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Traditional Beluga Drives of the Iñupiat of Kotzebue Sound, Alaska

Charles V. Lucier
James W. VanStone

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Traditional Beluga Drives of the Iñupiat of Kotzebue Sound, Alaska

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Kotzebue Sound beluga drives, which ended in the early 20th century, are described on the basis of information provided by Iñupiat informants in 1951 and 1952. Also examined is the changeover to the pursuit of belugas by individual hunters, which was rooted in significant technological and social changes. To better understand these drives, this study also includes descriptions of beluga hunting camps and the societal participation, religious beliefs and practices, and philosophy that underlay and reinforced the hunters' involvement in this cooperative activity.

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Figures 1–3, 8, 21, and 22 were drawn by Lori Grove, and Figure 24 was drawn by Zbigniew Jastrzebski. The photographs were taken by Lucier in 1951 and 1952. Numerous drafts of the manuscript were typed with accuracy and dispatch by James D. Foerster.

I

BACKGROUND TO THE STUDY

The purpose of this study is to document 19th century beluga (*Delphinapterus leucas*) hunting, and particularly communal beluga drives, by the Iñupiat of Kotzebue Sound, a major indentation of the coast north of Alaska's Seward Peninsula (Figs. 1, 2). This important subsistence activity has, for the most part, been neglected by students of Iñupiaq culture, both past and present. Beluga drives were important contributors to the health, well-being, and identities of a number of Kotzebue Sound societies (small nations), seasonal migrants who summered around the shallow waters of the northern and eastern sound. Drives played an important role in relations between the societies inhabiting the sound as well as with other Iñupiat and Koyukon Athapaskans.

Kotzebue Sound beluga drives, involving sizable deployments of man-powered qayaqs and weaponry, ended in the early 20th century. A change-over to the pursuit of belugas by individual hunters was rooted in technological and social revolutions, the most obvious of which were the more effective firepower of repeating rifles and the Christian assertion of individual autonomy instead of communal loyalty and authority based on age and merit. In other words, the religious community (once shamanistic and now Christian) and the hunting community, which had once been one, were now separate.

To better understand these drives, this study also includes descriptions of beluga hunting camps and the societal participation, religious beliefs and practices, and philosophy that underlay and reinforced the hunters' involvement in this cooperative activity. It is our hope that this effort will help in achieving a more balanced view of Iñupiaq culture and day-to-day existence in Kotzebue Sound in the 19th century and later, when the region's human and natural resources were redirected toward support and expansion of American and international economies.

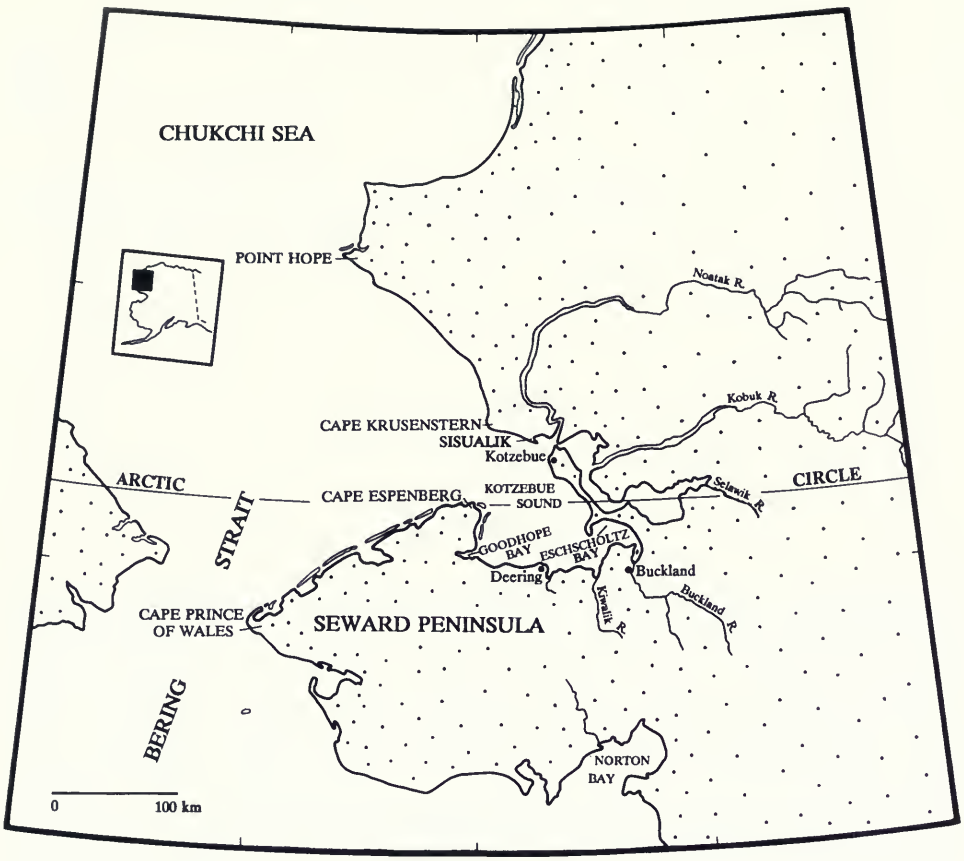


Figure 1. Map of western Alaska.

One might reasonably ask why beluga drives, which were impressive in scale and refined in execution, were so little noticed by explorers, scientists, and government officials who visited northwest Alaska from the time of Kotzebue's voyage into the sound in 1816 to the establishment of a Friends mission in Kotzebue village in 1897. The explanation almost certainly lies in the absence of large bowhead whales (*Balaena mysticetus*) and walruses (*Odobenus rosmarus*) from Kotzebue Sound. Had these commercially valuable, open seas species been present, Americans would have hunted in the sound in spring and, no doubt, would have had shore stations similar to those farther north along the coast by the mid-19th century, when whaling for world commerce flourished in the Chukchi Sea. But, of course, they did not and were present, if at all, only as traders in midsummer after beluga drives were finished. The fur trade, which attracted Caucasian boat traders and off-season whalers, remained partly under the control of Iñupiat from Cape Prince of Wales and other native middlemen.

By the time Friends missionaries arrived, Iñupiat were in numerical de-

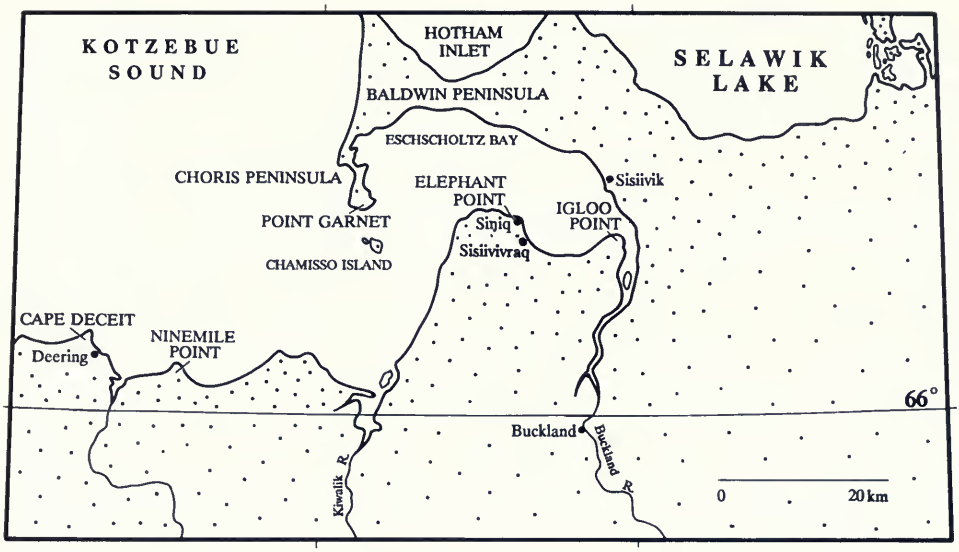


Figure 2. Map of southern and eastern Kotzebue Sound.

cline, and participation in beluga drives was also declining. In the late 19th century, government agents and scientific observers, passengers on seagoing vessels with predetermined schedules, visited Kotzebue Sound no earlier than mid-July for short periods of time, which allowed for only limited observations of Iñupiaq subsistence activities. Prospectors at the turn of the century were single-minded in their pursuit of gold deposits, and, after disembarking, headed immediately for the hills and graveled beaches. Meanwhile, Iñupiaq culture changed rapidly, and traditional hunting methods soon survived only in the memories of the oldest inhabitants.

Several aspects of beluga hunting and the beluga's presence in Kotzebue Sound need to be emphasized. For one, the communal drives were concentrated in, but not exclusive to, the northern and most easterly waters. In the 19th century, these drives were led by one society's hunters with the assistance of two or more societal allies—that is, hunters from other homelands. The subsistence practices of the leading societies and most of the allied societies involved fall river salmon (*Oncorhynchus* sp.) fishing, fall caribou (*Rangifer tarandus granti*) drives, and winter pursuit of caribou and other inland game. Because the eastern area drive leaders' homeland was close to salt water, they pursued spring sealing and, in winter when caribou hunting failed, specialized in fast ice sealing (Lucier & VanStone, 1991). The northern leaders' homeland was far upriver, so they hunted seals hardly at all in spring and almost never in winter. Broadly stated, peoples of both areas were exclusively coastal/inland migrants.

Another aspect of the human driving of belugas is obviously the animals themselves. Until the late 20th century, insofar as older Iñupiat knew, belugas

always migrated in the spring, moving eastward through the melting, breaking ice of the southeastern Chukchi Sea, past the northern shore of Seward Peninsula, into northern Kotzebue Sound, and then mainly to the easternmost sound, Eschscholtz Bay. Belugas in family groups, or pods, numbered perhaps a thousand or more. There was coming and going of belugas, but in human terms the essential fact was the meeting of numbers of belugas and qayaq-equipped Iñupiat again and again each early and midsummer year after year, and probably not to the detriment of the animals as a species. This balance of hunter and hunted, if imperfect, seems to have persisted for thousands of years until it was upset by Western thought and technology.

The authors of this study were in Kotzebue Sound in the late summer of 1951 when Nuataaġmiut from the Noatak were making their annual visit to Kotzebue village to obtain supplies and visit friends and relatives. Among these Nuataaġmiut were several elders who were born in the 1860s and 1870s. At that time, Lucier had completed a year of study among the Buckland River Kaŋiġmiut, and VanStone was completing excavation of a prehistoric settlement located virtually within the confines of the rapidly growing modern village. Taking advantage of the presence of these elderly Nuataaġmiut visitors, Lucier, with assistance from VanStone, tape-recorded information on, among other subjects, traditional beluga drives. The valuable memories of these elderly informants, combined with data about modern beluga hunting obtained by Lucier in 1951 in Eschscholtz Bay and in 1952 at Sisualik, the shore camp in the northern sound, provided the basic ethnographic information for this study. The summers of 1951 and 1952 were an extremely fortuitous time to collect information on traditional beluga drives. Within a few years, all the informants whose memories supplied the basis for this study had died.

2

THE ORIGINS OF BELUGA HUNTING

The beginnings of beluga hunting by native Alaskans in Kotzebue Sound are unknown but remote in time. Helge Larsen (1968:36–37, 71, table), in a discussion of Denbigh peoples, whose caribou-hunting artifacts he recovered from his Trail Creek Cave 9 south of Deering in interior Seward Peninsula, described them as pivotal ancestors of the Iñupiat of northwestern and far northern Alaska, including Kotzebue Sound. Larsen and J. Louis Giddings agreed that Denbigh peoples led a migratory existence, visiting the coast in spring and summer and spending winters in the interior.

Although no boat remains have been recovered from any Denbigh site, Giddings was certain that these people were "skilled enough at boating to procure seal in quantity and to live along a very wide stretch of the seacoast of western Alaska" (Giddings, 1964:242). Larsen believed it likely that the Denbigh peoples, "like the present-day Eskimo, hunted the white-whales, which are common in Kotzebue Sound in the early part of the summer" (Larsen, 1968:71). Larsen and Giddings thus tie formative beluga hunting to inland/coastal seasonal migrants with boats at least as early as Denbigh times, a period extending from about 5,500 to 4,000 years before the present (Harritt, 1993).

Pre-Denbigh peoples, those living from about 15,000 B.P. to 5500 B.P., whose weapons and prey remains also were found in excavated caves at Trail Creek, evidently had an economy based on land hunting and fishing. Whether these late Pleistocene and Holocene hunters were exclusively inlanders or were seasonal inland/coastal migrants is unclear. Their inland orientation is demonstrated by a reliance on caribou for food and caribou antler for weapons, but neither this fact nor the absence of seal bones and walrus ivory at the site is a sure or persuasive indication that they did not live seasonally or periodically on the coast. Those hunters who lived around Trail Creek in late Pleistocene times, however, probably had few if any opportunities for

sea mammal hunting or other saltwater pursuits, even though millennia before 5500 B.P. saltwater advance into eastern Beringia presumably allowed seals and belugas to occupy those shallow seas.

According to Larsen (1968:74),

> Techniques used for land hunting may be applied to hunting on the sea-ice, but hunting of sea mammals in open water implies new inventions, a new technique, and experience, hence spring-hunting of seals resting on the ice was probably adopted before open-water hunting of sea mammals.

Doubtless Larsen had in mind the winter shore-fast ice that prevails on inner sounds and open shores in northwestern Alaska, surviving through spring breakup as a virtual extension of land.

The beginning of open water sea mammal hunting, of course, depended on the existence of suitable water transport. There is sufficient reason to believe that boats were in use in northwestern North America before Denbigh times, that is, earlier than 5500 B.P. This supposition is supported by the existence of a maritime culture on Kodiak Island around 6500 B.C. (Clark, 1984:136–137). Boats constructed for hunting and travel on lakes, rivers, and enbayed salt waters like Kotzebue Sound need not have been as large, rugged, or durable as those that navigated Shelikof Strait, the coasts of the Alaska Peninsula, Kodiak Island, and other places on the stormy northern Gulf of Alaska.

There are no recognized representations of boats used on Kotzebue Sound or in surrounding river drainages before the time of Deering Ipiutak, where a toy or model of a frontally decked, one-man qayaq or canoe was recovered from communal house floor deposits that yielded five calibrated C14 dates ranging from 1400 ± 55 to 973 ± 170 B.P. (Gerlach & Mason, 1992:71–72, Table 1). An engraving of a prehistoric Kotzebue Sound boat is described and illustrated by Giddings (1967:91–92, Fig. 24c,d). The lifelike scene on an ivory bodkin shows two men standing on land, a man sitting in a boat, and a caribou. Giddings (1967:92) believed the boat to be "clearly neither umiak or kayak as we know them; rather it resembles the birch bark canoes described by the first western explorers on the Kobuk River." This engraving, from House 7 at Cape Krusenstern, which dates from about 1000 A.D. (Giddings & Anderson, 1986:30–31, 71, Figs. 19, 20), is notable not only for its detail but also for context; there is nothing to suggest sea hunting, and no sea mammals are shown.

The Old Whaling people, as exemplified by their occupation at Cape Krusenstern, dated about 2900–2800 B.P. (Mason & Ludwig, 1990:363), are the earliest evidential users of boats on Kotzebue Sound. Convincing evidence of boat hunting by Old Whaling people at Cape Krusenstern exists in walrus ivory chips, beluga bones, and extensive deposits of seal bones (Giddings & Anderson, 1986:250–252, 256). Granted that criticism of labeling

these ancient peoples as whalers has merit, because baleen whales probably rarely frequented Kotzebue Sound, the possibility that the large whale bones at these sites are from drifted whales does not detract from abundant evidence for maritime pursuits. Beluga bones are not discussed, but Anderson (Giddings & Anderson, 1986:318, Fig. 157) provided a cumulative graph showing the relative abundance of faunal remains from each of the Cape Krusenstern settlements. The graph shows that belugas comprised about 2% of preserved animal bones at the Old Whaling summer camp site, very similar to their frequency at the Cape Krusenstern Choris and Ipiutak sites. Surprisingly, the frequency given for beluga bones in Old Whaling winter houses is higher, around 8–9%, a percentage exceeded only in fairly recent Kotzebue period houses, where they comprise about 14%.

Anderson (Giddings & Anderson, 1986:319) recognized that

> It is impossible to know how representative the faunal counts are of the animals hunted and caught. Beluga, for example, undoubtedly played a larger role in the subsistence of Cape Krusenstern people than is indicated by our faunal collections . . . we know that these heavy animals were butchered on the shoreline. Only the flesh, blubber, skin, and occasionally the rib cages are taken into the camp area.

Anderson was referring to historic beluga butchering practices, and because of the low utility of beluga bones other than for fuel and occasional dog food, their frequency is likely to be low in all prehistoric and historic sites in relation to the actual take of belugas. This is especially true because archaeologists usually excavate houses and middens rather than shore and near-shore areas where belugas were butchered and drying racks were located.

What materials did pre-Denbigh people of late Pleistocene or Holocene tundras have with which to construct a usable boat? In the late Pleistocene, they had hides and sinews of musk ox, bison, and certainly caribou; later, primarily caribou hides and sinews. In some locales they had branches from poplar or the main shoots of larger willows and alders, even though these may have been spotty in occurrence as they are today.

Deciduous green wood is ideal for the construction of improvised boats because it is easily bent and for a time retains its elasticity and wet strength. Haired caribou hides, sinews, and green wood thus could provide pre-Denbigh people with the makings of boats that were nearly unsinkable and that could be made small for use by a single hunter or larger for transport and travel by a small group, depending on the builder's intentions and materials available. A one-man version would have sufficed for the interception and spearing of caribou and perhaps other, now extinct, big game species in rivers and lakes. The larger vessels could be used for inland travel and migrations on rivers to and from the coast. Boats would also have made possible late spring and summer hunting of belugas and seals.

The lance (spear), perfect for the killing of swimming caribou, was undoubtedly invented before the barbed harpoon and the toggle harpoon, at least one of which is necessary for open water hunting of seals and deep water hunting of belugas. Thus, the development of open water marine hunting with lined harpoons may have followed the development of boats for use on freshwater lakes. Regardless of the time of human marine adaptation in northwestern Alaska, boats may have predated widespread, year-round coastal living because they were essential for distant thaw seasons migrations.

Another factor relevant to the origin and development of northern Beringian sea mammal hunting generally and beluga hunting specifically is change in the coastline of northwestern Alaska over time. Kotzebue Sound reached its present level around 5000–4000 B.P. (Mason & Ludwig, 1990:370; Hopkins, 1967:465). Judging from the shallow inshore depths around much of the sound, only slight variations in sea level would dramatically alter the configuration and surface areas of the sound and its surrounding lowlands. Moderately lower sea levels, it seems, would not necessarily have kept belugas from utilizing a smaller, differently configured sound.

Anderson (1988:50, Fig. 45) showed the position of the shoreline in northwestern Alaska 10,000 years ago as being close to both capes Espenberg and Krusenstern, while modern Kotzebue Sound barely existed. At that time, belugas probably frequented those and nearby shores and the estuaries of rivers that crossed the still largely exposed Kotzebue basin. By 9000 B.P., the sound was larger and its shores were positioned nearer known prehistoric upland habitations. It seems that distances between inland locales and salt water were not, in some instances, much farther for early Holocene hunters than for hunters of Denbigh and later times. Anderson (1988:50) believed that "by 10,000 years ago the present-day complex of faunal resources on which people in northwestern Alaska have since depended (excepting perhaps salmon) was presumably established." Despite Larsen's (1968:74) carefully considered idea of shore-fast ice as a practical land extension and an avenue for the first hunting of marine mammals, belugas may have been hunted as early as were seals in Kotzebue Sound. Although early hunters may indeed have struck and retrieved belugas at the shore-fast ice edge in narrow leads in spring, the higher productivity and ease of cooperative beluga driving in shallows in early summer argue for its primacy over ice-edge hunting.

The adaptation to seal hunting around the Chukchi Sea could have ensued, as Larsen believed, when hunters of caribou and other land game began to kill seals hauled out on shore-fast ice in spring. The main hindrance to this proposition is the softness of snows in spring and the difficulty this poses to extensive travel, whether or not dog traction was a major factor in travel at that time. Of course, one cannot ignore the possibility that early peoples with forethought moved from inland to coasts in early spring to hunt seals

with a less than fully developed assortment of sealing weapons, as we envision the arsenal of harpoons, tools, and special clothing used historically for ice stalking of seals. They could not, however, have traveled far and overland with advanced snowmelt. On the other hand, following up the possibilities for fast ice seal hunting, early hunters and their families may sometimes have lived for much of the winter on shores of inland extensions of salt water, as on inner Kotzebue Sound, where they could hunt ringed seals at their breathing holes as well as seals basking on rotting but continuous sea ice in spring. This possibility, however, also requires winter coastal hunting of caribou, perhaps supplemented by under-ice fishing.

Whichever came first, adaptation from land-to-ice or land-to-open sea hunting, these developments must have occurred in a very remote time. Our skepticism regarding a relatively late Denbigh period development of sea mammal hunting joined with fall–winter inland residence or winter coastal residence in northern Beringia is based on consideration of the known choices faced by historic Kotzebue Sound and other Iñupiat and the opportunities as well as difficulties that terrains, snow and ice covers, waters, seasons, and prey availability posed to their survival around the sound and elsewhere in northwestern Alaska. Clear evidence of continuity in land ecosystems, especially tundras, around the present shores of the southeastern Chukchi Sea in Pleistocene times and until the present suggests that human survival needs and required responses there have been remarkably similar throughout the known times of human occupation (Guthrie & Mathews, 1971:507).

