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Recouvrir les ossements : L'archéologie du respect sur la rivière Kazan, Nunavut

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Résumé de l'article

Des relations complexes entre les hommes et les animaux définissent la vie dans le passé nordique. Pour les Inuit, ces relations se manifestent de nombreuses manières, notamment dans des pratiques souvent décrites comme des démonstrations du respect envers les animaux, favorisant la stabilité des relations entre les sociétés animales et humaines. Il est exaspérant de constater que beaucoup de ces activités, qui sont tellement proéminentes dans les archives ethnographiques, ont peu de corrélations archéologiques. Nous examinons ici une pratique importante présentant un niveau relativement élevé de visibilité archéologique : la dissimulation des os de caribou sous les pierres et dans d'autres zones inaccessibles, qui les protégent ainsi des chiens et autres perturbations susceptibles de heurter l'*inua* (l'esprit, l'âme) du caribou. Nous examinons ce phénomène à plusieurs traverses de caribou et sur des sites archéologiques inuit à l'intérieur des terres sur la rivière Kazan, dans le sud du Nunavut, où nous avons sondé de manière extensive. Cette recherche a été réalisée en collaboration avec les membres de la communauté de Baker Lake qui ont une connaissance directe de ces lieux, incluant l'aspect de la déposition des os. Ensemble, ces études révèlent un paysage culturel dans lequel les relations humain-caribou sont omniprésentes, non seulement en termes de structures liées à la chasse et à l'entreposage, mais également en ce qui a trait à la connexion spirituelle entre ces deux êtres interdépendants.

Covering Bones: The Archaeology of Respect on the Kazan River, Nunavut

T. Max Friesen[i] and Andrew M. Stewart[ii]

ABSTRACT

Complex relationships between people and animals define life in the northern past. For Inuit these relationships are manifested in many ways, particularly in practices that are often described as showing respect for animals, thus promoting stable relations between animal and human societies. Frustratingly, many of these activities, which are so prominent in the ethnographic record, have few archaeological correlates. Here, we examine one important practice with a relatively high level of archaeological visibility: the concealment of caribou bones under stones and in other inaccessible areas, which thereby protect them from dogs and other disturbances that could offend the caribou's *inua* (spirit, soul). We examine this phenomenon at several important caribou crossings and elsewhere at inland Inuit archaeological sites on the Kazan River, southern Nunavut, where we have conducted extensive surveys. This research was performed in collaboration with Baker Lake community members who have direct knowledge of these localities, including aspects of bone disposal. Together, these studies reveal a cultural landscape in which the human–caribou relationship is omnipresent, not just in terms of features relating to hunting and storage, but also with regard to the spiritual connection between these two interdependent categories of being.

KEYWORDS
Inuit, Nunavut, ritual, zooarchaeology, caribou, archaeology

RÉSUMÉ

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Des relations complexes entre les hommes et les animaux définissent la vie dans le passé nordique. Pour les Inuit, ces relations se manifestent de nombreuses manières, notamment dans des pratiques souvent décrites comme des démonstrations du respect envers les animaux, favorisant la stabilité des relations entre les sociétés animales et humaines. Il est exaspérant de constater que beaucoup de ces activités, qui sont tellement proéminentes dans les archives ethnographiques, ont peu de corrélations archéologiques. Nous examinons ici une pratique importante présentant un niveau relativement élevé de visibilité archéologique : la dissimulation des os de caribou sous les pierres et dans d'autres zones inaccessibles, qui les protégent ainsi des chiens et autres perturbations susceptibles de heurter l'*inua* (l'esprit, l'âme) du caribou.

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Nous examinons ce phénomène à plusieurs traverses de caribou et sur des sites archéologiques inuit à l'intérieur des terres sur la rivière Kazan, dans le sud du Nunavut, où nous avons sondé de manière extensive. Cette recherche a été réalisée en collaboration avec les membres de la communauté de Baker Lake qui ont une connaissance directe de ces lieux, incluant l'aspect de la déposition des os. Ensemble, ces études révèlent un paysage culturel dans lequel les relations humain-caribou sont omniprésentes, non seulement en termes de structures liées à la chasse et à l'entreposage, mais également en ce qui a trait à la connexion spirituelle entre ces deux êtres interdépendants.

MOTS-CLÉS
Inuit, Nunavut, rituel, zooarchéologie, caribou, archéologie

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The relationship between people and animals—and more specifically with the soul or spirit of their prey—is critical to hunter-gatherer societies, as is shown in their beliefs, practices, ceremonies, and stories, around the globe (Barnard 2016, 53). For Inuit, these relationships are seen in many ways, particularly in practices that are often described as showing respect for animals, thus promoting stable relations between animals and human beings (Rasmussen 1931, 501; Laugrand and Oosten 2015, 33–39, 44–49). Many of these practices, as referenced in the ethnographic literature and in interviews with modern Elders, have direct implications for the treatment of animal bones.

In this article, we will elaborate on one particular category of actions that speaks to the depth of the human–animal relationship, and which also has the potential to be recognized in the archaeological record: the special treatment of bones intended to keep them out of harm's way. This article builds on our own previous studies of caribou storage and consumption on the Kazan River (Friesen and Stewart 2004, 2013), as well as Douglas Stenton's (2001) study of similar activities on Baffin Island.

Inuit and animals

All Inuit societies lived in a complex cultural landscape associated with a great variety of beliefs and practices relating to the land and animals (Laugrand and Oosten 2015; Merkur 1991), with implications for archaeology at many scales. The land—*nuna*—itself was sacred, "a kind of protean being supporting all existence…to be respected and left undisturbed" (Arima 1976, 219). *Inuat* (sing. *inua*) or "indwellers"—metaphysical aspects of the earth, the sea, and the wind/sky—were part of the cultural environment (Merkur 1991, 41–70; 79–95). Specific landscape features, such as certain lakes or hills, might be regarded as powerful and dangerous (Laugrand and Oosten 2009, 40, 44; Tagoona 1975, plate 15). In

some cases, propitiatory offerings might be left at these places (e.g., Birket-Smith 1929, 74). Fear of danger and a wish to reduce the risk of offending *inuat* prompted people to observe a variety of rules and practices. For instance, among the Netsilik, old clothing might be left where it lay discarded and deliberately not reused (Rasmussen 1931, 36), and among the Inuinnait (Copper), Netsilik, and Iglulik Inuit, people might avoid working with stones and turf during the caribou migration (Merkur 1991, 81–82). In this sense, the archaeological record of settlement can be seen as responding not just to economic opportunities provided by caribou and other resources, but also to imperatives of the unseen world: the indwellers and other beings visible only to some.

Perhaps the most profound connections were those surrounding the ways in which animals and humans were linked as prey and hunter, as partners and as spiritual beings. Proper treatment of prey allowed it to be reincarnated, assuring future sustenance, or at least preserving the possibility of future hunting success (Merkur 1991, 89–90). The souls of animals, or the earth indweller, with the capacity to give the animals and their souls to hunters pursuing them, were seen as having power to retaliate if the animals were not treated well during their encounters with humans (Merkur 1991, 85–86; Bennett and Rowley 2004, 43–45; Laugrand and Oosten 2015, 52). These views were, and are, held widely by Inuit, and are similar to views held by hunter-gatherers more generally in the circumpolar north (Birket-Smith 1930, 80; Hendricksen 1973, 35–39; Rogers 1973, 10; Tanner 1979, 153–81).

