# Oddstaðir in Hörgárdalur, N. Iceland: Report of the 2009 Archaeofauna.

Ramona Harrison

*CUNY Human Ecodynamics Research Center*
*CUNY Northern Science and Education Center*

HERC/NORSEC

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

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*ramona.harrison@gmail.com*

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**Summary**

This report presents preliminary zooarchaeological results from the Viking Age and medieval midden deposits at the Oddstaðir farm ruins. Beyond providing a long term chronology on site management and farm economy, this site has produced faunal remains dating from the 13th to the late 14th c., contemporaneous with those found at the Gásir trading site and also those from the medieval monastic estate at Möðruvellir. The Oddstaðir ruins are found on land that has for several centuries belonged to the Öxnhóll farm. Öxnhóll owned a parish church until the 16th c. After an extensive coring survey for potential medieval midden deposits turned out successful in the summer of 2009, a test trench was placed into the most promising midden area, providing the excavation team with a sizeable sample of environmental and some material remains. A representative sample of the collected faunal remains has been analyzed to gain a general idea of midden formation processes, site economy and changes thereof observed from different midden phases. Cultural deposits available for faunal analysis span an occupation period from ca. the late 9th to the late 14th c. AD.

Results from the Oddstaðir faunal analysis are highly valuable and suggest that this farm was established early on during Icelandic Settlement. Based on its faunal collection, this was likely a medium ranked farmstead with relatively rich farm land available during the initial occupation phases. However, Oddstaðir could have just as well been or eventually become a tenant farm as during the 13th c., the farm management strategy seems to have changed, potentially in response to the prime meat supply required by the trading site at Gásir. As mentioned, it is not known for certain whether the Oddstaðir farm was a tenant farm from its establishment, whether this happened during the 13th or 14th c., or whether this change in farm ownership may have happened at some point later in time. A complete absence of fresh water

fish and the very small number of ptarmigan found at Oddstaðir may hint to a lower rank its occupants held within the local society. On the other hand, the domesticate profile at this farm, the recovery of a small, lap dog sized dog and a strong development toward predominant dependence on domesticates rather than marine resources (including sea birds) certainly available in Eyjafjörður and Hörgárdalur and likely to have been part of communal exchange, suggest that this farm was able to sustain its domesticate profile for centuries. Whether this suggests an independent, middle ranking farmstead, or a farm regulated and specifically geared toward the regional beef and mutton production is subject to further research and likely requires excavation of the Oddstaðir farm mound. It is entirely possible that Öxnhóll, either acting independently, or directed by the monastic estate at Möðruvellir, was the holder farm responsible for Oddstaðir´s quite distinct domesticate profile. The phased bovid skeletal element distributions suggest a shift in the kind of elements remaining on site and the ones missing in this assemblage; these skeletal elements associated with high quality beef cuts were likely sent to either Möðruvellir or Gásir for consumption purposes. This development took place in the 13$^{th}$ c., coinciding with the general decline of marine species, fish, seal, and sea birds, and an increase in the domesticates at Oddstaðir. At present, and whether a tenant farm or independently owned, this site seems to have played a significant role in the local Gásir supply system and is a great indicator for the impact that Gásir may have had on its Hinterlands.

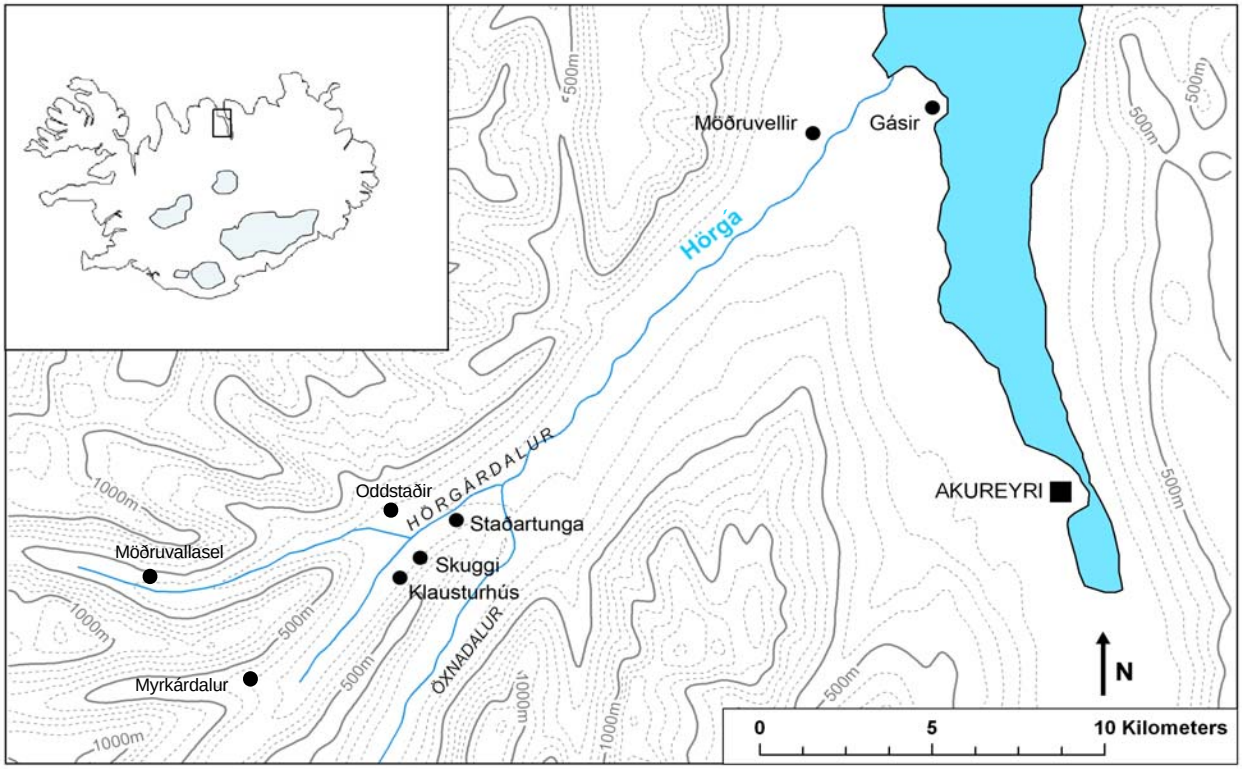



Figure 1. Map of Iceland, locating Oddstaðir and other sites investigated as part of the GHP, in Hörgárdalur, and Gásir, located at a coastal inlet in Eyjafjörður. (Orig. Map: Streeter, edited: Harrison).

## Introduction

The Oddstaðir farm mound is located in Hörgárdalur, ca. 20 km southwest of the medieval trading site Gásir in Eyjafjörður, N Iceland (figure 1, Oddstaðir GPS Coordinates: 65°40.617'N, 18°29.107'W). Oddstaðir lies north of the river Hörgá that names Hörgá Valley, or Hörgárdalur. The Hörgá collects water from the small tributaries of various connecting minor valley systems and eventually drains into the waters of Eyjafjörður just slightly north of Gásir, located relatively close to the southern end (head) of the fjord. As indicated in figure 4 below, the site is located on relatively flat land and it was much better able to support a cattle herd via its hayfield than Skuggi on the opposite site of the Hörgá. Although fishing in the Hörgá is still done today, the archaeofauna suggests that fresh fish were of no interest to the people at

Oddstaðir (see NISP table below). Figure 1 above indicates Oddstaðir´s strategic location close to the junctures at Staðartunguháls that splits Öxnadalur from Hörgárdalur, and its relative close proximity to the side valley Myrkárdalur, from where the , originating far inland, flows into the Hörgá. It is feasible that one way of traversing Hörgárdalur could have been passing by Oddstaðir, as it is located at the valley bottom.

Figure 2. Northern and southern Hörgárdalur slopes. Red circle on left indicates Oddstaðir location on the northern side of the valley, red circle on the right indicates Skuggi location in the south of the valley. According to Google.Earth (www.google.earth.com), both sites are at an elevation of 150-160 m asl, with Oddstaðir lying on a very gradually rising plateau compared to the steep slopes leading up to the top of the mountain.

The ’Southern’ side of Hörgárdalur looks greener in terms of slope vegetation than the one on the Northern side, where again, the slopes start further away from the river, with a good amount of grassland and hayfields on relatively even terrain leading up to the steep slope of Lönguhlíðarfjall., a very long mountain ridge that experienced numerous landslides throughout the Hörgárdalur settlement history. One example is the landslide destroying Langahlið farm in the 14th c. (Jónsson 1992:306-308). Landslides also occurred on the Öxnhóll property and traces of boulders can be found in the area behind the Oddstaðir ruins toward Lönguhlíðarfjall.

**Research History**

The **Gásir Hinterlands Project**, funded by a **Dissertation Improvement Grant through the US National Science Foundation** (OPP ARC 0809033, PI: Harrison), is aimed at improving our understanding of the interactions of local farming strategies affected by changing climate and ongoing human impact with medieval overseas trade and long distance exchange centered on Gásir. GHP also focuses on the long term human ecodynamics in this historically important part of Iceland, contributing to the reconstruction of a detailed historical ecology of Eyjafjörður from first settlement to modern times.

In 2009, after successful coring of the previously surveyed Oddstaðir farm mound complex (Hreiðarsdóttir et al 2010:97), a midden excavation was carried out. Radiocarbon analysis dates the Oddstaðir midden deposits from as early as ca. late 9th to ca. late 14th c. Tephrochronology analysis could only confirm presence of the AD1104 tephra (Richard Streeter, Edinburgh University, personal communication 2010), with another tephra layer still under analysis. The Oddstaðir midden excavation, directed by Howell M. Roberts and the author, was the latest in a series of archaeological projects part of a larger Eyjafjörður Ecodynamics program.

- 2001–2006: Gásir; Howell M. Roberts (FSÍ) excavation of the high medieval (13th and 14th centuries) trading site and its merchant's church (2004 and 2006, by Orri Vésteinsson, FSÍ) (i.e. Roberts et al 2002, 2006, 2009, Vésteinsson 2009, Vésteinsson in. Roberts et al. 2006, 2009, Vésteinsson et al. in press, Harrison et al 2008, Harrison 2009, Harrison 2006).
- 2004-2006: Skriðuhreppur; Regional surveys by FSÍ staff members, directed by Elín Ó. Hreiðarsdóttir (Hreiðarsdóttir et al. 2008).
- 2006: Möðruvellir; Ramona Harrison (CUNY) and H M. Roberts, excavation of an evaluation trench into the Öskuhóll (Harrison and Roberts 2006, Harrison 2007). This project builds on work done by Orri Vésteinsson´s expanded archaeological survey and site registration (Vésteinsson, 2001).
- 2007: Möðruvellir; H. M. Roberts and R Harrison, extension of the evaluation trench opened in 2006 (Harrison and Roberts 2007, Harrison. 2008a)
- 2008 – 2009: Gásir Hinterlands Project (GHP), directed by H.M. Roberts and R. Harrison. Program of midden prospecting, testing and excavation. Sites producing archaeofaunal remains: Möðruvellir (Harrison 2011b), Skuggi (Harrison 2010a,b) Oddstaðir, and Myrkárdalur (Harrison 2011a); all in Hörgárdalur (Harrison 2008b, Harrison et al. 2010).

## Materials and Methods

All the midden materials were dry-sieved through 4 mm mesh and where applicable materials were targeted for whole-soil sampling for post-excavation analysis, in accordance with

NABO recommendations to study plant remains, industrial activities, and other aspects of the site formation process.

The faunal materials were processed at the CUNY Northern Science & Education Center (NORSEC) laboratories in New York City and Brooklyn. Recording and data curation followed the NABONE protocols followed for other archaeofauna from Iceland, Faroes, Greenland, and northern Norway (NABONE, 2009, see www.nabohome.org for downloadable version 9). Following widespread North Atlantic tradition, bone fragment quantification makes use of the Number of Identified Specimens (NISP) method (Grayson 1984). Mammal measurements follow von den Driesch, (1976) and von den Driesch & Boessneck (1974), fish metrics follow Wheeler and Jones (1989) fish identifications follow FISHBONE 1.1 (Perdikaris et al. 2004, also at www.nabohome.org), bird identifications follow Cohen and Serjeantson (1996, 2nd Ed.), and Serjeantson (2009) and sheep/goat distinctions follow Boessneck, (1969) and Mainland and Halstead (2005), and Zeder and Pilaar (2010). Research on sheep/goat specimens from the AMNH Mammology Department further helped analyze and distinguish ovi/caprine mandibles when possible. Tooth-wear stage studies follow Grant (1982), for age and species determination based on dental materials Hillson's text was also helpful (Hillson2005, 2nd edition); long-bone fusion stage calibrations follow Reitz and Wing (1999), with overall presentation of age reconstruction following Enghoff (2003).

**Phasing**

Radiocarbon samples on some of the Oddstaðir faunal remains have yielded six dates that allow for a phasing of the deposits excavated in stratigraphic sequence.

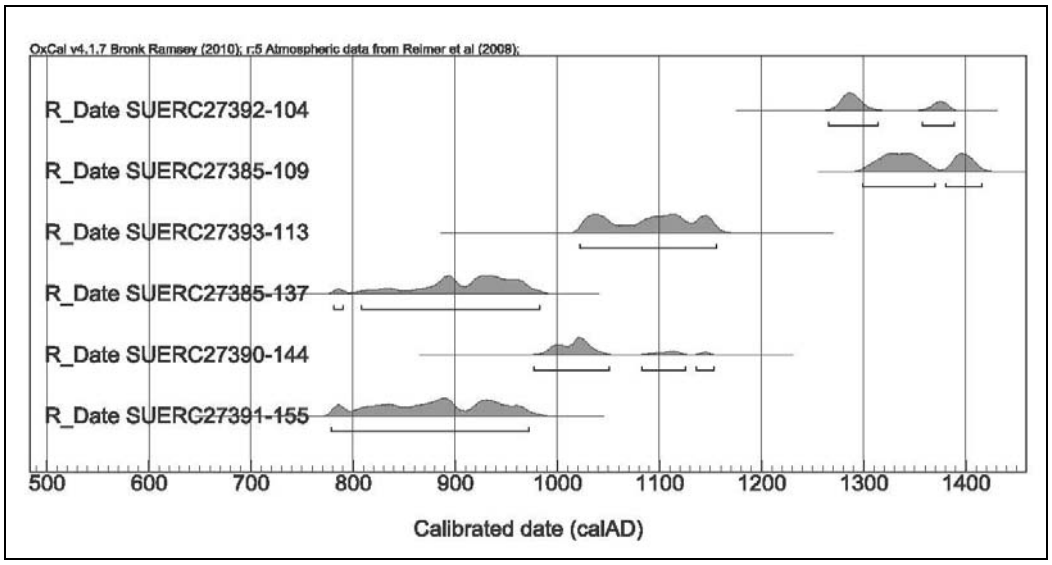



Figure 3. Oddstaðir Trench 1 Radiocarbon dates (https://c14.arch.ox.ac.uk/oxcal/OxCal.html, v. 1.6, Bronk Ramsey 2010, Atmospheric data from Reimer et al. 2009).

Figure 3 displays the calibrated **Radiocarbon** dates for the basal and upper layers of the midden from TR1. Context 155 provides the midden basal layers. According to the calibrated C14 dates, these layers fall into the **later Viking Age period.** Although context [137] is above context [144] in the stratigraphic order (see Harris Matrix in Appendix), the radiocarbon analysis of a terrestrial mammal bone from this context (bovine premolar) placed at least this context closer in time of the basal layer date from context [155] than the one from context [144]. The residual character of this bone may be the result of a reworking of the various discrete midden layers in the late 10/11$^{th}$ c. Because of the discrepancy of these two dates, all the layers were lumped into a general time frame to avoid potential mixing of various layers from different time periods.

The determination of the different occupational phases at Oddstaðir follows the various activity sequences encountered during the archaeological excavation. Dates were established using radiocarbon analysis, tephra analysis where applicable, and stratigraphic excavation methods. Artifact analysis was only helpful for the earlier deposits, where glass bead finds could

be associated with the Viking Age, especially find number 026 from context (140); a glass bead likely from the turn of the 10th c. (Hreiðarsdóttir 2010:48 in Harrison et al 2010). This artifact date corresponds with the radiocarbon dates, placing the contexts from this phase between the late 9th through mid-11th c. This could have been the first phase of abandonment of the structure associated with the turf wall underneath this midden layer.

None of the other artifacts were distinct enough in make to suggest anything other than that they were typical for Viking Age and medieval use (Gísladóttir 2010:61-64 in Harrison et al 2010).

- Phase I refers to what was likely the initial site settlement, encountered in Oddstaðir TR 1 in form of a set of architectural features, a stone lined turf wall and some post hole cuts as shown in figure 5 below. The midden materials directly on top of the wall yielded a calibrated radiocarbon date from the late 9th to the late 10th c. It is very likely that phase I is therefore, according to stratigraphic order, evidence for site activities taking place before midden material accumulation.

- Phase II refers to the basal midden layers from the Later Viking Age, with a calibrated two sigma range of 770 AD (95.4%) 980 AD (SUERC sample 27390) for the earliest radiocarbon date from context [155].

  Context [144] (SUERC-27390, calibrated 2 sigma range: 970AD (76.3%) 1050AD) represents the boundary between the earliest midden phase or phase II and the middle one or phase III, giving the lower midden phase a date range of ca. late 9th c. to the mid-11th c. This midden phase also contains context [137], although higher up in the stratigraphic order than [144], whose sigma 2 calibrated radiocarbon date is 800 AD (93.3%) 990 AD

(SUERC-27385). This is likely a context containing residual materials reworked over the course of the midden formation processes. To provide as accurate a date range for the entire phase, this residual date was incorporated into the lower midden phase. More radiocarbon dates may produce a narrower time span for this midden phase.

This midden phase is contemporaneous with the Skuggi Phase II midden layers (Harrison 2010a,b).

- Phase III contains the midden layers providing ca. mid-11$^{th}$ – mid-12$^{th}$ c., or – the layers between the radiocarbon dated contexts [144] and [113]. The latter provides a 2 sigma calibrated radiocarbon date of 1020 AD (95.4%) 1160 AD (SUERC-27393). Phase III is contemporaneous with phase III (for mandibular analyses only) and IV of the Skuggi midden deposits.

- Phase IV contains the midden layers providing ca. mid-12$^{th}$ to later 13$^{th}$ c., or – the layers between the radiocarbon dated contexts [113] and [109]. The latter provides a 2 sigma calibrated radiocarbon date of 1290AD (65.9%) 1370AD (SUERC-27389) and is also called level 1 of the upper midden deposits. This phase includes faunal materials from context [119]. This Phase is contemporaneous with Phase V of the Skuggi and Phase 1 of the Möðruvellir midden materials (Harrison 2011b).

- Phase V refers to level 2 of the upper midden deposits and is the latest known occupation phase at Oddstaðir included in the analysis. Context [109] and context [104][1] are the boundaries for this latest known phase, the latter providing a 2 sigma radiocarbon date of 1260AD (67.6%) 1320 AD (SUERC-27392). This phase falls within the ca. late 13th to the end of the 14th c. Layers from Oddstaðir's Phase V are contemporaneous with rhe Phase 2 Möðruvellir midden deposits and also those from Gásir, the medieval trading port excavated between 2001-2006 (i.e. Roberts et al 2009, 2010, Vésteinsson et al 2010, Harrison 2006, 2009, 2011b).[2]

The information presented above is displayed in table 1 below for better visualization.

| Phase | Occupation Period | Dates | Dating evidence |
|---|---|---|---|
| I | Viking Age | circa late 9th c. | Stratigraphy: Architectural remains below midden deposits. |
| II | Viking Age | late 9th - mid 11th c. | Radiocarbon dating: context [155] basal layers = cal. C14 AD770-980 (2 sigma range); upper extent: context [144] = cal. C14AD970-1050 (2 sigma range). |
| III | Late Viking Age - Earlier Middle Ages | mid 11th – mid 12th c. | Radiocarbon dating: lower extent = context [144], cal. C14 AD970-1050 (2 sigma range); upper extent = context [113], cal. C14 AD1020-1160. |
| IV | High Middle Ages | mid 12th to ca. late 13th c. | Radiocarbon dating: lower extent = context [113], cal. C14 AD1020-1160 (2 sigma range).; upper extent = context [109], cal. C14AD1290-1370 (2 sigma range). |
| V | Later Middle Ages | late 13th – late 14th c. | Lower extent = context [109], cal. C14AD1290-1370; upper extent = context [104], cal. C14AD1260-1320 (2 sigma range). |

Table 1. Break-down of the different occupational phases at Oddstaðir.

