Preliminary Report of the Archaeofauna at Skálholt, Iceland

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Abstract
This report presents results of a preliminary analysis of the archaeofauna at the Episcopal farm of Skálholt, Arnessyslá, southern Iceland. This report presents the preliminary analysis of group 634. Group 634 was a 3X5 meter trench oriented lengthwise north to south opened up on June 28th of 2004 by Birna Lárusdóttir. Further excavation of this group was conducted by George Hambrecht during June of 2005, and a 1x3 meter extension was opened up off of the north end of the initial trench. This work was conducted in conjunction with the FSI excavations of the early modern phases of Skálholt. A total of 11,176 bone fragments were recovered from group 634. An analysis of faunal remains from other contexts is on-going. Previous reports (Hambrecht et al. 2004, 2005) have covered the analysis of a large midden of cattle bones (unit 454) as well as some other finished contexts. Total number of bone fragments analyzed from the Skálholt archaeofauna to date is 48,674. All sediments were dry sieved through 4mm mesh to standardize recovery of bones following usual NABO recommendations.

Group 634

Group 634 was a 3X5 meter trench oriented lengthwise north to south opened up on June 28th of 2004 by Birna Lárusdóttir. It lies to the southeast of the main complex and its northern edge lies roughly one meter onto the plateau containing the complex while the rest of the southern portion lies on the south facing slope which descends at about 75°. The idea behind excavating here was to expose midden that might have been created by trash disposal over the break of the slope south of the Skálholt buildings. The horizontal area at the north end of the trench was clearly stratified with layers of peat ash and charcoal. The slope stratigraphy was very complex with many intermixed lenses most likely the product of the same deposits that made up the horizontal northern section but having collapsed and dispersed down the slope. Because of the complexity of this stratigraphy it was decided to only record "main events" and not every lense found. George Hambrecht excavated this trench further in 2005. Eventually as the slope got deeper the mixing became more extreme and the last units were fairly arbitrary on the slope section, excepting [1343], the last unit which was a clear intact charcoal layer. After unit [1343] the slope became too steep and the trench too deep for safe excavation. It was then decided to cut a new trench extending north from the northeast meter of the original trench for 3 meters. This trench was brought down to the depth of the northern section of the original trench. The stratigraphy was a clear extension of the stratigraphy of the horizontal section of the original trench. The idea behind the extension was that some of the units in the horizontal section of the original trench were relatively rich in bone and it was hoped that these same units would produce more artifacts further into the north. The extension trench was however on the whole bare of artifacts. Yet the whole of group 634 was fairly productive with a NISP (Number of Identified Specimens) of 1,237 and a TNF (total number of fragments) of 11,176. There was a significant amount of mandibular and long bone elements with intact ends for ageing.

Group 634 has been dated to the middle of the 18th century. The lowest unit in this group [1343], a very thin charcoal layer, contained a Gouda pipe bowl with a “crowned L” maker’s mark, giving it a terminus post quem of 1726 (Duco 1982). Unit [1090], which was the second highest unit in this group, contained a pipe stem with the maker’s mark of a Danish pipe manufacturer out of Christianshaven named Severin Ferslew. Severin Ferslew was only in production between the years of 1758 to 1764 giving unit [1090] a terminus post quem of 1758 (Ahlefeldt-Laurvig 1980). Due to the relatively tight resolution the assemblage from group 634 is presented in this report as a whole.

Laboratory Methods

Analysis of the Skalholt 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. Following NABO Zooarchaeology Working Group recommendations and the established traditions of N Atlantic zooarchaeology we have made a simple identified fragment count (NISP) the basis for most quantitative presentation. Measurements (Mitoyo digimatic digital caliper) of fish bones follow Wheeler & Jones (1989), mammal metrics follow Von Den Dreisch (1976) and mammal tooth eruption and wear recording follows Grant (1982). General presentation of domestic mammal age reconstruction 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 are permanently curated at the National Museum of Iceland. CD R versions of this report and all archived data are also available on request from nabo@voicenet.com.

Butchery marks are numerous and variable on this assemblage. A large amount of measurements were also recorded. These aspects of the assemblage will not be addressed in this preliminary report, but will be addressed in later reports drawing on a larger portion of the whole archaeofauna.

Overview of Species Present

Domesticates	NISP	%NISP
Cattle (*Bos taurus dom*. L.)	270	
Horse (*Equus caballus dom. L.)*	2	
Sheep (*Ovis aries dom.* L.)	106	
Goats (*Capra hircus dom.* L.)	2	
Caprines	407	
Total Caprines	515	
Birds		
Guillemot/Murre (*Uria* sp.)	10	
Bird species indet.	212	
Fish		
Atlantic cod (*Gadus morhua* L.)	57	
Haddock (*Melanogrammus aelgf*. L.)	6	
Ling (*Molva molva* L.)	1	
Saithe (*Pollachius virens* L,)	2	
Torsk (*Brosme brosme* L.)		
Cod family (*Gadidae*)	22	
Fish species indet.	140	
Total NISP	1237	
Large Terrestrial Mammal	727	
Medium Terrestrial Mammal	684	
Unidentified mammal fragments	8528	
Total TNF	11176	

Table 1

Group 634 contains a fairly typical spread of Icelandic fauna. This is especially clear when compared to unit 454, the largest unit to date taken from Skálholt. Caprines outnumber cattle almost 2:1. This proportion is closer to an Icelandic norm than that of unit 454 where cattle dominate. The percentage of cattle, 22%, is within the bounds of other higher end sites from different periods of Icelandic history. In comparison, archaeofaunal assemblages from the medieval farm sites of Sveigakot and Hofstaðir in the north of Iceland exhibit similar percentages of caprines, with cattle routinely representing between 15-20% of the archaeofaunal assemblages in the early period after Landnám, and then falling to 10-15% later in the early medieval period (McGovern et al 2001, Perdikaris et al 2004). The archaeofaunal assemblage from a lower ranking 18th century site in NW Iceland, Finnbogastaðir, has cattle making up roughly 10% of its assemblage (Edvardsson et al 2004). Both the early modern southern farm of Storaborg and the high status farm of Bessastaðir near Reykjavik had cattle making up roughly 20% of their assemblages (Sveinbjarnsdóttir 1988). Because of the size and number of Skálholt´s property holdings throughout Iceland these numbers can only be taken as a proxy of consumption patterns, not overall husbandry strategy. The question of which part of the Skálholt population´s consumption patterns is being reflected here is at this point unanswered.

