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Skagafjörður Church and Settlement Survey: Final Report on the Archaeofauna from Vatnskot on Hegranes, Skagafjörður

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Introduction and Excavations

From 2015-2018, the Skagafjörður Church and Settlement Survey (SCASS) explored the settlement pattern on Hegranes, in Skagafjörður (Figure 1) (e.g., Bolender et al. 2016, 2017; Steinberg et al. 2016). Vatnskot is located in central Hegranes, about 4 km inland (Figure 2). The modern day farms on this site are called Svanavatn and Hegrabjarg, both of which were created by dividing Vatnskot in the early 20th century (Pálsson 2010). Documentary records suggest that Vatnskot may have been abandoned in the late 15th or early 16th centuries, but we do not yet have archaeological confirmation of this. It seems that the farmstead relocated north after about AD 1300, which may be related to the potential abandonment (Bolender, personal communication). There is a lake associated with this farm, which is perhaps where the name *Vatn* comes from, and it has been present on the landscape since before human occupation of the island (Hallsdóttir 1996).

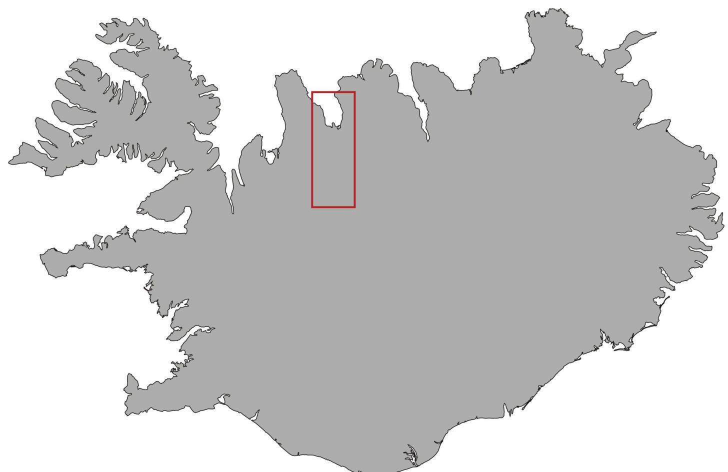

Figure 1: Map of Iceland. Skagafjörður is outlined by the red box.

In 2017, excavations began with a 1x1 meter test pit that was then expanded another meter south because the deposit was quite dense and it allowed us to collect a larger sample of archaeofauna and other samples (macrobotanical, tephra). In 2018, we reopened the original test pit and expanded it to the west by adding another 1x2 running north-south (Cesario and Ritchey 2018). The archaeofauna collected from these excavations are the focus of analysis here.

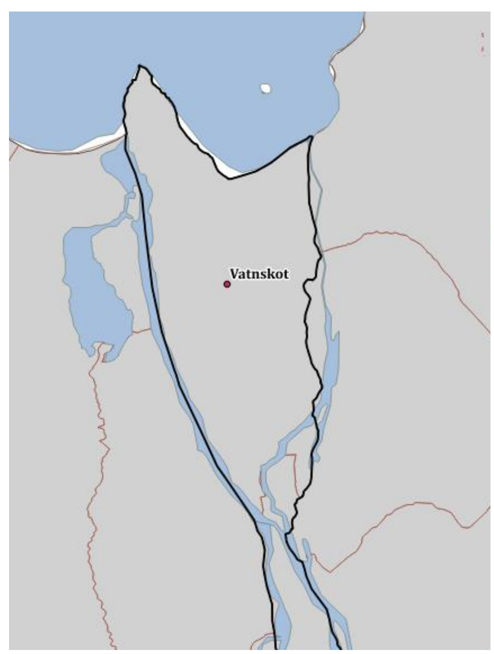

Figure 2: Location of Vatnskot on Hegranes

Methods

The faunal materials were partially analyzed at the Hunter College Zooarchaeology Laboratory, and made use of the comparative collection there. The 2018 material was analyzed in Iceland, at Fornleifastofnun Íslands (FSÍ) and using the comparative collection housed at the Agricultural College in Keldnaholt as well as the Natural History Museum in Garðabær. Recording and data curation follow NABONE protocols, utilizing the 9th edition of this recording package (a Microsoft Access database supplemented with specialized Microsoft Excel spreadsheets, available to download at www.nabohome.org). Digital records were all made using this package. The animal bones excavated will be permanently curated at the National Museum of Iceland along with all digital records. Digital records will also be preserved in the NABO collection on The Digital Archaeological Record (tDAR). An electronic copy of this report is available at www.nabohome.org and at the UMB SCASS website/Fiske Center site.

All fragments were identified as far as taxonomically possible, and a selected element approach was not used. Most mammal ribs, vertebrae, and long bone shaft fragments were assigned to "Large Terrestrial Mammal" (cattle or horse sized), "Medium Terrestrial Mammal" (sheep, goat, pig, or large dog sized), and "Small Terrestrial Mammal" (fox or small dog sized). Only those elements that could be positively identified as sheep, *Ovis aries*, or goat, *Capra hircus*, were assigned to these categories while all other sheep/goat elements were assigned to a more general "caprine" category.

Following widespread North Atlantic tradition, bone fragment quantification makes use of the Number of Identified Specimens (NISP) method (Grayson 1984). All mammal measurements follow (von den Driesch 1976). Sheep/goat distinctions follow (Boessneck 1969), (Mainland and Halstead 2005), and (Zeder and Lapham (2010). Only positively identified fragments of fish bone were given species level identification, with those unidentifiable to species placed in the family category where possible, often *gadid*, while others were identified simply as fish. No fish bones from this collection required measurement.

Tooth wear studies follow Grant (1982) and Lemoine et al. (2014). Long bone fusion stage calibrations follow Zeder (2006) and presentation of age reconstruction makes use of Enghoff (2003) and McGovern (2009).

The Archaeofauna

The analytical units for this excavation have been separated by time period (Table 1). Volcanic tephra observed during excavation was used to date the deposits, and carbonized seeds recovered through flotation have been sent for radiocarbon dating in order to get more precise dates. For this site, Phase I is AD 871-1000 and is capped by the dark grey 1000 tephra. Phase II is AD 1000-1104 and ends at the white AD 1104 tephra. Phase III is capped by the AD 1300 tephra and Phase IV is material from post-1766 (this comes from a modern cut, see excavation report for more details). For the purposes of this report, Phases III and IV will not be included in analysis, since the sample sizes are so small.

