Relations between man and reindeer – traces of reindeer herding

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Abstract

The transition from hunting and fishing to reindeer herding is one of the most important questions related to early Sámi culture. Artifacts indicative of reindeer herding are very unusual as archaeological finds. The material remains of reindeer herding consist mainly of organic material, which is very sparsely preserved in the soil. Changes in settlement patterns and increasing frequencies of reindeer bones at dwelling sites have been used as indicators. However, the osteological reference material does not allow separating domesticated and wild reindeer.

Intrasite patterns related to the handling of reindeer bones may provide new information. This can be combined with a palaeobotanic survey of the impact of changing relations between man and reindeer on vegetation. This article presents new results from excavations in the mountain ridge of northern Sweden and discusses them in relation to more large-scale changes in socioeconomic relations.

Keywords:

reindeer herding, bone deposits, pastoralism, nomadism, pollen analysis.

Introduction

The transition from hunting and fishing to reindeer herding is one of the most important questions related to early Sámi culture. The archaeological record in general falls into the three main categories of sites, finds, and traces in the environment. Archaeological finds indicative of reindeer herding are very unusual at least in the acid podzol soils of northern Fennoscandia. Harness finds indicate the presence of tame reindeer, but this kind of material is not preserved for long in the soil.

Some finds in Siberia, as well as some sites with petroglyphs depicting humans riding on reindeer, indicate that reindeer herding was established in the first millennium BC. In Scandinavia, the use of reindeer for draught is depicted on a shaman drum that is mentioned in *Cronicon Norvegicum* in about 1190 A.D. (For an overview of the previous research on the origin of reindeer herding, see Aronsson 1991: 10–25).

Analyses of reindeer bones from archaeological sites have hitherto not answered questions related to reindeer domestication. According to Hedman (2003: 198–199), the frequencies of reindeer bones at Viking Age settlement sites may, however, indicate the presence of domesticated reindeer. Hedman also points to the settlement pattern. The late Iron Age settlement pattern examined is discussed in relation to

semi-nomadic reindeer husbandry well known among the Forest Sámi in historical times (Hedman 2005).

Bergman (1995: 200–202) observed a change in settlement patterns in a study of the Arjeplog area of Swedish Lapland. After 400 AD, there was a nearly total absence of settlement sites in the resource areas of the earlier settlements. With reference to Bergman's investigations, Storli (1993) has put forward the hypothesis that the *Stallo* sites in the mountain area may be related to reindeer herding and reindeer milking. In a later study Bergman discusses the *Stallo* sites in relation to reindeer herding (Bergman et al. 2008).

Domestication

Bökönyi (1989: 22–24) stated that the essence of domestication is the capture and taming of animal species with particular behavioural characteristics. For mutual benefit, their maintenance requires controlled breeding conditions. Capturing and taming individual animals is of course a precondition for real domestication, but it is not yet domestication as such. Bökönyi has also pointed to the fact that domestication affects not only the animals in question, but also man. Domesticated animals need pasture grounds. Thus an important aspect of the herding of domesticated reindeer is that the animals influence the human settlement pattern. When reindeer domestication developed, the need for pasture necessitated migrations of men and animals. This mobility can be described in terms of pastoralism and nomadism.

Lundmark (1982: 33–34) has defined reindeer nomadism as a form of production in which domesticated reindeer is the main base of livelihood. However, from the point of view of recognizing domestication, this is not the crucial point. Lundmark describes the society in the Lule Sámi area in the beginning of the 1600s as a hunting and fishing society. However, it can also be said that reindeer pastoralism was established at that time. The numbers of tame reindeer were counted in 1609 AD. There were at least 4000 tame reindeer in this area (Lundmark 1982: 143–155). The conclusion is that this represents a stock of domesticated reindeer. So far we can say that pastoralism comprises various forms of nomadism. With reference to Khazanov (1984: 40–44), the widespread northern Eurasian combination of reindeer herding with a food extracting economy can be characterized as a specific form of pastoral semi-nomadism.