Although rules and proscriptions were often idiosyncratic, varying from place to place, from family member to family member, and from one year to the next, some basic principles held (Stenton 2001). The best known and perhaps most widespread of them were rules prohibiting contact between sea and land mammals (Burch 2006, 269, 295; Rasmussen 1930a, 48). Another widespread set of practices concerned treatment of animals, carcasses, and bones left on the land, which could be seen as liabilities that might allow opportunity for mischief and witchcraft. In parts of Greenland, for example, bones from hunted prey could be used by enemies to make a *tupilak* (harmful spirit sent to attack [Thibert 1970, 138; Fortescue, Jacobson, and Kaplan 1994, 353]) for sorcery, which "could be entirely composed of bones from different animals. Objects belonging to the victim or bones from his catch were highly useable. This mixture was wrapped in an old skin, and peat was used for 'flesh' padding. The creature came to life when its maker used a magic formula" (Kleivan and Sonne 1985, 23).

At a more general level, careless disposal of bones was often seen as disrespectful to the animal's or earth's *inua* and a liability for future hunting success. Treatment of bones sometimes involved moving them around, aligning them with the landscape in certain ways, or gathering them up (Laugrand and Oosten 2015, 67). They might be hidden or placed in the ground or under rocks to avoid the appearance of carelessness and prevent gnawing by dogs or

breakage of any kind, which might cause offence to the animal's spirit. Special treatment sometimes applied to the animal's head. Heads ideally remained in place where the animal was killed, and when left at the kill site, were oriented to face in the direction in which the hunting party was heading (Laugrand and Oosten 2015, 241).

Finally, "using" the land too much was seen as another form of violation (Laugrand and Oosten 2009, 44), one made manifest in a landscape overburdened with bones. For people at Wager Bay, living too long in one location and leaving too many bones on the ground are two sides of the same coin—both of them reduce the likelihood of continued success at even the most productive locations: "It's the tradition of Ukkusiksalik that if there's people living there, the game [seals] will get scarce…If people live there a long time, the game will go away, and when they are gone, the game will come right back again…That's why, in the past, we respected the policy to get enough to last you, no more, so that you won't waste the meat, and so there won't be many bones littered all over the place" (Mablik in Pelly 2016, 101–02).

The Harvaqtuurmiut and their treatment of caribou bones

The archaeological study below emphasizes a particular species—caribou—in a specific region—the lower Kazan River near Baker Lake, northwest of Hudson Bay (Figure 1). This region was occupied historically by the Harvaqtuurmiut ("people of the Harvaqtuuq," the name for the lower Kazan region), one of several largely or completely inland-dwelling Inuit groups occupying the region and collectively known as Caribou Inuit (Burch 1986) or Inland Inuit (Mannik 1998) in the ethnographic literature. Recent Elders maintained a detailed knowledge of this larger inland region's history, which has been recorded, at least in part (Harvaqtuurmiut Elders et al. 1994; Keith 1997, 2004; Mannik 1998; Pelly 2004), and the early twentieth-century lifeways of these Inuit were documented in detail by Birket-Smith (1929, 1933) and Rasmussen (1930a, 1930b; see also Burch 1986; Csonka 1995; Fossett 2001).

For the Harvaqtuurmiut, caribou was a critical focal resource. The Harvaqtuurmiut year can be described in terms of seasons with distinct activities and patterns of mobility (which nevertheless varied from year to year) related largely to the timing of caribou movements and to harvesting, processing, and caching caribou (Keith 2004). In spring (April until June), with snow still on the ground and the river frozen, or starting to break up, people established camps on the south side (right bank) of the river on high, well-drained sites—*auksiiviit* or "melting places." These sites were elevated enough to afford views of the land to the south from which direction caribou were anticipated to arrive during their northward spring migration. Depending on the timing of their arrival, and numbers of animals, caribou meat that wasn't immediately eaten at this time was dried. In summer (July and early August), people moved downslope, closer to

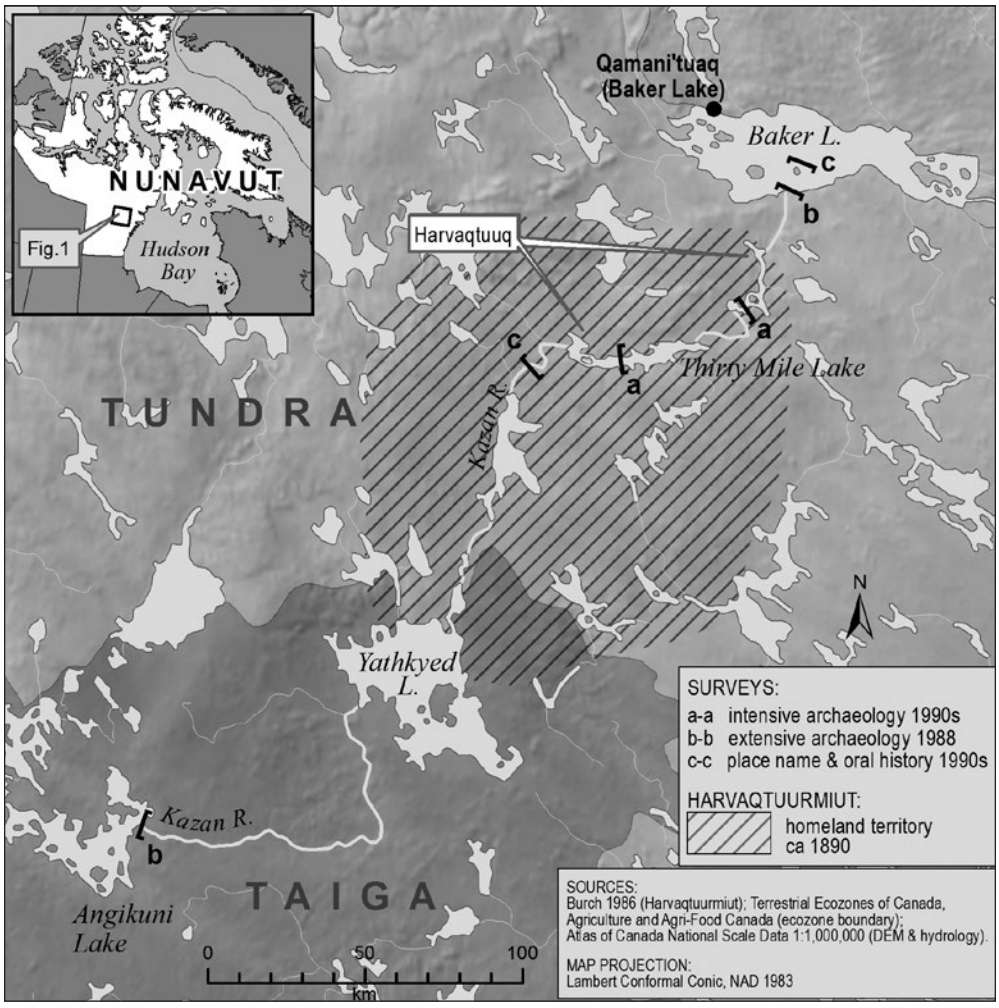


Figure 1. The Lower Kazan River region, showing core area of Harvaqtuurmiut land use and settlement in the 1890s, broadly defined ecozones, the extent of archaeological surveys along the river in 1988 and the 1990s, and the extent of place name and oral history field projects in the 1990s.

places on the now-open water of the Kazan River, especially to those places (*nabluit*) where caribou were expected to swim across the river during north-to-south movements of summer herds. In good years, harvests might be large as animals were intercepted in the water by kayak and on land as they emerged from the river. The practical size of harvests was limited, however, by the warm weather at this time of year, which made it impossible to cache meat without drying it. Dried meat and other products could be stored within skins placed in hollows and stone-built structures. At this time of year, movements and activities

were highly variable. Families would often travel, on foot and by kayak, stopping to visit other families.

