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Archaeological Investigations in Vatnahverfi,

Greenland 2008 Season Preliminary Report

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Summary

July and August 2008 was the fourth season of the collaborative *Norse Settlement in the Vatnahverfi Region, South Greenland ca. AD 985 – 1450 Project*. The Danish Middle Ages & Renaissance Department at The Danish National Museum and the Greenland National Museum and Archives (NKA) collaborated with the Northern Science and Education Center at City University of New York (NORSEC/CUNY) to complete an archaeological project in Southwestern Greenland, in the Qaqortoq Municipality. The project is part of a larger NABO (North Atlantic Biocultural Organization) and IPY (International Polar Year) program *Human Ecodynamics in the North Atlantic*, which works to coordinate international interdisciplinary projects in the Shetlands, Faroes, Iceland, and Greenland (see www.nabohome.org). The overall main objectives for this field season were to continue excavations of human burials (started in 2007) in the churchyard of a middle-sized Norse farm, Ø64 – *Innoqquasaq,* and take ancient DNA soil samples from multiple sites by the Danish team. The main objective of the CUNY crew was to test organic preservation, locate datable patches of cultural deposit, and recover a sample of ecofacts and artifacts from the midden layers at the same site. The field participants were Dr. Jette Arneborg (Project director), Dr. Martin Applet, Christian Koch Madsen, and Caroline Paulsen from The Danish National Museum, and Konrad Śmiarowski (CUNY team supervisor), Francis Feeley, Aaron Kendall from CUNY. Dr. Martin Hebsgaard, a biologist worked, with us part of the time while taking ancient animal DNA samples.

The CUNY/NORSEC team, apart from assisting in the churchyard excavation, was tasked to assess animal bone preservation at different sites, and if possible to locate and excavate additional substantial archaeofauna from surviving stratified midden deposits of the Norse Eastern Settlement. This interim report will only deal with the work performed by this CUNY middens team. The churchyard excavations were the responsibility of the Danish team, and will be

treated in a separate report.

Based on the results of midden prospecting survey in 2007 and 2008 (Śmiarowski 2007, Śmiarowski this report, Møller et.al. 2007) we were able to locate middens at Ø64 *Innoqqasaq* and Ø68 *Timerliit*, where we conducted archaeological excavations. This season, we also completed a program of survey and systematic coring (using a tube-type Oakfield soil corer) of 13 Norse sites: Ø64 *Innoqquasaq*, Ø66 *Igaliku Kujalleq* (2 farm sites), Ø169 *Amikitap Tasia*, Ø67 *Quorlortukasik*, Ø68 *Timerliit*, Ø69 *Timerliit*, Ø70 the Mountain Farm, Ø71N and Ø71S *Saqqaa*, Ø72 , Ø75 *Taseq Ammalortoq*, and Ø168 *Zucerip Tasia*. We located over 18 middens associated with dwelling buildings, and assessed the organic/bone preservation (to a degree possible without archaeological test trenching). Together with 8 sites assessed in 2007 (21 in total) we have acquired a rich data set reflecting location, depth, composition, and organic preservation conditions of Norse middens in the Northern and Western part of the Vatnahverfi region. Based on this data, site accessibility, and field observations we were able to asses the potential for further zooarchaeological investigation at those sites.

The Norse economy in Greenland was strongly dependent upon a balance of both marine resources (seals, sea birds, walruses) and terrestrial resources (pasture plants, soils, domestic mammals, reindeer). The project aims at improving understanding the Norse farming and hunting strategies in the Vatnahverfi area, and how they changed in the face of climatic and environmental changes, especially the arrival of summer sea ice ca. 1250-1300 and the cooling and increased variability of the 15th century (Ogilvie et al 2008, Dugmore et al 2007). This in turn may have affected the settlement pattern, and the use of landscape and natural resources in this inland part of the Norse Eastern Settlement. Through Zooarchaeology and environmental archaeology, we aim to reconstruct the human ecodynamics of that region and collect data that will be basis for a broader comparison with other places in the Norse North Atlantic.

This research was made possible by the generous support of the CUNY Northern Science & Education Center, the UK Leverhulme Trust, and grants (0527732,

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Figure 1. Northern part of the Vatnahverfi region with investigated midden sites indicated. Sites marked in red have been cored, and excavated in 2007. Sites marked in green had only been cored, but not excavated in 2007 and 2008. Site marked in yellow E68 and E64 had been excavated in 2008. Site marked in blue (E74) had been excavated in 2006.

Excavation at Ø64 – *Innoqquasaq* (N 60.550331, W 45.152323)

The site is located on a plateau ca. 13km S-E of the town of Igaliku. This is a middle-sized Norse farm with several farm buildings, main house dwelling, and a church with a round churchyard surrounded by a dyke. The midden excavation at

Ø64 started July 23rd after locating the best preserved, and most promising midden deposit associated with the main dwelling structure. An extensive coring exercise (34 cores at this site) indicated the thickest midden with bone residue just ca. 5 meters west of the main structure. The core indicated a depth of ca. 71cm in many locations west and south of the dwelling. The midden was thinning out as it followed the slope westwards, towards the erosion face of the beach.

