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An Interim Report of a Viking-Age & Medieval Archaeofauna from Undir Junkarinsfløtti, Sandoy, Faroe Islands

Thomas H. McGovern
CUNY Hunter College

Colin Amundsen
City University of New York

Sophia Perdikaris
University of Nebraska-Lincoln, sperdikaris2@unl.edu

Ramona Harrison
Brooklyn College

Yekaterina Krivogorskaya
City University of New York

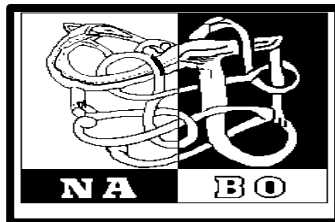
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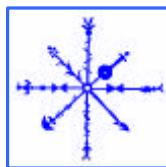
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**CUNY Northern Science
& Education Center**



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

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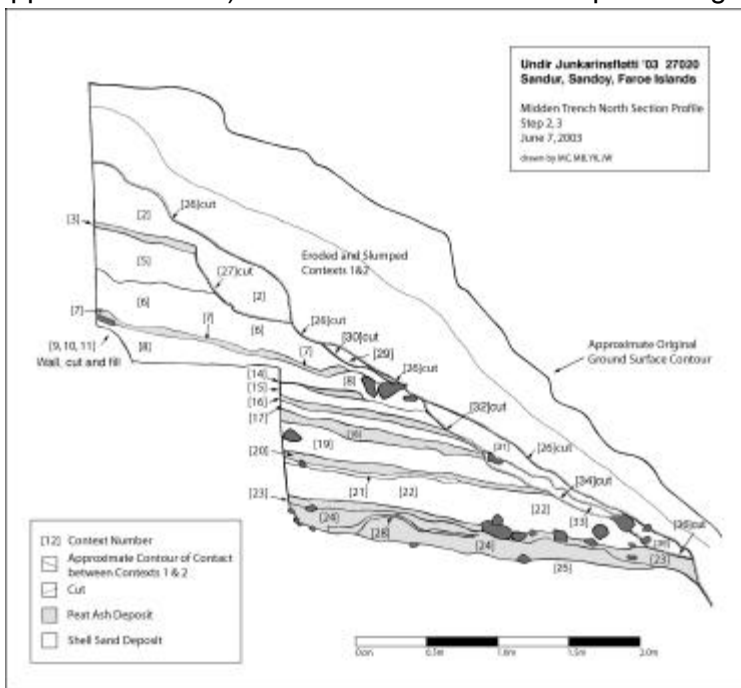
Contact: nabo@voicenet.com

A product of the North Atlantic Biocultural Organization (NABO) Research Cooperative and the Leverhulme Trust "Landscapes circum Landnám" Project.

ABSTRACT: Cooperative international excavations at the site of Undir Junkarinsflótti (27020) in the village of Sandur on the island of Sandoy, Faroe Islands in May 2003 recovered a stratified bone - rich midden deposit extending from the Viking Age to the early medieval period. The animal bone collection contains domestic mammals (cattle, sheep, dog, goat, and pig) and substantial amounts of fish (mainly cod), birds (mainly puffin and guillemot), and shellfish (mainly limpet). While the current collection has the archaeological limitations inherent in column samples, it suggests persistence of substantial pig keeping into the 13th c, and strongly indicates a sustainable exploitation of sea bird colonies as well as some preparation of preserved fish on site. The site has considerable potential for shedding light on early Faroese economy and the environmental impact of the local Viking age settlers.

Keywords: Faroe Islands, Zooarchaeology, Viking Settlement, Sea Birds, Early Fishing.

Excavation and Recovery. Excavations that have taken place at the village at Sandur on Sandoy since the 19th c have uncovered five successive church construction phases (figure 1 area A), the earliest 11th c construction resembling a Norwegian stave church (Krogh 1975). A Viking Age burial ground has been brought to light just south of the church (area B) where also settlement deposits turned up. Here 7 out of 12 graves have been excavated; (Arge & Hartmann 1992), the burial site of *við Kirkjugarð* in the village of Sandur, Sandoy (Fróðskaparrit 38.-39. bók (1989-90): 5-21). Well preserved animal bone and early medieval artifacts have eroded out of the sandy cliff near the modern village of Sandur for some time (areas C-D). During the investigations at the church and churchyard, soil phosphate mapping revealed a major concentration on the crest of the ridge above the eroding bone deposits (E). Following a period of very dry weather the summer 2000 the cliff eroded. Therefore the Faroese National Museum under the direction of Símun V. Arge carried out a small scale rescue excavation of part of the erosion face. This revealed well stratified deposits with excellent bone preservation and also yielded some Viking Age artifacts and basal 9th century radiocarbon dates from a test trench at C (*Undir Junkarinsfløtti*) (Arge 2001). A visit in 2002 by the Leverhulme Trust team carried out a coordinated program of pollen coring, digital mapping, and tephra sampling on Sandoy, and also visited the eroding deposits at Sandur. In the summer of 2003 a international NABO team conducted small excavations, sampling the two sites around the bay of Sandur for animal bones and recovering the archaeofauna reported here from deeply stratified deposits at Undir Junkarinsfløtti (UJF). The 2003 collection comes from a narrow trench (approx.1.5 x 3 m) cut into the erosion face paralleling the 2000 season excavation unit.



The 2003 excavation unit thus is effectively an extended column sample, and has all the usual limitations for recognizing activity areas and vulnerability to small scale spatial variability inherent in small horizontal exposures. Further work is needed at Undir Junkarinsfløtti both to recover a larger sample from dated contexts and to better understand the processes responsible for the accumulation of these deposits.

Identification of layers in 2003 was greatly aided by profiles drawn during the 2000 Faroese National Museum excavations and by the tags left in place by the 2000 team. Excavations followed natural stratigraphy and all excavated material was dry sieved through 4 mm mesh, with extensive

whole soil samples retained for laboratory separation and fine mesh flotation (see Woollett et al 2003 for complete excavation report). Every effort was made to ensure comparability of recovery with prior NABO excavations in Iceland, Norway, Shetlands, and Greenland. Conditions of preservation in the shell sand were generally excellent (pH near neutral), with some unrecoverable bone mush reported in the lowest layers in contact with the less permeable diamicton subsoil (probably a drainage effect). Twenty two fish *otoliths* (“ear stones” composed of nearly pure calcium carbonate) have been recovered, and these are generally found only in very basic depositional environments (such as shell sand). Figure 2 presents a profile of the W face of the 2003 unit with contexts labeled (Woollett 2003). In this report, we combine the stratigraphic unit contexts (SU) into three broader analytic units (AU) to provide more realistic sample sizes for comparisons. The AU follow natural stratigraphic breaks as far as possible, and are tied to available radiocarbon dates (a fresh program of AMS dating is now underway). Calibrated radiocarbon dates are currently available on context 19 of AD 1025-1160, and dates of AD 780-890 on context 23 and AD 890-980 on context 24 (Arge 2001). AU 1 combines SU 21-28 and radiocarbon dates to the 9th-10th c, AU 2 combines SU 15-20 and radiocarbon dates to the 11th-12th c, while the uppermost AU 3 combines SU 3-14 and is currently undated but is stratigraphically post-12th c. In terms of British Northern Isles archaeology, AU 1 thus reflects Viking Age occupation, while AU 3 is probably contemporary with medieval “Late Norse” phases. As far as can be determined from the current exposure, the deposit as a whole appears to reflect fairly continuous midden deposition from early settlement times into the high Middle Ages. Deposits seem to have built up against a series of low stone yard or boundary walls which were progressively buried by fairly rapid sand deposition temporarily stabilized by turf cover and midden deposits. In the upper contexts (SU 6-7) it was possible to observe clear Aeolian bedding patterns, suggesting only partially stabilized coastal sand dune conditions. The geomorphology of the site and local landscape is subject of ongoing study.