Early fall (starting mid-August through September) was a time for more intensive harvesting by families living together in larger camps at these same, or different, *nabluit* for winter meat, fat, and skins for clothing. Greater effort was made to secure more animals (as good years allowed) as, starting in late August when the weather turned colder, meat no longer had to be dried to be preserved. Butchered carcasses could be directly cached with little processing. Late fall (October and early November), when most caribou were usually no longer in the country, was a time for sewing winter clothing. During winter (mid-November until April), when snow and ice enabled extensive travel by dog team, people were camped at fishing lakes away from the river. They subsisted also on their caches, travelling far for other supplies, such as wood, and to visit other families as well as distant trading posts.

The maintenance of a good relationship between caribou and people was of paramount importance. This was true throughout the year but especially during the critical early fall harvest. This relationship was implicit in the search and pursuit of prey, butchery and storage of carcasses, processing of skins, consumption, and post-consumption treatment of bones. For example, Birket-Smith notes a tendency to avoid siting camps in the immediate vicinity of caribou crossings along east-west reaches of the river (1929, 72); offerings of meat and fat placed under stones to the soul of the caribou (94); the hunter's wife's greeting to the caribou when its carcass enters the tent (94); and a prohibition on sewing new deerskin clothing before snow houses are constructed in autumn near the coast (236).

A particular set of actions occurred around the disposal of bones, one that seems connected to the requirements of both the seen and unseen (metaphysical) world simultaneously. Among the Nunamiut of Alaska, for example, people were observed to separate out bones and bone splinters during their disposal of cooking waste outside the tent—good practice in case of need, during times of dire food shortage, for later retrieval (Binford 1978, 146). Elizabeth Tunnuq of Qamani'tuaq (Baker Lake), who grew up in camps on the Kazan River in the Harvaqtuuq, and who accompanied us to Thirty Mile Lake on the lower Kazan River in 1997, told us,

> The discarded bones, as from caribou leg bones, were gathered in one place. When they made *patqut*—when they collected bone marrow—this would result in a lot of [broken] leg bones which are very sharp and hard. These were put…usually in cracks—between cracks, where animals wouldn't get at them…If there are not cracks, usually under big rocks, rocks that are not easy to move…Crushed bones were also put away neatly, usually in one area where they wouldn't be spread by animals. (Keith 1997, tape 3; see also

Piryuaq in Mannik 1998, 177–78 and Aasivaaryuk in Harvaqtuurmiut Elders et al. 1994, 132)

Similarly, Baker Lake Elder Barnabus Piryuaq has spoken on many occasions with oral historian Hattie Mannik, and others, about the importance of keeping the shores of the Kazan River clean, including clean of bones, in order to prevent the approaching caribou herds from turning back and not entering the water during the summer and early fall harvests of caribou at water crossings (e.g., Piryuaq in Mannik 1998, 177–78). Asked specifically about how rocks were used on the Kazan River, Baker Lake Elder Peter Aasivaaryuk gave examples of several uses, including "to cover caribou…bones at spring time" (quoted in Harvaqtuurmiut Elders et al. 1994, 132). While Aasivaaryuk mentions spring, specifically, other accounts link a concern for correct observance with the fall, and especially at caribou crossings occupied during the summer and early fall.

As a result of both the overall patterns of Inuit respectful behaviour towards the bones of their prey, and the specific accounts of these practices in the Harvaqtuuq region and among Inuit elsewhere, it is clear that caribou bones were given special treatment as a form of long-term site maintenance (Stenton 2001). Thus, we expect that the archaeological record should reflect this practice and deeply held set of beliefs. The remainder of this paper outlines our efforts to recognize and understand features that may reflect intentional bone disposal in this region.

Kazan River surveys

Together and separately, we have conducted several surveys along the Kazan River—the main settlement axis for the Inland Inuit. The most intensive survey took place over three years in the 1990s along the Lower Kazan River in the Harvaqtuuq region (Figure 1:a-a; Stewart et al. 2000), but in 1988 a longer (more extensive) survey occurred along the Kazan River between Angikuni and Baker Lakes (Figure 1:b-b; Friesen and Stewart 1994; Stewart 1993). As a result, we have archaeological survey coverage of varying resolution for approximately the lower half of the Kazan River. In addition, the Harvaqtuuq was the subject of major oral history and place name field projects by Parks Canada in the 1990s. These projects extended from Baker Lake at the downstream end to above Thirty Mile Lake (Figure 1:c-c; Friesen and Stewart 2004, 2013; Harvaqtuurmiut Elders et al. 1994; Keith 1997, 2004; Stewart et al. 2000; Stewart, Keith, and Scottie 2004). The east-west reach of the Harvaqtuuq, including Thirty Mile Lake, presented a permeable barrier, slowing and influencing the movement of caribou northward in spring and southward in summer and fall. It was the focus for year-round settlement and harvesting of caribou and other resources by the Harvaqtuurmiut. Some residential camp sites recorded during these surveys have

been identified as being either mainly spring or mainly summer/early fall occupations; others may be a mixture of both or are not easily identified to a single season.

During the surveys, many feature types were described and identified, including tent rings, inukshuks (*inuksuit*), hearths, kayak (*qajaq*) stands, hunting blinds, and storage caches (Stewart 2015). However, we also encountered a range of features with less clear attribution, including the category we are calling "bone repositories," interpreted to represent the deliberate deposition of bone to keep it out of harm's way and thereby show respect for caribou. These were identified on the basis of their construction, context, or contents, all of which made them at least partially different from the storage caches that often occurred on the same sites. Faunal remains, almost always overwhelmingly composed of caribou bones, were recovered from many classes of features, including some bone repositories. We will describe these features, and their contents, below.

Bone repositories on the Kazan River

Before proceeding to our description of bone repositories, it is important to emphasize the difficulty in disentangling evidence for repositories from other activities and archaeological features relating to caribou butchery, transport, storage, and deposition. Caribou bones occur across almost all sites in the region in varying densities, and there is the potential for different sorts of features, such as emptied caches, to resemble bone repositories. Despite this, we do interpret several categories of evidence as directly related to this important component of Inuit interactions with animals.

