.

The “long” millennium from 500 B.C. to A.D. 700 witnessed a significant population increase in the inner bays and northeast coast of Norton Sound that directly or indirectly impacted Golovnin Bay. The presence of hundreds of house depressions bear witness to this population explosion focused on salmon-bearing streams from Unalakleet, to Shaktoolik to Safety spit. Unfortunately, few of the houses can be assigned ages based on $^{14}$C dates, a circumstance that prevents definitive statements about contemporaneity or population history. However, the agglomerations of 300 houses fronting Safety Sound can represent a tentative approximation of the demographic and cultural transition from early to late Norton.

The early Norton settlement forms a discrete cluster of 60 house depressions, with the settlement occupied between 550 B.C. and the mid 1st century A.D. (Bockstoce 1979). The household economics and subsistence pressures involved in the early to late Norton periods remain unclear due to the absence of adequate faunal data and sparse domestic inventories, as well as the fact that so few houses are excavated (Bockstoce 1979, Lutz 1972, 1973). While adequate faunal data are lacking for the entirety of Norton Sound prehistory, Giddings (1964:185) employed bone counts to propose that “very few caribou are represented in the Norton sample, while small seal, walrus and beluga bones show up prominently.” Most noteworthy, bird bones were rare and mussel shells were abundant. Beluga whale bones formed only from 3 to 6 percent of the bones collected by Giddings (1964:186)—its dietary value was probably many times higher.

During late Norton, A.D. 200-600, a shift in social organization occurred, marked by the construction of the men’s house (qarigi) communal structure, although a large structure at Tununak may be older (Okada et al. 1982). Considering that qarigi ceremonial activity in the 19th century A.D. was well developed in the Yukon Delta, as described by Nelson (1899), it is tempting to link the development of qarigi with developments in the Yu’pik heartland to the south. The appearance of the qarigi may correlate with men’s enterprises, such as caribou or beluga drives.

The terminal Norton period, A.D. 600-750, co-occurred with the spread of the Ipiutak shamanic cult (Mason 1998), as documented from the ritually apportioned
burials at Point Hope (Larsen and Rainey 1948, Larsen 1952), as well as Point Spencer (Larsen 1979/80), Trail Creek Caves (Larsen 1968:67) and Deering (Larsen 1953, Reanier et al. 1998, Mason 1998).\textsuperscript{21} Qarigi served as the focal points at several Ipiutak communities, e.g., at Cape Krusenstern (Giddings and Anderson 1986), Fenaiak Lake, Deering and Point Hope (Mason 1998). Ipiutak and the allied, occasionally warring, polities of Old Bering Sea and Birnirk participated in a widespread trade network to secure iron from Asian intermediaries, a trade focused on Ekven and other Siberian communities (Mason 1998, 2000). Ipiutak may be recognized by distinctive curvilinear designs, both abstract and zoomorphic, representing bears, seals and caribou (Larsen and Rainey 1948, Mason 2006, \textit{n.d.1}). Close affinities are seen with the designs of the Old Bering Sea (OBS) cultures prevalent on Chukotka (Rudenko 1961, Arutunov and Sergeev 1964, Ackerman 1984, Arutunov and Bronshtein 1985) and St. Lawrence (Jenness 1928, Collins 1937, Rainey 1941, Bandi 1972, 1984, Blumer 2002). Nonetheless, Ipiutak lithics closely resemble Norton types, whereas OBS lithics are considerably less well-crafted. Ipiutak people did not use oil lamps or ceramics, for reasons that are unclear — abundant wood supplies were often seasoned with oil for burning (\textit{cf.} Rainey 1941:367). Some archaeologists argue that Ipiutak reliance on caribou required a high mobility strategy that was at variance with ceramic production. Although dogs were frequent companions of Ipiutak people, and sleds were employed, firm evidence of dog traction is lacking (\textit{cf.} Larsen 2001).

Ipiutak collapsed or declined suddenly at or before A.D. 900 (Mason 1998, 2006), a juncture that also marks the onset of a cold and stormy episode (Mason and Barber 2003) and the initiation of the “Punuk-Thule”\textsuperscript{22} culture defined by a sparse, line-to-dot motif on harpoon heads (Collins 1937). Punuk witnessed a number of technological and social innovations, including an increase in house and drum size and bird hunting and fishing equipment (Collins 1937). The adoption of various improvements in bow and arrow technology considerably improved the war-making abilities of Bering Strait people (Bandi 1995, Mason 1998). Still a controversial view, Punuk appears to represent a foreign intrusion that led to the development of the

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\textsuperscript{21} Radiometric data accrued since 1979 force a revision of Bockstoce’s (1979:92 ff.) claim that the Interior was unoccupied from A.D. 500-1000. In fact, many Brooks Range sites were occupied at this time, the florescence of the Ipiutak culture (Mason 2000).

\textsuperscript{22} The definition of the Thule culture occurred at its margins, in the Canadian eastern Arctic, by Mathiassen (1927). Mason (2000), in accord with Collins (1972), defines the phenomenon outward from its earliest manifestations (Maxwell 1985). Thus, Punuk motifs occur on Ellesmere Island and Greenland may record an early movement ca. A.D. 1100 (Holtved 1944, Schledermann and McCullough 1980, McCullough 1989).
widespread Thule culture (Collins 1937, Maxwell 1985, Bandi 1984, Bandi and Blumer 2002), possibly with the input of Birnirk peoples (Mason 1930, Ford 1959), who used a lithic technology similar to Ipiutak. The relationships of the several contemporaneous cultures (Gerlach and Mason 1992) within Bering Strait reflect an elaborate multicultural milieu (Ackerman 1962), with considerable inter-mingling of cultural elements between and within communities (Mason 1998, 2000). Some archaeologists envision situations where people moved both voluntarily and involuntarily, as slaves or marriage partners, between communities, taking their natal styles with them (Mason 1998, 2000). The expansion of the Thule culture co-occurred with evidence of warmer temperatures and the intensification of bowhead whaling across a wide area of western and northwestern Alaska (Bockstoce 1973, 1976). The correlation of successful whaling with warming seems less clear today (cf. Mason and Barber 2003). Nonetheless, bowhead whales were not taken in large numbers — if at all — on the south coast of the Seward Peninsula.

The period from A.D. 800-1200 brought a significant cultural and technological transition (Sheehan 1985, 1995), the last of several centuries termed a “hiatus” by Giddings (1960:125), with the implication that people were absent from the region. In technology, people shifted to locally abundant sources of slate, as a replacement of chert, known only from very limited outcrops (Sheppard 1988:140). The use of slate “primarily as harpoon end blades,” as Sheppard (1988:141) notes, may be associated with an expansion or development of whaling (typically linked with the bowhead, not the ubiquitous beluga) — a development not evident in the limited faunal collections from Norton Sound.

After A.D. 1200 until 1800, the entirety of the Northwest Alaska coast witnessed a considerable similarity in tool inventories, a fact that may be attributed to the spread of the Inupiaq language and culture, a phenomenon termed the Thule migration (cf. Dumond 1987 and elsewhere; critique in Mason n.d.1). In addition, while evidence for warfare continues to be present, trade and peaceful interchange also have prevailed for decades (Mason n.d.2). A warm century between A.D. 1200 and 1300 witnessed expansion into Interior river valleys and mountains due to resource fluctuations (Mason 2001), the time of the earliest settlement at Ikjiiituq near Rocky Point (cf. this volume, pp. 144). Two or three bones at Safety Sound may indicate the taking of bowheads and belugas during the Cape Nome phase in the 15th century A.D.

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23 A single worked bowhead mandible in House 203 and a beluga scapula occur in its contemporary, House 315 (Bockstoce 1979:71, 73).

*An Ipiutak Outlier: A 1,500-Year-Old Qarigi at Qitchauvik*
The development of the dog team occurred by A.D. 1400 (Van Stone 1955, Giddings 1952b, Gerlach and Hall 1988, Mason 2003); this improvement in transportation revolutionized northern Alaska and resulted in the ability to exploit inland areas with greater ease (Hall 1978) and apparently fostered social interaction (Sheppard 1988:142). While dog traction provided flexibility in scheduling, the heightened need for salmon (i.e., dog food) likely acted as a negative feedback in the adoption or development of dog traction. To account for this paradoxical need to work harder to feed the dogs, Sheppard (1988:143) postulates that surplus salmon was a precondition for dog traction. The pay-off for this investment were the various satisfactions of social interaction (messenger feasts, dances, and so on) and the inter-community labor benefits involved in cooperative caribou hunting. Significantly, caribou drive lines, indicative of communal activities, are first documented from this period. In toto, the relationships of Northwest Alaska societies are hypothesized by Burch (1998, 2005) as a series of quasi- or totally independent nation states akin to a “world system” at its maximal development in the early 19th century A.D.\textsuperscript{24}

The ecological drivers for salmon-driven abundance are disputed [e.g., compare Lutz (1982:145 ff.), Bockstoce (1979:89) or Sheppard (1988) with Mason and Gerlach (1995b)]. The critical role of colder climates would seem evident in that the transformation co-occurred with the Little Ice Age and not during the warmer interval of A.D. 1200-1300. Contrary to the claims of Sheppard (1988:144), the benefits of colder weather extend both to terrestrial resources, e.g., caribou (cf. discussion in Mason and Gerlach 1995b) and to salmon (Laevastu 1993, Finney et al. 2002). Decline in caribou during the cold, late 19th century A.D. cannot be definitively isolated from the effects of increased hunting efficiency due to the use of firearms (Burch 1994:173-174). During the decades of caribou abundance ca. the 1840s (cf. Sheppard 1988:143), Seward Peninsula trees had narrow rings (D’arrigo et al. 2004:Fig.3), as a result of cooler weather, a condition that differs from the droughty conditions of much of the 20th century (Giddings 1952b:109, Jacoby et al. 1996:78, Graumlich and King 1998). Of course, weather can be too cold, if river ice does not melt or berries do not fruit, as in the A.D. 1783 famine produced by the chilling atmospheric effects of the Laki volcanic eruption in Iceland (Jacoby et al. 1999). The cooler weather had a profound impact on the Iñupiaq psyche, forming the “Third Disaster,” according to Native historian Oquilluk (1973:65).

\textsuperscript{24}The system as envisioned by Burch (1998, 2005) was reconstructed from oral traditions that are at best 100 years after the fact; virtually no archaeological evidence of early 19th century settlements is available; and the situation at Tikigaq is instructive (cf. Larsen and Rainey 1948).
The **18th to 20th** centuries A.D. in northern Norton Sound

The British adventurer Captain James Cook skirted the Alaska coast close to Golovnin Bay in September 1778, lending a number of toponyms to its cartography: *Norton Sound, Norton Bay, Capes Denbigh and Darby*, and so on (cf. Ray 1975:39 ff.). Nonetheless, Cook did not enter Golovnin Bay, because of his apparent inability to observe its mouth, marking only Cape Darby on his chart. Cook encountered few people, only recording the village of Shaktoolik. The bounty of salmon and the rarity of iron led to the Cook party’s (cf. Ray 1975:42) obtaining 180 kg (400 lbs.) of fish for the seemingly low price of four knives.25

The first direct Russian presence in Golovnin Bay occurred in 1821 and 1822 with the visit of Lt. Khromchenko in his ship, the *Golovnin*. This encounter was brief — two weeks in July and August — and largely uneventful, except for a few trading opportunities, various hospitable dances and the recording of a few ethnographic and cartographic details (Ray 1975:71-76). Locals were accustomed to tobacco use, but guns surprised them (Ray 1975:74, Gregg 2000:76). However, even more drastic challenges and opportunities followed the establishment of the trading station at St. Michael on the opposite shore of Norton Sound. This settlement, charged with the purchase of fur, attracted many Iñupiaq in its direction. Coupled with entry of Russian populations in the mid-1830s and 1840s, several influenza outbreaks had profound and deadly effects on the residents of northeastern Norton Sound, reducing populations by more than 50 percent (Fortuine 1989:209 ff.). The ecological vacuum produced by the epidemics led to a generation of cultural realignment and territorial readjustment; unfortunately, little or no detailed ethnographic data are available before 1880.

Russian entrepreneurs and travelers provide earliest surviving written records on the peoples of Norton Sound. The most reliable rapporteur, Lt. Zagoskin (1967) remained in Western Alaska over two years, from 1842 to 1844, operating out of the Russian outpost at St. Michael (established in 1833). Unfortunately, Lt. Zagoskin did not visit the Seward Peninsula. A few ethnographic details did reach Lt. Zagoskin (1967:100 ff., 125 ff.), who generalized that “the economy of the coastal natives revolves around the beluga (“grampas”), bearded seal (“makylyak”) and ringed seal,” with considerable commerce in oil and caribou skin from the Seward Peninsula exchanged for wooden utensils and furbearers from the Yukon River valley (Zagoskin 1967:101).

25 Nonetheless, at current market prices, with chum salmon, at only 5-15¢ per pound, the knives would represent a reasonable or even a low price., $20.00-60.00 apiece.
The pre-contact ethnicity of the southern Seward Peninsula residents remains ambiguous (Ganley 1995). Several ethnonyms were obtained by Zagoskin (1967:124): i.e., Kang-yulit, termed by their southern relatives Maleygmyut (Malemuit) or Naleygmyut, meaning “people who dwell in blanket-yurts.” However, this description reflects a highly mobile subsistence pattern and implies that more substantial subterranean houses were not used.

Large structures, qarigi, served as feasting locales and venues for shamanistic performance (Ray 1975:107, Jacobsen 1983:134 ff., 149 ff.). The earliest records of the qarigi organization appear in Zagoskin’s notebooks (1967:115 ff.). The collective, male-centered organization (cf. Larson 1995) in the qarigi might correlate with the communal hunting of caribou and belugas, as described by Sheppard (1986:139 ff.). The antiquity of the qarigi remains uncertain, but limited testing from Unalakleet suggests that its antiquity may exceed 1,500 years (Lutz 1973). Qitchauvik, as we shall see, provides some tantalizing clues on its evolution.

Only four settlements in the vicinity of Golovnin Bay were reported to Lt. Zagoskin (1967) by Native travelers; these locations and names do not correspond with subsequent evidence (Ray 1983:191-192). Nonetheless, the largest was on the open coast, northwest of Rocky Point; apparently few people lived year round at Qitchauvik within the sheltered inner reaches of Golovnin Lagoon.

In the late 19th century Ikjiiituq or Ignituk near Rocky Point was apparently the largest village near or within Golovnin Bay (Ray 1983:190): “about 150 people” settled at the mouth of a small canyon (Nelson 1899:252). Ikjiiituq served as the host for both feasts and funerals (Ray 1983:191, Jacobsen 1983:134 ff.). Interactions between communities ranged between trading and marriage alliances, participation in messenger feasts and in conflicts, e.g., warfare (Ray 1964, 1967, 1975).

The collapse of the Northwest Alaska caribou population during the 1880s (Ray 1983:159) remains a controversial topic; both Nelson (1899:118 ff.) and Burch (1994:173) attribute it to the adoption of rifles by Native hunters while Sheppard (1988:144) argued that the gun tipped the scale on a climate-driven event. Several circumstances argue against the “overkill” hypothesis: (a) the limited availability of ammunition (at least in the hinterlands, cf. Nelson 1899:163) and (b) the limited effectiveness of 19th century rifles (cf. Wolfe 1893:146). Muzzle-loaders and a variety of other antique guns remained in use in Norton Sound until late in the 19th century (Nelson 1899:163 ff.).

Pressures to abandon the outlying settlements involved feedbacks between Christian conversion, the establishment of canneries, roadhouses, stores, schools and the adoption of higher-draft aluminum boats. Reindeer herding was introduced in the 1890s as a palliative for the cultural transformations of the early American period (Stern 1983, Simon 1998). The influenza outbreak of 1918 led to hundreds of deaths and the total reorganization of society. Recovery required a generation and the economic benefits of Alaska statehood and the formal treaty arrangements of the 1980s that produced the current regime of land ownership and settlement pattern (Berger 1985).

**Physical Anthropology**

Investigations into the physical anthropology of Seward Peninsula peoples are limited by the dearth of archaeological investigations at cemeteries in the last 75 years, which reflects a shift in research priorities. The largest collection is that from Rocky Point, obtained by Henry Collins in the late 1920s. The Native Graves Repatriation Act (NAGPRA) led to the detailed study of these human remains in the 1990s. Employing qualitative and quantitative standard measurements on crania and teeth, Scott and Street (1997) inferred that population “exchanges,” intermarriage between villages, were common in the Golovnin region. Skeletons from the Rocky Point area share characteristics with a variety of neighboring populations, as distant as Yukon Delta Yup’ik societies and middle Yukon River Athapaskans.
Located on the south coast of the Seward Peninsula, Golovnin Bay extends north for 30 km from its 16 km wide opening between the promontories of 60 m high Rocky Point and 30 m high Cape Darby (Fig. 1). The Rocky Point and Cape Darby peninsulas are the southernmost extensions of two north/south trending mountain ranges that attain heights of 1000 m and on three sides touch the ocean. The twin mountain prongs that form Golovnin Bay are metamorphic Precambrian schist on the west and granite on the east, the Kwiktalik Mountains (Moffitt 1913:Pl. V; Till and Dumoulin 1994). Limestone and quartzite are occasionally interbedded with the schist (Till and Dumoulin 1994); these more resistant rocks are well represented on area beaches.

Golovnin Bay is marked by two compartments: (a) the lower two-thirds is comparatively exposed, 10-15 m deep and rectangular in plan view and (b) the upper third, Golovnin Lagoon, a shallow, square water body, generally less than 1 m deep, its inner reaches off the Fish River delta are even more shallow. The Fish River delta and tidal flat debouches into its northwest shore. Diurnal tidal range within Golovnin Bay varies from within 0.55 m, influenced by wind direction and intensity (NOAA 1983:338).

On its western limit, sheer but comparatively low (<200 m high) Iknutak Mountain bedrock cliffs of schist (Brooks et al. 1901:200) form the southern entrance of Golovnin Bay and for 1-3 km north. Beaches are comparatively narrow and steep in this area, restricted mostly to small coves. Sandy beaches front much of the low southwest coast from Kilimavik to Little Rocky Point, the inner margin of a crescentic embayment. This coastal reach is exposed to swell and currents from the southeast and is backed by a 5-7 m high bluff composed of sandy sediments, likely the result of mid to late Pleistocene colluviation or alluvial terrace formation. While not examined closely, no obvious uplifted Pleistocene marine deposits (wavecut platforms, and so forth) were observed. Sandy beaches also form a high proportion of the east coast, north of the Lomen...
Reindeer Camp. Persistent, long term patterns of onshore transport has produced several sediment accumulations that extend several hundred meters from the modern beach; these accumulations are sand and fine gravel deposits and preserve the trend of storm ridge accretion. These deposits are classifiable as forelands, or beach ridge plains, and/or spits and occur at four locations in Golovnin Lagoon.

The four Golovnin Lagoon beach ridge plains or complexes are designated, counterclockwise, GOL-A, GOL-C and GOL-D (Fig. 4) and GOL-B (Fig. 6). This designation reflects long-term current patterns, a conclusion based on the orientation of submarine bars and spits. The two east margin complexes (GOL-A and B) trend east to west and are downdrift from small rivers. The Qitchauvik site, investigated in the field school from 1998-2000, lies on the third oldest ridge of the GOL-B beach ridge complex. The present town of Golovin lies atop several of the ridges on the GOL-A spit.

Figure 4. Beach ridge complexes of lower Golovnin Lagoon; labeled counterclockwise from Golovin village (GOL-A). Qitchauvik lies atop GOL-B, illustrated in Fig. 6 [Photo source: Alaska Geophysical Center archive].
Geomorphologic Reconnaissance of Golovnin Bay Beaches

Several beaches (Fig. 5a, b, c, d) were profiled and described during the 1999 field school (Mason 1999, unpublished field notes). Beach Profile transects were constructed with a hand level and folding ruler; distances were paced. Field observations included clast size and orientation, amount of drift debris and evidence of recent storm activity. In general, clast size varied in relation to distance across the beaches, schist cobbles vary from 15-40 cm long. Sand was dominant on many reaches. Storm berms were 3-4 m above water level (AWL, at time of observation) on the west and east shores of Golovnin Bay, within the reach of the 1974 storm delineated by Sallenger (1983:5). However, the maximum limit of the 1974 storm was considerably higher, at 6.7 m, on the exposed shore south of Carolyn Island on the southeast shore of the bay. In general, sandy beaches are common along much of Golovnin Bay, while cobble beaches are restricted to its southern portion, dominated by bedrock cliffs. Numerous points and river mouths exhibit the growth of spits and beach ridge complexes—the setting of the Qitchauvik site.

Gol 99-1. (Mason 1999, p. 17). At the Golovin roadhouse (not illustrated), the height of storm beach ca. 3 m, is dominated by tabular schist clasts 1-2 cm thick, most are 15 to 25 cm long, with the largest 40 cm long. Many clasts are sub-angular, which is indicative of little littoral transport. The matrix consists of poorly sorted very fine to coarse sand. A distinctive lower energy storm ridge, possibly a reworked storm berm, occurs at 1.6 m above low water level—stable vegetation occurs at this level, a circumstance that indicates few storms (at least before 1999) had reached above this level. The clasts on this berm ridge are mostly 1-2 cm long and some up to 3-5 cm long, while the largest are only 10 cm in diameter.

Gol 99-2. (Fig. 5b) East facing Kilimavik storm beach imbricated large cobbles 25-cm dia. occur at 3.25 m AWL; while 50 cm dia. clasts occur higher and some even larger 80 cm. The beach consists of tabular schist (greenstone) with a very minor amount of medium sand, matrix coarse, very coarse sand. Driftwood covered, scarped berm ridge at 1.6 m AWL.

Gol 99-3. (Fig. 5c) Little Rocky Point (Mason 1999, p. 47) storm ridge: largest clasts 35-45 cm imbricated, sand dune activity landward most 5-10 cm dia. Ig. drift logs greater than 15 cm dia. elevation 2.3 m AWL for 9 July @ 1300 pm. Highest evidence of driftwood at 4.75 m AWL. Bluff is only 5.5 m AWL. Highest storm penetration consistent with 1974 storm effects (cf. Sallenger 1983).

Gol 99-4. (Fig. 5d) Lomen Camp, E shore of Golovnin Bay (Mason 1999, p. 56), at 4.8 m AWL (1340 pm, 10 July 1999) grass covered driftwood, upper beach mostly coarse sand (no sign of larger clasts) with some medium and fine to very fine sand. The highest storm penetration is consistent with 1974 storm effects (cf. Sallenger 1983).
Figure 5a. Beach at Qitchauvik beach ridge complex within sheltered Golovnin Lagoon; a wide prograding beach in a sheltered environment. A similar beach has formed in Golovin, site of station GOL 99-1.

Figure 5b. A beach (Station GOL 99-2) along the east-facing shore at Kilimavik (southwest Golovnin Bay, showing a storm beach with large cobbles (right). Fine sand accumulates during fair-weather conditions (mid beach).
Figure 5c. Little Rocky Point on western aspect of Golovnin Bay–Uiaalik site (SOL-061) in bluff, GOL 99-3. Note the plentiful and large drift logs on the storm beach.

Figure 5d. Sandy eastern shore of Golovnin Bay, south of the former Lomen reindeer camp, coastal profile GOL 99-4. Note the spit growing to the north under the influence of southeastern waves.
The Qitchauvik Beach Ridge Complex:
Geomorphologic Background for the Qitchauvik Site

Nine beach ridges have formed at the mouth of the Qitchauvik River; the succession represents a horizontal progression of ridges added through time, with the oldest Q-9 at the most landward margin (Mason and Ludwig 1990, Mason 1993). The northwest curve of the ridges, evident in plan view (Fig. 6), indicates that each ridge formed under the influence of northwestward longshore transport interacting with the mouth of the river. This transport occurred as storm-induced currents moved gravel and sand both along shore and landward during fall (i.e., open water) storms that acted over Golovnin Bay from the southeast. This particular storm trajectory was associated with the 1992 storm that pummeled the southern Seward Peninsula coast (Hegdal 1993).

Figure 6. Landscape Setting of SOL-143, the Qitchauvik qarigi. Located on widest beach ridge at a long abandoned side channel of Kitchauik (=Qitchauvik) River. Several earlier ridges extend to the northwest and a series of low ridges younger built to the southwest. The white arrow indicates the prevailing long shore transport direction. The broad Q-7 ridge that underlies SOL-143 formed before A.D. 500, possibly as early as 500 B.C., based on correlations with Safety Sound Norton occupations on a similarly broad ridge [Source of Aerial Photograph, GeoData Center, University of Alaska Fairbanks].

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The orientation of the Qitchauvik beach ridges reflects the circumstance that only a very specific wave climate can produce longshore transport. The sediment for the ridges originated from two sources, in unknown proportion: (a) material eroded from the low bluffs updrift from the site and (b) shelf sediments mobilized during storms. Of course, bluff material must be translated into shelf material—during periods between storms. The direction of wave energy strongly influenced how material was added to the coast. If wave energy was oblique to the coast, a series of ridges were added, whereas if waves were perpendicular to the coast, then only the strongest storms could push material on shore, building a composite ridge.

Two different types of ridges occur in the complex, as defined by vegetation and topographic characteristics. The most landward, oldest ridges are wide, flat and higher than the younger series of ridges. Grass predominates on the youngest series, while crowberry and a number of low tundra shrubs predominate on the oldest two ridges. The two plant communities reflect a successional regime: grass predominates on recently disturbed and younger land forms, possibly still affected by salt spray, while tundra vegetation is favored on the stabilized and older ridges, more distant from the sea. Some localized clumps of disturbance vegetation may reflect benefits from the phosphorus and other nutrients added by human occupations. Another indication of surface stability and of paleoclimatic conditions is the formation of frost wedge polygons atop the more landward, flatter ridges, especially on Q-7, the oldest, most landward ridge.

The elevation of the nine Qitchauvik beach ridges decreases seaward, extending across 260 m northeast to southwest, from 3.9 m above mean low tide on Q-7 to ca. 2 m on Q-1. The two ridges more landward than Q-7 are lower. Most ridges are comparatively narrow, only two (Q-7 and Q-4) are wider than 20 m. The most landward Q-7 represents nearly one quarter (50 m) of the entire Qitchauvik sequence, while Q-4 contains slightly more than 1/8th of the total accretion (30 m).

The youngest grass covered ridge (Q-1) is only 2 m above sea level and remains susceptible to the effects of most storms. Ridges Q-2 and Q-3 rise slightly to the northeast and are both rounded in cross section and resemble composite ridges. The low scarp between the two ridges marks an ecological boundary, with the first occurrence of Empetrum nigrum (crowberry), an indicator of greater surface stability. A low swale separates Q-3 from Q-4; it is also vegetated with willow (Salix sp.) and crowberry. The oldest ridges, Q-8 and Q-9, are in the marshy lowland north of the wide Q-7 ridge that underlies Qitchauvik Feature 1.
Shallow cores into the younger beach ridges indicate that storm deposition was episodic, producing the alternation of sand and granule beds, each only several cm thick, followed by 1-2 cm of silt. Each storm deposited a granule-and-sand bed, 5-10 cm thick, with the silt added during fair weather conditions. At least five storms produced the upper 20-40 cm on the Q-3 and Q-4 ridges; extrapolating, vertically, perhaps 20-25 storms were required to produce each 2-3-m-high ridge.

**Chronology and Paleoclimatic Implications of the Qitchauvik Beach Ridges**

Within Golovnin Bay, the addition of beach ridges is predominantly a reflection of storm induced wave transport, not the mild, fair weather wave regime. When did the Qitchauvik ridges form? Using the fact that the Qitchauvik occupation was constructed in the oldest ridge allows the assignment of an upper limiting age for the formation of the ridge, which occurred before the occupation. The Qitchauvik occupation, as described below, dates between A.D. 550 and 750; hence, the Q-7 ridge formed before A.D. 500, possibly as late as A.D. 600, but no later than A.D. 700. The considerable width of this ridge implies that the ridge was near the shore for a lengthy period. Therefore, its basal age would likely precede the first centuries A.D.; it is likely that the ridges older than this were eroded by very massive storms during the period from 1000 B.C. to A.D. 100, much like the spit at Point Hope (Mason 1990, Mason and Jordan 1993).

The beach ridge record indicates that a lengthy period with very strong storm cycles preceded the Qitchauvik occupation at A.D. 500. Subsequently, a slightly lower pair of ridges was welded onto the Qitchauvik beach ridge plain following the Lagoon Phase, after A.D. 700 and before A.D. 1000, likely correlative with storm-deposited ridges across Northwest Alaska (Mason 2000, Mason and Barber 2003). Following this ridge, the younger ridges at Qitchauvik reflect storm deposition during the Little Ice Age, between A.D. 1650 and 1900. This age assignment is supported by the ecological succession at Cape Espenberg that shows crowberries growing only on the ridges that precede A.D. 1650 (Mason 1990, Mason et al. 1995). The cryogenic alteration of the oldest ridges occurred following the occupation, either around A.D. 700 to 1000 or, more likely, during the Little Ice Age. Similar cryogenic deformation occurs in the youngest
dune capping the Norton ridge and on early Thule ridge 5 at Cape Espenberg, with bracketing ages between A.D. 800 and 1150.

**Regional Correlations with Qitchauvik Beach Ridges**

The Seward Peninsula and the northern shores of Norton Sound contain numerous similar beach ridge complexes or spits. The largest are at Unalakleet, Moses Point, Safety Sound and Port Clarence (Shepard and Wanless 1971:465 ff.). Few of the other beach ridge complexes along the southern Seward Peninsula offer any chronological data on the history of occupation or paleoclimatology. Archaeological ages provide upper limiting ages from only two complexes: Unalakleet and Safety Sound.

The antiquity of the northward growing Unalakleet spit exceeds 2,200 $^{14}$C years B.P. (400 B.C.), based on the occurrence of Norton occupations on the oldest ridges (Lutz 1972). North-trending ridges at Shaktoolik contain undated Norton occupations that are probably between 3,000 and 1,000 years old (Giddings 1964:183 ff., McMahan 1995). The Safety Sound spit, extending several km east from Cape Nome is also oriented toward southwesterly waves and includes only nine dune ridges. However, the growth of the spit reflects a combination of marine and eolian (i.e., wind) processes. Progradation (or addition of sand) of the spit occurs due to southwesterly winds, under the effects of storms with a different trajectory than within Golovnin Bay. Unlike Qitchauvik, Safety Sound is divided into coarse and fine components, as longshore transport fractionates the submarine matrix composed of granules and fine and medium sand. A large percentage of the larger granules remain on the westerly part of the spit, deposited by only the largest storms, and form linear ridges separated by the swales that mark less or non-stormy periods. Southerly winds preferentially remove the fine sand and produce low dunes atop the gravel.

Only nine ridges can be observed on the surface of western Safety Sound spit, so that it is uncertain how many storms were involved in the production of these ridges. The oldest, most landward ridge is capped by Norton houses dated to the last centuries B.C. (Bockstoce 1979), but also contains undated Arctic Small Tool occupations at least 1,000 years older. The age of this ridge correlates with similar composite ridges in Kotzebue Sound that were constructed during a cycle of frequent storms between 1600

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27 Field observations on the Safety Sound spit by OKM occurred in August 1992 and in 1999. No subsurface trenches were excavated, so that most of the inferences herein are speculative and rely also on air photo interpretation and the report of Bockstoce (1979).
and 200 B.C. (Mason and Jordan 1993, 1997, Jordan and Mason 1999, Mason 1999). The Safety Sound ridge system underwent a drastic shift in depositional regime during the late first millennium A.D., concurrent with late Norton and the purported Birnirk occupations. An even, major shift in deposition occurred during the Little Ice Age, when an abundance of sediment was introduced into the littoral transport system and led to the rapid elongation of the Safety spit. The age of this spit growth can be estimated from the upper limiting ages of superimposed archaeological sites; e.g., Mupterukshuk, (Biddle and Slaughter 1996). In general, the Safety Sound sequence mirrors the Qitchauvik sequence: a lengthy period of strong storms built composite ridges preceding A.D. 500 while lower intensity storms favored progradation afterward.

