

# The Qorluulasupaluk Site: an important puzzle piece in the interpretation of the Paleo-Inuit cultures in the High Arctic Thule region in northwest Greenland

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## ABSTRACT

The Qorluulasupaluk site is located in Inglefield Fjord, Thule, northwest Greenland. From a matrix in the coastal erosion zone of the site a substantial amount of artefacts typical of early Paleo-Inuit groups has been retrieved. The assemblage documents the presence of Saqqaq, Independence I, Pre Dorset and Greenlandic Dorset groups. With its location in Inglefield Fjord and its substantial inventory of lithics and bone the site is the first to evidence considerable Paleo-Inuit use of the central Thule region not related to the North Water Polynya. The site inventory calls in question former interpretations of the Saqqaq Culture as an occasional visitor at the North Water Polynya in the Smith Sound region (Schledermann 1990) and as being formed in Disko Bay (Sørensen 2012). It documents use of the central Thule region by the Independence I group, the Saqqaq group, the Pre Dorset group, and the Greenlandic Dorset group. Five radiocarbon dates indicate that the site has been in use from c.2200 BC to 200 BC. Four of the dates represent an interval from c.2200-1750 BC. The last date represents the interval c.350-150 BC. The dating of Qorluulasupaluk is compared with new dates from two other Paleo-Inuit sites (Qeqertat and Nuusuarqipaluk) in Inglefield Fjord and are analysed in relation to radiocarbon dates from other Paleo-Inuit sites of the Thule region. It is concluded that the Qorluulasupaluk site contributes to a new understanding of the Thule region's prehistory and that it raises important questions concerning the earliest prehistory in Greenland.

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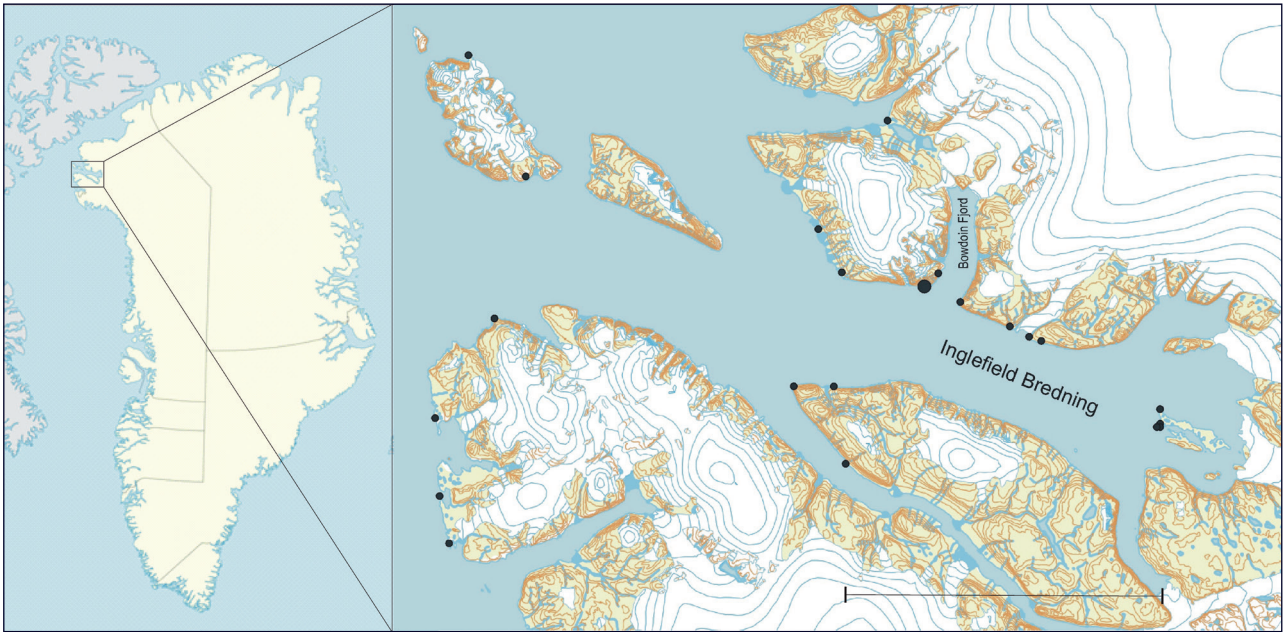
Paleo-Inuit; Thule region; Inglefield Fjord; Independence I; Saqqaq; Pre Dorset; Greenlandic Dorset; North Water Polynya.

## Introduction

In this article, we present an analysis of the Qorluulasupaluk site. The main problems addressed concern the cultural history of the Thule region: what Paleo-Inuit groups employed the site and when the site was in use. These problems are compared and discussed in relation to the Paleo-Inuit prehistory of the region concerning both diachronous questions and spatial/regional use of the area. The artifact material and dating of the Paleo-Inuit habitation are discussed as part of the earliest human use of the Thule region from c.2500-0 BC, and in relation to the human pioneering processes into Greenland. Moreover, we focus on the site location, its ongoing erosion, and its history of archaeological research. Five radiocarbon dates from the site are presented and analysed in relation to the absolute dating of Paleo-Inuit sites and the cultural sequence in the High Arctic, North Water region.

The Qorluulasupaluk site was reported to Thule Museum in 1991 by a local hunter named Masauna Oodaaq from Qaanaaq and was visited and recorded by Thule Museum the same year (Diklev and Madsen 1992, 15). Since 1991 the site has been visited and monitored repeatedly by Thule Museum/T. Diklev due to its erosive situation and its proximity to the museum in Qaanaaq. In 2018 Thule Museum, with the participation of T. Diklev and M. Sørensen, revisited the site to inspect and document it. During visits, artefacts have been collected along the eroded front, and the erosion sediments have also been sieved by T. Diklev. This has led to the largest collection of Paleo-Inuit artefacts made of stone, bone, antler, and tusk from a single site in the Thule region, estimated c.10.000 pieces, and a bone inventory, estimated c.1500 bones/fragments. Finds from the site have been cataloged according to their location (see below) and today constitute the backbone of the Paleo-Inuit culture display of the present exhibition at Avanersuup Katersugaasivia/Thule Museum in Qaanaaq.





**Figure 1.** The central Thule region with recorded Palaeo-Eskimo sites. The large size circle is the Qorluulasupaluk site. Scale is 50 km. After Diklev and Madsen (1992) and Sørensen and Diklev (in prep).

