

The possibilities of osteology in historical Sámi archaeology

Life and livelihood at the 18th-century Ohcejohka Sámi market site

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Abstract

This paper presents the archaeological material from a historical Sámi market site in Ohcejohka. The site was in use already in 1640 when annual markets were held in the area, and the Ohcejohka church was erected at the site in 1701. The excavated material derives from two traditional Sámi huts, goahti. The find material is quite typical for 17th–19th-century Sámi sites, and the main find group consists of unburned animal bones. The animal bones are analysed and questions of livelihood are discussed.

Keywords:

Sámi studies, osteology, ethnoarchaeology, historical archaeology, reindeer.

Introduction

This paper discusses some methodological aspects of interpreting archaeological material from the Ohcejohka Sámi market site (Lahti 2003; 2004a; 2004b; 2004c; 2004d: 284–295). In particular, I wish to emphasise the potential of osteology in the archaeological research of historical Sámi sites.

The Ohcejohka market site

The Ohcejohka market site is well known from written sources. In the past, it was the central place for the Ohcejohka *siida* (Lapp village), and annual markets were held there at the end of February already in 1640. Due to the colonial policy of the Swedish crown, the Ohcejohka and Guovdageaidnu churches were erected in 1701, and even today the new Ohcejohka church, erected between 1850 and 1853, is situated near the site (Itkonen 1948 I: 206–208, 303; 1948 II: 59, 203). Additionally, there is an old sacristy and cemetery at the site and a historical road to the Norwegian coast passes through the area (Karjalainen 2003).

During the winter markets, both live reindeer and reindeer products were sold by the Sámi and traded with burghers coming from southern towns. Besides the economic aspect, the markets were important in various other ways. Young people got to know each other, couples got married, children were baptised and the dead buried. Taxes were also paid and legal issues taken care of (Hansen 1984: 56–57; 1990: 135–136; Hansen & Olsen 2004: 245; Itkonen I 1948: 65; 1948 II: 402).

In 2003 and 2004, the National Board of Antiquities conducted archaeological excavations at the site. The project was partly funded by the Employment and Economic Development

Centre of Lapland and led by Taisto Karjalainen, MA. I worked as an assistant researcher and our labour crew consisted of 10 upper secondary school students from Ohcejohka. The site was also surveyed in connection with the excavation. A total of six round and four quadrangular structures were detected, along with several fireplaces and other structures. During the two field seasons (in total two months), two turf *goahti* (1 and 2) were excavated (Karjalainen 2003; 2004). Already in 1985, during an archaeological survey, Jarmo Kankaanpää discovered that one of the structures had been partly destroyed in connection with the hauling of sand (Kankaanpää 1985). The excavations were started by excavating the partly destroyed *goahti* 1, and the intact *goahti* 2 was excavated the next summer (Karjalainen 2003; 2004).

The structures of both *goahti* consisted of fairly strong sand walls and a central fireplace surrounded by stones. The floor consisted of a thin cultural layer. The structures resembled each other, except that *goahti* 1 may have had a window. In addition, *goahti* 2 may have had two entrances, and a small storage house, *buvri*, used as a shelter, was connected with it. However, no strong dirt layer was found, which may mean that it was not used as an animal shelter (Karjalainen 2003; 2004).

Osteology

Natural-scientific methods, such as osteology, are often helpful or even necessary in archaeological research. One of the main goals of osteology is to explain the interface between human population and fauna (Lyman 1987: 94). Osteological material can answer questions related to the seasonality of occupation and the utilisation of resources.

In my research the following questions were addressed:

Were the animals slaughtered near the market site or were only parts of the carcasses brought to the *goahti* and its surroundings?

If only parts of the carcasses were taken from the slaughtering site, which parts were brought to the market site? Is there a clear pattern related to the presence of anatomical parts that dominate?

Is it possible to decide whether the Sámi sold parts of the carcasses at the market sites or consumed everything themselves?