Laboratory Methods

Analysis of the Undir Junkarinsfløtti collection was carried out at the Brooklyn College and Hunter College Zooarchaeology Laboratories and made use of extensive comparative skeletal collections at both laboratories and the holdings of the American Museum of Natural History. All fragments were identified as far as taxonomically possible (selected element approach not employed) but most mammal ribs, long bone shaft fragments, and vertebral fragments were assigned to “Large Terrestrial Mammal” (cattle-horse sized), “Medium terrestrial mammal” (sheep-goat-pig-large dog sized), and “small terrestrial mammal” (small dog-fox sized) categories. Only elements positively identifiable as *Ovis aries* were assigned to the “sheep” category, with all other sheep/goat elements being assigned to a general “*caprine*” category potentially including both sheep and goats (only one goat bone was in fact positively identified from this collection). Murre and Guillemot are not distinguishable on most bones and are presented together as *Uria sp.*, except where positive identification of *Uria lomvia* (Guillemot) could be made. Fish identifications follow the most current ICAZ Fish Remains Working Group recommendations (including most cranial and vertebral elements), with only positively identified fragments being given species level identification (thus creating the usual large cod-family or *gadid* category as well as a substantial number of unidentified fish bones). Following NABO Zooarchaeology Working Group recommendations and the established traditions of N Atlantic zooarchaeology we have made a simple fragment count (NISP) the basis for most quantitative presentation. Measurements (Mitoyo digimatic digital caliper, to nearest mm) of fish bones follow Wheeler & Jones (1989), mammals follow Von Den

Dreisch (1976), mammal tooth eruption and wear recording follows Grant (1982) and general presentation follows Enghoff (2003). Digital records of all data collected were made following the 8th edition NABONE recording package (Microsoft Access database supplemented with specialized Excel spreadsheets, see discussion and downloadable version at www.geo.ed.ac.uk/nabo) and all digital records (including archival element by element bone records) and the bone samples will be permanently curated at the Faroese National Museum. CD R versions of this report and all archived data are also available on request from nabo@voicenet.com.

Taphonomy: The multiple transformations that convert a bone from a part of a living animal to a battered fragment on a laboratory table greatly affect zooarchaeological interpretation (Lyman 1994) and often limit our ability to reasonably compare archaeofauna from different deposits. Zooarchaeology (like archaeobotany and geoarchaeology) produces *proxy* evidence of past economy and ecology rather than any direct window into an ancient farmyard, and an assessment of the taphonomic factors affecting bone samples is an integral part of analysis. It may be useful to present some basic taphonomic indicators and provide some comparisons to a roughly contemporary Icelandic site (Sveigakot in Mývatnssveit). Table 1 presents the distribution of bone fragment size for the three analytic units at Undir Junkarinsflótti. Note that the great majority of the bone fragments from all three are 2 cm and below in maximum dimension.

Table 1 Fragment Size	AU1		AU2		AU3	
	Count	%	Count	%	Count	%
up to 1 cm	1484	30.81	641	18.80	940	13.35
1 - 2 cm	2299	47.73	1724	50.56	3649	51.82
2 - 5 cm	1010	20.97	1010	29.62	2409	34.21
5 - 10 cm	18	0.37	24	0.70	41	0.58
> 10 cm	6	0.12	11	0.32	3	0.04

All three AU also show consistently low percentages of canine tooth marking (almost certainly domestic dog) on the bones (less than 1% in all cases). All three AU at Undir Junkarinsflótti also have consistently low rates of burnt bone, but the pattern of burning presents some interesting contrasts to Viking Age Iceland (figure 3).

