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Archaeology and Oral History of Inuit Land Use on the Kazan River, Nunavut: A Feature-based Approach

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ABSTRACT. Archaeology and oral history are used to interpret recent Inuit land use along the lower Kazan River. A record of caribou crossings, camps, and other places of cultural significance generated by Inuit elders from Baker Lake is combined with the results of an archaeological survey to identify important spring and fall sites. The survey, which employed differential Geographic Positioning System (GPS) technology to record individual archaeological features (e.g., tent rings, caches), has resulted in a Geographic Information System (GIS) database for the Fall Caribou Crossing National Historic Site. Individual 'sites' are distinguished, within a more general 'non-site' distribution of features in the study region, on the basis of two criteria: clustering of features and the known history of use of these places by elders and previous generations of Harvaqtuurmiut Inuit. Analysis of the different kinds of features indicates considerable site variation, but also some seasonal patterning: fall has a more distinctive signature than spring. In this study, individual features are used to address questions of regional land use, site definition, and season of site occupation. This emphasis on the feature reflects the special circumstances of this project, which include the need to record archaeological materials occurring on the ground surface and spread over a large area and the availability of elders to interpret those materials.

Key words: caribou crossings, Caribou Inuit, Geographic Information Systems (GIS), Harvaqtuurmiut, Inuit oral history, Kazan River, off-site archaeology, place names, settlement archaeology, traditional knowledge

RÉSUMÉ. On a fait appel à l'archéologie et à l'histoire orale pour interpréter l'utilisation récente du territoire par les Inuit le long du cours inférieur de la rivière Kazan. Un relevé des traverses de caribou, des campements et d'autres lieux d'importance culturelle produit par les anciens inuit du lac Baker est combiné aux résultats d'un levé archéologique visant à identifier les grands sites printaniers et automnaux. Le levé, pour lequel on a utilisé la technologie du système de positionnement global (GPS) différentiel afin d'enregistrer les caractéristiques archéologiques individuelles (p. ex., les cercles de tente, les caches) a abouti à une banque de données de système d'information géographique (SIG) pour le Lieu historique national Fall Caribou Crossing. On distingue des «sites» individuels, parmi une répartition de caractéristiques plus générales appartenant à des «non-sites» distribués dans la région de l'étude, et ce, en se basant sur deux critères: la concentration des caractéristiques et l'histoire connue de l'utilisation de ces emplacements par les anciens et les générations antérieures des Inuit de Harvaqtuurmiut. Une analyse des divers types de caractéristiques révèle une variation considérable parmi les sites, mais aussi certains schémas saisonniers: l'automne est marquée de façon plus nette que le printemps. Dans cette étude, les caractéristiques individuelles sont utilisées pour aborder les questions d'utilisation régionale du territoire, de définition du site et de saison d'occupation. Cet accent mis sur la caractéristique reflète les conditions particulières du projet, parmi lesquelles on compte la nécessité de relever les matériaux archéologiques dispersés à la surface et sur une grande superficie ainsi que la disponibilité des anciens pour interpréter ces matériaux.

Mots clés: traverses de caribou, Inuit du Caribou, systèmes d'information géographique (SIG), Harvaqtuurmiut, histoire orale des Inuit, rivière Kazan, archéologie à distance, toponymes, archéologie du peuplement, savoir traditionnel

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INTRODUCTION

Along the major river valleys of the barrenlands of the central Canadian Arctic, Inuit have left extensive evidence of their presence in the form of archaeological features such as tent rings, caches, *inuksuit* (stone cairns), and bone scatters. These archaeological remains represent a great range of activities, conducted during all seasons, and doubtless reflecting some change and variability over time. Some activities are tethered to landscape features, such as caribou crossings or stone quarries, while others are less geographically constrained.

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Conventionally, evidence of this type has been considered in terms of 'sites,' which could vary in size from one isolated hearth to clusters of hundreds of features with thousands of artifacts and bones. Although this site approach has proven productive in the past, advances in archaeological methods and new technology available for the recording of sites have led us to adopt a 'non-site' (Nance, 1980) or 'off-site' (Foley, 1981) approach to the archaeological record discussed here. We recorded all data at the finest level of resolution practical: the feature. We applied this off-site approach to a region on the lower Kazan River inhabited during the recent period by the Harvaqtuurmiut and chosen by Baker Lake elders to represent their traditional way of life (Figs. 1 and 2). Using the recorded feature distributions, together with the extensive oral history collected during this project, we will address four questions. First, what is the range of activities that occurred in the region, as represented by surviving features? Second, to what extent do these features occur in clusters that might logically be considered 'sites,' as opposed to continuous, if variable, distributions of features across the landscape? Third, to what extent can seasonal settlements, as identified by oral histories, be identified archaeologically? And fourth, is the overall distribution of features patterned in ways that are different from sites or clusters and that can be explained by the oral histories?

This research is relevant to the history of the Caribou Inuit and, more generally, to the definition and interpretation of archaeological evidence of northern hunter-gatherers. The Harvaqtuurmiut are one of several Caribou Inuit societies that lived in the interior west of Hudson Bay during the 19th and 20th centuries while engaged in the fur trade, but whose primary focus of settlement and subsistence was the caribou (Birket-Smith, 1929; Rasmussen, 1930a; Burch, 1977, 1978, 1986, 1988; Csonka, 1995). Each of these societies had its own territory (shown in Figure 1 for the period around the turn of the 20th century), but people also travelled widely within the interior and to the Hudson Bay coast to hunt, trap, visit, and trade (Birket-Smith, 1929:159–162). Certain camps on Thirty Mile Lake are associated with Paallirmiut families, for example (Harvaqtuurmiut Elders et al., 1994), and ethnohistoric sources indicate that other travellers probably came for caribou, particularly during the fall:

> The land of the Harvaqtuuq people used to be a gathering place for other people from the coast and other places because that Harvaqtuuq is a crossing area for caribou during the fall. (Tataniq in Mannik, 1998:225)

Historic caribou crossings, many of them named, occur all along the Kazan and Thelon Rivers (Tyrrell, 1897; Birket-Smith, 1929, 1933; Rasmussen, 1930a,b; Arima, 1984; Akilinirmiut Elders et al., 1997). Because of the thin vegetation, archaeological evidence at crossings on the lower Kazan and Thelon Rivers is highly visible compared to evidence closer to the treeline. This material may also be more concentrated because it is close to the caribou calving grounds (Gates, 1989). Moreover, many of these crossings were occupied until the late 1950s (Pirjuaq, 1978), with the result that a rich oral historical record resides with elders currently living in Baker Lake. This combination of

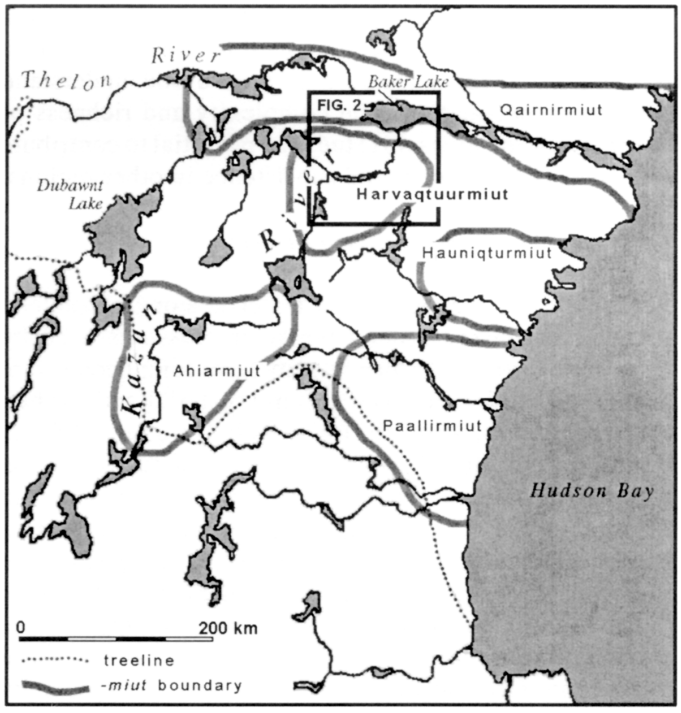

FIG. 1. Location of the Kazan River and Caribou Inuit societies ca. 1890 (after Burch, 1986).

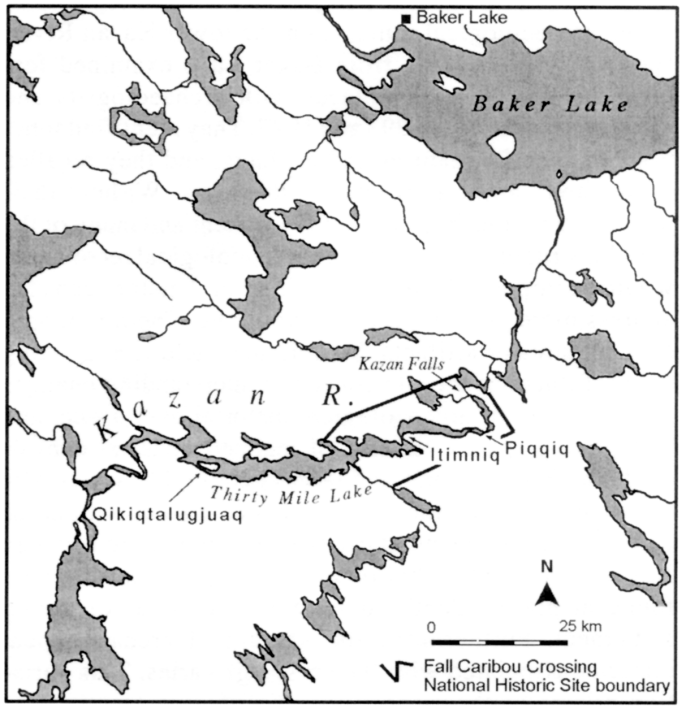

FIG. 2. The Harvaqtuuq region on the lower Kazan River, showing the location of the study area southwest of Kazan Falls and three Inuit-named caribou crossing sites.

a highly visible, recent, and concentrated archaeological record with the knowledge provided by the elders makes this region an ideal location to record and understand patterns of occupation. The complexity and richness of this information gives this study the potential to contribute to models of settlement and subsistence in other regions.