Finally, what kind of livelihood does the osteological material reflect? We can certainly make some interpretations about the species utilized in the past, but can we even begin to interpret, for example, the form of reindeer herding practised at an archaeological site on the basis of the osteological material?

Subsistence

In *goahti* 1 the vast majority of the bone material was identified as reindeer (*Rangifer tarandus tarandus*) bones. Small ungulates, like sheep (*Ovis aries*) and/or goat (*Capra hircus*), were also found. These two species are difficult to identify *per se*. Some bovid bones were found (*Bos taurus*), but they are probably recent, since they were found in the turf layer. Only one beaver (*Castor fiber*) and one hare (*Lepus timidus*) bone was found. The bird bones consisted almost exclusively of willow grouse (*Lagopus lagopus*), altogether from 13 individuals. Only a few bones of *anatidae* species were found. Bones of whitefish (*Coregonus lavaretus*), pike (*Esox lucius*), cod (*Gadus morhua*), and salmon (*Salmo salar*) were found (Lahti 2003). A peculiar find group is a small amount of ocean quahog fragments (*Arctica islandica*) from the Arctic Ocean. All the identified fragments are from the left side of the clam, so it was brought to the site already broken (Valovirta 2005).

In *goahti 2* the bone material was smaller, but much more fragmented than in *goahti 1*. These small fragments may represent utilising the nutrient grease of bones; or indicate glue making (Outram 1999: 103). The major species was reindeer. Sheep and/or goat bones derive from three juvenile animals. A few elk (*Alces alces*) and wolf (*Canis lupus*) bones were found. Some willow grouse, cod, and pike bones were also found (Lahti 2004c). Like in *goahti 1* there were a few fragments of ocean quahog (Valovirta 2005).

Sheep and/or goats were probably butchered for meat, since the bones seem to be mostly from juvenile individuals. Older sheep were kept for wool and older goats for milk production. In order to survive the rough winter, the sheep require shelter so they were most probably traded for reindeer meat at the coast and brought over the mountains to be consumed. It is well known that the sea Sámi kept both sheep and goats and that these animals were traded for reindeer and reindeer products with the reindeer herding Sámi. The reindeer herding Sámi favoured goat, since it was more durable and could be taken over the mountains to the inland (Aikio et al. 2000: 68–70; Itkonen 1948 II: 190). Sheep wool was not handled by the inland Sámi themselves before the 19th century (Arponen 2005).

Nowadays the meat of the willow grouse is considered to be a delicacy, but that was not the case earlier, when only the feathers were sold (Fellman 1906: 440, 491). Fishing was practised on the Norwegian coast during the summertime and inland lakes were used for fishing purposes in the winter. Moreover, salmon fishing was practiced on the river Deatnu only four kilometres from the site or at its outlets in the spring, summer, and autumn (Itkonen 1948 I: 285). Already during the 17th century, salmon from Deatnu was exported to the royal court in Stockholm by Carl XI (Itkonen 1948 I: 286). Based on

the osteological material, it seems that *goahti 1* was inhabited during the autumn and winter, and in my opinion the large amount of willow grouse individuals can be a sign of long-lasting settlement at *goahti 1* (Lahti 2003). In *goahti 2*, subsistence was based on reindeer and small ungulates, since other species are rare. Other sources of livelihood, like hunting and fishing, were probably practised elsewhere. The material suggests that *goahti 2* was inhabited during the winter months, and in my opinion the occupation lasted for a short period only (Lahti 2004c).

The artefacts

Besides the bone material, iron nails, window glass, vessel glass, and clay pipe fragments were found in *goahti 1* (Karjalainen 2003). The presence of window glass suggests that *goahti 1* had a window. Vessel glass and clay pipe fragments are associated with the selling and bartering of alcohol and tobacco. Other finds include lock flint and a pewter bullet, which are associated with hunting weapons. Furthermore, an awl, a sewing artefact made of antler, a small decorative leaflet, *lávvgastat* made of silver, and iron scissors were found. The dating of the settlement was based on the identified clay pipe fragments and coins. The identified clay pipes were produced in Sweden in the 18th century (Mellanen 2000; 2001). Two Danish silver coins were stamped 1659 and 1668 (Talvio 2003).