Figure 2. Ø64 Plateau with modern day shelter and our tents, looking south. The location of the excavation is indicated.

Originally, the midden trench was 2x6 meters in size, but after removing the turf layer and topsoil, we realized that the 2 meters at the eastern end (closest to the dwelling) consisted of wall collapse material such as large stones and structural turf. We realized that the midden material in that section must be underneath, but since we did not want to disturb structural remains, we decided to reduce the trench by 2 meters in the east section. This resulted in 2x4m trench dimensions, placed only in the midden area, which we completely excavated to the natural surface. The organic preservation was not encouraging since the beginning, but the soil acidity was good (ph 6.2). During the excavation, it became apparent that

we have again run into the same preservation problem we encountered in 2007 at Ø78 *Eqaluit* and Ø60 *Isotarfik*, and in 2006 at Ø74 *Qorlortorsuaq*. The site was located on a gravel, moraine, rocky subsoil and the good drainage was responsible for leeching out of the organic component of the site. Bone preservation was very poor, and the best-preserved bone fragments crumbled on contact with a trowel or hand. Nevertheless, we followed the NABO protocol and excavated all stratigraphic layers using single context recording method, sieved all deposits with a 4mm mesh, and took soil samples. At the end of the excavation, we also took kubiena tin geomorphology samples from two profiles of the trench (west and south) to be analyzed by Prof. Ian Simpson at Stirling University in United Kingdom. We also took two samples of this kind from the home field area at this farm, some 20 meters east of the main dwelling. It should be noted that several finds of steatite vessel fragments were found in this trench, including one with a possible runic inscription.

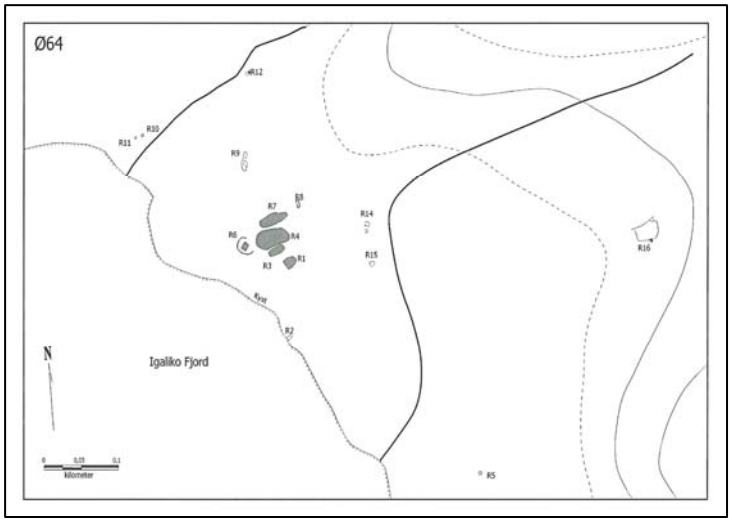

Figure 3. Ø64 farm site with major structural features indicated. The midden trench (area B) was located between the main dwelling R4 and the Church structure R6. (Møller & Madsen 2006a)

The churchyard crew had encountered a midden layer sealing the whole area of the churchyard. The organic preservation there had been slightly better than in the main midden and the excavation in that area produced a larger archaeofauna than that in the proper midden, and it will also be studied by the author at the NORSEC labs in New York.

Figure 4. Documenting western profile of the midden trench at Ø64. Note the sand and gravel natural subsoil.

Excavation at Ø68 -Timerliit (N 60.514633, W 45.175856)

After the completion of excavation at Ø64 the midden team left the main camp site and relocated inland to conduct excavations at Ø68 Timerliit. This site was chosen after the author completed a coring survey of this farm complex and located the midden. The modern sheep farmer had dug irrigation trenches near this site, and one of them divided the midden area in two parts. Systematic coring showed that one side is under a modern hay field, but another is still undisturbed, and we were able to find the extent of the midden deposits. The good thing about the irrigation trench was that a long profile was created, exposing deep midden layers associated with this farm site. After cleaning the sections, we encountered Norse steatite artifacts and animal bones, preservation of which was better than at other sites surveyed this season. Because we could not disturb the farmer's hayfield, we decided to open an archaeological trench into the section created by the irrigation ditch, on the undisturbed (eastern) side of it. The farmer, Siiku

Motzfeldt, is aware of the Norse remains and had informed us that he had not encountered any archaeological remains while digging those ditches, even though he was occasionally looking for them. He had found some worked wood fragments while digging another irrigation trench at Ø69 (this report, pp.15). He also assured us that the ditches fill with water only once a year in the spring.

Figure 5. Ø68 looking north.

This site is located on an eastern shore of Normu1'ip Saqqaata Tasia (lake), on a mountain slope rising East. This site has several farm buildings (Møller and Madsen 2006a) and a small dwelling structure with the midden located east (down slope), directly outside the entrance. We spent roughly two weeks excavating (2x3.5m on E-W axis) trench cut into the section exposed by the drainage ditch. This gave us a good stratigraphic control from the start, while

excavating stratigraphically using the NABO protocol. The trench was 130cm deep at the eastern end and deeply stratified. Although the preservation conditions were not as good as we had anticipated, we were able to collect a small bone assemblage, several artifacts of soapstone and metal, as well as a granite spindle whorl, and a whetstone. We took soil and geomorphology samples from several layers for chemical analysis, and we expect to date the site with AMS C14 method, using terrestrial animal bones. Micromorphology samples were also taken in one of the animal enclosures at Ø68, taking advantage of a profile prepared for Ancient DNA sampling.

