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Prehistoric Neoeskimo Komatiks, Victoria Island, Arctic Canada

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ABSTRACT. The remains of five prehistoric Neoeskimo sleds—komatiks—were located during extensive ground surveys over several hundred square kilometres on the Wollaston Peninsula, western Victoria Island, Arctic Canada. The radiocarbon dates obtained on the remains range from 790 to 300 BP (cal. 700 – 377), which places the sleds within the Thule and Intermediate Copper Eskimo Period. Structurally, these sleds are similar to historic Copper Inuit and Netsilik Inuit sleds: they have wooden runners with lashing and front trace holes, wooden slats tapered at each end with lashing notches on each side, and antler sled shoes with drilled holes to receive pegs for attaching to the runners. However, the sleds range in length from 1.38 to 1.81 m, and thus are at the smaller end of the size range of historic Inuit sleds. The size suggests either that they represent special function sleds used in addition to larger sleds, or that larger sleds may have been a late historic development, perhaps influenced by contact. The fact that no sleds attributable to Paleoeskimo culture were recorded is consistent with the generally held belief that dogs and sleds were not an important part of Paleoeskimo transportation systems.

Key words: Neoeskimo, Thule, sleds, komatiks, radiocarbon dates, Victoria Island

RÉSUMÉ. Les vestiges matériels de cinq traîneaux néo-esquimaux – komatiks – ont été localisés lors de travaux de sondages effectués sur plusieurs centaines de kilomètres carrés sur la péninsule Wollaston, île Victoria de l'Ouest, dans l'Arctique canadien. Des dates au carbone 14 ont été obtenues et se situent dans l'intervalle de 790 – 300 BP (cal. 700 – 377), les associant aux périodes thuléenne et intermédiaire des Inuit du cuivre. Architecturalement, ces traîneaux sont similaires aux traîneaux historiques des Inuits du cuivre et Netsilik : ils ont des patins en bois munis de perforations pour y fixer les traverses et les laisses de chiens. Les traverses, également de bois, sont bordées d'encoches latérales. Leurs patins sont chaussés d'andouillers de caribou fixés à l'aide de chevilles et de perforations forées. Toutefois, la longueur des traîneaux oscille entre 1,38 et 1,81 mètre, les plaçant dans la limite dimensionnelle inférieure des traîneaux inuits historiques. Ceci suggère une fonction particulière pour ces petits traîneaux, éventuellement complémentaire à des modèles plus longs. Autrement, les grands traîneaux sont peut-être le fruit d'un développement historique tardif, notamment lié à des contacts extérieurs. Aucun traîneau attribuable aux cultures paléo-esquimaudes n'a été trouvé, ce qui est en accord avec la croyance générale que de tels objets et les chiens qui y sont associés n'occupaient pas une place importante dans les systèmes de transport de ces groupes.

Mots clés : néo-esquimau, Thulé, traîneaux, komatiks, dates au carbone 14, île Victoria

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INTRODUCTION

In this paper we present the results of our investigations in 1998 – 2001 of prehistoric komatiks located during extensive surveys on Wollaston Peninsula, southwest Victoria Island, Northwest Territories and Nunavut. We report radiocarbon dates on the komatik wood and measurements of komatik dimensions, the first available for prehistoric sleds in the Arctic. We then comment on the significance of both sets of data.

The dog traction/sled combination is one of the defining characteristics of historic Inuit culture throughout the Arctic regions. Sleds (*komatik* in Inuktitut) were traditionally made of wood or whale bone. However, inventiveness in fashioning sleds in wood- and whale bone – impoverished regions is among the best known traits of Inuit, especially the Netsilik Inuit, who often made sleds from frozen fish wrapped in seal skins (Ross, 1835:546; M'Clintock, 1859:212, 233) and even from freshwater ice (Ross, 1835: 532). Prehistoric Thule Inuit, the direct ancestors of all historic Inuit groups throughout Canada and Greenland, brought this form of transportation with them from Alaska during the Thule migration approximately 800 to 1000 years ago (Thule and their Inuit descendants are collectively referred to as Neoeskimos). Indeed, Mathiassen (1927), the first to identify and define Thule culture, included dog

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sleds as a key defining trait. Evidence for dog traction and sleds is widespread at Thule sites, not only in abundant dog remains (some with pathologies consistent with dog-team discipline; e.g., Park, 1987), but also in the presence of artifacts such as tackle and harness pieces, cross slats, sled shoes, dog whips, and occasional sled runners (see summaries in Maxwell, 1985; McGhee, 1996), as well as toy sleds (e.g., Holtved, 1944; Collins, 1952; McGhee, 1984).

