

The Importance of Reindeer in Northern Finland during World War II (1939–45) and the Post-War Reconstruction

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ABSTRACT. We studied the consequences of World War II (WWII, 1939–45) for reindeer herding in northern Finland, evaluated the significance of the livelihood for the population during and after the war, and identified the factors that made successful reconstruction of the livelihood possible. The study is based on qualitative content analysis of articles published in the professional journal *Poromies* ('Reindeer Herder') during the period 1931–67. Reindeer were an important source of food, transport, clothing, footwear, and skins for soldiers during the war. Approximately 220 000 reindeer were slaughtered to provide food, averting the compulsory slaughter of 88 000 cows. Herders' skills were highly valued during the war. The herds and herders figured in the reconstruction of northern Finland and contributed to the war reparations owed the Soviet Union. During the period 1939–45 the number of reindeer fell dramatically, and the cession of Finnish territories to the Soviet Union and destruction of fences made herding difficult. In addition, the area of pastureland available to reindeer decreased. The combined effects of military operations, a labour shortage, an increased number of predators, and difficult weather and snow conditions led to losses of reindeer. The recovery of the livelihood to its pre-war level took 10 years. We argue that in addition to improved post-war pasture conditions—a result of decreased reindeer densities and favourable weather—the rapid recovery of reindeer herding can be attributed to the high motivation, diligence, and experiential knowledge of herders and the herding administration gained in rebuilding the livelihood after WWI (1914–18). Both groups understood that in northern Finland it would be economically wiser to invest in reindeer husbandry rather than cattle farming since reindeer are better adapted than cattle to the harsh climate and to forage grown in low-productive soils. Reindeer herding was based on natural pastures and labour, whereas cattle farming relied on crop cultivation, as well as expensive buildings, machinery, and fertilizers.

Key words: reindeer herding; northern Finland; World War II; reconstruction; recovery; *Poromies* journal; herding district; Soviet Union; qualitative content analysis

RÉSUMÉ. Nous avons étudié les conséquences de la Deuxième Guerre mondiale (1939–1945) sur l'élevage des rennes dans le nord de la Finlande, évalué l'importance des moyens de subsistance de la population pendant et après la guerre et déterminé les facteurs permettant la reconstruction réussie des moyens de subsistance. L'étude est basée sur une analyse du contenu qualitatif d'articles publiés dans la revue professionnelle *Poromies* (« éleveur de rennes ») entre 1931 et 1967. Les rennes étaient une source importante de nourriture, de transport, de vêtements, de chaussures et de peaux pour les soldats durant la guerre. Environ 220 000 rennes se sont fait abattre pour fournir de la nourriture, évitant l'abattage obligatoire de 88 000 vaches. Les compétences des éleveurs étaient très recherchées pendant la guerre. Les troupeaux et les éleveurs ont joué un rôle dans la reconstruction du nord de la Finlande et contribué aux réparations de guerre pour dommages causés à l'Union soviétique. De 1939 à 1945, on a assisté à un déclin très important de la population de rennes; la cession des territoires finlandais à l'Union soviétique et la destruction de clôtures ont rendu l'élevage difficile. De plus, les zones de pâturage des rennes ont diminué. Les effets des opérations militaires alliés à la pénurie de main-d'œuvre, à l'augmentation du nombre de prédateurs, aux conditions météorologiques difficiles et aux conditions de la neige ont entraîné la perte de rennes. Le rétablissement des moyens de subsistance à leur niveau d'avant-guerre a pris dix ans. Nous soutenons qu'en plus de l'amélioration des conditions de pâturage d'après-guerre (le résultat du déclin de la densité de population de rennes et de conditions météorologiques favorables), le rétablissement rapide de l'élevage de rennes peut être attribué au niveau de motivation élevé, à la diligence et aux connaissances acquises par l'expérience des éleveurs ainsi qu'à l'administration des troupeaux découlant de la reconstruction des moyens de subsistance après la Première Guerre mondiale (1914–1918). Les deux groupes ont compris que pour le nord de la Finlande, il coûterait moins cher d'investir dans les activités d'élevage de rennes plutôt que dans les activités d'élevage des bovins, car les rennes s'adaptent mieux que les bovins au climat rigoureux et au fourrage qui pousse dans les sols moins productifs. L'élevage de rennes reposait sur les pâturages naturels et le travail, tandis que l'élevage des bovins reposait sur la culture des plantes, sans compter les bâtiments, la machinerie et les engrais coûteux.

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Mots clés : élevage des rennes; nord de la Finlande; Deuxième Guerre mondiale; reconstruction; rétablissement; revue *Poromies*; territoire d'élevage; Union soviétique; analyse de contenu qualitatif

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INTRODUCTION

Reindeer herding in Finland can be divided into a western tradition, which developed from or in contact with nomadic Sámi herding, and an eastern tradition, which originated in the practices used by Forest, Inari, and Skolt Sámi, and later, by Finnish peasants. Eastern practitioners herded reindeer on a smaller scale and combined herding with other livelihoods, such as hunting, fishing, and farming. When settlement spread from south to north around the turn of the 19th century, Finnish peasants adopted herding practices from the Forest Sámi (Paulaharju, 1927; Itkonen, 1948; Ruotsala, 2002; Heikkinen, 2006; Kortessalmi, 2007; Turunen and Vuojala-Magga, 2014). Reindeer herding has been practiced in Finland by both Sámi and Finns, a situation contrasting with that in Norway and Sweden, where the livelihood is an exclusive right of Sámi (Eide et al., 2017). When reindeer numbers started to rise in the mid-19th century, the importance of reindeer as a source of meat increased as well. The state authorities intervened in 1898 by obligating the reindeer owners to set up geographically defined herding co-operatives (Kortessalmi, 2007; Vuojala-Magga et al., 2011), which was the start of the modern reindeer herding system with new and stricter government controls of the livelihood.

Before WWII herders practiced intensive reindeer herding, a technique in which a herd is kept under the control of the herder; at present the common practice is extensive herding, which means that reindeer graze in free-ranging or loose herds (Grotenfelt, 1920; Itkonen, 1948; Alaruiikka, 1964; Ruotsala, 2002; Helle and Jaakkola, 2008; Vuojala-Magga et al., 2011).

Reindeer herding has been an important livelihood in northern Finland alongside agriculture and forestry, both of which have challenged herding since as far back as the 1850s (Turunen et al., 2017a). Agriculture and forestry started to take over reindeer pastures because these occupations were seen as more prosperous than herding (Kortessalmi, 2007). In the beginning of the 20th century, Finland was an agrarian country, which later became wealthier and industrialized between the world wars (Alapuro, 1983; Jokinen and Saaristo, 2002). The most difficult conflicts between forestry and reindeer herding in the central and southern reindeer management area (RMA) had already been resolved through legislation before the 1920s. For example, the felling of lichen-rich trees for reindeer was restricted to pine-dominated mires and stunted trees (Ruuttula-Vasari, 2004; Kortessalmi, 2007; Turunen and Vuojala-Magga, 2014). Although a herder could be a farmer as well, there were continuous tensions between agriculture and reindeer herding, particularly in

the southern RMA. Attempts to resolve conflicts included obligating reindeer herding districts (HDs) to prevent reindeer from entering cultivations and to compensate farmers for the damage they caused, but obligations were imposed on farmers as well (Kortessalmi, 2007).