Beach ridge geomorphic records allow archaeologists to reconstruct the scale and duration of storms for the last several thousand years. In addition, large storms would have contributed a bounty of drift wood onto beaches, a circumstance that often serves as a limiting factor to settlement (Mason 1998). Human history within Golovnin Bay was conditioned by these variations in storms and fair weather—success and failure were often constrained or advanced by the benefits or disadvantages of weather.

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28Apparently because core data or detailed geological stratigraphy are lacking.
Chapter 4

The Qitchauvik Site (SOL-143)

Owen K. Mason and Mary Ann Sweeney

The Topography of Feature 1

The total spatial limits of the Qitchauvik site cannot be established with presently available data. Only a single depression ca. 1.5 m deep is apparent on the eastern margin of the one of the oldest beach ridge surfaces (Figs. 6, 7). While the general site area is flat, it is criss-crossed by a series of intersecting 50-cm-deep linear depressions, likely produced by cryogenic processes operative in the active layer. A former channel, possibly a river outlet, now forms a marsh north of the site (Fig. 8). Surface indications of other houses were not observed on the Qitchauvik ridge; however, 14 house depressions were documented on several of the ridges landward of Feature 1 (Mason, 1999, field notes).

Figure 7. Qitchauvik Beach Ridge plain, ridge Q-7 in distance; note the standing human figures near the qarigi, Feature 1 (right background).
Documentation is lacking for the topography of the Qitchauvik Feature 1 (Fig. 9) before the looter activity in 1994. Investigators in 1998 observed the remains of backdirt dislodged by a looter's trench across the width of the depression. Feature 1, as observed in 1999 by Mason, represents a 1.5-m-deep crater, excavated into the eastern edge of the third oldest Qitchauvik beach ridge.

Figure 8. View north from the Qitchauvik feature 1; this marsh is the remains of a former channel or inlet.
Figure 8b. Feature 1 excavation in foreground, marsh within former channel to north. Note structural timbers on surface, extracted from looted contexts. The channel in the background may have eroded part of the feature and produced the cavity in the middle ground.

The depression is L-shaped in plan, with the shorter leg at its southeast margin (Fig. 9). The first test excavated in 1998, at S1W1.4, encountered a square hearth slightly off center from the main chamber of the structure. The west margin is an abrupt vertical face, a cut that extends for 5 m at 339° and appears to be the result of recent alteration, likely by avocational diggers in the early 1990s, supplemented by the wall-cleaning activities of the 1998 season. The eastern margin of the depression is low, only slightly elevated above a healed inlet channel. One may speculate that channel erosion removed a portion of the house; alternatively, the feature was placed at the margin of the beach ridge.
Figure 9. Excavation Grid employed 1998 to 2000. The dashed line squares set at diagonal were excavated in 1998, before the establishment of a formal grid. The boundary of the house depression is marked by the black line.
Chapter 5

The Golovin Field School: Narrative and Methods
Owen K. Mason, Mary Ann Sweeney and Matt Ganley

The 1998 Session

The goal of the first season was to assess the significance of several archaeological sites on Golovin Native Corporation land and to provide opportunities for students to be involved in the documentation of their region’s history, learning archaeological field methods in the process. During the 1998 field season, in conjunction with site observations, radiocarbon samples were collected from three archaeological sites in the Golovnin Bay area, with excavation of the Qitchauvik site.

Ten Golovin high school students participated in the 1998 Golovin Heritage Field School, involved in all aspects of the fieldwork. Students learned basic archaeological techniques including site identification, feature mapping and documentation, excavation and laboratory analyses. The students were responsible for all of the photographic documentation, using 35 mm cameras for on-site. Nearly 400 slides and black and white photographs were logged for archival purposes and, in addition, seven hours of videotaped footage were compiled. Classroom sessions included lectures on prehistory of the area, as well as discussion of catalog procedures and oral history techniques. Near the end of the program, the students held an open house at the Martin L. Olson School; students arranged the artifacts for display, compiled data from the 1910 census and constructed posters describing their work. The open house met with considerable interest; about half the community residents attended. Similar events closed the 1999 and 2000 sessions.

In 1998, five 1 x 1 m units were excavated in and adjacent to Feature 1 (Fig. 9). The focus of the testing protocols was to locate intact deposits beyond the disturbed surface of Feature 1, as well as securing datable organics from one square (S1 W1.4) near the feature’s center. Unfortunately, no topographic or grid map was surveyed in 1998. Squares were set in a north/south grid line parallel to the maximal length of the feature. Site datum at 0.0 was placed inside the feature center, employing an east/west grid line.
The 1999 Session

Qitchauvik remained the focus of investigations during the 1999 session, held between June 30 and July 14. Excavation focused on elucidating the internal dynamics of the feature. Four supplemental excavation units were opened; three were along a north/south transect, with a central square in the feature adjacent to a hearthside square opened in 1998. The two other 1 x 1 m units were at 3 m north (N3 W2) and 2 m south of this unit (S4 W2). About 250 catalog entries were entered into the database.

Limited reconnaissance at the Little Rocky Point site of Uiaalik produced a stratigraphic profile of a subsurface site on an eroding bluff. Ceramics, mussel shell and caribou bone were collected from the exposed profile. Ancillary research by O.K. Mason included coastal geomorphological observations on Golovnin Bay beaches, consisting of several transects that documented the nature of sedimentary deposits, the elevation of driftwood accumulations and the prevailing direction of longshore transport.

The 2000 Session

The team continued to expand archaeological research in 2000: four new squares were uncovered in the areas between the efforts of 1998 and 1999 (Koskey 2000, field notes). Ancillary research by V. Barber included dendroclimatological observations on the uplands above Golovnin Bay, consisting of several pedestrian transects to document the nature of spruce growth. Dr. Barber’s observations (this volume, Appendix) were integrated with a tree ring chronology developed from the structural wood collected in 1999.

Methods

Excavation Strategy

Decisions on the areas to excavate were determined by consultation between archaeologists\(^{29}\) and Golovin community representatives; however, the community exercised final authority. One of the principal constraints was the limited amount of money, time and labor. Archaeologists, when constrained by budgetary concerns, must

\(^{29}\)Another consideration involved the shifts in on-the-ground archaeological decision-making between years: Gerlach and Sweeney in 1998, Mason in 1999 and Koskey and Ganley in 2000.
design excavations as exercises in sampling—a 100% sample removes the entire site; substantially smaller samples (25% or less) will inevitably be less representative. Randomly placed test squares are typically used in order to find unexpected structures or features, while trenches are employed to obtain maximum stratigraphic sequences (Wheeler 1954, Joukowsky 1980). The preferred strategy for revealing architecture or activity areas, involves revealing large areas, often 2 x 2 m or 3 x 3 m. This strategy was not followed at Feature 1. In order to conserve the site and avoid over-committing the field school students, testing was at first limited to small 1 x 1 m squares, a circumstance that yields only small snapshots, "telephone booths," of parts of the feature. Considering the fact that structural members can be over 2.5 m long and 25-35 cm wide, it is easy to see that a 1 x 1 m square will contain only a small fraction of any wall or roof. The strategy used in the Golovin Field School ultimately was not successful and should be avoided in any future excavations.

The grid established in 1998 (Fig. 9) was a non-standard choice that used all four quadrants by locating the feature datum at its center; to minimize confusion this grid was re-used, with reservations, in 1999 and 2000. Archaeologists usually limit grid designations to a single quadrangle in order to minimize cataloging errors; this practice should be instituted in any future excavations in the Golovin area.

In 1998, one square (S1W1.4) was placed near the center of the feature, a standard decision predicated on the expectation that a hearth with datable organics would be centrally located. Two squares provided data from the west (N0 W3.5) and south (S3 W1) margins of the feature depression; both of these provided structural wood that delimited wall and roof collapse. Two squares were located beyond the footprint of the feature depression; these were not aligned in relation to the grid, but both lie within the SW quad, at approximately S4W2.5 and S6 W1. These two test squares were intended to clarify site use outside the feature. In 1999, several squares were added adjoining the 1998 testing areas in hopes of improving the ability to describe architecture. Thus, squares northwest of the center were added: NO W2, and S1W4.5 on the west margin and a square on the south margin, S3W2 adjoining S3W1. In addition, a test square was added on the north margin, N3W2. In 2000, excavation proceeded in five additional squares, expanding the area uncovered to include nearly the entire western half of the feature. In total, 15 excavation units [15 m²] were exhumed in the three years.
Excavation Protocols

Excavation employed trowels in arbitrary 10 cm levels, with excavators proceeding from one 25 by 25 cm quad to the next (Fig. 10). All excavated sediment was removed to buckets, screened through ¼-inch mesh and artifacts and organic detritus (wood, skin, and so on) were bagged by quad. Plan views were drafted at the conclusion of most, if not all, levels. Artifacts encountered in situ were three-point provenienced. Photographic documentation included 35 mm slide and video. Excavated squares were generally back-filled, although the wall margin pits were not. Students maintained field notebooks, with variable diligence, both by individuals and by year. 30

Stratigraphy within Qitchauvik Feature 1

Stratigraphic observations were recorded during the excavations and by drafting profiles at the termination of the field season. The following discussion represents a synthesis of 1998 and 1999 field notes and profiles (Figs. 11 and 12). Pits were not re-occupied in subsequent years. No stratigraphic data are available from the 2000 session. The stratigraphic sequence revealed in the west wall (S2 to N2, W3.5) of Feature 1 (Fig. 11a, b) records several construction details associated with the feature (Units 1 and 2) and the subsequent history of the site after the feature’s abandonment (Units 3 to 7). Unit 1 represents a structural member of uncertain provenience, probably either of roof or foundation. This timber is capped by Unit 2, composed of shredded organics, possibly the remains of sod blocks or birch bark (as at Deering, cf. Larsen 2001) covering the structure, or alternatively the residue of a vegetated surface that developed after abandonment. Following site abandonment, a comparatively thick, poorly stratified amalgam of sediments was deposited, Unit 3. This depositional unit contains very small lenses of silt, clay and pebbles. Possible agencies for the deposition of this unit include ice rafted material carried on top of the site from the adjacent channel, or, alternatively, original deposits of beach ridge derivation locally reworked by fluvial processes, either due to trampling by humans, river flooding or (less likely) high rainfall. The high amount of silt precludes a purely marine (i.e., storm ridge) origin. The two dark brown beds,

Figure 10. Excavation in Feature 1 showing square No W2 in center; the view north shows the proximity of the ridge to the marsh. Note the West-to-East grid line in center of the depression.

Units 4 and 6, represent stabilized surfaces, resulting largely from the decay of detrital organics. Unit 5, comprised largely of silt, probably reflects river flooding, possibly in fall. The 15 cm thick upper level, Unit 7, formed as a consequence of a lengthy period of surface stabilization, as well. Unit 6 closely resembles Unit 4 and reflects similar fluvial processes.

Excavation of S1 W4.5 in 1998 enabled the discernment of several additional strata below the structural member revealed in the wall. Unit O, consists of a mottled
dark, yellow brown clayey silt, with several wood structural elements as inclusions within. Structural wood consisted of seven fragments, some rounded, some longer in horizontal direction; all likely represent wall collapse.

A considerable amount of human activity is represented in the stratigraphic sequence (Fig. 12) in the square S1 W1.4—disregarding the upper (Unit 10) that is the product of recent excavation by avocational diggers. The basal deposit (Unit 1) consists of reddish brown silt, interbedded with discontinuous peat beds; this unit probably reflects a water saturated margin related to the inlet. Cultural material was not recovered in this unit. A very thin bed of pebbles, forming Unit 2, caps the organic silt; either these pebbles were purposely laid by the inhabitants of Qitchauvik, or in view of a similar bed higher in the section, the pebbles may be a storm bed. This latter explanation is preferred. Unit 3, massive tan sand, was culturally sterile and lacked any other clasts. This unit is discontinuous across the square and, on the one hand, may represent a storm bed of lower energy, but longer duration than the others. Alternatively, it is the product of onshore wind transport of beach sand. Unit 4 represents the surface before and during the principal occupation at the feature. This buried organic soil horizon is similar to stable surfaces that formed at Cape Espenberg (Mason and Jordan 1997) and especially the Ipiutak surface dated between A.D. 600 and 900 at Deering (Mason 1999, unpublished Field Notes) during non-stormy conditions.
Figure 11. Stratigraphic description of Feature 1 (detail in Fig. 11b) bottom to top. Depth of exposed profile, 80 cm at SW corner. 50 cm scale (tape measure) at base. Color is estimated from Munsell color chips (e.g., 5 YR 2.5/2).

**Unit 1**—Structural wood, *Picea* sp., an intact timber lies horizontal, width ca. 24 cm. Uncertain length, apparently represents foundation support or roof member.

**Unit 2**—Shredded woody detritus and roots, loosely packed. The matrix, ca. 25%, is brown, organic-rich silt and clay, with a distinct upper contact. The bed thickens to the north from 4 cm - 16 cm.

**Unit 3**—Dark brown silt with 1 cm thick lenses of gray silt and clay. Small fraction of medium to fine sand. Some lenses contain small pebbles. While well-defined, the upper contact of this unit is deformed.

**Unit 4**—Organic stained silt, minor amounts of very fine sand and clay. Black, 5 YR 2.5/2. Deformed downward, cryogenic origin.

**Unit 5**—Silt, gray 10 YR 5/1. Sizable percentage of fine to medium sand. Organic content low.

**Unit 6**—Organic stained brown clayey silt, very little sand.

**Unit 7**—Organic mat, loosely packed detrital organics, rootlets, sphagnum etc. Comparatively little silt, clay or sand.
Figure 11 (a) (upper). Feature 1, west wall S2 to N2, W3.5, with detail of No-N1, W 3.5, detail below, Figure 11 (b). July 1999.
Figure 12, following. Stratigraphic Sequence within Feature 1, S1 W1.4, bottom to top.

**Unit 1**—Reddish brown silt, mottled with discrete pockets of bound vegetal matter. Distinct upper contact. Lower contact represents LOE. Lacks artifacts; present in all four wall profiles. The unit reflects a stabilized surface at the margin of inlet.

**Unit 2**—Discrete 1 cm thick bed of pebbles, only present in the West wall. Uncertain origin. Possibly a storm bed; alternatively, cultural modification.

**Unit 3**—Light brown to tan silty sand, massive, unoxidized. Pinches and swells across the unit. Not present in west wall, only slightly in north; but is thickest in the south. Represents non-cultural deposition. **Unit 3 b**—pit fill, marine mammal cemented sand.

**Unit 4**—Mottled, dark brown, organic-rich silt mixed with pebbles, clasts of charcoal, wood. Distinct upper and lower contact. Thickest in north wall, thins to south and east. Not present in west wall. In east wall, directly overlies Unit 1.

**Unit 5**—Tan sand with small pebbles. Discrete lenticular wedge in east wall, underlain by well-defined charcoal bed, capped by thin greasy charcoal, black silt 1 cm thick bed (Unit 5b).

**Unit 6**—Tan sandy silt, with small pebbles, discrete lenticular body in south wall, upper contact resembles angular unconformity, purposefully cut.

**Unit 7**—Reddish brown silt, sphagnum in places, small percentage of sand. Consists of discrete wedges, in east wall, underlain by undulating 1 cm thick layer of greasy charcoal.

**Unit 8**—Thin 1 cm thick bed of sand and small pebbles. Only evident in the south wall and appears to represent a storm bed.

**Unit 9**—Diverse amalgam of massive silty sand, with clasts of small pebbles, charcoal, with a greasy feel, due to high organic presence. Cigarette filter and a 12-gauge shell recovered from north portion of square. Back dirt deposited by looters in the early 1990s.

**Unit 10**—Vegetation mat, comprised of silt, tightly bound grass roots, stems, black and red silt common in north wall; also indicative of historic fill atop earlier deposits.
The principal occupation at Qitchauvik Feature 1 is represented by Units 5 to 7. Structural members are correlative with black, sea-mammal-oil-saturated levels. Unit 5a is a pit intrusive into underlying sterile Unit 1. Unit 5b is a complex diamicton of pebbles, silt, charcoal and wood. Unit 6, poor in organics and lacking cultural debris, contained a wide variety of particle sizes, including sand and silt. This discrete wedge may be spoil from prehistoric excavation into adjacent beach facies. Alternatively, it is a storm or ice rafted deposit. Unit 7, a pebbly loam, has a high organic fraction, including sphagnum.

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Figure 12. Stratigraphic Sequence within Feature 1, S1 W1.4.31
[Drafted by Dale Slaughter, Boreal Imagery]

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31 Based on field drawings and observations by excavators Stacie Macintosh and Mary Ann Sweeney, July 1998, re-interpreted by OKM.
and represents a second occupation. Finally, Unit 8 is a 1-2 cm thick bed of sand and pebbles that appears only in the south wall; this is very likely a storm deposit.

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**Stratigraphy of West Wall S3 W2 (bottom to top).**

**Unit 1**  
Light brown medium to very fine sand, fine sand, silt. Poorly sorted.  
Distinct contacts between Units 1 and 2.

**Unit 2**  
Dark brown, clayey silt isolated detrital organic fragments, with little or no sand. Distinct contacts between Units 1 and 2. Associated with the occupation of the qarigi.

**Unit 3**  
Brown silt, largely consists of peaty detritus, loosely packed and horizontally bedded. Small percentage of sand. Unit 3 is drier and has less clay. Wavy, gradational contact between Units 2 and 3.

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**West Wall, S3W2**

Located on the south margin of the feature, this stratigraphic succession reflects the construction of a feature (Units 2 and 3) atop sand that was trapped in a builder’s trench or by the structural wood of Feature 1 (Unit 1). Subsequently, the excavated pit filled with cultural debris associated with the qarigi, but not necessarily with debris dumped in the following period of abandonment. Structural wood underlies this Unit 1; for the most part, timbers were between 10 and 12 cm in diameter. Considering that Unit 1 caps the wall and floor structural members, it was possibly deposited shortly after the occupation, as the overlying strata imply.

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**Architecture of the Qitchauvik Qarigi**

Wooden structural members were exposed on the southwest margin of the feature and were documented *in situ* during the 1999 season. Observations of dimensions and alteration of structural members and of the successive plan views of the superimposed wooden beams were recorded (Figs. 13, 14, 15). Beams were inclined at oblique angles and indicate wall or roof collapse. The testing protocols in 1998 and 1999 established by the Golovin Native community produced a series of “telephone booths.”
As a result, the architectural details are evident in a series of isolated snapshots, not in the extended spatial areas that would confidently allow a full and unequivocal reconstruction. Any future archaeological enterprises should consider these limitations and strive to reveal larger areas.

The details of roof and wall collapse were revealed in S3 W2, with most of the upper roof support timbers evident in Levels 7 to 9, from 60-90 cm below surface and datum. A number of small, less than 5-cm-in-diameter structural members (SM) in Level 8 overlapped one another and at a southwest/northeast diagonal (Fig. 13); these very likely form the residue of a roof, now collapsed. The structural relationships are evident in a plan view of Levels 8 and 9 (Figs. 14, 15). Several uprights remain; for example, SM 8 with a shaped socket and ca. 4 cm wide. Quite significantly, the size of this socket approaches that of a notch in underlying SM 15, which collapsed beneath it. In the lower southeast corner, several round, narrow members (SM 1-5), ea. ca. 6 cm thick, seem to represent roof cover, as do perpendicular-to-other-small-members oriented SW/NE, underlying larger timbers (SM 6 and 7). Oriented horizontal (west to east) into the S3 W2 square, the wide, thick structural members SM 4, 5 and 6 reflect the lower wall collapse at the western margin. Two narrow 6-cm-wide slats (SM 13 and 14) lie diagonally, oriented north to south, and may be part of the roofing or of wall insulation.
Figure 13. A view of the Feature 1 southern margin in July 1999, toward the west of S3 W1, excavated in 1998, and S3 W2, the latter square still unexcavated. SM 15 (marked) extends outward, toward the east.
Figure 14. Oblique view of base of Level 8, S3 W2 and W1 (at right). First observed at the base of Level 4, SM 7 was removed by chain saw; it extended between 50 and 53 cm bs. At its southeast margin, SM 17 is 70 cm bs. The outer rings of SM 17 provided a calibrated $^{14}$C age of A.D. 440-635 (Beta-142948).

Wall construction is evident in a series of collapsed, horizontal structural wood exposed along the south margin of the feature (Fig. 15). The succession of several horizontal beams (SM 4-6), 15-25 cm wide, indicates the formation of walls by overlying large timbers one atop another. The roof was apparently supported by uprights and the cross beam, noted above. The data are sufficient to describe the roof; however, no indication of an entry was observed during excavation, so that it is too early to exclude an arctic entry shed or tunnel.
Figure 15. Plan view of S3 W2 Level 9 (80-90 cm bs). Note the notched timber (SM 15) below several other timbers, the remains of the roof. The mortised upright (SM 8) matches the tendon on the horizontal timbers (cf. Figs. 14, 16). Note the difficulty in comprehending structure from a 1-m square [Drafted by Dale Slaughter, Boreal Imagery].
Structural member 15 (Fig. 14, 15, 16) represents a 2.8 m long, 24 cm wide, roof support beam, notched on one end, presumably for inset into another piece (Fig. 16). This beam revealed five 2.5-4 cm deep notches on three aspects, the braces for accessory structural pieces to support the beam. One (A) 4 cm deep, 12 by 8 cm, was cut on the ventral (lower) surface to support the member as a roof rafter (Fig. 16), while another wider, shallower notch (B) on the opposite surface apparently served as a roof support. On the perpendicular aspect, the beam had three rectangular notches to a depth of 2.5 cm; these are inward from the vertical support notches. The perpendicular notches group in two sets, one set has two small rectangular notches (C, D) that are 36 cm apart, with the deeper, square notch (E) near the tapered inner surface. In plan view, the timber was oriented perpendicular (west to east) to the feature and with its broad notch (B) to the north, with only one-quarter within the unit S4W2. Interpreting these notches, it appears that the SM 15 was supported by a tapered vertical post that fit snugly into notch B—this notch probably represents a small fraction of the size of the tapering support post. The side notches (C, D and E) reflect support posts, presumably set in place at a diagonal. Finally, a horizontal plank was set into notch A on the upper surface of SM 15. One uncertainty concerns the attachment of the entire beam at its tapered end. Apparently the beam was attached to or supported another post and formed only half of the roof support system, considering the 8-10 m width of the entire feature, which bolsters this view.

Level 8 (Fig. 14) revealed the 25 cm wide SM 17, shaped on its upper surface, with a tapering end. However, only 80 cm of the timber was exposed in the excavated square, oriented roughly west to east and parallel to notched SM 15. Based on its relationships to other pieces, SM 17 must represent part of a horizontal support for the upper roof; confirmation remains in the unexcavated part of the structure.
Figure 16. Structural member-beam 15, in Level 9 and 10, S3 W2; two views are presented; and the side is rotated 90° from the bottom. This piece allows the reconstruction of the entire qarigi structure. The side has notches (C, D, E) for three smaller elements to support the roof; and the notch on the base (A) reflects the placement of a supporting upright, with another support in notch B. The orientation of the beam was across the square, west to east, and perpendicular to the long axis of the structure. Compare with the late prehistoric House 7 at Kukulek reproduced below (Fig. 20). The outer rings of SM 15 yielded a calibrated ¹⁴C age of A.D. 410-585 (Beta-142946) [Drafted by Dale Slaughter, Boreal Imagery].
**Architectural Evidence for a Central Hearth**

An elaborate central hearth, bolstered by tightly inlaid adzed timbers, is evident in a series of plan views through subsequent levels in the centrally placed test squares, No W2, S1 W1.4 (Fig. 17). The corners of a hearth were encountered and described in No W2. The hearth comprised a central area of 50 cm² and contained a variety of materials in association. A series of small boards, each 10 cm diameter, served as the walls of the hearth (SM 1 to 5) and enclose an area 15 cm deep. The hearth contained many wood fragments and charcoal within a matrix of black silt mixed with sand (MacIntosh, 1998, Level 3 notes for adjacent S1 W1.4). Several structural members (e.g., SM 3, 4, 10, 11) were adzed to form flat surfaces, while SM 8, at a perpendicular, was at an oblique angle to the hearth. The remaining timbers were minimally processed logs.

In the successively lower levels, square NoW2 revealed a series of inlaid tightly fitting logs and boards, each ca. 12-8 cm wide, oriented west to east across Level 2 (Fig. 18). The boards underlie the hearth and were seemingly employed as temporary upper floor covering for a lower hearth, as implied by the discovery of another set of boards and timbers exposed at the base of Level 4, at 48-50 cm bs.

**Reconstructing the Structure**

The outline of the western limit of the structure can be drawn from the 25 cm wide structural member lying horizontal, oriented to N350° along grid line S3.5 to N3 at W 3.5—about 3.5 m west from the excavation datum (Fig. 9). Unfortunately, no other structural members provide traces of the walls of the feature; this area was heavily impacted by looter activity. This horizontal timber indicates a section of the wall and establishes that at least its lower portion was formed of large timbers.

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32 The adjacent square to the SE, S1 W1.4 had witnessed considerable damage during avocational digging episodes (MacIntosh, 1998, Level 4 notes).

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*An Ipiutak Outlier: A 1,500-Year-Old Qarigi at Qitchauvik* 57
Figure 17. Plan view of excavation square No W2, base of Level 1, revealing part of central hearth (stippled area, lower right) within Feature 1 at Qitchauvik.
Further architectural details became evident during the excavation of the succeeding levels of the hearth in square NoW2 as several small flat slats were seen to overlie larger timbers. Charcoal from this hearth provided a radiocarbon age of $1430 \pm 80$ B.P. (Beta-123460 or A.D. 562-668). The age of outer rings from the walls (SM 15, 17, 19) on the south wall dated to A.D. 418-650. One interpretation is that the prehistoric inhabitants recycled wood from an abandoned older house or selected driftwood that was considerably older than the occupation; an unlikely possibility, considering the rapid weathering in driftwood accumulations in the area (Alix 2004). Nonetheless, both samples overlap within the two sigma range (95% confidence level) and may be contemporaneous (cf. discussion in Chronometric Dates, below).

A hypothetical illustration of the Qitchauvik structure indicates that several central posts supported a slanted lower roof and a flat upper roof. Rafters extended across the entire length of the structure. The walls were composed of upright timbers, placed vertically about the walls. No indication of an entry was noted in the course of excavations.
Comparatively few excavated structures in west or Northwest Alaska in use before A.D. 1000 (cf. Giddings 1952, 1957, 1964, Giddings and Anderson 1986, Young 2002, Lee and Reinhardt 2003) provide sufficient details for architectural reconstruction, rendering it difficult to trace the historical antecedents or the contemporaneous influences and affinities of the Qitchauvik structure. Employing the details discussed above, the Qitchauvik qarigi resembled the design of Type I structure (Giddings and Anderson 1986: 150) at Cape Krusenstern (Fig. 19) or the late prehistoric house (Fig. 20) excavated by Geist and Rainey (1936:63) at Kukulek on St. Lawrence Island. Some resemblances are also evident with the hypothetical reconstruction of the Deering qarigi offered by Larsen (2001: 26), bearing in mind that no evidence of roof construction was uncovered at Deering (Larsen 2001:25) and this reconstruction was based on inferences of Collins (1937:259), who employed a Nunivak house as a prototype.

Figure 19. Reconstruction of an Ipiutak structure at Cape Krusenstern (from Giddings and Anderson 1986: Fig. 38, p. 54). The Qitchauvik qarigi was occupied at the same time as the Krusenstern Ipiutak structures also interpreted as qarigi by Mason (1998).
Figure 20. Reconstruction of “late prehistoric” House 7 at Kukulek, St. Lawrence Island (from Geist and Rainey 1936:63). This undated structure is at least 750 years younger than Qitchauvik, which lacked evidence of an entry.

Chronometric Dates from the Golovnin Bay Sites

To obtain age estimates, ten (n=10) charcoal, wood or shell samples from the 1998-2000 field seasons were assayed for remaining radioactive carbon (\(^{14}C\)): six from Qitchauvik Feature 1, three from Little Rocky Point and one from Kuvrawik (Table I). In total, the samples establish the age of the principal occupation at Qitchauvik and provide several clues about the cultural history of the other localities, multiplying the number of dates from the Golovnin Bay region by several times. In interpreting \(^{14}C\) ages, it is critical to recall that the assays are probability estimates of remnant \(^{14}C\) in organic samples and require calibration to produce calendar ages (cf. Gerlach and Mason 1992).

Radiocarbon samples from Feature 1 at Qitchauvik derive from two excavated test squares separated by three meters (cf., above, pp. 41 ff.) and range in depth from 40-100 cm below the surface. The 1998 samples are from the interior of the structure, from wood used either in hearth/floor construction or as fuel (i.e., one piece is charcoal). The
samples collected in 1999 were from the outer rings of structural members at the southern edge of the structure. Charcoal (from unidentified wood) from the hearth yielded a \(^{14}\)C age of 1430±80 B.P. (Beta-123460) that calibrates within A.D. 562-668, while the outer tree rings of structural timbers (SM 15, 17, 19) were 100 to 200 years older. The oldest \(^{14}\)C age (Beta-142947) was from structural member 19 and indicates that the tree lived between 1,600±40 \(^{14}\)C years B.P. between A.D. 390 and 550. Thus, the younger ages (Beta-123461) from the hearth may yield the most reliable ages for the occupation: A.D. 651-756 (1350±60 B.P.)—at least of its final occupation. Notably, the oldest charcoal sample (Beta-123460) overlaps this age, within a two sigma range, for 20 years in the late 7\(^{th}\) century A.D. (A.D. 650-668).