In *goahti 2*, the most unexpected find was a piece of woollen cloth. It was found exactly opposite the main entrance, suggesting that it could be a remnant of a second door or a vent hole (Karjalainen 2004). The material of the cloth and the technique by which it was produced makes this fragment the oldest preserved one in the Finnmark area. It is similar to the type that Leem describes in his *Beskrivelse over Finnmarkens lapper* (1767). This type of cloth is still produced

in Manndalen. It was probably produced in the coastal area by the sea Sámi, since the inland Sámi did not know how to produce such fabric at that time (Arponen 2005).

The clay pipes were produced in factories in Stockholm and they date to the phase ca 1750–1800. Only one example is clearly identifiable to the 17th century (Mellanen 2000; 2001, Niukkanen 2004, pers. comm.). Two Danish silver coins are from the reign of Christian V and they were obtained between 1676 and 1681. Both of them were worn out already during use (Talvio 2004).

Altogether, the find material was quite typical for a Sámi site dating from the 17th and 18th centuries (Grydeland 1996; Halinen 1992a; 1992b; 2002a; 2002b; Liedgren 1997; Mulk 1994; Olsen 1987; Odner 1992).

Distribution

Archaeology aims to understand past people and the behaviour that has resulted in those structures, materials, and phenomena that are analysed in the archaeological record. At first this material was examined by means of the artefact distribution maps of the excavated area of the two *goahiti*. During the interpretation it became clear that the distribution of the find material was quite even and no distinctive concentrations were found (Harlin 2008).

The same pattern was repeated in the distribution maps of the bone material. It became clear that different species or different parts of reindeer carcasses did not have any special locus inside the *goahiti*. Contrary to the phenomenon that can sometimes be observed in the material of the Norwegian coast, no sacrifices of complete animal skeletons were found (Grydeland 1996: 83; Hansen & Olsen 2004: 193–194). Furthermore, specific bone concentrations of different species

related to different kinds of rituals could not be found in this material (Lahti 2004a; 2004b).

Reindeer bones and butchering

To gain a more precise understanding of the site and settlement, the reindeer bone material was studied by using routine osteological methods. At first the fragments were studied morphologically for the purpose of identification. They were counted in order to gain information about the number of fragments (Number of Identified Specimens or NISP), individual animals (Minimum Number of Individuals or MNI), and bone elements (Minimum Number of Elements or MNE).

Furthermore, the consistence of the bone assemblage was studied. To obtain a deeper understanding of the archaeological bone material, ethnoarchaeological work was carried out at the Ohcejohka Baišduottar reindeer herding district. The butchering at the modern reindeer round-up of Baišduottar was observed in order to understand the butchering order and to recognize taphonomical signs like cut marks on the bones of the Ohcejohka archaeological material. Finally, traditional cooking was observed. In addition, the traditional way of butchering in the Ohcejohka area was studied from literature (Itkonen 1948 I: 256–257). I also had the opportunity to see a video, in which Hans O. Kitti from Baišduottar demonstrated the old way of butchering that he had learned from his father (Okkonen & Kannianen 2005).

In earlier times, the first thing to do was to open the chest and remove the heart and lungs. Moreover, the forelimbs were sliced apart from the carcass between the distal part of the *humerus* (forelimb steak bone) and the proximal part of the *radioulna* (upper forelimb) and the hindlimbs between the distal part of the *femur*



Fig. 1. Reindeer herder Jorma Harlin from Baišduottar is butchering for home purposes. The forelimbs are cut between the distal part of the *radioulna* and proximal part of *metacarpus*. The hide remains intact, so the leg skin can be used for making fur boots.