Features we interpret as bone repositories can be grouped into several overlapping types. First, were concentrations of bones in cracks in the bedrock and among boulders in boulder fields (Table 1: Type 1; Figure 2a–c). We noted these in several different regions and at multiple sites. Where there was no obvious mechanism for bone to enter the cracks naturally, and where the depth or configuration of the crack made it impossible or at least difficult to retrieve meat, we interpreted them as probable bone repositories. Bones deep in cracks were not collected, but the few that could be seen from the surface were almost certainly just a small proportion of those deposited. This was the most common category of probable bone repository. This general type also includes bones placed on the ground surface under boulder erratics—we have two examples from the major caribou crossing at Piqqiq (KjJx-8; Figure 2a). Here, the spaces under boulders contained significant quantities of bone. Smaller stones may have originally sealed these spaces.

A second category represented intentionally constructed cache-like structures (Table 1: Type 2; Figure 3a–d). Here, the challenge was to differentiate repositories from food caches, which we did in two ways. First, repositories were

Table 1. Probable bone repositories on the Lower Kazan River

Bone Repository Type	Site/ Feature Number	Description	Context
1	88-081-2 (KdLh-9)	Spiral-fractured caribou long bone fragments scattered within small bedrock outcrop formation (measures 3 by 6 m in area).	Bedrock is deeply fissured by weathering and caribou bones are found in the fissures.
1	88-081-7 (KdLh-9)	Broken caribou bone fragments within bedrock crevice on a boulder field (1 × 4 m).	Located directly on the caribou trail (Feature 2); located halfway between two single-rock inuksuit that are also on this trail.
1	88-081-11 (KdLh-9)	A boulder field with many caribou bones among large, angular, frost-shattered boulders; bones appear to have been inserted among boulders.	Very large, ice-split, angular boulders in a bedrock outcrop with dwarf birch.
1	88-081-24 (KdLh-9)	Two ribs in a bedrock crevice.	Next to tent ring.
1	88-127-32 (KjLd-3)	Caribou bone, including a cranium and ribs, located at depth inside a bedrock fissure; a few vertebrae scattered on the ground around it.	Bedrock outcrop dissected by crevices.
1	96-582 (KjJx-8)	Caribou ribs and other bones placed under very large boulders (erratics).	Area 6 of Piqqiq: grassy meadow heath behind boulder-lined shore; area inhabited by Tiktaalak's father (Ulliut) in the 1930s.
1	96-588 (KjJx-8)	A total of 588 caribou bones, small numbers of arctic ground squirrel, wolf/dog, and fish bones, 3 cartridge casings and 4 white quartzite flakes located on ground sheltered under boulder.	Located in area 6 of Piqqiq.

Bone Repository Type	Site/ Feature Number	Description	Context
1	96-589 (KjJx-8)	A total of 89 caribou bones, small numbers of wolf/dog and fish bones, and one small screw cap (possibly from gun powder flask) located on ground sheltered under boulder.	Located in area 6 of Piqqiq.
2	96-509 (KjJx-8)	A total of 333 caribou bone fragments and 2 cartridge casings covered with boulders.	Located in area 4 of Piqqiq.
2	96-510 (KjJx-8)	A total of 59 caribou bone fragments covered with boulders.	Located in area 4 of Piqqiq.
2	96-511 (KjJx-8)	A total of 24 caribou bone fragments covered with rocks.	Located in area 4 of Piqqiq.
2	97-443 (KjLa-9)	Broken caribou bone (long bone ends are frequent) among boulders.	Concentration (diameter 1 m) of 13 boulders located next to large boulder on low, flat grassy tundra; backshore area at Aahivaq.
2	97-449 (KjLa-9)	Caribou bone within concentration of cobbles and boulders.	Concentration of boulders located next to large boulder on low, flat grassy tundra; backshore area at Aahivaq.
2	97-286 (KjLa-17)	Concentration of 6 boulders covering caribou bone fragments. Another caribou long bone fragment and a soapstone pot fragment are located 3 m to the south, both under a rock.	Extensive field of partly consolidated cobbles and boulders at Pipqa'naaqtalik; located at the northeast end of concentration of about 50 archaeological features in lower part of this site.
2	97-143 (KjLa-18)	Cluster of 6 cobbles adjacent to a large boulder containing caribou bone (bone is underneath and among cobbles).	Located within the dense, southern habitation area of Auksiivvik along a NW-SE-trending ridge of bedrock.

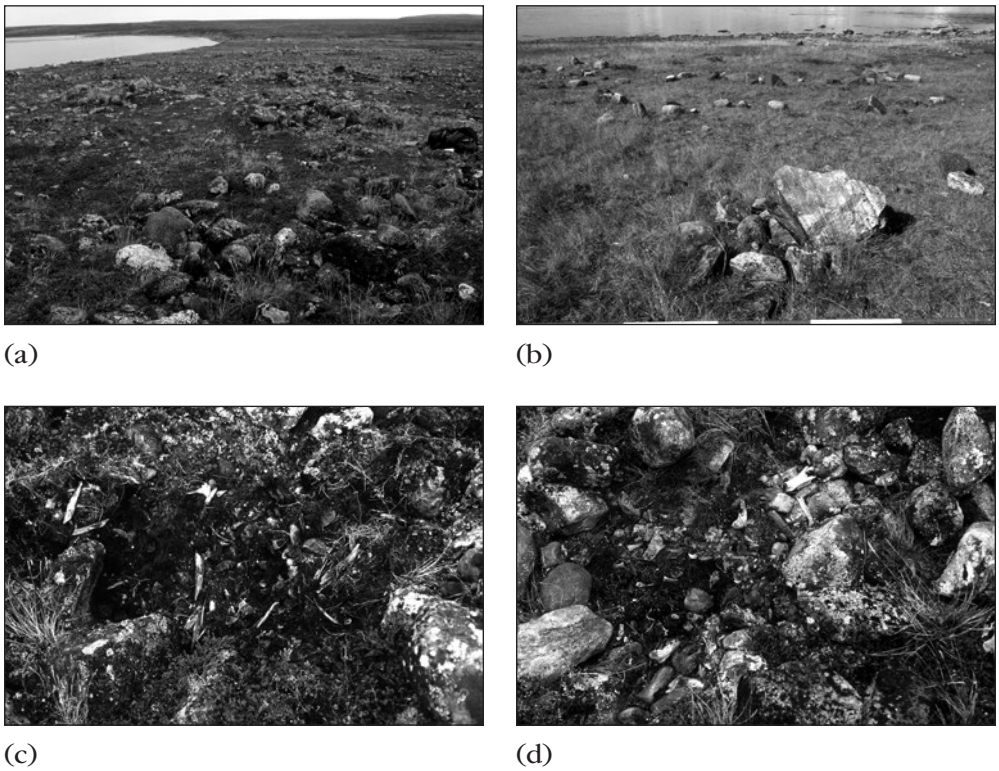
Bone Repository Type	Site/ Feature Number	Description	Context
2	97-151 (KjLa-18)	Several large cobbles on top of caribou bone.	Located within the dense, southern habitation area of Auksiivvik along a NW-SE-trending ridge of bedrock.
2	97-568 (KjLa-18)	Broken caribou bone located under a small cairn of 7 boulders.	North cluster of features at Auksiivvik.
2	97-14 (KjLa-1)	Rodent cranium, cut antler and caribou phalanx contained within a small concentration of about 10 cobbles.	Summit of Itimniq hill overlooking Itimniq rapids.
2	97-115 (KjLa-1)	Caribou bone under boulders.	Adjacent to Kazan River shore, distant from other features at Itimniq.
2	97-125 (KjLa-1)	Caribou bone fragments contained within a concentration (diameter 1 m) of cobbles.	Itimniq-North/Muskox area of Itimniq—not included in Table 2 calculations because this feature is outside the main site area (Friesen and Stewart 2004).
3	96-50 (KjJx-3)	Ten caribou mandibles, with teeth, placed in a natural crevice in a bedrock outcrop. Cobble-sized angular rocks are placed on top of the bone.	Crevice in solid bedrock measures about 70 cm across and 20 cm deep.
?	88-081-47 (KdLh-9)	A concentration of broken caribou bone—mostly long bone fragments with a few ribs and a cranium—placed within a shallow rock pit with no covering rock.	Angular, ice-split boulders within a frost network/ boulder field.
?	97-531 (KjLa-18)	Concentration of caribou phalanges under a flat rock in the interior of a tent ring (Feature 531).	Tent ring occurs at west end of Auksiivik.
1 or 3	96-74 (KjJx-3)	Crevice in bedrock containing caribou bone: at least 5 skulls are present.	Bedrock outcrop dissected by crevices.