Taphonomy

Bone preservation overall was fair. It varied throughout the trench, with the northern extension trench being particularly bad. On the slope of the original trench there was sporadically bad preservation. Yet on the whole there were high enough numbers of well preserved bone for solid ageing analysis to happen for both cattle and caprines.

Only 10% of the total caprine bones were recorded as loose teeth. In many of the slope units only caprine teeth were left, yet in most cases these teeth were themselves in good condition and had been deposited as whole intact mandibles. This was clear due to their compact tooth row layout upon exposure. Those teeth that were clearly deposited as whole mandibles were bagged separately and analyzed for tooth wear, though not for metrics. This fact skews the taphonomic indicators towards a sense of better survivability than there in fact was. Though survivability on the whole was fair and the assemblage is a good one for analysis.

Bone density can indicate the survivability of an assemblage through time. It can give an indication as to its representative utility, whether the bones being examined have survived well since burial or have been ravaged and are not a good representation of the original dump. Note that the 1st quartile is almost always going to be disproportionately larger due to the fact that cranial elements (which are within the 1st quartile) have a tendency to fracture and thus boost their proportion within the total assemblage.

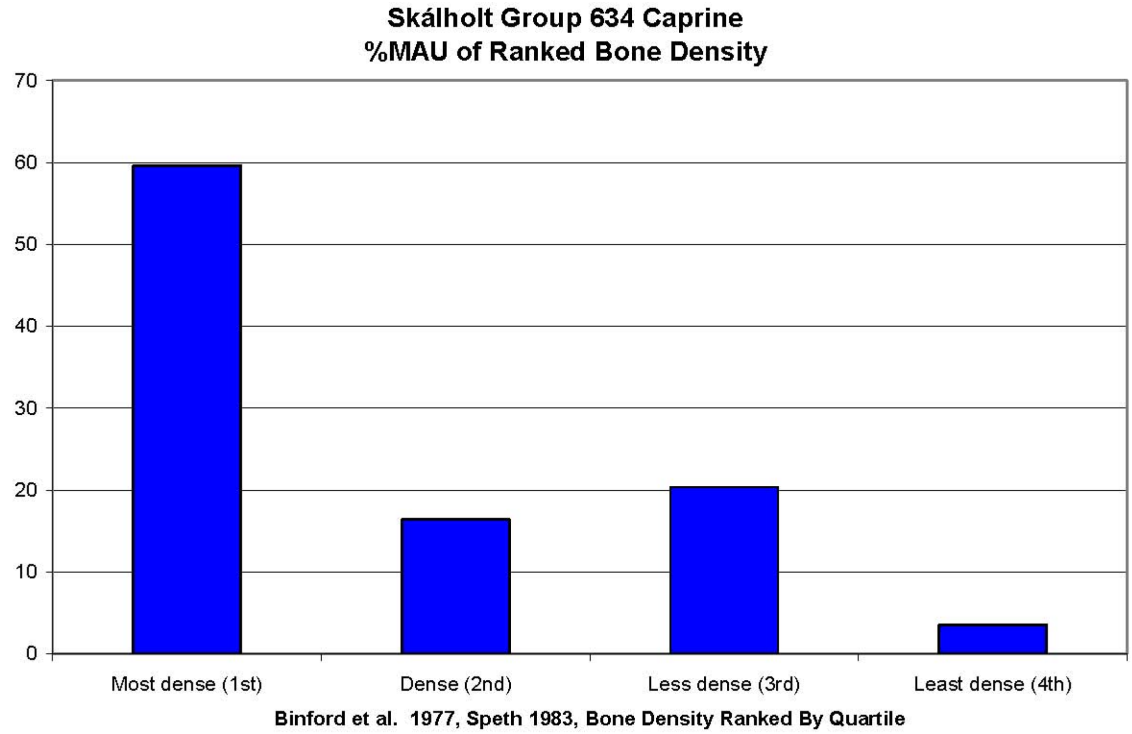

Figure 1

Caprine bone survivability as seen through the percent of survivability by minimum animal unit shows that bones from across the spectrum of density did survive to excavation. The least dense survived in the least numbers yet the other density quartiles are present in significant proportions. Overall this indicates that though survivability was not excellent it was good enough survivability to use this assemblage for further analysis.

