

# The Faunal Remains from Two Hearth-Row Sites in Pasvik, Arctic Norway

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## Abstract

At archaeological excavations of rectangular hearth-row sites in Pasvik, Arctic Norway, rich animal bone assemblages have been found that are dated to AD 1000–1350. Reindeer predominates among the represented species, followed by fish as the second most important category. Some bone elements of sheep have also been identified suggesting an early example of sheep herding. Indications of seasonality point to winter activities at these hearth-row sites.

## 1 Introduction

This paper presents some new results based on the faunal remains from two quite recently investigated hearth-row sites in Pasvik, Arctic Norway (Fig. 1). The specific features at these sites consist of large rectangular hearths organized in a linear pattern (Halinen et al. 2013; Hamari 1996; Hedman 2003; Hedman & Olsen 2009). Radiocarbon dating indicates that the hearths were constructed and used within the period AD 1000–1350 (Hedman et al. 2015).

The hearth-row sites in the Pasvik area are unique with respect to their well-preserved faunal remains. The faunal material from the different hearths consists of more than 17,000 fragments with a total weight of 16 kg (table 1). This is no doubt a comparatively large assemblage within this corpus. The amount of faunal material found at Sámi sites is often very small due to poor preservation conditions for bone fragments in acid soil (Mulk 1994: 176; Sommerseth 2009: 256).

In contrast with most other contemporary sites, Brodtkorbneset and Steintjørna are rich in bone finds and there are also unburnt bone fragments in the faunal assem-

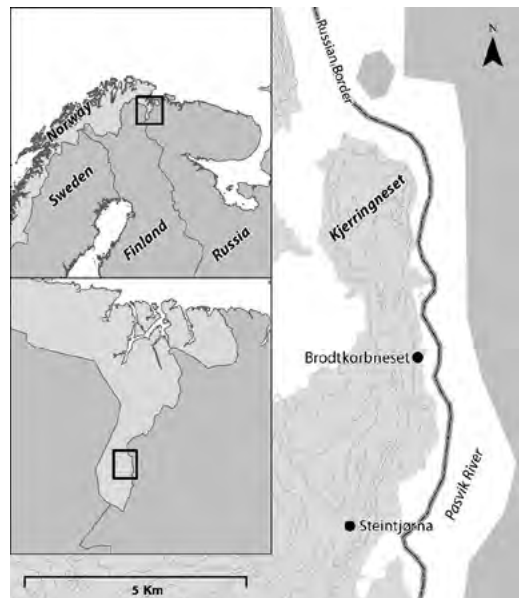


Figure 1. Location of the hearth-row sites in the Pasvik area. Map: Johan E. Arntzen.

blages (Fig. 2). However, the vast majority of the fragments from both sites are burnt and mostly found within the hearths. The amount of bones from the separate hearths differs, from around 60 g to more than 7 kg. The bone fragments are consistently very small. This will, of course, limit the available

| Site             | Hearth | Number of fragments    | Total weight in gram |
|------------------|--------|------------------------|----------------------|
| Brodtkorbneset   | H1     | 141                    | 59,2                 |
| Brodtkorbneset   | H2     | 165                    | 335,1                |
| Brodtkorbneset   | H3     | 5240                   | 7604,0               |
| Brodtkorbneset   | H4     | 1369                   | 563,5                |
| Brodtkorbneset   | H5     | 3447                   | 2741,8               |
| Brodtkorbneset   | H6     | 546                    | 311,1                |
| Brodtkorbneset   | H7     | 264                    | 458,5                |
| Steintjörna      | H1     | 494                    | 188,5                |
| Steintjörna      | H2     | 572                    | 384,3                |
| Steintjörna      | H3     | 2254                   | 2317,2               |
| Steintjörna      | H4     | 775                    | 335,9                |
| Steintjörna      | H5     | 666                    | 325,3                |
| Steintjörna      | H6     | 672                    | 170,9                |
| Steintjörna      | H7     | 230                    | 203,1                |
| Steintjörna      | H8     | 228                    | 141,2                |
| <b>Total Sum</b> |        | <b>17063 fragments</b> | <b>16139,6 gram</b>  |

Table 1. Amount of animal bone fragments in the different hearths at Brodtkorbneset and Steintjörna.

information. Still, data from the osteological analysis, such as abundance of different species, distribution of anatomical elements, age and gender assessment etc., provides useful contributions to discussion about subsistence and seasonality (Hedman et. al. 2015; Vretemark 2009; 2010; 2013a; 2014).

