

# Timber colonialism in the periphery: Timber frontiers and indigenous peoples land use in northern Scandinavia and southern Patagonia in the late 19th and early 20th century

Lars Östlund <sup>a</sup>, Macarena Fernández Génova <sup>b</sup>, Miguel Cáceres <sup>c</sup>, Elle Eriksson <sup>a,\*</sup>

<sup>a</sup> Department of Forest Ecology and Management, Swedish University of Agricultural Sciences, Umeå, Sweden

<sup>b</sup> Anthropologist, Punta Arenas, Chile

<sup>c</sup> Universidad de Chile (Doctorado en Filosofía/Estética y Teoría del Arte) and Asociación de Investigadores Museo de Historia Natural Río Seco, Punta Arenas, Chile

## ARTICLE INFO

### Article history:

Received 25 June 2024

Received in revised form

3 April 2025

Accepted 24 June 2025

### Keywords:

Forest History

Timber Colonialism

Colonization

Indigenous

Sawmills

Sápmi

Patagonia

## ABSTRACT

During the nineteenth century an intense exploitation of natural resources such as wood and timber in what was considered “marginal” or remote regions started, and was driven by an ever-increasing demand in industrialized regions. One common denominator for the timber exploitation that opened the global expansion of capitalism beyond the borders of Europe was the brutal intrusions into Indigenous territories. The overall aim of this study is to analyse two timber frontier movements in the late nineteenth and early twentieth century: one in northern Sweden and one in southern Chile, intruding into previously un-logged old-growth forests on ancestral Indigenous territories. The large-scale commercial logging began around the mid-nineteenth century in both regions. It was driven by external demand and financed by national and/or international capital. New logging entrepreneurs moved into the territories and established sawmills, brought in workers to run the sawmills, cut trees in the forest and transported the timber to the sawmills. In northern Sweden the logging industry was the main economic activity, while in southern Patagonia the logging of timber was one of several forms of natural resource exploitations complemented by mining, rangeland sheep herding and trade through the region. In both regions, the logging frontier was often intertwined with agricultural expansion promoted by the state and global capitalism. In both studied regions the colonial legacy of the nineteenth century timber frontiers has left a heavy burden on the forest landscapes, on the rights of the Indigenous peoples whose lands were exploited and on the present legal situation. Challenges for the future are to re-establish recognition of Indigenous heritage and land tenure rights in both regions, according to international conventions, as well as restoring ecological qualities to the associated forest ecosystems for the sustainability of Indigenous practices.

© 2025 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

Colonialism is a political and economic system by which imperial states, usually termed “colonial empires,” exercise their dominance through the use of violence over territories foreign to their own. Colonialism is also exercised through judicial violence, resulting in the dispossession of Indigenous land.<sup>1</sup> During the

nineteenth century an intense exploitation of natural resources in what was considered “marginal” or “remote” regions started.<sup>2</sup> The incorporation of such regions into the Western world economic system and the economic-production logics of extraction and global circulation of raw materials characterize this period.<sup>3</sup> Skins and oil of marine mammals, manure (*Guano*), sugar cane, rubber, extensive livestock farming, mining and forest products extracted

This article is part of a special issue entitled: Timber Colonialism published in Journal of Historical Geography.

\* Corresponding author.

E-mail address: [Elle.Eriksson@slu.se](mailto:Elle.Eriksson@slu.se) (E. Eriksson).

<sup>1</sup> Tuori, K. ‘The theory and practice of indigenous dispossession in the late nineteenth century: the Saami in the far north of Europe and the legal history of colonialism,’ *Comparative Legal History*, 3(1) 2015) 152–185; Smándych, R. ‘Colonialism, settler colonialism, and law: settler revolutions and the dispossession of Indigenous peoples through law in the long nineteenth century,’ *Settler Colonial Studies*, 3(1) (2013) 82–101.

<sup>2</sup> Sidney Pollard. *Marginal Europe: the contribution of marginal lands since the Middle Ages* (Oxford: Oxford University press, Oxford 1997).

<sup>3</sup> Tardones, C. ‘Vivencias en la formación de la frontera nacional: memorias yaganes y documentos chilenos (colonización del canal Beagle, 1896–1940) in La era del imperio y las fronteras de la civilización en América del Sur, ed. by Har-ambour, A. and Serje, M. 2023 (edición académica y compilación), Universidad de los Andes y Pehuén Editores 2023 <https://doi.org/10.51573/Andes.9789587985115.9789587985108.13> (p 366).

directly from the colonies was driving the expansion of frontier capitalism.<sup>4</sup> The extraction consolidated the global economy and was often accompanied with violence and suppression towards Indigenous or First Nations people in regions remote from the so called “civilized” world.

Lumber was one such commodity, and the exploitation of wood and timber was driven by an ever-increasing demand in industrialized regions and where forests had diminished in centuries before, due to over-use and/or agricultural expansion. However, in many far northerly or far southerly regions, large tracts of old-growth forests with valuable timber trees remained, and these regions then became a target for large-scale timber extraction. The exploitation of old-growth forests has been described in terms of “timber frontiers” or “lumbering frontiers,”<sup>5</sup> emphasising the dynamics and the rapid movement of the exploitation. In this paper we will use the term “timber frontier” to describe this process. However, since the contemporary definition of frontier varies among researchers,<sup>6</sup> we would like to briefly explain how we understand the concept. In this paper, the term timber frontier encompass a movement of exploitative timber extraction that entailed the use of violence on local and Indigenous peoples by regimes who viewed forests as a natural resource to be taken advantage of.<sup>7</sup> Thus, we consider that the timber frontiers constitute a form of timber colonialism and the movement will be used as point of departure to analyse two case studies where the impact on local Indigenous people is focal despite its multiple differences in what could be understood as a “situated” capitalism or that adapts its conditions of exploitation given the particularities of the socio-ecological environments that it colonizes, although as part of a global project.<sup>8</sup> Subsequently, this article provides a reinterpretation of history in the sense that it is an Indigenous perspective that highlights the timber frontier movement and not a Western perspective.

A main feature of the phenomenon of timber frontiers, as with other forms of resource exploitation that opened the global expansion of capitalism beyond the borders of Europe, was the brutal intrusions into Indigenous territories which resulted in timber colonialism. Sometimes the logging was preceded by agricultural

colonization into the same lands, but not always. These intrusions brought about the loss of land tenure of the Indigenous people living on the forestlands, which they had inhabited for millennia.<sup>9</sup>

Human population numbers were generally low in the northernmost and southernmost regions, and the Indigenous land use was generally spatially broad, but with low intensity. Furthermore, people moved regularly between different resource areas in the landscape. The subsequent transformation and destruction of ecosystems due to the introduction of new industries and forms of land use under timber colonialism, for example agriculture, livestock, forestry, mining, and fossil fuels extraction among others, then made the ecosystems less suitable for the traditional ways of life by the Indigenous people.

In all regions where timber frontiers advanced during the late nineteenth century, Indigenous people lived. The Sámi in northern Fennoscandia, many First Nations people in the northern and north-western parts of the Americas, and groups such as Aónikenk, Kawésqar, Yagán, Haush and Selk'nam in the southernmost part of the Americas and Tierra del Fuego are some examples. All these peoples, as well as numerous others, have suffered from the advancement of timber frontiers and the associated timber colonialism<sup>10</sup>.

## Aims of the study

The overall aim of this study is to do a specific analysis of two timber frontier movements in the late nineteenth and early twentieth century: one in northern Sweden and one in southern Chile, both of which intruded into previously un-logged old-growth forests on ancestral Indigenous territories. For us it is crucial to include an Indigenous perspective and therefore the analysis will include aspects of the impact on Indigenous peoples living in these regions, in terms of tenure rights and land use. The two case studies illustrate how timber frontiers have developed differently depending on prevalent ecological and social aspects during the era, which in turn can be interpreted in the light of colonialism. By comparing the two cases, important similarities and differences will be highlighted that nuance the picture of colonial dispossession due to timber extraction. Our specific aims are to: 1) describe the settings and development of these timber frontier movements, 2) discuss and contrast how the Indigenous societies were impacted by the timber frontiers and consequently by timber colonialism, and 3) contrast and compare in order to differentiate and distinguish the development of this particular colonial industry in the two regions.

Our study draws on previous published research by the authors, and a literature review of selected studies which shed light on this development in Sweden and in Chile. This literature has been selected by the authors from the respective regions (Östlund and Eriksson for northern Sweden and Cáceres and Fernández for Chile). We have selected literature which on one hand give information about the historical development and on the other hand provide understanding of the ecological setting as well as consequences of the timber exploitation. To contextualize the study we have also

<sup>4</sup> Anderson, B. *Imagined Communities: Reflections on the Origin and spread of nationalism*. London: Verso, 1991.; Das, V. & Poole. *Anthropology in the margins of the state*. Santa Fe: School for American Research Press, 2004.; Serge, M. 2005, 'El revés de la Nación. Territorios salvajes, fronteras y tierras de nadie' (p 26–28). Serge, M. (2017). Fronteras y periferias en la historia del capitalismo: el caso de América Latina. *Revista de Geografía Norte Grande*. <https://doi.org/10.4067/S0718-34022017000100003>.

<sup>5</sup> Sejersted, F. (1980). Veien mot øst. In *Vandringer - Festskrift til Ingrid Semingsen*. Ed. by Langholm, S. & Sejersted, F. Oslo: H. Aschehoug & CO (1980); Björklund, J. From the gulf of Bothnia to the White Sea. *Scandinavian Economic History Review* 32:1 (1984) 17–41.; Twining. The lumbering frontier. In: *The Great Lakes forest: an environmental and social history* ed by Flader, S.L. (red.) (Minneapolis: Univ. of Minnesota Press in association with the Forest History Society 1983); Williams, M. (1992). *Americans and their forests: a historical geography*. (Cambridge: Cambridge Univ. Press 1992); Östlund, L., & Norstedt, G. 'Preservation of the cultural legacy of the indigenous Sami in northern forest reserves – Present shortcomings and future possibilities' *Forest Ecology and Management*, 502, (2022); Kungsman, Ylva, 2023. 'Från expansion och äventyr till revolution och landsflykt: svenska sågverk och sågverksarbetare i norra Ryssland 1898–1925' (Umeå: SLU, Institutionen för skogens ekologi och skötsel, 2022).