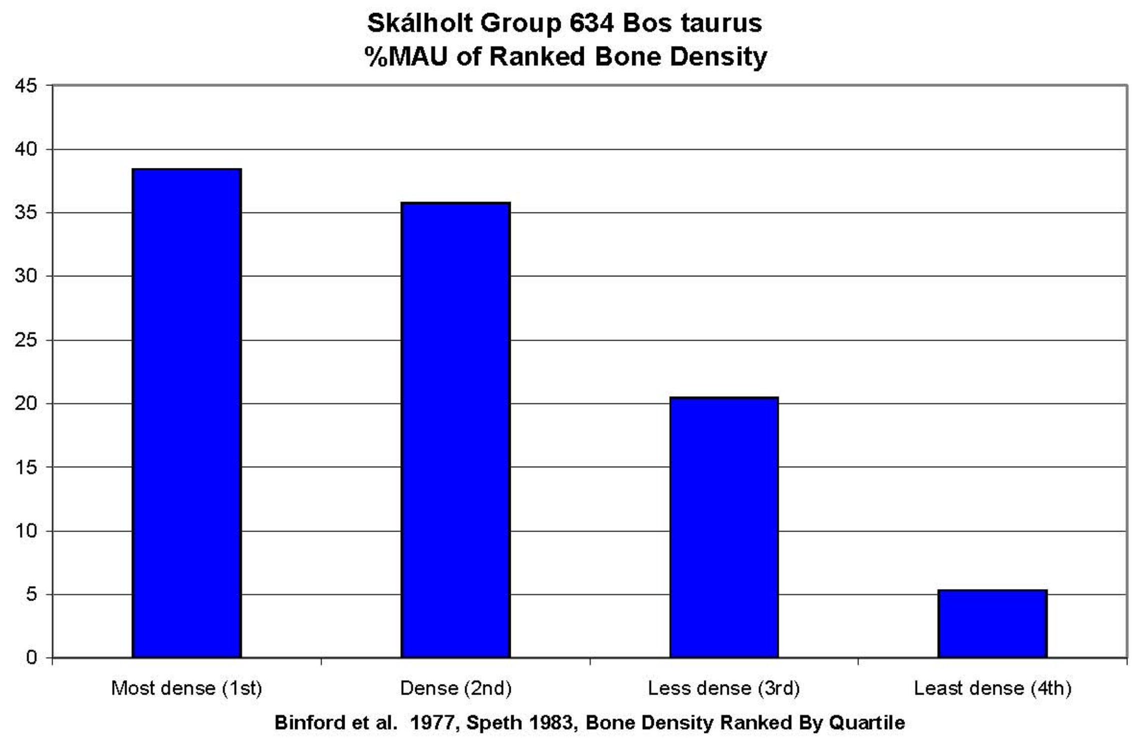

Figure 2

The cattle bone percentages of the same measure show better survivability than the caprines. Again the least dense survived in the least numbers but all quartiles are present and the 2nd and 3rd are not dramatically different than the first. The cattle bones indicate that this assemblage has not been ravaged beyond analytic usefulness and are a good reflection of the activities that formed it.

Caprines

The element distribution of the caprines suggests that these animals were slaughtered at Skálholt. Elements from across the skeleton of the animal are present (figure 3). The assemblage is however dominated by those areas of the animal skeleton that hold the greatest amount of meat, the hind and forequarters and the skull. This pattern is reinforced if we look at the MGUI scores for this part of the assemblage (figure 4). The MGUI is a widely used meat utility measure (Binford 1976) which attempts to evaluate the overall "modified general utility index (MGUI)", and provides a numerical score for each bone element (including marrow and sinew values as well as attached muscle meat). While MGUI scores are not precise indicators of amount of associated meat and marrow, they can highlight major differences in the content of bone assemblages.

