NABO

IPY 2007-10

Archaeofauna from Vatnsfjörður, Westfjords, Iceland

Interim report 2003-2007

Albína Hulda Pálsdóttir

Marjorie E. Gorsline

Thomas H. McGovern

CUNY Northern Science and Education Center

NORSEC

CUNY Doctoral Program in Anthropology
Brooklyn College Zooarchaeology Laboratory
Hunter College Bioarchaeology Laboratory

May 15th, 2008
Contact: nabo@voicenet.com

A product of the North Atlantic Biocultural Organization (NABO) Research Cooperative.
New York

NORSEC report nr. 43

Contents

Introduction

The Vatnsfjörður archaeological project started in 2003. This report contains results of analysis of bones from 2003-2007. Analysis has been completed on the material from 2003 and 2004 but is only partially complete on bones from 2005-2007. This is the second preliminary report of the archaeofauna from the Vatnsfjörður excavation. Analysis is still ongoing and the results presented here are by no means final. The Vatnsfjörður material dates to two time periods, the Viking Age component and the modern farm mound (Milek 2007).

Laboratory methods

Analysis of mammal and bird bones was done at the Hunter College Zooarchaeology laboratory by Albína Hulda Pálsdóttir and Marjorie Gorsline with assistance from Dr. Thomas McGovern. Fish bone identifications were done at the Brooklyn College Zooarchaeology laboratory with assistance from Dr. Sophia Perdikaris.

For distinctions between sheep (*Ovis aries*) and goat (*Capra hircus*) bones the standards of Boessneck are followed (Boessneck 1969) bones that can not be securely identified to either species are placed in the "caprine" category. Measurements are done according to the metrical standard of Von den Dreisch (Driesch 1976) with digital calibers to the mm.

Basic data was recorded through the NABO Zooarchaeology working group NABONE system (8th edition, see NABO website www.geo.ed.ac.uk/nabo for updates and sample data sets) which combines an Access database with specialized Excel Spreadsheets. A full data archive with coding manual is available via nabo@voicenet.com. The NABONE package allows application of multiple measures of abundance, taphonomic indicators, and skeletal element distribution (see Appendix and all text figures) and is the current standard record for Icelandic archaeofauna. Blank NABONE templates are included in the digital archive for the convenience of other workers. NABONE is freeware and should be cited as " North Atlantic Biocultural Organization Zooarchaeology Working Group (2004) *NABONE Zooarchaeological Recording Package 8th edition*, CUNY, NY."

Recovery methods

The Vatnsfjörður archaeofauna was recovered through a mixture of hand excavation and sieving. In the Viking Age area at least 25% of all contexts were sieved through a 4mm mesh with some complete contexts being sieved. Some contexts were also sampled for flotation through 2mm mesh and bone recovered from the heavy residue. Recovery biases will be minimal for this part of the collection. On the modern farm mound bones were recovered through hand picking with some contexts sieved through a 4mm mesh and some floated through 2mm mesh and bones collected from heavy residue.

Phasing

For the purposes of this report the material has been split into three phases. The Viking Age farm which includes all bones from areas 1, 2, 6 and 14, the modern farm with all bones from areas 5 and 7 and contexts of unknown age, this includes surface contexts from the Viking Age area, bones without context information and bones from test pits done outside the farm areas.

At this time a total of 6 structures have been discovered in the Viking Age farm area (Milek 2007).

Overview of species present Table 1

Domestic Mammals		**Viking Age farm**	**Modern farm**	**Unknown age**
Cow	*Bos taurus*	73	56	9
Horse	*Equus caballus*	2	0	
Pig	*Sus scrofa*	25	3	5
Cat	*Felis domesticus*		1	
Sheep	*Ovis aries*	9	85	
Goat	*Capra hircus*	1	0	
Sheep/goat	*Ovca*	82	315	25
Total Caprine		92	400	25
	Total Domestic	192	460	39
Seals				
Harbor seal	*Phoca vitulina*	3		
Seal species	*Phoca species*	19	38	5
	Total Seal	22	38	5
Whales				
Great whale	*Large Cetacean*	2		
Small whale	*Small Cetacean*		1	
Whale species	*Cetacean*	3	4	1
	Total Whale	5	5	1
Other mammals				
House mouse	*Mus musculus*		3	
Mouse species	*Mus genus*		3	
	Total other mammals		6	
Birds				
Swan species	*Cygnus family*	2		
Goose species	*Anser genus*	1		
Eider	*Somateria mollissioma*		3	
White-tailed Eagle	*Haliaeetus albicilla*	3		
Ptarmigan	*Lagopus mutus*	2		1
Guillemot family	*Uria species*	5		1
Black Guillemot	*Cepphus grylle*		1	
Puffin	*Fratercula arctica*	7	74	
Auk family	*Alcidae species*	1		
Domestic chicken	*Gallus gallus*		1	
Bird species indeterminate	*Aves species*	20		
	Total Bird species	41	79	2

Fish				
Cod	*Gadus morhua*	6		
Haddock	*Melanogrammus aeglefinus*	2		
Gadid species	*Gadidae*	3		1
Total Fish species identified		11		
Fish species indeterminate		22	696	5
	Total Fish species	33	696	6
Mollusca				
Mussel species	*Mytilidae family*	57	7	
Clam species	*Mya species*	12	19	
Snail species	*Gastropoda class*	2	0	
Mollusk species	*Mollusca*	45	2	3
	Total Mollusk Species	116	28	3
	Total NISP	409	1312	56
Unidentified				
Large Terrestrial. Mammal		76	61	8
Medium Terrestrial Mammal		142	188	9
Unidentified Mammal Fragments		1216	178	46
Unidentified Faunal Fragments		1504	438	83
Total number of fragments (TNF)		3347	2177	202

The number of identified specimens (NISP) from the Viking Age farm is still relatively small, but is now over the 300 NISP threshold informally adopted by NABO zooarchaeologists for generalized comparisons of taxonomic abundance. It should be emphasized that conditions of preservation are variable at Vatnsfjord (generally better in the farm mound area than in the Viking Age farm area), and taphonomic processes (probably mainly frost action rather than soil acidity) certainly affect the Viking Age archaeofauna more strongly than the early modern-recent archaeofauna from the farm mound area (see discussion below). Many of the Viking Age mammal elements recovered are tooth fragments and burnt bone (probably from hearth clearing), and there is probably some preservation bias favoring larger mammals and against fish bone preservation. However there is well preserved bone in the Viking Age archaeofauna and the abundance of shell fish fragments and the consistent soil pH (6.25-6.5) across the site area

suggests that the two major phases can still be broadly compared. The modern collection is large enough for a wider range of analyses (Pálsdóttir and McGovern 2007).