The case for Paleoeskimo dog traction, on the other hand, is so unconvincing that it is generally believed that the Dorset and probably the Pre-Dorset lacked dogs, and what few dogs they kept are thought to have been used for hunting or as pack animals, rather than for traction (Arnold, 1979; Gotfredsen, 1996; McGhee, 1996; see especially the review by Morey and Aaris-Sørensen, 2002). Likewise, although sled cross slats, sled shoes, runner fragments, and toy sleds have been reported from several Dorset sites (e.g., McGhee, 1969; Mary-Rousselière, 1979; Maxwell, 1985), these artifacts are rare, and the sleds are generally believed to have been hand-drawn.

During the course of surveys of raised beaches on Victoria Island (inhabited by Copper Inuit during the historic period) we recorded several relict komatiks. In four summer field seasons (1998–2001) totaling 11 weeks, we traversed raised beach terrains on southwestern and western parts of the island, intensively searching hundreds of square kilometres for driftwood (Dyke and Savelle, 2000), sea mammal remains (Dyke and Savelle, 2001), and archaeological features (Savelle and Dyke, 2002; Savelle et al., 2012).

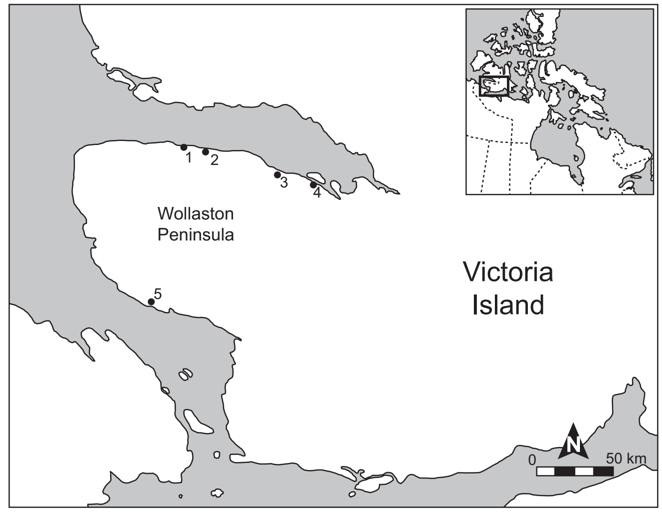

FIG. 1. Locations of the five dated prehistoric Neoeskimo komatiks on Wollaston Peninsula, Victoria Island, Arctic Canada. 1 – ObPk-5; 2 – ObPk-11; 3 – ObPf-3; 4 – ObPd-10; 5 – NhPk-9.

RESULTS

Site Contexts and Radiocarbon Dates

On Wollaston Peninsula, Victoria Island, we located the remains of five wooden komatiks: one in the Innirit Hills area on the south coast in 1999 and four along the coast of Prince Albert Sound in 2000 (Fig. 1). All were incomplete, entirely disarticulated, and strewn over areas of up to approximately 10 × 10 m. Although highly weathered, the wood retained the overall shapes of sled runners (planks with upward shaped ends and lashing holes) and cross slats. These pieces were reasonably complete in that they retained at least part of the cut ends and sides. All the wood was on the surface of unvegetated to moderately vegetated beach gravel, evidently scattered by wind, and much of it was in an advanced state of disintegration (see e.g., Figs. 2 and 3). Some of the komatik remains were found in the vicinity of dwelling features of probable Neoeskimo age. For example, ObPd-10 is beside a tent ring, and a scatter of "kindling" there may represent parts of the disabled komatik that were intended to be burnt. Another (ObPk-11) occurred beside an isolated Paleoeskimo hearth, which judging from the radiocarbon date on the komatik is a mere coincidence, and yet another (ObPf-3) occurred beside boulder meat caches of probable Thule age. NhPk-9 is an isolated find located about 1 km west of what for this region is a major Thule occupation site (NhPk-2), though not a winter habitation. All these remains give the impression that they might have been abandoned by their owners upon being broken en route, or perhaps cached but never retrieved; in this regard, all occur from several hundred metres to more than 1 km inland. Another possibility is that they had been left beside "surface burials": Stefansson (1929:111) noted in the Cape Parry area "…many graves, and beside them broken sledges upon which the bodies had been hauled to the graveyard, as well as property which the relatives of the dead had left there." However, we found no grave goods or human remains in association with the komatiks.