Phase	**I**	**II**	**III**	**IV**	**Total**
Domesticates					
Bos taurus	33	56	1	1	91
Equus caballus	0	4	0	0	4
Sus scrofa	6	10	0	0	16
Ovis aries	18	17	0	0	35
Capra hircus	0	2	0	0	2
Ovis/Capra sp.	123	183	5	2	313

SEALS					
Phocid sp.	0	1	0	0	1
CETACEA					
Cetacea sp.	9	1	0	0	10
BIRDS					
Wildfowl - sea birds	14	23	0	0	37
Wildfowl - land birds	2	0	0	0	3
Bird sp.	15	32	0	1	49
FISH					
Gadid sp.	2,265	2,114	9	33	4,421
Salmonid sp.	0	1	0	0	1
Other fish	3	0	0	0	3
Fish sp.indet.	268	205	0	0	473
MOLLUSCA					
Mollusca sp.	258	134	2	5	399
GASTROPOD					
Snail sp.	19	2	0	0	21
TOTAL NISP (Identified fragments) =	**3,033**	**2,785**	**17**	**42**	**5,877**
Small Terrestrial Mammal	4	10	0	0	14
Medium Terrestrial Mammal	272	325	4	10	611
Large Terrestrial Mammal	92	81	1	1	175
Unident. Mammal Frags	1,923	1,372	28	32	3,355
TOTAL TNF (all fragments)	5,324	4,573	50	85	**10,032**

Table 1: NISP and TNF for Vatnskot archaeofauna. Total NISP for all phases is 5,878. Note that Phase III and IV will not be discussed in this report, and the NISP for Phases I and II is 5,818.

Taphonomy

Various taphonomic factors can affect bones. Here, four measures of taphonomic effects will be explored to help characterize the entire archaeofaunal assemblage. The taphonomy is discussed in terms of the assemblage as a whole, using the Total Number of Fragments (TNF). Using the whole assemblage for taphonomic analysis, rather than just the identified bones (NISP), gives us a better picture of what happened to the entire assemblage from its deposition until excavation.

Identification Rate

The identification rate is calculated simply by looking at the NISP versus TNF. In both phases, over half of the assemblage could be identified. This high rate of identification indicates good preservation and not much post-butchery processing. However, the vast majority of the archaeofauna is made up of fish bones. Fish bones do not have marrow so they do not get further processed for marrow extraction. They are also, in general, not used for craftworking or household tools, though some fish bones, like the haddock cleithrum, are great for carving.

Fragment Size

Size of a bone can affect its identification rate. Larger bone fragments are often much easier to identify than smaller, more broken pieces. Some animals, however, have smaller bones that can be recovered whole and identified at a higher rate than broken fragments of a large mammal bone. At Vatnskot, the majority of the bones from both phases are in the 1-2 cm and 2-5 cm categories (Figure 3). This makes sense, as over 75% of the assemblage is made up of fish bones, which tend to fall within this range. Most of the pieces under 1 cm are unidentifiable or fish vertebrae with no spines.

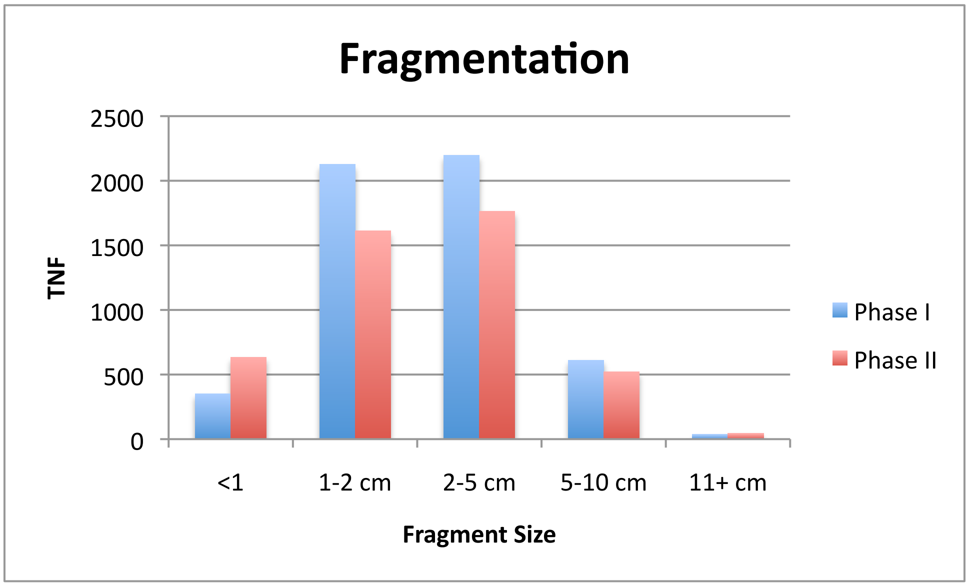

Figure 3: Fragmentation

Burning

As Figure 4 below shows, most of the bones from Vatnskot were unburned. The majority of those that were burned are completely calcined, the “white” category. This indicates a very hot fire. The midden layers at Vatnskot varied between peat ash midden and a darker, charcoal-based deposit. The darker charcoal midden may indicate periods of time when more wood was being burned rather than peat. The white burned bones could have been included in this and burned as fuel, then eventually deposited into the midden during a cleaning event. Another interpretation for white-burned bone in the Viking Age is that people would have disposed of their food waste in the long fire in the middle of the house, then during cleaning of the fire pit, calcined bone fragments mixed with wood charcoal and fire cracked rocks are disposed of in the midden (Thomas McGovern, personal communication).

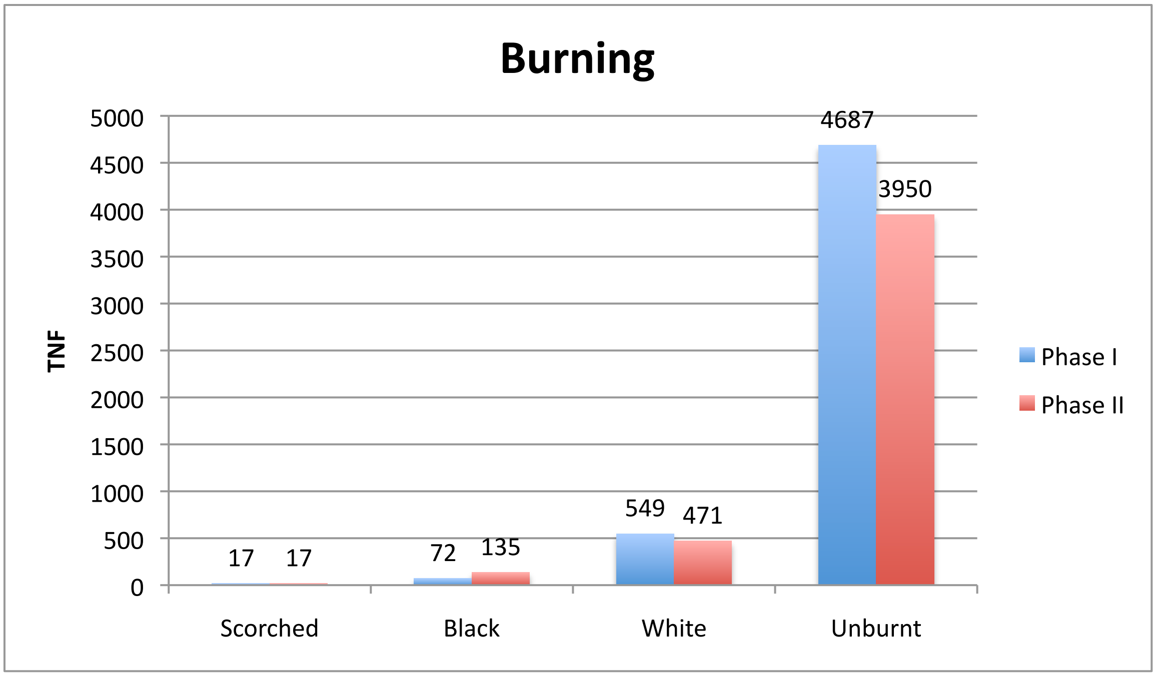

Figure 4: Burned bones at Vatnskot

Gnawing

Only six elements showed gnawing from a dog—two from Phase I and four from Phase II. This indicates the presence of dogs on site even though no dog remains were found. All of the bones with evidence of gnawing were from domesticates.