There is a clear predominance of reindeer in the assemblages from the hearths (Table 2). No less than 87 % of the identified fragments were identified as reindeer. The amount of fish bones are also quite impressive with a total of around 12 %. The remaining 1 % represents stray finds of birds and some fragments of arctic fox, wolf and sheep/goat.

## 2 Anatomical distribution of reindeer bones

The variation in occurrence of different bone elements in the hearths mirrors various activities that took place at the dwelling site. There are, however, problems in connection with the interpretation of the anatomical distribution because of several factors that



Figure 2. Well-preserved reindeer bone elements from hearth H3 at Brodtkorbneset. Photo: M. Vretemark.

will bias the results. Fragments from more compact bone elements will have a greater chance to be preserved than others and some bones are easier to identify because of their specific morphology or texture, for example cranial fragments or ribs.

The identified reindeer bones from the hearths at Steintjörna and Brodtkorbneset represent different parts of the carcass (Fig. 3). Bones from meaty parts as well as

|   | Brodtkorbneset |    |      |     |     |    |     | Steintjörna |     |     |    |     |    |    |    | Sum         |
|---|----------------|----|------|-----|-----|----|-----|-------------|-----|-----|----|-----|----|----|----|-------------|
|   | H1             | H2 | H3   | H4  | H5  | H6 | H7  | H1          | H2  | H3  | H4 | H5  | H6 | H7 | H8 |             |
| Reindeer<br><i>Rangifer tarandus</i>    | 82             | 70 | 1243 | 204 | 504 | 85 | 105 | 47          | 142 | 552 | 94 | 135 | 50 | 59 | 68 | <b>3440</b> |
| Sheep/goat<br><i>Ovis/Capra</i>         |                |    | 17   |     | 1   |    |     |             |     | 1   | 1  |     |    |    |    | <b>20</b>   |
| Arctic fox<br><i>Alopex lagopus</i>     |                |    |      |     | 7   |    |     |             |     |     |    |     |    |    |    | <b>7</b>    |
| Wolf<br><i>Canis lupus</i>              |                |    |      |     | 1   |    |     |             |     |     |    |     |    |    |    | <b>1</b>    |
| Wild duck<br><i>Anadinae</i>            |                |    |      |     | 1   |    |     |             |     |     |    |     |    |    |    | <b>1</b>    |
| Willow grouse<br><i>Lagopus lagopus</i> |                |    | 1    |     |     |    |     |             |     |     |    |     |    |    |    | <b>1</b>    |
| Black grouse<br><i>Lyrurus tetrix</i>   |                |    |      | 1   |     |    |     |             |     |     | 1  |     |    |    |    | <b>2</b>    |
| Capercaillie<br><i>Tetrao urogallus</i> |                |    |      |     |     |    |     |             | 1   |     | 1  |     |    |    |    | <b>2</b>    |
| Hazel grouse<br><i>Bonasa bonasia</i>   |                |    |      |     |     |    |     |             |     | 5   |    |     |    |    |    | <b>5</b>    |
| Common whitefish<br><i>Coregonus sp</i> |                |    | 95   | 2   | 83  | 2  |     |             | 30  | 94  | 3  | 1   | 7  |    |    | <b>317</b>  |
| Grayling<br><i>Thymallus thymallus</i>  |                |    | 4    | 4   | 6   |    |     |             |     |     |    |     |    |    |    | <b>14</b>   |
| Salmon<br><i>Salmo salar</i>            |                |    |      | 1   |     |    |     | 1           |     |     |    |     |    |    |    | <b>2</b>    |
| Pike<br><i>Esox lucius</i>              | 6              | 2  | 13   | 1   | 32  |    | 3   | 2           |     | 20  |    |     |    |    | 2  | <b>81</b>   |
| Cod<br><i>Gadus morhua</i>              |                |    |      | 1   | 2   |    |     |             |     |     |    |     |    |    |    | <b>3</b>    |
| Carp fish<br><i>Cyprinidae sp</i>       |                |    |      | 1   |     |    |     |             |     |     |    |     | 1  |    |    | <b>2</b>    |
| Fish unspec.                            |                |    | 7    | 14  | 41  | 2  |     |             |     |     |    |     |    |    |    | <b>64</b>   |

Table 2. Number of identified bone fragment per species in the different hearths.

those from lean body parts were found in all hearths. There is a slightly smaller proportion of cranial fragments than would have been expected and parts of antler are notably quite few in number. The underrepresentation of skull fragments in the investigated hearths may be due to special treatment of the reindeer cranium in ritual uses. Faunal remains from offering or sacrificial sites, such as Unna Saiva in Swedish Lapland, have proved to be clearly dominated by reindeer cranial bones (Nyyssönen and Salmi 2013: 45; Serning 1956).