Figure 6. Excavating at Ø68

Towards the end of the excavation at this site, we had worked with our hosts, Arnaq Motzfeldt and Sofiannguaq Lund, who are teachers at the local elementary school on an outreach day. The schoolchildren worked with us in the classroom and in the field for one day, where they learned basics of archaeological excavations, and we discussed some of the immediate results of our excavations as well as their implications on a larger scale. This had been a learning experience for the children, as well as the crew. While they learned about the Norse farmers and archaeology, we learned about their lives at modern Greenlandic farms that are using the same landscape and resources that were available to the Norse. We will continue this excellent relationship next field season, and collaborate with them as part of the “Kids Archaeology program” already implemented in Iceland.

At both Ø64 and Ø68, systematic stratigraphic excavations were conducted and the methods and results will be described in detail in a data structure report that

is under preparation, and will encompass all work done as part of the Vatnahverfi Project by both teams in 2008; therefore, I am not going into meticulous details in this report.

Figure 7. The crew, teachers, and some of the children at the end of the excavation.

Ø66 – *Igaliku Kujalleq* Midden Assessment (N 60.89275938, W 45.27507923)

This high status church farm had been a focus of many researchers (i.e. Gustav Holm, Daniel Bruun, and Aage Roussell to mention just a few). The church and the dwelling had been excavated, as well as some parts of the midden. We tried to locate undisturbed midden deposits associated with the dwelling, but without definite success. Even though the midden mound is clearly visible, several trenches were dug into it and never filled back. They deteriorated with time; their

sides collapsed and are now visible as depressions in the surface. The spoil heaps from those excavations form lumps on the surface, and are usually located next to the old trenches. This had formed a topography that resembles a “chess board” pattern. The dark “squares” are the trenches themselves, and the lighter ones are the spoil heaps. However, the pattern is not as regular as on a chessboard so the location and extent of trenches and spoil heaps is not very clear. Wind and water erosion, by depositing ca.50cm of natural silt (documented in all core profiles at this site), further complicated the assessment. Vatnahverfi is prone to silt deposition by wind and water from the Jespersens Glacier, as evidenced by the filling of the harbor. This erosion and re-deposition is so severe that when the tide is low it is possible to walk several hundred meters into the fjord without walking through water. This makes this bay shallow at high tide, and hard to navigate by boats.

Figure 8. Satellite Image of Igaliku Kujalleq Ø66 and Innoqquasaq Ø64. Note the glacial river depositing large amounts of silt into the fjord (gray areas).

We performed systematic transect coring on northern, western, and eastern side of the farm mound. The main dwelling and the church are located immediately to

the south. The best results were from borings on the N-E part, just at the foot of the farm mound, where we also exercised judgmental coring. Some of these borings encountered well-preserved bones, including a fragment of a seal mandible with a tooth still intact. This area was immediately located next to an old trench dug by Daniel Bruun in 19th century, and now only visible as a shallow (ca. 70-80cm deep) depression. Therefore, we decided to empty out a part the trench, and cut back one of its sides until the fill and collapse was removed, and undisturbed deposits exposed.