During WWII, Finland was a party to three major conflicts: the defensive Winter War (1939–40), the Continuation War (1941–44), and the Lapland War (1944–45). The first two, with an interim peace, were fought against the Soviet Union, and the third was waged to expel German forces from Finnish territory. The focal military operations were conducted in Karelia, southeastern Finland, and along the eastern border of the country, where they extended to the north, including the RMA. The Soviet Union attacked Finland on 30 November 1939, starting the Winter War; the conflict ended with a peace concluded on 13 March 1940. The terms of peace were harsh for Finland, involving as they did cession of territories and war reparations. Finland lost 35 000 km², 10% of its territory, which included part of the RMA and a significant number of the reindeer on the land (Kortessalmi, 2007). All in all, the ceded areas were home to more than 400 000 people, who were evacuated and relocated on the basis of the Emergency Settlement Act (346/1940) (Jaatinen, 1984; Ursin, 1984; Lehtola, 1994; Kivimäki and Hytönen, 2015; Lähteenmäki, 2017).

Finland and Germany engaged in military co-operation during the Continuation War and the German presence temporarily tripled the population of Lapland (Junila, 2000). One condition of the armistice of 4 September 1944 between Finland and the Soviet Union, which ended the Continuation War, was that Finland had to drive all German troops out of its territory (Elenius et al., 2015; Lähteenmäki, 2017; Seitsonen and Koskinen-Koivisto, 2017). As part of that campaign, the civilian population of northern Finland was evacuated to Ostrobothnia and Sweden starting at the beginning of September 1944 (Lehtola, 1994; Korteniemi and Vuopio, 2004; Seitsonen and Koskinen-Koivisto, 2017). More than 100 000 people, more than 70% of Lapland's civilian population, were evacuated in a few weeks. On the local level, the Finns and the Germans still worked together, and there was no break in contacts between them. German trucks and buses transported civilian refugees southwards, while Finnish vehicles carried German military supplies northwards (Seitsonen and Koskinen-Koivisto, 2017). In October German troops received orders that during withdrawal they were to destroy all buildings, movable property, bridges, and roads of use to the Finns. Depending on the source, it is estimated that in the parishes of northern Finland, between 40% and 90% of the buildings were destroyed on average (Ursin, 1980; Elenius et al.,

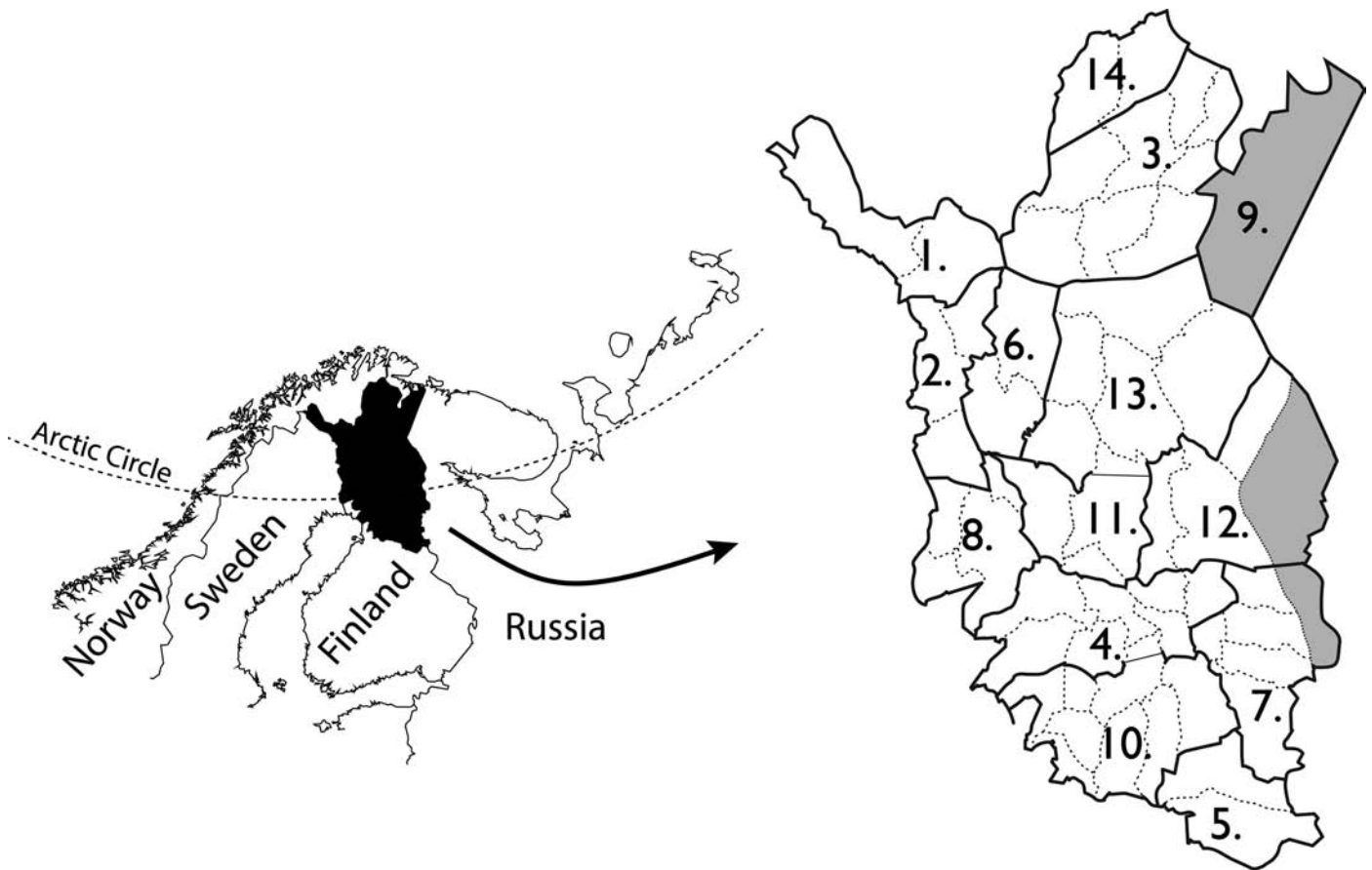


FIG. 1. Reindeer management area (RMA) of Finland. Grey shading shows the territories lost to the Soviet Union in WWII. Solid lines are borders of reindeer herding associations before WWII, and dashed lines, the present herding districts (HDs). The reindeer herding associations were 1. Enontekiö, 2. Etelä-Lappi, 3. Inari, 4. Itäkemijoki, 5. Kainuu, 6. Kittilä, 7. Kuusamo, 8. Läntinen, 9. Petsamo, 10. Pudasjärvi, 11. Raudanjoki, 12. Salla, 13. Sodankylä, and 14. Utsjoki.

