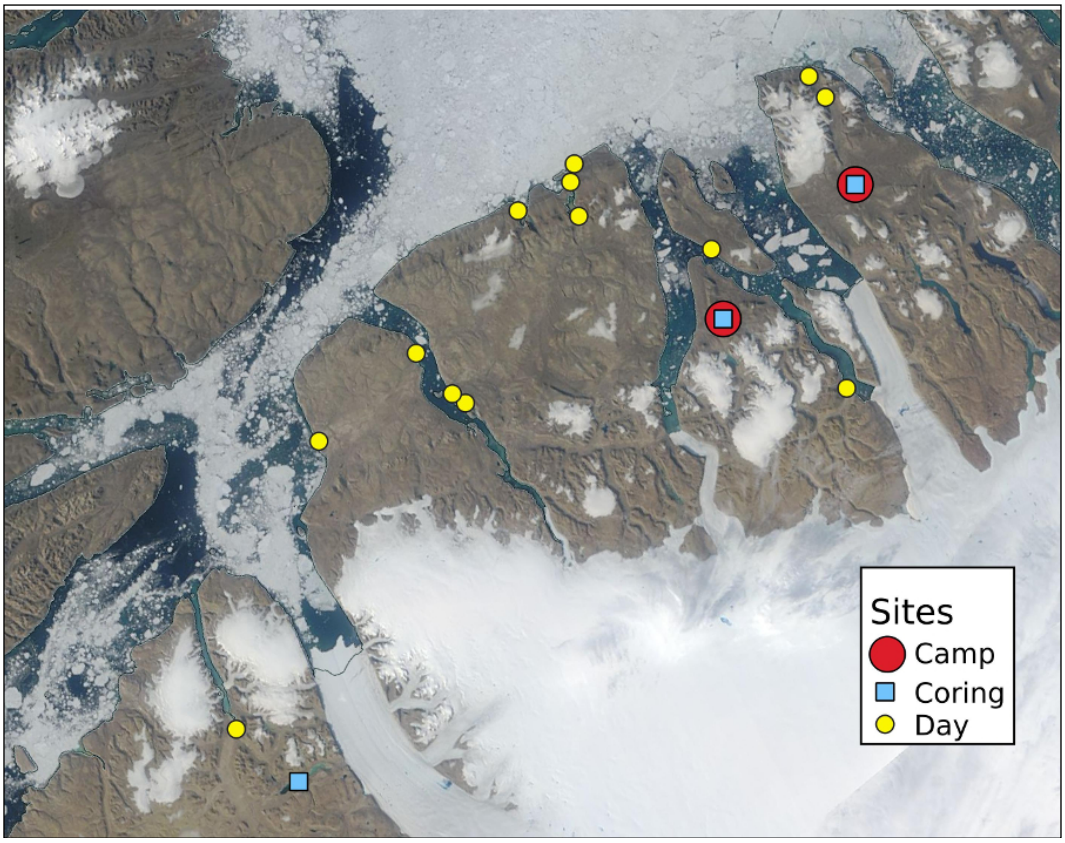
Preliminary report on the surveying of archaeological sites during the Ryder 19 expedition

During the summer 2019 a scientific expedition organized by Swedish Polar Research and NSF targeting the Ryder glacier on northern Greenland was launched. One of the sub-projects on the expedition targeted lakes for sediment coring. The object of the sub-project was to retrieve lake-cores for metagenomic DNA analyses, to eventually describe presence and absence (occurrence and disappearance) of various species in the lake-areas. Lakes on Wulff land, Warming land, and Washington land were cored.



Sites visited by the sub-project on Ryder19 coring lakes, including archaeological and ecological sites.

