Hrísheimar 2005
Interim Report

Figure 1. Expanded area E at Hrísheimar 2005

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Contents

1. Introduction

1.1 Research History

The excavations at Hrísheimar have now been in progress for five years (2000-05) and this report presents the preliminary results of the 2005 season. The site area is at the edge of the active erosion front in this part of Mývatnssveit, and clearly much of the original land surface and archaeological deposits have been destroyed completely by wind erosion. However the site has proven to be surprisingly productive and continued investigations have opened up some unexpected new perspectives on Settlement Age economy and settlement. The site area has produced many surface finds over the years, including many Viking age beads and (in 2003) a copper/bronze sword chape (Edvardsson R. et al. 2003). In 2003 Adolf Fridriksson successfully recovered a domestic dog bone from a plundered pre-christian grave on the ridgeline NE of the main ruin. The dog bone produced a Viking Age radiocarbon date (with allowance for a partial marine reservoir effect; Fridriksson & McGovern 2004). A set of consistent radiocarbon dates and volcanic tephra now indicate settlement from shortly after the fall of the Landnám ash (AD 871+/-2) to the end of the 11th century (discussion below). Ongoing research thus indicates both that Hrísheimar was once a rather prosperous farm, perhaps somewhere in status between the contemporary households at Sveigakot and Hofstaðir nearby, and that it was occupied for only during the first 200 years of settlement.

For the first two years the focus of the work was on surveying and test trenching for assessment rather than on large scale excavation, although a quantifiable archaeofauna was recovered from the 2001 season (McGovern & Tinsley 2001). In 2003 and 2004 the work intensified with the opening of two large excavation areas, one along the ridgeline above the main farm ruin, the other in an area below the farm ruin that was still covered with grass and appeared to contain intact deposits.

In 2003 there were two main excavation areas; one was approximately 60 m west of the farm mound; the other was just beside the farm mound on its eastern side. The areas were individually sub-divided and each was given an area code. The area along the ridge line west of the farm mound was given codes A, B and C while the other area on the eastern grassy slope below the farm mound contained codes H, L and Q.

The 2003 season identified an iron ore processing and iron-producing site in areas A–C. The number of furnaces, 19 small and 2 large, indicate that iron was being produced on a large scale and probably over a long period of time. (Edvardsson, R. et al., 2003). This industrial complex remains unique in Icelandic archaeology and it is possible that Hrísheimar represents one of the "iron farms" occasionally mentioned in the written sources.

In area H a sunken feature building was discovered in 2001. It was filled with stratified midden deposits, which were stratigraphically excavated in 2001 (McGovern & Tinsley 2001). This building H was progressively excavated in 2003-04, revealing well defined structural details and indications that the 4x3m structure was probably a workshop rather than a dwelling (Edvardsson, R. et al., 2004). Expansion of the area H excavation unit in an attempt to stratigraphically connect these features to other intact cultural layers demonstrated that the sunken feature structure and the midden within

were in fact effectively an "island" of surviving in-situ deposit, as the area directly around ruin H has been deflated down to sterile soil or the prehistoric H3 tephra.

In 2003-4 the area L unit just to the north of the area H sunken feature structure was progressively expanded from a test pit to an open area excavation, initially beginning as a 3 x 5m unit but expanding in 2004 to a 6 x 8 m exposure that connected the L unit to the area H unit in its southwest corner. Again, the effects of severe wind erosion were evident, with a truncation surface extending into area L along its southern and south western edges. This stratigraphic truncation has cut diagonally through midden layers and turf structures, creating a deflation surface that proved to slope diagonally across area H and L, exposing deposits of different periods along the sloping southwestern erosion face. This truncation complicated the stratigraphic interpretation of the emerging turf structures in the south western end of area L, prompting an enlargement of the area L excavation area by a further 2 x 2 m.

In an attempt to better understand the tephra stratigraphy and to connect it more effectively to the archaeological deposits, a 5 x 1 m trench (Q) was opened from the eastern (downslope) edge of area L in 2003 and expanded in 2004. The Q trench was eventually expanded to 5 x 2 m and was excavated to a depth of nearly 2 m below modern surface in its eastern end. This long deep exposure allowed documentation of a tephra series from the H3 prehistoric tephra up to the H1717 tephra, which seems to immediately predate the massive erosion (18^{th} c?) that truncated the archaeological deposits and the gradual accumulation of redeposited andisols which followed. In the Q trench cultural deposits appeared to rest just above the Landnám tephra and between the Veiðivötn ca 950 AD tephra and the H 1104 AD tephra. However, at the end of the 2004 season we still had not definitively connected these tephra horizons to the main midden deposits in areas L and H to the west.

Thus the 2003-04 excavations in the expanding area L/Q progressively revealed a complex of middens, early turf structures, and tephra horizons preserved under a 70-90 cm- thick layer of sterile wind deposited silts and fossil turf horizons. We were making rich collections of animal bones and artifacts from clearly definable cultural layers, but by the end of the 2004 season we were confronted with multiple partially exposed sunken feature structures filled with midden, and with wall lines disappearing into the profiles along the northern edge of the enlarged excavation unit.

If we were to properly understand the emerging complex of structures and middens, and to effectively connect the tephra horizons with the rich midden deposits, we clearly needed a major expansion of the excavation unit rather than the series of smaller *ad hoc* expansions carried out in 2004. Three small test pits dug in 2003 (M, N, P) 8 meters north of the L unit had all struck cultural material at ca 70 cm below the modern surface, suggesting that more cultural material was preserved *in situ* to the north of the 2003-04 midden unit L. We decided to open a much larger excavation unit in 2005 in this area to the north of the previous excavation units.