2015; Lehtola, 2015b; Lähteenmäki, 2017). The conflict, known as the Lapland War, ended in April 1945. The return of evacuees, begun already during the war, continued until 1947. Finland had to relocate not only evacuees but also veterans, to whom it had promised land during the war. The reconstruction of northern Finland, in ruins at the time, made it difficult for returning evacuees to resume a normal, everyday life (Kivimäki and Hytönen, 2015). The Land Acquisition Act (396/1945) was enacted urgently to create plots for housing, fishing, and cultivation (Laitinen, 1995). The establishment of resettlement plots was completed in 1958, with the repeal of the Land Acquisition Act (396/1945) and the coming into force of the Land Use Act (353/1958) in 1959. In northern Finland, however, resettlement holdings were still established as late as in the 1960s.

The history of reindeer herding during WWII has been studied in both Finland (Lehtola, 1994, 2003; Kortessalmi, 2007; Turunen et al., 2017b) and the Soviet Union (Gorter-Gronvik and Suprun, 2000; Gorter et al., 2005; Dudeck, in press), but scientific articles on the topic are few. In the Soviet Union, herders were drafted to fight as soldiers in the war with Finland, and their reindeer were confiscated (Gorter-Gronvik and Suprun, 2000). After Germany attacked the Soviet Union on the Kola Peninsula in 1941 in order to take Murmansk, the Soviet army decided to

establish troops that would use reindeer sledges. Sami, Nenets, and Komi herders served with their trained reindeer from early 1942 until 1944. The main task was to transport weapons and ammunition to the front, move soldiers to behind enemy lines and retrieve wounded soldiers (Dudeck, in press). Already during the Winter War (1939–40), it had turned out that herders coped extremely well with the harsh northern conditions and that reindeer were far more useful on the Arctic front than either tanks or horses (Gorter-Gronvik and Suprun, 2000; Dudeck, in press).

During the war, reindeer herding was subject to strong pressure from the combined effects of military operations, a shortage of labour, an increased number of predators, and difficult weather and snow conditions. In the present study, we examine the consequences of WWII for reindeer herding and evaluate the significance of the livelihood for the citizens of northern Finland during the wartime crises and reconstruction period. We also identify the factors that made rapid recovery and growth of reindeer herding possible after the crises. Our study is mainly based on the articles in *Poromies*, a professional journal for reindeer herders. In addition, we have used the scant literature on reindeer herding immediately before, during, and after WWII. This period has not been analyzed earlier from the viewpoint of reindeer herding, although the livelihood

played a significant role during the war years and survived the reconstruction of northern Finland.

MATERIAL AND METHODS

Study Site

The RMA (Fig. 1) is characterized by boreal coniferous forests, mires, subarctic mountain birch woodlands and fells (Kalliola, 1973; Oksanen and Virtanen, 1995). In climatic terms the region belongs to the continental subarctic or boreal (taiga) climates; that is, it has a cold, snowy forest climate (Köppen climate type: Dfc) that has characteristics of both maritime and continental climates (Peel et al., 2007). Because of the Gulf Stream, the climate in the area is relatively mild compared to that of other locations at corresponding latitudes. The mean annual temperature during the period 1981–2010 ranged from -1.9°C to 1.6°C , with mean temperatures of 11.2°C to 15.8°C in July and -14°C to -10.8°C in January. Yearly precipitation varies from 433 to 657 mm, with about half of this occurring as snow, which accumulates to a depth of 67 to 99 cm (Pirinen et al., 2012). The rivers and lakes freeze in October–November, and the ice cover lasts until May–June (Korhonen, 2005). There is a high variation in temperatures and precipitation between years. A significant warming trend during the past 50 to 100 years has been observed (Vikhamar-Schuler et al., 2016; Kivinen et al., 2017). For example, in Sodankylä, the mean annual temperature was -0.2°C during 1931–60, but it rose to 0.4°C during 1961–90 (Kivinen et al., 2017). In addition, the duration of ice cover on the lakes in the region has become shorter as a result of warming.

In the beginning of the 20th century, the number of reindeer in the RMA of Finland was approximately 120 000; by 1938–39, it had surpassed 200 000. The number dropped during the war, but in the 1970s and 1980s, it rose again to more than 250 000 animals (Grotenfelt, 1920; Kortessalmi, 2007). The largest permissible number of living reindeer, based primarily on the capacity of the winter pastures, is determined every 10 years by the Ministry of Agriculture and Forestry. It was set at 203 700 in 2004–05 and remained there in 2014–15 (RHA, 2017).

From before WWII until 1967–68, the reindeer-herding year started on 1 August and ended on 31 July (Reindeer Husbandry Act, 239/1932, 444/1948). In intensive herding, common around the time of the war, herders had tight control over the herds for most of the year, but in summer reindeer ranged freely on mires and meadows, the banks of rivers and brooks and the shores of lakes, where they fed on grasses, sedges, shrubs, herbs, and certain deciduous tree species (Turunen et al., 2009; Vuojala-Magga et al., 2011). In September, herders working on foot with reindeer dogs started collecting and moving the herds to roundup sites (Alaruikka, 1964). The work was facilitated by the rut, during which male reindeer attract small herds of female

reindeer around them. During midwinter roundups, reindeer were counted, and the animals to be left alive were separated from those to be slaughtered (Grotenfelt, 1920; Ikonen, 1948; Alaruikka, 1964). Before animals could be rounded up and slaughtered, a snow cover had to form, and mires, lakes, and rivers had to freeze so that meat and other products could be preserved and transported. After the roundups, herders on skis took reindeer to the winter pastures. During the late winter, reindeer fed on arboreal lichens in old-growth forests or moved to the fells, where snow conditions are more favourable for digging up terricolous lichens. Herders assisted reindeer in obtaining winter forage, especially when snow conditions were difficult. In May reindeer gave birth to their calves in their natural calving regions, for example, in forested areas or on the southern slopes of fells; this practice is still in use today. Tether calving was a widespread practice in the northern and central RMA and continued until the 1960s in the north. In tether calving, pregnant female reindeer were tied to a tree and moved onto fresh snow on the pasture every day until their calves were born. When tether calving was used, calves were earmarked immediately after birth, whereas in free calving they were marked in summer or autumn (Alaruikka, 1964; Hannula, 2000; Turunen and Vuojala-Magga, 2014). Herders' annual work included herding to protect reindeer from predators, repair of fences, driving reindeer away from cultivations and settlements, planning meetings, and bookkeeping (Helle and Jaakkola, 2008).