## Site Description

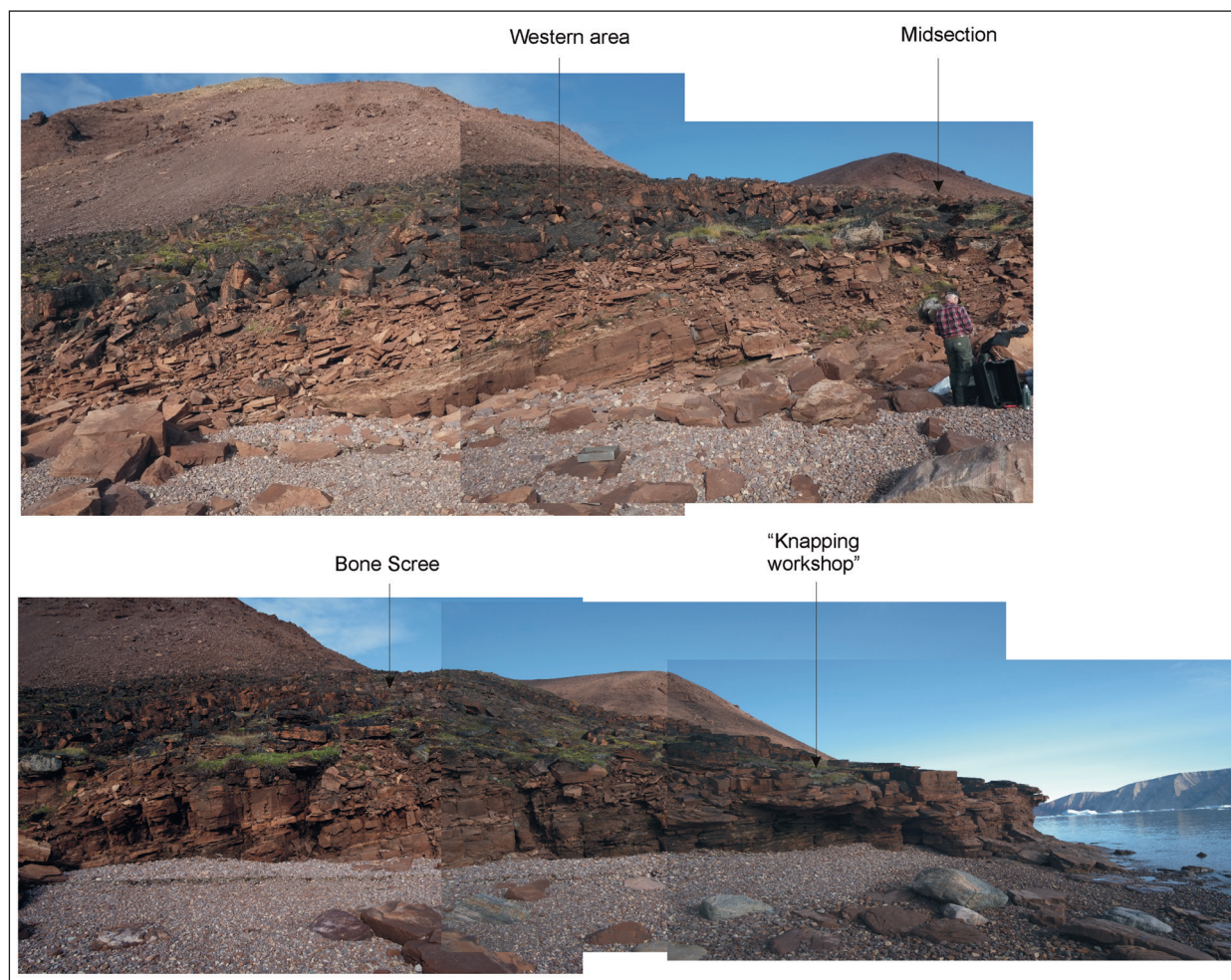
The Qorluulasupaluk site is located on Cape Tyrconnel between Kangerlussuaq/Inglefield Fjord and Kangerluarsuk/Bowdoin Fjord (Figure 1). It is situated along an eroding, low sandstone cliff that is from 2.5–4 m high. In front of this slope is a 4–7 m wide stony beach. On top of the sandstone a slightly sloping terrain with large boulders and some vegetation is seen. It is in this zone the cultural layers appear, from which the artefacts erode. The site area rises towards the west into a mountainous landscape. Thus, it can be imagined that a Paleo-Inuit site was situated on the sloping, uneven terrain on top of the sandstone along the coast. In 1991 and again in 2018 the sloping terrain was searched for prehistoric structures, but apart from some recent fox traps no features have been found.

The site location on the western cape between Inglefield Fjord and Bowdoin Fjord offers a view across Bowdoin Fjord and along Inglefield Fjord where, during spring and summer, marine mammals migrate into the waters near the productive Bowdoin Glacier at the head of Bowdoin Fjord. Due to Bowdoin Fjord's good marine mammal resources the small village Kangerluarsuk, located at the same coast *c.*4 km north of Qorluulasupaluk, was in use until one generation ago.

Artefacts are found in the erosion matrix along a 75 m stretch in mainly four different areas. From the west to the east these are named the “Western Area”, “Midsection”, “Bone Scree”, and “Knapping Workshop”. The Bone scree area contains the most preserved bones. At the eastern end of the beach a sandstone shelf, 3 masl, has been dubbed “The Knapping Workshop” as the overlying sod is full of flakes (Figure 2).

An analysis of the site's inventory in relation to the site area revealed no clear cultural preferences by the Paleo-Inuit cultures for camping and working in specific stretches of the site. In all areas, artefacts from at least three Paleo-Inuit groups have been identified. However, a majority of the Saqqaq artefacts seem to derive from the Midsection and the Western Area while artefacts typical of the Dorset Culture are mostly seen in the eastern area. This spatial distribution of the artefacts is probably best explained if during prehistoric times different Paleo-Inuit groups with different preferences for camping areas visited the site repeatedly. Due to its spatial layout, artifact distribution and taphonomy, the site is interpreted as a palimpsest of many occupations by different Paleo-Inuit groups.

In attempting to define and describe cultural layers, the site stratigraphy was investigated in 1991 and again in 2018 in the Bone Scree where the stratigraphy is most clearly exposed. Howev-



**Figure 2.** The Qorluulasupaluk site documented in 2018 from the beach (Photo and graphics M. Sørensen).

er, the result of these investigations was unable to document a clear stratigraphic profile with definitive cultural layers. Instead, the stratigraphy reveals mixing by sliding/erosion processes in an uneven terrain of sandstone bedrock and soils consisting of eroded sandstone mixed with cultural materials (Figure 3).

The totality and size of the site both spatially and in terms of the quantity of artefacts is difficult to estimate as the site itself has not been excavated and an area of unknown size has eroded into the sea.

**Figure 3.** The matrix in the erosion containing stone artefacts, bones, charcoal and burnt stones. A Saqqaq type burin made from killiaq is seen next to the ruler and bones are seen centrally and to the right. (Photo M. Sørensen).