Arctic marine mammal hunting is a demanding, specialized activity that often involves sea ice in its multitude of physical states and in various weathers. In the region of Kotzebue Sound, salt waters are ice free from July through September. From the time that slush ice forms in October until the disappearance of floating and grounded ice at the end of June, the lives and activities of marine mammals, sea birds, and human beings are influenced or even dominated by sea ice. Contrarily, the absence of sea ice greatly affects people and sea life, causing resident ice-dependent marine mammals to depart with the retreating ice pack.

The mix of primary marine mammal species that is available to Kotzebue Sound hunters—ringed seals (*Phoca hispida*), bearded seals (*Erignathus barbatus*), spotted seals (*Phoca largha*), and belugas—and the means required to take these prey therefore change throughout the year according to the season, the degree of ice coverage, and the kind of ice present, if any. Although the abundance and even the kinds of prey species may have varied over the last 15 or more millennia of human residence in northern Beringia and its remnants that border Kotzebue Sound, in human terms the seasonal ebb and flow and arrival and departure of species are recurrent and eternal.

There are but few human-powered means by which to take northern marine mammals: clubbing and spearing, thrust and thrown harpooning and darting, netting, and driving to stranding in shallows. These means were

employed to a greater or lesser extent on the sound historically and probably prehistorically, although evidence of use of a particular capture method may, for a given time and place, be unknown or unconvincing.

Of the four historic, key mammal prey species of Kotzebue Sound Iñupiat, the beluga is less ice tolerant and dependent than are bearded and ringed seals but somewhat more ice tolerant and ice adapted than is the spotted seal. The beluga's late spring and summer presence in Kotzebue Sound shallows and bays, however, parallels that of the spotted seal, which can also be found at times during the ice-free season along open shores and in brackish estuaries and lagoons. As early as late May and as late as mid-June, as ice in the sound is broken and leads widen, belugas come into the sound and remain there, with a midsummer drop-off in their numbers, into early fall (Seaman et al., 1986:33, Figs. 3–8). When slush ice returns in October, any remaining belugas depart, as do spotted seals.

A general idea of summer beluga movements and areas of the sound where the small whales are present is suggested by a map in Burns and Seaman (1986: Fig. 15). Although the animals were known, until recent years, to favor the Sisualik–Eschscholtz Bay axis, with apparently lesser movements along the southern coast, their peak numbers do shift during the summer, and at times large numbers may be found outside the northern and eastern parts of the sound.

In all hunting, the situation largely determines the procurement techniques that succeed. Belugas are believed to come into Kotzebue Sound to take advantage of early season herring runs and to molt. After entering the sound, they move from the main sound into those shallow inlets and bays that are more advanced in spring ice melt and warmer because of their respective rivers' spring flooding into the sound. In late spring, when the main sound is choked and humanly impassable due to ice breakup, river discharge channels in these areas are open, and the ice is in a more advanced state of melt. Rivers must have flowed across the unflooded basin that is now Kotzebue Sound throughout the Pleistocene. Evidence for this assumption comes from buried lowland tundra vegetation and mammalian fossils near Deering on the southern shore of the sound (Guthrie & Mathews, 1971). Evidence of now flooded river channels also exists in an extensive mud core sample taken from marine and freshwater deposits, attributed to various stages of the Pleistocene and Holocene, on the Chukchi Sea floor offshore from the Kivalina area (Colinvaux, 1964:324–325). Thus, one may reasonably suppose that whenever sea level rises permitted belugas to re-enter the growing sound, in late Pleistocene or early Holocene, the present pattern of beluga spring in-migration was established, as was the human opportunity to hunt them.

Successful and highly productive hunting of belugas in shallows thus was possible with simple technologies: skin-covered boats and shafted, hand-held stabbing weapons. Toggle harpoons and barbed darts, although helpful, were not absolutely essential. Most important, however, was the effective coor-

dination of numbers of boatmen. We propose that early beluga drives were informed and inspired by caribou drives overland into water or corrals, given that caribou have been hunted successfully probably before and certainly since the early Holocene, as evidenced by the abundance of split caribou bones in the Trail Creek Cave deposits on northern Seward Peninsula (Larsen, 1968:57). Moreover, people could learn from observing killer whales (*Orcinus orca*) in effect driving their beluga prey onto beaches and shallows. The only obvious barrier to beluga drives in those remote times would have been lack of boats or lack of social coordination among human hunters, but both traits likely were present in the late Pleistocene.

At first glance, another method of taking belugas—in nets—seems simple in its requirements. However, the need for large seal or walrus hides for beluga nettings shows this method's dependence on advanced marine mammal hunting techniques to acquire the hides directly when they could not be obtained by trade. Boats would have been needed to set the anchored nets off shore.

Given that any species's basic needs persist, it is likely not only that belugas have consistently returned to Kotzebue Sound and its lagoons and estuaries but also that beluga hunting began as early as boats came into use in northwestern Alaska, and that the prey–hunter relationship continued in a manner dictated by climate, beluga behavior, and technology. It is not accidental that beluga hunters, especially those who conducted drives, the most profitable method on the sound, were mostly seasonal inland/coastal hunters and fishers. Historically, winter coastal dwellers who hunted seals in leads and were dedicated to ice-edge and broken ice spring sealing on the outer sound did not drive belugas, although they hunted them in open water.

Why were traditional inland/coastal seasonal migrants the leading hunters of belugas on Kotzebue Sound? Despite the fact that outer Kotzebue Sound spring seal hunters were the first to encounter belugas annually, it was the heavily caribou-dependent river peoples who, upon their arrival on inner coasts in the north and east, had ice-free access to belugas in early summer on shoals, when and where they are vulnerable to mass drives and strandings. Spring advances faster inland than on the coasts. Main rivers emptying into the sound ordinarily are open, running high, and eroding saltwater ice at their mouths while most sound ice lies rotting but shore-fast. Therefore, in late spring and early summer, coastal sled and foot travel is effectively stopped, and boats are not usable on the main sound. Rivers are eroding estuary ice and extending open channels in the sound's ice in early to mid-June. Inland hunters at this time could boat to their nearest camps on the sound and arrive just a few days before belugas appeared, thanks to this regular, predictable sequence of river ice and then sea ice breakup. Moreover, migratory inland hunters were the more experienced drivers of caribou on land and water and could most effectively apply these skills to beluga drives.

Most likely, then, the earliest beluga drives on Kotzebue Sound and elsewhere in northwestern Alaska were initiated by hunters who sensed the

similarity of caribou and beluga group behavior. Both species seek to maintain group unity under pursuit, and with sufficient hunter skill, both can be driven to mass destruction. The needed elements—strategic insight, the lance if not the barbed dart or harpoon, the skin boat, and communal discipline and leadership—could have enabled late Pleistocene and early Holocene upland caribou hunters to also excel in the driving of belugas in salt water. This concept of the earlier development of caribou driving and its influence on beluga drives appears to fit the environmental circumstances and the continuity of tundra habitats in northwestern Alaska. This continuity contrasts with the flux of nearby seas and shorelines that seals and belugas could inhabit before sea levels stabilized a few thousand years ago.

3
BELUGA HUNTING CAMPS

The largest hunting camps on Kotzebue Sound in the 19th and 20th centuries were those that served as bases for the mass driving of belugas into shallows. The most productive beluga hunting areas prehistorically and historically were along the inner northern, eastern, and extreme eastern sound because the animals frequented those waters. The two most important known driving areas were off Sisualik at a spit terminus in the north, and in the shallower parts of Eschscholtz Bay, the easternmost extension of the sound. Sisualik was the only 19th century beluga driving camp in the north, whereas inside Eschscholtz Bay there were several co-existent camps whose hunters cooperated during the drives in the easternmost part of the bay.

At these camps, beluga hunting from ice breakup until midsummer was more productive than seal hunting and took precedence over other activities. At the same time, on outer Kotzebue Sound shores, particularly at capes Krusenstern and Espenberg, seal hunting was paramount. Beluga drives occurred annually between June and August, when the animals migrated into and out of the sound. Recent (1960–1988) records of beluga sightings indicate that the animals arrive earlier off beaches in the northern sound. The highest numbers (900–1,200) were observed in July in the eastern sound (Frost & Lowry, 1990:50, Table 2). These recent sightings may or may not be typical of the situation in the 19th and early 20th centuries, when hunters used quieter, paddle-driven boats.

The belugas' entrance into and progress within the sound at spring breakup probably is governed largely by the degree and extent of sea ice melt and breakup. Belugas cope well with broken and discontinuous ice but much less well with continuous ice that is more than about 8 cm thick (Seaman et al., 1986:3). Lead systems exist in the outer sound in winter and expand in the spring. Therefore, offshore qayaq pursuit hunting of belugas in open leads sometimes may have been possible, historically and prehistorically,

earlier than drives in the inner shallower waters. Ice breakup at Sisualik and in Eschscholtz Bay usually takes place by mid-June, while the breakup in the western and central sound is somewhat more advanced. On the other hand, the widespread floating ice that covers much of the outer sound when early season migrations of beluga are passing through serves to shelter them from attacks by ice-edge and open water seal hunters and from killer whales.

The shallower parts of the sound, especially the northern and far eastern inlets and bays, receive flushes of fresh meltwater in spring from a number of large and medium-sized rivers, notably the Noatak, Kobuk, and Selawik in the north and the Buckland in the east. Fresh water flowing into the sound erodes ice in channels and hastens salt ice melting. These warmer, freshened, inner waters have mostly low shores with sand and gravel beaches in a few key locations that allow spring camping on rapidly drying grounds adjacent to the belugas' main routes into and out of the shallows.

The movements of belugas from the southern Chukchi Sea and their spring and summer movements in and near Kotzebue Sound are not well known. However, their seasonal presence there from June into October is known, as is their absence from November through April (Seaman et al., 1986: Figs. 3–8). The pattern of near-shore availability and, by extension, the locations of known as well as forgotten shallow water beluga driving camps are suggested by the map in Burns and Seaman (1986: Fig. 15). This map shows June–July beluga routes arching northeastward from off northwestern Seward Peninsula near Cape Espenberg, toward Cape Krusenstern, thence eastward past Sisualik, southeastward along Baldwin Peninsula, past Choris Peninsula and Chamisso Island, into and out of Eschscholtz Bay, and back again northwestward past Cape Krusenstern, thence northward along the eastern Chukchi Sea coast and beyond. The map also shows eastward and westward movements of belugas on the southern sound coast between Goodhope Bay and the rocky headlands of the south-central shore.

According to Seaman et al. (1986:10), it is in July and August that beluga are most abundant in coastal waters. The peak times of beluga abundance, however, may not have always coincided with the most opportune times for driving them in shallow bays of the sound. Nevertheless, given the predictable migratory habits of belugas, traditional hunters could prolong their efforts, if they were initially unsuccessful, and achieve beluga kill goals by continued observation at strategically located camps. Their efforts could also be shifted as large or small aggregations of their prey moved into and out of favored shallows or as new groups of belugas entered Kotzebue Sound from the southern Chukchi Sea.

A number of little known 19th and early 20th century beluga driving camps on Kotzebue Sound need to be described and their relative importance and societal composition determined. For example, Kotzebue village on northern Baldwin Peninsula has been a base for beluga hunting in the 20th century, but its use for that purpose in the 19th century is unclear. Kotzebue society (Qikiqtaġruŋmiut) hunters in the 19th century were occupied with

seal hunting at Cape Krusenstern and eastward on the northern shore during the time of year when beluga drives took place off Sisualik near the Noatak River delta. Beluga hunting sites on the Hotham Inlet side of Baldwin Peninsula also are not well known; belugas were driven there, even if fewer than off Sisualik.

Iñupiat speak of beluga hunting in some locales by netting and open water pursuit rather than by drives. Some prehistoric springtime beach camp sites at Cape Krusenstern and Deering–Cape Deceit may also fall into this category. Netting and open water pursuit historically were carried out primarily by hunters who lived where shore configuration and deeper water precluded drives, such as those who lived on the south-central coast and who were not necessarily participants in drives elsewhere in the sound. Other hunters may simply have preferred beluga netting and deep water harpooning late in the season near their fall camps and home villages for convenience and easy storage of meat and *maktak* (raw, edible pieces of hide with connective tissues) near freeze-up. Beluga hunting methods used in a given locale in some instances must be inferred from the site location, the evidential past and present-day marine environment, and known beluga habits.

Historically, beluga hunting often has been carried out at some distance from the hunters' camps. This is especially true of drives. Beluga netting was typically practiced off headlands not far from a hunter's camp, whereas open water harpooning could take place by plan or chance near or far from living sites. Deep water pursuit and netting were more feasible along the steep, deeper south-central sound shores than in extensive shallow bays, where drives produced superior returns.

As a practical matter, when driving belugas, hunters needed to observe the conditions of wind and tidal stage. It was also necessary to ascertain the numbers and movements of the belugas at some shore point beyond which, in suitable calm weather, the prey became susceptible to continued detection, herding, and stranding on chosen shoals. Spotting, pursuing, and killing belugas in choppy waters is difficult or nearly impossible. Beluga driving camp sites were selected primarily for their suitability as staging areas and for spotting, for initiating the drive, and for preparation of kill products. Camps typically were located at the entrance to shoal waters, on deeper channels leading into broad shelving bottoms, or near tidal lagoons. That drives were not carried to fruition close to a shore camp was relatively unimportant because beluga corpses could be brought ashore near the kill place and partly dismembered there, or towed to the occupation site by one-man qayaqs or larger open boats. Some beluga driving camps were located not on prominent sand–gravel spits, as at Sisualik and Siŋiq (Elephant Point spit), but on a shelving shore, as at Sisiivik on northeastern Eschscholtz Bay, perhaps because lookout elevations were close and the nearby shallows were so often frequented by belugas that camping there was advantageous.

Belugas move close to some Kotzebue Sound shores, especially past Cape Krusenstern and Sisualik, along Baldwin Peninsula, Choris Peninsula, and

Chamisso Island, and in lesser numbers along the rocky south-central coast. These areas afforded opportunities for near-shore harpooning of belugas, provided that sea ice escape cover was scattered or absent. Historically, points and capes on the south-central shore and Choris Peninsula have produced incidental catches of belugas in nets set for seals in fall as well as in larger mesh nets set specifically for belugas in summer.

Ernest S. Burch, in his 1970 field notes (Burch, 1960s–1970s), mentioned both incidental and intentional netting of belugas on the south-central coast at at least two locations in the recent past. Burch's informant, Thomas Morris (born 1904) of Deering, described fall netting for seals at Cape Deceit, just west of Deering, and at Nine Mile Point, 14.5 km east of Deering, from September until slush ice formed on the sound, sometime in October. Belugas were occasionally taken in these seal nets. Another of Burch's Deering informants, Susie Thomas (born 1891), said that a small amount of beluga hunting was carried out at Deering after salmon fishing was over. In fall, when belugas travel along the southern coast from east to west, one of the best places to net them is off Cape Deceit. However, few belugas are present just prior to freeze-up. According to Burch (1994:396), the average date of freeze-up for Kotzebue Sound is October 23. Freeze-up may be earlier in sheltered, less saline parts of the sound, like Eschscholtz Bay.

Probably a few locales on the sound were useful for all three beluga hunting methods: netting, driving, and deep water harpooning. Cape Krusenstern may have been one such location prehistorically. Archaeological evidence (Giddings & Anderson, 1986:229, Fig. 126; 318, Fig. 157) indicates that belugas were hunted there over several millennia. There is fossil beach line evidence of changing sea access to Krusenstern Lagoon and lagoons and bays to the southeast where shore building has progressed over more than four millennia. Choris Peninsula is a place where belugas could be hunted by all three methods in prehistoric and historic times (Mendenhall & Mendenhall, 1987).

Frost and Lowry (1990: Fig. 7) noted major Kotzebue Sound beluga hunting sites and the distribution of beluga sightings during a 16-year period, 1970–1986. According to these authors, in the 1970s and 1980s, Sisualik and Elephant Point were the two most important beluga hunting camps. Belugas taken near Sisualik are en route to other parts of the sound, and hunting success there is determined by these movements and by overall numbers. In contrast, the hunting camp on Siŋiq, the small spit at Elephant Point, provides access to an area where large numbers of whales circulate and congregate. Here belugas presently are taken by coordinated motorized boat hunts involving residents of the village of Buckland as well as people from other settlements, recently with meager results or complete failures of the hunting effort. The contents of stomachs of belugas taken at Elephant Point in June 1978 and June 1980 consisted mostly of incompletely digested saffron cod (*Eleginus gracilis*), sculpins (family Cottidae), smelt (*Osmerus mordax*), and herring (*Clupea harengus*), indicating active feeding in these waters (Seaman et al., 1982:7, Table 3). In response to a 1993 inquiry by Lucier, Buckland

hunter and resident Nathan D. Hadley, Sr., gave birthing as the main reason that belugas come in to Eschscholtz Bay. Hadley also believes that belugas use Eschscholtz Bay shallows as a refuge from attacks by killer whales. This and other information stresses not only the opportunities for beluga hunters on the Sisualik–Eschscholtz Bay axis, but also the attraction of the area's shallows and rich fisheries, which draw belugas and hunters to places where the animals return year after year.

There were at least four beluga driving camps on inner Eschscholtz Bay in the 19th century. Lucier's Buckland informant Sannu (Andrew Sunno, born ca. 1857–1859) emphasized the primary importance of Siŋiq; he also referred to Iglurġautchiat (Igloo Point), Sisiivik, and Sisiivivraq, about 5 km south of Elephant Point. Identification of additional beluga driving sites may depend on expert exploratory investigations or on ethnographic information, which at best will cover only the period from the mid-19th century to the present. Sedimentation and erosion on some low, earthy shores and unstable bluffs, as well as the frequent absence of houses in beluga camps, have hastened the obscuration or disappearance of beluga driving sites despite the relative stability of sea levels in the sound for the past 4,000–5,000 years. Detailed local knowledge of traditional beluga camp locations has been greatly reduced by cultural attrition and change. For example, use of fast, motorized boats has lessened modern beluga hunters' reliance on seasonal camps away from modern villages. This change dates primarily from the end of World War II, when increases in outboard engine power and the availability of lighter, stronger materials for boat construction drastically increased boat speeds and tow abilities.

The prehistory of the Choris Peninsula–Chamisso Island area since Choris times is poorly documented, but, as previously mentioned, there is sufficient reason to believe that the peninsula and nearby headlands may have been used for beluga hunting camps for at least three millennia. In the 19th century, occupancy of hunting and camp sites on and near Choris Peninsula involved both Deering and Buckland people. In late summer and fall, peoples from as far away as Bering Strait stopped at or passed through the area, but not, it seems, for beluga drives.

The earliest contemporary printed reference to a human presence on Chamisso Island and Choris Peninsula is provided by Louis Choris, a member of Kotzebue's expedition of 1815–1818 (VanStone, 1960). During the expedition's penetration of eastern Kotzebue Sound in early August 1816, Choris went ashore at the cove and beach on Chamisso Island, known to Iñupiat as Iyaġuvik (cooking place), where he "saw no other traces of human habitation than a scaffolding on which there were some weapons, fishhooks, and earthen pots" (VanStone, 1960:148). Brief as they are, Choris's observations indicate summer–fall occupation, no doubt involving the hunting of belugas, seals, and caribou, the racks serving to dry meat and fish.

These early August landings on Choris Peninsula and Chamisso Island by members of the Kotzebue expedition occurred after the beluga driving season. Expedition members encountered "many boats" of Eskimos along

the eastern shore near Elephant Point on or about August 10, 1816. These may have been travelers from afar who had come to the Buckland River estuary to collect greens and berries and barter with Kaŋiġmiut for their beluga foods, clay cooking pots, and furs for the Siberian trade. The apparent wealth and particular crafts of these Iñupiat, who traded "objects sculpted from walrus teeth, and pieces of these teeth on which they had drawn designs" (VanStone, 1960:149), suggest they were from Bering Strait or Point Hope. This early 19th century encounter emphasizes the fluidity and variety of human activities even in these backwaters of the sound where beluga drives occurred.

A map of the lower Baldwin Peninsula and Choris Peninsula with site names and subsistence information provided by sound residents Collins and Mary Ann Mendenhall (Mendenhall & Mendenhall, 1987) demonstrates that there remains a considerable surviving fund of native knowledge about beluga driving and related activities in eastern Kotzebue Sound. According to the Mendenhalls, belugas were hunted just east of Point Garnet on the southeastern shore of Choris Peninsula and in the twin bays that form a nearly perfect cul-de-sac at the southern end of Baldwin Peninsula. The carcasses of belugas driven near Point Garnet were towed to Siŋiq for butchering and processing. Frost and Lowry (1990: Fig. 7) showed sightings of beluga in this far northwestern corner of Eschscholtz Bay during the period 1970–1986. In these years, belugas also were sighted in the strait between Choris Peninsula and Chamisso Island. Collins Mendenhall also described berry gathering on Choris Peninsula, presumably a post-hunt or incidental summer–fall activity.

The presence of killer whales in summer in the deeper waters just off the western and southern shores of Choris Peninsula is related to their pursuit of belugas. Iñupiat report that belugas being pursued by killer whales may beach themselves or "hide" by entering shallow bays (like the twin bays) or lagoons where killer whales cannot follow (Frost & Lowry, 1990). According to hunters in Kotzebue Sound, this escape response is so strong that when killer whales are nearby, belugas will even move into and stay in areas where they are being hunted. Waters near Choris Peninsula constitute one of the borders between deeper waters that allow killer whale predation on belugas and broad shallows where people are their sole predators (Frost et al., 1992:116).