Major Taxa

Figure 5 below shows the major taxa present in the Vatnskot assemblages based on NISP. In both phases, fish make up the majority of the assemblage, between 84% and 83% in Phase I and Phase II, respectively. In both phases, domesticates make up 10% or less of the assemblage. The rest of the assemblage is made up of an assortment of birds, sea mammals, and mollusks in varying amounts. The next sections will discuss these major taxa in more depth in order to understand the activities taking place at Vatnskot.

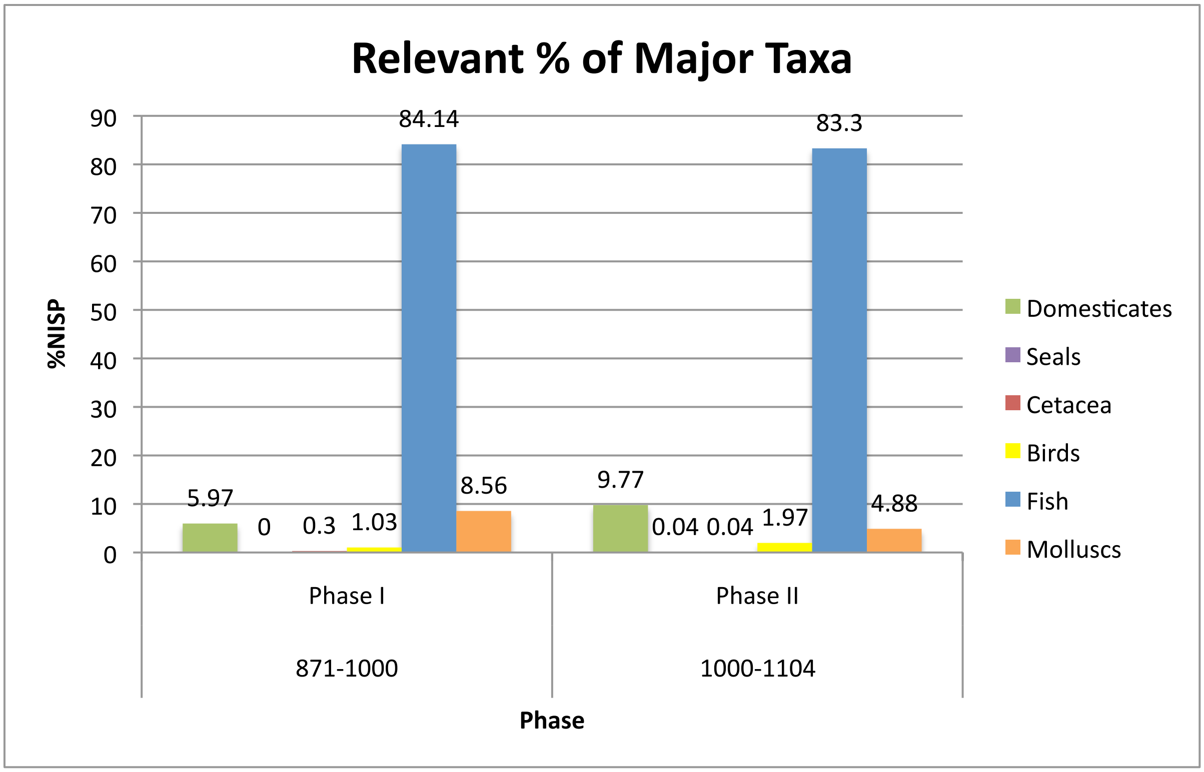

Figure 5: Relative percent of major taxa in both major phases at Vatnskot

Caprines

The caprine category includes both sheep and goats. It can be quite difficult to distinguish between the two, especially on phalanges and long bone shafts. However, the ends of many long bones have diagnostic features allowing the identification of sheep or goat (see Boessneck 1969, Mainland and Halstead 2005, and Zeder and Lapham (2010) for a list of elements and their distinguishing features). These distinguishing bones are generally quite dense and preserve well in the archaeological record.

In the Vatnskot archaeofauna, two bones were positively identified as goat, a distal humerus and a calcaneus, both from Phase II. These are the first goat remains to be identified in Skagafjörður. This could be due to many reasons, one of which is that there have been very few zooarchaeological analyses on Skagafjörður archaeofauna and sample sizes are smaller than other comparable studies in Iceland. Another potential reason for the lack of goats is that they simply were not present in large quantities in Skagafjörður for social, political, and/or environmental reasons.

Element Distribution

The caprine elements present in the Vatnskot archaeofauna are from the entire skeleton. The lack of vertebrae and ribs in Figure 6 is due to the NABONE protocol of identifying these elements only to size categories (see Methods section above) rather than the bones actually being missing from the archaeofauna.

The presence of elements from the entire skeleton indicates a home butchery strategy, where the inhabitants at Vatnskot were sustaining themselves. There is no evidence for extra body parts coming into the site, which would suggest that they were being provisioned from elsewhere, nor is there evidence of specific body parts leaving the site, which would indicate that they were provisioning others. In Phase II, there is a much higher percentage of forequarter elements than any other elements during the same phase. It is also important to note that a nearly complete lamb skeleton was found in Phase I, which will be discussed further in the "neonates" section below.