Beyond the advanced state of weathering of the wood and the lack of European material (e.g., nails or rope), there was nothing to suggest whether the sleds had once belonged to historic Copper Inuit, to prehistoric Copper Inuit of the "Intermediate Period" (ca. AD 1600 to 1771) defined by McGhee (1972), to their Thule ancestors, or to earlier Paleoeskimo people. Consequently we collected small samples of wood for radiocarbon dating, selecting relatively solid parts along the edges of larger pieces to avoid as far as possible the dating of deep interior wood. Weathered surface wood and discoloured or crumbly wood were removed from these samples before dating.

Given that locally available driftwood is fairly abundant, all of the komatik wood may have been derived from that source. During the early historic period, on the other hand, Copper Inuit, including those from Victoria Island, made periodic (perhaps annual) trips to the vicinity of the tree line in the Coppermine River drainage to procure wood for sled construction and other purposes (Stefansson, 1929:230). We realize that any date on driftwood will provide a maximum date on the object made from that wood. However, because we dated wood close to the former tree surface, and considering that wood on the ground in this region deteriorates, at least from a "carpentry" perspective,

FIG. 2. ObPk-5: Scatter of cross slats and sled shoes. Wood cross slat dated at 620 ± 50 BP.

FIG. 3. ObPk-11: Scatter of two runners, six cross slats and two sled shoes. Wood cross slat dated to 790 ± 50 BP.

quite rapidly (Dyke and Savelle, 2000), we feel that the dates will be only decades, rather than centuries, too old. In that regard, the dates are no less accurate than charcoal dates from boreal regions; indeed, they are better controlled for within-tree provenance. Stefansson (1929:171) inferred from numerous pieces of adzed driftwood along a beach on the mainland shore in Copper Inuit territory that they "… had been testing the pieces of wood to see if they were sound enough to become the materials for sledges or other things they had wished to fashion. Those pieces which had but one or two adze marks had been found unsound. In a few places, piles of chips showed that a sound piece had been roughed down there to make it lighter to carry away."

All five samples were identified from cell anatomy as spruce (*Picea* sp.), the result expected from the colour and ring width, from the predominance of spruce within the considerable abundance of Mackenzie River driftwood that accumulates on the beaches of this region (Dyke and Savelle, 2000), and from its dominance near the tree line in the Coppermine River region. And all samples returned dates that fit comfortably within the time range of either the Thule culture in the Canadian Arctic or the prehistoric Copper Inuit, ranging from 790 – 300 BP (700 – 377 calibrated years BP; Table 1). The komatik dates are also within the range of dates on caribou and muskox bones from Neoeskimo sites in the region (Le Mouël and Le Mouël, 2002; Savelle et al., 2012).

Komatik Descriptions

Each komatik is described below, and dimensions of individual pieces are indicated in Table 2. Note that the thickness of individual pieces varied as a result of the extreme weathering, but generally ranged from 3 to 5 cm at the thickest point.

ObPk-5: Six cross slats and four pieces of sled shoe fashioned from caribou antler (Fig. 2) occur here (Table 2). The slats in this and the other komatiks are tapered on each end to about 1/3 to 1/2 of the maximum width. They have very slight lashing notches and indicate a deck about 58 cm wide. The drilled holes in the shoes indicate that they were pegged to the runners (there is no channel between holes to accommodate a line). The antler sled shoe fragment reported by McGhee (1972) from a late prehistoric site had a bone rivet in one of its drilled holes. The assemblage from ObPk-5 indicates that this shodding style stems from Early Thule time.

ObPk-11: Six cross slats, two runners, and two antler shoe pieces, indicating a sled about 60 cm wide and at least 157 cm long, with eight or more cross slats placed about 23 cm apart (Figs. 3 – 5). Associated with these remains were a possible antler knife handle measuring 30 × 3.5 cm, and a composite antler snow knife measuring 37.5 × 6.5 cm (Fig. 5).

ObPf-3: Five cross slats and two runners, indicating a sled about 61 cm wide and at least 145 cm long, with eight or more cross slats (Fig. 6).