Lucier's informant Sannu described a cave on Seward Peninsula where spirit people lived who were humans on land and killer whales in water. These spirit people cut up whales and seals at the front of the cave. Real human beings never saw them, but they did see where the sand was bloody at the front of the cave. Pre-Christian Iñupiat who wanted good hunting, a long life, and other things left offerings at the cave. These offerings to killer whale spirits are understandable in view of known killer whale–beluga interactions and traditional Iñupiaq views of animal–human relationships.

4

SOCIETAL PARTICIPATION IN BELUGA HUNTING

Hunt Participation in Eastern Kotzebue Sound

On Eschscholtz Bay and at Sisualik, none of the historic beluga driving camps are known to have been occupied solely by members of a single society. However, the first-arriving and central drive participants were from a single society. In the east, these were the Buckland–Kiwalik rivers Kaŋiġmiut, and in the north, the Nuataaġmiut of the upper Noatak River. These societies led their respective hunts.

In addition to Kaŋiġmiut, 19th century beluga drive participants in Eschscholtz Bay were Deering Ipnatchiaġmiut and Koyukon Athapaskans from the upper Koyukuk River. Historically, all processing of the kill apparently was done at Siŋiq. Cooked and dried foods were stored in dug caches until being traded in late summer or used inland in fall–winter villages and camps. The cooperation and peaceful accommodation that characterized 19th century multi-societal use of eastern (and northern) sound marine resources may have stemmed in part from the mechanism of beluga drives, which were best achieved through intersocietal cooperation (Lucier & VanStone, 1991: 34–35).

According to Lucier's 1951 field notes (Lucier, 1950–1952) the spit Siŋiq at Elephant Point on the south shore was the main 19th century beluga camp on Eschscholtz Bay. Beluga hunters camped at several places on the southern and eastern shores of the bay and the mouth of the Buckland River. The hunt began soon after ice breakup in early June, and Deering people arrived by boat in mid- to late June. Sites at Sisiivik and Igloo Point (Iglurġautchiat) also offered nearby beluga hunting in the eastern bay. In the early 20th century, before the use of outboard motors resulted in its abandonment because water in front of the site was too shallow to accommodate the motors,

Sisiivik was the second most important beluga hunting encampment in Eschscholtz Bay.

Igloo Point, which lies on the western side of the Buckland River estuary, was also occupied in winter, as indicated by Lucier's test excavations in a fall–winter house at the site in 1951. Potsherds retrieved from these excavations compare with those excavated from a site (KTZ-101) on the eastern tip of Cape Espenberg that dates from the mid-17th century (Schaaf, 1988, vol. 2:291–293). The most plausible explanation for the existence of winter villages on the coast at Iglurġautchiat and also at Sisiivik, where charcoal from subsurface deposits was dated to 617 ± 104 B.P. (U.S. Bureau of Indian Affairs, ANCSA Office, 1989), was local abundance of caribou. The 19th century Kaŋiġmiut pattern of inland fall and winter living yielded to coastal living in winter only when inland caribou hunting failed (Lucier & VanStone, 1991).

According to recent investigations by the Bureau of Indian Affairs, ANCSA Office, over 100 depressions were noted on two breach ridges at Sisiivik (BLM F-22267), and a site known as Saayou was identified less than 1 km east of the limit of former occupation at Sisiivik (U.S. Bureau of Indian Affairs, ANCSA Office, 1989). Some of the depressions at Sisiivik probably were storage pits for beluga products, but the larger ones are almost certainly the remains of fall–winter houses. Based on evidence from Lucier's excavations at Igloo Point in 1951, the prehistoric occupations at Sisiivik probably were related to summer dependence on fish and belugas and winter caribou hunting and fast ice breathing hole seal hunting.

When beluga hunting was successfully completed by midsummer, many Kaŋiġmiut turned to set-netting for dog salmon and berry gathering at the mouth of the Buckland River estuary. This entailed a move for families who were camped at Siŋiq, but no moves or only short ones for those at Sisiivik and Igloo Point.

Informants interviewed by Burch (1960s–1970s) and BIA personnel (U.S. Bureau of Indian Affairs, ANCSA Office, 1989) mentioned Sisiivik as a beluga hunting site occupied concurrently with the camp at Siŋiq. According to these informants, Kaŋiġmiut hunters were joined at Sisiivik by Siilviŋmiut from the Selawik River and residents of Noorvik on the Kobuk River. However, E. Thomas, who summered at Sisiivik as a boy in the 1920s, noted that "only Buckland people camped at Sisiivik," although Selawik and lower Kobuk River people hunted "in that part of the bay" (U.S. Bureau of Indian Affairs, ANCSA Office, 1989:7). Apparently societal participation in the Eschscholtz Bay beluga hunts changed at some point during the late 19th and early 20th centuries. Kaŋiġmiut traditionally had close kin ties or trading partnerships with Selawik River people. Whether such participation from the rivers east and northeast of Buckland was a significant element in the beluga drives is unclear.

Also unclear is whether 19th century non-Kaŋiġmiut who hunted on Eschscholtz Bay brought their families to Sisiivik, Siŋiq, and other bay drive

camps. Women were needed for boat paddling and for processing products of the hunt. It would have been difficult, however, for Kobuk and Selawik River people to haul their boats overland across Baldwin Peninsula on melting snow trails just prior to the beluga hunt. According to Sannu, some non-Kaŋiġmiut, such as Koyukon Athapaskans, overwintered at Buckland. Others probably arrived in spring before sled trails deteriorated.

The rationale for concurrent use of several beluga hunting camp sites on Eschscholtz Bay is not completely clear. This apparently was not the case at Sisualik in the northern sound. One factor may have been the centrality of broad shoals in the eastern and southeastern bay that gave access to belugas from surrounding shores. The extremely shallow water off Sisiivik was no hindrance to travel in open skin boats and qayaqs, but the mud flats posed an impediment when beluga carcasses were being towed.

On the other hand, although approaches to Siŋiq are fairly deep, that spit lacks the advantage of the river mouth locations, such as Sisiivik and Igloo Point, where there was better salmon fishing, water fowl hunting, and land produce gathering. The chief advantage of Siŋiq as a beluga hunting camp was its strategic location below a high bluff at the turning of the southern bay shore from an east–west direction to the southeastward.

From the Elephant Point hillside and bluff (elevation 15–30 m), belugas could be spotted before they passed the point and a timely warning could be given to waiting boatmen. Knowledge of beluga numbers and of the direction of their movements was essential if qayaq and umiaq hunters were to direct and kill their prey effectively. Igloo Point has no correspondingly high ground nearby, although rises there of a few meters may have been enough for the spotters.

The depths and bottom in Eschscholtz Bay and the changing configuration of shoals and courses of river outflow channels near the Buckland River mouth have played a role in the use and relative importance of beluga hunting camps on Eschscholtz Bay. Beluga behavior and the distribution of beluga prey populations over decades and centuries are other factors that, if better understood, would further explain the concentrations of beluga hunters here and elsewhere around Kotzebue Sound.

A June 1987 map (U.S. Bureau of Indian Affairs, ANCSA Office, 1991) of the Siŋiq spit (BLM F-22265) shows that the width of the tenting areas is constricted by the wetness of the rear, southern half of the spit. Because the shoreline had to be reserved for umiaq and qayaq stations, cooking areas, and meat racks, the traditional tenting areas were small in comparison with Sisualik's. The camp in the 19th century must have been quite linear, composed of one or two rows of tents, each tent not far from its neighbor. Kaŋiġmiut had been living in *itchalit* (domed tents) since late winter. An *itchalik* (singular) framework consisting of light willow poles could be disassembled and reassembled easily. People arriving at Siŋiq unloaded frame elements and covers from the boats and set up the frames. They lashed the curved poles to make a strong hemispherical or oval framework. The caribou

skin tent cover was then unrolled and laid over the frame, leaving a small flap doorway and front window.

A family arriving at Siŋiq put their tent household in order quickly. If they had suitable foods such as freshly caught fish for cooking, they lighted a fire in front of their tent area near the front beach where there was leftover or newly landed driftwood for fuel. Kaŋiġmiut cooked fresh fish and meat in large bentwood tubs using paired sets of special fist-sized, fire-heated stones that they handled with a pair of long wooden tongs. Water for drinking could be obtained from snowbanks in early summer, but later it had to be brought from creeks west of the camp.

Population estimates for the Siŋiq camp in the 19th century are nonexistent, and in fact there are no data on the populations of Eschscholtz Bay beluga hunting camps during this period. In 1849, Commander T. E. L. Moore and Captain Henry Kellett of the Franklin search vessel *Plover* visited a camp at or near the mouth of the Buckland River and noted that approximately 150 people were living in 22 tents (Moore, 1851:28–34). This visit, however, took place in the fall, after beluga hunting. According to Burch (1994:369), Kaŋiġmiut numbered 250–300 in the mid-19th century. The 150 people seen by the English explorers in 1849 may have been Kaŋiġmiut returned from trading at Sisualik or Kaŋiġmiut trading with visitors.

Sisualik's location near the entrance to the sound may have meant that hunters there experienced more one-chance encounters with belugas than did hunters at Siŋiq or other camps on Eschscholtz Bay. On the other hand, the animals' habit of lingering in Eschscholtz Bay offset the first-encounter advantage of the northerners. According to Frost and Lowry (1990:39), there were 2,500–3,000 belugas in the eastern Chukchi Sea each year in the 20–30 years preceding 1990, although their numbers in Kotzebue Sound fluctuated during this period. These estimates are for a period when use of high-powered boats was increasing. Hunters in the 1950s and later commonly have stated that belugas are more stressed by harassment, both intentional and incidental, than they were in the 19th century before powered boats and rifles were used. Apparently 19th century Iñupiat hunted less wary belugas than have their descendants.

Hunt Participation at Sisualik

Although we have only a limited understanding of mid- to late 19th century beluga hunting camps on Eschscholtz Bay, we have a somewhat better picture of Sisualik as a beluga hunting camp from the time when Western influences were beginning to be felt until the camp's decline in the 20th century. Sisualik is located near channels, and extensive shoals and tidal mud flats lie north, east, and south of the camp (Fig. 3). The fine sediments in the northern shoals arrive in discharges mainly from the Noatak River and outflow from Hotham Inlet, which ultimately comes from the Kobuk and Selawik rivers. A main westward-trending channel with sediments in suspension is visible

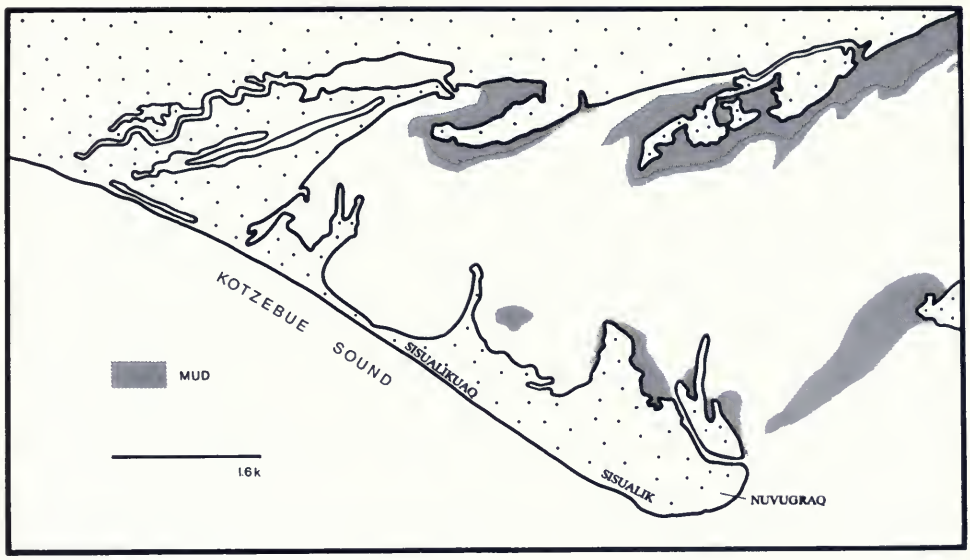


Figure 3. Map of the Sisualik spit.

just off the Sisualik camp's shore. Presumably the rich fisheries of this zone of fresh- and saltwater mixing are a great attraction for belugas.

The entire spit is 9–10 km long. Only the camp near its terminus was named Sisualik and was used historically as a beluga camp (Fig. 4). Immediately to the west is Sisualikruaq (Old Sisualik), another seasonally occupied camp (Fig. 5). Sissualikruaq has been a historic period seal hunting and set-net fishing place used by Kotzebue people, but it is believed by Iñupiat to have been an ancient beluga hunting camp, as the name indicates. House ruins there date from early western Thule times, near the end of the 1st millennium A.D. (Giddings & Anderson, 1986:86–90).

Although European expeditions sailing into Kotzebue Sound early in the 19th century must have seen Sisualik, close up or from afar, the first recognizable description of the camp was that of E. W. Nelson, who visited it in July 1881. Nelson did not identify the camp by name, but his observations and illustrations leave little doubt as to where he was. Either the visit of Nelson and members of his party on July 15, 1881, interrupted the beluga driving plans of Sisualik residents or the hunting effort was already over. He referred to the location as a "summer trading camp" in Hotham Inlet and illustrated the arrangement of the camp as well as a typical "summer lodge" used by Noatak River residents. In current usage, Sisualik is considered to be not in Hotham Inlet but on Kotzebue Sound's northern shore.

Nelson's (1983:261–262) description creates a vivid impression of the camp's appearance in the early 1880s:

> At Hotham Inlet, near the head of Kotzebue sound, . . . a large gathering of Eskimo from Kowak [Kobuk] and Noatak rivers was seen. They were

Figure 4. Sisualik in mid-June 1952. View is eastward along the front beach. Set nets are drying on slanting sticks in the foreground. Scarcity of heavier driftwood is typical. The spring meltwater, visible far left, soon vanishes (FMNH neg. no. 110448-11).

living in a row of conical lodges extending in a line for more than a mile along a low, sandy spit parallel to the shore of the Sound. Figure 88, from a photograph, illustrates this camp for the season of 1881. This camp was arranged with almost military precision; along the beach, above high-water mark, with their sterns to the sea, were ranged between sixty and seventy umiaks, turned with the bottom upward and toward the prevailing wind, tilted on one rail, the other being supported on two sticks 3½ to 4 feet long. Seventy-five yards back from the umiaks, in a line parallel to the beach, were ranged over two-hundred kaiaks, supported about three feet from the ground on low trestles made of branching stakes. Below each kaiak, supported on a rest 3 or 4 inches above the ground, was the set of spears, paddles, etc, belonging to the boat. The kaiaks were all of the long, slender pattern common at Kotzebue sound, and were ranged parallel to each other, pointing toward the sea, in a line with the umiaks. Fifty yards back from the kaiaks, and ranged in a line parallel with them, were the conical lodges occupied by the people; they were framed by slender poles standing in a circle, with the upper ends meeting and held in place by a strong wooden

Figure 5. Old beach line at Sisualik, 1952. Sisualikruaq is in the distance. In the 19th century, this area was occupied in late July and early August by visiting native traders from within and outside the Kotzebue Sound region (FMNH neg. no. 110447-11).

hoop lashed to the poles with rawhide cord midway between the ground and the top. The accompanying sketch (figure 89) shows the manner of arranging the framework.

The frames were about 10 feet high and from 12 to 15 feet in diameter at the base; they were covered with untanned winter deerskins sewed into squares containing about six deerskins, which were thrown over the framework with the hair outward. Several of these squares were necessary for each lodge. In some cases the deerskins were covered with a large sheet of drilling or calico as shown in plate LXXXIIIb. Behind the lodges were stakes to which each family had tied its dogs, fastened so as to be just out of reach of each other.

This was a summer trading camp of these people, and contained from six to eight hundred persons. Figure 90 shows the plan of the encampment.

In size and methodical arrangement this camp presented a striking appearance and was the only one I ever saw in which the Eskimo had followed a deliberate plan. The large number of boats, and the necessity for having clear space to enable each crew to launch without interfering

> with its neighbors, must have brought about this plan, which could not have been improved, as the entire camp could embark and paddle to a trading vessel in less than five minutes.
>
> This was a temporary camp which is located for a few weeks each summer for the purpose of trading with vessels which cruise in these waters, as well as meeting and trading with the people from both shores of Bering Strait.

If Nelson was describing Sisualik, as we believe, he understated the length of time that the camp was occupied. Although native traders and their families camped there for only a few weeks, beginning in mid- to late summer, Sisualik as a hunting and fishing site was occupied from breakup in June until August.

The Sisualik camp of 1881 was an extensive and populous tent aggregation by any measure. As a beluga hunting camp visited by Lucier in the summer of 1952, the tents and other camp features occupied a stretch of beach about 500 m long (Fig. 4). The 19th century camp undoubtedly was larger in spring and early summer and grew even larger later in the summer when trading parties came there from points as far away as Point Hope and eastern Siberia. A shift of trading from Sisualik to Kotzebue village took place in the mid- or late 1880s. Distant trading parties no longer came after the influenza pandemic of 1918.

Annual fluctuations in the period of river and sea ice breakup on Kotzebue Sound were of considerable importance to inland/coastal migrants, particularly Nuataaġmiut, who were making the annual trip by boat to Sisualik. Their well-being depended on a reasonable travel time from the upper and middle Noatak River to the river's mouth, thence to Sisualik. Overland travel is difficult in spring, and food stores often were low or exhausted. Spring river-to-coast boaters such as the Nuataaġmiut were dependent for sustenance largely on fishing and kills of water fowl or a chance encounter with a caribou. There may in one human lifetime have been variations of weeks in breakup time. Long delays could result in some people arriving at Sisualik in a hungry and weakened condition. Even at the time of Lucier's visit in 1952, some families arrived at Sisualik with little food. Nuataaġmiut families, once they arrived, depended heavily on marine hunting success or on sharing the success of other hunters.

Lucier arrived at Sisualik on June 11, when the camp was unoccupied. Melting, drifted snow covered most tenting spots (Fig. 6), and the sound ice was melting. Boat travel was impossible, and travel across the ice on foot or with loaded dog sleds was inadvisable. The following extracts are from Lucier's 1952 field notes (Lucier, 1950–1952):

> June 12—A channel opened in the ice just off the point and grew irregularly eastward toward the Noatak River mouth. Old Squaw ducks and several loons appeared.

Figure 6. Sisualik on June 11, 1952. There is an umiaq frame in the foreground. In the background are tent frames and upright poles. Note remaining areas of drifted snow and the ice-covered shore of far northeastern Kotzebue Sound (FMNH neg. no. 110407).

June 13—Strong west wind. Late last night or in early morning today one boatload of Noatak people arrived and set up their tent near the center of the Sisualik camp. A middle aged man said that he and his family left Noatak village and started down the Noatak River in their boat two days before. On the way, ducks were scarce and their food was scarce. When they emerged from the river mouth they worked their boat westward along the mainland shore to a camp site where they were stopped by solid ice. They camped there until the ice opened enough to let them boat over to Sisualik. Concerning their journey, the family head remarked, they had gone hungry: "Seven people, one duck. The dogs got feathers."

June 14—Two additional tents indicating night time boat arrivals. Another boat, and tent, in the afternoon. More open water and continued west wind.

June 15—A Sunday, quiet. More tents up last night. Everyone seems to come when I'm asleep.

June 15—West wind continues. Twenty-five to 28 tents are set up or are being erected. Sisualik camp is alive with activity tonight as people unload gear from boats and set up tents. This activity may be like the "almost military precision" that E. W. Nelson noted at the time of his visit in 1881. Unlike the 1880s, however, most adult males were preparing to leave the beluga hunting camp to work in Bristol Bay salmon canneries. Airplanes were in and out almost continuously carrying passengers to Kotzebue [Fig. 7]. The camp was rapidly reduced to tent households with older middle aged hunters, old men, or no men at all.

June 17—Boats got three or four belugas last night. Hunters say belugas are still westward in deeper water.

Napaaqtuġmiut of the lower Noatak River left their camps in spring to set up seal hunting camps in the vicinity of Cape Krusenstern. There they remained until ice breakup allowed the hunters and their families to boat to Sisualik. Shifts in the respective areas of winter occupancy and mixing of upper river Nuataaġmiut and lower river Napaaqtuġmiut may have occurred in the decade or two before their merger at Noatak village beginning in 1908. At the time of Lucier's stay at Sisualik, older and middle-aged people still identified themselves as either Nuataaġmiut or Napaaqtuġmiut, but except for tent placement and boat crewing in extended family groups, their self-identification probably no longer had any bearing on hunting or their order of arrival and activities on the coast in spring.

The usual order of arrival of the several participating societies of Kotzebue Sound Iñupiat for beluga hunting at Sisualik was prescribed largely by subsistence demands and the sequence of spring melt on their home rivers and on Kotzebue Sound.

The general outline and detail of Sisualik camp living from an Iñupiaq perspective in the mid- to late 19th century are based on Lucier's discussions in 1952 with three key informants: Aluniq (Jenny Mitchell, born ca. 1875), Misigaq (Mark Mitchell, born ca. 1865), and Kumak (Ezra Booth, born ca. 1887). Misigaq and Kumak identified themselves as Nuataaġmiut, while Aluniq said she was of mixed upper Noatak River and upper Kobuk River residency and parentage. Aluniq and Misigaq almost certainly were at Sisualik when Nelson visited the camp in 1881.

Figure 7. Charter aircraft at Sisualik, mid-June 1952, waiting to take Noatak men to Bristol Bay cannery employment (FMNH neg. no. 110405).

