

2

Hunting native reindeer, while herding imported ones? Some thoughts on the development of Saami pastoralism

Jostein Bergstøl*

Abstract

It has been commonly believed that Saami pastoralism developed from small-scale husbandry in the Iron Age, into large-scale intensive herding during the Late Middle Ages, but new genetic research suggests that the large, semi-tame herds were bred from imported animals, while they still kept hunting the native ones. Studies of aDNA of prehistoric reindeer during the last two decades have shown that the reindeer had two different immigration routes into Scandinavia after the Ice Age. In addition to that, researchers have seen another genetic marker in the domesticated reindeer, from around AD 1500. New published research suggests that this type has its origins in Northern Russia. This insight opens new perspectives and questions on the start and development of intensive reindeer herding. Did the Saami import a pastoral system together with the new animals, or is it still possible that Saami pastoralism developed here?

Excavations and surveys have revealed different types of mass trapping systems from the Iron Age and Middle Ages in Southern Norway. The later, funnel-shaped traps have striking similarities to the driving fences in modern reindeer herding. This article discusses the possibilities of influences from wild reindeer trapping and its relation to imported reindeer herds in Norway on the development of Saami pastoralism.

Keywords: Reindeer (*Rangifer tarandus*), aDNA, mass trapping systems, Saami, herding

2.1 Introduction

In 890 AD, Ohthere (No: Ottar), a chieftain from Hålogaland in northern Norway (Figure 2.1), visited King Alfred the Great in Wessex. Ohthere gives a description of the land of the North, the peoples, and the economy (Bately 2007). In his tale, there is one passage especially that has been used in discussions around reindeer domestication, pastoralism, and hunting/trapping. Ohthere claims to have 600 unsold reindeer and six tame ones (*stælhranas*). The latter were used as decoy animals and were considered very valuable among the Saami (Bately 2007:46).

* Museum of Cultural History, University of Oslo, jostein.bergstol@khm.uio.no



Figure 2.1: Regions and places mentions in the text. 1: Hålogaland, where Ohthere lived. 2: Mountains of Southern Norway with trapping systems. 3: Varanger peninsula. 4: Yamal peninsula. (Map: M. Samdal.)

The transition from hunters to pastoralists is among the most debated questions in Saami archaeology, and the tale of Ohthere has been a very important source of information. A key question is what the 600 animals were. In earlier translations, they were referred to as a herd of 600 semi-domesticated, herded animals, but most researchers now argue that Saami pastoralism developed around five centuries after Ohthere's visit to England (Hansen and Olsen 2004; Sommersteth 2009; Bjørklund 2013). Both Inger Storli and Ivar Bjørklund have pointed out that it is more likely the passage refers to wild animals waiting to be butchered and sold (Storli 1994:91; Bjørklund 2013:176). Storli believes that Ohthere kept wild reindeer pasturing on some of the islands in his home region (Storli 2007:94). The *stælhra* may be interpreted as domesticated animals, as reflected in the Saami term *boazu*, and not necessarily just decoy animals (Bjørklund 2013). Decoy animals are linked specifically to the Saami people in the account of Ohthere. The 600 unsold animals are not, and may come from both Saami and Norse trapping. In this article, I will bring new results from genetic research on reindeer and from new studies of the development of trapping systems into the discussion around the emergence of Saami reindeer herding. Was the technology of large scale mass trapping in the mountains of Southern Norway in some way a model for the later Saami reindeer fences, and what role did the imported animals play in this development?

2.2 New genetic evidence

Ancient DNA analyses of reindeer bones have provided new data, leading to new questions that only a few years ago were unthinkable. During the last decades, geneticists have analysed mitochondrial DNA from both wild and domesticated reindeer in Fennoscandia. They have found that there are two genetic lines that can be followed back to the wild animals that arrived after the last Ice Age (Indrelid et al. 2007; Røed et al. 2011). In addition to these, a third line appears much later. This third cluster of haplotype groups is first seen in the material between 1400 and 1500 AD, in contexts affiliated with Saami pastoralism (Bjørnstad et al. 2012). New genetic studies have now revealed that “the mitochondrial genome in Finnmark reindeer underwent a massive genetic replacement since the medieval period, characterized by significant loss of historically native haplotypes and a significant introduction of new ones” (Røed et al. 2018: 283). The same studies suggest that the genetic material points towards an origin in northern Russia.