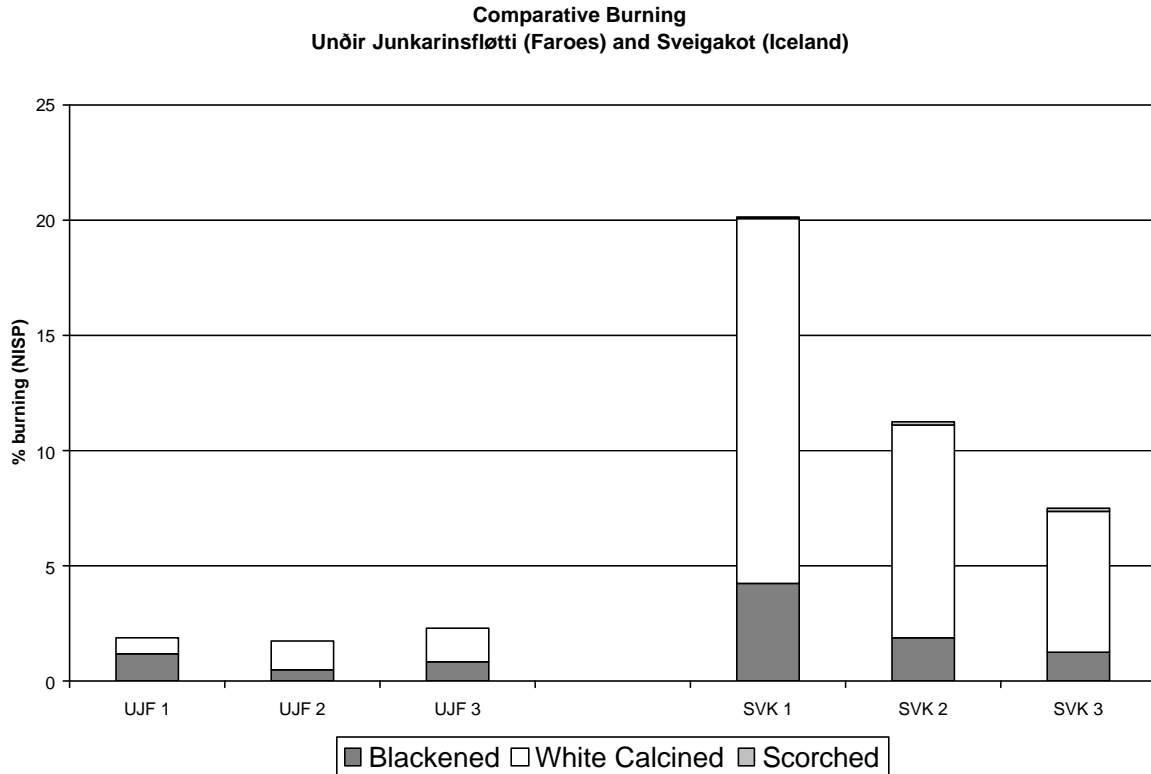


Figure 3

Note that the Viking age contexts from the site of Sveigakot (Vésteinsson 2001) show both higher overall rates of burned bone than Undir Junkarinsfløtti, and far greater amounts of white calcined bone probably exposed directly to hot fire. The Icelandic site produced considerable amounts of wood charcoal and fire cracked stones from the same contexts as the calcined bone fragments, and soil micromorphology analysis indicates a wide range of fuels in use including wood and animal dung (Simpson et al 2002). The 2003 UJF deposits also included substantial amounts of fire cracked stones and dense layers of peat ash, so it appears that both site middens are partially composed of fire place cleaning debris as well as a wide range of butchery debris and kitchen waste. Does the lower proportion of strongly burnt bone at UJF reflect the lower temperatures characteristically produced by peat vrs. wood fires, or is it a result of other taphonomic processes, or simple sampling error? The general similarity of the taphonomic indicators of the three AU at Undir Junkarinsfløtti does suggest broadly similar histories of deposition and attrition in the different phases and that comparative analysis may be worthwhile.

Major taxa: Table 2 presents the fragment count for the 2003 Undir Junkarinsfløtti archaeofauna. The excavation produced a total of 10,445 fragments identifiable to a useful taxonomic level (NISP) and a grand total of 15,297 fragments (TNF).

Table 2	AU 1	AU 2	AU 3	total
<i>Domestic Mammals</i>	76	118	241	435

<i>Whales</i>	1	2	0	3
<i>Seals</i>	1	6	7	14
<i>Birds</i>	1,068	1,167	2,148	4,383
<i>Fish</i>	2,400	573	1,157	4,130
<i>Shellfish</i>	183	268	1,029	1,480
<i>NISP</i>	3,729	2,134	4,582	10,445
<i>Medium terrestrial mammal</i>	98	176	289	563
<i>Large terrestrial mammal</i>	16	3	11	30
<i>Unidentified fragments</i>	980	1128	2151	4,259
<i>TNF</i>	4,823	3,441	7,033	15,297

Figure 4 illustrates the changing proportions of the major taxa in the collection.

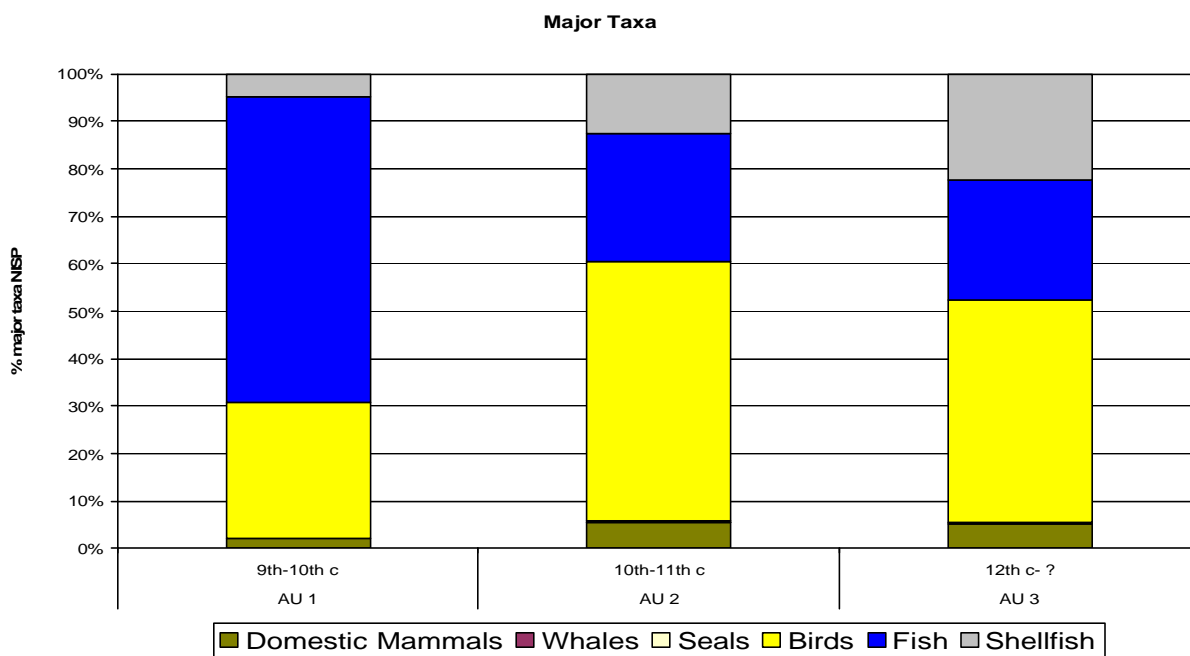


Figure 4

There is a pattern of increasing percentage of domestic mammals from bottom to top, but the most striking pattern apparent in the current Undir Junkarinsfløtti archaeofauna is the apparent reduction in fish bone from bottom to top (despite the poorer conditions for fish bone preservation in the lowest layers).