## Analytical Methods

The cultural interpretation of the inventory from Qorluulasupaluk and the attribution of different Paleo-Inuit cultural groups are based on analyses and conclusions from the project “Technology and Tradition in the Eastern Arctic” (Sørensen 2012). In this project lithic inventories are analysed systematically in a ‘*chaîne opératoire*’ approach. The reductive process of producing lithic tools is sequential in character. Thus, in principle each human action in a lithic production process can be studied through the artifact material. The theoretical background for the methodology and terminology used can be found in the views of Marcel Mauss who stated that ‘[t]here is no technique and no transmission in the absence of tradition’ (1979, 104). Later, these ideas were significantly developed and applied to archaeology by mostly French scholars under the heading *chaîne opératoire* (e.g. Leroi-Gourhan 1964; Lemonnier 1976; Pelegrin 1990; Inizan et al. 1999; Sørensen 2004; Soressi and Geneste 2011). By using the *chaîne opératoire* approach, we aim to study the technological process as cultural transmission that is embedded in the formative principles of every technological complex. This allows us to study the decisions that are manifested in the technological processes of tool production from raw material extraction through use and discard of the end products (Desrosiers and Sørensen 2016). This approach ultimately provides access to the particular quality of cultural reproduction and thereby allows us to describe the knowledge applied in specific technologies. Consequently, it is possible to define prehistoric human traditions and on this basis study human interactions and migrations among regions through the identification of specific traditional knowledge inherent in the material processes studied. The advantage of method, compared to a traditional typological analysis, is that we can identify and compare many more diagnostic material differences than just the morphology of the tools. Examples are; raw material choice, possible heat-treatment, flake products, core products and lithic knapping tools. There are, however, some challenges in employing this methodology to the Paleo-Inuit cultures of the Eastern Arctic. A main challenge is that what we arch-

aeologically define as “cultures”, “cultural groups” or just “groups” are related to and developed from each other in what is defined as “The Arctic Small Tool-tradition” and thereby share technological knowledge<sup>1</sup>. Consequently, in some cases, e.g., when one cultural group is directly ancestral to the other, only few technological choices can separate the cultural groups. Through time, archaeological fieldwork and analysis have demonstrated that the North Water Polynya in the Thule-Ellemer region has attracted no less than six different Paleo-Inuit cultural groups, depending on how these are defined (Grønnow and Sørensen 2006, Schledermann 1990, Sørensen 2012, Sutherland 1996, Darwent et al. 2007). In this article we follow the present definition of cultures of the Eastern High Arctic that constitute: Independence I, Saqqaq, Pre Dorset, Greenlandic Dorset and Late Dorset (Friesen and Mason 2016). However, we also include a Transitional Dorset group, sometimes referred to as Early Dorset (Grønnow and Sørensen 2006). This choice is made to gain the most detailed cultural description of the area in order to analyse the cultural processes in the Thule region as accurately as possible.

The cultural diversity in the Thule region makes it one of the most complicated areas to interpret in the Eastern Arctic. Thus, when a site assemblage as the one from the Qorluulasupaluk has inventories from several Paleo-Inuit groups, it is problematic to subdivide with certainty the assemblage into the specific cultural groups.

One of the main problems in the region concerns the identification of the Pre Dorset cultural group as this group has technological choices and artifact morphologies in common with the Independence I, Saqqaq, Transitional Dorset, and Greenlandic Dorset groups. The best lithic process to discriminate among the groups is the production of burin tools (Schledermann 1990, 344 ff; Desrosiers and Sørensen 2016; Sørensen 2012; Grønnow and Sørensen 2006). Thus, while the Independence I, Saqqaq, and Greenlandic Dorset cultural groups can be identified on several characteristic lithic choices and artifact morphologies in the Qorluulasupaluk assemblage, the Pre Dorset group is attributed solely on its burin ‘*chaîne opératoire*’ and burin morphology. The reason for the similarity between Pre Dorset and Greenlandic

Dorset is that Pre Dorset is ancestral to the Transitional and the Greenlandic Dorset (Ryan 2016). In the Thule/Ellesmere region this is acknowledged by the definition of Early Dorset groups (Schledermann 1990; Grønnow and Sørensen 2006).

A strict count of the artifact inventories attributed to each of the identified Paleo-Inuit groups present at Qorluulasupaluk is not possible as the site is a palimpsest with artefacts mixed in the find context. Instead, an approach is chosen where the different Paleo-Inuit groups are identified qualitatively on criteria that are technologically and typologically diagnostic to each of the groups.

In the following, the identified cultural groups are described by their characteristic inventory.

## Results: Artefacts and cultural Attribution

### *The Independence I Group*

Artefacts and technology typical of the High Arctic Independence I group are identified in the Qorluulasupaluk site assemblage. No precise number of artefacts can be attributed, but several technological choices and artefacts diagnostic to the Independence I tradition can be identified. These are:

- 1) Use of large notches at the lateral sides of bases of scrapers and bifacial knife blades.
- 2) Occasional use of fine serration on projectile

points.

3) Finely worked, stemmed angular bases on weapon (lance) blades often of a heavy quality.

4) Production of large and wide regular microblades (above 9 mm width).

5) Burin technology where primarily microcrystalline quartz (mcq) flakes are used for the production of simple spalled burins without grinding of the faces or other edge modification, and with a simple narrow or minimal base modification.

6) Reduction of large tabular cores maintaining a square cross section.

7) A primary use of fine grained mcq, e.g., from the Ellesmerian Folding<sup>2</sup>.

*Based on these criteria the following artefacts can be attributed to Independence I:*

Notched bases on scrapers:	2	(mcq)
Fine serration of small projectile points:	2	(mcq)
Bifacial endblades with stemmed angular base:	4	(grey mcq)
Large/wide microblades (more than 9 mm width):	5	(grey mcq)
Simple burins without grinding or other edge modifications:	8	(grey mcq)

(Figure 4).



**Figure 4.** Independence I tool types made from grey mcq of the Ellesmerian Folding (Photo M. Sørensen).

## The Saqqaq Group

The Saqqaq group is richly represented in the assemblage. Literally all lithic artefacts, technologies, raw material preferences, and tools typical of the Saqqaq group, as described from the large and numerous Saqqaq inventories from West Greenland (Sørensen 2012; Grønnow 2017), have been found at Qorluulasupaluk. This includes rare artifact types such as ground awls and adzes.

A characteristic feature of the site assemblage is a dominant use of silicified and metamorphosed slate termed killiaq. Large amounts of large bifacial killiaq flakes are struck from large bifacial cores and a characteristic heavy grinding of the platform edges is seen on most of the large flakes. This method is defined at Saqqaq sites in West Greenland as part of the Saqqaq concept of lithic reduction.