(a)

(b)

(c)

Figure 2. Examples of Type 1 bone repositories: (a) Feature 96-588 at Piqqiq, Roy Avaala is in front of erratic boulder under which bone was placed; (b) Feature 88-81-002 at KdLh-9, south of Yathkyed Lake; (c) Feature 96-074 at KjJx-3, caribou bone visible.



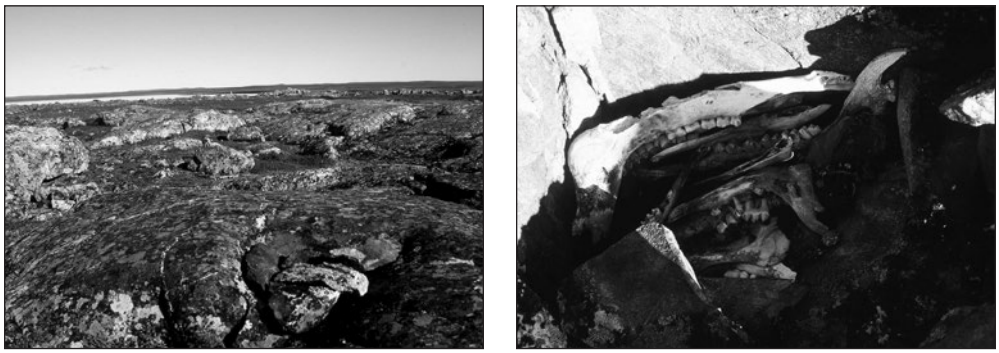
(a) (b)

(c) (d)

Figure 3. Examples of Type 2 bone repositories: (a) Features 96-509, -510 and -511 at Piqqiq; (b) Feature 97-443 at Aahivaq (KjLa-9); (c) Feature 96-509 at Piqqiq, after opening; (d) Feature 96-510 at Piqqiq, after opening.

generally not made as carefully as food caches. For instance, there was often no carefully prepared substrate of cobbles to allow air circulation through and under bones; instead, they sat directly on, or in, soil. Caches, on the other hand, were designed to keep meat from decomposing, safe from scavengers, and easily retrievable for later consumption. Second, repositories should contain contents that differ from those in caches. Repositories are expected to contain bone waste following consumption, as indicated by the range of different carcass parts, inferred from skeletal element and modification frequencies. In contrast, caches are expected to contain whole or partial carcasses that match ethnographic patterns of butchery and storage. Distinguishing between these two feature types is, admittedly, challenging, because, by definition, bone repositories will contain the remains of bones that have moved through various processes, including storage in caches, all of which leave an imprint on the element frequencies. Furthermore, based on ethnographic accounts, it is possible that bone repositories represent repeated cleaning of surface bone from an occupation area, and therefore represent a palimpsest of multiple events of deposition.

The third category of bone repository is represented by only one clear example in this region: a special depositional context that was almost certainly linked to ritual practice (Table 1: Type 3; Figure 4a, b). We encountered a small construction of stones covering a hollow on an elevated rock outcrop at site KjJx-3. Upon removing these stones, ten caribou mandibles, but no other bones, were revealed. This was not a food cache, since the mandibles had already been broken for marrow along their inferior margins. We can offer no additional interpretation beyond the fact that mandibles are a part of the head, which is often singled out for ritual treatment (e.g., Rasmussen 1930a, 35). We include it here as part of the continuum of bone deposits that extends across the regional cultural landscape.



(a) (b)

Figure 4. Type 3 bone repository: Feature 96-050 at KjJx-3 (a) before and (b) after opening for recovery of bones.

One general set of observations concerns spring versus summer/early fall (herein "fall") sites. In general, spring sites had more visible bone on the ground surface, and more features at these sites were associated with surface bone (Table 2). On the other hand, fall sites, particularly those at major caribou crossings (*nabluit*) generally had less surface bone, despite their very intensive occupations. This contrast is reversed for features we have interpreted as bone repositories: more repositories occur at fall sites, and fewer at spring sites, with the notable exception of the spring site of Auksiivik (KjLa-18) (Table 2).

This finding is consistent with Fifth Thule Expedition accounts of inland-dwelling Inuit practices, which stress the importance of careful observance of customs and cultural rules during the fall season and at fall crossings (e.g., Laugrand and Oosten 2015, 45–99; Rasmussen 1931, 179–80, 503). This care may result from at least three considerations. First, the fall hunt (starting mid-August) was critical to the annual economic cycle, and the crossings were spatially restricted. Ensuring that caribou were not in any way reluctant to cross at any one of these expected places was, therefore, highly important. Second, the longer a site is occupied, the greater the need for maintenance, whether motivated by

Table 2. Distribution of repositories, and features with visible surface bone, by site and dominant season of occupation

Site	Season	Probable repositories (number)	Features associated with visible surface bone (excluding repositories and caches) (number)	Total, all features (number)	Probable repositories (percent of total feature count)	Other features with surface bone (percent of total feature count)
KjJx-3	?	2	5	69	2.90	7.25
KjLa-9 (Aahivak)	?	2	15	66	3.03	22.73
KjJx-4 (Piqqiarjuk)	Fall	0	3	94	0.00	3.19
KjJx-8 (Piqqiq)	Fall	6	3	247	2.43	1.21
KjLa-1 (Itimniq main)	Fall	2	0	98	2.04	0.00
KjJx-6 (Akunni'tuaq)	Spring	0	4	184	0.00	2.17
KkJx-5 (Qavvavaujarvik)	Spring	0	1	69	0.00	1.45
KjLa-17 (Pipqa'naaqtalik)	Spring & summer/fall	1	8	102	0.98	7.84
KjLa-18 (Auksiivik)	Spring	4	9	122	3.28	7.38

Note: Table includes only sites with thorough recording of features and surface bone.

a concern for offence to animal spirits, or for cleanliness and practicality, or both, which may, in fact, be mutually reinforcing concerns (Harper 1964, 10). Third, the fall hunt sometimes saw particularly large aggregations of people; in such cases, ritual tends to be more closely followed. Writing about the people at the mouth of the Back River, far north of the Kazan River region, Rasmussen (1931, 81) says spirits appear to have visited camp most during October, when approaching darkness and storms influenced people's attitude. Shamans were busy at this time of year, warding off spirits.