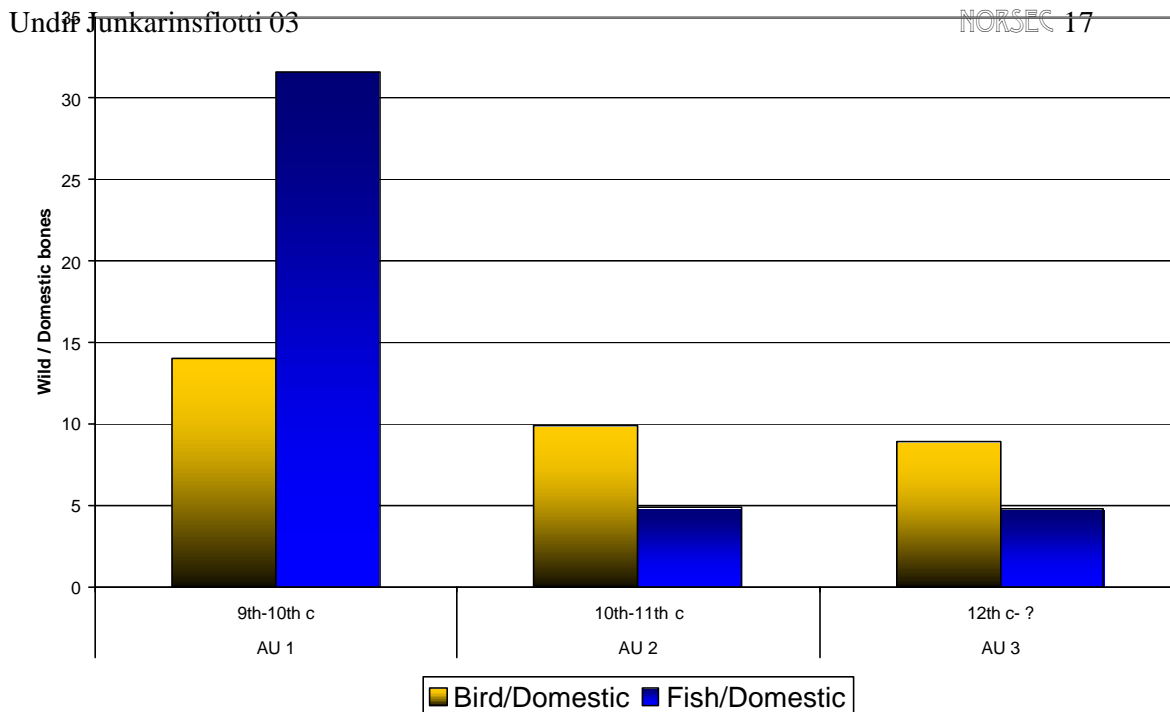


Figure 5

Figure 5 illustrates the dramatic transition in the relative importance of the major wild taxa compared to domestic mammals. In AU 1, fish (blue bar) are far more important than birds, though both provide very substantial supplement to the domestic mammal economy. By AU 2 the proportions are reversed, with birds (yellow bar) more important than fish, a pattern that extends without much change into AU 3. While most 9th-11th c Norse archaeofauna show a similar mix of wild and domestic species and a few also contain substantial numbers of bird bones, no other currently known archaeofauna from the North Atlantic shows this trajectory.

Domestic Mammals

Table 3 presents the NISP count for the domestic mammals identified in the 2003 UJF archaeofauna. While only a single dog bone is present in the uppermost layers, dog tooth marks are present throughout. Sheep and goat are notoriously difficult to distinguish on most elements, but thus far the collection appears dominated by sheep, with only a single goat bone positively identified so far.

	AU 1	AU 2	AU 3	total
DOMESTICATES	9th-10th c	10th-11th c	12th c- ?	
<i>Cattle (Bos taurus)</i>	18	14	25	57
<i>Dog (Canis familiaris)</i>			1	1
<i>Pig (Sus scrofa)</i>	13	20	43	76
<i>Sheep (Ovis aries)</i>	4	12	30	46
<i>Goat (Capra hircus)</i>		1		1
<i>Caprine</i>	41	71	142	254
<i>total caprine</i>	45	84	172	301
<i>total Domestic Mammal</i>	76	118	241	435

Figure 6 illustrates the relative percentage of these domesticates in the three AU.

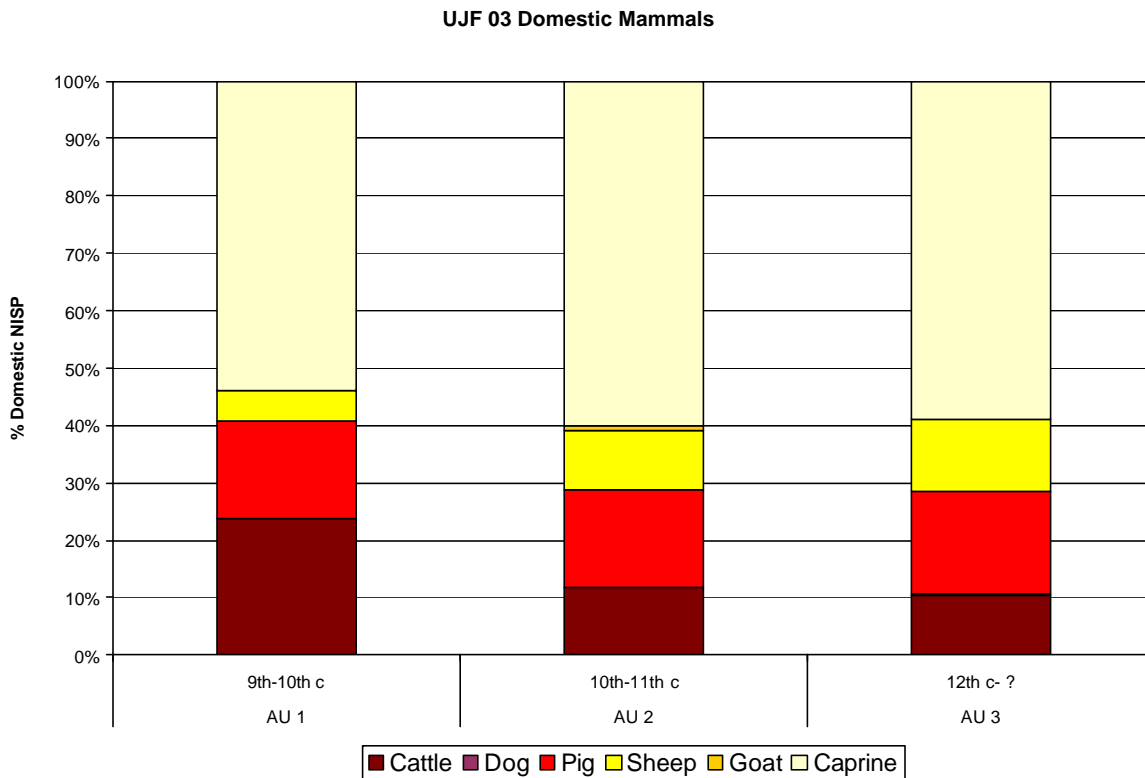


Figure 6

The relative proportion of cattle decreases between AU 1 & AU 2, a pattern widely observed in most N Atlantic Landnám sites where early hopes for high status cattle rich holdings may have been regularly frustrated by the realities of island farming. The presence of substantial numbers of pigs is also commonplace in Landnám sites in Greenland and Iceland (McGovern et al 2001), but pigs rarely survive as a major element in the domestic economy much beyond the mid 11th c in either of these settlements. Pigs become extinct in the Faroes later in the Middle Ages, with a few place names reflecting earlier piggery (Arge in press 2004). In arctic Norway however, pigs remain economically important into early modern times, and never became entirely extinct (Perdikaris 1999, Amundsen 2004). Pigs reproduce rapidly and have been favored “Landnám” domesticates in both Atlantic and Pacific islands, but economic pig keeping requires either substantial unmanaged woods or marshland for free ranging pannage or some source of feed for penned sty kept animals (Ward & Mainland 2004). In medieval England, many communities had already converted from open pannage to sty piggery by the 1086 Domesday survey, with improving monasteries taking a lead in raising legumes mainly as pig fodder (Biddick 1984). In the N Atlantic, available fodder vegetation was probably reserved for cattle and sheep, but fish offal might provide a high-protein substitute in some

northern communities. A project is now underway to compare carbon isotope ratios in pig bones from Undir Junkarinsflótti, Finnmark, and Iceland to attempt to detect degree of participation in the marine food web (McGovern, Amundsen & Cook in prep), and pig bone samples have been sent from all three areas to the ongoing Durham Univ. pig DNA project (Dobney & Albarella in prep).