Background to the Harvaqtuuq Project

Much of the archaeological material along barrenland rivers is organized around the river crossings used by migratory caribou. Archaeologists have long been aware of this association between cultural material and caribou crossings (Harp, 1961; Irving, 1968; Gordon, 1996). A few stratified cultural sequences convey some idea of the antiquity and persistence of this association (e.g., Gordon, 1976), but the fine stratigraphic resolution needed to perceive individual seasonal camps is not easily achieved. This kind of resolution is needed to understand variation in the conditions under which people lived and the choices made by families from year to year on the basis of these conditions. Oral accounts of travel and settlement by elders who lived on the land address these issues, at least for the period of "living memory" (Chase, 1989:174; Hanks and Pokotylo, 1989; Hart, 1994).

Oral history is critically important to the interpretation of the archaeological remains on the lower Kazan River. Harvaqtuurmiut elders from Baker Lake examined features and visited many places with archaeologists and geographers between 1993 and 1997. They identified functions of specific features and artifacts, and they recalled events and names associated with places. Without their participation, the fragments of equipment and many of the boulder structures that form the archaeological record here would be impossible to identify. This oral history can also address more general issues, beyond the function of specific features or artifacts. Such issues include evaluating the usefulness of the site concept, understanding changes in the density of archaeological material over space, and interpreting spatial patterns of mapped material considered at different (small and large) geographic scales. For example, some of the largest spatial concentrations of cultural material occur at caribou crossings used between July and September, but other large concentrations were found at places identified by elders as areas of spring settlement. Furthermore, the amount of archaeological material associated with the crossings varies. This variation relates to the importance of different crossings as determined by elders independently of the archaeological evidence. The overall distribution of material on both sides of the river appears to reflect past concern that families who camped near crossings might disturb the caribou.

Patterns of settlement inferred from oral history do not, however, always match archaeological patterns: some places with large quantities of archaeological material seem to be relatively overlooked in the oral accounts. Likewise, specific activities that were named and located by elders—activities like stone quarrying that might be expected to have archaeological signatures—left no apparent archaeological evidence. In this paper, we will focus less on these anomalies and more on areas where the oral historical and archaeological records overlap. More specifically, we will look at how oral historical accounts of seasonal activities explain some of the patterns that we see in the distribution of archaeological features in the study area.

The project was jointly designed by archaeologists, cultural geographers, local elders, and oral historians from Baker Lake to record some of the heritage of the inland-dwelling Caribou Inuit. It was initiated both locally, by elders in Baker Lake under the auspices of the Harvaqtuuq Historic Site Committee, and federally, by Parks Canada. The goal was to commemorate the traditional caribou-hunting way of life of these Inuit by recording place-names, oral history, and archaeological evidence of land use along the lower Kazan River, known as the Harvaqtuuq (Fig. 2), which formed the core of the territory of the Harvaqtuurmiut (Rasmussen, 1930a; Arima, 1984; Harvaqtuurmiut Elders et al., 1994). Part of this area has now been designated the Fall Caribou Crossing National Historic Site (FCCNHS). Results of the Harvaqtuuq project have been presented in unpublished reports (Mannik, 1993; Stewart, 1994a, 1997, 1998; Harvaqtuurmiut Elders et al., 1994; Fox, 1994; Keith and Scottie, 1997; Friesen, 1998), a thesis (Keith, 2000), a book (Mannik, 1998), conference papers, and exhibits at the new Inuit Heritage Centre in Baker Lake.

There were two coordinated parts to this project. First, oral history and place-names were recorded with Harvaqtuurmiut elders. The locations of hundreds of culturally significant places and associated information were recorded while elders travelled up the river with researchers in 1994 and 1997 (Harvaqtuurmiut Elders et al., 1994; Keith and Scottie, 1997). There are about 60 toponyms for places that are close to (within about 5 km of) the Kazan River, within the FCCNHS. Elders identified caribou crossings and other places along the river that were used within living memory, between the west end of Thirty Mile Lake and the outlet of the river on the south shore of Baker Lake (Fig. 2). Some of these places had also been identified by the Fifth Thule Expedition in the 1920s (Birket-Smith, 1929; Rasmussen, 1930a,b) and are thought to represent long-established patterns of settlement and caribou-interception on the Harvaqtuuq. Maps drawn by Knud Rasmussen's Harvaqtuurmiut guides and informants, Pukirluk and Kijurut (Rasmussen, 1930b), show many of the same places and place-names that their descendants—today's elders—have identified (Mannik, 1993; Harvaqtuurmiut Elders et al., 1994; Keith and Scottie, 1997; Keith, 2000).

Second, archaeologists undertook a comprehensive survey by foot along a 40 km section of the river inside the FCCNHS during 1996 and 1997. The survey was guided

by the advice of elders. Areas considered important by elders and areas with high archaeological potential were identified by place-name maps (Harvaqtuurmiut Elders et al., 1994) and by the results of a previous archaeological survey of the Kazan River (Stewart, 1991, 1993, 1994b). These locations included, most importantly, fall caribou crossings, but also spring camps, a 'dancing place,' soapstone quarries, graves, and lookouts.

METHODS

The goal of the survey was to record the distribution of surface cultural material for management of the national historic site area. Much of the material occurred as discrete features—boulder structures or clusters of artifacts and bone (Figs. 3–13, 18). The archaeological survey, done over two summers by a crew of five people on foot, encompassed land mostly within about 1 km of either shore of the river inside the FCCNHS area. Coverage of large concentrations of material, however, involved mapping features as much as 2 km inland. One place named in the oral histories and containing cultural material was located 10 km south of the river and was investigated separately in 1994 (Fox, 1994). The start and end points of the survey were defined by the boundaries of the FCCNHS: to the west, halfway down Thirty Mile Lake; to the east, just downstream from Kazan Falls (Fig. 2).

The preeminence and visibility of discrete boulder features in this landscape greatly influenced the method of recording. Their prominence favoured the use of accurate (differential) Global Positioning System (GPS) technology to record precisely the locations of individual features, regardless of how clustered or scattered their distribution in the landscape. Isolated and scattered features can be mapped with the same efficiency as large concentrations of features using this approach. A non-GPS survey, using traditional surveying equipment (e.g., total stations), would require a separate datum for each site or new region of survey, making it less likely that small clusters and isolated features would be recorded. These outlying data are easily recorded using GPS during the course of a pedestrian survey.

Each feature was mapped on the basis of a single point at its centre, using GPS receivers. With post-processing software, the horizontal accuracy for geographic coordinates improves to within 10 cm. Although this equipment is a bit cumbersome to carry around, we found the results made it worthwhile. It takes about 15 seconds to determine and record the coordinates of each feature. Our use of differential GPS required five people: one to carry the roving GPS receiver; another to monitor a second, stationary receiver at our base camp and to do the post-processing of data in the evening on a laptop computer; and three people to find, describe, and photograph features. Spatial data were mapped using GIS software (MapInfo) on topographic base maps (scale 1:50 000, see Fig. 14), allowing us to search for spatial patterns of feature distribution at different scales. Some small (1:50 000) and medium (1:10 000) scale patterns are discussed later in this paper (Figs. 14 to 17). The efficiency of this technology allowed us to survey a large area fairly comprehensively, and to produce accurate maps—not only of archaeological features within large, dense concentrations, but also of smaller groups of features and isolated features across the landscape. We feel that the maps allow us to treat archaeological feature distributions as a source of information, together with oral history, on the extent to which sites exist as meaningful, interpretable cultural entities.

We recorded observations about features that could be made quickly, including substrate, condition, and content (any artifacts and bone that could be observed without dismantling or excavating the feature). Features were interpreted in terms of a number of functional 'classes' on the basis of our observations and any comments by elders and qualified by an assessment of certainty. Independently of this, the physical remains of the feature were described and a typology of remains was developed from these descriptions (Stewart, 1998). In total, we recorded 29 types of remains, which were then interpreted in terms of 15 feature classes (Table 1). Artifacts were described and photographed, but not collected; some technological attributes of stone tools and debitage were noted. Faunal material was collected from selected features during the 1997 field season. Ongoing analyses of these bones, to be published elsewhere, will be used to confirm feature function and seasonality.

Identifying Archaeological Features

Most of the features are boulder structures (e.g., the *qarmaq* or shelter in Fig. 3, foreground) or arrangements (e.g., the tent ring in Fig. 3, background) that are clearly visible on the ground surface. Some are partially hidden by tundra vegetation (dwarf birch and willow) and, in lower areas, by accumulating peat; but most substrate consists of bedrock or sparsely vegetated sediments of glacial origin (Aylsworth et al., 1980, 1989). Some features are recognizable as cultural constructions but are scattered or otherwise lack the integrity (i.e., they are not intact) needed to identify them with certainty. Other features are clusters of archaeological remains (artifacts, bones) or isolated remains that do not seem to be spatially associated with boulder structures.

Many of the boulder features and some of the artifact and bone features are interpretable, in terms of general or specific function, on the basis of features examined by elders during field work with archaeologists (Fig. 4). For instance, elders discussed caching and its different contexts, corresponding to different seasons, material (e.g., meat and equipment), and requirements for ease of access to material. These discussions enabled archaeologists to recognize structures that likely were caches, distinguishing them from graves and fox traps, which can resemble

TABLE 1. Frequency and percentage of archaeological features by class.