(hindlimb steak bone) and the part of the *tibia* (upper hindlimb) (Itkonen 1948 I: 256–257; Okkonen & Kanniainen 2005). This was also practical, since the leg skin remained complete and could easily be used to make fur boots, fur leggings and fur mittens. More important, the leg joints remained complete. They were used as tendon threads, which was used for sewing fur boots and other clothing.

Nowadays the first thing that is removed from the carcass together with the fur is the head. The forelimbs are cut between the distal part of the *radioulna* and the part of the *metacarpus* (lower forelimb, above toe bones, palm

bone) and the hind limbs between the distal part of the *tibia* and the part of the *metatarsus* (lower hindlimb, above toe bones). When butchering is done according to modern EU butchery, the skin is removed together with the lower limbs. But when butchering is done for home purposes, the leg skin remains intact with the rest of the hide for the purpose of making fur boots (see Fig. 1).

Results

If we had an ideal material (i.e., all parts of the carcass had been consumed there) it would have the same values throughout the whole

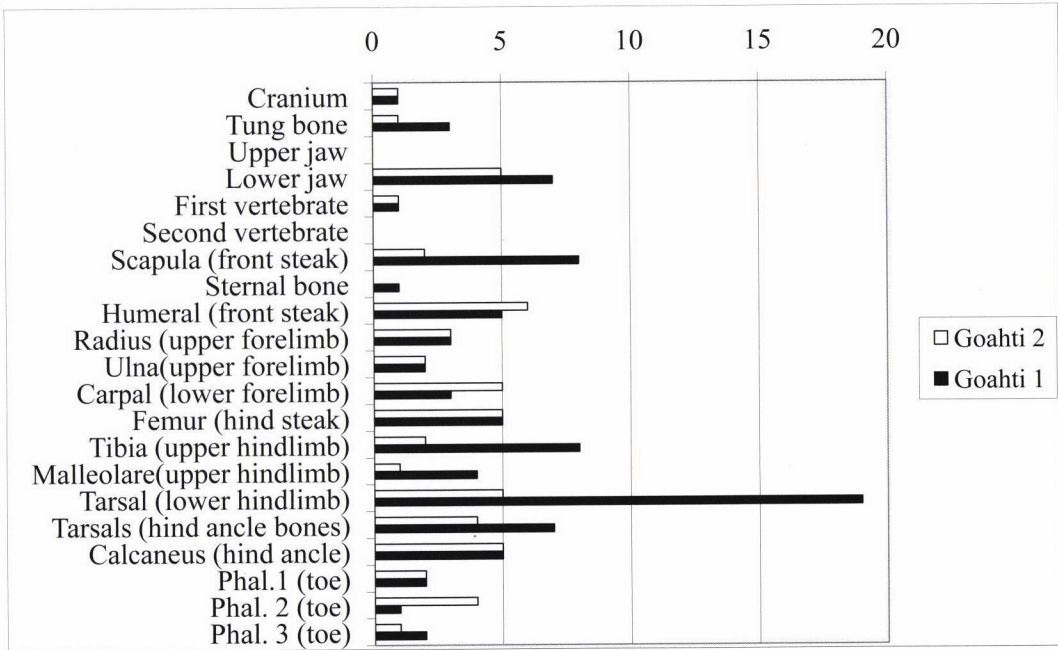


Fig. 2. The Minimum Number of Individuals (*Rangifer tarandus*) in the Ohcejohka market site.

