Fighting over every hectare: the challenges for the protection of Old-growth forests in Sweden

An analysis of the Swedish forest debate

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Abstract:

Old-growth forests have profound roles in the provision of biodiversity and multiple ecosystem services. These forests and their protection are threatened by structures within the Swedish Forestry Model and Sweden's attitude towards the European Union's environmental and climate policies relating to forest management. A literature review and semi-structured interviews employed through a mixed-methods approach explores the challenges for the protection of Old-growth forests in Sweden. A political ecology lens focusing on interactive governance examines the power structures within Swedish forest management. The findings point to a polarised debate where the Swedish Forestry Model and the interests of the forestry industry are favoured at the expense of the protection of Old-growth forests, illuminated through unbalanced power structures in forest management and a reserved attitude towards the influence of the EU. The thesis concludes with a glimpse towards a reformed interactive governance to ensure the protection of Old-growth forests in Sweden.

Word count: 11.891

Acknowledgements

I would like to thank my supervisors Torsten Krause and Carlos Vélez for their valuable guidance and patience throughout the process of writing this thesis.

I would also like to thank my peers for their insightful advice, and my friends and family for their continuous support.

Lastly, I would like to thank my interviewees who so generously shared their time and knowledge with me.

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1. Introduction

Forests are an integral part of the Swedish landscape and economy. The Food and Agriculture Organization (FAO) defines forests as "land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10%, or trees able to reach these thresholds in situ" (FAO, 2023, p.7). Approximately 69% of Sweden's land area is forest (SLU, 2023), with forest-based products accounting for 10% of national export income (Skogsindustrierna, 2022).

Forests of an older nature (hereinafter referred to as Old-growth forests) constitute a small yet significant part of Swedish forests. These forests have profound biological and socio-cultural values and therefore need protection. The Swedish National Forest Inventory (*Rikskogsstaxeringen*) suggests that in 2020, Sweden had 2.4 million hectares of Old-growth forests, corresponding to 10% of Sweden's forest area (SLU, 2023). Figure 1 illustrates the area of Old-growth forests distributed on land areas within and outside of formally protected areas in certain Swedish regions. Of the 2.4 million hectares of Old-growth forests, 1.7 million hectares fell outside of formally protected areas (SLU, 2023).
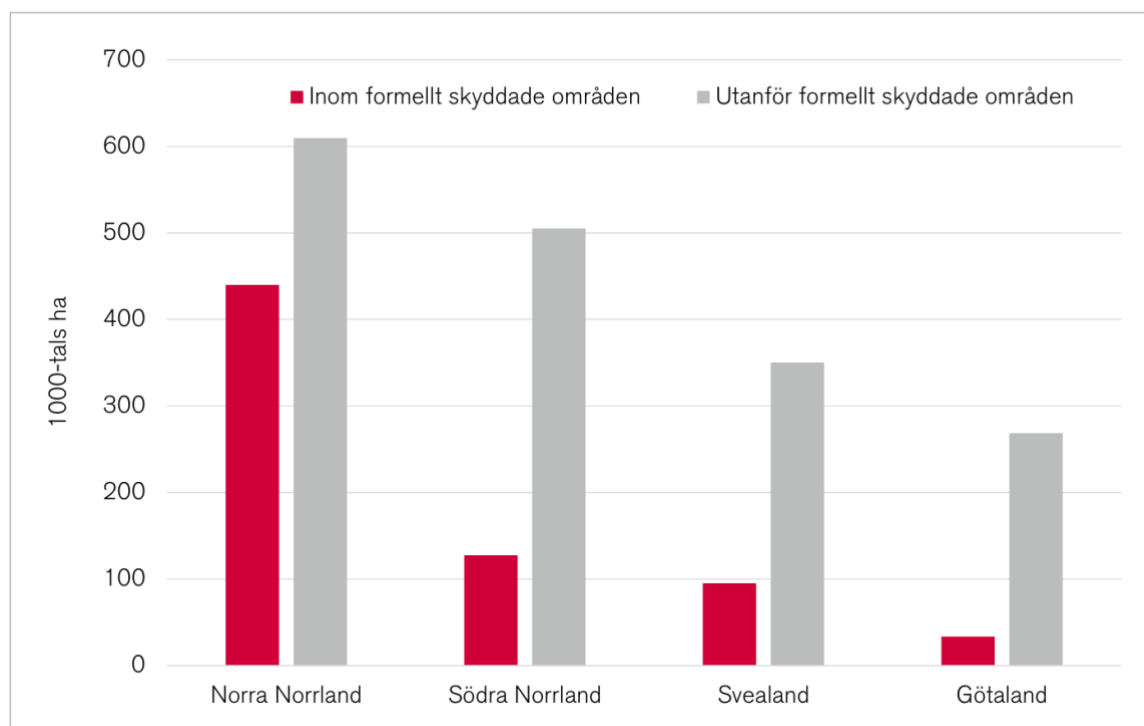
Figure 1. Old forest area (1000 hectares) distributed on land areas within (red) and outside (grey) formally protected areas. 2018–22. (SLU, 2023).

Despite SLU's (2023) figures, there is currently no national inventory of how much Old-growth forests remain in Sweden, nor where they are located. Moreover, recent changes to Sweden's forest management, combined with the European Union's (EU) various environmental and climate related

policies affecting forest management in member states, have created a contentious debate surrounding the role of forests in the strive towards environmental sustainability, which the challenges for the protection of Old-growth forests shed light on.

Through theory on interactive governance stemming from political ecology and a mixed-methods approach combining a literature review and semi-structured interviews, I seek to answer the following research questions:

RQ1: How do the EU and Sweden define and protect Old-growth forests?
RQ2: What are the challenges for the protection of Old-growth forests in Sweden?

Addressing RQ1 involves an analysis of how Old-growth forests are defined in relevant guidelines, legislation, and strategies, as well as what laws, policies and mechanisms for protection exist. Addressing RQ2 involves an analysis of how relevant actors and stakeholders perceive the current state of forest management and protection of Old-growth forests in Sweden, and how this relates to the Swedish forest debate and EU policies affecting forest management.

Section 2 gives a brief background on forests and forestry in Sweden, illustrating the Swedish Forestry Model and how the EU's environmental and climate policies enter the arena, as well as identifying the relevant actors and stakeholders for this thesis. Sections 3 and 4 outline this thesis' chosen theory and methodology, which is followed by an analysis of the findings (Section 5). Section 6 concludes this thesis with a brief reflection and conclusion.

2. Background

The purpose of this section is to outline Swedish forests and forestry, forest ownership and the Swedish Forestry Model, and the importance of forests in the EU. By doing so, I identify the guidelines, legislation, strategies and the actors and stakeholders relevant for answering my research questions.

2.1 The Swedish Forest

From the total land area of 40.7 million hectares, forest cover in Sweden translate to 27.9 million hectares (SLU, 2023). Most Swedish forest stands fall within the age category of 41 to 60 years old (SLU, 2023), largely as a result of intense forest management manifested through clear-cutting and tree plantations (Hertog et al., 2022). According to *Rikskogsstaxeringen*, there are currently around 3,5 million hectares of forests older than 140 years in Sweden, corresponding to 12.7% of the total forest area (SLU, 2023).

Forests also constitute a significant proportion of Sweden's national economy (Eggers et al., 2022). Sweden is home to 1% of the world's forests, which accounts for 4% of the world's production of forestry products (Skogsindustrierna, 2022). Sweden is the fourth largest producer of pulp, paper and cardboard, and timber after Canada, the United States of America and Russia (Skogsindustrierna, 2022). Forestry products account for 10% of national export income, yet only 2% of total employment (Skogsindustrierna, 2022) and under 2.5% of gross domestic product (Skogsindustrierna, 2022). There is, thus, a strong economic incentive to cultivate Swedish forests.

2.2 Forest ownership in Sweden

Figure 2 illustrates the structure of forest ownership in Sweden. According to *Skogsstyrelsen's* (the Swedish Forest Agency) latest statistics, private owners, which includes individuals, estates and non-trading companies, own the largest area of land suitable for forestry (productive forest land) at 49%. This group is followed by privately owned limited companies (25%), state-owned companies (13%) and the state (6%). Other private and public owners own 6% and 1% respectively (Skogsstyrelsen, n.d-a). There are around 310,000 private owners of forest land in Sweden, representing around 3% of Sweden's population. Together, they own 11,3 million hectares of productive forest land (Skogsstyrelsen, n.d-a).
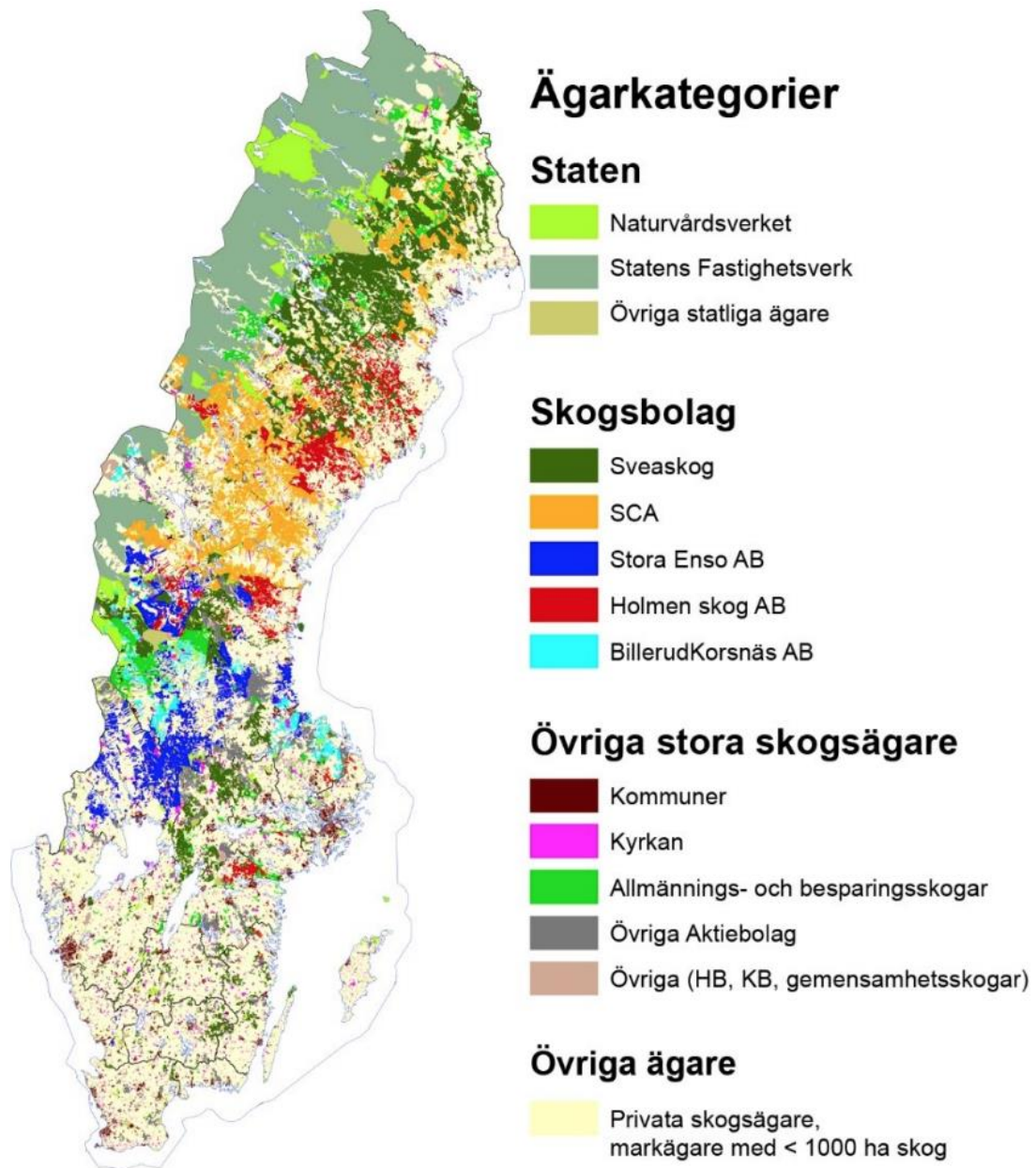
Figure 2. The structure of forest ownership in Sweden by categories (*Ägandekategorier*) (Regeringskansliet, 2020). The categories are: The state (*Staten*), forest companies (*Skogsbolag*), other big forest owners (*Övriga stora skogsägare*), and other owners (*Övriga ägare*).