Analysis

The material analyzed includes articles published in the journal *Poromies* during the period 1931–67 and dealing with reindeer herding during WWII and the reconstruction period. *Poromies* is a professional journal that has been published since 1931 by the Reindeer Breeding Association of Finland (RBAF), later called the Reindeer Herders' Association (RHA), which is the central non-profit ideological organization of herders (Kortessalmi, 2007). It is responsible for steering reindeer husbandry, promoting research, handling relations with society at large, and taking care of counseling and guidance. The RBAF/RHA has in fact had a double role: supervising the interest of herders on the one hand and transmitting the requirements of the government to them on the other. The journal is directed to herders, stakeholders, and others interested in reindeer herding. *Poromies* was established to make education and guidance of reindeer herding more effective. The editor-in-chief during the period studied (1931–67) was Yrjö Alaruikka. He held the honorary title of *talousneuvos* for distinction in economics (1953), was secretary and executive director of the RBAF (1930–48), executive director of the RHA (1948–72), and chairman of the board of directors of Poro and Riista Ltd and Paliskuntain jäähdyttämö Ltd (1940–80). He was also the author of several textbooks and popular articles on reindeer husbandry (Alaruikka, 1959, 1964, 1977). The articles in *Poromies*, between one and two

pages in length, were written by Alaruikka, members of the board of directors of the RBAF/RHA, or others (e.g., herders, researchers) familiar with reindeer herding in different parts of the RMA. They are mostly descriptive and pragmatic and do not deal with topics such as military actions, life on the home front, or the participation of women and children in reindeer herding during or after the war. In addition to articles, *Poromies* published annual reports of the activities of the RBAF/RHA (1933, 1935–38, 1942–45 and 1948–49) and statistics on reindeer herding.

Poromies is a commonly used source of information in Finnish reindeer herding research and is considered relatively reliable (e.g., Kortessalmi, 2007; Helle and Jaakkola, 2008; Vuojala-Magga et al., 2011; Turunen and Vuojala-Magga, 2014). Naturally, during the exceptional times of the war, one aim of the writings was to boost the morale of the herders and encourage them in their livelihood. Wartime writings may also have had some propagandistic nuances, included in part with a view to receiving more state support for the livelihood. In addition, instructions and refusals related to the war censorship of the press, which became more active towards the end of WWII (Salminen, 2003), may have had some impact on the content of *Poromies*.

The statistics published by the RBAF/RHA are the official source of information used by authorities, decision makers, and researchers. For example, the Ministry of Agriculture and Forestry, on the basis of these statistics, confirms the largest permissible number of living reindeer for each HD once in a decade. Because of the state of emergency during WWII, however, the reindeer numbers, calculated during the annual roundups, may not be as reliable as they were before and after the war years; not all reindeer were marked or rounded up during the war, because most of the herders were either at the front or had been evacuated. In addition, reindeer could have been hidden by their owners in an effort to avoid the compulsory surrender of animals to the state.

We read and analyzed all of the articles published in *Poromies* during the period 1931–67. The journal published articles dealing with the recovery and reconstruction of reindeer herding as late as the 1960s. The reconstruction period was completed in northern Finland in the early 1950s (Heikkola and Hiilivirta, 1983), although repair of the railway network, for example, continued until 1957 (Ursin, 1980:385). The articles were analyzed using qualitative content analysis (Tuomi and Sarajärvi, 2009), through which we sought to gain an interpretive understanding of the material. Our objective was to gain a succinct, chronologically coherent, and more informative description than the original, comparatively fragmented material provided. We also wanted to link the results of this work to the wider context of the phenomena and other scientific results related to the issues studied. Our approach focused on the practices in the livelihood, with less attention paid to the ethnicity of those engaged in it. Discussions on the colonial histories of the Sámi are therefore beyond the

scope of the article. Sámi reindeer herding during and after WWII has been discussed earlier by, among others, Lehtola (1994, 2003, 2015a, b) and Seitsonen and Koskinen-Koivisto (2017).

The following central themes emerged in our analysis: 1) the effects of the war on reindeer herding (reindeer herding before the war; herders and military operations; reindeer evacuations; loss of territories and reindeer; and the combined effects of war, difficult weather conditions, and predators); 2) the significance of reindeer herding during crises (e.g., a meat reserve for the civilian population and the army, transport, maintenance); 3) reindeer herding and reconstruction; and 4) the factors that made the rapid recovery and reconstruction of reindeer herding after the war possible. The volumes of *Poromies* can be found in, among other locations, the National Repository Library in Kuopio and the archives of the RHA in Rovaniemi.

RESULTS

Reindeer Herding before WWII

Although the military events of WWI (1914–18) did not take place in northern Finland, they and the Finnish Civil War (1918) between the Reds and the Whites had serious consequences for reindeer herding. During WWI, the number of reindeer decreased because of the conflicts and difficult weather conditions. The depression immediately after the war was particularly severe because of losses in agriculture and lack of foodstuffs. With the widespread hunger that prevailed, poaching of reindeer was common (Kortessalmi, 2007). According to Alaruikka (1931), the losses were such that only one-third of the pre-war herd was left. After the war, economic growth and recovery of reindeer herding were rapid. Between 1926 and 1931, the number of reindeer in the different HDs increased by 20% to 40% as a result of favourable weather and low calf mortality (Alaruikka, 1931). The total number of reindeer was estimated to have increased from fewer than 80 000 animals in 1927–28 to 238 300 (including calves) at the beginning of WWII in 1939. There was plenty of reindeer meat to eat and to sell, as the following excerpt shows: “The amount of reindeer hoof marrow and tongue we ate here in 1936–39 was such that [the food/broth that spilled on] our beards froze in the cold and millions of kilograms of meat were sold abroad” (Anon., 1947).

The establishment of the central ideological organization of herders, the RBAF, in 1927 greatly quickened the development of the livelihood. Since 1948, the organization has been called the RHA (Kortessalmi, 2007). The first Reindeer Husbandry Act (239/1932) prescribed that reindeer herding associations were to be formed within the RMA (Fig. 1). These herding associations were given responsibility for leading, promoting, and monitoring reindeer herding within their boundaries. After the change in legislation (Reindeer Husbandry Act, 444/1948), the

HDs became members proper of the RHA. The growth experienced by reindeer herding after WWI can also be attributed to funds allocated by the state for developing management of the herds, the bookkeeping system, slaughtering, and meat processing, as well as for improving the health of the herds (Anon., 1943b).