According to Misigaq, Nuataaġmiut arrived earlier from the upper Noatak River in the mid- to late 19th century than they did in the 1950s. Fishing for whitefish and trout was the first order of business when they arrived on the sound coast. Small mesh nets were made from caribou leg sinews and beluga back sinews. Misigaq's remarks about fish netting during the time of coastal ice breakup highlight the problem of sustenance for Nuataaġmiut who gathered at Sisualik before beluga or seal kills were possible at that location. Until numbers of beluga could be taken, Sisualik and its immediate area of ice-choked waters could not provide food resources commensurate to the needs of the camp's peoples and their dogs.

Representatives of the various societies occupied separate, adjoining campgrounds a short distance west of the point (*Nuvugraq*). After the beluga hunting season, by mid-July, the tent camp extended an unknown distance westward toward Sisualikruaq on the beach ridges shown in Figures 5 and 8. An annotated map provided by Willie Goodwin, Jr., of Kotzebue in 1994

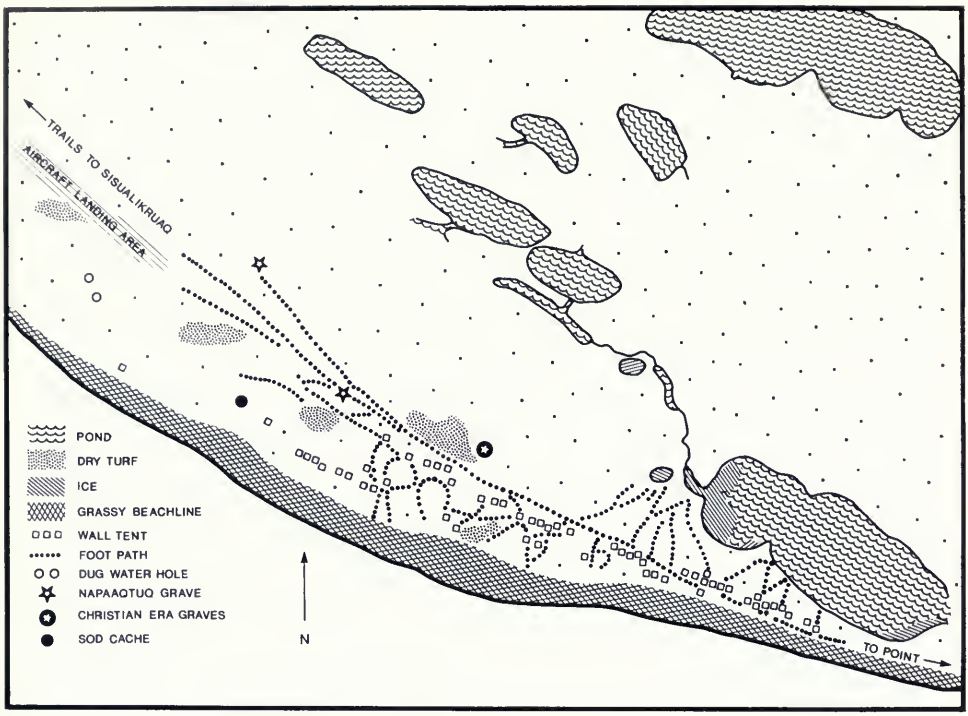


Figure 8. The Sisualik encampment, July 14, 1951. Not to scale.

gives the extent of late 20th century Sisualik as 400 m, close to Lucier's estimate of 500 m in 1952. The low point of the spit was not occupied by tenters but, according to Aluniq, was, until the end of the 19th century, the place for laying bodies of the dead. The surface graves of a few prominent pre-Christian Nuataaġmiut, marked with conical pole structures and surface log coffins, were located back of the Nuataaġmiut camp (Fig. 9).

Lucier's informants agreed that in the 19th century the Nuataaġmiut set up their camp in the same area as did their descendants in 1952. Aluniq named Kobuk River people as the second group to arrive at Sisualik. Kobuk River people, possibly a mixture of people from the three societies who occupied the river, camped adjacent to the Nuataaġmiut on their eastern flank. The third society in order of arrival, the Napaaqtuġmiut, camped immediately east of the Kobuk River people, nearest the point. They were not participants in the beluga drives and apparently arrived when the drives were nearly completed for the year. According to a Kotzebue society informant, Yiyuk Harris (born ca. 1879), Kotzebue people arrived by boat nearby at Sisualikruaq from Cape Krusenstern in July, after the grounded shore ice had melted. Aluniq's remembrance of the societies present at Sisualik suggests that, in the late 19th century, Nuataaġmiut and Kobuk River societies were the only beluga drive participants. Napaaqtuġmiut and even later

Figure 9. Nineteenth century pre-Christian man's *napaaqtuq* burial at the west end of the Sisualik camp. Note residual snowbanks and frozen lagoon in the distance (FMNH neg. no. 110398).

arrivers came to attend the post-beluga-hunt trading fair. Misigaq did not provide specific information on beluga drive participants other than Nuataaġmiut, probably reflecting upper Noatak River people's traditional dominance in the drives. According to Kumak, Selawik River people also participated in the beluga drives. From Lucier's informants' description combined with the 1952 Sisualik camp evidence (Fig. 8), the 19th century beluga drive encampment of Nuataaġmiut and other peoples may have occupied the beach front for more than 1,000 m.

No map is likely to include, let alone accurately position, all societies represented at the 19th century trade fair because members of virtually every Eskimo society in northwestern Alaska and nearby parts of Siberia were present at Sisualik in one year or another. Traditional beluga drives off Sisualik and the populous, highly ordered, multi-societal camp life associated

Figure 10. Gordon Mitchell cleaning fish near his Sisualik tent home in June 1952. Beyond the heavy drying racks, with door open for ventilation, is the tent of Gordon's mother, Jenny Mitchell (Aluniq), and his sister, Della (Puyuq). Bundles of dried beluga black meat hang from the racks (FMNH neg. no. 110448-20).

with them ended early in the 20th century. We are fortunate to have Nelson's account of his visit in 1881 to compare with information provided by Aluniq, Misigaq, and Kumak.

Nelson's (1983:262, Fig. 90) representation of the layout of the Sisualik camp shows a row of neatly spaced umiaqs on a front beach with their bows toward the sound. On the succeeding beach are similarly oriented qayaqs. On the third beach line is a row of conical tents with their entries facing the beach. Nelson's photograph (1983: Pl. LXXXIIIb, opp. p. 259) shows several occupied tents in 1881. The nearest has a ladderlike load carrier (*isugalik*) leaning against its caribou hide and cloth overlay. The foreground is uncluttered. Poles are stored leaning against the owner's tent. Nelson's more distant photograph (1983: Fig. 88) of a Sisualik tent row shows a closely spaced alignment of bipod- or tripod-supported, horizontal poles in front of the tents parallel to the beach line. There racks are of light construction and may have served for drying bedding and clothes rather than as meat and fish drying racks. In 1952, the Sisualik camp had heavy spruce drying racks located here and there along the grassy, stable front beach (Figs. 4, 10). Some of the drying rack uprights were massive and had been in place for decades.

Figure 11. Emma Thomas cooking beluga *maktak* in cut-down steel oil drum at Siŋiq (Elephant Point), summer, 1951. When cooled and dried, cut beluga *maktak* strips drying on metal cot frame in foreground will be put into oil-filled containers, then stored in a cool, shaded place. In the background, Lucy Hadley hangs strips of beluga meat on drying racks (FMNH neg. no. 110437).

Heavy post-and-beam permanent driftwood drying racks and lighter, variously supported, temporary horizontal pole assemblages for drying uses have been common features at villages and camps in Bering Strait and Kotzebue Sound in the 20th century as they were at Sisualik in early historic times. At mid-20th century Sisualik, near-shore drying racks bore heavy burdens of beluga flesh and *maktak* in the beluga hunting season (see Figs. 10, 11).

It is not the purpose of this study to discuss the post-beluga-drive gathering at Sisualik, which was devoted primarily to trade, sports, and social intercourse. We do recognize, however, that the products and ideas exchanged and the social integration achieved among the societies camped there, including beluga hunters, were profound and enhanced Nuataaġmiut and

other inlanders' ability to hunt and live successfully on the coast as well as inland. The trade fair was an added incentive for Nuataaġmiut and other hunters to come regularly to the coast in summer. Thus the annual beluga drive and the subsequent trade fair were interlocking and interdependent.

5

CAMP LIFE AT SISUALIK

The first boats to arrive at Sisualik in spring navigated from the Noatak River delta through channels cut in the sound ice by outflows from Noatak River and Hotham Inlet. As boats approached Sisualik, they veered past the drowned inner part of the spit's terminus, then around its hooked point, and came ashore on grounded ice that fringed the south-facing beach (Fig. 3). In the 19th century, umiaqs presumably were accompanied by several manned qayaqs, or one or more qayaqs were lashed to the cargo. When families migrated, they carried the essentials for living and hunting except durable supplies previously cached at their destination. The open, skin-covered umiaqs were broad-beamed, deep, and efficient carriers of shallow draft. Northern and eastern Kotzebue Sound qayaqs were narrow, low, and therefore poor cargo carriers. They were essentially one-man carriers and platforms for sea hunting weaponry.

Nuataaġmiut and other societies' umiaqs going to the Sisualik spring encampment carried, in addition to the boat owner and relatives, their tightly restrained dogs, furred bedding, grass mats, cooking and eating utensils, infants' hammocks, children's toys, tools, fish nets, fishing lines and hooks, food pokes, dried fish, game and birds killed en route, tent skin covers, hunting implements, boat mast and sewn gut sail, boat hooks, inflated seal-skin pokes, and paddles. In addition, a loaded umiaq often carried spruce poles and towed driftwood for fuel and various constructions.

Once an umiaq landed at Sisualik, all able-bodied boat occupants purposefully and systematically carried the cargo ashore and to tent places. Dogs were unloaded first, usually by youths and bigger children, led one by one to the family dog yard behind their tent, and tied to individual stakes on a tether short enough that the animals could not reach one another.

Unloading of boats and the erection of conical tents (*napaaqtat*, plural) undoubtedly progressed efficiently in the 19th century (this was true in 1952

Figure 12. Sealing camp family tent with windbreak at Sisualikruaq, spring, 1952. Pole right carries shortwave radio antenna wire (FMNH neg. no. 110447-13).

even when camp belongings included bulky canvas wall tents, sheet metal stoves and chimney pipes, camp cots, footlockers, etc.) when camp living was traditional and highly structured. There are, however, no published sources that describe the setup of tents and other camp constructions at Sisualik. Nelson (1983:261, Fig. 80) illustrated an uncovered *napaaqtuq* (singular) spruce pole frame and gave the dimensions as 10 feet high by 12–15 feet in basal diameter (3 m × 3.7–4.6 m), giving a floor area of 10.8–16.6 sq m. The tent poles as drawn by Nelson seem too slender. *Napaaqtuq* poles were at least 6–8 cm in basal diameter and were kept over the winter at Sisualik tent sites, stacked horizontally on the graveled tent pad.

In 1952 and for many years previously, Nuataaġmiut used mostly white canvas wall tents of several standard sizes, rectangular in floor plan, with a single flap or framed door entry on the end and often with a collar for a stove chimney near a front corner. In 1952 some families had permanent, sawed lumber or peeled spruce pole wall tent frames, while others set up and guyed their tents each summer (Figs. 10, 12).

Presumably the conical *napaaqtuq* frame (Nelson, 1983:261, Fig. 89) was dismantled at the end of the camping season. Nelson's sketch of the frame indicates no tie or locking device at the apex but rather a midsection lashed hoop that stabilized the structure. Each pole of the traditional Nuataaġmiut

tent was a *napaaqtuq*, hence the name. Nelson described the cover in 1881 as composed of about six haired "deerskins" sewn together and sometimes covered by imported drill or calico cloth (Nelson, 1983:261, Pl. LXXXIIIb, opp. p. 259).

The change from use of traditional conical tents to wall tents by northern sound peoples was rapid and was initiated, in part, as a show of social standing. Cantwell (1889:72) reported the use of wall tents by wealthier men at Sisualik in 1884, whereas in 1881, judging from Nelson's (1983:20, Fig. 80) photograph of a tent row, there were few or no wall tents. According to Aluniq, some Noatak families in years past, from choice or necessity, sewed their own wall tents before they purchased the expensive commercial variety. VanStone (1962) listed drilling among the trade goods most desired by Iñupiat at the Hotham Inlet trading center in 1883–1886. The main advantage of the canvas wall tent in the 1880s may have been as a replacement for the hard to obtain caribou skins. The wall tent's better lighted interior, vertical walls, and superior adaptability to newly available metal homemade or imported camp stoves also favored its rapid adoption. Once the change to wall tents began, social competition alone may have made abandonment of the traditional *napaaqtuq* inevitable.

At the Sisualik camp, the nearly flat, older beach lines that lie behind the younger, higher, grassier front beach line have provided ideal tenting for centuries. Nuataaġmiut and other springtime residents at the camp spread gravel floors in the *napaaqtuq* tent. The tent rows of Nelson's time and in the mid-20th century were on almost flat beach ridges covered with mat vegetation. Families would use the same tent sites over a number of years and sometimes for generations. In 1952, closely related tent households generally were grouped together. In the 19th century, tenters must also have erected tents on new, previously ungraveled sites, as they did in the 1950s. Tenters of the 1880s set up their *napaaqtuq* with the butt ends of the poles thrust into a gravel pad 5–6 cm deep. The ground fronting the tent probably was graveled as well. The tent floor may have had bed areas set off by retainer logs to create an activity area in the center and front of the circular tent floor. Small spring-cut willows were spread in the bed areas of the gravel floor, and twined grass mats and haired caribou bedding skins were laid over the willows. Senior tent occupants slept and rested in prescribed areas. Infants and smaller children slept near parents or guardians, while older children, young adults, and the physically handicapped occupied places near the entry.

The *napaaqtuq* entry faced the sound, that is, southward. According to Aluniq, the *napaaqtat* of Point Hope people were distinguishable from those of other societies because they had coverings of ugruk and seal skins. However, shortages of caribou skins might have forced use of such materials or a patchwork of old skin scraps by Nuataaġmiut and others who ordinarily used caribou skins.

Wall tents at Sisualik in 1952 sometimes were fitted with low improvised

Figure 13. Claimed collections of fall, storm-deposited driftwood on Kotzebue Sound shore west of vacant Sisualik camp (FMNH neg. no. 110448-8).

cut-off steel drum or commercial sheet metal wood-burning stoves and had a wooden chopping log outside their entrance. No windbreaks are shown in Nelson's Sisualik photographs, and informants stated that they were not used by Nuataaġmiut at Sisualik. In fair weather, before the mosquito hordes emerged, tent dwellers raised the bottom edges of the *napaaqtuq* cover to ventilate and dry the interior. When mosquitoes were abundant, either the tents had to be kept shut tight and stuffy or else a green willow smudge was set in the open entry to repel the biting pests inside the tent and discourage their entry. The effect of these smudges on 19th century campers' health is unknown, but some middle-aged and old people in the 1950s may have suffered residual eye and respiratory problems from frequent exposure to smudges.

The spit at Sisualik, in spite of its excellent location and tenting grounds, is seriously deficient in clean drinking water and wood fuel (Fig. 13). For the most part, these commodities had to be brought to Sisualik by boat. The earliest arrivers found patches of compacted snow, but these remnants of drifts contained chaff and litter. Sisualik-area snowmelt ponds in the late stages of the spring melt are shallow and occupy swales between the low old beach lines north and east of the camp (Figs. 4, 14). Such pondlets are grossly polluted and soon disappear. Deeper, ice-covered ponds near the camp thaw gradually and, while persistent, are brackish. By late June, drink-

Figure 14. Early summer, 1952, snowmelt ponds at Sisualik in front of a pre-Christian burial (FMNH neg. no. 110403).

able water is very scarce on the spit and remains so for the remainder of the camping season.

Water has had to be brought by umiaq either from the shore just west of the Noatak River delta or from the northernmost Baldwin Peninsula shore opposite the Noatak River mouth. The shore northward, 6–7 km distant, has snowbanks that last into early summer. In 1952, the preferred source of clean water was shore-drifted, granular "corn" snow along bluffs of northern Baldwin Peninsula about 17 km southeast of Sisualik. Prior to the introduction and extensive use of outboard boat engines, snow water collection exacted a considerable expenditure of energy and time from men and women who had to paddle or sail no fewer than 34 km every few days to replenish their family's supply of fresh water. With adverse winds and tides, snow collecting was even more arduous. In 1952, the watery "corn" snow was obtained with powered skiffs and was transported in galvanized steel tubs and wood stave barrels (Fig. 15).

Figure 15. The Mitchell extended family unloading hunting gear and containers of snow/water at the Sisualik camp site, spring, 1952. Mark Mitchell (Misigaq), the most elderly person at Noatak and Sisualik, is nearest the boat's bow (FMNH neg. no. 110448-24).

People who lacked boats or extended family support in the 1950s had to make do with water either from low-grade permanent ponds, which lie near the east end of Sisualik, or from very shallow excavated wells. In 1952, several wells were located just west of the Sisualik encampment, near the sound shore among waist-high willows. These wells were about 1 m deep, were steep-sided, and penetrated well-defined gravel and organic layers that represent a history of the beach line as it was built up by storms and intermittent plant growth. At the bottom of two wells there was seepage to a depth of 3–4 cm, which required straining to remove floating and riled debris and, in midsummer, larval "wiggler" mosquitoes. The wells were some distance from obvious surface sources of pollution, such as sled dog yards and butchering areas of the camp, and were less obviously polluted than the transient spring ponds and less saline and acidic than the permanent ponds.

In the 19th century, fresh water was stored inside tents in covered bentwood tubs. We are unsure how saturated snow was formerly transported by boat to the Sisualik camp. Traditional containers that fit this purpose are bentwood tubs and buckets. Perhaps drinking water was carried by individuals in closed gut segments and bladders.

Containment of human wastes of Sisualik seems to have been provided

for in the 19th as in the 20th century by the use of chamber pots in tents, with disposal of their contents in the beach waters of the sound, where currents readily dilute and carry away camp wastes. In 1952, human feces were not in evidence on the spit surface, and the confinement of dogs reduced dispersal of their body wastes, thereby reducing this health threat to humans. In the 19th century, Iñupiat used human urine for cleaning hides, but because the householders were so preoccupied with beluga hunting and processing, such usage probably was slight. The neat appearance of the Sisualik camp at the time of Nelson's visit and in 1952 was the result of concerted efforts by the inhabitants to keep tent and work areas clean. The extent of disease among Sisualik residents in the 19th century can only be surmised. Diseases due to waterborne and canid-borne agents that existed in the mid-20th century probably were also present earlier. Traditional camp cleanliness and end-of-season, camp-wide cleanups, which included disposal of beluga bones in salt water, also maintained efficient cycling of energy from the sound to the spit camps and back again to the sound.

Brief visits by 19th century observers like E. W. Nelson provided only rough estimates of large and small camp populations. People in groups are difficult to count, and at any given moment some residents are absent from the immediate camp area. Another approach is to estimate the number of residents per tent. Lucier's informant Sannu recalled the crowding in the Kaŋiġmiut *itchalik*, which often held eight, nine, or more persons. The *itchalik* was much smaller than the conical *napaaqtuq* that Nuataaġmiut used at Sisualik in 1881. Ten persons could easily have fitted into a *napaaqtuq* with less crowding than existed in the domed tent of Sannu's youth in the 1860s.

Lucier counted approximately 40 wall tents at Sisualik in 1952. Most were 8 × 10 feet (2.4 × 3.0 m) or 10 × 12 feet (3.0 × 3.7 m), but a few were larger and smaller. Smaller tents commonly were occupied by one or two persons, one of whom usually was elderly. Other small tents held overflows of children of large families, and some larger, less crowded tents regularly or occasionally hosted children whose home tents were crowded. Tent households with which Lucier was most familiar had three to four adults and one child; four adults, two children, and one infant; two to three adults and two large children; and two to four adults and one infant. Adult numbers declined as able-bodied men departed for work in Bristol Bay canneries. Lucier estimated the maximum population of the Sisualik camp in 1952 as about 250, an average of about six persons per tent. The practice of elderly persons tenting separately away from younger parents and children to whom they were related is probably a 20th century innovation, but shifting of children from crowded to less crowded tents of relatives was a feature of traditional living.

Nelson's (1983:261) observation of 600–800 persons at Sisualik on July 15, 1881, may have included some people other than beluga hunters who had come for the summer trade fair, but in any event this is a very low figure. On August 21, 1884, Cantwell (1889:71) visited Sisualik and counted nearly

600 natives. He was informed that many had gone back to their homes because it was late in the summer. Nelson in 1881 probably missed some beluga hunters and their dependents and many post-beluga hunt traders and their families. Hooper (1884:39), captain of the *Corwin* on which Nelson was a passenger, observed "about two hundred drill tents" at Sisualik. This probably indicated a population of about 2,000 persons. It is not clear why Nelson neither described nor illustrated drill tents.

The crowding of people in traditional tents at Sisualik and elsewhere was not an inconvenience to the inhabitants except in really bad weather—rain with accompanying strong winds. Crowding was reduced by the continuous daylight of spring and early summer, which allowed daylong outdoor pursuits. Tents were practically emptied when belugas were being hunted and butchered. In fair weather, not everyone slept at the same time, and cooked meals were not on a set schedule but occurred according to circumstance and often only once a day. Nor was eating confined to tents but often was done outside in good weather, much as in later years (Figs. 10, 16).