Strong emotional and cultural ties relating to forests by forest owners are manifested in various constitutional laws. The longstanding tradition of *Allemansrätten*, or the right to public access, entails freedom under responsibility in which everyone regardless of nationality has a right to nature in Sweden but must show consideration and caution with their interactions (Naturvårdsverket, 2018), thereby also granting the public the opportunity to emotionally connect with natural environments such as forests.

Similiarily, *Äganderätten*, or the right to own, states that as a landowner, one's property is secured by the fact that no one can be forced to give it up to the public or any individual through

expropriation. Exceptions can be made to satisfy pressing public interests, in which case landowners must be insured for full compensation for their loss (Pettersson, 2020).

Another law restricting landowners', specifically forest owners', rights to use their land is *Artskyddsförordningen*, or the Species Protection Regulation, which concerns the protection of wildlife species, outlining the consequences of harming or disturbing certain wild animals and their offspring as well as the removal or harming of wild plants (Regeringskansliet, n.d).

2.3 The Swedish Forestry Model

During the growth of the Swedish forestry industry in the late 19th century, the need for a regulation of forests to ensure sustainable use of forest resources for Sweden's welfare and economic interests was consolidated through the Forestry Act of 1903, or *Skogsvårdslagen* (Roberge et al., 2020). Subsequent reforms of *Skogsvårdslagen* have resulted in the current Swedish Forestry Model, in place since the 1990s (Roberge et al., 2020).

The underlying principle of the Model is "freedom with responsibility" concerning the relationship between the state and private forest owners (Roberge et al., 2020, p.34). A key feature in this system is the "epistemic authority" of the forest professionals, such as *Skogsstyrelsen* and the industry, to guide private forest owners on what is regarded as good forest management (Andersson & Keskitalo, 2018, p.79). The explicit desire that greater freedom leads to greater variation in forest management coupled with a strong trend towards eco-modernisation through marketisation, enhancement of the private sector's role, deregulation and voluntarism are the foundations for the Swedish Forestry Model. While the forest owner remains the main decision-maker, other important stakeholders include the state, the forestry industry, the environmental movement, and other non-governmental organisations (NGOs) (Roberge et al., 2020).

Since 2018, Sweden follows a *National Forest Program* in which sustainable forestry with an increased climate benefit is stressed (Regeringskansliet, 2018). Sustainable forestry is defined as the management and use of forests in such a way that biodiversity, productivity, regeneration capacity and vitality is maintained and able to fulfil future ecological, economic, and social functions (Regeringskansliet, 2018). This is manifested through *Skogsvårdslagen's* two principal goals: an environmental goal concerning biodiversity, cultural and social values of forests, and a production goal concerning effective and responsible use of forest resources (Skogsstyrelsen, 2023b). Sweden also has an environmental target system in place, where one of the 16 environmental quality goals concerns 'Living forests', calling for the biological production value of forests to be protected while also preserving biodiversity and cultural and social values through both formal protection and voluntary set-asides (Naturvårdsverket, 2018).

2.3.1 Forest management

Two governmental agencies are mainly responsible for forest protection, namely *Skogsstyrelsen* and *Naturvårdsverket* (Environmental Protection Agency). Both agencies are concerned with the national strategy for the formal protection of forests (Naturvårdsverket & Skogsstyrelsen, 2017). The three types of formally protected areas for forests in place are nature reserves, biotope protection areas and nature conservation agreements (Naturvårdsverket & Skogsstyrelsen, 2017). Responsibility for formal protection is mainly shared by Sweden's county administrative boards (*Länsstyrelsen*) and *Skogsstyrelsen* (Naturvårdsverket & Skogsstyrelsen, 2017; Naturvårdsverket, n.d).

Skogsstyrelsen's main objective is to promote management of forests that enables the objectives of Sweden's forest policy to be obtained through activities such as the supervision of compliance of *Skogsvårdslagen*, the production of official statistics concerning forests and forestry and the management of governmental subsidies and of protected forest areas (Roberge et al., 2020). *Skogsstyrelsen* works to ensure that Sweden's forests are managed in such a way that sustainable forestry is achieved. In this work, environmental goals such as 'Living forests' are important guiding principles (Skogsstyrelsen, 2023a).

Naturvårdsverket mainly promotes work towards Swedish society's transition towards a circular economy, primarily through environmental monitoring and research on important ecosystems (Naturvårdsverket, 2023a). Sweden's counties all work with regional forest strategies and programs of their own that contribute to the *National Forest Program*, coordinated by the respective county administrative board (Regeringskansliet, 2018). NGOs, such as forest certification systems, also play an important role in Swedish forest management (Skogsstyrelsen, 2023a).

2.4 Old-growth forests

There are various ways to define forest ecosystems of an older nature. In Sweden, "Gammal skog" (Old-growth forests) is used to define forest land with stand age older than 140 years in the boreal region and older than 120 years in the boreonemoral and nemoral regions (SLU, 2023, p.15).

The European Commission distinguishes between primary and old-growth forests. Primary forests, or "urskog" (Höjer, 2023, p.10), are naturally regenerated forests with no clearly visible indications of human activity and where the ecological processes are not significantly disturbed (European Commission, 2023). Old-growth forests, or "naturskog" (Höjer, 2023, p.11), are forests that have developed structures and dynamics normally associated with primary forests, where signs of human activity may be visible but are either gradually disappearing or too limited to significantly disturb natural processes (European Commission, 2023). Both types of forests show natural forest

dynamics, such as diverse tree species composition, age structure and regeneration processes, as well as the occurrence of dead wood (European Commission, 2023).

Old, uncut boreal forests have profound biological and biochemical functions, partly linked to the larger presence of older and dead trees (Ahlström et al., 2022). These forests sequester and store more carbon dioxide from the atmosphere (Fredeen et al., 2005; Jonsson et al., 2020; Luyssaert et al., 2008) and accommodate a larger number and variety of species (Bradshaw et al., 2009; Frank et al., 2009; Jonsson et al., 2020; Mosseler et al., 2003) than planted forests. These forest ecosystems also provide important grazing grounds for reindeer husbandry practiced by indigenous Sámi people in Sweden (Kivinen et al., 2012). Alongside the longstanding tradition of *Allemansrätten*, there is thus a need to protect these forests for a variety of biological and socio-cultural reasons.

2.5 Forests and the European Union

The EU can only act in areas where it is authorised to do so by member states. Areas in which both the EU and national governments can legislate include agriculture, energy, and fisheries policies (European Commission, n.d). While there is currently no common forest policy in the EU, the role of forests, especially Old-growth forests, as providers of multiple ecosystem services and as carbon sinks are highlighted in various EU environmental and climate related policies that affect forest management in member states such as Sweden.

In May 2020, the European Commission published the *EU Biodiversity Strategy for 2030* (European Commission, 2023), which established the objective of defining, mapping, monitoring, and protecting the EU's remaining primary and old-growth forests (Old-growth forests). The strategy calls for the legal protection of 30% of the EU's land area, under which 10% should be strictly protected areas such as primary and old-growth forests (European Commission, 2021a, p.10). The EU's work on Old-growth forests has accelerated since, notably with the publication of the *New EU Forest Strategy for 2030* in 2021 (European Commission, 2021b) and the most recent *Commission Guidelines for Defining, Mapping, Monitoring and Strictly Protecting EU Primary and Old-Growth Forests,* published in March 2023 (European Commission, 2023).

In March 2023, a target was set for and adopted by the Land Use, Land Use Change and Forestry sector (*LULUCF*). The target falls within the EU Climate Law, in which the EU is committed to achieving carbon neutrality by 2050 and reducing net greenhouse gas emissions by at least 55% by 2030 compared to 1990 levels (also known as 'Fit for 55') (European Parliament, 2023).

One of the major reasons behind the EU's lack of a common forest policy is opposition from forest-rich countries such as Sweden. The 'Fit for 55' target has especially been met with criticism for its ambitious goals. Swedish Forest Industries (2024) suggests that if targets become reality, Sweden is expected to be the EU's largest carbon sink in both forests and land. The proposed 30% increase in

carbon sinks, they suggest, would lead to a 15% reduction in the extraction of raw forest materials (Skogsindustrierna, 2024).

2.6 Problem statement

The biological and socio-cultural significance of Old-growth forests in Sweden placed against the Swedish Forestry Model's economic incentives to cultivate forests has created a precarious situation for the protection of these ecosystems.