As mentioned, an unexpectedly large number of repositories occur at the spring site of Auksiivik along with a high frequency of surface bone. Frequent re-use of Auksiivik is implied by its name—"the melting place"—where people came to wait out the spring thaw while intercepting north-migrating caribou on the south side of Thirty Mile Lake (Figure 1; Keith 2004, 43). While the harvesting and drying of caribou meat here in spring appears to have resulted in a lot of surface bone (Table 2; see also Friesen and Stewart 2013), it also seems to have prompted a certain amount of clean-up, including the sequestering of bone in repositories.

Analysis of caribou bone

Though features interpreted as bone repositories were quite common across the study area, we collected the contents of only a few. In all cases, bones were collected carefully by hand with the aid of a trowel, but the soil was not screened. The best examples are from the site of Piqqiq, which is one of the largest fall caribou crossing sites on the Kazan River (Stewart 1994, 1997). For comparative purposes, we also include selected bone frequencies from three other sites. Auksiivik is clearly a spring site, based on its place name, oral history, and archaeology (Keith 2004, 43; Stewart 1998). We examine aspects of three caches and a surface assemblage in the vicinity of a tent ring (Feature 97-189) from this site. Pipqa'naaqtalik (KjLa-17) is a site that was occupied in both spring and summer/early fall seasons. We will use information from one large cache (Feature 97-245) at the site, which relates to the spring occupation. Akunni'tuaq (KjJx-6) refers to a prominent hill between two major caribou crossings on the south side of the river, which contains a low density of features constructed and used mainly during the spring. Below, we will refer to bones surface-collected near a hunting blind (Feature 96-316) from this site. We have previously described and interpreted some of the same features in a paper devoted to understanding seasonal differences in butchery and caching strategies (Friesen and Stewart 2013), but left issues of more ideologically based bone deposition largely unexplored at that time.

In five cases at Piqqiq we collected the contents of suspected bone repositories (Table 3). Two of them were Type 1 deposits in spaces under boulder erratics referred to previously (Features 96-588 and -589); the other three

Table 3. Caribou bone samples discussed in this paper

Site	Feature No.	Season	Description	Caribou NISP	Caribou MNE	NISP/ MNE
Piqqiq	96-509	Summer/Fall	Type 2 Bone Repository-covered with rocks	333	117	2.85
Piqqiq	96-510	Summer/Fall	Type 2 Bone Repository—covered with rocks	59	19	3.11
Piqqiq	96-511	Summer/Fall	Type 2 Bone Repository—covered with rocks	24	7	3.43
Piqqiq	96-588	Summer/Fall	Type 1 Bone Repository—under boulder	556	211	2.64
Piqqiq	96-589	Summer/Fall	Type 1 Bone Repository—under boulder	89	39	2.28
Auksiivik	97-152	Spring	Cache—mainly vertebrae and sterna	465	365	1.27
Auksiivik	97-155	Spring	Cache—mainly long bones	278	230	1.21
Auksiivik	97-160	Spring	Cache—mainly skulls and mandibles	612	256	2.39
Auksiivik	97-189	Spring	Surface scatter near tent ring	1234	n/a	n/a
Pipqa'naaqtalik	97-245	Spring	Cache—large	2425	1744	1.39
Akunni'tuaq	96-316	Spring	Surface scatter near hunting blind	199	n/a	n/a

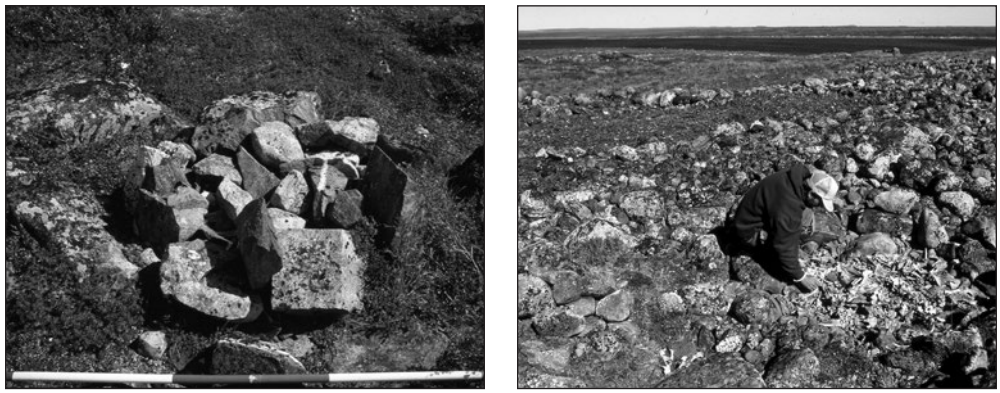
Note: NISP is the total number of complete or partial specimens; MNE is the minimum number of complete elements represented in the sample.

were Type 2 cobble constructions (Features 96-509, -510, and -511). Sample sizes varied. Three were quite small, ranging from 24 to 89 specimens, while the other two were larger, at 333 and 556 specimens.

To understand these features further, several aspects of the caribou bone samples were quantified. As a first measure of potential differences between the contents of bone repositories and caches, we quantified bone fragmentation, which provides an approximation of the degree to which individual bone elements have been broken up. A simple fragmentation index was calculated, consisting of the total number of identified specimens (NISP) divided by the Minimum Number of Elements (MNE) (see Table 3). With this measure, an assemblage consisting entirely of unbroken complete elements will have a value of 1.0, with higher values indicating greater fragmentation.

Most fall caches we encountered consist of complete or near-complete whole skeletons (Friesen and Stewart 2013) and, therefore, would produce fragmentation indices of 1.0 or only slightly higher. Such values would match our expectation, since they would be significantly less fragmented than the bone repository indices calculated in Table 3. However, a more useful comparison is with caches consisting of more heavily processed and butchered caribou body portions. While we do not have appropriate caches from fall sites, we do have four caches from spring sites: three from Auksiivik and one from Pipqa'naaqtalik (Figure 5a, b). Figure 6 illustrates the fragmentation indices for the five bone repositories compared with the four caches. Fragmentation rates for the bone repositories range from 2.28 to 3.43, while those for the caches range from 1.21 to 2.39. The repositories are, on average, almost twice as fragmented as the caches. Note that one of the caches, Auksiivik Feature 97-160, is an outlier with almost double the fragmentation of the other caches. This feature is unusual in containing a high frequency of caribou heads (crania and mandibles), combined with an array of other bones, many of which are broken. It is possible that our earlier interpretation of this feature as a cache (Friesen and Stewart 2013) is incorrect, and that it is, in fact, a bone repository. Regardless, the overall pattern is consistent with the interpretation that the repositories were created after the bones had been processed more thoroughly, compared to bones in the caches.

