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**Reindeer Husbandry, Sami Economy and the Evolution of Common-Pool
Resources in early modern northern Scandinavia 1550–1780**

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Abstract

During the last decades, there has been a large increase of knowledge about the use of common pool resources in many parts of early modern Europe. Despite having an economy based on extensive animal husbandry, the use of CPRs has been almost absent in the discussion of early modern Sami communities. This paper endeavors to fill this void, presenting an empirical based assessment of how changes in Sami economy, i.e. reindeer husbandry, came to alter the landscape use and its implication for property rights and collective action. The paper will discuss these changes in a self-governing perspective using the IAD-framework. In early modern Lappmark in Northern Sweden, two groups of Sami lived of different resources and in different areas yet within the same administrative organization. Forest Sami dominated in the eastern part and Mountain Sami dominated in the western part. This paper will discuss the development of the economy of these two Sami groups and its implications for land use, property rights and collective use of natural resources. The hypothesis is that the Mountain Sami were able to make a leap in their economy during the sixteenth century by developing reindeer nomadism into a large-scale husbandry. This changed the way natural resources were used and the large increase of reindeer required more collective use of pasture land. It impacted property rights to land and created an economy more dependent on collectively owned resources. The Forest Sami subsistence focused mainly on fishing, hunting and small-scale reindeer husbandry. They did not expand reindeer herding, instead Mountain Sami used Forest Sami land for winter grazing. We conclude that due to differences in their ecology Mountain Sami and Forest Sami could develop along different economic trajectories by changing their rules of use. The change was self-organized and differences are visible when comparing attributes of these communities.

Introduction

The development and function of common-pool resources (CPR's) has been a major topic in research during the last three decades (Ostrom 1990; Walker and Gardner 1992, Agrawal and Gibson 1999; Acheson 2003; Haller 2012 are a few). It has increased our understanding of local users' ability to build institutions for governance. In a European context, it has been showed that a complex grid of property rights was a necessity for early modern farming and that commons were a vital part of peasant economy (de Moor 2015; Netting 1976). This economy emerged during the medieval time and disappeared in many parts of Europe in the eighteenth and nineteenth centuries when commons where privatized or came under government control (de Moor et al. 2002). In Northern Scandinavia, a more intense use of commons started in the sixteenth century that took off in the seventeenth century and was driven by a global demand for commodities like copper, iron and tar. A production that relied on the local users increased use of CPR's (Larsson 2016a).

The sixteenth and seventeenth century was also a time of transformation and expansion of reindeer husbandry and the Sami economy (Arell 1977; Hansen and Olsen 2014; Hultblad 1968; Lundmark 1982; N.J. Päiviö 2011). Despite the large increase in knowledge about the use of CPRs and the importance of commons in early modern Europe the discussion about CPR's has been almost absent concerning the development in early modern Sami communities. Instead the discussion of how property rights developed and its impact on the use of natural resources in an early modern Sami economy has mostly focused on formal property rights translated from an agrarian concept. Resulting in misinterpretations and a superficial discussion not paying enough attention to the special features in the development of the Sami land use. This paper endeavors to fill this void, presenting an empirical based assessment of how changes in Sami economy, i.e. reindeer husbandry, came to alter the landscape use and its implication for a customary land right system and development of de facto property rights. We will inquire this by focusing on the reciprocal and complex nature of human-environment interaction (HEI) (Moran and Brondizio 2013) by building an analytic narrative using the Institutional Analysis and Development (IAD) framework (Ostrom 2010; McGinnis 2011). It will make it possible to analyze the development by focusing on how local users responded to changes and how they developed policy for land use. The article will contribute to a better understanding of how Sami economy evolved, how natural resources

were used and later how these de facto properties right came to encounter de jure property rights proposed by the Swedish government.

This paper will discuss the differential development of the economy of two Sami sub-groups, i.e. Forest Sami and Mountain Sami, using different ecological settings in Northern Sweden and its implications for land use and property rights. The hypothesis is that changes in reindeer herding altered the way natural resources were used and that increasing numbers of reindeer required a more collectively use of land. We are focusing on the property regimes the users created, hence the paper will emphasize de facto property rights rather than de jure property right. By analyzing the development as a human-environment interaction (HEI) we stress that to understand the development one have to consider how user groups managed different ecological settings and how the use of natural resources changed over time. Some groups might have benefit more than others from changes in production and in this study, we found that Sami families that could expand reindeer husbandry in the seventeenth century, came to define natural resource management until today.

Our analysis proceeds as follows. Part I will introduce different land use strategies used by two Sami sub-groups in the Swedish Lappmark and discuss these from a property rights and self-organization perspective. The area of investigation, Lule lappmark, will be introduced. In Part II the development from 1550 up to 1780 will be analyzed. We will show how the three external variables in the IAD-framework: natural resources, attributes of community and rules in use, came to change during the period. In part III we will discuss how these changes came to affect property rights to different resources and its consequences for Mountain Sami and Forest Sami. In part IV the observed changes will be synthesized and shifts in property rights concluded.

Part I

Mountain and Forest Sami and governance

In early modern Lappmark (Lapland) in Northern Sweden two sub-groups of Sami lived of different resources and in different areas, at least for parts of the year. Forest Sami (*skogslappar* or *granlappar*) dominated in the eastern Alpine part while Mountain Sami (*fjällappar*) dominated in the western Boreal part. The first known division of Sami into these two sub-groups are in the tax records from 1553 (Hultblad 1968: 124–126; Lundmark 1982:

41–46). During the second half of the early modern period, the concepts of Forest and Mountain Sami were clearly in accordance with how their economy was organized. It is fuzzier however, what the concepts describes when they first appear in the records. Scholars have pointed to inconsistencies in the tax records that make these hard to interpret. Hultblad (1968:126) has shown that the same person could be listed as a Mountain Sami one year and a Forest Sami another year. It has also been suggested that one reason for the Swedish state to distinguish the two sub-groups were that the Forest Sami paid tax solely in Sweden while the Mountain Sami paid tax in both Sweden and Norway. Related to this is the fact that the Forest Sami paid a fish tax, while the Mountain Sami, with a few exceptions, did not (Lundmark 1982: 44–45).

Even if it might have been hard for the tax collector to fully distinguish the two sub-groups in individual cases, it is obvious that a distinction between the two existed as early as the mid sixteenth century. It is unlikely that the two sub-groups would just have been the creation of the state, but more reasonable to think that the concepts actually reflect different economies and livelihoods. Lundmark (1982, 45) makes an important statement when he argues that the detailed descriptions of Forest and Mountain Sami from the second half of the seventeenth century cannot be used as a source about how these two sub-groups were using resources in the sixteenth century. However, in the sixteenth century the distinction provides an indication that the external conditions differed in such as ecological settings and trade were different between the two subgroups and that they faced different incentives to develop their resources in the centuries to come. It is possible that substantial differences were small in the sixteenth century (we will examine this more closely in section II) and this might have been a reason for why the tax collector sometimes mixed them up. An overarching idea for this paper is that the incentives that the two Sami sub-groups faced in the sixteenth and seventeenth century put them on different trajectories and that a major factor explaining the differences between them is how they used their different ecological settings. This resulted in increased organizational and economic differences between the two sub-groups with implications for the use of natural resources and property rights. To put it simple: It was in the interest of the Forest Sami to protect and control resources that was more stationary like fishery. In contrast, it was in the interest of Mountain Sami to get access to pasture land for an increasing number of reindeers. However, it is important to stress that Forest- and Mountain Sami were not different ethnical sub-groups, it was Sami people using different ecological settings within the same Lappmark.

The sub-groups were not fixed and it was possible for individuals to move between sub-groups. Early modern Sami's were not homogenous and the natural environment to a large extent impacted their livelihood. Different Sami groups occupied separate economic niches and an additional Sami group was, Sea Sami, who lived along the cost in northern Norway and in Russia and their main income came from fishery (Fjellström 1985: 27–38).

What do we know about how these sub-groups governed their society? We know a little (section II), but more importantly for this paper, we do know that one centerpiece in much of earlier research has been proven wrong. With little knowledge about how the Sami organized their society before the encounter with the early modern state, scholars had to adopt a model of their society to establish a baseline for comparisons. To create a viable model of their society with limited access to written sources and hard to interpret archeological artifact, scholars turned to ethnographical studies. In 1929, Väniö Tanner a Finnish geologist and diplomat published a field study of the Skolt Sami in the Petsamo area on the Kola Peninsula in today's Russia (Tanner 1929). In his book, he argued that the Skolt Sami governance system as it was in the 1920s represented an original Sami Siida organization, a self-governing local community, which had been present throughout the whole Sami region. He suggested that this original organization had been preserved in the Skolt Sami district because they had lived in isolation from Tsar-Russia, while in the Nordic countries the original Sami organization had been destroyed in the encounter with the state. An important part of the Skolt Sami organization was that members of the communities gathered in permanent winter villages, held village meetings and elected representatives. The village was a meeting point not only for families with kinship relation, but for all households in a certain district. The Siida could decide about institutions for the use of natural resources and they had their own court. Tanners' description of the Skolt Sami as representing the original Siida organization has prevailed and influenced the perception of Sami organization.

However, the idea about an original Siida organization including large winter villages, as Tanner described it have so many flaws that it must be considered invalid as a model for analyzing a Sami society in Northern Sweden before the encounter of the early modern state. Kuoljok (1987: 2011) has shown that the Skolt Sami organization that Tanner described was the result of a changing Russian society after 1861 when selfdom was abandoned. In contrast to Tanners model the Skolt Sami Siida was in fact modeled after Russian village ordinances

and the Sami's were governed under the same laws as Russian peasants. Further the idea that the Skolt Sami had lived in isolation from the Russian society in earlier centuries has been proven wrong. They were under the same law as peasants, they were involved in international trade, and they had lost major parts of their land to monasteries (Kuoljok 2011 and references therein). Kuoljok is not the only scholar that has questioned the idea of large winter villages in a North Swedish context. Using different archeological methods Karlsson (2006) and Aronsson (2009) have shown that what was previously interpreted as large winter villages in Lule lappmark in North Sweden instead represented places used over many centuries by small groups of people.