This also provided for the possibility to visit and survey known and unknown archaeological sites in the vicinity of the cored lakes. And also sites close to the path in-between these lakes (when moving camp). In this way seven archaeological sites of varying types were surveyed. Three sites previously excavated by Eigil Knuth were visited; Memnon I on Warming Land, Røde Enkesæde on Hall Land, and Solbakken also on Hall Land (Grønnow & Fog Jensen 2003). Another three new sites were discovered. The first one is likely a Thule site on Wulff land, the second one is possibly an Independence I site on Nyboe land (this one is uncertain, it could also be a structure of modern origin), and also a Paleo-Inuit complex by the Besselfjord was discovered. The final site was on inner Warming Land and constitutes a single find. A chert core or a scraper. A manipulated piece of chert with a retouched edge and a flake knapped out of it. The artifact is likely of a Paleo-Inuit origin and indicates presence of humans on inner Warming Land already during the early stages of Greenlandic prehistory.

The main focus of the sub-project was other than surveying these sites, why time was restricted on the sites. Some of the sites were visited for much less than an hour (Memnon for

example), and the site where most time was spent on (Solbakken) was still not visited for more than three hours (and including the surveying of the adjacent area). In most of the cases a brief description and documentation of the site was produced (the exception being Memnon I where the time only sufficed for a short note). Samples for radiocarbon dating was retrieved from a few of these sites. This was done for Røde Enkesæde and Besselfjord, which were judged to be threatened and with a risk of disappearing / being severely damaged in the near future. And for Solbakken and Memnon, where the waste-piles and disturbed areas made it possible to retrieve a sample without manipulating the undisturbed layers. Two sites were not in any way threatened and also impossible to sample without manipulating undisturbed layers (the newly discovered sites on Wulff Land and on Nyboe land), why these were not sampled. One site was constituted by a chert core.

There were different strategies for retrieving the samples. The two threatened sites (Røde Enkesæde and Besselfjord) needed to yield samples for radiocarbon dating. These sites are running a risk of partly (Besselfjord) or fully (Røde Enkesæde) disappear before they are visited again. If they do, radiocarbondates and photos would ensure a possibility to place them within a cultural context. The remaining sites would be interesting to collect more information from, but as they were not under any kind of visible threat they could be visited and sampled under better organization in the future. In these cases samples were only collected if it was possible to take them from waste-piles or clearly disturbed areas. Naturally this decreases the certainty that the sample represent the site, but it is still likely that waste-piles from previous excavations is sufficient to connect the sample to the site.

Kape Stanton
Coordinates: N82°10’39,03” W57°12’21,58”

The site was spotted during a helicopter survey on 28th of August 2019. The site was investigated visually, on ground, for app. 1 hour by Christian Carøe, Love Dalén and Anders Götherström.

The site consists of two circular boulder structures (roughly 4x4m) adjacent to each other. One ring is made of single boulders with an empty floor in the middle, the other made up of a similar ring of boulders, but containing stones of approximate equal size to the stones shaping the ring. Some of the stones in the filled circle may be interpreted as a smaller square structure or could even resemble another mid-passage. The two circles were separated by a rectangular stone structure (roughly 1.5x0.5m), made up of flatter stones, which could also be interpreted as a mid-passage. It is especially noteworthy that a number of flat stones were placed in the middle of the possible mid passage, thus possibly remnants from a hearth structure. A number of stones (0.2-0.5m large) where placed 0.5-1 m outside ring A.

The site is located some 200m from the sea, and some 100m from a small outlet, not active during summer but most likely a stream in springtime. Behind the site is an elevated terrace, more than five but less than 10m.

The site is in several aspects similar to other excavated Independence I sites in northwestern Greenland, usually slightly older than 4000 years (Grønnow 2003). The shape of the site, the rectangular “mid-passage” structure in-between the circles, having one of the circles almost completely empty and the other semi-filled with boulders.

However, a modern tent peg made from galvanized steel estimated to be not older than 50 years, judging from the type was found next to a stone on the inside of ring A indicating that the whole structure could possibly be of recent origin. After 1 hour of visual search no other anthropogenic objects where found, neither modern garbage or left-behinds such as cans or other metal scraps, nor any artifacts of paleo-Inuit origin. Notably, some of the boulders seems to have been moved recently. The whole structure is also comparatively large compared to Independence I sites. Further, some stones seemed to be too shallow to have been in situ for 4000 years while other stones seemed to be too deep into the ground to have been in situ for only 50 years.