1.2 Methods & Personnel

The methodology for the excavation at *Hrísheimar* followed the approaches already established at the *Hofstaðir* and *Sveigakot* sites, i.e. stratigraphic excavation, single context excavation and recording, 100% dry sieving backed by large scale whole soil

sample collection for flotation. The site was divided into 5 x 5 m planning areas and each archaeological unit was recorded and given a unique context number. The excavation team in 2004 was a combination of experienced graduate students in the archaeology doctoral program of the City University of New York. (CUNY) (Yekaterina Krivogorskaya, Seth Brewington, Konrad Smiarowski, Aaron Kendall) and the NSF-funded Research Experience for Undergraduates team (Raymond Petit, Hugo Azurza, Peter Kuchar, Eduardo Martinez, Courtney Scott, Alexander Volkov). The project was led by Ragnar Edvardsson with aid from Thomas McGovern (Professor, Hunter College CUNY) and from Sophia Perdikaris (Associate Professor Brooklyn College, CUNY), Colleen Batey (FSÍ/Glasgow University) and Mike Church (Durham University). The staff and students collectively represented 9 nationalities (including Mexico, Guyana, Ukraine, Russia, and Poland) reflecting the central role Iceland has come to occupy in training North Atlantic archaeologists in the past decade.

1.3 Objectives for 2005

Our objectives for 2005 were :

1) Expand the excavation area L

2) Locate key tephra horizons within the midden deposits

3) Define stratigraphic relationships between midden fill and emerging turf structures.

2. Excavation Results – Area E

Since our prior expansions of the L unit by small increments had not achieved the necessary horizontal exposure, we were determined to open up a substantial open area excavation to the north of the L unit, despite the problems of shifting the overlying sterile deposits. On July 18th 2005 we began unturfing an ambitious 10 x 10 m expansion of the L unit (see Figure 1, front cover). This expansion of the area L unit was named area E, and dedicated hard work by the excavation crew had cleared the entire 100 sq m of 50-80 cm of sterile overburden by noon on July 22nd. This expansion effectively became a text book example of the advantages of large scale open area excavation, as midden layers could be followed horizontally across the expanded unit, and both the Landnám and Veiðivötn ca 950 tephras could be traced across the site surface and now provide working divisions of the midden deposit. We were also able to fully expose and clear a second small sunken feature structure, and to conclusively demonstrate that the grey green tephra visible in the construction turf was in fact the Landnám sequence, indicating construction soon after the late 9th c. While 201 additional finds were made and a further 35 boxes of animal bone were recovered, probably the most important results of the 2005 season was in establishing a firm working chronology for the surviving archaeological deposits.

2.1 ***Area E Features*** : turf boundary wall [279]. The expanded unit quickly revealed the remains of a curved turf and stone boundary wall running across the entire excavation unit along its eastern side, along the lower part of the sloping hill side. This construction was partially truncated in some areas by the 18th c soil erosion, but in most parts of the unit it stood 50-75 cm high. This wall line had a substantial amount of loose turf and stone dumped along its western (uphill) side, and seems to have acted as a leveling

revetment as much as an enclosure, perhaps reducing the steepness of the slope as well as providing a yard enclosure. Earlier phase midden deposits ran under this turf walling, and it definitely belongs to a late phase of the farm's occupation.

2.2 Area E Features : Sunken Feature Structure D: During the 2005 season, it became clear that the 2004 profile visible in figure 1 (front cover) was bisecting another sunken featured structure, whose walls were partially constructed of turf blocks holding large amounts of LNS tephra.

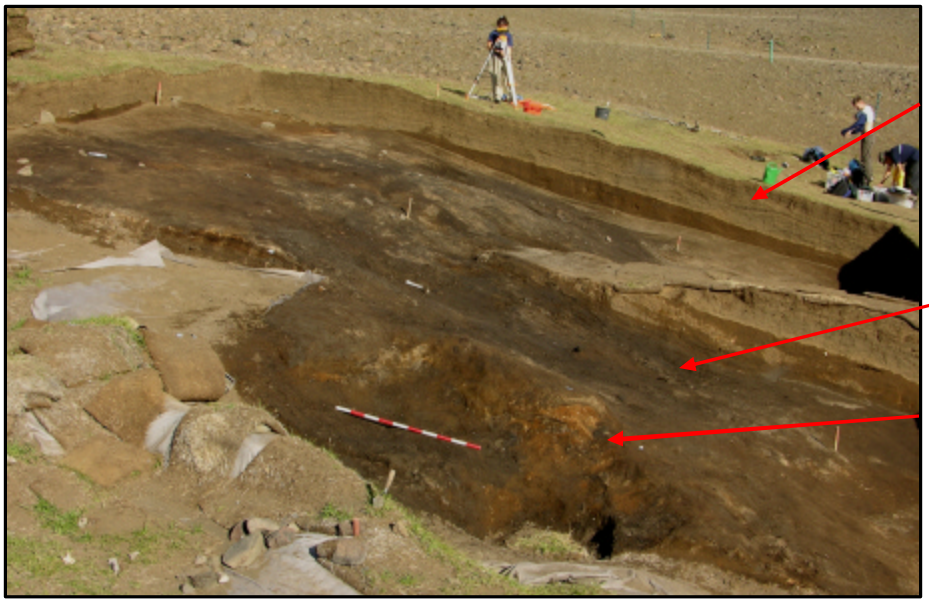


Figure 2
The 75-90 cm thick banded soil accumulation above the archaeological layers.

2.3 Area E Features: tephra horizons

The two key tephra horizons for Viking age archaeology in Mývatnssveit have been the local manifestation of the widely distributed grey-green Landnám Sequence (LNS) of AD 871+/2 and a much more localized grey green Veiðivötn tephra which seems to have fallen over the southern portions of Mývatnssveit sometime in the first half of the 10th c and has been referred to as V 950 when encountered at Sveigakot and Hofstaðir. While the two tephra are chemically distinct and the earlier Landnám tephra contains crystalline inclusions which the later tephra lacks, it is not always easy to immediately distinguish these layers, and re-deposition is always a potential problem around turf built structures. All of the turf wall constructions encountered beneath the midden deposits in areas H and L had thick bands of grey-green tephra in their turves, suggesting that these turf blocks were cut within a short time of the tephra deposition. The positive identification of LNS vs. V950 in these structural turves was thus important for phasing the structures as well as dating midden deposition.