Attempting to map Old-growth forests in Sweden, Ahlström et al. (2022) found that forests predating 1880 (over 140 years old in 2020) accounted for 18.7% of clear-cuts between 2003 and 2019, suggesting that considerable portions of recent harvests have relied on the conversion of old uncut forests to planted forests (Ahlström et al., 2022, p.3). Cut at a stable rate of 1.40% per year since 2003, all unprotected older forests in Sweden are expected to be converted to planted forests by 2073 (Ahlström et al., 2022, p.3). However, a glance at Sweden's environmental goals' website shows a steady rise of the area of Old-growth forests in Sweden (see Figure 3) (Skogsstyrelsen, n.d-b).
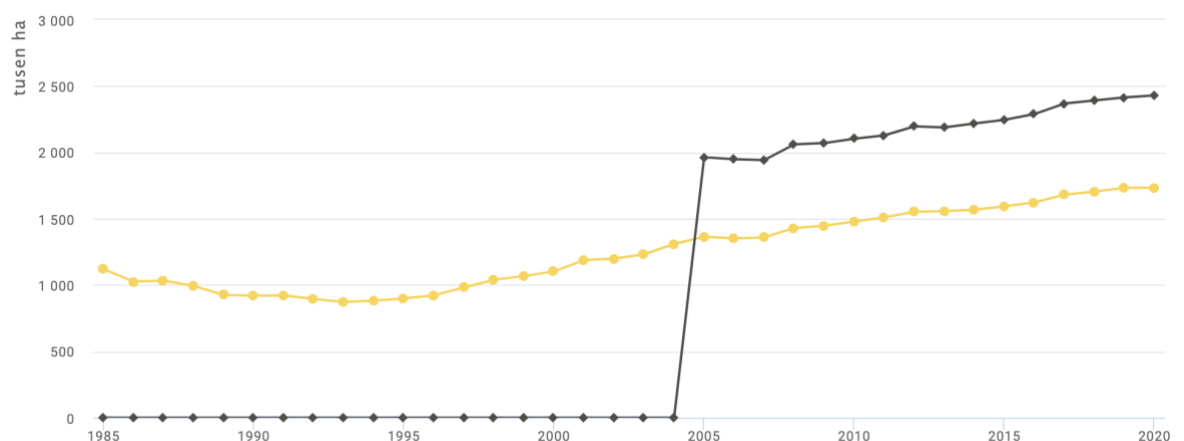
Figure 3. The change in Old-growth forests in Sweden by thousand hectares over the last 35 years, defined as average tree age over 140 years in boreal regions and over 120 years in nemoral and boreonemoral regions (Skogsstyrelsen, n.d-b). The yellow dotted line represents the whole country excluding protected areas, while the black dotted line represents the whole country including protected areas.

Against this, many changes to the Swedish Forestry Model and the environmental goals relating to forests have occurred, most notably *Skogsstyrelsen's* disuse of the registration of key biotope areas in Sweden (*nyckelbiotoper*). Between 1993 and 2016, *Skogsstyrelsen* made an inventory of and registered a great deal of key biotope areas in order to pinpoint where rare flora and fauna could be found in Sweden. This in turn provided a complement to planning for various actors in the forestry industry and authorities' decision-making in terms of formal protection (Skogsstyrelsen, 2023a).

In 2020, the Swedish government published an inquiry with the purpose to protect and strengthen private ownership of forests by ensuring financial compensation for restrictions on laws such as *Äganderätten*. The inquiry found that the term 'key biotope areas' is neither constitutionally regulated nor linked to *Skogsvårdslagen*. The inquiry found that the method of registration often went beyond what was necessary for authorities' work, thereby threatening the individual forest owner's responsibility to themselves judge what constitutes sustainable forestry (Regeringskansliet, 2020, p.33). As of December 2021, *Skogsstyrelsen* no longer registers new key biotope areas (Skogsstyrelsen, 2023a), which can be seen as a clear step away from their environmental goals.

In line with proposed protection on Sweden's unique structure of forest ownership, the inquiry also proposed a new method of formal protection, namely voluntary formal protection. Unlike voluntary set-asides, the inquiry suggests voluntariness should govern implementation, in that the forest owner can offer an area for voluntary formal protection only implemented once the forest owner and relevant authorities have agreed upon it (Regeringskansliet, 2020).

In February 2024, *Naturvårdsverket* announced a call for a revision of the national strategy for formal protection of forests by March 2025, with particular emphasis to be placed on how property rights should be strengthened, new forms of protection used and how voluntariness as a basis should be applied, all while protecting forests with high natural values (Naturvårdsverket, 2024).

Forests and forestry represent a very emotive debate. In February 2024, the minister of rural affairs, Peter Kullgren, wrote a debate article stressing the how forests are a strategic resource and how a reformed forest policy is necessary for long-term, sustainable forestry contributing to employment, growth and "a greener world" (Regeringskansliet, 2024).

Given the complexity of the Swedish Forestry Model, I analyse how Old-growth forests are featured in Swedish forest management and to what extent their protection is challenged.

3. Theory

This section outlines the theoretical framework relevant for this thesis, which draws upon interactive governance rooted in political ecology.

3.1 Political ecology

Rather than a single theory or framework, political ecology can be described as a field consisting of a range of narratives and theses used to explain nature-society relations (Robbins, 2012). At the core of political ecology lies the assumption that environmental change and ecological conditions are the result of political processes, which a critical interrogation of power relations intersecting and affecting natural resources can reveal. Research thus tends to focus on causes rather than symptoms of problems, stressing not only the political dimension of ecological systems but also the ways in which political and economic processes delimit and direct wider perspectives of such systems. Robbins (2012) describes this as the "hatchet" and the "seed" of political ecology: as the field attempts to critically explain flawed and politically problematic accounts of environmental change (the hatchet), it also explores alternative socio-ecologies within mismanagement and exploitation (the seed) (p.20).

A central tenet of political ecology is conservation and control. Robbins (2012) argues the control of resources and landscapes is wrested from local actors through the implementation of efforts to preserve "sustainability" or "nature". The process of preserving the "environment" disables local socio-political systems, which are in turn characterised as unsustainable by state authorities or other actors in the struggle to gain control over resources (p.178). The theme draws upon four fundamental theoretical foundations, of which the constructed character of natural wilderness is relevant for this case. Robbins (2012) calls for a critical interrogation of what actors seek to conserve, especially including "natural" environments that require restoration and "wilderness" that demands protection (p.180).

While political ecology provides a theoretical entry-point to the relationship between the 'political' and the 'ecological', understanding the theme of conservation and control in terms of the protection Old-growth forests in Sweden can be coupled with theory on interactive governance to illustrate the dynamics in power structures central to the forest debate.

3.2 Interactive governance

In outlining theory on interactive governance, I provide a brief description of the concepts of governance and interactive governance, drawing specific attention to power perspectives.

3.2.1 Governance and interactive governance

Simply put, governance refers to the process of governing, regardless of whether undertaken by a government, market, formal or informal organisation, or through laws, norms, or power (Bevir, 2012). The concept differs from government in that its focus lies largely on social practice and activities (Bevir, 2012). Governing is increasingly shared by a range and variety of state and non-state actors and stakeholders, which has led to an emergence and promotion of new practices and designs for governance, including interactive governance (Bevir, 2012).

As governance broadly suggests both the market and civil society have prominent roles in governing society, interactive governance highlights solving societal problems and creating opportunities through the interactions between civil, public, and private actors (Kooiman et al., 2008). In such a way, interactive governance resembles Robbins' (2012) 'hatchet' and 'seed' within political ecology theory. Kooiman et al. (2008) place particular emphasis on interaction as specific forms of action to remove obstacles and follow new paths (p.2). Alongside this element, interaction entails several governance actors constrained or enabled by structures. Actors refers to any social unit possessing power of action, while structure entails the frameworks within which actions are limited or widened (Kooiman et al., 2008). Central to interactive governance is the concept of governability, which Koiiman et al. (2008) describe as the overall capacity for governance.

3.2.2 Interactive governance and power perspectives

Defining power as the ability to shape outcomes and politics as the conflict-ridden decisions that structure and shape social and economic relations, Torfing et al. (2012) illustrate the linkages to interactive governance through an analysis of power *in*, *of*, *over* and *as* interactive governance.

Drawing from Lukes' (1974; 2005) seminal essay on the three faces of power, Torfing et al. (2012) outline power *in* interactive governance through direct, indirect, and ideological power, including a 'fourth face' on social power. While direct power is common in interactive governance, as many actors will seek to influence collective decisions to pursue their interests (p.56), indirect and ideological power are more important. As the political agenda in interactive governance is often relatively open, indirect power strategies seek control to ensure certain outcomes are reached. This form of power is also used to prevent conflicts from arising that risk jeopardising future cooperation. Here, ideological power plays a similar role in attempting to influence interests to gain support for ideas and proposals (Torfing et al., 2012, p.57). Lastly, social power concerns the assumption that power is determined by an actor's social capital. The more social links an actor has, the more knowledge, experience, trust and reach they will have, and thus also the impact on policy interactions and decision-making (p.59).

Torfing et al. (2012) suggest that power *of* interactive governance involves both a "power to govern" and a "power over government", where the former concerns the capacity for joint action and societal regulation and the latter the capacity to affect governmental decisions and regulation (p.59). Attributes that condition the political impact and power of interactive governance arenas include scalability (the ability to expand membership), adaptability (the ability to transform institutional design) legitimacy (of institutional design) and expediency (the ability to put pressure on governments and accept policy outputs) (Torfing et al., 2012).

Power *over* interactive governance refers to the dynamics between governments and interactive governance through different forms of meta governance that shape and influence governance areas in indirect ways (Torfing et al., 2012). These forms of governance include regulating access to interactive governance arenas by either including or excluding actors, as well as constructing the agency of such actors. Governments can also exercise power by framing interactions through funding schemes, administrative resources, and economic incentives, as well as by assessing performance of interactive governance through "naming and shaming" (Torfing et al., 2012, p.65). Lastly, governments have the power over interactive governance by being able to either create new ones or close existing ones down.

Power can also be analysed *as* interactive governance, in which governments aim to "govern at a distance" through mobilising and including autonomous actors in self-regulating governance arenas (Torfing et al., 2012, p.66). In the Western world, this is best exemplified as a move from neoliberal governments to liberal ones with more reflexivity in governing, where actors now have shared responsibility for governing social and economic relations based on negotiations, contracts, standards, and performance management (p.68).

3.3 The Swedish Forestry Model as interactive governance

The Swedish Forestry Model presents itself as an example of interactive governance. As outlined in Section 2, important actors and stakeholders stemming from the various public agencies, the forestry industry and civil society all work together to ensure forest management in Sweden. As political ecology theory suggests, this form of governance can both solve problems and create opportunities through interactions. Moreover, theory on interactive governance helps uncover the roots and causes of a contentious forest debate by uncovering the underlying structures behind a conflict of goals in forest management. I thus investigate where the 'hatchet' and the 'seed' are in the Swedish forest context and where matters of conservation and control play into the debate, through highlighting a small yet significant part of the forest landscape and the challenges for its protection.