The six age estimates from Qitchauvik overlap within the two \(\sigma\) (sigma, or probability range, \(p=0.95\) or 95\% confidence level) range between A.D. 400-750. Averaging all the Qitchauvik age estimates, yields a temporal range estimate of 1,519±21 \(^{14}\)C years B.P., with calibration (following the Oxford calibration [Oxcal] programs and Stuiver et al. 1998) placing the occupation after or during A.D. 441-618. This age estimate is probably older than the actual date of the occupation because the averaged age estimate obscures the variability between the ages; notably, the six ages fall as early as A.D. 390 and as recent as A.D. 756. The samples also differ by provenience—the older samples are from the structural members at the south margin of the site; it seems likely that older, larger trees would be preferentially used in construction rather than for fuel. However, using only the three structural wood samples, an averaged age for the end rings falls within A.D. 426-561, or 1560±25 B.P. The age of the wood cannot be directly linked to the occupation in that it is very probable that driftwood, not standing timber, was used in construction. However, the structural wood, even if it is driftwood, may yield a reliable age, considering that as few as one or two years may occur between the erosion of a tree and its transport and deposition on the coast (Oswalt 1951, Häggblom 1982). Minimally, then, the site is younger than A.D. 560; and the younger ages are a more precise age estimate for the occupation. Hence, the occupation of Qitchauvik likely occurred between A.D. 550 and 750; two of the ages indicate an age before A.D. 650.
Table I. Radiocarbon age assays and calibrations from Golovnin Bay sites

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<th>Laboratory Number</th>
<th>$^{14}$C yr B.P. Adjusted</th>
<th>$^{13}$C/$^{12}$C Ratio $\text{‰}$</th>
<th>Cal yr A.D. (2 $\sigma$, $p=0.95$)</th>
<th>Material</th>
<th>Context (Level or elevation below surface)</th>
<th>Site</th>
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<td>360±40</td>
<td>-26.8</td>
<td>1445-1645</td>
<td>Peat (i.e., Detrital Soil Organics)</td>
<td>45 cm bs upper strata of Unit 3</td>
<td>Uiaalik, Little Rocky Pt.</td>
</tr>
<tr>
<td>Conventional</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Beta-142945</td>
<td>740±70</td>
<td>-19.0</td>
<td>1180-1320</td>
<td>Caribou bone collagen</td>
<td>50 cm bs lower stratum, Unit 3</td>
<td>Uiaalik, Little Rocky Point</td>
</tr>
<tr>
<td>AMS</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Beta-142944</td>
<td>1160±50</td>
<td>+1.4</td>
<td>1160-1315</td>
<td>Mussel shell</td>
<td>45 cm bs. upper stratum, Unit 3</td>
<td>Uiaalik, Little Rocky Point</td>
</tr>
<tr>
<td>AMS</td>
<td></td>
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The Chronostratigraphy of Little Rocky Point as a Climatic Proxy

The three samples from the Little Rocky Point site of Uiaalik (SOL-061) derive from a cutbank exposure about 5.5 m above mean water level (Figs. 5d, 21). Three different materials were employed in the dating of this stratigraphic sequence: shell, caribou bone and peat. Sandy (very fine to fine) silt, Unit 1, underlies this cultural horizon and in its upper 5-10 cm is marked by an oxidized reddish brown soil horizon, with a slight enrichment of clay. A thin bed of fine to medium sand was subsequently deposited as Unit 2. Afterward Unit 3, a cultural horizon, included at least four discrete horizontal beds of detrital plant fragments, ca. 4 cm thick, capped by shell and overlain by Unit 4, a fine to medium sand bed about 2 cm thick. Finally, a thick peat formed Unit 5. The age of the primary cultural horizon—Unit 3—represented at Uiaalik is between A.D. 1160 and 1315, an age range replicated by both the corrected shell and caribou bone ages. Peat formation, in Unit 5, followed the occupation by several hundred years and provides only a limiting age for the occupation.

Figure 21. Uiaalik (SOL-61), stratigraphy exposed in the cutbank (see text for the description of depositional Units 1 to 5 marked above).

33Uiaalik is listed as a "small camp" by Koutsky (1981:21, 46), although little else is described.
The Uiaalik stratigraphy serves as a preliminary framework to reconstruct climate along Golovnin Bay. While the timing of silt deposition of Unit 1 is unknown, soil formation in its upper levels co-occurs with or post-dates the cultural occupation; and, thus, indicates warmer and/or higher precipitation during the 13th to 14th centuries A.D. The thin sand layers enclosing the cultural deposit reflect intense easterly winds associated with heightened storms—these occurred ca. A.D. 1150 and also after A.D. 1250. Peat formation following the occupation indicates that less stormy conditions prevailed from A.D. 1445 to 1645 and was probably associated with warmer summer temperatures. A sequence of sandy silt beds inter-bedded with grass beds follows Unit 3 and reflects an intensification of storm winds that carried sand atop the low bluff. The eolian deposits correspond to the Little Ice Age glacial expansion, documented on the Kigluaik Mountains by Calkin et al. (1999). Comparisons with other Seward Peninsula paleoclimatic records show that storminess increased in the Cape Espenberg vicinity following stable surfaces and soil formation dated to A.D. 1400 (Mason and Jordan 1997).

**Within the Structure**

At this juncture, we have placed the Qitchauvik structure in time and space, using \(^{14}\text{C}\) assays to establish its age, delimiting the climate during its occupation and employing wood debris within its boundaries to reconstruct its architectural configuration. The large structure that resembled others in Western Alaska was occupied for only a short interval during a less stormy interval during the middle of the 1st millennium A.D. With these data serving as preface, as context, we are finally able to appreciate and comprehend the artifacts recovered in the structure.
Chapter 6

The Collections from Qitchauvik Feature 1

Owen K. Mason and Mary Ann Sweeney

Analytical Considerations

Materials from Qitchauvik provide the full range of the prehistoric inventory. The relative abundance of well-preserved wood artifacts presented an opportunity for the detailed analyses by Alix (this volume, Chapter 7). By contrast, faunal remains were comparatively rare, consisting only of several hundred mostly unidentifiable elements—a situation that very likely reflects cooking and consumption in households outside the qarigi. Only the 1998 faunal sample was identified by Sweeney; the sample size is too small for any detailed analytical discussion. Numerically, the assemblage was predominantly composed of stone tools, greater than 500 flakes and tools from the entire project. A small but significant number of decorated or stylized tools of bone or wood allow the discernment of a few of the ethnic and aesthetic categories of the middle to late 1st millennium A.D.

Pre-industrial hunting by Inuit peoples required a substantial inventory of implements, most of which were parts of composite tools such as the bow and arrow, atlatl (spear-thrower), nets, scoops, leisters, spears, seal scratchers and so on. Only a small fraction of the likely total inventory was recovered from Qitchauvik.

To facilitate regional comparisons, the classification of the artifacts from the field investigations at Qitchauvik follows the function and form classification used by Giddings (1964) to describe Cape Denbigh material culture and by Bockstoce (1979) for the Safety Sound collections. Artifact description and discussion will follow the following broad categories:

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34 Relative abundance, compared to some Norton Sound sites (i.e., Safety Sound, cf. Bockstoce 1979 or Unalakleet (Lutz 1972); the amount of wood within the Deering qarigi was as great or greater than at Qitchauvik. The amount of wood originally within Qitchauvik before the non-archaeological digging is unknown.
This artifact description includes material culture not only obtained from the excavation squares and surface finds from the 1998-2000 field seasons, but also some artifacts collected before the archaeological investigations. These artifacts from Feature 1 at Qitchauvik were donated to the Golovin Native Corporation and are included in this analysis. Provenience data for each artifact are provided in the Site Catalog in the custody of the Golovin Native Corporation. Surface indicates materials found on the surface of the feature but not in the context of an excavated square. The presence of the artifacts on the surface of Feature 1 is most likely the result of uncontrolled digging before 1998. The designation “previous” also indicate that those artifacts were recovered before the 1998 field season; consequently, their exact provenience in Feature 1 is not known.

**Land Hunting and Sea Hunting**

This category includes any artifact used in the hunting of mammals, birds or fish. Of the 200 artifacts related to land and sea hunting identified, most are prehistoric, i.e., pre-A.D. 1700; and only two are historic and from the late 20th century. Most hunting artifacts can be attributed to bird or large land and sea mammal hunting, reflecting the throwing board, the bow-and-arrow or the spear.

Bone points served as the “business” ends of projectile or spear delivery systems employed in hunting birds, terrestrial animals and probably humans. Several bi-pointed or blunt bone points at Qitchauvik are broadly similar to a number of pieces from Ipiutak illustrated by Larsen and Rainey (1948); e.g., [98-296e (Plate I b); 98-296b (Pl. II e);
98-296 c (Pl. II d); 99-40, Pl. II f); a cleft blunt bird point (99-135, Pl. II c) or a possible bi-point modified into an awl (98-114, Pl. I c).

Wood bow [98-150; 98-282 (Fig. 25)] or arrow shaft fragments [99-38 (Pl. XV a); 98-297] were recovered from Feature 1 before the project, another (98-150) was a possible child’s bow fragment (Pl. XV d). A number of other shaft fragments were also recovered; as discussed by Alix (this volume, Chapter 7).

Two historic hunting artifacts were found in the upper stratigraphic levels of the site: (a) a .22 rim fire cartridge case from S3 W1 Level 2 and (b) a fired 12-gauge shotgun shell from S1 W1.4, Level 2. Golovin residents confirm that these two artifacts are related to the feature’s use in the early 1990s as a hunting blind, a circumstance that led to the site’s discovery.

**Fishing Equipment**

Considering the modern fish camp several hundred meters west of the qarigi, near the river mouth, the rarity of fishing equipment in Feature 1 would seem notable; only three pieces are identifiable as fishing implements. Further, notched pebbles, commonly used as net sinkers by Norton peoples, are absent—were nets employed at Qitchauvik? One distinctive fishing tool was recovered: a linear decorated leister or salmon spear barb (98-300, Pl. IV b), part of a composite tool similar to pieces on St. Lawrence Island (Collins 1937: Pl. 75 m, Rainey 1941: Fig. 15), Point Hope (Larsen and Rainey 1948: Pl. 42 21-24) and from the Intermediate Kotzebue phase on the Kobuk River, a piece distinguished by multiple, possibly decorative, holes (Giddings 1952: Pl. XXXVI 10). The Qitchauvik piece more closely resembles the St. Lawrence Island and Ipiutak pieces. Possibly significantly, barbed pieces from the Cape Denbigh sites are different from the Qitchauvik artifact (Giddings 1964: Pl. 9).

**Worked Ivory Crescent: Fishing Hook?**

Two flat, dual pronged objects [99-87 (Plate IV a); 98-290 (Pl. IV c)] are apparently fish hooks with few or no parallels in the region—although traditional tomcod hooks from Point Hope were similar (Foote 1992:61). The two pieces (3 mm thick and 3.85 cm long) apparently carved in weathered bone or ivory, consist of an edge planed shaft that broadens to a dual barbed crescent in the distal aspect. The shaft tapers inward.
from a proximal square surface (7 mm width), marked by a circular hole. One of the dual barbed "fish hooks" was recovered by avocational collectors before the 1998 season (98-290) while the other (99-87) was obtained from screened material from Level 10 within S3 W2. The two bone objects do not easily fit into any reported tool or artifact inventories from published collections in Bering Strait. Intuition, based on the hole attachment, suggests two possible uses: (a) as a personal adornment, either as a pendant or part of a composite labret (Nelson 1899: Pl. XXII 1899: Pl. XXII 1899: Pl. XXII 1899: Pl. XXII), or (b) as a fish hook, similar to a piece collected by Nelson (1899: Pl. LXIX 4). One "self-barbed" fishing hook at Wales dates to the late prehistoric period (Morrison 1991:54, Fig. 8.). The Qitchauvik piece very broadly resembles a St. Michael needle case holder collected by Nelson (1899:110; Pl. XLIV 2). A similar artifact from the lower component, dated to the 10th or 11th centuries A.D., in Uivvaq near Cape Lisburne was termed a tomcod hook by Mason (2003:127).

Bird Hunting

The bird hunting inventory includes one bi-pointed, bone point and several blunt bone points. This symmetrical bi-point (99-86, Pl. I g), 8 cm long, is ungrooved and lacks a central hole, tapers at both ends, but resembles an unfinished gull hook, used as gorges to trap birds, as described by Larsen and Rainey (1948:78; Pl 42 12, Pl. 3 8-a). A linear decoration on one side also resembles Ipiutak forms. This piece differs considerably from a gull hook from the Pigniq site [known as Birnirk] (Ford 1959:Fig.72). A cleft, blunted bone point, from the western margin of the feature, in square S1 W4.5, was probably used as a bird blunt (98-135, Pl. II a).

Blunt Bone Points

**GOL-99-204** (Pl. I a)

- **L** 6.4 cm; **Thickness** 0.88 cm
- **S3 W2, Level 4** [S2.15 W1.33, 39 cm bs]

Asymmetrical, tapers at longer end, blunted at both ends. Circular in cross section, with considerable root etching. Undecorated. Similar to bone pieces labeled awl-like, but considered bird points (Larsen and Rainey 1948:Pl. 28 12) and also similar to House 40 at Cape Krusenstern (Giddings and Anderson 1986: Pl. 81a). The piece exhibits a general similarity to Kukulek pieces from House 3, which is younger (Geist
and Rainey 1936:Pl. 55 12, Pl. 52 10-11). By contrast, it is considerably different from bird points at the earliest Kobuk River occupation at Ahteut (Giddings 1952:Pl. 27 10-12) and from Nukleet at Cape Denbigh (Giddings 1964:Pl. 5 2-6).

**GOL-98-135 (Pl. IIa)**

No W2, 50 cm bd
6.36 cm L 1.25 cm W; 1.05 cm T

Antler. Tapered from a bifurcated distal end. One line on one surface only, not on the porous aspect. Oval in cross section. The distal end is crescentic, with a groove in center that links with a single decorative line. The piece resembles a pointed blunt arrowhead at Deering (Larsen 2001:Pl. 112), but differs from Nukleet blunt arrowheads (Giddings 1964:Pl. 5 2-6) that resemble Phillips head screw drivers.

**GOL-98-296a (Pl. II b)**

Antler. Asymmetrical Bi-point. Blunted end distal. Oval in cross section, the piece has three 1 mm thick, very precise lines that extend 2.75 cm from the proximal end. The three lines are spaced apart 0.5 cm on the smooth aspect of the antler; lines lacking from the porous half of the piece. Its proximal end is cut at a diagonal, apparently for hafting, that crosscuts the lines. This piece resembles symmetrical Type 8 arrowheads, at the Ipiutak site, that are “subquadriangular” in cross section (Larsen and Rainey 1948:Pl. 118), but differ from arrowheads at Cape Denbigh (Giddings 1964:Pl. 5 2-6). An apparently closer resemblance can be observed with Ipiutak lance heads (Larsen and Rainey 1948:Pl. 40 11).

**Bone Point (Fig. 22; Plate II f)**

**GOL 99-40**

S3 W2 NE/4 Level 7 (60-70 cm bd)
11.88 cm (L), dia. 0.81 cm

A long, tapering bone point circular in cross section, lacking end or side blade attachments, and slashing slots. Its base has a diagonal cut for hafting. The piece is decorated with three lines on ventral surfaces; two on the upper, dorsal, surface. Lines radiate from the base and dissipate toward the point. While broadly similar to Ipiutak arrowhead bone points (Larsen and Rainey 1948:Pl. 112); which are slotted for side blades, the piece has a cleft for hafting into a foreshaft. The piece differs in number of
lines used; four are typical in Ipiutak (Larsen and Rainey 1948:137); it is possibly a preform.

**Figure 22.** Bone Point, with linear motifs (99-40); alternate views: top and side, as well as details of base (insets at left and right).
Cultural Affinities of the Bone Points

Despite morphological similarities, this class includes two functional categories, distinguished by size and symmetricality: Bi-pointed bone points [GOL 98-296a-e: Pl. II b, e, d, Pl. I d, b); (99-40, Pl. II f) and a Gull Hook (99-86, Pl. I g). All three lance heads have inscribed linear grooves, either three or five spaced at regular intervals. The longest piece, with three grooves, is flat on one side and curved on the other side, pointed to a tip at one aspect, with its proximal end sheared to facilitate hafting. The three grooves are on the smooth aspects. Other pieces are blunt at the ends, or blunted on only one aspect. Possibly, one or more of these pieces served as a bird point. The lines are the most distinctive characteristic of the bone points: linear motifs are diagnostic of Ipiutak, its “trademark,” according to Larsen and Rainey (1948:137-138).

The two [98-296a (Pl. II d), 98-296c (Pl. II c)] Qitchauvik bi-points, decorated with several lines, are slightly asymmetrical, a characteristic of ice picks at the Ipiutak assemblage at Point Hope (Larsen and Rainey 1948:Pl. 39 a, b). However, Ipiutak ice picks typically lack linear decoration. An alternative function is suggested by the morphological similarity with Type 2 lance heads at the Ipiutak site (Larsen and Rainey 1948:Pl. 40 a). Unfortunately, the Qitchauvik points lack grooves for side blades or the small hole at the proximal end; perhaps the Qitchauvik pieces are unfinished. The Qitchauvik pieces may be harpoon foreshafts, an artifact that does have linear decoration (Larsen and Rainey 1948:Pl.39 a). The two Qitchauvik bi-points also resemble Type 8 arrowheads recovered in Ipiutak houses by Larsen and Rainey (1948:Pl. 1 17-19) while another linear decorated bi-point is similar but has a slight notch at the hafting end (99-40) [Fig. 22, Pl. II f].

Other Hunting Implements

Several implements indicate the taking of seals, specifically a seal dart and a float plug for an inflated bag attached to a line used to tire seals during open water conditions. The float plug (GOL-99-49; Pl. V b) was recovered in S3 W2, level 8. The piece resembles float plugs from Birnirk (Ford 1959:Fig.39b) and Walakpa (Stanford 1976:Pl. 47 a), but differs from an Old Bering Sea piece from Sivuqaq (Collins 1937:130, Pl. 32 a) and from Nukleet (Giddings 1964:Pl. 8 a). Another wooden object (GOL-99-90) is a possibly a wound plug used to staunch the bleeding of wounded seals.
Although it lacks a hole, GOL 00-07 (Pl. V a) resembles a North Slope bola weight (Ford’s class A), reworked from other ivory tools, recovered only from Utqiagvik (cf. Ford 1959: 138, Fig. 66a); although Stanford (1976:38) claims that similar pieces occur at Walakpa, his illustrated pieces are not convincing (Stanford 1976:Pls. 9f, k, 37). The Qitchauvik piece differs slightly from a Nukleet bola (Giddings 1964:Pl. 5 18, 19). In morphology, there are resemblances to bolas from the Punuk levels in Sivuqaq sites (Collins 1937:227-228; Pl. 76 18). The presence of a bola weight in the Qitchauvik collection either may be intrusive (redeposited from above) or a landmark discovery, considering the proposition of Collins (1937:227) that the bola was a Punuk innovation. Most data suggest that Qitchauvik may have preceded Punuk by up to several hundred years, but two solid carbon 14C ages from Ayveghyaaq (near Gambell) suggest that an earlier age for Punuk on St. Lawrence Island may be possible (Blumer 2002).

**Barbed Bone Point** (Fig. 23, Pl. III)

GOL 99-70  
12.8 cm (L) 0.625 (W)  
S3 W2, NW/4 90 cm bs Level 10

Twin barbed, tapering tang basal end, decorated with four lines, equally spaced. Round in cross section. The piece parallels an Ipiutak arrowhead from Burial 96 at Point Hope (Larsen and Rainey 1948:Pl. 33 19), especially in the characteristic linear decorative element. Very noteworthy perhaps, it differs from household inventories (Larsen and Rainey 1948: Pl. 1), although a single Ipiutak arrowhead type did include multiple barbs and a tapering tang. Perhaps it may be more important that a single barbed type, with a tapering tang is also most common in Sivuqaq collections termed Punuk by Collins (1937:221-222; Pl. 74 18). However, the arrowhead differs from barbed forms reported by Giddings (1964:Pl. 1) at Nukleet. Again, the antiquity of Punuk on St. Lawrence Island may be as old as Qitchauvik; however, current data are imprecise (Blumer 2002, Staley and Mason 2004).
Figure 23. Barbed Bone Point (99-70) with linear motif and twin barbs. Drawn to 1:1 scale.

**Bone Bi-Point** (Pl. V c)
GOL99-158
7.38 cm (L), 0.76 cm (T), 1.0 (max W)
No W2, SE quad, Level 4, 35 cm bs.

A pointed tip is formed by four flat aspects tapering to the point, two to a side and consists of a flattened tip and a rounded base (3.24 cm L). The basal margin is blunted,
while the flattened tip is pointed. The piece resembles the stone imitations of bronze blades in Uelen that are inferred to reflect direct familiarity with halberds from China, Korea or Japan (Arutiunov and Sergey 1964:331) but the piece has few parallels in Northwest Alaska.

**Seal Dart Point** (Fig. 24 (below) and Pl. VI)

GOL 99-25
S3 W2, SW1/4, L 9, 81 cm bd, S2.81, E22 E1.78

The point is close-socketed (center, Fig. 24), with a single rectangular shaped line hole (at right in Fig. 24). A slot for side blade insertion, on its dorsal aspect (Fig. 24, left), measures 1.75 cm long and 0.2 cm wide. The point tapers to a conical unbladed tip (*i.e.*, self-bladed); and its base has two bifurcated spurs and is marked by a triangular design between the spurs. No lashing holes. The dart point resembles Type 2 close-socket harpoon heads from burials 73, 74 and 108 at Ipiutak (Larsen and Rainey 1948:Pl. 37-8) and is broadly similar to Type 3 from Houses 34, 46 and 59 (Larsen and Rainey 1948:Pl. 5 1, 2, 3). Type 2 at Ipiutak has a circular line hole and a linear decoration (Pl. 37 4). A similar piece occurs from the deepest levels (2.2 m bs) in Kirigitavik, illustrated by Dumond (2000:152), but termed Birnirk by Collins (2000:28). The piece has no parallels at Nukleet or Iyatayet.

![Figure 24. Seal dart point (99-25) from S3 W2, 81 cm bd. Three views: top, base, side. Scale: 1:1.](image-url)
Intrasite Spatial Distribution of Hunting Implements and Fauna

Most of the bone points were located within the interstices of the walls of the feature, within S3 W2 and S3 W1, possibly stored in the walls by the qarigi inhabitants. Several stone end blades were recovered in the center of the feature (NoW2, etc.); and nearly half of the bifaces, including most of the end blades, recovered in 2000, were from two squares at the southern margin of the feature: S3 W1 and S2 W1. In addition, a handful of bifaces were recovered from the south margin, within S3 W2. Unifacial flakes were recovered throughout all the five squares excavated in 1998.

The distribution of stone tools suggests that discrete activities were conducted in different parts of the feature, possibly the residue of specialized activities. However, the south wall of the structure may have served as a cache, as part of a storage compartment. In addition to several end blades, discrete flake concentrations occurred in levels 7 to 9 of S3W1, in association with fur, grass and animal bone. The limited nature of testing at the site and the imprecise provenience data—limited mostly to quad and level identifications—precludes any sophisticated spatial analyses. Future explorations of other qarigi in Northwest Alaska or on the Seward Peninsula area should be conducted more rigorously to maximize spatial data recovery and test the hypothesis of gender-related activity area usage.

Organic artifacts, including fur, were most prevalent in the center of the feature and were recovered in 1998. This provenience may not preserve the original context, due to looter disruption of the overlying strata. Similarly, most of the fauna in 1998 was recovered in the central part of the feature, adjacent or near the hearth in S1W1.4 or in NoW3.5, 2 m to the west. Only a handful of faunal elements were found in other units. Faunal debris may represent either in situ culinary processing or post-occupational disposal, employing the feature as a trash dump. Apparently, faunal elements were a comparatively rare part of the fill in the qarigi, a circumstance that supports its use as a community structure. Disposal of faunal remains may have occurred outside of the structure, possibly in the adjacent, formerly active river channel.
Lithic Technological Attributes

Lithic (stone) tools, in a non-metallic technology, served as the principal cutting, drilling and cutting instruments for the residents of Qitchauvik; these were often placed into wood handles (Alix, *this volume*, Chapter 7, pp. 110 ff.). Archaeologists have developed a specialized lithic terminology to analyze manufacture procedures (Andrefsky 1998); these characteristics are crucial in the cataloging technique employed in this project and are important for comparisons to other archaeological assemblages. The following terms are important in the discussion: platform remnant-bearing flake, shatter, unifacial retouch, bifacial retouch, uniface and biface. In order to secure a better application of force, the flint knapper places the striking tool on a “platform.” Thus, a platform remnant-bearing flake (PRB) is any flake with a platform remnant and the presence of a bulb of percussion—a feature produced after the impact of a hammer. Shatter is any lithic that does not have a platform and a bulb of force on the ventral surface. A unifacially retouched flake is a PRB or other flake with retouch (small patterned chipping) on one side of the artifact on the margin edge. Unifacially retouched shatter is shatter with retouch on one side, on the edge of the artifact. A bifacially retouched flake is a PRB flake with retouch on both sides of a margin edge. A uniface is a complete artifact with flake scars covering the entire surface of one side. Usually, a uniface has a triangular, or a dome-like, cross section. A uniface differs from an unifacially retouched PRB because the flake scars on a uniface are more encompassing, covering one whole side of the tool. A biface is a complete artifact with flake scars completely covering the entire surface of both sides of the object. Bifaces typically have a double concave lens-like cross-section. Lastly, all lithic artifacts were categorized by standardized size classes and material type.

More lithic material was recovered from Qitchauvik in 1999 (n=253) than in 1998 (n=149) or 2000 (n=103). For all three years, “finished” or formal tools (n=28) comprised only 5.5% of the collection (n=505) and expedient, margin-retouched objects (n=24) represent another 5.2%. Unused manufacture debitage formed the predominant category of stone objects recovered (n=369), 89.3%, an indication that at least occasional tool fabrication was conducted within the precincts of the qarigi.
Stone Tools Associated with Hunting

Projectile point fragments were one of the most frequent tools recovered from Qitchauvik (Plates VII, VIII, X); most probably shattered during hunting and were part of an arrow or harpoon that was mended or repaired in the qarigi. Small, bifacially worked triangular tipped pieces, these were part of a weapons system; either associated with the spear-thrower (atlatl) or the bow and arrow. The end blades reflect a diverse group of manufacture procedures. Several end blades record a series of delicate marginal pressure retouch (micro-flake detachment) on a larger flake to produce a serviceable point form.

End blades and end blade fragments comprise the largest category of stone tools located in 1999 (n=7) and 2000 (n=9). Only a few were intact, but these allow cross comparisons with a number of sites across Northwest Alaska, with considerable similarity to the Iyatayet Norton assemblage (Giddings 1964:161-164). One end blade (GOL 99-20a, Pl. VII b) bears a fracture transverse to its axis; only a portion of an original flake surface remains, with a straight-sided margin. This piece resembles one from Iyatayet (Giddings 1964:Pl.49,). An asymmetrical tip of a biface (99-013, Pl. X f) has comparatively broad flake removals on its dorsal surface, with an original flake surface preserved on ventral aspect. Only one margin of ventral side is retouched, but it is not clear if this piece was an end blade or a side blade. A long, thin, oval shaped biface (99-41, Pl. VIII a) resembles one from Iyatayet (Giddings (1964:Pl. 50,). A gray chert end blade (GOL 99-105, Pl. VII a), 2 cm long, is symmetrical, triangular, straight based and convex in cross section. The end blade was shaped by narrow diagonal flake removals and delicate marginal retouch. The end blade bears some resemblance to the finer manufactured points within Ipiutak burials (Larsen and Rainey 1948:Pl. 35 ,). None of the illustrated pieces from Iyatayet are as finely worked, although superficial similarities do occur (Giddings 1964:Pl. 47 ,). Several end blades, located within levels 4 to 9 in the southern portion of the feature (S3 W1 and S2 W1), have straight bases that resemble Ipiutak end blades (Larsen and Rainey 1948: Pl. 2 ,). Two end blades [(00-01, Pl. X d) and 00-11a (Pl. X a)], also with straight bases, are similar to pieces at Onion Portage (Anderson 1988: Fig. 115a).

GOL 00-10 (Pl. VII d) is an exceptionally symmetrical triangular arrow point, formed by the marginal retouch of a thin flake of fine-grained chert. One aspect is only marginally retouched by very fine pressure flake removal (none wider than 2 mm), while

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the concave (dorsal) aspect has broader flake removals along one longer margin. Some formal and technological parallels to this piece are found at Iyatayet (Giddings 1964 Pl. 47:33, 35); however, the Qitchauvik end blade is considerably more finely flaked than the Iyatayet pieces. Another marginally retouched flake classed as an end blade (GOL 00-30a, Pl. VII e) also resembles Iyatayet pieces.

**Other Bifaces**

Large bifaces from Qitchauvik, greater than 3 cm long, are in a diverse number of forms and probably were employed for a variety of functions. One leaf shaped, nearly asymmetrical piece (99-41, Pl. VIIIa), shows retouch along its ventral margin [measures 3.95 by 2.23 cm; from 55 cm bd, S3 W2, L 7]. This piece is either a scraper or spear point, bearing some resemblance to projectile points at Iyatayet (Giddings 1964:Pl. 50:3, 4). One pressure-flaked long and narrow chalcedony biface [(99-304, Pl. IX e), 7 cm long, 1 cm wide] was likely a knife or saw, functionally equivalent to a flake knife.

Side blades are comparatively rare, but several symmetrical pieces may be classified as such. A convex (in plan) gray chert piece (Gol 99-187, Pl. VIII f) reflects a flake that was subjected to shallow pressure flaking on its ventral aspect, with finer retouch on its margin. The function of this piece is unclear; it seems more likely it was used as a scraper, inset into a handle. It resembles knife side blades from Ipiutak Cape Krusenstern House 37 (Giddings and Anderson 1986:Pl. 77:4, 5) that was possibly contemporaneous with Qitchauvik.

Several bifaces were collected before the 1998 field season, including some of the most expertly knapped specimens from Qitchauvik Feature 1: the long, chalcedony biface described above (GOL-98-304, Pl. IX e); as well as a 5 cm long, roughly shaped (i.e., large flake scars), blunted triangular black chert biface (98-303, Pl. IX f) of uncertain function (spear point?); and an apparently unfinished gray chert biface (GOL-98-305, Pl. VIII e) that also resembles a projectile or spear point. One gray chert biface fragment was recovered in situ, within S1 W 4.5 (GOL-98-0125, Pl. VIII c). Broken biface fragments were probably discarded during the mending and repair of bone arrow points.

*An Ipiutak Outlier: A 1,500-Year-Old Qarigi at Qitchauvik*
Unifacial Tools

Unifacially or marginally worked flakes comprise a sizable number of the formal stone tools from Qitchauvik. One uniface fragment made from basalt was found in S3 W1. Seventeen unifacially retouched flakes were identified. A unifacially retouched flake, from S3 W2, Level 8 at 78 cm bd, was retouched on two edges and was likely employed as a scraping tool (GOL-98-60, Pl. VIII g). Six other pieces collected in 1998 were unifacially retouched shatter fragments, divided evenly into size classes 3 and 4. Eleven of the unifacially retouched lithics are PRBs. The size classes of the unifacially retouched PRBs range from three in size class 2, seven in size class 3 and one in size class 4. Unifacially retouched black chert flakes were found in S1 W1.4 and S4 W2, outside the feature. The unifacially retouched shatter and PRBs are made from a variety of material types, including gray and black chert, chalcedony and jasper.

Four bifacially retouched PRBs were recovered from Feature 1. All four were collected before the 1998 field investigations. The size category breakdown for the bifacially retouched PRBs is as follows: one in size class 1, one in size class 2 and two in the size class 3. Two are made from gray chert and two from black chert.

While it represents the predominant technique employed, the flaking of stone was not the only method of stone working in evidence at Feature 1. Four ground slate pieces were recovered, apparently, though, not in association with Feature 1. In 1998, two ground pieces were recovered outside the feature: one was ground on one edge, a gray chert flake from within S6 W1 and a basalt flake from S6 W6. In 1999, two ground slate pieces were located in S1 W4.5; one in the profile and one in level 2. The stratigraphic relationships of all the slate pieces are uncertain, but in the case of the 1999 collection, one piece of slate was above the house floor and the other was outside the feature. Too few contextual data are available to state categorically that slate was not part of the cultural repertoire of residents of Feature 1 at Qitchauvik.