<sup>6</sup> Wynn, G. Forests, Frontiers, and Extractivism. *Environmental History*. 28(4) (2023) 640–655. Stroud, E. (2023). New Directions in Forest History, but Please No New Frontiers. *Environmental History* 28(4) (2023) 687–693.

<sup>7</sup> Newton, J.L. (2023). Cutover Capitalism: Connecting Labor and Nature in Forest Extraction. *Environmental History* 28(4) (2023) 656–667.

<sup>8</sup> By this we refer mainly to the laws that regulate the evolution of social growth in relation to the distribution of resources on a global scale. O'Connor, J., (2003). Desarrollo desigual y combinado y crisis ecológica. *Ambiente & Sociedad*, 6(2), 9–23.

<sup>9</sup> For a broader overview see for example Langston, N., & Dockry, M. J. (2025). Global forests. A companion to global environmental history, 275–287. Williams, M. (2003). Deforesting the earth: from prehistory to global crisis.

<sup>10</sup> Cf. Negi, A. K., Bhatt, B. P., Todaria, N. P., & Saklani, A. (1997). The effects of colonialism on forests and the local people in the Garhwal Himalaya, India. *Mountain Research and Development*, 159–168; Brown, K. (2003). 'Trees, forests and communities': some historiographical approaches to environmental history on Africa. *Area*, 35(4), 343–356; Karamanski, T. J. (2016). Settler Colonial Strategies and Indigenous Resistance on the Great Lakes Lumber Frontier. *Middle West Review*, 2(2), 27–51.

included literature on global capitalism, colonialism and Indigenous rights and dispossession of their lands. We have also complemented the literature review with analysis of historical records pertaining to timber companies (Fig. 1 and 3) and photographs (Fig. 2, 4 and 5).

## Northern Sweden 1850–1920

### *The ecological and physio-geographic setting in northern Sweden*

Northern Sweden is a region dominated by coniferous forests (Scots pine, *Pinus sylvestris* L. and Norway spruce, *Picea abies* (L.) Karst), with a minor component of deciduous trees (primarily *Betula* sp.). It lies between 60 and 78°N and is enclosed by the Fennoscandian mountain range in the west and the Baltic Sea in the east. Forest covers approximately 85% of the land area, and there has been no major change in coverage of forests during the last few centuries. The forested lands rise gently towards the mountains in the east and the tree line is located approximately 600 metres above sea level, slightly higher in the south and slightly lower in the north. A network of major rivers floating towards the southeast and encompassing a fine network of tributaries and creeks drains the forested land. The preindustrial forest was dominated by multi-storied forest and with a component of old and large coniferous trees.<sup>11</sup> Scots pine could reach ages up to 800 years and Norway spruces could reach ages of 400 years. The forest was furthermore quite open compared to present managed forest plantations and on drier soils ground lichens (a main food resource for reindeers) dominated or co-dominated with dwarf shrubs in the bottom layer of vegetation. Forest fire has in the past been a very important disturbance agent, with or without the help of humans, and has been a very important factor shaping these northerly ecosystems. Recurring fires favoured Scots pine trees and created multi-storied open forest ecosystems.<sup>12</sup> Anthropogenic fires have been primarily connected to agricultural colonizers in the lowland forest near the coast from the 1600s onwards,<sup>13</sup> but it is still debated whether the Sámi promoted forest fires or not in the past. In more recent times, Sámi reindeer herders are mostly adverse to forest fires since they destroy the valuable lichen pasture and it takes a long time before ground lichens grow back.

### *The ancestral lands of indigenous people in northern Sweden*

The traditional territory of the Indigenous Sámi is called Sápmi. This area stretches across parts of northern Fennoscandia. In northern Sweden, the Sámi have been present in the boreal forest and the mountains for time immemorial. As an ethnic group the Sámi have not “come” from anywhere, the people originate from the landscapes of Sápmi through complex social processes which took place in the first millennium BC.<sup>14</sup> The early Sámi population were hunter-gatherers, and they adapted their land-use patterns to the

environment and climate of northern interior Sweden. This region is characterised by a harsh seasonal climate, with long winters and short vegetation seasons. Consequently, the Sámi adapted to a way of life that efficiently utilized natural resources, including the reindeer (*Rangifer tarandus*). Both wild and domesticated reindeer have been important in the subsistence, practices, and religion of the Sámi.<sup>15</sup> Additionally, Scots pine trees have also been part of the Sámi religion and individual trees have even been worshipped before the forced Christianisation in the seventeenth and eighteenth centuries.<sup>16</sup> When reindeer herding was developed is debated among scholars, with some research pointing towards the eighth century AD as being the starting point.<sup>17</sup>

Beyond reindeer herding, hunting and fishing have constituted important livelihoods for the Sámi. Before the eighteenth century, Sápmi was divided into Sámi tax lands and each tax land comprised natural resources such as fishing lakes, hunting grounds, grazing lands for reindeers and forest resources for fuelwood and food.<sup>18</sup> Each tax land was owned by a *sijdda* (extended family group) that paid taxes to the Swedish Crown (from at least the sixteenth century and onwards) for the right to own and use their land.<sup>19</sup>

### *The early exploitation of natural resources and the start of the timber frontier*

At the mid-nineteenth century, large-scale logging began in northern Sweden. The primary driving force was the industrial revolution and the ever-increasing demand for lumber in Western Europe. Norway had been the primary exporter of sawn timber to Western Europe, but the rapidly increasing demand during the industrial revolution expanded the timber extraction to Sweden, Finland and Russia during the nineteenth century.<sup>20</sup> Freer trade during the middle of the nineteenth century promoted Scandinavian lumber industry because of the shorter distance to the markets over the lumber industry in North America. The Swedish timber export started growing in the 1820s, with a marked increase after 1850 and the most important market was England.<sup>21</sup>

<sup>15</sup> Hellskog, K., & Indrelid, S. ‘Humans and reindeer’ *Quaternary International*, 238 (1–2) (2011) 1–3; Salmi, AK. & Heino, M.T. ‘Tangled Worlds: The Swedish, the Sámi, and the Reindeer’ *International Journal of Historical Archaeology*, 23 (2019) 260–282.

<sup>16</sup> Bergman, I., & Östlund, L. (2022). A Sacred Tree in the Boreal forest: A Narrative about a Sámi Shaman, her Tree, and the Forest Landscape. *Human Ecology*, 1–11; Bergman, I., Östlund, L., Zackrisson, O. & Liedgren, L. (2008) *Vårro mourra* – the landscape significance of Sami sacred wooden objects and sacrificial altars. *Journal of Ethnohistory*, 55 (1) 1–28.

<sup>17</sup> Bergman, I., Zackrisson, O., & Liedgren, L. ‘From hunting to herding: Land use, ecosystem ‘processes, and social transformation among Sami AD 800–1500’ *Arctic Anthropology*, 50(2) (2014) 25–39; Björklund, I. (2013). ‘Domestication, reindeer husbandry and the development of Sámi pastoralism’ *Acta Borealia*, 30(2) (2013) 174–189; Seitsonen, O., & Viljanmaa, S. ‘Transnational landscapes of Sámi reindeer: Domestication and herding in Northernmost Europe 700–1800 AD’ *Journal of field archaeology*, 46(3) (2021) 172–191.

<sup>18</sup> Josefsson, T., Bergman, I., Östlund, L. ‘Quantifying Sami settlement and movement patterns in Northern Sweden 1700–1900’ *Arctic* 63(2) (2010) 141–153; Östlund, L., Liedgren, L., Josefsson, T. ‘Surviving the Winter in Northern Forests: an Experimental Study of Fuelwood Consumption and Living Space in a Sami Tent Hut’ *Arctic, Antarctic, and Alpine Research* 45 (3) (2013) 372–382. Rautio, A.-M., Josefsson, T., Östlund, L. ‘Sami Mobility Patterns and Resource Utilization: Harvesting Inner-Bark in northern Sweden’ *Human Ecology*, 42 (1) (2014) 137–147.

<sup>19</sup> Norstedt, G. *A land of one's own*. (Umeå Acta Universitatis Agriculturae Sueciae, 2018:30 2018); Kuokkanen, R. From Indigenous private property to full dispossession – the peculiar case of Sápmi. *Comparative Legal History*, 11(1) (2023) 23–44.

<sup>20</sup> Björklund, J. From the Gulf of Bothnia to the White Sea: Swedish direct investments in the sawmill industry of Tsarist Russia. *Scandinavian Economic History Review*, 32(1) (1984) 17–41.

<sup>21</sup> Söderlund, E. (1951) *Svensk trävaruexport under 100 år* (Stockholm: Almqvist & Wiksells, 1951) (p 34–37).

<sup>11</sup> Östlund, L., Zackrisson, O. and Axelsson, A.-L. (1997). The history and transformation of a Scandinavian boreal forest landscape since the nineteenth century. *Canadian Journal of Forest Research* 27 (1997) 1198–1206; Linder, P. & Östlund, L. (1998) Structural changes in three mid-boreal Swedish forest landscapes, 1885–1996. *Biological Conservation* 85 (1998) 9–19.

<sup>12</sup> Östlund, L., Zackrisson, O. and Axelsson, A.-L. ‘The history and transformation of a Scandinavian boreal forest landscape since the nineteenth century’ *Canadian Journal of Forest Research* 27 (1997) 1198–1206.

<sup>13</sup> Niklasson, M., & Granström, A. Numbers and sizes of fires: long-term spatially explicit fire history in a Swedish boreal landscape. *Ecology*, 81(6) (2000) 1484–1499.