When not in use, the many tilted umiaqs provided shelter for sleeping and a multitude of activities. In addition, children, especially boys, old enough to be self-sufficient but too young to be involved in hunting, were away from the tent much of the day. The activities of girls were restricted because they were often required to pack infants and care for smaller siblings and cousins. In the summer of 1952, children of both sexes were active throughout the night, and boys often slept fully clothed on the ground somewhere until near noon. Children and youths of mixed sexes found havens from adult supervision beneath overturned boats.

Sisualik lifeways of the 19th century gave way in the 20th to a variety of outside influences. In some tents in 1952, parent's bed places were screened by hanging calico enclosures, and some people used mosquito nets over their sleeping places. Most Sisualik residents still slept at ground level in their tents, but Lucier recalls two elderly men sleeping on steel frame army cots. The needs of the elderly with health and age-related problems constrained tent living in the 19th century as they did in 1952. Tent partitioning in the 20th century may have resulted from teachings of the Friends Church regarding personal modesty but also from the better lighting inside white canvas wall tents as compared with the dark inside the hide-covered *napaaqtat*.

The ordered, logical layout of the Nuataaġmiut camp at Sisualik observed by Nelson resulted from a rationalization of the special needs of a beluga hunting camp. Nuataaġmiut beluga hunters required quick and ready boat access to the sound and rapid marshalling of paddle-driven one-man boats to successfully pursue the sociable belugas. In addition, the concentration of many hundreds of tenters at Sisualik in and of itself called for order and discipline. The native conviction that belugas were acutely sensitive to noises and varieties of human waywardness influenced virtually all hunting season

Figure 16. Leila Mitchell boiling freshly caught trout or whitefish for her family's midday meal at the Sisualik camp, summer, 1952. Her family's tent is in the center background (FMNH neg. no. 110448-18).

activities there in the 19th century because beluga driving success at Sisualik required the close and unsuspecting approach to shore of the belugas.

The beluga hunting circumstances in the northern sound interplayed with the spit setting at Sisualik. Clearly it was the expanse of good shoreside tenting that allowed the location of the large Nuataaġmiut and other peoples' camps there. Although historically, beluga driving was pursued on the southwestern shore of the sound and westward, there is no evidence in the 19th century of tent gatherings on the extensive beaches at Cape Espenberg of a size anywhere near that at Sisualik. Eschscholtz Bay, the highly productive beluga hunting area in the far eastern sound, has no location on its shores comparable to the extensive old beach lines at Sisualik, nor did its hinterlands, the Buckland River drainage, have a human population size near that on the upper Noatak River in the 19th century, perhaps even when Bucklanders combined with people from the south sound and elsewhere. Kaŋiġmiut and their allies in beluga drives on Eschscholtz Bay lived in several camps and came together, usually at Siŋiq, for beluga butchering. The large number of hunters at Sisualik was advantageous in beluga drives and may indeed have enabled a high ratio of kills, whereas the historically less numerous Eschscholtz Bay hunters could make repeated forays against belugas that came in and out of those waters.

Figure 17. View east-southeast of beach at low tide just west of the Sisualik camp. Black deposits of debris from underwater peat deposits indicate increasing shallowness of inshore sound waters west of the camp (FMNH neg. no. 110447-10).

Giddings and Anderson (1986:15) aptly described the low flat beach ridges at Cape Krusenstern 30–40 km west of Sisualik, where they reported a "three meter crest about twelve meters from the water's edge" and lower elevations in back. The "water's edge" is perhaps a less meaningful reference point for spit elevations than evidence of fall storm waters' highest level: ridged and heaped gravel and driftwood at the high water mark. Much of the near-shore grassy beach at Sisualik is barely more than a meter above the fall drift debris level (Fig. 17), and the old, flat beach ridges become increasingly lower until one finds boggy tidal areas on the spit's north shore, behind Sisualik (Fig. 18).

Because of its exposed location and low elevation, Sisualik was nearly indefensible against surprise attack. Armed attacks on beluga camps seem not to have occurred within living memory or in collected folklore. This may have various explanations, one being the sound societies' interdependence and necessary cooperation for success in beluga drives and another the complementary trading needs of inland/coastal seasonal migrants and coastal dwellers. Warfare, at least in early historic or late prehistoric times, seems to have occurred only once at Sisualik. This was in mid- to late summer when members of all societies present there, except for those from Point

Figure 18. Boggy tidal area along the shore of the spit's terminus north-northeast of the Sisualik camp (FMNH neg. no. 110761).

Hope, retreated to a now willow-covered area behind Sisualik where they built a wood stockade in defense against an organized attack by warriors from Point Hope, who reportedly were losers in the subsequent battle (Lucier, 1952). Possibly overt intersocietal conflicts between two or a few men did happen, although it is likely that such conflicts were most often resolved by traditional peaceful means. Violence did occur when Euro-American traders introduced alcohol to Sisualik residents in the mid-19th century and later. The impact of alcohol on the beluga hunt may have been indirect because the drives were conducted before Euro-American trading ships arrived. Lucier did not ask Sisualik residents in 1952 whether home brewing of alcohol had ever taken place at the camp. Owing largely to Friends Church influence, Sisualik was officially "dry" after 1897 or 1898 and was practically so in 1952.

The near-beach butchering and work areas at Sisualik, although not mentioned by Nelson and other 19th century observers, were an essential part of the camp. Camp life centered on the beach and the grassy area adjoining

Figure 19. Butchering freshly netted trout and whitefish under the Mitchell family food drying racks at Sisualik, summer, 1952. Seated woman with back to the camera is Jenny Mitchell (Aluniq) (FMNH neg. no. 110448-34A).

it. In 1952, the beach front had several groups of heavy timbered meat-drying racks that had been in place for many years. If the tentlike surface burials nearby, which predate 1898, are any indication, then some rack uprights, which are heavier than the burial structure poles, may be nearly or as old as the burial structures (Figs. 10, 19). In 1952, the substantial timbers of the meat- and fish- drying racks showed no evidence of rot.

In 1952, and presumably earlier, the grass-covered front beach ridge was the location of family hearths, used every year, where large quantities of meat, *maktak,* and fish were cooked for human and dog consumption. Fuels used were driftwood, marine mammal blubber, and sometimes bones. Figure 20 shows such a hearth area in 1952 with an improvised cut metal drum stove and re-used 5-gallon gasoline cans that served as cauldrons, as well as a wooden stave tub containing cooked dog food. This hearth was located 2–3 m east of the Mitchell family meat racks. In the 19th century, the family cook would have used fired clay pots obtained in trade from Buckland or Selawik River peoples. Such clay pots varied in capacity from 2 to 3 gallons (7.6–11.4 liters) (Nelson, 1983:201–202). Boiling was accomplished by placing the vessel at the fire's edge or on fire-heated stones. Near the hearth and not shown in Figure 20 was a shallow pit 50–60 cm deep and 1.5 m wide where, as the hunting season progressed, small wood stave barrels, sealskin pokes,

Figure 20. Della Keats (Puyuq) with dog food she has cooked on a metal-lined hearth, summer, 1952 (FMNH neg. no. 110449-4).

and re-used 5-gallon (19-liter) cans were filled with marine mammal products immersed in self-rendering blubber. This pit cache was covered with a tarpaulin and scraps of plywood to shield it from light and the sun's warmth.

The grassy front beach at Sisualik in 1952 had areas where there were no meat racks, hearths, or boat motor stands. In these open areas, on Sundays

and at other times, senior Friends Church members, seated in a semicircle facing the sound, held prayer meetings. Prior to their conversion to Christianity by Friends missionaries in or about 1898, Nuataaġmiut and members of other societies gathered in these open areas for secular meetings featuring dancing, singing, and drumming.

The same areas served for shamans' performances, such as one witnessed by Aluniq, probably in the early 1880s. This séance was occasioned by the failure of beluga migrations. Participants were a shaman, his wife, and other relatives, and the séance involved sending the shaman's helping spirit undersea to bring belugas to the vicinity of the camp.

6

ORGANIZATION OF THE BELUGA HUNT

Beluga Behavior

Beluga behavior in northwestern Alaska has been observed from two viewpoints: that of academically trained scientists and that of Iñupiat, who draw on a fund of knowledge accumulated over generations. The scientific viewpoint can be found in the published literature, but Iñupiat traditional knowledge has not been so directly communicated. Even when traditional knowledge is utilized by scientifically trained observers, it is often summarized or incorporated into the conclusions of a study, and the individual Iñupiaq informant is not always identified. It is thus easier for the student of beluga behavior to appreciate scientifically derived information than the view of hunters who may be drawing on many lifetimes of beluga observations. Both points of view are valuable, and neither should be considered superior to the other.

There is no published evidence of any Iñupiaq with an encyclopedic knowledge of Kotzebue Sound marine life. This may reflect a failure by researchers to seek out Iñupiat hunter-intellectuals. But it is also true that most seal and beluga hunters with extensive traditional knowledge and experience were dead before serious ethnographic research began in the Kotzebue Sound area, about 1940, and before scientific marine mammal inquires began there, in the 1970s. Moreover, the behavior of the belugas is largely hidden in the murky inshore waters where they are most likely to be seen and hunted. Given such limitations, even the most technologically advanced observations provide only rudimentary information that can profitably be supplemented with information from Iñupiat.

Iñupiat interviewed in the early 1950s agreed that belugas formerly came readily into northern and eastern Kotzebue Sound but that human activities,

especially air traffic and powered boats, interfered with the belugas' natural movements and reduced their availability at Sisualik and in Eschscholtz Bay. Frost and Lowry (1990:55) wrote, for example, that "belugas are sensitive to disturbance in certain circumstances and waterborne noise may influence their distribution and behavior. . . . The principal disturbances to which they are presently exposed in coastal Alaska are associated with beluga hunting, commercial fishing, coastal traffic, industrial development, and the proximity of settlements."

According to Feldman (1986:60), "no more than three to five animals [belugas] were harvested for the entire Eschscholtz Bay hunt in 1979. This was a disastrous beluga hunting season due in large part, in the villagers' view, to the presence of killer whales at the mouth of the bay, which prey on beluga." The villagers' opinion in this instance may be true, but there was no evidence in the statements of older hunters in the 1950s that killer whales were believed to be a threat to the achievement of beluga kill goals in the mid- to late 19th century. Frost and Lowry (1990:55) noted that "a major source of disturbances in Kotzebue Sound . . . is that associated with hunting" and that "residents of Kotzebue, a settlement of over 3,000, think that increased traffic and noise in their area have caused fewer whales to remain for shorter periods in northeastern Kotzebue Sound." The same authors also reported that local residents believed beluga movements to be affected by the presence of killer whales.

These and other published and unpublished accounts of beluga avoidance responses to human-generated noises appear to explain and justify traditional Iñupiat attention to the suppression of noise in beluga camps. Scientific beluga studies seldom address the many human behaviors that Iñupiat traditionally proscribed because of their presumed offensiveness to belugas.

Ordinarily, belugas display rather slow, determined movements when they are not hard-pressed. In the late 1940s and early 1950s, the smallest outboard motors (3.5–5.0 hp) did not allow hot pursuit of belugas, whereas the more powerful motors of the years following easily closed the distances between hunters and prey. The whales, with no chance of outracing their pursuers, had to resort to quick rotational, sharply veering movements and prolonged stays under water to escape. Under intense pursuit, the beluga pod breaks apart, and the animals then have to be pursued individually, a tactic that has an obvious survival advantage to belugas as a species despite the deaths of individual animals in such encounters.

Despite its fairly slow swimming speed, 14–18 km per hour when chased, the beluga's agility and its reported habit of fleeing and sometimes hiding motionless against the bottom in shallow, often muddy waters when hounded by killer whales and human pursuers also have aided the survival of this small whale. Its purported sensitivity to sounds and smells, such as motor exhausts, may also explain its later 20th century scarcity or absence from waters around Sisualik and Siŋiq. It is impossible to say with assurance whether beluga evasive behavior is identical in the rather similar inshore

environments of the eastern and northern sound. Neither do we know whether the two inshore marine environments present significantly different means of escape and concealment to belugas or how environmental circumstances differentially affect the belugas' communication and group cohesion. That prehistoric and early historic Iñupiat generally understood the belugas' inherent and learned behaviors and exploited them in hunting is obvious from those hunters' frequent successes. Also apparent is the belugas' ability to alter their behavior in response to a wide range of intrusive human actions.

Locating Belugas

As noted previously, the major Kotzebue Sound beluga driving camps had in common good tenting on recent or older beach ridges composed of gravel or sand and lying just above high water. Although these low, almost flat beach lines are ideal for most beluga hunting support activities, their low elevation is disadvantageous when it comes to spotting distant belugas. At birth, belugas are slate or blue-gray in color, changing gradually in youth and older ages to a creamy white. These colors are no help to beluga spotters. The grays and blue-grays are difficult to see in silty water, and the flashes of white that may be visible as adult animals surface to breathe in low, rolling motions can, in any but dead-calm waters, be easily mistaken for breaking waves.

Because belugas are not easily spotted, a key person in the beluga camp was the lookout. His timely warning allowed qayaq men to get their vessels and weapons ready and in the water in formation for the pursuit. At Sisualik, there is no high ground for sea observation, and informants mention only plain eye scanning by a lookout as he walked the shore. Lucier's informant Misigaq, whose memory dated from the late 1860s, stated that traditionally, when the Sisualik drives were highly organized and wholly controlled by community elders, the lookouts were shamans. That leading beluga hunters often were shamans is clear from Lucier's discussions with older sound Iñupiat.

We assume that the traditional Sisualik lookout was a Nuataaġmiu and that in inner Eschscholtz Bay he was a Kanŋigmiu. The south shore Ipniatchaamiut may sometimes have had their own lookouts around the rocky headlands at the entrance to the bay. At Sisualik, the channel of deeper water that lies close to the spit's terminus turns westward and is situated farther offshore as one walks northwestward away from the Nuataaġmiut camp. Therefore, the 19th century lookout may not have walked far beyond the camp's western limit and may have had favorite viewing positions in front of the camp or a little westward. Of course, we do not know, in fact, that belugas invariably used deeper water approaches to Sisualik, but based on local hunters' comments and observed beluga behavior in 1952, this seems the usual course of their movements to and from the vicinity of the Noatak River delta and the entrance to Hotham Inlet.

Inside Eschscholtz Bay and at the bay entrance, there are high terrain lookouts immediately adjacent to the known beluga driving camps on beaches at Choris Peninsula, at Siŋiq on the southern shore, and at Sisiivik on the eastern shore. Another historic beluga driving camp site on the inner bay, Igloo Point, has no high ground nearby and, in the 20th century, has reportedly been used infrequently as a beluga hunting camp. Today in Kotzebue Sound, beluga drives exist, if at all, in a form that depends more on speed and firepower than on patient, expertly coordinated encirclement.

Hunting Leadership

Nuataaġmiut have reported that, in addition to the lookout, there was a beluga drive leader (*atanniq*). His interactions with hunters before, during, and after the hunt are not completely clear. This lack of clarity may reflect, in part, the structure of Nuataaġmiut and other inland/coastal migrant societies where traditional leadership perhaps was less obvious than it was in the baleen whaling societies. The Nuataaġmiu beluga hunt leader was a respected man of middle years who was chosen by consensus. A proven leader may have held this position for more than one season. We assume that beluga hunt leaders often were related by blood to their predecessors, although a leader from family lines of no great recent distinction could arise if he demonstrated sufficient ability and a forceful, astute character. Because in the 19th century a majority of the hunters at Sisualik were Nuataaġmiut, it is unlikely that a hunter from another society could have achieved the position of beluga drive leader. Whatever power and authority the leader had, it is likely that he retained it only for the duration of the beluga hunting season.

The chosen drive leader at Sisualik could rely on discipline among those he led, for reasons that were peculiar to Nuataaġmiut, to Iñupiat generally, and to most large mammal hunting societies: experience and practical ability were valued highly. Everyone was taught to respect elders and those of proven judgment and performance, during the hunt and at other times.

The above assumptions about hunt leadership are made on the basis of statements by informants and from our knowledge of Iñupiat social relations. More difficult to determine, however, is how the beluga drive leader communicated with the dispersed fleet of hundred of qayaqs and many umiaqs. Because shouting can be ruled out as likely to have frightened the belugas, the early direction of the drive, when silence was required, must have been accomplished by visual signs and by watching both the leader and other near participants. The close spacing of qayaqs, nearly paddle to paddle, undoubtedly reduced the need for loud speech. Younger, less experienced hunters, according to informants, positioned themselves near experienced relatives or hunting partners whose behavior and body language they most clearly understood.

Any willful deviation from the drive leader's expressed wishes would have caused deep embarrassment and serious loss of face to a nonconformist. On the other hand, in accordance with Iñupiaq tradition, less competent but obedient participants, despite their inadequacies, could be assured of a share in any kill of belugas. Two of the most skilled qayaqers were positioned one at either end of the beluga drive line to assure the drive's momentum and integrity at critical moments during the chase, prior to the free-for-all slaughter at the conclusion.

7

PREPARATIONS FOR THE HUNT

Preparing for the beluga drive was a year-round endeavor, materially and in instruction and psychological preparation of hunters and backup members of the Nuataaġmiut community. Earlier we emphasized the similarities between beluga and caribou drives and especially the resemblance of the lancing of caribou in freshwater lakes and belugas in saltwater shallows. The behavior of the two species is quite different, but both lend themselves to killing with lances from qayaqs. The young person who learned use of the qayaq on rivers and lakes inland could transfer those skills to salt water.

The beluga hunters' time, once they arrived at Sisualik or on Eschscholtz Bay, was devoted largely to hunt preparations, including maintenance of qayaqs and umiaqs, paddles, hide lines, lances, barbed harpoon darts, and harpoons with toggling heads. These composite weapons required special materials as well as manufacturing and assembly skills. This meant that most hunters, to one degree or another, depended on older, talented specialists who made and assembled weapons and accessories. Repayment was accomplished through exchanges of goods and services and, when called for, by shares of the hunt. This latter "payment" was seldom discussed or openly acknowledged but was mutually understood.

The state of readiness of qayaqs at Sisualik is shown in Nelson's (1983: 260, Fig. 88) photograph of the tent row at Sisualik. It shows a northern sound qayaq, probably one belonging to a Nuataaġmiu, with a clever, effective method of at-ready storage, upside down with the pointed bow directed at the launching place. Twin cut, forked willows with a single crosspiece at the center of the Y support the inverted deck of the vessel. A smaller, crotched, cut willow underneath the cockpit cowling allows the owner to store his double-bladed paddle and other equipment off the ground, protected from rain and light winds underneath the qayaq's front deck. A single-bladed paddle is laid across a stick on the ground beneath the other hunting

equipment. These objects are laid parallel to the long axis of the qayaq. Another Y-shaped stand with a crosspiece near its top has a socketed harpoon and other long, pointed objects in its crotch. The closer stand is probably associated with another qayaq stored beyond the camera's view. The pictured qayaq rests knee-high or a little higher.

Nelson's photograph also shows one of a pair of deck retainer pegs located roughly halfway between the front of the cockpit and the tip of the bow. Deck pegs kept weapons and paddles from rolling overboard. Smaller objects presumably were stored inside the qayaq. This arrangement of a qayaq and its equipment makes clear why dogs and puppies were always kept tied at the Sisualik camp. Otherwise, lines, lashings, and weapons would be chewed and the qayaq's hide cover torn.

Nelson's (1983:261) description of the Sisualik camp mentioned "between sixty and seventy" umiaqs stored above the high water mark with their sterns pointing toward the sea and "turned on one rail, the other being supported by sticks 3½ to 4 feet [107 × 122 cm] long." Oars, masts, pikes, and other loose items would have been stored inside, wedged between the lashings. Uprighting and launching of an umiaq required assistance to smaller crews by other crews or shore-bound persons. Boats were dragged across the sandy beach for launching and for storage near shore on return.

Human Behavior During Beluga Drives

Empirical knowledge of beluga behavior by Kotzebue Sound Iñupiat was combined with a philosophical–religious belief system that granted belugas and other prey a willingness to be killed by human beings, who in turn were expected to adhere rigorously to certain rules and prohibitions and to the edicts of shamans who were spiritual leaders. Considerable pragmatic and religious effort was employed to maintain the equilibrium of human–beluga interaction. At the end of the 19th century, however, missionaries from the Friends Church arrived and soon suppressed traditional religious beliefs. Within a few years, traditional rules relating to hunting were ignored and largely forgotten. It is now impossible to gain more than a superficial knowledge of the old hunting rules, but we do know that there were prescribed and proscribed actions that preceded and accompanied the beluga drives. Of such rules and prohibitions, some applied to everyone and some to persons of a certain status or condition. The origins of most rules are probably beyond understanding. But it seems certain that rules and prohibitions, as well as amulets for success and protection during the beluga hunt, were passed down from father to son through successive generations, were self-prescribed through spiritual inspiration, or were discovered by consulting a shaman, who was often a relative.

Based on published information and accounts obtained by Lucier from elderly informants at the two beluga hunting camps, Siŋiq and Sisualik, we consider magico-religious beliefs that bear on beluga hunting from two

perspectives: measures that furthered success and remedied problems of the hunt, and appeals, offerings, and prohibitions that pre-Christian Iñupiat saw as straightforward rules of conduct that ensured a productive hunt.

Considering first appeals and offerings, Lucier's Buckland informant Sannu described spirits in a Choris Peninsula cave who were humans above ground and killer whales below ground. In order to have long life and success in hunting, hunters hung worthy objects like glass beads or wolverine fur on sticks pushed into the cave walls. These cave spirits are among the kind associated with a particular locale or feature such as a hillside or bluff.