Lithic Debitage

The technological format followed by Qitchauvik inhabitants relied on the bifacial reduction of small-to-medium-sized cobbles, producing a variety of apparently non-useful flake waste. A bifacial product is the end result of pressure flaking; the finished tools are described in the following section. The sequence of manufacture can be
reconstructed by examining the size classes represented, observing the presence of weathered surface of the original rock surface and noting the surface alterations on rock fragments produced by flint-knapping (Andrefsky 1998). A platform remnant-bearing flake (PRB) is any flake with a platform remnant and a bulb of percussion present. Shatter describes any stone fragment that lacks a platform and/or a bulb of force on its ventral surface.

A single shovel test (50 cm$^2$) into the upper levels of S1 W4.5 in 1999 produced the highest concentration of debitage, 62 flakes; roughly 17% of the total recovered within Feature 1 from 1998-2000. This density of flakes suggests that only a few episodes of reduction were represented. Most flakes were between 1 and 2 cm wide; the majority had a bulb of percussion that reveals the application of force to the material. In terms of material type, most are either basalt (17 of 62) or chert of various colors (26 of 62). The association of these materials with the principal occupation of the feature is uncertain. Several inferences about context are: the materials may derive from the exterior of the feature; may have been stratigraphically higher than the Feature 1 qarigi, or may have been deposited in a “builder’s trench” at the margin of the feature during its construction.

The presence of a bulb of percussion on the dorsal aspect of flakes indicates the substantial application of force during direct percussion; probably with a hard hammer (cf. Andrefsky 1998), a procedure typical in several stages of biface reduction or production. Nearly half (43.5%) of the 1999 and 2000 collections contained bulbs of percussion (n=155). Several waste flakes resemble the products of a blade production sequence, for example, a red chert proximal blade fragment (GOL 99-121); while a handful (<5) of parallel-sided blades approach the micro-blade size range.

Lithics recovered from the structure reflect a variety of material types (Table II). The majority are gray chert, with limited occurrences of black, red, brown and white chert, as well as a small amount of chalcedony, basalt, slate and obsidian. Future researchers might employ geochemical petrographic fingerprinting to identify the rock outcrops, an attempt that might enable the reconstruction of trade and exchange across Western Alaska (cf. Malyk-Selivanova et al. 1998a, 1998b).

Analysis of the debitage was limited to technological observations, distinguishing features that indicate manufacture or retouch, either due to use or pressure retouch. A series of outline comparison grids were used to quantify size. The size categories used in
analysis varied slightly between the 1998 and 1999-2000 collections; nonetheless, the results show a common pattern.

Table II. Lithic material types from Qitchauvik Feature 1 (1998-1999, n=358)

<table>
<thead>
<tr>
<th>Material</th>
<th>Count</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Chert</td>
<td>74</td>
<td>20.7%</td>
</tr>
<tr>
<td>Gray Chert</td>
<td>148</td>
<td>41.3%</td>
</tr>
<tr>
<td>Brown Chert</td>
<td>15</td>
<td>4.2%</td>
</tr>
<tr>
<td>Red Chert</td>
<td>6</td>
<td>1.7%</td>
</tr>
<tr>
<td>White Chert</td>
<td>2</td>
<td>0.006%</td>
</tr>
<tr>
<td>Chaledony</td>
<td>29</td>
<td>8.1%</td>
</tr>
<tr>
<td>Basalt</td>
<td>44</td>
<td>12.3%</td>
</tr>
<tr>
<td>Slate</td>
<td>12</td>
<td>3.4%</td>
</tr>
<tr>
<td>Obsidian</td>
<td>2</td>
<td>0.006%</td>
</tr>
<tr>
<td>Siltstone</td>
<td>18</td>
<td>5.0%</td>
</tr>
<tr>
<td>Quartzite</td>
<td>6</td>
<td>1.7%</td>
</tr>
<tr>
<td>Schist</td>
<td>2</td>
<td>0.006%</td>
</tr>
<tr>
<td>Total</td>
<td>358</td>
<td>(not equal to 100 % due to rounding)</td>
</tr>
</tbody>
</table>

The weathered outer surfaces or "cortex" indicate the state of the rocks selected for manufacture. For example, the presence of the cortex of the cobble indicates its use in the initial stages of biface reduction. For the most part, flakes with cortex at Qitchauvik are comparatively small, which implies that cores were small cobbles or that the initial processing of larger cores occurred off-site. Most of the weathered surfaces at Qitchauvik likely derive from small cobbles. A small, but significant, percentage of flakes (6.4%, n=23) had one or more weathered surfaces. Most fragments were too small to determine whether alluvial cobbles or rock outcrops used as quarries were the source of the rock.

Many flakes (n= 82) are PRB flakes that lacked retouch. All lithic size classes are represented (Table III), while the majority of PRBs are size class 2 (n=32) and size class 1 (n=29). Only three PRBs are larger than size class 3. Nineteen shatter fragments are identified. Three size classes of shatter were found: size class 3 (n=3), size class 4 (n=9) and size class 5 (n=7). For both the PRBs and the shatter the most common size class is 4, followed by the smallest, size class 5.
Table III. Qitchauvik lithic debitage size

<table>
<thead>
<tr>
<th>Size Class</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 &lt; 1 cm</td>
<td>29</td>
<td>35.4</td>
</tr>
<tr>
<td>2 &gt;1 cm but &lt;2 cm</td>
<td>32</td>
<td>39</td>
</tr>
<tr>
<td>3 &gt;2 cm, &lt;3.5 cm</td>
<td>18</td>
<td>22</td>
</tr>
<tr>
<td>4 &lt;4.2 cm, &gt;3.5</td>
<td>2</td>
<td>2.4</td>
</tr>
<tr>
<td>5 &gt;4 cm</td>
<td>1</td>
<td>1.2</td>
</tr>
</tbody>
</table>

1999 and 2000 Field Seasons (n=362)

<table>
<thead>
<tr>
<th>Size Class</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 &lt; 1 cm</td>
<td>45</td>
<td>12.4</td>
</tr>
<tr>
<td>2 &gt;1 cm but &lt;2 cm</td>
<td>122</td>
<td>33.7</td>
</tr>
<tr>
<td>3 &gt;2 cm, but &lt;2.5 cm</td>
<td>120</td>
<td>33.2</td>
</tr>
<tr>
<td>4 &gt;2.5 cm dia.</td>
<td>41</td>
<td>11.3</td>
</tr>
<tr>
<td>5 &gt;2.5 cm dia</td>
<td>34</td>
<td>9.4</td>
</tr>
</tbody>
</table>

Very few flakes were larger than 2.5 cm; most flakes were between 1 and 2.5 cm long. The frequency distribution for flake debitage approaches a probabilistic normal distribution. Such regularity suggests that manufacture activities at Qitchauvik were comparatively consistent in intention. Sample size may account for the most of the variability in the collections from 1998, 1999 and 2000. However, the highest number of small fragments was recovered in 1998, the first year of the field school, as compared to the subsequent two years, possibly related to more enthusiastic screening by the students. Based on the debitage size classes, resharpening was the major activity undertaken in the qarigi; comparatively few large cobbles or cores apparently were processed in the excavated portion of the feature. Flakes with retouch on one or two margins record the expedient use of a sharp fragment for cutting.

Several lessons are apparent from the lithic tools at Qitchauvik. The manufacture of weapons-related implements was most prevalent—a finding consistent with the

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stereotypical, ethnographic reconstruction of the men's house (Nelson 1899, Larsen 1995). Expedient tools (flakes and scrapers) also indicate the manipulation of wood and organic materials. The diversity of the tool assemblage indicates that a wide range of other activities occurred in the qarigi. The range of lithic materials suggests a wide catchment for lithic procurement and extensive social ties or travels.

**Food Preparation and Household**

Four types of artifacts are present in this category: grass matting, bound fiber, oil lamps and hooks. Clinker, consisting of burned organics and sediment, comprises the largest category and is discussed below. One fragment of grass matting was found at Feature 1 before the 1998 investigations. The stitching is still discernible in the fragment (GOL-98-308, Pl. XI). Bound fiber, grass fiber tied into a knot, was recovered in S1W1.4. One large antler hook, probably a meat hook, was found in the interior of the feature (GOL-98-115, Pl. XXIII a).

Two oil lamps were found either in or adjacent to Feature 1 GOL-98-309 (Pl. XII a); 98-215 (Pl. XII b). A fragment of an oval stone lamp (98-309) derived from the interior of the depression from N1 W3.5 (117 cm bd, No.2, E 2.72). Provenience data are lacking for the second lamp (98-215), collected at Feature 1, before the 1998 field season. The fragmentary lamp (98-309) is similar to the Norton lamps at Iyatayet (Giddings 1964:Pl. 58 , ) and is an object that represents a considerable departure from the Ipiutak repertoire [on its absence within Ipiutak, cf. Larsen and Rainey (1948:110-111)]. The Qitchauvik lamps have less well-defined rims and are more oval than larger lamps at Iyatayet. However, very different lamps also occurred in the Norton occupations at Safety Sound, with metamorphic cobbles pebbles modified as oil receptacles (Bockstoce 1979:52, Pl. IV, ). Such idiosyncratic differences are expected in view of the considerable significance that lamps had in defining domestic life, as recorded in 19th century ethnography (Lucier and Van Stone 1991).

A number of baked (thermally altered) clay fragments (n=44) were termed pottery by M. Sweeney in a preliminary report. These fragments were recovered only in the 1998 field season from the upper levels in two squares, S1 W1.4 and No W3.5, of Feature 1. Based on examinations by and discussions with other archaeologists, it seems very doubtful that these fragments are ceramics; pending further analyses, these are considered clinker. Nonetheless, the clay materials cannot be clearly associated with the
principal occupation at the site; e.g., the fragments did not occur below Level 3. Sweeney observed that the clay had a fabric of either sand or sand and vegetal material. Clay fragments varied in surface color and paste color; most had gray surfaces with dark “paste” (25/44 or 57%).

Organic Tools

More than 150 organic (bone, wood or fiber) tools were identified from Feature 1 at Qitchauvik. Two bone awls derive from the interior of the feature in S1 W4.5, while another was found on the surface of the feature near S3 W1 [98-114 (Pl. I c); GOL 98-243 (Pl. I f)]. Wood was employed for a variety of objects (Alix, this volume, Chapter 7). Two wooden knife handles with one side slot for a blade were found at Feature 1 before the 1998 field season (GOL 98-279, 98-285, Plate XVI a). One critical artifact identified was float plug (99-49, Pl. V b) as well as a probable float plug (98-393, Pl. XVI b). Four wooden pegs [(99-90b), Pl. XIII f], varying between 3.5 and 13 cm long, were found in the interior of the feature, one from S1 W1.4 and three from No W4.5. An undecorated wooden “paddle” was retrieved behind collapsed structural beams in the southern corner of the feature (GOL-98-137, Fig. 37; cf. Alix, this volume, Chapter 7, pp. 113-114). The paddle is 49.5 cm long with a blade that measures 10.4 cm wide and is 0.7 cm thick. While paddles are rarely preserved in most sites, the Qitchauvik paddle resembles kayak paddles collected by Nelson (1899:225). An antler wedge was found at Feature 1 before the 1998 field season.

Miscellaneous Artifacts

Artifacts were placed into the miscellaneous category based on two criteria: (1) functionally identifiable artifacts that do not conveniently fit into the rest of the classification system (e.g., cigarette filters); and (2) non-detritus items that are either functionally unknown (e.g., a “swivel”) or else are too fragmentary to be identified (shaped wood).

36 The piece was termed a pottery paddle by S.C. Gerlach (1998, catalog notes, but considered a skin stretcher by Golovin residents during the open house. Both Alix (this volume, Ch. 7, p. 114) and Mason fail to see any resemblances with reported pottery paddles.
A cigarette filter was found in situ within the uppermost of Level 2 of S1 W1.4. This item is significant to the stratigraphic interpretation of the feature in that it illustrates the complex nature of the deposits (this volume, Ch. 5, pp. 47 ff.).

One curious artifact superficially resembles a pendant. One anchor shaped object was found at Feature 1 before the field school (GOL-98-290, Pl. IV c), while another was recovered in situ from Level 10, S3 W2, during the 1999 excavations (GOL-99-87, Pl. IV a). Another unidentified artifact is a worked antler artifact, saddle shaped with a groove and two drilled holes, which was found at Feature 1 before the 1998 field project (GOL-98-295). One pumice abrader with a wear pattern was found at Feature 1 before the 1998 season (98-284, Pl. XXIII b, Fig. 53).

Another unidentified artifact is a circular stone, possibly of jet (coal), flat on one side and convex on the other side (GOL-98-294, Pl. XXI a). The piece has a groove across the center of the convex aspect. Larsen and Rainey (1948, Pl. 48, c) describe a similar object from Ipiutak: a circular jet plate, with one flat and one convex surface with two connected holes on the flat surface. The main difference between the Qitchauvik and Point Hope artifacts is that the Qitchauvik artifact lacks the two connected holes on the flat surface. A small pyramidal piece of ivory (99-111, Pl. XIII d) has a resemblance to pegs inset into throwing boards (Ford 1959:Fig. 51).

A swivel made from antler was uncovered when cleaning the Feature 1 profile (GOL-98-44, Pl. V d). This bulbous shaped object with an open carving is similar to “swivels” in Larsen and Rainey (1948:Pls. 56 and 57) and in Giddings (1967:121). The function of swivels remains uncertain, but may be associated with dog traction. Certainly, the swivel provides a link with Ipiutak uses.

**Ritual or Decorative Artifacts: Carved Effigies and Maskettes**

Several pieces described below include objects retrieved from looters’ efforts before the 1998 season. Interviews with the participants involved in the looting activities establish that the pieces derived from Qitchauvik; no other alternatives are known in the Golovin area. Wood carvers in the Qitchauvik qarigi focused on two species: humans and caribou (Rangifer tarandus). The function of these objects is uncertain, possibly serving as toys, hobbyist carving efforts or ritual objects. Four wooden effigies— one human, three of caribou — were found by avocational diggers at Feature 1 before the 1998

Human Figures

The most arresting human figure (GOL-98-288, Pl. XVII) resembles ivory human or bear figures from the Okvik site on eastern St. Lawrence Island, across Shpanberg Strait from the Yukon Delta (Rainey 1941:524, Collins 1969/70, Wardwell 1986:37 ff., Linn and Lee 1999:4), but may have closer affinities with the transformative belief systems of the Ipiutak culture. While complete, the artifact is broken into two pieces (both totaled 14.2 cm long, 3.9 cm wide, 2.5 cm thick). The figurine seems to depict a human being rising from a second human face or hand that forms a pedestal, a representation of a transformative experience, likely shamanic in nature (Pearson 2002). The upper face is flat and strong asymmetrical, with outlined eyes, nose and a very slightly pursed, possibly grinning mouth. This head has a small chin and rather bulbous skull, with no indication of hair. The face of the bottom figure also includes outlined eyes, a mouth and a recessed nose. The body of the upper figure tapers, almost armless, into a hemi-cylindrical shape at mid-body without clearly defined legs. The cylindrical form resembles a drum. In profile, the piece is abstract and has the shape of two ovals attached at the center; it resembles an Ipiutak open work carving in a general way (cf. Larsen and Rainey 1948). The abstract shape of the carving may be a representation of movement (even of dance), which may illuminate the uncertain function of Ipiutak open work pieces.

Two other human effigies are miniature masks of human faces (Pl. XVIII a, b). The smaller piece, 6 cm by 4 cm, that is almost rectangular in plan view (98-286, Pl. XVIII a), has a long axis parallel to the grain of the wood. A face is defined by a square forehead, circular eyes of different sizes, a broad, flat nose and an open oval mouth, with a slight cleft (possibly post-depositional) and a narrow chin. The eyes and mouth are completely carved through the back of the piece, but the nose is clearly outlined. The larger maskette (00-39, Pl. XVIII b), measuring 11.4 cm by 6.5 cm, has pronounced eye sockets and a triangular nose with a small, slightly smiling mouth and a very prominent chin. One side of the maskette is straight, the other curved. The forehead is abbreviated and abrupt. The small size of both of these pieces suggests that any use occurred in an intimate space—the pieces may be pedagogical tools, roughed out models or toys or
possibly avocational carvings. The pieces are possibly not functional masks; no adult could wear them on their faces. Alternative uses include finger maskettes or puppets. Votive, shamanistic or mortuary uses are other possibilities, although the pieces are not burned and were not associated with graves.37 Few other Bering Strait sites have yielded comparable miniatures (cf. Lee 1999, Linn and Lee 1999), although an ivory maskette is reported from Chukotka (Bronshtein et al. 1997:Fig. 6).

**Caribou Figures**

Two pieces provide realistic renderings of caribou that both lack legs and concentrate on the torso and hindquarters of the animal. The rear portion of a caribou, 5 cm long and 2 cm wide, is portrayed in another carving, including the haunches and the legs (GOL-98-287, PI XX a). The resemblance between the rear of a caribou is confirmed when the piece is viewed in perpendicular; a series of diagonal lines are inscribed on the haunches in an X-ray style reminiscent of Ipiutak and Dorset practice (Sutherland 2001). One caribou figure represents a legless torso and head (GOL 99-84, Pl. XX b) recovered in situ from Level 10 in S3 W2. The narrow torso of the figure is disproportionately small, occupying slightly more than half the piece; it has flat, abrupt sides (i.e., dorsal and ventral surfaces). This comparatively thick, shaped piece of wood has an elongate, featureless head, lacking antler or eyes, nostrils or mouth. The neck tapers inward and has a pronounced bulge underneath. Possibly unfinished, the piece lacks any decorative motifs and was carved parallel with the grain of the wood.

One ambiguous, long, thin cylindrical piece of wood (12 cm long, 2 cm thick) may have a carved head that lacks facial details and that extends from a long body that lacks legs (GOL-98-278, Pl. XIX). The face is elongated and most likely is an abstraction of a caribou muzzle. The rear end of the cylinder is roughly shaped, but in a general sense follows the caribou body in its contours.

The function of the caribou figures remains speculative; presumably, each served as an amulet or a charm of a sort that lent its owner success in hunting or in pursuits that the animal favored, if it is possible to extrapolate from the ethnographic records. As Edward Nelson (1899:436-437) observed during the late 19th century A.D.:

37 Human figures employed by shamans were often decapitated; isolated heads frequently occur (Linn and Lee 1999:15).
The images and fetiches [sic] used in hunting are supposed to watch for game, and, by clairvoyant power, to see it at a great distance; the hunter is then guided by the influence of the fetich [sic] to find it. They are also supposed to guide the spears so that they will be cast straight. Sometimes the influence of the amulet is supposed to bring the game to the hunter.

Browband
(Uncataloged, provenience reliably attributed to Qitchauvik) (Pl. XXII)

A browband, one of the most aesthetically significant objects reported from Qitchauvik, was in the hands of the avocational diggers during analysis; the author had only a printed image in his possession (Pl. XXII). The bone plaque is inscribed with complex linear designs. The plaque is in only two fragments, each 2 to 3 cm long. Two holes on one margin indicate its fastening to another piece, probably a wooden hat.

The preserved segment is dominated by a complex bi-lobed figure that opens about a central circle outlined by a series of lines. Motifs on the browband attachment include two attached dual curvilinear elongate ovals, with smaller ovals inscribed within. Both ovals are attached to circles that nearly conjoin. A series of lines radiate perpendicular to the curves; these “rays” alternate between short and long segments. The interior space of the inner oval is distinguished by a deep circle at the wider third of the oval that is connected by a series of straight lines to the nodal connection at the narrow end of the larger oval. The surface of the piece is formed by a regular series of diagonal, deeply incised lines at regular intervals. The space outlined by these diagonals is further subdivided by fainter lineaments. The individual lines on the browband appear to be composed of a faint outer and a deeper inner line.

The outline of the browband motif betrays a general resemblance to the winged objects common to Bering Strait. The motifs on this browband closely resemble motifs from Point Hope (Larsen and Rainey 1948) and Deering (Steinacher 1998, Larsen 2001), typical of Ipiutak; elements in common with Ipiutak include: outer/inner lines, use of circles and rays and series of dashed lines. Hatchures occur in Ipiutak and Thule (Giddings 1964). The oval shape occurs on a young walrus carving illustrated by Larsen and Rainey (1948:125); and a very general resemblance can be seen with a design on snow goggles (Larsen and Rainey 1948:113). The Qitchauvik browband also has a general resemblance to Old Bering Sea 2, motif #23, illustrated by Collins (1937:82). However, as Larsen and Rainey (1948:143) observe: “... it is difficult to draw a clear line of
distinction...” between Ipiutak and Old Bering Sea styles. The potential significance of the browband for Alaska prehistory remains considerable, despite the uncertainties surrounding its recovery by collectors.

Incomplete Organic Objects

Antler

Seven pieces of worked antler were identified; three of the worked antler pieces collected by individuals before the 1998 field season were subsequently donated to the community. Four worked antler pieces are from the interior of the feature and a rounded antler tine is from the feature profile. Three pieces of worked antler are from NoW3.5: one piece of antler cut at both ends, an antler fragment cut longitudinally and an antler fragment cut longitudinally with a groove down its center. Two fragments have cut ends, and a third piece has cut ends in addition to one side cut.

Ivory

The three pieces of worked ivory in the collection were extracted before the 1998 field season. One piece is rectangular shaped with two notches on each end (GOL-98-299, Pl. XIII e). A cylindrical ivory artifact, which is pointed at one end with a possible notch, was also found. The third artifact is a flat, triangular shaped fragment with one drilled hole (GOL-98-396).

Wood

The wood preservation at Qitchauvik, Feature 1 was extremely good; and more than 150 wooden artifacts were identified, e.g. pegs, knife handles, effigies and bow fragments (cf. Alix this volume, ch. 7). Many worked wood specimens are obviously artifacts but could not be identified. Shaped wooden artifacts are described in the following manner. First, the cross section of the piece is described as either flat, rectangular, oval or round. The ends of the artifact are described as either fragmented (broken), cut or shaped. Shaped ends are described as notched, beveled or pointed. Measurements include length, width and thickness. For round pieces, the length and
diameter were measured. If the measurement of the dimension varied on the item, the greatest measurement of the dimension was recorded.

Eighty-three worked pieces of wood were identified for Feature 1 in 1998 (GOL-98-251, GOL-98-282) with 40 pieces recovered in 1999. Shaped wood was recovered within S1 W1.4 and S3.4 W1 from the profile and on the surface of the feature. Before the 1998 season, avocational diggers collected more than 40 pieces of shaped wood, some of which were available for study. Sixty-five percent of the worked wood collected before 1998 had a flat or oval shape. Rectangular shaped pieces comprise 21% of the shaped wood assemblage, followed by round pieces at 14.4%. Each shape category has a wide selection of end attributes. Alix (this volume, Chapter 7) describes and analyzes the wood collection in more detail.

**Detritus**

The detritus category is for items that are created during the manufacturing process of an artifact, as well as ecofacts. This category is the largest in the classification system, having seven different classes: faunal remains, fur, bark, ivory, fire-cracked rock, lithic debitage and wood.

**Faunal Remains**

The comparatively small faunal assemblage (n=253) represents a variety of taxa and is in a good state of preservation. Funds were sufficient only for a preliminary analysis of the faunal collection from 1998; it is possibly significant that only a handful of faunal elements were recovered in 1999 and 2000. To identify the faunal remains, the specimens were compared by Sweeney to faunal manuals or to comparative specimens at the Department of Anthropology and University of Alaska Museum. Each faunal item was identified to the most specific level of taxa, to genus and species if possible. *Aves* (birds) and *Pisces* (fish) remains were only identified to class. No shellfish were found.

Table IV shows the range of identified taxa and the percentage of each taxon in the faunal assemblage. The largest category of faunal remains, 52.6% of the total, could be identified only as unidentified mammals, with unidentified calcined bone, the remains of heat treatment during food preparation, as the second largest category, comprising 15% of the faunal assemblage. Bird bone, identified only to family level *Aves,
constituted 14.2% of the assemblage. Based on ethnographic analogy (cf. this volume, Introduction), only a minor amount of the major dietary items were represented by this sample. For example, caribou (Rangifer tarandus) included only 6% of the total while sea mammals occurred in a similar amount (7%)—this includes the order Pinnipedia (walruses, hair seals and fur seals and sea lions), the family Phocidae (including hair seals of nine different species, bearded seals and the genus Phoca) and the genus Phoca (including harbor, ribbon and ringed seals). Smaller mammals include beaver (Castor canadensis), hare (Lepus) and fox (Vulpes vulpes). Only three fish bones were found: an operculum, an otolith and a vertebra. The excavation squares with the greatest density of faunal remains lie in the feature depression: S1 W1.4 and N0 W3.5.

Table IV. Number of identified taxa and percentage of taxa in the faunal assemblage

<table>
<thead>
<tr>
<th>TAXA</th>
<th>ITEM COUNT</th>
<th>PERCENTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rangifer tarandus</td>
<td>15</td>
<td>5.9%</td>
</tr>
<tr>
<td>Phoca spp.</td>
<td>10</td>
<td>4.0%</td>
</tr>
<tr>
<td>Castor canadensis</td>
<td>3</td>
<td>1.2%</td>
</tr>
<tr>
<td>Lepus spp.</td>
<td>1</td>
<td>0.4%</td>
</tr>
<tr>
<td>Vulpes vulpes</td>
<td>1</td>
<td>0.4%</td>
</tr>
<tr>
<td>Phocidae</td>
<td>5</td>
<td>2.0%</td>
</tr>
<tr>
<td>Pinnipedia</td>
<td>3</td>
<td>1.2%</td>
</tr>
<tr>
<td>Unidentified Mammals</td>
<td>133</td>
<td>52.6%</td>
</tr>
<tr>
<td>Aves</td>
<td>36</td>
<td>14.2%</td>
</tr>
<tr>
<td>Pisces</td>
<td>3</td>
<td>1.2%</td>
</tr>
<tr>
<td>Unidentified calcined</td>
<td>38</td>
<td>15.0%</td>
</tr>
<tr>
<td>Unidentified bones</td>
<td>5</td>
<td>2.0%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>253</td>
<td></td>
</tr>
</tbody>
</table>

The rarity of faunal remains within Feature 1 provides several important clues about past behavior in the structure. Apparently, very little food preparation occurred
within its walls; this possibly was a function of gender-related work patterns—if indeed the structure served as a men's house. However, the disposal of food debris also did not occur in the structure. Such a circumstance also indicates that after its abandonment, the structure did not serve as a dump location, as often is the case. However, it must be recalled that avocational diggers did remove substantial "overburden" from the central precinct of the feature and discarded bone midden may have been part of that deposit or, very likely, the associated bone dumps remain to be discovered beyond the perimeter of the feature.

**Fur**

Fur is a general class in the detritus category for samples of animal fur found during excavation. Twenty pieces of animal fur were found. Eighteen of the samples are from S1 W1.4, in Levels 2 through 5. The stratigraphic profile of S1 W1.4 (Fig. 12) shows the provenience of the fur. Square No W3.5 yielded two samples of fur: one on the surface and the second from Level 2, an undercoat fragment with long guard hairs. None of the fur samples was identified; further analyses are recommended.

**Bark, Ivory and Fire-Cracked Rock**

Bark, ivory and fire-cracked rock are artifact classes in the detritus category. S1 W1.4 has one bark sample from excavation Level 4. No W3.5 had two fragments of birch bark (98-191) found in Level 3 and Level 4 (cf. Alix, *this volume*, pp. 126). Blackened birch bark was also recovered from Feature 1 before the 1998 field season. Two pieces of ivory are present in the assemblage. A walrus ivory fragment with scratching on one surface came from Level 2 in No W3.5. A possible mammoth ivory fragment is from S4 W1, Level 3. Fire-cracked rock was identified during the excavation of S4 W1, Level 3; 10 pieces were collected as a reference sample.
Conclusions about Daily Life at Qitchauvik

Many of the activities of daily life were preserved in the large structure at Qitchauvik; many of the artifacts suggest the tool manufacture (wood and stone tool making) and tool maintenance, as well as ritual activities (masks, effigies) typically assigned to male interests. Quite significantly, little evidence of food preparation or of food consumption occurred within the limited portion of the structure that was excavated. Nonetheless, the structure is best described as a men’s house or qarigi; and as such it is one of a handful excavated in Alaska (Lutz 1973, Larsen 1995, Larsen 2001, Sheehan n.d. and 1997). Although fishing would seem the prevalent focus of Qitchauvik, considering its location, numerous other hunting pursuits are represented—bow and arrow hunting of caribou, darting of seals and bird snaring. The qarigi served as a focal point that organized male and community activities across the landscape.
Wood Artifacts and Technology at Qitchauvik

Claire Alix

Wood-wise, Norton Sound is the richest area of all coastal western and northern Alaska, with both an important quantity of driftwood lying on the beach and stands of spruce trees reaching the shoreline in some places. As Sheppard (1983:8) observes: Norton Sound “has extensive forestation, from the western boundaries of the Fish River to the coast South of Unalakleet.” Thus, Qitchauvik lies at the western end of this forested area that is also described as bearing “the westernmost coniferous trees in America...” (Giddings 1951:2). At the same time, huge piles of driftwood are found along most shorelines of Norton Sound due mainly to the proximity of the Yukon delta (Giddings 1952a). However, smaller rivers such as the Koyuk and First Rivers also provide some driftwood to the coast. The proximity of these rivers assured to Norton Sound inhabitants an annual and more regularly renewed driftwood resource than to people farther north (Alix 2005). Driftwood “production” (Wein n.d.) varies with the rate of undercutting river erosion, flooding, storm frequency (Dyke et al. 1997, Mason, 1998) and its incorporation into sea ice (Håggblom 1982). The annual amount of driftwood coming down river also depends on spring break-up conditions that in turn link to winter conditions and precipitation (Alix 2005, Huntington 2002).

Although the annual delivery of driftwood was likely variable, wood was not a rare commodity along the shores of Golovnin Bay; and the inhabitants of Qitchauvik probably had plenty of wood to choose from. The architectural elements of the Qitchauvik structure, the abundant and well-preserved artifacts and the large dimensions of the manufactured wood seem to support this idea.

The collection of artifacts from Qitchauvik analyzed in this chapter consists of 135 remarkably well-preserved objects and worked fragments of wood, six fragments of bark and one root thread. Thirty pieces have a whitish/grayish surface, indicating they were
lying at the surface of the site and dried in the sun. These probably correspond to surface finds or result from the previous disturbance and looting that occurred in 1993/94. Thus, artifacts with a whitish surface are not necessarily recent.

**Analytical Methods**

The analysis first involved the identification of the artifact type, then, the macroscopic examination of the wood, followed in most cases by its microscopic identification. Only a few already known artifact classes could be identified. Many wood items are broken or elements of composite objects and cannot easily be placed in the traditional functional categories employed in arctic archaeology. For this reason, attributing an original function to these items is tentative. The artifacts are grouped into types based on their morphology, dimensions and manufacture and placed into categories such as hunting equipment, processing tools, household items and transportation. During analysis, artifacts were briefly described and basic data on the wood were recorded. Sketches and digital images were produced in a number of cases.

The wood was described in terms of its physical characteristics: (a) the width of growth rings (which serves as an indicator of wood density), (b) the presence of knots or other defects and (c) grain straightness [which, among other things, is technically important when the object is being made and subsequently used (for a detailed description of analytical procedures, cf. Alix 2001: Chap. IV, Alix n.d.)]. Finally, (d) the orientation of the growth rings of the wood in relation to the main axis and the width of the object were recorded to assess which part of the tree or log had been used to make different objects.