Thus, it should be further investigated if this is in fact a modern site, either resembling an ancient site or being placed in the same spot as an ancient site, with concurrent disturbance of the stone structure. Ancient sites of the Independence I type usually contains both lithics and charcoal from fires, therefore it should be easy with enough time to accept or dismiss it as a site produced by the first people reaching this island.

Stenbacken
Coordinates: N82.42531, W050.59617

The site was investigated visually the 27th of August 2019 for app. 1 hour by Christian Carøe, Love Dalén and Anders Götherström.

The site contains one circular to oval boulder structure (4x5m). The inner part is made up of a free circular area of about 1m diameter. The thick stone circle is made up of irregular boulders of roughly 0.2-0.7m diameter, and slightly manipulated to keep the surface horizontal in the slope. After an hour of screening (looking over the site and the vicinity of it), no obvious artifacts spotted.

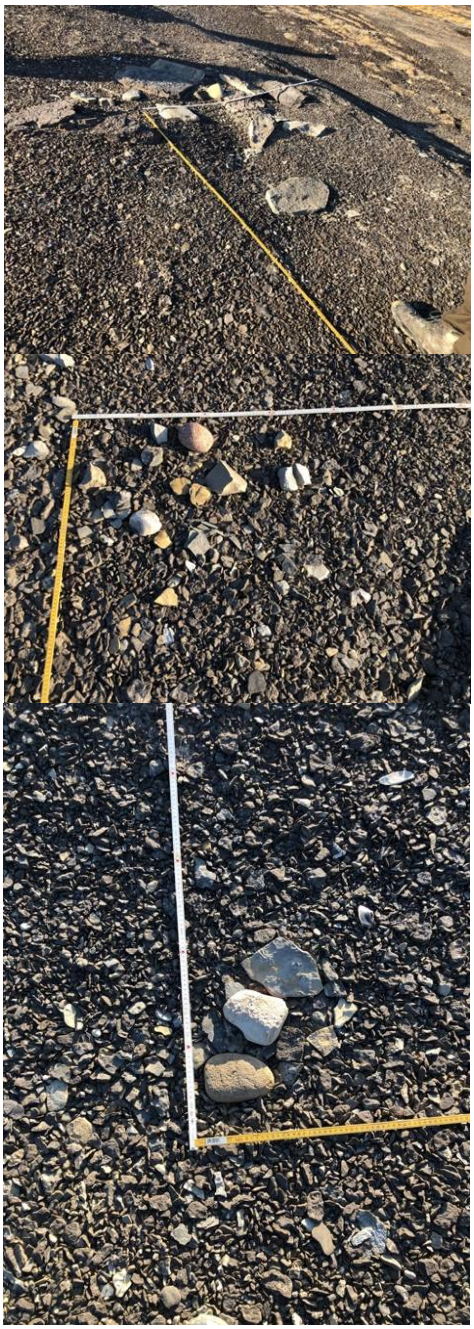
The site could possibly be interpreted as belonging to the Thule complex (roughly 800-100BP). The shape of the structure (there is an almost identical feature at Stjernborg in Wandel Dal) and the absence of lithics (or in better excavated features, low frequency) are two strong arguments. Two particulars to note are that the single stone circle makes it a small site if it is assigned to the Thule complex. There are usually (but not always) more than one tent-rings at the known ones from northwestern Greenland. But without proper excavation, or at least deeper surveying, it is not possible to claim with certainty whether it is an ancient or modern structure. With a proper excavation and / or more surveying time it is possible that connected features would be found if such exist. Further, Wulff Land contains only few archaeological sites, which makes this site even more interesting.