[1] Context [104] is almost directly beneath topsoil and it is not believed that contexts 102 and [103] were deposited much later on, as context [103] is described as the "soil/midden interface". The two elements from context [102] are not included in the report, however, as it is not clear whether or not this layer contains post-medieval tephra.
[2] Gásir archaeofauna is subject to further analysis according to earlier and later phases.

Table 2 lists results from all currently available isotopic analyses done on Oddstaðir fauna, including calibration of Radiocarbon dates, all with calibrated 2 sigma ranges, according to Bronk Ramsey (c14.arch.ox.ac.uk/oxcal/OxCal.html, v. 1.6, Bronk Ramsey 2010, Atmospheric data from Reimer et al. 2009).

Results from the stable isotopes analysis are part of a larger investigation of the local and regional variation in Nitrogen levels and a study of the Marine Reservoir Effect as observed in marine and also fresh water resources (Ascough et al 2006, 2010).

| Site Code | Con-text | Sample reference numbers | Species | Sample | C14 BP | d13C | d15 N (cf) | Cal. AD 14C date ± 2 SD |
|---|---|---|---|---|---|---|---|---|
| ODÖ | 104 | SUERC-27392, GU-20703 | Bos taurus | Tooth | 690±30 | - 21.5 | 4.4 | 1260-1320(67.6%), 1350-1390(27.8%) |
| ODÖ | 109 | SUERC-27389, GU-20700 | Bos taurus | Tooth | 585±30 | - 21.0 | 6.6 | 1290- 1370(65.9%), 1380-1420(29.5%) |
| ODÖ | 113 | SUERC-27393, GU-20704 | Ovi/ Caprine | Bone | 955±30 | - 20.7 | 0.8 | 1020-1160(95.4%) |
| ODÖ | 137 | SUERC-27385, GU-20699 | Bos taurus | Tooth | 1140±30 | -20.2 | 3.2 | 808-982(93.2%), 781-790(2.2%) |
| ODÖ | 144 | SUERC-27390, GU-20701 | Bos taurus | Bone | 1005±30 | -21.4 | 4.3 | 970-1050(76.3%), 1080-1160(19.1%) |
| ODÖ | 155 | SUERC-27391, GU-20702 | Ovi/ Caprine | Bone | 1155±35 | - 20.6 | 2.8 | 770-980(95.4%) |

Table 2. Isotopic data from analysis of C14, d13C, and d15N, data Isotopic data from analysis of C14, d13C, and d15N, data made available by Dr. Gordon Cook and Dr. Philippa Ascough 2010 , C14 calibration by Bronk Ramsey (https://c14.arch.ox.ac.uk/oxcal/OxCal.html, v. 1.6, Bronk Ramsey 2010, Atmospheric data from Reimer et al. 2009).

**Oddstaðir in Hörgárdalur, Survey and Excavation**

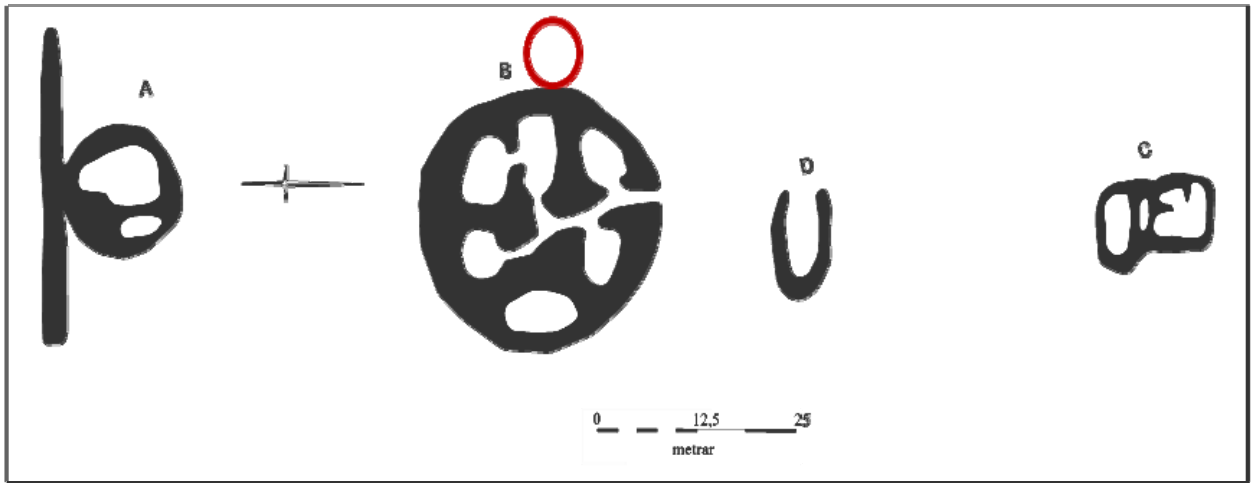



Figure 4. Survey plan of the Oddstaðir ruins, TR1, the trench excavated in 2009 is located on the eastern slope of ruin B as indicated by the red arrow (plan by Hreiðarsdóttir 08:97; North arrow direction adjusted by RH).

The ruins of the former Oddstaðir farm, together with other farm ruins (i.e. Uppsalir ruins, cored for midden materials in 2009 (Harrison et al. 2010) are located on the present property of the farm Öxnhóll which used to have a parish church until 1575 (Vesteinsson, personal conversation, March 2012). The farm (and the church) was owned by the canons in Möðruvellir located about 1.2 km southeast of Oddstaðir. As indicated by the survey plan, there are several ruins at Oddstaðir on Öxnhóll land north of the Hörgá and west of Oddstaðsá. The second river mentioned, Oddstaðsá, delineates the property boundary between Öxnhóll and Barká, on its west. The modern farm house at Barká is situated at approximately the same altitude and on the same alignment (N - S line) as the ruin of outhouse building C at Oddstaðir, about 50 m south of the Oddstaðir farm mound. The ruin mound is about 3 m high and represents an accumulation of structural remains and midden materials.

In 1712, the Icelandic land register Jarðabók mentions that the ruins had been abandoned longer than men could remember (Jarðabók Árna Magnússonar og Páls Vídalíns 1943 edition, Vol.10:141). Öxnhóll itself seems to have been a major church farm, and even the central farm

of a parish, and it is unclear whether Oddstaðir was an independent farm that at some point was abandoned and became part of Öxnhóll property, or whether it had been a tenant farm to Öxnhóll at some point. It is possible, that Oddstaðir, was once an independent farm, since its name ends in '-staðir' rather than '-kot', but the name alone of course does not suffice to make an assumption on the farm´s ownership (Hreiðarsdóttir, personal communication, May 2012). The Oddstaðir archaeofauna from the midden feature that fell out of use by the late 14th c., indicates this farm indeed could have been an independent farm, at least at the time of its settlement in the late 9th to early 10th c. When Jarðabók was written in the early 18th c., Öxnhóll itself had passed from Möðruvellir to the (Danish) king after the Reformation. The king however rented out the monastery´s possessions as portfolios so these could be kept together, despite the fact that the monasteries had been dissolved by then (Vesteinsson, personal conversation, March 2012).

Figure 5. Oddstaðir ruin complex, indicated by the red arrow. Oddstadir is situated at the western end of Öxnhóll land with the river, Oddstaðsá (black arrow), creating a natural boundary between the Öxnhóll and Barká farms.

In summer of 2009, after cores placed into the Oddstaðir farm mound indicated the presence of deeply stratified midden materials, a 1 m (N-S) by 3m (E-W) evaluation trench was put into the eastern side of the ruins depicted as farm mound B in the survey plan(Coordinates: 65°40.617'N, 18°29.107'W, Elevation 158 m ASL). This trench excavation was supervised by Howell M. Roberts from the Institute of Archaeology, Iceland (FSÍ). Within two days of excavation, the Oddstaðir Trench 1 - TR1 - had produced several substantial and discrete midden contexts, several of which contained well preserved faunal remains (i.e. context [104]). TR1 was extended to 2 m (N-S) by 3 m (E-W) to maximize recovery of artifacts and faunal and other environmental remains. Upon a second coring transsect placed to pinpoint the midden extent even further, the trench was extended by another meter along the eastern section, resulting in its final extent of 2 m by 4 m.

This trench not only contained a large and well preserved archaeofauna and several artefacts: Removal of midden deposits revealed several structural remains. For example, the corner of a rectangular pit (122) was filled with and sealed by various deposits household midden materials, that were in turn sealed by an unknown tephra layer (context 114; analyzed by R. Streeter, U Edinburgh), located in the SE corner of TR 1 (figure below, right), before the 1 m eastern extension.

Figure 6. Oddstaðir; left: multi-context picture: stone lined wall, post holes with a rectangular feature emerging. Picture faces west. Right: negative feature with a very regular edge forming one corner of the feature. Multicolored layers on the bottom of the feature/pit are prehistoric deposits. Picture faces east.

Another structural feature found in the trench was a stone-lined turf wall transsecting the trench from north to south at its center (figure above, left). East of this wall feature, postholes and a rectangular feature are visible. This is very likely a feature associated with Phase I, the earliest observed occupation phase at Oddstaðir (see phasing and dating information above). Following FSI and NABO protocols, all structural remains were left intact for future research of the farm mound itself. All faunal materials analyzed for this report were collected from this trench, TR1. The section drawing below will clarify the chronological events involved in the midden formation.

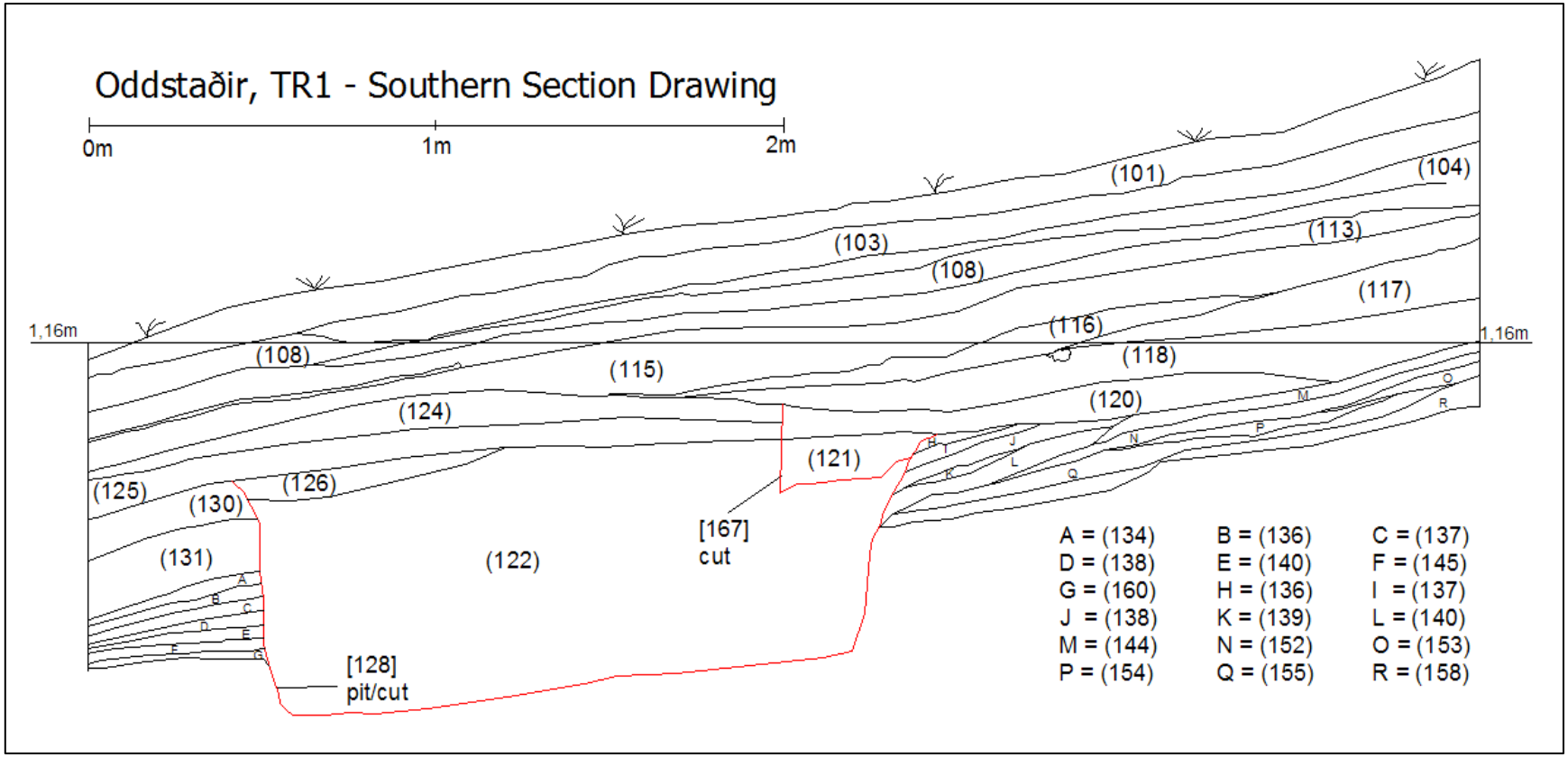



Figure 7. Oddstaðir, TR1 – Southern Section Drawing. Letters in the section drawing are given appropriate context numbers in the legend.

**The Oddstaðir archaeofauna**

Table 3 presents the Oddstaðir archaeofauna as a Total Count. NISP (number of identified specimens) refers to all fragments that could be identified to a useful level. TNF is a count of all bone fragments (identifiable or not), MTM is "medium terrestrial mammal" (sheep-dog-pig sized), LTM is "large terrestrial mammal" (cattle-horse sized), MM is an "unidentifiable marine mammal" (i.e. whale, dolphin, walrus, seal), UNIM or unidentified mammal are small fragments that cannot be identified beyond this broad category. UNI or unidentifiable bone fragments simply indicate the existing degree of erosion.

The current Total Number of Fragments (**TNF**) count is **9,055**, with a Number of Identified Specimens (**NISP**) of **2,300**. Although this is not a very large faunal collection, the numbers suffice to discuss most issues concerning long term farm management and site economy. This archaeofauna thus serves to raise issues on the larger Eyjafjörður, and especially Hörgárdalur human ecodynamics, without pretending to provide finite answers, as some data sets are subject to change.

The Oddstaðir archaeofauna is generally well preserved, the TNF indicating a relatively high level of fragmentation especially in the earlier layers (Total Number of fragments smaller than 2 cm = 4,921).

Further division of the total NISP according to phase results in a *NISP* of 836 for **Phase II,** the Viking Age deposits.

**Phase III,** the early medieval layers, produced a *NISP* of 650.

**Phase IV,** the transition phase between the high and later Middle Ages had a NISP of 356.

**Phase V,** the terminal midden phase from TR 1, had a **NISP** of 458.

| Oddstaðir - TR 1 Element Count | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Phase | | | | | | | | |
| Taxon | II, late 9th - mid 11th c. | Phase II NISP % | III, Mid 11th - mid 12th c | Phase III NISP % | IV, mid-12th - late 13th c. | Phase IV NISP % | V, late 13th to end of 14th c. | Phase V NISP % | Total NISP |
| Domestic mammals | | | | | | | | | |
| Cow (*Bos taurus* (L.)) | 107 | 12.80 | 63 | 9.69 | 46 | 12.92 | 89 | 19.43 | 305 |
| Horse (*Equus caballus* (L.)) | 3 | 0.36 | | | | | 1 | 0.22 | 4 |
| Pig (*Sus scrofa* (L.)) | 23 | 2.75 | 6 | 0.92 | 1 | 0.28 | 2 | 0.44 | 32 |
| Dog (*Canis lupus familiaris* (L.)) | | 0.00 | | | | | 1 | 0.22 | 1 |
| Goat (*Capra hircus* (L.)) | 6 | 0.72 | 1 | 0.15 | 3 | 0.84 | 5 | 1.09 | 15 |
| Sheep (*Ovis aries* (L.)) | 28 | 3.35 | 22 | 3.38 | 16 | 4.49 | 20 | 4.37 | 86 |
| Unidentified caprine | 280 | 33.49 | 176 | 27.08 | 184 | 51.69 | 232 | 50.66 | 872 |
| Total caprine | 314 | 37.56 | 199 | 30.62 | 203 | 57.02 | 257 | 56.11 | 973 |
| Total domestic | 447 | 53.47 | 268 | 41.23 | 250 | 70.22 | 350 | 76.42 | 1,315 |
| Wild Mammals | | | | | | | | | |
| Small seal | | | | | | | | | |
| Large seal | | | | | | | | | |
| Unidentified seal species | 8 | 0.96 | 2 | 0.31 | | | | | 10 |
| Total seal | 8 | 0.96 | 2 | 0.31 | | | | | 10 |
| Unidentified whale species | | | | | | | | | |
| Total whale | | | | | | | | | |
| Total wild mammal | 8 | 0.96 | 2 | 0.31 | | | 1 | 0.22 | 11 |
| Birds | | | | | | | | | 0 |
| Common gull (*Larus canus* (L.)) | 1 | 0.12 | | | | | | | 1 |
| Black-headed gull (*Chroicocephalus ridibundus (L.)*) | | | 1 | 0.15 | | | | | 1 |
| Gull species (Larus sp.) | 2 | 0.24 | 2 | 0.31 | | | | | 4 |
| Razorbill (Alca torda (L.)) | 1 | 0.12 | | | | | | | 1 |
| Murre species (Uria sp.) | 9 | 1.08 | 5 | 0.77 | | | | | 14 |
| Auk species (Alcid sp.) | 4 | 0.48 | 2 | 0.31 | | | 1 | 0.22 | 7 |
| Goose species (Anser sp.) | 1 | 0.12 | 8 | 1.23 | | | | | 9 |
| Ptarmigan (Lagopus muta (Montin)) | 1 | 0.12 | | | | | | | 1 |
| Unidentified bird species | 43 | 5.14 | 20 | 3.08 | 1 | 0.28 | 5 | 1.09 | 69 |
| Total bird | 62 | 7.42 | 38 | 5.85 | 1 | 0.28 | 6 | 1.31 | 107 |
| Fish | | | | | | | | | 0 |
| Cod (*Gadus morhua* (L.)) | 14 | 1.67 | 25 | 3.85 | | | 1 | 0.22 | 40 |
| Haddock (*Melanogrammus aeglefinus* (L.)) | 9 | 1.08 | 10 | 1.54 | | | 14 | 3.06 | 33 |
| Saithe (*Pollachius virens* (L.)) | 6 | 0.72 | 16 | 2.46 | 3 | 0.84 | | | 25 |
| Cusk (*Brosme brosme* (L.)) | | | 2 | 0.31 | | | | | 2 |
| Atlantic Halibut (*Hippoglossus hippoglossus* (L.)) | 2 | 0.24 | 5 | 0.77 | | | | | 7 |
| Gadid species | 123 | 14.71 | 105 | 16.15 | 26 | 7.30 | 21 | 4.59 | 275 |
| Fish non-speciated | 230 | 27.51 | 166 | 25.54 | 75 | 21.07 | 66 | 14.41 | 537 |
| Total fish | 308 | 36.84 | 329 | 50.62 | 104 | 29.21 | 102 | 22.27 | 843 |
| Mollusca | | | | | | | | | 0 |
| Soft-shel Clam (Mya sp.) | | | 7 | 1.08 | | | | | 7 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Hard-shell Clam (Arctica islandica (L.)) | 2 | 0.24 | 4 | 0.62 | 1 | 0.28 | | | 7 |
| Common whelk (Buccinum undatum (L.)) | 1 | 0.12 | | | | | | | 1 |
| Mussel (*Mytilus edulis* (L.)) | | | 1 | 0.15 | | | | | 1 |
| Unidentified mollusc species | 11 | 1.32 | 1 | 0.15 | | | | | 12 |
| Total mollusca | 14 | 1.67 | 13 | 2.00 | 1 | 0.28 | | | 28 |
| **Total Number of Identified Species** | **836** | **100.00** | **650** | 100.00 | **356** | **100.00** | **458** | **100.00** | **2300** |
| Large terrestrial mammal | 141 | | 66 | | 57 | | 100 | | 364 |
| Medium terrestrial mammal | 335 | | 303 | | 273 | | 318 | | 1229 |
| Uni. terrestrial mammal fragments | 1,595 | | 1,448 | | 657 | | 1,461 | | 5161 |
| Unidentified marine mammal fragments | | | | | | | 1 | | 1 |
| **Total number of fragments** | **2,907** | | **2,467** | | **1,343** | | **2,338** | | **9055** |

Table 3. Oddstaðir, Total TR 1 element count, with a NISP breakdown by phase.