<sup>14</sup> Aikio, A. (2012) ‘An essay on Saami ethnolinguistic prehistory’ In *A Linguistic Map of Prehistoric Northern Europe* ed by: Grünthal, R. & Kallio R (Suomalais-Ugrilainen Seuran Toimituksia = Mémoires de la Société Finno-Ougrienne 2012) 63–117, p 106; Svestad, A. & Olsen, B. ‘Archaeology, Language, and the Question of Sámi Ethnogenesis’ *Acta Archaeologica* 93 (2) (2023) 427–455.



The overwhelming part of the production was exported and only a minor part was sold within Sweden. The prerequisite in northern Sweden were the so far unexploited coniferous forests with old and very large timber trees. Water-powered sawmills were established at or near the entrances of the major rivers in the southernmost parts (starting in the province of Västernorrland) and timber was logged in the inland forests, transported on the rivers to the sawmills and then processed into sawn board which were exported on sail ships (Fig. 1). Entrepreneurs financed by Swedish capital, or in some cases by international capital, rapidly took advantage of the situation with huge demand for sawn wood and a large stock of old-growth forest in northern Sweden. Some of the most important entrepreneurs included the Dickson family, originally from Scotland but first established on the west coast in Sweden, but then followed the timber frontier northwards in Sweden and established the largest water-powered sawmill at the Umeälven River in northern Sweden.<sup>22</sup> A very important forest company was Wifstavarv AB, originally a ship building company just north of the town of Sundsvall, but which later became one of the major forest companies in northern Sweden.<sup>23</sup> A third example is the Kempe family exploring region near Örnsköldsvik and establishing a complete sawmill community, Norrbyskär, on an island near the coast.<sup>24</sup> At the beginning of the forest exploitation, timber was bought directly from farmers on yearly contracts and the farmers themselves cut the trees and transported them downriver to the next village.<sup>25</sup> During the second half of the nineteenth century timber was more often bought on longer “logging contracts” with a duration of first 50, then 30 and finally 20 years. As the logging expanded northwards, timber was also bought from state-owned forests. These contracts were specified for a number of trees of a certain size at a specific state forest.

During the following decades in the late nineteenth century the timber frontier moved northwards and new sawmills were established also in the provinces of Västerbotten and Norrbotten. In some places, such as near the city of Sundsvall, large clusters of competing sawmills were established,<sup>26</sup> where networks of rivers provided large tracts of forests inland which could be logged and then floated to the coast.<sup>27</sup> In other areas a monopolistic situation arose where one large sawmill dominated a larger region,<sup>28</sup> for example the Baggböle sawmill in the Umeälven River. Although water-powered sawmills dominated during the initial phase of the timber frontier, they were successively complemented with and then replaced by steam sawmills.<sup>29</sup> The sawmills on the coast provided opportunities for work in the local communities and the demography of the population in northern Sweden was favourable for industrialization in the coastal region. The process was the first

step in the transformation of the north Swedish society from small scale (and newly established) agriculture and Sámi reindeer herding to an industrially based economy.

The forests were high-graded successively further inland, but only the largest and commercially valuable trees were cut,<sup>30</sup> leaving a slightly sparser and more open forest,<sup>31</sup> but still featuring the ecological qualities of an old-growth boreal forest.<sup>32</sup> Most of the timber was cut as saw-timber during the nineteenth century, but a small portion of the largest trees were used as square-timber (processed in the forest) and masts for the sailing ships.<sup>33</sup> Forest workers, including loggers and log-drivers for the floating of timber were initially usually locally recruited farmers and peasants working on farms, but during the latter part of the nineteenth century the scale of operation demanded more people and forestry work became a profession.<sup>34</sup> These workers were recruited from the small farms which were being established first near the coast, but successively on the Sámi territories further inland. The population grew rapidly in northern Sweden during the nineteenth century due to the agricultural colonization and the establishment of the sawmill industry. To a minor extent and primarily in the far north, Sámi people were also hired as loggers.

#### *The impact on indigenous people by the exploitation of the boreal forest*

The logging of the inland forests in northern Sweden introduced a new element of capitalistic economy in areas where reindeer herding, hunting, fishing, and small-scale agriculture had dominated. The entire forest ecosystem had until then been important for subsistence and the use of resources was done on a spatially broad scale but with low intensity at any given place (Fig. 2).<sup>35</sup> When the timber trees became a valuable commodity for private farmers, commercial sawmill companies and the Swedish state all gained interest in the full ownership of the forest land. In parallel, also agricultural colonization, supported by the government, moved inland and new farms were established on lands previously belonging to Sámi families. Due to the colonization and the industrial development the population increased four times in the two northernmost counties between 1805 and 1900 (from 67,889 persons to 278,504).<sup>36</sup> This population growth changed the demographic relationship between the Indigenous Sámi population (which was mostly stable) and the colonizers. The newly established farmers became a very important workforce for the logging companies, since the farm work was primarily done in the summer and the logging was always done during the winter. While agriculture was difficult in these northern locations (above 60° north), income from logging, manual forestry work and for women

<sup>22</sup> Flodén, N. A. (1978) *Sågverkspatronerna I. De tio stora*. (Sundsvall: Tryckeribolaget i Sundsvall AB, 1978).

<sup>23</sup> Östlund, L. 'Logging the virgin forest of northern Sweden in the early nineteenth century' *Forest History and Conservation* 39(4) (1995) 160–171.

<sup>24</sup> Ahnlund, M. *Norrbyskär: om tillkomsten av ett norrländskt sågverkssamhälle på 1890-talet* (Umeå: Umeå universitet, 1978).

<sup>25</sup> Östlund, L. 'Logging the virgin forest of northern Sweden in the early nineteenth century' *Forest History and Conservation* 39(4) (1995) 160–171.

<sup>26</sup> Wik, H. (1950). 'Norra Sveriges sågverksindustri från 1800-talets mitt fram till 1937' Uppsala: Skrifter från Uppsala universitets geografiska institution, 1950; Hjulström, F., Arpi, G., & Lövgren, E. *Sundsvallsdistriktet 1850–1950* Uppsala, Uppsala University, 1955).

<sup>27</sup> Törnlund, E. & Östlund, L. 'Large trees, the flow of water and the timing of industrialization – timber floating in Sweden 1850–1980' *The Journal of Transportation History* 27(1) (2006) 48–70.

<sup>28</sup> Ahnlund, M. *Norrbyskär: om tillkomsten av ett norrländskt sågverkssamhälle på 1890-talet* (Umeå: Umeå universitet, 1978).

<sup>29</sup> Wik, H. 'Norra Sveriges sågverksindustri från 1800-talets mitt fram till 1937' Uppsala: Skrifter från Uppsala universitets geografiska institution, 1950).

<sup>30</sup> Östlund, L. & Lindersson H. 'A dendroecological study of the exploitation and transformation of a boreal forest stand' *Scandinavian Journal of Forest Research* 10 (1995) 56–64.

<sup>31</sup> Östlund, L. & Lindersson H. 'A dendroecological study of the exploitation and transformation of a boreal forest stand' *Scandinavian Journal of Forest Research* 10 (1995) 56–64.

<sup>32</sup> Linder, P. & Östlund, L. 'Structural changes in three mid-boreal Swedish forest landscapes, 1885–1996' *Biological Conservation* 85 (1998) 9–19.

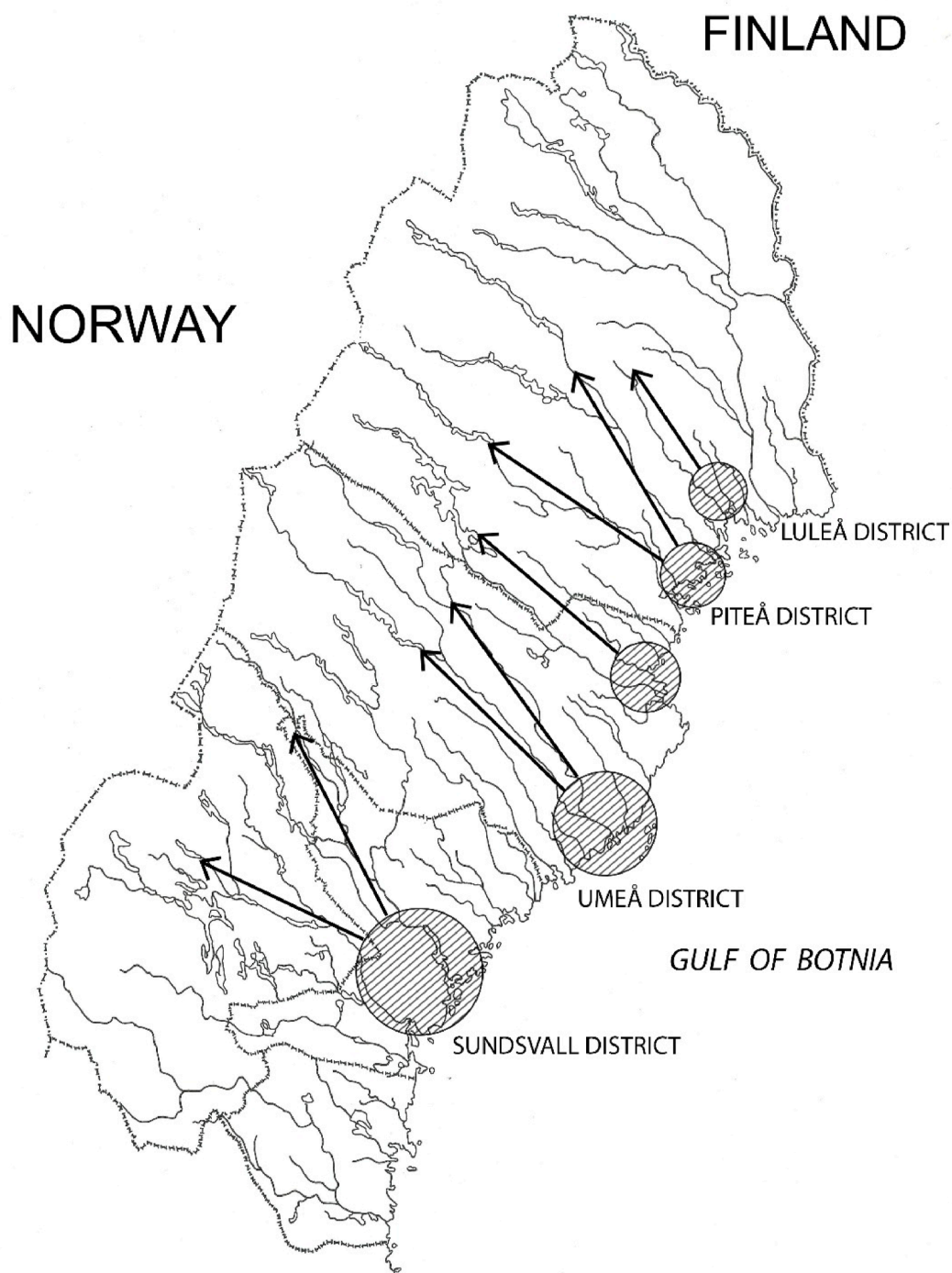
<sup>33</sup> Östlund, L. (1995). 'Logging the virgin forest of northern Sweden in the early nineteenth century' *Forest History and Conservation*, 39(4):160–171.