This does not mean that the Saami did not have domesticated animals before 1400 AD. Finds of Saami sledges going back to 1500 BC show that they had animals for transport, and maybe also for milking (Murashkin et al. 2016). However, when pastoralism was introduced in Fennoscandia, the DNA indicates that this was done with a new stock of animals brought into the region. The Saami did not build up herds from their own, domesticated animals. Nor did they use native, wild reindeer. The same genetic analysis has also shown that the native, wild reindeer population went through genetic bottlenecks, an indication that intensive hunting decimated the population. In the mountains of Southern Norway, the bottleneck can be seen from the 11th to 12th centuries and in Finnmark after 1500 AD (Røed et al. 2014; Røed et al. 2018). The concurrence between the genetic bottleneck and new animals in northern Norway is an indication that there is a correlation between an increase in hunting and trapping, and the transition to pastoralism. In the following, I will carry out a brief overview of technological developments in the trapping systems for big game from the Stone Age to the Middle Ages.

2.3 Hunting and trapping of wild reindeer

The oldest form of hunting of reindeer is of course the bow and arrow. Sometime during the Mesolithic, the pitfall trap was invented (Bergstøl 2015a). The oldest dated examples in Scandinavia were made for catching elk, but the technology is the same for elk and reindeer, so it is safe to assume that they were used for both species.

Even single pitfalls had low leading fences made of stacked stones. These fences were not high. Just a double or triple layer of stones, normally not more than five meters in length, but sometimes up to 10 meters (Figure 2.1). The pitfalls measure about 1 x 2 meters inside, and they are nearly two meters deep. It may look like there are two types of pitfall; the ones made of stone, and the oval earth-pits, dug in sandy soils (Bang-Andersen 2009). Excavations of well-preserved oval pitfalls in sand, however, have shown that they were lined with an inner wooden construction, making them very similar to the stone-built ones (Bergstøl 2015b). I will argue that the local building material was the most important factor, since most of the stone-built pits lie above the tree line.

It was not until the late Viking Age and Middle Ages that the rows of pitfalls became really long, with up to a thousand pits in a single system (Vorren 1998; Hansen and Olsen 2004: 185-190; Solli 2018). These long rows block large seasonal migrations, like at Dovrefjell (Jordhøy 2007).

When new methods for trapping were developed, it did not mean that the old ones had to be abandoned. Hunting with bows and arrows existed parallel to pitfall trapping, and when new mass

trapping systems were developed into the final form in the Late Iron Age, trapping with pitfalls were still used. In many ways, one can say that the first mass traps for several animals were a development of the single pitfalls, like one located close to a large mass trapping system at Hardangervidda. This pitfall has long funnel shaped arms that led the animals into the short end of the rectangular pit (Figure 2.2). This feature is typical of the bigger mass traps. Normally, the pitfalls can catch animals from both directions, but in some cases they catch only from one. In the case of the pit in Figure 2.2, it lies in a migration route where thousands of animals pass every fall. It was constructed in the Viking period, and was abandoned in the middle ages (Bergstøl 2016). A pit like this is not very different from the smallest mass trapping systems. The common feature is that they have funnel shaped fences that lead the animals into the trap.



Figure 2.2: Pitfall with long fences. (Photo: J. Bergstøl.)

The archaeologist Runar Hole has documented and studied the development of mass trapping systems in his master's thesis (Hole 2013). All the known traps in the Dovrefjell/Rondane-region have been documented with GPS, and I will present them here (Figure 2.3), together with other known traps for reindeer from Southern Norway (Jordhøy 2007, 2012).

The trap called Storgrava in Rondane is similar to the pitfall, but the dimensions are greater (Figure 2.4). The inside measurements of the holding pen are 19 x 3 meters, and it could hold maybe as many as 50 animals. There are traces of posts near to the holding pen, and the area between the posts has been cleared of rocks, making it easier for the animals to go there. This type is what Runar Hole refers to as type 1. The biggest difference, apart from the size, between the pitfalls and the mass traps, is that the hunter had much better control of the game after it had entered the mass trap. The

pitfall catches animals randomly, and the hunters have no control over what animals they get, and if the animal is killed or not. In a trap like this, the animals was kept alive until they were butchered, or let go. The fences were made of both stones and posts, which were bigger and more solid the closer they were to the pen.

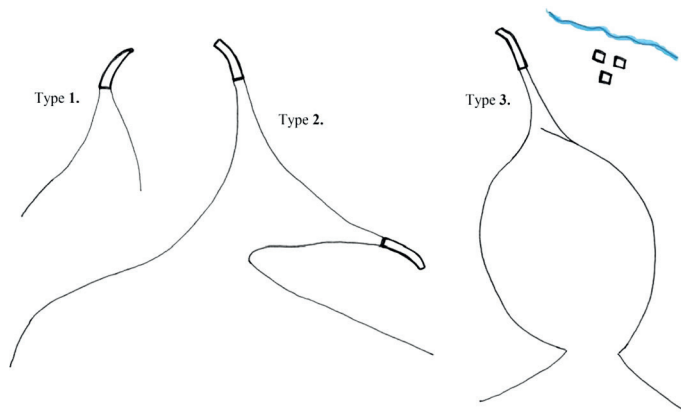


Figure 2.3: The three types of mass traps, as presented by Runar Hole. (Hole 2013, with permission).