## Overview of Species Present

The phased major taxa graph in figure 8 displays the proportions of various animal groups using their NISP percentages. During the entire occupation span, sampled in TR 1, the domestic mammal category never makes up less than 40 % of the site's total animal proportion profile, with 54 % in phase II, 41 % in phase III, 70 % in phase IV, and 76 % in phase V. Birds make up larger percentages during the Viking Age (7%) and Early Middle Ages (6%), whereas they are seemingly less utilized as a food resource in the upper midden deposits. The few wild mammals, mostly phocidae, were only recovered in the earlier midden phases, but not in the later two. The fish category made up a relatively high proportion of the total animal profile in phase II (37%), phase III (51%), but not in phases IV (22%) and V (22.22 %).

Mollusks, relatively few in number, were only found in phases II and III (2% each) and a fraction thereof in phase IV (0.28%).

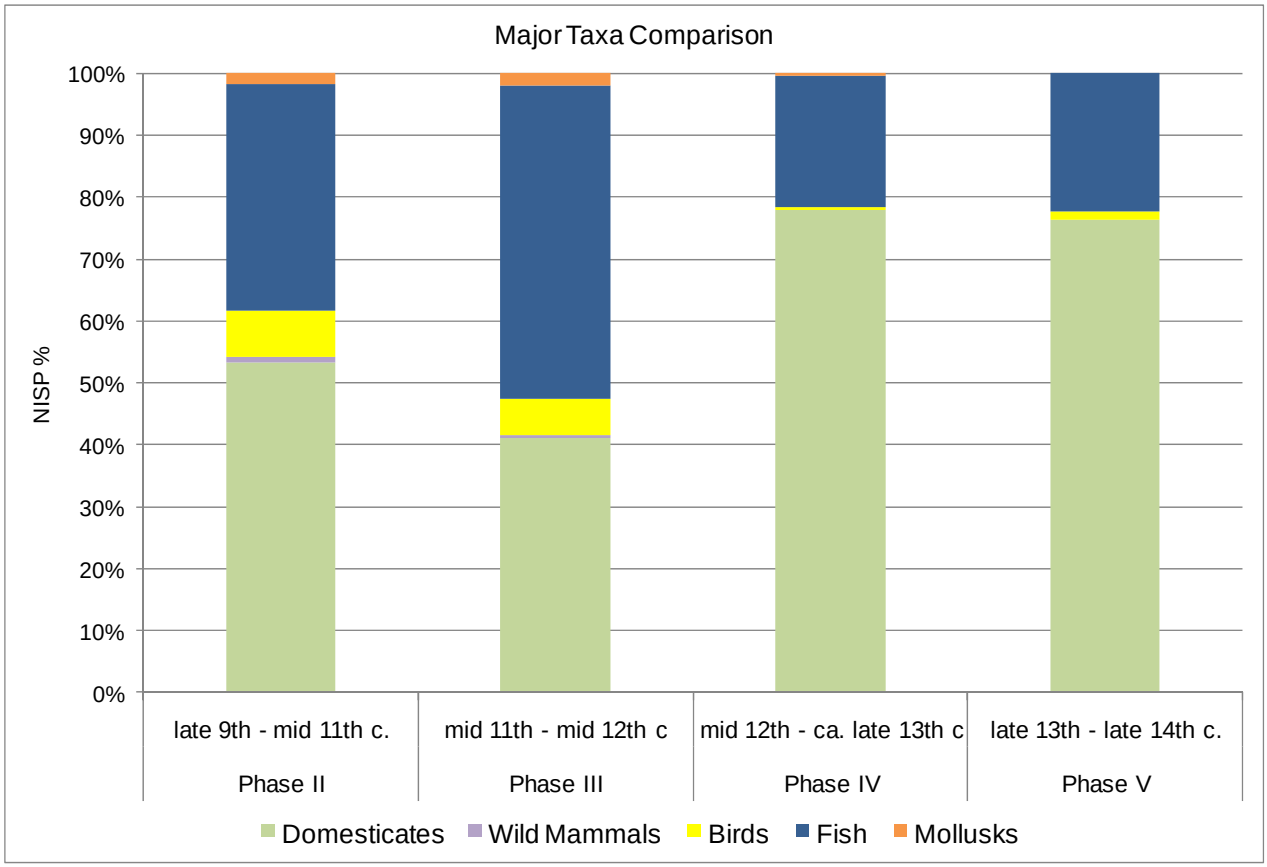



Figure 8. Oddstaðir Major Taxa presented as NISP percentages.

These major taxa profiles per phase suggest that generally, domestic mammals became more important from the High Middle Ages on and fish and other wild resources declined in importance as time proceeded.

NB: this change in major taxa proportions somewhat reflects the change in neonatal cattle numbers, with potentially dairy economy in place in Phases II and III, and possibly a change to a beef production profile in Phases IV and V; from the mid-12$^{th}$ to late 14$^{th}$ c.

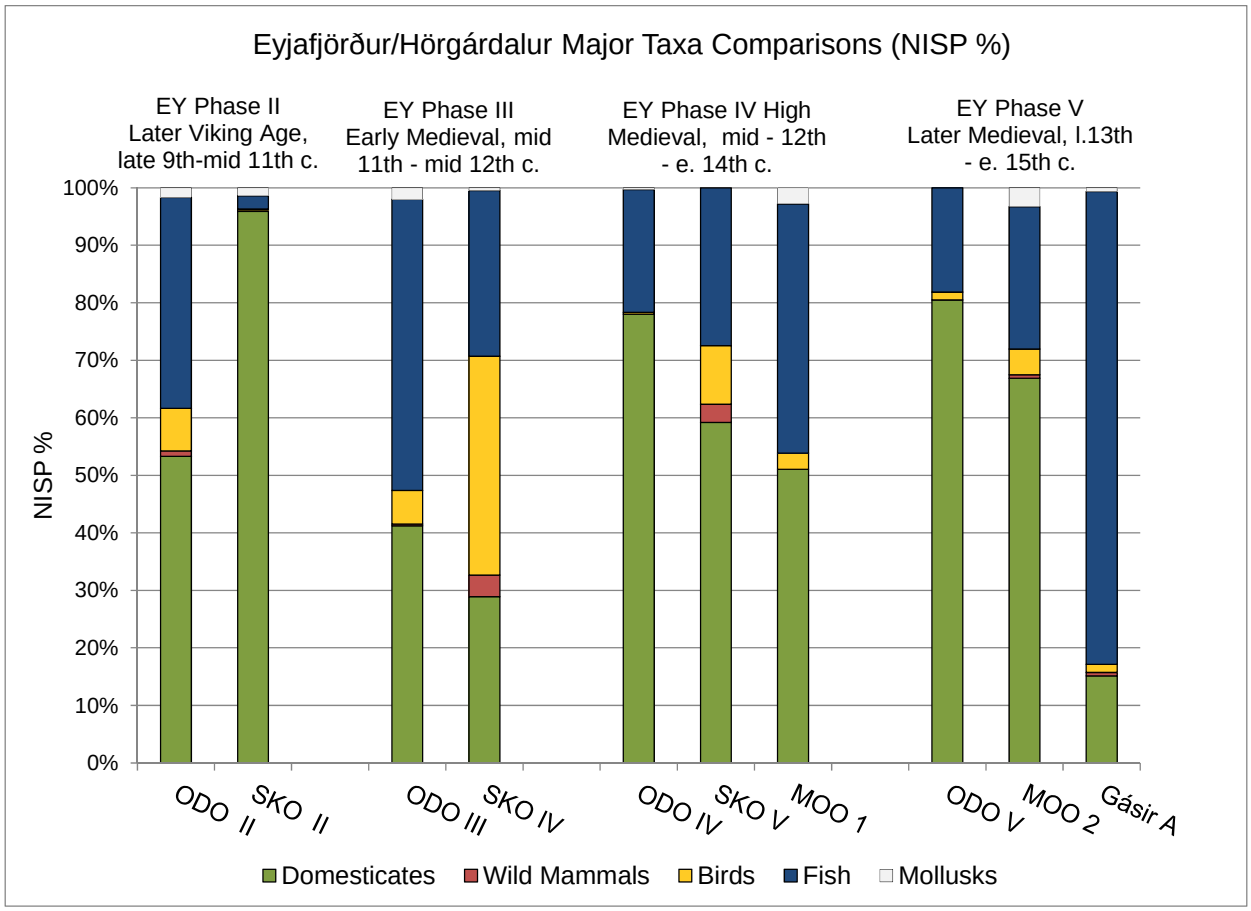



Figure 9. Oddstaðir Major Taxa (NISP %) compared to other sites in Hörgárdalur.
SKO = Skuggi, Hörgárdalur ; small scale farm established during Viking Age Settlement phase, occupied until ca. mid-late 12th c. MOO = Möðruvellir monastic farm estate, Hörgárdalur; lowest excavated midden deposits, 13th – early 15th c. Gásir, Eyjafjörður, area A = medieval trading site, excavated layers dated to 13th – early 15th c.

Figure 9 displays the same Oddstaðir data as presented in figure 8, this time compared with major taxa proportions from other contemporaneous sites in Hörgárdalur (for more information on these sites, see Harrison 2008, Harrison et al 2008, Harrison et al 2010, Harrison 2009, Harrison 2010a, b, Harrison 2011b).

There is a change between Viking Age/early medieval general taxa profiles and those from the high and later medieval periods. Less species diversity later on is combined with the trend of domesticates becoming very dominant, over 75 % for the high and later medieval Oddstaðir faunal profiles. Except for conspicuously low amounts of fish bones, the later

medieval species distribution profile is somewhat similar to the one from later medieval Möðruvellir (MOO 1 and 2), clearly contrasting with Gásir, a coastal site functioning as a trading port. The development of earlier major taxa profiles including considerable proportions of wild taxa and later ones being more dominated by domesticates is observed in other Icelandic archaeofaunal collections also (i.e. McGovern et al 2007, Amorosi 1996).

While the relative fish proportion at Skuggi increases over time, however, it decreases at Oddstaðir in the later phases. Could this contrasting change in domesticate vs. wild/fish proportions be indicative of an independent farm economy (Oddstaðir) versus a tenant farmer (Skuggi)? It has been mentioned earlier that Jarðabók indicates Oddstaðir as located on Öxnhóll land in the early 18$^{th}$ c. (Jarðabók Árna Magnússonar og Páls Vídalíns 1943 edition, Vol.10:141), and it is very possible that this site was once a tenant farm, but possibly after the Middle Ages. An alternative may be a form of dependence on Öxnhóll, but not in the strict sense of the subsidiary tenant system. The archaeofauna itself suggests an Öxnhóll status of at least middle ranking. It is entirely possible that Öxnhóll owned Oddstaðir (a separate farm) and was actively involved in the Gásir exchange system. Therefore, it may have dictated Oddstaðir´s livestock management and also wild resource access to a certain degree.

## Mammals

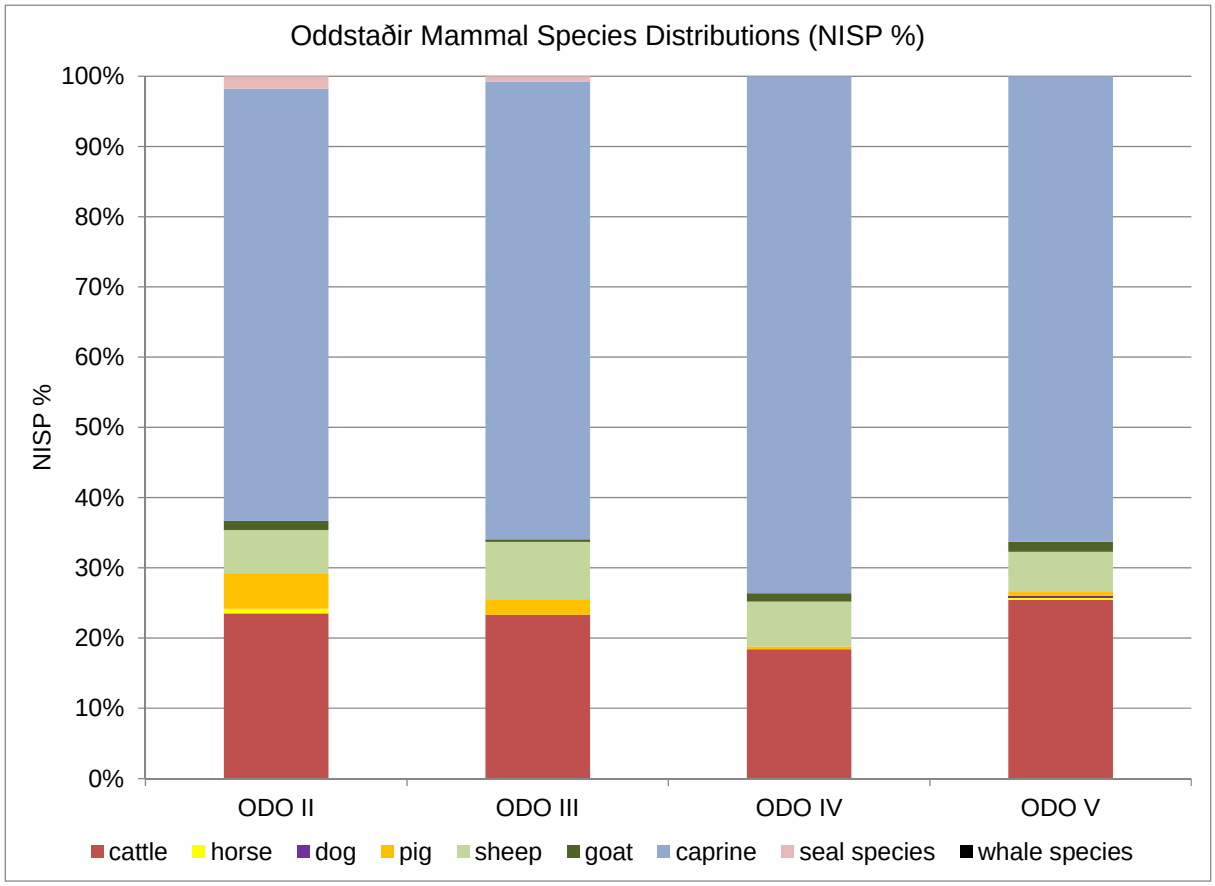



Figure 10. Oddstaðir phased mammal species distributions.

The phased mammal species distribution graph in figure 10 displays the various mammal species proportions present in the phased TR1 midden deposits. Whereas in phase IV (High Middle Ages) the cattle proportion was 18 % of the mammal species, it was 24 % in phase II (Viking Age), 23 % in phase III (Early Middle Ages), and 25 % in Phase V (Later Middle Ages). Few horse remains in phase II (0.66 %) and phase V (0.26%) and one dog remain in phase V (0.26 %) indicate the low importance as a food resource of these species throughout all the phases encountered at Oddstaðir. Pigs, however, were found in all four phases and represent 5 % in the Viking Age phase, 2 % in the Early Middle Ages, 0.4 % in the High Middle Ages, and 0.57 % in the Later Middle Ages. A decline in this species per time period is observable, as is

that of seal species, with only phase I and II contexts producing small amounts of seal. Caprines (sheep/goat indeterminable) are the most abundant category for all phases, making up 62 % of phase II, 65 % of phase III, 74 % of phase IV, and 66 % of phase V. All phases had a proportion of sheep between 6 % and 8 %. The goat percentages are very low from the beginning of the Oddstaðir activity: in phase II the goat percentage of the total mammal number was 1.3 %, in phase III it was 0.37 %, in phase IV to 1.2 %, and in phase V 1.42 %. These numbers suggest that goats were never of great importance to this site.

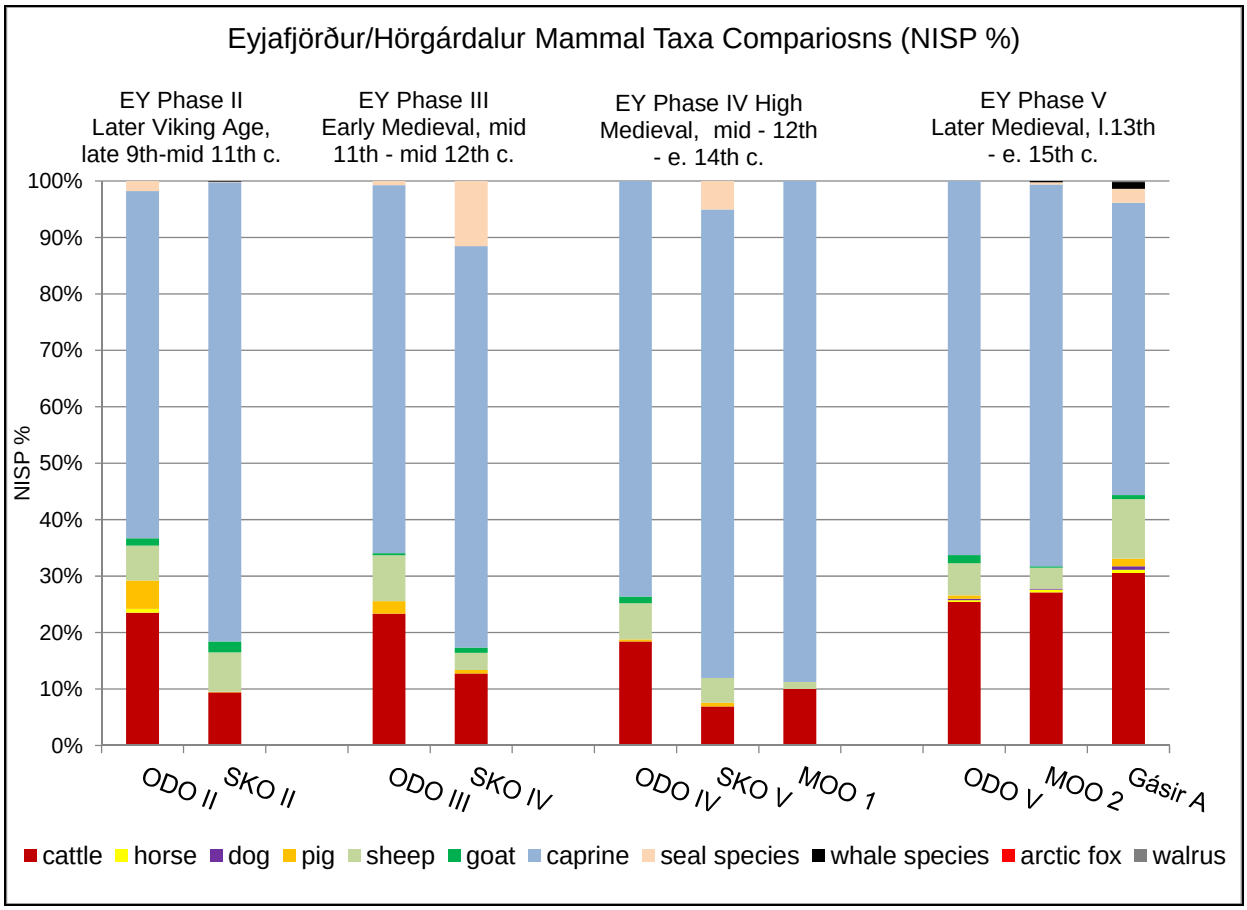



Figure 11. Oddstaðir phased mammal species distribution compared to other Hörgárdalur sites. Here, the Oddstaðir domestic and wild mammal species proportions are divided into phases and compared to other Hörgárdalur sites. ODO II and SKO II are Viking Age faunas, ODO III and SKO IV from early, ODO IV and SKO V and MOO 1 from high, and ODO V, MOO 2, and Gásir Area A from later medieval faunal materials.