Domestic Mammal Management. While sample size constrains what can be said about patterns of mortality in the domestic stock and possible management strategies, a few observations are possible.

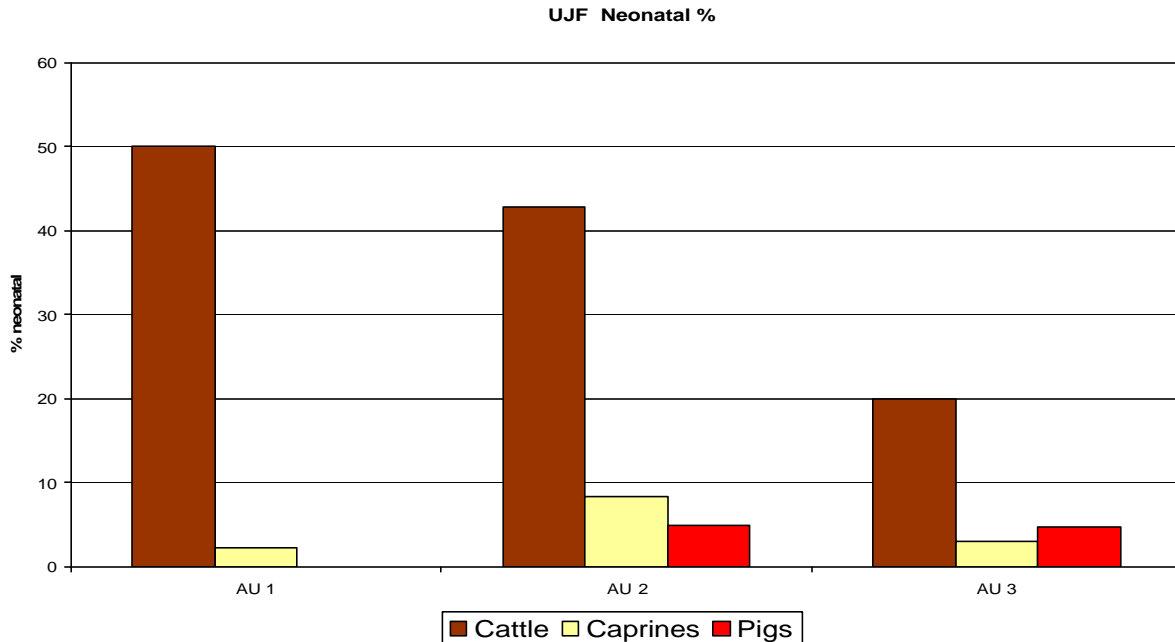


Figure 7

Figure 7 presents the relative percentage of the bones of newborn (neonatal < 3 month old) animals in the three phases at UJF. While a few lambs and piglets seem to have died young, the much higher proportion of young calves is evident. This pattern is very similar to the Viking-Medieval archaeofauna from Iceland, where between 20-50% of cattle bones come from these very young animals (McGovern, Perdikaris et al 2001). This pattern is evidence for a dairying economy (Halstead 1998), and would seem to confirm the general impression that Norse farmers throughout the North Atlantic emphasized dairy production over meat production in their cattle herds. Table 4 presents the fairly limited epiphyseal fusion data for available long bone fragments (all contexts). While cattle sample size is too small to comment on, the caprines fusion pattern suggests that a substantial proportion survived to full maturity. Pig fusion data thus far suggests the majority of animals died as juveniles, with a few reaching adulthood. Larger sample sizes will certainly refine and probably correct these preliminary comments based on long bone fusion.

Table 4 **UJF Caprines**

		Fused	Unfused	total	% fused
6m	Humerus D	5	1	6	83.33
2 yr	Tibia D	4	4	8	50.00

3.5 yr	Femur D	2	2	4	50.00
4.5 yr	Tibia P		1	1	
5 yr	Radius D	2	4	6	33.33

UJF Cattle

		Fused	Unfused	total	% fused
1-1.5 yr	Humerus D	1	2	3	33.33
3.5-4	Femur D		2	2	0.00

UJF Pigs

		Fused	Unfused	total	% fused
c 12 m	Humerus D		2	2	0.00
	Radius P	1	1	2	50.00
	Tibia D		2	2	0.00
c 24 m	Metapodial	1	6	7	14.29
c 36-43 m	Femora P		2	2	0.00
c 42 m	Femora D	1	3	4	25.00
	Tibia P	1	3	4	25.00

The eruption and wear of domestic mammal teeth provides some of the best and most widely used means of reconstructing domestic mortality patterns, but sample size again restricts reconstruction of herding strategy at Undir Junkarinsfløtti. Table 5 presents the available tooth eruption and wear data, wear scoring following Grant (1982).

Table 5

Species	ref #	Context	dp4	P4	M1	M2	M3	MWS
<i>Mandibles</i>								
cattle	40	20	B		unerupted			
caprine	10	6	G		C	in crypt		9
sheep	11	6	G		E	in crypt		11
caprine	12	6	missing		L	in crypt		17
sheep	201	20	L		G	C	unerupted	20
sheep	32	23	N		H	C	unerupted	21
sheep	71	17		G	G	F	C	31
<i>Maxilla</i>								
caprine	1001	7			in wear	in wear	in wear	

The single cattle mandible comes from a young calf in its first summer. The caprine jaws (all probably sheep) span a wider range of possible ages on the basis of tooth eruption, from around 12 months to adulthood, and the caprine maxilla is from an adult animal. The Grant (1982) Mandibular Wear State (MWS) calculations are provided for reference. While it seems likely that cattle were kept mainly for milk and pigs managed for meat,

larger sample sizes are required to better assess the herding strategy of the caprine flocks at UJF.

Whale and Seal bones are present but rare in all contexts, as table 6 indicates.