Figure 2.4: The holding pen at Storgrava, a type 1-trap. (Photo: J. Bergstøl.)

Throughout the year, wild reindeer have different behaviour. In the summer, the bucks form separate herds, counting from a few up to as many as 100 animals, whereas the does and calves form larger herds. During the rutting season from around August, the bucks seek the does for mating, and by then some herds may count as many as 1000 animals.

The holding pens in the type 1-traps may take from 20 to maybe 50 animals if they are completely full, and I believe that it must have been frustrating for the hunters to see the majority of the animals escaping, just because the pen was full. This may have led to the development of type 2. This type is actually nothing more than one or two more pens to catch the animals escaping from the first. Animals that turned around, or were not caught in the first pen would be led into a second and sometimes into a third pen. The dimensions of this type are more or less the same as for type 1.

The third type is the really large systems, with arms stretching more than a kilometre. The reindeer were pushed into a holding fence that can hold hundreds of animals. The trap marked *h* in Figure 2.5 has two enclosures. First the holding fence, and then a small pen with very thick posts with small gaps in-between. This, the killing pen, ends in a narrow funnel, which can only hold one animal at a time. From this end, there is a deep trail leading to the butchering site, a few hundred meters away. There are traces of several houses, with large heaps of butchering refuse. The reindeer were killed at the end of the funnel, and were probably pulled by horse to the site where the butchering took place (Hole 2013: 83).

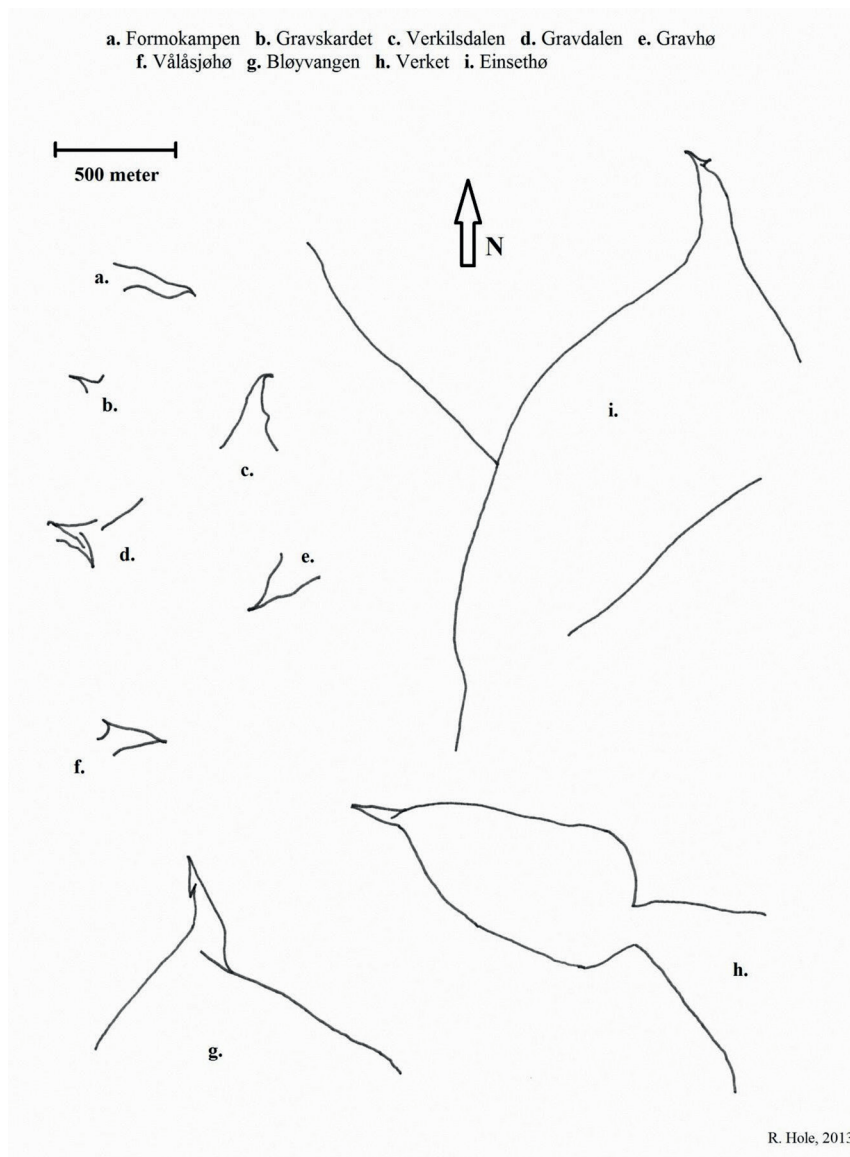


Figure 2.5: The different mass traps, in scale. Type 1: a, b, c, e. Type 2: d, f, g, and Type 3: h, i. (Hole 2013, with permission.)