The geography of the site also indicates Thule affiliation. It is located some 500m uphill from a lake (the lake could have been larger previously), and on a slope. While Thule settlements seems to have been less patternlike distributed, the earlier Paleo-Inuit sites are generally found on terraces at the coasts or at fjords close to river mouths, or at terraces by larger inland lakes.

Northwestern Greenland presents a lower density of known archaeological sites than Northeastern Greenland. There are various ideas why this is the case, one is that this was an area to pass through on the way to the east. Which would produce fewer sites with fewer artifacts. But it may just be because this area is not sufficiently surveyed. In either case, an archaeological site on northern Wulff Land is interesting, and a more thorough exploration of Stenbacken would likely provide interesting data.

The Besselfjord complex
Site one, the workshop
Coordinates: 80.7480° -63.09774°
First spotted by Brendan Reilly, Anna Gleüder, Alan Mix

Feature 1: A collection of boulders measured 2.5X2.1m. The boulders are about 0.1-0.4m. Most of the boulders were flat. The upper layer of one was broken up in pieces (frost or fire?).



The structure is full of both charcoal and flint flakes and waste from knapping. There are bones (muskox?) right outside of the structure, one concentration of finely crushed bones close to it and further away on the opposite side there were more bones, and larger chunks of them, deposited. Close to the structure was also a small bowl (15X9cm).

Feature 2: Some seven meters away from feature 1 is a collection of pebbles 0.7x0.5m. The pebbles are of smaller size, <0.05m. Here is a high concentration flint flakes, cores, and waste. There is also what appears to be a knapping-stone. It is tempting to view this as a frozen snapshot of tool-making.

Feature 3: some five meters from feature 1 and three meters from feature 2 is a yet smaller collection of stones measuring 0.4x0.3m. The stones are about 0.1x0.1m. This small feature has few flint flakes, but at least one is of high quality.

The whole site is located about 10m above sea level, within walking distance from fresh water, and close to, but not immediately under a steep slope with terraces. We visited in early September, and the Besselfjord was then more than 500 but less than 1000 meters away.

The whole site is dominated by flint related to tool-making (waste, flakes, cores), and also of crushed bones and teeth. And one of the features contains much charcoal. The site is possibly best interpreted as a workshop used by Paleo-Inuits. The bowl could well be a lamp, which appear at Thule sites, but all the lithics and crushed bones indicate Paleo-Inuits.

Site two, the dwelling site
Coordinates: N80°44’59,91” W63°04’31,17
First spotted by Anders Götherström and Christian Carøe.

The site is made up by an oval of boulders, where the structure is 5x3m. The oval is split in two parts by three flat stones. There is much space between the boulders. The size of the boulders is about 0.15-0.3m. The organization of the boulders makes it very similar to several

Independence I sites in northern Greenland. The structure is located on an elevated terrace right beside seasonal running water.

Notable with this structure is that it is right on a gravel edge. Part of it is already sliding down. It also appears to have been flooded with water at least once (but likely several times). This site is most likely the most threatened of all the sites we visited.

Site three, the butchering site
Coordinates: 80.7500, -63.0830
First spotted by Love Dalén

The site was roughly 5x5m, and made up of bones and pieces of bones belonging to several species (Muskox, Reindeer, Canids). Sometimes the bones were fragmented to a high degree. There were also a flint-tool right outside the site, a scraper fragmentized by frost. The pieces were still found on the same spot and possible to fit together. There was another piece of possibly worked flint nearby it.