4. Methodology

While my approach is of a qualitative nature, I use a mixed-method approach combining a literature review to illustrate how Old-growth forests are defined by the EU's environmental and climate related policies affecting forest management and Swedish forest policies, with semi-structured interviews to provide further insight into the challenges for the protection of such forests in Sweden.

4.1 Positionality and research philosophy

As I am personally convinced that current Swedish forest management causes more harm than good to the environment, I firmly believe theory stemming from political ecology is not only applicable but also relevant in revealing the structures behind the Swedish Forestry Model. Here, my stake in my research is conveyed in that I hope to highlight an area in sustainability science that I personally believe requires more nuanced attention.

I adopt a critical realist approach as my research philosophy. Often linked to the works of Bhaskar (1975), critical realism separates epistemology from ontology by distinguishing between "real" and "observable" worlds (Forsyth, 2023, p.192). I thus approach my research with epistemological relativism realising my positionality in my research and ontological realism acknowledging the structured yet adaptable reality of my case (forest management), which facilitates judgmental rationality in evaluating the different approaches to forest management as better or worse for the protection of Old-growth forests (Yucel, 2018).

4.2 Data collection and analysis

My research is based on primary qualitative data gathered through a literature review and semi-structured interviews, which was collected and analysed in February and March 2024.

4.2.1 Literature review

A literature review of relevant forest policies was conducted in order to answer RQ1 and illustrate how Old-growth forests are defined by the EU and Sweden, hereinafter collectively referred to as forest policies. By 'definition', I include elements similar to the questions conducted during the qualitative data collection, i.e., descriptions, mapping and protection of Old-growth forests. For this research, I define forest policies as belonging to the broader categories of acts, guidelines, legislation, and strategies to include the most relevant literature from both the EU and Sweden. During my background research, I identified the following literature as most relevant for my research questions (Table 1). The literature is cited in the format (LIT, *number*), with the number assigned depending on the date of publication.

Table 1. Table of eight forest policies conducted for a literature review as organised by date published, title, type and source.

Date of publication	Title	Type	Source
02/2017	National Strategy for the Formal Protection of Forests (*Nationell strategi för formellt skydd av skog*)	Strategy	*Skogsstyrelsen* and *Naturvårdsverket*
2018	Sweden's Environmental Goals (*Miljömålen*)	Goals	*Riksdagen*
17/05/2018	National Forest Program (*Strategi för Sveriges nationella skogsprogram*)	Strategy/Program	*Regeringskansliet*
02/2023	Swedish Forestry Act (*Skogsvårdslagen*)	Legislative act	*Skogsstyrelsen*
05/2021	EU Biodiversity Strategy for 2030 - Bringing nature back into our lives	Strategy	European Commission; Directorate-General for Environment
16/07/2021	New EU Forest Strategy for 2030	Strategy	European Commission
21/03/2023	Commission Guidelines for Defining, Mapping, Monitoring and Strictly Protecting EU Primary and Old-Growth Forests	Guidelines	Directorate-General for Environment
11/05/2023	Consolidated text of the LULUCF Regulation (EU) 2018/841	Legislation	European Parliament

4.2.2 Semi-structured interviews

I chose to conduct semi-structured interviews to answer RQ2 and illustrate the challenges for the protection of Old-growth forests in Sweden. While focused on one core topic to provide structure, semi-structured interviews allow for the discovery of different directions and space for conversations to unfold, often resulting in rich and complex data (Magaldi & Berler, 2020).

Interviewees

Drawing from the actors and stakeholders outlined in Section 2, the 18 interviewees were found through targeted selection and were contacted by email. My aim was to assemble a group of interviewees representing different actors and stakeholders in forest management and their respective perspectives on the protection of Old-growth forests in Sweden. The interviews were held

in Swedish and took place virtually between February 8th, 2024, and March 11th, 2024. Each interview lasted between 30 and 50 minutes. To ensure anonymity, the actors are described in terms of their respective organisations or affiliations. The following actors participated in my semi-structured interviews (Table 2). The interviews are cited in the format (INT, *number*), with the number assigned randomly to ensure anonymity.

Table 2. Table of 18 actors and stakeholders with whom semi-structured interviews were conducted as organised by organisation or affiliation and their role in Swedish forest management.

Organisation or Affiliation	Role
Forest Stewardship Council (FSC)	Forest certification system
Holmen	Swedish company producing pulp and paper
Luleås tekniska universitet (LTU)	Expert in forestry
Länsstyrelsen #1	County administrative board
Länsstyrelsen #2	County administrative board
Länsstyrelsen #3	County administrative board
North Sweden	Advocacy group
Programme for the Endorsement of Forest Certification (PEFC)	Forest certification system
Private forest owner #1	Private forest owner
Private forest owner #2	Private forest owner
SCA Skog	Swedish company producing timber, pulp and paper
Skogsstyrelsen	Swedish Forest Agency
Skydda Skogen	Non-profit environmental organisation
Statens Fastighetsverk (SFV)	National Property Board
Steget Före	Non-profit environmental organisation
Sveaskog	Swedish state-owned company
Sveriges lantbruksuniversitet (SLU)	Researcher in forest planning
Södra Skogsägarna	Forestry cooperative and company

Questions

To allow for flexibility while maintaining an organised focus (Magaldi & Berler, 2020), I approach each interview with a set of questions regarding five different topics. The topics concerned definitions, mapping, protection, sustainable production and biodiversity and EU climate policies concerning forests and forestry (see Appendix). I incorporated elements relating to interactive governance specifically in questions 2 to 4, while allowing space for the actors themselves to talk about how they work with and perceive the roles of other actors and stakeholders in forest management whenever appropriate. The questions varied slightly depending on the interviewee. For example, question 4 was mainly targeted towards interviewees from the private sector. When talking to interviewees from the other organisations or affiliations, the question tended to concern the Swedish Forestry Model and forest debate.

4.3 Qualitative data analysis

The subsequent sections outline the methods and tools used for a qualitative data analysis.

4.3.1 Literature review

The eight forest policies were analysed in order to establish how forest policies in the EU and Sweden define Old-growth forests. Each document was analysed in the reference management software Zotero. Using the search function, I browsed the documents written in English for the words: "*primary forest*", "*old-growth forest*", "*map/mapping*", and "*protection*". For the documents written in Swedish, I searched the words: "*äldre skog*", "*naturskog*", "*urskog*", "*gammal skog*", "*kartläggning*" and "*skydd*".

For every hit, I registered the quote and page number in which the words could be found relating to descriptions, mapping and protection of Old-growth forests in a table (see Appendix).

4.3.2 Semi-structured interviews

The 18 interviews were recorded using a smartphone. The audio files were transcribed using the transcription function on Microsoft Word. Using intelligent verbatim transcription (McMullin, 2023), I edited the transcriptions by hand while relistening to the audio files to exclude fillers, fix grammatical issues and make the transcriptions efficient for thematic coding. I used Computer Assisted Qualitative Data Analysis Software (CAQDAS) NVivo 14 to store my data before coding. All coding was conducted in Swedish.

The codes were created to allow for a thematic analysis in line with the open-ended nature of semi-structured interviews to identify common topics, ideas or patterns relating to the

interview questions. Eight top-level codes were created for an analysis of the interviews and organised by colour. The remaining three codes concerned non-question specific topics which frequented certain interviews. Each top-level code included between 1 and 10 additional codes (See Appendix). The additional codes for the question specific top-level codes were similar in nature, especially with questions 4 and 5. Here, I included additional quotes specifically related to interactive governance, such as "involved actors" (*Inblandade aktörer*), "conflicts" (*Konflikter*), and "Influence" (*Inflytande*).

To organise the coding and following analysis further, each interview was colour-coded in accordance with the interviewees' organisation or affiliation. The 18 interviewees represented 13 different organisations or affiliations, of which the five types are listed in Table 3. Not only does this distinguish between the different types of actors and stakeholders involved in the interactive governance of forest management, but it also strengthens anonymity, as the organisations or affiliations are grouped together under one category during the analysis of the findings.

Table 3. The 18 different organisations or affiliations with whom semi-structured interviews were conducted as organised by types of organisations or affiliations.

Experts/Researchers	Civil Society/Climate Movement	Non-governmental Organisations (NGOs)	Private Sector	Public Sector
Luleås tekniska universitet (LTU)	*Skydda Skogen*	Forest Stewardship Council (FSC)	*Holmen*	*Länsstyrelsen* (#1, #2, & #3)
Sveriges lantbruksuniversitet (SLU)	*Steget Före*	Programme for the Endorsement of Forest Certification (PEFC)	Private Forest Owners (#1 & #2)	North Sweden
			SCA Skog	*Skogsstyrelsen*
			Statens Fastighetsverk (SFV)	
			Sveaskog	
			Södra Skogsägarna	

4.4 Ethical considerations and limitations

All interviewees were sent a consent form prior to the interview, where I outlined the purpose of my research and how I intended to use the data. I realised early in the data collection process that forestry in Sweden is a sensitive topic, with many interviewees expressing how their involvement in my research could have serious implications for their work if full anonymity was not ensured. This is the reason for grouping the interviewees together by organisation or affiliation, which has an implication on how the data is presented and analysed. The quotes and findings cannot be directly linked to the actors and stakeholders in question, which causes ambiguity. Relating to this is a language limitation. As I conducted all my interviews in Swedish, the transcription and coding were also in Swedish. However, the quotes presented are in English. While I have tried my best to translate the quotes accurately, I realise some Swedish wording or phrases may come across differently in English.

Another limitation is the absence of *Naturvårdsverket*, *Naturskyddsföreningen* (The Swedish Society for Nature Conservation) and the Swedish Church in my research. The two former actors could not participate in interviews due to time constraints, while contact with the latter was difficult to maintain. These actors play important roles in Swedish forestry, thus would likely provide valuable insights regarding the research questions.

5. Analysis

This section outlines the analysis of the findings for RQ1, *How do the EU and Sweden define and protect Old-growth forests?* and RQ2, *What are the challenges for the protection of Old-growth forests in Sweden?* The analysis draws on interactive governance theory as outlined in Section 3.

5.1 RQ1: Definitions and protection of Old-growth forests

This section addresses the research question: *How do the EU and Sweden define and protect Old-growth forests?* The findings are presented in a table by description, mapping and protection strategies of Old-growth forests as outlined in the EU's and Sweden's forest policies (see Appendix).