It was estimated as early as in 1934 that animal density in the central and southern RMA was too high relative to the state of the winter pastures (Anon., 1934a, b). This being the case, *Poromies* advised herders to pay special attention to the sufficiency of winter pastures, more efficient slaughtering of reindeer, and more effective control over the herds. These actions would reduce damages caused by reindeer to cultivations and make it easier to resolve conflicts between herding and agriculture (Lahtela, 1936). Societal development aggravated the situation: with the spread of forestry, settlements, and agriculture, total pasture area declined, and pastures became fragmented (Alaruikka, 1937; Anon., 1938a).

A commercial company, Poro and Riista Ltd., established in 1937, significantly expedited the purchasing, processing, and marketing of reindeer products (Kortessalmi, 2007). The company was first owned collectively by the herders and HDs, and later also partly by the RBAF/RHA. In addition, research on reindeer herding gradually emerged in the form of pasture vegetation surveys and feeding experiments. The growth potential of reindeer herding was apparent in the titles of articles in *Poromies* as late as in 1938, a year before the war: “Development of the market for our reindeer products” (Anon., 1938d), “Export of reindeer meat to Germany” (Anon., 1938b), “Genuine entrepreneurial belief in reindeer herding” (Ailanko, 1938), and “Improving the production of reindeer husbandry” (Anon., 1938c).

Impacts of WWII on Reindeer Herding

The favourable development seen in reindeer herding ceased at the beginning of WWII (1939–45), although reindeer were still herded despite the state of emergency. One problem was that professional herders had to go to the front during the Winter War (1939–40) or were evacuated (Lahtela, 1940, 1941a). Reindeer herding in the 1930s was a labour-intensive livelihood, in which herders had to control herds without motorized vehicles, aid reindeer in getting winter forage, hunt predators, assist in tether calving, and carry out slaughtering (Anon., 1940c; Hannula, 2000; Helle and Jaakkola, 2008; Vuojala-Magga et al., 2011). Lack of control over herds resulted in reindeer being lost; for example, not all calves born during the war could be marked, and additional damage was caused by predators, loose dogs, poaching, and train and car accidents (Lahtela, 1941a, 1948; Anon., 1942).

Before the beginning of the Winter War (1939–40), the RBAF prepared an evacuation plan for the reindeer (Anon., 1964). When the war started in 1939, reindeer were evacuated from 16 HDs located close to Finland’s eastern border to locations farther west, hundreds of kilometres

from their pastures and beyond the range of military operations. After the Winter War, part of the RMA was ceded to the Soviet Union; in Salla and Kuusamo, for example, pastures that supported about 15 000 reindeer ended up on the other side of the new border (Alaruikka, 1940b). In 1940, animals that were still alive in the evacuated herds were returned to their districts, where the herders got them under control (Lahtela, 1948). However, a considerable number of reindeer had not been evacuated and had remained on their old pastures, which now belonged to the Soviet Union (Alaruikka, 1940b).

A large number of reindeer perished in military operations (Lahtela, 1941c). The military requisitioned draught reindeer (reindeer taught to pull a sledge) and over 10 million kilograms of reindeer meat from the HDs. During the war, reindeer were slaughtered both voluntarily and by order of the government to improve the nutritional situation (Lahtela, 1945), which was dire throughout the country, particularly during the winter of 1941–42. It has been estimated that in 1941 the volume of agricultural production was only 73% of normal (Myllyniemi, 1982), a result of the cession of agricultural land to the Soviet Union in the Moscow Peace Treaty, the collapse of the import of fertilizers, and unfavourable weather conditions (e.g., drought during the 1940–41 growing season) (Järventaus et al., 1984). Reindeer populations collapsed because of the war. The herding association of Petsamo lost all of its reindeer and pastures through cession of territories to the Soviet Union. Salla lost 92%, Kuusamo, 85%, and Kainuu, 89% of their herds, whereas Enontekiö in the northwestern part of the RMA lost 30% of its reindeer (Alaruikka, 1947) (Fig. 1). The total number of reindeer in the RMA decreased by 53% as a result of WWII, declining from 204 608 animals (not including calves) in 1938–39 to 96 772 in 1946–47 (Alaruikka, 1947; Turunen et al., 2017b).

Important reindeer-herding areas in eastern and northeastern Finland, including Petsamo and parts of Kuusamo and Salla, were lost to the Soviet Union during the Winter War (1939–40) and Continuation War (1941–44) (Fig. 1). The eastern border fence of Finland, fences between the HDs, and reindeer roundup fences were destroyed or torn down (e.g., for firewood; Kariniemi, 1948; Lahtela, 1948). The cession of territories to the Soviet Union after the war made it necessary to reorganize the division of pastures into HDs (Anon., 1940b). In *Poromies*, herders were encouraged to kill predators and prevent damage to cultivations, particularly as opportunities for farming had to be provided for settlers who had been evacuated from Karelia, which had also been ceded to the Soviet Union (Lahtela, 1941b). After the Continuation War in 1944, several HDs disappeared as additional territories were ceded to the Soviet Union (Fig. 1). Moreover, 150 km of the eastern border fence was lost. Even after peace was achieved, the rebuilding of the border fence took many years, which meant that reindeer were still being lost to the Soviet Union. Recovery of reindeer herding was therefore slower in the Salla and Kuusamo regions than elsewhere (Kortessalmi, 2007).

Of all the war years, those of the Lapland War (1944–45) were the harshest for the people in northern Finland, since it was there that military operations were conducted, destroying buildings, movable property, and transport routes and forcing evacuation of the population (Alaruikka, 1945).

Combined Effects of WWII, Predation, and Difficult Weather Events

The combined impacts of military operations, the cession of territories, unfavourable weather conditions, poor pastures, and an increased number of predators caused the reindeer numbers to collapse. Predators included grey wolf (*Canis lupus*), wolverine (*Gulo gulo*), bear (*Ursus arctos*), lynx (*Lynx lynx*), Golden Eagle (*Aquila chrysaetos*), fox (*Vulpes vulpes*), and Raven (*Corvus corax*); even loose dogs preyed on reindeer. Predators have always caused reindeer losses and extra work for herders, who have to protect their herds (Turunen et al., 2017c). In the early 1900s, hunters kept predator populations small by driving the predators away, killing them, and destroying their nests and lairs. Contributing to this effort were bounties provided by the state and several HDs (Lahtela, 1948; Turunen et al., 2017c). Even before WWII, special attention was paid to reindeer losses caused by wolves in the fell HDs and by wolves and bears coming in across the eastern border (RBAF, 1934, 1936, 1937, 1938, 1939). During the war predator populations grew, and the damage they caused to reindeer increased because of the shortage of hunters (RBAF, 1944).