Lucier obtained accounts of appeals and offerings among the Kaŋiġmiut of the eastern sound. The skin blanket toss, usually associated with whaling communities in northwest Alaska, was performed at Siŋiq for Sila, identified as weather or the spirit of weather, to dispel winds that interfered with hunting. A small, dried child's body (or fetus?) assured a qayaqer success in hunting belugas. The dried corpse was wrapped in a hide bundle that the owner carried in his qayaq while hunting. An amulet that brought overall protection and hunting success was the dried carcass of a bald eagle (*Haliaeetus leucocephalus*). Amulets were worn on a diagonal torso strap next to a person's body. Amulets could be inherited, not always the object itself but the same kind of object.

Among prohibitions were activities to be avoided at certain times. For example, skins of inland animals like caribou could not be sewn while people were living on the coast at Sisualik. Thus, before arriving on the coast, Nuataaġmiut had to stop near the mouth of the Noatak River to sew skin covers for their qayaqs or sew boots and clothing. There was a strict prohibition on children sleeping while belugas were being butchered. Nuataaġmiut believed that the handling of human skulls left from old surface burials on the Sisualik spit would cause strong winds, a serious problem during the beluga hunting season.

During beluga hunting, everyone avoided cutting or destroying grasses and flowering plants with the exception of wild rhubarb (*Polygonum alaskanum*) and wild celery (*Angelica lucida*), both of which were important food plants. Prohibitions against cutting or destroying most plants prevailed at Eschscholtz Bay and Sisualik (Foote, 1959–1963 [Foote Collection, University of Alaska Archives, box 3, folder 1, p. 31]). That other prohibitions were in effect in Eschscholtz Bay, if not elsewhere in the sound, is clear from Hooper's (1881:24–25) statement that people "are not allowed to chop wood, dig in the earth, sew, tan skins, and many other things" during beluga hunts for fear that the animals would not return the following year. Hooper, who visited Kotzebue Sound on the U.S. Revenue steamer *Corwin* in July 1880, also noted that, following the hunt, bones were collected and burned. Lucier's informant Sannu noted that in the early 1860s at Siŋiq beluga bones were heaped and burned at the close of the beluga hunting season. Also, the qayaqers' clothes, ragged cut-off shorts and armless pullover shirts, were discarded in the post-season cleanup.

Lucier's Kaŋiġmiut sources mentioned prohibitions relating to both bear and beluga. A dish used for bear meat could not later serve as a container for beluga meat. If a hunter killed a bear and ate some of the meat, he could not later wear the clothes he had worn bear hunting when he hunted belugas. Hunting of either black bear (*Ursus americanus*) or brown bear (*Ursus arctos*) during the beluga hunting season was forbidden.

Lucier was told of Kaŋiġmiut rules regarding uses of materials for cutting edges in weapons and tools. Ground slate was the sole material allowed for sea mammal hunting harpoon blades even after steel blades were available in the 19th century. Knives used for butchering belugas always had flaked chert blades. Flaked chert also was used exclusively for the beluga lance (Hooper, 1881:25, 59).

Although detailed information is lacking, it seems clear that most beluga hunting rules and prohibitions were not all that onerous, and many banned activities were unnecessary anyway during the few weeks when belugas were driven. Grasses, for example, were green and growing in early summer and unsuitable for mat or basket making; they hardly needed to be collected. Even the traditional use of ground slate or flaked chert for the blades of cutting tools, while traceable in part to conservatism, probably also reflected the superiority of a stone and stone-working technique for a particular purpose. Thus, seemingly arbitrary rules may, in fact, often have had practical explanations that are not apparent today.

Sannu described the distancing of a hunter from his wife when beluga carcasses were being landed. When hunters arrived off Siŋiq with towed beluga carcasses, no hunter called directly to his wife on shore, but rather a "friend," probably a hunting partner, called to the hunter's wife and told her how many belugas her husband had killed. During this exchange, the qayaqs remained offshore. When the belugas and qayaqs were beached, each successful hunter's wife poured one ladle of fresh water over the bow of her husband's qayaq for each beluga that he killed.

The Nuataaġmiu Flora Penn (Aquġluq) told Lucier that "when they bring a beluga [on shore at Sisualik], the hunter's wife sends somebody to bring a sheephorn dipper and with it she gives the beluga water on its mouth, and some water to her husband, and then to a female relative."

It may be that, given the long prehistory of beluga hunting on Kotzebue Sound, some rules and prohibitions pertaining to the hunt were peculiar to one society or another. These distinctions, however, cannot be determined with confidence from the limited information available.

Hunting Equipment and Techniques

Detailed, reliable published descriptions of historic Kotzebue Sound sea mammal hunting weapons and equipment are few. For the most part it is necessary to rely on E. W. Nelson (1983), who, regrettably, made only one brief foray into the sound. The timing and short duration of his visit in mid-

July 1881 precluded his observation of beluga drives at Sisualik. Nelson's failure to specify weaponry and accessories used by qayaqers and umiaq crewmen in Sisualik beluga drives, given his keen eye for significant details elsewhere, suggests that he simply had insufficient time ashore.

In addition to the valuable, if limited, information in Nelson (1983), museum collections from Kotzebue Sound containing a variety of sea mammal hunting weapons have been published (Bockstoce, 1977; VanStone, 1980). Their usefulness is limited for the present purpose, however, because the collectors failed to identify weapons used in beluga hunting.

Archaeologists working in the sound region in the 1940s and 1950s, although occasionally supplementing their excavations with ethnographic inquiry, concentrated on obtaining an overview of cultural development in western and northwestern Alaska and did not study beluga hunting. The information presented here is derived largely from Lucier's field notes (1950–1952), but other sources are cited.

Of primary importance in beluga drives was the qayaq, which, with its paddles, provided the means of delivering the weapons at beluga kills. Both single-bladed and double-bladed paddles were used with qayaqs, the latter being preferred for beluga drives. Although umiaqs were also used, their role was secondary, probably due to the nature of the hunt, which favored the superior maneuverability and shallow draft of qayaqs.

Although the qayaq may be the most familiar object of Eskimo material culture, those of Kotzebue Sound have been infrequently described. The description by E. W. Nelson (1983:220–221) is the most detailed.

> The kaiaks in use on the shores of Kotzebue sound are much smaller and slenderer than those found elsewhere along the Alaskan mainland, and are built on a somewhat different model. This style of kaiak is found from Kotzebue sound northward to Point Barrow. . . .
>
> A kaiak from Cape Krusenstern (figure 6, plate LXXIX) is 17 feet 3 inches in length, 8 inches in depth back of the manhole, and has 18 inches beam. Another, from Cape Espenberg (figure 5, plate LXXIX) is 14 feet 4 inches long, 13 inches deep, and has 24 inches beam. They are long, slender, and sharp-pointed at both ends; the manhole is placed somewhat backward from the center, and the deck is flat from the rear of the manhole to the stern. Just in front of the manhole the deck is sprung upward by means of the upcurved cross-pieces so as to form a rising slope, which extends to the rim of the manhole.
>
> . . . These kaiaks lie very low in the water, and the upsprung curve of the deck just in front of the manhole serves to throw off the water and prevent the full force of the waves from striking against the occupant.

The Cape Espenberg qayaq illustrated by Nelson (1983: Pl. LXXIX, 5) is not a typical northern or eastern Kotzebue Sound qayaq. Instead, except for

its upturned, pointed bow, it resembles Bering Strait models. The historic qayaq of southern and southwestern Kotzebue Sound was not described by Nelson and is essentially unknown. Lucier's informant Levi A. Mills, Sr. (born 1903), has noted that the Deering qayaq resembled northern and eastern sound qayaqs in one important respect: its cockpit rim was strongly raked and had a prominent cowling. Otherwise, the Deering qayaq closely resembled the Cape Prince of Wales vessel illustrated in Adney and Chapelle (1964: 200, Fig. 185). Its hefty under-deck capacity could hold an entire butchered bearded seal, suggesting that when fully loaded it drew more water than, for example, Nuataaġmiut and Kaŋiġmiut qayaqs. Deering qayaqers worked rough, open seas that northern and eastern sound qayaqers generally avoided.

Adney and Chapelle (1964:200–201, Fig. 186) described and illustrated a qayaq from Cape Krusenstern. Because this vessel was formerly in the U.S. National Museum, it may have been collected by Nelson and could, in fact, be the same qayaq he illustrated (Nelson, 1983: Pl. LXXIX, 6), for the dimensions given in both sources are almost identical.

At Siŋiq, in August 1950, Lucier made a drawing of a qayaq constructed in the 1930s or 1940s and now in the University of Alaska Museum in Fairbanks. This Kaŋiġmiut qayaq (Fig. 21) is 4.8 m long, slightly shorter than Cape Krusenstern and Point Barrow qayaqs described and illustrated by Adney and Chapelle (1964:200–201, Figs. 186, 187). Its height is 19 cm from the rounded keel to the flat rear deck and 21 cm in height from keel to deck level in front. The prominent, raked cowling, which is highest at the forward edge of the cockpit coaming, rises 22 cm above the deck. The qayaq's bottom profile is curved similarly at either end. There is no cross-sectional view, but Lucier's drawing indicates a slightly round, shallow-bottom profile. Even when occupied, this qayaq drew little water and could be used in depths as shallow as 15–25 cm over soft, muddy bottoms where there was little chance of tearing the bottom cover. A heavy thong deck strap originates just below the gunwales on either side at a point just in front of the cockpit. Attached to this strap are paired thong loops, one on either side, that lie against the cowling. Two small rawhide loops are tied like wings to narrow stanchions on the deck center, located respectively 78 cm rearward of the prow and 95 cm forward of the stern.

Because this qayaq was made many years after firearms were introduced, it is doubtful whether any traditional weapons were ever deployed on its decks. The fore and aft stanchions with paired loops could have effectively retained shafted weapons or been used as tie-downs. Paddles could have been inserted under the deck strap on the cowling. The hand-sized loops on either side of the deck strap were useful to the qayaqer as he positioned his floating craft in preparation for his entry into the cockpit or when grasping it as he prepared to lift and carry it to water or ashore.

The previously mentioned qayaq from Cape Krusenstern illustrated by Nelson (1983: Pl. LXXIX, 6) has a bow and stern much more tapered than

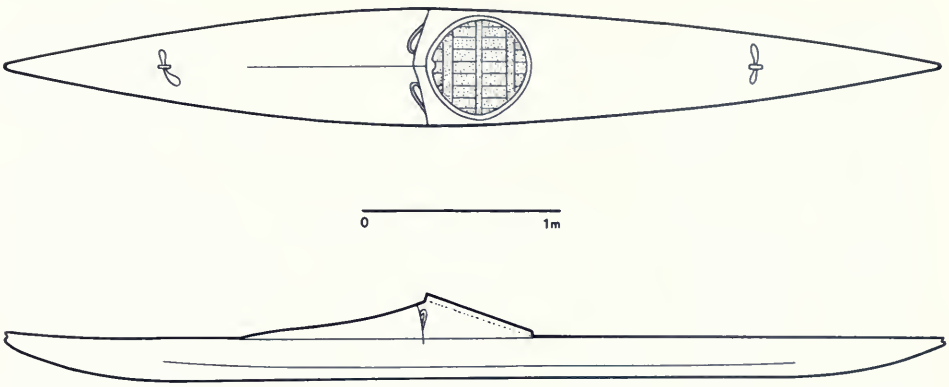


Figure 21. John A. Hadley's Buckland River qayaq obtained at Elephant Point in 1950 by Lucier for the University of Alaska Museum, Fairbanks.

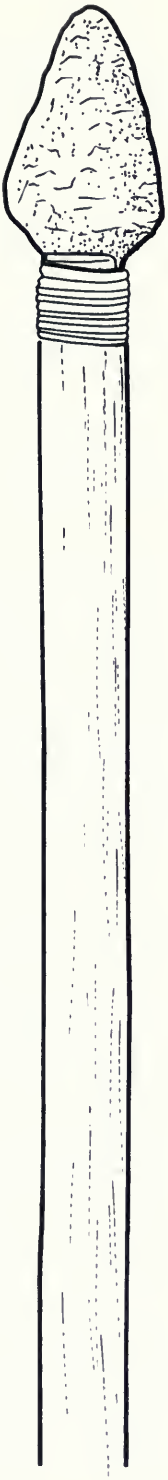
the Kaŋiġmiut craft and it is slightly longer. Otherwise, the two qayaqs are practically the same. There were variations in the construction of qayaqs in eastern and northern Kotzebue Sound, but all resembled the vessels that have been described here from Eschscholtz Bay and Cape Krusenstern.

Lucier's Nuataaġmiu informant Kumak discussed the traditional weapons used by beluga drivers in Kotzebue Sound, namely, two heavy barbed harpoon darts (*qavluniun*, singular) and two flint-headed beluga lances or spears (*aŋuviugaq*, singular). The open water, toggling head harpoon (*nauligaq*, singular) was also used in the beluga drives at Sisualik, mostly by participating umiaq crewman, but also occasionally by qayaqers.

According to Kumak, the Nuataaġmiu qayaqer kept his two harpoon dart assemblies on the forward deck, one on either side of the cowling, because these were first-strike weapons, whereas the two lances were carried on the aft deck. The Nuataaġmiut qayaq's restricted under-deck space aft did not allow for much storage, just as the forward under-deck space was largely needed for the occupant's legs and feet.

All the detailed hunt descriptions provided by identified informants are in agreement that barbed harpoon darts were used first; lances were used only after the beluga prey had become tired and nearly stranded with their backs exposed or when the whales had been driven into shallows and were becoming increasingly exposed on a retreating tide. In some instances, drives progressed with sufficient smoothness that belugas in some numbers were soon helplessly stranded so that few or no harpoon dart strikes were needed. The first and only attack thus could begin with the wielding of lances and hunting knives against the helpless but uninjured belugas. To some extent, each hunt was unique, calling forth unexpected opportunities and responses from human predators as well as from their prey.

The historical barbed harpoon dart head shown in Figure 22b is made of antler and is asymmetrically barbed, with three barbs along one side and



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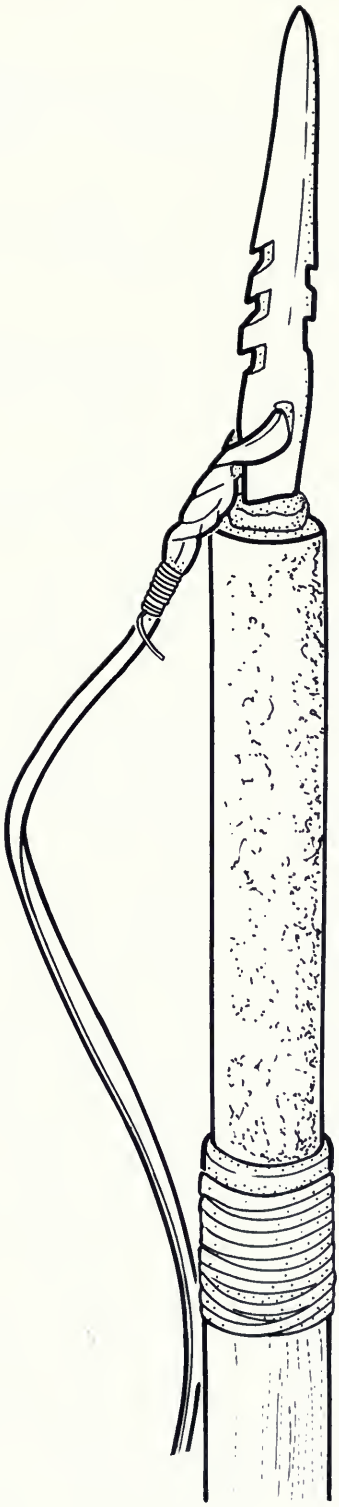

b

two along the other. It has an oblong central line hole and a wedge-shaped tang to fit into a split wooden receiver plug. The socketpiece for such a dart head would be made of walrus penis bone, the shaft of spruce wood, and the finger rest of antler. The dart assemblage was approximately 171 cm long. The dart line attached to the shaft was about 2 fathoms (3.7 m) in length. The shaft served as the only float marker. Nuataaġmiut umiaq crewmen using the toggling harpoon on beluga drives did not use line floats but instead tied the trailing end of the harpoon line to the umiaq bow. At Eschscholtz Bay in 1951, Lucier observed one beluga hunter use his toggling harpoon with an empty 2-pound coffee can for a float (Fig. 23).

The lance illustrated in Figure 22a has a spruce wood shaft 140 cm in length. The flaked chert head is imbedded in the split distal end of the shaft, which has a lashing lip; the lashing is twisted sinew. It is not possible to determine when iron or steel heads replaced chert heads on beluga lances, but given the previously documented knowledge that metal heads were proscribed in the early 1880s (Hooper, 1881:25, 50; Nelson, 1983:145), it is obvious that chert heads were prevalent long after metal was available for other uses. Beluga lances with chert heads like the one in Figure 22 are present in late 19th century ethnographic collections from Kotzebue Sound and adjacent areas (Bockstoce, 1977:46–47; VanStone, 1980:29, Pl. 5b; 1990: Fig. 5d; Nelson, 1983:145–146, Pl. LVb, 3, 4), where they are usually identified as a caribou hunting weapon. According to Lucier's informants, there was no material difference between the beluga lance and the lance used for killing caribou in lakes, although they had different Iñupiaq names.

Ethnographic collectors in the late 19th century made no clear distinction between weapons used for seal hunting and those used against belugas. Understandably, archaeologists have been reluctant to make such distinctions on the basis of limited recovered artifacts. Moreover, sealing is the best known and often predominant pursuit of Alaskan coastal Eskimos. In this respect, the beluga driving regions are exceptional because seal hunting is often secondary to the beluga driving effort. The Nuataaġmiut, in particular, emphasized beluga hunting and were not sophisticated seal hunters. The collections of the Field Museum of Natural History contain three harpoon darts from Kotzebue Sound collected in the 1890s that have been described as sealing darts (VanStone, 1980:23, Fig. 5). They are heavier than darts used with a throwing board; their shafts are equipped with finger rests and a butt notch. It seems certain that these were, in fact, primarily beluga hunting weapons (Fig. 24).

←

Figure 22. Beluga lance (*aŋuviugaq*) and barbed harpoon dart (*qavluniun*) made at Noatak village by Ezra Booth (Kumak) in the winter of 1952–1953 for Lucier. (Collections of the University of Alaska Museum, Fairbanks.)

Figure 23. Eschscholtz Bay beluga hunt on Qasigiaq shoal, June 1951. Arthur Nagozruk, Jr., aiming his riffle at head of beluga, shown by its vertical vapor spout. Note the brass-headed harpoon, line, and sealed coffee can float on deck (FMNH neg. no. 110762).

Asymmetrically barbed harpoon dart heads occur archaeologically in the Kotzebue Sound region as early as the Choris culture, about 2900–2100 B.P. (Mason & Gerlach, in press). A form with 3/2 asymmetrically disposed barbs also occurs at the Old Kotzebue site, which dates about A.D. 1400 (Giddings, 1952: Pl. XII, 5). A large harpoon dart head from Giddings's Intermediate Kotzebue site (A.D. 1550), symmetrically barbed, may also have been used primarily, if not exclusively, for beluga hunting (Giddings, 1952: Pl. XXXVIII, 1). VanStone, who excavated houses near Kotzebue village dating from 1400 to A.D. 1550, recovered a single asymmetrically barbed harpoon dart head approximately 15.6 cm long that probably was used with a beluga hunting weapon (VanStone, 1955:102, Pl. 6, no. 8). The reason for persistence of asymmetry in barbed harpoon dart heads on Kotzebue Sound is not clear,

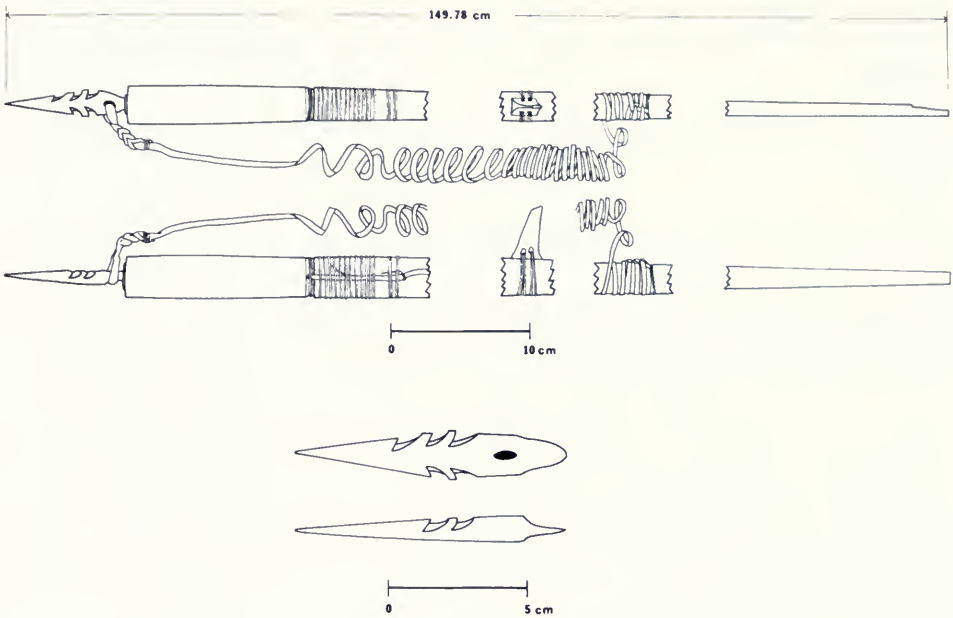

Figure 24. Barbed harpoon dart from Kotzebue Sound (cat. no. 20135) in the collections of the Field Museum of Natural History (VanStone, 1980:23, Fig. 5).

but it is certainly an expression of function and apparently is not correlated with the size of the heads. Perhaps the asymmetric barb design somehow allowed for better penetration of beluga skin and held better with less breakage than did heads with symmetrical barbs.