The whole complex is exposed and threatened in various ways. The dwelling site is already sliding down onto a gravel bed. The lithics are exposed to temperature shifts which we noted in some cases has resulted in fragmentation. And there are human activities in the area as seen by oil barrels and various modern garbage and stone structures. We left the sites with minimal manipulation, only taking photos and quick-measures the structures (as reported here). And we also did

collect samples to radiocarbondate the workshop and the dwelling site. The rational being that the complex is threatened in various ways. We collected one small piece of charcoal and one small piece of bone from the workshop (feature 1, on the very top) and one small piece of bone from the dwelling-site (in direct connection to one of the boulders, washed out likely by flooding). We did this as it seems to be an extraordinary complex, and we should at least have ^{14}C dates on it if the complex is hurt or completely disappears (the dwelling site will eventually be swallowed by the meltwater). In all cases was it small surface pieces that did not require much manipulation of any of the sites. Further, we also collected the frost-blown scraper. We did this while most of the pieces were still there, and thus it was still possible to fit them together. Northern Greenland is a complicated place to work in. But if there is a possibility to spend some time on archaeological excavations there in the near future, we would recommend this complex to be prioritized, as it still remains undisturbed, but may not be so for an extended time.

Røde Enkesæde
Coordinates: N81°47’57,30” W59°30’47,60

The site was investigated for approximately one hour by Christian Carøe and Anders Götherström on the 31st of August 2019.

An irregular circle, mainly made up by flat stone. But there are also stones of a more irregular shape. The size of the stones and boulders are 0.1-0.4m. In one part of the structure there is a higher concentration of the flat stones. In this area traces of charcoal were identified. The circle (not including the concentration of flat stones) roughly had a diameter of 3x3m. The concentration of flat stones adjacent to the circle constituted an area of perhaps 1x0.5m. Across from the circle, on the other side of the concentration of flat stones, were more stones and boulders that did not form a pattern, and also a pile of gravel and soil. It appears that Eigil Knuth excavated half of the structure, the part that is now made up of a pile of gravel and unorganized stones, while the circle and much (but not all) of the mid-passage remains undisturbed and not excavated. A large portion of the stones are covered with red lichen, just as described by Eigil Knuth.

What remains of the structure follows the model for a small Independence I site quite well.

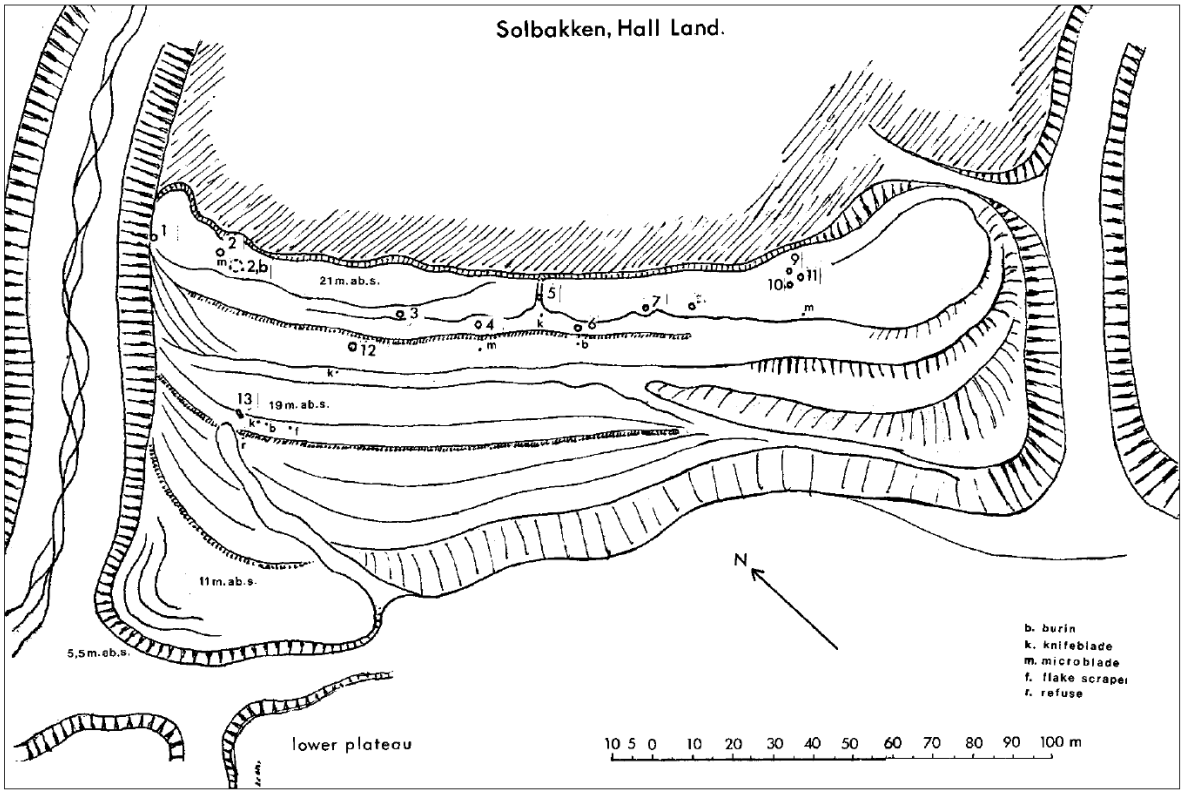
An oval, or two circles, divided into two parts by a mid-passage. And as expected there were charcoal in the mid-passage. A flint flake was also found in the structure (in the waste pile from the previous excavation), which further supports the assignment of the structure to Independence I.