Both the experience-based knowledge of herders and research have shown that long periods when deep snow or ice formation on the ground reduce availability of forage, combined with low temperatures, are difficult for reindeer (Kumpula and Colpaert, 2003; Helle and Kojola, 2008; Vuojala-Magga et al., 2011; Rasmus et al., 2014; Turunen et al., 2016). Mould that develops on vegetation when the snow cover forms on unfrozen soil can worsen the situation (Kumpula et al., 2000). Methods used for supplementary and emergency feeding of reindeer have included pulling lichens off trees, cutting down trees rich in lichens, breaking a hard snow cover with shovels to make digging easier for reindeer, and moving herds to areas where trees have been cut or to locations on the fells where the snow cover is thinner (Anon., 1943a; Itkonen, 1948; Helle and Jaakkola, 2008; Turunen and Vuojala-Magga, 2014).

Before the Winter War, the winters of 1935–36 and 1937–38 were unfavourable for reindeer (Lahtela, 1941c; Anon., 1943b). The winter of 1939–40 was again difficult, and inexperienced herders did not have the “foresight learnt by experience or ability to monitor the situation to prevent losses of reindeer caused by a severe winter” (Lahtela, 1941c). A large number of reindeer died in the central and southern RMA, where less forage was available because of ice formation on the ground, followed by severe cold and a lack of herding (Alaruikka, 1940a). Reindeer were

weakened, with calves and male reindeer dying first. The loss of reindeer in the winter had a cascading impact on the following year: a considerable proportion of pregnant reindeer gave birth to dead calves or calves so weak that they did not survive, which essentially led to a total loss of calves (Lahtela, 1943).

In addition, evacuated reindeer died from hunger and lack of herding in 1939–40 because over large areas, lichens were encased in ice. Reindeer were also weakened during the winters of 1940–41 (Lahtela, 1941d) and 1942–43 (RBAF, 1943). In their search for forage, they destroyed cultivations (Aikio, 2013), which aroused bitterness, since after the unfavourable summer conditions in 1942, not even domestic animals could be fed (Lahtela, 1943). In this way, the cumulative effects of reindeer grazing and trampling, unfavourable weather, and a lack of labour because of the war had far-reaching impacts on agriculture, which further increased tensions between reindeer herding and agriculture.

Significance of Reindeer Herding during WWII

The contribution of both reindeer herds and herders to WWII was highly valued. Herders formed the core of several battalions that operated in regions close to the eastern border (Figs. 2, 3). Herders’ good physical condition and experience in moving in the wilderness—on waterlogged mires in summer and on snow in bitter cold in winter—were needed at the front (Alaruikka, 1941). Their ability to navigate was an important skill in patrolling and other mobile duties. Their initiative was also valued. Herders not only participated in direct military actions but also had to rescue herds from the frontlines: “...a task which was carried out successfully as bullets rained down on herds and herders alike from the machine guns on airplanes” (Anon., 1940c). Hundreds of herders died or were disabled in the war. During and after the Lapland War, mines laid by German soldiers killed and maimed civilians, including herders, and resulted in the deaths of many reindeer as well (Virkkunen, 2014).

Reindeer herds provided a significant meat reserve for citizens during the crises. A considerable amount of meat was provided by slaughtering reindeer during WWI and WWII, preventing hunger and starvation (Lahtela, 1941b, 1944, 1954). During the period 1939–46, about 220 000 reindeer were slaughtered to feed citizens (Lahtela, 1954). Calculations have shown that compulsory slaughters of reindeer averted the slaughter of more than 88 000 cows, which could then be used to produce milk, calves and manure for several years (Lahtela, 1948, 1954). Slaughtering cows instead of reindeer would have led to decreased agricultural production. Although a disproportionately large number of reindeer was ordered to be slaughtered during the period 1939–46, herders provided the prescribed number of animals each year (Nivanto, 1943, 1944; Alaruikka, 1947; Lahtela, 1954).



FIG. 2. Patrol consisting of reindeer and soldiers wearing snow camouflage clothing in Jäniskoski, Petsamo, northeastern Finland during the Winter War in 1940. Photo: SA-kuva.

In addition to meat obtained through slaughter, meat was sold to citizens with ration coupons at the roundup sites. The availability of meat, among other foods, was regulated because of the severe food shortage (Järventaus et al., 1984). Herds grazing close to the border provided a significant food reserve for the army. The herds to be slaughtered could be brought to the food delivery site without using any extra energy for their transport. Reindeer meat was suitable food for the detachments lodging in the wilderness, and even the blood of the slaughtered animals could be used (Alaruikka, 1939, 1967; Anon., 1964).

Reindeer also provided a source of accessories, such as reindeer-skin coats and footwear, which were light and warm and thus valuable for soldiers (Alaruikka, 1939) (Fig. 4). The RBAF and the Red Cross of Finland worked together to collect reindeer skins among all HDs in northern Finland in order to produce clothes and footwear for the border guards (Anon., 1964).

The role of the Finnish horse during WWII has been recognized (Ojala, 2007), but less is known about the role of reindeer. According to Alaruikka (1939), reindeer played an important role in winter maintenance operations in northern Finland. Use of draught reindeer was advantageous in the wilderness and on the fells. There was no need to build roads through the forests (Anon., 1964) or to bypass difficult terrain. Reindeer were used for communication, patrolling, and as a means of transport. In widely dispersed units, vehicles were replaced with reindeer. Far-ranging scouting and destruction patrols operating behind enemy lines were supplied with reindeer, which carried equipment and food (Fig. 3). The most tired men could rest in the sledge. Silent maintenance columns using reindeer were harder to detect than horses even by air reconnaissance. Herders drove and herded the reindeer and no special forage had to be provided (Alaruikka, 1939; Anon., 1964). For example, at the front in Lutto there were between 500 and 750 reindeer pulling sledges or carrying supplies. “Even in deep snow one strong reindeer pulling a



FIG. 3. Light troops leaving to prevent Russian commando attacks. The reindeer is being lifted up into the lorry. It will be used to pull ammunition and other supplies in a sledge. Savukoski, northeastern Lapland during the Lapland War in 1944. Photo: SA-kuva.

sledge can carry equipment and a week’s rations for at least four men at the speed of a skier” (Alaruikka, 1939).

Reindeer Herding during the Reconstruction Period

Reindeer herders started returning from evacuation to their own HDs even before the Lapland War had ended (Anon., 1945; RBAF, 1945; Lehtola, 1994; Seitsonen and Koskinen-Koivisto, 2017). “In October 1944 the first herders returned to their HDs. During that time there was nothing more than piles of ruins sticking out here and a howling wolf could be heard by those keeping watch by the fire at night. There was seemingly no end to the piles of reindeer that had been shot or to the rotten carcasses and skins that were found in the HDs” (RBAF, 1946). By the end of 1944, about 1000 herders had returned (RBAF, 1945). When the war ended in April 1945 and the evacuees returned to estimate the losses and start reconstruction, the rest of the herders started to search for their now-reduced herds in the forests and fells. Evacuees continued to return to northern Finland until the end of 1947 (Lehtola, 1994; Seitsonen and Koskinen-Koivisto, 2017).