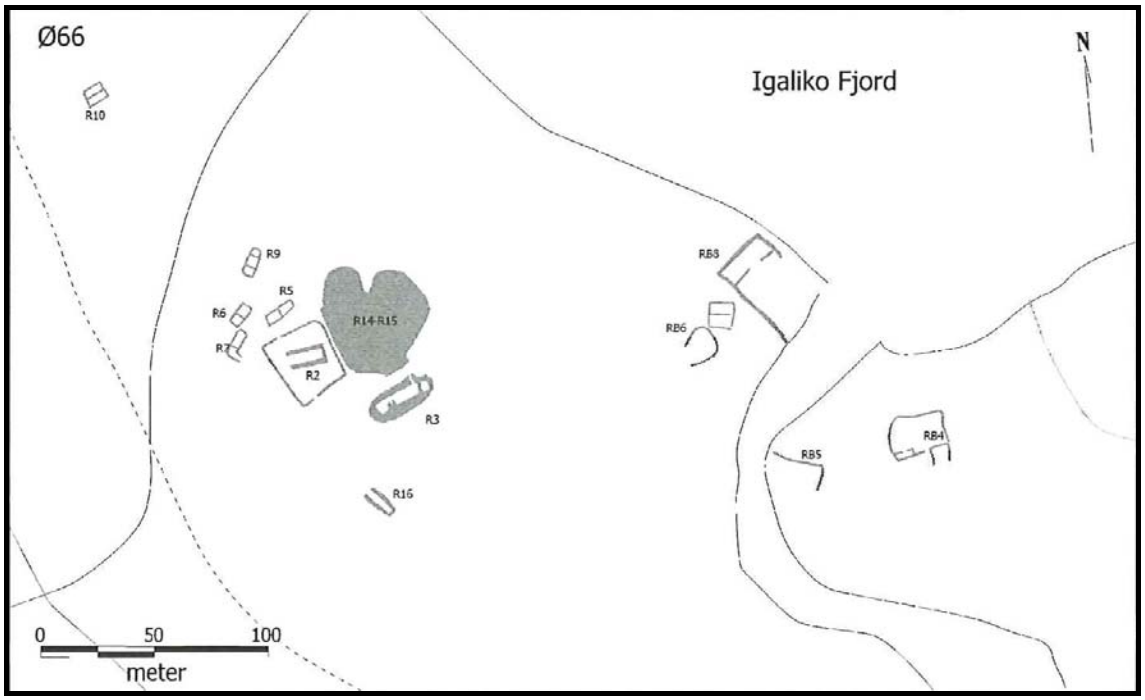

Figure 9. The midden area R15 and the main dwelling R14 are indicated north of the Church R2 (Møller & Madsen 2006a).

The trench had collapsed sides, and while we cut back more that 60 cm to the south, and emptied the trench to the depth of two meters, we still found modern trash deposits. The local farmers used the trench depression in 20th century as a garbage dump. We found modern metal kettles, American mugs (most likely from the abandoned base in Narsarsuaq), iron objects, rubber boots, and fragments of plastic mixed with bones of seals, fish, cattle, sheep, and birds. Objects

associated with modern day sheep farming such as sheep skulls cut with mechanical saws, and wool-cutting shears further testified to the modern provenance of these deposits.

While the objective of emptying out an old trench to gain understanding of stratigraphy and midden composition, as well as organic preservation we set up to achieve is doable, it would require aid of a back hoe (or a much larger team) to clear the overlying silt deposits, and the modern trash. As this task proved labor and time consuming we decided not to focus on this site during 2008 season. The author suggests that to further understand the midden, disturbance and composition, an open area excavation (at least 5mx5m) needs to be conducted. This will allow for a larger overview, and detection of old trenches, even the back-filled ones. This job was too large to be performed with the small crew we had available in 2008.

Figure 10. Profile form the old trench at Ø66 after cleaning. Note the uniform stratigraphy and the 2 meters long scale.

Coring Survey

Ø169 *Amikitap Tasia* (N 60.88492256, W 45.30997611)

Ø169 site is located on the northern shore of Amikitap Tasia (lake). This site comprises of the dwelling and two farming buildings, as well as an interesting animal enclosure that uses the natural topography of a small lake peninsula (Møller and Madsen 2006a). Two coring transects placed southwest of the main dwelling; down the slope towards the lake revealed midden deposits with

relatively well preserved animal bones. The deposits are ca. 70 cm deep (excluding the ca.15 cm of topsoil and natural windblown silt deposited everywhere in the northern part of Vatnahverfi region) and appear to be highly stratified. This site has a potential for recovery of an archaeofauna collection, but the logistics of getting an excavation crew there may be hard. The author proposes to place a small test trench there (1x1m) to confirm the preservation conditions. This can be done as part of the coring/survey project planned for 2009 season.

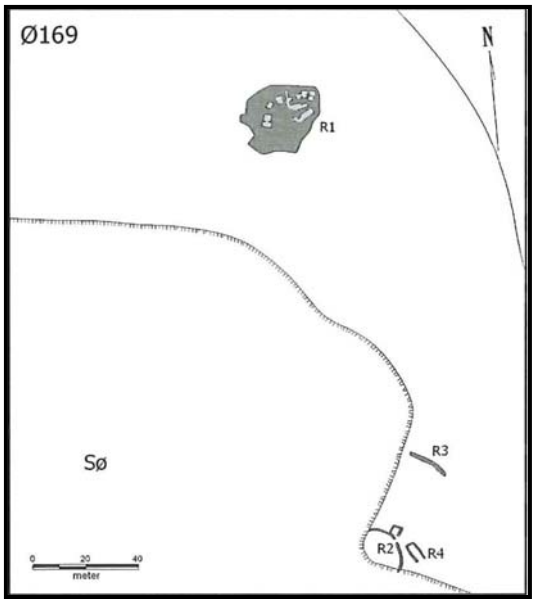

Figure 11. Dwelling and enclosures (Møller and Madsen 2006a).

Figure 12. Test core no.7 at Ø169. Black and gray layering of the midden deposits is clearly visible to the depth of 70cm from the surface.

Ø 67 *Quorlortukasik* (N 60.85399141, W 45.30485761)

This middle-sized farm site, located inland, consists of several farm buildings, and an extensive area of midden deposition southwest of the main dwelling structure (Møller and Madsen, 2006a). By placing series of core transects and

using judgmental coring the author was able to locate two main middens within that area. While coring, some bone remains were encountered at a depth of ca. 60 to 80 cm from the surface. We were unable to asses the total depth of the middens, because permafrost (or frost still from previous – supposedly harsh winter) was present at depth of 80cm throughout the site. It is recommended to test this site with a small trench, and logistics in this case should not pose a problem. A dirt road from the harbor at Igaliku Kujalleq leads to modern day farm (Quorlortukasik) near the archaeological site.