Except for a change in the few wild mammals species, the overall livestock management at Oddstaðir seems to have remained fairly stable, with cattle percentages actually highest in the latest phase encountered. This farm may have been wealthy enough to sustain a generally permanent livestock profile throughout its occupation. Whether there was a change in management of Oddstaðir sheep/goat or cattle herds may be determined better in the next section, where these animals' age at death data will be presented. There was a considerable amount of pig remains at Oddstaðir during the early times of its occupation and even during the later phases

**Reconstructing Domesticate Mortality Patterns**

| | Phase II - lower | | Phase III - middle | | Phase IV - upper L1 | | Phase V - upper L2 | |
|---|---|---|---|---|---|---|---|---|
| | Late 9th - mid 11th c. | | Mid-11th - mid 12th c. | | Mid-12th - ca. late 13th c. | | Late 13th - end of 14th c. | |
| Taxon | NISP | % group | NISP | % group | NISP | % group | NISP | % group |
| *Bos taurus (L.)* | 107 | 23.94 | 63 | 14.09 | 46 | 18.40 | 89 | 25.43 |
| *Equus caballus (L.)* | 3 | 0.67 | | | | | 1 | 0.29 |
| *Sus scrofa (L.)* | 23 | 5.15 | 6 | 1.34 | 1 | 0.40 | 2 | 0.57 |
| *Canis familiaris (L.)* | | | | | | | 1 | 0.29 |
| *Capra hircus (L.)* | 6 | 1.34 | 1 | 0.22 | 3 | 1.20 | 5 | 1.43 |
| *Ovis aries (L.)* | 28 | 6.26 | 22 | 4.92 | 16 | 6.40 | 20 | 5.71 |
| Ovis/Capra sp. | 280 | 62.64 | 176 | 39.37 | 184 | 73.60 | 232 | 66.29 |

Table 4. Domestic Mammal Table

Table 4 presents all the domestic animals as NISPs and also relative NISP percentages per phase. Caprines in general are the largest group in all phases, with cattle being the second largest, their proportion never falling below 18 %. Goat proportions range from 0.4 % to 1.4 %, slightly increasing in the last phase and pig percentages declining from 5 % in the earliest phase to 0.5 % in the latest. As mentioned before, the presence of pig elements in the later medieval

layers seems to be indicative of the importance of these animals as status indicators, since they often disappear from low status sites' faunal collections by this period (McGovern et al 2004, 2007, 2009, Amorosi 1996). The fact that a few pig remains and goat remains were found relatively late on hints toward at least a partial meat provisioning strategy instead of one purely geared toward wool production. This very stable proportion of cattle elements throughout the occupation phases should be kept in mind.

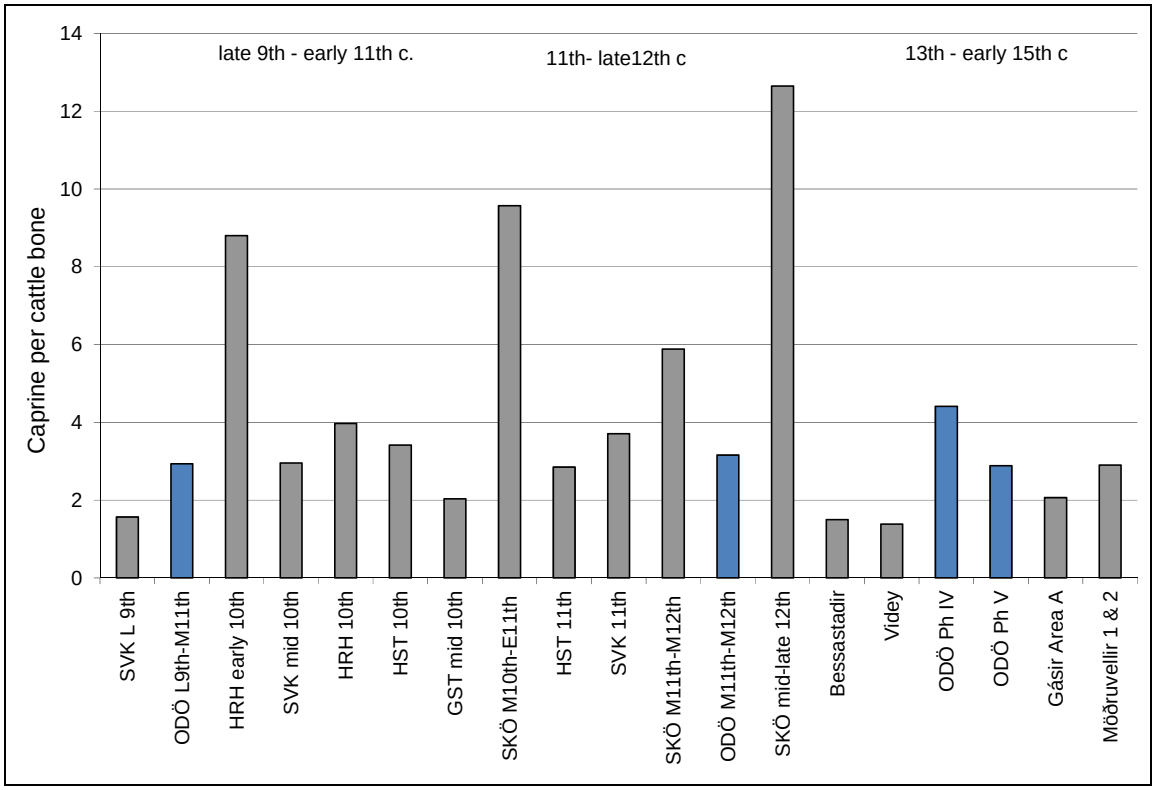



Figure 12. Comparison of caprine/cattle ratios from various Viking Age and medieval Icelandic sites.[3]

Except for the higher ratio of 4 caprine elements per 1 cattle element in Phase IV, the Oddstaðir caprine to cattle ratio seems to remain at a relatively constant 3 to 1 from early occupation through the latest. This pattern contrasts significantly with the one observed in the archaeofauna from neighboring Skuggi, where a ratio of ca. 9.5 caprine bones per cattle bone in the earliest phase changes to a caprine/cattle ratio of 6:1 for the mid-11$^{th}$ – mid-12$^{th}$ century collection and

[3] The Hrísheimar archaeofauna is still under analysis; data is therefore subject to change.

then rises to 12.5 caprines per cattle in the terminal phase in the later 12th c. The overall Oddstaðir caprine/cattle ratio resembles the one from medieval Möðruvellir, and also the one from that of Gásir (caprine/cattle ratio = 2:1), albeit to a lesser degree (e.g. Harrison 2006).

The rather constant profile of these most frequently utilized domesticate species in medieval Iceland observed from the Oddstaðir archaeofauna may indicate that this farm site may have not seen much change in the management of domestic livestock throughout its apparent occupation.

Finally, when comparing the Oddstaðir cattle/caprine ratios to other sites in early and later medieval Iceland, it appears that relatively high status farms (i.e. Hofstaðir in Mývatnssveit) display similar caprine vs. cattle proportions, with the later medieval, higher status sites at Bessastaðir and Víðey (both larger Reykjavik area) displaying a ratio of these two species even lower than Gásir's. The mid-10th c. archaeofauna from Granastaðir in neighboring Eyjafjarðardalur (McGovern & Amorosi in Einarsson 1995) indicates a caprine to cattle ratio of 2:1, and thus also has slightly higher cattle element counts per caprines than Oddstaðir. Again, when observing the above graph comparing various contemporaneous ratios from the Viking Age through the Later Middle Ages, Oddstaðir displays very little change in its caprine vs. cattle element numbers.

*Cattle*

Cattle tooth eruption analysis:

Only five (5) cattle mandibles were available for eruption analysis and are thus not suitable for a cattle tooth eruption comparison discussion.

Oddstaðir Cattle Long Bone Fusion Comparison:

Similar to the tooth row data, only ten (10) cattle long bone elements were available for fusion analysis, and an age at death assessment from these two categories is therefore not available until more data becomes available.

The one data set that allows for a statement on the Oddstaðir cattle management during the four midden phases chronicling its perceived occupation time is the cattle neonatal data derived from the very well preserved elements available for a distinction between fetal, neonatal, and immature/mature skeletal elements.

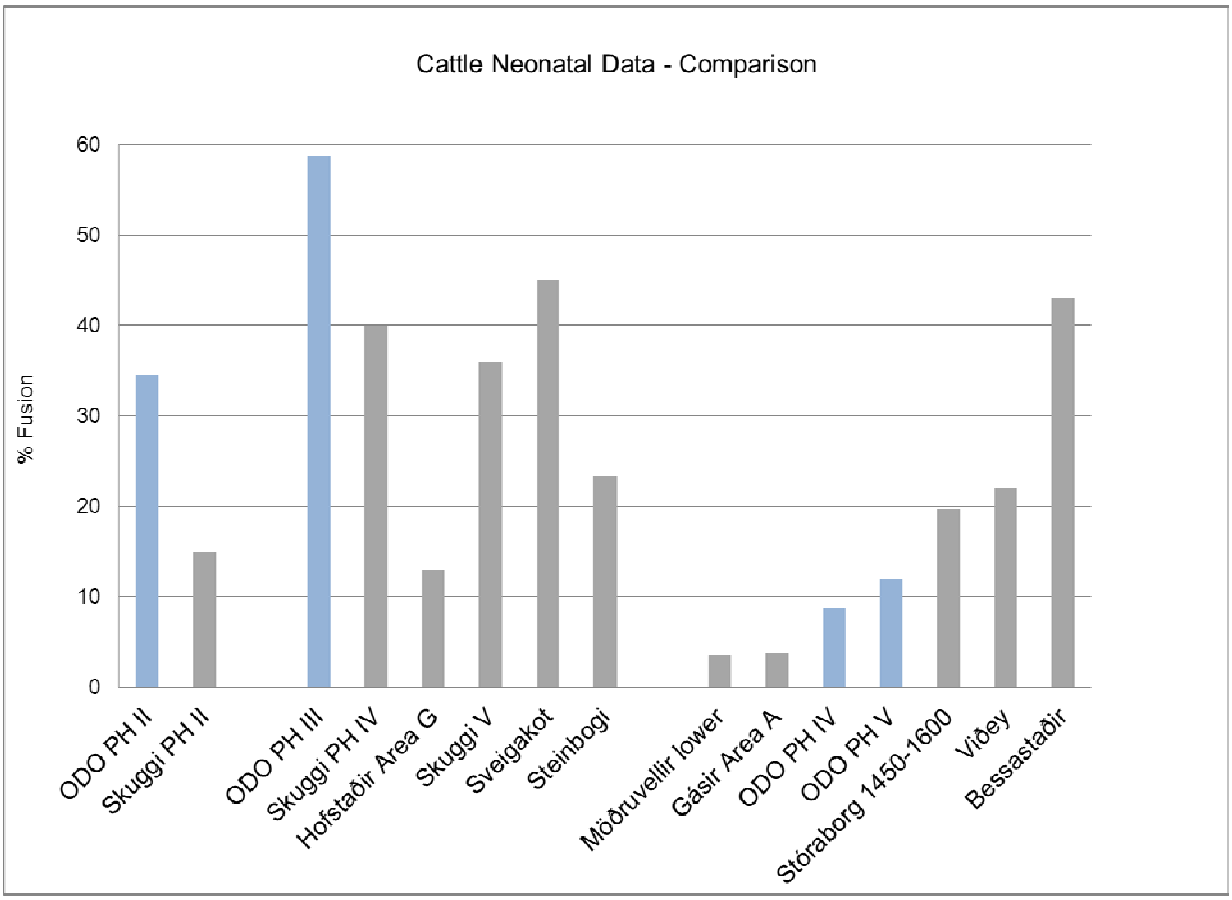



Figure 13. Oddstaðir cattle neonatal data compared to other Viking Age – Medieval sites from N Iceland

The Oddstaðir cattle neonatal graph in figure 13 indicates various proportions of neonatal cattle elements found in the site's four occupational phases. While the archaeofauna from Phases II and

III contained neonatal elements exceeding 30 % of the total cattle elements, Phase IV and V neonatal cattle element proportions are below 15 %.

This indicates a potential shift in the management of the Oddstaðir cattle herds, possibly from a dairying profile to another form of cattle management, i.e. a high-quality beef production profile, requiring animals to be raised to their prime-meat age of about 2 ½ – 3 ½ years (see Harrison 2006). Generally, a range of ca. 15-50 % neonates among the total cattle bone assemblage is interpreted as evidence of dairy herd management, with calves culled early on and most milk being reserved for humans (Halstead 1998). The later Oddstaðir phases coincide in time with the Gásir and lower Möðruvellir faunal collections – all from the l3$^{th}$ – ca. early 15$^{th}$ c., and possibly part of the same prime-age beef supply system.

Since neither cattle tooth row eruption nor long-bone fusion data help with an assessment of the Oddstaðir cattle ages at time of death, the neonatal data presented here should be understood as a general indicator rather than a firm pattern of cattle herd management during later stages of these animals' life histories.

Still, this distinct decline in neonatal cattle bone, compared with a consistent preservation stage in all Oddstaðir deposits is indicating a change in the cattle herd management during the site's high and later medieval occupation.

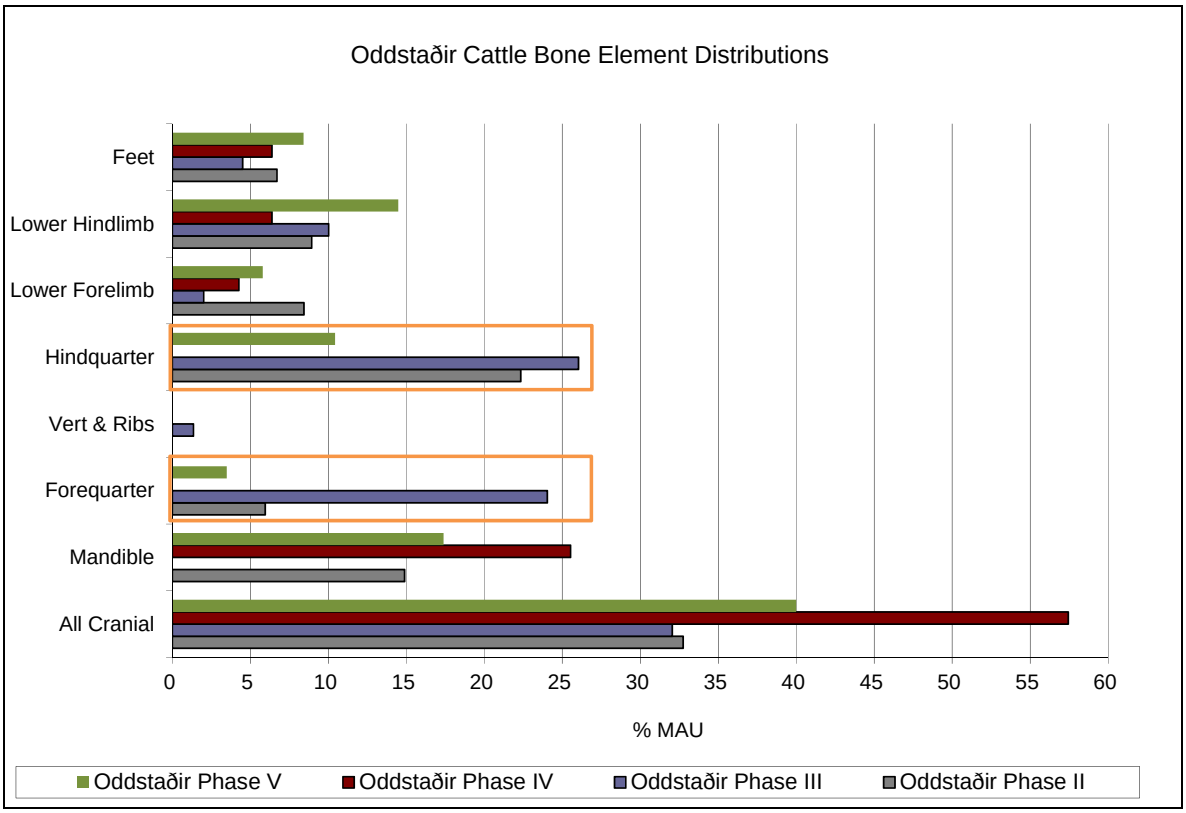


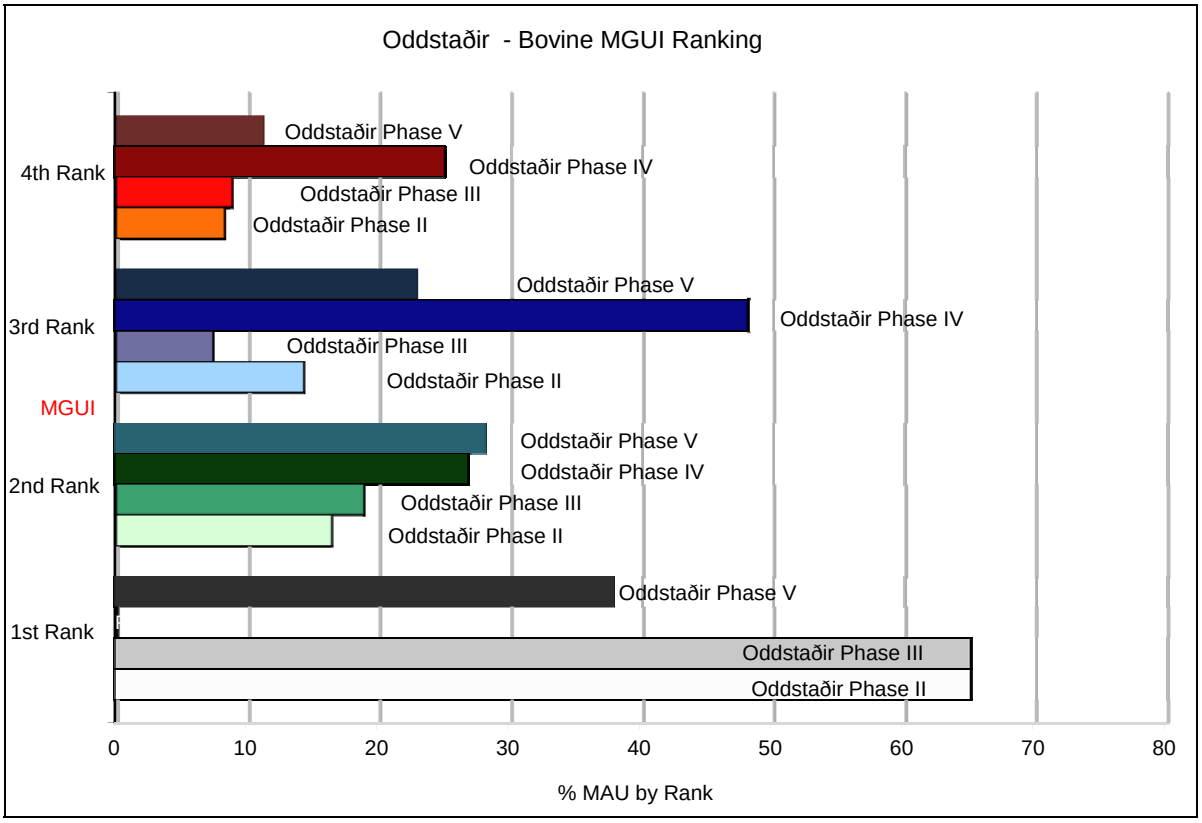

Figure 14**.** Cattle skeletal element distribution per phase

Figure 14 demonstrates clearly that relative percentages of fore- and hind quarters are declining later on, representing possibly meat cuts exported from the site to be consumed elsewhere (for detailed discussions on frequencies of skeletal parts in certain archaeological scenarios, see Lyman 1994:223-293). While live animals seem to have been culled on site as indicated by the presence of cranial elements and other skeletal remains, the best beef cuts may have been consumed and discarded somewhere else (see Harrison, *forthcoming*).