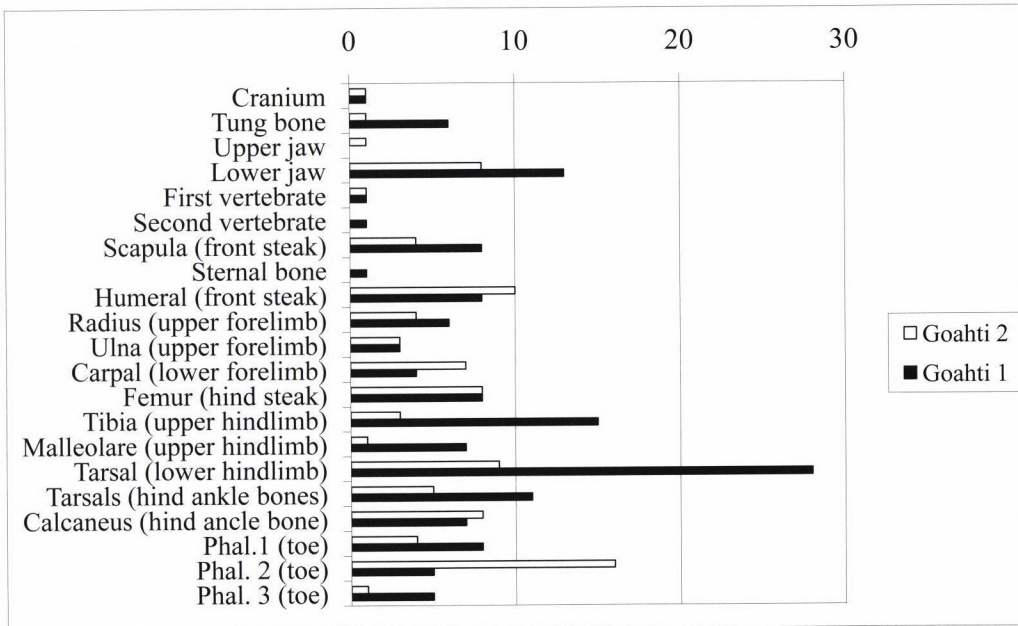


Fig. 3. The Minimum Number of Elements (*Rangifer tarandus*) in the Ohcejohka market site.

anatomical distribution (MNI or MNE). Of course this is improbable, because some of the bones are located outside the *goahti* and perhaps even further away from the market site. There is always the possibility that animals, like dogs, moved some bones or that the dwelling was occasionally cleaned.

After observing the identified bones, it could be concluded that the butchering was probably done away from the Ohcejohka market site, since only a part of the heavy and meat-poor parts are present in the material. First of all, there were only a few skulls and antlers. Also, there were but a few examples of the first two *vertebrae* (spinal column), the *atlas* and the *axis*, and the sternal bones (breast bones) were totally absent (see Fig. 2 for MNI and Fig. 3 for MNE). These elements were probably left at the butchering site, which in turn was situated near the pasture areas where the reindeer were kept during the markets.

However, the butchering site was probably not situated far away from the site, since some meat-poor parts, like *mandibulae* (lower jawbones) and *metatarsus* (the metatarsal bone) are plentiful in the material. However, the lower jawbone and the metatarsal bone contain a lot of bone marrow which is highly nutritious (Itkonen 1948 II: 258; Hambleton & Rowley-Conwy 1997: 62; Outram 2001: 401–402). The presence of several *hyoideum* (tonguebone) is explained by the fact that tongue is a delicacy and it was surely taken from the butchering site to the market site (Itkonen 1948 II: 258) (see Figs. 2 and 3).

The small amount of *vertebrae* (spinal column) is probably related to the fact that the fillets were left attached to the spinal column and sold, perhaps to be cooked as a delicious soup. The *costae* (rib bones) were not separated from the meat when the ribs were dried. Drying was a cheap and easy method for storing food. This way of preservation was also very practical for

the nomadic way of life, since after it is dried, the meat will weigh about 1/3 of its original weight and it will be easy to carry. Dried ribs were probably eaten during the annual migration. Dried ribs could also be sold, since they were a good trading item (Itkonen 1948 II: 259).