<sup>34</sup> Johansson, E. (1994). *Skogarnas fria söner: maskulinitet och modernitet i norrländskt skogsarbete* (Stockholm: Nordiska museets förlag, 1994).

<sup>35</sup> Östlund, L., & Norstedt, G. 'Preservation of the cultural legacy of the indigenous Sami in northern forest reserves – Present shortcomings and future possibilities' *Forest Ecology and Management* 502 (2022).

<sup>36</sup> Historisk statistik för Sverige. *Befolkningsutvecklingen under 250 år. Historisk statistik för Sverige. Demografiska rapporter 1999:2* (Stockholm: Statistics Sweden, 1999).





**Fig. 1.** The major sawmill districts (circles) in northern Sweden at the start of the logging in 1850 and the main timber catchment areas (arrows) for each district. Based on information from Wik, H (1950) *Norra Sveriges Sägverksindustri från 1800-talets mitt fram till 1937*. Geographica nr 21. Esselte. Stockholm 1950. Bidrag till Sveriges officiella statistik, Skogsväsendet, Skogssstyrelsens underdåniga berättelse för åren 1874–1900. Archival sources from SCA archive at the Merlo archive pertaining to Wifstavarv AB, Wifstavarvs skogsdistrikt, F:1 Ragunda district and F:1–4 Ragunda district, Huvudkontoret HK F:1a.





**Fig. 2.** Old growth open Scots pine forest in northern Sweden, with good reindeer grazing conditions.



working as cooks in logging camps was very important for the overall subsistence.<sup>37</sup>

While the Sámi reindeer herders still had the legal right for their animals to graze on all the forest land, the ownership was successively transferred to either private landowners or to the Swedish state.<sup>38</sup> Thus, a process of dispossession of the Indigenous Sámi tax lands began at the end of the nineteenth century. Until that time, the district courts in northern Sweden had upheld Sámi land ownership in the same manner as farmers' ownership of their lands.<sup>39</sup> The inland Sámi territory of the two northernmost counties, Västerbotten and Norrbotten, comprises more than 100 000 km<sup>2</sup> and this area became either state-owned forest, private forest owned by farmers or commercial forest companies. The dispossession of Sámi land during the late nineteenth century resulted in court-cases more than a 100 years later, which the Sámi communities finally lost in the Swedish Supreme Court.<sup>40</sup> Also other areas further southwest were transferred from Sámi tenure to agricultural colonists. Subsequently, the private property of the Sámi was claimed by the Swedish Crown and agricultural settlers. Overall, this hindered the traditional ways of life for the Sámi and in some instances, it even caused the displacement of entire *sijda* (extended family groups). The dispossession process also led to a distorted historical narrative about Sámi legal rights. The prevailing view was that the Sámi livelihoods of reindeer herding, hunting, and fishing were fundamentally unsettled and therefore considered nomadic and "unsystematic" to give rise to land ownership.<sup>41</sup> This view was later coupled with racist beliefs where Sámi were seen as belonging to a "lower level" of cultural- and socio-economic development, who had neither a need nor a perception of land ownership. Additionally, the traditional practices of the Sámi came to be considered as "privileges" that the Swedish Crown had granted them, further amplifying the lesser view that the Swedish government had about the Sámi. This particularly affected the Mountain Sámi, who as nomadic reindeer herders were considered as stereotypical for what a Sámi ought to be. In contrast, other Sámi, such as semi-settled reindeer herding Forest Sámi and non-reindeer herding Sámi, were supposed to be assimilated into Swedish society. Consequently, there existed some recognition regarding Sámi ways of life, but the land tenure rights were disrespected and the Sámi became completely overwhelmed and oppressed judicially. This is also a characterising aspect of the colonialism that the Sámi were facing, that no major physical violence was exercised against them. The dispossession of Sámi tax lands led to a new situation where the Swedish state and Swedish settlers could exploit forest resources with no regard to the Indigenous land tenure.

#### *Increased logging during the latter part of the nineteenth century and early twentieth century*

The timber frontier was not just one single movement. The main direction was northwards towards the Finnish border, and the

second direction was inland towards the mountain near the Norwegian border. The third internal direction was from the lower river valleys towards the upland forest on the watershed divides.<sup>42</sup> There was also successive waves of logging in the same forest since the first wave of logging focussed on the largest Scots pine trees. When these became scarce smaller Scots pine trees and eventually (during the latter part of the nineteenth century) also Norway spruce trees were cut. The repeated logging made the forest successively sparser, but it also increased the annual growth since it released smaller trees with a higher growth potential, and particularly Norway spruce trees in the understory were released from the competing larger Scots pines.<sup>43</sup> This process, driven by logging and reinforced by the inherent ecological dynamics of the boreal forest, was the starting point for the fundamental forest ecosystem transformation in northern Sweden.<sup>44</sup> The major parts of this transformation was a loss of old trees and forest, a loss of dead wood which until then constituted an important part of the northern ecosystems, and a loss of fire as the major driver of forest disturbance.

At the beginning of the twentieth century the intense exploitation of the forest in the preceding half century, the lack of regeneration measures and consequences for farmers losing their farms to commercial forest companies led to intense debates in the Swedish parliament. During the final decades of the nineteenth century, and until 1906 when legislation prohibited the sale of forest to commercial companies, approximately 4.7 million hectares of the forest land was sold to commercial forest companies.<sup>45</sup> New forest legislation was also passed in 1903 to promote forest regeneration after logging,<sup>46</sup> and new legislation prohibiting commercial forest companies to acquire private forest land was passed.<sup>47</sup> However, it is notable that concern for the lost land tenure for the Sámi reindeer herders and the negative consequences of logging on reindeer pasturelands were largely lacking in the debates.

A further consequence of the forest exploitation was the emergence of 'modern' forest management in northern Sweden at the beginning of the twentieth century. The basis of sustainable forestry, at the time strictly from a production standpoint, had reached Sweden from Germany in the early nineteenth century and had been tested and practiced in the central parts of the country and particularly in the mining districts during most of that century.<sup>48</sup> At this time also suppression of wildfires started which further steered the ecosystem away from a more natural state.

<sup>42</sup> Östlund, L., & Norstedt, G. 'Preservation of the cultural legacy of the indigenous Sami in northern forest reserves – Present shortcomings and future possibilities' *Forest Ecology and Management*, 502 (2022).

<sup>43</sup> Ericsson, S., Östlund, L. & Axelsson, A.-L. 'A forest of grazing and logging: Deforestation and reforestation history in a central boreal Swedish landscape' *New Forests* 19(3) (2000) 227–240.

<sup>44</sup> Linder, P. & Östlund, L. 'Structural changes in three mid-boreal Swedish forest landscapes, 1885–1996' *Biological Conservation* 85 (1998) 9–19; Östlund, L., Zackrisson, O. and Axelsson, A.-L. (1997). 'The history and transformation of a Scandinavian boreal forest landscape since the nineteenth century' *Canadian Journal of Forest Research* 27 (1997) 1198–1206.

<sup>45</sup> Enander, K. G. *Skogsbruk på samhällets villkor* (Umeå: Department of Forest Ecology and Management, Swedish University of Agricultural Sciences, 2007) (p 20).

<sup>46</sup> Lundmark, H., Josefsson, T. & Östlund, L. 'The history of clear-cutting in northern Sweden – driving forces and myths in boreal silviculture' *Forest Ecology and Management* 307 (2013) 112–122.

<sup>47</sup> Rolén, M. *Skogsbygd i omvandling. Studier kring befolkningsutveckling, omflyttning och social rörlighet i Revsunds tingslag 1820–1977* (Stockholm: Almqvist & Wiksell, 1979).

<sup>48</sup> Lundmark, H., Josefsson, T., Östlund, L. 'The introduction of modern forest management and clear-cutting in Sweden: Ridö State Forest 1832–2014' *European Journal of Forest Research* (2017) 1–17.

<sup>37</sup> Östlund, L., Öbom, A., Löfdahl, A., & Rautio, A. M. Women in forestry in the early twentieth century—new opportunities for young women to work and gain their freedom in a traditional agrarian society. *Scandinavian Journal of Forest Research* (2020) 1–14.

<sup>38</sup> Norstedt, G. *A land of one's own*. Umeå: Acta Universitatis Agriculturae Sueciae, 2018:30, 2018).

<sup>39</sup> Kuokkanen, R. 'From Indigenous private property to full dispossession—the peculiar case of Sápmi' *Comparative Legal History*, 11(1) (2023) 23–44.

<sup>40</sup> Östlund, L., Bergman, I., Sandström, C., & Brännström, M. 'The legal application of ethnobotany: The Girjas Sami Village versus the Swedish State' In *Plants, People, and Places: The Roles of Ethnobotany and Ethnoecology in Indigenous Peoples' Land Rights in Canada and Beyond* ed by Turner N (Univ BC, 2020) 188–202.