*The following artefacts are typical of the Saqqaq group. The count of artefacts includes diagnostic fragments.*

Large bifacial endblades:	37	(killiaq)
Spalled burins with ground faces:	15	(killiaq and mcq)
Arrow points:	15	(killiaq)
Harpoon points:	12	(10 killiaq, 2 mcq)
Fully ground awls:	1	(killiaq)
Beveled point:	1	(killiaq)
Adzes:	2	(killiaq)
Bifacial cores:	2	(killiaq)

(Figure 5).



**Figure 5.** Saqqaq tool types made from killiaq (Photo M. Sørensen).

## The Pre Dorset Group

Attribution of a Pre Dorset group is solely based on burin technology and morphology. Pre Dorset burins are produced by spalling, most often they have a well formed relatively broad base and a thinning of the burin blade by retouch made from the spalled burin edge. Moreover, it is important to notice that all the burins attributed to the Pre Dorset in the Qorluulasupaluk assemblage are made from the characteristic blue-white mcq/flint of the Ellesmerian Folding geologically identified in Washington Land and on southern Ellesmere Island. From previous studies and analyses this raw material is dominating in the Pre Dorset people's lithic technology in the North Water Polynya region e.g., in Ellesmere Island (Schledermann 1990) and at Nuulliit (Sørensen 2010).

*Burins attributed to the Pre Dorset group:*

Spalled burins with broad bases and retouch from the spalled edge: 12 (mcq)  
(Figure 6).

## The Greenlandic Dorset Group

At Qorluulasupaluk the Greenlandic Dorset people are clearly identified by a number of characteristic artefacts and technologies:

- 1) Burin-like tools with fully ground facets and faces made from killiaq materials.
- 2) Microblade cores made from single or dual

**Figure 6.** Burins typical to the Pre Dorset group (Photo M. Sørensen).



**Figure 7.** Greenlandic Dorset tool types made from grey mcq of the Ellesmerian Folding, agate from Siorapaluk, heat-treated chalcedony and killiaq (Photo M. Sørensen).



fronted single platform cores with a characteristic steep platform front angle (*c.*50 degrees).

3) Microblades tanged by gentle retouch of the proximal end.

4) Preference for heat-treating blue/white chalcedony. This material looks milky, shiny and translucent when worked. Most often this material is used for bifacial tools and microblades (Sørensen 2012).

5) Steatite shards from lamps of oval shape (Figure 7 and 8).

Quite a number of stemmed bifacial endblades made from fine grained mcq with large lateral notches (box-bases) typical of the Dorset tradition in Greenland are present in the Qorluulasupaluk assemblage. However, as a similar base morpholo-

gy is attributed to Pre Dorset in Canada this choice of production is not a secure trait for defining the Greenlandic Dorset in the Thule region and at the Qorluulasupaluk site. Found in this context only endblades that are made from heat-treated microcrystalline quartz (e.g., chalcedony) or local materials (e.g., rock crystal), can with certainty be defined as Greenlandic Dorset. Similar bifacial endblades do also appear in Middle Dorset and Late Dorset contexts, but neither of these groups' artifact technologies or typologies have been defined in the inventory of the Qorluulasupaluk site. A similar problem concerns side blades that are diagnostic of Dorset in Greenland, but appear in Pre Dorset contexts in Canada.

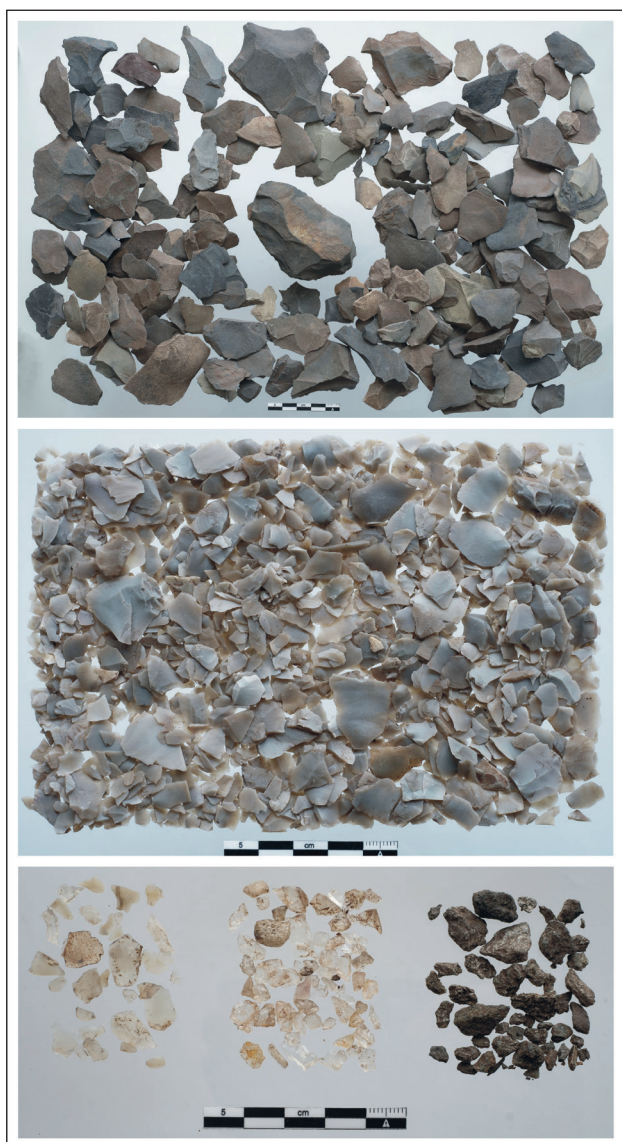
*Artefacts attributed to Greenlandic Dorset: Bifacial mcq endblades include fragments of bases.*

Burin like tools:	6	(killiaq)
Tanged microblades:	15	(grey mcq, chalcedony)
Side blades:	9	(grey mcq, chalcedony)
Bifacial mcq endblades with large notches:	23	(18 grey mcq, 5 chalcedony)
Oval lamp (fragments):	5	(steatite)

(Figure 8).



**Figure 8.** Greenlandic Dorset type oval lamp made from steatite (Photo M. Sørensen).



**Figure 9.** Raw material types from Qorluulasupaluk. Top: killiaq flakes and bifacial core. Central: grey mcq of the Ellesmerian Folding. Bottom: Chalcedony, rock crystal and steatite.