A good method of studying the bone material is to compare the MNI and the MNE. When these two are compared, it can be seen if whole carcasses are present in the material or if some parts are obviously missing. This is very helpful when assumptions are made about the function of the site (Hambleton & Rowley-Conwy 1997: 57; Lyman 1994: 205–215). For example, if we compare the MNI and MNE, it can be seen that in *goahti* 2 there are twice as many *scapulae* (shoulder blade) as there are animals, but when we look at *goahti* 1, only half of the *scapulae* are present. The same pattern is repeated with the *humerus* (shoulder bone). It seems that about half of the *humerus* and *femur* are missing in *goahti* 2 and that almost the same can be said about *goahti* 1. This means that these parts were sold or that they are absent from the material for some reason.

The lower parts of the front and hind limbs (knuckles), *radioulna* and *tibia*, are abundant in the material, but they are strongly fragmented. These bones were probably worthless as merchandise but they are a good ingredient for a soup. According to the comparison between MNI and MNE, it seems that the lower front limbs, the *radioulna*, of altogether three animals were consumed by the inhabitants themselves. The same goes for *tibia*, since it seems that all the *tibiae* came from two animals in *goahti* 1 and eight animals in *goahti* 2, respectively. It is important to remember that these bones are easy to identify also when they are fragmented, so the results of the analysis can turn out to be a bit biased.

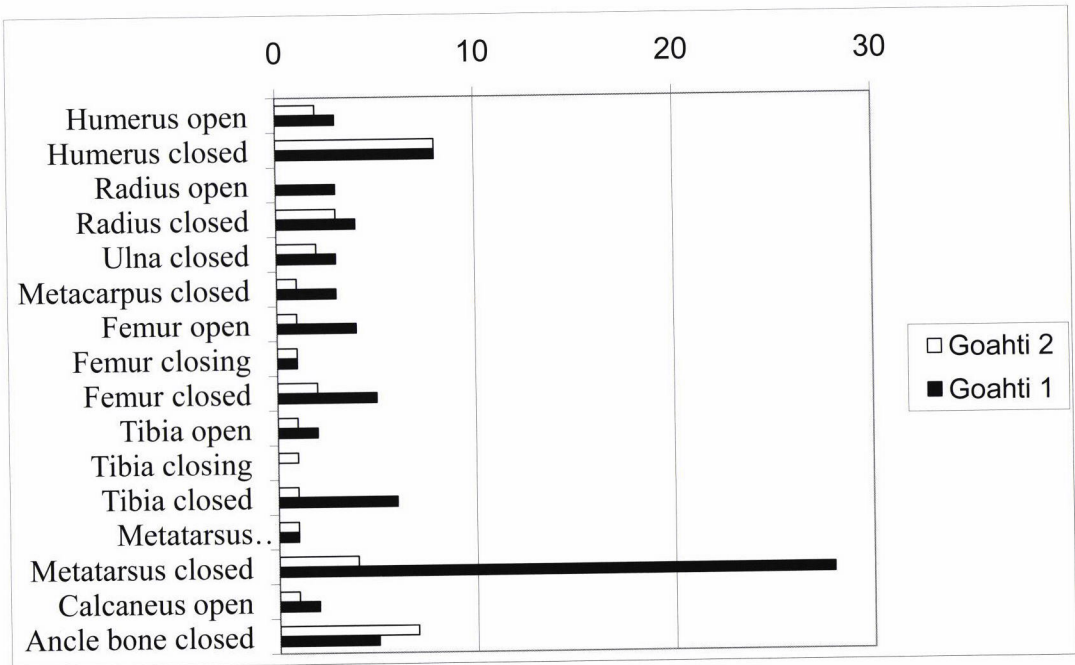


Fig. 4. Fusion of the long bones (*Rangifer tarandus*) in the Ohcejohka market site.