ObPd-10: A runner, indicating a sled at least 139 cm long with seven or more cross slats (Fig. 7). The hole near the bottom of the runner was likely for harness attachment.

NhPk-9: Two runners and five cross slats, indicating a sled about 73 cm wide and at least 181 cm long, with 10 or more cross slats (Fig. 8).

This last sled, the youngest of those dated, is also the largest. The earlier sleds appear to have been 140 to 160 cm long and about 60 cm wide, with about eight cross slats. All wood used was "milled" (split and adzed?) from round driftwood logs as much as 16 – 20 cm in diameter (runner widths) into reasonably equi-dimensional sizes and similar shapes. Given the twisty grain of many spruce logs, obvious in many barkless logs on the beach today, the splitting of long straight runners, even if less than 2 m long, would have required careful searching for straight-grained logs or very extensive adzing of twisty-grained logs. Similarly, runner shodding with uniformly shaped caribou antler 3 – 4 cm wide, a few millimetres thick, and 3 to 4 m of it per sled, drilled and furnished with bone pegs, must have represented a large investment of time. Otherwise, construction

TABLE 1. Radiocarbon dates on Neoeskimo komatiks, southwestern Victoria Island. GSC dates are unconventionally reported with 2-sigma error terms.

Lab code	^{14}C Age (BP)	Elevation (m)	Material	Calib 6.0 (BP) 2-sigma range
GSC-6576 (ObPk-5)	620 ± 50	14.5	*Picea* sp. cross slat	552–657
GSC-6577 (ObPk-11)	790 ± 50	24	*Picea* sp. cross slat	675–736
GSC-6578 (ObPf-3)	580 ± 60	9	*Picea* sp. runner	533–649
GSC-6579 (ObPd-10)	630 ± 50	10	*Picea* sp. runner	554–662
GSC-6580 (NhPk-9)	300 ± 50	5–10	*Picea* sp. runner	299–455

TABLE 2. Dimensions of komatik pieces.

Site	Piece	Length (cm)	Width (cm)	No. holes & type
ObPk-5	Antler shoe	30.5	3.5	7 drilled
	Antler shoe	25.5	2.5	4 drilled
	Antler shoe	13.0	2.8	4 drilled
	Antler shoe	13.5	5.0	5 drilled
	Cross slat	57.0	4.5	
	Cross slat	56.0	6.5	
	Cross slat	56.0	5.5	
	Cross slat	58.0	5.0	
	Cross slat	53.0	6.5	
	Cross slat	49.0	2.5 (incomplete)	
ObPk-11	Antler shoe	38.5	4.0	6 drilled
	Antler shoe	54.0	4.0	6 drilled
	Runner	157.0	16.0 (widest remaining)	7 lashing (closed), 1 lashing (open)
	Runner	150.0	18.0 (widest remaining)	8 lashing
	Cross slat	59.5	6.5	
	Cross slat	59.0	4.5	
	Cross slat	59.5	8.0	
	Cross slat	59.5	9.5	
	Cross slat	57.0	8.0	
	Cross slat	57.0	6.0	
ObPf-3	Runner	145.0	15.0	4 lashing
	Runner	138.0	10.0 (widest remaining)	8 lashing
	Cross slat	61.0	9.2	
	Cross slat	61.0	4.5	
	Cross slat	61.0	4.5	
	Cross slat	53.5 (partial)	5.0	
	Cross slat	56.0	7.5	
ObPd-10	Runner	139.0	12.0	7 lashing (top); 1 lashing (bottom, front)
NhPk-9	Runner (longer of two)	181.0	16.0	10 lashing (gouged rectangular)
	Cross slat	70.0		
	Cross slat	69.5		
	Cross slat	67.5		
	Cross slat	70.5		
	Cross slat	73.0		

was of the simplest possible form: the runners were simply tapered upward at the front ends, without any further upward extensions, as seen in more elaborate komatiks and toboggans. Lashing of cross slats to the runners provided as much rigidity and strength as needed, while remaining flexible; the technique is still used today in komatiks pulled by snowmobiles. Evidence of handles at the back for steering and braking is entirely lacking. Antler handles such as those illustrated by Boas (1888:529) may have been used, but none were recognized at the sites reported here, and they have not been reported for historic Copper Inuit (Jenness, 1946) or the neighbouring Netsilik Inuit (Taylor, 1974).