The trap *b* in Figure 2.5 was found at a place called ‘Verket’ in Lesja, Oppland County. Variants of this name is found in connection with several of the larger traps, such as Verket, Verkilsdalen, and Verkensseter (Solli 2018). The origin of the name may be interpreted in at least two ways. It may be connected to the Old German word *werka*, meaning work or action, indicating that the hunt was almost industrial (Solli 2018: 17). Another possibility is that it comes from the Old Norse *virki*, meaning timber logs, or a solid fence made of wood, as for example in Danevirke, the great Iron Age wall in Schleswig (Jordhøy et al. 2005: 57). The dimensions of the posts and the small gaps between them indicate a solid wall, and the length was more than a kilometre. I certainly see that both interpretations are possible, but in my opinion, it is more likely that a fence like this, that restricted the passage for everybody who were in these mountains all year around, is very likely to become a place name used by everyone.

The site at Verket is especially interesting because it has a remarkable resemblance to the later fences used for tame reindeer among the Saami. The funnel ends on the top of a small hill, which means that the animals, caught between the arms of the fence, can see an opening between the posts in the fence in front of them. After they pass the ‘gate’, the terrain falls and the fence opens, and the animals can settle down while the hunters close the opening behind them.

When we look at the different types put together in the same scale, it is easier to understand the similarities and difference between them, and how large the third type really is. In addition to these three types, there are the systems that lead the animals into water, where they were killed. The butchering sites by these traps are similar to the ones in type 3. The watertraps are also very large. Figure 2.6 show the system of cairns that led the animals to the water, and the butchering site on the opposite side (Bergstøl 2016). Analysis of the bone material on the butchering sites show that the main phase was between 1250 and 1300 AD, and estimates from the Sumtangen site alone, is that between 5500 and 7800 reindeer were butchered during those 50 years. Counting the three other localities in the same system that were in operation at the same period, an estimated 11 000–15 000 animals were caught, an average of nearly 300 a year (Indrelid and Hufthammer 2011).

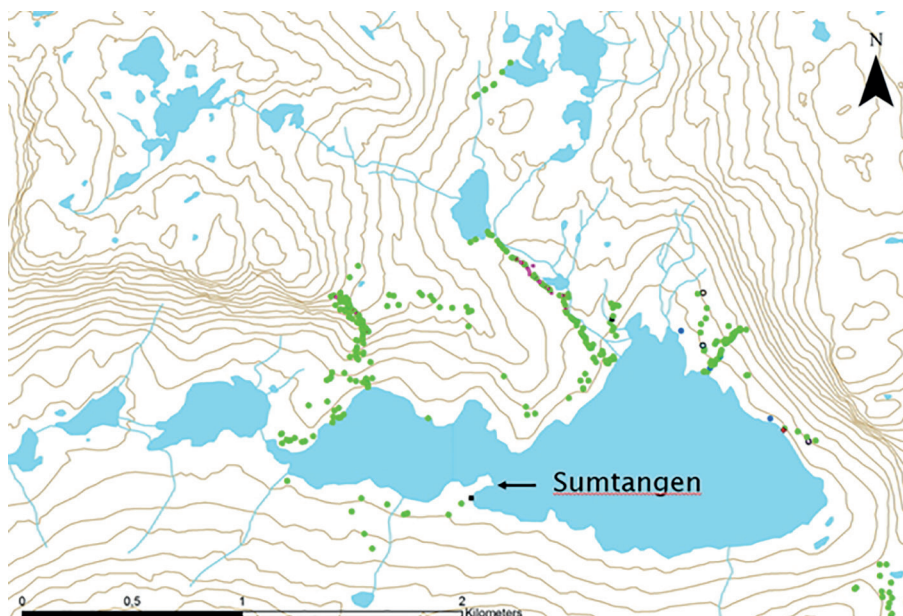


Figure 2.6: Water trapping system at Hardangervidda. (Bergstøl 2016.)