**Wood Identification Procedures**

Microscopic analysis requires the removal of small slivers of wood to observe the anatomical structures in the cross section, as well as the longitudinal tangential and radial sections. During the analysis of the Qitchauvik collection, however, cross sections were generally not sampled in order to protect cutmarks preserved on the culturally modified ends of the objects. All the analyzed wood objects were sketched, noting the location of removed slivers. Cut slivers were then temporally mounted on slides and
observed with a transmitted light, high-magnification microscope (Lenses x200, x400, x1000).

Wood identification involves comparisons of anatomical structures with a reference collection (in this case, my personal collection) and with criteria provided from manuals, e.g., Jacquiot (1955), Jacquiot et al. (1973), Schweingruber (1978, 1990), Panshin and de Zeeuw (1970). Spruce (Picea spp.) was distinguished from larch or tamarack (Larix spp.) by using criteria described in Bartholin (1979), Anagnost, Meyer and de Zeeuw (1994) and Talon (1997). While two genera—Picea and Larix—are very distinct in the forest, their anatomical structures are nearly identical and difficult to differentiate, especially in archaeological wood. This results in a category of Picea sp./Larix sp. undifferentiated. Along the same line, wood can be easily identified to the genera level, e.g., Picea spp., but rarely to the species level, i.e., Picea glauca (white spruce). Thus, it is nearly impossible to microscopically distinguish one species from another, e.g., Picea glauca (white spruce) from Picea mariana (black spruce), despite the attempt of Marguerie et al. (2000) for trees of northern Quebec.

Artifact Descriptions

Wooden objects and artifacts from Qitchauvik are remarkably large, the longest measuring 710 mm. The average size of the wood remains is higher than that found in other sites of Alaska and the Canadian arctic (Alix 2001). At Qitchauvik, many implements may be attributed as kayak parts or watercraft related equipment; shafts are also numerous, but very few are proper arrow shafts.

The lack of precise provenience information renders it difficult to confidently offer cultural associations to some of the artifacts. The making of holes with a gouge-like rodent tooth knife is, however, a good marker of the excavated structure and possibly of Ipiutak practices in general.

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39 The author refers to the materials obtained from the avocational diggers in 1993 and 1994 and implies that these are possibly not related to the feature below; these concerns are minimized by Mason this volume.
Hunting and Fishing Equipment

This category comprises a large variety of shafts, a few bow fragments and some objects that can be linked to fishing activities.

Bows

Bow elements are not numerous: only two middle fragments of miniature bows [98-282 and 98-390] and the end fragment of a small reflex bow [98-297]. A larger item (98-136) that was first identified as a hunting bow fragment is more likely a kayak rib or some other structural element.

- 98-297 is the end fragment of a small reflex bow (Fig. 25). Dimensions: 187 x 22 x 8 mm. It was not found in situ [i.e., through excavation] at the site but was collected by Denise Oliver Okliasile in the early 1990s.

This bow has a keeled cross section and a rounded nock. It widens abruptly after a bent at about 80 mm from the nock end. This bent corresponds to a knee (or a “siyah”) in bow terminology (Hamilton 1970). Above and below the knee (15 mm below the nock end) two parallel scorch marks can be seen on the belly of the bow. No lashing marks or retention grooves are preserved, but the shape of the bow and the scorch marks suggest that it was backed with sinew. This bow fragment has an unusual shape. However, its keel cross section and rounded nock link it to the earliest forms of bow at Nukleet (Giddings 1964:31-32) and to the southern type used in the late 19th century, described by Murdoch (1884:308-310).

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40 The bow fragment [98-150] described in this volume, Ch. 6, p. 71, Pl. XV d) was not available for my analysis.
Wood: *Picea* sp./*Larix* sp. Heavy helical “checking” (Fig. 26), showing compression wood, thick cell walls that are microscopic anatomical characters typically observed in wood used for bows (Alix 2003a), no knots and straight grain.

- 98-382 and 98-390 are two possible miniature bows. Dimensions: 313 x 11 x 7 mm; 179 x 9 x 7.5 mm. These middle fragments are slightly thickened about midway from both
ends and taper slightly toward the ends. Shaving marks are well visible on the surface of #382, while #390 is smoothed. No provenience information is available.

Miniature bows are quite common in Birnirk and Thule collections (Alix 2001, Alix 2003b, 2003c:196) and are known as early as the Old Bering Sea (OBS) culture41 of St. Lawrence Island (Collins 1937:134). Larsen (2001:Plate 18) reports toy bow fragments, but no miniature bow fragments from an Ipiutak qarigi in Deering.

**Wood:** respectively *Picea* sp./*Larix* sp. cf. *Picea* sp. and unidentified coniferous wood. No knots; growth rings are parallel to the back of the bow in one case and perpendicular in the other.

- **98-136** – a middle fragment of a bow or kayak rib? This object is a long and slender slightly curved narrow slat. Dimensions: 550 x 25 x 10 mm.

The slat tapers slightly at both ends, thus its middle cross section is thicker. The end tips are broken. One surface is flat while the upper surface is rounded and slightly keeled in the middle. Surfaces are regular and bear marks of shaving. The flat back and keeled top are traits found on bows. However, the absence of any constriction or any appreciable thickness of the wood at the handle does not fit the morphology of bows. The slenderness and lightness of this curved slat would make it suitable as a kayak rib.

**Wood:** *Picea* sp. Growth ring width averages 0.85 mm. No knots. As for bows, the flat surface follows the surface of an outside growth ring. This orientation of growth rings (parallel to the width of the object) is often found in bent wood and would be that of a kayak rib. This suggests it was intended to be bent and to sustain bending stress.

**Shafts**

Arrow shaft: only one middle fragment [98-121] is identified with some certainty.42

- **98-121** is small middle fragment of arrow shaft. Dimensions: 85 x 8 x 7 mm. One end is flat and larger than the other end, which has a round section. Both ends are broken. The wood is perfectly smoothed.

**Wood:** Unidentified coniferous wood. No knots. Straight grain. Two other short, cut fragments of small shafts with the same wood characteristics may also be arrow shafts (• 98-154).

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41 The oldest intercept age of OBS on St. Lawrence Island ranges from 50 B.C. to A.D. 300 (Blumer 2002:92).
42 An end fragment [99-038] described in this volume, Ch. 6, (p. 71, Pl. XV a) was not available for my analysis.

An Ipiutak Outlier: A 1,500-Year-Old Qarigi at Qitchauvik
**Harpoon Shaft**

Only one is identified with some certainty.

- **98-199** is a long, large and straight shaft. Dimensions: 720 x 28 x 23 mm. One end was beveled, while the other was cut with a chainsaw during the excavation of the structure’s floor. Wood surface is smoothed. The bevel is 14 cm long and has a uniform surface.

  *Wood: Picea sp./Larix sp. Cf. Picea, no knot, straight grain. Rings width averages 1 mm.*

**Large pointed shaft fragments** (Fig. 27), n=8

Eight shafts fall into this type: • 98-117, 98-252, 98-259, 98-276, 98-370 (refit with shafts 98-385 and 98-383) [Fig. 27, bottom], 98-373, 98-378 (re-fit with shaft 98-386) [Fig. 27, top] and 99-207a. The shafts are broken at various lengths, oval in cross section have a width >20 mm (21 to 29.5 mm). The surfaces are generally smoothed but sometimes marks of regular shavings are slightly visible. The shafts and points have been slightly scorched at the tips or along the surfaces, eventually as a way to harden the wood. In some cases, however, both ends are heavily charred (the point and the broken end), such as for 98-378/386, the two refit fragments. Some of these points were meant to be assembled with other shaft elements as shown by the long facial bevel at the end of one shaft (98-259). Pointed rod or long pegs are common in the coastal sites previously studied by Alix (2001, 2003a, 2003b); however, those are, in general, not as well-crafted and smoothed as the specimens from Qitchauvik. The pointed shafts from Qitchauvik seem to be “real” shafts and not simply pegs used in hide drying.

  *Wood: 3 Picea sp., 1 Picea sp./Larix sp. cf. Picea sp., 1 unidentified coniferous wood and 1 Salix sp. All but one was made from larger pieces of wood. The grain is straight, except in two cases that show a sinuous grain because of remnant outline of a knot on surface of the wood. However, the knot is not part of the object. No other knots were observed. Annual growth rings are regular and narrow, ranging from slightly above 0.5 mm to slightly above 1 mm. No special ring orientation was observed. The curve and the orientation of the growth rings of the willow shaft suggest it was made from a large trunk of willow.*

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*An Ipiutak Outlier: A 1,500-Year-Old Qarigi at Qitchauvik*
Figure 27. Large pointed shafts: Top: 98-378 and 98-386; Bottom: 98-370 and 98-383, Material: willow (Salix sp.).

Medium pointed shaft and shaft fragments (Fig. 28), n=11

- 98-049, 98-173, 98-366, 98-367, 98-369, 98-374, 98-377, 98-388 and 99-063a, 99-072a, 99-091. The shafts are broken at various lengths and are oval in cross section oval; width ranges between 15 and 20 mm and thickness between 11 and 15 mm. Most shafts were smoothed, but a few shaving marks can be observed. As for the larger shafts, some have their surface and/or points slightly scorched presumably to harden the wood, and others have been heavily burned or charred for no clear technical purposes. These heavy burns suggest the use or re-use of these shafts in association with an open fire or a lamp (Fig. 28, cf. the three shafts at the top). However, none of the shafts with provenience data were found particularly close to the hearth area. One shaft has a localized burn at its broken end (#98-374 in a similar way as the large shaft 98-373).

Wood: 5 Picea sp., 1 Picea sp./Larix sp. and 5 unidentified coniferous wood. Grain is straight except in two cases where it is sinuous because of the proximity of a large knot in the wood. No other signs of knots were observed. In all cases, ring width is slightly above 1 mm. Only one shaft is made from a straight branch or sapling. No specific ring orientation was observed.
Small pointed shaft and shaft fragments, n=3
- 98-256, 98-389 and 99-81 h. Shafts broken at various length, their section is oval and their width ranges from 11 to 14 mm. Surfaces are smoothed. One shaft is pointed, and the tip of the point was slightly scorched. Another is a mid-shaft section broken at both ends, and the last one tapers to a rounded end.
  Wood: 2 *Picea* sp. and 1 unidentified coniferous. Straight grain, no knots, ring width averages around 1 mm.

Pointed shaft with tenon (Fig. 29), n=3
- 98-260 & 99-057, 99-141. One of these shafts [98-260] is carefully made and is heavily burned (Fig. 29, top). The other two are not as carefully made and bear clear marks of their manufacture especially at the tenon tip. One was accidentally split along its length. Dimensions, respectively: 134 x 18 x 12 mm, 164 x 16 x 13.5 mm and 200 x 13 x 10.5 mm (incomplete original thickness).
  Wood: unidentified coniferous wood with a straight grain. The least well-made piece has a knot [99-057].
Pointed pegs, hide peg and larger pegs (n=6)

- 98-176, 98-272, 98-365, 98-371, 98-376, 99-207b. The shafts have not been smoothed. Split surfaces and manufacturing marks are clearly visible. Ends are crudely pointed. Four points have been slightly scorched, and one is heavily burned at the other end. Three points are slightly crushed eventually as a result of being pushed into the ground. Most of them are slightly wider in their middle part. Dimensions range from largest of 180 to 342 x 20 mm to smallest, 29 x 13 x 27 mm.

Wood: 3 Picea sp. 1 Picea sp./Larix sp., 2 unidentified coniferous. Straight grain with several knots. Ring width is variable from very narrow (< 0.5 mm) to larger than 1 mm.

Other pointed rods or shafts

- 99-72b is a pointed rod with a square cross section. No smoothing of surface. Opposite end is broken. Dimensions: 110 x 14 x 13 mm.

Wood: Betula sp. has one knot; grain is relatively straight.

- 98-372 is a rod with a flat and slightly curved point. The other end is broken. Surfaces are smoothed although revealing some shaving marks. The smoothing could be the result of wear. Section is irregularly oval. The outer face of the point was slightly charred. Dimensions: 177 x 15 x 11 mm.

Wood: Picea sp./Larix sp. Straight grain, no knot.

Pointed splinters (n=2)

- 99-81g, 99-143. These splinters of wood have been crudely carved into points.
Wood: *Picea* sp./*Larix* sp. Dimensions: 139 x 13 x 10 mm and 132 x 16 x 6.5 mm.

**Wood Point, Prong for Fish Spear or Fish Hook Barb**

- 98-225. A wooden point or prong with a round cross section, carefully crafted from dense wood (ring width averages 0.5 mm) [cf. Fig. 30]. Dimensions: 136 x 10 x 10 mm. Both ends bear shavings and flaking. One end was thinned on both faces as if the piece was to be hafted into a shaft. The other end has smaller and deeper cut marks, and the tip has been slightly scorched. The diameter is largest at mid-section.

Wood: *Picea* sp. No knots. Narrow rings (average 0.5 mm wide).

![Figure 30. Probable central prong of a fish spear, 98-225.]

- 99-72C. Small wooden point with a round to rectangular cross section (Fig. 31). Dimensions: 88 x 5 x 5 mm. The opposite end is irregularly beveled as if the piece had been hafted. No true lashing marks are visible; however, at the base of the bevel, the wood shows a slight constriction that might be linked to hafting. The small size of this point suggests it could have been used as the barb of a fish hook.

Wood: *Picea* sp./*Larix* sp. *Cf. Larix* sp. No knots; ring width between 1 and 1.5 mm. Prongs made of larch occur in the Eastern Arctic Thule culture (Alix 2001). Larch is a denser wood, compared to spruce that is also more resilient.
Figure 31. Small point, probable fish hook barb (98-072c); at right, detail of point.

Fish Line Reels, Net Shuttles or Ice Fishing Rods

Three objects may be attributed to these general categories.

- 98-142 is an end fragment with a two-prong fork (Fig. 32, left). Dimensions: 95 x 35 x 17 mm. Its surfaces were regularly and carefully fashioned, but were not smoothed. This object was found at 120 cm below the surface of the site. Giddings (1964:50 & Pl.12) illustrates a very similar object from in the oldest levels of the Nukleet site at Cape Denbigh, interpreted, hypothetically, a fish line reel.

Wood: Picea sp., made out of a branch or a small trunk with several small knots (the pith is present). Growth rings are very narrow (≤0.5 mm).
Figure 32. Fish line reels or net shuttles (Left to right: 98-142, 99-180a, 98-397).

- 99-180a is a badly preserved shuttle like object (Fig. 32, middle). Dimensions: 74 x 36 x 13 mm. This object has a two-prong fork preserved at one end. At the other end, only one prong of the fork is preserved. This object was recovered during shovel pit testing. Wood: Populus sp. wood poorly preserved. No knots.

- 98-397 is a long and slender broken shaft that ends with a two-prong fork (Fig. 32, right). Dimensions: 227 x 21 x 18 mm. Surfaces are well smoothed. On one side and just below the fork, three incisions are grooved (Fig. 33). No comparable items are known, and no provenience data are available for this object. However, it has a grayish color that suggests it was at the surface of the site or came from a disturbed area. Wood: Picea sp., no knots. Growth rings are narrow, averaging at 0.9 mm.
Figure 33. Detail of intentional incisions on 98-397, illustrated in Fig. 32.

**Float Bar**

- 98-387 is a chunk of wood, broken at one end and cut at the other. Dimensions: 129 x 24.5 x 21.5 mm. Carefully manufactured, it tapers slightly at each end. Its shape is similar to the Birnirk type of float bar (Ford 1959:109, Fig. 39f-h). The object fits easily in the hand. Float bars are evidence of the practice of open-water sea mammal hunting. **Wood:** *Picea* sp./*Larix* sp. made from a straight branch, a root or a sapling, as is often the case for this type of object (Alix 2001:316, 324, Pl.32). The wood has several small knots on its surface.

**Processing Tools**

**Knife Handle**

- 99-279 is a side-bladed knife handle (Fig. 34). Dimensions: 183 x 27.5 x 18 mm. The lateral slot measures 52 x 5.5 mm and is 9 mm deep. The width of the slot suggests the hafting of a stone blade. Surfaces of the handle are smoothed. The proximal end is larger than the distal end to assure a better grip. Examples of similar handles were found in the Ipiutak *qarigi* of Deering (Larsen 2001:Pl.94-5a,b). This specific type of knife handle is not found, in my knowledge, in Birnirk or Thule wood artifact assemblages.
Wood: *Picea* sp./*Larix* sp. The ring width, the grain orientation and the design of the wood suggest that wood was extracted from a stump to fabricate this handle. Several knots are present. Growth ring width averages 2 mm.

![Image of a handle]

**Figure 34. Side-bladed knife handle (99-279).**

Wedge?
- 98-163 is a wedge-shaped chunk of wood. Dimensions: 163 x 49.5 x 23 mm. It has a very smooth and slightly rounded upper surface, bearing the marks of red dye. Its beveled lower surface shows smoothness due to wear. The piece is cut and broken at the upper end, but has no sign of pounding. This absence of pounding questions its identification as a wedge.

Wood: *Picea* sp./*Larix* sp. A large knot is present on one side. Ring width averages out at 1.5 mm.

**Household Items**

**Firedrill Hearth**
- 99-179 is an elongated piece of wood longitudinally split and bearing five blackened cupules (Fig. 35). Dimensions: 210 x 25 x 18 mm.
Fire drill hearths are relatively common in Thule culture wooden remains, but are seldom illustrated (Alix 2001: vol. 2, pl. 47). For the Ipiutak culture, Larsen illustrates three examples from the qarigi of Deering (Larsen 2001: pl. 19:9-11). In the available Qitchauvik sample (Fig. 35), the cupules are farther from each other than in the Deering examples. No wooden fire drill shafts or fire drill bearings were found at Qitchauvik.

Wood: badly preserved. *Picea* sp./*Larix* sp. Ring width averages 1.3 mm. No knots, sinuous grain.

**Figure 35. Fire drill hearth (99-179).**

- 98-209 and 99-63b are two fragments of wood that have a blackened vitrified cupule on their side (Fig. 36). The larger of the two specimens, 98-209, has an upper surface that is flat and a side beveled with an adze (regular marks are clearly visible). The lower surface is split. The upper end is cut or broken, while the lower end is broken. This object was found in the screen, but the tiny fragment 99-63b comes from Level 10, which is relatively deep in the feature.

A similar very narrow piece of wood with two “vitrified” blackened cupules was identified in the Thule occupation of Deering (Alix 2003b). The attribution of these objects to fire drilling remains hypothetical and does not resolve the question of the “vitrified” coating of these cupules. Such black vitrified surfaces have not been observed previously on larger fire drill hearth fragments, and it is unclear what type of activity and/or burning process would have produced it. In the cases from Qitchauvik and Deering, the object or object fragment is thin, and the cupule is sideways. Cutmarks on 98-209 suggest the use of a sharp and thin-edged adze blade (Fig. 36a, right).

**Wood:** *Picea* sp. and *Picea* sp./*Larix* sp. straight grain, no knots.
Figure 36. Vitrified cupules [left (a) to right (b): 99-63b & 98-209]. Adze working is visible on 98-209.

Transport

This category had the most number of objects, even though many of the attributions remain tentative—in particular the functional attribution of the wood slats.

Paddles

- 98-137 was found in the northwest corner of the structure (Fig. 37). Dimensions: 495 mm long. The blade is 105 mm wide and 11 mm thick at the thickest edge. The blade is thinner along the opposite edge (6 mm). This could be the result of wear produced by water pressure. The handle/shaft is 31 mm wide and 17 mm thick. It was intentionally cut and broken at the shaft.

  Both faces of the blade have some fine cutting marks that suggest a secondary use of the blade as a cutting board. Curiously, the wood is not thicker at the transition between the blade and the shaft, structurally the weakest spot in a paddle. Thus, the identification of this piece as a paddle could be questioned.

  Wood: Picea sp. Growth rings are not very narrow and their width averages at 1.42 mm. The paddle was made from a trunk of wood of at least 20 cm in diameter. The face of the blade pushing the water partially follows the surface of the inner face of the growth ring of the wood. Several knots are present, mostly on the blade and not on the shaft.
• 99-207c was found at the surface of the site. This fragment is broken both at the paddle and at the shaft end. Dimensions: 232 mm long. The blade is 100 mm and 10 mm thick; one edge is missing. The shaft handle is 24 mm wide and 26 mm thick. Unlike the above, the wood is thicker at the transition between the blade and the shaft, thus reinforcing this weak spot of the paddle. The inner face of the blade is slightly concave. The morphology of this paddle is quite different from the above. The inner surface of the paddle is slightly grayish and, apparently, was exposed at the surface for a long time. 

Wood: Unidentified coniferous wood. One knot is located in the middle of the blade 0.35 mm from the end of the shaft handle. As for the previous paddle, the inner surface (the one pushing against the water) follows the inner face of the growth ring of the wood.

• 99-207d is a longitudinally split fragment of wood that may have been a paddle, but shows signs of re-use. The blade is broken, and the shaft was cut in three blows by what seems to have been a metal bladed tool. The object is 398 mm long. The incomplete paddle blade is 79 mm wide and 13 mm thick. The remaining part of the shaft is 14 mm thick and 31 mm wide. The blade and shaft of this paddle are flat on one side and slightly rounded on the other. The wood is gray and was exposed at the surface for a longer time than the previously described object. Unlike the two previously described paddles, this paddle was not as carefully made.

Wood: unidentified coniferous wood, with several very tiny knots. The orientation of the rings is different from that in the two other paddles. The rounded outer surface of the paddle is parallel to the outer growth ring of the wood.

An Ipiutak Outlier: A 1,500-Year-Old Qarigi at Qitchauvik
• 98-403 is a possible paddle blade fragment (Fig. 38). The object is a narrow plank, broken at one end and slightly rounded at the other. Dimensions: 297 x 75 x 10 mm. One can see that, in spite of superficial splits, the upper and lower surfaces have been perfectly smoothed. As a paddle, it is narrower than the previously described examples. However, kayak paddle blades can be narrow, as in western Greenland (Gulløv 1997:150).

Wood: unidentified coniferous wood. Straight grain. One large knot is placed transversally in the wood (from one side to the other). Ring widths are irregular (from very narrow to over 1 mm). Growth rings are perpendicular to the width of the plank. This in itself is different from the three other relatively well identified paddles.

![Figure 38. Possible paddle blade (98-403).](image)

Cross Piece or Cross Bar for Boats and Sleds

• 98-251 is the “oldest looking” possible crossbar and the best manufactured one (Fig. 39: top). Dimensions: 373 x 47.5 x 16 mm. It has an almost semi-rounded cross section with flat and slightly smoothed surfaces. It is broken or cut at one end, while the other has a rounded tip with carefully made side notches. This piece could be compared to what Larsen (2001:Pl. 5.3) identifies as a sled runner fragment. However, the object from Qitchauvik is not bent or thinned at its end and is quite different. The exact attribution of this object remains unclear.

Wood: *Picea* sp. straight grain, no knots. Growth rings are parallel to the width of the object.

*An Ipiutak Outlier: A 1,500-Year-Old Qarigi at Qitchauvik*
Figure 39. Cross slats/pieces (Top: 98-251; bottom: 98-282).

- 98-398 (re-fit with 98-381), is a long slender piece of wood with two bilateral small side notches at one end. These notches are shallow and partly broken. Dimensions: $425 \times 24 \times 13$ mm. Once refitted with 98-381, this potential crossbar is 18mm thick. In section, the piece is close to octagonal. Its surface is smoothed and grayish, indicating that the object probably was on the surface of the site for some time. No provenience data are available.  
  **Wood:** *Picea* sp. Straight grain, no knots.

- 98-282. Large cross bar probably of a boat (Fig. 39: bottom). The manufacture is somewhat rough, especially by comparison with the two objects described above. Dimensions: $470 \times 63 \times 18$ mm. One end is broken. The other end has two bilateral side notches that show some clear and pronounced cut marks. One edge shows clear marks of regular adze working on the surface of the wood. Surfaces of the piece are completely gray, suggesting that the object was on the ground surface for some time.  
  **Wood:** Unidentified coniferous wood. Several knots: The largest one is responsible for the breakage of the cross piece.

- 98-395 is a flat slat-like fragment with an end notch on the upper face (Fig. 40). Dimensions: $190 \times 66 \times 21$ mm. The other end shows two lateral and invasive cuts as well as some facial adzing. These cuts were likely produced with a metal bladed tool. Many cut marks can be seen on the surfaces and sides of this object. No provenience data is available. However, it has a grayish color suggesting it was on the surface for some time.  
  **Wood:** unidentified coniferous wood. No knots. Straight grain. Upper surface follows the outer ring surface.
Wood Slats: Boat or Sled Parts

- 98-399 is a long straight slat with an oval section. Dimensions: 425 x 37 x 14 mm. One end was cut, while the other was broken. Because of its shape and the care with which it was made, this object looks very much like the notched cross bar, 98-251, described above, p. 117. However, it is narrower, and the growth rings are oriented in the opposite direction.

Wood: unidentified coniferous wood. Ring width is narrow, averaging 1 mm. No knots.

- 98-245 is a fragment of a long and slender slat with an oval cross section. Dimensions: 285 x 25 x 10 mm. Wood has been accidentally split along the grain in the middle of the artifact. Surfaces are regular and bear shaving marks. This object is very similar to the above but narrower. One end is slightly narrower than the other and has been cut and broken. In its dimensions, this item is very similar to the bow/kayak rib object, 98-136, described above, p. 102. However, the growth rings are oriented in the opposite direction, a detail that would have had mechanical importance, especially in the bending process.

Wood: Picea sp. Growth ring widths average 0.96 mm and are oriented perpendicularly to the width of the slat. No knots. Straight grain.
• 98-255, 98-280, 98-391, 98-400 and 98-402 are narrow and thin slats of wood (Fig. 41). Dimensions: 531 x 41 x 7 mm, 322 x 36 x 9 mm, 227 x 28 x 8 mm (incomplete width), 263 x 37 x 7 mm and 271 x 42 x 8 mm, respectively. These slats are rectangular in cross section and are perfectly flat and smoothed, fashioned from perfectly straight-grained wood lacking knots.

Figure 41. Narrow, thin slats. Bottom to Top: 98-255, 98-280, 98-391, 98-400 and 98-402.

Two of these slats have one lateral edge thinner than the other. All have one end that has been cut straight, while the other end has been accidentally broken. Two slats have a 5 to 7 mm wide hole, off centered and located close to the cut end. The hole was gouged from one face of the wood downward, likely with a rodent tooth knife (probably a beaver tooth) [Fig. 42]. The longest of the four slats is more than 500 mm and shows that one end is wider than the other.

Figure 42. Detail of a hole gouged on the slat (98-400).
The function of these slats remains unclear, but the slats resemble Larsen's (2001:28-43) model for the Ipiutak sled—although nothing similar was found in Deering. The slats from Qitchauvik are fairly unique in that the wood used to make them is perfectly straight grained without knots. By comparison, a similar fragment was recovered from the Birnirk/early Thule levels of Uivvaq, Cape Lisburne (Alix 2003c:202); the Uivvaq fragment was a similar slat (straight grained wood, without knots, same growth ring orientation) with one edge thinner than the other but lacked a hole.

Most of the slats from Qitchauvik, including the two slats with gouged holes, lack specific provenience locations in the excavated structure. One was obtained from the “avocational” digging in 1993 and 1994, while the other has a grayish surface indicative of lengthy surface exposure. One slat (98-255) was recovered in situ at 110 cm below surface, which suggests that the other similarly crafted objects were contemporaneous with the principal occupation of the structure.

Wood: *Picea* sp. Growth rings are irregular and vary between 0.5 and 2 mm. The growth rings are in each case oriented perpendicularly to the width of the slat or “quarter-sawn.” As mentioned earlier, the grain is straight, and the wood had no knots.

- 98-281 is a slat, very similar to the above, though wider and thicker (Fig. 43 top left). Dimensions: 277 x 61.5 x 14 mm. Split-broken at both ends, it has a rectangular hole along one edge. The hole was gouged with a rodent tooth knife, as for the thin slats described above (Fig. 43 top right). The surfaces were carefully planed. This slat was collected in 1993/94 during the uncontrolled digging. The slat can be distinguished from the thin slats in that the wood has a strong spiral grain.

Wood: *Picea* sp. Twisted grain (Fig. 43 bottom), no knots. Growth rings are perpendicular to the width of the slat, as for those described above. No knots.
• 98-269 is a slat very similar to the series of slats described above. However, it is slightly thicker and was made from a badly twisted grained wood that resulted in the distortion of the slat. Dimensions: 397 x 46 x 11 mm. Broken at both ends, its surfaces were planed. Cutting marks occur on one face, indicating that at some point the slat was used as a cutting board. The remnants of a small broken square hole are observable at the split-broken end. The break of the wood prevents me from observing how the hole was made. This slat was found in situ, within level 7, S3 W1.

Wood: Picea sp., rings are very narrow, strong spiral grain. No knots. The piece was quarter-sawn, which means that, as for the other slats, the growth rings are oriented perpendicularly to the width of the object.

• 98-401 is a slat fragment with a small pierced rectangular hole. Dimensions: 140 x 57 x 9.5 mm. Surfaces are perfectly flat and smoothed. One end is broken, and the other is cut straight. A small notch at the cut end is the remnant of an insect hole or marine wood borer, sometimes found on driftwood logs. A mortise-like rectangular hole was cut by pushing a very sharp blade inside the wood, thus, in a very different manner from the square holes or mortise previously described. No provenience information exists for this artifact; however, its grayish surface indicates it was lying at the surface of the site. Together with the shape of the hole, this characteristic suggests a more recent origin than the other slats.

Wood: unidentified coniferous wood. No knots. Straight grain. Ring width averages out between 1 mm and 2 mm. Growth rings are once more oriented perpendicularly to the width of the slat.
• 98-274 is a large plank with two holes at the narrower end. Dimensions: 470 x 97 x 13 mm. Surfaces are flat and planed; cross section is rectangular. One hole measures 22 mm in diameter, while the other is 11 mm in diameter. Both were made by gouging the wood with a rodent tooth knife. Fine, straight cut marks can be seen on both surfaces, suggesting secondary use of the wood as a cutting board. This plank was found at 104 cm below the surface of the site.

Wood: Picea sp., the wood has a slightly spiral grain and several very tiny knots. The orientation of the growth rings is opposite from that of the other two planks; in other words, parallel to the width of the plank.

Observations on the Slats

Unlike the wood of the cross pieces (98-251, 98-398/81, 98-282, 98-395) and the planks with two holes (98-274), the wood of all the slats have growth rings oriented perpendicularly to the width of the object. The perpendicular orientation provides the object with superior mechanical qualities and is termed “quarter sawn” in the modern timber industry. Wood is an isotropic material: its physical and mechanical properties vary in three directions. Grain direction affects shrinkage, stiffness and strength of the wood. In quarter sawn slats or planks, the risks of distortion are reduced compared to flat grain (or plain sawn boards, in other words, cut or split parallel to the growth rings). Consequently, the wood is more stable (<www.radialtimber.com/html/products.htm>). While the recurring wood orientation of the slats does not indicate their function, it informs us that, whatever their function and use, wood stability was an important criteria for Qitchauvik woodworkers. The straightness of the grain and the absence of knots also indicate the great care with which the wood was chosen. At the same time, one can infer that the slats were produced by splitting the wood along its natural grain, much in the same way that some Yup'ik carvers still employ to split this type of wood to make fish traps and other implements (Gump 2005).