The domestic species present reflect the range found in other Viking Age excavations in Iceland, including both pig and goat bones (McGovern et al. 2007). The number of pig bones (mostly tooth fragments) from the Viking Age farm is much higher than that from the modern farm. Pigs become rare in Icelandic collections after the 12th century. The modern collection fits with the present day farming practices in the area which focus mostly on sheep farming with cattle kept for domestic use. No goats are present in the modern collection but one bone is present in the Viking Age fauna which is also in line with what is usually found in Iceland. Goats are not present in the modern farm collection and they are extremely rare in present day Iceland.

One cat bone is present in the modern farm material, cat bones are very rare in Icelandic archaeofaunas. The bone had a pathology most likely caused by arthritis which would have been extremely painful but the cat lived with it for a considerable amount of time.

Seals can only be identified to species level on a restricted range of bone elements, and a seal species category tends to hold most seal bones, the few seal bones that could be speciated in the Vatnsfjörður collection are from harbor (or common) seal which still breeds in the immediate vicinity. Whale bone fragments probably mainly reflect craft production, and probably do not provide a readily quantifiable measure of actual whale meat consumption. Most whale bone fragments in the collections are heavily fragmented and not identifiable to species.

The majority of fish bones from the modern farm mound have not been analyzed yet only counted; more information about fishing practices at the modern farm will come to light when they have been finished for the next interim report.

The large terrestrial mammal category includes bones of the cattle/horse size, while the medium terrestrial mammal category includes bones of the sheep/goat/pig/large dog size. While no dog bones were identified, canine tooth marks were present on bone fragments of other species in both the Viking Age and modern faunas (Pálsdóttir and McGovern 2007).

In general both collections show a wide use of marine resources although fish bones may be underrepresented in the Viking Age collection due to preservation issues (Edvardsson and McGovern 2005). The Vatnsfjörður area is far from being ideal for farming, lowland areas are very limited and vegetation is not particularly lush. The inhabitants of Vatnsfjörður definitely

made substantial use of local seal populations, sea birds, mollusks, fish and whales (probably from strandings) in all time periods.

Fish, sea birds, whales and seals make up around a third of the Viking Age fauna (even if fish bone preservation is variable). The marine component of the modern farm is even larger making up almost two thirds of the fauna, with fish (mainly cod-family) making up over 50% of the early modern archaeofauna. This pattern of increasing deposition of fish bone vs. domestic mammal bone is widespread in Iceland, and is not restricted to this site.

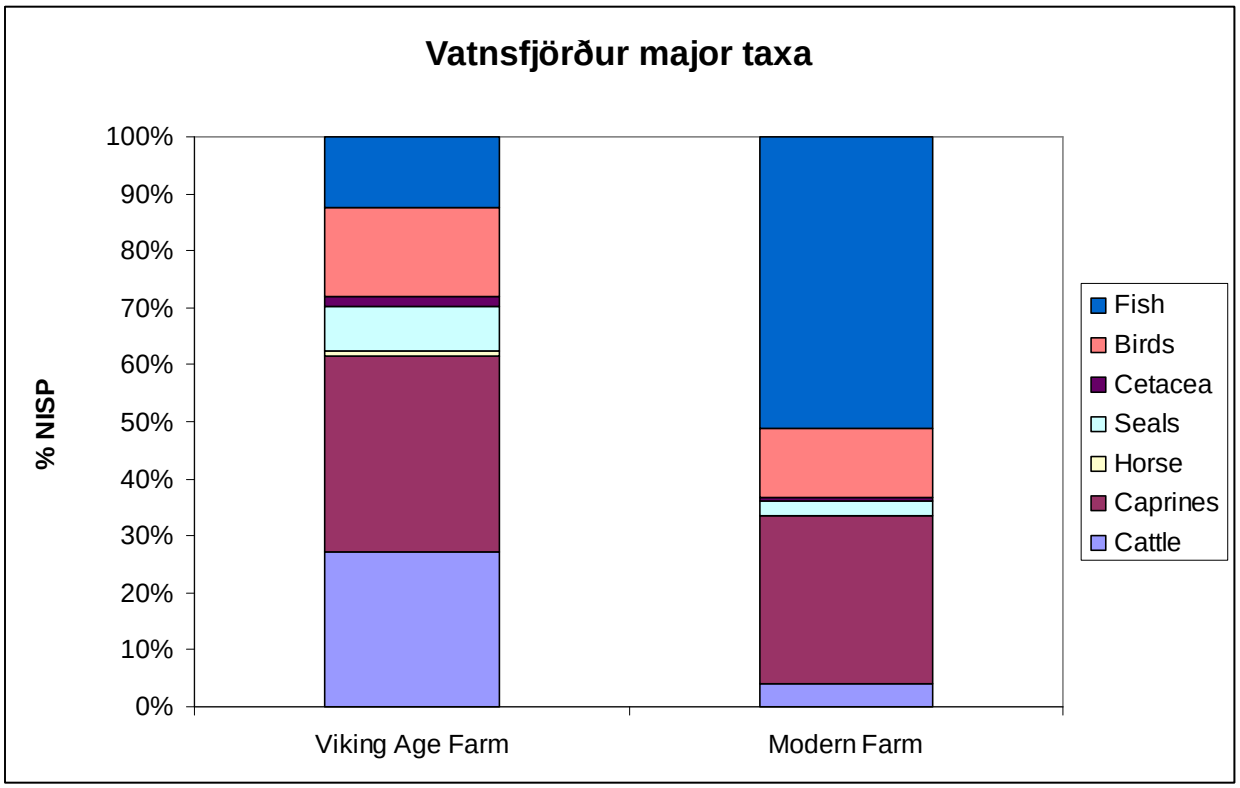


Figure 1: Major taxa represented in the Viking Age and Modern farm archaeofauna.