2.4 Dating of mass trapping systems in southern Norway

Not all these mass traps have been dated, but enough to know when the type 3 systems were fully developed. Pitfalls were in use from the Mesolithic all the way up to the 19th century, with the most intensive period during 1000–1300 AD. None of the systems of type 1 or 2 are dated, but there are several dates from the fully developed third type, and of the water traps. It is of course likely that some of the type 1 and 2 traps were still in use in parallel with type 3. It is also possible that the first two types are older.

At Einsethø (*i* in Figure 5), the butchering site was used from an early start around 600 AD, to around 1300, with a peak around 1200 AD (Mikkelsen 1994). At Verket (*b* in Figure 2.5), only two reindeer bones have been dated so far, and they fall between 1000 and 1300 AD (Hole 2013). The large water trapping system at Hardangervidda had a limited use in the Early Iron Age and was then abandoned until the most intensive phase between 1250 and 1300 AD (Indrelid and Hufthammer 2011).

As a conclusion, we see that the third type with a separate butchering/processing site, the same as the largest water trapping systems have, was developed between 1000 and 1300 AD.¹ This matches very well with recent studies that show a genetic bottleneck in the reindeer population in southern Norway in the 11th and 12th Century AD (Røed et al. 2014).

2.5 Trapping in Northern Norway

As in southern Norway, there are pitfalls for reindeer in all areas where the animals migrated, and the story of Ohthere suggests that there was large-scale trapping also in the north in the Viking Age (Bately 2007). Radiocarbon dates have shown an equal time depth in the north as in the south (Furset 1995, 1996; Sommerseth 2009: 253). The most important place is the Varanger peninsula, with more than 3000 pitfalls (Schanche and Schanche 2014). The density of trapping pits is maybe greater here than anywhere else and there are also funnel-shaped traps (NSaa.: *voupman*). The topography of the inner part of the peninsula forms bottlenecks through which the animals had to pass during seasonal migrations. The longest rows of pitfalls are at Gollevarre, located on the isthmus between the Tana river and the Varanger fjord, where a large settlement site with turf huts has been found (Munch and Munch 1998). This site contains middens with huge amounts of reindeer bones and antlers (Hansen and Olsen 2004: 186).

Written records from Vardøhus state that in 1632 and again in 1653, Saami people were charged with not having paid the nine reindeer in taxes from two reindeer fences (No.: *reingårder*) (Niemi 1983: 182–183). The traps were not maintained due to a lack of reindeer. According to Governor Hans Lillienkiöld, they were abandoned in the late seventeenth century (Bjørklund 2013: 175).

Is it possible that they may be as old as the ones in southern Norway, or even older? When we look at the petroglyphs in Alta, there are indications that some kind of enclosures was used as far back as 4000–5000 BC (Helskog 2012). The depictions do not show the same long funnel-shaped arms as the later traps, but these may have been later extensions. It is interesting to note that they were in use as traps for wild animals as late as the 17th century.

The most characteristic feature of the type 3-traps in southern Norway is the butchering sites with large middens of bones and antlers, none of which have been found in connection to the fences at Varanger. The only known large mounds of butchering refuse, are near the large system of pit-fall traps at Gollevarre mentioned above. Three reindeer bones from the midden at Gollevarre are dated between 1225 and 1425 AD, and one after 1520 AD, (Munch and Munch 1998). This is later than

1. Professor Brit Solli carried out excavations at Verket in 2018 and 2019, but the results are not yet published.

the peak of the mass traps in the south, and coincides with the genetic bottleneck, suggesting that the wild reindeer population in Finnmark was drastically reduced in the 16th century (Røed et al. 2018: 284). Instead of the large mounds of bones found with the converging fences in the North, there are numerous circular meat caches (Schanche and Schanche 2014). This indicates that the meat was temporarily buried in the scree to be collected and brought to a settlement site somewhere else.

2.6 From trapping to pastoralism, or from one form of domestication to another?

Ethnographers Ørnulv Vorren and Ernst Manker suggested that the converging fences in Saami reindeer herding must have found their form in the earlier fences for trapping (Vorren and Manker 1976: 64–65). In 1957, when they first published their book, the funnel-shaped mass traps were only known in Finnmark, and Vorren and Manker's thought was probably that Saami pastoralism developed there. I believe that in many ways they were right that the reindeer fences developed from traps for wild reindeer, but that the models were not the ones found in northern Norway.

The archaeological material from the house remains and middens found with the mass traps in southern Norway is typical of Norse sites. The houses found adjacent to the traps were rectangular, some were stone built and others made of timber, and they are similar to houses found in medieval towns (Weber 2003). The archaeological material at the sites suggests the same ethnic affiliation, with for instance several runic inscriptions at Sumtangen, even with reference to the Christian God (Indrelid and Hufthammer 2011).