The virtual absence of elements in the 'Vert and Ribs' category can be explained with the NABO protocol of placing these elements into mammal-size categories (STM, MTM, LTM) rather than species categories to reduce the error in analysis.

The Oddstaðir cattle skeletal element distribution comparison indicates a change in butchery style/site supply of beef. From the data presented below, this is not a preservation issue, but indeed suggests human decision making.

Phased bovine bone density rankings and the MGUI (Modified General Utility Index (Lyman 1994:227) rankings, or portions of the animal's skeleton bearing the most food utility (i.e. muscle mass, but also marrow and sinews) are presented next. These statistical aids can help identify levels of taphonomic effects versus human choice for certain meat cuts, although their application is somewhat limited because they are based on few examples (Lyman 1994:231).



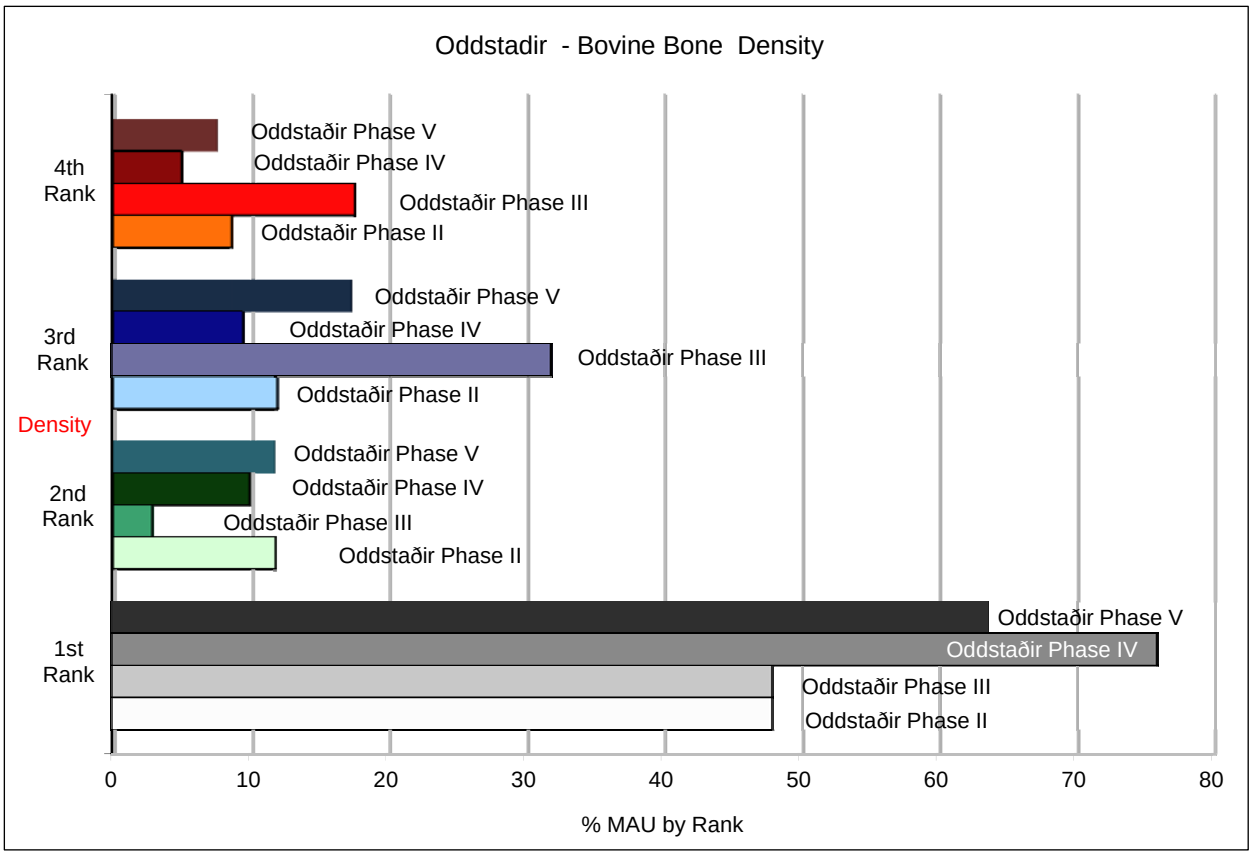



Figure 15**.** Phased Oddstaðir Bovine MGUI (top) and Bone Density Rankings (bottom). MGUI (Modified General Utility Index (Lyman 1994:227) and Bone Density Comparison. MAU= '…the minimum number of animal units necessary to account for the specimens observed (Lyman 1994:511).'

When comparing the Oddstaðir MGUI and Density rankings of the cattle skeletal elements collected from the midden trench, it can be seen that a change in selection of certain elements took place between the Phase II and III bone collections and those from Phases IV and V. The latter are contemporaneous with the Gásir and Möðruvellir faunal collections from this region.

Figure 15 indicates that early on during the site's occupation, a relatively 'natural' element/meat value utilization seems to have taken place, with the more beef bearing/elements associated w. higher nutrition value consumed at greater numbers. There is a shift in the high and later medieval assemblages towards a pattern where the most meat/nutrition bearing elements are not necessarily chosen above those with lower MGUIs. The Bovine Bone Density Ranking

suggests this is not due to the preservation conditions, but rather due to decisions made by the livestock manager. Again, this indicates that some of the elements higher in food utility were consumed elsewhere, and likely at Gásir.

*Caprines*

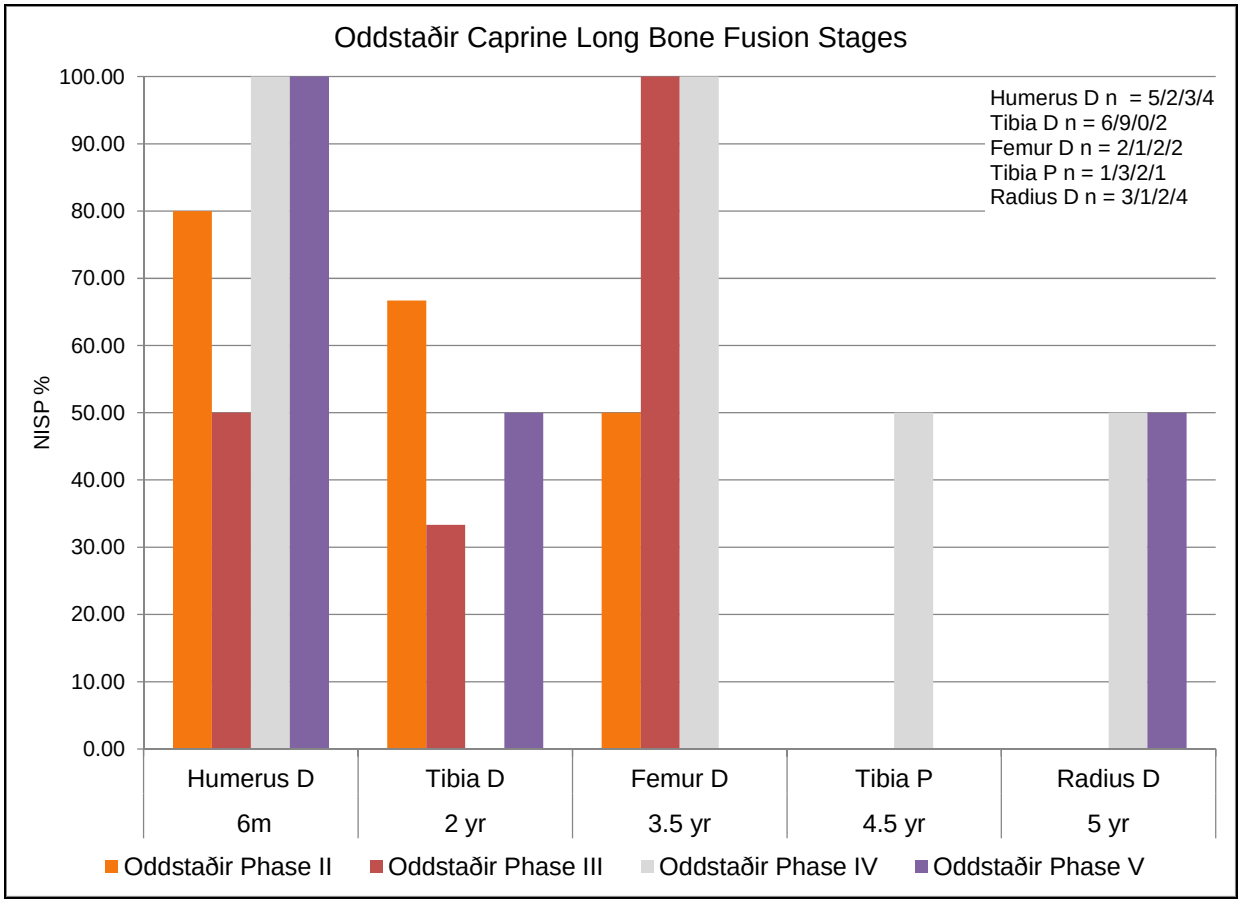



Figure 16. Oddstaðir Caprine Long Bone Fusion Comparison

The graph in figure 16 presents a caprine age-at-death assessment according to the long bone fusion data available from the various Oddstaðir occupation phases (see Reitz and Wing 1999 for information on long bone fusion during a domesticate mammal's life time). The data sets suggest 50+ % caprine survival rates until or even beyond 6 months of age for all phases, with most caprines from the Viking Age (Phase II) and early medieval times (Phase III) culled by the time

they reach ca. 3.5 years of age. The distal radius data available from this collection indicate that about 50 % of the high and late medieval caprines survived until the age of 5 years and possibly beyond, suggesting the presence of relatively old animal on the farm during the later occupation phases.

While interesting in itself, this data represents a relatively small number of individuals (the text box on the top right corner of figure 16 indicates the number of elements available for age assessment per element and phase), and needs to be compared to other data, i.e. the caprine tooth eruption comparison below:

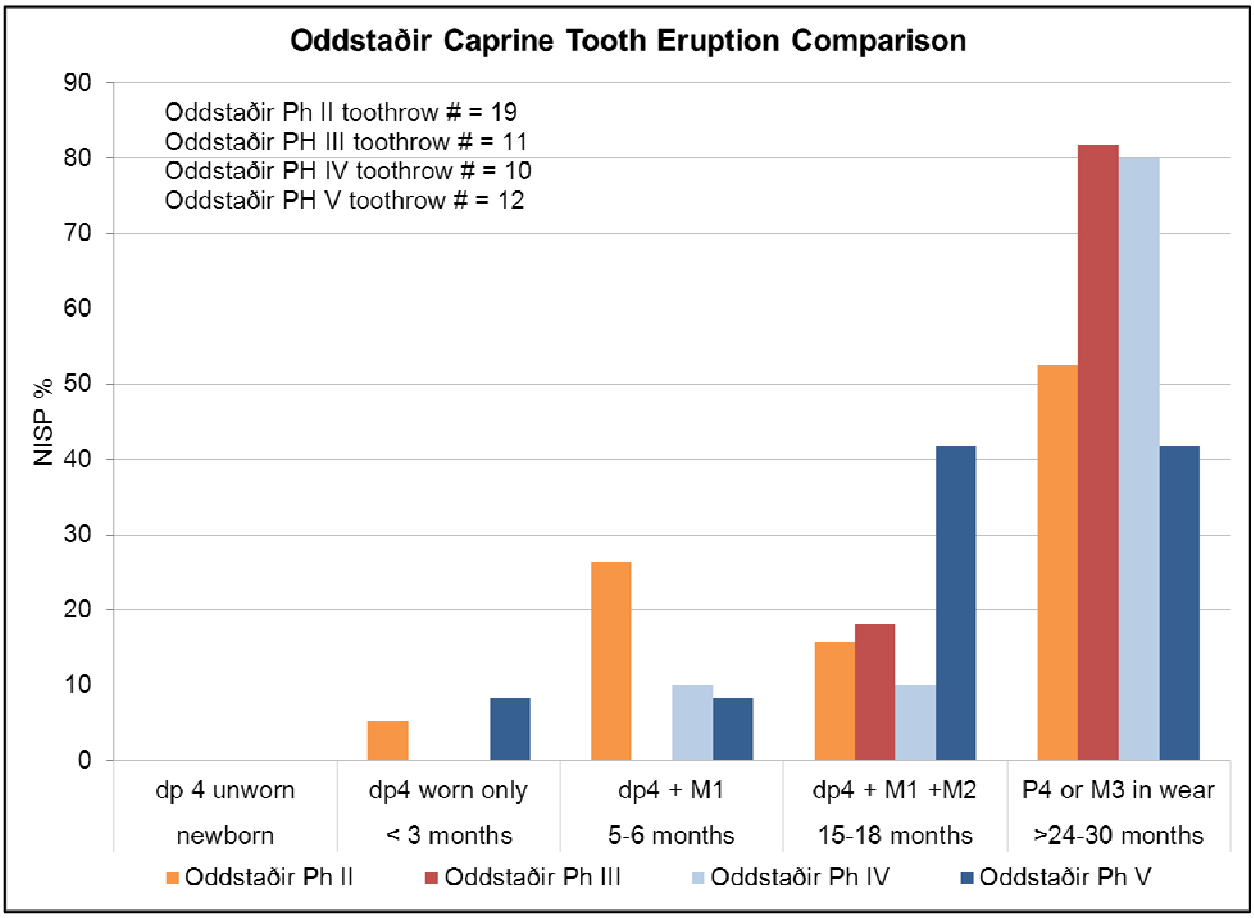



Figure 17. Oddstaðir caprine tooth eruption comparison.

Similar to the long bone fusion data presented in figure 16, the Oddstaðir caprine tooth row data in figure 17 indicates very few newborn sheep or goats among the Oddstaðir faunal remains,

with only 5.3 % of the caprines from the Phase II and 8.33 % from Phase V culled before their first summer, or before they reached 3 months of age.

The data indicate 26.3 % of the caprines from the Phase II deposits being culled after their first summer, or at ca. 5-6 months of age; 10 % of the caprines from Phase IV and 8.3 % of those from Phase V were also removed from the herd at around that age. Percentages of caprines surviving their first winter are: 15.8 % (Phase II), 18.2 % (Phase III), 10 % (Phase IV), and 41.2 % (Phase V), with about 52.6 % of the Phase II caprines surviving until about 2 years and beyond, compared to 81.8 % reaching that age category and beyond in Phase III, 80 % in Phase IV, and 41.7 % in Phase V.

While the caprine tooth row analysis indicates slightly varied culling patterns throughout the various occupation phases, it does not clearly reflect a dairying economy in place at Oddstaðir. Such a caprine management strategy would be characterized by a high number of new born caprines culled early on in their lives to preserve the milk for human consumption (Halstead 1995, 2005). It is possible that the Oddstaðir caprines were kept for meat and wool rather than milk products, with a potentially stronger focus on specific meat production in the Later Middle Ages (Phase V), when 80 % of the available tooth rows indicate an age at death between 1.5 and 3+ years. The data from Phases III and IV also indicate a generally older caprine age at death, and potentially hints toward a focus on wool production. At the same time, the data suggest a certain concentration on meat production. The currently available data sets are too small to make a definite statement at this point, but the caprine tooth eruption and long bone fusion analyses indicate a mixed strategy in place at Oddstaðir, with likely some animals kept for wool, and others utilized specifically for meat supply purposes.

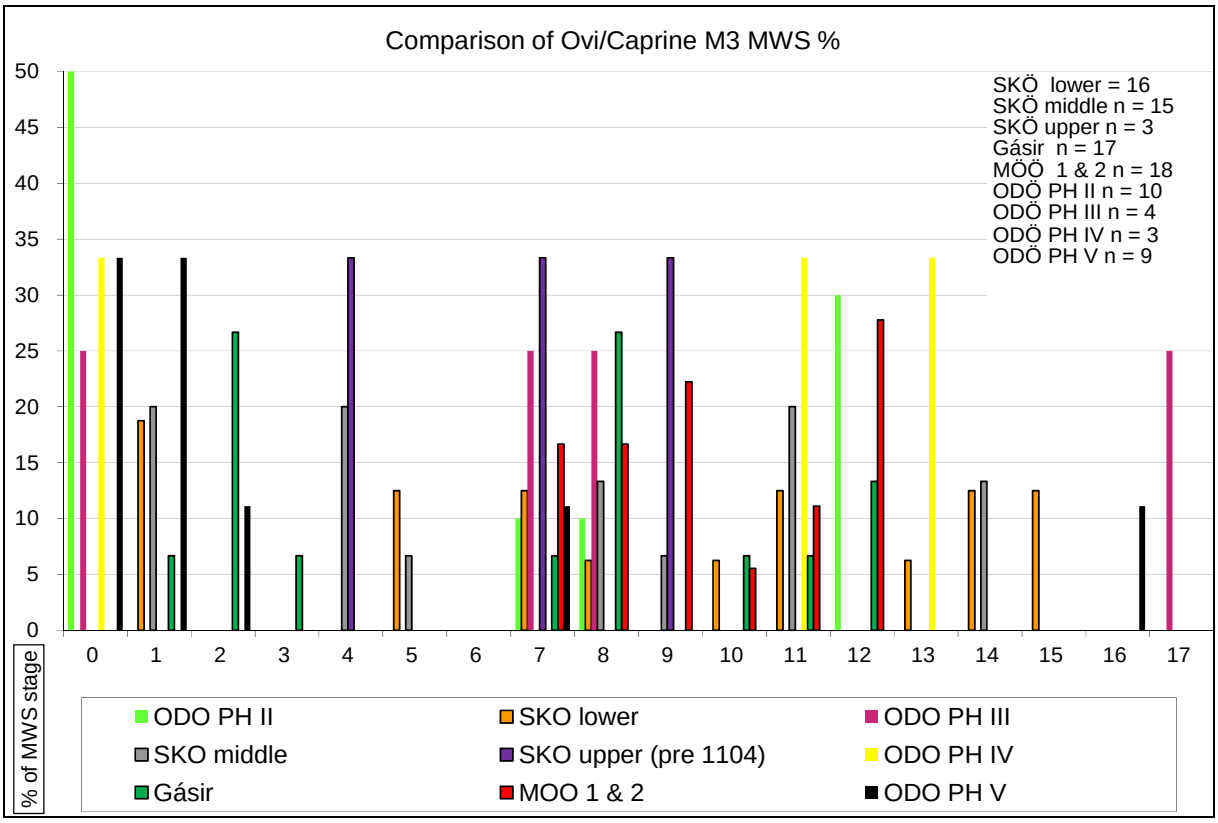



Figure 18. Ovi/Caprine M3 MWS (Mandible Wear Stage, after Grant 1982). SKÖ = Skuggi (ca. AD 950 – 1100); Gásir archaeofauna (late 13th – early 15th c.), Möðruvellir (MÖÖ) lower midden deposits (13th – early 15th c) compared with the faunal data from the four periods at Oddstaðir encountered in midden TR 1.