Table 6	AU 1	AU 2	AU 3	total
Cetacea				
Whale sp	1	2		3
Seals				
<i>Grey Seal (Hal. gryphus)</i>			5	5
<i>Large Seal (prob. Grey seal)</i>	1	2	1	4
<i>Small Seal (prob. Common seal)</i>		1		1
<i>Seal sp</i>		3	1	4

The whalebone is all probably tool-making debris, as all the (small) fragments show cut marks and one is sawn. Species identifications are not possible from these fragments, nor is it yet possible to be certain if the bones come from great whales (bowhead, humpback, etc.) or from smaller toothed whales and porpoise. Seal bones include some teeth that can be positively identified as Grey seal (*Halichoerus gryphus*) and several elements that are too large to derive from anything but a Grey seal or Bearded seal (*E. barbatus*). On biogeographical grounds these are almost certainly also in fact Grey seal bones. Several additional grey seal bones were visible in the unstratified erosion slump downslope from the *in situ* deposits. Four newborn seal ribs and an unfused femur of a seal in the range of harbor seal (*P. vitulina*), harp seal (*Pag. groenl.*) or ringed seal (*P. hispida*) suggest hunting of smaller seals, possibly at pupping beaches. Again, biogeography suggests that these small seal bones are almost certainly harbor seal. While harbor (or common) seal bones are regularly encountered in Viking Age and Late Norse contexts in Iceland, Greenland, and the Northern Isles, Grey seal bones are normally much rarer in all contexts as these seals tend to keep offshore (hence the Icelandic name “ocean seals” for *H. gryp.* vrs “land seals” for *P. vitulina*) and are generally less common and less accessible to human hunters.

Birds

Bird bones make up a large proportion of the Undir Junkarinsfløtti archaeofauna in all phases, and their relative abundance does not decrease after first settlement (as in S Iceland). Table 6 presents the count of identified bird bones. Puffins and related alcids (Guillemot, Black Guillemot, Razorbill) make up the overwhelming majority of these remains (most of the unidentified bird bones could have been small alcid from their size). The presence of Manx shearwater bones also suggests the exploitation of nesting cliffs (as in historic times).

Table 6	AU 1	AU 2	AU 3
<i>Puffin (Fratricula arctica)</i>	451	459	995
<i>Guillemot (Uria lomvia)</i>	2	4	
<i>Black Guillemot (C. grylle)</i>	1		

<i>Murre/Guillemot (Uria sp.)</i>	116	51	76
<i>Razorbill (Alca torda)</i>	6	9	5
<i>Duck sp (Anatidae sp)</i>			2
<i>Eider duck (Somateria moll.)</i>			1
<i>Manx shearwater (Puffinus puff.)</i>	1	4	7
<i>Gannet (Sula bassana)</i>		2	1
<i>Shag (Phalacrocorax arist.)</i>	2	4	8
<i>Gull sp. (Laridae sp)</i>	1	1	2
<i>Goose sp. (poss. Domestic)</i>		7	7
<i>Bird sp.</i>	488	626	1044
<i>total Birds</i>	1068	1167	2148

Goose (*Anser* sp) bones are notoriously difficult to positively identify as wild or domestic (Benecke 1993), but we know that domestic geese were part of the Viking age farmyard (Hutton Macdonald et al 1993) and it is possible that these bones (one of which contains medullary bone characteristic of egg laying females) come from domestic animals. One puffin bone came from a fledgling chick, again suggesting exploitation of nesting colonies.

Fish

Identified fish bones from Undir Junkarinsflótti come from a range of families including rays, salmon and trout, and flatfish, but the great majority are from the cod (gadid) family (table 7). While a few deep-water ling and cusk are present,

Table 7	AU 1	AU 2	AU 3	total
Gadid Fish				
<i>Atlantic Cod (Gadus morhua)</i>	592	206	391	1,189
<i>Ling (Molva molva)</i>			7	7
<i>Cusk (Brosme brosme)</i>	14	13	42	69
<i>Gadidae (Cod family)</i>	260	48	114	422
Salmonid fish				
<i>Salmonidae sp (Salmon family)</i>		3		3
<i>Trout (Salmo trutta)</i>	3		1	4
Flatfish				
<i>Pleuronectiformes (Flatfish sp)</i>		7	2	9
<i>Atlantic Halibut (Hippoglossus hipp.)</i>	3			3
Other Fish				
<i>Rajidae (Skates)</i>		7	2	9
<i>Anarchiradidae (Wolf fish)</i>		2		2
<i>Scaphthalmidae</i>	2	1		3
<i>Sebastidae</i>			6	6
<i>Cottidae</i>		3	2	5
<i>Fish sp indeterminate</i>	1,524	283	590	2,397
<i>total fish</i>	2,398	573	1,157	4,128

the great majority of the gadids are Atlantic cod (*Gadus morhua*). Making use of the widely used formulae of Wheeler & Jones (1989) it is possible to reconstruct live length of the UJF cod based on measurements of the dentary and premaxillary bones (Figure 8). The vertical lines mark the approximate limits of

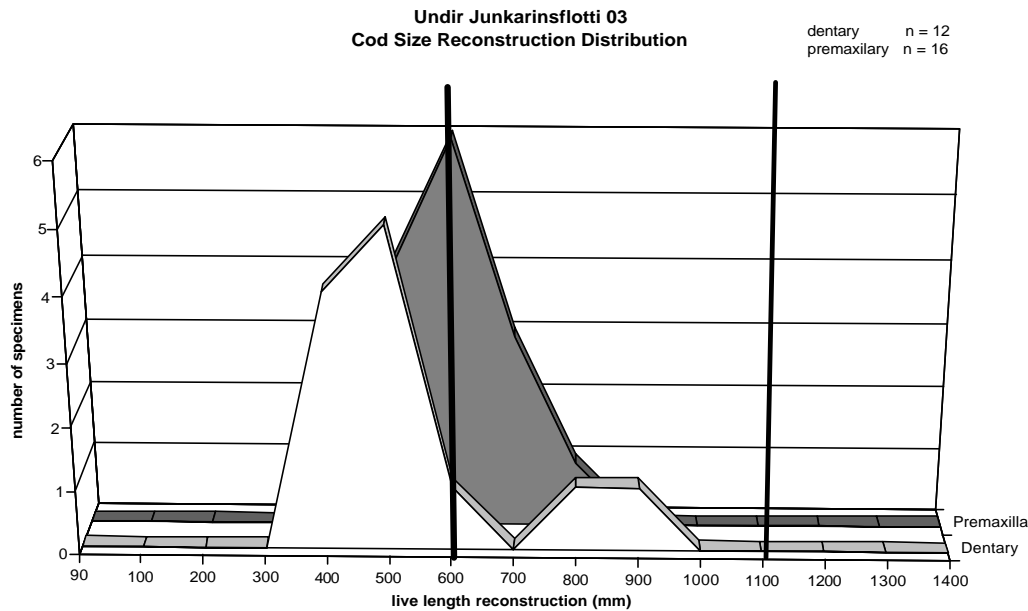


Figure 8

the “stockfish window” the size range suitable for the preparation of air dried stockfish, the traditional product of the medieval and early modern North Atlantic commercial fisheries (Perdikaris 1999, Perdikaris et al 2001, Amundsen 2004, Barrett et al 2001, Bigelow 1984, Cerón-Carrasco 1998). While sample size is still modest, it is apparent that most of the cod landed at UJF are too small to be effectively air dried in the round as stockfish. Fish skeletal element distribution has been used to investigate potential signatures for production sites (disproportionately high in skull bones cut off during processing) from consumption sites (disproportionately high in body elements). Figure 9 illustrates the contrast between inland Viking age sites in N Iceland (SVK Sveigakot, HRH Hrísheimar, GST Granastaðir, HST Hofstaðir) and two 18th c coastal contexts (FBS Finnbogastaðir, TJR3c Tjarnargata in Reykjavik) and the UJF gadid element distribution (MAU %- with natural anatomical proportions all bars would be equal height). The Undir Junkarinsfløtti gadid element distribution unsurprisingly resembles the coastal Icelandic sites, but both of these collections were also involved in early modern commercial fishing (Edvardsson et al 2004, Perdikaris et al 2001). Was Undir Junkarinsfløtti involved in pre-modern production and exchange of a preserved fish product?