Phalanges and metapodia from the lower parts of the extremities are well represented

in the hearths. This has also been noticed in previous analyses of contemporary sites (Magnell 2001). These are bones from lean body parts, but the content of fatty marrow would compensate for the lack of meat. What is known from ethnological documentation of traditional reindeer slaughter in the 18th and 19th centuries is that all parts, including meat, marrow and entrails, were taken care of and almost nothing was considered as useless waste (Drake 1918: 56-58).

The pattern of element distribution in the faunal assemblages from Steintjörna and Brodtkorbneset is very consistent with almost no difference between the hearths.

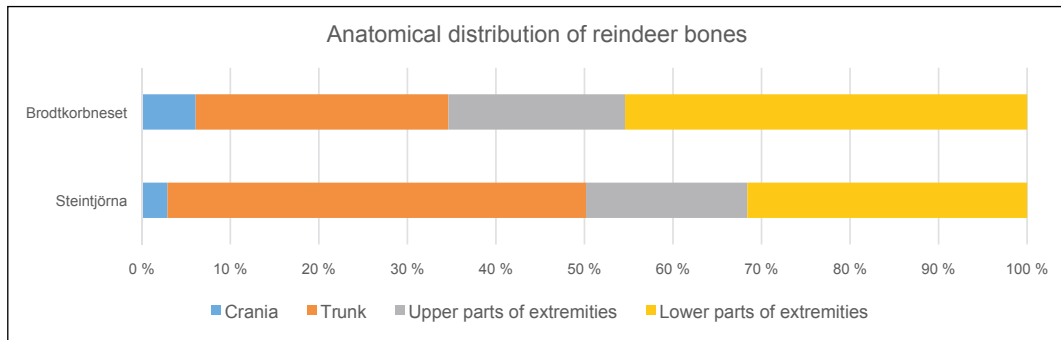


Figure 3. Anatomical distribution of reindeer bone fragments found at the hearth-row sites of Steintjörna and Brodtkorbneset (data from Vretemark 2009, 2010, 2013a and 2014).

Various activities in the process from the living animal to prepared pieces of meat were carried out at the dwelling sites. As it seems, the waste that ended up in the rectangular hearths was the result of similar acts and handling in connection with food preparation and consumption in the everyday life of these households.

The anatomical distribution pattern may to some degree mirror the relation between the slaughtering place and dwelling site in terms of distance. For practical reasons the weight was reduced as much as possible if the cuts had to be transported over a long distance. At dwelling sites at greater distances from the killing areas, the predominance of bones from meaty parts has been noticed while bones from less meaty parts such as metapodials or phalanges were clearly underrepresented (Binford 1978; Fossum 2006: 66). In reindeer bone assemblages from medieval professional mass hunts in Southern Norway it is obvious that the meat-producing parts of the carcasses were defleshed and that the heavy bones were left at the slaughtering sites in the mountains to facilitate long-distance transport (Indreliid 2013:67). This was not the case at Steintjörna or Brodtkorbneset. At these sites the anatomical distribution points of slaughtering activities were closer to the dwelling sites. The place for killing or slaughtering the reindeer and dismembering the carcasses appears to have been not too far away since even heavy

bones such as the thighbone or shinbone are well represented, along with bones from body parts with less meat.

### 3 Age and gender assessment of reindeer bones

Due to the often highly fragmented condition of the faunal material in Sámi hearths, observations of age and sex assessment are normally very few, if any (Hedman 2003: 190). Discussion about the age profile and proportions of male and female reindeer among the slaughtered or hunted animals will consequently be based on a rather small body of data. The hearths from Steintjörna and Brodtkorbneset however have contributed with a comparably large number of observations concerning age, but less when it comes to gender assessment.

There is without any question a clear predominance of mature reindeer. Based on observations on epiphysis status in the long bones it is clear that 70–80% were at least 4 years old when killed. A little over 60% were even 5 years or older (Fig. 4). Only a few per cent were less than 1.5 years of age and there was a total absence of very young calves.