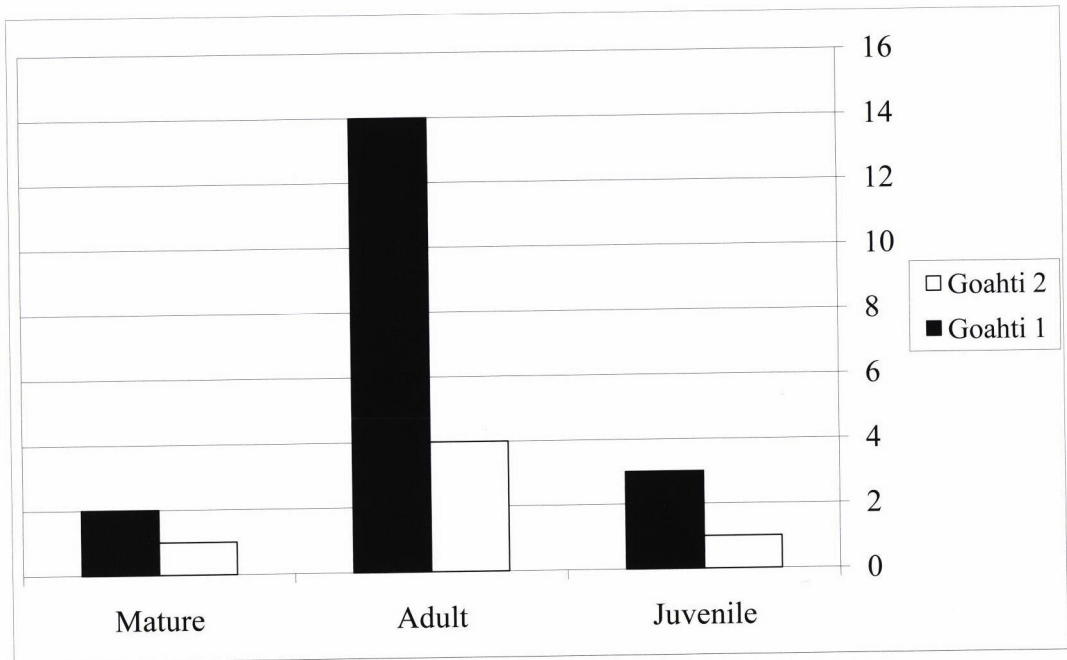


Fig. 5. The age-structure of the reindeer (*Rangifer tarandus*) individuals according to fusion of the long bones and teeth abrasion in the Ohcejohka market site.

Metacarpus (palm bone) and *metatarsus* contain a lot of marrow, which is nourishing and tasty. If heated or cooked it can be eaten as such, or the marrow can be used for example in blood pudding. *Metacarpus* is good raw material for artefacts, and so are antlers. This may be why there are but a few examples of *metacarpus* in the material. So we know that the palm bones were used as raw material, but why are there so many *metatarsi* in the material? This can be due to the old way of butchering, in which the feet were kept whole until the end of the butchering (Itkonen 1948 I: 256–257; Okkonen & Kanninen 2005), or the huge amount of *metatarsus* in *goahti 2* can be related to marrow consumption (Hambleton & Rowley-Conwy 1997: 62; Outram 2001: 401–402).

Age determination

The age determination was carried out by observing the abrasion of the teeth and fusion of the long bones (Hufthammer 1995). According to the fusion of the long bones, the youngest of the animals were under 2.5 years old, since the fusion of the distal part of the *tibia* happens between 1.5–2.5 years (see Fig. 4 for fusion of the long bones). After the long bones are fused, the only morphological way to age-determine animal bones is to observe the stage of the dental wear. The dental material consisted of both loose and intact teeth. In *goahti 1*, most teeth have some wear, or are worn, and only a minority has no wear at all. In *goahti 2*, the material consists mostly of teeth with some wear and a minority are teeth that are worn. The number of teeth with no wear is half of the number of teeth with some wear. However, in this case the age determination of the teeth does not give any clear picture of the age of the animals, since only part of the jaws and teeth of the butchered animals are present in the material. When all the results are put

together, the age structure of the animals looks quite interesting (see Fig. 5 for age determination). The material of *goahti 1* comes from an average of eight individuals, although there are metatarsals from 19 individuals in the material. Three of these animals are juvenile, 14 adult and two animals mature. In *goahti 2* there are six individuals, three of which are juvenile, four adult and two mature.