Objects of Uncertain Use

• 98-277 is a large, thick slat of wood. Dimensions: 625 x 77 x 19 mm. One end is cut and rounded; the other is broken. One surface is perfectly flat and smoothed. The other is
also flat, but its edges are beveled with accidental splits in some places. One edge is thinner than the other. This object has an oily fish smell and was identified as a possible skin stretcher by the excavators, but could also be part of a kayak or umiaq. The piece was obtained during the 1993/1994 digging efforts. Long and thin pieces of wood, slightly arched like this piece, resemble similar pieces used for stretching skins in historical Yup’ik material culture (Sundown 2004).

Wood: *Picea* sp. Growth ring width is irregular, but often less than 0.5 mm. Growth rings are parallel to the object’s width. Straight grain with several knots.

- 99-160 is a carefully made shaft with a bulb at two-thirds of its length. Dimensions: 81 mm long; 8 mm in diameter for the shaft; 16 mm in diameter for the bulb. Both ends are broken. The shape of this object suggests its use as an engraving tool. The object was collected *in situ.*

Wood: *Picea* sp./*Larix* sp. No knots, straight grain, rings width: 1 to 2 mm.

- 98-392 is a fragmentary object, has a carved nock at one end and is flattened on both sides toward the nock. It uses the natural curve of the wood (Fig. 44). Dimensions: 244 x 34.5 x 35 mm. No provenience data are available. The wood is slightly grayish, indicating its exposure to the surface of the site. The piece is among the few that are not made of coniferous wood.

Wood: Willow (*Salix* sp.) made from a branch or a large root.

![Figure 44. Possible handle, 98-392 (*Salix* sp.).](image)

- 98-396 is a modified branch or small trunk of willow that uses the start of a shoot for support (Fig. 45). Dimensions: 228 x 44.5 x 29 mm. The end above the shoot tapers
symmetrically (the very tip is broken) while the other end is broken. No provenience is available. Part of the wood has a grayish color, indicating its exposure to the site surface. **Wood:** Willow (*Salix* sp.) branch, or small trunk, several knots.

**Figure 45.** Wood piece possibly used as a support, modified branch (98-396).

- 98-394 is a support or a handle. Dimensions: 158 x 41 x 24 mm. The proximal end is broken. The distal end is larger and cut flat. No provenience data are available. Part of the wood has a grayish color indicating its exposure on the surface. **Wood:** *Populus* sp., one transversal knot, relatively straight grain.

- 98-384 is a very carefully made object, possibly part of a handle (Fig. 46). Dimensions: 176 x 32 x 22 mm. The object has a shaft with an oval cross section and a slightly enlarged and rounded end. The opposite end is broken. The surfaces are perfectly smoothed. No provenience information is available. The wood is partly grayish. Larsen (2001:Pl. 25c) illustrates a fragment of a possible handle that has a similar shape to that of 98-384. **Wood:** *Picea* sp./*Larix* sp. cf. *Picea* sp. straight grain, no knots. Ring width relatively large, averaging 2 mm. Growth rings are oriented parallel to the width of the object.

**Figure 46.** Well-crafted unidentified object (98-384).

- 98-375: object of unknown function, end fragment. Dimensions: 91 x 29.5 x 16 mm. It consists in a wedge-shaped object with an oval cross section, a rounded end and perfectly...
smoothed surfaces. The opposite end is broken. Just below the break, wood fibers have been crushed, suggesting the work of an adze (cf. Fig. 52 below).

Wood: undetermined *Pinaceae*. It has several very tiny knots, very narrow rings and straight grain.

- 98-116 is the re-used fragment of a previous structural element (Fig. 47). Dimensions: 227 x 25 x 14 mm. This splinter of an object has a rectangular mortise, probably made with a tooth-bladed gouge, although the cut marks are not as clear as in the previous described mortises and holes. One surface is longitudinally split and the wood has been secondarily hollowed on the split surface below the mortise (Fig. 47, bottom). The broken end was roughly notched. The secondary working on the wood also seems to reflect the use of a tooth gouge knife. The object was recovered in the cultural deposit at 90 cm below the surface.

Wood: unidentified coniferous. No knots, straight grain. Ring width averages 2 mm with an orientation perpendicular to the object’s width.

---

**Figure 47. Re-used frame fragment (98-116).**

- 98-271 is a splinter of wood with a baleen or sinew thread lashing around one end. Cross section is square. A constriction in the wood ca. 10 mm below the lashing suggests that the lashing was not restricted to the tip of the splinter. Dimensions: 80 x 5 x 4 mm.

Wood: unidentified coniferous. No knot, straight grain.

- 99-63c is a curved and tapered small rod of wood. Dimensions: 120 x 14 x 4.5 mm. The wood was intentionally bent.
Wood: *Picea* sp., no knot, straight grain, growth rings are oriented parallel to the width of this curved rod.

• 99-053 is very similar to 99-63c but is longitudinally split (Fig. 48). Dimensions: 124 x 11.5 x 6 mm. This curved piece has been intentionally bent. The inner surface has been manufactured and smoothed. However, its surface bears marks resembling chewing. Such chew marks may be linked to the bending process. In Hooper Bay, southwestern Alaska wood carvers slowly bend the wood by holding it in their mouth and exerting a slow and controlled pressure on the wood: “[The carver’s] teeth act as a clamp to prevent the outer fibers from splitting while crushing the inboard ones to facilitate bending” (Zimmerly 2000:45 Fig.59). At the same time, saliva serves to humify the wood (cf. Gump 2005).

Wood: *Picea* sp. no knots, narrow rings oriented parallel to the width of the rod.

• 99-152 is a splinter of a longitudinally oriented object. The remaining surface reveals its perfect smoothing. Dimensions: 97 x 11 x 7.5 mm.

Wood: *Picea* sp. No knots, narrow rings, straight grain.

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*Figure 48. Bent wood with “chew” marks (99-53).*
Other Woody Material

Birch bark

A few fragments of birch bark were identified in the 1998 excavation from in situ within the feature. These small rolls do not show any sign of sewing, but were possibly cut. GOL 98-191 was possibly rounded at one end (Fig. 49). Two other sets of birch bark fragments are blackened, but remain quite flexible (one was obtained by Denise Oliver Oklesile in 1993/94).

![Birch bark, possibly cut at its end (98-191).](image)

Cottonwood bark

A very small fragment was identified in a bag containing another object. It has not been cut.

Coniferous bark

- 98-141 is a bag filled with fragments identified as spruce bark (Fig. 50). Finding spruce bark fragments in archaeological collections is relatively rare since bark does fragment. Most bark fragments found in driftwood accumulations are cottonwood or birch. Spruce trees are usually without bark by the time they reach the coast. However, it is not unusual to find patches of bark on the stump and between the root appendices of driftwood, especially on the Norton Sound coast, where the source area is not too distant, i.e., the lower Yukon or Koyuk Rivers. At the same time, the presence of spruce bark in
this assemblage reminds us that spruce trees grow north of Qitchauvik and that wood used at Qitchauvik was not necessarily only driftwood.

![Unworked spruce bark fragments](image)

**Figure 50. Unworked spruce bark fragments (from bag, 98-141).**

**Willow root**

- 99-134 corresponds to two threads of willow roots, one being twined around the other, probably for storage purposes (Fig. 51). The width of the thread is 6 mm and its thickness 2 mm. This root is larger than those identified in sites farther north, in later occupations such as Deering and Uivvaq where twined willow thread was only ca. 2 mm wide (Alix 2003b, 2003c). In the Thule occupations of Deering (cf. Bowers 2006), larger fragments of split willow roots are used as supports around birch bark baskets (Alix n.d.). Larsen (2001:Pl.323) identified a similar large thread of willow root in the Ipiutak qarigi in Deering.

![Two twined threads of willow root](image)

**Figure 51. Two twined threads of willow root (99-134).**

*An Ipiutak Outlier: A 1,500-Year-Old Qarigi at Qitchauvik*
General Characteristics of the Wood Artifacts

The prevailing morphological characteristic of the Qitchauvik assemblage is the large size of the objects and the low number of artifacts for which a function or a functional type could be assigned with certainty. For example, while the category “shaft” is well represented, only one shaft can be considered a “true” arrow shaft. Overall, the dimensions of the shaft fragments are much larger than what is found in Alaska sites farther north such as at Walakpa (Alix 2001:145-147). The second important category of objects corresponds to items probably linked to transportation. Most of them are slats that are easily seen as elements of larger constructions. However, at this point, it is impossible to push further the functional attribution. Also noted is the absence of household equipment, such as containers or ladle. A few objects show signs of re-use or secondary use, two types can be defined:

- Objects used for an occasional and spontaneous activity such as in the case of cutting boards.
- Secondary use of the wood to make a new item: The wood is either cut and the ends are discarded (e.g. 98-395), or the accidentally split wood was re-shaped (e.g. #98-116).

I will add, that the Qitchauvik collection shows both affinities with Thule culture collections previously studied (Alix 2001, 2003b and 2003c) and with the very extensive Ipiutak collection described by Larsen (2001). Finally, cut marks left at the surface of some of the artifacts are different from those observed on Thule material. One important difference lies in the making of holes and mortise with a rodent tooth knife, a practice that was not observed on Thule and later wooden assemblages even though beaver tooth knives are known to have been used at these sites.
Discussion

Use of Wood and Woodworking Techniques at Qitchauvik

The wood from Qitchauvik consists, overwhelmingly, of 81.6% of coniferous wood, 14% of deciduous wood, with bark comprising only 4.4% of the collection. This is quite consistent with what is usually found in coastal wooden artifact assemblages. Among these, several species were identified (Table V).

Table V. Results of microscopic wood identification

<table>
<thead>
<tr>
<th>Genus</th>
<th>Quantity</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Picea</em> sp. (spruce)</td>
<td>49</td>
<td>37.1</td>
</tr>
<tr>
<td><em>Picea</em> sp./<em>Larix</em> sp. Cf. <em>Picea</em> sp. (spruce or larch)</td>
<td>6</td>
<td>4.5</td>
</tr>
<tr>
<td><em>Picea</em> sp./<em>Larix</em> sp. Cf. <em>Larix</em> sp.</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td><em>Picea</em> sp./<em>Larix</em> sp.</td>
<td>17</td>
<td>12.9</td>
</tr>
<tr>
<td><em>Pinaceae</em></td>
<td>2</td>
<td>1.5</td>
</tr>
<tr>
<td><em>Populus</em> sp. (poplar, probably cottonwood)</td>
<td>5</td>
<td>3.8</td>
</tr>
<tr>
<td><em>Salix</em> sp. (willow)</td>
<td>10</td>
<td>7.6</td>
</tr>
<tr>
<td><em>Betula</em> (birch)</td>
<td>2</td>
<td>1.5</td>
</tr>
<tr>
<td>Unidentified coniferous</td>
<td>36</td>
<td>27.3</td>
</tr>
<tr>
<td>Unidentified deciduous</td>
<td>4</td>
<td>3.0</td>
</tr>
<tr>
<td>Total</td>
<td>132</td>
<td>100.0</td>
</tr>
</tbody>
</table>

As apparent in the artifact descriptions (above), spruce was by far the dominant species used by Qitchauvik inhabitants. This comes as no surprise since spruce is the dominant species in the Alaska boreal forest and often is the most abundant species in Alaska coastal driftwood accumulations. Spruce was also the species most commonly used in the 19th century throughout Alaska (Oswalt 1957, 1967).

Among deciduous wood, willow was the most used species. Apart from one pointed shaft made from a larger piece of wood, all willow fragments are branches of various dimensions, mostly small. Many are small branch fragments that have been burned or cut at one end and can’t be associated with any functional type. The near absence of poplar is remarkable because cottonwood logs are quite numerous in modern Norton Sound driftwood accumulations (Alix 2004, 2005). The distribution of species in the archaeological assemblage is quite different. At Qitchauvik, only two objects of poplar (a fishing reel and a support/handle) were found. The remainder of the poplar fragments is splinters, sometimes bearing cut marks.
The near-absence of poplar in archaeological assemblages has been noted before (Alix 2001, 2003c, n.d.). Evidence that poplar was worked at some sites is common, but formalized objects made from poplar are rare. In this regard, Qitchauvik resembles Uivvaq, Deering and Walakpa. Reasons for this underutilization of poplar can be sought in the differential mechanical properties between poplar and spruce, or the lower resistance to decay of poplar. However, it could also result from other cultural practices.

Considering the excellent preservation at Qitchauvik, birch bark fragments are rare; and their use was not as extensive as at the Ipiutak qarigi of Deering (Larsen 2001:61-64). Unlike its wood that decays rapidly, buoyant birch bark is common in beach deposits. Thus, birch bark rolls recovered at the site had probably been collected in the local driftwood. Besides cut and rolled birch bark fragments, two objects of birch wood, a pointed rod [99-072b] and a worked fragment [99-043b] indicate this wood was worked and/or re-worked at the site. Objects made of birch wood are relatively rare in coastal archaeological collections in Alaska or in the Canadian Arctic (Alix n.d.). Birch logs are also rare in most coastal driftwood accumulations. Therefore, the presence of two worked pieces of birch wood may represent either the occasional find of a birch log on the beach driftwood or direct or indirect procurement of birch timber from standing trees. As mentioned above, birch wood has a high rate of decay and does not remain buoyant in water for very long. Birch wood found on the beach is not necessarily suitable for woodworking, and birch timber was possibly preferred over birch driftwood.

At Qitchauvik, willow roots also attest of the use of local shrubs. Together with the occurrence of spruce bark and birch wood, it suggests that local trees or shrubs may have been used as well. One must not forget, however, the inherent advantage of driftwood over standing timber: driftwood was likely available near the site, essentially already felled and seasoned, ready for use.

**Woodworking in the Qitchauvik Qarigi**

The absence of reduction flakes limits what can be said on wood manufacturing techniques. However, the presence in the collection of several splinters, and of well preserved cut marks at the surface of some objects, allows us to get a glimpse of the woodworking techniques employed by Qitchauvik inhabitants.
As observed for more recent sites, splitting the wood, probably with wedges, was the first manufacturing stage of the wood reduction. These splinters were then further worked with an adze or a whittling knife. What seems different at Qitchauvik is the presence of very narrow and regularly shaped splinters or narrow strips of wood. These may then have been reduced into objects such as small points, for instance 99-072c (Fig. 31) and 99-138b.

Even though no adze blade or handle was found, the staves and splinters obtained through splitting were probably further worked with an adze and then a whittling knife. The use of adzes was deduced from the observation of recognizable impacts on the surface of several objects: wood fibers are smashed or crushed, leaving a straight line on the wood (Fig. 52). The width of the line exceeds 2 mm in some cases and suggests the use of stone adze blades, or a dull metal blade (Fig. 52, left). In other cases, such as for 98-395, marks suggest the use of a sharp, metal bladed adze (Fig. 52, right).

Figure 52. An example of adze cutting, the blade was held perpendicular to the plane of the wood (edge of 98-375).

Observations of the surfaces of objects show that a fine shaving or abrading stage preceded the last stage of smoothing the wood. This last stage was not always completed: some objects are perfectly smoothed with no cut marks left while others are much cruder. In various cultural contexts, the last stage of the manufacturing process - smoothing the surface of the wood - was done with an abrading stone. A pumice stone [98-284] was found at Qitchauvik (Fig. 53); the piece has a slight depression indicating its use as an abrader. Abrading marks observed on some objects may be due to grinding.
the surface of the wood with such a pumice stone. Experiments with pumice stones and other types of stone would provide a better understanding of the different finishing stages in the woodworking process.

**Figure 53. Pumice abrader (98-284) with a slight depression.**

The use of rodent/beaver tooth for gouging and making holes is visible in several cases at Qitchauvik (Fig. 42 & 43), as it is visible on some of the illustrated wood objects of the Ipiutak qarigi at Deering (Larsen 2001). Such marks are not observed in assemblages of the later Birnirk and Thule period, despite the occurrence of beaver tooth gouge-like knives in some of these sites. Birnirk and Thule culture people drilled their holes rather than gouged them. This suggests that gouging mortises and holes in wood with a rodent/beaver tooth bladed gouge is a trait of the Ipiutak culture.

At the same time, the ends of some shafts and wood fragments are cut in a manner close to what has been observed on Birnirk and Thule shafts and other objects (Fig. 54) (Alix 2001). One shaft (99-180b) shows straight and unequivocal cut marks that suggest the use of a metal blade (Fig. 54, left). This cut shaft was recovered in the shovel testing in S1 W4-5. Another striking end cut wood fragment (Fig. 54, right, 99-081e), shows a few clear and precise cut marks and was found in square No W3-5, between 112 and 118 cm below surface, within the earliest levels. In all, a dozen artifacts show cut marks that strongly suggest the use of a metal blade. Considering the *in situ* provenience of some of these artifacts, it is safe to conclude that the occupants of the Qitchauvik qarigi possessed some metal bladed tools (adzes and/or knives) with which they worked their wood. Along with these metal bladed tools, Qitchauvik residents worked wood with rodent bladed tools. Work on the tools used for woodworking activities in coastal sites of the last 1,500 years should be pursued further with an experimental research program to
test tool marks left by stone and metal bladed tools. Such a program would allow the confirmation of my visual observations.

![Figure 54. Well-defined cut marks indicative of metal use (99-180b, at left; 99-081e, at right).](image)

The Qitchauvik people’s selectivity of wood species is reflected in the structural characteristics of the wood, as described for the artifacts. Wood fragments selected for most objects or parts of objects at Qitchauvik are straight grained, bearing a minimal number of knots, if any. The occurrence of some wooden planks with a strong spiral grain (Fig. 43) is a reminder that spiral grained logs are numerous in coastal driftwood accumulations. In an accumulation sampled in 2001 in the vicinity of Nome, 19 out of 51 logs (37%) were spiral grained. In the Qitchauvik archaeological assemblage, only 5 out of 86 artifacts (ca. 6%) were made with slightly to highly spiral grained wood. This also suggests a careful selection of the wood. Similarly, the trees in driftwood accumulations usually have a fair number of knots, especially in their middle and upper parts. In the Qitchauvik assemblage, only 15 of the 80 objects made on split staves (18%) have knots, and even the largest objects have very few. Moreover, the knots are often found on objects for which knots have little consequence (e.g., handles) and are located in areas where the risk of breakage is reduced, or are part of a branch kept as a whole. This shows the care with which wood for manufacturing was selected, how it was reduced to usable splinters and planks and adequately chosen and oriented for each object according to how it would be used.

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43 Data recorded from observations on a two-meter transect of the beach deposit.
The low number of knots on wooden objects, some of them quite large, doubtless reflects the large amount of wood available to the inhabitants of Qitchauvik during the 6th or 7th centuries A.D. Farther north in the Birnirk levels of the Walakpa site along the northern Chukchi Sea, fully 38% of the objects analyzed had knots (Alix 2001: Vol. 1:314-315, Vol. 2: Appendix C). This difference could reflect a difference in the abundance of local driftwood (and eventually timber) available to the inhabitants of Qitchauvik. This abundance is due to the relative closeness of the source origin of driftwood trees: the middle and upper Yukon River and the smaller nearby rivers such as the Koyuk River (Giddings 1941, 1947, 1952a).

Conclusions

The well preserved wooden assemblage from Qitchauvik includes several items with ambiguous or indefinite types and/or functions. The comparative near-absence of arrow shafts (only two clearly identified fragments) is notable in that arrow shafts are often numerous in wooden collections from coastal arctic archeological sites (Alix 2001). A fair amount of larger shafts was identified; however, most likely these were not intended for arrow points. A second important artifact type in the Qitchauvik wooden assemblage consists of slats and planks that may be related to transportation implements such as sleds and kayaks. The presence of several paddle fragments reflects the use of some type of watercraft. Out of 86 objects, only one definite knife handle was found but no bowls, platters or ladles. This lack of “household” objects and the low number of processing tools such as knife handles seems surprising, especially in the context of a qarigi, where one might have expected to find more signs of woodworking tools and waste (i.e., wood chips). At the same time, while three wooden human figurines and a small mask were found in the structure, no other performance related objects such as drum rims or other wooden miniatures and game pieces were recovered.

Not surprisingly, the type of wood used was predominantly spruce (Picea sp.), with only a small amount of poplar (Populus sp.), birch (Betula sp.) and willow (Salix sp.). At present, while poplar is quite abundant in driftwood accumulations of Norton Sound (Alix 2005), its limited occurrence in archaeological sites, noted in other coastal archaeological assemblages and contexts (Alix n.d.), suggests that cultural selection.
accounts for its low rate of use in making objects. Birch wood on the other hand is absent or extremely rare in driftwood accumulations because of its low resistance to decay. Its presence suggests either its acquisition from local driftwood or the use of living birch trees. Willow wood used at the site consists mostly of branches, many of which were small fragments burned at one end. While driftwood deposits typically have numerous small willow branches, willow shrubs are also locally abundant on the landscape. The characteristics of the wood may enable us to distinguish the two sources of willow. For example, one straight, large, pointed shaft of willow (98-383/98-385) definitely was not made from a local shrub, but was carved out of a larger diameter but relatively straight grained trunk. Finally, only alder (Alnus sp.) is totally absent; apparently, its wood was not used by inhabitants of Qitchauvik. While, like birch, alder is only occasionally found in local driftwood accumulations, alder grows adjacent to Qitchauvik as a shrub, often of a sizable height (Alnus crispa [Ait.] Pursh) and was probably present when the site was occupied.

The bark of cottonwood, birch and spruce trees was present in the Qitchauvik structure. While cottonwood bark may be abundant in driftwood accumulations, the pieces found at Qitchauvik were unworked. Birch bark is also part of the typical driftwood concentration, occurring usually in small rolls and often used today as fire starter. However, the rolls and pieces found at Qitchauvik are not burned, but are extremely well-preserved and flexible. One has an edge that appears to have been cut and rounded, although no stitches holes were seen. Nevertheless, the presence of willow root thread might indicate the sewing of birch bark, although it may also suggest weaving activities. The flexibility of birch bark as well as the presence of birch wood may mean that wood and bark from birch trees were collected by Qitchauvik’s inhabitants. Unlike cottonwood and birch bark, spruce bark does not occur as individual pieces in driftwood accumulations. However, spruce bark may often remain in the interstices of large roots; and its presence in the assemblage may indicate the use of stump wood that is easily found in driftwood deposits. Nonetheless, the use of local shrubs and trees can not be totally excluded, whether in the form of branches and trunks of birch and spruce, or of willow roots. However, the species found in the archaeological assemblage and to some extent the ratio of their occurrence, together with the advantages of using driftwood over timber, suggest a larger reliance on driftwood than on timber. Driftwood trees are already felled and seasoned and require minimal transport.
One compelling trait of the collection is the scorching and burning; many shafts or other implements display evidence of the presence of flame. While the practice of scorching for hardening the wood can be suggested for some of the artifacts, other burn marks are too invasive for this to be the explanation. Burned end and scorching of artifacts occurs in every Arctic coastal collection previously analyzed by Alix (2001, 2003a, 2003c). This practice is often related to the lamp: wood sticks or broken objects would be used on the spot to attend the mesh.

In terms of wood technology, sharp and clear cut marks were observed at the end of some objects, suggesting the use of metal blades. As mentioned, these cut marks are very similar to those observed on younger wood collections. However, Qitchauvik differs from these later assemblages in the making of holes and mortising by using a rodent tooth bladed knife, probably a beaver incisor. Even though beaver tooth knives are found in some Thule sites, cut marks produced by these tools are not clearly observed on Thule wooden assemblages. People from Qitchauvik gouged their holes while the Thule people of Deering, Uivvaq, Walakpa and other sites farther east drilled their holes.

To conclude, more detailed analysis of assemblages from the 1st millennium A.D. should be coupled with experimental woodworking in order to deepen our understanding of the use of the critical wood resource and its related technologies in western and northwestern Alaska.
Chapter 8

The Significance of the Qarigi at Qitchauvik

Owen K. Mason and Mary Ann Sweeney

Feature 1 at Qitchauvik is a semi-subterranean structure constructed between A.D. 550 and 750. By and large, the stratigraphy, artifact assemblage and radiocarbon dates indicate that Feature 1 is a single component site—there are no indications of multiple occupations or dwellings younger than A.D. 750. The effects of prior unauthorized digging at the site are evident from mixing in the upper layers of fill and grass-covered spoil piles within the interior of the feature and by the late 20th century artifacts found (cigarette filters, etc.). The six radiocarbon dates are consistent with their stratigraphic location; there are no reversals in the expected order (older at the base), and the dates are tightly clustered. The artifact assemblage is consistent; there is no evidence of artifacts from widely different time periods. For example, we do not have Russian trade beads, ASTt lithics and Norton pottery all in the same assemblage. Therefore, Feature 1 at Qitchauvik represents an archaeological “snapshot” or a single cultural assemblage for the Golovnin Bay region for A.D. 550-750.

The artifact assemblage from Feature 1 includes a significant proportion of items associated with activities typically considered male-oriented, involving the maintenance and care of stone tools, a repertoire commonly associated within a qarigi. However, a fair number of items from food preparation and sewing are represented, including awls, pieces of fur, and so on but in minor amounts, possibly due to the occasional visits of women. Very likely, the function(s) of the qarigi were considerably more complex than that envisioned by 19th century ethnographers. (cf. Larsen 1995, Sheehan 1995).

The excellent preservation of artifacts at Qitchauvik, Feature 1, was apparent during excavation of the site. The existence of the grass mat, fibers, shaped wood artifacts, bone tools, faunal remains and the structural remains of the feature are all the result of advantageous preservation conditions. From two excavation squares, surface finds and previously collected materials, a variety of shaped wood pieces were found. In fact, organic materials, specifically wood, were an important material resource at Qitchauvik (Alix, this volume, Chapter 7).
The very few faunal remains at the site indicate the use of both sea and land resources. The limited amount of bone in the feature indicates that disposal of animal remains occurred in other discrete locations on or adjacent the qarigi; all remains were either dietary or manufacture residues. Various sea mammals and land mammals, including beaver and caribou, were consumed, as well as birds and fish. Antler was often employed as a material for tools. The small sample of bones disallows any more detailed zooarchaeological conclusions beyond a basic “laundry” list.

Qitchauvik Feature 1 would be enigmatic to some interpreters of arctic prehistory—especially for the purists who envision a Sears catalog approach to archaeology—for it does not fit neatly into the existing cultural chronologies of Norton Sound prehistory (cf. Mason 1998, 2000 for a multi-cultural view). The taxonomic problems become apparent if the Qitchauvik archaeological evidence is compared to the two other major excavated sites in the area, Safety Sound and Cape Denbigh. During the last phase that Qitchauvik was occupied, a Birnirk phase is dated (A.D. 650-950) by Bockstoce (1979) at Safety Sound. Birnirk sites are typically on the open coasts and located at headlands or at points of land jutting into the ocean and exhibit an emphasis on seal and walrus hunting (Bockstoce 1979:89). The Safety Sound collection is comparatively small, less than 100 items, and lacks the organic inventory that often contains distinctive decorative motifs. Consequently, the Safety Sound houses lack many of the diagnostic artifacts for Birnirk (Mason 2000): only a single, slate end blade lends its strongest link to Birnirk. Linear decorations on antler or bone objects, however, are also characteristic of the type of site for Birnirk, the Piijiq site, according to Carter (1966:37). The use of the oil lamp provides a critical reference point since lamps are common at Norton occupations and in Birnirk as well, but are unknown from Ipiutak occupations (Larsen and Rainey 1948). The lamp fragments from Qitchauvik occur above the occupation levels and quite possibly were not associated with the qarigi (cf., this volume, p. 86).

During the occupation of Qitchauvik, Feature 1, the sites near Cape Denbigh apparently were not occupied—the position of Giddings (1960, 1964), substantiated by Murray et al. (2003). At Cape Denbigh a hiatus occurred between the Norton occupation dated 800 B.C. to A.D. 400 and the Nukleet/Thule occupation after A.D. 1000. Unalakleet contained likely one of the largest contemporaneous sites in the eastern Norton Sound region. Lutz (1972, 1973) describes a qarigi from a feature of similar size to that at Qitchauvik, dated within the centuries from A.D. 200-600. While organic
artifacts are lacking, the lithic inventory, especially the end blades, from Unalakleet apparently show close resemblances to Qitchauvik. A major cultural continuity, however, is the thin, check stamped ceramics from Unalakleet that record a Norton occupation and, possibly, a societal boundary.

Several nearly contemporaneous or younger, A.D. 600-900, Ipiutak occupations are reported and are comparatively close to Golovin, less than 200 km distant: e.g., from the Interior and north coasts of the Seward Peninsula, in Trail Creek Caves (Larsen 1968:70), at Deering (Reanier et al. 1998, Mason 1998, 2000, Bowers 2006) and at Cape Espenberg (Harritt 1994). An Ipiutak occupation at Point Spencer is undated (Larsen 1979/80). In general, coastal Ipiutak settlements within Kotzebue Sound date to A.D. 550-900 [Gerlach and Mason (1992), but cf. Mason (1998, 2000) for a re-interpretation placing the earliest Ipiutak occupation ca. A.D. 400, especially at Cape Krusenstern, and possibly earlier at Point Hope (Mason 2006)]. Ipiutak sites are characterized by specific burial goods, artistic motifs, the absence of pottery and other attributes discussed above (cf. this volume, pp. 19-20).

At Qitchauvik three artifact classes are similar to artifacts found at Point Hope, the Ipiutak-type site, including (a) an antler swivel (GOL-98-44, Pl. V d), (b) a circular stone with groove (GOL-98-294, Pl. XXI a) and (c) longitudinally grooved, bi-pointed bone points (GOL-98-296a-e, Plates I, II). The browband (Pl. XXII), collected by avocational diggers in 1994, contains motifs common to OBS and Ipiutak. Its exact provenience within Feature 1 is uncertain, but assuming its occurrence with the feature, the object bolsters the attribution of the site to the Ipiutak or OBS archaeological culture. These artifacts, however, may not be sufficient for some archaeologists to designate the Qitchauvik Feature 1 occupation as Ipiutak. On a matter that is likely trivial or related to circumstances of supply, (1) Ipiutak swivels are usually made of ivory, whereas the Qitchauvik swivel is made of antler, (2) the circular stone function is unidentified and (3) the grooved bi-points may be a coincidence owing to the limited number of ways one can make a bi-pointed point. Nonetheless, Larsen and Rainey (1948:138) considered the straight lines as the "trademark" of Ipiutak motifs. Although the presence of the swivel and the circular stone is intriguing, their presence could be explained by other means, such as trade or diffusion of ideas. The most compelling evidence for Ipiutak affinities seems that of the carved wood figures (cf. this volume, pp. 90 ff) that also resemble Ipiutak imagery (i.e., x-ray outlines, the browband and the emergent human figure).

An Ipiutak Outlier: A 1,500-Year-Old Qarigi at Qitchauvik
Lastly, several points need to be emphasized when considering the 1998-2000 excavations at Qitchauvik. First, the cultural chronology and prehistory of the Golovnin Bay and the adjacent coast are not well established. In fact, many areas remain uncertainly dated, incompletely mapped or surveyed, with many sites and features untested; a case in point is the inner reaches of Norton Bay, especially the lengthy spit at Moses Point, as well as many hundreds of house depressions south of Shaktoolik (Giddings 1964, McMahan 1995). Little is known of the very considerable villages on the Unalakleet spit, several of which were likely contemporaneous with Qitchauvik and the Norton culture (Giddings 1964, Lutz 1972). Second, only 15 one-m² squares were excavated at Feature 1, six in the interior of the feature and four outside of the feature. Obviously, this sample size is small, although it is larger than that from Safety Sound Birnirk houses; still, any interpretation based on this limited sample is tentative and subject to change with future excavations at the site. Nevertheless, the excavations at Qitchauvik are intriguing because Feature 1 is one of only three excavated sites on the northeast shore of Norton Sound that date between A.D. 550 and 750.