Class	Frequency	Percent
Dwelling	332	21.4
Inuksuk	320	20.6
Cache	268	17.2
Unknown Boulder Feature	153	9.8
Hearth	142	9.1
Kayak-related Structure	66	4.2
Waiting Place or Blind	64	4.1
Grave	48	3.1
Scattered Material	48	3.1
Lithic Concentration	46	3.0
Fox Trap Structure	21	1.4
Bone Disposal Area	17	1.1
Hide-drying Ring	14	0.9
Play-related Structure	12	0.8
Marrow Extraction Area	3	0.2
TOTAL	1554	100.0

FIG. 3. Walled dwelling or *qarmaq* (foreground) and tent ring (background) at Itimniq.

caches. Wherever possible, traditional knowledge about the archaeological features, derived from questions addressed to Harvaqtuurmiut elders, was the basis for interpretation in terms of a number of functional categories or 'classes.' The assignment of features to classes reflects Harvaqtuurmiut concepts of uses or activities, to the extent that archaeologists understand these concepts. This assignment is possible only where features have integrity and, with exceptions, it applies to boulder features rather than to clusters of artifacts or bones. Clusters of cracked longbone, which clearly represent places for marrow processing, are one exception.

Interpretation was accomplished at different levels of generality, or specificity, depending on the amount of information elicited from elders about different functions and activities involving different types of features. Hence, caches can be assigned different names depending on their shape, construction and size: *hirluaq* (storeroom) is a walled structure; *pirujaq* (something, e.g. meat, held down under stones) is a small cluster or cairn of rocks. Thus,

FIG. 4. Elder Luke Tunguaq examines kayak remains at Pipqa'naaqtalik with Baker Lake historian and interpreter Joan Scottie.

FIG. 5. Foreground, centre: *Inuksuk* set up before 1960 by Baker Lake elder Peter Aasivaaryuk. Background, right: Ipjurjuaq's stone on Thirty Mile Lake.

interpretation at a relatively fine level is possible. On the other hand, standing stones, or *inuksuit* (Fig. 5), include a large number of features about which, individually, little is known. Many types of *inuksuit* (human likenesses) could probably have been identified on the basis of context and

shape, had elders been able to accompany us to each one. Some stones (e.g., Ipjurjuaq's stone, Fig. 5) have unique stories. Certainly there are patterns and generally recognized reasons for building *inuksuit*, including navigation, the signposting of caches and places to fish, and the control of caribou movements. Some of these types have been defined for broad regions (Hallendy, 1994), but not locally for the Harvaqtuuq. We did not attempt, therefore, to assign names to different types of *inuksuit*, although such discrimination might be possible from the photographs and descriptions that are now part of the archaeological database of the study area.

RESULTS

Overview of Feature Classes

Table 1 lists features by interpreted class, giving the number of features in each class for the entire study area. These classes are briefly described in order of frequency, excluding incomplete or fragmented features, which were classified as 'unknown' (Table 1). Dwellings, *inuksuit*, and caches were the three most common classes, accounting for 60% of 1554 features recorded. Dwellings include tent rings and also more substantial walled structures, like the *qarmaq* (Park, 1988) in the foreground of Figure 3. Caches have different structures, and elders discussed three types of caches as we encountered examples of them in the field. A simple low cairn of loosely piled rock or a boulder cluster (Fig. 6) often represents a fall carcass cache (*pirujaq*):

> We try to put the heaviest rocks on top and on the sides of the meat…We [first] dig out a hollow space on a gravel rocky area…. (Aasivaaryuk in Mannik, 1993:32)

A more elaborate construction (*hirluaq*) was used for storing dried meat (*nipkut*) and equipment that people might have cached before leaving a spring camp (Fig. 7). A third type looks like a small tent ring with closely set rocks, which are used to secure a covering of skins over cached equipment (*uliqtauhiurvik* or *qimatulivvik*, Fig. 8). People might have cached equipment when leaving an area:

> We usually brought along all of our belongings in the wintertime, but during the summer we would leave some of our belongings at an old camp because we would be travelling by foot. (Tunnuq in Mannik, 1998:239)

The distinctive Inuit hearth or *kik&u* (meaning 'outdoor fireplace' and sounded as *kiklut* but with a voiceless *l*) is a square of rocks open on one side (Fig. 9). A class of kayak (*qajaq*)-related features includes the easily recognized kayak stand, *ikuvvraq* (support or base, Fig. 10) and other facilities for kayak construction, including a double line of parallel boulders for straightening wood (Fig. 11) that was identified by elder Luke Tunguaq. The hunting blind (*taluq*) is usually a simple wall of two or more upright boulders, but there are also *utaqqivviit* ('waiting places') overlooking crossings on the river, where hunters watched

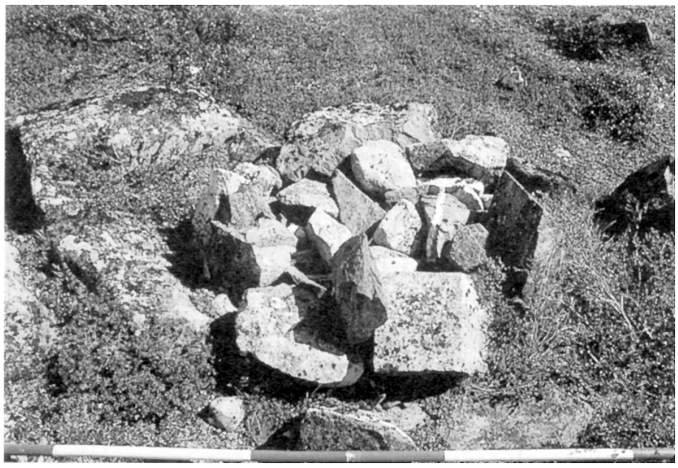

FIG. 6. Boulder cluster (meat cache or *pirujaq*). Interval on scale bar in this and following photographs equals 50 cm.

FIG. 7. Walled cache (*hirluaq*) for meat or equipment.

FIG. 8. Boulder outline of an equipment cache (*uliqtauhiurvik*).

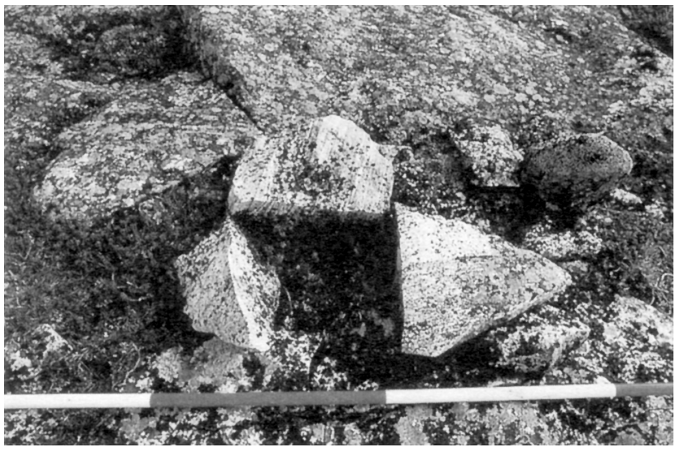

FIG. 9. Boulder hearth (*kik&u*).

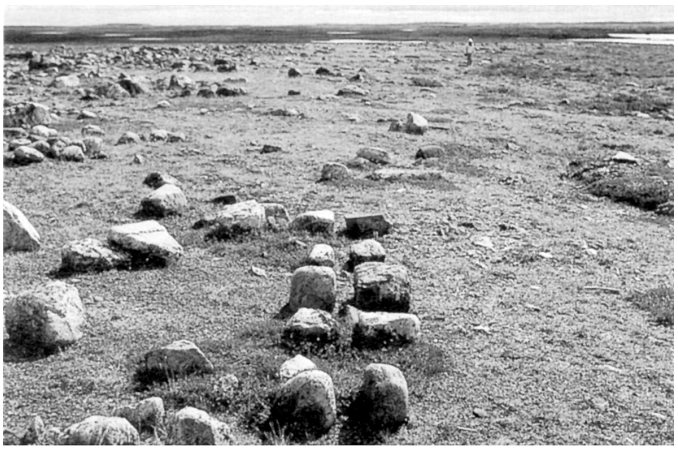

FIG. 11. Alignment of paired boulders for straightening wood.

FIG. 10. Kayak stand (*ikuvvraq*).

FIG. 12. Waiting place (*utaqqivvig*). This unique waiting place at Piqqiq, a circular enclosure with 1.5 m high walls, is called Utaqqivvigjuaq (the big waiting place).

for caribou. One of them, the 'big waiting place' (Utaqqivvigjuaq), is a massive boulder enclosure (Fig. 12) located on top of a hill at Piqqiq overlooking a caribou crossing. This structure was used as a lookout by hunters until the 1950s, but it is also associated with a legend concerning its use as a man-trap or prison, told by elder Peter Aasivaaryuk of Baker Lake (Mannik, 1993; Stewart, 1994a, 1999). Graves (sing. *illuvik*) are a class of feature that includes oblong boulder enclosures and clusters of boulders, as well as bones or artifacts in specific contexts (e.g., rock crevices).

Two other classes are more descriptive than interpretive: lithic concentrations (flaked stone and unmodified cobbles) and scattered material. Both of these classes may, in some places, represent activity areas (tool making, food preparation, dog tethering, etc.). Flaked stone (quartzite) is widespread. Some pieces, especially unmodified flakes, were used as firestone (*tunnuujaq*) by Harvaqtuurmiut and other Inuit. Some bifacially worked pieces seem to be of Dene or Palaeo-Eskimo origin, though some of this material, particularly large lanceolate bifaces, occurs at former Harvaqtuurmiut camps, where it may have been culturally redeposited (Tunnuq in Mannik, 1998:239). Flaked stone is sometimes found eroding from caribou trails, indicating the possibility of buried archaeological components in these places. These locations would represent qualitatively different kinds of features—parts of buried deposits rather than culturally discrete structures or activity areas. Scattered material includes isolated items (artifacts and bone). The contexts of many of these items probably represent relocation—for instance, human bone that has become separated from graves, or wooden artifacts or fragments that have moved downwind from tent rings. Others, like gun cartridge casings or a leg-hold trap, may indicate the occurrence of activities that otherwise left no trace.