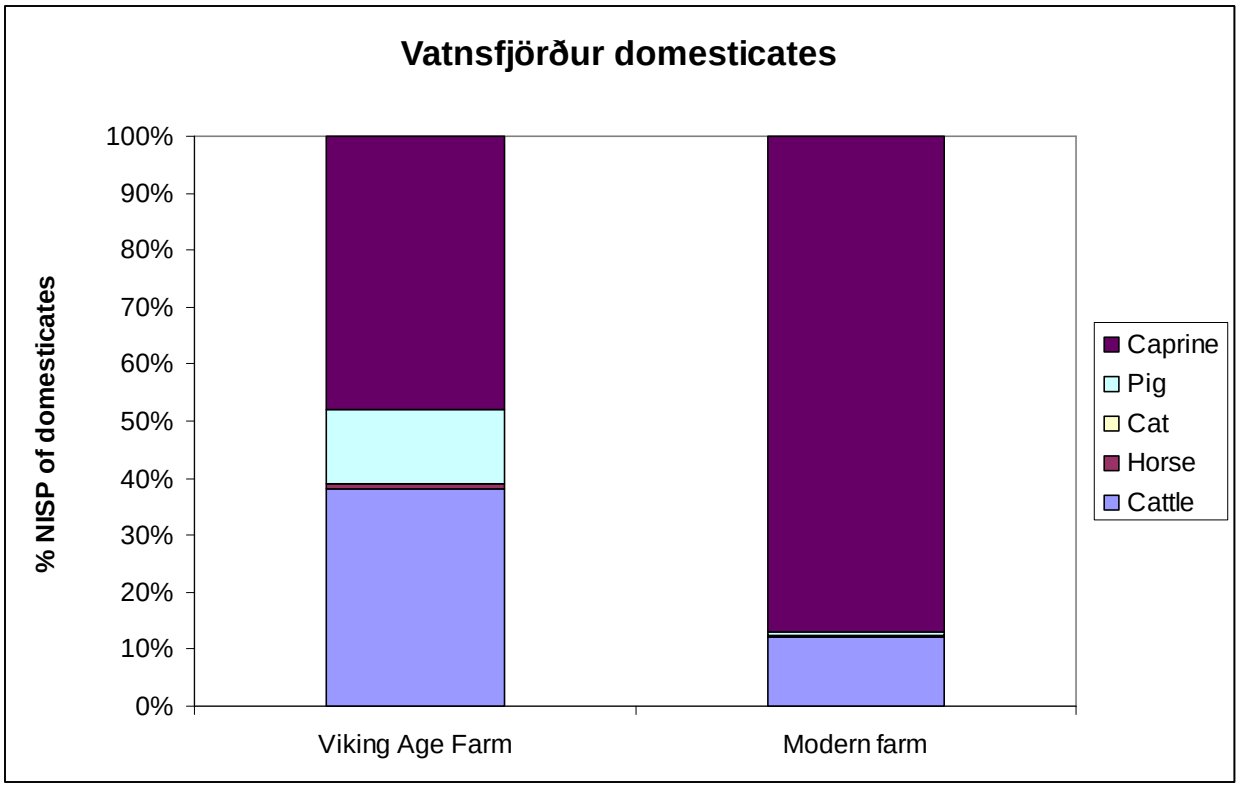


Figure 2: Viking Age and Modern domestic stock percentages.

The caprine: cattle ratio of almost 1:1 in the Viking Age material may reflect some taphonomic effects but the substantial proportion of cattle is fairly typical of larger (and probably higher-status) sites in Iceland. The Viking Age Vatnsfjörður domestic mammal proportions resemble those of other parts of Iceland, and the percentage of pigs and cattle again would tend to suggest higher status. The early modern archaeofauna resembles other Icelandic sites in the strong dominance of sheep and very secondary role of cattle production. While sample size issues still restrict what can be reasonably said about herding strategies in this interim report, the relative percentages of bones from very young (neonatal) animals can provide some indications (Table 2)

Table 2

	Viking Age	**Modern**	**Unknown period**
Cattle neonatal	10%	22%	4%
Caprine neonatal	1%	1%	0%
Caprine foetal	2%	3%	0%
Seal sp. Neonatal	0%	53%	20%

Table 2: Percentage of neonatal bones at Vatnsfjörður

As table 2 indicates, there is a strong contrast in the relative abundance of neonatal calf bones vs. newborn or late foetal lamb bones. In most Icelandic archaeofauna of all time periods, substantial numbers of bones of young calves (less than one month to up to two months old) have been identified, and this pattern is normally interpreted as reflecting a dairying economy operating within the constraints posed by northern climates. The difference in neonatal cattle percentages between Viking Age and Modern samples may reflect harsher taphonomic attrition in the Viking Age materials (neonatal bones are less mineralized than adult bone), but in any case the strong contrast is with the consistently far lower percentages of caprine (sheep or goat) lamb bones. While some young lambs might be still born or killed to preserve the health of a ewe with twins in a hard season, sheep were clearly being managed differently from cattle in both major phases.

The seal neonatal bones come from pups probably killed on land at rookeries in spring, adult seals could have been taken at any time by clubbing, nets, or (in modern times) with firearms and harpoons. The high ratio of neonatal seal bones in the modern collection confirms ethnographic accounts of spring rookery hunting with clubs, but the absence (thus far) of neonatal seal bones from the Viking Age deposits may possibly reflect a different pattern (or taphonomic effects).