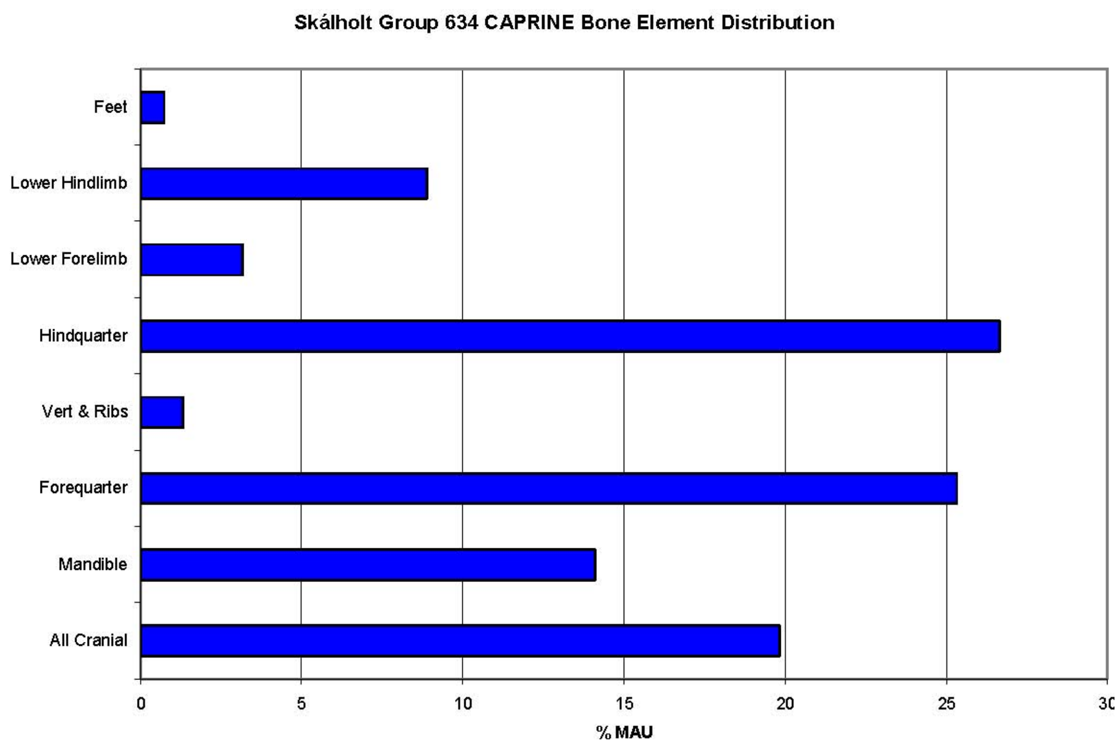

Figure 3

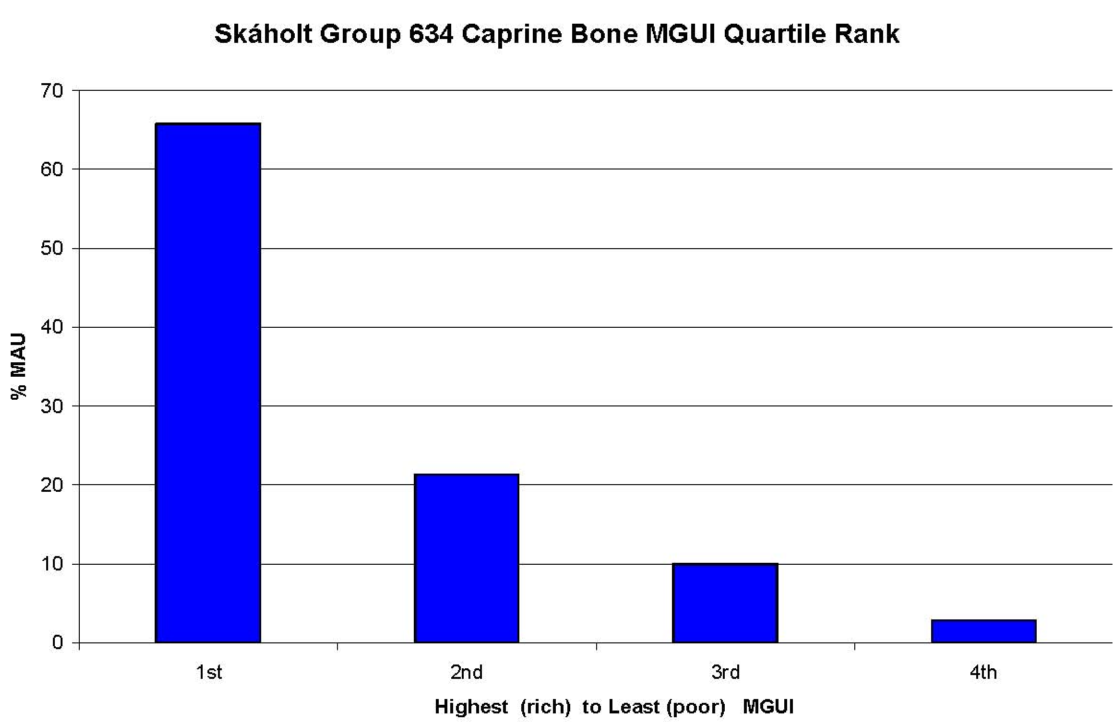

Figure 4

The MGUI quartiles reinforce the pattern of greater numbers of more meat, fat, and sinew carrying portions of the skeleton being deposited in this midden.

Though elements from across the skeleton are present in this midden, suggesting that the animal was slaughtered onsite, there is a much higher proportion of high meat load bones, possibly indicating that this midden was the product of domestic consumption and not just butchery waste.

The age structure of the caprines in group 634 again suggests provisioning of meat for the Skálholt population. The mandibular eruption rates show no newborns or yearlings and then very few individuals under 3 years of age (figure 5). This midden suggests that at least part of the population of Skálholt was being provisioned with mature sheep, and they were not eating much lamb at all.