Cultural Interaction and Development

The Qitchauvik inventory incorporates a variety of different cultures, ethnicities or societies that are often considered discrete as defined by archaeologists. Often archaeologists classify cultures in reference to type of sites [e.g., Old Bering Sea culture defined at Gambell (Collins 1937), or the Birnirk culture type site at Piñiq north of Barrow (cf. Ford 1959) and critique in Mason (2000)]. By contrast, Ackerman (1962) and Arutiunov and Bronshtein (1985) argued that cultural entities should be graded in terms of “purity” across the Bering Strait. While some archaeologists may find a lack of cultural purity discomforting, Mason (1998, 2000) argues that the array of apparently divergent “diagnostic” pieces represents a 1st millennium A.D. world with considerable interaction likely consisting of intermarriage, warfare, trade and, possibly, servitude. For example, design motifs on several Qitchauvik pieces suggest influences from Ipiutak or Old Bering Sea, likely inscribed with iron. The sole diagnostic harpoon or sealing head at Qitchauvik has its closest parallels with either the Ipiutak or Birnirk cultures. Most illuminating is the lack of design elements at Qitchauvik that indicate or presage Punuk or Thule cultures.
The fishing and bird hunting artifacts also show numerous similarities with Ipiutak, principally in the tendency to inscribe arrow points with three to five lines and the common use of composite open prongs. A dual barbed fish hook is unique; most other Bering Strait fish hooks are composites—it is conceivable that the anchor shaped piece was not a fish hook but was part of a labret; it does bear a superficial similarity with 19th century composite labrets illustrated by Nelson (1899:Pl. XXII). A similar piece found at the younger site of Uivvaq near Cape Lisburne (Mason 2003) resembles the tomcod hooks employed at Point Hope in the 19th century (Foote 1992:61).

One surprising result concerns the number of differences between Qitchauvik diagnostic pieces and the collection from the adjacent Cape Denbigh sites of Iyatayet and Nukleet (Giddings 1960, 1964). This may not be so surprising, considering that the Nukleet occupation is younger by several centuries (Giddings 1964, Murray et al. 2003), and the Norton occupation at Iyatayet may be considerably older than Qitchauvik, by several centuries. Nonetheless, the differences between both are revealing. While several categories of lithics, e.g., unifacial flakers and end scrapers are held in common, the Qitchauvik collection lacks both discoidal scrapers and the very distinctive pentagonal end blades so characteristic of the Iyatayet locality only 30 km across Norton Bay. If presence of stone lamps is associated with the feature, Qitchauvik would resemble Norton cultures and would represent a significant departure from other Ipiutak manifestations, or possibly evidence of an intrusive or later occupation.

The nature of the activities occurring in the Qitchauvik structure included the manufacture of stone tools but showed less woodworking (cf. Alix, this volume, Ch. 7). Possibly, seasonality played a role in the various toolmaking activities, excluding the possibility that sampling error has precluded the discovery of wood debitage and woodworking tools. Alternatively, woodworking might have occurred outdoors. The absence of wood serving trays, ladles and other ceremonial objects is also a cause for reflection about the function of the presumptive qarigi at Qitchauvik.

The development of the qarigi organization presents archaeologists with a variety of theoretical implications and can be only briefly addressed here.44 The institution of a men’s house, to 19th century ethnologists, e.g., Nelson (1899), involved elaboration of a collective group, organized for the cooperative hunting of caribou or belugas. The appearance of the qarigi during the late Norton culture coincides with increasingly sedentary communities, greater population densities, evidence of elaborate burial

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customs and warfare (Mason 1998). In many parts of the world, such social changes are linked to shifts in political power and the development of chiefdoms (Earle 1997). Food surpluses and feasting typically are part of such transformations (Hayden 2001), often catalyzed by dynamic leaders capable of guiding communities to war and in spiritual quests. Thus, the Qitchauvik qarigi may have marked the initiation of social complexity, even the elaboration of a system of “international relations” in the Bering Strait region—if Burch (1998) is correct in his interpretations of an arrangement of territorial polities. Considerably more data will be necessary to substantiate such hypotheses.
Chapter 9

Field Investigations at Other Golovnin Bay Localities

Owen K. Mason

One of the main objectives of the Golovin Heritage Field School was to determine the cultural chronology of the Golovnin Bay region. To attain this goal, two additional archaeological sites, Ipnauchauq and Kuvrawik, were very briefly tested in 1998 to obtain radiocarbon samples to establish the age of occupation(s). Only a single sample provided an age estimate; and, in sum, the effort was insufficient, and further research will be necessary to achieve this objective.

Radiocarbon Chronology from Ipnauchauq and Kuvrawik

Ipnachauq

Ipnachauq (“Little bluff,” according to Ray 1964:70 [Ray 1983:191], Koutsky 1981:41) is 13 km SW of Golovin and 11 km NW of Rocky Point (Figure 1). Oral history accounts indicate that Ipnauchauq was a permanent settlement in the late 19th century abandoned during the influenza epidemic of 1918 and only used on a seasonal basis afterward (Slaughter 1990:9). For example, residents from Golovin and Elim built cabins and caches during the 1920s and 1930s, using the site as a base for subsistence pursuits. During the 1950s Sigfried Ayakamak Jr. built a reindeer fence stretching from Ipnauchauq northeast to Golovnin Lagoon. The fence kept the herd at the south end of the peninsula. Historical accounts only briefly discuss Ipnauchauq; the Russian Lt. Zagoskin (1967:126) placed “Chaymyut” close to the location of Ipnauchauq. It is uncertain if the two villages are one and the same. Opinions differ about the size and import of Ipnauchauq. In years past, the village, according to modern residents, was a fairly sizable village with several families and inhabited year round (Ray 1964:70); alternatively, Ipnauchauq was only inhabited by one or two families (Koutsky 1981:41).

45 Some confusion exists between the usage of Ray (1964:70) and Koutsky (1981:42) who terms Ignituk just NW of Rocky Point as the largest settlement; the correct location was established by ANCSA investigators.

46 Based on site interviews with elders Bertha Adsuna and Agnes Amarok in Slaughter (1990).

An Ipiutak Outlier: A 1,500-Year-Old Qarigi at Qitchauvik
The Bureau of Indian Affairs ANCSA office mapped the site in 1987 (Slaughter 1990), but no other archaeological testing has occurred at Ipnachauq. The site runs parallel to the coast in a linear fashion and has 61 surface features and four possible graves (Slaughter 1990:Fig. 3-6). Behind the site, away from the coast, is an unnamed lake that flows into Norton Sound through a short stream. Features 19 through 49 are southeast of the lake in a long culturally disturbed area dominated by grass vegetation. The feature depressions vary considerably, including both oval and rectangular forms, some of the latter with 1-2 m long entryways. The surface of the site bears traces of animal bone butchered and processed by previous inhabitants at an unknown era; beluga bone was “the most commonly observed. A total of eight beluga skulls were located within Feature 39, one skull in Feature 40 and a beluga skull and post cranial elements were in Feature 43” (Slaughter 1990:14).

Feature 23, a semi-subterranean feature, was selected for subsurface testing in 1998. A shovel test pit, 50 cm in diameter and 84 cm deep, was excavated through the center of the feature. The base of the pit cut into Unit 1, a culturally sterile, yellow-gray-brown, silty sand. Unit 2 consists of a dark, mottled, silty lens with charcoal, sampled for possible $^{14}$C dating. This possible hearth was capped by a structural wood layer, Unit 3, topped by an enamel teakettle just underneath the sod. The pit was backfilled, including the tea kettle, after the charcoal samples were collected from the wall of the shovel test pit. The $^{14}$C samples from Ipnachauq were too small to be dated using the conventional method and were archived for submission for an AMS assay at a later date.

**Kuvrawik and Ikjiiituq**

The settlements and graves of Kuvrawik and Ikjiiituq are located 8 km northwest of Rocky Point (Fig. 1). Little is known about Kuvrawik, either from ethnohistoric, ethnographic or traditional sources. However, a few historic records and Native informants mention Ikjiiituq, a sizable community in the late 19th century. Contemporary informants in the late 1960s to Ray (1971) and Koutsky (1981:42) described 19th century A.D. Kuvrawik as a village that contained six houses and focused on the netting of belugas. Kuvrawik has two localities, each on promontories into Norton Sound (Slaughter 1992). Both site localities are vegetated with dense grass. While Kuvrawik was mapped by BIA ANCSA investigators in 1987, it has not benefited from any other...
archaeological research. Located at the mouth of a small stream, Kuvrawik extends more than 800 m² and includes 22 features, both of multi-roomed, apparently subterranean character and small pits. A large cemetery with more than 300 graves (evident as driftwood mounds and occasional exposed human remains) occurs between Kuvrawik and the more southerly Ikngiituq site (Slaughter 1992:14). Five different types of graves occur in the Kuvrawik/ Ikngiituq cemetery (Slaughter 1992:28); all are associated with rectangular schist slabs or within rock clefts, occasionally modified with additional slabs or piles of rock. Grave goods occur with a fair number of graves, including an occasional wooden bowl, a sled runner or worked wood that represented part of a supra-burial construction (Slaughter 1992:29, 55 ff.).

Iknjiituq is situated on high bluffs 9 to 15 m above sea level, associated with 19 features and 17 graves in its immediate vicinity. Only seven of the features were likely subterranean houses, some had lengthy entryways indicative of the late prehistoric period (Slaughter 1992:18). An 800 year antiquity for Iknjiituq may be inferred from samples, submitted by the BIA, collected from a cultural horizon 90 cm below surface at the north aspect of the eroding bluff (Slaughter 1992:18, 23). Two radiocarbon assays indicate an occupation between A.D. 1200 and 1300 (Table VI). Older occupations may be present, considering that cultural materials were noted 1.5 m below the surface (Slaughter 1992: 23). A sterile sand bed that overlies that level may indicate partial or total site abandonment or a population decrease—if the bed is representative of the site. Nonetheless, a subsequent occupation was recorded on the eroding bluff on the south side of the site at 17 cm below surface during the 15th or 16th centuries A.D. (Table VI).

Table VI. Radiocarbon ages from Iknjiituq
[Parcel C, F129536, Slaughter (1992, p. 18, 23)]

<table>
<thead>
<tr>
<th>Lab. No.</th>
<th>(^{14}C) Age B.P.</th>
<th>Calibrated Age</th>
<th>Material</th>
<th>Depth (cm bs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beta-23391</td>
<td>390±70</td>
<td>A.D. 1411-1652</td>
<td>Charcoal</td>
<td>15-20, Feat. 20</td>
</tr>
<tr>
<td>Beta-23393</td>
<td>620±80</td>
<td>A.D. 1262-1439</td>
<td>Charcoal</td>
<td>90, Feat. 22</td>
</tr>
<tr>
<td>Beta-23392</td>
<td>770±50</td>
<td>A.D. 1164-1710, 1186-1298</td>
<td>Charcoal</td>
<td>88-90, Feat. 21</td>
</tr>
</tbody>
</table>

An Ipiutak Outlier: A 1,500-Year-Old Qarigi at Qitchauvik
Results of Shovel Testing in 1998

Feature 9 in Parcel A at Ikngiituq was selected for a shovel test pit. Feature 9 represents a well-defined semi-subterranean feature. A 50 cm² shovel test was placed in the approximate center of the feature and extended to 50 cm below surface, the limit of permafrost. The basal Unit 1 describes brown silt that contained a 10 cm thick layer of charcoal and fire cracked rock. A radiocarbon assay was run on charcoal sample from a shovel test pit from the burned layer of Unit 1 (cf. Table I). The overlying Unit 2 describes grayish brown silt with rock and wood inclusions, approximately 15 cm thick. Unit 3 consisted of a 26 cm thick layer of rotten wood extended to the root mat. A single unnamed sea mammal found in the wood layer represents the only cultural material produced in the test. The ¹⁴C age on the charcoal is 190±90 B.P. (Beta-123465), with the calibrated intercepts producing a calendar age within the 350 years from A.D. 1657 to the present. Regrettably, ¹⁴C assays within this range provide only approximate age estimates due to variability in ¹⁴C concentration during these centuries. Thus, Kuvrawik was occupied before or during the historic period and probably during the Russian period although the Russians did not mention the site. Further archaeological investigations at this site will provide more opportunities for dating the occupation of the site. In this case, trade items or tree ring ages will allow a more precise assignment of the age of the site than will radiocarbon dating.

47 The hole was back-filled after obtaining the charcoal sample from the wall of the test pit.

An Ipiutak Outlier: A 1,500-Year-Old Qarigi at Qitchauvik
The Golovin Heritage Field School examined several sites in the Golovnin Bay region, which span from A.D. 600 to Russian contact around A.D. 1820. Subsurface testing of 10 m² in and around Feature 1 at Qitchauvik resulted in the identification of an occupation during A.D. 550 and 750. This time period is relatively unstudied on the southern Seward Peninsula, and Qitchauvik is the one of three excavated sites in the area that dated to the period. The people at Qitchauvik relied on coastal and inland resources and relied on wood as a primary material source.

The relationship between the people at Qitchauvik and their Ipiutak neighbors or relatives to the north at Deering (Larsen 2001, Reanier et al. 1998) and Port Clarence (Larsen 1979/80) is not known with complete clarity. The people at Qitchauvik were clearly on the periphery of the Ipiutak sphere of influence and were possibly not even participants in the Ipiutak "cult" (Mason 1998, 2000) as known from the elaborate burial offerings at Deering (Reanier et al. 1998, Steinacher 1998) and Point Hope (Larsen and Rainey 1948). Only further excavations at Qitchauvik and at other sites in the Golovnin Bay area will indicate the nature of the relationship(s) between the prehistoric inhabitants of Qitchauvik and their neighbors.

Radiocarbon dates were obtained from two sites southwest or beyond Golovnin Bay: Ipnauchauq and Kuvrawik. The radiocarbon age from Kuvrawik indicates that the site was possibly occupied during the Russian period. This date raises an interesting issue because the Russians did not record Kuvrawik even though mentioning several other villages in the area. Obviously, historical archaeology will provide important information about Kuvrawik during the contact period, information that is not available in the documentary sources.

Future research in the Golovnin Bay area should include further investigations at Qitchauvik. Expansion of the excavations at Feature 1 and subsurface sampling at the other features will provide information of the site’s relationship to Ipiutak. A detailed faunal analysis is necessary to specifically identify the subsistence pursuits of the people.
Radiocarbon dates should be obtained from several other archaeological sites in the region to identify the time span of the archaeological resources in the area.

**Cultural Interaction along Norton Sound from 500 B.C. until A.D. 900**

During the late 1st millennium B.C. and the 1st millennium A.D., social interaction between communities as far distant as Ipiutak/Tikigaq (Point Hope) and Qitchauvik was particularly frequent, often violent, characterized by long-distance trade and common religious beliefs (Mason 1998, 2000, 2006, n.d.2, n.d.3). Although the long-distance relationships postulated by Collins (1937:333 ff.) were considered old-fashioned by the “New” Archaeology of the 1960s and 1970s, by the late 1990s, views had returned full-circle. The search for unadulterated cultures has floundered on the reality of “mixed” assemblages. Assemblages with styles and artifacts that resemble a diverse number of localities indicate interaction, not isolation (cf. Ackerman 1962, Arutinunov and Bronshtein 1986). This circumstance is not surprising, considering the cemetery evidence of violence and the evidence for offensive and defensive weapons (cf. Bandi 1995, Mason 1998); nonetheless, evidence for warfare is less prominent after A.D. 1000, until A.D. 1400 (Mason n.d.3).

While Qitchauvik was occupied, people with somewhat different tool inventories, and belief systems, were living at Safety Sound and possibly at Iyatayet on Cape Denbigh. The number and cultural affinities of inhabitants at Unalakleet, Shaktoolik, Koyuk or Moses Point is uncertain, due to the limitations of the database.

In inner Norton Sound, four locales [Safety Sound, Kwik River, Shaktoolik and Unalakleet] contain between 100 and 300 houses, likely evidence of sizable Norton villages. The sites are close to or at the mouth of salmon-bearing rivers, which is likely a precondition for the development of the settlements. Not accidently perhaps, Norton communities thrived in a region with good access to driftwood and standing timber—treeline extends to the coast in this area—unlike anywhere else from the Yukon Delta to Barrow (Giddings 1951, 1952a). Further, the region often benefits from a persistent polynya, open water in sea ice, that forms as northeasterly winds rake the region in winter. Access to the Interior is also facilitated by a portage from Unalakleet to Kaltag on the middle Yukon River. Alaska archaeologists, in general, have not recognized the crucial importance of this region. Minimally, it is apparent that several, possibly sizable,
Norton villages thrived around Norton Sound during the late 1st millennium A.D.; these people were the neighbors, friendly and antagonistic, of Qitchauvik.

The mid-6th to 8th century A.D. occupation at Qitchauvik in upper Golovnin Bay consists of a 10 m x 5 m structure interpreted as a qarigi, based on the preponderance of a male-related inventory dominated by end and side blades. Although lacking the distinctively Norton pentagonal points and discoidal scrapers, the less-well-flaked lithics from Qitchauvik resemble Norton more than Ipiutak. The Qitchauvik qarigi contained a number of objects that closely resemble Ipiutak artifacts, including an open work swivel, skeletal motifs on wood caribou figurines, a series of three lines on antler arrowheads and a spurred, closed socketed seal dart nearly identical to Ipiutak forms. A browband with dual-lobed Old Bering Sea II motifs further confounds any facile archaeological classification of the Qitchauvik materials.

If Ipiutak settlement patterns at Cape Krusenstern (Giddings and Anderson 1986, Mason 1998) serve as any guide, the presence of a qarigi at Qitchauvik implies that at least five or six houses were present. Any evidence for the surrounding houses, activity areas and/or cemetery precincts are as yet lacking; only further testing will establish their existence. Erosion by the inlet channel east of Feature 1 might account for the absence of one, possibly two houses, but the size of the inlet is not so great as to suggest the total erosion of all other structures. By contrast, the preservation of Feature 1 may derive from the subsequent blockage of the inlet by storm ridge accretion.

Farther west, the Norton occupation on the Cape Nome spit that encloses Safety Sound [in actuality, a small lagoon] may reflect a period in which a sizable number of people lived either on a composite ridge formed during the late 1st centuries B.C. or on a small ridge that buds off the composite ridge that dates to the early centuries A.D. Bockstoce (1979:31) counted or mapped more than 300 houses on the surface of low stabilized dunes (Fig. 55); only a few were presented in the published report. Most of the houses are concentrated on the single composite ridge; nonetheless, Bockstoce (1979) primarily tested outliers and focused on a series of houses at the eastern limit of the complex. In addition, it is unfortunate that only six 14C ages constrain the occupational history of Safety Sound (Table VII).

Three “early” Norton houses within a cluster of about 50 houses (Houses 268, 284 and 285) were occupied during the last centuries B.C. to the earliest centuries A.D.

48 Based on an unpublished University of Pennsylvania map drafted by John Bockstoce in 1970. A copy of the original is part of the D.M. Hopkins collection, held by the Rasmuson Library, University of Alaska Fairbanks archives.

An Ipiutak Outlier: A 1,500-Year-Old Qarigi at Qitchauvik
atop a composite dune, correlative to the composite Norton ridge at Cape Espenberg (Mason and Jordan 1993). Several hundred meters to the west on a southeast trending ridge, three "late" Norton houses (Houses 14, 18 and 330) were occupied during A.D. 200 to 600.

Figure 55. Distribution of Norton houses on the Cape Nome / Safety Sound spit. The putative (assumed to have existed) Birnirk houses are at far left (Sources above). Scale: 5 km across.

While it is tempting to interpret the several hundred Norton houses along the Safety Sound spit as a succession of villages, confirmation by ¹⁴C ages is lacking that any group of houses within a presumed cluster of houses (e.g., a village) or villages was contemporaneous. The site map of Bockstoce (Fig. 55) indicates that early and late Norton occupations are spatially discrete, separated by about 1 km. Two types of Norton houses can be observed on the surface: either deep or shallow, with a distinct difference in size. House size varied considerably between early and late Norton—from 25 and 36
m² in early Norton, decreasing to between 9 and 16 m² in late Norton (Bockstoce 1979:32, 39).

A simple calculation implies that even small Norton settlements at Safety Sound of only three or four houses used for a 25 year generation could produce more than 500 houses in 800 years. Nonetheless, if one assumes that some houses were occupied during the same time, the early Norton cluster of 50 houses, with 8 people per house, yields a total of 400 people for the span of 300-400 years (10-16 generations, if a generation lasted 25-30 years), then a typical early Norton village consisted of only 25 to 50 people, between 3 and 10 houses. For late Norton period, although houses were smaller by 25 percent, the number of houses was five or six times greater. Assuming a span of only 400 years for late Norton, then population apparently increased considerably between early and late Norton.

Table VII. Calibrated radiocarbon ages from Safety Sound houses. The italicized ages are from houses termed Birnirk by Bockstoce (1979:59 ff.). (Bockstoce 1979:37, ρ=0.95, of 95.4 probability option).

<table>
<thead>
<tr>
<th>Lab. No.</th>
<th>¹⁴C yrs. B.P.</th>
<th>Calibrated Age</th>
<th>Feature</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-6085</td>
<td>2216±97</td>
<td>550 B.C.-A.D. 50</td>
<td>House 285</td>
<td>hearth charcoal</td>
</tr>
<tr>
<td>I-5983</td>
<td>2047±79</td>
<td>215 B.C.-A.D. 125</td>
<td>House 284</td>
<td>hearth charcoal</td>
</tr>
<tr>
<td>I-5376</td>
<td>1662±95</td>
<td>A.D. 209-597</td>
<td>House 14</td>
<td>hearth charcoal</td>
</tr>
<tr>
<td>I-5378</td>
<td>1719±181</td>
<td>93 B.C.-A.D. 664</td>
<td>House 18</td>
<td>hearth charcoal</td>
</tr>
<tr>
<td>I-5380</td>
<td>1593±89</td>
<td>A.D. 244-645</td>
<td>House 330</td>
<td>hearth charcoal</td>
</tr>
<tr>
<td>I-5377</td>
<td>1374±92</td>
<td>A.D. 430-490, 530-890</td>
<td>House 16</td>
<td>hearth charcoal</td>
</tr>
<tr>
<td>I-5982</td>
<td>1244±74</td>
<td>A.D. 650-900, 910-970</td>
<td>House 322</td>
<td>hearth charcoal</td>
</tr>
</tbody>
</table>

To the west of the late Norton settlement, three houses are “distinct from the other groups of houses” and apparently are on a younger ridge (Bockstoce 1979:59 ff.). While largely lacking diagnostic, organic objects (a single bola weight) or ceramics, Houses 16 or 322 contained approximately 100 lithic end blades (one of slate) and unifacial scrapers that resembled Norton or Ipiutak materials (Bockstoce 1979). The slate end blade and the bola resemble Birnirk (cf. Ford 1959) and may provide evidence of cross-cultural interaction. Nonetheless, Mason (2000) rejected the Birnirk label for the houses and argued for affinities with Qitchauvik and late Norton, their contemporaries based on two ¹⁴C ages within the 6th to 9th centuries A.D. (Table VII above).49

49 In view of the identification of sea mammal oil within the houses (Bockstoce 1979:59), the charcoal samples might be providing ages that are too old.

An Ipiutak Outlier: A 1,500-Year-Old Qarigi at Qitchauvik
The 99 tunneled, circular houses at Difchahak, south of Shaktoolik, visited by Giddings (1964:183-184) have witnessed recreational activities of soldiers that did not severely impact the integrity of the site. Like other Norton Sound sites, Difchahak lies on a beach ridge/spit at the mouth of a small river, well positioned to secure and process salmon.

Unfortunately, the chronological data from Unalakleet include only five ages and preliminary excavations at an unreported number of sizable (1 x 2 m) test pits and excavations in six houses that a Ph.D. conducted in 1968 and 1969 (Lutz 1972, 1973). A large structure, 8 by 12 m, originally termed an “Ipiutak” house was subsequently recognized as a qarigi (Lutz 1973). This structure contained log-banked hearths and resembled an Ipiutak structure excavated by Larsen (2001) at Deering. Lutz (1972) distinguished the Unalakleet qarigi from Ipiutak primarily on the basis of the shape of its end and side blades and in the presence of several potsherds (Lutz 1972:344). The large structure, however, was occupied possibly over several centuries, possibly before Ipiutak, A.D. 122-263 (P-1772, 1810±40 B.P.) and during A.D. 414 to 610 (P-1530, 1556±48 B.P.), possibly contemporaneous with the Ipiutak occupations at Qitchauvik (cf. this volume, pp. 63) and Deering (Reanier et al. 1998, Bowers 2006). Apparently, the Unalakleet qarigi lacks any stratigraphic separation in the occupations, its 35 to 45 cm of midden accumulation indicating that it was “in use for a rather long period of time” (Lutz 1972:67). Alternatively, old wood may bias the older age (P-1772).

Iyatayet Norton, while containing a sizable collection from houses and middens, also suffers from a lack of precise dates; the three solid carbon assays (and a single CO2 age) have standard deviations of between 100 and 330 years (Giddings 1964:244-245). Calibration introduces an additional imprecision. Charred wood from upper Norton levels dated to 1460±200 B.P. (C-506) for Giddings (1964:244) an unacceptably recent age. However, calibration of this age places the occupation within “late” Norton in a range from A.D. 207 to 981 (ρ=0.98 in the 2σ=0.954 probability option). In the CO2 age (2213±113 B.P., P-13) the Norton occupation of House 7 occurred at some point between 515 B.C. and A.D. 20, preceding Ipiutak by up to four centuries.

Some measure of contemporaneity must exist in the 500-1,000 houses of the Norton Bay region; just how large the villages were, we cannot yet establish. The

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50 The number of houses is perhaps several times higher than estimated by Giddings, based on a short visit by Mason in 2003 and the mapping efforts of Harritt (personal communication) in 2006.
51 Lutz (1972:41) alludes to test pits but does not quantify the result or describe in detail the artifacts obtained from these tests.
52 As excavation proceeded, Lutz (1972:51) decided the inventory did not meet the definition of Ipiutak, based on the occurrence of several checked stamped potsherds, but “not in the usual manner” (ibid., p. 344).
methodology employed in the preliminary estimates by Mason (1998), if applied to this region, suggests that the average settlement consisted of only 90 people; hence, only several hundred for the entire region.\footnote{Span of Norton at Safety...600 yrs., 25 yrs. to the generation=24 generations—300 houses divided by 24=12.5 houses per generation multiplied by seven per house.}

What type of social structures served to integrate the sizable populations represented in Norton Sound during the late Norton period? From the Qitchauvik excavations, it would seem that the qavigi as defined by 19th century ethnographers (cf. Nelson 1899, Larsen 1995) might have provided the critical matrix for collective action. Presumably, the strategies and camaraderie required for beluga and caribou hunting and warfare were formulated within the community structure. At present, archaeologists possess little concrete data to extend beyond speculative arm-waving. Evidence of high status individuals buried at Deering and Point Hope suggests the operation of “agency” (Dobres and Robb 2000)—inspired political leaders—and shamans might date from this period (Mason 1998).

The Punuk and Thule Entry into Norton Sound, A.D. 900-1200

Comparatively few Punuk or early Thule settlements occur along the shores of Norton Sound. The locale with the most continuous record, Safety Sound, was possibly unoccupied for 500 to 800 years, based on present data. No houses are mapped at Safety Sound, following the two of only three mapped houses occupied by “Birnirk”/“late Norton” people, possibly as the late 10th century A.D. (cf. Bockstoce 1979:59 ff., Mason 2000) and the Cape Nome Thule houses constructed possibly as early as the early 15th century A.D. (Bockstoce 1979:66 ff.).\footnote{The two ages for the two cultures represent the extreme limits of the \textsuperscript{14}C ages; the hiatus might be considerably longer if the Birnirk houses were occupied earlier, e.g. A.D. 700 or 800 and if the Cape Nome houses were occupied later, e.g. A.D. 1650, the youngest outlier of the calibration for the \textsuperscript{14}C ages from the Cape Nome phase.} Heightened storminess provides the most likely taphonomic explanation for the hiatus on highly mobile gravel and sand beach ridge and spit complexes (Mason and Barber 2003).

Farther east, beyond Golovnin Bay, two early Thule occupations may occur at Iyatayet. Two \textsuperscript{14}C assays using “carbonized” cooking organics from the Iyatayet site indicate a Thule occupation during the 10th or 11th centuries A.D. The residue is from two pots, one with curvilinear decorative motifs, the other undecorated or plain (Crane and Griffin 1964:21). The residues possibly contained sea mammal oil, biased by old carbon (cf. Dumond and Griffin 2002); however, the ages are not uncharacteristically old for...
early Thule materials.\textsuperscript{55} On the eastern side of Cape Denbigh, Punuk designs and harpoon heads were recovered at Nukleet (Giddings 1964:36,38-39, Pl. 6) with their age only estimated to \textit{ca.} A.D. 1250 by Giddings (1964:116) in comparison with the Kobuk tree ring sequence (\textit{cf.} Giddings 1952b). Direct dating of an antler arrow point suggests an earlier age, as early as A.D. 1000, as determined from the \textsuperscript{14}C analysis of archived museum specimens by Murray \textit{et al.} (2003).

The use of defensive body armor and improved composite bows may indicate that the Punuk culture witnessed intensified warfare and undertook wars of conquest (Collins 1937:325-333, Bandi 1995, Mason 1998). However, at Nukleet evidence of military equipment occurs only in its upper levels, with the occurrence of wrist guards and slat armor (Giddings 1964:33, 85, 90), the re-dating efforts of Murray \textit{et al.} (2003:101) indicate their age followed the 14\textsuperscript{th} to 15\textsuperscript{th} century A.D. The Nukleet data are consistent with the widespread increase in defensive gear that occurred only after A.D. 1400 across western Alaska from Bristol Bay to Utqiagvik (Mason \textit{n.d.3}). The rarity of armor before A.D. 1400 outside of the immediate Bering Strait region (Wales, St. Lawrence Island) may relate to the absence of feuding or war. Originally, its occurrence at Nukleet was whimsically attributed to a certain fashion consciousness among otherwise pacific Norton Sound peoples (Giddings 1964:90). Nonetheless, Qitchauvik as well as Nukleet lack any evidence for the warfare presumably associated with the spread of Punuk in the Bering Strait region.

The Punuk style may also correspond to a migration of people, both to the north and into Norton Sound (Mason 2003, \textit{n.d.2}, \textit{n.d.3}). For example, at Wales, Sicco harpoon heads date \textit{ca.} A.D. 1000 (Harritt 2004), while at Uivvaq (Cape Lisburne) Mason (2003:145 \textit{ff.}) reported that a Punuk atlatl counterweight dated between A.D. 1100 and 1200, while nearly identical pieces occurred on St. Lawrence Island (Collins 1937) and at Nunagiak near Wainwright (Ford 1959:62-63). A similar movement of “Punuk” people may have occurred south of Bering Strait, considering that the basal levels of Nukleet also date to the 11\textsuperscript{th} century A.D. (Murray \textit{et al.} 2003).