There were also Saami groups present in the Dovrefjell mountains at the time the funnel shaped traps were in use (Bergstøl and Reitan 2008). One of the largest traps lies at Einsethø (marked 'i', in Figure 5), in the mountains belonging to King Harald Fairhair's farm at Dovre, where the Saga tells that the Norwegian king met, and married, the Saami woman Snøfrid in the ninth century (cf. Mikkelsen 1994; Bergstøl 2008). Even as far south as Hardangervidda, where most of the large water trapping systems are, there are sites that indicate Saami presence (Gjerde 2016). For example, the famous site Sumtangen is located at a headland in Lake Finnsbergvatn. The prefix *Finn-* (meaning 'Saami' in Norse) is found several places in the nearby mountains (Bergstøl 2016). Altogether, this indicate that even if the large scale trapping in southern Norway in the Middle Ages was controlled by Norse hunters and traders, there may have been Saami people involved in the trapping (see also Amundsen this volume).

It has been suggested by anthropologist Tim Ingold and others, that the transition to pastoralism among the Saami marked a change in the relations between man and animals, and in the social relations within the Saami society (Ingold 1980, see also Salmi et al. this volume). From an egalitarian situation, with the same right to hunt every animal, a change occurred to private ownership of a herd. But how much of a transition was this? The Saami already had small herds of domesticated reindeer for milking, pulling sledges, and as decoys (Hansen and Olsen 2004: 209, Bjørklund 2013). The faunal material from Saami hearth row sites even shows they kept sheep or goats in Pasvik from around AD 1000 (Hedman et al, 2015, see also Nuñez et al. this volume). Thus the concept of private ownership of animals was already practiced and well known among the Saami.

Saami hunters, who in many areas hunted wild reindeer in the same mountains as the Norse in southern Norway, met private ownership of traps among their neighbours and trading partners. Ownership and rights to build traps was regulated in the oldest Norwegian laws (cf. Solli 2018). The animals themselves everybody could hunt in the commons, but the right to the traps was private, as

long as they were used and maintained. We can thus argue that the concept of private ownership of traps and hunting installations was well known among the Saami, at least in the south. The Saami may also have taken part in the organised trapping, even if it was controlled by Norse chieftains and kings.

Why did the Saami not develop a pastoral economy with the animals they already had? Or did they even try? The wild reindeer in the mountains of Southern Norway are extremely shy, and may have been impossible to control in large herds. The now extinct wild reindeer population in northern Norway came from the same immigration, more than 12 000 years ago, and have probably had the same behavior (Røed et al. 2011). In Reinheimen, between Jotunheimen and Dovrefjell, reindeer herding ended in the 1950s. The remaining animals were released into the wild, and have been hunted every year since. Studies show that these animals have slower flight response and run shorter distances before settling down again, compared to wild animals in regions where there was never herding (Bevanger et al. 2007: 72). This may indicate that these animals are genetically calmer. Another reason for not building herds with the local, wild animals may have been that the native, migrating reindeer was considered a common good. Perhaps it was more socially acceptable to build up large herds if you did not use community resources, but built it up with new, domesticated animals. Studies of traditional reindeer husbandry shows that it is possible to keep wild and domestic populations separate, even when they exist in the same area (Anderson et al. 2017).

The Saami societies increased contact both with the Norse in the south and west, and with trading partners in today's north-western Russia during the Viking Age and Middle Ages (AD 800–1300) (Hansen and Olsen 2004: 136). At the same time, certain practices and common material features spread throughout the Saami settlement area, for example the hearth row sites (Hedman et al. 2015). This has been described as ethnic consolidation among the Saami (Hansen and Olsen 2004: 140). I will argue that this intensified contact made it possible for the Saami to develop their particular form of pastoralism. The technology of the large traps made it possible to control bigger herds and to separate the animals they wanted to keep from the ones they wanted to take out. This technology was developed and well-known when the new breed of animals was introduced to the region. The genetic evidence points towards an eastern origin of the new animals (Røed et al. 2018). The Saami have had important eastern trading relations that goes far back in time, and they may have had knowledge of these docile animals long before the emergence of pastoralism. Saami pastoralism may thus be seen as a hybrid trait, made possible by contact with neighbouring societies, both to the south and to the east.

The aim of this article has been to combine new empirical data from several sources into the discussions around the big change, from a hunting-based economy with small-scale husbandry to pastoralism. The Saami identity was already closely linked to the reindeer, both through husbandry and hunting. Even with culturally hybrid elements such as innovations in trapping systems and the introduction of a new breed of animals, the Saami pastoralism is a fully Saami invention. How and why this transition happened within the Saami societies is another and much bigger question.

Acknowledgements

I want to thank the editors and two anonymous referees for much needed and appreciated comments on a manuscript that was far from coherent.