Figure 13. Andala Lund's finds of wood and bone from Ø67.

While digging an irrigation ditch in the area of the site the farmer, Andala Lund, found several fragments of worked wood and a cattle bone (see fig. 13). This area is now under a hayfield, but we did not observe any archaeological structures in the immediate surroundings of the vicinity the area where those finds were picked up. Nevertheless, the preservation of these organic artifacts, found some 150 meters from the main dwelling, suggests that this site may have a potential of generating a zooarchaeological collection.

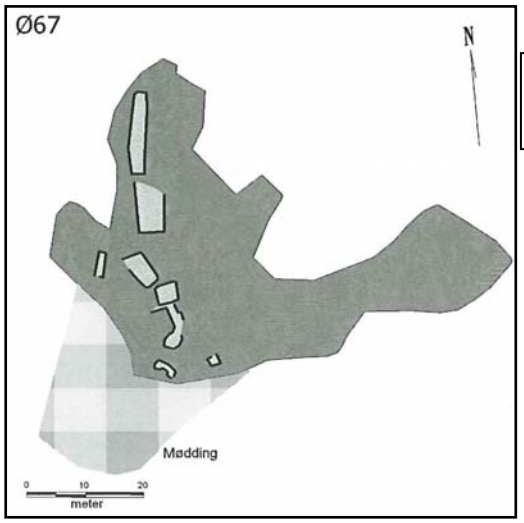

Figure 14.Dwelling and midden area (Møller and Madsen 2006a).

Figure 15. The landscape and the modern farm buildings at Ø67 looking north-west from the top of the Norse farm mound. The middens are located under the willow trees in the foreground. Note the eroded landscape in the background.

Ø 69 *Timerliit* (N 60.85399141, W 45.30485761)

This ruin group is located near modern sheep farm at Timerliit, in close proximity (ca. 1km) from Ø 68. Their location in the landscape is also very similar. Both are located on gentle slopes of mountains that shelter them from the north-eastern winds sweeping Vatnahverfi from the glacier. Both are located on shores of small lakes, and their home fields encompass areas around those lakes. The same farmer dug irrigation trenches here as at Ø68, but here he found some wood fragments in close proximity to the main dwelling. This ditch too, separates the midden in two parts, but while cleaning the section for geomorphology sampling no bones or artifacts were found. It was possible to asses the extent of the

midden based on this section, and judgmental coring. Most of it lies east of the trench, while only small part is on the western side. Both sides are not used for agriculture, so there is no threat to the deposits. The coring transects revealed the extent of the midden layers down the slope (west) from the main dwelling. Very badly preserved single bone fragment was noted in the core only once. Despite the wood fragments found here some years ago, the coring and section clearly demonstrates that the preservation conditions here are not good. It is therefore not recommended to excavate the midden at this site.

Figure 16. Irrigation trench section at Ø69.

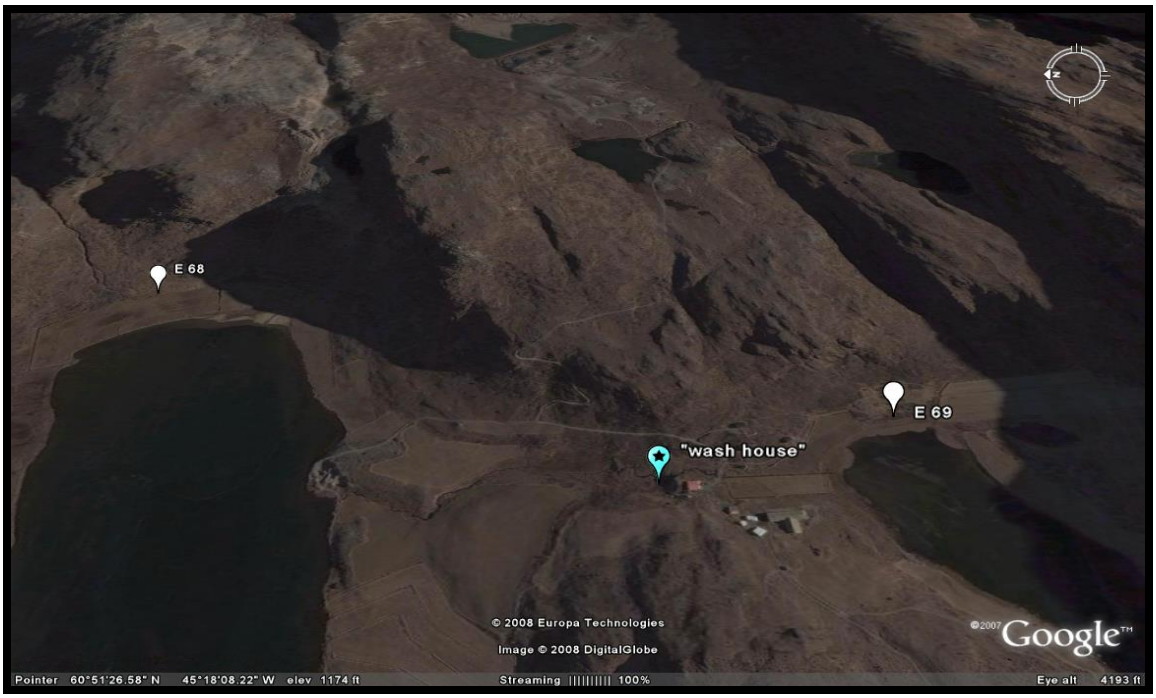

Figure 17. Location of Timerliit, a modern day farm in relation to the Norse farms Ø68 and Ø69. Note the similar placement in the landscape of the archaeological dwellings.