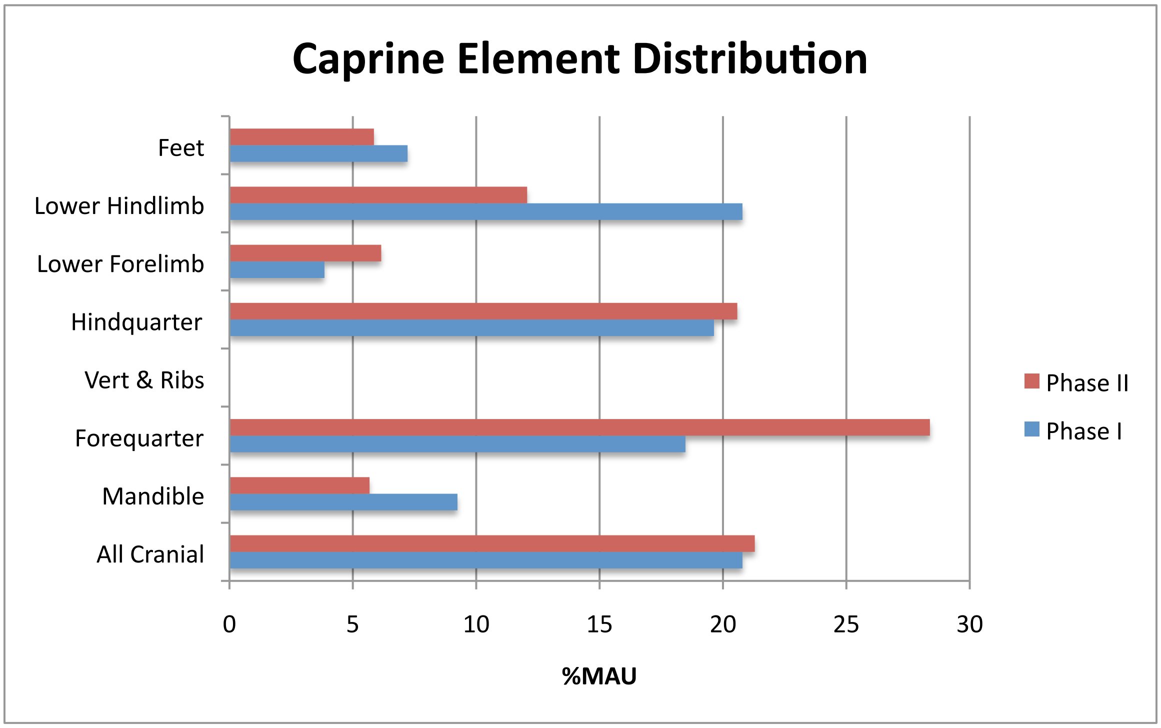

Figure 6: Caprine element distribution for both phases at Vatnskot

Caprine Age Profile

Tooth Eruption and Wear

Only six mandibles were available with teeth present. Eruption and wear were scored based on Grant (1982) and age ranges based on McGovern (2009) and Enghoff (2003). One mandible had a deciduous fourth premolar (dp4) with the first adult molar (M1) in the process of erupting. This indicates an individual around 11 months of age, since the M1 is fully present around 1 year. Three mandibles had both the dp4 and M1 present and in wear, indicating an age range between 12-24.5 months. The last two had a dp4 and M1 present with the M2 visible in the crypt but not fully erupted. These individuals were likely towards the tail end of the 12-24.5 months age category.

Long Bone Fusion Stages

There were 37 long bones present for which fusion data can be scored. Figure 7 below shows the percentage of fused bones in various age categories. In Phase I, all of the bones indicate that caprines survived their first 6 months of life, but only 50% survived beyond two years. There were no fused elements present beyond the two year age, perhaps indicating a focus on meat rather than wool or milk. The caprines in Phase II show a more mixed economy, with 2/3 of caprines surviving their first six months of life, 1/5 living to two years of age, and then there are none present from in the 3.5 year old category. These missing caprines are of prime meat bearing age, and point towards a meat economy.

Combining this set of long bone fusion data with the tooth eruption and wear supports the idea that most animals made it past their first 6 months of age and then were culled at some point after that time but before reaching 4.5 years. These all point to animals that were being killed in their prime meat-bearing years rather than being kept for milk or wool specifically. However, at least one caprine survived to 4.5 years of age, which could indicate a shift to wool-focused animal husbandry. Sheep herding nearly always mixes strategies for milk, meat, and wool, so this mixture of all herding strategies is not uncommon.

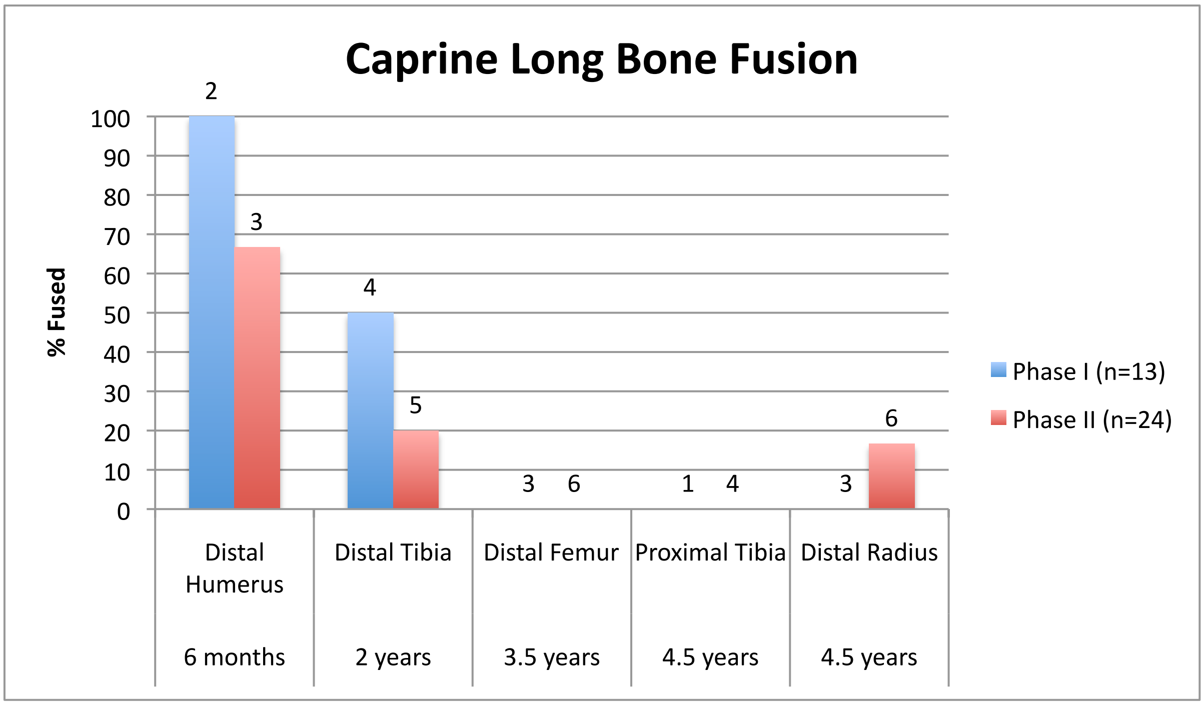

Figure 7: Long bone fusion stages for all caprine elements. Numbers shown above each bar represent how many of each element was available for scoring fusion.

Neonates

Neonates were not common at Vatnskot in either phase. In Phase I, however, a nearly complete neonatal caprine was found articulated in context [108]. Its forelimbs were missing, along with the skull, but it is likely that these were just not preserved. The NISP was adjusted to reflect this articulated skeleton, ensuring that the same animal was not counted multiple times. Other than the nearly complete individual, there were small numbers of isolated neonatal elements in both phases. The presence of neonates indicates an early summer occupation, since lambing season begins in May.

Cattle to Caprine Ratios

In Iceland, there is a general increase in caprine use over time, especially as sheep gain importance for the creation of the standardized woolen cloth *vaðmál* as well as remaining a vital part of Icelandic household economy. The tradeoff seems to be that fewer cattle are kept in favor of increasing the number of sheep that can be raised.

At Vatnskot, the cattle to caprine ratios are in the low end, and quite typical of the Viking Age patterns as we currently know them (Figure 8). In Phase I, the cattle to caprine ratio is 4.27, so for every head of cattle there are 4.27 caprines. In Phase II, this ratio drops to 3.61. These ratios are not all that different and essentially round to four caprines per head of cattle. The slight change may signify the growing importance of sheep; however, they would have been first and foremost vital for making household goods and clothing before surplus can be produced. Vaðmál also becomes a standardized product and legal currency by about the 11th century, towards the end of the occupation phases covered here, and is regulated until the 17th century (Hayeur Smith 2011:2).