Another five classes each represent less than 2% of the total number of features (Table 1). Barnabus Pirjuaq, a Baker Lake elder, identified several types of fox trap made from boulders at Piqqiq (Stewart, 1994a). One type of fox trap, called *pullat* (stone trap), is a long, low chamber with an entrance at one end that is closed by a dropped slab of stone (Fig. 13). Bone disposal features are places where caribou bones have been placed after meals or butchery,

FIG. 13. Fox trap (*pullat*), showing closed entrance at near end.

usually under rocks or in crevices. Oral testimony and archaeological evidence seem to indicate that bone disposal was a distinct practice, though it is sometimes hard to distinguish between caches and bone disposal features. Places for drying caribou hides, *panisivvik* (place where things get dry), can sometimes be identified by the presence of small (1 m diameter), light rings of rocks. Elders identified two unusual rock features as children's playing areas; one was inside a tent ring. Small pebble or cobble outlines were also identified as children's structures for playing. Finally, some longbone concentrations could be interpreted as places where marrow was extracted (and where the bone was not subsequently moved or covered up).

The GPS-mapped distribution of all features in the study area is shown in Figure 14. The majority of these features are assumed to be Inuit, specifically Harvaqtuurmiut. This assumption must, however, be qualified. The archaeological landscape in the central barrenlands west of Hudson Bay represents an accumulation of material from both 'continental' and 'arctic' cultures (Irving, 1968): earlier and contemporary Dene Indian, including Taltheilei and historic Chipewyan (Smith and Burch, 1979; Gordon, 1981, 1996); Palaeo-Eskimo (Irving, 1968; Stewart, 1991, 1994b; Gordon, 1996); and Inuit, including Thule populations who frequented the Hudson Bay coast, but who may have occupied the interior on a seasonal basis (Gordon, 1974; Clark, 1977). Later (transitional Thule) Inuit may have crossed the barrenlands from the Bathurst Inlet region en route to the Hudson Bay coast during the 1600s or 1700s (Burch, 1978). Some of the boulder features along the Kazan River where recent artifacts are absent appear to be quite old and may relate to an earlier Inuit occupation (Stewart 1991, 1998; Friesen and Stewart, 1994). Archaeological evidence for many of these earlier cultural occupations is present in the Kazan and Thelon River watersheds. There is also historic evidence for visiting among Caribou Inuit societies during the 19th and 20th centuries, so that not all features and sites along the lower Kazan River can be assigned to the Harvaqtuurmiut (Harvaqtuurmiut Elders et al., 1994). Furthermore, certain features, like tent rings and hunting blinds, are virtually identical for Dene and Inuit (Morrison, 1978). Nevertheless, the lower Kazan was used predominantly by Inuit during the last two centuries (Burch, 1978; Smith and Burch, 1979). Most archaeological features can be associated with the Inuit settlement of the area by means of their distinctive construction (*inuksuit*, *kik&u*-type hearths, kayak stands, certain kinds of caches and fox traps) and the recorded oral history of places where these features are found.

Feature Distributions: Sites and Non-Sites

The problem of the existence of 'sites' and site boundaries was ignored during field work in favour of accurate recording of discrete features. Indeed, spatial definition for sites is usually difficult to achieve, involving questions about spatial boundaries, the variable spatial distribution of archaeological surface material and the interpretation of the behaviour that produced it, site formation and preservation, and landscape evolution (Janes, 1983; Dunnell, 1992; Stafford and Hajic, 1992). Features, where recognized, can be defined more easily. They can often be interpreted in terms of specific events or behaviours and are affected by fewer of the complex issues that bedevil sites (Binford, 1992). Moreover, the distribution of boulder features, which are highly visible in this landscape, can be used to infer patterns of general land use, not simply the most concentrated of past activities that occurred at fall camps. This distributional, non-site or off-site approach (Nance, 1980; Foley, 1981; Dunnell and Dancey, 1983; Jones and Beck, 1992) is sensitive to a broad range of past activities and human movement across the landscape.

Using the existing record of features, sites may be defined, and re-defined, to address various research questions and for management purposes. Some clusters of features correspond to camps or other culturally significant places identified by Inuit elders. Designating these feature assemblages as sites is relatively unproblematic as they are spatially discrete and culturally interpretable. Most of the dense feature clusters and named camps occur adjacent to the river, so the record of settlement tends to be defined almost exclusively in terms of these riverside locations. This bias is not necessarily misleading because river narrows coincide with important caribou water-crossings (Fig. 14) and elders consider them to be the most important places (Keith and Scottie, 1997; Keith, 2000).

On the other hand, these large sites tend to be loosely defined—in fact, they often include distinct feature clusters. Smaller clusters of features on the periphery of, or removed from, water-crossings tend to get overlooked during analysis and interpretation of these sites. Activities that might be associated with peripheral areas include spring camping on hilltops; hunting and caching of individual caribou away from crossings; movement of families from spring to summer camps, camping en route; and gathering of firewood, stone, or other raw materials at

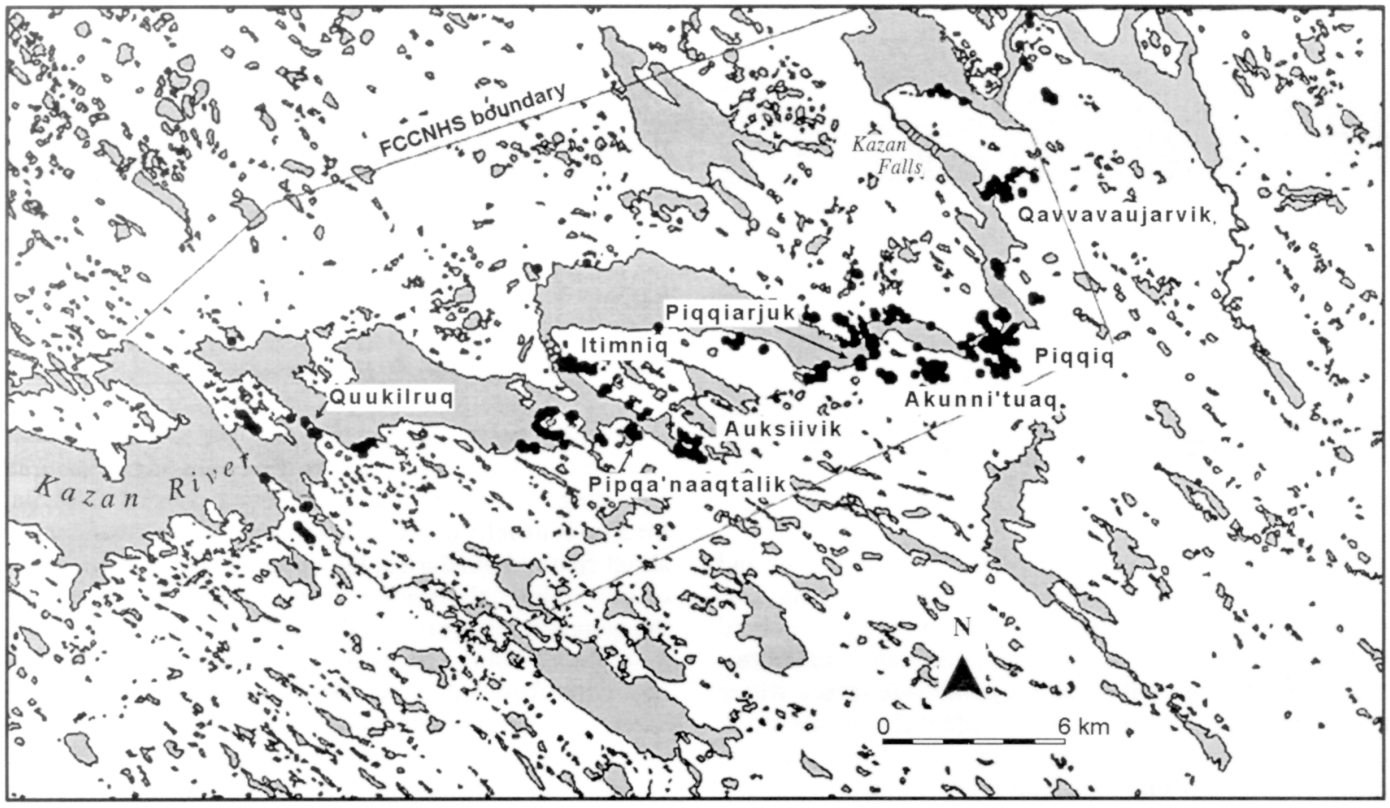

FIG. 14. Distribution of 1554 archaeological features (dots) in study area, with names of important caribou crossings and spring camps.

specific locations. Many of these non-crossing activities are discussed in oral histories, but they are difficult to associate with archaeological evidence that is diffuse or absent. An example is Mumirvik, 'the dancing place' (Fig. 15), which is prominent in oral accounts of land use but lacks a strong archaeological signature. Exceptions are two large and dense feature clusters—Pipqa'naaqtalik and Auksiivik (Fig. 15)—that were first identified in the oral histories as spring sites. Like Mumirvik, they occur within a complex part of the river identified as a fall crossing area, centred on the narrows at Itimniq.

The observed distribution of features is, of course, only a remnant of the original pattern of Harvaqtuurmiut settlement and land use. We believe, on the basis of considerations discussed earlier, that the extant record of features represents this original pattern. First, boulder features along the lower Kazan River are highly visible and are unlikely to have been missed during survey. Second, most of these features can be recognized as pertaining to Caribou Inuit settlement rather than non-Inuit (Dene and earlier) land use. Third, evidence from this recent (Caribou Inuit) period is not likely to have been obscured by slowly accumulating sediments and vegetation. Finally, the scope of the river corridor survey was relatively comprehensive within its narrow confines.

The importance of hunting caribou in summer, when herds were large, and in fall, when hides were suitable, lends support to the idea that the largest camps occurred during the warm season:

> The only time Inuit are camping in one camp is in the summer and early fall, but during the spring and winter they are camping at their own camps. (Peter Aasivaaryuk in Mannik, 1993:33)

This interpretation of Aasivaaryuk's account, and that of Tataniq's, earlier, may be too simple, however. Different families had different experiences—or at least memories—of social aggregation (see Tunnuq's quotation, below). Moreover, the interpretation of the archaeological evidence of settlement, based on the oral history record, suggests that spring aggregations were also important. Unlike spring, summer, and fall camps, which may have contained several families, winter settlements are expected to be nearly invisible archaeologically. Nonetheless, the remnant pattern of features should still indicate a wide range of seasonal and annual behaviours. The next two sections explore two of these patterns: clusters of features that form 'sites' that we interpret as spring and fall camps, and a more general, linear pattern of features extending along the south shore of the Kazan River. Oral history provides new insights into the interpretation of these patterns.