Reindeer milking grounds

The Swedish term *renvall* (*giedtieh* in South Sámi language) covers a number of Sámi terms for reindeer pens, milking grounds, and pens for milking and the marking of calves, as well as for separating reindeer between different owners. The *renvall* is a relatively open and restricted topographical area where the herders drive domesticated reindeer together for pastoral aims. It can be fenced like a pen, but this is not necessary if the animals are very tame. Reindeer can graze at a *renvall,* but the primary function is not that of a pasture ground.

Field studies in northern Sweden have demonstrated that the fertilization of the soil by manure from reindeer that are regularly driven together within a restricted area is an important factor influencing the vegetation (Figs. 1 and 3). The trampling of the ground by reindeer causes destruction of the natural vegetation at field and ground levels. The felling of trees for the construction of dwellings and enclosures clears the forest. Flora favoured by erosion and light colonizes such sites. Manure in combination with light, trampling, and nitrification increases the accessibility of phosphorus and nitrogen. Herbs

Fig. 1. Map of the Sápmi area with the places discussed in the text.

demanding more nutrients colonize the site and herb-rich vegetation types are established. From the field studies it was concluded that these changes in vegetation appear where domesticated reindeer have stayed regularly on unfrozen ground. These types of sites are related to the summer pasture grounds. The free and extensive grazing of reindeer does not cause comparable changes in vegetation. Surveyors observed the vegetation changes related to places where reindeer have been driven together already in the 1600s. Abandoned reindeer pens and reindeer milking grounds are described as suitable land for pasture or hay-making, or even as possible arable land. The Sámi themselves used these fertilized soils for gathering edible plants and sometimes even for agriculture. The recognized changes in the natural vegetation are traces in the environment related to reindeer herding (Aronsson 2001: 32–37; 1994). So far, the impact of reindeer herding on vegetation can also be traced by pollen analysis.

Fig. 2. Field investigation at Bijelite. A small stone cairn with a bone deposit is opened for C14 sampling. Photo: K.A. Aronsson.

Deposits of reindeer bones

Deposits of unburnt reindeer bones are a part of the intrasite pattern of settlements of reindeer herders (Aronsson 1993: 244–245). The question is why people put bones in special hiding places. Andersen (2005: 83) has discussed such deposits of reindeer bones and relates them to ideas of luck in reindeer herding. He has some C14 datings of hidden reindeer bones from the period 800-1200 A.D. (Andersen 2005: 77). An earlier study by the author at a reindeer milking ground in southern Lapland gives another example of deposits with reindeer bones dated to the same period (Aronsson 1993: 237–245, 323). This may indicate that beliefs related to reindeer luck can be traced back to the late Iron Age (Fig. 2).

Cultural landscapes of reindeer herding

Milking grounds and reindeer pens are parts of the cultural landscape of reindeer herding. The author's conclusion from a number of comparative studies is that the impact of reindeer herding can be detected on the basis of pollen. The pollen-analytical indications of reindeer herding are increased frequencies of *Poaceae* pollen, accompanied by *Rumex* and a number of other herb pollen types, as well as *Juniperus*. In contrast to the impact of arable land and permanent settlements, indicators such as *Trifolium*, *Humulus*, *Spergula*, *Galium*, *Brassicaceae,* or *Cerealia* are not frequent. The interpretation of the pollen-analytical indications must take into account all relevant ancient remains in the environment under study. An archaeological survey of the surroundings of the sampling point for pollen analysis is necessary for a relevant interpretation of the character of the cultural influence recorded

Fig. 3. Culturally influenced vegetation at an abandoned reindeer milking ground in the mountain forest. Site Storreinvollslia, Njaarke, in Jämtland.

in a pollen stratigraphy (Fig. 3). All factors in the pollen spectra and the palaeoenvironment must be considered in order to obtain the most reliable interpretation (Aronsson 1991: 37–49; 1994).