The structure is located on a high terrace, 20m above sea level today, just adjacent to a steep slope down to a river and about 300m from the Newman Bugt. It is likely that the topography has changed since the site was in use, and it is also likely that it continues to change to some extent, threatening the site in the long run. Before all it is unlikely that the edge to the steep side down to the river was as close then as it is today. The location provides a splendid overview of the region, but also leaves the site exposed to the weather.

Eigil Knuth encountered three needle fragments in the structure during his excavation. We found a flint flake in Knuths waste-pile. We looked for material for ^{14}C analyses in a disturbed area where Knuth had excavated. But we did accidentally touch undisturbed layers (as we were closer to it than we expected), although less than 1dm^2 (within the red square on photo).

Solbakken on Hall Land
Coordinates: 81.5595, -61.5318

Solbakken consists of 13 easily identifiable features, of which at least 12 have been excavated and not restored. Eigil Knuth excavated them in 1958 and 1965, and gave them numbers 1-13. Although I am not certain that he excavated feature 5, and there appears to be a possible untouched feature a few meters west of feature 13. However, the earlier excavations dominate the site as the trenches remains open and the waste-piles are mounting over the site.



Interestingly, there is likely also value in the non-restored site as it also provides information on mid-20th century archaeology. It should be noted that it is not possible to tell how much of what is described below that is *in situ* and how much was moved or rearranged during the excavations.

Feature 1 and 2 are smaller and at the edge of the site. A collection of flat stones and smaller fire-cracked stones. There is some charcoal in the structures. They are described by Knuth as isolated box hearths, and that is what they resemble.

Feature 13 has been described as a dwelling. What remains is parts of the mid-passage, with some stones still standing. There was much bone and bone-waste in the structure. It was surrounded by three waste-piles. A sample was taken from the waste-pile.

Feature 12 is made up of a row of flat stones, and a little more than a meter away from it a collection of a few flat and amorphic stones. It is possibly a part of a hearth. It is a seal-remain from this feature that has been used to argue that Independence I on northern Greenland carried out winter breathing-hole hunting of seals. But neither much charcoal, nor much bone is visible in this structure.

Feature 3 has been described as a box hearth similar to feature 1 and 2. It contains some charcoal. Feature 4 has also been described as a box hearth similar to 1 and 2. It is, however, distributed in two concentrations of flat and amorphic stones. It also contains some charcoal. The waste-piles for these features are smaller than for 12 and 13, but the structures are smaller too.

Feature 5 is exciting since it is the only of the 13 features described by Knuth that is neither open, nor has a waste-pile close to it. Did he not excavate it, or did he restore this particular one? The whole structure is 2.3x1.2m, and is made up of flat stones about 0.1-0.5m in size. The stones are distributed over a frost crack.