The large open area exposed in 2005 by the E unit rapidly allowed recognition of the LNS in the north west corner of the E unit, where erosion has cut down into the natural soil in patches. This exposure revealed the distinctive local double-banding of the *in situ* LNS which could be followed over an area of 3.5 meters. No cultural materials were visible below the LNS, but midden material was present directly above. Further south along the western (uphill) edge of the E unit a second grey green tephra surface was

identified, this time with midden material both above and below. This surface could be followed to the LNS exposure area in the northwest corner, physically establishing its superposition above both the LNS and midden deposits. A site visit by Dr. Mike Church of Durham University (who had logged and described the tephras visible in the deep Q trench in 2004) confirmed the identification of the upper grey green tephra surface as V950 and the lower as the local LNS. The V950 tephra surface (context [295]) was traced across the full length of the E unit, and confirmed to pass above the wall tops of the buried turf walled structures identified in area L. These structures had been abandoned for some time prior to the fall of the V950 tephra, and were roofless and partially filled with midden material when the tephra fell. The grey green tephra visible in their construction can thus be firmly identified as the LNS and the structures dated to the very first phases of the settlement. The V950 tephra had not been observed within the midden layers during prior excavation as at Hrísheimar it is much thinner and less continuous than at Sveigakot, and hard to recognize in profile view. This may reflect the orientation of the surviving deposits at Hrísheimar which survive largely because they are in the lee of the main farm mound ruin that provides shelter from winds coming from the south. It is also possible that the V950 tephra fell while Sveigakot was in one of its periods of abandonment and accumulated relatively undisturbed, while the Hrísheimar middens were definitely rapidly accumulating as part of an actively occupied farm at the time of the tephra fall. In any case, once the nature of the Hrísheimar V950 tephra surface was recognized, it was possible to positively identify the tephra horizon in digital photos from the 2001 test excavation of the area H sunken feature structure, running through the midden fill. It is thus possible to stratigraphically connect the area H structure and its midden fill to the structures and middens in areas L and E, despite the erosion of the cultural deposits between. As in area L, the area H sunken feature structure was a roofless ruin partially filled with refuse when the V950 tephra fell, and its turf construction likewise dates to the earliest period of occupation.

3. The Finds : The 2005 Hrísheimar excavations collected 201 artifacts as small finds, and a complete listing is presented in Appendix A. As usual, the great majority of the finds were iron nails and other small corroded iron objects. The finds also included several spindle whorls made of steatite (and one made of lead), glass beads, schist whetstones, and several bone pin fragments. The finest of the bone pin fragments is illustrated at right, and may have had a role in textile production.

Figure 3. Bone pin (find 149)

4. Zooarchaeology

The excavations at Hrísheimar have produced a very large archaeofauna (5 boxes 2001, 15 boxes 2003, 27 boxes 2004, 35 boxes 2005) which is still being analyzed at the CUNY Zooarchaeological laboratories at Hunter and Brooklyn Colleges. While this means that all discussion of the zooarchaeology must be seen as a preliminary working report, 6,238 fragments have been identified out of a total of 27,780 fragments examined. This total is spread across seven contexts from areas H (sunken feature structure fill) and L (sheet midden and sunken feature fill). Three contexts (L 082, L 087, H 005) are from below the V c 950 tephra ("lower") and four contexts (H 004, H 003, L 045, and the deflation layer 002) are from above the V c 950 tephra (upper). The great majority of the bones come from 003,045, 082 and 087.; a summary of the species identified and the bone fragment count is presented in table 1 below.

Table 1
Hrísheimar Preliminary March 2006

phase	lower	lower	lower	upper	upper	upper	deflated upper	total all
context	L 087	L 082	H 005	L 045	H 004	H 003	H-L 002	
DOMESTIC MAMMALS								
Cattle	31	44	32	60	12	187	5	371
Horse		1		1		4		6
Pig	3			31	7	299	7	347
Goat	2	1		3		19		25
Sheep	53	105	1	15	3	117	4	298
Caprine	198	542	40	244	25	604	14	1,667
WILD MAMMALS								
House mouse	1							1
Arctic fox				2				2
SEA MAMMALS								
Seal sp	1							1
Whale sp	1							1
small cetacean				2				2
BIRDS								
Duck species		1		2				3
Scaup	2							2
Goldeneye		1						1
Long tailed Duck		1						

								1
Grt. N. Diver				1				1
Diver sp.				1				1
Ptarmigan	23	24		110		167		324
Swan				2				2
Gull sp.				1				1
Bird sp.	30	9		172		57		268
FISH								
Freshwater fish								
Charr	76	47		685		1		809
Trout	19	39		624		2		684
Salmonid sp	59	28		357		141		585
Marine Fish								
Cod	80	95		16		2		193
Haddock		1		2		17		20
Saithe	2	1				9		12
Gadid	48	43		47		29		167
Fish sp.	117	56		194		38		405
Gastropod				1				1
SHELLFISH								
Mytius edulis				13				13
Clam sp	3			11				14
Mollusca sp.				11				11
NISP TOTAL	749	1,039	73	2,608	47	1,693	30	6,239
Large Terrestrial Mammal	44	75	15	77	10	271	3	495
Medium Terrestrial Mammal	853	605	110	1,586	77	1,034	48	4,313
Small Terrestrial Mammal	11	1		6				18
Unidentified fragments	725	447	1,213	11,815	423	1,809	283	16,715
TNF TOTAL	2,382	2,167	1,411	16,092	557	4,807	364	27,780

Species present

The Hrísheimar archaeofauna has nearly the full range of Icelandic domestic mammals, lacking only cat and dog bones (but medium size carnivore tooth marks almost certainly

left by domestic dogs are found on bones from all contexts). Wild mammals include both native arctic fox (*Alopex lagopus*) and imported house mouse (*Mus musculus*, positive identification based upon a single nearly complete skeleton from context 087 (below the V c 950 tephra). *Mus musculus* was also identified from early settlement contexts at Hofstaðir, and *Mus musculus* seems to have also been the most common commensual rodent in the Nordic colonies in Greenland (McGovern 1985), suggesting that it was widely dispersed during the Viking settlement age.