Figure 18. The midden at Ø69 looking west from the main dwelling. The drainage ditch is located at the boundary of the lush grass overgrowing the midden in the foreground, and the willow in the center of the picture.

Ø70 – the Mountain Farm (N 60.504697, W 45.172999)

This site was excavated by Christen L. Vebaek in 1950, but not finished due to the onset of winter weather (Vebaek 1992). This small farm, and may have started as a shieling, which is located over 200 meters above the sea level. A series of spoil heaps and stone cairns from the old excavation are still there. In front of the dwelling (south),

there are areas of lush, green grass that looked like a potential midden. Both transect

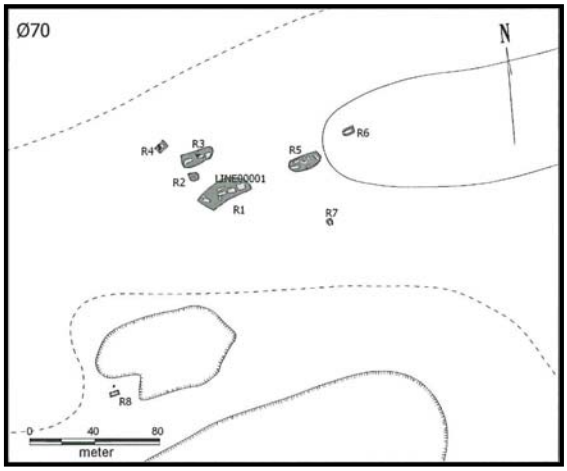

Figure 19. Main Dwelling and some farm buildings. (Møller and Madsen 2006a)

and judgmental coring did not prove effective at finding the midden. In several areas, all around the structure, we evidently cored through old spoil heaps (soft, empty feeling when inserting the core and uniform/lack of clear stratigraphy) that had been spread down slope by wind and water. Since the spoil heaps contained organic material from the occupation phases, the grass grew better there but conditions of organic preservation were not good. We did not encounter any midden material at this site. The core readings were shallow, only ca. 50 cm deep, including ca. 20 cm of windblown silt at the top. It is possible that this site was mainly managed as a seasonal shieling rather than a full farm (like those of roughly contemporary shieling/ sel sites in Iceland), and the midden may not have ever contained much bone debris. This site seems to have very limited potential for further zooarchaeological investigation.

Figure 20. Ø70 the Mountain Farm. The excavated structure and the remains of the spoil heaps and stone cairns resulting from these excavations.

Ø72 (N 60.82618352, W 45.31681356)

This middle-sized inland farm was only briefly surveyed and cored by the author. The main dwelling is located on a south sloping hill, and it was expected that the midden residue had been rolling downhill from the main entrance located on this side. There are areas of lush vegetation there, but series of coring transects did not locate the midden. Judgmental coring was employed, and finally a small midden was found on the northern (back) side of the building. It is not evident from the ruin remains, but there might have been another door on that side. The midden was shallow (ca. 44 cm deep, including 10 cm of silt at the top), and did not extend over a large area (only about 2x2 meters). This site has little potential for midden exploitation, and the logistics of getting to this very remote place without a helicopter are very difficult.

Figure 21. Ø72 Farm mound seen from the west.

Ø75 *Taseq Ammalortoq* (N 60.504872, W 45.132113)

This inland site is unique among the sites investigated during this project in Vatnahverfi area. It comprises of three dwelling structures clearly visible in the topography of the terrain, that are located within 25-50 meters from one another, and a number of associated farm buildings. The dwellings are placed on similarly low altitude on a gently south sloping side of a mountain. This site overlooks a river that flows from a small lake to the S-W of the site, towards another lake (Taseq Ammalortoq) in the east. The three dwellings are very similar to each other and it is probable that they are contemporary. Since there is not much flat terrain around them for a prosperous home field, it is possible that these were shielings belonging to different farms, and functioning at the same time. The coring exercise aimed at locating and assessing the middens associated with these dwellings found that the middens are spread out, shallow, and their accumulation was probably not as intense as at a average Norse farm. This further suggests that the site was a shieling rather than a full time farm site.