Feature 6 has been described as a mid-passage. Not much remains, a few flat standing stones and a few flat lying stones. The waste-piles around it indicates that there was much to excavate though. Previous descriptions of the

excavation also indicate that there were structures in the gravel around it, and finds connected to it, that qualifies it as a dwelling feature.

Feature 7 appears to have harbored an impressive amount of flat stones. It is described as a mid passage, with few finds, and a collapsed structure. But the two piles indicate that there was much to excavate, and the amount of flat stones compared to the other features indicates some kind of prominence.

Feature 8 is one of the previously best described features. It is described as a dwelling site. It produced lithics, bones (muskox, seal, and bear) when it was excavated. Today there are a number of scattered flat stones in front of the feature and some in it. They may have been deposited this way during the excavation, but in this case, it is likely that at least some of them are *in situ*. The reason for this assumption is that Knuth describes several flat stones in front of the structure prior to excavation. It is from the waste-pile for this feature we retrieved samples for radiocarbondating.

Feature 9 and 10 are described as flagstone platforms, and 11 as an ash filled pit. There are many bones in some of these three structures.

One notable peculiarity with the site is that there are very few visible lithics in it. It may be that Eigil Knuth was good at spotting everything and collected it. It may be that we did not see it as we did not excavate or in any way disturb the site but only looked at the surface. But on other sites where we had a similar approach, we spotted more lithics.

The site leaves two standing impressions. The one related to prehistoric times is that this was an impressive complex. Several dwelling sites and hearths and other structures. We did walk around the area for a few hours, but it would indeed be interesting to do a thorough survey of the area. This complex site could not have existed in a vacuum. The other impression is that of the excavation. In one way it is so visible, piles everywhere, all trenches open, no restoration. But yet not a trace of the excavation teams. No garbage or anything else indicating people working here in 1958 and in 1965.

<u>Brief note on Memnon I</u>
N81º31.533 W051º09,117

Memnon I is constituted of a set of smaller (<0.1m) and larger (0.1-0.4m) boulders organized in an oval geometry roughly about 2X1.5m. It is easy to spot as its distinct formation sets it apart from the environment. Memnon I was fully excavated 40 years ago. Judging from the published photos prior and during excavation, and from our photos, the boulders were never moved during the excavation but excavated between and around. Thus, there is likely untouched layers beneath the boulders, which would make future excavations possible. The excavation identified the site as a dwelling with a central hearth.

There were several smaller bones within the structure, most likely recent bird remains. The collected sample was a charred small bone easily visible in-between the boulders. The rationel being that since it is unlikely (but not impossible) that there has been a fire on the site during the latter four decades, the small bone was likely originally from the excavated hearth even if it now occurs in the excavation-waste. Also, a few of the additional bird bones were collected. But as these were uncharred and well preserved on top of excavational waste, it is likely that they are recent and deposited after the excavation.

Sample ID	Material	Region	Site	LAT	LON	Notes & comments
RY19AG010	Bone	Warming Land	Mermnon	N 81.31533	W 51.09117	Small bone
RY19AG011	Bone	Warming Land	Mermnon	N 81.31533	W 51.09117	Several small bones
RY19AG012	Bone	Warming Land	Mermnon	N 81.31533	W 51.09117	Small bone
RY19AG035	Tooth	Washington Land	Bessel site	N 80.74801	W 63.09774	Muskox tooth for 14C
RY19AG041	Bone	Hall Land	Røde Enkesæde	N 81.475730	W 59.304760	small bone
RY19AG042	Bone	Hall Land	Røde Enkesæde	N 81.475730	W 59.304760	small tooth
RY19AG049	Bone	Hall Land	Solbakken	N 81.5595479	W 61.531847	Feature 8, 14C
RY19AG050	Tooth	Hall Land	Solbakken	N 81.5595479	W 61.531847	Feature 8, 14C
RY19AG051	Tooth	Hall Land	Solbakken	N 81.5595479	W 61.531847	Feature 13, 14C