Feature Clusters and Seasonal Settlement

Despite the importance of acknowledging the scattered nature of archaeological remains in the Kazan River area, the significance of large concentrations of material—their

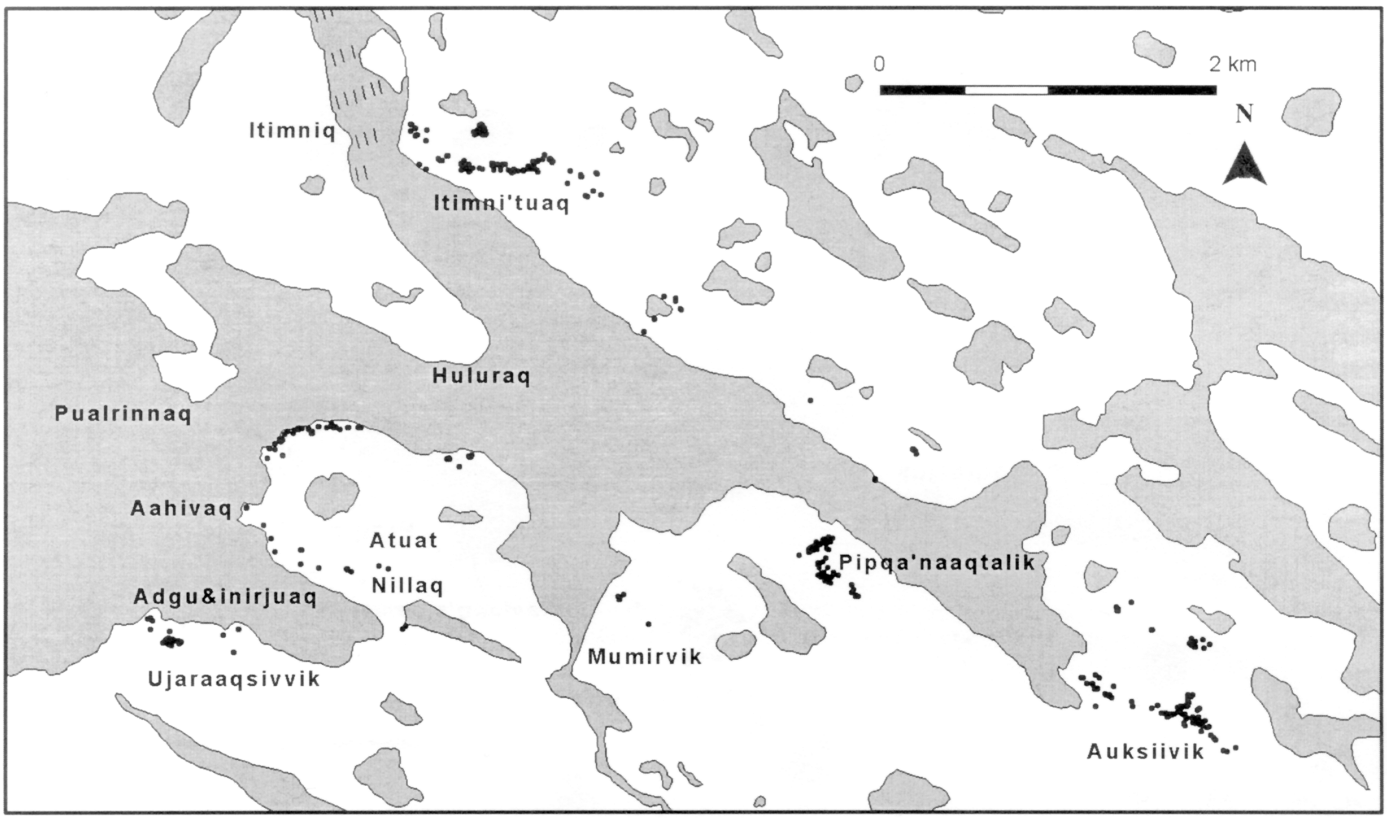

FIG. 15. Feature distribution and place-names in the Itimniq caribou crossing area.

potential for yielding information about contrasting seasonal patterns of settlement and subsistence—should be recognized. Some of the largest concentrations, including Piqqiarjuk, Piqqiq and Itimniq (Fig. 14), coincide with the most important caribou crossings. Others, like Auksiivik and Pipqa'naaqtalik, mentioned above (Figs. 14 and 15), have been identified as spring occupations. The dense concentration of archaeological material in these places, combined with historical evidence for seasonal use, supports the idea of a special 'site' status for certain places. All of these sites probably represent both large occupations (many people camped together) and repeated settlement (seasonal camps reoccupied over the course of many years), making it difficult to infer community patterns during any single occupation. On the other hand, the identification of separate spring and fall site locations by elders makes it possible to look for gross patterns in the archaeological data, including the faunal data, and to relate these patterns to our baseline understanding of seasonal occupation of these sites over the years.

Three places with dense accumulations of archaeological features were explicitly identified in the oral history as being spring season camps: Auksiivik, Qavvavaujarvik and Pipqa'naaqtalik (Harvaqtuurmiut Elders et al., 1994). These sites are located on high ground above the river, a type of location probably favoured by people seeking views of northbound caribou. They are also places where snowmelt occurred early in the season, enabling tents to be pitched there (Birket-Smith, 1929:73): Auksiivik, in fact, means 'place where one goes at melting time' (See Table 2 for meanings of other names). A fourth concentration of features at a place called Akunni'tuaq is located on a bedrock hill 40 m above the river and 1 km inland. Probably, therefore, it is a spring site, although the elders did not explicitly identify it as such. The locations of these four sites are shown in Figure 14.

Four places on the river, all occurring at narrows, were identified by elders as fall crossings, where people used to wait to intercept caribou at times from July to September. Two of these places are on Thirty Mile Lake (Fig. 14): Quukilruq is a minor crossing in the middle of the lake, with few features; more important is Itimniq, a complicated area of points, rapids, and a change of direction in the river occurring at the end of the lake. Further east along the river are Piqqiarjuk and Piqqiq: both are substantial crossings located at constrictions of 300 m or less along a part of the river that progressively narrows towards a sharp northward bend (Fig. 14). At these two crossings, features occur on both sides of the river—though they are most numerous on the south shore—clustering around the two constrictions or narrows, but also scattering inland for some distance (Fig. 16). At Piqqiq, there are three concentrations of features on the south shore (Fig. 16); each one contains many tent rings and probably corresponds to a separate camp. The westernmost camp, at the entrance to the narrows, was identified by the late David Tiktaalaaq

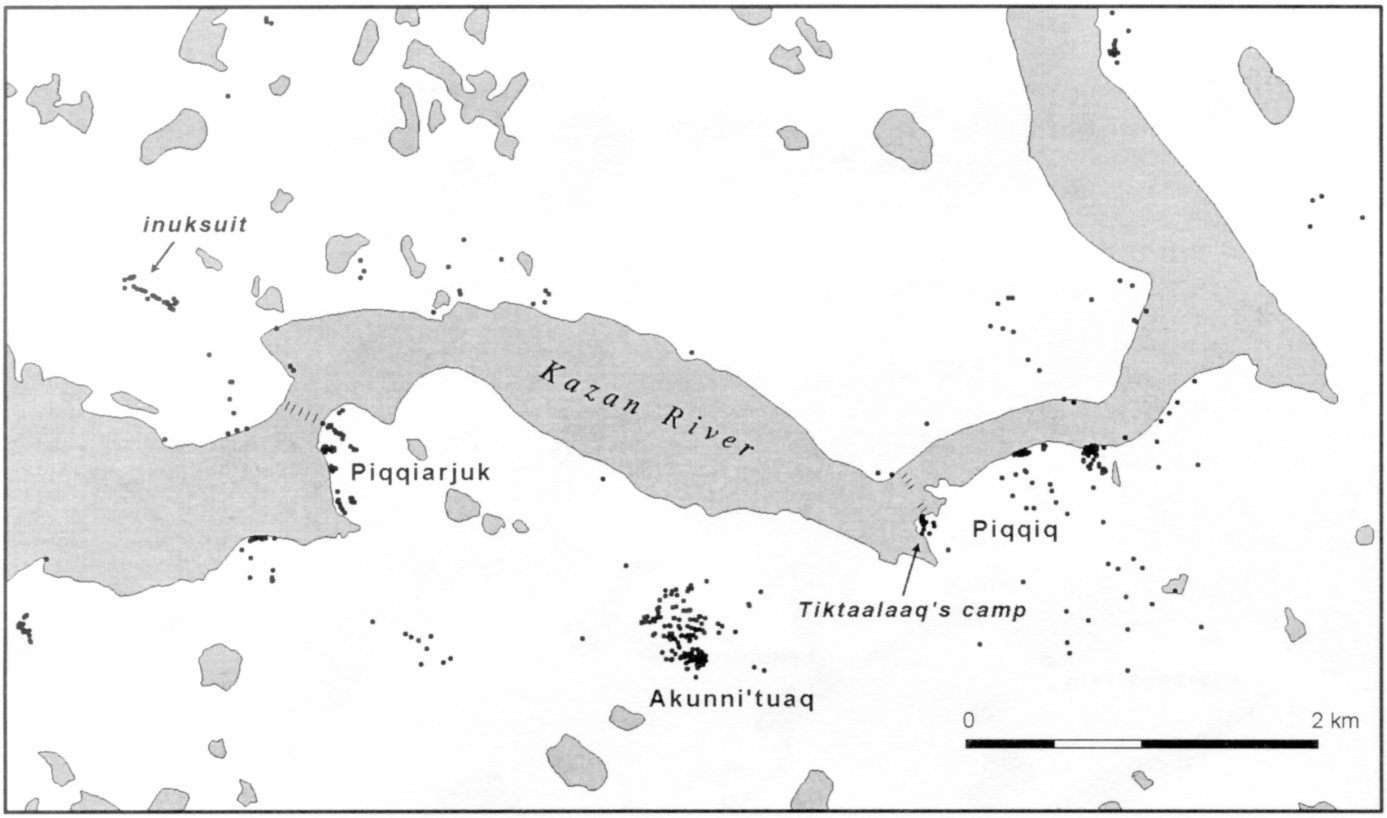

FIG. 16. Feature distribution in the Piqqiq-Akunni'tuaq-Piqqiarjuk area, showing Tiktaalaaq's camp at Piqqiq and *inuksuit* line on north side of river.