Phase I at Vatnskot is very similar to nearby Kotið (Figure 8), which spans the time period from AD 871-1104, but seems to be sparsely used beyond AD 1000 (Catlin et al. 2017; Cesario 2018a). It also looks like the mid-10th century deposit at Hrísheimar in Mývatnssveit. Vatnskot Phase II is most similar to Phase II at Grænagerði in Skagafjörður, which dates to the same time period and is located relatively nearby (Catlin et al. 2018; Cesario 2018b; Ritchey and Cesario 2018). Thus, these cattle to caprine ratios at Vatnskot are well within the Viking Age range that we see in other contemporaneous sites both within the same region and in other areas of Iceland.

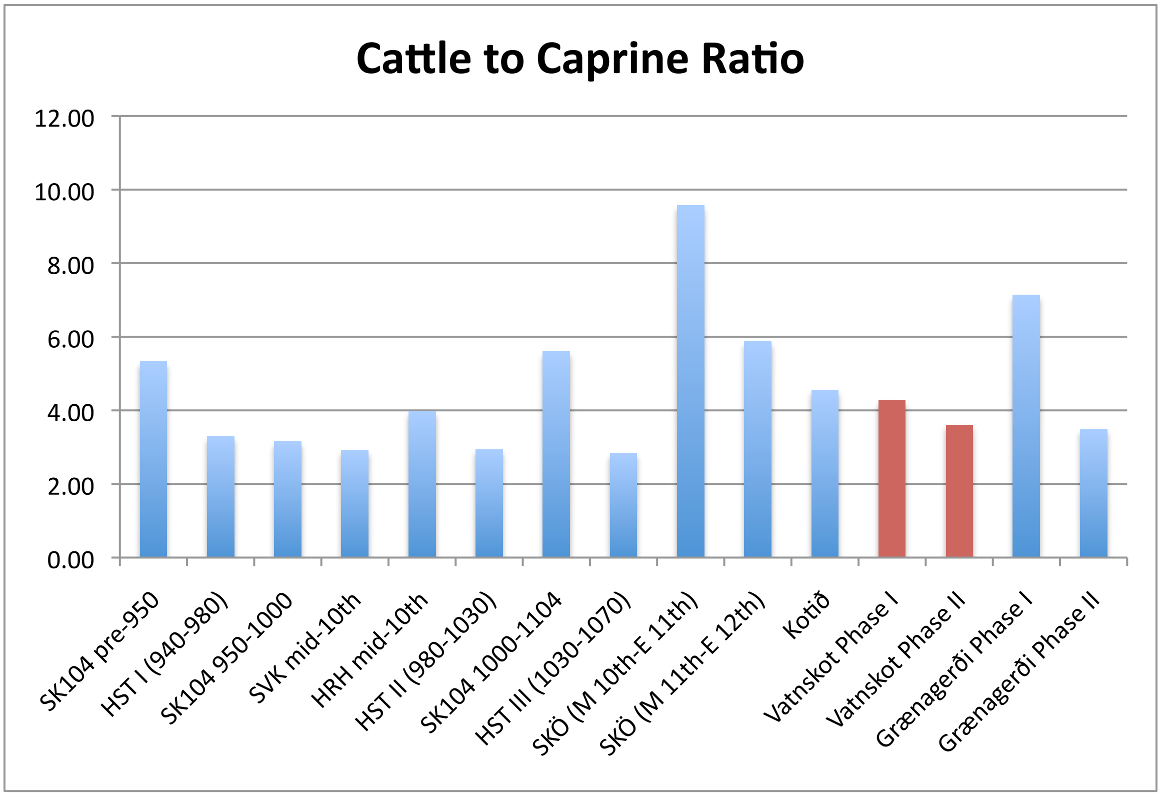

Figure 8: Cattle to caprine ratios throughout Iceland. Vatnskot is highlighted in red. Other sites in Skagafjörður include SK104 (Stóra-Seyla), Kotið, and Grænagerði. As comparisons, we have Skuggi (SKÖ) in neighboring Eyjafjörður and in Mývatnssveit we have Hofstaðir (HST), Sveigakot (SVK), and Hrísheimar (HRH).

Cattle

The use of cattle at Vatnskot increases from Phase I to Phase II. In Phase I, they made up 18% of the NISP of domesticates, in Phase II they are 21%. (see graph of domesticates, Figure 9). This slight increase in cattle percentage is followed also by a decrease in caprine numbers. These changes are not drastic, and likely would not have changed herding strategies in any notable way.

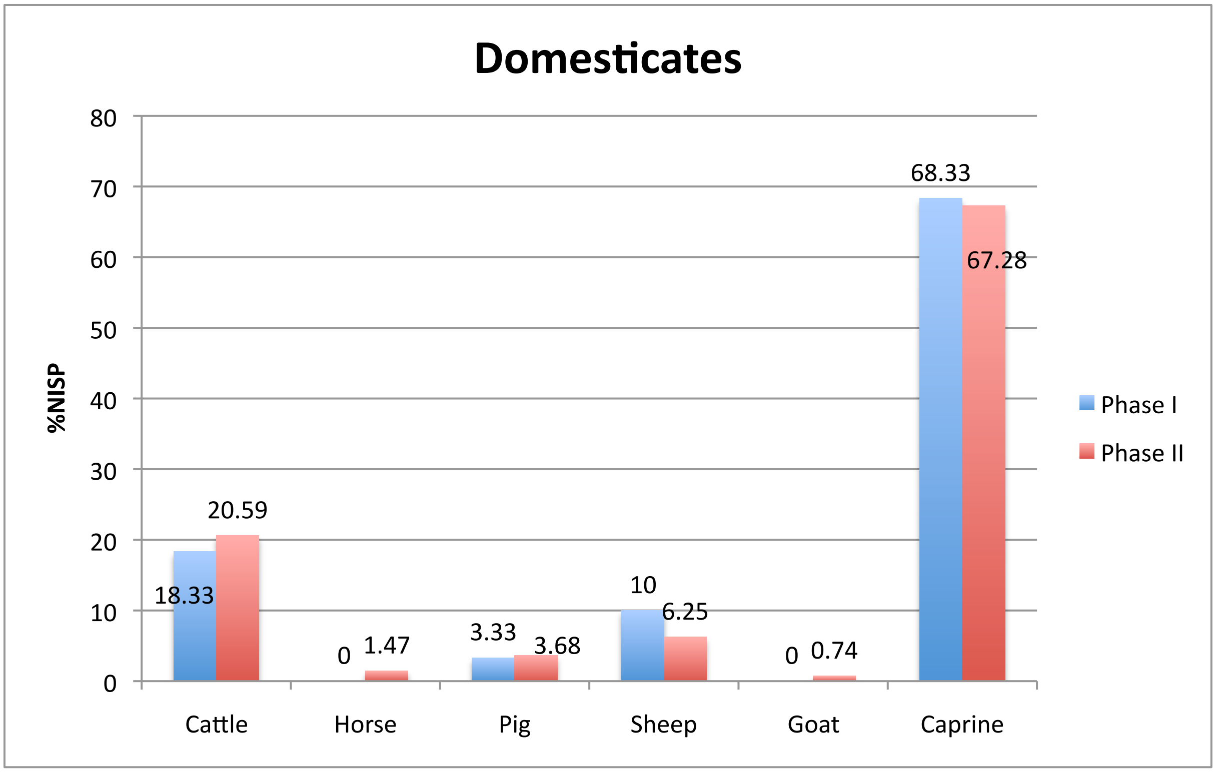

Figure 9: Relative percentage of domesticates in both phases.