<sup>41</sup> Kuokkanen, R. 'From Indigenous private property to full dispossession—the peculiar case of Sápmi' *Comparative Legal History*, 11(1) (2023) 23–44.



## Chilean Patagonia 1850–1930

### *The ecological and physio-geographic setting in Chilean Patagonia*

The Magallanes Region in Chilean Patagonia, and specifically the geographical region called *Fuegopatagonia*,<sup>49</sup> is located at the very southern tip of Chile and is characterized by a complex geography made up of fjords, canals, mountains, glaciers, steppe and dense forests. The diversity of ecosystems, the varied topography and the harsh climate makes this a region difficult to access. The forest covers approximately 30% of the total land area presently, but there has been extensive deforestation (and some afforestation) since the nineteenth century.<sup>50</sup> Lenga (*Nothofagus pumilio*) and Coigüe (*Nothofagus betuloides*) are and were the main tree species used for the timber industry. Despite the southerly location, timber trees of these species can be very large, measuring more than 70 cm in diameter at breast height and reach ages of 400–500 years.<sup>51</sup>

### *The ancestral lands of indigenous people in the very south of the Americas*

The first evidence of inhabitants shows early settlement from around 13,000 years ago. The native populations were nomadic hunter-gatherers, inhabiting a large part of the continental territory as well as channels between the canals and the shoreline ecosystems. Some of them were “canoe people” (*canoeros*) and others were land-based. In more recent historic times, there was five ancestral cultures; on the continent lived Aónikenk and Kawésqar who travelled along the western fjords. On Tierra del Fuego and the larger islands in the south there were Selk’nam and Huash who were terrestrial, and in the southernmost archipelagos of Navarino island and fjords, the Yaganes. The forest was a place of shelter, used for gathering and hunting and wood resource. From the trees, they mainly used smaller stems of Canelo (*Drimys Winterii*) for structures of their huts and shelters and branches to cover them. Among the Aónikenk people, there was a legend of the “Gualicho” who lived in the forests, and whom they avoid disturbing. The Yaganes and Kawésqar peoples used wood from straight Lenga and Coigüe trees and bark from Coigüe trees to build canoes, which could measure up to 7 metres long.<sup>52</sup> The tools they used for this were made with whale, pinnipeds, sea birds, huemul and guanaco bones and stones, besides the use of fire.<sup>53</sup> Due to low population numbers they did not intensively exploit the forest and create

deforestation around the settlements. However, the use of fire sometimes led to sparse parkland forests with large trees.<sup>54</sup>

### *The early exploitation of natural resources and the start of the timber frontier*

After several disputes between the colonial empires and some unsuccessful colonization attempts, the claim of the Strait as territory belonging to the Chilean State led to a settlement wave in the nineteenth century. The arrival of the first Chilean settlers were in 1843 (Fuerte Bulnes) and the development was accentuated by the founding of Punta Arenas in 1848. At this time, the intense exploitation of the natural resources began, helped by strong investments from the colonial powers and royalties from the Chilean State that allowed concessions to international companies, which were mainly made up of British capital in the form of public limited companies. A driving force was also an international pressure to develop industries occupying the strategic passage that would allow communicating the trade routes between the Atlantic and Pacific markets. Therefore, sawn wood quickly became a fundamental resource extracted from the region (Fig. 3). Thus, forestry was one of the first industrial and commercial activities of the incipient colony. The accessible old-growth forests and the lack of state regulation of the timber resource meant that it was basically ‘freely available’ for the timber entrepreneurs, and which facilitated the establishment of the first sawmills.

In this way, following the factual means of modern contractualism, Indigenous sovereignties were subtly ignored or brutally eradicated on the basis of notions of “no man’s land” (*tierra de nadie/terra nullius*) for regions that they wanted to believe without civilization, nor State, nor property, nor permanent inhabitants. This colonialist imagination as a Spanish heritage, and which is intertwined and strengthened with British imperial influence, is what Gabriela Nouzeilles calls “imperial geographical imagination” (*imaginación geográfica imperial*),<sup>55</sup> which is an important base for the concept of timber colonialism and border territory.<sup>56</sup>

### *The impact on indigenous people by colonization and logging*

The territorial, legal and imagined conformation of the Chilean nation on the southern tip of Patagonia and Tierra del Fuego gave way to exploitation of both Indigenous people and natural resources in the nineteenth century. The Indigenous peoples in the region were quickly displaced from their homelands. Either they were confined in Salesian missions, or being exploited as labour during the colonization period (Figs. 4 and 5). Extended family groups, which were a very important base in all Indigenous groups in the region, were disintegrated and which led to a destruction of their culture.<sup>57</sup> There were no respect or recognition of ancestral ways of living in the region nor their tenure and rights to the lands.

<sup>49</sup> In particular, we take this reference of “Fuegopatagonia” or “fuegopatagónica region,” without the hyphen (Fuego-Patagonia) and without the separation (Fuego Patagonia) introduced after the unified geographical form proposed by the Finnish geographer Väinö Auer (1948), since it seems relevant to us that this concept has been formulated by analogy to the subpolar region of Fenoscandia or Fennoscandia, a relevant fact to our comparative perspective. Auer considers Georgia, the Falkland Islands, Tierra del Fuego and Patagonia as a single subpolar region with diversity of soils and vegetation. In: Bascopé-Julio, J. y García-Oteiza, S., “Diarios de viaje de Piedrabuena en Fuegopatagonia” (2024), Magallania: documentos inéditos para la historia de Magallanes: <http://doi.org/10.22352/MAGALLANIA202452015>.

<sup>50</sup> Zegers, G., Arellano, E. & Östlund, L. ‘Using forest historical information to target landscape ecological restoration in Southwestern Patagonia’ *Ambio* (2019) 1–4; García-Oteiza, Samuel. (2022). ‘Acercas del aserradero Fuego-Patagónico “San Nicolás,” estrecho de Magallanes’ *Magallania* 50 (2022) 6. Epub 01 de junio de 2022. <https://dx.doi.org/10.22352/magallania202250007>

<sup>51</sup> Dames & Moore (1995), *Proyecto Río Cóndor. Estudio de Impacto Ambiental*, (Santiago de Chile, 1995). Hauenschild, L., Zegers, G. & Östlund, L. Protección y gestión holística de bosques de *Nothofagus* en la Península de Brunswick, Chile. *Revista Iberoamericana Ambiente & Sustentabilidad* 6 (2023).

<sup>52</sup> Orquera, L. Y Piana, E. *La vida material y social de los Yámana* (Ediciones Monte Olivia, Argentina, 2015).

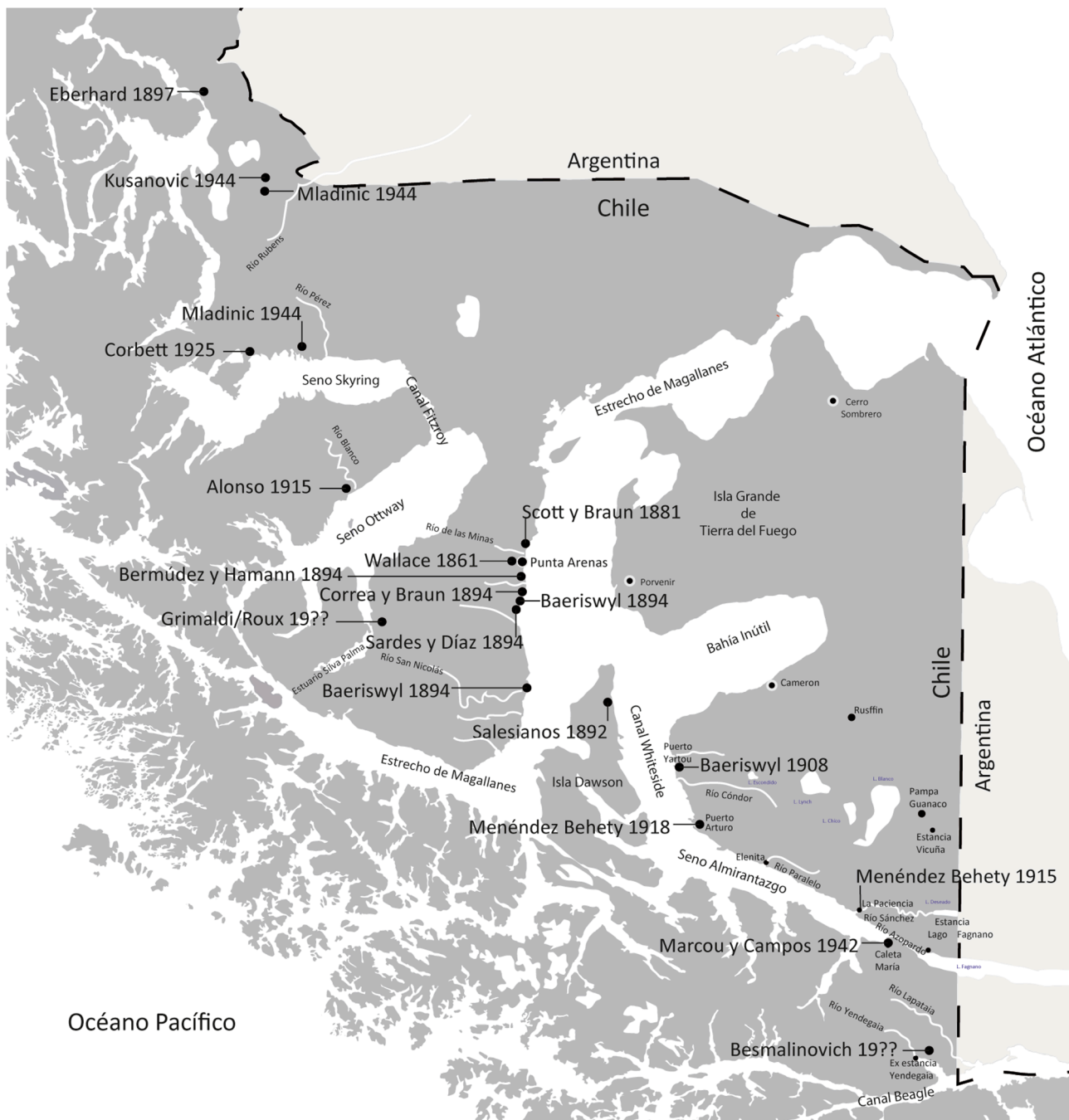
<sup>53</sup> Gusinde, M. *Los indios de Tierra del Fuego. Tomo II. Los Yámana* (Buenos Aires: Centro Argentino de Etnología Americana, Consejo Nacional de Investigaciones Científicas, 1986). Emperaire, J. *Les nomades de la mer* (Paris: Gallimard, 1955).