The depiction of an advanced Sami society, destroyed in the encounter with a strong state has played an important role for scholars that have emphasized the state's devastating role in the changing Sami economy during early modern period (Lundmark 1982: 2008). To point to the fact that a Sami society, that resembled the organization of early modern peasants, did not exist is not to say that the State did not have an important role in shaping the future of Sami society. The State indeed had an important role, but to understand this process one have to understand how the early modern Sami society changed and how these changes came to impact different Sami households (groups) and their relation to the state.

It is important in two ways. The first is that the pre early modern Sami society presumably was a society without an overarching Sami organizations to create institutions for larger groups. Management decisions regarding most natural resources were made within user groups, hence small self-organized groups. The second is that the Sami society that we encounter in the first tax collection records in the sixteenth century was a society built on kinship relations and the most plausible is that groups of related families came together in hunting, fishing and reindeer husbandry (Kuoljok 2011). In relation to the overarching hypothesis of this paper, that changes in reindeer herding required a more collective use of land, it is highly plausible that interaction among users were altered when reindeer herding became more important. A fundamental part in the discussion about the origin of common pool resources in medieval Europe is the transition from an economy based on family and kinship to an economy where neighbor relations became more important. An economy where people started to make alliance with others who followed a similar course in life (de Moor 2015: 3). Hence, a Sami economy with more intense use of common pool resources would

require more collaboration between neighbors and the mountain Sami community would develop strategies to collaborate with actors outside their kinship.

Self-organization

Research about the management of CPRs has focused on local user's ability to build their own institution for governance (Gibson et al 2005). The concept of self-governing has been present in the discussion about Sami reindeer husbandry in modern era (Marin and Bjørklund 2015; Riseth 2004), but is lacking in the discussion of the early modern Sami communities, with few exceptions (Bjørklund 1990).¹ Earlier research has described two main trajectories. One has focused on the encounter between the state and Sami communities and emphasized the colonial pattern of the state and how Sami communities have been deprived of rights to land and culture (Lundmark 2006; *ibid* 2008; Hood 2015). The other has focused on Sami agency where the interaction with outside societies played a crucial role in generating and maintaining a number of features considered integral to Sámi culture. But even here the driving forces for change came from the outside. Hansen and Olsen (2014: 229) argue that the state "considerably undermined the foundation for autonomous Sámi social systems". The question about how early modern Sami communities built their own institutions and implication of this for management of natural resources has not explicitly been inquired. What has been lacking in earlier research is the question of how Sami CPRs were managed. Did the local users created a common property regime for governance or if not, what defines the property regime they created?

The early modern state had the power to tax people and households, conscript men to warfare (however not Sami), propose the religion, introduce a judicial system, etc., but they had limited power to decide how local users would manage their land and waters, and how users would co-operate with other users. This is not to say that the decisions that the early modern state took did not impact the Sami. They certainly did, but the states decisions became part of the fabric of institutions that the users need to internalize to make decision about their future management of land.

¹ Bjørklund (1990) identifies that early modern Sami economy was based on self-governing, but the concept has not been further explored

In the sixteenth and early seventeenth century the states interest in northern Scandinavia was driven by geopolitical reasons (control of international maritime trade), fur trade with the Sami, and revenue (tax) for the state. The Swedish state came to increase its interest in the inner of Northern Scandinavia in the seventeenth and eighteenth century, by mining and agrarian colonization. Despite the states larger interest, it was not until the nineteenth century that these aspirations really gathered pace with large impact on resource management and Sami livelihood (Brännlund and Axelsson 2011). Hence, early modern reindeer husbandry was managed in a self-governing context. Meaning that Sami took decisions about institutions for governance and that they created de facto property rights for their management. State legislation or changes in the tax code, could influence their decision making, but the state did not intervene in management and had little knowledge about how the Sami economy came together. More thorough investigation of Sami culture and economy was initiated by the state during the second half of the seventeenth century to provide the state with more accurate information. This was also a time of religious change when indigenous religion was confronted with Christianity (Rydving 1993).

This asymmetry of information between the state and the Sami is an argument for why the Sami economy has to be analyzed through a self-governing perspective. The Swedish state had some information about the output of the Sami economy, but had scant knowledge of how most of the land was used, how the decision-making process proceeded within the Sami society, and how the Sami created institutions for governing. In a self-governing context rules about how resources may be harvested and consumed and how rules would be monitored and enforced are usually developed by the users themselves (Ostrom 2005). There is no evidence that outside groups or the state could impact institutions for the governance of the natural resources used for reindeer herding. From this we conclude that the Sami decided their own institutions for governance of these resources. They decided who had a voice in making decisions, who had the right to participate in these decisions, who could propose new initiative etc. Before 1780, the state was mainly interested in the outcome of these activities. As we will see later for the case of fishing resources the state was a more active player. And in one important aspect the state had a role in management, the local courts where conflicts over resources were brought. This was led by a judge appointed by the state. However, the judge was supported by 12 lay-judges from the local community and up to 1780 these were

mostly Sami, making the local court well aware of local customs (Hultblad 1968; Arell 1977; Österberg and Sogner 2000; Larsson 2016b).

Property regimes

The discussion about the development of early modern Sami customary land rights has been almost absent. Instead the discussion of how property rights developed and its impact on the use of natural resources has mostly focused on formal property rights translated from an agrarian concept (Hansen and Olsen 2014: 301–304). This has resulted in misinterpretations and a superficial discussion not paying enough attention to the special features that characterize the development of Sami land use.

In its most simplified outline the long trajectories of Sami property regimes are described as going through three phases, hunting, pastoralism and ranching, giving users different access to animals and land (Ingold 1980: 4-5). The first phase was a hunter and fisher economy where wild reindeer and game animals were collectively used resources and hunting required collective action on common land (Bergman et al 2013; Josefsson et al 2010: 142). In the second phase reindeer pastoralism was based on privately owned reindeers grazing on common land (Bjørklund 2013: 175; Josefsson et al 2010: 142). The third phase was again based on collective action since the reindeer herding in the late nineteenth century was managed through Sami villages (*samebyar*) (Lantto 2012).² This over simplification is missing the complex web of rights to land, animals and other property that constituted the Sami society.

A lot of research has focused on the Sami's taxations land (Korpilaakko-Labba 1994; Lundmark 2006; N J Päiviö 2011). Taxation lands are known from the mid seventeenth century and was the land a person paid tax for. It has been assumed that taxation lands represent an older organization pre-dating their first appearance in sources and that they represented the area a household had an exclusive right to use natural resources from. It has been argued that the Swedish crown gave the same right to Sami's taxations land as it gave to the free holding peasants. A right that was evoked in the eighteenth and nineteenth centuries

² Ingold (1980: 4) argue that ranching introduced divided access to land and conclude that "hunting and ranching are precise opposites, whilst pastoralism contains elements of both". He makes a general statement about the whole northern circumpolar area, that not fully reflect the development in Sweden.

when taxation land was considered to be property of the crown and Sami users became crown tenants instead of freeholders. However, even if the question whether Sami were freeholders or crown tenant is important, it over shadows other important feature of the right to land that Sami's had. For instance, users could have different property rights to different resources. Furthermore, by ignoring de facto property rights it does not place the discussion in a larger context of how property rights developed during this time. It is also important to remember that not all taxpaying Sami were assigned to a taxation land. For example, in the taxation record from 1695 it is mentioned that a Sami did not have taxation land and instead moved on the mountain with his neighbors (Holmbäck 1922: 22). Assuming that also his neighbors lacked taxation land.

The early modern peasant in Sweden, freeholders or crown tenants, had different property rights to different resources with implications for how and when they could be used. Farm buildings were private property and possible to sell. Arable land was private when used for crop production, but common land after harvest when the fallow was used for grazing, making the land semi-commons (Smith 2000; Dahlman 1980). Arable were possible to sell but different rules were applied if the land was inherited or bought (Ågren 1997). Meadows could be private or common land and for the commons, peasants had user rights in accordance to their share in the village. Common land was not possible to sell as a separately entity (Larsson 2014). Similarly, when analyzing the early modern Sami society, it is reasonable to assume that de facto property rights and de jure property rights differed between different resources and some of these rights came to change when the resources were used differently. According to Linnaeus who traveled in the Lappmark in 1732 a taxation land was between 30 to 50 kilometers in diameter (175,000 to 485,000 acre) (Linnaeus 2003[1732]), a large area that must have been hard to control. We emphasize that focusing on taxation land, does not encompass the complexity in land use nor its implication for rights to use land.

There are some scholars that have discussed the early modern Sami customary rights in relation to taxation land. However, these studies lack a discussion about change in land use within the Sami society and implications for customary rights up to 1780 (Korpiaakko-Labba 1994). Other scholars have seen changes in the Sami economy (expansion of reindeer herding) between 1550 and 1780, but have not connect this to changes in customary land right, but instead focused on the transformation of the taxations land from freeholding to

crown tenants (N J Päiviö 2011). Most of the discussion about how taxation lands have changed has been a discussion without connection to the recourses used or to self-organization. Instead it has been seen as the state slowly but steadily eroding Sami institutions (Lundmark 2006).