Flaked stone bifaces, such as lance heads, were conserved and retouched to be inherited along male lines. Therefore, particular lance heads survived in use and in storage for generations. The earliest stone bifaces likely to have been used with beluga lances may be those recovered at Old Whaling sites (approximately 3000 B.P.) on Cape Krusenstern (Giddings & Anderson, 1986: Pls. 133q,r, 138h,q, 143a–n); beluga bones were recovered from these sites.

Evidence may be sparse, but it seems clear that the use of asymmetrically barbed harpoon dart heads with center and off-center line hole and rounded or wedge-shaped tang together with stone-headed lances for beluga hunting existed for several millennia before the introduction of firearms and the abandonment of qayaqs put an end to the use of these weapons in Kotzebue Sound.

8

THE TRADITIONAL BELUGA DRIVE IN KOTZEBUE SOUND

When Lucier first observed the beluga hunting scene at Siŋiq Eschscholtz Bay in 1951 and at Sisualik in 1952, beluga drives had ceased. At that time, elders deplored the present state of beluga hunting, saying that everyone was out for themselves and that rules regarding behavior on shore and on the sound were being ignored. Hunting coordination certainly existed at this time, but it was based not on the decisions of a hunt leader but on the actions of one or more good hunters who independently chose the time and weather conditions appropriate for their departure on a hunt. In a sense, there was still hunt leadership, but only by example. Concerted drives of belugas with numbers of participating boats were not evident.

It is interesting that no equivalent level of criticism by elders was directed at paired or lone seal hunters, or even umiaq crews, who used rifles instead of harpoons and inevitably lost a good many wounded seals that sank after being shot. This tolerance for wasteful, nontraditional sealing practices probably existed because traditional seal hunters often hunted alone or as members of one umiaq crew, whereas traditional, highly disciplined beluga drives at Sisualik and in Eschscholtz Bay involved all or nearly all Nuataaġmiut or Kaŋiġmiut plus their usual allies from other societies.

Lucier's informants believed that beluga drives began to decline sometime in the late 19th century and involved all areas where belugas were driven in Kotzebue Sound. This was probably due at least in part to the increased mortality of beluga hunters as a result of chronic and sudden catastrophic disease epidemics. Also, by the beginning of World War I, virtually all children were attending schools in which Western education replaced to a significant degree the traditional hunter's education involving hunt participation with male relatives. Summer wage employment, although minimal

in the late 19th century, gradually siphoned away young men who would have been participating in beluga drives. Before and after World War II, some summer–fall wage jobs, usually as low-paid common laborers, were available to Buckland and Deering men at gold placer and dredge mining camps on Seward Peninsula. The 1952 beluga hunting season at Sisualik was accompanied by the mass departure of Noatak men to the Bristol Bay salmon canneries, and only older middle-aged and juvenile men were left to carry out the beluga hunt. Formal education, wage employment, and distant, non-traditional marriages also reduced the role of younger women in the beluga hunting effort.

In 1952, there was still a substantial demand for beluga products as food for people and the numerous sled dogs. By the 1960s, even this motivation to hunt belugas faded as use of store-bought foods increased and snow machines replaced dogs for hauling and transportation.

The 20th century thus saw the abandonment of whole-society participation in beluga hunting at both Sisualik and in Eschscholtz Bay. As the beluga drives collapsed, the powerful integrating effect of the drives within the principal societies also disappeared. The cessation of inter-societal hunting cooperation weakened links between Kotzebue Sound societies. The important conceptual tie between belugas and human beings, emphasized by shamans and proclaimed and demonstrated through public rituals, was lost when Iñupiat accepted the broad authority of Christian missionaries and Western schooling in English. Perhaps equally important was the introduction of breech-loading repeating rifles, which foreclosed the need to drive belugas, or so it seemed. In fact, belugas were not simply fated to be shot and killed as tradition-free hunters chose but had the option to stay away. It appears they have done so increasingly in the last 40 years in spite of increased hunter firepower and boat engine horsepower. It would seem that the shamans and elders were correct: belugas have had the final say.

In fairness, it should be noted that in recent years successful efforts have been made to organize motorized beluga drives in Eschscholtz Bay (Frost, 1994, personal communication) with a single drive commander and with restraints on the actions of individual boats. However, the modern tendency of hunters to break ranks and a lack of effective sanctions have worked against a renewal of highly disciplined drives in Kotzebue Sound. Although the present scarcity of belugas in the usual shoals may have several explanations, we believe that in this area the sustainability of motorized drives and the tolerance of belugas for them are in doubt. Time will tell.

Although we do not completely understand the societal control and leadership of the beluga drives at Sisualik and the several Eschscholtz Bay camps in the early and mid-19th century, we know enough to sketch the organization of the northern drives. As noted previously, underlying the drives was a tradition of individual conformity and compliance with elders as well as well-practiced skills that made the Nuataaġmiut and members of other societies participating in the Sisualik hunt attuned to a single objective—the

encircling and driving of belugas to stranding. As we have also noted, the endeavor had a religious-philosophical underpinning and the hunter-shamans brought supernatural forces to bear that enabled the beluga prey to accept the hunt and their temporary deaths. Quiet and full participation by every household ensured the proper conditions that allowed belugas to come past Sisualik heading eastward. An older, experienced watchman walked the front beach line on the lookout for belugas and on sighting them signaled the camp residents with a "rolling raven call."

A predetermined hunt leader, a man highly respected for his judgment and beluga hunting knowledge, decided when the armed qayaqs and umiaqs were to be launched. This action required the assistance of all able-bodied persons in a camp of perhaps 700–800 people as qayaqs and umiaqs were transported to the water and set afloat. Women and older children would surely have carried out well-defined roles in the launching process. As previously noted, the means of communication between the hunt leader and the qayaqers and umiaq captains was not reported by Lucier's informants in 1952. Whatever the hand signals or other visual "language" and low-level voice communications were, the fleet line formed quickly for attack, maintained short intervals between boats, and altered the line of the pursuing boats as belugas veered or turned about. As complete a silence as possible was maintained until it was deemed proper to frighten the prey.

These procedures bear little resemblance to the hunts of the mid-20th century, when decision making was fragmented and societal and hunter unity radically diminished through material, religious, and linguistic change that encouraged individual initiative. These changes resulted in the denial of Iñupiaq concepts such as the existence of helping spirits and of animals' souls and their reincarnation. Beluga drives emphasized the necessity for order, restraint, and obedience to a multi-societal leader, that is, one man who commanded drivers from several societies. With the drives' decline, a key focus of Kotzebue Sound Iñupiaq life disappeared, one that in 1952 had no replacement.

Beluga Drives at Sisualik

The earliest account of a beluga drive anywhere in Alaska is reported for Norton Sound in the early 1840s by Zagoskin (1967:113).

> The most important beluga-hunting . . . takes place with the big drives at Pashtol [Pastol] Bay, where all the coastal people of the south shore of Norton Sound congregate about the middle of July. They choose a quiet day, and when the tide is full, they sail out in 100 or more kayaks to the edge of the deep water. From July on, the beluga appear in great numbers with their young as they follow the fish outside the mouths of the Yukon. As they move forward in pursuit, the natives keep absolute silence, but when they have gone out to a certain distance, at a signal

> from one of the old men who has been chosen, they start to make the greatest possible noise: they beat drums, strike their paddles on the kayaks, they do not shout, but bellow, and slowly, carefully, they move in toward the shore as the tide starts to go out. The school of belugas . . . hurries toward the shore as though trapped by the noise, to where the beach shelves off gradually. The tide ebbs; first the animals stop diving, then their spines start to show above the water, after that they lose their power of motion, and finally they are left high and dry. In a good year the hunters may round up as many as a hundred head in one drive. During the whole process the people who stayed ashore, young and old, try to observe the strictest possible silence. The dogs are taken far into the interior.

A later, briefer account of a beluga drive was reported by Hooper (1881: 59), who noted:

> The 'beluga' are hunted in kyacks; a dozen or more natives take up a position near the entrance of some bay, where they can see them as they come in with the tide. As soon as they have passed, the natives paddle out behind them, and, by shouting and beating the water, drive them into shoal water, where they are easily dispatched with flint spears.

In the summer of 1880, Hooper traveled along the coast of Alaska in the *Corwin* from Nunivak Island to Point Barrow. He did not indicate where he observed a beluga drive. Thus there is no reason to suppose that his account refers to any part of Kotzebue Sound.

There are two mid-20th century accounts of beluga drives that refer specifically to Sisualik. Foote and Cooke (1960:30), in an account of beluga biology and behavior, provided a brief account of the traditional drive:

> Primitively the beluga were herded by a group of kayakers into very shallow water and there harpooned and speared. A great killing could be made as long as the whales were kept in shallow water, for they could not then submerge enough to swim rapidly. This practice was abandoned when the Eskimos began to use power-driven boats. . . .

An account of a 1960 beluga hunt at Sisualik (Foote & Williamson, 1966: 1082–1083) is detailed and informative. Their account described how the hunter aimed his rifle and noted that when more than one hunter was shooting at a beluga, the first person to harpoon the animal could claim possession. If a beluga was driven into shallow water, it might be harpooned first rather than shot. The authors described the rifles that were used and noted that the harpoon and lance shafts were made of spruce, the brass blades being handmade "following primitive design." There is no mention of the barbed harpoon dart but only of the "harpoon," presumably the open

water toggling harpoon, with a rope line and float made from an empty 5-gallon gas tin. There is no mention of any beluga hunting technique other than the pursuit of individual whales by one or more hunters.

Marine biologists have been conducting studies of beluga movements and behavior in western and northwestern Alaska since the 1970s. Their published accounts, incidentally but importantly, have contained brief descriptions of traditional beluga drives. For example, Seaman and Burns (1981:567–568) observed that "the return per unit of effort at favorable hunting locations was quite high." They described beluga drive methodology and the interplay of human action and beluga behavior:

> . . . belukhas were permitted to enter confined bodies of water and harpooned or lanced as they returned seaward past strategically positioned kayakers. Often, organized drives were made in which many hunters attempted to herd whales into gently sloping shallow areas where they could be easily followed and struck. At other locations a line of kayakers would attempt to slowly drive whales to other hunters waiting on high banks or in kayaks. Harpooned whales were often killed with spears.
>
> All accounts of belukha drives or herding techniques conveyed to us, involved two important components: a high degree of organization in the line of drives and maximum silence until the whales reached a location suitable for killing. If killing occurred in shallow water the hunters commenced to make as much noise as possible. This and the sounds produced by the whales apparently resulted in confusion and disorientation among the whales, permitting more to be taken. Frequently the younger gray colored whales would strand themselves.

Seaman and Burns seemingly were describing different methods of driving belugas, apparently from various regions of western and northwestern Alaska because some of the techniques described are unlike those known from Kotzebue Sound. However that may be, according to Frost (1994, personal communication), information in this quotation came from hunters at Elephant Point (Siŋiq).

Other game management reports and journal articles by marine mammal biologists treat the subject of beluga hunting, but these are concerned with recent hunts and particularly with the subsistence harvests in Kotzebue Sound and elsewhere as they affect the beluga population. Such management studies cover methods currently used to hung belugas. All are to some degree concerned with losses of belugas resulting from the use of firearms in deeper waters, where carcasses routinely sink unless promptly harpooned with attached floats. Some studies attempt to address the causes of beluga absence or scarcity in areas like Kotzebue Sound where they formerly were plentiful. Seaman et al. (1986:34), for example, examined patterns of beluga movements in Eschscholtz Bay and noted:

> On some flood tides they [the belugas] do not deeply penetrate the bay but concentrate . . . along the northeast shore. This may be due in part to avoidance of boat traffic near Elephant Point and the Buckland River.

In the late 20th century, when the Kaŋiġmiut and Nuataaġmiut diet is comprised of imported as much as or more than native foods, the failure of a beluga hunt is a disappointment but not a disaster, as it would have been in the 19th century or even in the mid-20th century, when Iñupiat cash incomes were very low.

Three Nuataaġmiut, Misigaq, Aluniq, and Kumak, described the Sisualik traditional beluga drives through interpreters to Lucier in 1952. Misigaq, the eldest, began by remarking on the large number of qayaqs, 200 or even 300, and the fact that Nuataaġmiut, probably in the 1870s, had no telescopes but relied on watchmen/shamans for knowledge of when belugas were arriving and how may there were. Once belugas were spotted (Lucier, 1950–1952),

> those hunters started going quietly in qayaqs, close together in a string. Their paddles are almost touching. They chase [belugas] quietly, going way back there [northeastward]. They chase the belugas until they're way over there where the water is shallow—maybe one-and-a half feet [46 cm]. Then they start to [strike the belugas]. Qayaqs are all close together, almost stopped, in a line.

Aluniq first discussed the arrangement of the qayaqs and umiaqs ashore at Sisualik. She described use of both qayaqs and umiaqs and said these went together to drive belugas into shallow water.

> They made a line and moved together. They hollered, splashed their paddles, waved their harpoons to scare them into real shallow water. Those belugas always tried to go back to deep water, but hunters chased them back into water that was shallower than two-and-a-half feet [75 cm]. They could see belugas' backs above water. Every hunter had his spear [lance] with its handle marked at around two-and-a-half feet. He used that [mark] to see how deep the water was. Hunters picked big belugas and chose them first. Every hunter had his own mark on his harpoon. The marks were red and black paint so every hunter knew his own harpoons if he struck a beluga and lost it. Hunters used spears [lances] and when there were lots of belugas in shallow water, hunters stabbed them with those spears. When a hunter got a beluga, he ties it to his qayaq and brought it to shore; if he get two, he'd tie one on each side, up close to his qayaq. If wind came up while men were out hunting, women would take umiaqs off the racks and go to help those hunters who were towing two belugas. People always helped together when they landed and pulled those belugas on the shore.

Kumak's account of the beluga drive at Sisualik closely parallels that of Aluniq. Another account of the drive that Kumak told Don Foote 7 or 8 years later added details. According to Kumak, two qayaqs occupied by elders, who ranked below the fleet commander, went on the flanks of an advancing line of boats, one on the right and one on the left, to herd the belugas "like caribou." These qayaqers attacked the largest beluga in their respective waters, a signal for the remaining boats to go together into the fray. In his account to Foote (Foote, 1959–1963 [Foote Collection, University of Alaska Archives, box 3, folder 1, p. 40]), Kumak provided a few details as recorded by the interviewer:

> On each end of the line of boats chasing the belugas there were two old men who would watch for stray whales. When the time came for the attack these two old men would throw their harpoons. When the people thought they had killed enough whales they allowed the other animals to escape.

Drawing on the descriptions of Sisualik beluga drives provided by individuals who either experienced traditional drives personally or learned about them from their elders, and also using historical and ethnographic data presented earlier in this paper, it is possible to present a composite view of Sisualik drives from the 1870s through the 1890s.

The initiation and execution of beluga drives at Sisualik depended on the existence for some hours of calm or nearly calm wind and waters. Belugas, which travel in socially cohesive groups or pods, can be observed approaching at some distance only if the seas are not breaking. Rough water interfered too with the progress of the drives and their conclusion in extremely shallow waters. At times hunters actually got out of their qayaqs to wade at kill sites.

Belugas were spotted by an elder shaman, and the drive commenced at the command of a single, chosen leader. Qayaqs and umiaqs assembled quickly in a coordinated, closely spaced line once the prey had been spotted. Nuataaġmiut were the dominant participants, and non-Nuataaġmiut qayaqers and umiaq crews operated under their direction.

The drive began at a speed and direction calculated to push the prey onto known shoals as the tide receded. The drive usually proceeded in a northeasterly direction. When belugas sought to turn back, or to go around the qayaq–umiaq line, hunters would turn them by shouting and striking the water with their paddle blades. The hunters' boats were so close together that their paddles were nearly touching. This suggests a spacing between qayaqs and umiaqs of 2–2.5 m. If, as Misigaq recalled, 200–300 qayaqs and 60–70 umiaqs were involved, the attack line extended 1 km or more across the water.

At either end of the line of boats was a leading elder hunter who made quick decisions to counter attempts by belugas to escape. The chase covered

a number of kilometers before the belugas were driven into water so shallow that they were unable to swim. The drive began in silence. Noise-making began on command and increased as the belugas swam into ever shallower water. When the whales were essentially trapped, the leader ordered the deadly attack, which was begun by the wingmen, two elder qayaqers on the flanks who attacked the largest belugas. Their motive was to destroy pod leadership and reduce the prey to a state of ineffectual panic. Sheppard (1986: 142) has written with regard to historic beluga drives in Norton Bay that "the men would try to kill the dominant male first, which would render the rest of the animals more passive and directionless."

Hunters in qayaqs generally used the barbed harpoon dart, but the open water toggling harpoon was an option. Hunters in umiaqs probably used either weapon. A qayaqer ordinarily had two detachable barbed harpoon darts and two lances. Hunters who struck a beluga with a harpoon dart could follow or retrieve it by observing the trailing wood shaft. When belugas were stranded or barely able to swim in shallows, hunters killed them quickly with lance thrusts.

The leader decided when the hunt was ended. Sometimes he determined that the kill was sufficient for people's needs, and some belugas were allowed to escape. In calm seas, beluga carcasses were roped to the sides of qayaqs and umiaqs. In rough weather, additional umiaqs, crewed by women, came from Sisualik to assist in towing carcasses to the camp. Kills were always shared among relatives, the elderly, and the needy. Owner's marks on weaponry ensured that a hunter who struck first could claim that beluga as his kill. Successful hunters cut off the tail flukes at the kill site to dispose of as they desired. Informants gave no examples of contested beluga kills at Sisualik. The communal nature of the hunt and the required sharing of beluga kills inevitably reduced carcass ownership conflicts. Although informants did not describe failed beluga drives, when all or most of the driven prey escaped, undoubtedly, even with the best organization, failures occurred.

Kumak told Lucier and Foote that when an umiaq crewman struck a beluga with a toggling harpoon, the harpoon line was attached to the boat and dragged until the whale could be killed (Foote, 1959–1963 [Foote Collection, University of Alaska Archives, box 3, folder 1, pp. 39–42]). This was possible with an umiaq, but a line could not connect a free-swimming beluga and an easily overturned qayaq without disastrous consequences. The securing and towing of large kills of belugas from the shoals northeast of Sisualik to the home camp was an arduous task but one made easier in calm seas. Carcasses were towed at a distance from boats in heavy swells or breaking waves.

In 1952, belugas killed and brought to Sisualik were seen to be ferried, landed, and left to lie with bellies against the flooded beach bottom, heads at water's edge. The tail flukes had been severed and removed at sea. Presumably, ceremonial treatment of the beluga such as previously described

ceased in 1898 or soon thereafter when Friends missionaries and their converts discouraged all non-Christian beliefs and practices.

Informants generally agreed that Nuataaġmiut and other participants, using skin ropes, pulled the beluga carcasses onto the shore at Sisualik, across the gravel and sand shore, and up and onto the grassy front beach ridge. People moved the carcasses to avoid getting sand on meat and *maktak* as the animals were dismembered. In 1952, adult and smaller ugruk and ringed seal carcasses were roped and hauled by mixed gangs of adults and children from boats to the vegetated front beach work areas, as in the 19th century.

According to Kleinenberg et al. (1964:322), adult male belugas in the Bering Sea have been found to weigh 510–1,063 kg. Foote and Williamson (1966: 1083–1084) noted that most belugas taken at Kotzebue in 1960 were about 10 feet long (3 m) and averaged 1,000 pounds (455 kg), although the largest might weigh twice as much. Based on personal observations, Frost (1994, personal communication) suggested a rough average length of 3.3–3.6 m for Kotzebue Sound belugas. Feldman (1986:159) reported that a "medium sized" female beluga carcass at Siŋiq was 3.65 m long; it yielded about 289 kg of *maktak* and 18 kg or more of spinal muscle.

Beluga Butchering

Nuataaġmiut women were the beluga butcherers. In the 19th century, butchering probably proceeded, as in 1952, with the beluga belly down and the carcass intact except for absent tail flukes. Leading participants and relatives conferred about distribution of the carcass parts. The hunter's household in the Sisualik camp setting was never the sole recipient of the products of a kill; some meat was given to this person or another, commonly to surrogates of persons too feeble or handicapped to come to the kill site. Conferences about division of belugas were unhurried, although cutting and hauling away of heavy pieces were carried out quickly and efficiently once begun.

According to Aluniq, *maktak* from the front flippers forward was given to widows and those who had no men to hunt. The customary division of the remainder of the carcass is unknown. One informant observed, however, that the man who killed a beluga with a "spear" received half the carcass. This may mean, in effect, that until their immediate needs were satisfied, the successful hunter's household, close relatives, and recognized members of the extended family received most of the carcass behind the flippers, with the rest going to hunting partners and distant relatives. A youth's first kill was distributed widely to the elderly, whether related or not, so little was left over for the young hunter's household.