Cattle Age Profile

Very few cattle bones were available for determining age. Only one fragmented mandible was present, and there was no wear on the teeth that were present. This indicates a young individual. There were five long bones that could be scored for fusion, all from Phase II. One unfused distal tibia indicates and individual below 2-2.5 years of age. Three unfused distal femora and one unfused distal radius suggest animals younger than 3.5-4 years of age (e.g., McGovern 2009:221).

Neonates

There were 16 neonatal cattle elements at Vatnskot, making up about 18% of the assemblage. The presence of neonates indicates a spring occupation, as that is when the cattle are born. They also represent a dairying signature, where the young are culled in order to collect milk for human consumption.

Other Mammals

While the majority of domestic mammals at Vatnskot were cattle and caprines, a few other species were also present (see Figure 9 above). Pigs and horses were found in the assemblage, but no dogs or cats. There were no wild land mammals.

The pigs represent mostly adult individuals where the elements are all fused. In Phase II, one unfused calcaneus suggests an individual under 36-48 months of age and an unfused ulna represents an individual under 48-60 months (Zeder et al. 2015). One pig mandible was also present from Phase II, with three teeth available for scoring. The not-quite-erupted 2nd molar indicates an age below 12 months and perhaps below 8 months (Grant 1982; Lemoine et al. 2014). Pigs were brought to Iceland as part of the settlement package, but their use fades out relatively quickly and we do not see many in the archaeological record anywhere in Iceland after about AD 1100.

Sea mammals were present in very small quantities, with ten cetacean bones total—nine in Phase I and one in Phase II. There was also one seal bone in Phase II. None of these can be identified to species through morphology alone, but they may be sent for aDNA extraction in order to identify species.

Mollusks and Gastropods

The mollusks from Vatnskot are shown in Figure 10 below. Most of the identifiable mollusks present in Phase I are clams. In Phase II, clams and unidentifiable mollusks make up nearly the same percentage of the assemblage. There are also mussels and periwinkle present in both phases, with one whelk in phase I. These shellfish only make up between 2 and 5 percent of the archaeofauna from each phase, respectively, and therefore did not contribute heavily to the economic strategy at Vatnskot. It is possible that they were collected for food or perhaps for bait, though no tool marks were present on the shells. Shellfish are generally quite easy to collect, and nearly anyone can do it, so they may represent a part-time activity on the shore while fishing or other ventures are also taking place. However, if the clams are *Arctica islandica*, they may be coming from deep water and are more likely to be collected from the beach without meat inside, and therefore not used as bait. These shells are used ethnographically as spoons or scoops, and so this could be another explanation for their presence in the assemblage.

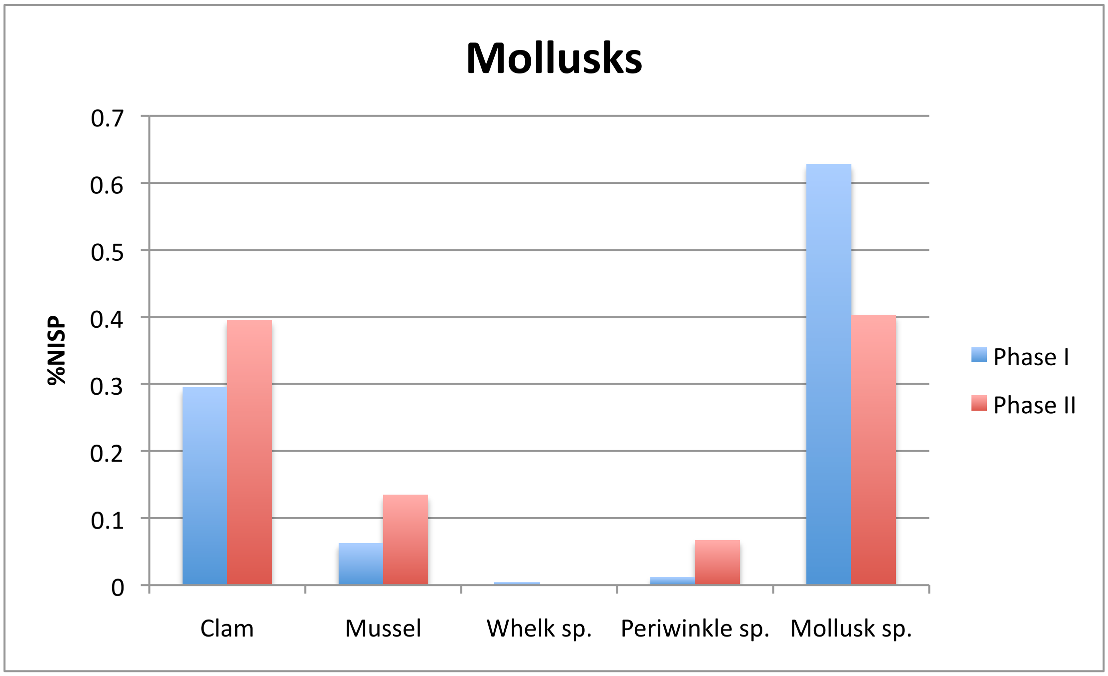

Figure 10: %NISP of mollusks at Vatnskot.

Gastropods were also found at Vatnskot. These are likely land snails, but a species-level identification has not been made. There were 19 in Phase I and only 2 in Phase II.

Birds

Birds were not common at Vatnskot, making up only 1.03% of the Phase I NISP and 1.97 of Phase II (Table 2). Of the identifiable birds in Phase I, the majority were seabirds—gulls and guillemot. In Phase II, the identifiable birds were all seabirds—gulls, puffins, and guillemot. The only bird in the "other" category is an Arctic tern (*Sterna paradisaea*).

Gulls can easily make their way inland, and may also represent birds that got tangled up in lines during fishing. Puffin and guillemot are cliff-nesting birds that would have been purposely collected, as they generally do not come further inland on their own. These two are interesting because they are only found in the summer during their breeding season. The collection of these seabirds is also dangerous and would have been a communal activity.

	Phase I	**Phase II**	**Total**
Seabirds			
Puffin (*Fratercula arctica*)	2	11	13
Guillemot (*Uria aalge*)	3	8	11
Razorbill (*Alca torda*)	1	0	1
Gull sp.	8	2	10
Other	0	1	1
Land birds			
Duck sp.	2	0	2

Unidentifiable birds	15	32	47
Total	**31**	**54**	**85**

Table 2: Birds present in both phases at Vatnskot.

Fish

Even though Vatnskot is located next to a lake, all but one of the identifiable fish bones were from marine fish (Table 3). Many of the marine fish were from the gadidae family; however, there were a couple elements from the Atlantic wolffish (*Anarhichas lupus*) in Phase I. This likely represents by-catch from fishing for gadids. Most of the identifiable bones were Atlantic cod (*Gadus morhua*).