The Oddstaðir M3s (third mandibular molars) available for tooth wear state grading were all graded on a range between **a,** with a score equal to 0, and **k,** with a score equal to 17 (Grant 1982 in Hillson 2005:319). This suggests the animals were mature, and some of relatively old age. Skuggi ovi/caprines included some older animals, with M3 MWS (Mandible Wear Stage, Grant 1982) up to 15. None of these animals had scores between 18 and 20 (categories 18, 19, 20 had no y-values and were eliminated for a less crowded presentation of the individual data columns), indicating presence of old animals.

Compared to the other ovi/caprine M3 MWS, the one from Oddstaðir suggests a relatively wide age range for these mature animals, with one concentration in the very early mature stage (value – 0), possibly around 2-2 ½ years of age, as indicated by the tooth eruption

stage data presented in figure 17. The same analysis, but this time only showing the Oddstaðir ovi/caprine M3 MWS is presented in Figure 19.

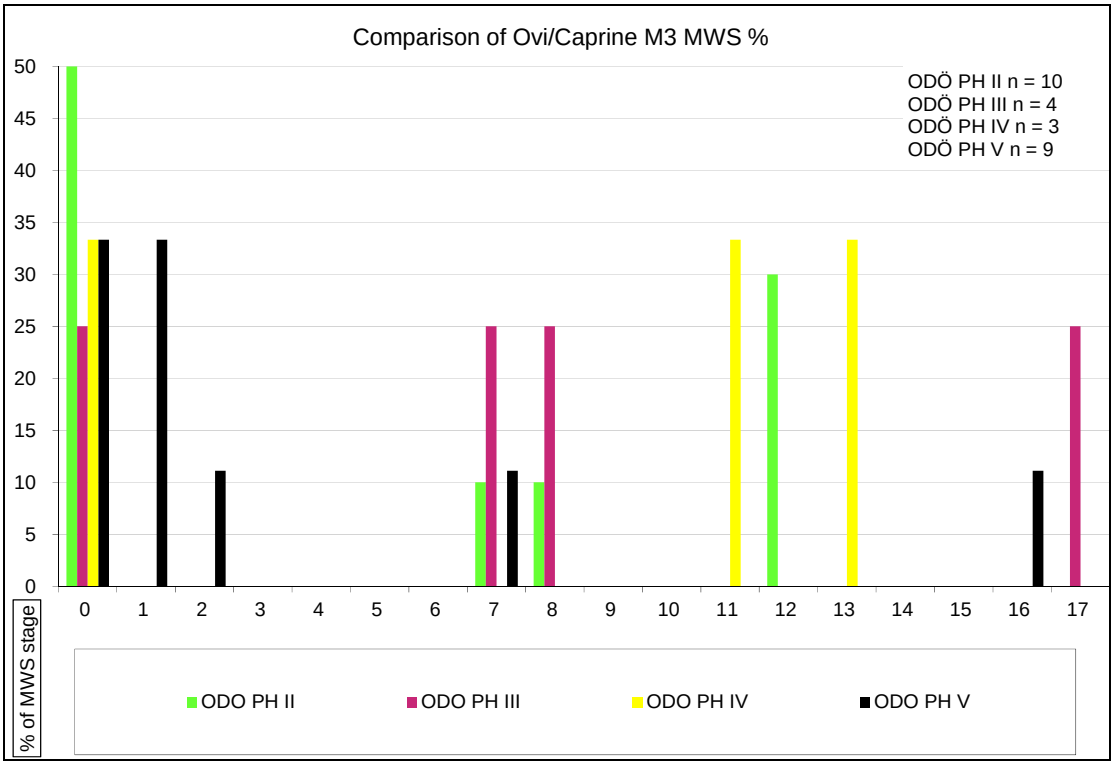



Figure 19. Ovi/Caprine M3 MWS (Mandible Wear Stage, after Grant 1982).

The graph in figure 19 indicates that there is a clustering of young mature animals (values 0 to 2), representing animals at circa 2 – 3 years of age, with age assignment again based on data from figure 16 (i.e. Hillson 2005). The Oddstaðir M3 MWS seem to cluster at different values, with some young mature, and also several older mature ovi/caprines present in the collections. These varied patterns could indicate a bi-variate ovi/caprine management, with some animals kept as meat animals culled at a prime-meat stage, and others for wool production. Sample size limits generalizations, with the highest sample numbers from Phases III and V, but available data suggests such dual-purpose sheep and goat management. As is true for the remains from the midden deposits of the Möðruvellir manorial farm, a typical management of a dairy herd seems

not reflected in the Oddstaðir ovi/caprine remains (see Harrison et al 2008, McGovern et al 2007, Harrison 2011b).

The caprine mandibular data sets presented above could indicate a slight shift from a herd raised for meat production to maybe a higher focus on wool herds later on, but the available mandibles are too small in number to make a distinct statement toward a sheep management primarily focused on wool production. Rather, the data suggest again a mixed sheep management strategy, with possibly stronger focus placed on a surplus of meat rather than wool. This can be either a very typical pattern for farms of the region, or a very individualistic approach toward sheep management at Oddstaðir. More faunal collections from sites of this region are therefore required to say anything conclusive about the farm management system in place in Eyjafjörður.

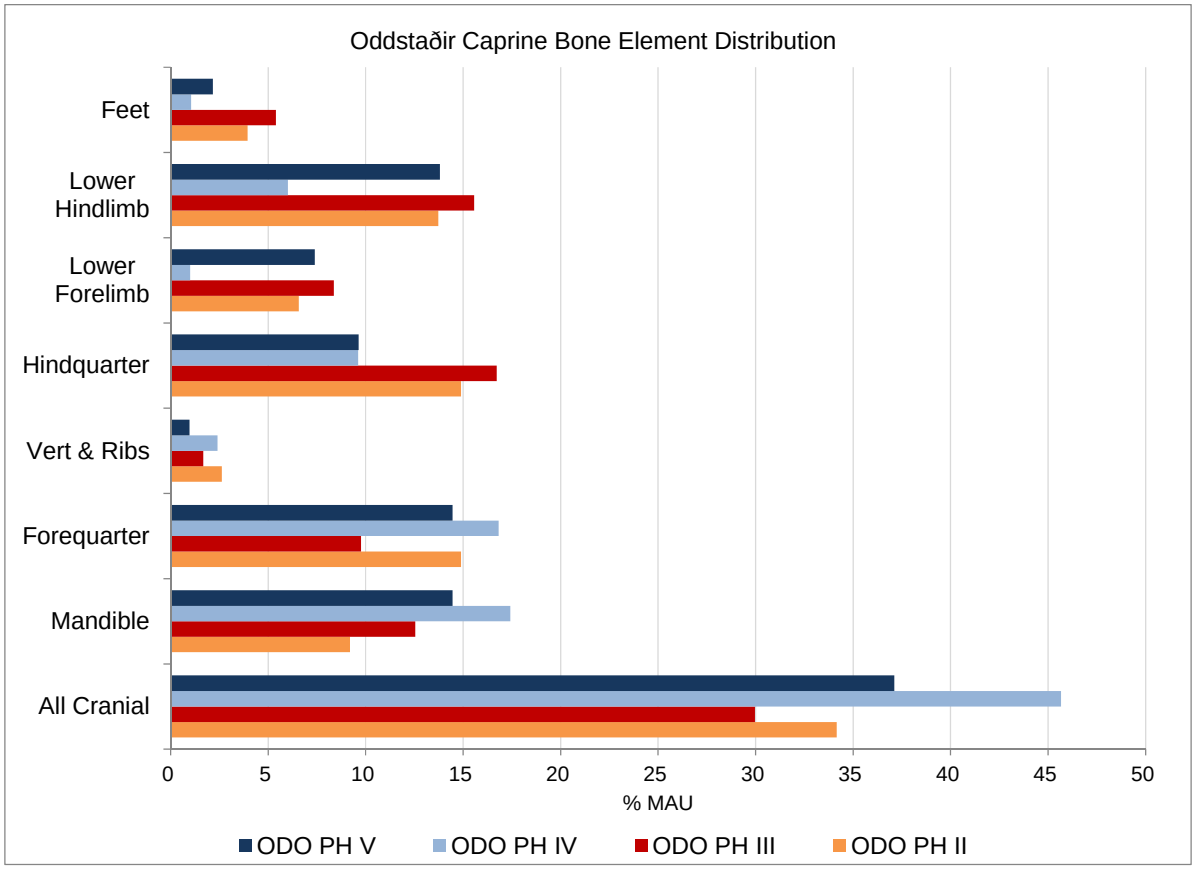



Figure 20. Oddstaðir caprine skeletal element distribution per phase

The general absence of vertebral and rib elements can be explained with the NORSEC laboratory practice of placing sheep and goat sized animals into the MTM group to not mistakenly put other mammals of similar size into the caprine category. A relatively large amount of cranial elements (at least 30 % in all phases) is not surprising, since these elements break easily while the mandibular elements preserve very well and are thus possibly present in higher numbers than other skeletal elements.

It further indicates that the ovi/caprines whose skeletal remains were found at Oddstaðir, TR1, were probably butchered on site and likely also raised on the farm.

This skeletal distribution data does not clearly indicate the lack of a significant element or series of elements correlating with a certain cut of meat. However, the fore-and hindquarter percentages from Phases IV and V are somewhat lower when compared to the cranial elements in comparison with the Phase II and III proportions. Again, the fact that the available data sets are not very large needs to be kept in mind.

*Horse*

| Phasing | Context | Species | Skeletal element | Count |
|---|---|---|---|---|
| Phase V | 104 | Equus caballus | Maxillary fragment | 1 |
| Phase II | 144 | Equus caballus | Distal Phalanx | 1 |
| Phase II | 158 | Equus caballus | Mandibular molar | 1 |
| Phase II | 160 | Equus caballus | Metapodial | 1 |

Table 5. Oddstaðir – contexts producing equine skeletal elements.

Three of the horse bones recovered from TR1 were from the earliest midden deposits; the fourth horse element found was retrieved from Phase V.

*Pigs*

The Oddstaðir midden trench produced 32 pig elements, 23 (72 %) of which were found in the lower midden deposits, and 6 (19 %) in the middle deposits, with an additional 1 (3 %) fromLayer 1 and 2 (6 %) from Layer 2 of the upper midden deposits.

| Midden_phase | Unit | Species | Bone | NISP |
|---|---|---|---|---|
| Phase V | 107 | Sus scrofa | Premolar | 1 |
| Phase V | 142 | Sus scrofa | Incisor | 1 |
| | | | | 2 |
| Phase IV | 119 | Sus scrofa | 2nd Phalanx | 1 |
| Phase III | 121 | Sus scrofa | Innominate | 1 |
| Phase III | 121 | Sus scrofa | Metapodial | 1 |
| Phase III | 122 | Sus scrofa | Metapodial | 1 |
| Phase III | 131 | Sus scrofa | 3rd Phalanx | 1 |
| Phase III | 131 | Sus scrofa | Ulna | 1 |
| Phase III | 134 | Sus scrofa | Astragalus | 1 |
| Phase III | | | | 6 |
| Phase II | 137 | Sus scrofa | Incisor | 1 |
| Phase II | 137 | Sus scrofa | Incisor | 2 |
| Phase II | 139 | Sus scrofa | Metapodial | 1 |
| Phase II | 144 | Sus scrofa | Incisor | 2 |
| Phase II | 144 | Sus scrofa | 2nd Phalanx | 1 |
| Phase II | 144 | Sus scrofa | Tibia | 1 |
| Phase II | 144 | Sus scrofa | Tooth fragment | 1 |
| Phase II | 152 | Sus scrofa | Incisor | 1 |
| Phase II | 152 | Sus scrofa | Molar | 2 |
| Phase II | 153 | Sus scrofa | Incisor | 1 |
| Phase II | 153 | Sus scrofa | Tibia | 1 |
| Phase II | 155 | Sus scrofa | Incisor | 2 |
| Phase II | 155 | Sus scrofa | Tooth fragment | 1 |
| Phase II | 157 | Sus scrofa | Incisor | 1 |
| Phase II | 157 | Sus scrofa | Incisor | 1 |
| Phase II | 157 | Sus scrofa | Molar | 1 |
| Phase II | 157 | Sus scrofa | Ulna | 1 |
| Phase II | 158 | Sus scrofa | 2nd Phalanx | 1 |
| Phase II | 161 | Sus scrofa | Mandibular fragment | 1 |
| | | | | 23 |

Table 6. Oddstaðir pigs by phases.

Table 6 represents the Oddstaðir pig elements by midden phase and context. Contexts listed with more than one element, especially teeth, could have contained several pig skeletons, but it is also likely that several elements of the same pig were found. The pig assemblage seems

to be dominated by maxillary and mandibular elements and thus may indicate that these animals were kept at Oddstaðir and possibly culled on site.

*Dogs*

Only one set of elements belonging to the same individual was retrieved from TR1. A fragmentary maxilla from context [108] of Phase V (late 13th to late 14th c.) was found to articulate with left and right premaxillary fragments, part of the occipital bone, part of an innominate fragment, and one lumbar vertebra. Upon the author's closer examination, this skull closely resembles the one retrieved from the Gásir later medieval context [2812] (Harrison 2009), which most likely belongs to a small sized dog, likely a lap dog (see also Harrison et al. 2008 for discussion on the Gásir dogs).


Figure 21. Oddstaðir canine maxilla from context [108] on top, compared to polar fox maxilla from Hrísheimar in Mývatnssveit.

As demonstrated in figure 21, the Oddstaðir dog maxilla retrieved from Phase V very much resembles the contemporary dog skull from context [2812] excavated from the contemporary trading site Gásir, about 20 km further northeast. Clearly, the Hrísheimar fox maxilla is more delicate and generally smaller than the one from the small Oddstaðir dog, utilized for companionship rather than herding purposes (Harrison et al. 2008).

Figure 22. The Arnolfini wedding by painter Jan van Eyck, showing a wealthy merchant couple and their little dog (http://www.ibiblio.org/wm/paint/auth/eyck/arnolfini/arnolfini.jpg).

Visiting traders, possibly women (and seemingly a few Icelandic aristocrats) made fashion statements with these imported lap dogs, but apparently Icelanders never replaced the larger more utilitarian sheep herding breed of the Viking age (Harrison et al 2008).

The picture below is from the 15th c. and was painted by van Eyck. The small dog shown here is maybe typical as a pet for medieval aristocracy, women and men. This Italian merchant called Arnolfini and his wife lived in Bruges, the painting was made in 1434 (http://www.nationalgallery.org.uk/paintings/jan-van-eyck-the-arnolfini-portrait).

Table 7 presents a list of contexts containing faunal elements with dog gnawing marks (n=7) and potential dog gnawing marks (n=8). Contexts from *Phase IV* contained the most bones potentially bearing dog gnawing marks, indicating that dogs may have had easier access to the bone materials from this phase than others. However, the total amount of elements with dog gnawing marks is too small to argue for a faunal collection significantly altered by dogs (see McGovern et al 2009 for a discussion on dogs´ access to certain areas in the Hofstaðir household).

| Context | Midden phase | dog tooth marks | possible dog tooth marks |
|---|---|---|---|
| 104 | Phase V | | 1 |
| 108 | Phase V | 2 | |
| 119 | Phase IV | 2 | 6 |
| 120 | Phase III | 1 | |
| 144 | Phase II | 1 | 1 |
| 152 | Phase II | 1 | |
| Total | | 7 | 8 |

Table 7. Contexts with faunal elements displaying dog tooth marks and potential dog tooth marks.

**Wild Mammals**

The Oddstaðir archaeofauna analyzed to date only revealed 10 seal elements, none of which could be analyzed to species beyond the very general phocid category.

*Seals*

A total of ten unidentifiable seal elements were retrieved from Phases II and III, the Viking Age and early medieval occupation phases from TR 1.

| Phasing | Context | Species | Bone | Count |
|---|---|---|---|---|
| Phase III - ca. mid-11th - mid 12th c. | 120 | Phocid | Rib | 1 |
| Phase III - ca. mid-11th - mid 12th c. | 131 | Phocid | Cervical vertebrae | 1 |
| Phase II - ca. late 9th - mid 11th c. | 140 | Phocid | Thoracic vertebrae | 2 |
| Phase II - ca. late 9th - mid 11th c. | 140 | Phocid | Rib | 1 |
| Phase II - ca. late 9th - mid 11th c. | 140 | Phocid | Metacarpal | 1 |
| Phase II - ca. late 9th - mid 11th c. | 144 | Phocid | Rib | 3 |
| Phase II - ca. late 9th - mid 11th c. | 157 | Phocid | Vertebral fragment | 1 |
| Total | | | | 10 (5) |

Table 8. Phocid remains by phase and context.

All seal elements were placed into a general phocid family category, as none of them displayed specific enough morphological signatures. The elements are of Harbor Seal (*Phoca vitulina* (L.)) size. As is true also for the gray seals (*Halichoerus grypus* (L.), harbor seals give birth to their young on Iceland's sandy beaches along coastal strips.

In Iceland, harbor seals were predominantly netted in spring (Kristjánsson 1989:447), and there used to be a series of known seal hunting areas along Eyjafjörður (Kristjánsson 1989:315) where these individuals may have been caught.

Although no obvious skeletal articulation was detected during excavation, the four phocid elements from context [140] may be from one individual, as may be the three phocid ribs recovered from context [144], in which case there would only be three individuals from the earliest midden phase, and two from the next one, bringing the Oddstaðir seal count to a total of five.

A distinct lack in seal elements in the last occupation phase at Oddstaðir, between ca. late 13th and late 14th c., could potentially indicate that the site was no longer included in or focused on contributing to the communal seal hunting and possibly paid its dues to the parish, the monastery, or even the bishopric differently.

**Birds**

From a total of 109 avian skeletal elements, 38 could be analyzed to family or species level.

| Oddstaðir | Midden Phases | | | | | |
|---|---|---|---|---|---|---|
| Bird species count | Phase II | | Phase III | | Phase V | |
| Identified Bird Species | NISP | % NISP | NISP | % NISP | NISP | % NISP |
| Migratory Waterfowl | | | | | | |
| Anser species (Goose family) | 1 | 5 | 8 | 44 | | |
| Sea birds | | | | | | |
| Common gull (*Larus canus*) | 1 | 5 | | | | |
| Gull sp. (Larus sp.) | 2 | 11 | 2 | 11 | | |
| Black-headed gull (*Larus ridibundum)* | | | 1 | 6 | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Razorbill (*Alca torda*) | 1 | 5 | | | | |
| Murre species (Uria species) | 9 | 47 | 5 | 28 | | |
| Auk family (Alcid familie) | 4 | 21 | 2 | 11 | 1 | 100 |
| Non Migratory Terrestrials | | | | | | |
| (Ptarmigan/grouse (*Lagopus muta*) | 1 | 5 | | | | |

Table 9. Oddstaðir - Bird Species identified to family or species level.

The majority of the analyzed Oddstaðir avian elements belonged to sea birds, specifically the auk family species. Both Uria species' skeletal elements are very similar to each other and were thus placed into the Murre species category rather than labeled as either Guillemot (*Uria aalge*) or Common Murre (*Uria lomvia*). These sea birds can be found along the sandy beaches and coastal waters of Eyjafjörður (and all of Iceland) in the winter (Hilmarsson 2000:30-31). These were potentially a seasonal food species to improve the available winter diet.

Other sea bird elements found in the midden trench were from gull species, possibly scavengers killed on site and dumped on the garbage rather than eaten. These wild species were retrieved from Phase II and III deposits. Geese, especially during the Early Middle Ages (Phase III) seem to have been the migratory waterfowl of choice – they could have even been domesticated birds kept on the Oddstaðir farm rather than caught while on their seasonal round.

The high medieval layers did not produce any bird elements identifiable to species or family level, and only one auk element was identified from the later medieval deposits. One ptarmigan element retrieved from the earliest deposits indicates that this terrestrial fowl was possibly available to the Oddstaðir residents, at least during the early occupation of the site. More analysis is necessary to gain a better idea on bird consumption at Oddstaðir.