Bibliography

- Anderson, D. G, K. S. Kvie, V. N. Davydov, and K. Røed. 2017. Maintaining genetic integrity of coexisting wild and domestic populations. Genetic differentiation between wild and domestic Rangifer with long traditions of intentional interbreeding. *Ecology and Evolution* 17(7): 6790–6802.
- Bang-Andersen, S. 2009. Prehistoric reindeer trapping by stone-walled pitfalls. News and views. In N. Finlay, S. McCartan, N. Milner, and C. Wickham-Jones (eds.): *From Bann Flakes to Bushmills*, pp. 61–69. Prehistoric Society research paper 1. Oxford: Oxbow Books.
- Bately, J. 2007. Ohthere and Wulfstan in the Old English Orosius. In J. Bately and A. Englert (eds.): *Ohthere's Voyages. A Late 9th-Century Account of Voyages along the Coasts of Norway and Denmark and Its Cultural Context*, pp.18–39. Maritime culture of the north 1. Roskilde: Viking Ship Museum.
- Bergstøl, J. 2008. *Samer i Østerdalen? En studie av etnisitet i jernalderen og middelalderen i det nordøstre Hedmark*. *Acta humaniora* 325. Oslo: University of Oslo.
- Bergstøl, J. 2015a. 8000 år gamle fangstgroper for elg? *Viking* 78:47–62.
- Bergstøl, J. 2015b. Trapping pits for reindeer. A discussion on construction and dating. In S. Indrelid, K. L. Hjelle, and K. Stene (eds.): *Exploitation of Outfield Resources – Joint Research at the University Museums of Norway*, pp. 49–54. Universitetsmuseet i Bergen skrifter 32. Bergen: University of Bergen.
- Bergstøl, J. 2016. Fangst av villrein på Hardangervidda. In J. C. Frøstrup, T. Punsvik, and B. Benberg (eds.): *Villreinen fjellviddas nomade. Biologi, historie, forvaltning*, pp. 99–111. Arendal: Friluftsförlaget.
- Bergstøl, J. and G. Reitan. 2008. Samer på Dovrefjell i vikingtiden: et bidrag til debatten omkring samenes sørgrense i forhistorisk tid. *Historisk Tidsskrift* 87(1): 9–27.
- Bevanger, K. M, F. O. Hanssen, and P. Jordhøy. 2007. *Villreinen i Ottadalsområdet*. NINA report 227. Trondheim: Norsk institutt for naturforskning.
- Bjørklund, I. 2013. Domestication, reindeer husbandry and the development of Sámi pastoralism. *Acta Borealia* 30(2): 174–189.
- Bjørnstad, G, T. Flagstad, A. K. Hufthammer, and K. H. Røed. 2012. Ancient DNA reveals a major genetic change during the transition from hunting economy to reindeer husbandry in northern Scandinavia. *Journal of Archaeological Science* 39(1): 102–108.
- Furset, O. J. 1995. *Fangstgroper og ildsteder i Kautokeino kommune. Rapport fra forskningsutgraving 24 juli - 3 september 1994*. Institutt for Samfunnsvitenskap 37. Tromsø: University of Tromsø.
- Furset, O. J. 1996. *Fangstgroper i Karasjok kommune. Rapport fra forskningsutgraving 3 juli - 4 august 1995*. Institutt for Samfunnsvitenskap 39. Tromsø: University of Tromsø.
- Gjerde, Skalleberg, H. 2016. *Sørsamisk eller førsamisk? Arkeologi og sørsamisk forhistorie i Sør-Norge - en kildekritisk analyse*. PhD thesis. Oslo: Museum of Cultural History.
- Hansen, L. I. and B. J. Olsen. 2004. *Samenes historie fram til 1750*. Oslo: Cappelen.
- Hedman, S. D, B. J. Olsen, and M. Vretemark. 2015. Hunters, herders and hearths. Interpreting new results from hearth row sites in Pasvik, Arctic Norway. *Rangifer* 35(1): 1–24.
- Helskog, K. 2012. Ancient depictions of reindeer enclosures and their environment. *Fennoscandia Archaeologica* 29(1): 29–54.
- Hole, R. 2013. *Massefangstanlegg for villrein. Ei studie av sosial kontekst basert på romlege og kronologiske variabler*. MA-thesis. Trondheim: Norwegian University of Science and Technology.
- Indrelid, S. and A. K. Hufthammer. 2011. Medieval mass trapping of reindeer at the Hardangervidda mountain plateau, South Norway. *Quaternary International* 238(1): 44–54.