DISCUSSION

Wooden komatik remains are rare in archaeological sites of the Canadian Arctic. We are aware of only two others. The first is a komatik observed by Savelle in 1995 at Cape Stang, northeastern Victoria Island, during paleontological surveys there. Its condition was very similar to that of the Wollaston Peninsula komatiks (highly weathered, scattered), and associated artifacts indicated a probable prehistoric Neoeskimo affiliation, but no sample was taken for dating purposes. The runners measured 220 × 11 × 4 cm and 210 × 11 × 5 cm, the longest with eight lashing slots for cross slats and the first and last slots double (Fig. 9). The one cross slat observed measured 67 × 8.5 × 2.5 cm. The second komatik, collected by Yorga (1973) from a Thule grave site (PcJq-3) at Cape Garry, southeastern Somerset

FIG. 4. ObPk-11: Close-up of sled runner, cross slats, and sled shoe with drilled holes. Note the tapering and slight notching on the ends of the cross slats. Camera lens cap provides scale.

FIG. 7. ObPd-10: Sled runner dated to 630 ± 50 BP.

FIG. 5. ObPk-11: Composite snow knife found in association with komatik remains. Each notebook underneath the knife measures 20.5 × 12.0 cm.

FIG. 8. NhPk-9: Two sled runners and one of the five cross slats at this site. The larger of the two runners dates to 300 ± 50 BP.

FIG. 6. ObPf-3: One of two sled runners at this site, dated to 580 ± 60 BP.

FIG. 9. Neoeskimo sled runner observed at Cape Stang, northeastern Victoria Island.

Island, consists of two runners manufactured from whale bone, one 86.7 × 9 × 3 cm and the other 90 × 10.7 × 4.6 cm, with four lashing holes. Thule culture in this area dates to approximately 700 – 400 BP (McGhee, 2009; J.M. Savelle and A.S. Dyke, unpubl. data).

Otherwise, Stefansson (1929:337) in 1911 noted "numerous fragments of sledges all the way from Crocker River west…" along the mainland coast. However, we found only five sites with such remains in our surveys of western Victoria Island, despite recording hundreds of archaeological sites. Furthermore, we found no such remains in equally extensive archaeological surveys farther east although archaeological sites are abundant there as well (Savelle and Dyke, 2009; Dyke and Savelle, 2009; Savelle et al., 2009; Dyke et al., 2011). And no other direct radiocarbon dates are reported on komatiks in Arctic Canada in the Canadian Archaeological Radiocarbon Database (to 2005), indicating presumably that complete or nearly complete archaeological Neoeskimo komatiks are generally rare, if not unique. Within areas that we have surveyed, with the exception of the Cape Stang komatik, the apparent limitation of komatik remains to southwestern Victoria Island can reasonably be attributed to the far greater abundance of driftwood, especially large logs, in that region than elsewhere. It was perhaps only there that a broken komatik would have been ignored, rather than being repaired or the wood reused for other purposes (although the absence of sled runners at komatik ObPk-5 would suggest that at least in that instance runners were retrieved). On the other hand, and despite the relative abundance of wood there compared to regions farther east, Jenness (1922) indicates that wood was highly valued because of short supply historically. It is therefore more probable that circumstances or spiritual taboos (if associated with burials) prevented retrieval of cached sleds than that these sources of already shaped wood were ignored in subsequent encounters.

Nevertheless, it is also significant that all of the komatiks found on southwestern Victoria date to Thule and prehistoric Copper Eskimo time. This fact is all the more remarkable when we consider that no Neoeskimo winter village is found within the entire region of komatik distribution, that even Neoeskimo summer occupation sites are small and rare there, and that Paleoeskimo sites are exceeding abundant. Furthermore, driftwood has been arriving in the region in fair abundance since earliest Paleoeskimo time (Dyke and Savelle, 2000). Therefore, the lack of Paleoeskimo (especially Late Paleoeskimo) sleds indicates either lack of use or lack of preservation. Given that Paleoeskimo lingered fairly late in this region (Savelle et al., 2012), lack of preservation is an unconvincing explanation. It is more probable the Paleoeskimos in this region relied little (or not at all) on sleds, even hand-drawn sleds. As noted by Morey and Aaris-Sørensen (2002:52), "team sledding became important only in the context of a lifeway centered heavily on maximization of multi-seasonal group mobility and efficient response to different resource targets over extensive territory"—that is, a Neoeskimo lifeway—and Paleoeskimo lifeways appear to have lacked the security and organization for such logistically organized responses (see e.g., McGhee, 1996).