Sea mammal bones have been recovered from other early inland Icelandic sites, including Sveigakot, Hofstaðir, Háls, and Unðir Sandmúla, and a few seal and small whale (probably porpoise) bones also appear in the Hrísheimar collection. Note that a knife handle made from a walrus baculum (penis bone) was recovered from the 045 context in 2003, though this could have been imported from many distant sources.

Bird bones make up a small portion of the archaeofauna, and in all contexts the great majority of these bones come from the local Ptarmigan (*Lagopus mutus*) rather than the migratory Mývatn waterfowl (represented by only a few bones). Most of the bird bones that could not be speciated (Bird sp.) could all be Ptarmigan as well. In 2005 as in 2003-04 masses of bird egg shell were encountered in excavation in many contexts- large scale egg collection clearly took place during the 10th c at Hrísheimar as at other contemporary Mývatnssveit sites. Specialist identification work using SEM imagery by Jane Sidell (U C London) indicates that the great majority of the eggs are duck species, but that some fragments were from Ptarmigan and sea bird eggs (Sidell in McGovern et al 2006 in press). The Hrísheimar archaeofauna thus strongly supports the picture of long term sustainable harvesting of migratory waterfowl eggs (but not adult birds) built up by the prior work in Mývatnssveit.

Fish bones make up a substantial portion of the archaeofauna, including both freshwater arctic charr (*Salvelinus alpinus*) and trout (*Salmo salar*) and marine fish (mainly Gadidae, cod family). The marine fish are all represented by lower vertebrae and bones of the pectoral girdle (around the gill slit), and their remains on this inland site provide further evidence of an early (pre 1000 AD) intra-Icelandic trade in preserved marine fish products (see Amundsen et al 2005, Krivogorskaya et al 2005, Perdikaris & McGovern 2006a,b).

The molluscan remains include some clam shells which may have been used as artifacts (scoops or spoons) and a few very small mussel shells (Mytilus edulis) which were probably brought inland in the root balls of seaweed collected (possibly for salt production) along the seacoast.

Change through time: The Current Patterns

As figure 4 below indicates, there is a marked change in the composition of the domestic stock bones being deposited above and below the V950 tephra. The large number of caprine (mainly sheep) bones appearing in the [082] and [087] contexts may possibly relate to the dumping of partially articulated skeletons- several whole lamb

skeletons and several articulated limbs were identified during excavation (and counted as 1 NISP in this analysis). It is likely that some articulated sheep carcasses went unrecognized, inflating this taxon's NISP count for these two contexts. However, a possible inflation of the caprine count does not explain the marked difference in the frequency of pig bones between the two phases. While pigs are very common in the post-V 950 deposits, they are rare in the early deposits. This pattern reverses the overall temporal trend in Iceland, where pigs generally are most common in the earliest phases and decline sharply relative to both cattle and caprines in the 11th-13th c. As the figure indicates, this pattern is not simply a statistical artifact (high concentration of bones in the largest NISP contexts) but repeats across the different contexts.

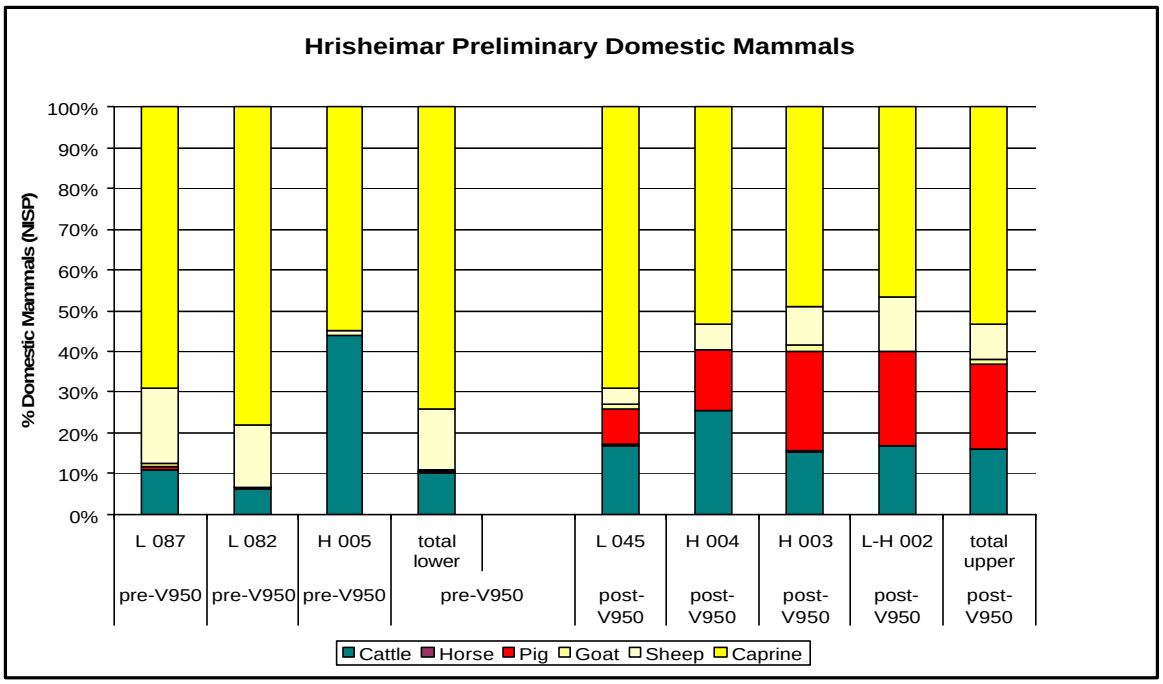


Figure 4 Domestic Mammal Bones

Figure 5 below presents an overview of the abundance of major taxa in the analyzed contexts, indicating the degree of variability between deposits.