Aluniq and Kumak noted that while women did the butchering, men watched the cutting and hand-hauling. This custom still prevailed in 1952. In the 19th century, according to Aluniq, after butchering was finished, men gathered on the grassy shore edge, sitting under umiaqs propped up on their

gunwales, to relax, sing, and dance while being served food by the women. Of course, completion of a 19th century hunt left a good deal of men's work such as stowing of qayaqs and weapons and the hauling ashore of heavy umiaqs if, indeed, these were stored between hunts. Sometimes if the kill was a small one, the hunters may have taken only a brief rest before awaiting a call from the spotter to reassemble and go after other belugas.

Tools used in butchering belugas were few: larger slate and, later in the 19th century, steel semilunar knives or ulus and whetstones. Dismemberment of the beluga took place in two stages. First the carcass was cut into large pieces that were further disassembled at cooking and storage places near extended family drying racks along the front beach ridge. The initial large pieces were hauled away by a pair of younger women using the previously mentioned ladderlike carrier.

For an account of beluga butchering at Sisualik, we have Lucier's observations in 1952. The leading participants were Apayunaq, whose crew killed the belugas, and his sister Puyuq, the senior butcherer. Both were then middle-aged and well versed in Nuataaġmiut traditions (Lucier, 1950–1952):

> A clear warm morning on the Sisualik beach, June 27, 1952. Apayunaq and crew arrive in the family skiff, a large, and well-maintained craft built for use on the Noatak River. The hunters have a large, adult beluga tied to either side of the boat which is powered by an outboard motor of about 10 h.p. or more. They position the two beluga carcasses side-by-side at water's edge directly in front of their drying racks and cooking hearths. They pull the two belugas so that their heads point northward toward the drying racks. The belugas' upper bodies and heads are exposed above water, their bellies rest on the shore bottom so that persons in hip-length boots can walk around the carcasses without shipping water. The equipment and boat are put on shore. The crew and bystanders go to eat, the belugas lie unattended. Seas are calm and there is little air movement. The tide shifts the water's edge a little but the carcasses stay in place.
>
> Midday. Four women, Puyuk, Apayunaq's wife Tuuqpak, and his two grown daughters come to the shore. They are dressed for work, all are wearing rubber hip boots, trousers, and their sleeves are pulled up baring their arms. All have ulus and Puyuq has a sharpening stone.
>
> Apayunaq comes down to one of the carcasses to make the first cut. Using a hunting knife he cuts the skin all around at the join of the body and head. He plays no further role in the butchering process. Puyuq and Tuuqpak make encircling cuts around the beluga's body. Puyuk makes a long cut down the crest of the whale's back almost to the tail. Once this is done, Puyuq begins cutting the *maktak* with its blubber from the underlying flesh, beginning along the back crest. She next cuts a longitudinal slot in the connective subcutaneous tissue at the top or

dorsal edge so that the section can be grasped and pulled outward and downward with one hand while with the other she cuts away at the blubber–flesh interface. As the process continues the *maktak* and blubber become a sizeable slab that arches outward, easing the task of separating the heavy section of skin/blubber from the underlying flesh. The other women are working at similar tasks.

The first and subsequent *maktak* slabs are severed with a horizontal cut and by means of a slit handhold are pulled over to the nearby shore where they are placed just above the waterline, skin side against the washed beach gravel. The women work closely together, stripping *maktak,* producing slabs that appear uniform, measuring perhaps 45cm by 60cm. They peel the thick, white skin and blubber from the entire torso including the submerged belly; Puyuk cuts off the front flippers. Once the *maktak* is all removed, the women cut away unusable fibrous tissue that adheres to the exposed torso muscle.

The young women leave briefly and return bearing an *isugailik,* the ladderlike carrier, which they place beside the *maktak.* They commence loading the runged carrier with several slabs of *maktak,* take positions fore-and-aft, and walk deliberately up and over the front slope of the vegetated front beach to a hearth area next to meat racks. They unload, placing the *maktak* skin downward on grass. They return and move all the *maktak* to the hearth place, about 20 to 25 paces from the butchering place.

During dismembering of the carcasses, an elderly woman is seen approaching, towing a small, empty wooden skiff. She arrives, Puyuk and Tuuqpak stop their work to speak with auntie. Puyuq promptly selects a piece of *maktak* and puts it into the old woman's boat, and also puts in pieces of meat and liver. The old woman, rope in hand, returns from whence she came, her boat trailing behind.

In viewing the beluga butchering, Lucier was impressed with the efficiency and economy of effort employed by the skilled older women and the unfaltering strength of the younger women as they carried loads that may have exceeded their own body weight. Puyuq stopped frequently while butchering to sharpen the steel ulus. After butchering was completed and the others had gone, Puyuq remained at the butchering place trimming scraps of meat from the partly submerged beluga spines for her dogs' food.

The butchering of belugas at Sisualik in 1952 was carried out in the traditional manner. The large ulus, although having steel blades and imported hardwood handles, were identical in design to the slate-bladed knives of prehistoric and early historic times. The carrier has kept its 19th century form, except that those seen at Sisualik were heavier and cruder than the one illustrated by Nelson (1983: Pl. LXXXIIIb), with side rails made of dimension-sawed commercial lumber.

Beluga Processing and Storage

According to Lucier's informant Fanny Mendenhall (born 1908), after the butchering process was complete the slabs of *maktak* were placed, skin side down, on wooden cutting boards. This procedure avoided contamination of the *maktak* with dirt, which may carry an anaerobic soil bacterium (*Clostridium* sp.) that in growth produces acute lethal food poisoning through its toxin botulin. Nineteenth century Iñupiat were aware of the link between food cleanliness and care and avoidance of poisoning from the eating of contaminated *maktak*. Iñupiat also avoided long exposure of the raw *maktak* slabs to warm sun, which promoted spoilage.

The two main beluga foods were the hide and meat, both important contributors to the diets and economies of beluga-driving Iñupiat through the mid-20th century. Use of the Iñupiaq word *maktak* for the whale's hide has persisted, while the meat, usually in its dried state, has come to be known as "black meat." *Maktak* was eaten raw from the kill or boiled, but most beluga meat was half-dried, boiled, and stored in oil, or simply dried, depending on circumstances. The most easily butchered and preserved beluga meat consists of the powerful muscles that lie along the mammal's spine. Meat from these large, sometimes 2-m-long pieces, like all beluga meat, is very dark and darkens with processing. Hence the term "black meat," which is also applied to the flesh of seals, walruses, and the larger baleen whales.

In preparing black meat, women cut the dorsal muscles into narrower strips on cutting boards and hung these from drying racks to allow speedy air drying to a half-dry or slightly drier condition (Fig. 11). The drying black meat was covered during rainy spells and inspected regularly to avoid spoilage and fly egg development. Most black meat, after half-drying, was cut into pieces, boiled thoroughly, and stored immersed in beluga oil. Black meat strips that were simply air dried were eventually tied loosely in bundles (Fig. 10), kept cool, and then held frozen outside living quarters in fall and winter until the strips were eaten. When eaten plain, dried black meat strips were cut into smaller pieces that were dipped in oil before chewing.

Beluga *maktak* consists of four layers: a thin, tough outer epidermis that is left in place until the eater peels it away; a much thicker, gray or whitish epidermis, dense but chewable; a layer of connective tissue; and the blubber, which oozes a thin, colorless oil. When eaten raw, *maktak* is usually sliced to make chewing easier.

Most of the blubber was cut off, using an ulu, and cut into small pieces that, in the 19th century, were put into traditional bentwood containers, sealskin pokes, or imported metal pots. At Sisualik in 1952, cut-open, cleansed gasoline and kerosene 5-gallon (19-liter) steel cans were the usual receptacles. Filled containers were covered and shaded or put into a covered pit cache to begin the self-rendering process. Tight covering slowed rancidization, while coolness prevented spoilage. Some people, notably at Buckland, cooked blubber, which reduced rancidization but produced darkening, an astringent

taste, and a tarry, clotted consistency. The primary uses of beluga oil were as a covering for cooked, half-dried black meat and *maktak*, a dip for dried meats, a high-calorie dog food, and, in the 19th century, sometimes as lamp fuel.

At Sisualik in 1952, *maktak* slabs were cut, after removal of excess blubber, into 8– to 10-cm-wide strips that were deeply scored at regular intervals, producing a series of interconnected, squarish segments that were slung to dry on drying racks and sheltered from the rain for 3 days. In the 19th century and later, the partly dried *maktak* was then boiled until tender; a large fork was used to determine appropriate tenderness (Fig. 11). There was no set boiling time, and boiling at Sisualik in 1952 was done in fresh water to avoid an unwanted salty taste.

In the late 19th century, *maktak* was cooked in fired clay pots, a number of related women working together, taking turns boiling in one or several pots until everyone was finished. In 1952 at Sisualik, 5-gallon cans were most often used to boil *maktak* and other foods as well (Figs. 16, 20). At Siŋiq in 1951, cut-off, basal parts of 55-gallon (208-liter), cleaned steel fuel drums served as cauldrons for boiling *maktak*. These were emptied and refilled with clean water when the fluid was excessively oily. As the Siŋiq photo (Fig. 11) shows, cooked beluga *maktak* chunks were drained, cooled, and dried in the open air, in this instance on the wire mesh of a salvaged metal cot frame; air had to circulate around the cooked *maktak*. Presumably, in the 19th century, open mesh, twined grass mats or wooden slats served this purpose.

The dried, cooked *maktak* was stored promptly. In 1951, Lucier observed Kaŋiġmiut wiping the slightly damp, cooled *maktak* chunks with a cotton rag before they were put into a blubber and oil bath in steel gasoline drums. In 1952 at Sisualik, 5-gallon cans, sealskin pokes, and re-used wooden stave barrels that had contained brined bricks of butter were also used for storage. Alternating layers of *maktak* and pieces of blubber were put into the containers and covered with self-rendered oil. Filled sealskin pokes were tied but were reopened, deflated, and reclosed if they were overly distended, while lids of stave barrels were hammered shut. Sometimes *maktak* and oil-filled cans were soldered shut for distant shipment by boat or air. In more recent years, closeable plastic containers have replaced pokes and cans. Whereas in the 19th and early 20th centuries excavated cache pits served as cool storage in summer, in more recent years camp- and home-situated freezers allow storage of beluga foods immediately in a raw state or after traditional processing.

In the 19th century and earlier, beluga carcasses provided, in addition to *maktak*, meat, blubber, and valuable nonedible tissues that filled the essential needs of Kotzebue Sound Iñupiat. Traditional butcherers saved the main digestive tract to obtain its surrounding membranes and the pericardium, which they stripped of soft tissues, inflated, and dried for making rain parkas, pokes, bags, and window glazing. Another essential nonfood derivative of beluga kills was the long back sinews, which had superior length and wet

strength. They were used for the heavy-duty sewing of boots and boat covers, as well as for bow strings and fish nets. Owing to its special qualities, beluga sinew was an important trade item.

Beluga Drives in Eschscholtz Bay

We know considerably less about beluga drives in Eschscholtz Bay than at Sisualik. It is clear from Sannu's few remarks on the subject that coordinated qayaq drives of belugas occurred in Eschscholtz Bay in the early and mid-19th century and that they were led by Kaŋiġmiut and included Ipnatchiaġmiut from Deering and vicinity and Koyukon Indians. It is less certain that traditional drives in this area were conducted with hundreds of participants as at Sisualik.

Marine charts inadequately describe shoal waters either in the north or in Eschscholtz Bay. It is our impression that depths in eastern Eschscholtz Bay and the volumes of flow channels from the Buckland River are less than those around the mouth of Hotham Inlet and the Noatak River delta. Driving belugas was made easier in inner Eschscholtz Bay by the cul-de-sac situation and the broad central and side shallows. Possibly drives succeeded here with fewer qayaqs than were required at Sisualik.

Eastern and southern Eschscholtz Bay is where most 19th century beluga drives are reported to have taken place. At ordinary slack summer tide, much of the broad Qasigiaq (spotted seal) shoal in the eastern bay is not much over 90–100 cm deep and is even less in some areas. One can easily see that, with the exception of serpentine, narrow river outflow channels, depths hereabout at low tide are not much over the 46-cm equivalent that Misigaq and Aluniq said was the critical marker depth for the initial attack with weapons on driven belugas off Sisualik. In the early 1950s, these waters were barely navigable with small outboard-powered boats even well above low tide. In 1951, belugas were spending time leisurely in these shoal areas, apparently feeding and rubbing against the bottom to shed (molt) old skin, and not purposely heading somewhere, as they were off Sisualik in 1952. Under these circumstances, it would seem that beluga pods under pursuit had two survival options: to disperse and reform to the westward or to disperse and hide individually and quietly in the muddy, nearly opaque waters; they probably did both.

It is probable, therefore, that small assemblages of qayaqs and umiaqs did drive belugas successfully in eastern and southern Eschscholtz Bay but that "driving" may have been construed differently there than in the north. Nevertheless, Eschscholtz Bay informants' descriptions of drives that ended in strandings are essentially the same as accounts of drives off Sisualik. It should be kept in mind, of course, that traditional beluga drivers did not try to overtake belugas but instead exercised patient, considered methods to move them steadily but slowly into shallows, and that the whales were not supposed to be attacked but only frightened when one or more turned and

Figure 25. Pursued beluga swimming in extensive shallows of Qasigiaq shoal in Eschscholtz Bay near Sisiivik in June 1951 (FMNH neg. no. 110768).

attempted to flee back into deeper water. We assume that beluga drives in all areas of shallow water in Kotzebue Sound used this coordinated hunter group approach whether there were 10 qayaqs or 300 working the drive.

An excellent account of the traditional Kaŋiġmiut beluga hunt is provided by Burch (1994:370–372). He noted that beluga entered Eschscholtz Bay by early to mid-June and lingered for several weeks in the inner bay, moving in and out with the tide:

> When the tide came in, the belukha came in. The hunters, based at *Sinik* and *Sisiivik*, let them pass. Then, just before the tide reached its peak, they spread out in lines of kayaks stretching from both sides of the bay to Kasigiaq shoal. Then they proceeded to drive the belukha toward the bottom of the bay. Their efforts were facilitated by the fact that early every summer there was a long, high snowbank along the coast southeast of *Sinik*. The belukha saw this and apparently mistook it for an extension

Figure 26. Beached, dead beluga on the shore of Siŋiq spit at Elephant Point, June 1951. Note cut-away patch of *maktak* at rear of head made by removal of embedded harpoon head. In the background right, Arthur Nogozruk, Jr., is returning to hunt on Qasigiaq shoal in his outboard motor-powered plank skiff.

of the bay. In their efforts to escape the pursuing hunters, they headed for the bank, thinking of it as an avenue of escape. When the animals reached the shallow water at the head of the bay they panicked and tried to escape by passing back through the approaching line of hunters. As soon as they did so, the drive was over and the hunt began.

Burch went on to describe the hunt as an "exciting event," with animals dashing about in the shallow water, sometimes causing qayaqs to overturn. Hunters practiced capsizing and righting their qayaqs in preparation for such an emergency. His informants reported that accidents were common but drownings rare.

At the end of a hunt, the hunters were likely to be some distance from their camps. After the belugas had been towed ashore at the kill site, a fire was built to signal those in camps that the hunt was successful. Umiaqs were

sent to bring the kill back to Siŋiq, where the *maktak* and meat were processed.

Burch emphasized that although the Kaŋiġmiut beluga drive was communal, each hunter kept the animals he killed, and there was no sharing of the results with the entire population. He acknowledged that this characteristic differentiated the Kaŋiġmiut hunt from that at Sisualik. It is difficult to reconcile this reported practice with the fact that every hunter belonged to an extended family and, in addition, had responsibilities to others, such as hunting partners, namesakes of whatever age or condition, and elders, and to the expectations of tenuous blood relatives and the physically handicapped. It is likely, therefore, that although each Kaŋiġmiut hunter may, as Burch stated, have preferred to own what he killed, his obligations to others actually resulted in the distribution of beluga products to virtually everyone in the society.

A major factor in the revolutionary changes in the late 19th and early 20th century Eschscholtz Bay beluga hunting was the exodus of Kaŋiġmiut, often to the south, that was underway by no later than the 1860s. It is our understanding that from the late 1800s through the 1950s not much over 100 Kaŋiġmiut spent summers on Eschscholtz Bay for beluga hunting. Until the early 1900s, they camped at two or three sites and then, by the 1920s, mostly or entirely at Siŋiq. Although Kaŋiġmiut as numbered in censuses were increasing (Burch, 1984:316, Table 1), this growth also involved their dispersal, largely for wage-seeking employment. Therefore, they cannot have maintained very large beluga drives. Lucier estimated a kill of about 25 belugas in 1951, all taken from powered boats on or near the Qasigiaq shoal by shooting with rifles at close range (Figs. 23, 25, 26) and harpooning with a line float attached to mark the carcass location. There was no observed coordination between the few boats that were hunting.

9

SUMMARY AND CONCLUSIONS

In northwestern Alaska, as throughout the Arctic, land productivity generally is lower and the distribution of species essential to human subsistence spottier than in temperate zones. Conversely, the productivity of shallower arctic seas and estuaries may be rather high but subject to fluctuations in the availability of valuable marine life forms. Also relevant is the long seasonal presence of ice that both helps and hinders human access to seas, tidelands, and rivers and, more often than not, determines the presence or absence of water prey.

Few far-northern locales provide resources that will support year-round settlements. Historically, around Kotzebue Sound this has meant that Iñupiat usually were seasonal migrants, in summer utilizing several sites on or near coasts to obtain food expeditiously where and when given species of mammals, birds, and fish were present or most abundant. When people lived inland in fall and winter, they also had multiple residences throughout their societal territory in the planned but not entirely predictable pattern of travel and habitation required by dependence on the hunting of migratory caribou, the preeminent and most useful of arctic land mammals.

Because caribou were so vital to their sustenance, one might plausibly argue that people's lives and their residences were ultimately determined by the routes and numbers of migrating caribou. Iñupiat simply had to obtain caribou. Nevertheless, dependence on caribou did not diminish the importance of beluga driving, but rather the two efforts were complementary, ensuring relative prosperity and societal integrity.

Evidence gained through archaeological excavations and ethnographic inquiry concerning the traditional subsistence heritage of people living around Kotzebue Sound has shown the importance of beluga hunting, and beluga driving in particular, perhaps for a period of at least 3,000 years. The core areas for beluga driving were the northern shoals that now center off Sisualik

and, in the east, Eschscholtz Bay, along the shores of which there were, in historic and earlier times, several beluga hunting camps. The primary drivers of belugas were the upper Noatak River Nuataaġmiut at Sisualik and the Buckland River Kaŋiġmiut at Eschscholtz Bay; both societies were heavily dependent on caribou in fall and winter. For both societies, belugas constituted a large and generally reliable food source in summer and provided a surplus that served as a buffer against downward fluctuations that sometimes marked their harvest of migrating caribou and salmon, although salmon and other fish were a relatively predictable food source for people and dogs.

The success of caribou hunters such as the Nuataaġmiut and Kaŋiġmiut was heavily dependent on the interception, herding, and entrapment of aggregations of caribou during their fall and early winter migrations. The success of beluga hunters was similarly founded on the social nature and group cohesiveness of belugas. The cautious, patient, and sustained interception and herding of belugas, accompanied by an informed response to their behavior, was similar to the herding and trapping of caribou in enclosures or the overtaking of them as they swam lakes or crossed rivers. In northern and eastern Kotzebue Sound, shoals at low tide held belugas as surely as fenced, snare-net corrals or tundra lakes and rivers confined caribou. The main hunts of both species were highly organized and required total community involvement and cooperation.

Underlying the historic northern and eastern Kotzebue Sound beluga drives were the social whales' preference for these low salinity, comparatively warm, and biologically productive waters in the ice-free season and the opportunity wedded to need that belugas presented to caribou hunters who occupied watersheds adjacent to these waters. Traditional Iñupiat who participated in beluga drives believed, based on oral traditions and their own experience, that their ancestors had moved back and forth annually since time began between inland caribou hunting grounds and the coastal waters frequented by belugas.

The two primary beluga hunting societies served as nuclei around which members of other Kotzebue Sound societies gathered by prearrangement. This process reinforced hunting partnerships, cemented relations between participating societies, and minimized intersocietal conflict. A hunt commander, shaman-spotters, camp quiet enforcers, and two fleet wingmen, all with defined duties and responsibilities, oversaw the full compliance of all camp inhabitants with rules associated with beluga hunting and with the fleet tactics and behavior required to conclude successfully a drive and harvest. Shamans played key and subsidiary roles as hunt leaders and also relieved community anxieties and tensions. Religious beliefs provided the rationale for killing the prey without ensuing guilt.

In addition to its importance as a beluga hunting camp, Sisualik provided a dry, spacious setting. The drives furnished a food surplus for the trade fair that followed in midsummer each year, with participants from most of the Iñupiat societies of northwestern Alaska as well as Yupik-speaking people

and Chukchi from easternmost Siberia. Beluga drives and the Sisualik trade fair enriched and pacified the peoples of Kotzebue Sound and reinforced their mutually advantageous relations with the powerful Kingiġmiut of Cape Prince of Wales, who dominated trade between Alaska and far eastern Siberia.

This study has emphasized the significance of beluga drives as a cohesive force for the traditional Iñupiat societies of Kotzebue Sound. Equally significant was their importance in the subsistence cycle of Nuataaġmiut and Kaŋiġmiut and neighboring peoples. Even under the best of circumstances, the migratory caribou that visited drainages of rivers emptying into the sound could not adequately support year-round residence. Without a late spring movement to the coast, the sustainable human population of Kotzebue Sound and the cultural achievements of the region's peoples would have been significantly smaller and poorer.

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