(and confirmed by Barnabus Pirjuaq and Lucy Kownak) as his family's camp during the 1930s and 1940s:

> There used to be many tents and sometimes other families from elsewhere went there to camp with us…. (Tiktaalaaq in Mannik, 1993:58)

A boulder ridge along the shore screens the camp from the north, the direction from which caribou cross the river. At the approach of caribou, the hunters, including David Tiktaalaaq's father, would launch their kayaks from the inlet south of camp (Fig. 16) to intercept them during their crossing (Tiktaalaaq in Mannik, 1993; Stewart, 1994a).

In contrast to these fall sites, where concentrations of features—as well as single features—are dispersed around the crossings, spring sites are tightly clustered. Figure 16 shows contrasting patterns for a spring site (Akunni'tuaq) located in the interior, where features are densely clustered, and two fall sites (Piqqiarjuk and Piqqiq) located along the shore, where features are more dispersed and individual camps can be distinguished. Other areas with both spring and fall sites show a similar difference in settlement patterning. At the Itimniq fall crossing, features extend a long way around the shore of a broad peninsula, opposite Huluraq, in contrast to dense clusters of features at the spring sites of Auksiivik and Pipqa'naaqtalik (Fig. 15).

Different proportions of feature classes at spring and fall sites may reflect contrasting seasonal activities, assuming activities in any one season are the same from one year to the next. This inference would be supported if fall sites, as a group, tend to contrast with spring sites, as a group. Alternatively, individual sites may express quite different tendencies, regardless of named seasonal affiliation. The evidence for assessing these alternatives is presented in tables where frequencies (Table 3) and proportions (Table 4) of features are shown by class and site, grouped by spring and fall season. (Table 2 provides a key to site names and numbers.)

To identify contrasting spring and fall patterns, we need to develop expectations about how such patterns might be expressed. We assume there is a culturally defined probability distribution of feature classes reflecting the frequency—or some aspect of importance—of various activities like tenting, caching, and making or maintaining kayaks. This distribution is an average, resulting from cumulative activity by different families over different seasons and years across the study area. We calculate this distribution using data on feature class frequency pooled from all sites in the entire study region (last column, Table 3). With no a priori expectations about the probability distribution of features for specific sites or seasons, we compare individual site (Table 4) and seasonal (Table 5) data to the pooled, average data to look for significant differences (Cowgill, 1989; Kintigh, 1989). Before exploring this possibility—that the distribution of feature classes at individual sites, or within seasonal groups of

TABLE 2. Site names and their meanings, where known, keyed to Borden site numbers used in Tables 3 and 4.

Site (Borden) Number	Site Name	Meaning
Fall Sites		
KjJx-8	Piqqiq	?
KjLa-1	Itimniq	portage
KjJx-4	Piqqiarjuk	?
Spring Sites		
KjJx-6	Akunni'tuaq	big interval (between two other places)
KjLa-18	Auksiivik	place where one goes at melting time
KjLa-17	Pipqa'naaqtalik	place of Pipqa'naaq (his grave)
KkJx-4	Qavvavaujarvik	place of ghosts

sites, is distinct from the background distribution of classes—we briefly explain the presentation and organization of data in the tables.

Sites (columns in Tables 3 and 4) are feature concentrations at places that have been identified as spring camping places, used in May and June (Auksiivik, Qavvavaujarvik, Pipqa'naaqtalik, and Akunni'tuaq), or fall caribou crossings, used in July through September (Itimniq, Piqqiarjuk, and Piqqiq). The minor fall crossing at Quukilruq has been excluded. Most of Itimniq, identified as a crossing, is included as a fall site, although the occupational history of this site is complex. A discrete cluster of features that appears to be older (see below) and which is located further inland, away from the main site area, is excluded from Tables 3 and 4. Categories of feature (rows in Tables 3 and 4) include the six most common individual classes (excluding 'unknown boulder feature') and a seventh 'other' category, which includes the remaining nine classes from Table 1.

Table 5 collapses percentage data from individual sites in Table 4 into contrasting seasons. Pooled, regional percentages for all sites, shown in the last column of Table 5, provide an expectation against which to compare feature class frequencies at each site: 21.4% dwellings; 17.3% caches, etc. Among observed frequencies (Table 3), significant departures ($p \leq 0.05$) are identified by italicized bold numerals. In Tables 4 and 5, corresponding feature percentages that are significantly higher or lower than expected are footnoted. In Table 4, for instance, the percentage of dwellings (15.8%) at Akunni'tuaq (KjJx-6) is lower than expected (21.4%), and the probability of 29 or fewer dwellings occurring at this site (calculated from last column of Table 3) is, in fact, only 0.04. This suggests that further investigation is warranted to try to explain the unusually small number of dwellings that occur there. By contrast, the percentage of hunting blinds (2.7%) at the same site, although also smaller than expected (4.1%), does not merit the same attention: the probability of 5 or fewer blinds occurring at Akunni'tuaq is 0.23.

In Tables 4 and 5, seasonal contrasts should be manifested in contrasting cell values for spring and fall, for each class. In Table 5, seasonal contrasts are apparent in five of seven feature classes—only blinds and dwellings appear not to be structured by the seasonal partitioning of data based on information supplied by oral history. Of the five classes that exhibit structuring, one (kayak-related features) shows significant departure from the regional distribution both in fall sites, where these features are underrepresented, and in spring sites, where they are overrepresented. This finding is not unexpected: kayaks were made during the spring, and kayaks with newly sewn skin were placed on stands to dry at that time of year. The remaining four classes (Table 5) show weaker seasonal patterning, manifested by significant values only at fall sites: caches and the rarer classes ('other') are overrepresented at fall sites, whereas *inuksuit* and hearths are underrepresented at these sites. The large number of caches near fall crossings is intuitively explainable in terms of the importance of having to store meat for winter at this time of year.

These data suggest that fall sites in the Harvaqtuuq might be identifiable through recognition of unusual proportions of caches, *inuksuit*, hearths, kayak-related features, and several minor feature classes, compared to the regional proportions of these classes. Spring sites, in contrast to fall sites, are relatively undistinguished as a group. It is probably not possible to identify spring seasonality on the basis of feature proportions, though an

TABLE 3. Frequency of features by class (Table 1) and site (Table 2), grouped by season. Significantly large and small frequencies ($p \leq 0.05$) for individual sites are shown in bold italic type.

	Fall Sites				Spring Sites					Total	Total All
	KjJx-8	KjLa-1 (main)	KjJx-4	Total	KjJx-6	KjLa-18	KjLa-17	KkJx-4	Total	Fall and Spring Sites	Sites/Features
Dwelling	57	23	26	106	***29***	29	18	16	92	198	332
Cache	***77***	14	14	105	***14***	27	***42***	***5***	88	193	268
Inuksuk	***11***	19	***9***	39	***69***	***17***	***10***	***4***	100	139	320
Hearth	***4***	11	6	21	***24***	13	10	4	51	72	142
Kayak	7	1	***0***	8	11	5	***11***	6	33	41	66
Blind	11	***0***	5	16	5	6	3	2	16	32	64
Other	***80***	30	***34***	144	***32***	25	***8***	***32***	97	241	362
Total	247	98	94	439	184	122	102	69	477	916	1554

TABLE 4. Feature percentages corresponding to frequencies in Table 3.

	Fall Sites			Spring Sites				Total	Total
	KjJx-8	KjLa-1 (main)	KjJx-4	KjJx-6	KjLa-18	KjLa-17	KkJx-4	Fall and Spring Sites	All Sites/Features
Dwelling	23.1	23.5	27.6	15.8[1]	23.8	17.6	23.2	21.8	21.4
Cache	31.2[2]	14.3	14.9	7.6[1]	22.1	41.2[2]	7.2[1]	21.3	17.3
Inuksuk	4.5[1]	19.4	9.6[1]	37.5[2]	13.9[1]	9.8[1]	5.8[1]	15.4	20.6
Hearth	1.6[1]	11.2	6.4	13.0[2]	10.7	9.8	5.8	7.9	9.1
Kayak	2.8	1.0	0 [1]	6.0	4.1	10.8[2]	8.7	4.5	4.2
Blind	4.5	0 [1]	5.3	2.7	4.9	2.9	2.9	3.5	4.1
Other	32.4[2]	30.6	36.2[2]	17.4[1]	20.5	7.8[1]	46.4[2]	25.7	23.3
Total	100.1	100.0	100.0	100.0	100.0	99.9	100.0	100.1	100.0

[1] Significant values ($p \leq 0.05$) that are smaller than expected (see text for explanation).

[2] Significant values ($p \leq 0.05$) that are larger than expected (see text for explanation).

unusually large number of kayak-related features may suggest spring occupation.

More complex patterns can be explored when these data are partitioned into individual spring and fall sites (Table 4). At most of these sites, *inuksuit* are rare for both seasons. The exception is Akunni'tuaq (KjJx-6), where about 70 *inuksuit* stand on the slopes and at the top of the hill where this site is found. The name Akunni'tuaq (the big interval) alludes to the site's position between the major sites of Piqqiq and Piqqiarjuk and to frequent travel through this site. These attributes suggest that the site was used at different times of the year and hint at a possible connection, in this context, between the *inuksuit* and travel (e.g., navigation). The general absence of *inuksuit* at other sites reinforces the idea that these features tend to occur off-site. For example, a line of *inuksuit* on the north side of the river leading to the fall crossing at Piqqiarjuk (Fig. 16) is not closely associated with this site. This line probably served as a caribou drift fence or direction changer.