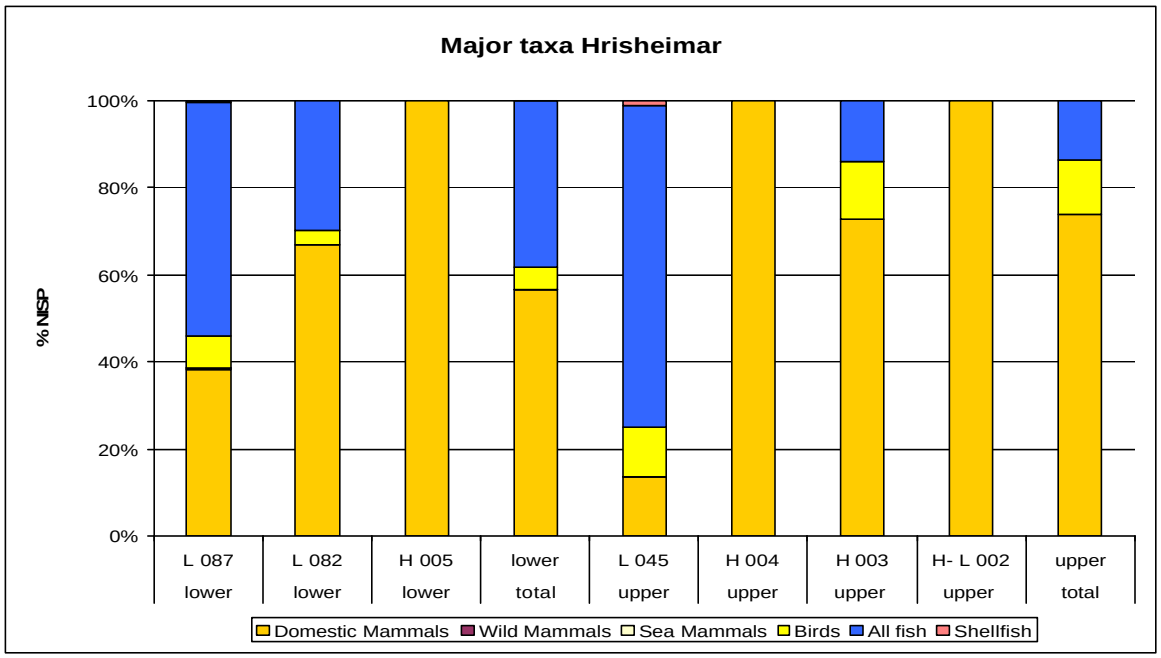
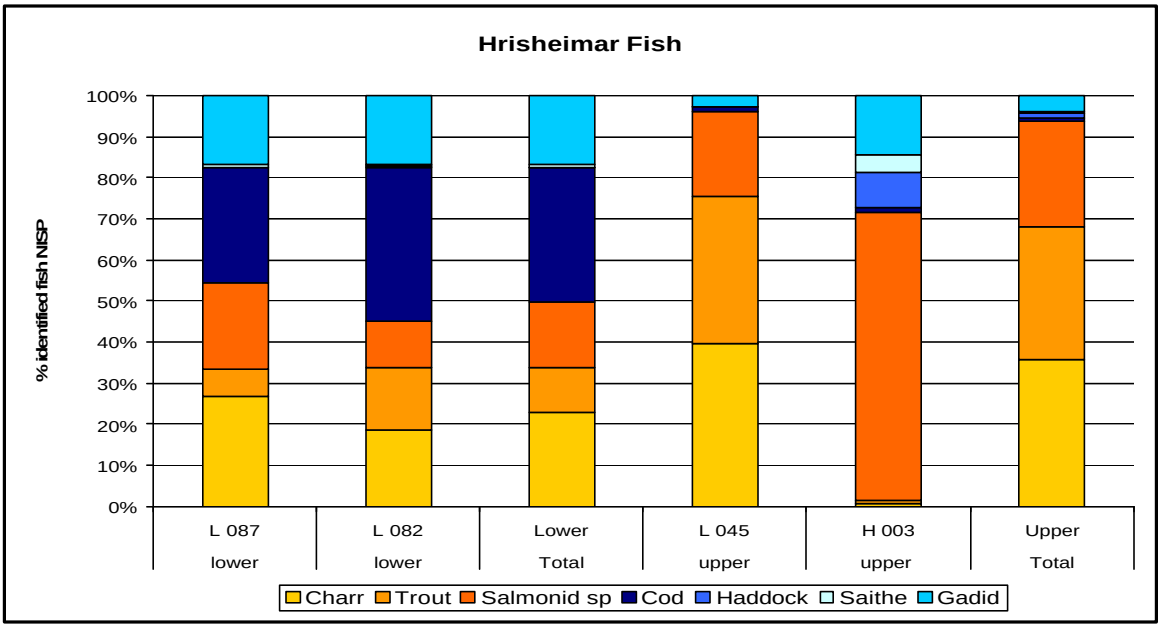


Figure 6 below compares the fish taxa for the contexts with substantial fish collections, illustrating another unexpected pattern in the current data set. Marine fish bones (blue shades) equal or outnumber freshwater fish bones in the larger lower (pre V 950) contexts, but the drop to the more usual 10-20% level in the upper layers. It remains to be see if this pattern is a sampling artifact or if it represents a major change in the use of fish as household provisioning at Hrísheimar.