The discussion about the development of the Sami economy needs to focus on property rights as a mean to achieve different goals in the management of natural resources. Lueck (1989) argues that different parties are likely to control different attributes of a resource because of their respective comparative advantages. We need to ask the following questions: How did the Forest Sami manage the resources they used? How did the Mountain Sami manage the resources they used? How did changes in their economies affect the right to use different resources? The property rights they had, made it possible to exercise choice over property and manage reindeer husbandry, fishing or other use of natural resources. In that sense property rights determined their economic performance and their developmental trajectories. Property rights are a bundle of legal relationships between people and these relationships change over space and time (Hohfeld 1913). Allan (1998: 106) describes an economic property right as an “ability, without penalty, to exercise a choice over a good, service, or person”. This right could be de jure, given legal recognition, de facto, based on customary relationships and existing without the state or state enforcement (Ellickson 1991). The facto property rights can also overlap with de jury rights.

The conventional typology of property systems divides them into four basic property regimes: state property, private property, common property and non-property (Bromley 1991). As has been pointed out this typology do not fit many real word circumstances (Cole 2002). What is also missing is a discussion about the fact that different types of property regimes are developed in accordance to the ecologies that are used. Robert Netting (1976: 135–46) identified five key variables that he considered the most important in differentiating common-property rights from individuals right to land, based on the nature of land use in an agricultural setting. Common property is more likely to develop and be sustained if (1) the value of production per unit area is low, (2) the frequency and dependability of use or yield is low, (3) the possibility of improvement or intensification is low, (4) the area required for effective use is large, and (5) the labor- and capital-investment group is large. These variables all appear to apply to the condition of production in the Lappmark.

Recently it has been suggested that the four categories of property regimes mentioned above are not enough to understand how pastoralist communities are using land for animal grazing (Moritz 2016). Since non-property is the absence of a property regime it would imply that it is open access to land and open access is equated with the tragedy of the commons. Moritz is arguing, from studies of pastoralist in Cameroon, that open access is not the absence of rules, and it does not lead to depletion of the resource. Moritz (2016: 689) propose a new property regime he calls open property regime that “solves the problem of a misfit between current theoretical models of the commons and the social-ecological system of pastoralism in which resource distributions are highly variable in space and time and users have to be highly mobile, flexible and opportunistic in tracking the changing distribution of resources”. Moritz argues that in lack of a better word pastoral system has often in earlier research been described as common property regimes. Fernández-Giménez (2002) point out that a hallmark of pastoral land use strategies is mobility, flexibility, and reciprocity. The paradox requirement of pastoralism is the need for secure use rights with maintained spatially and social flexibility. It makes “the codification of tenure and delineation of spatial and social boundaries within pastoral areas problematic” (Fernández-Giménez 2002: 52). She argues that a way to avoid the problem of boundary delineation is to focus on *facto* tenure regimes instead formalized property rights.

In early modern Scandinavia grazing land for reindeers were common pool resources (CPRs). The reindeer used land where it was hard to exclude other users but the resource used was subtractable (Ostrom and Gardner 1993). An expansion of reindeer husbandry had to affect the property regime used.

Methods

To explore our hypothesis, we use the IAD-framework to address the human-environment interaction in the Sami communities. The framework makes it possible to build an analytic narrative explaining changes in Sami livelihood and property rights for user groups that utilized different ecological settings. The IAD-framework focus on the user's ability to create policy and the action situation is the framework's core element (Ostrom 2010; McGinnis 2011). In the action situation users take policy decision about management. The policy decisions users take in the action situation are dependent on the exogenous variable; 1)

Natural resources; 2) Attributes of community: and 3) Rules-in-use. The decision that were taken in the policy process will have outcomes and these outcomes will be evaluated by the users changing the exogenous variable and leading to new policy decision, new outcomes and evaluations, and so forth. The action situation is the black box and in a historical context, with scarce sources, it is hard to come close to the individuals and the policy decisions they took. However, by determining the most important exogenous variable and look into the outcome of the decisions it is possible to understand the effect of decision taken and their implication for property rights and governing of natural resources.

Part II of the paper will give the most important exogenous variables. This part of the paper relies mostly on secondary sources. However primary sources, such as tax records, investigations, and early modern descriptions of the area, such as accounts from priests and travelers, has been used when possible to complement available data and to give a richer picture of Sami economy. To understand how a pre-modern society dependent on reindeer, hunting and fishing evolved one have to pay a lot of attention to the ecological factors, since these to a high degree set the scene for opportunities and limits to change production. In part III where changes in property rights will be discussed we will turn to court records from the local court (*Häradsrätten*) of Lule lappmark. We will use transcript of the court records published by Hultblad (1968). Hultblad's records are not full transcripts, but summarize the cases. The advantage of using Hultblad's transcripts are that it is possible to connect court cases with people from the Sami villages (*samebyar*) in Lule lappmark, since Hultblad has made cross references between the court cases and a register over people in the parish. Hultblad spent more than 30 year to complete his PhD-thesis, a scholarly work with astonishing accuracy in the details. There are about 150 court cases up to 1780 and most of them are about management aspect of natural resources. These cases can touch upon more than one aspect of property rights. The most common cases are about trespassing, borders, the right to use land and fishing rights.

The investigation area is made up of Lule lappmark in northern Sweden. From 1553 up to 1647 Lule lappmark consisted of four Sami villages (*samebyar*): Sjokkjokk, Jokkmokk, Tuorpon and Sirkas. In 1647 Sirkas was divided in Sirkas and Kaitum. The two former were in the end of the seventeenth century considered to be Forest Sami and the three latter were Mountain Sami (Hultblad 1968). By using Sami villages located in one specific lappmark it is

possible to consider differences with regards to natural settings and climate within the investigation area, i.e. between the boreal forest zone in the east and the alpine zone in the west. All villages in Lule lappmark belonged to the same administrative unit, i.e. used the same winter market, went to the same church and solved conflict in a local court that encompassed the whole Lule lappmark.

Part II Natural Resources, Attributes of the Community and Rule in Use, 1550-1780

Ecology

In early modern Europe people's livelihood was to a large degree determined by which local natural resources were available in their close surroundings. For Sami, as for other people living in the circumpolar north, this primarily meant exploiting pasture lands for reindeer (*Rangifer tarandus tarandus*); using lakes, rivers and streams for fishing; and utilizing the boreal forest and the alpine zone for hunting. Sami also collected bark, plants and berries both to eat and for various other purposes (Rheen 1983[1671, 1897]; Graan 1983[1672, 1899]). It was likely the use of natural resources that contributed most to the organization of Sami society at this time. However, trade also played an influential role in the Swedish lappmark as many Sami households were engaged in trade networks, which extended to Norway and Russia (Hansen and Olsen 2014). Although the state's intervention in Sami society was on the rise it was still relatively limited and there were very few settlers in the Swedish lappmark before c. 170 (Bylund 1958: 3). The first part of this chapter describes the natural resources that Sami in the Swedish lappmark have used, and sometimes still use, for their livelihood. It also illuminates differences between the alpine zone and the boreal forest, with regards to natural settings, since different functions in different landscapes set the frame for people's livelihood and social organization.

The alpine zone – natural settings

In summer, reindeer feed primarily on fresh vegetation, such as herbs, grasses and sedges (Warenberg et al. 1997: 21). It has a high nutritive value which make up excellent summer grazing that allows for reindeer to grow, produce milk and store energy reserves that are needed during the following winter. High-quality grazing is especially abundant on heaths, grass lands, in willow thickets and birch forests in the alpine zone. Apart from offering favorable *vegetation* for grazing the alpine zone also offers favorable *conditions* for grazing. The growing season is short in northern Fennoscandia and reindeer have to have undisturbed

grazing to grow and put on fat. Hagemoen and Reimers (2002) have shown that the harassments of parasitic oestrid flies: warble flies (*Hypoderma tarandi* L., *Oestridae*) and nose bot flies (*Cephenemyia trompe* L., *Oestridae*), cause a dramatic decrease in the reindeer's feeding and lying, and increase in walking, running and standing which might compromise their physical condition.

In fact, reindeer are so easily disturbed by oestrid flies that one single fly can easily upset a whole herd. This phenomenon was described already by Linnaeus during his journey in Lapland in the summer of 1732: "I remarked with astonishment how greatly the reindeer are incommoded in hot weather, insomuch that they cannot stand still a minute, no not a moment, without changing their posture, starting, puffing and blowing continually, and all on account of a little fly. Even though amongst a herd of perhaps five hundred reindeer there were not above ten of these flies, every one of the herd trembled and kept pushing its neighbour about. The fly meanwhile was trying every means to get at them; but it no sooner touched any part of their bodies, than they made an immediate effort to shake it off. [...]" (Linnaeus 1811b[1732]:22). Linnaeus clarifies that this turmoil is caused by the insect *Oestrus Tarandi* (known today as the warble fly) which also leaves spots on the reindeer skins.

Linnaeus also writes that heat or gnats/mosquitos disturb the reindeer and stops them from eating. "When these animals are permitted to face the wind, they run very fast and without intermission, in hopes of finding a place to cool themselves. Indeed I observed one of the herds crowding close together under the shadow of a hill, on a spot covered with snow, to avoid the heat caused by the reflection of the sun from the snow in other places. These animals will eat nothing in hot weather, especially as the gnats are then very troublesome." (Linnaeus 1811a[1732]:308). However, Hagemoen and Reimers (2002) have shown that neither mosquitos nor heat have any substantial effects on reindeer's behavior. In fact, weather parameters have no influence in the absence of oestrids and no sign of heat stress was recorded even on the warmest days in their study. The reindeer's behavior in warm weather is thus completely related to harassment of oestrids since they only fly if air temperature is above 7 °C, in clear skies, or 11°C, in cloudy skies. The oestrids are moreover disadvantaged by wind which both makes it difficult for them to maneuver and reduces air temperature. The best grazing conditions for reindeer is thus offered in cold and windy weather much like the weather conditions offered in the alpine zone in summer.