5.1.1 Summary of findings for RQ1

The findings point to a contrast in the description, mapping and protection strategies of Old-growth forests presented by the EU's and Sweden's various forest policies. While only two of the EU policies have specific descriptions of Old-growth forests and how to map such forests, they nonetheless all stress the importance of establishing concrete methods for mapping and protecting these ecosystems. Certain policies explicitly mention how this can be achieved (LIT, *21/03/2021*), while others mention how other actions, such as prohibiting the sourcing of forest biomass from Old-growth forests, ensures protection (LIT, *16/07/2021*).

        The Swedish policies are vague. Only one policy explicitly describes old forests through extensive definitions of primary and old-growth forests, which is unsurprising as this policy concerns the formal protection of forests and thus includes a range of definitions for the various types of forests worthy of protection in Sweden (LIT, *02/2017*). What is most striking with this policy, however, is the lack of mention of how to map Old-growth forests. Considering the lack of a national inventory discerning how much or where the last Old-growth forests are in Sweden, this is expected. Instead, the policies faintly point towards how forests with high conservation values must be protected from felling (LIT, *02/2017*), while also stressing how biological production, biodiversity and social-cultural values must be protected (LIT, *2018*). Ensuring said protection points to interactive governance, where the government's ambition to preserve forests worthy of protection (LIT, *17/05/2018*, p.14) should be met through joint action by the state, state-owned companies, landowners, and the forestry industry (LIT, *02/2017*; LIT, *17/05/2018*). Yet there is no mention of actual measures to protect Old-growth forests in Sweden. Alongside the lack of measures for mapping, the Swedish forest policies are seen as self-contradictory; how can Old-growth forests be protected when there are neither measures for protecting them nor for mapping them in place?

The *Commission Guidelines for Defining, Mapping, Monitoring and Strictly Protecting EU Primary and Old-Growth Forests* provides clarity in terms of how a forest-rich member state such as Sweden could go about mapping and subsequently protecting Old-growth forests. While this policy was published after most of the Swedish policies, there is still no indication that these have been incorporated into other policies such as *Skogsvårdslagen*, suggesting an almost intentional ignorance of measures to protect Old-growth forests.

The mapping of Old-growth forests is arguably a prerequisite for a coherent forest policy. The intentional ignorance of this can in turn be drawn to a reluctancy from the Swedish government, as well as seen to protect the interests of the forestry sector. The question of how *Skogsvårdslagen's* two goals concerning biodiversity and 'effective and responsible' use of forest resources play out thus arises.

5.2 RQ2: The challenges for the protection of Old-growth forests

This section addresses the research question: *What are the challenges for the protection of Old-growth forests in Sweden?* The findings are presented by the themes discussed during the interviews and analysed in accordance with Torfing et al.'s (2012) theory on power in terms of interactive governance.

5.2.1 Defining Old-growth forests

What exactly is meant by Old-growth forests in Sweden? While physical characteristics of a forest play a role in distinguishing different kinds of forests, defining Old-growth forests specifically presents itself as a contradictory case best analysed in terms of ideological and indirect power *in* interactive governance.

Table 4 outlines the different terms used by interviewees to describe what the EU refers to as 'primary and old-growth forests' (hereinafter 'Old-growth forests'). The different terms are similar in that they stress the age of the forest in question, as well as other conservation and ecological values. The age of tree stands, the structural substrate, the presence of dead wood and specific species are in turn mentioned as important parameters and physical characteristics in determining the nature of forests in Sweden (INT, *12*; INT, *8*; INT, *18*; INT, *13*).

Table 4. Word choice of the 18 interviewees when asked to describe what the EU defines as 'primary and old-growth forests' (Old-growth forests).

Word Choice (Swedish)	Translation (English)
Urskog	Primary forest
Gammal skog	Old forest
Gammelskog	Old forest
Äldre skog	Older forest
Kontinuitetsskog	Continuity forest
Ursprungsskog	Primeval forest
Skog med höga naturvärden	Forest with high natural values
Naturvårdsskog	Conservation forest
Ekologiskt viktiga skogsområden	Ecologically important forest areas
Opåverkad/orörd skog	Unaffected/uncut forest

The discussion on definitions is however not as focused on the differences between the words used, but rather on the elements conveyed by certain terms. This is especially the case with the EU's definitions of 'primary and old-growth forests'.

While having "as clear a picture as possible of what is meant by primary and old-growth forests" (INT, *16*) is considered an important goal in relation to the EU, agreeing upon what exactly is meant by these definitions is considered a "hopeless task" (INT, *5*). As such, there is a tendency for certain actors in the private sector to not use the EU's definitions of primary and old-growth forests, suggesting these "[are] difficult to apply" (INT, *18*) and "create a lot of confusion, as [people] don't always know what is meant by these definitions and what is put in [them] (INT, *14*).

The concept of "untouched nature" is specifically of concern and criticism. While some believe that primary forests as defined by no human intervention is "basically non-existent and perhaps not even desirable" (INT, *3*), others suggest "we hardly have any [untouched] primary forests in Sweden" (INT, *2*), thus 'primary forests' as a definition is inapplicable in Sweden. This 'untouched' element further begs the question of untouched by whom, as "much of Sweden's forests have had major disturbances [such as] fires, [thus] may have been untouched by man, but not by nature" (INT, *9*).

Conflicts arising from the 'untouched' element of primary and old-growth forests as definitions highlight a rift in ideological power, where the EU's definitions are presented as means to distinguish between forests and thereby also determine which forests are worthy of protection, which are

received as "tricky" and "completely crazy" (INT, *3*; INT, *7*). This in turn can be seen as a means for the forestry industry to delay discussions on definitions and thus continue business as usual.

Along the same lines, definitions can be seen as an indirect form of power. While Torfing et al. (2012) outline indirect power *in* interactive governance to prevent conflict, the private sector points to the opposite. Definitions are understood as "a means of power [for people to] get their way" (INT, *9*). Forest owners "don't want to keep getting into lots of boxes and corners and definitions" (INT, *14*) nor want to say they own primary forests, as "there will be very strong protection on them [...] from the EU, something that means [they] can't use [their] forest" (INT, *9*). Instead, these actors call for the discussion on Old-growth forests to ask why these forests haven't already been cut or "when something happened that made it valuable to not cut down?" (INT, *9*).

The challenges for the protection of Old-growth forests arise from the fact that definitions in theory are used to clarify what is meant by Old-growth forests and thus worthy of protection, however in reality are used as ideological and indirect power *in* interactive governance to push certain agendas. Forest owners state how they don't want to get into boxes and corners. Yet where are these boxes and corners? Old-growth forests can be described in numerous ways that only vaguely resembles the definitions presented in Swedish forest policies. Instead, certain elements within the definitions, specifically what is deemed valuable and worth protecting, are lifted in the debate. As such, definitions have become a starting point for conflicts on what is worth protecting; Old-growth forests as an ecosystem or Old-growth forests as a resource?

5.2.2 Forest certification and key biotope areas

The main tools and methods used for the mapping of forests in Sweden involve forestry plans used to determine which stands can be felled, forest certification and inventory methods such as *Rikskogsstaxeringen* and *Skogsstyrelsen's* key biotope areas (INT, *2*; INT, *11*; INT, *9*). The latter two methods and their combined use and disuse by the forestry industry represents a paradox and a major challenge for the protection of Old-growth forests.

Forest certification, which demands that at least 5% of productive forest land is set-aside for biodiversity (INT, *1*), is dependent on an inventory method that in theory no longer has any significance in forest management. As previously outlined, *Skogsstyrelsen* ceased the registration of new key biotope areas in 2021 after criticism that it threatened ownership rights (Regeringskansliet, 2020; Skogsstyrelsen, 2023a).

Key biotope areas' violation of landowners' rights is mentioned in detail by private forest owners. One forest owner described an incident where they had acquired a neighbouring stand through loans, planned a felling and hired workers, when a representative from *Skogsstyrelsen* found

a red-listed mushroom species, registered the stand as a key biotope area and thereby prohibited felling (INT, *10*). The forest owner described the incident as emotionally upsetting and economically challenging, like a "like a small assault" (INT, *10*). Their picture of key biotope areas is thus one of a concept once used to protect a small amount of Sweden's forests that has "suddenly [become] a completely different thing, much more difficult [and] crazy" (INT, *10*).

Other forestry industry actors, however, mention how to meet the requirement for certification, the concept of key biotope areas is fundamental for efforts to set aside forests with high conservation values (INT, *2*; INT, *11*). Some actors even have an "over-goal" in practice with "more than 5% set aside" (INT, *2*), while others refer to how their forests set aside for nature conservation "basically [include] all really old forest on [their] land" (INT, *16*).

The findings point to the fact that key biotope areas are perceived and used differently depending on the private sector actor in question. While it is no surprise that private forest owners are critical of key biotope areas as they often have higher stakes than larger forestry companies, the use of key biotope areas for certification by the forestry industry is nonetheless ironic, pointing to a tendency to hand-pick elements in forest management that suit these actors' needs.

This hand-picking by the forestry industry can be aligned with *Skogsstyrelsen's* blatant abandonment of their environmental goals. Public sector actors describe *Skogsstyrelsen's* change in their working methods as an example of how "forestry strategy has changed and how the forestry industry gets through with very strange things'' (INT, *6*). The climate movement has similar opinions (INT, *13*). *Skogsstyrelsen's* abandonment of key biotope areas registration is "hugely problematic", signalling a "completely different application and interpretation of [their] mission" and a "shift in exercise of authority" (INT, *13*).

The use and disuse of key biotope areas in relation to forest certification represents a clear shift in power in interactive governance. Initially, the registration of key biotope areas by *Skogsstyrelsen* could be considered in terms of power *of* interactive governance, where registration represented a capacity for joint action between forest certification, the private sector and *Skogsstyrelsen*, as well as the provision of scalability in that registration could be used by various actors within Swedish forest management. However, as *Skogsstyrelsen* ceased to register key biotope areas, power *of* has shifted to power *over*. While the registration of key biotope areas is perceived as important for some actors, others see it as limiting of their freedom to manage their own forests. Regardless of the different perceptions, the challenge to the protection of Old-growth forests ultimately relates back to how a fundamental actor within the interactive governance of forest management in Sweden goes against their own environmental goals. The agency of key biotope areas is thus arguably constructed in such a way to meet the needs of certain actors over others.

5.2.3 Indicator species

Indicator species and species diversity are crucial in determining whether a forest is valuable for protection or not. In some Old-growth forests where typical structures such as dead wood aren't present, "the species tell the story" (INT, *18*).