The Skolt Sámi (Fig. 5), who lived in northeastern territories ceded to the Soviet Union, were resettled in different parts of northeastern Finland (Alaruikka, 1949; Kuusela, 1949; Lehtola, 1994, 2015b; Länsman, 2000). The Skolts had to give up their traditional way of life, which included annual migration between winter and summer villages. They had to begin living in permanent settlements built by the state between 1949 and 1952. Reindeer herding among the Skolt Sámi recovered gradually, with the help



FIG. 4. A guard wearing a reindeer skin taking his gun and skis from the wall of a cabin to start his shift during the Winter War in 1940. Photo: SA-kuva.

of state funds and private donations, but the herders had to adapt to the Finnish HD system (Länsman, 2000; Lehtola, 2015b). In 1952, what was known as the Skolt Act came into force, securing the living conditions of about 600 Skolt Sámi (Lähteenmäki, 2017).

The situation of reindeer herding had been difficult during the war years. A great deal of meat and many skins had been requisitioned by the government for the use of the civilian population. The development of reindeer herding declined markedly. The shortage of labour delayed the slaughter of reindeer, and reindeer began dispersing and disappearing and causing damage to cultivations. It had not been possible to increase the number of reindeer during the war years; the aim was to maintain the numbers at the time (Anon., 1943b). In addition to the impact of small breeding populations, the situation was aggravated for many years by a lack of fences and an increased number of predators (Anon., 1956). Yet, the state of emergency also provided possibilities for development: the weakest reindeer were selected for slaughter, which not only helped the food supply, but also improved the genetic quality of the remaining herds. The state of emergency also affected the market for reindeer products. Because of difficulties in food production and diminishing imports, attention had to be paid to what had previously been less valuable products,



FIG. 5. Skolt Sámi evacuee (above) and an evacuated Skolt Sámi woman making slippers from reindeer skin at a school (below) during the Winter War in 1940. Photos: SA-kuva.

such as blood and organs, and, for example, production of reindeer sausage began (Anon., 1940a).

Although more than half of the total herd had been lost by the time the war ended in 1945, reindeer owners were ordered one more time, in 1945–46, to provide meat and skins to the government (Alaruikka, 1947). In 1946–47, herders slaughtered fewer reindeer than had been used for compulsory slaughter and their own consumption in the previous year. They were motivated to improve their financial situation and increase production as the war was over and normal conditions returned. The price of reindeer meat rose 100% from 1945–46, the last year of compulsory slaughter and price regulation, to 1946–47, the first herding year exempt from these restrictions (Alaruikka, 1947).

Both herders and the RBAF worked intensively to increase the number of reindeer (Anon., 1948a). By 1952 most of the HDs had regained the reindeer numbers seen in 1939 (Alaruikka, 1952). By 1955, it is estimated, the reindeer populations had fully recovered from the damage caused by the war (Kortesalmi, 2007), and the largest permissible reindeer numbers of that time were even exceeded in many HDs. The increase in the number of

reindeer took longest in the HDs located close to the eastern border of Finland, as they had lost nearly all their animals in the war (RBAF, 1950; Alaruikka, 1956).

The HDs that had lost pasture areas to the Soviet Union were combined with the neighbouring districts. After the war had ended, the absence of a border fence along the new eastern border hampered efforts to stabilize reindeer management for a long time (Anon., 1940b). The RBAF began negotiations with the Soviet authorities about returning to Finland the reindeer that had crossed the border. The negotiations, conducted through the embassy of Finland in Moscow, were protracted (Anon., 1946; Seppälä, 1947). After the war, invoking the second Compensation Act, the HDs applied for compensation for the sections of border fence that had been destroyed or broken, as well as for those lost to the Soviet Union (Laisaari, 1945). This compensation was never paid (Kariniemi, 1948), and in 1956, part of the fences had still not been built for lack of funding (Anon., 1956).

Research and guidance relating to reindeer herding began to recover after the war, albeit slowly because state support for promoting reindeer herding was meagre. For many years, small reindeer numbers and unfavourable winters prevented selective breeding and extensive slaughter (Alaruikka, 1955). Young breeding reindeer were transferred from HDs that had suffered less damage to those where damage had been extensive. The RBAF took the initiative immediately after the war to propose to the Ministry of Agriculture that it should establish a station for reindeer husbandry research and breeding in northern Finland in order to promote herding. The aim was to increase the profitability of the livelihood through measures such as breeding, more effective use of summer pastures, and improved marketing of reindeer products (Alaruikka, 1945; Lahtela, 1947; Jaurola, 1952).

Reconstruction of the livelihood was not easy in areas where military operations had taken place. Among other things, the shortage of labour continued even after the wars. The danger posed by mines was most extensive, and the number of reindeer and herders lost because of mines greatest, in the HDs of Salla, Oraniemi, Lappi, and Ivalo (Alaruikka, 1947; Virkkunen, 2014). Reindeer herding practices had to be modernized. Predator populations had grown during the war years and hunting of predators had to be made more effective (Lahtela, 1946, 1948; RBAF, 1946; Turunen et al., 2017c). For example, poisonous bait was used, and wolves were hunted in fell regions even by airplane (Turja, 1947; Anon., 1949). There was also a great need for freezer facilities, which would help herders to slaughter reindeer earlier in the fall, when the weight of reindeer is at its highest. Earlier slaughter would also save winter pastures from trampling and grazing by reindeer and decrease the risk of damage to cultivations (Alaruikka, 1952). In addition, herders considered it important to build up the populations of reindeer dogs (Anon., 1948b).

During the reconstruction period the settlements which had spread already before the war challenged reindeer

herding, as did agriculture, which became more common in reindeer pasturelands, for example on mires (Lahtela, 1936, 1950). The conflicts between reindeer herding and agriculture escalated after the war as a result of actions taken to facilitate resettlement and the clearing of land for cultivation. Extensive areas of pastureland were lost to cultivation (Kortesalmi, 2007). Land use conflicts were prevented by protective fences, reindeer repellents, and the slaughter of reindeer that caused damage to cultivations (Alaruikka, 1952).

After the end of the war, the importance of reindeer was greatest in the forest industry and in the reconstruction of northern Finland. Reconstruction required large amounts of timber, and timber was also needed as part of the war reparations paid to the Soviet Union between 1944 and 1952. One-third of the reparations, which totaled 300 million dollars, was paid in the form of timber and forestry products. A lack of means of transportation limited forestry and the acquisition of timber for reconstruction (Parpola and Åberg, 2009). Without horses and reindeer, it would have been far more laborious to cut forests or haul and drive logs downriver (Kortesalmi, 2007; Ojala, 2007). Reindeer were still useful both in transport and for nutrition, since the roads were impassable and no other source of meat was available. Particularly in winter, reindeer herding was a significant source of income and employment in the region (Alaruikka, 1950; Lahtela, 1954; Kortesalmi, 2007).