### **The Bone Inventory**

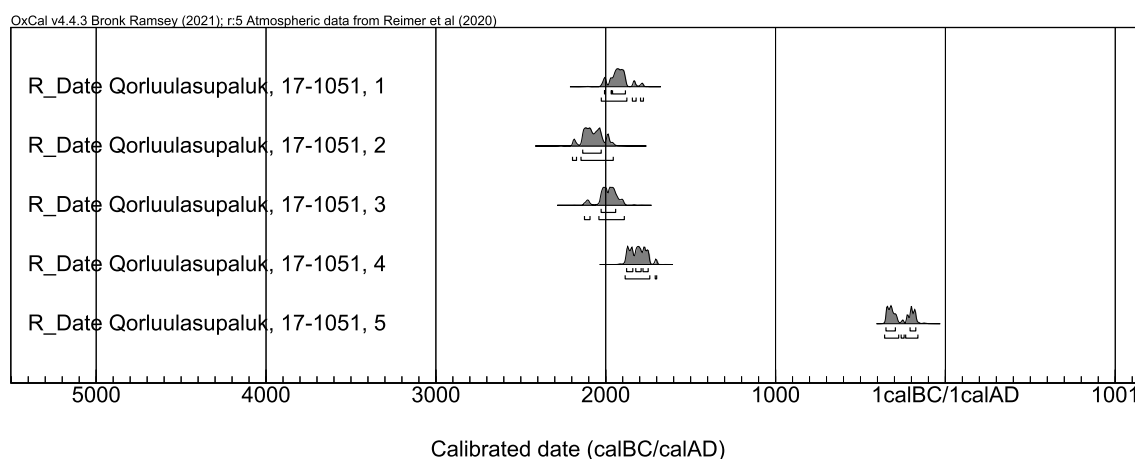
Approximately 1500 bones and bone fragments are collected from the site, mainly from the “Bone Scree” area. Preservation of bone from the early Paleo-Inuit cultures is very rarely seen in the Thule region, while Late Dorset semi-subterranean houses and middens found in permafrost condition have produced a rich bone material when excavated (Appelt and Gulløv 1999; Darwent et al. 2019). As the Qorluulasupaluk site does not yield any cultural material younger than the Greenlandic Dorset, the revealed bone material is a unique Paleo-Inuit assemblage. The bone material is mineralized, i.e. the organic matter of the bones is partly substituted by minerals, due to local climatic and geological processes.

The bone material was subjected to an initial zoological study. A clear majority of the bone material reveals seal species. However, also whalebone is present among the marine species. Of terrestrial species, bones from musk ox, caribou, polar bear, birds, and a single tooth from dog/wolf have been identified (Diklev and Madsen 1992; A.B. Gotfredsen oral communication 2020).

Artefacts of tusk, bone and antler appear both as preforms and tools. In total four pressure flakers, one fragment of a harpoon head of type Qt-B (Grønnow 2016, 80), a piece of worked tusk, a rib with a longitudinal groove, and a rounded fragment of a bone tool or preform are identified in the assemblage.

The four pressure flakers and the harpoon head are typical artefacts of the early Paleo-Inuit cul-





**Figure 10.** A multiplot of the calibrated radiocarbon dating from Qorluulasupaluk.

Site	Lab no.	Material	Association	Radiocarbon age BP	$\delta^{13}\text{C}$	Calibration 68% BC
Qorluulasupaluk, 17-1051	AAR 31881	Antler, Caribou	cultural layer	$3575 \pm 31$	$-19.1 \pm 0.1$	1960BC-1884BC
Qorluulasupaluk, 17-1051	AAR 31882	Antler, Caribou	cultural layer	$3684 \pm 34$	$-18.1 \pm 0.1$	2136BC-2027BC
Qorluulasupaluk, 17-1051	AAR 31883	Bone, terrestrial long bone	cultural layer	$3621 \pm 30$	$-18.7 \pm 0.1$	2028BC-1942BC
Qorluulasupaluk, 17-1051	AAR 31884	Willow, Charcoal	cultural layer	$3485 \pm 26$	$-24 \pm 1$ ( $\delta^{13}\text{C}$ AMS)	1878BC-1750BC
Qorluulasupaluk, 17-1051	AAR 31885	Willow, Charcoal	cultural layer	$2180 \pm 22$	$-24 \pm 1$ ( $\delta^{13}\text{C}$ AMS)	350BC-175BC

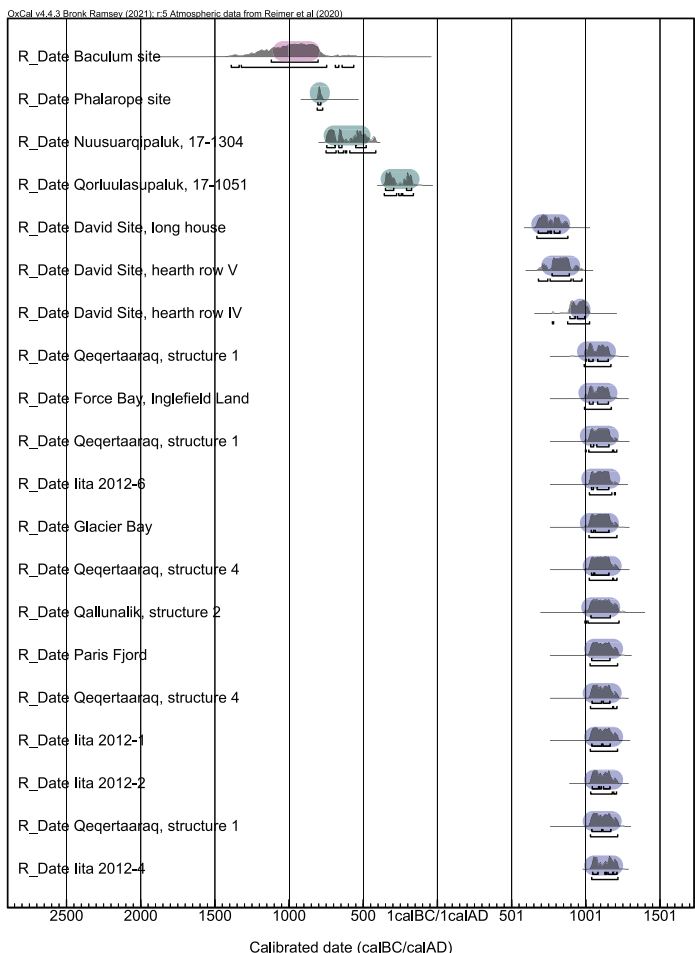
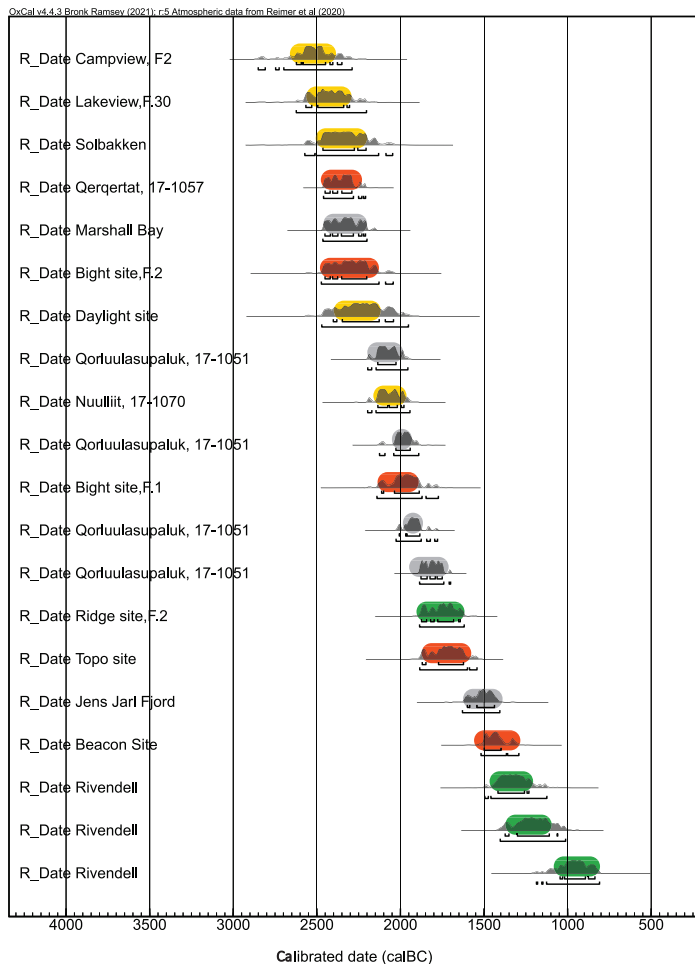
**Table 1.** The radiocarbon dating from Qorluulasupaluk.