One plant species frequently mentioned in relation to protection is the orchid *Goodyera repens* (Goodyera, or *Knärot*) (see Figure 4). Considered a red-listed, vulnerable species (Naturvårdsverket, 2023b; SLU Artdatabanken, n.d) Goodyera is often used as an indicator for Old-growth forests. According to SLU's species database, ca. 68.300 finds of Goodyera have been reported across Sweden, with 13.467 finds reported in 2023 (SLU Artdatabanken, n.d). The presence of indicator species such as Goodyera can also prevent forests from being felled. Thus, it is also a species that highlights a rift in what is deemed valuable for protection.

Figure 4. The orchid *Goodyera repens* (Goodyera, or *Knärot*) represents a hot topic in the Swedish forest debate. (By © Hans Hillewaert, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=15778578)

Goodyera is often mentioned in media. Certain debate articles argue that Goodyera is neither unusual nor demanding of protection, but rather an effective weapon for activists to prevent forestry (Lindahl et al., 2024). Others stress how even if reports of Goodyera are numerous in Old-growth forests, it is nonetheless still threatened, as these forests will all soon be clear-cut (Nylander, 2024).

Unsurprisingly, Goodyera is thus associated with the involvement of the climate movement in forest management, especially in terms of preventing felling. One public sector actor points to how nature groups that "want to stop forestry and do everything they can to make things difficult for foresters'' go out and look for Goodyera as soon as a felling notification is available, "so they can stop the felling just to mess with the foresters" (INT, *7*). While Goodyera is considered a vulnerable species, the actor believes that it is "a common plant and easy to find in forests" (INT, *7*). A private forest owner shares similar thoughts on Goodyera's presence in forests and impact on management and protection. "It has become unmanageable. [...] If you know what Goodyera looks like and if you look for it, you will find it. But if you don't, you won't. You could say it is a bit inconspicuous [...]. There are [millions] of examples in Sweden, [thus] it isn't anything exclusive and unique but rather something common." (INT, *10*).

The fact that some perceive the environmental movement to be 'out there looking' is also mentioned by NGOs. One actor points to how this creates "a discrepancy in expectations" in the sense that an area may be considered valuable and contains red-listed species worthy of protection by both the environmental movement and the forestry industry, but that the latter can also deem the area suitable for harvesting. "There is a big discrepancy about what counts as primary forests and a big discrepancy about how natural value assessment is viewed." (INT, *1)*.

In terms of value assessments, the actor describes how the forestry sector uses natural value assessments to look for structures such as dead wood of different qualities to determine whether the forest is of an older nature. These assessments are in turn based on which structures are suitable for species and can be considered suitable habitats (INT, *1*). Here, indicator species such as Goodyera "can help along the way" (INT, *1*). However, the actor points to how there is no requirement to look for such species. It is in this context that the actor suggests the environmental movement differs, as "[the environmental movement] thinks that [indicator] species constitute biodiversity and if these are present, they are worth protecting" (INT, *1*). Actors from the environmental movement however suggest that indicator species aren't the only aspects considered when determining an area worthy of protection. In terms of the eco-park Karatj-råvvåive in Jokkmokk, forest history and archaeological and socio-cultural values are equally important in "trying to understand the overall picture of the forest" (INT, *13*).

This discrepancy and focus on indicator species have also been observed by researchers. The focus on threatened and indicator species is based on the idea to get away from counting stumps and instead use other indicators to identify forests worthy of protection (INT, *3*). Yet with the current disuse of key biotope areas, the role indicator species have in indicating valuable areas for protection seems futile, which in turn creates an obstacle for protection. The species discussion and the structures needed for biodiversity is instead used by certain actors to motivate forestry practices, specifically

clear-cutting, a silvicultural system in which all trees in a forest stand are removed, usually for commercial purposes (Puettmann et al., 2012) (Figure 5). This form of silviculture has been the main form of forest management in Sweden since the 1950s (Roberge et al., 2020), which in boreal forests results in a range of negative ecological effects (Dynesius et al., 2008; Piirainen et al., 2015; Pridacha et al., 2021; S.P. Sah & H. Ilvesniemi, 2007; Virkkala et al., 2023).

Figure 5. A clear-cutting in Södermanland county, Sweden. The stand to the left belongs to a nature reserve. (Author's own image).

Clear-cutting is described by an actor as "the most natural form of felling as it is the most reminiscent of fires, which is the forest's most natural form of regeneration" (INT, *7*). The actor explains how certain species thrive in intact old-growth forests, but how other species thrive in clear-cuts in the same way that species benefit from a fire. For example, bird species such as capercaillie and grouse thrive in open areas with sunshine, which clear-cuts provide. "Different forest environments favour different species" (INT, *7*). A private forest owner shares a similar thought. "I understand that [clear-cutting] disadvantages certain species. There are [certain methods] I can do as a forest owner to counteract this. But I can't prevent everything. Some species disappear from the forest and eventually return.

Other species think it's great that [the land] is completely open [with] no competition and lots of sunshine" (INT, *10*).

The current debate on Goodyera points to how indicator species are in reality not allowed to tell the story of Old-growth forests in Sweden. Instead, species have become a polarised topic, where one side strives to use them as a mechanism for protection but are met by the other side who uses them to lift perceived injustices and imbalances in how forest management works today. The purpose of indicator species is thus diluted, thereby creating an obstacle for the protection of Old-growth forests. Much like the power seen in terms of the agency of definitions of Old-growth forests, indicator species are also used as ideological and indirect power *in* interactive governance. The forestry industry, both private owners and larger companies, justify their actions by trivialising indicator species, which subsequently increases the discrepancy in whether forests as ecosystems or forests as resources should be valued.

5.2.4 The Swedish forest debate and the role of the EU

The challenges outlined above all point to how certain actors' interests, namely those stemming from the forestry industry, are met at the expense of the protection of Old-growth forests in Sweden. The question of protection is thus ultimately a question of who has power in Swedish forest management, and what interests and values are in turn consolidated. As one actor suggests, "there is a certain policy, a certain direction, a certain current that sits everywhere and affects [work towards protection]" (INT, *5*).

The 'poor, private and small' forest owner

While only two private forest owners were interviewed, the group they represent nonetheless dominated much of the discussion on where rifts in the Swedish Forestry Model exist and where the EU comes into play. One actor "gets personally quite annoyed when you run over small people", which they believe EU forest policies "are powerfully dedicated towards" (INT, *7*). "[People] have no understanding of [private forest owners'] love for the forest and the incredibly deep roots to the forest." (INT, *7*). Along the same lines, a private sector actor points to an emotional side of forests, stating "Sweden has the right of public access and a lot of people who are actually connected to the forest have an image of what the forest should look like" (INT, 2). Similarly, when discussing voluntary set-asides as a form of protection, a public sector actor stresses how permanent protection is ultimately based on landowners doing it voluntarily. "The change that has taken place in recent years makes it much clearer that [protection] is based on the landowners' voluntary participation." (INT, 12). The private forest owner is thus placed in the centre of the debate by certain actors, representing a unique element of the Swedish context that is threatened and should be supported.

The same sentiment is not shared by other actors in the public sector. One actor concerned with nature protection acknowledges how "the forestry debate [is centred around] poor, private, and small forest owners", and how this image is emphasised by certain political parties. The actor states how if land is protected, "[forest owners] get 125% compensation, i.e., more than 100% of the forest value. And if they still have the land, they can't cut down the forest, but they can keep the land [and] have their cabin there or hunt" (INT, *5*) In line with this, the actor points to a positive attitude among forest owners. "Despite this campaign that is running, [the attitude] is much more positive among private landowners nowadays [...] because they know they get paid well. Even though they have been, I dare say, indoctrinated with the idea that the worst thing that can happen is to get a nature reserve" (INT, *5*). In sum, "it is not difficult for them. The policy has changed. If they refuse, we can't protect" (INT, *5*).

Nevertheless, the private forest owner and their rights are used as a symbol for all things Swedish in a forestry context, specifically *Äganderätten* which certain actors believe EU forest policies threaten. By "weakening" *Äganderätten* through legislation on protection, forest owners are "scared" to have biodiversity in forests, "as the state will then force them [into formal protection]." "It is sad when the politics meant to protect nature has exactly the opposite consequences" (INT, *7*).

The narrative of the 'poor, private and small' forest owner is used to symbolise the discrepancy between Sweden and EU forest policies and to justify industry over protection. Coupled with recently proposed changes to *Skogsvårdslagen* relating to a strengthening of *Äganderätten* and greater emphasis placed on the voluntary aspect of protection, private sector actors attempt to grant more power *in* interactive governance to private forest owners. This in turn results in a skewed representation of the interests of forest management. Protection of Old-growth forests, as outlined by the EU, thus becomes framed as going against both the will and rights of Swedish forest owners.

The role of the forestry industry

The fact that private forest owners are lifted in the debate mirrors the greater challenge for the protection of Old-growth forests in Sweden, namely how economic interests are pursued through the power of the Swedish forestry industry.

The state of Old-growth forests in Sweden, specifically whether they are increasing or decreasing, can be seen as a means for the forestry industry to justify how they meet both the environmental and production goals of *Skogsvårdslagen*.

Within the private sector, there is a strong belief that while there is "a misunderstanding or an error in judgment that [there are] no old or natural forests left, [...] a lot of Old-growth forests are set aside already" (INT, *14*). Similarly, another actor states that there aren't any conflicts when they must decide whether to harvest Old-growth forests or not, as "almost everything that is over 100, 130 years

old has already been set aside" (INT, *16*). At the same time, the actor stresses how in relation to the "picture of an ongoing development where more of the old forest is utilised and disappears, we shouldn't forget that at the other end of the spectrum, there is an ingrowth of forests with values over time." (INT, *16*). The idea that a balance exists between an increase and decrease in Old-growth forests is further supported by an actor in the public sector. Speaking in relation to Ahlström et al.'s (2022) article, the actor stresses how *Skogsstyrelsen's* statistics point to how the number of Old-growth forests has been increasing during the last 20 to 25 years is a consequence of current Swedish management (Figure 3). The actor describes how saying Old-growth forests will disappear is "an example of where the wrong conclusions are drawn" and "very contradictory, [as] people complicate [the argument] when they use different concepts and maybe don't really know what they are talking about" (INT, *12*). This statement is in turn contradictory, seeing as there is neither a national inventory of the remaining Old-growth forests in Sweden nor any methods on how to map these forests set forth in Swedish forest policies.