Over the decade from 1940 to 1950, the population of northern Finland increased by 60% (from 108 000 to 170 000). This increase was totally dependent on paid labour, which significantly changed the economic structure of the region, which had previously been based largely on subsistence economy. Construction and forestry often provided better income than intensive herding of what were diminished herds. Many of the workers came from the south and stayed. The forest industry expanded, and intensive forestry, characterized by large clearcuttings, continued, gradually reaching more remote and northern parts of the RMA and causing fragmentation and deterioration of pastures (Parpola and Åberg, 2009).

DISCUSSION

World War II (1939–45) was a significant turning point in reindeer herding in northern Finland. Hundreds of herders lost their homes, reindeer pastures, and reindeer during the conflict. Difficult weather and snow conditions and increased predator populations added to these hardships. Reindeer herding was vital for the whole nation and the army, since semi-domesticated reindeer—a ruminant well-adapted to the Arctic—was used to provide nutrition, transport, and clothing on northern front lines, making it possible to save other resources and to ensure mobility for the army in the wilderness and under harsh winter conditions.

After the war years, society in northern Finland changed drastically. A large number of people were relocated and resettled within the RMA. The holdings established most often did not have any fields cleared before people settled on them (Kietäväinen, 2009). In this way agriculture spread onto the reindeer pastures, causing conflicts between reindeer herding and agriculture. These conflicts have continued until present times in some of the HDs, although the number of holdings has decreased and fields may be used to grow hay for reindeer (Helle and Jaakkola, 2008). Moreover, the extensive forest cuttings necessitated by reconstruction and the requirements for war reparations to the Soviet Union made grazing of reindeer more difficult (Helle and Jaakkola, 2008; Kivinen et al., 2010). Logging advanced from one area to the next with the construction of roads, as well as waterways for timber rafting. The forests in the southern part of the RMA were most heavily affected. Forest use had changed already during the war years: clearcuttings had become common, with logging concentrated in old-growth forests, especially spruce forests (Parpola and Åberg, 2009), which are critically important for reindeer during late winter. Forest cuttings, site preparation, and logging residues have reduced the quantity of lichens and hampered access to pastures for reindeer. In addition, roads and ditches have caused fragmentation of pastureland (Kivinen et al., 2010; Jaakkola et al., 2013).

The encroachment by other sources of livelihood has changed the operational environment of reindeer herding irreversibly. The need to prevent conflicts between the livelihoods forced reindeer herding to develop and adapt. When the reconstruction of northern Finland was over, numerous changes had occurred in Finnish society at the same time: it had become wealthier and more technical, a development which extended to reindeer husbandry (Kortessalmi, 2007). It is estimated that the period of evacuation had a fundamental impact on the livelihoods in northern Finland. The values of subsistence livelihoods were replaced by those of monetary economies (Kietäväinen, 2016). Reconstruction of northern Finland, modernizing the building base and constructing roads, railways, telephone connections, and reindeer fences offered seasonal work. The main sources of livelihood and professions became differentiated in the space of two or three decades and, for example, at the end of the 1960s, 77% of Sámi households had wage and entrepreneurial income (Lehtola, 1994; Länsman, 2000).

The many years of disorder caused by WWII, together with the expansion of other land uses, forestry in particular, had far-reaching consequences for reindeer herding in northern Finland. Herders were forced to modernize their practices. In the southern RMA, this process included a change from intensive to extensive, or loose, herding (Helle and Jaakkola, 2008; Turunen and Vuojala-Magga, 2014). In extensive herding, reindeer range or graze by themselves in free-ranging, loose herds without any supervision by the herder. The animals gather freely, forming mixed herds that consist of reindeer belonging to many owners, villages

or *siidas* (an extended family or kin group consisting of economically independent households) (Ruotsala, 2002; Vuojala-Magga et al., 2011). The herds are gathered only for calf marking in summer and roundups in autumn. In the northern RMA, however, herders returned to intensive herding, even to tether calving, after the war in spite of the decreased number of reindeer. Large predator populations required intensive herding, and socio-economic changes reached the region later (Helle and Jaakkola, 2008). A transformation from intensive to extensive herding was sparked only in the 1960s by the “snowmobile revolution” (Pelto et al., 1968; Müller-Wille, 1975; Helle and Jaakkola, 2008; Turunen and Vuojala-Magga, 2014).

The recovery of reindeer herding in northern Finland in 10 years (1945–55) following WWII is a good example of the rapid reconstruction and growth of a livelihood following a serious crisis. We have identified important factors in the fast recovery. First, both herders and the herding administration were highly motivated and willing to work hard for the recovery of the livelihood, and both had gained experiential knowledge of how to rebuild the livelihood after WWI (1914–18). Reindeer numbers increased rapidly with the aid of state-supported development targeting herders and the RBAF. The herders remembered the times of crisis even during WWII. Experience from the earlier development of the livelihood after a crisis strengthened their confidence in the future again. In many HDs, reindeer herding had to rebound from very adverse conditions. Yet by 1948–49, the reindeer numbers had already risen to the pre-war levels in some HDs, a development attributed to improved pasture conditions resulting from lower reindeer densities during the war. Moreover, favourable weather after the war, such as that experienced in the winter of 1944–45, had made the year easier than average for reindeer herding (RBAF, 1950). Secondly, herders were well aware that semi-domestic reindeer are better adapted to harsh climate and forage growing in low-productive soil than domestic animals such as cattle. They knew that reindeer are able to find forage in winter conditions that are too harsh for any domestic animals and that the natural summer pastures of reindeer are mires that are too remote, open, and pine-dominated to be used by cattle, for example (Alaruikka, 1964). There was a strong idea that with meat consumption increasing after the war years, it would be economically wiser in northern Finland to invest in reindeer husbandry more than in cattle farming. Reindeer herding was based on natural pastures and labour, whereas cattle farming relied on cultivations and even forage bought abroad, as well as expensive buildings, machinery, and fertilizers (Anon., 1959). Furthermore, the flexibility provided by the diversity of herding practices (e.g., in calving: free calving, tether-calving, use of calving fences), co-operation across HDs (e.g., for acquiring breeding animals and hunting predators) and with other land users (e.g., for solving conflicts) and state support (e.g., loans, grants, bounties) helped in rebuilding the livelihood.

During the decades after the war, the possibility that new and different crises would affect society and the importance of maintaining and securing critical supplies were recognized, and these topics also figured prominently in the articles of *Poromies* (Lahtela, 1954; Anon., 1964). The thoughts and ideas that herders presented on recovering from the times of crisis after the war are still topical. In an unstable global geopolitical situation, preparedness to cope with different kinds of crises might be realistic and wise. Reindeer husbandry is still a viable source of livelihood in northern Finland, one that keeps peripheral regions populated. It is one facet of the diversity of northern sources of livelihood and professions, which enhances resilience by playing a role of its own as an important buffer against potential new crises.

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