These methodological results can be compared with results from a new study. Karlsson (2006: 151–159) analyses the correlation between fertilised soil rich in phosphorus and the grass and herb-rich vegetation typical of reindeer milking grounds.

Since the mid-1990s, archaeological investigations have been carried out in the Njaarke Sámi Village territory in the middle part of the Scandinavian mountain ridge. Some of the results have already been published (Aronsson 2003; 2005, Ljungdahl 2003). In addition, an overview of the results from the sites investigated by pollen analysis was published recently (Ljungdahl 2007). The conclusion is that the cultural landscape of reindeer herding was created already in the beginning of the second millennium AD (Fig. 4). That means that reindeer herding started at least 500 years earlier than has been stated in previous research.

The indication in the pollen analysis can also be compared with C14 dates from hearths on the dwelling campsites. One example is the Rafvajokk site at lake Sösjön, excavated during the years 2002–2004. C14 dating of charcoal from inside the hut remains provided, with a probability of 95,4 %, the values 990–1160 AD, 1030–1120 AD, and 990–1170 AD (Ua-21227, 21229, 21230). An unburnt reindeer bone provided, with a probability of 92,5 %, the value 950-1180 AD (Ua-18533). The indications from the pollen stratigraphy provide a comparable result with a start of the cultural influence on the vegetation at the beginning of the second millennium AD (Aronsson 2005: 115).