Spring and fall sites exhibit at least weak seasonal patterning for caches when their distribution is broken down by site (Table 4). Caches are common at Piqqiq (KjJx-8), one of the three fall sites, and are rare at two of the four spring sites, Akunni'tuaq (KjJx-6) and Qavvavaujarvik (KkJx-4). Contrary to this general pattern, which suggests seasonal contrast, Pipqa'naaqtalik (KjLa-17), a spring site, has a significantly large number of caches. The explanation for this anomaly may lie in the different kinds of meat for storage. Table 6 shows the breakdown by physical type of feature of caches located in two areas at Pipqa'naaqtalik: the first area lies below and north of the 100 m contour line (Fig. 17); the other, above and south of the line. One type of feature, the boulder field depression, accounts for most of the caches at this site. This type, a hollow within an area of cobbles and boulders (Fig. 18), occurs mostly in the northern area within a large, continuous boulder field at the base of a steep hill (Fig. 17). This feature type is more common at spring sites than at fall sites (Table 6) and may be associated with the specialized spring caching requirements of dried, as opposed to frozen, meat. The most common types of cache feature at fall sites are boulder clusters (Fig. 6) and boulder cluster/clearings. Both of these types probably represent simple cairns built over cached carcasses or parts of carcasses: the boulder cluster/clearing is an opened cache.

TABLE 5. Feature percentages for total fall and spring sites from Table 4. Footnoted values indicate significant departures from the percentages for all sites, shown in the last column.

	Fall Sites	Spring Sites	Fall + Spring Sites	All Sites
Dwelling	24.1	19.3	21.8	21.4
Cache	23.9[2]	18.4	21.3	17.3
Inuksuk	8.9[1]	21.0	15.4	20.6
Hearth	4.8[1]	10.7	7.9	9.1
Kayak	1.8[1]	6.9[2]	4.5	4.2
Blind	3.6	3.4	3.5	4.1
Other	32.8[2]	20.3	25.7	23.3
Total	99.9	100.0	100.1	100.0

[1] Values significantly smaller than the total percentage of features in all sites.

[2] Values significantly larger than the total percentage of features in all sites.

Hearths also show a seasonal pattern: they are common at spring sites and rare at fall sites. However, only one site in each season clearly expresses this pattern (Table 4), which suggests that factors specific to those sites may be at work. The large number of hearths at Akunni'tuaq (KjJx-6) may relate to its position as an intermediate point on a travel route (see above). Frequent short stays by people at this site might result in an archaeological pattern that contains a high number of hearths in comparison to other types of features (e.g., tent rings), which are associated with longer stays. Clearly, there could be other reasons for the large number of hearths at this site, but the oral history does not provide any obvious ones (Harvaqtuurmiut Elders et al., 1994). This question could be pursued through further oral history inquiry into annual settlement and subsistence. One line of inquiry, for instance, might focus on differences between Piqqiq (KjJx-8), where hearths are relatively absent, and Akunni'tuaq (KjJx-6), where they

TABLE 6. Frequency of caches by type of feature at spring site KjLa-17 (by area within site, see Fig. 17). Table includes only those cache types present at KjLa-17.

Type of Cache	KjLa-17 lower/north	KjLa-17 upper/south	Other Spring Sites	Total, Spring Sites	Total, Fall Sites
Boulder cluster	4	2	5	11	35
Boulder cluster/clearing	0	2	23	25	35
Boulder field depression	24	1	7	32	22
Continuous rock ring	2	2	2	6	2
Discontinuous rock ring	3	0	3	6	3
Isolated artifact	1	0	0	1	0
Walled enclosure	1	0	5	6	7
Total	35	7	45	87	104

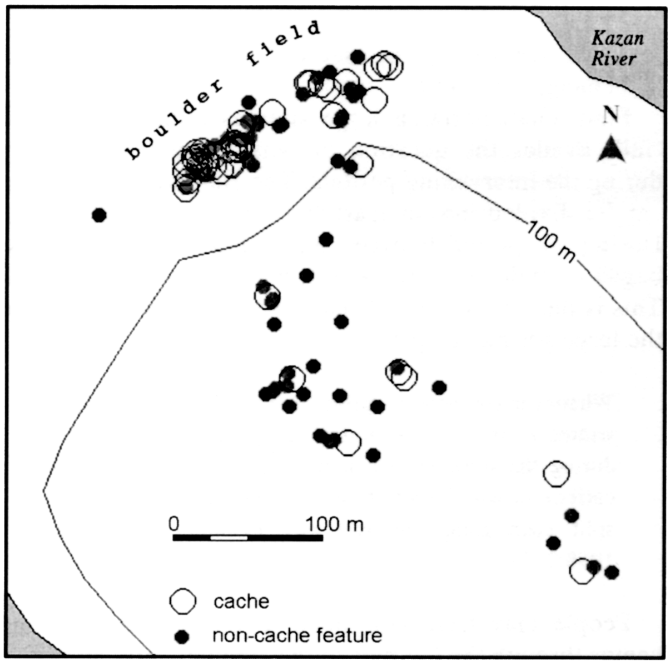

FIG. 17. Distribution of caches and other features at Pipqa'naaqtalik.

FIG. 18. Cache in boulder field at Pipqa'naaqtalik.

are common. Questions might centre on unusual conditions of settlement, unique activities, number of years of occupation, and duration of settlement during any single year.

Regional Patterning of Features

Considered from a more general (small-scale) perspective, the archaeological evidence appears to occur mostly on the south side of the river (Fig. 14). This tendency can be expressed in terms of the distribution of features relative to the distribution of survey coverage by side of river (Table 7). Only 216 features are found on the north side of the river, representing about 14% of the total number in the study region. This percentage is low compared to the area that was surveyed on the north side of the river, which represents 23% of the total survey coverage (Table 7). The breakdown of features by class also indicates differences between the north and south sides of the river (Table 8). On the north side, half of all features are *inuksuit*. This is consistent with at least one of the potential uses of *inuksuit:* deflecting caribou to crossings (see above and Fig. 16). On the south side of the river, the breakdown of features by class shows a more even distribution (Table 8). It includes a much higher percentage of dwellings, hearths, and kayak-related features (reflecting activities close to where people lived), as well as a much larger representation of the eight rarest classes of features, plus unidentified features, that were grouped as 'other.'

The south shore bias in distribution of features agrees with a general understanding of how Inuit hunters of migratory caribou spread themselves out along barriers to the movement of animals in summer and fall to increase the probability of interception (Birket-Smith, 1929:72; Harp, 1961; Irving, 1968). This pattern of settlement is easily explained as a useful strategy for a small population of foragers attempting to cope with an uncertain distribution of a single prey species available for a limited season (e.g., Jochim, 1981). But the distribution of features along the south shore is also consistent with other aspects of the settlement pattern that are discussed in Harvaqtuurmiut accounts of settlement and subsistence.

Oral accounts suggest that the settlement bias towards the south shore of the river occurred not only in summer and fall, but also in the spring. During summer and early fall, people lived in camps on the south shore, waiting to intercept caribou as they swam across the river at narrows

TABLE 7. Distribution of features and area surveyed on the north and south sides of the Kazan River.

	Features		Area Surveyed	
	No.	%	km^2	%
North	216	13.9	11.5	28.8
South	1338	86.1	28.5	71.2
Total:	1554	100.0	40	100.0

TABLE 8. Frequency and percent of features on the north and south sides of the Kazan River.

Feature	North		South	
	No.	%	No.	%
Dwelling	27	12.5	305	22.8
Cache	37	17.1	231	17.3
Inuksuk	108	50.0	212	15.8
Hearth	9	4.2	133	9.9
Kayak	1	0.5	65	4.9
Blind	11	5.1	53	4.0
Other	23	10.6	339	25.3
Total	216	100.0	1338	100.0

during their southward migration. People generally avoided the north shore and were careful not to disturb the ground on the side of the river from which the caribou came:

> Piqqiq is important to Inuit because it was their camp ground—so important that they don't cache their meat across the river from the camp...The other side of the river...where caribou roam...was kept clean. (Pirjuaq in Mannik, 1993:11)

This avoidance is reflected in a relative absence of features on the north side of the river, particularly those associated with camps, after accounting for differences in survey coverage (see above, Tables 7 and 8). Less clear in Pirjuaq's account of Inuit settlement preference is the fact that people also camped on the south shore of the river during spring. An important reason for this choice was to ensure that people and caribou would be on the same side of the river during spring breakup. If spring breakup occurred when caribou were about to cross the river on their northward migration, the flowing ice would trap the animals on the south side of the river until the ice cleared. This delay extended the period during which hunters could obtain fresh meat, meat for drying, and bull skins for kamiks and tents (Tataniq in Mannik, 1998:229; Tunnuq in Mannik, 1998:242; Keith, 2000).

Hunting opportunities were enhanced, therefore, by camping on the south shore in spring. Only by camping on this side of the river were people able to take advantage of the special circumstances afforded by a coincidence of spring breakup with the arrival of caribou. It is not clear how often people expected this opportunity to arise, or whether they chose to camp on the south shore exclusively in spring because of it. Nevertheless, all spring camps identified by elders, as well as other camps located high above the river that were probably used in spring, were located on the south side of the river.

DISCUSSION

The distribution of features presented here represents some of the broadest patterns in a complex set of settlement data. Although we believe these patterns to be robust, there is complexity in both the archaeological and oral history evidence that has not yet been explored. We briefly explore two issues that provide direction for further research: identifying the 'season' of occupation of sites and change over time.