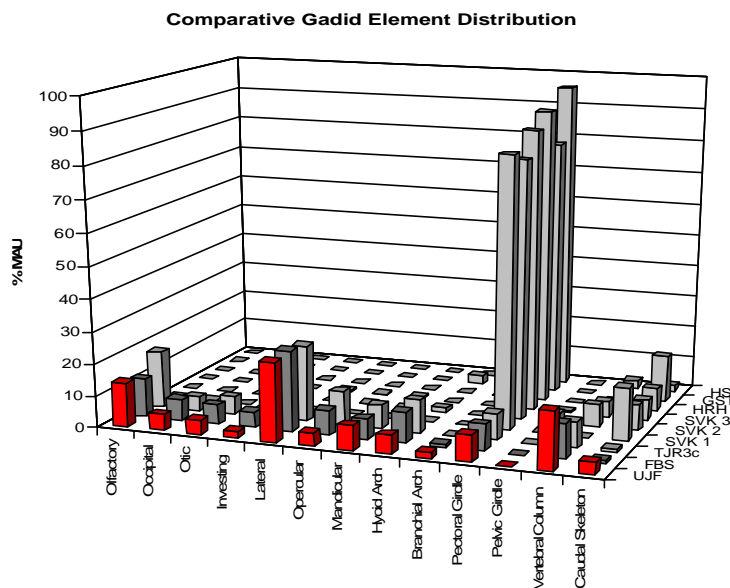


Figure 9

The tall pectoral girdle bar in the Icelandic Viking age inland consumer sites is largely the result of a concentration of cleithra, a curved bone plate often left in the body of many types of preserved fish. The cleithrum helps keep the beheaded body together and can aid in spreading open the body cavity for drying. Table 8 compares the proportion of cleithra to the other gadid skeletal elements at Undir Junkarinsfløtti, Finnbogastaðir, Tjarnargata 3 c, Sveigakot (two phases) and Hrísheimar. While more work on larger samples needs to be done, the low frequency of cleithra and thoracic vertebrae in the current UJF sample raises the issue of a possible production of some sort of preserved fish product (not stockfish) at the site during the Viking age.

Table 8	UJF	FBS	TJR3c	SVK 2	SVK 3	HRH
total	1669	1809	18742	177	376	57
Cleithrum count	7	25	152	21	114	21
Cleithrum %	0.42	1.38	0.81	11.86	30.32	36.84

Mollusca

Mollusks recovered are mainly the common Limpet (*Patella vulg.*), which retains its dominance even if only complete specimens are counted. Some fragments of a clam and of whelk are also present, but as trace species (table 9). As the anthropogenic status of any common shellfish should be questioned in a beachfront setting, it is interesting to report that whenever the complete shell of the Limpet has survived it invariably shows a notch left by a pry-stick used by a human collector to remove them from rocks. These are thus almost entirely deliberately gathered shellfish, whether for human food or for use as bait.

Table 9

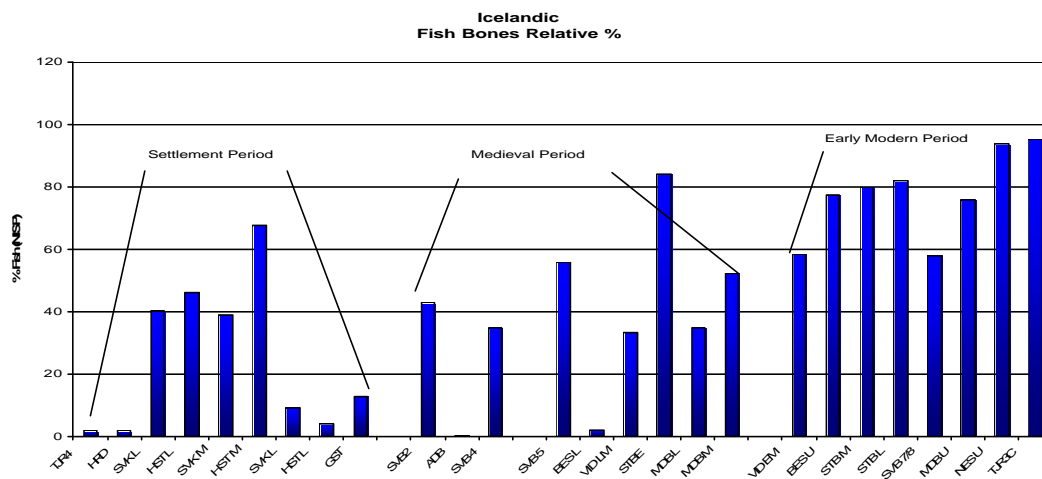
	AU 1	AU 2	AU 3	Total
<i>Limpet (Patella vulg.)</i>	167	219	923	1,309
<i>Clam sp (Mya sp)</i>	7	11	10	28
<i>Whelk (Buccinum undatum)</i>	9	15	14	38
<i>Mollusca sp</i>		23	82	105
<i>total Shellfish</i>	183	268	1,029	1,480

Discussion

The present archaeofauna from Undir Junkarinsflótti shows many similarities to other bone collections from the N Atlantic region dating to the Viking Age settlement period. It reflects an economy making use of a familiar mix of domestic mammals, with a clear ability to take large deep water fish (and seals), some use of whales, and a sustained (and perhaps growing) reliance upon birds most likely taken at cliff nesting sites. However, the emphasis placed on different parts of the general Viking N Atlantic economic pattern is virtually unique:

- No other archaeofauna is so dominated by birds (almost all a single species: Puffin)
- No other archaeofauna shows the same trajectory – clearly sustainable long term intensified exploitation of major sea bird colonies rather than progressive intensification of fisheries.

Figure 10 summarizing the relative abundance of fish bones on Icelandic sites from settlement times (left side) to the early modern period (right side) may serve to illustrate how unusual the pattern at UJF 03 appears- the general trend in Iceland as in the N Isles is for an uneven but steady increase in the use of fish for both subsistence and commerce.