\textbf{The Thirteenth Century A.D. “Punuk Thule” Dispersal and Afterward}

Another profound shift in mobility and settlement pattern occurred in the 13\textsuperscript{th} century A.D., a period marked by less stormy conditions along the Chukchi and Bering

\textsuperscript{55} If the ages are corrected for old carbon (\textit{cf.} Dumond and Griffin 2002 for 500 and 700 yr offset values, the calibrated age could be as recent as the 15\textsuperscript{th} to 17\textsuperscript{th} centuries A.D.; this seems far too recent.
Sea coasts (Mason and Jordan 1993, Mason 1999, Mason and Jordan 2002). Fewer storms and less upwelling were associated with reduced marine productivity (cf. Finney et al. 2002); these circumstances likely induced a re-orientation to terrestrial resources and possibly lower ranked resources.

On the northern Seward Peninsula, two presumed Thule occupations occurred during the less stormy, warmer 13th century A.D. along Lopp Lagoon56 and at the northern margin (Cape Espenberg57) of the Seward Peninsula (cf. Harritt 1994). Persistent southerly winds probably accentuated polynya formation and rendered Cape Espenberg adequate for spring whaling. Thule evidence is particularly thin in the Ikpek area: two undecorated potsherds, a tci-tho, a few used slate flakes and an incised marlin spike (Harritt 1994:202). Besides slate and an anthropomorphic figurine, diagnostic pieces were also sparse at Cape Espenberg (Harritt 1994:85 ff., 95 ff., 503). Were Thule people just passing through the Seward Peninsula, finding it less than hospitable, much as Giddings (1964:255) observed? On the north shore of Eschscholtz Bay, nearly 100 depressions occur on the Sisiivik beach ridges with a lower limiting age of 610±100 B.P. (Beta-23386) or A.D. 1219-1452; Lucier and Van Stone (1995:20) link this winter re-orientation toward maritime resources with the failure of inland caribou populations. A similar pattern apparently prevailed in the Golovnin Bay region, where a 13th century A.D. occupation at Ipnachauq occurred on the Rocky Point peninsula. Access to belugas, for example, might be related to the development of sand bodies, which promote shallow water (cf. Lucier and Van Stone 1995:21). The input of sediment was due to increased storms that augmented bluff erosion, a process that preceded the 13th century.

The Golovin Heritage Project added little to the meager database for the Norton and Golovnin Bays for the centuries from A.D. 1400 until 1900. As mentioned previously (cf. pp. 27 ff. above), several profound changes occurred during this period, most prominently the introduction of dog traction and warfare (Sheppard 1988, 2004). The numerous depressions on Qitchauvik ridge Q-4 might contain archaeological data on this period. Virtually no archaeological data are available from Qitchauvik to supplement the ethnohistorical and historical records of the 18th to 21st centuries; this data domain remains a fertile field for future researchers.

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The 1998-2000 Field School, administered by Golovin Native Corporation and Chinik Eskimo Community, has provided considerable data concerning the archaeological sequence in the Golovnin Bay/Norton Sound area. The information gathered will be of use to Golovin Native Corporation for future land management and resource assessment purposes. A very significant outcome of the field school and one that should not be underestimated is the training of the village's youth in the methods of archaeological excavation and survey. The involvement of students, elders and other community members in the program also brought about unexpected benefits.

Support from the community was expressed in a number of ways during the course of the program. The first open house, held on July 10, 1999, brought together not only the students and the community; it also was a catalyst for other important and encouraging events. During the open house residents brought in artifacts they had found throughout the Golovnin Bay area and contributed them to the growing collection from Qitchauvik. Fortunately, the donors also offered information about the objects' provenience that allowed students to accurately record the place of origin. One of the objects donated was a check-stamp paddle, used to decorate pottery and usually associated with the Norton culture. The donor of this object remembered where he had found it, and because of this we now know of a previously unrecorded Norton period component in a site along Golovnin Bay.

A surprise announcement arrived during a Golovin Native Corporation meeting on July 10, 1999, to discuss the field school: a resident of Golovin donated all of the items that a family member had collected from Qitchauvik during previous years. This donation and the certainty of its provenance added greatly to our understanding of the site. These events are expressions of the community's support of the program and their confidence in the Village Corporation.

Before this project, Qitchauvik, the focus of the field school, had not been tested or excavated in a manner that would allow an assessment of its age or place within the

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58 All materials collected during the field school and subsequent donations are the property of Golovin Native Corporation. The final disposition of the collection is a planned "repository" in the Golovin High School.
cultural chronology of the area. With the results from the \( ^{14} \text{C} \) samples taken at Qitchauvik, we know that it was occupied possibly as early as A.D. 550. Occupied at the same time as a purported Birnirk phase at Cape Nome and the Ipiutak phase further north at Deering, Qitchauvik cannot yet be pigeonholed, to the satisfaction of all archaeologists, as representative of either of these cultures (cf. Mason 2000; this volume, Chapters 8 and 10). What was the language of those people living there at that time? Unfortunately, the answer to this and other questions must wait until further research can be done there.

While the qarigi at Qitchauvik provides considerable grist for archaeological argumentation, it is likely that other features, including houses and burials also exist at the site. Future testing at Qitchauvik should be directed toward the recovery of in situ data on settlement structure and even evidence of the culturally very diagnostic ritual activity often interred with the deceased. Of course, any human remains could yield DNA useful in reconstructing genetic affinities, evidence of paleodemographic characteristics (cause of death, age structure) and pathologies.

The sites of Ipnachuaq, Kuvrawik and Ikjïituq further expand our knowledge of the region. Ikjïituq had been previously tested by BIA/ANCSA; and the samples revealed occupations between A.D. 1200-1300 and from A.D. 1600 to the present. Because this site was dated, no further samples were taken.\(^{59}\) In a similar situation, Chiukak was not tested because of the extensive and scattered above ground burials located there. To compensate for the exclusion of these sites from the program, Golovin Native Corporation allowed the crew to expand their excavation at Qitchauvik and permitted collection of samples from Kuvrawik and Ipnachuaq.\(^{60}\) As yet, the sample from Ipnachuaq has not been processed, but the dates for the Kuvrawik sample indicate occupation within the historic period. We know with certainty now that Ikjïituq and Kuvrawik were occupied at about the time of the first direct contacts with Euro-American culture.

\(^{59}\) The decision not to test this site was due to its location near the reburials in 1997. To test the site, after the students and community had worked so hard for repatriation, may have presented a mixed message to the youth of the community [MLG].

\(^{60}\) Ipnachuaq is the allotment of Agnes Amoarok who granted permission for testing.
Research Priorities and Domains in Western Alaska  

Several promising lines of research for the Golovnin Bay region include:
- early man/first peopling of New World;
- evidence for early maritime resource use;
- development of the Norton culture:
  - changes in subsistence and social organization;
- interaction in the Old Bering Sea/Ipiutak horizon;
- human/climate interactions, as evident from tree ring and other proxy records;
- and development of the Thule culture in relation to social and ecological changes.

The nature and timing of entry into the New World are reasonably well documented only from elsewhere in Alaska, mostly in the Tanana and Nenana valleys of Central Alaska. Any late Pleistocene site on the Seward Peninsula would yield a noteworthy bonus. While late Pleistocene sites are notoriously difficult to find, several geomorphic settings in the Golovnin Bay vicinity provide hopeful indications for site discovery. Eolian deposits on the hillsides above Golovnin Bay may be the residue of late Pleistocene dune fields, and exploration in these areas could yield evidence of Early “Man/Woman” sites.

Early maritime sites, dated before 2500 B.C., are a rarity in any part of Alaska. Cape Denbigh still records the earliest firmly dated evidence of maritime subsistence in Alaska north of the Aleutians, possibly as early as 2500 B.C. (Harritt 1998). The outer coast of Golovnin Bay holds considerable promise for early archaeological evidence, if means are possible to date the Denbigh localities discovered by Giddings (1964). Even earlier sites may occur on the two promontories. This possibility is inferred from the inspection of bathymetric charts that show that continental shelf relief is steep, a

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61 By Owen K. Mason
62 The earliest maritime-reliant sites in Alaska are in the Aleutians, 8,500-8,000 ¹⁴C yrs. B.P. (Dumond and Knecht 2001, Dumond 2001) or ca. 9000 B.P. from southeast Alaska (Dixon et al. 1997).
circumstance that means early Holocene paleo-shorelines may be close to land. Norton Sound, only 20 m deep, was flooded between 10,000 to 8,000 years ago, due to the post-glacial sea level transgression (Nelson 1982). Evidence of a maritime hunting economy older than 5000 B.P. is obscured by the erosive environment produced by sea-level rise (Jordan and Mason 1999, Mason and Jordan 2002).

The origin(s) and first history of maritime adaptation in Northwest Alaska, both of seal and whale hunting, are largely unknown. Questions remain about the scope and dependence of Denbigh peoples on resources of the sea; faunal remains are lacking from nearly all coastal Denbigh sites.

The onset and/or appearance of the Norton culture remains poorly documented; nonetheless, its reliance on ringed seal and bearded seal is clear even from the simplistic bone-count-based zooarchaeology of Giddings (1964:186). Even so, much about Norton remains unclear, including the size and nature of communities, the development of ritual and the scope and nature of regional interaction between communities.

The scale and intensity of interaction during the largely warm early 1st millennium A.D. presents a number of intriguing research possibilities. The results from Qitchauvik, detailed above, confirm the multicultural view of Mason (1998, 2000). In fact, the array of materials from the Golovnin Bay area leads to a revision of the classification of Bockstoce (1979) for Safety Sound (Mason 2000).

Once again, fate of Norton peoples is unknown, considering the lengthy hiatus following Norton at Safety Sound and Cape Denbigh. Does this reflect stormy colder climate that favored sea mammal populations farther north? Because of this gap in dated sites, the appearance of “Thule” peoples appears sudden and mysterious: Is it a replacement event, i.e., conquest, or a colonization of virgin soil? The major expansion ca. A.D. 1200 can be linked to a climatic warming that forced people on the move. The 14 house depressions located landward of Qitchauvik can very likely provide data on the Thule occupation in Golovnin Bay. It is also noteworthy that settlements from Rocky Point and Little Rocky Point have occupations that date to the warmer 13th century A.D. Additional research can assist in explaining the development of Thule into the 19th century A.D. cultural configuration first noted by the Russians.
Appendix

Dendroclimatological Studies in the Golovnin Bay Region Area

Valerie Barber

Introduction

This study was part of the Golovin Field School sponsored by the National Park Service Shared Beringia Heritage Project. A 1,500-year-old Feature 1 at Qitchauvik (SOL-143) on the Seward Peninsula was excavated in 1998-2000 (this volume, Chapters 4 to 7). Some old timbers of white spruce (*Picea glauca*) were obtained from Feature 1 in 1998 and dated by radiocarbon analyses (Table I, cf. Chronometric Dates, pp. 63 ff.). Sample disks were cut by chainsaw in the field, followed by dendrochronological and dendroclimatological study undertaken in the spirit of Giddings (1941, 1951). In assist to interpret the annual growth of the rings, modern samples of tree cores were taken from white spruce at two locations; one from a site along the coast east of Golovin and one upriver from the fish camp. Chronological sequences were created based on the index of annual growth from tree cores collected at each site. These were compared to monthly temperature and precipitation data from three sites nearby on the Seward Peninsula. Nonetheless, it is highly probable that the structural wood at Qitchauvik derived from driftwood that had grown in Interior Alaska. For this reason, the proxy record within the Qitchauvik tree rings might not provide a local record of climate, but one that is remote from Golovnin Bay.

Field Study of Living Trees along Golovnin Bay

Live trees were sampled, non-destructively, with tree corers at two locations on the Seward Peninsula. Golovin is beyond latitudinal treeline (Giddings 1951), but spruce grows inland, north of Golovin, near White Mountain, and also grows along the coast.
to 48 km to the east. To obtain an inland signature, a sampling location was selected from islands and the banks of Fish Creek, inland from Qitchauvik and downstream from White Mountain; hence, the “River chronology.” Here we collected two cores from each of the trees. To obtain a “Coastal chronology,” a second study location was selected: along the coast, ca. 40 km east of Cape Darby, where a transect was taken on a south-facing slope, starting from near sea level and continuing up the slope about 200 m below tree line. Two cores were extracted from each of 17 trees.

Tree Ring Analyses

Cores were mounted in wooden strips and sanded to 400 grit with a belt sander and to 600 grit by hand when necessary to resolve annual boundaries. The disks from the archaeological wood were not mounted but were sanded in the same manner as the tree cores. The annual rings of each tree core were measured to 0.001 mm precision with a sliding bench micrometer (Velmex, Inc.). Measured rings were cross-dated by site using the computer program Cofecha (Holmes 1983) and by visual cross-dating (Stokes and Smiley 1968). Cores that appeared to have minor offsets from the average were re-measured. Cores that did not correlate with an average masters series by at least an \( p=0.4 \) or greater, were dropped from the chronology. For trees with two cores, an average of the two was used. Tree cores that were less than 100 years old were dropped from the chronology to maintain constant sample depth in the 20th century. The remaining cores were run through the ARSTAN program for de-trending [available at <<http://web.utk.edu/~grissino/software.htm>>], and a master chronology was created for each of the two sites. The ARSTAN program involves measuring and cross-dating ring-width series for each tree so that the series are “de-trended” to remove age-related growth trends while preserving as much low frequency variation as possible by fitting with conservative curve-fitting methods. This included fitting each tree ring series with a negative exponential, a line of negative slope, or a horizontal line. Dividing the ring width value in year \( x \) by the value of the fitted line or curve in year \( x \) produces a dimensionless index of tree growth minus the age-related trends. This technique removes the relative differences in growth rates among trees, but preserves the year-to-year variation in growth. Each chronology was created by averaging the ring-width index.
value for each year across all trees. For the river site, two cores from 14 trees were used; and for the southern slope site, two cores each of 17 trees were used for the chronologies.

Temperature and precipitation data from three weather stations were used for correlation analysis to determine parameters controlling the growth of the trees. This allows hind casting and reconstruction of climate parameters when recorded data is not available. The longest recording weather station in the Golovin region is in Nome, 150 km to the west. The Nome weather station was established in 1907 and remains in operation at present. Anecdotal accounts from locals indicate that Golovin weather differs considerably from Nome weather so other sites were located. Moses Point is on the coast 48 km east of Golovin and temperature and precipitation data are available from 1949-1967, although there may be some problems with data collection during some years; but most years are complete. Unalakleet, located ca. 100 km across Norton Sound to the southeast, has temperature data recorded from 1945-1978; and precipitation data extends from 1942 through 1978.

Simple Pearson correlation analyses of the two tree chronologies (one at a time) against monthly parameters from each station were conducted to determine any relationships (Table VIII). A positive value between 0 and 1 indicates a positive correlation; a value between 0 and -1 indicates a negative or inverse relationship; and a value close to zero indicates no relationship. The higher the negative or positive values, the better the correlation. Only significant correlations are indicated in the tables.

Results

The tree ring chronologies created from the two study locales (Fig. 56, 57) show some relationship in general trends, but the correlation between the two data sets is low (ρ=0.236). The two chronologies share some characteristics with the Cape Darby tree ring sequences reported by Giddings (1951:Fig.2); the statistical relationships between Giddings’ record and this study remain to be established. To understand the tree ring sequence from Cape Darby, I first looked at correlations with the Nome climatological data, because of their greater time depth. However, neither chronology revealed any significant correlation with Nome temperature. By contrast, precipitation (Table VIII), had a significant number of negative correlations for the Coastal chronology. The River
chronology only had one slightly significant negative correlation for the growth year precipitation (prior year Sept.-Dec., current year growth Jan.-Aug.), but a lack of significance with individual months indicates this might be a random correlation. The Coastal chronology had several months that were negatively correlated with precipitation, as well as the growth year.

Figure 56. Tree Ring Chronology derived from living trees on the coast near Cape Darby Peninsula and Fish River near Golovnin Bay. Ring width on left axis; years A.D. to present on lower axis.

Figure 57. Statistically smoothed tree ring chronology for the Golovnin Bay region. Ring width on left axis; years A.D. to present on lower axis.
Next I examined the correlations between the Moses Point climate data and the two chronologies. The correlations with temperature showed similar results for both chronologies (Table IX). They had a positive correlation with May temperatures and a negative correlation with September temperatures.

Table VIII. Correlations between precipitation at Nome and tree ring width in the Golovnin Bay region based on samples collected during this project.

<table>
<thead>
<tr>
<th>Nome Precipitation</th>
<th>Coastal Chronology</th>
<th>River Chronology</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>-0.302</td>
<td></td>
</tr>
<tr>
<td>April</td>
<td>-0.314</td>
<td></td>
</tr>
<tr>
<td>June</td>
<td>-0.345</td>
<td></td>
</tr>
<tr>
<td>October</td>
<td>-0.302</td>
<td></td>
</tr>
<tr>
<td>November</td>
<td>-0.311</td>
<td></td>
</tr>
<tr>
<td>Growth Year (Sept.- Aug.)</td>
<td>-0.471</td>
<td>-0.325</td>
</tr>
</tbody>
</table>

Table IX.

Correlations between Moses Point temperature and tree ring width.

<table>
<thead>
<tr>
<th>Moses Point Temperature</th>
<th>Coastal Chronology</th>
<th>River Chronology</th>
</tr>
</thead>
<tbody>
<tr>
<td>May</td>
<td>+0.477</td>
<td>+0.449</td>
</tr>
<tr>
<td>September</td>
<td>-0.625</td>
<td>-0.4875</td>
</tr>
</tbody>
</table>

When comparing the chronologies to Moses Point precipitation, only the coastal station had significant negative correlations, especially in April and May (Table X).
Table X. Correlations between Moses Point precipitation and the Coastal chronology.

<table>
<thead>
<tr>
<th>Moses Point Precipation</th>
<th>Coastal Chronology</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>-0.351</td>
</tr>
<tr>
<td>April</td>
<td>-0.517</td>
</tr>
<tr>
<td>May</td>
<td>-0.413</td>
</tr>
<tr>
<td>June</td>
<td>-0.292</td>
</tr>
<tr>
<td>October</td>
<td>-0.364</td>
</tr>
<tr>
<td>November</td>
<td>-0.363</td>
</tr>
</tbody>
</table>

Finally, the relationship with the Unalakleet climate data was examined (Tables XI and XII, below). For temperature, neither site correlated very well (Table XI). The relationship of ring width (e.g., growth) with precipitation was slightly more significant for the River chronology but precipitation showed no significant correlation with tree growth in the Coastal chronology (Table XII).

Discussion

Based on the correlation analysis, both Seward Peninsula sites are negatively correlated with precipitation; in other words, the trees grow less well with additional precipitation. For the River chronology, summer rainfall (May-June) is very important; but with less rain, the trees seem to grow better. The Coastal chronology correlates very negatively in relation to the Moses Point and the Nome precipitation data. The more precipitation during April-June, the less well the trees grow. Similarly, October and November precipitation seems to limit growth as well. This region of the Seward Peninsula can be quite stormy with considerable precipitation. The ice in the bay on average does not disappear until June, and the ground does not thaw until late summer.
Table XI. Correlations between Unalakleet, comparing temperature and both tree ring chronologies.

<table>
<thead>
<tr>
<th>Unalakleet Temperature</th>
<th>Coastal Chronology</th>
<th>River Chronology</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>-0.248</td>
<td></td>
</tr>
<tr>
<td>April</td>
<td></td>
<td>-0.275</td>
</tr>
<tr>
<td>September</td>
<td></td>
<td>-0.287</td>
</tr>
</tbody>
</table>

Table XII. Correlations between the “River” tree ring chronology and Unalakleet precipitation.

<table>
<thead>
<tr>
<th>Unalakleet Precipitation</th>
<th>River Chronology</th>
</tr>
</thead>
<tbody>
<tr>
<td>May</td>
<td>-0.296</td>
</tr>
<tr>
<td>June</td>
<td>-0.365</td>
</tr>
<tr>
<td>July</td>
<td>-0.256</td>
</tr>
<tr>
<td>December</td>
<td>-0.366</td>
</tr>
<tr>
<td>Growth Year</td>
<td>-0.389</td>
</tr>
</tbody>
</table>

The growing season for trees on the Seward Peninsula is very short, starting in late June and lasting reliably until late August or September. The trees are probably not limited by moisture for most of the growing season, so that more rainfall correlates to less growth. This differs somewhat from that of the forests of the Interior, where drought stress has an adverse relationship to tree growth (Barber et al. 2000, Juday et al. 2003).

With increasing ecological sophistication, researchers find that growth responses of Alaska trees are more complex, as individual trees varying in sensitivity to...
temperature, for example (Wilmking et al. 2004). In order to reconstruct paleoclimate from tree rings, researchers must critically examine the entire range of responses among trees and develop “responder” chronologies, rather than simple “site” chronologies (Wilmking et al. 2005).

Temperature appears to play a role at the beginning of the thaw period (May) and at the end of the growing season (September). Both chronologies correlate well with the May and September Moses Point temperature data. In May, the two sites exhibit a positive growth response to temperature, which is what we would expect. When there is a warm May, the ground thaws quicker and growing season begins a bit earlier. In September, the two sites indicate a negative correlation with temperature, meaning that the warmer it is, the less well the trees appear to grow. This could be due to a slight moisture limitation when the growing season extends over a longer period.

Unfortunately, the meteorological database is not long enough to make definitive statements. We would expect that wetter conditions generally mean cooler conditions and that the negative correlation of both sites to precipitation means temperatures were a bit cooler. Further studies of the correlation between temperature and precipitation need to be conducted for this region but are beyond the scope of this report. When combined with the Cape Darby sequences of Giddings (1951), the Fish River and Bering Sea Coast chronologies from A.D. 1840 to 2000 for the Seward Peninsula developed for this report should prove useful for archaeological interpretations (cf. this volume, Chapter 2), but this question remains outside the data collected from the Qitchauvik site.

The climate of the Seward Peninsula is driven by maritime influences; and weather in Nome is generally wetter than at Fairbanks, so that tree ring records from the Seward Peninsula generally show an opposite response to Interior trees (Blasing and Fritts 1976:51). For example, on the Seward Peninsula tree growth is low during May if temperatures are cool and summers are rainy. Thus, one might expect that the archaeological wood, which is probably driftwood from Interior Alaska, would bear an inverse signature to the tree ring chronologies from the Seward Peninsula.\(^{64}\)

\(^{64}\) However, driftwood logs probably derived from the flood plain forest. By contrast, most tree ring records employed as proxy climate records are from the tree line and upland trees. Floodplain tree growth is not subject to the same meteorological variables as upland trees in the Interior, as Giddings (1941, 1953) discovered in the B chronology for the Fort Yukon area. Recent tree ring research on the Yukon River floodplain shows that there is no direct correlation between temperature and tree growth [editorial comment by C. Alix 2006].
Comparisons of 20th century tree ring records from the Interior (cf. Figure 58 with Figs. 56 and 57) show that Interior trees were growing vigorously during the 1920s to 1950s, in contrast to those from the Seward Peninsula where trees were less healthy for much of those three decades. Inversely, Seward Peninsula trees, although less productive during the last 40 years than before 1950, still were “outperforming” Interior trees, apparently suffering less moisture stress. The chronologies for the structural timbers of the Qitchauvik qarigi show a number of striking similarities and dissimilarities (Fig. 59), as expected from driftwood that derives from hundreds of kilometers to the east.
Figure 59. Tree ring chronology from three structural timbers at Qitchauvik, Golovnin Bay. Ring widths are plotted on the left and indicate growth per year. On the lower axis, calendar years A.D., based on the average of three $^{14}$C ages on outer rings.

The three structural timbers (T-15, T-17 and T-19) sampled for dendroclimatological purposes derived from Structure 1 (cf. this volume, pp. 53); the end rings of all three were $^{14}$C dated (this volume, Table I, pp. 63 ff.). All three trees were between 130 and 180 years old at the time of death. The tree ring sequences from the three timbers were cross-dated using the methods described above (cf., p. 161), with the end ring age assigned from the mean calibrated age of each sample. Hence, T-17 had a mean calendar age of A.D. 540, while T-15 falls at A.D. 497 and A.D. 470. The mean ages are employed as the upper limiting ages in the cross-correlated diagram produced (Fig. 59). After correlation the three trees provide variable lengths of record: T-19: A.D. 310-490, T-15: A.D. 380-510 and T-17: A.D. 410-540. However, the actual age of the end rings may be earlier or later by as much as 80 to 100 years, in consideration of the probabilistic nature of $^{14}$C dating (cf. Gerlach and Mason 1992).

Considering the likelihood that the Qitchauvik archaeological wood derived from driftwood, one may very tentatively extrapolate Interior dendroclimatological inferences
to the floating chronology produced in this study (Fig. 59). The longest lived tree, T-19, experienced adverse growth conditions for the last half of its life, the 5th century A.D., following a century of very favorable growth before A.D. 400. The other two trees recorded rapid alternations in growth in the 5th century A.D., but all three were not quite in sync. For one tree, T-17, the late 6th century produced favorable growth conditions. Bearing in mind that sample size is low (n=3), the Qitchauvik trees are most useful in generating hypotheses for future tree ring research. The Qitchauvik chronology indicates that in Interior Alaska, the source of the driftwood, growth declined significantly between A.D. 400 and 500. Very likely, drought stress might have produced this tree ring signature (Barber et al. 2000, Juday et al. 2003). By employing the inferences obtained in the climatological study for the Golovnin Bay region, one might argue that the Seward Peninsula experienced positive conditions for trees and a lower amount of summer precipitation because tree growth is low during May when temperatures are cool and summers are rainy. In the 5th century A.D., the period of overlap between all three trees used as structural timbers, the mix of responses confirms the need for emphasizing “responder” chronologies (Wilmking et al. 2005) and appreciating the multiplicity of tree growth patterns within an ecozone (Wilmking et al. 2004).

A major task remaining involves integrating the Golovnin Bay records with the larger data set from the Seward Peninsula that D’Arrigo et al. (2004) have linked statistically to the Kobuk River chronologies of Giddings (1952b). The Coastal chronology presented in this work may record a similar temperature response, although statistical confirmation is needed. Additional research at Qitchauvik or other structures with excellent wood preservation could refine and extend the floating chronologies produced in this effort. Qitchauvik provided a tantalizing data set that is rapidly vanishing and is often ignored by archaeologists. Similar aged wood also occurs on St. Lawrence Island and as recently as the late 1990s was casually discarded (or even burned as fuel) by subsistence diggers (Allen McCartney, 1998, oral communication to O.K. Mason). With great urgency and dedication, dendroclimatologists should return to the rich vein explored by J. Louis Giddings.
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PLATES
Plate I

Bone points with multiple linear decorative motifs

Upper: from left to right:
(a) Blunt bird point (99-204);
(b) Blunt bone point (98-296e);
(c) Awl or blunted bone point with linear motif (98-114);
(d) Blunt bone point (98-296d)

Lower:
(e) Blunt bone point (99-48);
(f) Shaped bone (98-243);
(g) Gullhook (99-86)
Plate I
Plate II

Shaped bone and ivory objects from left to right:
(a) Bi-pointed bone point with linear decoration (99-86);
(b) Foreshaft (98-296a);
(c) Cleft-bone point (98-135);
(d) Awl or punch (98-296c)

Blunt bone pieces with linear motifs:
(e) (98-296b); (f) (99-40)
Plate III

Single-barbed bone point: alternate views of 99-70
Plate IV

Miscellaneous bone objects from left to right

(a) Fish hook or pendant (99-87);
(b) Leister prong (98-300);
(c) Fish hook or pendant (98-290)
Plate V

Miscellaneous artifacts, hunting or other pursuits

(a) Bola weight (00-07); (b) Wooden float plug (99-49); (c) Bone point, shaped like metal object (99-158); (d) Bone swivel (98-44)
Plate VI

Seal dart point (99-25), views from left and right
Plate VII

End and side blades

From top to bottom, left to right:

Top Row: (a) End blade (99-105); (b) Fractured end blade (99-20a); (c) Bimarginally retouched flake, side blade (oo-30b); (d) Bimarginally retouched flake, end blade (00-10)

Middle Row: (e) Bimarginally retouched flake, end blade (00-30a); (f) Bifacial end blade (00-30c); (g) Asymmetrical biface, side blade (99-14); (h) Side blade fragment (99-12)

Lower Row: (i) Bimarginally retouched end or side blade fragment (99-35); (j) Asymmetrical side blade fragment (00-20b); (k) Fragmentary side or end blade (00-11); (l) Bifacial fragment — side blade (?) (99-20)
Plate VII

An Ipiutak Outlier: A 1,500-Year-Old Qarigi at Qitchauvik
Plate VIII

Bifacial and unifacial objects
from top to bottom, left to right

Top Row:
(a) Ovoid, bimarginally retouched flake (99-41),
(b) Biface (99-191);
(c) Fragmentary asymmetrical biface, roughly flaked (99-125)
Middle Row:
(d) Asymmetrical biface (98-147);
(e) Triangular biface (99-305);
(f) Asymmetrical biface—Side blade (99-187)
Lower Row:
(g) Retouched flake (99-60);
(h) Retouched chalcedony flake (98-307);
(i) Retouched gray chert flake (99-76)
Plate VIII

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Plate IX
Retouched flakes and bifaces
Upper: (a) Reddish chert flake core (98-229); (b) Unretouched chalcedony flake (98-51); (c) Unretouched flake (00-50); (d) Unimarginally retouched gray chert flake (98-329)
Lower: (e) Chalcedony bifacial knife (98-304); (f) Asymmetrical black chert biface (98-303) (g) Chalcedony flake (98-335)
Plate X

End blade fragments

Top Row: left to right: (a) 00-11a; (b) 00-11b; (c) 00-11c;
(d) 00-01; (e) 99-013
Bottom Row: (f) 00-20a; (g) 99-20b; (h) 99-119

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Plate XI

Woven grass, possible boot lining (98-308)
Plate XII

Ground stone lamps: (a) Fragment (98-309); (b) Whole (98-215)
Plate XIII

Miscellaneous organic artifacts
(a) Worked ivory with multiple holes on each side (99-259); (b) Flat bone fragment with two holes, 98-285; (c) Birch bark fragment (99-90); (d) Ivory peg (99-111); (e) Browband fragment (99-299); (f) Wooden peg (99-90)
Plate XIV

Ground slate and fragments
(a) Slate ulu fragment (98-05); (b) Ulu fragment (99-214); (c) Ceramic fragment from Uiaalik site (SOL-061) at Little Rocky Point; (d) Slate end blade fragment (99-193)
Plate XV

Wood artifacts
(a) Arrowshaft (99-38); (b) Blunt end, pointed object, Peg? (99-05);
(c) Shaped wood (99-98); (d) Bow fragment (98-150)
Plate XVI

Miscellaneous wood and bone objects

(a) Side and bottom view of wooden handle (98-285);
(b) Float plug (98-393);
(c) Shaped bone (98-302);
(d) Bone haft (98-310);
(e) Beaver tooth engraver (98-293);
(f) Wooden peg with shaped head (98-270);
(g) Bone object (98-291)
Plate XVI

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Plate XVII

Wood figurine (98-288)

Upright human figure with crossed arms rising from lower figure
Plate XVIII

Wooden human maskettes
Upper (a) 98-286; Lower (b) (00-39)
Plate XIX

Shaped wood, possibly a figurine, representing caribou (98-278)
Plate XX

Wooden caribou figurines

(a) Multiple views of the posterior of a caribou. Note diagonal lines on rear flanks (98-287).
(b) Caribou figure in profile (99-84)
Plate XXI

Bone and ivory objects
Upper Row: (a) Grooved circular stone, of uncertain function (98-294); (b) Engraved ivory (98-127)
Lower Row: (c) Three views of bone object with two holes and central cleft
Plate XXII

Browband with Old Bering Sea motifs (uncataloged)
Plate XXIII

Blubber hook (98-115); (b) Pumice abrader (98-284)
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