A distinct preference for sea birds over other species was found at Oddstaðir which is located far enough inland to suggest that the residents made trips to the coast during the winter to possibly

partake in sea bird hunting exercises. Alternatively, these seabirds were part of the local food exchange and supply during the Settlement and following early medieval phases.

## Fish

### *Marine Fish*

The total Oddstaðir fish assemblage analyzed at this date consists of marine species. Even though the Hörgá is known as excellent Char and Trout fishing river, no fresh water fish bones were found in the Oddstaðir archaeofauna (http://www.angling.is/en/waters/silungsveidiar/a-nordausturlandi/6479/). This lack in freshwater fish bones among all the Hörgárdalur faunal remains (see Harrison 2009, 2011a, b) poses the question of whether the Hörgá was not as rich in fish during the Viking Age and medieval times, and whether this had something to do with glacial water properties. Restrictions on access to the fresh water resources (and terrestrial bird resources) could also have been implemented in this area. Another option could be that Oddstaðir land simply did not reach the Hörgá and therefore its residents could not fish there.

The Viking Age (Phase II) marine fish assemblage contained 384 total fish elements, with 14 speciated to Cod (*Gadus morhua* (L.)), 9 to Haddock ((*Melanogrammus aeglefinus* (L.)), 6 to Saithe (*Pollachius virens* (L.)), 123 to the gadid category, and 2 elements were determined as Halibut (*Hippoglossus hippoglossus* (L.)). Presence of these elements suggests occasional consumption of marine fish at Oddstaðir.

The Oddstaðir medieval fish assemblages also consisted of marine fish, with 329 elements present in the early medieval layer (Phase III). Of those, 25 could be speciated to Atlantic Cod (*Gadus morhua* (L.)), 10 to Haddock ((*Melanogrammus aeglefinus* (L.)), another 16 to Saithe (*Pollachius virens* (L.)), and 2 to Cusk (*Brosme brosme* (L.). A total of 105 elements were

assigned to the gadid family, and 5 could be identified as Halibut (*Hippoglossus hippoglossus* (L.)).

The upper midden phases, Phases IV and V contained lower amounts of marine fish remains, with a total of 104 and 102 fish elements counted, respectively.

Phase IV, the high medieval faunal collection, contained 3 elements of Saithe (*Pollachius virens* (L.)); 26 elements placed into the gadid category.

In Phase V, the later medieval faunal collection, 1 element was speciated to Cod (*Gadus morhua* (L.)) element, 14 to Haddock (*Melanogrammus aeglefinus* (L.)), and 21 to the gadid category.

From the upper midden fish collections, only gadid remains could be identified to species or family level, and species diversities were not as high as in the lower and middle midden deposits.

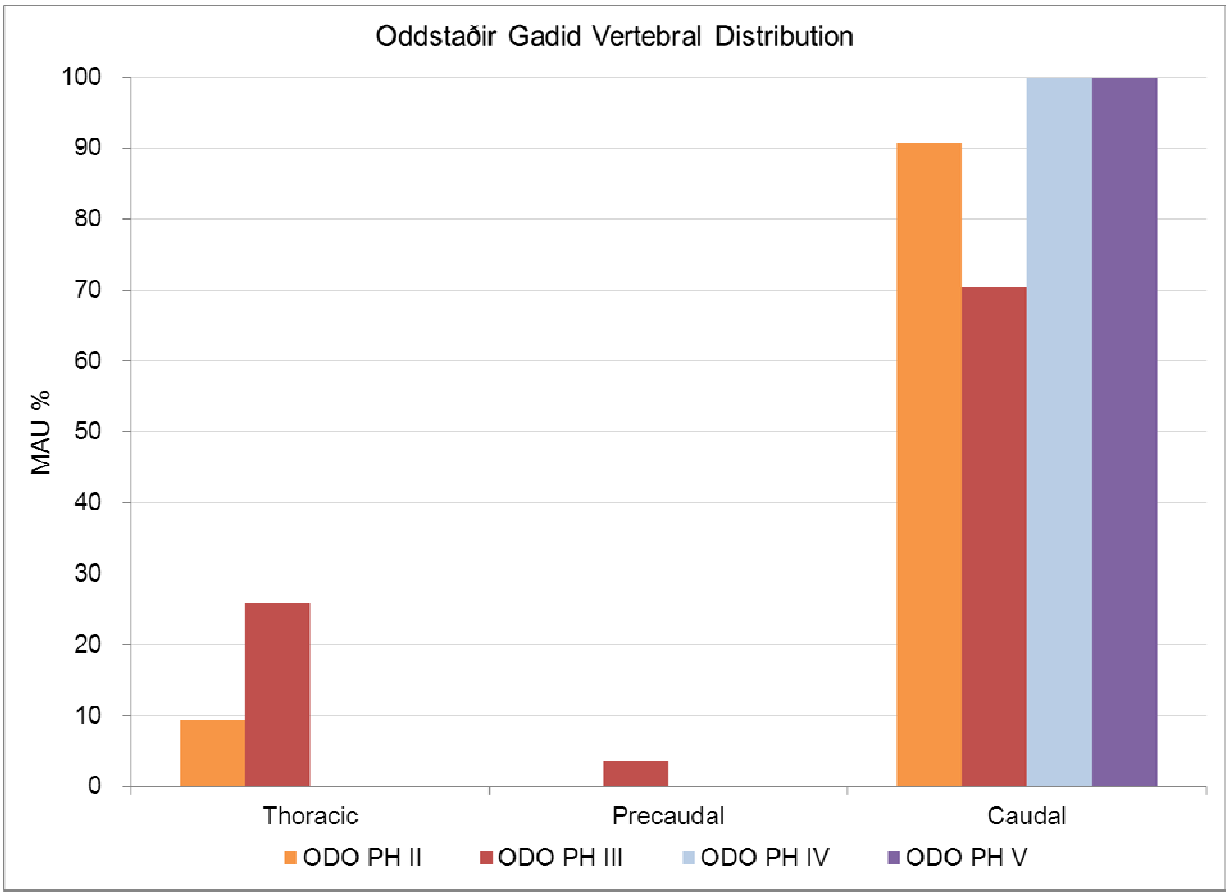



Figure 23. Oddstaðir gadid vertebral series distribution.

The Oddstaðir gadid vertebral series distribution analysis indicates that in the high and later medieval periods, only the caudal vertebrae made it to the site, while some thoracic (Phase II and III) and a few precaudal (Phase III) were also present in the earlier occupation deposits.

Although Cod, Haddock, and Saithe were all present in relatively equal numbers as total counts, Haddock occurred most consistently throughout the occupation phases, indicating that this species may have been in use for internal trade from the very beginning of domestic fish trade in Iceland (for a discussion on early Icelandic fish trade, see Perdikaris & McGovern 2008:76).

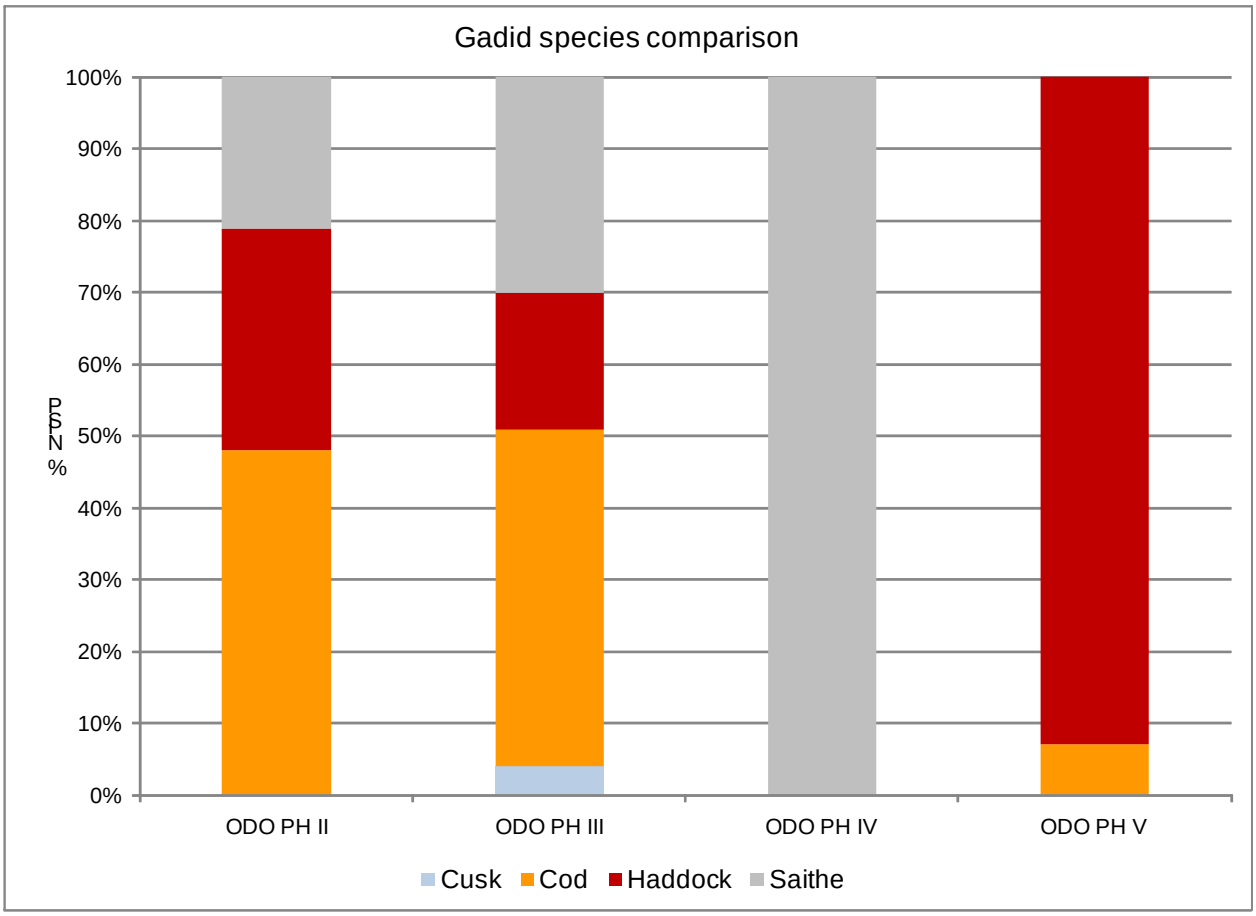



Figure 24. Oddstaðir gadid species comparison.

The graph in figure 24 displays a shift from utilization of various gadid species during the earlier occupation phases to more focused species use later on. The NISPs are not high enough to argue for a commercial fish production responsible for the species distribution in the high and later medieval occupation phases, but certainly there was higher emphasis on certain gadids than others, with cod declining in relative numbers (for discussion on early medieval gadid trade to Icelandic inland sites, see for example Perdikaris & McGovern 2008:76). The later medieval gadid species data suggest a haddock product brought to site in higher numbers than cod fish; more work on gadid skeletal distribution patterns and species utilization remains to be done. This initial work suggests typical inland trading of gadids other than Cod (and especially Haddock)

were more likely to be consumed at inland sites, with potentially Cod reserved for export purposes (Perdikaris & McGovern 2008).

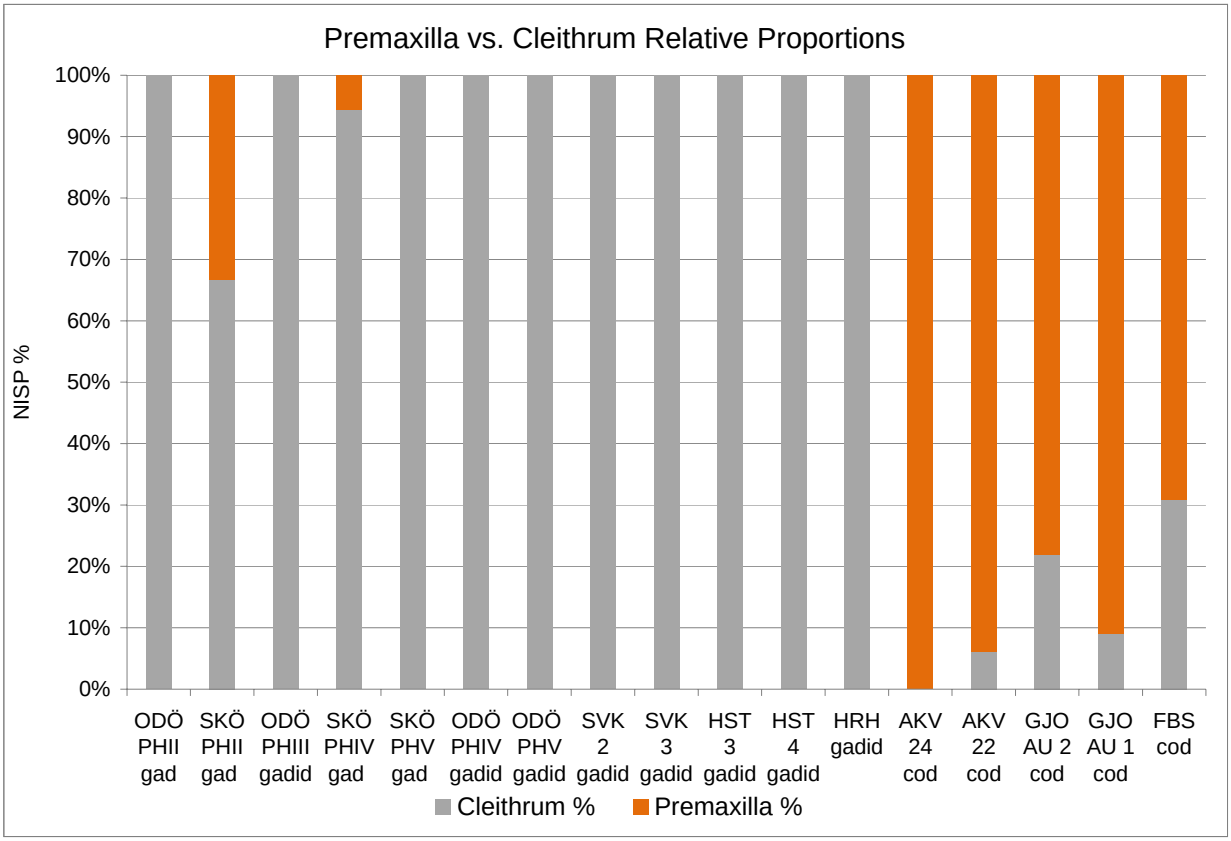



Figure 25. Gadid premaxilla vs. cleithrum relative proportions.

The graph in figure 25 compares the inland Oddstaðir farm site with several other sites that exhibit a certain gadid skeletal element profile: the Sveigakot, Hofstaðir, and Hrísheimar data presented here are from Viking Age deposits of farmsteads in Mývatnssveit, containing considerable proportions of marine fish, especially gadids (Perdikaris and McGovern 2008). These inland sites are compared to some from the coasts of the Icelandic West Fjords. Akurvík is a fishing station with medieval cultural deposits from the 12$^{th}$ – mid-15$^{th}$ c, and Gjögur is a medieval fishing farm with access to coastal areas (Krivogorskaya et al. 2005, 2006). Finnbogastaðir is an early modern coastal farmstead whose inhabitants may have mostly used a dried fish product for subsistence (Edvardsson et al. 2004). The gadid fish signatures for all these

sites have been well researched and documented and they can thus be utilized for a comparison with the ones from the inland sites Oddstaðir and Skuggi in Eyjafjörður, although there may not be an overlap in time for the sites from the West Fjords (Perdikaris and McGovern 2008:66-67). The premaxilla/cleithrum proportion comparisons in figure 25 indicate that far more gadid post-cranial bones than cranial elements were present in the Oddstaðir faunal collection during all phases (i.e. Perdikaris and McGovern 2008, McGovern et al. 2009). Premaxillae elements are skull fragments usually found with fish skulls in processing sites such as Akurvík, Finnbogastaðir, and Gjögur in the Westfjords. Cleithra are skeletal elements in the pectoral area of the fish and frequently travel with a processed fish product to consumer inland sites such as the Mývatnssveit sites of Hofstaðir, Hrísheimar, Sveigakot, Oddstaðir and also Skuggi in Hörgárdalur.

Oddstaðir lies about 20 km inland from the closest marine waters, and the site's gadid skeletal profiles so far suggest an occasional supply with a processed marine fish product (gadid species and a few Halibut in the earlier phases) rather than a fresh fish brought to the site and processed there.

Figure 26. Haddock gaming piece from context [137], Phase II (scale: 1 square = 1 cm).

This gaming piece made from Haddock cleithrum was found in the Phase II midden deposits (context [137]) and indicates that people living at Oddstaðir may have played board games during their leisure time. Six unworked Haddock cleithra were also found in these deposits; this artifact might have been saved for carving upon consumption of a fish meal either at Oddstaðir or elsewhere. Haddock cleithra were in use for carving objects until very recently (Kristjánsson V. 1989). At present time, it is not known if this is a chess piece or gaming piece used for a different game.

**Mollusks**

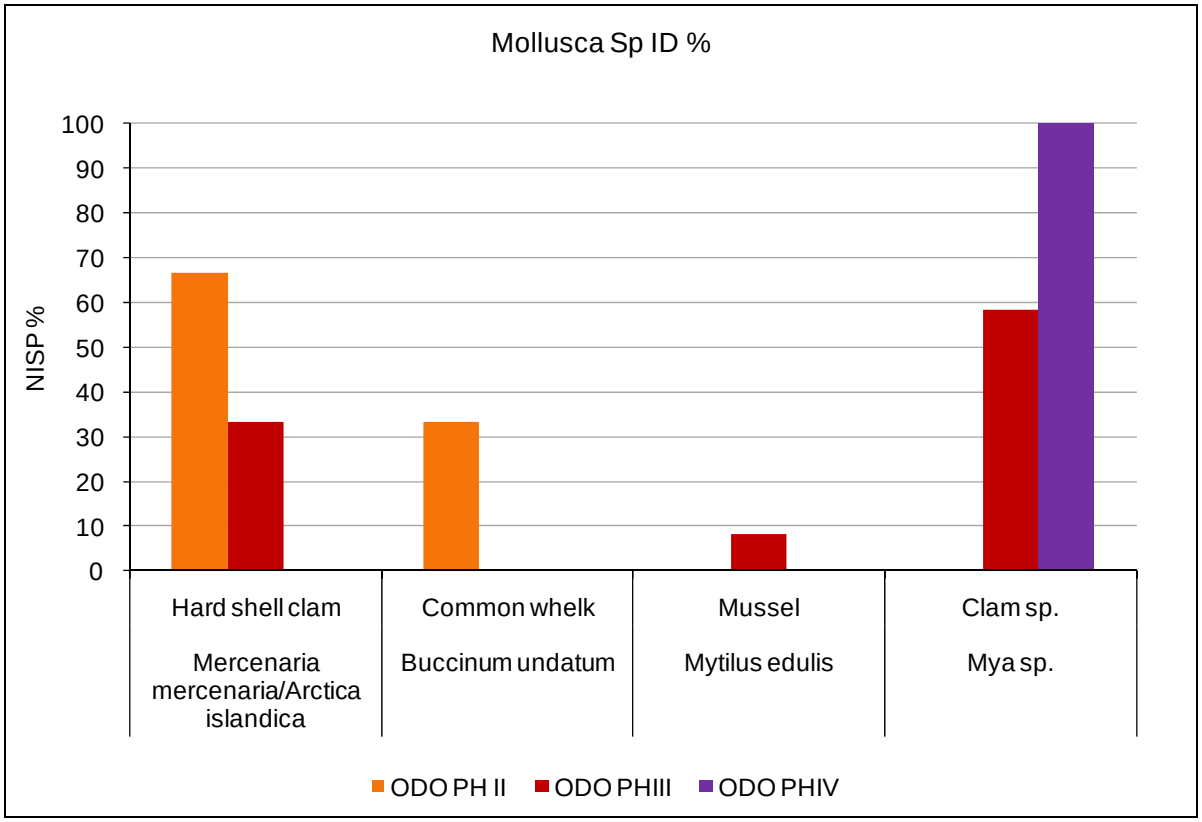



Figure 27. Mollusks

The mollusks identified to species/family level are all native to Icelandic waters and were all most likely consumed by humans rather than used as bait (Kristjánsson I, pp 147-151). Only

one speciated mollusk was collected from the Phase IV, and none from Phase V. The lowest midden deposits (Phase II) contained three identifiable mollusks, and Phase III contained 12. The total Oddstaðir mollusk assemblage identified to family or species level therefore was very small.