This perceived balance between an increase and decrease in Old-growth forests is not shared by all actors within the public sector. One actor is especially critical of *Skogsstyrelsen*, *Riksskogstaxeringen* and the production of statistics pointing to an increase in Old-growth forests. "Anyone can see that it can't increase, because when you have clear-cutting in Old-growth forests, where do the new ones come from? It's impossible." (INT, *5*). The actor believes that some "statistical trickery" is in place when an old forest is defined by the age of 140 years old. "If it's 139 years old, then it's not old, but you can't see any difference between a 130-year-old forest and a 140-year-old forest." Age is just a number; if a forest is 139 years old one year, it will be 140 years old the next year, thus the number of old-growth forests will have increased. This, the actor says, is fraud (INT, 5). What more, the actor recounts that many forests have been cut in Sweden, specifically in northern Sweden, that forests are running out. "We have built up such a large forestry industry in Sweden that the forest is not enough" (INT, *5*).

The latter comment suggests that the production goal of *Skogsvårdslagen* is ultimately what is prioritised. This is emphasised through the private sectors' tendency to justify forest-based products as a 'sustainable' alternative to other products. "We can combine cultivation and preservation and generate forest products that are good for the environment as they replace fossil products or raw materials and fuels" (INT, *11*). Similarly, another actor states "we produce good products, what would we make paper out of otherwise? What would we build our houses with?" (INT, *10*). Alongside this, the 'sustainable' element of forestry is backed up by actors' striving towards more nature-oriented forestry (INT, *11*) and an incorporation of the three elements of sustainability into forestry (economic, social, and cultural) (INT, *18*).

Here, public sector actors, as well as researchers, again point to how only economic interests are pursued. "The Swedish attitude is that the forest must be used, as then it is worth money. When you create protection, you lock forestry [and] put a stop to it" (INT, *5*). Alongside this, other actors stress the urgency for protection of Old-growth forests. "We believe we are in the eleventh hour and that we are in a hurry. [Protection] is going too slowly while a lot of old-growth forests are disappearing" (INT, *6*). The forestry sector is like "a big mouth that just eats a lot of wood and spits out products." (INT, *5*). The wood is, however, not enough. "For nature conservation, the forest that you protect is removed, and [then allowed to be felled]. It has gone so far that we are fighting for every hectare" (INT, *5*). Researchers share similar thoughts. "The forest companies have over-felled, there is not much fellable forest left. That's why there is so much pressure on those last fragments of an old forest." (INT, *17*).

The forestry industry in Sweden manifests a great deal of power in interactive governance that all intertwine to consolidate the path dependency of the Swedish Forestry Model. Indirect power *in* interactive governance is manifested through the image of the poor, private and small forest owner for the forestry industry to maintain power *over* certain actors' views of the current state of Swedish forests. The clear strive towards and maintenance of the production goal in *Skogsvårdslagen* suggests the forestry industry's power *over* interactive governance is maintained in that their agency has been constructed in such a way that using forest resources is presented as the most viable solution. The flaw here, however, is that this solution has been stretched to the extent that Swedish forests, both young and old, are running out.

The question of the challenges for the protection of Old-growth forests in Sweden thus becomes a question of how these underlying power structures of the Swedish forestry industry and the overall path dependency of the Swedish Forestry Model are confronted by the influence of the EU.

Polarization and the EU

While certain actors are positive towards the EU and their forest policies, others have a more reticent view of the EU as meddling and misunderstanding of the ways of the Swedish Forestry Model, mirroring a reserved approach to the EU.

The EU and their environmental and climate policies are acknowledged by actors within forestry. "[There is] a responsibility to try to follow developments in the EU for what is applicable or important for [our company]" (INT, *16*). However, EU forest policies are often discussed in terms of what can and should be applied to a Swedish context. "This is an important question, how they should be defined in order to somehow be worthwhile or appropriate in Sweden." (INT, *12*). Another actor states how, in relation to deforestation and restoration directives, "we don't yet know where it will

end up in Sweden, so it's difficult to relate to. But what we understand is that it will be a major change for forestry and the forestry industry." (INT, *14*).

One actor suggests the *Biodiversity Strategy's* goals of protecting 30% of land of which 10% should be under strict protection "in the end feels like it can work for Scandinavian and Swedish conditions" (INT, *16*). Representing somewhat of an outlier, the actor has a generally positive outlook towards the EU. "Sweden has a voice in these discussions, so I don't see the EU as being completely insensitive. Sometimes in the Swedish debate, you hear how the EU doesn't understand what we are doing. It is not possible to reason that way as in the end EU legislation flies over everything else, which we must stick to. It is a democratic process" (INT, *16*). The same actor nonetheless suggests that there is a "fundamental difference in approach within the EU", stemming from "a division between the views found in forest-rich and forest-poor countries" (INT, *16*), of which Sweden undoubtedly belongs to the former.

This distinction between Sweden and other EU member states, specifically in terms of forests, is mentioned by other private sector actors. "What is important to us is that there will be national adjustments to the EU directives that will be translated into Swedish legislation and application. We do not believe that forests in Spain, Italy, or Greece should be managed in the same way as we do in Sweden and vice versa, so it is very important for us to adapt to Swedish conditions." (INT, *11*). The actor argues that "strict" requirements must be in such a way that they still allow for a forest industry in Sweden (INT, *11*).

Another actor suggests, "Nordic forests [are] very resilient. If you compare them with other European countries, the big difference is a land transformation from forest to infrastructure or agricultural land. We don't have a land conversion in any way" (INT, *2*). The same actor points to a polarisation in what the EU and Sweden strive towards, and where the responsibility ultimately falls. "If you think 25 years ahead, you would gain more by leaving forests. That is the argument for those who want something else". Those who want something else in this case are "other EU countries, [who] do not have the same economy of forestry at all." (INT, *2*). As such, small countries like Sweden are tasked with the responsibility of reaching the EU's environmental requirements (INT, *2*).

Unsurprisingly, private forest owners are also critical of the EU. One actor states how "it's so wrong when [the EU] gets involved because they talk as if [an old forest] were a rainforest, that natural values increase the longer it [gets] left alone" (INT, *9*). Another forest owner outlines how when Sweden joined the EU, they were under the impression that forestry would remain a national issue. "The EU has circumvented this by going by way of the environmental wave to not call [policies] forest management but instead call [them] environmental protection. We've been fooled into this, this is not what we voted for" (INT, *10*). In terms of other EU countries, the actor suggests "many of these countries [who] run these issues have destroyed their own forests, so it feels provocative that they

now come and have some thoughts on how we should handle ours". Clearly, there is a distrust from certain actors towards the EU in that unique, Swedish forests and the important economy stemming from forest-products will be disregarded in the face of protection.

As with many other cases with the challenges for the protection of Old-growth forests laid forth thus far, this distrust is not shared by all actors. The climate movement, for instance, is positive towards the EU while critical of the general Swedish attitude. One actor firmly believes there has been a shift from an already poor situation where *Skogsvårdslagen's* two goals aren't equal in practice, thus "we have to put hope on the EU as there is such poor support for nature conservation in Swedish legislation" (INT, *13*). Another actor outlines how the EU's demands are the reason why Sweden joined in the first place. With Sweden as a member, "the EU would become more democratic and environmentally friendly", thus the rejection of the EU's demands is simply "backwards" (INT, *15*).

Public sector actors specifically working with nature protection express a similar outlook towards the influence of EU. Yet one actor stresses how the EU requirements "get stuck in the Swedish government and the Swedish politicians that work on behalf of the Swedish forestry industry". The forestry industry has incredible power and influence, suggesting "there is no other lobby group that has a greater influence on politics in Sweden" (INT, *5*). Similarly, another actor working with nature protection states how they are "very much in favour of the EU running a tough or ambitious environment and climate programme" (INT, *6*). Much like the previous actor, there is a belief that "those who think the EU is interfering are the ones who earn money from forests and have an incentive to say that [protection] is better than what it [actually] is" (INT, *6*).

A researcher outlines how the EU is gaining more influence over Swedish forest policy with their environmental and climate policies concerning forestry. "The EU and [their] policies come in and affect the Swedish forest policy through the back door", as Sweden is legally obliged as a member state to somehow relate to these different strategies and legislative proposals (INT, 3). Nevertheless, the expert suggests, the response from Sweden has been "lukewarm", with Sweden ultimately claiming their right to decide for themselves what Swedish forest policy should look like (INT, 3).

The power of the EU in the Swedish forest debate depends on the actor in question. As outlined above, some actors are positively inclined towards the EU and their forest policies, while others are more critical. However, the power of the EU is arguably weak in interactive forest governance. This is seen not only in how Swedish forest policies haven't incorporated the EU's definitions, mapping and protection of Old-growth forests into their policies, but also in the distrust towards the EU and the perceived threat they pose to Sweden's path dependency in forestry. Here, the findings point to a dichotomy of being a member of the EU while wanting to keep the EU at an arm's length in terms of forest management. As such, power and governability of the EU are undermined by the influence of the Swedish forestry sector and the economic interests ingrained in

Swedish forest management, inevitably magnifying a discrepancy between Sweden and the EU and a major challenge for protection of Old-growth forests.

Thus, it is contradictory when certain actors in the forestry sector state how important the EU is and how their influence will be a major change for forestry. While this may be the case in the long-term, which other actors would favour, the current state of forestry and protection in Sweden suggest that the forestry sector and their economic incentives currently go before anything else.

5.2.5 Summary of findings for RQ2

The challenges for the protection of Old-growth forests in Sweden are broad and concern a range of elements in forest management. However, in one way or another, they all stem from the fact that certain actors, certain interests, and a certain agenda relating to interests of the forestry industry are consolidated.

The Swedish Forestry Model maintains a path dependency rooted in economic incentives to use the forest as a resource through manifestations of power in interactive governance. Power shifts *in*, *of*, and *over* interactive governance place the interests of private sector actors concerned with forestry at the forefront of the Swedish debate, at the expense of the protection of Old-growth forests in Sweden. The EU's power and governability are thus currently undermined, and the values of Old-growth forests as unique ecosystems are overshadowed by their value as a resource.

6. Reflection and Conclusion

The Swedish forest debate is an incredibly multifaceted, emotionally charged issue, extensively exemplified by the wide range of replies given by the interviewees. By looking at the challenges for the protection of Old-growth forests, I shed light on the structure of The Swedish Forestry Model and the various discrepancies between actors involved in forest management. As I conducted my research, I quickly came to realise that the question of the protection of Old-growth forests in Sweden is much more than just formal protection and forest policies.