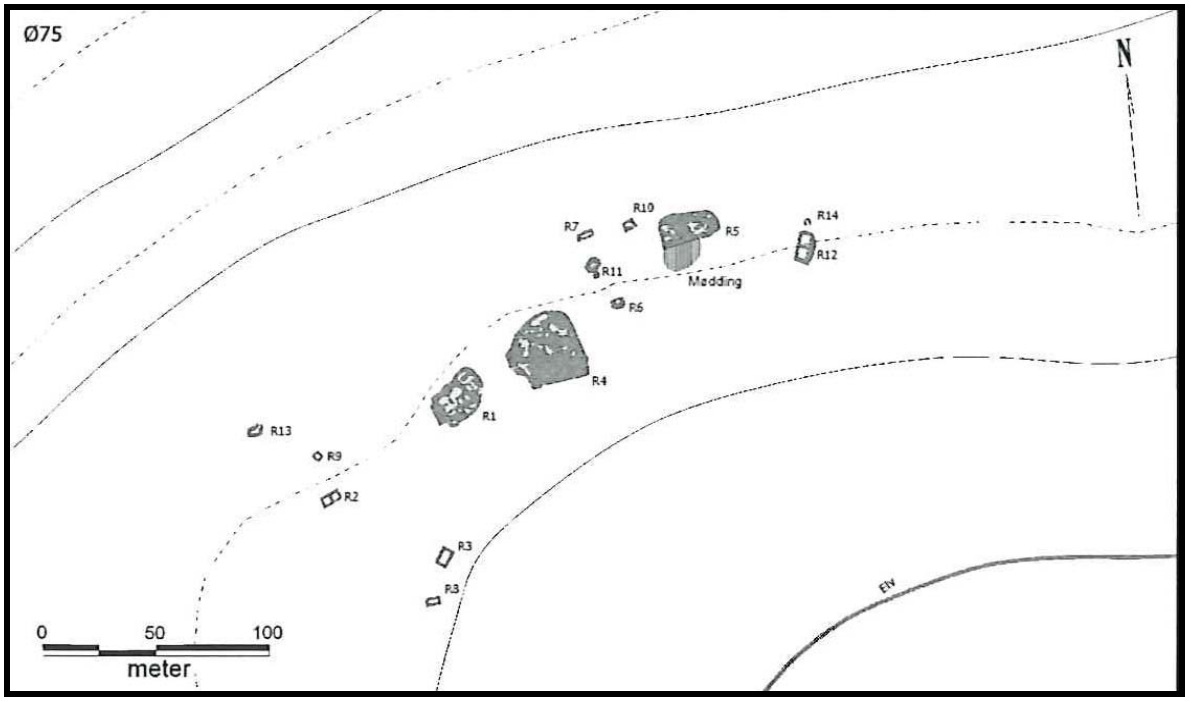

Figure 22. Ø75 (Møller and Madsen 2006a).

For the purpose of the survey and this report, the dwellings were named according to their location: Western Dwelling, Middle Dwelling, and Eastern Dwelling. It was suspected for all of them, that most of the midden material would be located down slope, on the southern side of the structures. This area had pronounced topography of terrain and much more green and lush vegetation than anywhere else. Nonetheless, cores were also drilled north, east, and west of all dwellings to make sure that was the case. Coring exercise proved our earlier assumption to be the truth, and the only midden material detected at this site was in fact on southern (down slope) side of the dwellings, located approximately 4-5 meters south of the visible ruins. All the cores drilled had revealed heavy deposits of windblown silt over the whole site that ranged from 8cm to over 40cm thick.

The midden associated with the eastern structure was located ca. 5 meters down slope from the remnants of southern wall. It was approximately only 20-25cm thick and located under 20-28 cm of windblown silt. The midden layer consisted of small amounts of charcoal that reflected human activity, spots of decomposed organic material, and very little white burned bone specs. This midden is not recommended for zooarchaeological excavation.

The middle dwelling is located approximately 50 meters west of the eastern one. In the cores taken in the most promising places on the northern side, we only recorded some structural turf collapse mixed with little charcoal, but no clear evidence for midden deposits. Approximately 4 meters south of the dwelling, a midden was found sloping ca. 16 m south towards the river. In the deepest part (ca. 5 m south from dwelling), the midden was 87cm deep, and thinned down slope to 34cm at the 16 meter mark. The cores closer to the building (ca. 4-10m from the dwelling wall) produced the richest, although poorly preserved evidence of organic preservation (unburned bone), as well as burned bone, and gray ash indicating proper midden deposits. All this strata was located under 16cm of windblown silt in the northern part of midden, to 42cm of the same silt down slope.

Figure 23. Middle dwelling looking south, towards the river.

Cores taken on northern side of the western dwelling (located ca. 20 meters from the middle dwelling) only revealed 30-45 cm deep deposits of windblown sand, under which an orange-brown sandy silt substrate, that underlies the whole site was found. As in previous two dwellings, the midden associated with this building was located south, and extended for 10 meters down slope. The midden layers were only15-25 cm deep and did not contain preserved organic materials. There were some large charcoal fragments present, but no bone remains at all.

The poor organic preservation at this site may be partially attributed to the leaching of such materials with water running down slope towards the river, especially during spring snowmelt. The gravel moraine located immediately under the sandy silt underlying the whole site is definitely a factor further contributing to leaching at this site. There is no potential for recovery of a well-preserved zooarchaeological collection from this site.