tures. Specimens similar to the ones from Qorluulasupaluk are published from Saqqaq sites in West Greenland, e.g., the Qeqertasussuk site (Grønnow 2016) and the Nipisat site (Gotfredsen og Møbjerg 2004). Thus, due to their types and morphologies, they most likely belong to the Saqqaq group.

### Absolute Dating

Five samples for radiocarbon dating were prepared from the bone inventory and from charcoal from

the cultural layers and dated by AMS at Aarhus University AMS Center. One sample is from an ungulate bone, two samples are antler (*Rangifer tarandus*) and two samples are taken from outer/bark charcoal layers of local grown willow (*Salix arctica*). The radiocarbon dates document that the site was in use during the interval *c.*2200-1750 BC to *c.*200 BC. It is worth noticing that the bone samples date to the 2<sup>nd</sup> mill. BC, i.e. the earliest Paleo-Inuit culture, while the charcoal samples are younger, the youngest *c.*200 BC. (Table 1, Figure 10).



**Figure 11a and 11b.** A multiplot of 51 screened radiocarbon dates from Palaeo-Inuit contexts in the Thule/Ellesmere region. The cultural attribution of the single dates are marked by colors: yellow; Independence I, red; Saqqaa, green; Pre Dorset, purple; Transitional Dorset, light blue; Greenlandic Dorset, blue; Late Dorset.

The dates from Qorluulasupaluk are compared with Paleo-Inuit radiocarbon dates of the Thule/Ellesmere region. Only radiocarbon dates that can meet the following criteria are included. They:

- 1) have a secure Paleo-Inuit context,
- 2) are faunal, terrestrial material, i.e., bone or antler from terrestrial species,
- 3) are charcoal from local grown species, and preferably the outer layers of these.

A total of 51 radiocarbon dates meet these criteria.

The cultural contexts of the dated material are:

Independence I:	5,
Saqqaq:	5,
Pre Dorset:	4,
Transitional Dorset,	
Greenlandic Dorset:	3,
Late Dorset:	27,
unknown:	6

(Table 2, see Supplements).

The chronological sequence is analysed in a radiocarbon multiplet (Oxcal v4 4.3 Bronk Ramsey 2021; Reimer et al. 2020)<sup>3</sup> (Figure 11a and 11b). Given with one radiocarbon calibration standard deviation, the analysis enlightens the following chronological sequence: Independence I *c.*2600-2000 BC, the Saqqaq group *c.*2400-1400 BC, the Pre Dorset to *c.*1800-800 BC. One date of a Transitional Dorset site is in the interval *c.*1100-800 BC. The Greenlandic Dorset is dated *c.*800-150 BC. From *c.*150 BC-700 AD (*c.*850 years) no dates appear, suggesting that the Thule region was devoid of people during this period. The Late Dorset group is dated from *c.*700-1200 AD. The standard deviation of the radiocarbon dating method and the fact that several of the dates are conventional radiocarbon dates with large deviations mean that intervals might be more narrow than here estimated. On the other hand, the few dates of the single groups, except for the Late Dorset, suggest that more dates from other sites may broaden the intervals. During the first *c.*500-600 years of occupation, only dates attributed to the Independence I and the Saqqaq groups are seen. Here we see an overlap of *c.*400 years between the two, and it is therefore likely that the two groups were in the area within the same time span. The Independence I and the Pre Dorset group do not have an overlap, while the Saqqaq and the Pre Dorset group have

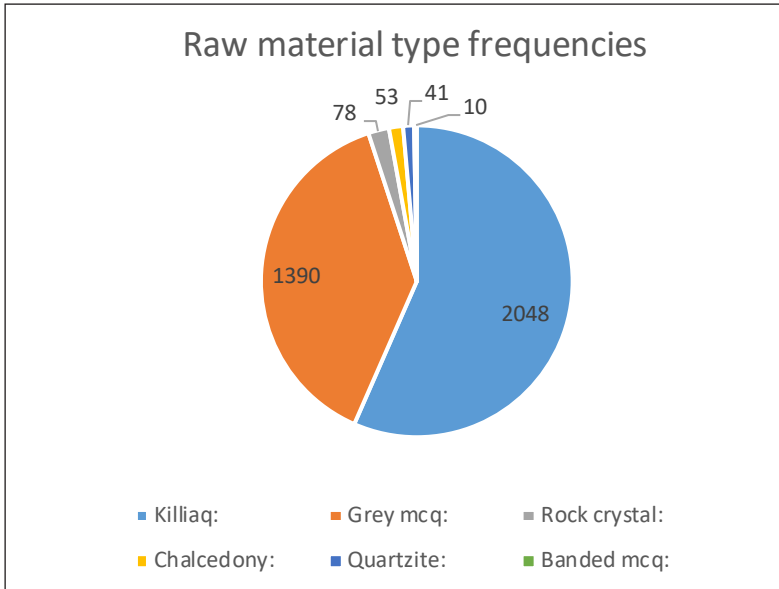
an overlap of *c.*400 years, and it is therefore likely that also these two groups have encountered in the Thule region. More dates need to be made, single dates need to be evaluated further according to the own age of the sample, and the cultural attribution of the single dated contexts needs to be further scrutinised, before questions of cultural overlaps can be answered with greater certainty.