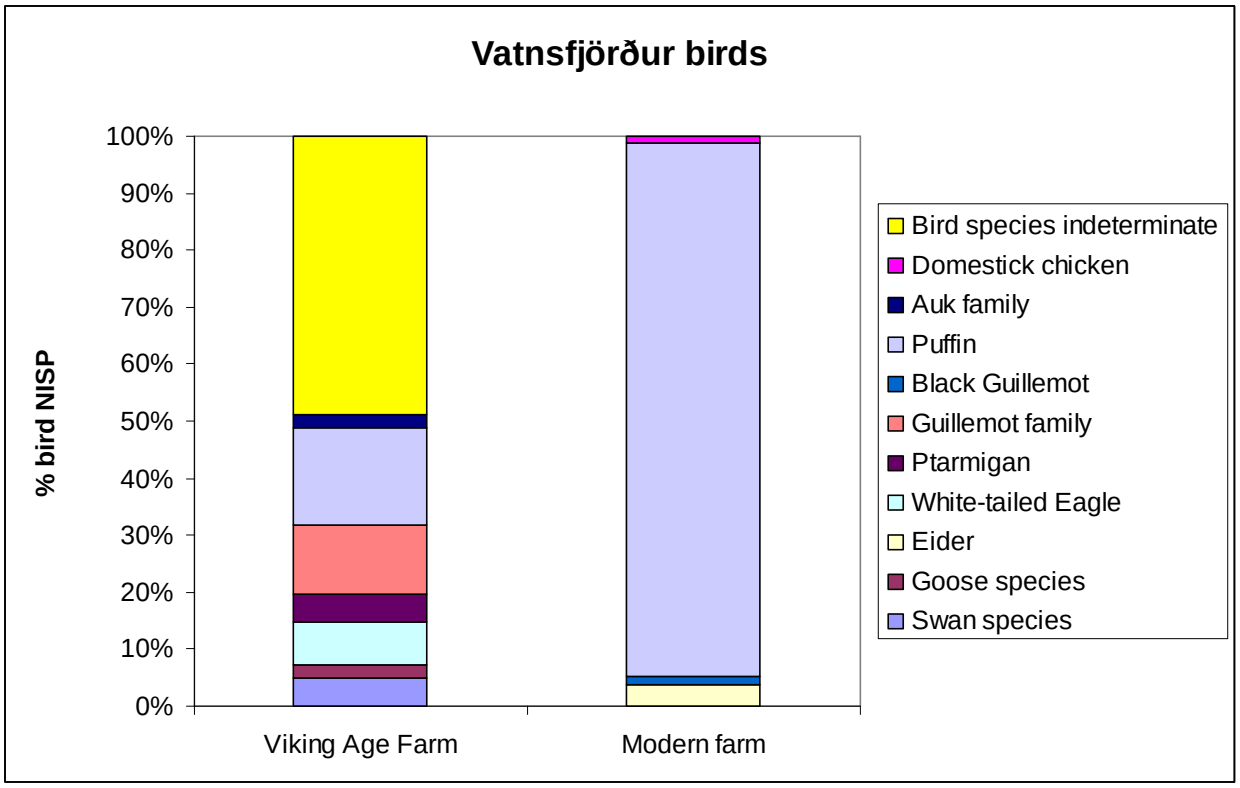


Figure 3: Bird Relative Percentages

The two Vatnsfjörður collections differ dramatically in variety; the modern collection is almost exclusively focused on puffin while the Viking Age collection contains a mix of a wider range of marine (mainly auk-family) and terrestrial birds (mainly ptarmigan). The presence of eider is somewhat unexpected as they are usually not taken for food in Iceland as down collection from eider nests is a significant source of income for Icelandic farmers. The presence of domestic chicken on the modern collection is also interesting, chicken bones are rare in Icelandic archaeofaunas and all come from early modern or early modern layers.

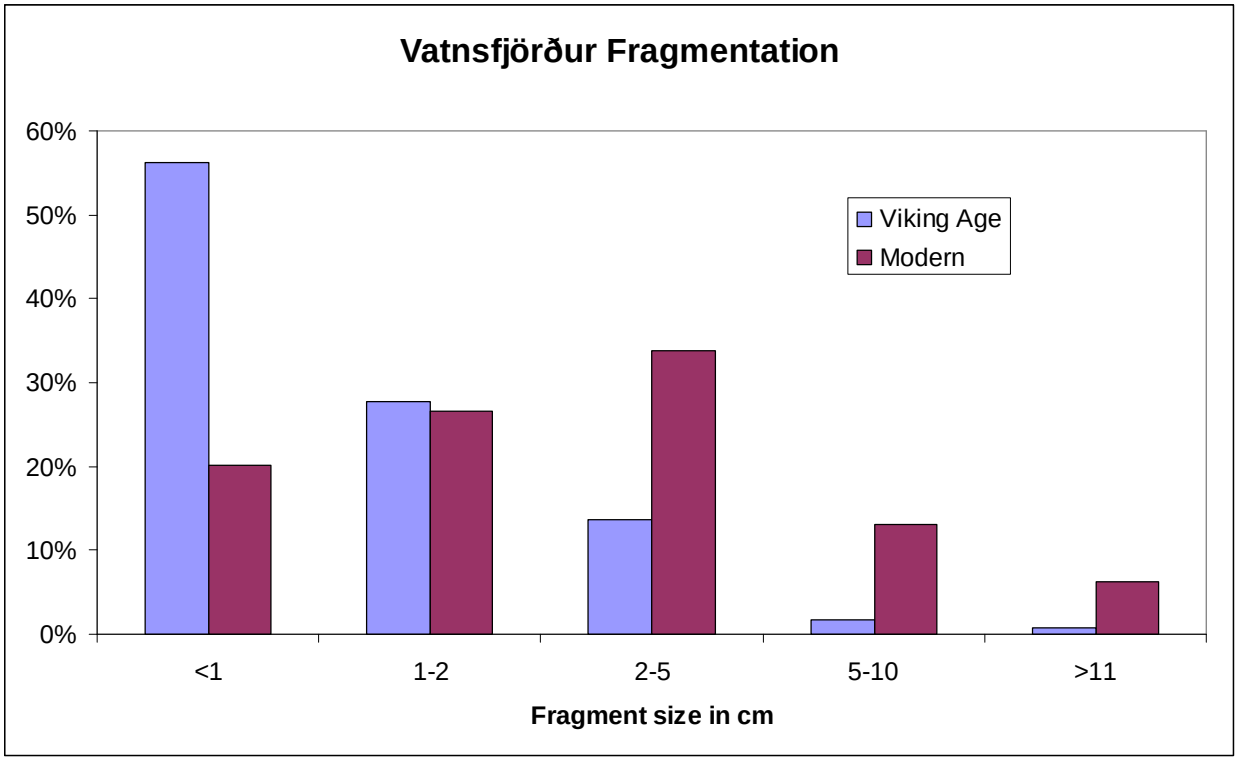
The eagle bones likely indicate hunting to prevent predation rather than for food as eagles are known to prey on lambs and they can cause significant losses. There is also a possibility that the eagle bones have something to do with religious practices. The presence of swan is also interesting as there is a modern day taboo against hunting or eating swan in Iceland, though swan bones have been recovered from other Viking Age collections.

Taphonomy

As stated in the previous preliminary report taphonomy is a major issue when it comes to interpreting the Vatnsfjörður Viking Age archaeofauna. Despite the favorable pH level of the site bone preservation at the Viking Age farm area is very poor due to a coarse gravel substrate that is almost directly beneath the human occupation layers. The Viking Age occupation layers are also relatively thin. This causes very efficient water drainage at the site which in turn leaches minerals from bone so they are not preserved. The bones are also negatively affected by freeze-thaw cycles. The rate of identification in the Viking Age farm area is only 13% but 70% of the bones from the modern farm mound can be identified to taxon. The preservation seems to be much better in the modern farm mound where the human occupation layers are much thicker (Edvardsson and McGovern 2005; Pálsdóttir and McGovern 2007).

Fragments are recorded according to maximum size and assigned to the appropriate category (NABO Zooarchaeology Working Group 2004).