The question is what such a killing strategy represents – the hunting of wild reindeer or slaughtering within reindeer herding? The predominance of adult animals may indicate hunting as the hunters would aim for the

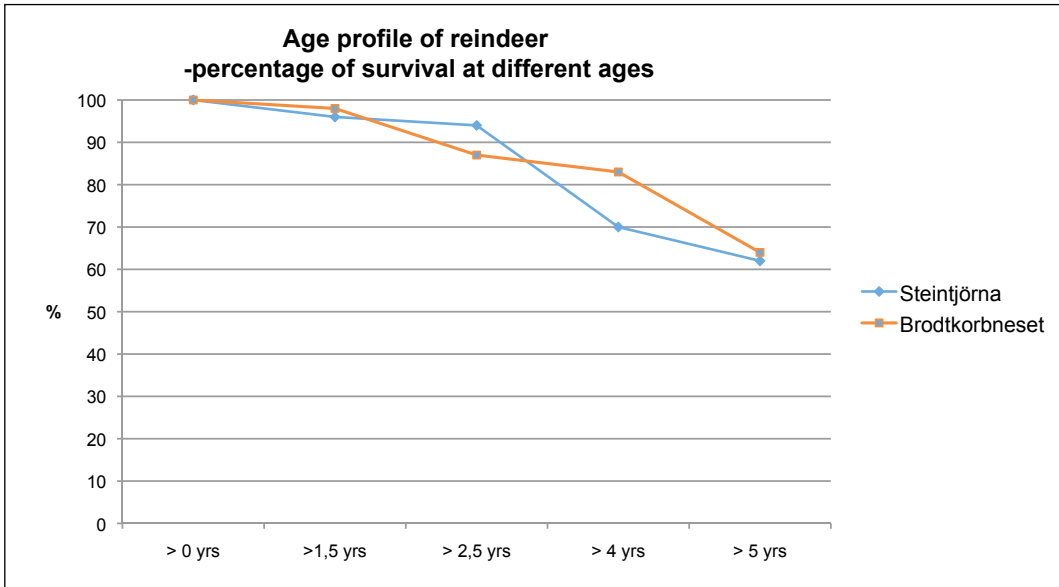


Figure 4. Kill-off rate of reindeer. At 5 years there is a survival percentage of little more than 60 %. Consequently, only 40 % of the reindeer turned out to be younger than 5 years when slaughtered or killed. The majority were older.

adult animals with the highest yield of meat. But it is more complicated than that. Documentation of traditional reindeer herding from the 18th and 19th centuries describes a cropping strategy with essentially the same pattern among Sámi groups in the northern parts of Sweden. They had small herds of only 10-15 animals. Normally 3 to 5 fully grown males were slaughtered in the autumn, sometimes also an older female (Drake 1918: 55-56). This information is supported by the results of an osteological investigation of faunal material found at Silbojokk near Arjeplog in Sweden and dated to the 17th century. A total of 160 kg of mostly unburnt bones were found at the site and the majority of them were of reindeer (Sten 1984: 3; 1989: 168). The age profile of the Silbojokk reindeer displays exactly the same pattern as the data from the considerably smaller and older faunal material from the rectangular hearths of Steintjörna and Brodtkorbneset; only a few juvenile individuals with around 90 % of the reindeer older than 2 years and 70 % over 4 years (Sten 1989: 173). The set-

tlement at Silbojokk was not a Sámi dwelling site but instead a silver mine area run by the Swedish crown, but the local Sámi population became highly involved in transportation activities, as workers and not least in food supply. The reindeer bone elements found in the waste heaps at Silbojokk most probably reflect the outcome of the reindeer economy and the cropping strategy of local reindeer herding in Early Modern Times. The same pattern of age profile is also confirmed in late medieval and Early Modern faunal material from other Sámi contexts in the Arjeplog area along the Lule River when reindeer herding had definitely been established (Vretemark 2013b). The predominance of adult reindeer in a body of a faunal material is thus obviously not a strong indication of reindeer hunting, and neither is the absence or low proportion of very young calves. To conclude, the age and sex assessments displayed in the faunal material from the hearths, might just as well reflect small-scale reindeer herding. The cropping strategy would in that case include a yearly

slaughtering of a few fully grown male reindeer, including the surplus of younger male individuals of aged 2–4 years. The females would normally be kept longer and slaughtered at higher ages.

#### 4 The importance of fishing

The substantial amount of fish bones in the hearths reveals the importance of fishing in food subsistence at Steintjörna and Brodtkorbneset. Six different fish species were identified in the assemblage. Common whitefish were most numerous, represented by a great number of bone fragments from vertebrae and the cranium. Fresh whitefish was probably brought to the site, prepared and consumed. Pike was the second most important fish species. Their size varied but most of them were 50–60 cm length.

The other fish species found in the assemblages; salmon, grayling and some carp fish were of minor importance in comparison with common whitefish and pike. They could have been caught in nearby waters but not necessarily. Some fish might just as well have been included in food storage prepared elsewhere. The number is too small to reveal any pattern.