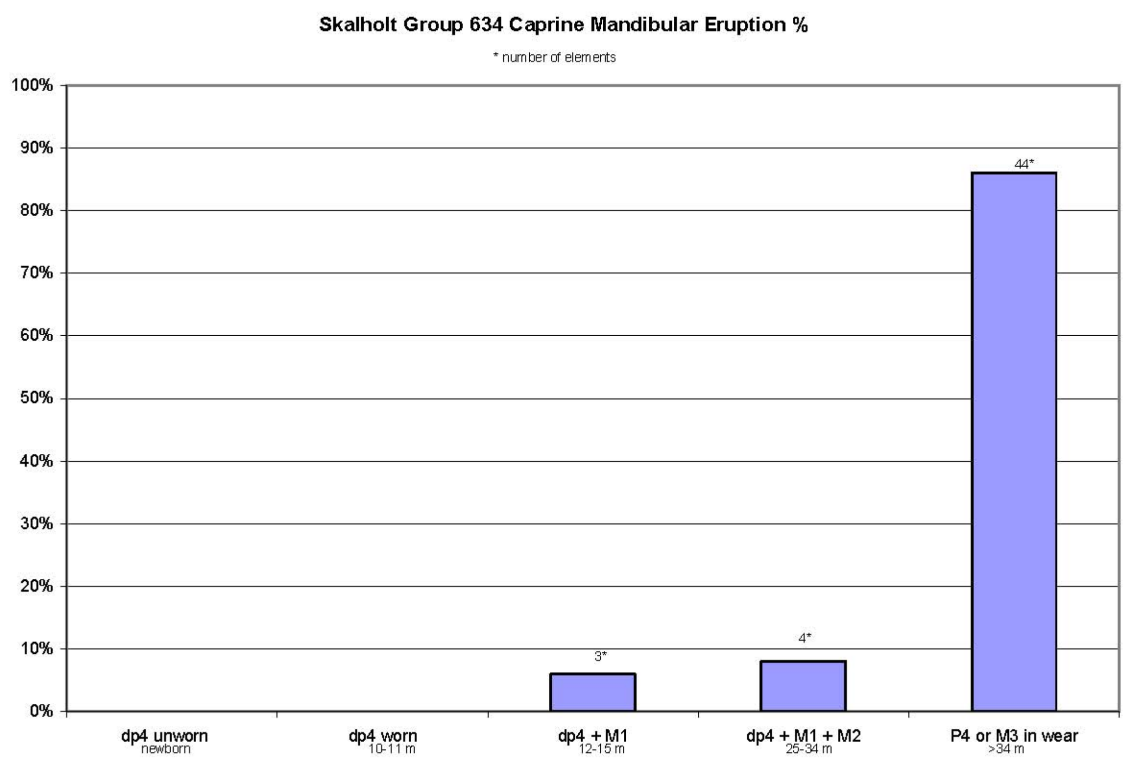

Figure 5

The wear states for the intact caprine tooth rows gives more detail regarding these mature sheep (figure 6). The wear state numbers indicate that these mature sheep were generally between the ages of 3 to 6 years old. These sheep then were neither very young nor very old.

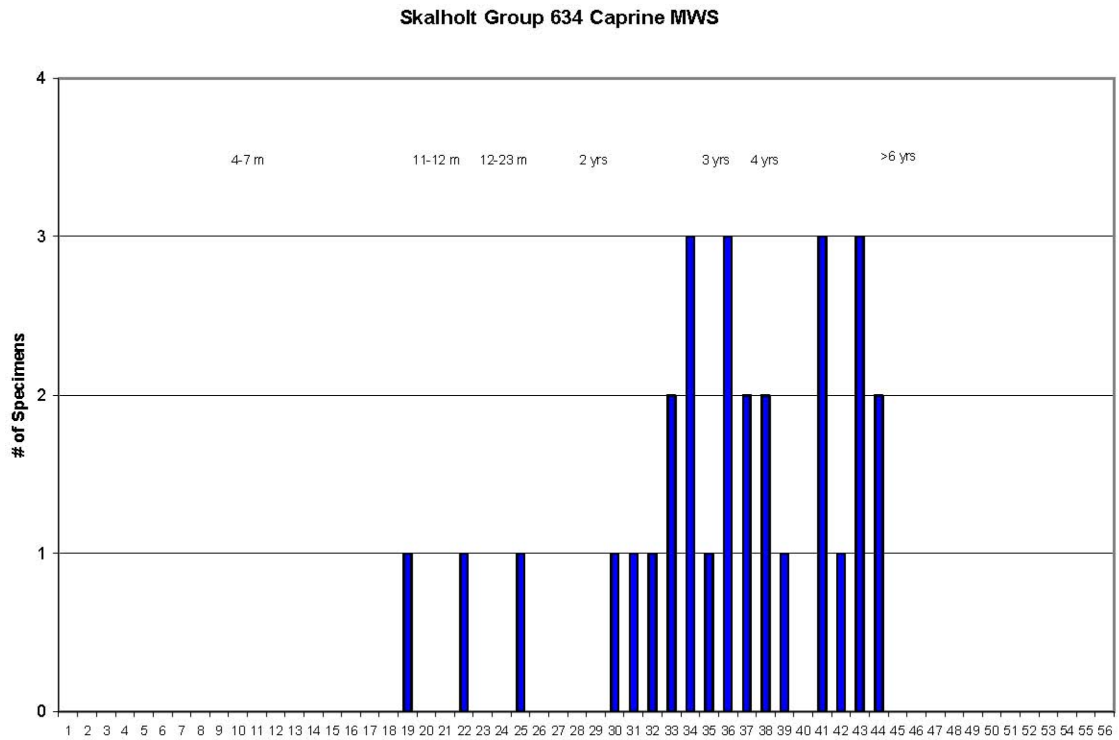

Figure 6

The wear of caprine molars can be differentially affected by factors such as the amount of grit and soil in their rangeland. Grit in the grass, possibly caused by erosion or tephra fall, can increase the rate of wear on the teeth of grazing animals thus possibly skewing the age estimations based on the wear state of their molars (Mainland 2000). To counter this possible noise caused by environmental factors we can examine long bone fusion rates as well (figure 7). The long bone fusion states generally reinforce the impression given by the mandibular wear states. One difference is that there seem to have been a few yearlings, roughly 3, as indicated by the presence of unfused proximal femurs. Otherwise there is a pattern of less fused long bones as we move through the bones by age of fusion towards those that fuse at a later age. Though the proximal tibia, which fuses sometime in the first half of the third year of life, shows a relatively high rate of fusion, the distal radius, which fuses at the same time shows a relatively low rate of fusion. The average of the two is still less percent fused than the bones which fuse earlier. The bone fusion data does reinforce the mandibular wear state data, especially in the fact that both very young and the very old animals are not apparent. Though it does not look like there were many very old sheep it might be the case that the sheep older than roughly 4 years might have been retired milkers. Those between 2 to 4 years old might have been bad milkers or prime animals offered up for provisioning. A combination of a milking herd that is culled for meat provisioning could be what we are seeing here.