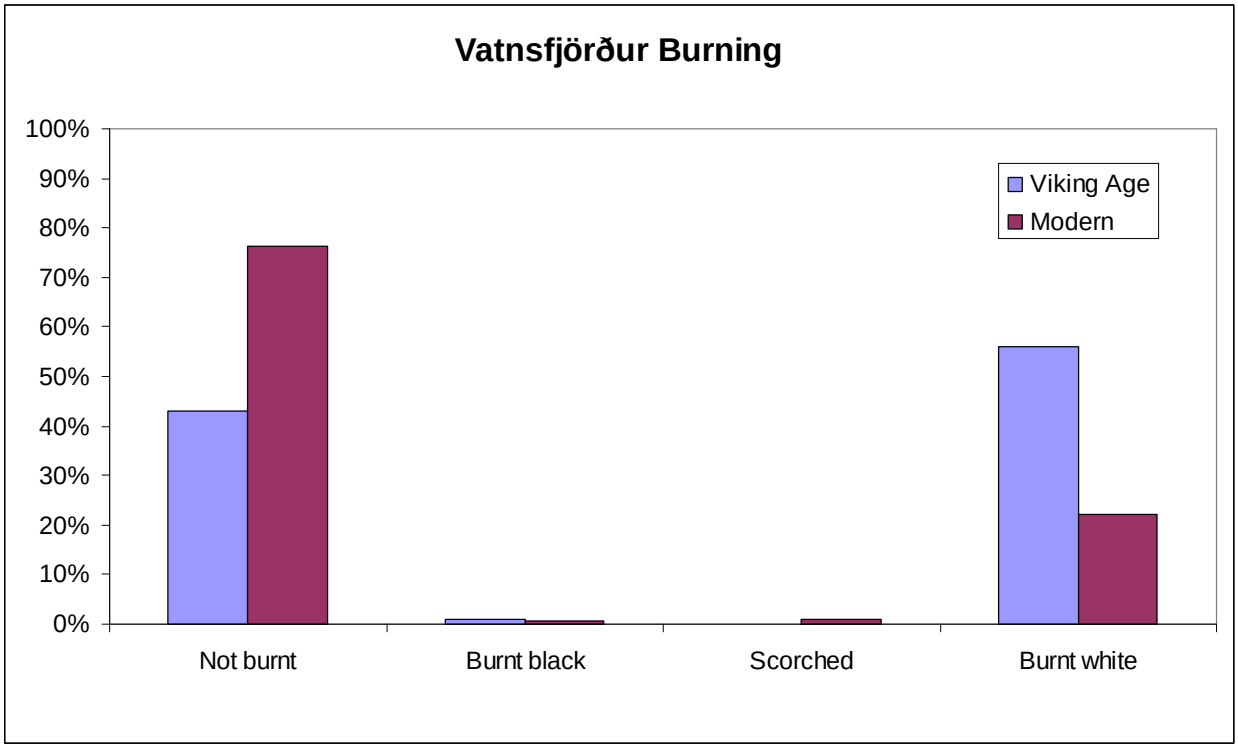
Figure 4: The bones recovered from the Viking part of the site are generally much smaller.



The difference in fragment size seen between the Viking Age areas and the modern farm mound stems from several different reasons. Viking age archaeofauna regularly contain “hearth

cleaning" deposits characterized by highly fragmented and strongly burnt bone (usually associated with ash, fire cracked stones, and charcoal). In the Viking Age, the open long hall fire and similar smaller open hearths were widely used for disposal of scraps and processing debris, and these mixed deposits are often encountered either *in situ* or re-deposited into midden layers. Modern farms made use of closed stoves and tended to discard bones directly into trash middens, resulting in much lower rates of burnt bone and generally less fragmentation (Figure 5).

Figure 5: Burnt Bone Comparison.



Conclusions

The Vatnsfjörður archaeofauna presents great potential for comparisons across long periods in time, from the Viking Age to the near present. While taphonomy and sample size issues continue to limit final conclusions, the work done thus far is now beginning to allow a systematic comparison between major phases, and is beginning to permit us to place these archaeofauna from the West Fjords into a wider temporal and geographical perspective.

List of analyzed bags and contexts

Vatnsfjörður 2003 Bone Register

Bag	Context	Area	Description	Date	Analyzed
1	5	1	2 teeth	25.6.2003	X
2	5	1	1 piece	25.6.2003	X
3	5	1	1 piece	25.6.2003	X
4	5	1	1 piece	26.6.2003	X
5	6	1	1 tooth.	26.6.2003	X
6	5	1	1 tooth.	26.6.2003	X
7	6	1	1 fishbone	26.6.2003	X
8	15	1	1 piece C14	26.6.2003	X
9	19/20	2	1 bag.	28.6.2003	X
10	20	2	1 bag.	30.6.2003	Missing?

Vatnsfjörður 2004 Bones Register

Bag	Context	Description	Date	Analyzed
1	39	1 sheep bone	9.6.2004	X
2	42	6 fragments	17.6.2004	X
3	48	Tooth	24.6.2004	X
4	64	1 fragment	25.6.2004	X
5	64	Whalebone?	25.6.2004	X
6	64	1 fragment	23.6.2004	X
7	74	4 fish bones	30.6.2004	X
8	74	4 fish vertebrae	29.6.2004	X
9	73	2 fragments	30.6.2004	X
10	64	5 fragment	24.6.2004	X
11	63		24.6.2004	X
12	56	Fragm. Broken tooth	23.6.2004	X
13	59	Fragment	23.6.2004	X
14		Tooth	22.6.2004	X
15	59	1 longbone fragment	23.6.2004	X
16	48	Whale fragment	25.6.2004	X
17	65	Fragment	25.6.2004	X
18	48	Fragment long bone	28.6.2004	X
19	48	Pig mandible	28.6.2004	X
20	70	Bone fragment	29.6.2004	X
21		Fragment		X
22		Fragment	21.6.2004	X
23	74	Burnt bones.	1.7.2004	X
25?	70	4 bone fragments		X

Vatnsfjörður 2005 Bone Register

Bag	Area	Context	Description	Analyzed
23	1		Burnt bone	X
38	2		Unit no. 252 or 288. Burnt bone fragment	X
69	3		Bones from test "Mound 1"	X
80			Core 1, 1 small bag of bones	
81			Core 2, 1 small bag of bones	
82			Core 32, 1 small bag of bones	
8	1	74	Bones and tooth + shells	
11	1	74	Cow bone	
6	1	87	Small bone fragment	X
7	1	87	Radius found during cleaning	X
12	1	200	Bone fragment	X
13	1	200	Bone fragment	X
14	1	201	Bone fragment	X
3	2	204	Bone from sieving	X
4	2	204	Small bone fragment	X
5	2	204	Small bone fragment	X
15	2	204	Bone fragment	X
16	2	204	Bones	X
17	2	204	Bone fragments	X
18	2	204	Bone fragments	X
20	2	204	Burnt bone fragments	
25	2	204	4 bone fragments	X
26	2	204	10 bone fragments	X
27	2	204	bone fragments	X
28	2	204	bone fragments	X
29	2	204	bone fragments	X
30	2	204	herbivore teeth fragments	X
2	1	206	Bones from sieving	X
9	1	206	Bone from cleaning	X
10	1	206	Bones from cleaning	
31	1	206	bone – LTM	X
33	1	206	small bone fragment	X
39	1	206	Mixed bones	X
32	1	209	bone fragments and claw	X
40	1	209	Burnt and unburnt bone	X
57	2	209	large burnt bone	X
19	1	213	End of bird femur	X
22	1	218	Burnt bone in 2 fragments	X
34	1	230	small bone fragments	X
41	1	232	Bone fragment	X
35	1	237	fragments of burnt bone	X