From this analysis, the dates from Qorluulasupaluk are considered in relation to the individual occupation periods of Paleo-Inuit groups. The youngest date (AAR 31885) must be ascribed to the Greenlandic Dorset as this is the only known group from northern Greenland and the Eastern High Arctic during the 2<sup>nd</sup> century BC (Grønnow and Sørensen 2004). Of the remaining four dates, AAR 31881, 31883 date a Saqqaq occupation, AAR 31882 must date Independence I or Saqqaq, and AAR 31884 date a Saqqaq or Pre Dorset occupation.

## Discussion

It is known from fieldwork around the North Water in both Canada (Schledermann 1990; Southerland 1996) and Greenland (Diklev and Madsen 1992; Grønnow and Jensen 2003; Andreassen 2000; Darwent et al. 2007; Sørensen 2010) that Paleo-Inuit peoples visited and lived next to the North Water Polynya. However, Inglefield Fjord and Bowdoin Fjord are not known for polynyas or early fast ice retreat. On the contrary the Inglefield Fjord area is known for its fast ice, its rich sealing, its summer migrations of marine mammal species, especially narwhal and beluga and its terrestrial resources such as caribou and musk ox. Inglefield Fjord is historically described as an area of the Thule region that has sustained seasonally and chronologically residential habitation due to its rich and stable resources (Rasmussen 1921). Thus, the topographical site location of Qorluulasupaluk, in the central part of Inglefield Fjord, points to a more permanent use of the Thule region than the polynya sites in relation to Smith Sound. A more permanent use of the Qorluulasupaluk site is argued for based on the artifact inventory:

- 1) At the site is found a rich bone assembly consisting of mainly marine but also terrestrial species.



**Chart 1.** The different lithic raw material type frequencies at Qorluulasupaluk.

2) The lithic assemblage and tool inventory evidence that the entire ‘chaîne opératoire’ has been carried out at the site, at least for some of the Paleo-Inuit groups (Chart 1).

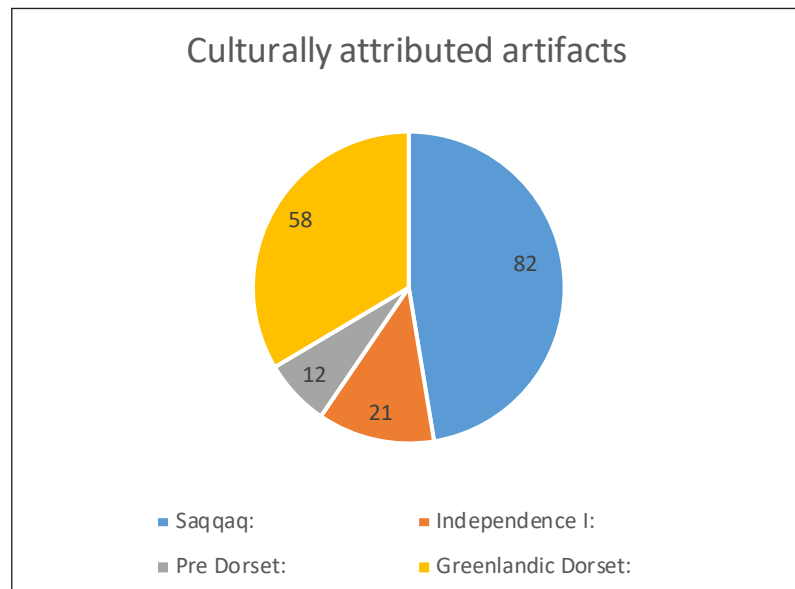
Concerning the Saqqaq group, the following stages of production are seen: procurement of raw material nodules, i.e., in the shape of large bifacial killiaq preforms, their systematic reduction, shown by large amounts of bifacial flakes, and a tool inventory which comprises all known tool types including rare artefacts such as ground lithic awls and adzes. A similar completeness of ‘chaîne opératoire’ is seen concerning the Greenlandic Dorset comprising all typical lithic tool types including rare artefacts such as steatite lamps.

Thus, Qorluulasupaluk, with its complete lithic inventory and its rich bone inventory, can be defined as “base camp” in the Inglefield Fjord that in periods might have had great importance in a regional Paleo-Inuit settlement system. Consequently, the Qorluulasupaluk site distinguishes itself from the polynya sites, which typically include only a few structures with a limited artifact assemblage of only a few types, indicating short stays during a particular season. Thus, while the polynya sites must have been of primary importance to living in the Thule region due to the outstanding concentrations of marine mammals in the North Water, some Paleo-Inuit groups have, perhaps during particular seasons, favoured living in the central part of the Inglefield Fjord region.

While the “base camp” concept at Qorluulasupaluk is best applied to the Saqqaq and the Greenlandic Dorset groups, it is still important to note that both Independence I and Pre Dorset groups were also employing the site, though probably not for as long and as intensively as the two former groups. The appearance of the latter two groups in Inglefield Fjord likewise documents a non-polynya employment of the region. While we know that the Independence I group had a settlement system directed towards the use of terrestrial inland resources in northeastern Greenland, the appearance of a Pre Dorset group in Inglefield Fjord is more surprising. This group has so far only been identified on few locations in Greenland and only in relation to Nares Strait/Smith Sound and the North Water (Solbakken site in Hall Land and Nuullit in Steensby Land (Grønnow and Sørensen 2004; Sørensen 2010)). Identifying 12 burins typical of the Pre Dorset tradition from the erosion matrix of a single site indicates the importance of the site for the Pre Dorset people, and suggests that the Pre Dorset had a more permanent use of the central Thule region than formerly anticipated. The evidence of Pre Dorset in the central Thule region is confirmed by a new analysis of other site assemblages in the region (Sørensen and Diklev in press).

During autumn, winter, and spring the Qorluulasupaluk site is locked in a fast ice landscape from where seals can be hunted through their breathing holes, and when basking on the ice during spring,

**Chart 2.** Frequencies of artefact types attributed to different Palaeo-Eskimo groups at Qorluulasupaluk.



while during summer an open water sea-scape appears where migrating birds and marine mammals, such as seals and narwhal, pass by the site. Further, inland resources can be hunted, too, from the site at the Piulip Nunaa, where to the north Tasersuit, The Great Lakes, with migrating arctic char are situated in a lush landscape, further west along the coast of MacCormick Fjord and likewise along the shore of Murchison Sound south to Cape Ackland. Presence of bird bones suggests that the site was occupied during summer. However, a more thorough analysis of the bone assemblage needs to be made, involving a species list, with named seal species, before a seasonal use of the site can be concluded.