<sup>54</sup> Zegers, G., Arellano, E. & Östlund, L. (2019) ‘Using forest historical information to target landscape ecological restoration in Southwestern Patagonia’ *Ambio* (2019) 1–4.

<sup>55</sup> Nouzeilles, G. ‘Patagonia as Borderland: Nature, Culture and the Idea of the State’ *Journal of Latin American Cultural Studies* 8 (1) (1999) 35–48; Harambour, A. *Soberanías Fronterizas: Estados y Capital en la Colonización de la Patagonia (Argentina y Chile, 1839–1922)* (Ediciones UACH, 2019) (p 16).

<sup>56</sup> Harambour, A. & Serje, M. *La era del imperio y las fronteras de la civilización en América del Sur*. Universidad de los Andes/Pehuén Ediciones 20239 (p 11–22). Likewise, the definition that the same author coins under the concept of *exclave* is important, that is, colonial spaces or imperial redoubts whose mechanics consist of operating outwards (as opposed to a *cónclave*), interconnected with the global economy operated by imperial agents.

<sup>57</sup> Vega, C. & Grendi P. *Vejamenes inferidos a indígenas de Tierra del Fuego, tomo II: El Proceso*. (Impreso en los talleres de Comercial Ateli t Cia Ltda, 2002–2013) (p 5–26).



**Fig. 3.** The sawmills in southwestern Patagonia and Fireland Island - Región de Magallanes y de la Antártica chilena (Chile), their localisation and the year they were established. Based on information from Martinic, M. (1980). *Patagonia de Ayer y Hoy*. Ediciones Sociedad Difusora Patagonia Ltda., Punta Arenas. Martinic Beros, M (2001). *La actividad industrial en Magallanes entre 1890 y mediados del siglo XX*. Historia (Santiago), 34, 91–115. <https://dx.doi.org/10.4067/S0717-71942001003400004>. Baeriswyl, D. (2003). *Arquitectura en Punta Arenas. Casas de madera 1848–1948. Cien años - de historia*. Editorial Hielos Antárticos Ltda., Punta Arenas. Fernandez, M. (2014). *Rastreando huellas. La dinamica del paisaje en el valle de la Paciencia, Tierra del Fuego*. Tesis Antropología Universidad Academia de Humanismo Cristiano, Santiago. Fernandez, M. (2014). *Rastreando huellas. La dinamica del paisaje en la Paciencia, Tierra del Fuego*. Magallania, 42 (1), 35–53. <http://dx.doi.org/10.4067/S0718-22442014000100003>. Map prepared by Nicolas Recabarren T.

This process was very severe and there were massacres, genocides and dramatic cultural violence which led to transculturation.<sup>58</sup> For

<sup>58</sup> Harambour, A. *Soberanías Fronterizas: Estados y Capital en la Colonización de la Patagonia (Argentina y Chile, 1839–1922)* (Ediciones UACH, 2019) pages 99–144. Harambour, A. & Serje, M. (2023). Harambour, A. & Serje, M. *La era del imperio y las fronteras de la civilización en América del Sur*. Universidad de los Andes/Pehuén Ediciones 20239 (p 11–22); Gigoux, C. 'Condemned to Disappear: Indigenous Genocide in Tierra del Fuego' *Journal of Genocide Research* 24(1) (2022) 1–22.

the new settlers and from the side of the Chilean authorities, the region was considered deserted with no regard to the people living there; "it did not belong to anyone" in the sense that the Indigenous people had no property rights – thus land ready to be taken by colonizers.<sup>59</sup> With no regard to the people having ancestral land tenure, these same lands and forests could be confiscated by the

<sup>59</sup> Gigoux, C. 'Condemned to Disappear: Indigenous Genocide in Tierra del Fuego' *Journal of Genocide Research* 24(1) (2022) 1–22.





**Fig. 4.** Panoramic of the Salesian logging-reduction complex on a double postcard (inset). Published by the El Zorro fur store in Punta Arenas and dated between 1905 and 1915 by the National Digital Library (Santiago, Chile). The foreground shows the end of the railway for transporting wood, and the background the penetration of deforestation. In the central space are the rooms for indigenous families and, closing the establishment of the workshops, residences, church and boarding school for minors.



**Fig. 5.** Indigenous people dressed as logging and textile workers at the San Rafael Salesian Mission (1889–1911). Photographic reproduction taken from the book “Islas-prison, punishment for political transgression,” Ediciones Mapocho Press, 2020.

government and then leased to sawmill owners and entrepreneurs funded by foreign or national capital. Already in 1848 a new form of distribution to entrepreneurs and estates took place. This process of land distribution was mainly based on long term leases and concessions with the promise to generate infrastructure associated with the promise of the use natural resources.

The case of Dawson Island is particularly disastrous in terms of the concept of timber colonialism, since the Salesians “invested large sums in the establishment of the pastoral agricultural colony, in the tannery and in sawmill machinery. The workers are Fuegian Indians who show energy at work.”<sup>60</sup> Those confined were

concentrated in two missionary production complexes: the Buen Pastor mission, in the extreme north of the island and intended for poor non-Indigenous minors, apparently exclusively women, and that of San Rafael, located about 30 km to the south, intended only for “Fueguinos,” the undifferentiated name applied by the colonizers to the different native nations of the canals (Kawésqar and Yaganes) and the Big Island (Selk’nam and Haush).<sup>61</sup> The vast majority of those interned would be survivors of the massacres carried out by the livestock companies, mainly minors and

<sup>60</sup> L. Del Valle Carbajal (1900). The salesian missions in Patagonia and the Magallanic region. Statistical historical study. Benigno Cavanese: Scuola Tipografica Salesiana, 78. Like any book written by Salesians, this one had to be submitted to a censor of the order. In 1897 Del Valle carried out an appraisal of all the Salesian buildings in Patagonia. The investment in Dawson was greater than those in Punta Arenas, Tierra del Fuego and the Malvinas, combined (p. 80).

<sup>61</sup> The use of free indigenous labor by the Salesians, a key factor in their enrichment, was early noted by the local press and witnesses such as Roberto Payró (1898), *La Australia argentina*. Buenos Aires: La Nación, 155–157. In the mid-twentieth century, Empeaire’s influential book returned to the Salesians’ breach of contract with the treasury, as they profited from the island’s resources and free and subsidized labor. See The nomads of the sea. Santiago: LOM. In the most recent historiography, Joaquín Bascopé highlighted this key to the missionary establishment. See his (2009) “From exploration to exploitation. Three notes on the colonization of southern Patagonia,” *Nuevo Mundo Mundos Nuevos* (2009).



women, captured and deported by them. There they would die by the hundreds until, in 1911, the Mission was left with almost no inmates; when the Salesians sold their facilities to a livestock company and returned the concession to the State, only 25 Indigenous people survived and were transferred to the other Salesian mission in the far south, Nuestra Señora de La Candelaria, on the Atlantic coast of the Tierra del Fuego island.<sup>62</sup>

*Increased logging during the latter part of the nineteenth century and early twentieth century*

Forest exploitation and the establishment of sawmills was thus one of the first important economic activities in the region. The first sawmills were established in Punta Arenas and on the southern parts of the Brunswick Peninsula, and later on also in the central-southern part of Tierra del Fuego, and in some sectors of the province of Última Esperanza. Some smaller sawmills were also established on islands only accessible by boat. When the colony was already transformed into a small, populated centre and shipping activity maintained a growing movement through the Strait of Magellan, the construction activity of Punta Arenas attracted sailors who sailed through the Strait of Magellan; ships anchored in the bay to supply themselves with water and exchange merchandise. In 1853, Jorge Cristián Schythe, the governor of that time, carried out the first large-scale timber export selling five thousand pieces of firewood to the Peruvian steamship "Ucayali."<sup>63</sup> Subsequently, the need to have a greater quantity of processed wood (mainly boards) to sufficiently supply the construction demand of the colony motivated Governor Schythe to carry out the idea of having a hydraulic sawmill, which was built by Guillermo Wallace and installed on the banks of the Minas River in 1861.<sup>64</sup> By 1870, the major exports of processed wood was sent to Montevideo, Uruguay.<sup>65</sup> The installation of the sawmills was prioritized along riverbanks or in coastal areas, to facilitate the extraction of logs from the mountains, using the rivers and streams to transport them to the sawmill.<sup>66</sup> In some cases, the logs were transported with teams of oxen to the vicinity of the coast where they were sawn in the sheds or transported directly in boats.

The growth of the population and the colonizing expansion in the territory, especially of livestock activity, generated a strong internal demand and subsequently growth in the timber industry. This led to the installation of the first steam sawmills in 1875 to supply wood and firewood not only to the large ranches (estancias) in southern Chile, but also those in Argentina from the territories of Santa Cruz and Tierra del Fuego and even to Buenos Aires and the Malvinas Islands (Fig. 3). Some of the most important entrepreneurs and capitalists were the Chileans Daniel Cruz Ramírez and Guillermo Bloom (Río de los Ciervos sector) and the British Henry Reynard and Francisco Roig in partnership with Jacobo Henderson Dunsmuir (in Leñadura). This sawmill operated regularly, eight to nine months a year.<sup>67</sup> With the successful mass introduction of sheep, new sawmills emerged in the 1880s that supplied the growing demand for wood for the construction of estancias. At this time, Punta Arenas had around 1500 inhabitants.