Bag	Area	Context	Description	Analyzed
36	1	241	Bone fragments	X
37	1	241	Shell fragments	
55	3	244	Large bag of bone	
70	3	244	Large bag of bones "looked over"	X
42	1	246	Fragment of burnt bone under postpad	X
71	3	247	Large bag of bones "looked over"	X
72	3	249	1 small bag of bone fragments	X
44	2	251	Small burnt bone fragment	X
51	2	252	Bone fragments	
73	3	254	1 small bag of bones	
43	1	268	Burnt bone	X
75	3	285	1 small bag of bones	
47	2	287	Cow tooth complete	
48	2	287	Burnt bone fragments	
49	2	287	Tooth fragment	
52	2	287	Shell lining?	
53	2	287	Bone fragments	
54	2	287	Tooth fragments	
24	2	288	cow mandible with row of teeth, bone did not survive; See photo 15	X
45	2	288	Bone fragments	
60	2	288	Bone fragments	
61	2	288	Tooth, sheep?	
67	2	288	1 leg bone of cow, jammed under entrance stone	
68	2	288	Burnt and unburnt bone, teeth	
76	2	288	1 large bag of bones	
74	3	293	1 small bag of bones	
50	2	302	Bone fragments	
79	5	302	1 bag of bones	
77	5	308	1 bag of bone fragments	
84	5	308	1 small bag of bones	
78	5	309	2 large bags of bones	
63	2	318	Small bone fragments	X
62	2	322	Shell lining	
64	2	322	1 burnt bone	
58	1	323	Bone fragments	
59	1	331	Shell flake	
83	2	335	1 small bag of burnt bones	
66	2	340	2 pieces	
21		204	4 bone fragments 889/1060	X

Vatnsfjörður 2006 Bone Register Farm Mound

Bone No.	Area	Context	Bags	Description	Analyzed
1	7	6501	4	Bones from Topsoil in Area 7 main	X
2	7	6501	1	Bone fragments from cleaning under 6501	
3	7	6507	1	Burned bone fragments	
4	7	6508	1	Bone fragments	
5	7	6510	2	Bones from a modern cellar in building in Area 7 (20th cent.Artifacts found)	X
6	8	6511	1	Bone fragments from Test trench	X
7	7	6513	1	Bones	
8	N/A	N/A	1	Ian Simpsons's Trench #1 on the farm mound. Assorted bones	X
9	N/A	N/A	1	Ian Simpsons's other Trench on the farm mound. Assorted bones.	
10	7	6505	1	Bone fragments	
11	N/A	N/A	1	Ian Simpson's northern test trench, unstratified	
12	N/A	N/A	1	Ian Simpson's southern test trench, unstratified	

Vatnsfjörður 2006 Bone Registers – Area 2 and 6

No	Area	Context	Description	Date	Analyzed
1	6	6000	Burnt bone fragments	5.7.2006	
2	2	6001	Burnt bone fragments	5.7.2006	
3	6	6001	Burnt bone fragments	5.7.2006	
4	6	6001	Burnt bone fragments	5.7.2006	
5	6	6001	Burnt bone fragments	5.7.2006	
6	6	6001	Burnt bone fragments	5.7.2006	
7	6	6001	Burnt bone fragments	5.7.2006	
8	6	6001	Burnt bone fragments	6.7.2006	
9	6	6001	Burnt bone fragments	6.7.2006	
10	6	6001	Burnt bone fragments	6.7.2006	
11	6	6001	Burnt bone fragments	6.7.2006	
12	6	6001	Burnt bone fragments	5.7.2006	
13	2	6001	Burnt bone fragments	7.7.2006	
14	6	6001	Burnt bone fragments	7.7.2006	
15	2	6001	Burnt bone fragments	7.7.2006	
16	6	6001	Burnt bone fragments	7.7.2006	
17	6	6003	Burnt bone fragments	7.7.2006	
18	6	6004	Burnt bone fragments	10.7.2006	
19	2	6006	Burnt bone fragments	10.7.2006	
20	2	6006	Burnt bone fragments	10.7.2006	
21	6	6009	Burnt bone fragments	10.7.2006	
22	6	6005	Burnt bone fragments	10.7.2006	
23	2	6006	Burnt bone fragments	11.7.2006	
24	6	6009	Burnt bone fragments	11.7.2006	
25	6	6005	Burnt bone fragments	11.7.2006	
26	2	6014	Burnt bone fragment	11.7.2006	
27	6	6015	4 Burnt bone fragments	11.7.2006	
28	2	6019	Tooth fragments	12.7.2006	
29	6	6018	Burnt bone fragments	12.7.2006	
30	2	6014	Burnt bone fragments	12.7.2006	
31	2	6026	Burnt bone fragments	13.7.2006	
32	2	6024	Burnt bone fragments	13.7.2006	
33	2	6030	Burnt bone fragments	14.07.2006	
34	2	6028	Burnt bone fragments	14.07.2006	
35	6	6038	Burnt bone fragments	14.07.2006	
36	6	6029	Burnt bone fragments	14.07.2006	