Phase		**I**	**II**	**Total**
Marine				
Gadus morhua	Atlantic cod	565	899	1,464
Pollachius virens	Saithe	4	0	4
Melanogramus aegilfinus	Haddock	14	6	20
Molva molva	Ling	17	37	54
Gadidae	Gadid family	1,665	1,172	2,837
Freshwater				
Salvelinus alpinus	Arctic char	0	1	1
Other Fish				
Anarhichas lupus	Wolffish	3	0	3
Unidentified fish		268	205	473
Total		2,536	2,320	4,856

Table 3: Fish NISP by phase at Vatnskot.

Looking at only the fish that could be identified to species (Figure 11), it is again clear that cod are the most common. However, the next most common fish is ling (*Molva molva*), with haddock (*Melanogramus aegilfinus*) close behind in Phase I, but falling nearly out of use in Phase II. This is slightly different from other Viking Age distributions, where haddock usually make up the next highest percentage of fish after cod.

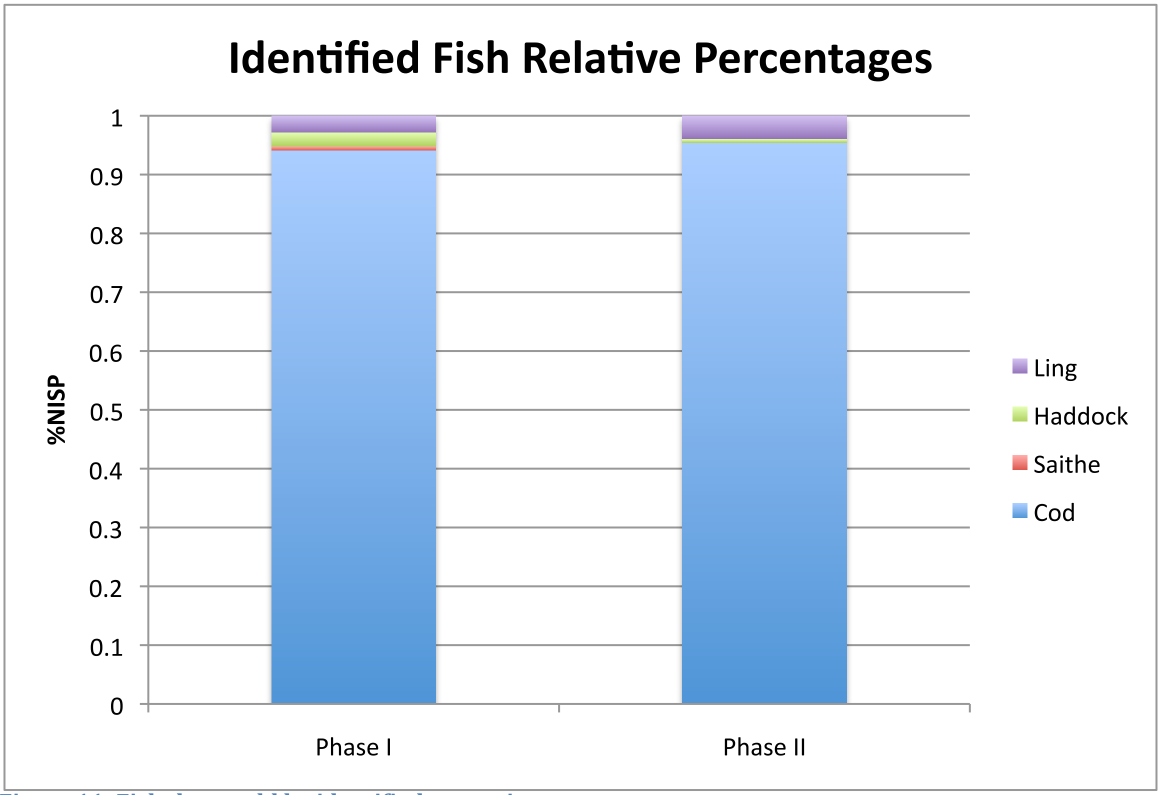

Figure 11: Fish that could be identified to species.

Phase I Fish

The total NISP for Phase I fish is 2,536 (Table 3). Most of these fish were gadids, and the majority of the identifiable ones were cod (*Gadus morhua*). Element distributions (Figure 12) indicate that head parts are more common than those from the rest of the body, and analysis of the vertebrae (Figure 13) has shown that thoracic vertebrae are more common than precaudal or caudal. This pattern is typical of the production of a flat-dried fish product, as will be discussed further below. There is still evidence of whole fish being consumed on the site, as can be seen through the presence of some precaudal and caudal vertebrae on the site.

Phase II Fish

The total NISP for Phase II fish is similar to Phase I, at 2,320 (Table 3). A pattern of mostly cod is present in this phase as well, and element distributions (Figure 12) and vertebral series (Figure 13) indicate the same production of a flat-dried fish product as well as the occasional whole fish consumed on site that we see in Phase I. The presence of the single char vertebra is interesting, as the site is located directly next to a freshwater lake, but they do not seem to have exploited freshwater fish in any noticeable quantity.