Zooarchaeological Summary:

While only a portion of the Hrísheimar archaeofauna has been analyzed, several unexpected and intriguing patterns have emerged. While it is dangerous to put too much analytic weight upon any amount of bone that comes from a restricted area or single context, the current evidence from Hrísheimar challenges some of our assumptions about the economic processes behind first settlement in Mývatnssveit, and provide another reason for continued excavation to recover larger early collections which may be more representative of the pre-950 economy.

5. Chronology

A suite thirteen AMS radiocarbon age determinations are now available from contexts from both area H and area L (Table 2, Figure 7)

Lab Reference #	Context	Material	comment	delta C13	radiocarbon age BP
SUERC-3441	[002]	cattle bone	deflated midden	-21.5	1095+/-35
SUERC-3442	[002]	pig bone	deflated midden	-20.2	1120+/-35
SUERC-3446	[002]	cattle bone	deflated midden	-21.5	1080 +/-35
AA49627(GU9729)	[003]	cattle bone	Area H upper	-20.7	1150+/- 35
AA49628(GU9730)	[003]	cattle bone	Area H upper	-21.0	1135+/- 45
AA49629(GU9731	[003]	cattle bone	Area H upper	-20.2	1135+/- 45
SUERC-3439	[003]	cattle bone	Area H upper	-21.1	1085+/-35
SUERC-3440	[003]	pig bone	Area H upper	-21.4	1150+/-40
SUERC-6433	[045]	cattle bone	Area L upper	-21.7	1120+/-35
SUERC-6437	[045]	cattle bone	Area L upper	-20.7	1120+/-35
SUERC-3445	[060]	cattle bone	Area L upper	-20.9	1090+/-35
SUERC-6431	[293]	cattle bone	Area L lower	-21.5	1220+/-35
SUERC-6432	[293]	cattle bone	Area L lower	-21.4	1200+/-35

Table 2 Laboratory data

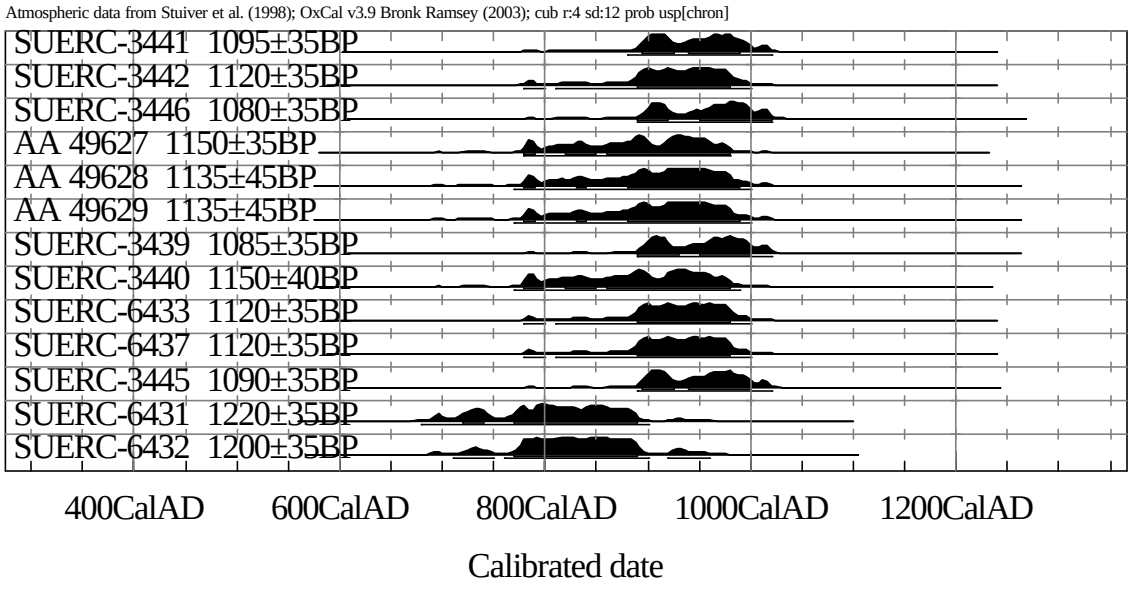


Figure 7 Calibrated two sigma ranges for current AMS Radiocarbon dates for Hrisheimar

These 13 AMS radiocarbon dates have been kindly provided by Dr. Gordon Cook of the Scottish Universities Reactor Centre in East Kilbride Scotland. Additional samples of marine shells and freshwater charr were also run as part of a larger radiocarbon reservoir effect study in the N Atlantic funded by the UK Leverhulme Trust. As expected these provided ages far older than the domestic mammal bones from the matched contexts and are not used for chronology, though papers are in preparation discussing the carbon and nitrogen isotope results. Note that pig bones submitted produced the same strongly terrestrial delta C13 results as the cattle, indicating a diet fully within the marine food web.

The calibrated date ranges are presented in stratigraphic order, with the two lowest dates coming from just below the V950 tephra horizon and all the other dates coming from above this tephra. The overlap in calibrated dates from the upper midden fill of the sunken feature structure H and the upper midden fill of the sunken feature D_ in area L are in agreement with their common stratigraphic position above the V950 tephra and further suggest that the middens infilling these two structures are roughly contemporary and can reasonably be placed in the same phase. The three uppermost dates (context [002]) were run on bones in the lowest part of the post-deflation natural overburden. These were selected to investigate the possibility that the occupation at Hrísheimar continued into the later Middle Ages or early modern period, but that all these layers had been completely removed by erosion, leaving only the Viking Age layers intact. As the figure indicates, these three calibrated dates do not support this hypothesis, and instead group with the *in situ* upper midden dates. At present, both the available radiocarbon dates and the position of the H1104 tephra above the in situ upper midden deposit in area Q fail to indicate any occupation beyond the mid-to-late 11th century. The planned investigation of the main farm mound in 2006 may help to resolve this question, and perhaps shed light upon the reasons for abandonment of what had clearly been a large active site during the Viking Age.