No	Area	Context	Description	Date	Analyzed
37	2	6041	Burnt bone fragments	17.07.2006	
38	6	6043	Burnt bone fragments	17.07.2006	
39	2	6044	Small brown bone (needle?)	18.07.2006	
40	2	6046	Teeth bone fragments	18.07.2006	
41	6	6049	Bones from north wall collapse of structure 4	18.07.2006	
42	6	6070	Tooth, 2 pieces	19.7.2006	
43	6	6063	Bone from turf collapse in structure 4	19.7.2006	
44	6	6072	Bone	20.7.2006	
45	2	6073	Burnt bone fragments	20.7.2006	X
46	2	6085	Burnt bone fragments	21.7.2006	
47	2	6099	One fragment burnt bone	25,7,2006	
48	6	6092	One fragment burnt bone	25,7,2006	X
49	6	6105	Burnt bone fragment	25,7,2006	
50			DELETED		
51			DELETED		
52			DELETED		
53	2	6103	Bone fragments	26.7.2006	X
54	2	6103	Burnt bone fragments	26.7.2006	X
55	2	6103	Burnt bone fragments	26.7.2006	
56	2	6103	Burnt bone fragments	26.7.2006	X
57	2	6103	Burnt bone fragments	26.7.2006	X
58	6	6110	Burnt bone fragments	26.7.2006	
59	2	6103	Burnt bone fragments	26.7.2006	
60	2	6129	Burnt bone fragments and tooth fragments	28.7.2006	
61	6	6125	1 bone fragment	28.7.2006	
62	2	6020	Bone fragments in heavy residue, S-115	11.8.2006	
63	6	6120	Bone fragments in heavy residue, S-302	11.8.2006	
64	2	6020	Bone fragments in heavy residue, S-131	11.8.2006	
65	6	6138	Bone fragments in heavy residue, S-303	11.8.2006	
66	2	6104	Bone fragments in heavy residue, S-244	11.8.2006	
67	2	6104	Bone fragments in heavy residue, S-246	11.8.2006	
68	2	6057	Bone fragments in heavy residue, S-153	11.8.2006	
69	2	6076	Bone fragments in heavy residue, S-179	11.8.2006	
70	2	6090	Bone fragments in heavy residue, S-199	11.8.2006	
71	2	6096	Bone fragments in heavy residue, S-211	11.8.2006	
72	2	6101	Bone fragments in heavy residue, S-215	11.8.2006	
73	2	6020	Bone fragments in heavy residue, S-119	11.8.2006	
74	2	6044	1 tooth	09.09.2006	
75	2	6020	Bone fragments from heavy residue, S-117	03.10.2006	

No	Area	Context	Description	Date	Analyzed
76	2	6020	Bone fragments from heavy residue, S-167	03.10.2006	
77	2	6075	Bone fragments from heavy residue, S-172	03.10.2006	
78	6	6034	Bone fragments from heavy residue, S-140	03.10.2006	
79	2	6076	Bone fragments from heavy residue, S-183	03.10.2006	
80	2	6020	Bone fragments from heavy residue, S-114	03.10.2006	
81	2	6020	Bone fragments from heavy residue, S-178	03.10.2006	
82	2	6020	Bone fragments from heavy residue, S-165	03.10.2006	
83	2	6020	Bone fragments from heavy residue, S-123	03.10.2006	
84	2	6076	Bone fragments from heavy residue, S-180	03.10.2006	
85	2	6020	Bone fragments from heavy residue, S-159	03.10.2006	
86	2	6020	Bone fragments from heavy residue, S-116	03.10.2006	X
87	2	6020	Bone fragments from heavy residue, S-121	03.10.2006	X
88	2	6076	Bone fragments from heavy residue, S-180	03.10.2006	X
89	2	6020	Bone fragments from heavy residue, S-158	03.10.2006	X
90	2	6019	Bone fragments from heavy residue, S-048	03.10.2006	X
91	2	6057	Bone fragments from heavy residue, S-153	03.10.2006	X
92	2	6020	Bone fragments from heavy residue, S-128	03.10.2006	X
93	2	6020	Bone fragments from heavy residue, S-160	03.10.2006	X
94	2	6020	Bone fragments from heavy residue, S-157	03.10.2006	X
95	2	6076	Bone fragments from heavy residue, S-182	03.10.2006	X
96	2	6090	Bone fragments from heavy residue, S-198	03.10.2006	X
97	2	6087	Bone fragments from heavy residue, S-207	03.10.2006	X
98	2	6087	Bone fragments from heavy residue, S-203	03.10.2006	X
99	2	6087	Bone fragments from heavy residue, S-202	03.10.2006	X
100	2	6087	Bone fragments from heavy residue, S-210	03.10.2006	X
101	2	6087	Bone fragments from heavy residue, S-200	03.10.2006	X
102	2	6020	Bone fragments from heavy residue, S-168	03.10.2006	X
103	2	6020	Bone fragments from heavy residue, S-126	03.10.2006	X

Vatnsfjörður 2007 Bone Register – Farm Mound

Find No	Context	Area	Notes	Analyzed
501	7501	7	8 bags in total	Partially
502	7501	7	1 small bag	
503	7504	7	2 bags in total	
504	7504	7	1 small bag	
505	7505	7	1 bag	
506	7506	7	1 bag	Partially
507	7509	7	1 bag	
508	7510	7	1 bag	
509	7513	7	1 bag	
510	7515	7	1 bag	
511	7515	7	1 small bag	X
512	7516	7	1 bag	
513	7516	7	1 bag	
514	7518	7	1 bag	X
515	7519	7	1 bag	
516	7522	7	1 bag	
517	7523	7	1 bag	X
518	7525	7	1 bag	X
519	7525	7	1 bag	
520	7530	7	1 bag	
521	7532	7	1 bag	
522	7534	7	1 bag	
523	7536	7	1 bag	
524	7545	7	1 bag	X
525		7	Before excavation, cleaning, 1 bag	
526		7	Clean up (895/240 SE), 1 bag	
527		7	Cleaning west of structure 1. 1 bag	
528		7	From cleaning	
529		7	From cleaning under [7543]	
530	7507	7	1 bag	
531	7508	7	1 bag	X
532	7509	7	Shell, 1 bag	X
533	7511	7	1 bag	X
534	7515	7	Bone fragments from flotation S-006, 1 bag	X

Fish bones have not been analyzed from these contexts.