All in all, in comparison with the boreal forest the alpine zone offers better settings for summer grazing both due to an abundance of high-quality grazing and a relatively low activity of oestrid flies. Moreover, when the weather gets warm the alpine zone offers more insect relief habitats, such as shady northern slopes, snow patches, and windy mountain tops, where reindeer have good chances of avoiding the flies (Hagemoen and Reimers 2002). In the boreal forest reindeer can seek out open and windy terrain, such as mires and lake shores, but these kinds of insect relief habitats are much more scattered.

Apart from grazing resources there are countless lakes and streams in the mountains that are suitable for fishing. The fishing waters in the mountains are generally populated by two dominating species; Arctic char (*Salvelinus alpinus*) and trout (*Salmo trutta*). Most of the waters are nutrient poor, and thus relatively low-yielding compared to the lakes and streams in the boreal forest (Norstedt et al 2014). Moreover, the alpine zone is a habitat for animals that have been, and in some cases still are, used for hunting. The most important prey animal in pre-industrial Sami households was maybe the wild reindeer (*Rangifer tarandus*) that was intensively hunted there before it was exterminated in the late 19th century. It dwelled in the alpine zone in summer and migrated to the boreal forest in winter much like the domesticated reindeer. The most common prey animals in the alpine zone were otherwise fox (*Vulpes* sp.), mountain hare (*Lepus timidus*) and ptarmigan (*Lagopus* sp.) (Rheen 1983[1671, 1897]:54; Lundius 1983[c. 1675, 1905]:20). Lastly, the alpine zone offers collectible resources and especially plants and berries included a long range of species that could be gathered in the mountains, such as garden angelica (*Angelica archangelica*), common sorrel (*Rumex acetosa*), sedges (*Carex* sp.), cloudberries (*Rubus chamaemorus*) and crowberries (*Empetrum nigrum*) (Linnaeus 2003[1732]:95; Graan 1983[1672, 1899]:42; Rheen 1983[1671, 1897]:21).

The boreal forest – natural settings

The boreal forest in the Swedish lappmark is mostly covered by coniferous trees and due to the dense tree layer it offers limited summer grazing. Fresh vegetation suitable for grazing there is only found in more open parts, such as on mires, on shores of lakes and rivers, and in areas with deciduous trees (Axelsson Linkowski 2015). Ground lichens make up the bulk of reindeer's winter diet (Warenberg et al. 1997: 15) and the boreal forest, and especially Scots Pine forests therein with their rich lichen carpets, offer rich winter grazing for reindeer. Even

if the snow cover is deep reindeer are quite able to dig out ground lichens with their front hooves as long as the snow is soft. The nature of the snow cover depends on several factors, such as openness, forest structure, wind, temperature, and snow depth. In fact, many of the features that favor a soft snow cover are more prevalent in the boreal forest than in the mountain landscape where the combination of openness and frequent winds often make the snow too hard packed for reindeer to dig through.

Aside from ground lichens reindeer also feed on tree lichens which predominantly grow on tree branches in the boreal forest (Warenberg et al. 1997: 15). These lichens become essential if ground lichens become unavailable, for example due to sudden weather changes that lead to formation of impermeable ice crusts on the ground which reindeer cannot dig through. All in all, the boreal forest has many positive characteristics, such as abundance of ground and tree lichens and favorable snow conditions, which are favorable for winter grazing.

There are other resources in the boreal forest besides grazing that are or have been important for Sami livelihood. Firstly, there is a countless number of lakes and streams there that can be used for fishing. Most of these waters are nutrient rich and thus relatively high-yielding with a great variety of fish species, such as pike (*Esox lucius*), whitefish (*Coregonus* sp.), perch (*Perca fluviatilis*), roach (*Rutilus rutilus*) and grayling (*Thymallus thymallus*) (Norstedt et al. 2014). The abundance of high-yielding waters with plenty of fish species make fishing a more rewarding enterprise there compared to the alpine zone where waters are nutrient poor and low-yielding and populated by only a couple of fish species.

Secondly, the boreal forest is a habitat for a long range of prey animals that have been, or still are, hunted. The hunted species were largely the same in boreal forest as in the alpine zone and included for example wild reindeer (*Rangifer tarandus tarandus*), brown bear (*Ursus arctos*), fox (*Vulpes* sp.), mountain hare (*Lepus timidus*), stout (*Mustela ermine*), wolverine (*Gulo gulo*) and Eurasian lynx (*Lynx lynx*) (Rheen 1983[1671, 1897]:54; Linnaeus 2003[1732]; Högström 1980[1747]). There were also some species that only lived in the forest, such as European pine marten (*Martes martes*) and red squirrel (*Sciurus vulgaris*). All in all, the wider range of different habitats in the boreal forest probably made hunting more rewarding there than in the alpine zone.

Thirdly, many of the species that were, and in some cases still are, gathered for various purposes can be found both in the alpine zone and in the boreal forest. Aside from the species that have already been mentioned in the alpine zone we have for example lingonberries (*Vaccinium vitis-idaea*); bilberries (*Vaccinium myrtillus*); roots of Norway spruce (*Picea abies*), Scots pine (*Picea abies*), and birch (*Betula* sp.); and, the bark of birch, rowan (*Sorbus aucuparia*), grey alder (*Alnus incana*) and sallow (*Salix caprea*) (Rheen 1983[1671, 1897]; Linnaeus 2003[1732]; Högström 1980[1747]).

Rules in use and attributes of the community

Here, attributes of the community and rule-in-use are lumped together. The reason for this is for simplicity, and that they are sometimes hard to disentangle. We have better knowledge of formal institution, proposed by the state, i.e. taxes, judiciary, and trade than the informal institutions.

Trade

The Sami were important agents in trade in Northern Scandinavia including bartering between neighboring Sami groups (Hansen and Olsen 2014; E-L Päiviö, forthcoming). Trade was already ongoing when the period captured in this article begins, but changed character through the period. In the sixteenth century, the main commodity for the Sami in Lule lappmark was fur, but dry fish and handicraft were also part of the trade. The second half of the sixteenth century was a time when fur trade flourished in Europe and demand for exclusive furs was high. One large buyer of furs was the Swedish Crown. Fur trade diminished in the early seventeenth century due to short-term problems in the area³, but more importantly, in the long run, due to changes in international fur trade when Russia increased their export and furs from America entered the European market. For the Sami, the most important commodities to get in exchange was flour, butter, and wadmal, but they also got silver and money. Sami traveled to the Norweigen cost for markets, while the trade in Sweden was mostly an inland trade were merchants (Birkarlar) from Sweden traveled up to the Lappmark to trade on individual basis or with larger groups (Steckzén 1964).

³ Lundmark (1982:120) argue that the two most important short term problems were; 1) shortage of furs in Norway, where Sami could buy furs and resell them to the Swedish Crown; and 2) harsh climate in the Lappmark between 1614-1618.

In the beginning of the seventeenth century came a major institutional change in Sami trade within Sweden. Instead of trading with the Sami at many places the crown decided that trade should be centralized to one place in each Lappmark and Jokkmokk was chosen for Lule lappmark. Following this, a winter market was held in Jokkmokk every year where people from the four Sami villages (*samebyar*) (from 1647 five) that encompassed Lule Lappmark traded with the Swedish crown and merchants. The decision to establish a market place in each Lappmark coincided with the decision to establish a church, a local court, and tax collection at one place in each Lappmark. These fundamental changes were a way for the crown to increase its control over the territory and the Sami village connecting, in space and time, markets, judiciary, religion and tax collection (Bergling 1964). The new trading rules were an advantage also for the Sami with more people and more goods at the markets. With the growing market the Sami's became indispensable actors for transit trade across the region. Especially the mountain Sami became involved in trade networks. Swedish towns established along the coast of the Gulf of Bothnia during the seventeenth century to facilitate the trade of Northern Sweden, and they would have struggled severely if the Sami trade had been hampered (Arell 1977:61–62). A long range of products were bought by Sami at markets, such as tobacco, alcohol, copper, steel, iron, fishing gear, needles, wool blankets, clay tobacco pipes, tar, hides from cows and oxen (E-L Päiviö forthcoming). The profit from trade was often invested in silver (Fjellström 1985:481–494).

Taxes

We know that the Sami in the Lappmark paid tax to the Swedish state in the fifteenth century, and probably also earlier (Steckzén 1964:307–8). However, the first preserved tax records from the Lappmark and the taxations of the Sami are from 1553 and reflect a firmer grip that the Swedish state tried to get over the Northern part of the realm. The tax on the Sami was an individual tax on all men 17 years and older. In Lule lappmark tax record from mid sixteenth century up to the beginning of the seventeenth century demonstrates that furs was the most common commodity. Red squirrel (*Sciurus vulgaris*) and European Pine Marten (*Martes martes*) are most common and show the large interest the crown had in furs. It reflects a Sami economy where hunting and trading furs were important. It was also common to pay tax in dried fish, mostly pike (*Esox Lucius*), perch (*Perca fluviatilis*) and European whitefish (*Coregonus lavaretus*). The Sami villages (*samebyar*) in Lule lappmark, that later would be considered as Mountain Sami, also taxed Arctic char (*Salvelinus alpinus*) a species that are

common in lakes and streams on higher altitude. The number of reindeer was low in the tax records and reindeer appear for the first time in the 1570s (Lundmark 1982:191–7).