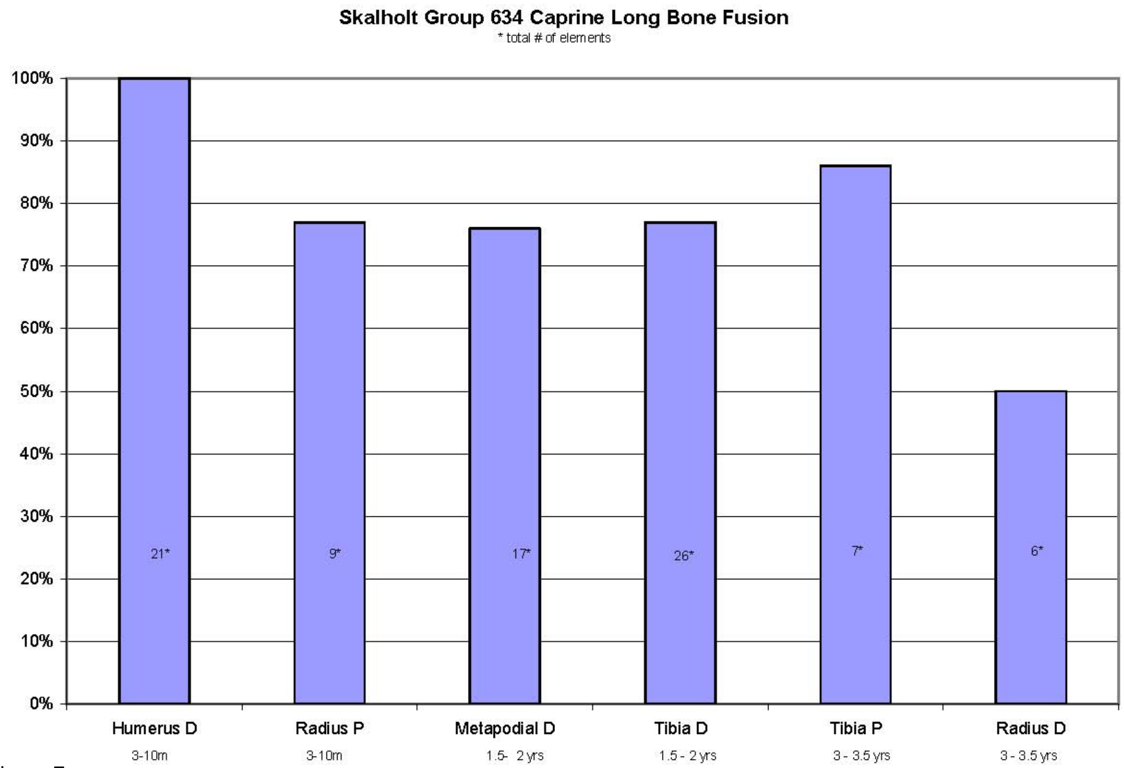

Figure 7

Cattle

Cattle bone element distribution, like the caprines, indicates that the animals were slaughtered at Skálholt (figure 8). The MGUI quartiles indicate that the cattle bones were largely from areas that had the highest amount of bone, fat, and sinew. Like the caprines this midden looks like a product of domestic consumption from the Skálholt complex.