6. Publication and Dissemination

While excavations are ongoing and major collections are still under study, preliminary statements of the results of the Hrísheimar excavations and uses of the site for comparative purposes have appeared in the following publications:

Amundsen Colin, Sophia Perdikaris , Thomas H. McGovern , Yekaterina Krivogorskaya , Matthew Brown , Konrad Smiarowski, Shaye Storm, Salena Modugno, Malgorzata Frik, Monica Koczela (2005) 'Fishing Booths and Fishing Strategies in Medieval Iceland : an Archaeofauna from the of Akurvík, North-West Iceland', *Environmental Archaeology* 10,2 :126-146.

Perdikaris, S. & T.H. McGovern, Walrus, Cod Fish, and Chieftains : Intensification in the Norse North Atlantic, in : Thurston, T. L. and C. T. Fisher (eds.)
(2006). *Seeking A Richer Harvest: The Archaeology of Subsistence Intensification, Innovation, and Change*. Springer Science+Business Media, New York, pp 67-89.

Krivogorskaya Yekaterina, Sophia Perdikaris, & Thomas H. McGovern
(2005) Fish bones and fishermen: the potential of Zooarchaeology in the Westfjords, *Archaeologica Islandica* 4 : 31-51

Guðmundur Ólafsson, Thomas H. McGovern, Kevin P. Smith
(2005), *Outlaws of Surtshellir Cave: the underground economy of Viking Age Iceland* in B. Grønnow (ed) *Dynamics of Northern Culture Change*, National Museum of Denmark Copenhagen.

Thomas H. McGovern , Orri Vésteinsson , Adolf Fridriksson, Mike Church , Ian Lawson, Ian A. Simpson, Arni Einarsson , Andy Dugmore , Gordon Cook , Sophia Perdikaris , Kevin Edwards , Amanda M. Thomson, W. Paul Adderley ,Anthony Newton , Gavin Lucas , Oscar Aldred
2006 (in press)
Landscapes of Settlement in Northern Iceland: Historical Ecology of Human Impact & Climate Fluctuation on the Millennial Scale, invited paper in special issue on the archaeology of global change, *American Anthropologist*,

Conference paper presentations at: Association for Environmental Archaeology (Winchester 2004), Society for American Archaeology (Salt Lake City 2005), University of Iceland History Seminar (January 2006), and the 2005 meeting of the Icelandic Archaeology Association at Holar.

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Sigurðardóttir, K.H. (2004).*"Haugfé". Hlutavelta tímans. Menningararfur á Þjóðminjasafni.*. Árni Björnsson og Hrefna Róbertsdóttir (ed) Þjóðminjasafn Íslands, Reykjavík, 64-77.

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Appendix A: Finds list Hrísheimar 2005 with annotations by Dr. Colleen Batey, U Glasgow.

Find # 2005	Object	Material	Notes
1		Iron	Two pieces
2	Whetstone	Stone	Small frag./one piece
3		Iron	Small object
4		Bone	Worked whalebone
5	Nail	Iron	round head, square shank
6	Nail	Iron	round head, round broken shank
7		Stone	Possible strike-a-light

8		Iron	Possible vessel fragment
9		Iron	Field walking
10	Buckle	Iron	
11	Slag	Slag	Bulk slag from context 2, 90% smithing slag
12		Iron	looks like end of key
13		Iron	
14	Whetstone	Schist	
15		Iron	
16		Iron	
17	Nail	Iron	square head, square shank broken
18	Nail	Iron	oval head, square shank
19	Rivet/Rove	Iron	rivet attached to iron sheet, possibly rove
20		Steatite	
21		Iron	iron spike, sharp at both ends and slightly bent
22		Iron	
23		Iron	hook shaped iron bar
24		Iron	possibly broken end of nail
25	Rove	Iron	broken in half
26	Spindle Whorl	Steatite	half of whorl, Bryggen type A
27		Iron	square shank stud
28		Iron	iron sheet
29	Nail	Iron	round head, round shank, bent at tip
30	Needle	Iron	possibly needle, lacking hole
31		Iron	
32	Nail	Iron	broken square nail shank
33		Iron	triangular iron sheet
34	Nail	Iron	round head, round shank, broken mid shank
35	Nail	Iron	broken round shank
36		Iron	possibly broken nail shank
37	Nail	Iron	bent nail shank missing head
38		Iron	small iron sheet
39	Rove	Iron	badly corroded rove with part of nail intact
40		Iron	
41	Nail	Iron	round head, round shank, broken just below head
42		Iron	
43	Nail	Iron	round head, indet shank, broken mid shank
44		Iron	bulbous headed pin with hole thru, broken shaft
45	Nail	Iron	bent square shank, no head
46	Needle	Iron	large needle with eye filled in with corrosion
47	Punch	Iron	small punch with square cross section
48		Iron	bent round cs iron bar
49	Crampon	Iron	possible broken crampon spike
50		Iron	possible nail shank, shape indet
51	Nail	Iron	indet head and shank, broken tip
52		Iron	
53		Iron	
54		Iron	possibly tip of nail
55	Slag	Slag	
56	Bead	Clay	large inner dia bead, possibly fired clay
57	Whetstone	Schist	one face possibly worked
58	Nail	Iron	round head, round shank, broken mid shank