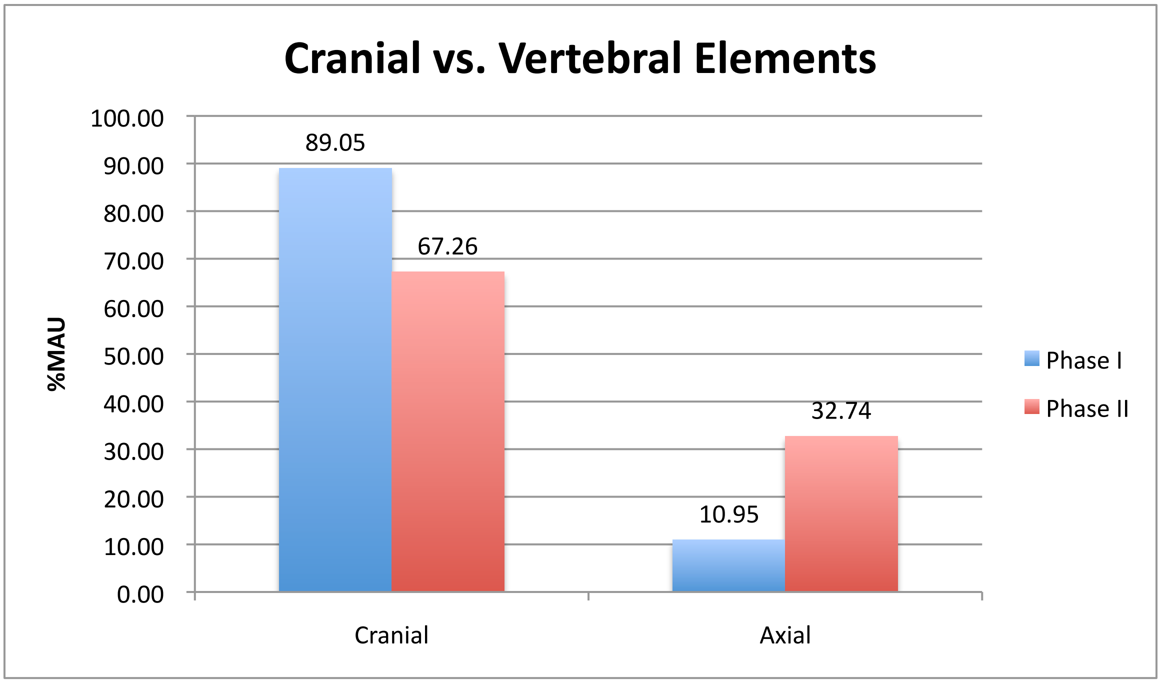

Figure 12: %MAU of cranial elements vs. axial in all gadids

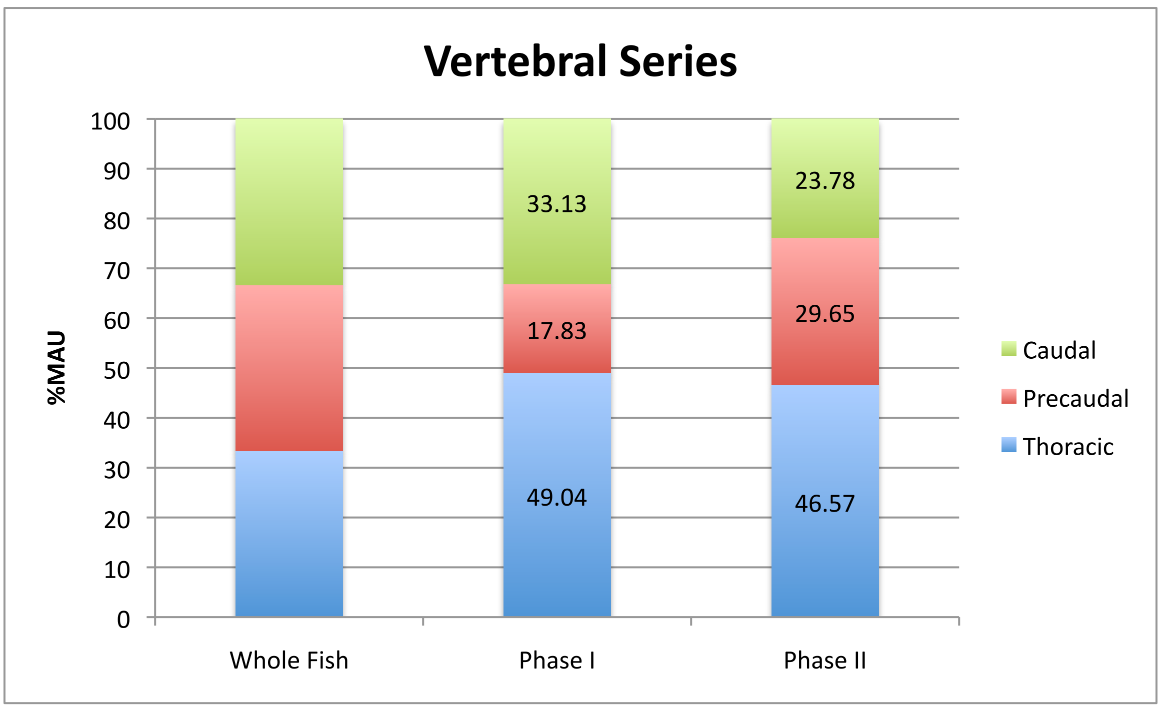

Figure 13: %MAU of different vertebrae from all gadids. Note that the leftmost column shows the ratios in a whole fish.

Fish Interpretation

The fish at Vatnskot show a distinct signature of more head elements than those from the tail. There are also more thoracic vertebrae than any other type of vertebra. This signature tells us not only that Vatnskot was a fish-processing site during both phases analyzed here, but that they were producing a flat-dried fish product rather than one dried in the round (e.g., Amundsen et al. 2004, 2005; Perdikaris and McGovern 2008a).

Sites where fish are being processed and dried will contain disproportionately more elements from the head of the fish, since the head is not left with the finished product. Sites where dried fish are consumed will contain more elements from the body of the fish, mostly vertebrae. The kinds of vertebrae present can tell us if the product was dried in the round or dried flat.

Round dried fish closely resemble the historically known "stockfish" later exported in large quantities from late medieval and early modern Iceland. The head is cut off, leaving the cleithrum and all vertebrae. Thus, a site where production of round dried fish is the focus will have mostly head bits and very few vertebrae. Consumption of round dried fish shows more vertebrae than other elements.

On the other hand, flat-dried fish were more heavily filleted and may have circulated more intensively within Iceland. For a flat-dried product, the head is cut off, and the fish is split down the middle almost all of the way to the tail, leaving the cleithrum to aid in keeping the body together. During the drying process, this filleting allows some vertebrae to fall out. Therefore, at site where production of the flat-dried product is the focus, skull fragments and thoracic vertebrae are expected, with some precaudal and caudal as well. At a site consuming flat-dried fish, mostly caudal vertebrae will be found, along with small numbers of precaudal and perhaps thoracic vertebrae. If these fish were instead consumed whole, the graphs above would show equal bars for all vertebrae, as it presents %MAU and thus controls for carrying quantities of each vertebra in the body.

As can be seen in Figure 12 and Figure 13 above, cranial elements are much more common than axial in both phases. In addition to this, the vertebral analysis shows that mostly thoracic vertebrae are found. This is strong evidence for the production of a flat-dried product at Vatnskot. The presence of other vertebrae and axial elements also indicates that whole fresh fish were sometimes consumed on site. This pattern points to a Viking Age artisanal fishing strategy that began at the settlement of the region. Archaeological investigations at sites further inland in Skagafjörður also confirm a local trade network of this dried fish product. At the site of Stóra-Seyla in Langholt, zooarchaeological analyses point to the consumption of a flat-dried fish product (Cesario 2016). Other sites on Hegranes (Kotið, Grænagerði, and Næfurstaðir) also seem to have produced flat-dried fish, illuminating the possibility of an even larger network of producers and consumers (Cesario 2018a, 2018b, 2019). Patterns of marine fish product production and consumption have considerable potential to shed light on still poorly-understood patterns of pre-commercial, artisanal production and distribution of these characteristic Nordic dried fish products (Perdikaris and McGovern 2008a, 2008b).

With fish bones, there is always the possibility that taphonomy has destroyed many of the bones or that the collection strategy will not favor smaller bones and the archaeofauna will be biased. A biased collection strategy was not the case at Vatnskot, since the caudal vertebrae are the smallest of all the vertebrae and many were collected. Since these smaller bones were preserved, it can be assumed that the soil conditions were favorable, and so taphonomy does not seem to have played a dominant role in the number of fish bones recovered.

Concluding Remarks

The fish remains at Vatnskot tell an interesting story of a Viking Age artisanal fishing enterprise and open up avenues for research of interregional (i.e., coastal and inland) exchange. It is important to remember that these would have been pre-commercial fishing ventures, and standardization of size or product made would not have been as highly regulated as it became later in time.

Sites like Vatnskot, Kotið, Næfurstaðir, and Grænagerði participated in the production of a specialized product while also maintaining small farms for their own use. They likely played pivotal roles in the local economy, and understanding these kinds of sites within the larger social system is important for making sense of the changes in landscape organization over time.

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