Considering the geographic location, the hard-shell clam remains are likely those of *Arctica islandica*, an edible, long-living, intertidal clam still used commercially in Iceland; caught also in Eyjafjörður (www.fisheries.is/ main-species/invertebrates/ocean-quahog/). Traditionally, *Arctica islandica* (Isl. *kúfskel/kúskel)* was one of the most prevalent shellfish species collected for human consumption Kristjánsson I:144-151). The shells were also used as scoops. The complete absence of shellfish in Phase V, the late 13$^{th}$ to earl 15$^{th}$ c. deposits, and the minimum amount present in Phase IV, the mid-12$^{th}$ to late 13$^{th}$ c. deposits indicates that this marine resource had become obsolete, possibly because of a change in local exchange patterns.

**Burning**

Throughout all occupation phases, the majority of the Oddstaðir bones were not burnt, with generally less than 20 % of elements burnt or scorched. The Phase V deposits are an exception, with close to 35 % of the faunal material exposed to fire, and almost 1/3 (31.6%) of the analyzed bones calcined, or burnt white. When a bone is exposed to high temperatures for a significant amount of time, all its organic components break down and only the inorganic ones remain.

Fuel ash data from micromorphological and soil chemistry analysis potentially helpful in explaining these patterns are still being processed.

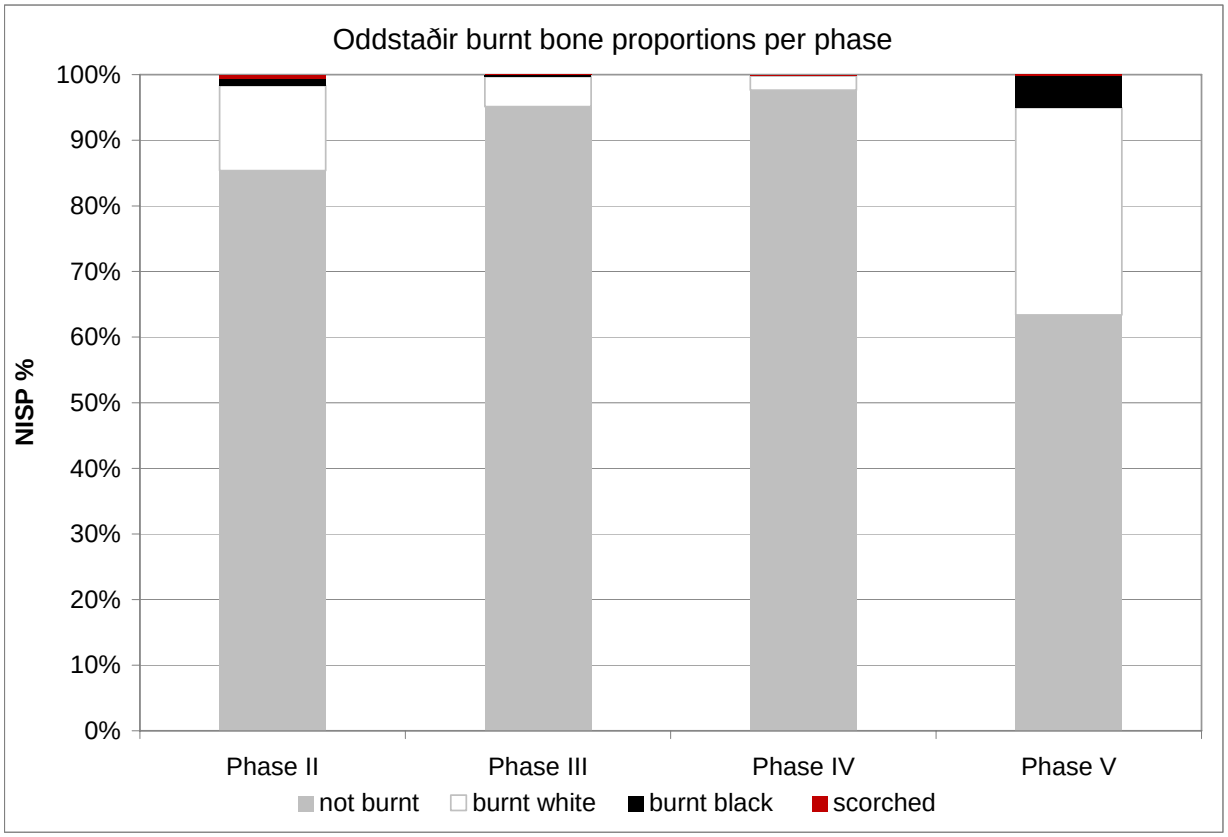



Figure 28. Percentage of burnt bones per context.

**Butchery**

The prevalent butchery signatures found on the Oddstaðir skeletal remains were chopping and splitting. The long bone fragments, and especially caprine metapodia from this collection seem to have been split for marrow consumption rather than bi-perforated.

Out of the current Oddstaðir TNF of 9,055, 3.27 % (296 elements) bore potential butchery marks, including chop marks, knife marks, split elements, and impact marks from tools used for splitting bone.

Only two (0.04 %) of the 49 Oddstaðir caprine lower leg bones (metapodia) had one hole drilled either on the proximal or distal end, possibly an early if likely failed attempt to facilitate marrow

extraction. Both elements were whole elements with fused distal ends and were retrieved from the same context (104) from Phase V, associated with the late 13th to late 14th c. midden deposits. The rest of the site´s lower leg bone elements were all split, often displaying impact marks. None of the Oddstaðir metapodia displayed the bi-perforations typical for later medieval North Atlantic faunal assemblages (with exception of Greenland). The practice of drilling holes into the top of a metapodial epiphysis and one right above the distal epiphysis by knife to suck out the marrow while leaving the bone intact for artifact production or children's toys started around AD 1150-1200 (Bigelow 1985). The Oddstaðir metapodials with only one perforation could have also been intended for a special, if unknown use other than bone marrow extraction.

**Concluding remarks**

This Oddstaðir faunal report clearly indicates that throughout the site´s known occupation, a serious change in farm management and site economy seems to have occurred at some time during the 13th c., and likely late in that century. By then, the Gásir trading station had likely been in operation for quite some time already as indicated by documentary resources. Securely dated faunal materials from Gásir's cultural deposits that were excavated so far point at least to a later 13th - early 15th c. activity period. Earlier Gásir cultural deposits remain unexcavated at this point, as this undertaking would have required large funding due to the waterlogged and thus very fragile archaeology (i.e. Roberts 2006).

One of the main questions revolving the Oddstaðir farm is whether it was an independent farm or a tenant farm. And if the latter was the case, then at which time did this happen? Although more information on site status from the Oddstaðir material remains would be desirable, the finds report does not list an abundance of high status artifacts, neither of more common artifacts (Gísladóttir et al 2010:61-64 in Harrison et al 2010).

From the Oddstaðir archaeofauna available to date, it is quite obvious, that the Oddstaðir farm residents were not as poor tenants as were their southern neighbors at Skuggi, just across the Hörgá River (Harrison 2010), but that they were either independent farmers of relatively prosperous standing in the local hierarchy, or that they were made to look as such through a controlled effort by their landlords who were instituting a specialized farming strategy. This would have been predominantly in form of prime age beef and mutton production, with possibly a portion of the farm´s sheep herd held for wool harvesting and cattle dairying. Since goats were retained at Oddstaðir through the late medieval period, these animals could have also been utilized for meat production, again allowing the farmers to use some of their sheep as wool animals. The fact that a small amount of pig elements was found in the later occupation phases may also hint toward a meat production enterprise, with pork possibly sent to Gásir, where pork cuts were indeed consumed (Harrison et al 2008). No pig elements were retrieved from any of the Möðruvellir occupation phases (Harrison 2011b).

The Oddstaðir caprine skeletal element distribution indicates that a certain focus on meat surplus for exchange may have been in place during the entire occupation time, again with goats likely specifically kept for this purpose and sheep added to the herd designated for meat-production as needed. During the earlier occupation phases, this meat surplus could have been used in exchange for the observed marine resources. During the 13$^{th}$ and 14$^{th}$ c., mutton was still likely used for exchange purposes, but no longer solely for site provisioning with marine resources as those declined significantly during that time. Since at least the inland fish trade was quite firmly established by high medieval times (McGovern et al 2009, Perdikaris and McGovern 2007, 2008), a significant increase in fish price versus mutton seems not to be a plausible explanation for this continuation of caprine skeletal elements distinctively missing on site and

fish species distinctively declining. Rather, it seems more likely that the focus or nature of exchange had shifted by the 13th c. This marks also the period when beef seems to have been produced for exchange. Does this potential change in exchange patterns indicate a shift in customers, with the meat cuts directed specifically toward Möðruvellir or Gásir instead of the general community?

No matter what the farm status was, the faunal remains suggest that whoever owned this farm made the conscious decision to focus on meat production over a farming economy primarily relying on wool surplus or dairy products in the 13th and 14th c. This is not to exclude that there was at least some wool production at Oddstaðir during its High and Later Middle Age occupation phases, but little to no evidence for dairying activities is available. During Oddstaðir's earlier occupation, goats may have been utilized primarily for meat, whereas sheep were utilized for both wool and meat production.

During the earlier occupation phases, from ca. late 9th through mid-12th c., less focus seems to have been placed on a farm economy focused on meat surplus production. Rather, the archaeofauna indicates some focus on wool production over meat production, as well as a generally more diversified species management. During these earlier phases, marine species, including sea birds seem to be of great importance to the farm, indicating the cows and sheep meat may have not been as readily utilized as later on.

Despite the relatively small gadid element numbers that were recovered from Oddstaðir, the early marine fish assemblage indicates that the site fish supply may have involved some filets of different gadid species (and occasional halibut) that had been dried mostly in the round. The skeletal element data analyzed so far indicate that this changed slightly during the later phases, with less overall fish elements present in the archaeofauna. Later on, that assemblage was

dominated by a single cod-fish species (Saithe in the high medieval deposits, and Haddock in the later medieval deposits), likely in form of fish filets dried in the flat. This shift could indicate presence of commercialized fish products during the later occupation phases, and that gadids other than cod brought to Oddstaðir were likely results of an inland trade system in place, with cod reserved for the export marked (Perdikaris & McGovern 2007, 2008).

Again, this shift in subsistence strategy and farm economy seems to have happened around the time international traders frequented Eyjafjörður, through Gásir. If the Öxnhóll farm indeed owned Oddstaðir during the entire time when faunal, environmental and a sparse material (all but two Viking Age glass beads could not safely be assigned to period) record are available, this parish farm changed or tightened its control on the Oddstaðir farm management in response to something during the 13th c., very likely the Gásir trade connections to the larger North Atlantic and therefore medieval European realm. If Oddstaðir was an independent farm, its occupants made a very significant decision to partake in the Gásir meat exchange, possibly for enhanced social status, or in return for high prestige material goods, but likely also for some sort of access to the international medieval world, if only by association. These material goods seem currently invisible in the midden materials, however, and if this latter option were the case, they then may have been supplied in form of organics, i.e. grains. The lap dog skeleton recovered from the latest occupation phase could indeed be such a high prestige good ending up at Oddstaðir. If Öxnhóll was the chief benefactor of this exchange, the luxury goods might be found there.

If the Oddstaðir bovid and caprine skeletal element remains associated with choice meat cuts that are missing from its midden collection were purposed for Gásir rather than consumed at Öxnhóll itself, and high prestige goods given to either Öxnhóll or Oddstaðir in return might have

not been of the kind that would survive in the archaeological record but could have been either in form of organics or just plain status accreditation and maintenance among the local and regional community. At any rate, the Oddstaðir archaeofauna provides another piece of the puzzle informing us that Gásir trade and the foreign merchants with their goods, information and experience surely had an impact on the hinterlands area.

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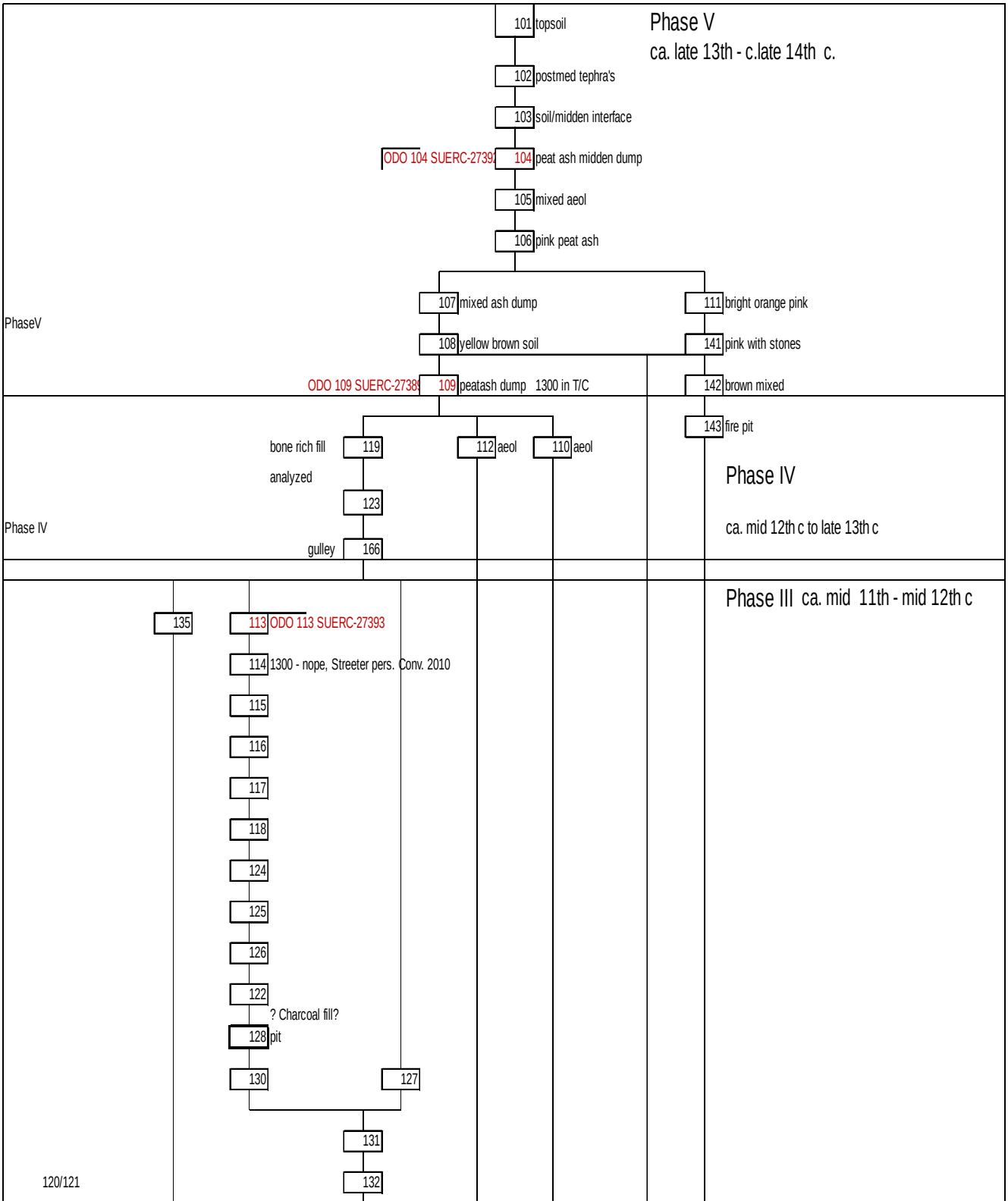
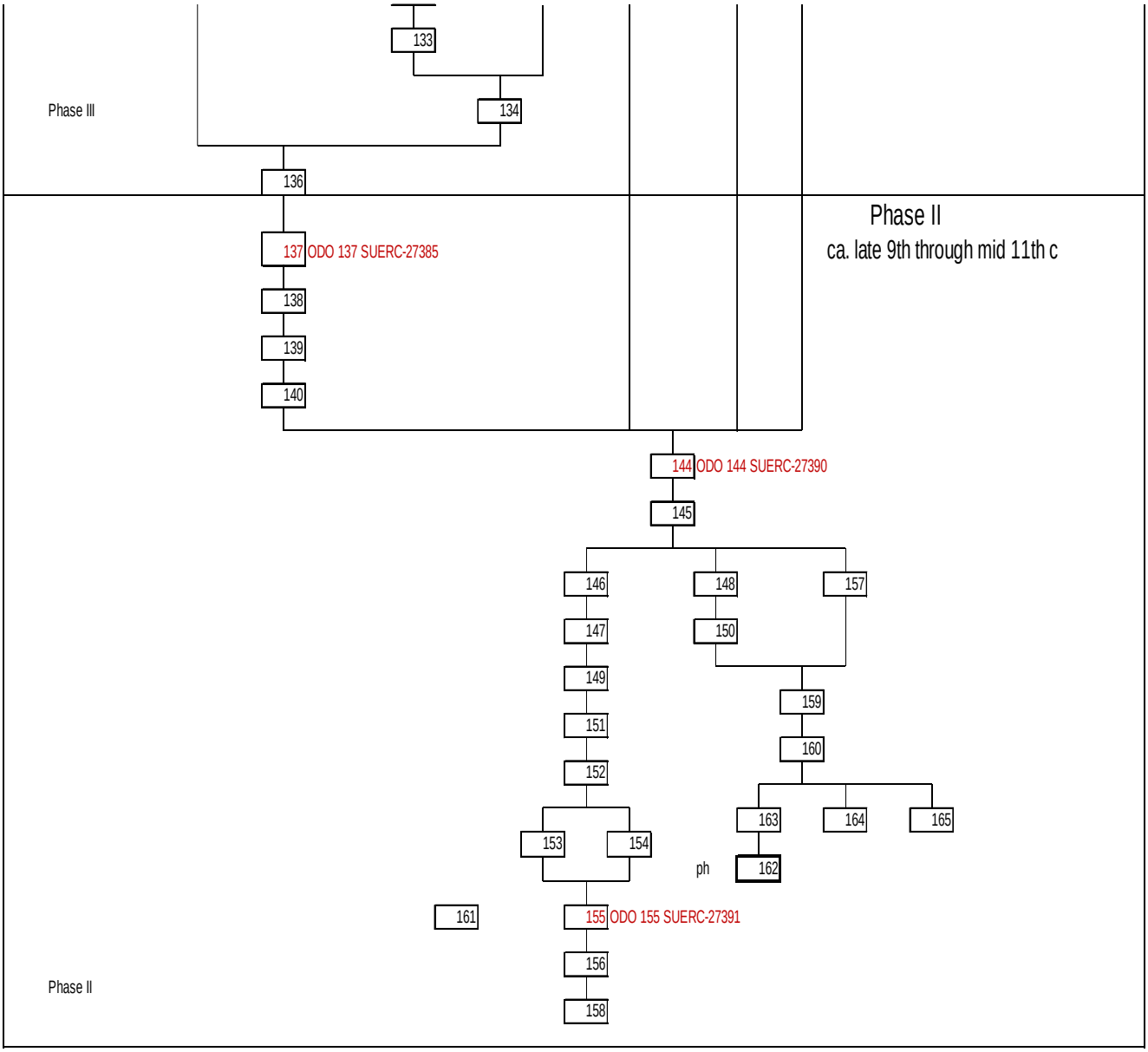
Appendix 1 – Oddstaðir Harris Matrix (H.M. Roberts)




Phase III
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Phase II
ca. late 9th through mid 11th c
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155 ODO 155 SUERC-27391
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Phase II