The tax code changed profoundly in the early 1600s and reindeer and dry fish became the main tax objectives. The reason for this change is thought to be to provide food for the Swedish military campaigns (Lundmark 1982:88–89). While tax was still individually calculated on male Sami from the age of 17, the number of reindeer payed is often reported only for the village. In Lule lappmark, the Mountain Sami villages (*fjällsamebyar*) (Tuorpon and Sirkas) paid a higher number of reindeer in tax compared to the Forest Sami villages (*skogssamebyar*) (Sjokkjokk and Jokkmokk). However, when taking into account the total number of reindeer held by members of the Sami villages (*samebyar*) the percentage reindeer tax was lower for Mountain Sami villages compared to Forest Sami villages (*skogssamebyar*) (Table 1). There was no difference in the amount of dry fish paid per person between Mountain and Forest Sami villages in the first decades of the seventeenth century. However, during the seventeenth century the dry fish that the Mountain Sami villages paid in tax decreased and in the 1660s and 1670s dry fish ceased (with a few exceptions) to be a tax commodity for them. By then, it was only the Forest Sami villages that still paid part of the tax in dry fish (Lundmark 1982:169). Estimates of how access to resources correspond to tax has shown that in the last part of the 17th century only fishing waters seem to correlate with tax levels (Nordsted et al 2014). There seems to be no correlation with reindeer grazing resources.

Category	Sami Village (<i>sameby</i>)	Total Reindeer	Adult Reindeer	Nr of Reindeer tax	Reindeer tax (%)
Forest	Sjokksjokk	504	435	13	2.6
Forest	Jokkmokk	393	334	10	2.5
Mountain	Tuorpon	1162	1001	18	1.5
Mountain	Sirkas	1923	1676	19	0.9

Table 1. Number of reindeer and tax in Lule lappmark 1609. Note that this was just one part of the tax. Source: Elaboration of Lundmark 1982, 210–216.

During most part of the seventeenth century the taxation of the Sami was a complicated task for the state. The tax consisted of five different parts (not included other duties that the Sami

had to do) and in an investigation about the tax code, made in 1695 by the county-governor Douglas and the Lappmark judge Buhre, it became apparent that nobody knew the background to the tax code (Douglas 1695). It was hard for the state to know if they received the right amount of taxes, or if part of it got lost on its way to Stockholm. In 1689 the county-governor Strijk had proposed a progressive tax on the Sami in accordance to the number of reindeer they had (Arell 1977:60–61). Expressing that the county governor saw reindeer as the most important asset the Sami had. However, the problem of putting a tax on the number of reindeer was numerous. The 1695 investigation about the taxation of the Sami pointed out that the number of reindeer had large fluctuations, and a rich Sami one year could be poor the next year (Douglas 1695). In the early 1690s there had been reports about large losses of reindeer and the poverty that followed (Korpilaakko-Labba 1994:400). In addition, keeping track of the number of reindeer, would have been a tremendously hard work for an early modern government. In the end, the five taxes were reduced to one, a tax on the land the Sami used for reindeer herding, hunting and fishing (Arell 1977:62). The tax was supposed to be a fixed sum “for all eternity” (Hultblad 1968:79). The land that was assigned to each person in the cadastral book was valued, but a surveyor never measured individual lands and some Sami living in Mountain Sami villages (*fjällsamebyar*) were assigned taxation without being assigned to a specific land (Holmbäck 1922). Since land now was the main asset for taxation, the new tax code had similarities to how peasants in Sweden were taxed at this time. A contemporary investigation came to the conclusion that it would have been possible to measure the lakes and land the forest Sami used, but they recommend not to do it since it would have been too expensive (Douglas 1695). The investigations also conclude that it would have been impossible to measure the land used by Mountain Sami since they were using such extended land areas.

The new tax code was a break with the older tax code in one more important aspect. The cadastral book defined each household's part of the total tax for the Sami village (*sameby*), but it was up to the Sami village to decide how large share each member would have to pay. From now on, the tax paying unit was the Sami village, and not the individual household. The tax became collective and it was the responsibility of the Sami village to deliver the tax each year. This made it possible for the village to adjust for fluctuations in household income, but could also force people to pay more if some tax-payers did not contribute, or if people moved

out of the village and the tax based decreased. The tax was not paid in kind anymore, but in money.

Number of tax-paying Sami (*Skattelappar*)

The early modern Lappmark was sparsely populated and it is hard to estimate the number of people how lived there.⁴ The most reliable numbers are the number of *skattelappar* (Sami's listed in the tax records, however a few of them did not pay tax for different reasons). The number of *skattelappar* has some limitations; the number could fluctuate, partly because Sami were mobile and had the possibility to move to neighboring countries, and we do not know how many people one *skattelapp* represent. One of the Swedish states greatest concerns about the Lappmark during the seventeenth century was that the Sami would move to Norway or Russia and potentially increase the power of the Danish king or Russian tsar in the area.

Between 1553 and 1570 there were on average 105 *skattelappar* in Lule lappmark. From the 1570 the number start to increase and around the turn of the century there were on average 169 and numbers peaked in the 1610s with an average of 186 skattelappar. From 1621 up to the 1660 data is mostly missing because few tax records have been preserved. The tax record from 1643 show a number of *skattelappar* in line with the number from the early 1600s. In the 1660s a large dip in the number is observed which is explained by the states mining activity in the Lappmark. This activity forced Sami's to make transport for the mines and some Sami's simply moved away from the area. In 1667, when the tax collector came to the Mountain Sami Village Kaitum (*fjällsameby*) in Lule Lappmark, he wrote that "all had escaped"⁵ and no tax was to collect. In the neighboring Mountain Sami Village Sirkas, only nine tax payers were left. In 1643 Sirkas and Kaitum were one tax record unit, and had around 70 tax payers registered (Mantallängd 1643, Västerbottens län, RA). In 1667 the five villages in Lule lappmark hit a low in tax paying Sami with 55 people (RA, Mantalslängd, Västerbottens län 1667). It had gone down from almost 200 a few years earlier (Hultblad 1968:121 figure 15). This was a sign of stress for the Sami communities, but it also hurt the intention the Swedish government had with the Lappmark. They had to rethink their policies

⁴ Recent estimates of population in early modern Lule lappmark are hard to use, and since these numbers makes no sense (Palm 2000) and will not be related here. The relation between the number of tax paying Sami and number of people each tax payer represent are too low. For example, in Lule lappmark (Jokkmokk with Kvickjokk) there were 174 taxpayers in 1620 (Lundmark 1982) making Palm's estimation of 381 inhabitants that year to an average of 2,1 person per taxpayer. The numbers presented by Palm are not based on a thorough investigation of the condition in the Lappmark.

⁵ The tax collector wrote in Swedish "Ingen till Städhes uthan alle förrymde" (RA, Mantalslängd, Västerbottens län 1667).

for the area. From 1670 a slow but steady increase of Sami tax-payers took place but it was not until after the tax reform in 1695 that the increase gathered momentum. In 1750 there was 300 Sami taxpayers in Lule Lappmark and the number peaked in the 1780s with more than 360 (Hultblad 1968:121).⁶ To sum up, the number of tax paying Sami more than tripled between 1550 and 1780. The process was not a linear development. There were two periods of quite rapid increase, from 1570s to 1610s, and from 1690s to 1780. In contrast the 1660s was a period with a sharp decrease.

Church and colonization

The establishment of a church organization was one way that the state organized its activity and tied the Lappmark closer to the Swedish state. In 1606 a vicar was appointed to Jokkmokk in Lule lappmark and he was supposed to live in the new parish. He would have been the first Swedish settler in the area, but continued to live in his homestead in Bredåker 115 kilometer from Jokkmokk. Since he refused to live in Jokkmokk the new parish lost its independence 1617 and became an annex parish to Luleå on the coast of the Gulf of Bothnia. In 1673 the government made a new push to create independent parishes in the Lappmark with a requirement that the vicar had to live in the Parish. However, it took another 20 years before this was accomplished in Jokkmokk (Hultblad 1968:160).

In spite of the Royal ordinance of 1673 and a renewed one in 1695, in which the government tried to attract settlers to the Lappmark by offering them exemption from taxes and military service for 15 years, the result was quite disappointing and only few settlers came to Lule Lappmark. In the end of the seventeenth century some farms were established, but colonization was a slow process until end of the eighteenth century. In 1738 there was a total of eleven settlers at eight different locations. By 1760 there was 13 settlers and in 1780 there was 22 (Hultblad 1968: table 5). In contrast, there were 360 tax paying Sami around 1780, making the period from 1550 up to 1780 a period when the Sami economy dominated in Lule lappmark.

⁶ Hultblad (1968, figure 15, p. 121) gives a higher number for Lule Lappmark, but from Hultblad's number one need to subtract the Sami belonging to Jukkasjärvi that was added to Kaitum in 1742.

Judiciary

In the sixteenth century, it was the bailiff in each district that collected tax and was responsible for law enforcement and collecting fines (Korpiaakko-Labba 1994:86). In early seventeenth century, local courts were established in the Lappmark and in Lule lappmark the court convened the first time in 1606 (Hultblad 1968:41). The court was a way for the state to get in better control of the local circumstances and more firmly introduce Swedish legislation. The way Swedish local courts were organized, with lay-judges, they became an important and trusted arena to solve local conflicts by local users (Österberg and Sogner 2000). Settlers in the Lappmark were few and almost all lay judges were Sami making it possible for the court to consider customary rights (Arell 1977). The judge was appointed to all local courts in the lappmark and traveled from court to court during the winter. Thus he relayed heavily on the local lay-judges. A hallmark for the Swedish local courts concerning local land use, up the end of the eighteenth century, was their ability to use both *de jure* and *de facto* rights in jurisdiction (Larsson 2016). For jurisdiction concerning user rights in the Lappmark this became an important trait, since rules about reindeer herding was absent in the law and relied on customary law.

Reindeer owning Sami

There has been a long and intense debate about the introduction of reindeer nomadism in Northern Scandinavia among Sami. We will ignore most of this debate, since it would take us off track from the purpose of the paper. Instead we will focus on the number of reindeer and its effect on natural resource use and how this affected property rights. Unlike the debated origin of reindeer nomadism, there is almost consensus that the number of reindeer increased from the sixteenth century up to the end of the seventeenth century and that a large-scale reindeer nomadism than was in place.