Caribou bone samples from the five repositories at Piqqiq were also analyzed for body part representation to search for any patterning of elements (e.g., mandibles, ribs) in terms of their frequency distribution (i.e., to reveal whether any elements were more or less common). Minimum Animal Units (MAU) were calculated by dividing the MNE in each category by the number occurring in a complete caribou skeleton. This standardizes the numbers so that the frequencies of all element categories are equivalent. The MAU for each bone repository is then divided by the most frequently occurring MAU, and multiplied by 100, to give a percent MAU, which allows different samples to be compared with each other on a scale of 0 to 100 (Figure 7).



(a) (b)

Figure 5. Two of four meat caches from which bones were recovered and analyzed for this study: (a) Feature 97-160 at Auksiivik before opening and collection; and (b) Feature 97-245 at Pipqa'naaqtalik after it was opened, showing Max Friesen collecting the bone.

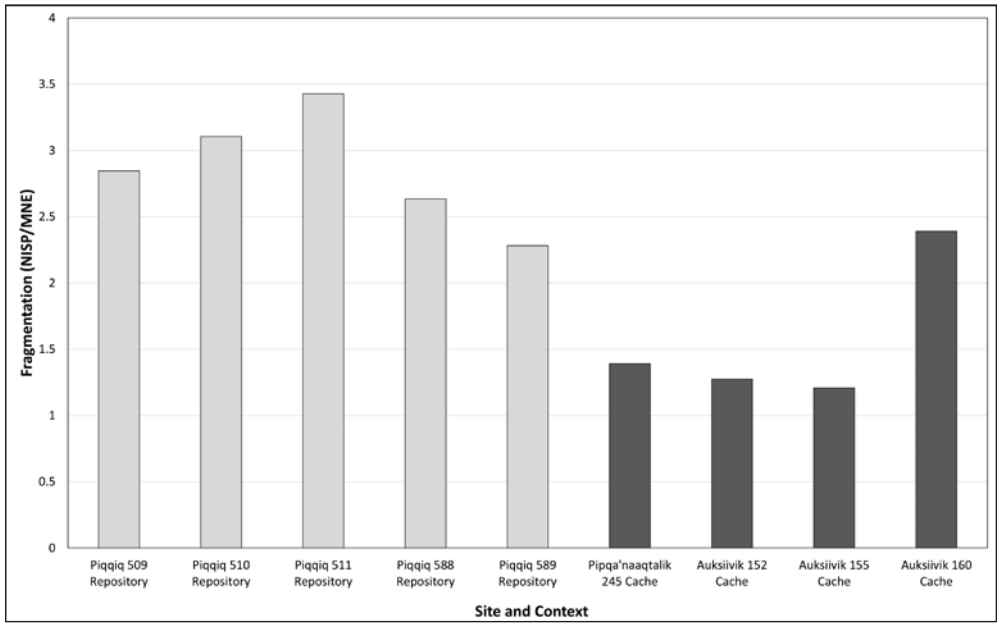


Figure 6. Fragmentation frequencies for bone repositories and caches.

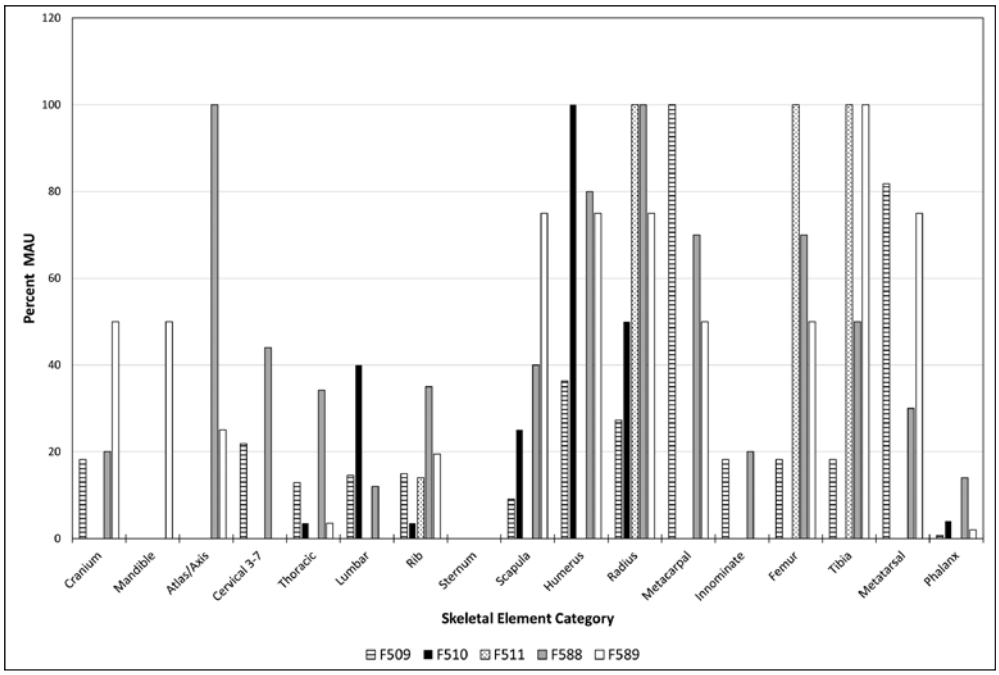


Figure 7. Element distributions for the five bone repositories from Piqqiq.

The five bone repositories at Piqqiq vary significantly in terms of percent MAU (Figure 7), though there is a general tendency for long bones to be common relative to axial elements. These values were assessed against the bone density index "BMD_2" (Lam, Chen, and Pearson 1999). Density is a proxy for the ability of bone to survive taphonomic factors, which destroy bone, with denser bone being more resilient. For all five bone repositories, the element distributions are positively correlated with the density index, though in only one case is this statistically significant (F589). This positive correlation with density indicates the likelihood that the elements in all five repositories have been subjected to taphonomic processes that destroy bone. This outcome is to be expected given that many of these features likely represent ongoing site maintenance. The bones within them may, in many cases, have been exposed for some time on the surface before ending up in these repositories. This could result from instances in which bone was not immediately placed in repositories, but rather was periodically cleaned from the site's surface. Alternatively, given that Piqqiq was occupied during the fall, in some cases bones might have been covered with snow and thereby temporarily lost—to be collected and deposited in repositories only the following late summer/early fall when the site was reoccupied.

The element frequencies, expressed as Minimum Animal Units, were also compared to other indices that measure the relationship between element

frequencies and food utility, meat drying, and marrow acquisition (see Friesen and Stewart 2013 for details on these indices). Three of the repositories (F509, F510, and F589) are significantly negatively correlated with the Meat Drying Index. We suspect, however, that this correlation is mainly due to the complex negative relationship between the Meat Drying Index and bone density (Friesen and Stewart 2013, 97–98), and that this pattern actually results mainly from the above-mentioned density effect. In one case (F589), the bone frequencies are significantly positively correlated with the Unsaturated Marrow Index, possibly resulting from the incorporation of bone fragments after processing for marrow. Overall, we consider the element frequency patterns to be somewhat ambiguous but suspect that they have been impacted by density mediation following butchery and consumption at Piqqiq.

