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An Interim Report of the Viking Age Archaeofauna from Hrísheimar, Mývatn District, N Iceland

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Abstract:
The excavations at Hrísheimar in Mývatnssveit in N Iceland are producing a very large archaeofauna, which can now be dated through both radiocarbon and two major volcanic tephra layers (the Landnám tephra of ca AD 871 and the Veiðivötn 930 tephra). While much of the site has been destroyed by wind erosion, substantial midden deposits (which overly earlier structures in some cases) still remain along the NE edge of the site area. While excavation is ongoing and only a small portion of the very substantial archaeofauna has been analyzed so far, it may be useful to present an interim working report of this important new early Icelandic archaeofauna.

Overview

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 1below.

Hrísheimar Preliminary March 2006							deflated	total
phase	lower	lower	lower H	upper	upper H	upper H	upper H- L	all
context	L 087	L 082	005	L 045	004	003	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 1 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.

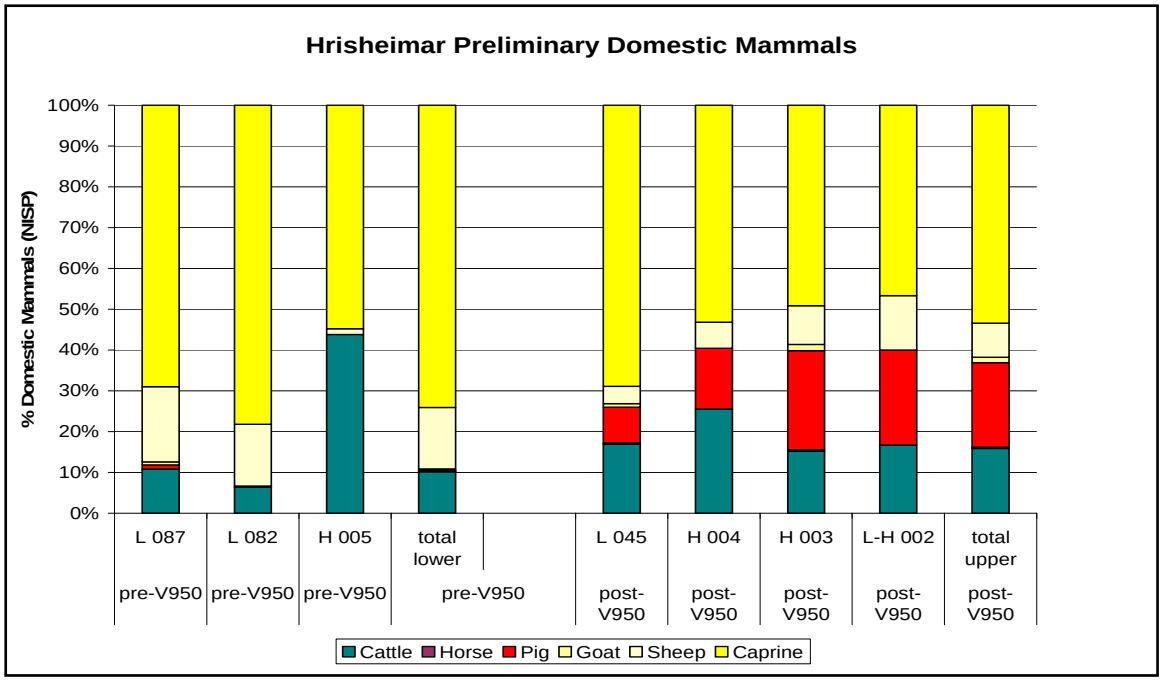


Figure 2 below presents an overview of the abundance of major taxa in the analyzed contexts, indicating the degree of variability between deposits.