Conclusions

In *goahti 1*, the find material, such as clay pipes, iron artefacts, and coins is quite typical for a Sámi site dating to the 17th–18th centuries. Reindeer was the most important part of the diet, but sheep and/or goat were also kept. During the stay in the inland, lake fish like whitefish and pike were eaten, as well as salmon from the Deatnu river or from the rivers that are its outlets. Dried cod was brought from the Norwegian coast. A large amount of willow grouse was probably used for selling the feathers. Materials like Danish coins, cod bones, sheep and/or goat bones, and clam fragments indicate that there were strong connections between the inland and the coastal Sámi societies. The *goahti* was inhabited during the autumn and winter. The amount of find material and presence of different species give an impression of a long-lasting settlement at *goahti 1*.

In *goahti 2*, the find material was quite similar, and in addition a rare piece of woollen cloth was found near the suggested second door. Reindeer meat was the most important part of the diet, but young sheep and/or goats were also consumed. Hunting and fishing were probably practised elsewhere, but not near the market place. Again Danish coins, sheep and/or goat bones, clam fragments, and the woollen cloth represent the connections between the inland and the coastal Sámi societies. The *goahti* was inhabited during

the winter months and the amount of find material and biased presence of different species suggest that the use of the *goahti* was short-term, but also that the people who stayed there really relied on reindeer meat in their alimentation.

The presence of different anatomical elements in the two excavated *goahti* suggests that the butchering was done away from the market site. There was probably a special pasture area where the reindeer were kept and near which they were also butchered. The differences in the representation of different elements of bones are probably due to the fact that the most precious parts of the carcass were sold at the market place, or if these parts were easy to preserve, they were taken to the next place during the annual migration.

According to age determination, the slaughtered animals are mostly adult, although there are some juvenile and mature individuals as well. Obviously, adult animals produce a lot of meat. Nowadays in the meat-based economy mostly young and sub-adult animals are slaughtered (Hambleton & Rowley-Conwy 1997: 68). For example, in Baišduottar, about 85% of the butchered animals are calves and only 15% represent animals that are older than one year.

In earlier times, the most favourable animals for slaughtering were 1.5-year-old castrates and old females (Jomppanen & Näkkäläjärvi 2000: 83; Soppela 2000: 93). This was favourable when the pastures were plentiful. If there was no food for the adult animals, the flock could be removed to other areas. The situation changed after the closing of the national borders by fences in the 19th century. During the 20th century, the different reindeer herding districts were separated by fences in Finland. These changes naturally affect the way that is most favourable for keeping the reindeer flock. Young animals eat a lot and it is more uncertain whether they are good breeders.

Nowadays the majority of the butchered flock consists of young animals.

According to taxation in 1751, there was a flock of 7000 reindeer pasturing in the area of the Ohcejohka *siida*, and these animals were owned by 27 herders (Itkonen 1948 II: 118). The nature of reindeer herding and its development is one of the most burning questions among the Sámi cultural history, and needless to say, very difficult to interpret from the archaeological material alone. Nowadays several researchers are in agreement that during the 18th century, reindeer herding was common in some areas (Schance 2005: 69–70). The Ohcejohka material derives from a highly specialised way of life, relying almost exclusively on reindeer herding.

However, this analyzed material is very small: it consists of 14 carcasses. More osteologically analysed material is needed to make assumptions. According to MNI in *goahti* 1, there are at the most 19 individuals present in the material. However, there are as many as 19 metatarsals only. When the other bones are considered, it seems that the bones come from an average of eight individual animals. In *goahti* 2, the MNI is six. All in all, we can assume that differences in the representation of different elements of bones provide information about commerce at the market place.

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