59		Iron	
60	Slag	Slag	
61		Iron	
62	Rove	Iron	rectangular rove
63	Nail	Iron	square head, square shank, broken tip
64		Iron	bent metal w holes in both ends, poss. Clamp
65		Schist	indet object, possibly schist
66	Nail	Iron	indet head and shank, broken shank
67	Nail	Iron	round head, indet broken shank
68	Nail	Iron	round head, round shank, broken below head
69		Iron	
70	Nail	Iron	round nail shank, no head
71		Flint	indet flake
72	Slag	Slag	
73		Iron	
74		Iron	bent metal plate with rivet thru one end
75	Nail	Iron	round head rivet and rect. Rove
76	Slag	Slag	
77		Bone	small bone with slight perforation
78		Iron	iron sheet
79	Blade	Iron	possible iron blade, no tang
80		Iron	possible nail tip
81		Iron	
82	Whetstone	Schist	
83	Slag	Slag	
84	Bead	Glass	blue glass bead
85	Nail	Iron	complete nail, oval head, round shank
86		Iron	
87	Whetstone	Schist	
88	Nail	Iron	small nail frag, indet head shape
89	Nail	Iron	round broken head, square shank, bent tip
90		Iron	indet iron frag
91	Nail	Iron	round head, indet shank
92	Knife blade	Iron	possible blade with most of edge missing
93	Nail	Iron	round head, round shank, missing tip
94	Nail	Iron	round head, shank broken just below head
95	Spindle Whorl	Steatite	approx. Half of small spindle whorl
96	Whetstone	Schist	
97		Iron	fragment of iron plate
98		Iron	possible strap end
99		Iron	bent iron shaft
100	Spindle Whorl	Steatite	half of whorl possible match to sf95
101	Bead	Glass	complete blue bead
102	Whetstone	Schist	small frag
103	Whetstone	Schist	small frag
104	Whetstone	Schist	small frag
105		Stone	possibly schist frag
106	Whetstone	Schist	worked on four surfaces
107		Flint	small flake
108	Strike-a-light	Iron	half of piece
109		Iron	indet thin curved piece

110	Bead	Glass	complete blue bead
111	Pin	Bone	frag of bone pin shaft
112		Stone	possible manuport pebbles
113		Iron	indet shaft frag
114	Blade	Iron	small blade broken just below tang
115		Flint	small flake
116	Bead	Bone	globular bead with polishing
117		Iron	thin disc with hole thru center
118	Nail	Iron	round head and shank, broken mid shank
119	Slag	Slag	
120	Whetstone	Schist	four faces worked
122	Whetstone	Schist	four faces worked
123	Nail	Iron	compelete boat nail
124	Nail	Iron	round head, round shank, broken mid shank
125		Iron	possibly end of a utensil
126		Stone	possible manuport, quartz?
127	Nail	Iron	small nail, round shank, indet head, broken mid sh
128	Slag	Slag	
129		Flint	small flake
130	Nail	Iron	complete boat nail
131		Iron	large piece, poss. Handle or key, found in sieve?
132	Slag	Slag	
133	Whetstone	Schist	two worked faces
134	Spindle Whorl	Lead	complet whorl, very finely made
135	Comb	Antler	term frag incl tooth plate & outer pieces, 1 rivet
136		Iron	possible pin shaft
137		Iron	shaft of indet tool
138		Iron	indet frag of metal sheet
139	Slag	Slag	
140	Nail	Iron	round head, round shank, broken tip
141		Iron	possible wood working tool, broken shaft
142		Stone	possible flint frag
143	Nail	Iron	round head, round shank, broken tip
144	Nail	Iron	possible small tack, bent shank
145		Iron	complete indet tool, poss. Handle
146	Whetstone	Schist	
147		Iron	small iron shaft
148	Bead	Glass	cloudy white bead
149	Pin	Bone	head of bone pin with 9 holes thru, for wool work?
150	Slag	Slag	
151	Bead	Glass	cloudy white double bead, only half found
152		Iron	flat indet iron object
153		Iron	iron frag with part of hole thru
154		Flint	flint flake
155	Nail	Iron	round head, round shank, broken shank
156		Iron	possibly nail or blade tang
157	Nail	Iron	round head, round shank, broken shank
158		Iron	possibly tang
159		Stone	manuport, possibly a predrilled bead
160		Iron	bent shaft
161	Whetstone	Schist	small frag

162	Nail	Iron	round head, round shank, broken shank
163		Iron	small frag of iron wire
164	Buckle needle	Iron	
165		Iron	possibly part of a rove
166		Steatite	small frag
167		Steatite	small frag
168		Iron	small bent frag of shank
169		Iron	small frag of sheet
170		Iron	indet frag
171		Iron	small frag of wire
172		Iron	small frag of wire
173	Buckle needle	Iron	only small part of bent end remaining
174		Iron	small frag of sheet
175	Whetstone	Schist	small frag
176	Whetstone	Schist	small frag
177		Stone	small quartz frag
178		Wood	large piece of wood, possibly structural
179		Stone	frag of flint?
180		Iron	frag of indet shaft
181		Stone	red sandstone, manuport?
182	Spindle Whorl	Steatite	half of whorl, incised line indicating reworking
183	Slag	Slag	
184		Iron	indet shaft of iron
185	Nail	Iron	possilby small boat nail
186	Whetstone	Schist	possibly thin frag from whetstone
187	Manuport	Stone	quartz pebble
188		Iron	indet iron sheet fragment
189	Comb	Antler	tooth plate
190	Slag	Slag	bulk
191	Slag	Slag	bulk
192	Slag	Slag	bulk
193	Slag	Slag	bulk
194	Slag	Slag	bulk
195	Slag	Slag	bulk
196	Slag	Slag	bulk
197	Slag	Slag	bulk
198		Iron	indet object
199	Nail	Iron	
200		Steatite	possible steatite frag
201		Iron	indet iron frag