There appeared investors such as William Alfred Scott, Francisco Mateo Bermúdez and Mauricio Braun (Río Seco-1881), The Salesian Mission of San Rafael (Dawson Island-1892), Rómulo Correa and Mauricio Braun (Tres Brazos-1894) Julius Haase, Federico Arnal, José Menéndez, Francisco Mateo Bermúdez in partnership with Rodolfo Hamann (Punta Arenas), the Swiss Joseph Baeriswyl (Leñadura-San Juan-1894), Juan Bitsch (Tres Puentes-1896), the German Hermann Eberhard (Puerto Consuelo-1897), among others. The final years of the nineteenth century were the heydays of the sawmills on the Brunswick Peninsula and by 1894 the industry was so important socially and economically that it employed a workforce of half a thousand men.<sup>68</sup>

At the beginning until the middle of the twentieth century some of the most important entrepreneurs were Alejo Marcou (Punta Arenas), Sardes y Díaz (Leñadura), and Alberto Baeriswyl (San Juan-Punta Carrera, Leñadura, Puerto Yartou-1908). Alberto Baeriswyl is also associated with Mauricio Braun creating the Sociedad Baeriswyl y Compañía, as well as the important Sociedad Anónima Comercial Menéndez Behety (La Paciencia-1915, Puerto Arturo-1918, Elenita).

Several of these sawmills were located within Almirantazgo, Tierra del Fuego, and became the most important industrial logging centres, forming large towns for the time, which lasted until the mid-twentieth century. This constant logging work brought about a large shipping movement between the ports of the Strait of Magellan and those in the Atlantic. Wood processing began to open to the international market, exporting part of the production to the Malvinas Islands, Buenos Aires and Montevideo and even to England. The need for wood products, such as barrels, boxes and for construction (beams, boards, doors, windows and others), and also sleepers for railways were required at that time by the growing cities and settlements, which made sawmills an economically prosperous and safe business.<sup>69</sup>

The workers were mainly men who came from the regions of Los Lagos (Puerto Montt and Chiloé Island) and Araucanía,<sup>70</sup> thus from other parts of Chile. Many of the forest workers had Mapuche Huilliche origin, who had general ancestral knowledge about forest use further north of this region, for example the felling of trees and transport of logs from the forest, which needed to be directed by experienced people or elders under whose command a group of young people acted in a disciplined manner.<sup>71</sup> That experience and knowledge from Mapuche people was applied in Magallanes, and complemented by the knowledge of logging exploitation from European countries and North American workers. However, after the catastrophic first contacts between the Indigenous population and the European colonialists, local Indigenous communities also contributed many workers to the sawmill companies. The tasks were divided between those who were loggers in the forest and those who oversaw carrying the logs and beams with oxen or assembling them on rafts. And in the sawmills, there were the workers manufacturing the beams to transform them into boards,

<sup>68</sup> Martinic, M. *Patagonia de Ayer y Hoy*. (Punta Arenas: Ediciones Sociedad Difusora Patagonia Ltda. 1980).

<sup>69</sup> Recabarren, N. y Fernández, M. *Levantamiento del Complejo Industrial Maderero Puerto Yartou, Tierra del Fuego – Chile. Compendio Arqueología de la Patagonia: de mar a mar. IX Jornadas de arqueología de la Patagonia* (Santiago: Ediciones CIEP y Nire Negro, 2016).

<sup>70</sup> During the process of Spanish colonization, larch wood became the main economic resource of Chiloé, generating an important commercial activity supported by the felling of said tree species at the beginning of the Chilean Republic after the notorious intensification of logging exploitation during colonial rule. En Torrejón, F., Cisternas, M., Alvial, I., Torres, L. (2011), "Consecuencias de la tala maderera colonial en los bosques de alerce de Chiloé, sur de Chile (Siglos XVI-XIX)," *Magallania*, vol.39, no.2, <https://doi.org/10.4067/S0718-22442011000200006>.

<sup>71</sup> Otero, L. *La huella del fuego. Historia de los bosques nativos. Poblamiento y cambios en el paisaje del sur de Chile* Pehuén: Pehuén Editores, 2006).

<sup>62</sup> F. Aliaga (2000). *La Misión Salesiana en Isla Dawson (1889–1911)*. Santiago: Editorial Don Bosco.

<sup>63</sup> Martinic, M. *Patagonia de Ayer y Hoy*. (Punta Arenas: Ediciones Sociedad Difusora Patagonia Ltda. 1980).

<sup>64</sup> Baeriswyl, D. *Arquitectura en Punta Arenas. Casas de madera 1848–1948. Cien años de historia*. (Punta Arenas: Editorial Hielos Antárticos Ltda. 2003).

<sup>65</sup> Martinic, M. *Patagonia de Ayer y Hoy*. (Punta Arenas: Ediciones Sociedad Difusora Patagonia Ltda. 1980).

<sup>66</sup> Baeriswyl, D. *Arquitectura en Punta Arenas. Casas de madera 1848–1948. Cien años de historia*. (Punta Arenas: Editorial Hielos Antárticos Ltda. 2003).

<sup>67</sup> Díaz Contardi y Cía Ganadería, Industrias y Comercio del territorio de Magallanes, desde sus principios hasta la actual época. Año 1919. (Santiago: Universo, 1920).

pickets, barrels, posts, lumber for construction, special pieces for shipbuilding, doors, windows or other processed wood products. Tree cutting was a mission that corresponded to teams of 5–10 people per area, settling in the forest for long periods of time that could last weeks or months. When the tree was very large and hard the task was facilitated by two or more people. Up to eight trees could be cut daily. The axe or two-handed saw were essential tools for the job as well as some type of blade sharpener. Cutting down a tree required a lot of precision, knowledge and technique. Identifying whether it was rotten or not was part of the logger's wisdom. In some forests, felling was done all winter, accumulating beams to be delivered to the workers transporting the logs. These workers could work with six yoke of oxen hauling beams to the sawmill. Human strength in both physical and mental capacity were intrinsic requirements, as each tree took more than an hour to fell; very different from what is done today with a chainsaw, a tool that arrived in the region in the mid-twentieth century.<sup>72</sup>

With the opening of the Panama Canal in 1914, maritime traffic through the Strait of Magellan significantly decreased, affecting the sale of wood negatively. By 1930–32, there were 22 major logging establishments and several small ones, which together employed around 2000 men in different forestry work positions, which provided the second most important source of employment after livestock. At this time the logging industry entered a crisis because of the restrictive measures imposed on imports by the Argentine Government.<sup>73</sup> This paralyzed sales and shipments of wood to Argentina, which was also linked to the Global Great Depression that affected Magallanes. Although the industry managed to recover partly, by 1940–45 the activity declined deeply, stopping exports to Argentina. This led to the closure of most of the large sawmills located in different parts of the region, and especially those in Tierra del Fuego. However, some managed to overcome it and continue with the factories.

## Discussion and concluding remarks

Timber colonialism and timber frontiers swept over Indigenous ancestral lands in northern Sweden and southern Patagonia simultaneously during the latter part of the nineteenth century and the beginning of the twentieth.<sup>74</sup> These movements have rarely been described regarding impact on local Indigenous people and thus this article contributes to a reinterpretation of history in these regions, where tenure rights and land use practices of affected Indigenous people are central. The timber frontiers were also part of a broader pattern of timber colonialism worldwide where capitalist entrepreneurs exploited 'remote' forests in Indigenous territories, e.g., in Africa, India, and North America.

<sup>72</sup> Fernández, M. 'Rastreando huellas. La dinámica del paisaje en la Paciencia, Tierra del Fuego' *Magallania*, 42(1) (2014) 35–53.

<sup>73</sup> Martinic, M. *Patagonia de Ayer y Hoy*. (Punta Arenas: Ediciones Sociedad Difusora Patagonia Ltda. 1980).

<sup>74</sup> Once again, this conceptual distinction is important for the period studied, in that precisely the concept of "frontier" or "border capitalism," articulated with that of "timber colonialism" allows us to understand the geographical spaces analyzed, beyond their incorporation into one or another State, they correspond to a "disputed" territory, a border within a State enabled by global capitals that allow the delegation of sovereignty into the hands of capitalism operated between 1870 and 1930 by English imperialism. Southern Patagonia or Northern Scandinavia, in that sense and within the period described in the article, is the production of a "border territory" that is part of the intricate network of global trade of goods and commodities that feed the construction and lay the foundations of an economy on a global scale, replacing the old idea of the State as the representation of the divine order in the hands of the monarchical regime with that of the market as a symbol of the power and sovereignty of the Nation State. In: Harambour Ross, A. (2021). "Fronteras nacionales, Estados coloniales. ¿Para una historia plurinacional de América Latina?". *Historia Crítica*, 1(82), 3–27. <https://doi.org/10.7440/histcrit82.2021.01>.

The main driving forces in both studied cases were remaining old-growth forests with valuable timber trees, a strong external demand for wood products and a region that was considered by exploiters and authorities as "terra nullius" – land and forests belonging to no one. The timber frontier describes the process of forest exploitation, but the foundation was a colonial perception of Indigenous land – which they had used and lived on since time immemorial. The exploitation was a strong factor in a larger process leading to the loss of tenure for the Indigenous peoples; they were displaced or even subjected to genocide,<sup>75</sup> and the forest ecosystems that were the basis for their subsistence were fundamentally changed. While there are many similarities, there are also important differences. In the following, we will contrast and compare the development of the timber frontiers during the latter part of the nineteenth and early part of the twentieth century in these two regions, and discuss some of the consequences of the colonial forest exploitation.