The sleds documented here from the region of the Copper Inuit are smaller than those reported for the region historically, although they are within the range that Boas (1888) reported to be in use in the eastern Canadian Arctic during the late 19th century, which ranged from about 5 feet (1.52 m) to 15 feet (4.58 m). Stefansson (1929:337), for example, noted that "…the long sleds now in use on Victoria Island and Coronation Gulf and everywhere to the eastward to King William Island and beyond" were 12 to 20 feet (3.66–6.1 m) long, and Jenness (1946:136) reported that the average Copper Eskimo sled length was 14 to 15 feet (4.2–4.6 m). However, Jenness also noted the use of sleds "under 10 feet in length [that] served for short trips only, for transporting goods to and from the cache [and] for relieving the main sled of part of its load" (Jenness, 1946:136). The small sleds we report here, which are isolated and well away from the coast, would be consistent with the latter use, i.e., for ancillary loads related to caching or small hunting parties, or both.

On the other hand, presumably sled length was related to the number of dogs available for teams to pull each sled. Dog team maintenance is (or was) a considerable expense. Smith (1991:383–384), for example, estimated that a dog team of seven would consume approximately 2850 kg of meat and fat annually, requiring approximately 1500 hours in Inuit provisioning time (this estimate does not include specialized dog equipment maintenance, feeding, medical attention, or staking). This is a substantial annual investment, and the larger sleds described by Jenness and Stefansson may have been possible only after the establishment of missions and fur trade networks (and corresponding decreasing economic uncertainty) in neighbouring areas (see e.g., Friesen, 2013). In this regard, Damas (1984:406) notes that among the Copper Eskimo, "[i]n the early period when only a few dogs were affordable, husband and wife helped pull the sled. Later, when more dogs could be fed and kept (because rifles increased productivity), teams of dogs came into use." Balikci (1964:48) reported a similar situation amongst the Netsilik, where dog ownership increased from 1.5 dogs to 3.5 per hunter following the introduction of the rifle. Finally, McGhee (1972:55) remarked on the paucity of artifacts related to dogsledding in Thule sites in the western Canadian Arctic in contrast to the abundance of such items in eastern sites. Although this contrast may reflect a greater proportion of time spent in the west at snow igloo sites on the sea ice, it may equally well reflect the difficulty of obtaining enough extra food to support large dog teams.

Our data, although admittedly a small sample, indicate that prehistoric Neoeskimo sleds in the Copper Inuit territory are in the lower size range of those reported by Boas (1888) for the eastern Arctic and smaller than those reported by Jenness (1946) and Stefansson (1922) for the historic Copper Inuit. Furthermore, such small sleds were in use shortly after Thule colonization of the region, if indeed they were not typical of the first Thule to arrive.

CONCLUSIONS

The five komatiks in archaeological context reported here from the Wollaston Peninsula, southwest Victoria Island, dated from 790–300 BP, are clearly prehistoric Neoeskimo in affiliation, and are the first nearly complete prehistoric komatik "assemblage kits" to be reported in the Canadian Arctic. They were the only sleds located during our surveys of several hundred square kilometres. Paleoeskimo occupations, including those approximately contemporaneous with Neoeskimo, are widespread in these same survey areas. This temporal and geographic distribution of komatiks in our study areas is consistent with previous suggestions that Paleoeskimos probably did not have dog traction or sled technology.

The komatik styles are similar to those of historic Copper Inuit and the neighbouring Netsilik Inuit. Complete parts include wooden runners with upper lashing holes and anterior lower drag line holes, wooden cross slats with tapered ends and lashing grooves, and bone sled shoes with drilled holes for attachment with pegs. Nearly complete komatik runner lengths ranged from 1.39 to 1.81 m, indicating that these komatiks are smaller than most historic Inuit sleds. However, their size is consistent with that of historic special-purpose sleds and very early historic Inuit sleds. The Cape Stang and Creswell Bay prehistoric Neoeskimo komatiks are similarly small (2.20 m and 0.90 m long, respectively). However, because we did not encounter any larger sled sizes, it is also possible that prehistoric Neoeskimos in the western Arctic, including possibly newly arrived Thule from Alaska, may also have been restricted to small sleds.

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