At Qorluulasupaluk the killiaq material dominates the assemblage quantitatively (56 %) (Chart 2). The quality of this material, being fine grained and grey bluish, is strikingly similar to killiaq from the Nuussuaq outcrop in West Greenland (Sørensen and Pedersen 2005; Sørensen 2012; Jensen 2006). However, the large amount of debris as well as the actual conduction and production of this material (i.e., reduction of large killiaq cores and preforms), demonstrate that this material must have been locally procured. So far, no killiaq outcrop has been identified in the Thule region. Yet, based on geological maps, there should be many possibilities of shales, schists and slates having been intruded by basalts in the Thule Super Group, creating killiaq-like materials. The Thule Super Group appears from Inglefield Land to the southwestern part of

Inglefield Fjord (Dawes 1997). This suggests that a high quality killiaq outcrop employed by the Saqqaq group is situated somewhere near Qorluulasupaluk. The second most employed raw material in the assemblage is the “blue/grey mcq/flint” (39 %). This raw material is present in the Ellesmerian Folding stretching from southern Ellesmere Island to Washington Land. Outcrops and an abundance of this raw material has been located in Cass Fjord, immediately north of the Humboldt Glacier. It is most likely that the blue/grey mcq at Qorluulasupaluk was procured from this location *c.*300 km north of Qorluulasupaluk as the raven flies and *c.*450 km of travel along the coast or a little less over the ice cap. That would have involved a round trip of *c.*700-900 km before the grey mcq/flint could be transformed into tools and be used, modified, and discarded, if it were not traded between groups of people. Paleo-Inuit groups that favour this raw material in their tool production are the Independence I, the Pre Dorset and the Greenlandic Dorset groups. The high percentage of this particular raw material evidences a strong connection and mobility towards the Smith Sound area, a connection that is confirmed by sites attributed to Independence I, Pre Dorset, and Greenlandic Dorset in this area. The remaining *c.*5 % of raw material comprises 2 % rock crystal, 1 % chalcedony, 1 % banded mcq and 1 % quartzite. Chalcedony appears as small nodules in basalt geology, which in the Thule region could be from the Siorapaluk area, while the banded mcq is most likely synonymous with the agates from a location

a little distance east of Siorapaluk (Sørensen 2012, 53). Rock crystal and quartzite are likely more locally procured raw materials. It is worth noticing that the Siorapaluk agate and the chalcedony bear signs of having been heat-treated, a practice typical of the Greenlandic Dorset group.

With the assemblage from Qorluulasupaluk new questions can be raised concerning the origin of the Saqqaq culture. The present interpretation is that Saqqaq developed as a regional group in Disko Bay, from where it spread to other regions of Greenland. The Saqqaq is understood and defined in relation to the discovery and extensive use of grey, metamorphosed slate, known as killiaq, in West Greenland (Sørensen 2012, 54-59). However, with the assemblage from Qorluulasupaluk it is now clear that killiaq materials were also procured from and worked within the Thule region. This raises the question whether the Saqqaq culture could initially have developed as a culture in the Thule region, before entering West Greenland. With the Qorluulasupaluk assemblage we can argue for a substantial Saqqaq use of the Thule region, i.e., generations of continuous settlement in the region, which must have included a profound knowledge of the area's geology and resources. The earliest radiocarbon dates of Saqqaq contexts are from West Greenland, made on charcoal of local grown species (Grønnow 2017, 435), while the earliest date of a terrestrial bone in Saqqaq context is from Ellesmere Island (Schledermann 1990, 343). Due to the dubious own age of the local wood before burning, it cannot safely be said which date represents the earliest habitation. Further dating and archaeological fieldwork in the Thule region is required to shed light on this enigma.

## Conclusion

The Qorluulasupaluk site, topographically positioned centrally in Inglefield Fjord, reveals that Paleo-Inuit peoples settled in the central part of the Thule region. The size of the lithic and bone assemblage and the location in the landscape suggests that the site in periods was a summer base camp or a site for aggregation. This topographical position and the size of the site add important

new information to our knowledge about early Paleo-Inuit peoples' use of the Thule region, and the early pioneering processes in Greenland.

The following cultural sequence is documented at the site: Independence I, Saqqaq, Pre Dorset and Greenlandic Dorset. Yet, the majority of the artifact material analysed is attributed to the Saqqaq group. There are no artefacts that can document the presence of Transitional Dorset or Late Dorset groups. Transitional Dorset in the Thule region is so far only known from the Smith Sound/Nares Strait region, while Late Dorset sites are documented from the central Thule region at the Island of Qeqertat in Inglefield Fjord and from Steensby Land at Nuuliit and at Tupeqarfik (Sørensen and Diklev 2019, and in prep).

The absolute dates of the site indicate that it was in use from *c.* 2200-1750 BC (four dates) and during the interval *c.* 400-200 BC (one date). The early interval generally corresponds to the dating of the Saqqaq group in the region, but two of the dates could also date Independence I and Pre Dorset respectively, while the single later date must reveal a Greenlandic Dorset occupation.

The screening and calibration of radiocarbon dates from Paleo-Inuit contexts in the Thule/Ellesmere region suggest that Independence I, Saqqaq, Pre Dorset, Transitional Dorset, Greenlandic Dorset and Late Dorset peoples employed the region subsequently, but also that there might have been an overlap in occupation and a possible encounter between Independence I and Saqqaq, and between Saqqaq and Pre Dorset. However, more radiocarbon dates are necessary and further fieldwork in the Thule region needs to be made before this matter can be further clarified.

Finally, the completeness and amount of Saqqaq inventory in the Qorluulasupaluk assemblage raises the question whether the Saqqaq culture could have developed in the Thule region from where people migrated to West Greenland? With the knowledge we now have, we can conclude that the formation of the Saqqaq culture took place around 2400 BC in either West Greenland or in the Thule region from where long distance migrations took place with the first generations of "Saqqaq people".

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## Notes

1) In the following text we prefer to use the term “Paleo-Inuit groups”. This term signifies that we are defining groups of people of different history and material culture, travelling and living in the Thule region.

2) The microcrystalline quartz from the Ellesmerian Folding is found with limestone cortex in hand size nodules. The material can therefore also be defined as a type of flint.

3) <https://c14.arch.ox.ac.uk/oxcal.html>

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