Vatnsfjörður 2007 Bone Register – Area 2, 6, 14

No	Area	Context	Description	Date	Analyzed
1	14	7001	1 burnt bone fragment	3.7.2007	X
2	14	7001	2 bone fragments	4.7.2007	X
3	14	7001	2 bone fragments	4.7.2007	X
4	14	7001	3 burnt bone fragments	4.7.2007	X
5	14	7001	2 bone fragments	4.7.2007	X
6	14	7001	6 burnt bone fragments	4.7.2007	X
7	14	7001	1 burnt bone fragment -LOST?	4.7.2007	
8	14	7001	1 burnt bone fragment-LOST?	4.7.2007	
9	14	7001	1 burnt bone fragment	4.7.2007	X
10	14	7001	Bone fragment	5.7.2007	X
11	14	7002	Tooth fragments	5.7.2007	X
12	14	7002	2 burnt bone fragments	5.7.2007	X
13	14	7001	1 burnt bone fragment	5.7.2007	X
14	14	7001	Burnt bone fragments	5.7.2007	X
15	6	6148	Very eroded bone	5.7.2007	X
16	14	7001	Approx. 8 frags. Of bone embedded in soil	5.7.2007	X
17	14	7001	Teeth	5.7.2007	X
18	14	7008	2 burnt bone frags.	5.7.2007	X
19	14	7001	1 bone frag.	5.7.2007	X
20	2	7006	Burnt bone frags.	5.7.2007	X
21	14	7001	Burnt bone frags.	5.7.2007	X
22	14	7000	1 large bone frag.	2.7.2007	X
23	6	6149	Small frags. Of bone	5.7.2007	X
24	14	7001	Small bone frag.	6.7.2007	X
25	2	7011	Small burnt bone frags.	6.7.2007	X
26	2	7011	Sheep tooth, very poorly preserved	6.7.2007	X
27	14	7008	2 small bones	6.7.2007	X
28	14	7001	Small burnt bones fragments	9.7.2007	X
29	14	7008	1 fragmented bone	9.7.2007	Missing?
30	2	7012	1 bone fragment bird	9.7.2007	X

No	Area	Context	Description	Date	Analyzed
31	2	6129	1 tooth in pieces	9.7.2007	X
32	14	7001	Fragment of animal tooth	9.7.2007	X
33	2	6165	Burnt bone fragments	9.7.2007	X
34	6	7023	Articulated caprine mandible	11.07.2007	X
35	14	7001	Tooth ovca/burn bone	12.07.2007	X
36	6	7025	Bone fragment, very decomposed	12.07.2007	X
37	2	7045	Shell fragments	13.07.2007	X
38	14	7052	Bone	13.07.2007	X
39	2	7044	Bone fragments	16.7.2007	X
40	14	7052	Bone fragment	16.7.2007	X
41	14	7001	Burnt bone	16.7.2007	X
42	2	6129	Bone/tooth	16.7.2007	X
43	14	7135	Burnt bone fragment	19.7.2007	X
44	6	7140	Burnt bone, tooth fragment	20.7.2007	X
45			DELETED		
46	2	7012	Fish bone from hearth, Structure 3	22.7.2007	X
47	14	7001	Bone fragment	4.7.2007	X
48	14	7001	Bone fragment	4.7.2007	X
49	14	7001	Bone fragment	9.7.2007	X
50	14	7001	2 bone fragments	9.7.2007	X
51	2	6167	Burnt bone fragments	18.7.2007	X
52	14	7001	Burnt bone, formerly F-007	4.7.2007	X
53	14	7120	Tooth	24.7.2007	X
54			DELETED		
55	14	7143	3 fragments burnt bone	24.7.2007	X
56			DELETED		
57	14	7152	Tooth	25.7.2007	X
58	14	7139	Tooth fragments	20.7.2007	X
59	2	6129	Burnt bone fragments, teeth fragments in residue of S-48, 2mm	7.09.2007	
60	2	6126	Burnt bone fragments in residue of S-8, 2 mm	7.09.2007	
61	6	7014	Burnt bone fragments in residue of S-16, 2 mm	7.09.2007	
62	6	7025	Burnt bone fragments in residue of S-	7.09.2007	

			56, 2 mm		
63	6	7027	Burnt bone fragments in residue of S-31, 2 mm	7.09.2007	
64	6	7027	Burnt bone fragments in residue of S-35, 2mm	7.09.2007	
65	6	7027	Burnt bone fragments in residue of S-36, 2mm	7.09.2007	
66	2	7028	Burnt bone fragments in residue of S-37, 2mm	7.09.2007	
67	14	7052	Burnt bone fragments in residue of S-67, 2mm	7.09.2007	
68	6	7089	Burnt bone fragments in residue of S-68, 2mm	7.09.2007	
69	2	7090	Burnt bone fragments in residue of S-54, 2mm (stake holes inside structure 3)	7.09.2007	
70	14	7092	Burnt bone fragments in residue of S-53, 2mm	7.09.2007	
71	2	7125	Burnt bone fragments in residue of S-73, 2mm	7.09.2007	
72	6	7140	Burnt bone fragments in residue of S-95, 2mm	7.09.2007	
73	6	7141	Burnt bone fragments in residue of S-97, 2mm	7.09.2007	
74	6	7142	Burnt bone fragments in residue of S-99, 2mm	7.09.2007	
75	6	7144	Burnt bone fragments in residue of S-106, 2mm	7.09.2007	
76	6	7145	Bone fragments in residue of S-108, 2mm	7.09.2007	
77	6	7146	Bone fragments in residue of S-107, 2mm	7.09.2007	
78	14	7151	Burnt bone fragments in residue of S-117, 2mm	7.09.2007	
79	6	7054	Burnt bone fragments in residue of S-45, 4mm (18 fragments, 2.73g) and 2mm (294 fragments, 5.87g)	7.09.2007	

Acknowledgements

We would like to thank Dr. Thomas McGovern and Dr. Sophia Perdikaris for their assistance with identifications and interpretation. We would also like to thank the project directors Guðrún Alda Gísladóttir and Dr. Karen Milek for their help and the opportunity to work with this collection.

This research was funded by the CUNY Northern Science & Education Center, and grants (0527732, 0732327, 0352596, 0234383) from the US National Science Foundation, Office of Polar Programs (Artic Social Sciences Program), Archaeology Program, International Polar Year Program, and Human and Social Dimensions of Global Change Program, The Icelandic Science Council.

Bibliography

Edvardsson, Ragnar, and Thomas H. McGovern. 2005. Archaeological excavations at Vatnsfjörður 2003-2004. *Archaeologia Islandica* 4:16-30.

McGovern, Thomas H. et al. 2007. Landscapes of Settlement in Northern Iceland: Historical Ecology of Human Impact and Climate Fluctuation on the Millennial Scale. *American Anthropologist* 109, no. 1:27-51.

Milek, Karen. 2007. *Vatnsfjörður 2006: Framvindurskýrslur/Interim Report*. Reykjavík: Fornleifastofnun Íslands.

NABO Zooarchaeology Working Group. 2004. *NABONE Zooarchaeological Recording Package*. 8th ed. New York: CUNY.

Pálsdóttir, Albína Hulda, and Thomas H. McGovern. 2007. Preliminary Report on Faunal Remains from Vatnsfjörður 2003-2006. In *Vatnsfjörður 2006: Framvindurskýrslur/Interim Report*, Ed. Karen Milek, 80-84, Reykjavík: Fornleifastofnun Íslands.