Ø168 *Zucerip Tasia* (N 60.521623, W 45.124248)

The site is located on a flat plateau near the northwestern shore of Lake Zucerip Tasia. There is a large dwelling with several rooms visible on the surface at this site. Large area with lush vegetation and earth lumps just southwest to the dwelling is a classic example of middens recognizable in topography of the terrain. The site area is flat and it seems that there has not been much disturbance on the site since Norse abandonment. The earth lumps mentioned before are midden dump areas, which seem to be in situ since Norse deposition. Several cores were drilled in all directions around the building to confirm the midden location. The midden was located SW from the dwelling and cores resulted with some well and poorly preserved bone fragments. The greatest thickness of the midden deposits encountered was 99cm, located under ca.38 cm of windblown silt. Single fragment of wood and a piece of birch bark were identified in a context with charcoal, in one of the cores.

The mixed signals of good and poor bone preservation, especially the preserved wood, leads author to believe that this midden may have a good potential to generate a bone collection. Further investigating with a small test trench, to asses the preservation condition is advised for this site. Although the logistics of large-scale excavation on this site may be difficult, a 2-3 person survey team should be able to make small-scale test trench excavation (1m x1m) and asses the preservation conditions.

Figure 24. Ø168 is located on the plateau.

Ø66' - Dwelling located on eastern side of the stream at Igaliku Kujalleq (N 60.533340, W 45.160067)

This dwelling is located ca. 450 meters east of the main Norse farm complex at Ø66 (see fig. 25). This site, interpreted as a possible Norse dwelling, is located very close to a modern day farm. It is partially included in a fenced off home field area of a modern farm, where most of the dwelling room depressions are visible on the surface. The modern farmer had filled several of these with sheep manure and planted rhubarb in some of them crating a kind of garden (fig. 26). After looking into one of these depressions, and cleaning off a bit of a profile from under the angelica plants overgrowing it, we observed a possible midden deposit, full of charcoal and few bone fragments. This is not clear if it actually is Norse refuse, as it may represent modern garbage dump, as at Ø66. We decided to core around the structure to find any surviving midden deposits.

Figure 25. Location of Norse sites at Igaliku Kujalleq.

A series of cores NW of the structure revealed a thin ca. 17-47 cm charcoal rich layer testifying to human activity, under 45-60 cm of sterile windblown silt. Only two white burned bone fragments were noticed, and no unburned bone or other organic material traces.

Other possible midden area was located SE of the dwelling. Transect, and judgmental coring in this area showed even less human activity than N of the structure. Here a dark, charcoal rich bands disrupted by windblown silt deposition events were only ca. 5cm thick, and did not contain any preserved bone or organic material. This site does not seem to have much potential for further zooarchaeological excavation.

Figure 26. The other dwelling at Igaliku Kujalleq. Note the rhubarb and angelica plants growing on top of the ruin, in the depressions that possibly indicate separate rooms of the dwelling.

Conclusions

While many archaeological midden deposits at Norse sites in Vatnahverfi Region are poorly preserved, few of them may still prove productive in generating a well-stratified, zooarchaeological collection. Sites such as Ø169, Ø67, and Ø168 have potential, but need to be tested with a small excavation trench. Other sites mentioned have poor, to non-existent organic midden preservation. Ø66 may prove to be a large midden with good preservation, but it would requite a large effort, and numerous team to conduct excavations there. Even with all such effort, this would be a gamble, and the results may be similar to our excavation at Ø68 and Ø64. A table with immediate results of the midden assessments, and some immediate recommendations is presented below. The preservation is

judged on a scale: good/fair/poor/none, and the maximum midden depth includes the windblown silt deposited since farm abandonment. Farms Ø71N and Ø71S were cored, but the extensive excavations by Christen Vebaek, and limited time spent at that site by the author, lead to inconclusive results summarized in the table.

Site Code	Locality Name	GPS Coordinates	Maximum Depth from the Surface	Preservation Condition	Recommendation
Ø64	Innoqqasaq	N 60.550331, W 45.152323	71 cm	Poor	No further midden excavation
Ø68	Timerliit	N 60.86369061, W 45.29716462	130 cm	Poor	No further midden excavation
Ø66	Igaliku Kujalleq	N 60.89275938, W 45.27507923	Uncertain	Uncertain	Large scale excavation at high risk
Ø66'	Igaliku Kujalleq	N 60.533340, W 45.160067	107 cm	Poor	No further midden excavation
Ø169		N 60.88492256, W 45.30997611	85 cm	Fair	Testing with small trench
Ø67	Quorlortukasik	N 60.85399141, W 45.30485761	Uncertain, at least 80cm	Fair	Testing with small trench
Ø69	Timerliit	N 60.85399141, W 45.30485761	115 cm	Poor	No further midden excavation
Ø70	Mountain Farm	N 60.504697, W 45.172999	40 cm	None	No further midden excavation
Ø72		N 60.82618352, W 45.31681356	44 cm	Poor	No further midden excavation
Ø75	Taseq Ammalortoq	N 60.504872, W 45.132113	103 cm	Poor	No further midden excavation
Ø168	Zucerip Tasia	N 60.521623, W 45.124248	137 cm	Fair to Good	Testing with small trench
Ø71N	Saqqaa	N 60.8480799, W 45.36820435	Not Found	Uncertain	More coring and Testing with small trench
Ø71S	Saqqaa	N 60.84751303, S 45.36883953	Not Found	Uncertain	More coring and Testing with small trench

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