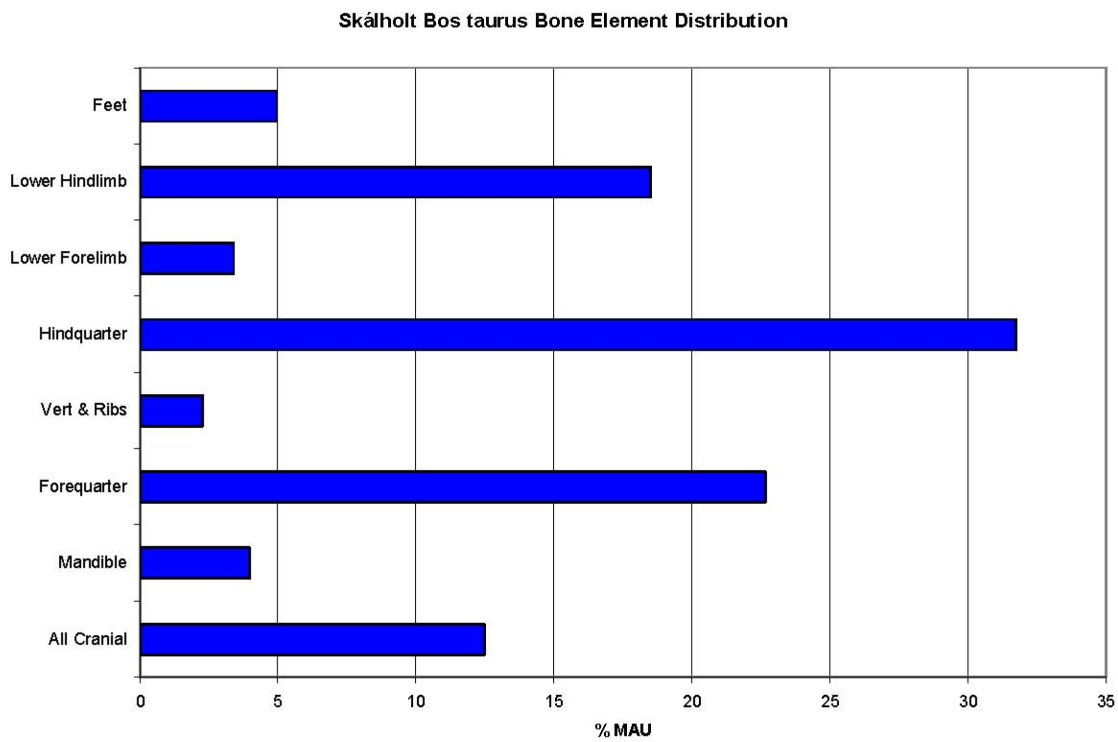

Figure 8

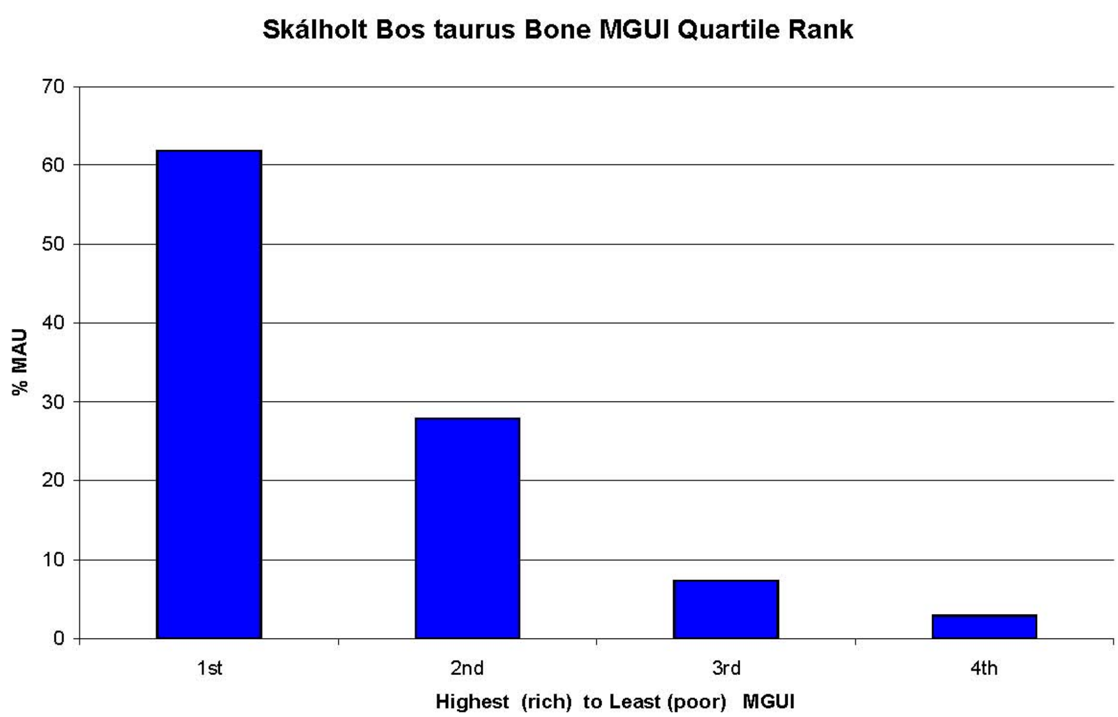

Figure 9

There were too few intact cattle mandibles for good analysis. The few that were found were 2 maxilla with medium wear on the M3 molar, 1 maxilla with light wear on the M3 molar, one maxilla with only the P4 molar still intact with no wear at all, and finally one mandible with the P4 molar intact showing very light wear. These specimens, though too few for in depth analysis do suggest that all these specimens came from animals that were young but whose adult teeth had erupted and were in light to medium wear. This would mean ages of roughly 2-4 years.

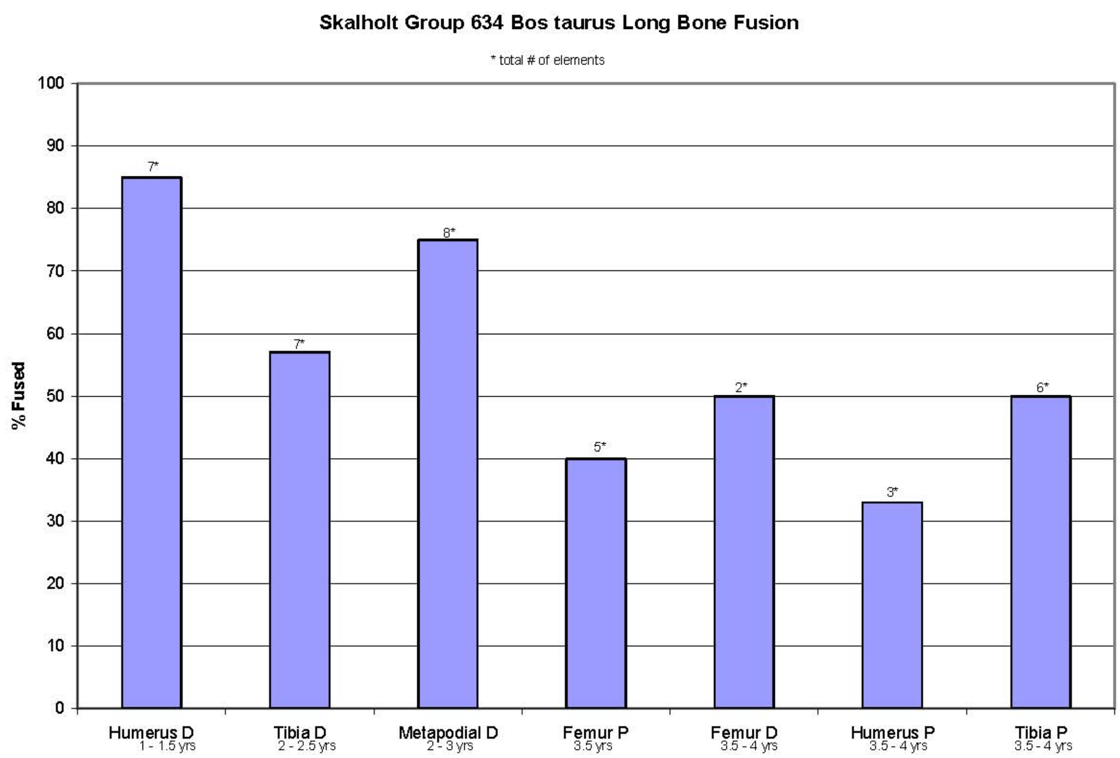

Figure 10

Though the total number of specimens used for the bone fusion analysis is not great, especially towards the later fusing long bones, there are enough to get some idea of the age profile. It is a somewhat odd profile, but this could be because of sample size or even seasonal slaughter patterns. In general it looks as if the cattle represented by group 634 were slaughtered after their 2nd to 3rd year of life and in some cases after their 4th year. There are a high proportion of mature animals slaughtered at the height of their growth curve. This is similar to the profile of unit 454 and seems to indicate a beef production strategy, though there could be some older animals in group 634 as well. Like the caprines we could be seeing a strategy involving the culling of animals from a dairy herd to supply beef for Skálholt. The younger animals could possibly be bad milkers or again just prime animals used for provisioning. On the other hand this could be a dedicated beef strategy, though it would seem more in the realm of common sense to cull those who do not produce satisfactory amounts of milk for meat.