- Indrelid, S, A. K. Hufthammer, and K. Røed. 2007. Fangstanlegget på Sumtangen, Hardangervidda - utforskningen gjennom 165 år. *Viking* 70: 125–154.
- Ingold, T. 1980. *Hunters, Pastoralists and Ranchers. Reindeer Economies and Their Transformations*. Cambridge Studies in Social Anthropology 28. Cambridge: Cambridge University Press.
- Jordhøy, P. 2007. *Gamalt jakt- og fangstkultur som indikatorer på trekkmonster hjå rein. Kartlagde fangstanlegg i Rondane, Ottadalen, Jotunheimen og Frollhogna*. NINA report 246. Trondheim: Norsk institutt for naturforskning.
- Jordhøy, P. 2012. *Gamalt villreinfangst i Rondane. Dei store fangstgroprekkene i høve til villreintrekk og beite*. NINA report 872. Trondheim: Norsk institutt for naturforskning.
- Jordhøy, P, S. A. Hoem, and K. Støren Binns. 2005. *Gammelt jakt- og fangstkultur som indikatorer for eldre tiders jaktorganisering, ressurspolitikk og trekkmonster hos rein i Dovretraktene*. NINA report 19. Trondheim: Norsk institutt for naturforskning.
- Mikkelsen, E. 1994. *Fangstprodukter i vikingtidens og middelalderens økonomi. Organiseringen av massefangst av villrein i Dovre*. Universitetets Oldsaksamlings skrifter 18. Oslo: Universitetets Oldsaksamling.
- Munch, J. S. and G. Stamsø Munch. 1998. Utgravningene på boplassen på Gållevarri. In Ø. Vorren (ed.): *Villreinfangst i Varanger fram til 1600–1700 årene*, pp. 106–133. Tromsø museums skrifter 28. Tromsø: Nordkalott-Forlaget.
- Murashkin, A. I, E. M. Kolpakov, V. Shumkin, V. Khartanovich, and V. Moiseyev. 2016. Kola Oleneostrovskiy grave field: A unique burial site in the European Arctic. In P. Uino and K. Nordqvist (eds.): *New Sites, New Methods: Proceedings of the Finnish-Russian Archaeological Symposium, Helsinki, 19–21 November, 2014*, pp. 185–199. Iskos 21. Helsinki: The Finnish Antiquarian Society.
- Niemi, E. 1983. *Vadsø historie. Fra øyvær til kjøpstad*. Bd. 1. Vadsø: Vadsø kommune.
- Røed, K. H, Ø. Flagstad, G. Bjørnstad, and A. K. Hufthammer. 2011. Elucidating the ancestry of domestic reindeer from ancient DNA approaches. *Quaternary International* 233(1): 83–88.
- Røed, K. H, I. Bjørklund, and B. J. Olsen. 2018. From wild to domestic reindeer – Genetic evidence of a non-native origin of reindeer pastoralism in northern Fennoscandia. *Journal of Archaeological Science* 19: 279–286.
- Røed, K. H, G. Bjørnstad, Ø. Flagstad, H. Haanes, A. K. Hufthammer, P. Jordhøy, and J. Rosvold. 2014. Ancient DNA reveals prehistoric habitat fragmentation and recent domestic introgression into native wild reindeer. *Conservation Genetics* 15(5): 1137–1149.
- Schanche, A. and K. Schanche. 2014. Jakt og fangst i eldre tid. *Ottar* 302(4): 14–22.
- Solli, B. 2018. Reindeer hunting, materiality, entanglement and society in Norway. *Journal of Glacial Archaeology* 3(1): 1–26.
- Sommerseth, I. 2009. *Villreinfangst og tamreindrift i Indre Troms: Belyst ved samiske boplasser mellom 650 og 1923*. PhD thesis. Tromsø: University of Tromsø.
- Storli, I. 1994. *“Stallo”-boplassene. Spor etter de første fjellsamer?* Oslo: Novus.
- Storli, Inger. 2007. Ohthere and his world. A contemporary perspective. In J. Bately and A. Englert (eds.): *Ohthere's Voyages. A Late 9th-Century Account of Voyages along the Coasts of Norway and Denmark and Its Cultural Context*, pp. 76–99. Maritime culture of the north 1. Roskilde: Viking Ship Museum.
- Vorren, Ø. 1998. *Villreinfangst i Varanger fram til 1600–1700 årene*. Tromsø museums skrifter 28. Tromsø: Nordkalott-Forlaget.
- Vorren, Ø. and E. Manker. 1976. *Samekulturen. En kulturhistorisk oversikt*. 2nd edition. Tromsø: Universitetsforlaget.
- Weber, B. 2003. Lafteteknikk og hustyper: Introduksjon av laftete bygninger i Norge. *Primitive tider* 5: 65–83.