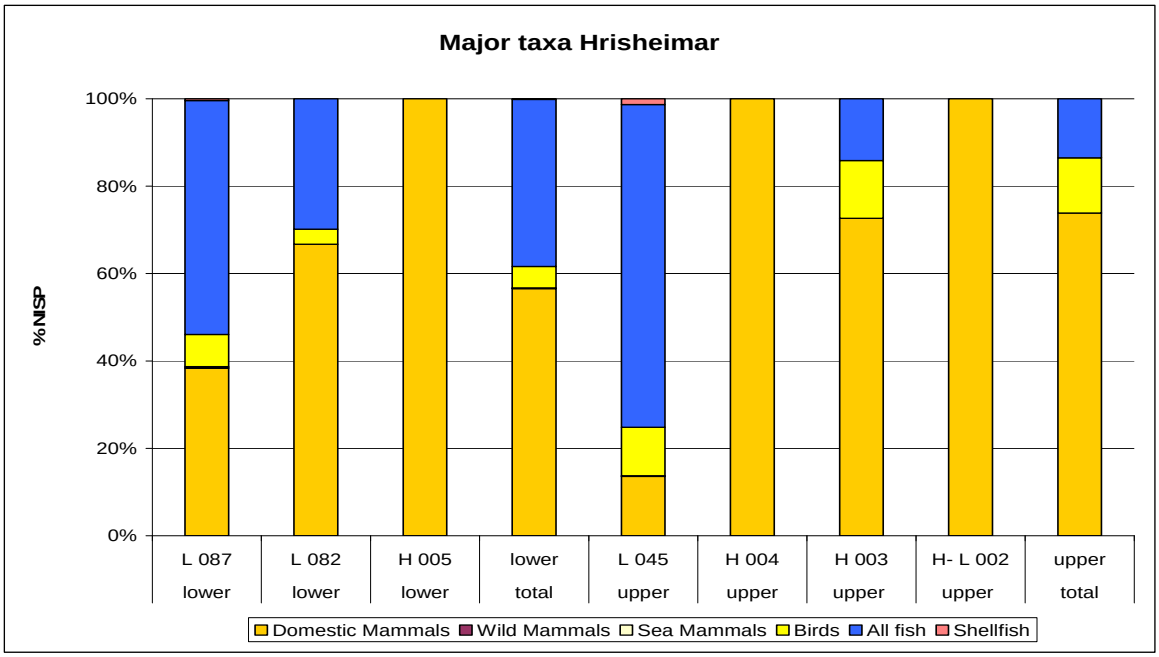
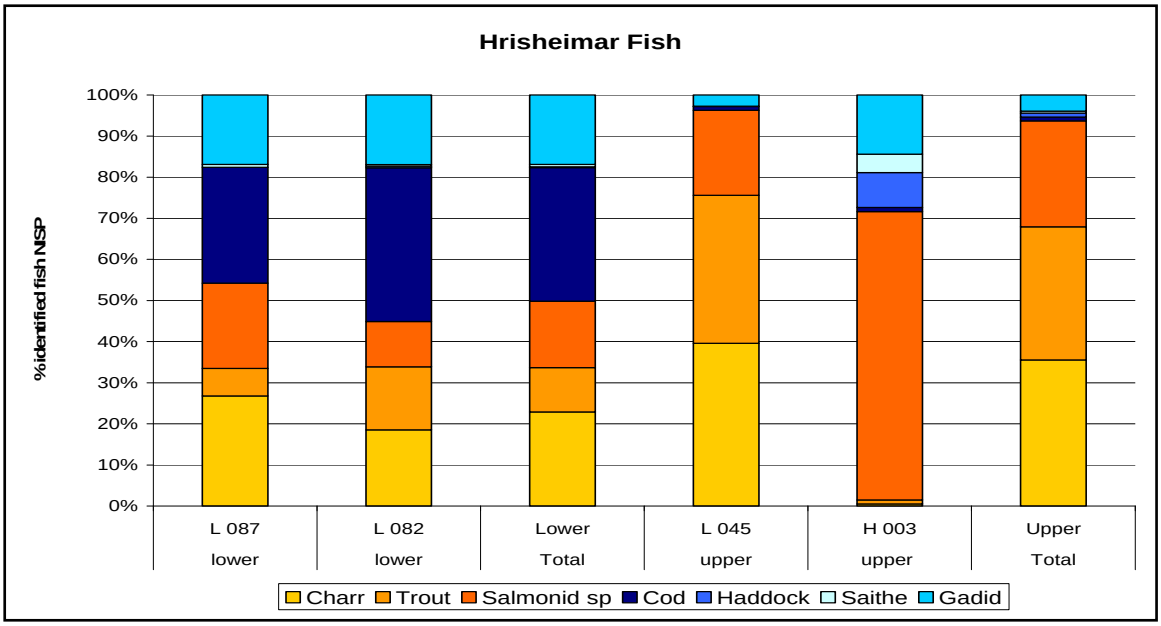


Figure 3 below compares the fish taxa for the contexts with substantial fish collections, illustrating another unexpected pattern in the current data set. Marine fish bones (blue shades) equal or outnumber freshwater fish bones in the larger lower (pre V 950) contexts, but the drop to the more usual 10-20% level in the upper layers. It remains to be seen if this pattern is a sampling artifact or if it represents a major change in the use of fish as household provisioning at Hrísheimar.