In addition, cod was also found and this is the only undisputable indication of sea fishing activities. The finds of cod bones at Brodtkorbneset suggest coastal contacts. Groups of people could have moved seasonally between different areas to exploit a variety of resources, or the cod may simply have belonged to exchange goods.

With the exception of cod, the list of species reflects fishing in freshwater lakes and flowing rivers. Given the fact that fish always will be underestimated compared to bones from larger species, the amount of fish bones stresses the importance of fish as a vital food resource at these dwelling sites.

The normal method of fish conservation was drying. Pike and other fish were split up in order to speed the drying process by making the fish thinner and increasing the area exposed to the air. Drying as a food preser-

vation technique could be used for all kind of fish that was to be stored, even for a long time. It also facilitated transport since the dried fish lost a great deal of weight from the reduction of water content. It is plausible that food preparation to fill the winter stores with dried fish took place here at Steintjörna and Brodtkorbneset.

#### 5 Bird hunting

The bird finds consist with one exception of different species of forest hen, more precisely willow grouse, black grouse, hazel grouse and capercaillie. These are birds available throughout all seasons and they could be hunted most preferably in the forest zone. Apart from them, only one duck bone was found, the species of which is impossible to identify.

Bird hunting evidently played a part in subsistence and the species represented in the hearths reflect the seasonality of the hunt. The hunting of sedentary forest birds such as different grouse and capercaillie took place on a regular basis as can be seen from a number of bones in the faunal remains, especially at Steintjörna. Strong evidence for late autumn-winter occupation is provided by the almost total absence of summer birds except for a single find of a wing bone from a wild duck in hearth number 5 at Brodtkorbneset. Bones, however, could be kept for special reasons and may not automatically reflect seasonal occupation. Except for this duck bone, there were no other remains of migratory birds.

#### 6 Signs of animal husbandry

Bones from sheep/goat can be considered as undisputable signs of animal husbandry. A total of 20 such bone fragments were found in the hearths at both Brodtkorbneset and Steintjörna (Fig. 5) (Vretemark 2009; 2014). It is difficult to distinguish sheep from goat because the morphology of their skeletons is very similar. In those cases where clear species identification was possible it turned out



Figure 5. Bone elements from sheep, found in Brodtkorbneset hearth H3. Photo: M. Vretemark.

to be bones from sheep. Therefore, it is most plausible that all the small ruminant bones in the assemblages represent sheep.

The presence of sheep indicates that domesticates were actually part of animal exploitation systems very early in history in this part of northern Fennoscandia. One of the sheep bones from Brodtkorbneset has been radiocarbon dated to AD 990–1155 (Niemi et al. 2013: 4). As it seems, the concept of animal husbandry was familiar to the inhabitants of the area already in early medieval times. In previous investigations concerning medieval Finnmark, bones of sheep/goat have been noted at least from the 14th century (Amundsen 2011) and are well recorded from late medieval sites and onwards (Odner 1992). The sheep bone finds from Brodtkorbneset and Steintjörna obviously predate the possibility of herding in this area.

Even a minor level of sheep farming would have enabled a steady food supply but it also meant that life had to adapt to this situation, otherwise the sheep could not survive. The presence of domesticates no doubt led to a demand for grazing areas with grass and leaves, as well as needs for shelter and winter fodder.

The anatomical distribution of the sheep bones found in the hearths indicates that the animals were slaughtered at the dwelling site. However, it is not beyond doubt that sheep farming was practised by the very groups using the hearths. Living sheep may have been traded and brought to the site as part of exchange goods. Nonetheless, it is tempting to consider the sheep bones as signs of early low-scale sheep herding in this part of Finnmark.

## 7 The question of seasonality

An important issue to address is the question of seasonality, i.e. when the hearths were in use according to the evidence provided by the faunal remains. Since food was preserved for winter storage, the hunting or fishing season did not necessarily have to be equivalent to the time of consumption. This is important to bear in mind when interpreting seasonality on basis of species occurrence. Sometimes the absence of species will tell more in this matter than their presence.

The vast majority of the bone assemblages represents reindeer. Despite the identification of hundreds of reindeer fragments, not a single bone from very young calves was found. Even if individuals of this age category were not normally slaughtered, some bones from suckling calves could have ended up in the refuse if breeding female reindeer were around. Their absence points to a dwelling period in autumn, winter or early spring. It is consistent with the seasonal indications given by the bird bones as mentioned earlier.

Other signs of hunting activities were the bones of wolf and arctic fox found at Brodtkorbneset. These animals were present throughout the year but were preferably hunted in the winter season since their winter fur is of far better quality than the summer fur.

When all the faunal evidence is considered, the use of the hearths in the late autumn and winter half of the year seems most likely.

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