In the early 1600s, after a change of the tax code, the number of reindeer were counted twice in Lule lappmark, 1605 and 1609. The survey from 1609 is the most thorough one giving the number of reindeer for each of the 177 taxpaying persons, further the distribution on male and female reindeer as well as calves are given. The average number of reindeer per Sami that had reindeer were higher in the Mountain Sami villages (*fjällsamebyar*) compared to the Forest Sami villages (*skogssamebyar*). Tuorpon and Sirkas had on average 23,5 and 24,6 adult reindeer respectively (including calves, 27,1 and 28,2), while Sjokkjokk and Jokkmokk had

on average 10,9 and 11,9 respectively (including calves 12,6 and 14,6) (Lundmark 1982:150). Only five persons had 60 reindeer (including calves) or more and the largest owner had 70 reindeer.

We have no surveys of the number of reindeer from the second half of the seventeenth century, but other source tells us that the number of reindeer increased and the impact this had on the household's economy. Samuel Rheen had worked as a priest in Lule lappmark in the 1660s until 1671 when he wrote a manuscript about the Sami economy, culture and religion,⁷ a manuscript that was first published in 1897. According to Rheen (1983[1671, 1897]:23) many Sami had one hundred, or one thousand, and some even had more reindeer. These reindeer need to be taken care of, "night and day, winter and summer", so they did not disappear. Further, Lundius (1983[c. 1675, 1905]:20), who wrote a manuscript around 1675, claims that rich mountain Sami had more than one thousand reindeer. Rheens and Lundius number of reindeer would not have been much of a proof of a more profound change in reindeer herding if other evidence did not back them. In fact, from the late seventeenth century and up to the mid eighteenth century, a large number of the descriptions, and investigations, describe a mountain Sami culture that was heavily dependent on reindeer (Rheen 1983[1671, 1897]; Graan 1983[1672, 1899]; Lundius 1983[c. 1675, 1905]; Linnaeus 2003[1732]; Ehrenmalm 1743[1741]; Högström 1980[1747]). This culture is often contrasted to a forest Sami culture based on fishing and hunting. These sources emphasize how the use of different ecological niches shaped these groups economically and culturally. According to a governmental investigation from 1695 the number of mountain Sami were greater than the number of forest Sami (Douglas 1695). In some records the mountain Sami are described as much richer than the forest Sami (Graan 1983[1672, 1899]). The differences between the groups remained in mid eighteenth century (Hultblad 1968). When Linnaeus woke up in the morning of July 7, 1732, in an encampment belonging to a few Sami households encompassing 16 people that was part of Tuorpon Sami village (*sameby*) in Lule lappmark he saw some thousand reindeer⁸ coming back from the pastures to be milked (Linnaeus 2003[1732]:100). In Pehr Högströms relation about the Sami's (mostly from Kaitum in Lule lappmark) from 1747 he stressed that a Sami's fortune was in Reindeer and that some owned a few thousand and that one Sami village could have 30 thousand reindeer (Högström

⁷ Used by Johannes Schefferus in his work Lapponia published in Latin in 1673.

⁸ In Swedish "Om mårgonen kom ett par 1000 renar hem, ..." (Linnaeus 2003[1732]:100).

1980[1747]:88–89). From Åsele lappmark in the southern part of the Lappmark Ehrenmalm (1743:130), wrote that a Mountain Sami with medium sized herd had 150 to 200 reindeer.

Part III Sami organization of resources

Grazing lands

People in northern Fennoscandia have depended on reindeer and thus grazing land since the retreat of the ice after the last glaciation some 10 000 years ago. Firstly, wild reindeer were hunted but steadily their numbers were reduced until they became extinct in this part of Fennoscandia in the late 19th century (Bjørnstad et al. 2012). In parallel to wild reindeer hunting the Sami also caught and tamed wild reindeer to use them as decoy in hunts for wild reindeer and as draft animals (Aronsson 1991). For many centuries Sami livelihood was based on hunting and fishing combined with the keeping of a small number of tame reindeer as decoy and for transports, as well as for their milk, meat and hides (Bjørklund 2013). However, in the 17th and 18th centuries certain Sami sub-groups multiplied the number of reindeer in their herds and the production centered around milk, meat and hides (Hultblad 1968; Lundmark 1982). Although the timing of this transition to large-scale reindeer pastoralism is much debated among scholars it is generally accepted that it had taken place in the Swedish lappmark in the 17th century (Bergman et al. 2013; Lundmark 1982; Sommerseth 2011).

Based on accounts from priests and travelers in the Swedish lappmark in the 17th and 18th centuries it seems that the Mountain Sami in the western part of the Swedish lappmark had developed large-scale reindeer pastoralism already in the 17th century while Forest Sami in the eastern part of the lappmark still depended primarily on fishing and hunting and kept only a small number of reindeer for transports (Linnaeus 2003[1732]; Rheen 1983[1671, 1897]; Högström 1980[1747]). The driving forces behind the transformation in Mountain Sami's livelihood is not known, although there are several possible explanations (Sommerseth 2011). However, the key factor that made it possible to increase the number of reindeer in the western part of the Lappmark must surely have been the abundance of summer grazing in the mountains. Mountain Sami moved to the boreal forest in winter where they leased grazing from Forest Sami probably without much competition since the latter group did not need it for their own usually small reindeer herds (Hultblad 1968:87; Norstedt et al 2014).

There are few historical sources that can tell us about land use in the mountains before the 17th century and how it was organized. There are some archeological evidence but it does not give any conclusive answers although recent archeological research suggest that Sami might have stayed in the mountains all year round (Sommerseth 2011). The organization of Sami in Sami villages (*samebyar*) is mentioned for the first time in tax records from the 16th century (Hultblad 1968:38). From the 17th and 18th century there are several historical sources that can give more detailed insights about the organization of land use in these Sami villages. One source is court records from local courts from the 17th and 18th centuries and another source is a tax record (*jordbok*) from 1695. The court records describe how Sami disputed over land, for example in the local court in Jokkmokk of 1751 where a record describe how grazing land in the mountains is used alternately by Sirkas Sami and Tuorpon Sami (evidence no 213a in Hultblad 1968). Another court record from the same court of 1770 describes how Tuorpon Sami and Sirkas Sami have grazing land in the mountains at random distribution (evidence no 270a in Hultblad 1968). Both Tuorpon and Sirkas were situated in the mountains and the overlapping between these villages suggests that the grazing was organized collectively. This is moreover corroborated by another source, the tax record (*jordbok*) for Lule lappmark from 1695, which among other things tells us that 18 out of 43 Sirkas Sami were not connected to a specific land (Holmbäck 1922:18). This in turn suggests that they used the grazing land within the Sami village (*sameby*) in common. Similar conclusions can be made about Tuorpon where the tax record from 1695 do not give any information about Sami being tied to specific places. Nonetheless, court records from the 18th century show that there were tax lands in Tuorpon and that these were tied to individual Sami. Holmbäck (1922: 19) however concludes that the division into individual tax lands in Tuorpon could not have been strict. He refers to a source from 1745 where a couple of Tuorpon Sami told engineers doing preparatory work for the demarcation of the Swedish Norwegian border that the Mountain Sami villages (*fjällsamebyarna*) Sirkas and Tuorpon overlapped each other “since Sami belonging to both of these villages mostly lay on each other (*ligga om varandra*) as good friends” (Holmbäck 1922:19). Another example that corroborate the collective organization of grazing in the mountains in the Swedish lappmark comes from Pite lappmark: in the tax record (*jordbok*) for Pite lappmark from 1695 only 1 out of 32 Mountain Sami in Norrvästerby Sami village can be tied to a specific place while the remaining 31 Sami are described as being without land and moving about in the mountains (Holmbäck 1922:20). There is also an example of the same phenomena from the tax record for Ume lappmark from 1695 which describes that only

2 out of 21 Mountain Sami in Ran Sami village had specific lands (Holmbäck 1922:22). Alongside the name of one Ran Sami in the tax record it is stated that he did not have a specific land and that he moved about in the mountains as did all his neighbours. Holmbäck (1922:22) concludes that this remark was valid also for 18 other Ran Sami that were listed in the tax record. All in all, the evidence from 17th and 18th century's court and tax records suggests that Mountain Sami villages in the Swedish lappmark organized their summer grazing in the mountains collectively within Sami villages.

To get access to winter grazing, which largely was lacking in the mountains, Mountain Sami had to move with their herds to the boreal forest in winter as already described. It seems that grazing rights in the forest were tied to tax lands which were rather large territories that individual Sami had the right to use and that they paid tax for and Mountain Sami thus had to lease grazing when they moved to the forest in winter. From the start this relationship between Mountain and Forest Sami was probably informal and mainly based on reciprocity but it seems that formal relationships gradually evolved in the winter grazing area. In fact, local court records from the 18th century show that individual Mountain Sami and individual Forest Sami in Lule lappmark in some cases shared rights to the same tax lands. Disputes in the local court in these cases were about Forest Sami (from Sjokksjökk and Jokkmokk) incorporating other Sami on the land they shared with Mountain Sami (from Sirkas and Tuorpon). This is for example what happened in the local court of 1801 when the Tuorpon Sami Anders Persson Mauna sued the Jokkmokk Sami Pål Jonsson Tjedda for having incorporated Sami on their shared tax land and thereby having received all the interest by himself (one Sami had paid with a two-year-old reindeer and the other with 16 'skilling') (evidence no 178 in Hultblad 1968). For the Tuorpon Sami, who probably owned a relatively large reindeer herd, this intrusion in the winter grazing by Sirkas Sami meant production losses due to increased competition but for the Jokkmokk Sami, who most likely owned relatively few reindeer, it meant a welcome income from a resource that he himself did not need.