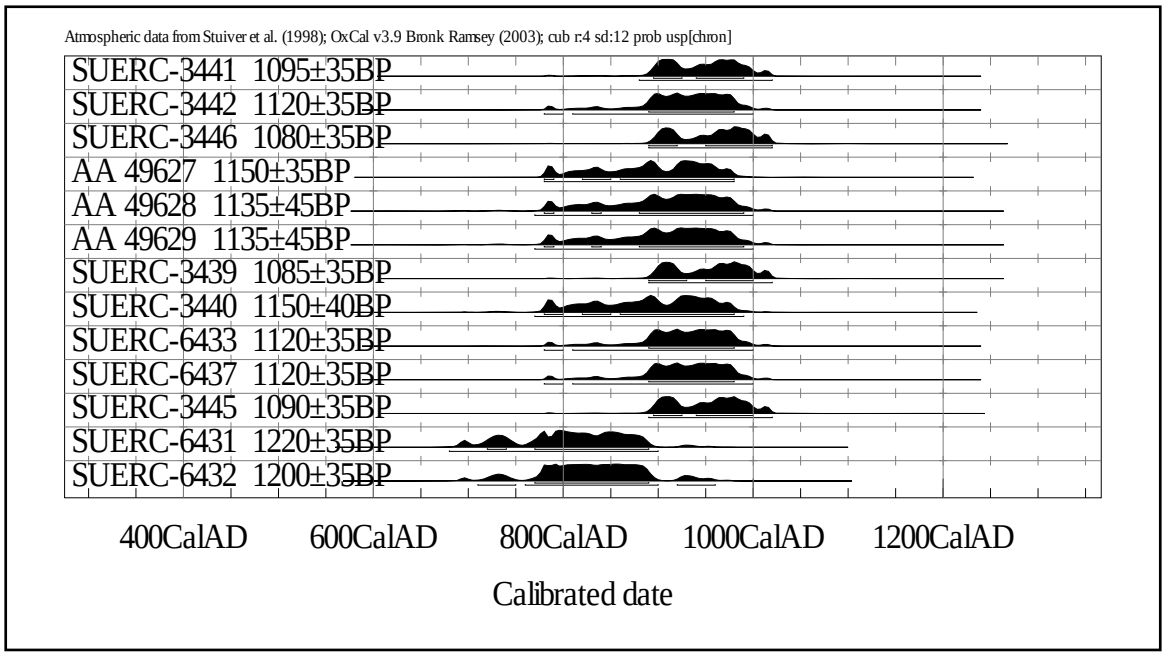
Summary:

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-930 economy.

Chronology

A suite thirteen AMS radiocarbon age determinations are now available from contexts from both area H and area L (Table 2 , Figure 4)

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



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 V930 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 C 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.

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:

Colin Amundsen , 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.

McGovern, T.H. 1985 Contributions to the Paleoeconomy of Norse Greenland, *Acta Archaeologica*, Vol 54 : 73-122

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

In press:

2006 (in press) Guðmundur Ólafsson, Thomas H. McGovern, Kevin P. Smith 2004, *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 (in press).

2006 (in press) 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 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.

References:

Edvardsson, R., T. McGovern, C. Batey, J. Woollett (2003), *Hrísheimar 2003, Iinterim Report*, Fornleifastofnun Íslands, FS223-0322, Reykjavík.

Hamilton, J.R.C. (1956) *Excavations at Jarlshof, Shetland, Edinburgh* (Ministry of Works Archaeological Report 1).

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

Eldjárn, K. and A. Friðriksson (2000). *Kuml og Haugfé úr heiðnum sið á Íslandi,* Mál of Menning, Reykjavík.

Ottaway, P. (1992). *Anglo-Scandinavian Ironwork from Coppergate.* The Archaeology of York. The Samll Finds 17/6. Council for British Archaeology, London.

Sigurgeirsson, M.Á. 2003, *Fornleifarannsóknir í Mývatnssveit og Aðaldal 2003. Gjóskulagagreining.* Greinagerð 5.

Vésteinsson, O. 2002. "Hrísheimar – the Structures" in *Archaeological investigations at Sveigakot 2001*, with reports on preliminary investigations at Hrísheimar, Selhagi and Ytri Tunga, Edited by Orri Vésteinsson. Reykjavík, Fornleifastofnun Íslands, FS173-00212.