Fish

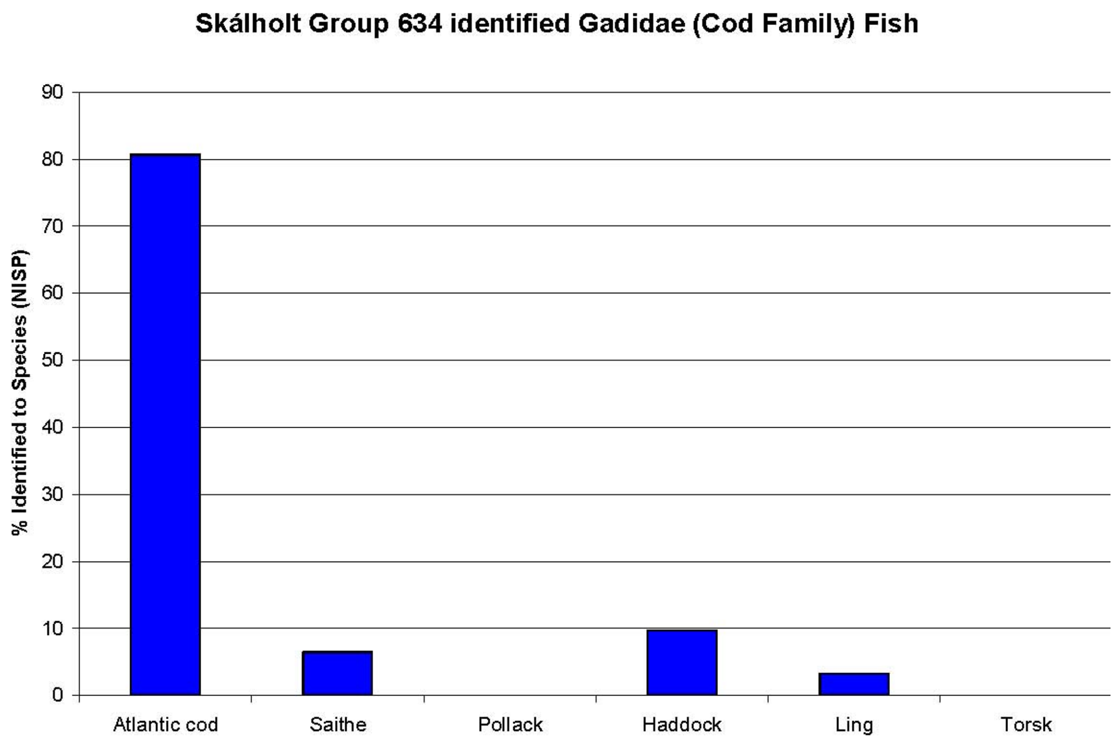

Figure 11

The fish bones in this assemblage are dominated by cod (Gadus morhua). Small proportions of haddock, saithe and ling are also apparent. There are not a suitable number of bones for an analysis of whether these fish came in the dried or fresh form.

Birds

The only identifiable to species bird bones were from the Uria species, commonly known as guillemots or murres. These birds breed on the coast of Iceland, though some, such as the Black Guillemots, can be year round residents (Hilmarsson 2000). The presence of the bird at Skálholt, considering the bird´s maritime habits, indicates that there was some transport of sea birds to Skálholt. This is no surprise but it does increase the variety of foods seen archaeologically at Skáholt.

Discussion

Group 634 seems to be the product of provisioning the school, Bishop´s household, and complex of Skálholt. The idea that these animals were culled from dairy herds is possible. Whether these animals came from herds based at Skálholt or at one of the numerous farms owned by the Bishopric and farmed by tenants, often paying rent in kind, cannot be determined at this time. Not only did the Bishopric of Skálholt own many farms but often a number of animals on these farms were the property of Skálholt as well, at times raised soley for the purpose of furnishing the Skálholt complex with meat and dairy products. Tenant farms were also obliged to supply fodder for those animals based at the Skálholt farm itself (Grímsdóttir 2006). The absence of neonates and younger animals as well as older animals could result from the fact that the actual husbandry of at least some of these animals took place on tenant farms. The husbandry archaeological signatures that we commonly produce from age profiles might not be available from this particular assemblage. This assemblage is likely the product of the consumption side of animal husbandry, not the supply side. From the consumption end of this assemblage we again have evidence of fairly intensive meat provisioning for the complex at Skálholt. Being one of the largest and richest concentrations of population in Iceland before the founding of Reykjavik at the end of the 18th century it is not surprising that large numbers of animals would be used for supplying the complex.

Inventories of cattle slaughtered for the Skálholt community in the 16th and 17th century show a mix of older animals and two and three year old animals (Grímsdóttir 2006). Both in unit 454 and group 634 the mix of cattle reflects this, though it is not entirely clear what the inventories meant by ´older animals´. In unit 454 there are very few very old animals, meaning over 6 to 8 years. In group 634 it is hard to tell the range of older animals due to the lack of tooth wear analysis, yet what little there is has no animals older than 4 years.

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