Another example is when two Tuorpon Sami accuse the Jokkmokk Sami Lars Pålsson Pärak at the local court of 1794 for incorporating Sirkas Sami on their shared tax land (evidence 270e in Hultblad 1968). The accused Jokkmokk Sami however demanded a counterclaim to get the right to the tax land as his ancestors belonging. Based on a prior court verdict from the

local court of 1757 it was however possible to show that the Tuorpon Sami's predecessors had owned the right to use the land together with the accused Jokkmokk Sami's father. This disputes among other things shows that Tuorpon Sami had formal grazing rights to tax lands belonging to Sjokksjokk Sami and that these had evolved over generations. Another conclusion is that the winter grazing in the boreal forest do not seem to have been an open property but a private property where one or more right holders owned the right to a certain grazing land that they could either use for their own reindeer or lease to others.

The number of conflicts over tax lands increased in the first half of the 18th century which was probably linked to the expansion of large-scale reindeer pastoralism (Hultblad 1968; Arell 1977). Bigger reindeer herds led to an increased need for grazing resources and the system with Sami migrating between seasonal grazing lands grew in importance. This mobility in turn led to frictions when the previous more rounded land use system with individually managed tax lands that primarily was based on organization of fishing and hunting gradually was replaced by long and narrow east-west Sami villages (*samebyar*) that better suited the collective management of grazing resources (Hansen and Olsen 2014:289). The increased mobility related to grazing can be seen in court records from the local courts during this time where many cases dealt with the unauthorized intrusion on tax lands in connection with migrations between seasonal grazing lands (Hultblad 1968:84). In most of these cases the court gave the intruding Sami right to stay on another Sami's tax land for one or two days during migration. This means that the court system, which at this time depended heavily on local Sami lay-judges, had adjusted its conception of legality towards an emphasis on grazing rights.

In the court records from the 18th century there are also a few examples of Forest Sami in Lule lappmark getting formal rights to grazing in the mountains. One such case is when the local court of 1774, after a dispute between a Tuorpon Sami and a Jokkmokk Sami, decided that the Jokkmokk Sami had the right to the grazing land 'Skärtats' but not 'Kallomkurra', both of them situated in the mountains, the latter was considered sole property of the Turpon Sami (evidence no 1056a in Hultblad 1968). Another example is a case in the local court of 1756 when the court refers a Sjokkjokk Sami to a low mountain area called Ulterifvas (Ultevis) together with Sirkas Sami, since the latter did not need all the grazing land there (evidence no 715a in Hultblad 1968). The court adds that the Sirkas Sami are so much more obliged to put

up with Sjokksjokk Sami in spring and summer, since Sirkas Sami stay on Sjokkjokk Sami land for most of winter. This shows a development where the adjacent borders between the Sami villages (*samebyar*) situated in the western mountains and in the eastern forests started to dissolve. It is likely that the increased east west migration motivated the local court to approve migration also for Forest Sami who need summer grazing in the mountains although this was not nearly as common as the cases where Mountain Sami got access to grazing on Forest Sami's land in the forest.

Fishing

There are countless lakes and streams in the Swedish lappmark that all drain in one of the seven great rivers; Torne, Kalix, Råne, Lule, Pite, Skellefte and Ume River that outflow in the Gulf of Bothnia. Most of these waters have been used for fishing and several travelers and missionaries in the lappmark in the 17th and 18th centuries have described fishing as the central part of Forest Sami's subsistence at this time (Ehrenmalm 1743; Lundius 1983[c. 1675, 1905]; Linnaeus 2003[1732]; Rheen 1983[1671, 1897]; Tornaeus 1983[1672, 1900]). Rich Mountain Sami were on the other hand described as too busy tending their large reindeer herds to have time for fishing and it is therefore depicted as an occupation primarily of the poor in this group (Graan 1983[1672, 1899]:36; Lundius 1983[c. 1675, 1905]:11). Tax and court records are other sources that describe fishing in these centuries. Local court records from Lule lappmark show that disputes among Forest Sami in the early 18th century almost always were about fishing which corroborate that it was by far the most important resource for them at this time (Hultblad 1968:96). The first mentioning of (dried) fish as a tax good in Lule lappmark dates back to a tax record from 1555 (Lundmark 1982:87). In another tax record, from 1559, all the fishing waters and their users are specified which tells us that fishing waters was a base for individual taxation.

Judging from historical sources fishing rights in the Swedish lappmark, particularly in the boreal forest, were tied to lakes and streams within roughly defined territories that individual Sami paid tax for. Most Sami moved about within these so called tax lands⁹, following the spawning of different fish species in different lakes and streams (Graan 1983[1672, 1899]:35). Usually, a Sami family, or in some cases the extended family, had the right to fish

⁹ The term "tax land" is first known from local court records from the mid-17th century (Hultblad 1968, 81).

within a tax land and that right could be passed down to the next generation. The right also gave them authority to exclude others from fishing. Nonetheless, there are several examples in local court records from the 18th century where two or more Sami, that are not related, share the right to the same fishing water. In these cases fishing was anyhow privately organized which the court verdicts show by splitting the fishing rights between the different right holders, either temporally or spatially. In the verdict the right could for example be given to one Sami for part of the year and to another Sami for the rest of the year, or be divided so that the right holders took turn holding the fishing right every other year (Hultblad 1968:87). The court could also make spatial divisions of fishing rights so that one Sami got the right to fish in a well-defined part of a certain lake or stream, for example a specific bay or fishing-ground, while the other Sami got the right to the rest of the fishing water (see Bjørklund 1991). Lastly, in the 18th century, fishing waters could sometimes be situated far from the land that they belonged to which, according to Hultblad (1968:87), was due to the gradual division of lands into smaller and smaller units.

Hunting

Hunting has always been an important part of subsistence for people in northern Fennoscandia and the accounts from missionaries and travelers in the Swedish lappmark in the 17th and 18th centuries give many detailed descriptions both of hunting methods and prey animals (Ehrenmalm 1743; Linnaeus 2003[1732]: 61ff; Lundius 1983[c. 1675, 1905]; Rheen 1983[1671, 1897]; Tornau 1983[1672, 1900]). According to these sources the most common hunting methods were shooting, with rifles and bows; and, trapping and snaring. The most frequently described prey animals are wild reindeer (*Rangifer tarandus tarandus*), bear (*Ursus arctos*), hare (*Lepus timidus*), fox (*Vulpes* sp.), red squirrel (*Sciurus vulgaris*), pine marten (*Martes martes*), stout (*Mustela ermine*), ptarmigan (*Lagopus* sp.) and grouse (*Tetraoninae* sp.). Moreover, Högström (1980[1747]:85) and Linnaeus (2003[1732]:138) described in their accounts from the 18th century that Forest Sami were far better marksmen than Mountain Sami and that many Forest Sami owned rifles and steel bows while many Mountain Sami only had wooden bows that were used for hunting squirrels in the forest. Nonetheless, poor Mountain Sami, with small reindeer herds, were also reliant on hunting and for example Linnaeus (2003[1732]:107) describes how poor Mountain Sami sometimes stayed in the mountains all winter to snare ptarmigans. Based on these accounts it seems that

hunting was more important for Forest Sami both because it was the main contributor of meat for most of them, and because they gained incomes from selling furs and feathers.

Another source that tell us about hunting in the Swedish lappmark is tax records from the 16th, 17th and 18th centuries. The first tax record that originates from 1553 shows among other things that Mountain Sami in Lule lappmark paid their taxes in the form of reindeer hides and furs from martens, while Forest Sami only paid in furs from red squirrel and stout (Lundmark 1982:87). This suggests that hunting was essential for both groups in the 16th century but maybe more so for Forest Sami, that payed tax only in furs, than for Mountain Sami that payed tax both in reindeer hides and furs. Despite several minor changes in the tax regime during the second half of the 16th century fur remained an essential tax good for Sami until the introduction of a new tax reform in the Swedish lappmark in 1602 that replaced fur for reindeer meat and dried fish.

Aside from accounts and tax records the local court records from the 18th century also give information about hunting and in particular how it was organized. From the court cases that deal with hunting it is possible to conclude that hunting in the Swedish lappmark, at least in the boreal forest, was organized privately within tax lands. For example, the local court in Jokkmokk of 1712 forbid the Sjokksjökk Sami Nils Mattsson to hunt on his neighbour Dager Tomasson's tax land. The sheriff Nils Nilsson in Jokkmokk were to inspect whether the disputed mountains Hornbärget and Rachtisvari should belong to Dager Tomasson or to Nils Mattson where the latter had shot wild reindeer four years earlier (evidence no 966a in Hultblad 1968). Another example comes from the local court in Jokkmokk of 1742 where the Sjokksjökk Sami Per Jakobsson Havar sued the Jokkmokk Sami Lars Hansson Svensk over a killed bear. The case was postponed until a further investigation had settled on whose land the bear had been put down (evidence no 767b in Hultblad 1968). Some court cases also describe disputes between Sami and settlers where the latter have hunted illegally on tax lands belonging to Sami (evidence no 797a and 968 in Hultblad 1968).

There is relatively little known about how hunting was organized in the mountains. Compared to the boreal forest it is difficult to piece together a complete picture of any division into territories in the mountains since the borders there are insufficiently described in the source material (Hultblad 1968:88). Archeological studies in the mountains have however described

an elaborate systems of trapping pits there that have been used for hunting wild reindeer as late as medieval times (Sommerseth 2011). It is in fact suggested by some researchers that a decline in the number of wild reindeer was the main driving force behind the transition to reindeer pastoralism among the Mountain Sami in the 17th century (Sommerseth 2011; Lundmark 1982). Regardless of the reasons it seems that the introduction of large-scale reindeer pastoralism in the 17th century made hunting irrelevant for Mountain Sami as they instead got meat and other products from tame reindeer. The new form of reindeer husbandry was also very labour intensive which left little time for hunting.