The large-scale commercial logging began around the mid-nineteenth century in both regions. It was driven by external demand and financed mostly by international capital. New logging entrepreneurs moved into the territories, established sawmills and brought in workers to run the sawmills, cut trees in the forest and transport the timber to the sawmills. In northern Sweden the logging industry was the main economic activity, while in southern Patagonia the logging of timber was one of several forms of natural resource exploitations complemented by mining, range-land sheep herding and trade through the region. In both regions, the logging frontier was often intertwined with agricultural expansion promoted by the state.<sup>76</sup> In northern Sweden the agricultural expansion into northern territories had the double effect of establishing small farms and villages in the interior parts and thus providing a local labour force for the forest companies.<sup>77</sup> In Patagonia the agricultural expansion mostly led to establishment of larger estancias and rangeland sheep herding, and forest workers were brought in from other regions. In both cases, despite all the differences that we can find, as Laura A. Ogden very well describes, environmental change and colonial history are intertwined, producing archives that are "forms of loss" in the face of radical transformations, including territory, language, sovereignty and life itself, which in both cases flourishes in different ways despite cycles of devastation.<sup>78</sup>

The impact on the forests and the Indigenous peoples traditionally living in both regions that utilized the forest ecosystems for their subsistence was very sudden and the consequences dramatic. The logging companies and the national states did the intense logging with no regard for the people living on these lands and their rights. Indigenous land use was considered primitive, inferior and a hindrance to the new capitalistic forest exploitation. However, an important difference is that the Sámi in northern Sweden had recognized legal rights and a tradition of interaction with the government before the arrival of the timber frontier.<sup>79</sup> Over time, the Sámi successively lost their legal rights to their Sámi tax lands, but they were allowed to keep the right to use all forest land for reindeer grazing. In Patagonia the exploitation was more brutal and

<sup>75</sup> Gigoux, C. 'Condemned to Disappear': Indigenous Genocide in Tierra del Fuego' *Journal of Genocide Research*, 24(1) (2022) 1–22.

<sup>76</sup> Hultblad, F. *Övergången från nomadism till agrar bosättning i Jokkmokks socken* Stockholm: Acta Lapponica XIV, 1968); Gigoux, C. 'Condemned to Disappear': Indigenous Genocide in Tierra del Fuego' *Journal of Genocide Research*, 24(1) (2022) 1–22.

<sup>77</sup> Lundgren, N. G. *Skog för export: skogsarbete, teknik och försörjning i Lule älvdal 1870–1970* (Umeå: Umeå universitet, 1984).

<sup>78</sup> Ogden, L. A., (2021) "Loss & Wonder at the world's end," Ed. Duke University Press, ISBN-13: 9781478021865.

<sup>79</sup> Cramér, T., & Ryd, L. *Tusen år i Lappmarken* (Skellefteå: Ord och Visor Förlag, 2012).

with no regard to the Indigenous groups in the region. In Fuego-patagonia the issue of land tenure for the Indigenous groups was never even considered at the time, since the Chilean State, in complicity with the capital coming mainly from the British Empire, simply handed over timber concessions to commercial sawmill companies. Furthermore, the Sámi in northern Sweden and the Aónikenk, Kawésqar, Yagan, Haush and Selk'nam in Fuego-patagonia were generally considered and treated as 'primitive' and devoid of ideas that supported property ownership, positivism and economic forward thinking. A radical difference between the two regions is the genocide in Fuego-patagonia where the Indigenous peoples were the victims, while there was a judicial oppression in Sápmi which resulted in loss of Indigenous culture and languages.

Timber colonialism have left a deep legacy on the forest eco-systems in both regions, but with some important differences. In northern Sweden, the successive waves of logging encompassed almost all forest land, from the shores of the Bothnian Sea to the forest along the Fennoscandian mountain range within a fifty year period (1850–1900).<sup>80</sup> There are some minor exceptions to this, where there are unique unlogged forests in very remote locations.<sup>81</sup> A consequence of the intense logging and the intense forest management is that almost all protected forest (forest reserves and national parks) in northern Sweden is located at higher altitudes along the Fennoscandian mountain range and in the northernmost parts of the country.<sup>82</sup> Therefore the protected areas are skewed towards low productive and climate limited forests in Sweden.

The legacy of the logging in northern Sweden includes gaps in forest dynamics and forest structure. There is a lack of very old trees, disruption of natural landscape patterns and dynamics (particularly forest fire), and a lack of critical biodiversity structures such as dead wood.<sup>83</sup> Another important aspect is that logging and forest exploitation was not a time-limited event in northern Sweden. After the initial logging in the nineteenth century, successive waves of logging of wood for pulp-mills and finally plantation forestry followed. The forest exploitation successively increased and presently the timber harvest is close to the net annual growth.

From a Sámi reindeer herding perspective the overlaying effects of modern forest management on top of the effects of forest exploitation is even more detrimental.<sup>84</sup> The forest management includes prescribed burning to facilitate regeneration, planting of seedlings, the use of herbicides and pre-commercial thinnings and

intense soil scarification.<sup>85</sup> The process that was set in motion by the timber frontier in the nineteenth century became unbearable and has created a very difficult situation for the Sámi reindeer herders in the twentieth and the twenty-first centuries. Although the legal rights for the Sámi reindeer herders persist, the grazing resources have deteriorated dramatically during the twentieth century.<sup>86</sup>

In Fuego-patagonia the timber frontier and the logging had a very different spatial pattern, with single sawmills located where there was old forest suitable for logging and means of transportation for the sawn products. This resulted in a scattered pattern of past logging impact, more intense along the shores of the sea and much less intense further inland.<sup>87</sup> A present day consequence is that there are very large areas of forests that have limited impact by historic logging, and other forms of exploitation, and large areas are protected as pristine forest ecosystems in Patagonia. This is in clear contrast to the situation in Sweden.

A fundamental difference in comparison with northern Sweden is also that the forest exploitation in Patagonia was very seldom followed by the introduction of 'modern' forest management, such as the introduction of exotic tree species, chemical treatments of forests, pre-commercial thinnings, etc. One explanation for this was that forestland was often transferred to pasture for extensive livestock farming and in some cases mining. An important driving force in Fuego-patagonia was also local demand brought on by the establishment of local wool and meat production facilities and less so by international demand for wood products. When these were established and with the opening of the Panama Canal in 1914, trade routes changed and the decline of the large sawmills owned by international capitalists began and in successive steps became less important for the regional economy. From the mid -twentieth century smaller family-owned wood enterprises were favoured, and in some cases with almost artisanal and proto-cooperative characteristics that were successively dedicated to satisfying the needs according to the growth of small local industries as well as regional and national demand.

In conclusion, despite the differences marked by the scales, technologies and social technologies of exploitation under the evolution of global capitalism during the "age of empire,"<sup>88</sup> in both northern Sweden and in southern Patagonia/Tierra del Fuego the colonial legacy of the nineteenth century timber frontiers has left a heavy burden on the forest landscapes, on the rights of the Indigenous people whose lands were exploited and on the present legal situation. Challenges for the future are to re-establish recognition of Indigenous heritage and land tenure rights in both regions, according to international conventions, as well as restoring ecological qualities to the associated forest ecosystems for the sustain of Indigenous practices.

## Acknowledgements

This study was financed by Formas Sweden (project 2023–00772), Proyecto Fondecyt N° 1230490: "Trabajo, fronteras y colonialismo en América del Sur" and Göran Gustafsson Foundation. We also wish to thank Nicolás Recabarren T. and Gerd Aurell for help with the maps.

<sup>80</sup> Östlund, L., & Norstedt, G. 'Preservation of the cultural legacy of the indigenous Sami in northern forest reserves – Present shortcomings and future possibilities' *Forest Ecology and Management*, 502 (2022).

<sup>81</sup> Josefsson, T., Gunnarson, B., Liedgren, L.G., Bergman, I. & Östlund, L. 'Historical human influence on forest composition and structure in boreal Fennoscandia' *Canadian Journal of Forest Research* 40 (2010) 872–884.

<sup>82</sup> Östlund, L., & Norstedt, G. 'Preservation of the cultural legacy of the indigenous Sami in northern forest reserves – Present shortcomings and future possibilities' *Forest Ecology and Management*, 502 (2022).

<sup>83</sup> Östlund, L., Zackrisson, O. and Axelsson, A.-L. 'The history and transformation of a Scandinavian boreal forest landscape since the nineteenth century' *Canadian Journal of Forest Research* 27 (1997) 1198–1206. Linder, P. & Östlund, L. 'Structural changes in three mid-boreal Swedish forest landscapes, 1885–1996' *Biological Conservation* 85 (1998) 9–19.

<sup>84</sup> Kivinen, S., Berg A., Moen, J., Östlund, L. and Olofsson. 'Forest fragmentation and landscape transformation in a reindeer husbandry area in Sweden' *Environmental management* 49 (2012) 295–304.

<sup>85</sup> Östlund, L., Zackrisson, O. and Axelsson, A.-L. 'The history and transformation of a Scandinavian boreal forest landscape since the nineteenth century' *Canadian Journal of Forest Research* 27 (1997) 1198–1206. Östlund, L., Laestander, S., Aurell, G., & Hörnberg, G. 'The war on deciduous forest: Large-scale herbicide treatment in the Swedish boreal forest 1948 to 1984' *Ambio*, 51(5) (2022) 1352–1366.

<sup>86</sup> Sandström, P., Cory, N., Svensson, J., Hedenäs, H., Jouga, L., & Borchert, N. 'On the decline of ground lichen forests in the Swedish boreal landscape: Implications for reindeer husbandry and sustainable forest management' *Ambio*, 45 (2016) 415–429.

<sup>87</sup> Hauenschild, L., Zegers, G. & Östlund, L. (2023) Protección y gestión holística de bosques de Nothofagus en la Península de Brunswick, Chile. *Revista Iberoamericana Ambiente & Sustentabilidad* 6 (2023).

<sup>88</sup> Hobsbawm, E. *The Age of Empire, 1875–1914* (Traducción *La era del Imperio*) (1875–1914), (Crítica, 1998).