First, characterizing large sites as either 'spring' or 'fall' evades the question of what people were doing during the intervening periods. The Harvaqtuurmiut year can be divided into at least five seasons (Keith, 2000). During the period between April and June when snow began to melt (*upingraqhaaq*), people moved into tents. This is the time when at least some people were living at the large spring camps:

> Whenever we were at spring camp, or during the [late] winter, we [families] would all be together for a while, but during the summers when we would be searching for caribou or when it was time to cache caribou we would split, each going our own way. (Tunnuq in Mannik, 1998:245)

People may have continued to occupy these spring camps through the hot part of the summer, July and early August (*upingraaq*), before moving to their fall camps. This is also the time, however, when large caribou herds crossed the river from the north, so that many families would be camped at the river to intercept them. Families may also have travelled extensively, visiting other families, during the hot part of the summer. This activity may have produced some of the 'off-site' features, small clusters of features with tent rings. When the weather turned colder, during late August and September (*aujaq*), meat could be cached for the first time without first being dried, and caribou were hunted at the crossings for clothing (Tataniq in Mannik, 1998:227). This is the time when relatively large numbers of people might live together at caribou crossings like Piqqiq. However, these late summer/early fall camps might not always be larger than camps earlier in the summer because younger hunters travelled to interior lakes in the fall. They would cache some meat there in the interior, and bring back other meat for the elders, who remained at the crossings (Tataniq in Mannik, 1998:227-228). Later in the fall, during October (*uqiaqhaq* and *uqiaq*), people were less mobile until snowfall made travelling easier. Women used that time to sew winter clothing. In November, people moved away from

their fall camps to places where fishing, fuel, and caribou might sustain them for the winter.

Winter occupations for the period between November and April (*uqiuq*) have so far eluded detection, partly because the evidence is ephemeral: unlike the summer tent, the snowhouse leaves no boulder ring. Another reason may be the dispersed pattern of smaller winter camps, particularly for the depopulated period after the famine of 1915, when fox-trapping assumed greater importance in the interior economy (Vallee, 1962; Burch, 1986, 1988; Csonka, 1995). Elder Elizabeth Tunnuq identified one winter camp location on the shore of Thirty Mile Lake that was used 50 years ago. When we examined the site in 1997, there was no trace of settlement, probably because the iglu camp was placed too far out on the lake ice and archaeological remains were swept away from the shore during breakup. Generally, winter camps might be expected in areas with birch, willow, and dense brush, which provided a source of fuel (Tunnuq in Mannik, 1998:244). Many late fall caches and adjacent winter camps are probably located in the interior:

> When the time has come to cache meat for winter and the skins are thick enough for inside clothing, some Inuit tried not to use too many bullets. They travelled away from the [Kazan] river looking for caribou around lakes...to cache meat. When they left the river they also looked for a place to camp for winter.…(Tiktaalaaq in Mannik, 1993:58)

> When it is time to cache meat for the winter, we travelled to lakes, not to the river...So when we have enough cached for the whole winter, we travelled to any lake for the winter camp to be near our cache. (Peter Aasivaaryuk in Mannik, 1993:29)

A dedicated interior survey would be needed to find evidence of these camps, something that has not been attempted so far. Though difficult to find, evidence of former iglu locations may in some cases be identifiable (Savelle, 1984). Fall caches in the vicinity of these settlements would be easier to find; therefore, the search for winter settlements might best be focused on areas containing brush and higher densities of fall caches.

Labelling sites as 'spring' or 'fall' obscures variability. The fall sites Piqqiq, Piqqiarjuk and Itimniq are not equivalent (Table 4). Piqqiq is by far the largest archaeologically, and also the most prominent in oral history. The nearest equivalent in the Harvaqtuuq, in terms of importance, may be the crossing site at Qikiqtalugjuaq, located 50 km west at the upper end of Thirty Mile Lake (Fig. 2; Aasivaaryuk in Mannik, 1993:26; Tataniq in Mannik, 1998; see also Birket-Smith, 1929:74; Arima, 1975:197). Some, but not all, fall sites are located adjacent to hills that may have been used as lookouts in spring and summer. The hill that commands Piqqiq contains the large waiting place, Utaqqivvigjuaq, which people used as a lookout in summer (Fig. 12). Itimniq also has one high hill (Itimni'tuaq) and a lower ridge containing tent rings. People and caribou sometimes preferred these exposed locations in summer for the protection they afforded from insects. Spring hilltop sites may have been used in summer for the same reason.

A second issue not addressed in this paper is change in land use over time. The dense accumulation of features at named places in the landscape indicates a certain level of stability and continuity in land use; but variation in settlement patterns from year to year, and from one family to another, has not been satisfactorily documented.

Harvaqtuurmiut were living in this area year-round from the late 19th century (Burch, 1986), and probably earlier, until the 1960s. Many sites in the Harvaqtuuq contain 20th century material. For the most part, however, it has not been possible to achieve finer temporal control over features and sites during this survey. Some sites lack recent material, however, thus suggesting older occupations. There is evidence of relatively early Harvaqtuurmiut or other Inuit settlement within distinct areas at two sites—Itimniq and Piqqiq—and possibly at others. This evidence consists of large, heavy tent rings with boulder sills or low walls, possibly representing cold-season dwellings from a period before the introduction of the iglu sometime in the early 19th century (see Burch, 1978). These early feature clusters also exhibit an absence or small number of artifacts and extensive lichen growth on feature boulders. The presence of muskox bone in some of these clusters also suggests relatively early use, prior to the early 20th century (Burch, 1977; Stewart, 1997, 1998; Friesen, 1998).

We have presented a fixed seasonal pattern in which the same fall and spring sites were used over many years in the same ways. These older locations within Itimniq and Piqqiq may reinforce this pattern, supporting the idea of stability through time. The muskox bone introduces new evidence, however, suggesting that some aspects of subsistence, and possibly land use, changed substantially through time.

Much of the oral testimony pertains to the 20th century, during which period Harvaqtuurmiut settlement patterns may have changed in response to famine and sickness, the decline of the muskox population, changes in external demand for furs, and greater availability of trade items (Stewart, 1993). Seasonal patterns surely varied from year to year, though to what extent is unknown. Also, other Caribou Inuit groups used this area, and Harvaqtuurmiut families certainly moved beyond the boundaries of the study area, so that this part of the lower Kazan River represents only a part of any one family's total range:

> We just move from one land to the other to search for caribou, we don't go to the same places all the time.… (Peter Aasivaaryuk in Mannik, 1993:29)

This variability, which stems in part from changing environmental conditions that influenced numbers and movements of caribou, has affected the archaeological

record, which is simply an "aggregate of different yearly patterns" (Jochim, 1991). Varying settlement choices by different families through time, for example, may have contributed to the dispersion of features away from the major spring and fall sites, along and away from the river, thereby increasing the 'off-site' component of the archaeological record. Dispersion of features might be particularly noticeable around fall settlement locations, compared to spring locations (e.g., Figs. 15 and 16), if caribou crossings were observed to vary from year to year, or if different families had specific site preferences along the river within the general region of crossing.

CONCLUSION

The oral history and archaeological information collected during this project contribute to an understanding of Inuit, especially Harvaqtuurmiut, land use through the recording of culturally significant places, place-names, and archaeological features. Features indicate the locations of tents, graves, caches and some historical activities, such as caribou drives and interception, cooking, hide drying, and kayak building and repair. Beyond this locational information, the continuing analysis of faunal remains will resolve in some detail issues related to food preparation and storage. In particular, analyses of differential element representation are expected to reveal seasonal contrasts in processing and storage of caribou meat, based on the necessity of drying meat during the spring and summer, as opposed to freezing it during fall and winter (e.g., Binford, 1978). Some of the larger clusters of features correspond with fall (*aujaq*) and spring (*upingraqhaaq*) camps recently identified in oral histories by Baker Lake elders (Harvaqtuurmiut Elders et al., 1994) and with places that appear on Inuit-drawn maps from the 1920s (Rasmussen, 1930b). Fall camps occur close to the shore of the Kazan River, whereas spring camps tend to occur on hills that are slightly further inland, consistent with oral accounts; however, camps from these two seasons may coalesce where hills are close to the shore.

Classification and analysis of features at fall and spring sites lead to the conclusion that neither of these seasons has an unambiguous archaeological signature, in terms of the particular mix of features at a site, but that fall sites are more distinctively patterned than spring sites. Fall sites contain relatively large numbers of caches and minor feature classes (graves, material concentrations, fox traps, hide-drying rings, children's play areas) and relatively small numbers of *inuksuit*, hearths, and kayak-related features. Spring sites appear to have larger numbers of kayak-related features. A corroborating source of evidence for season of occupation will be provided by the analysis of faunal remains.

There are also many outlying features, removed from the large, seasonally identified sites. This scatter is not easily interpreted as part of any seasonal settlement pattern. It contributes, however, to a larger pattern of bias in the distribution of features towards the south shore of the river. Oral history suggests that this bias reflects the choice of caribou hunters to be on the south shore during the spring, when caribou are sometimes trapped there by moving ice, and during summer and fall, when caribou swim from the north to south shore. Features on the north shore of the river are mostly *inuksuit*, possibly part of drive systems that helped to direct caribou to crossings at Piqqiq and Piqqiarjuk.

Much appears to be missing from the archaeological record of seasonal settlement—particularly activities associated with seasons other than *upingraqhaaq* and *aujaq*. There are several possible reasons for this. First, people may have moved often during summer (later July) and winter, resulting in a more scattered (non-site) distribution of features. Second, summer settlement may simply be a part of the record of spring and fall camps if, during summer, families stayed at spring locations or moved directly to fall locations. Finally, evidence for winter camps may be confined to the interior—more than 1 or 2 km from the river—which remains unsurveyed.

Systematic survey in the Fall Caribou Crossing National Historic Site area has established a high-resolution set of spatial data on Inuit land use over the past century and a half. Future river surveys, which are still much easier logistically than interior surveys, will make it possible to compare land use within the Harvaqtuurmiut region along the lower Kazan and between the Harvaqtuurmiut and other inland Inuit (Paallirmiut; Ahiarmiut; Akilinirmiut) regions by comparing GIS-based data on cultural resources. Oral history from the last and rapidly diminishing generation of Inuit to have lived on the land in these regions is a critical part of any effort to make sense of this record.

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