Gathering plants and berries

Many of the plants and berries that Sami gathered in the 17th and 18th centuries have been described in detail, together with their intended use, in accounts by missionaries and travelers in the Swedish lappmark (Linnaeus 2003[1732]: 95; Graan 1983[1672, 1899]:42; Rheen 1983[1671, 1897]:21). The sources describe various herbaceous plants, berries, sedges, tree roots and bark and how they were prepared and used as food, medicine and for practical purposes. Most of the gathered plants grew both in the mountains and in the boreal forest and was thus available for Mountain and Forest Sami alike. It is however likely, based on the accounts, that gathering was more important for Forest Sami than for Mountain Sami in the 17th century. According to Lundius (1983[c. 1675, 1905]:19, 30) and Linnaeus (2003[1732]) Forest Sami sometimes sold gathered resources, such as berries and shoe-hay (sedges) to Mountain Sami in return for reindeer, cheese or meat. For Mountain Sami bartering was surely an efficient way of getting hold of products that they needed instead of spending time gathering them. The time saved could instead be invested in reindeer husbandry.

Even though gathering seems to have been an important part of Sami subsistence these kind of resources are only mentioned a few times in court records from the 18th and 19th centuries. One such case comes from the local court in Jokkmokk of 1829 when the wife of the Sjokksjokk Sami Per Andersson Vannar was sued by the Sirkas Sami Lars Persson Skol for gathering common sorrel (*Rumex acetosa*) on his land (evidence no 612a in Hultblad 1968). Common sorrel was used in cooking and was an appreciated dish in Sami households. Although this court case originated c. 50 years after our investigation period ends it indicates two relevant things that probably had not changed much in these five decades, firstly that gathering was important, and secondly that plants could be considered a private resource that

were tied to a specific tax land. Another case comes from the local court in Jokkmokk of 1770 and describes how two Sirkas Sami handed over a couple of tax lands that they had inherited from their father, including two lakes and one berry hill (*bärbacke*), to two other Sami (evidence no 259a in Hultblad 1968). The berry hill was obviously considered such a valuable asset in this case that it was worth a special mentioning in the court record. A possible interpretation of the mentioning of the berry hill is also that the berries growing there were a private resource that belonged to the holder of the tax land. Both of these examples originates from tax lands in the forest and it is even more difficult to say something about the organization of gathering in the mountains at this time. However, if one draws parallels to fishing and hunting it seems plausible that rights to gathering were not as strictly tied to specific territories in the mountains as they were in the forest.

Part IV

Discussion

Mountain Sami and Forest Sami economy had two different trajectories from 1550 to 1780. The Mountain Sami expanded their land use and focused on grazing resources while Forest Sami continued to be stationery and focused on fishing waters and hunting grounds. The mountain Sami's expansion of reindeer husbandry change the Sami society in many fundamental ways. Land use required large areas with summer pastures in the alpine zone and winter pastures in the boreal forest zone inhabited by Forest Sami.

Large scale reindeer herding required summer pastureland to be common pool resources used under a common property regime. The large leap in this development was during the seventeenth century. Organization of work went from kinship relation to be based on cooperation of households with a common economic interest and employment of maids and herdsboys (*drängar*) by large scale reindeer owners. The management of reindeer herding was self-organized and the users took decision about policy for land use. The process was driven by the Sami. In the mid-18th century the mountain Sami had developed large-scale reindeer husbandry involving seasonal long-distance migration in order to find pasture for their reindeer herds, staying in the mountains during summer and in the forests during winter. This changed property rights to land and created an economy more dependent on collectively owned resources.

Mountain Sami, as all pastoralists, needed mobility, flexibility and reciprocity in land use to manage fluctuating conditions in grazing resources (Fernández-Giménez 2002). It is difficult, not to say impossible, to manage large herds of grazing animals on low-productivity pasture lands within restricted territories. Forest Sami needed control over stationary resources, i.e. fishing waters and hunting grounds, and were not able to expand reindeer herding to the same extent mainly due to limitations in the natural settings and climate in the boreal forest.

When large-scale reindeer husbandry was introduced the following factors, related to grazing, likely contributed to an earlier transition in the alpine zone than in the boreal forest zone:

1. Access to high-quality summer grazing in alpine heaths, grass lands, willow thickets and birch forests
2. Cold and windy weather in the alpine zone, and more insect relief habitats, decreased the harassments of oestrid flies. This increased reindeer's grazing time and hence growth
3. The open character of the alpine landscape made it easier to gather the herd
4. Mountain Sami could easily lease winter grazing in the boreal forest from Forest Sami because the latter had access to more grazing than they needed

With large-scale reindeer husbandry, the grazing resource became the center asset for Mountain Sami households, and due to the nature of extensive large-scale grazing there was an increased competition over pasture lands which in turn gave rise to common property regimes and invoked a greater emphasis on social relations to make the regime run smoothly.

The increased number of reindeer and the organization needed to herd and milk them change the way Mountain Sami worked together. Reindeers are sensitive to hardships, such as diseases and lack of grazing, which increase the probability of large yearly variations in the number of reindeer in the herd. A stable economy based on reindeer nomadism thus required more cooperation between households. The cooperation worked as an insurance system where neighbors and relatives helped out if a family lost many reindeer. This system contributed to a system of strategic marriages that tied Mountain Sami families together (Nordin 2009). Social networks are especially important in systems where people depend on common pool resources. It is known from more recent days (early twenty century), that a strategy for large reindeer owner was to work together with small owner. This way it is possible for the larger

owner to get cheap labor for herding and milking from smaller reindeer owner and poor Sami while the smaller owners get access to resources larger owner have (Holmbäck 1922:67).

One sign of the Mountain Sami society becoming more dependent on common-pool resources and strong relations among neighbors is that the two Mountain Sami villages (*fjällsamebyar*) in Lule lappmark, Tuorpon (50 villagers) and Sirkas (60 villagers), did not distinguish a border between the two villages in the mid-18th century. Instead the two villages used the same land “as good friends” as expressed by the villagers of Tuorpon in an investigation conducted by the crown concerning the border between Norway and Sweden in 1745 (Wiklund & Qvigstad 1909:17; Holmbäck 1922:19).

The conditions for winter grazing in the boreal forest varied much within the season which called for high flexibility in reindeer management (Rouiter and Roué 2009). This means that the winter grazing had to be organized among Sami families living in settlements based on family groups and not in larger settlements as Tanner (1929) has claimed. This theory is corroborated by Kuoljok (2011) who states that for practical reasons reindeer herds must be divided into smaller groups during winter. Emelie Demant-Hatt (1913) who wrote a book about her year with the Mountain Sami in northern Sweden in the early 20th century similarly describes the winter grazing as a highly flexible system where the family mostly lived on their own in the forest and moved with their herds as frequently as every two weeks in winter in constant search for better grazing. Although she describes a later phase in Sami history, when reindeer husbandry had shifted from milk to meat production, it is possible to make parallels over time. The common denominator is that the mobility and flexibility that Demant-Hatt described in the early 20th century was applicable also to 17th and 18th centuries large-scale reindeer pastoralism. Regardless if the outcome was milk or meat the Sami’s main goal was to find good grazing for the reindeer, precisely like it is the central goal for reindeer herders today (Rouiter and Roué 2009).

The forest Sami had strong property rights for fishing waters. It was often organized as an exclusive right to fish and resemble private property. Such rights to specific fishing water are known since the mid sixteenth century. If the rights were shared between users, detailed rules are known from the eighteenth century, specifying rights for the different parties. There were rules what time of the year the different users had access, what places in the lake or along the

river they had the rights to use, and what fishing gear they could use and sometimes what species they were allowed catch. Detailed early modern rules about fishing are also known from Sea Sami along the Norwegian coast (Bjørklund 1991). The forest Sami had private rights to hunt on their land.

During the seventeenth and eighteenth centuries, the Mountain Sami got more access to grazing resources on land belonging to Forest Sami and their territories became important winter grazing land for Mountain Sami. This led to weakening of the Forest Sami's property rights to that same land. The Forest Sami had a resource that was in demand for many Mountain Sami, and a Forest Sami did not have the right to sell the resources to the highest bid. The local court in Lule Lappmark decided that the Mountain Sami that lived in the same Lappmark (Tuorpon and Sirkas) had the right to use the Forest Sami's land for winter pasture. It is also known that the court even forbade the owners of land to lease it to mountain Sami's from neighboring Lappmarks after complaints from mountain Sami's from Tuorpon. It is important to stress that it was not open access for all Mountain Sami from the same Lappmark to use Forest Sami pasture land during the winter. It was a right that was granted to an individual or a group of Mountain Sami. To facilitate reindeer herding the Mountain Sami's right to use Forest Sami's land became stronger during the eighteenth century.

There is no evidence of over grazing in early modern reindeer herding (Bjørklund 1990). The Mountain Sami created a common property regime on the summer pasture in the mountains. However, one of the main reasons to create a common property regime, to exclude users to avoid depletion of the resource, is missing and the property regime hence resembles what Moritz (2016) has described as an open property regime. However, the pastures in each Lappmark was mostly used by users living within the Lappmark, but when the conditions were bad in neighboring Lappmarks, reindeer owner had the right to use the pastures in other Lappmarks. Flexibility was more important than exclusion. Intensive debate in the local court shows that both Mountain Sami and Forest Sami had clear rules about the governing of their natural resource.

The changes in the Sami economy during the period 1550–1780 created winners and losers. The winners were those Mountain Sami that could expand reindeer herding and the losers were poor Mountain Sami and Forest Sami that could not expand their reindeer herds. A land

use pattern had been established in the Swedish Lappmark that required large-scale extensive land use of grazing resources. This land use was in opposition to more exclusive rights to land and was created by self-organization.

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