A final question we can ask of these assemblages is, were these bone repositories actually effective in protecting the bones from being impacted by processes that could offend the caribou? One partial test is to compare the frequency of animal gnawing on bones from these contexts with other bone samples from uncovered contexts on the site surface. Our bone repository samples are all from fall sites and, unfortunately, we did not collect any surface samples from these sites. We did, however, collect surface samples from two spring sites: Auksiivik and Akunni'tuaq (Figure 8a, b). These samples were then compared to the bone repositories. The results make clear that that bone repositories did discourage animal gnawing of bones (Figure 9). While all five sampled repositories contained some evidence for gnawing, the frequency ranged from 0.9 to 12.5 percent, with the highest frequency (Piqqiq Feature 96-511) being on a very small sample. In contrast, the two surface collections from spring sites showed much higher levels of gnawed bones, at 25.2 and 35.8 percent.

(a) (b)

Figure 8. Scattered surface bone collected at two sites: (a) Auksiivik, associated with or near Feature 97-189; and (b) Akunni'tuaq, associated with Feature 96-316.

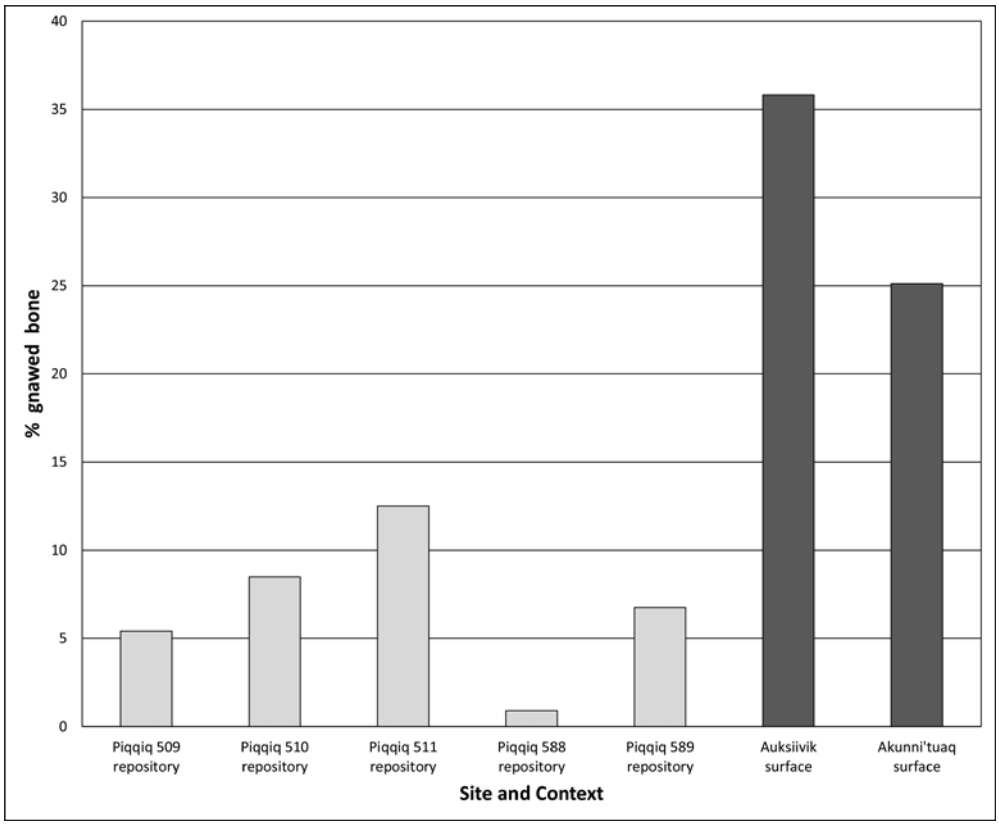


Figure 9. Frequency of gnawing evidence on caribou bones from repositories and two surface-collected samples. The five repositories are from the fall caribou crossing of Piqqiq; the two surface collections are from spring sites.

Even more surprising than these high percentages is the fact that many of the bones appear to have been gnawed by caribou, not carnivores. Herbivores such as caribou are known to chew bone for phosphorus and calcium, and leave gnaw marks that, when well preserved, can be distinguished from carnivore marks (Hutson, Burke, and Haynes 2013). However, evidence for this behaviour is rare on archaeological sites. Within our study area on the Kazan River, the frequent caribou-gnawing of bone likely results from the fact that sites are traversed by large numbers of caribou in the spring, when bulls growing antlers and pregnant cows require large amounts of the nutrients necessary for antler and foetal bone growth.

Conclusion

These studies of the bones contained within bone repositories have convinced us that the patterned activities surrounding respectful treatment of bones after

their consumption are robust enough that they leave an archaeological signature. Because of the similarities among several types of features containing caribou bone, evidence for intentional bone deposition will often be masked or otherwise difficult to see. In fact, we readily admit that we may not always have inferred the function of these various features correctly, though we are satisfied that the overall pattern is clear. Closely related sets of activities, beliefs, and archaeological remains have been reported by Stenton (2001), who also notes several other archaeological cases where the same phenomenon might be at play. To this, we can add the possibility that the "waste-disposal area below an overhanging rock" reported by Pasda (2014, Figure 18) in West Greenland may also be connected, though it is not described in detail. In fact, this is probably a widespread phenomenon that is underreported due to a combination of often poor archaeological visibility, and the fact that it is almost by definition ambiguous, intergrading with other storage and disposal activities.

We have presented these bone repositories as a separate category of feature, but recognize that in the day-to-day lives of Inuit, relationships with caribou were complex and impacted every activity, not just bone deposition. From an archaeological perspective, though, repositories do stand out. They are a rare example of archaeological evidence resulting from actions driven primarily by the perception of a metaphysical world. The apparent paradox of bone repositories and scattered (uncovered) bone occurring together within sites such as Auksiivik and Akunni'tuaq may not be so great when one considers that the risk (of giving offence) varied with the specific activities occurring during each episode of the site's use. For instance, if a child was about to be born during one occupation, or if there was need to disturb the earth or build with stone, at the same time that caribou were approaching an adjacent river crossing, these circumstances, and others, might have increased the risk of violating rules, requiring more careful treatment of caribou bone in repositories.

Together, these studies reveal a cultural landscape in which the relationship between human beings and caribou is omnipresent. Under usual circumstances, it is easier for the archaeologist to see a more purely economic landscape, as evident in features relating to hunting (caribou drive systems and hunting blinds), food preparation (marrow breakage areas), and storage (caches). This is not, however, the whole story; nor does it accurately represent the behaviour and position of Inuit on the land. Instead, the landscape as a whole represents an entangled network of relationships between people, animals, inanimate objects, and places, together with their respective *inuat*, bound together by social, economic, and cosmological ties. As people travelled across the tundra, they would be aware of constantly passing bones, both visible and hidden under boulders or piles of rocks, or in cracks in the bedrock. These bone deposits were a physical manifestation of the relationship of mutual regard between two interdependent beings: caribou and people. The high stakes involved in this relationship are captured in the words of Ivaluardjuk, as told to Knud Rasmussen

(1929, 56): "The greatest peril of life lies in the fact that human food consists entirely of souls. All the creatures that we have to kill and eat, all those that we have to strike down and destroy to make clothes for ourselves, have souls, like we have, souls that do not perish with the body, and which must therefore be propitiated lest they should revenge themselves on us for taking their bodies."

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