A more detailed comparison of the Undir Junkarinsflótti archaeofauna with other major collections from the same general period may illustrate these contrasts. Figure 11 compares the major taxa (domestic mammals, birds, wild mammals, fish, mollusca) of the three provisional phases of UJF 03 with major taxa from a series of sites (arranged in rough chronological order from left to right). Aaker in S Norway was a late 8th-9th c high

status chieftains farm (Perdikaris 1985) and may stand as a sort of cultural “ideal farm”. In Iceland, the probable late 9th c collections include Tjarnargata 4 and Herjolfsdalur (both in the South) and Sveigakot (SVK) AU 1 in the north. Icelandic 10th c collections include an unusual outlaw cave deposit at Vígishellir (VGH), Selhagi (SLH), Hofstaðir (HST), Hrísheimar (HRH) and Granastaðir (GST). Icelandic 11th-12th c collections include the upper layers of Sveigakot, Hofstaðir and Selhagi and the lower layers of Svalbarð in the NE. The Greenlandic 11th c collections include a high, middle, and low status farms from the western settlement (W51, GUS Phase 1, W48)

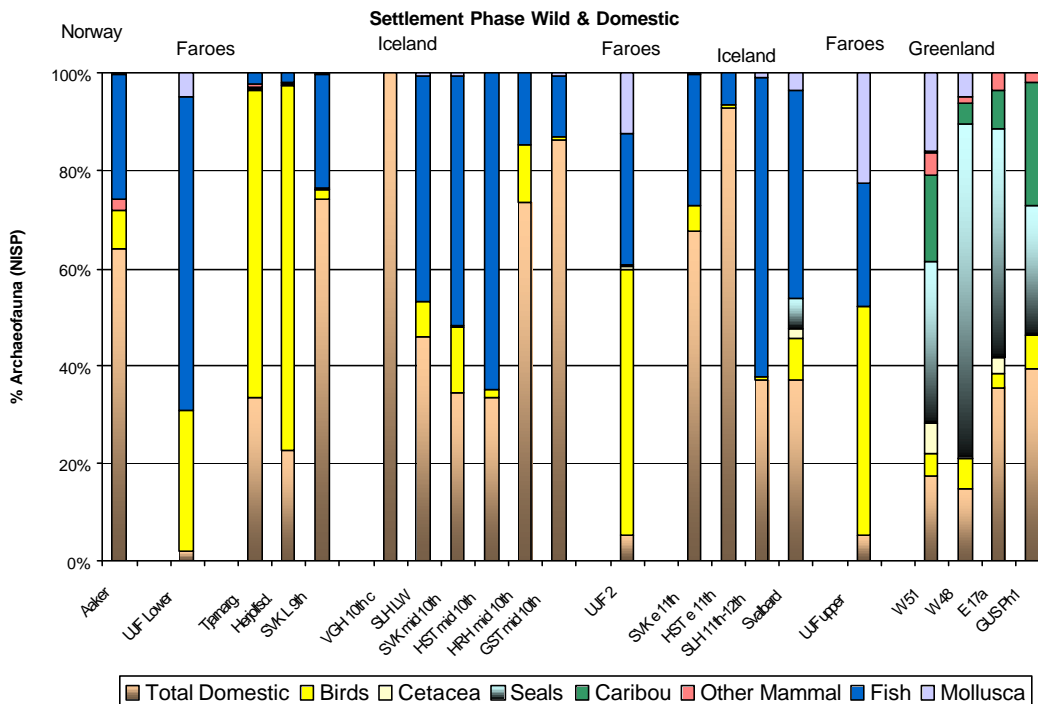


Figure 11

The only collections showing somewhat comparable amounts of bird bones (yellow in Figure 11) are the early settlement sites in S Iceland. These are also dominated by alcid bones (here guillemot and great auk as well as puffin), but subsequent collections from Iceland generally show less than 10% bird bone. It has been suggested that the heavy exploitation of sea bird colonies in S Iceland represented a one-time draw down of “natural capital” accumulated prior to human colonization (see discussion in Vésteinnsson et al 2001). The UJF middle and upper contexts (placed in approximate chronological position) further illustrate how unusual the sustained large scale use of sea birds is in a medieval N Atlantic perspective.

Figure 12 makes use of the same comparative collections to provide context for the domestic mammal bones from UJF 03. Note that small sample sizes in these taxa suggest some caution, but the continued keeping of substantial numbers of pigs beyond the 12th c is notable. Pigs were kept at elite farms in Greenland during the first settlement period in the 11th c, but appear to have become very rare or extinct soon after.

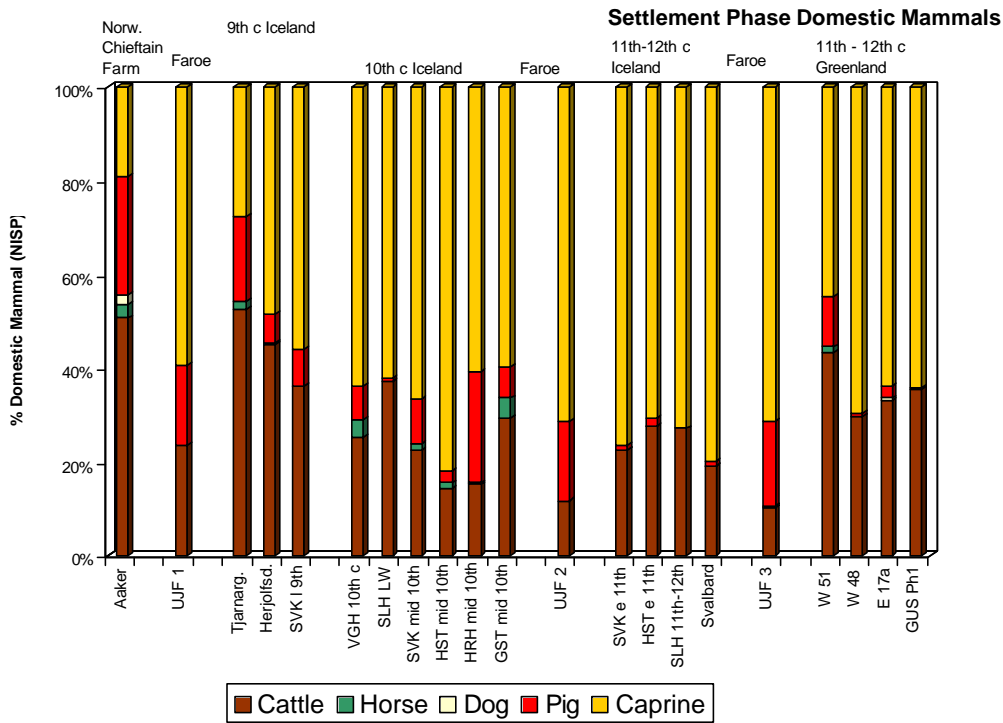


Figure 12

The intriguing results of this analysis of the Undir Junkarinsfløtti 2003 archaeofauna raise as many questions as they answer. There is a clear need for larger collections from this important site and for more comparative collections from other Faroese sites to more fully explore the apparently unique nature of Viking Age- Medieval economy in the Faroe Islands.

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