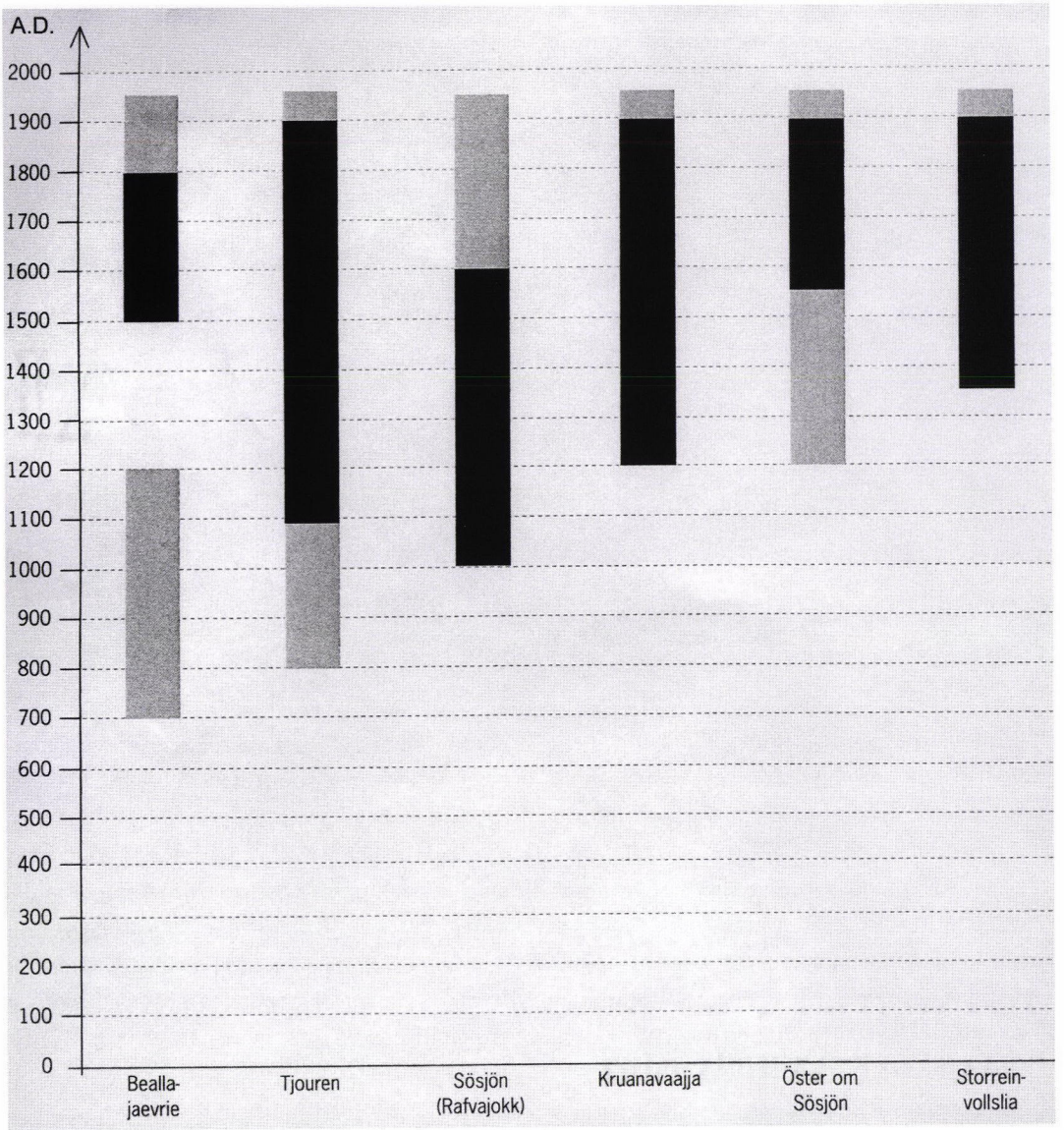

Fig. 4. An overview of the results from 7 sites with reindeer milking grounds investigated by means of pollen analysis. The chronology is based on C14 dating of macrofossil remains in the peat.
dark grey — strong cultural influence
light grey — weak cultural influence

The transition to large-scale reindeer herding

The transition to true reindeer pastoral nomadism is a development related to increased economic interaction and diversification among the Sámi and in the neighbouring societies. We can follow this development in detail in the written sources of Swedish Lapland during the 17th and 18th centuries. The expansion of sedentary settlements and commercial market places during the 17th century made the expansion of pastoralism

obligatory in the mountain area, as well in the forests of Lapland (Hultblad 1968; Arell 1977).

Results from pollen analysis in Lapland correspond to what is known from written sources about the expansion of large-scale reindeer nomadism (Aronsson 1991; 1994). Archaeological investigations and pollen analysis carried out so far point in the direction that this change to true pastoral nomadism was even earlier in the southern Sámi areas than in the north. Also the influence of reindeer herding on the vegetation seems to be more evident there than in the north (Aronsson 2005: 118–119). The explanation for this must be that in contrast to the north, reindeer herding was an early specialization in the south. Permanent settlements with agriculture were established in the interior of Middle Scandinavia during the Iron Age (Aronsson 2005: 120). The expansion of sedentary settlements and market places was much later in the interior of the north.

Conclusions

When all indications of reindeer herding are put together, the picture of early reindeer herding becomes clearer. The change of settlement pattern after 400 A.D., the increasing frequencies of reindeer bones on settlement sites, intrasite patterns with deposits of reindeer bones, and the pollen-analytical indications of the impact of reindeer herding on the vegetation all together seem to point in the direction that reindeer pastoralism was established in the late Iron Age. This must not be interpreted to mean that the utilisation of domesticated reindeer would have been the only or the main source of livelihood for all pastoral Sámi groups at that time. Much more research is needed on the variations in economy. As a result of economic changes, social interaction, and large-scale division of labour, various types of pastoralism spread and adapted to different economic and cultural environments.

The contextual background of the introduction of reindeer herding to Fennoscandia was far-reaching economic and cultural change in Fennoscandia, as well as in the Baltic area. Commercial factors in late Iron Age and early medieval coastal societies stimulated an intensified resource utilisation in the interior of Fennoscandia. This was made possible by new subsistence strategies among the hunting and fishing populations. The hunting of fur-bearing animals probably played an important role in the interaction between pastoral Sámi groups and their neighbours. A settlement strategy based on mobility is related to this interaction. Small-scale reindeer herding with the use of reindeer for transport and as a food supply was essential for this new subsistence strategy.

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