Wishing to contribute to sustainability science by highlight a small yet significant part of forest ecosystems, this thesis explores the challenges for the protection of Old-growth forests in Sweden. Through a literature review exploring how the EU and Sweden define and protect Old-growth forests, the findings suggest an almost intentional omission in Swedish forest policies of formal measures for mapping and protecting these forests in Sweden. Placed alongside 18 interviews with actors and stakeholders involved in forest management, the challenges for the protection of Old-growth forests become concrete. The interviewees elucidate the many different interests and stakes at heart in Swedish forest management, which results in polarised opinions and priorities. Through my theory on interactive governance stemming from political ecology, I attempt to investigate where the 'hatchet' and the 'seed' are in Swedish forest management by analysing the power structures in interactive governance. I find that the 'hatchet' undoubtedly lies in the discrepancies between Sweden and the EU. The 'seed', however, is less easy to distinguish. For certain actors, the 'seed' lies in the EU's environment and climate policies relating to forest management, yet for others, they represent challenges.

The indirect effects on Swedish forestry management by the EU's involvement in forests have charged the forestry debate in recent years and brought it to a head. While the forestry industry has always hidden behind their epistemic authority in the Swedish Forestry Model and the lack of a common forest policy in the EU, the EU's recent environment and climate policies relating to forest management rattles this safety net. The ownership structure and emotional ties to forests enhance the fact that forests in Sweden have become a contentious ground where the conflict of goals relating to how they are viewed in either an environmental or an economic context creates a tough situation for their protection, especially vulnerable Old-growth forests.

Ultimately, the question of the challenges for the protection of Old-growth forests becomes not only a question of power in interactive governance, but also of the challenges within interactive governance. The Swedish Forestry Model is a clear example of interactive governance where a variety of actors work together to govern. However, the influence of certain actors stemming from the forestry sector over others suggests an imbalance in governance. Thus, a power balance is

arguably needed in order to ensure both protection and Sweden's need for production. While the current path dependency of Sweden suggests it will never fully abandon forestry, in order to meet EU forest goals and ultimately protect important ecosystems in need of attention, a more nuanced approach to interactive governance is key.

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8. Appendix

8.1. Example of questions for semi-structured interviews, in English and Swedish

8.1.1 English

1. How would you and your organisation or affiliation define what the EU refers to as "primary and old growth forests", or what can broadly be defined as "Old-growth forests"?

2. What are your methods for mapping these forests and are there any challenges with this? Do you work with other actors? If so, what does this work look like?

3. What does your work with protection look like and are there any challenges with this? Do you work with other actors? If so, what does this work look like?

4. How do you and your organisation or affiliation balance sustainable production and biodiversity and are there any challenges with this? Do you work with other actors? If so, what does this work look like?

5. How do you and your organisation or affiliation perceive and work with the new EU climate policies concerning forests and forestry and are there any challenges with this?

8.1.2 Swedish

1. Hur skulle du och din verksamhet definiera det som EU refererar till som "primary and old-growth forests", eller vad som i stort sett kan definieras som "äldre skog"?

2. Vilka är era metoder för att kartlägga dessa skogar och finns det några utmaningar med detta? Arbetar ni med andra aktörer? Om så är fallet, hur ser detta arbete ut?

3. Hur ser ert arbete med skydd ut och finns det några utmaningar med detta? Arbetar ni med andra aktörer? Om så är fallet, hur ser detta arbete ut?

4. Hur balanserar och din verksamhet hållbar produktion och biologisk mångfald och finns det några utmaningar med detta? Arbetar ni med andra aktörer? Om så är fallet, hur ser detta arbete ut?

5. Hur uppfattar och arbetar du och din verksamhet med EU:s nya klimatpolitik gällande skog och skogsbruk och finns det några utmaningar med detta?

8.2. Table of the description, mapping and protection strategies of Old-growth forests as outlined in the EU's and Sweden's forest policies.

Literature	Origin	Description of Old-growth forests	Mapping	Protection
National Strategy for the Formal Protection of Forests (Nationell strategi för formellt skydd av skog) - 02/2017	Sweden	Old-growth (*Naturskog*) = forest that has been unaffected by humans for so long that it has acquired the characteristics (tree structure, species composition, etc.) similar to primeval forests (p.64). Primeval forest (*Urskogsartad skog*) = forests that have properties and structures that have developed primarily under the condition that natural processes such as wind, water and forest fires have been allowed to occur undisturbed for a sufficiently long time; characterized by	No specific mention of how to map Old-growth forests.	"Forests with high conservation values must be protected from felling" (p.14) The state's and state-owned companies' responsibility to complement formal protection of such forests with voluntary set-asides. (p.20)

		different species ages, patchiness and great structural variation. The amount of dead wood present is typically high. Other common features include various types of trees in varying sizes, various moisture levels and the presence of natural stumps and broken tree trunks. In forests that have previously been burned or extensively farmed, such as dry and pine-dominated forests, dead wood is scarce, thus tree age and continuity may instead give an indication of the natural values (p.66).		
Sweden's Environmental Goals (Miljömålen) - 2018	Sweden	No specific description of Old-growth forests.	No specific mention of how to map Old-growth forests.	"The value of the Forest and forest land for biological production must be

				protected at the same time as biological diversity is preserved and cultural environmental values and social values are protected." (p.20)
National Forest Program (Strategi för Sveriges nationella skogsprogram) - **17/05/2018**	Sweden	No specific description of Old-growth forests.	No specific mention of how to map Old-growth forests.	"The state is responsible for formal protection such as nature reserves, nature conservation areas and biotope protection. Landowners and the forestry industry, on their own initiative, exempt certain lands with high conservation values from timber production or adapt management to take these values into account" (p.8) "The government has a clear ambition that forests worthy of protection should

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				not be felled but preserved, either through formal protection or voluntary allocations, and that environmental considerations in forestry should increase." (p.14)
Swedish Forestry Act (Skogsvårdslagen) - **02/2023**	Sweden	No specific description of Old-growth forests.	No specific mention of how to map Old-growth forests.	No specific mention of how to protect Old-growth forests.
EU Biodiversity Strategy for 2030 - Bringing nature back into our lives - **05/2021**	European Union	No specific description of Old-growth forests.	No specific mention of how to map Old-growth forests.	The target to protect at least 30% of EU land area, out of which 10% should be under strict protection, concerns primary and old-growth forests specifically in that they will have to be strictly protected, as their cover is generally small and fragmented (p.11).
New EU Forest Strategy for 2030 - **16/07/2021**	European Union	No specific description of Old-growth forests.	Stresses the "immediate need to map the	"All primary and old growth forests, in particular, will have

			primary and old-growth forests and establish their protection regime, including increased efforts to protect the primary forests in outermost regions and overseas territories of the Union, given their exceptionally high and unique biodiversity value." (p.11). "Member States should urgently engage in completing the mapping and monitoring of these forests, and ensuring no deterioration until they start to apply the protection regime." (p.11)	to be strictly protected." (p.11) Stresses the "immediate need to map the primary and old-growth forests and establish their protection regime, including increased efforts to protect the primary forests in outermost regions and overseas territories of the Union, given their exceptionally high and unique biodiversity value." (p.11). Prohibiting the sourcing of forest biomass from primary forests (p.8).
Commission Guidelines for Defining, Mapping, Monitoring and	European Union	Primary forests = 'naturally regenerated forest of native tree	Remote-sensing data could be used for pre-screening	The policy underlines that many strictly protected areas will

*Strictly Protecting EU Primary and Old-Growth Forests - **21/03/2021***		species, where there are no clearly visible indications of human activities, and the ecological processes are not significantly disturbed.' (p.6) Old-growth forests = forest stand or area consisting of native tree species that have developed, predominantly through natural processes, structures and dynamics normally associated with late-seral developmental phases in primary or undisturbed forests of the same type. Signs of former human activities may be visible, but they are gradually disappearing or too limited to significantly disturb natural processes. (p.7)	potential areas, combined with in-situ data and modelling techniques. The policy calls for the coordination of mapping at a national level to ensure consistency and comparability (p.12).	be non-intervention areas. Only limited and well-controlled activities that do not interfere with natural processes will be allowed. Such activities may include scientific research, natural disaster prevention, control of invasive alien species and controlled recreational activities. In practice, productive forest management regimes are to be excluded from primary and old-growth forests. (p.14)

Consolidated text of the LULUCF Regulation (EU) 2018/841 - 11/05/2023	European Union	No specific description of Old-growth forests.	No specific mention of how to map Old-growth forests.	No specific mention of how to protect Old-growth forests.

8.3. List of question and non-question specific codes and screenshots from Computer Assisted Qualitative Data Analysis Software (CAQDAS) NVivo 14 (NVivo 14)

8.3.1 Question specific codes, top-level codes

- Question 1: Definitions
- Question 2: Mapping
- Question 3: Protection
- Question 4: The Swedish context
- Question 5: The EU

8.3.2 Non-question specific codes, top-level codes

- Case study: Karatj-råvvåive
- Ownership of forests
- Key biotope areas

8.3.3 Screenshots of top-level question and non-question specific codes in Swedish from NVivo 14

Name	Files	References	Color	Created on
> ◯ Ägande av skog	1	2	●	18 March 2024 at 11:21
> ◯ Case Study	1	1	●	27 March 2024 at 11:09
◯ Nyckelbiotoper	11	31	●	18 March 2024 at 15:26
> ◯ Q1. Definitioner	1	2	●	18 March 2024 at 10:54
> ◯ Q2. Kartläggning	0	0	●	18 March 2024 at 11:09
> ◯ Q3. Skydd	0	0	●	18 March 2024 at 12:57
> ◯ Q4. Svenskt kontext	0	0	●	18 March 2024 at 13:28
> ◯ Q5. EU	3	3	●	18 March 2024 at 10:52

Figure 6. A screenshot of the top-level question and non-question specific codes from NVivo 14.

Name	Files	References	Color	Created on
> ◯ Ägande av skog	1	2	●	18 March 2024 at 11:21
> ◯ Case Study	1	1	●	27 March 2024 at 11:09
◯ Nyckelbiotoper	11	31	●	18 March 2024 at 15:26
∨ ◯ Q1. Definitioner	1	2	●	18 March 2024 at 10:54
◯ Ålder och struktur	12	20	●	18 March 2024 at 10:58
◯ EUs förordningar o...	6	12	●	18 March 2024 at 11:01
◯ Konflikter	11	16	●	19 March 2024 at 10:38
◯ Naturvärden	11	22	●	18 March 2024 at 10:58
◯ Ordval	17	41	●	18 March 2024 at 11:00
◯ Värderingar	11	14	●	18 March 2024 at 14:40
> ◯ Q2. Kartläggning	0	0	●	18 March 2024 at 11:09
> ◯ Q3. Skydd	0	0	●	18 March 2024 at 12:57
> ◯ Q4. Svenskt kontext	0	0	●	18 March 2024 at 13:28
> ◯ Q5. EU	3	3	●	18 March 2024 at 10:52

Figure 7. A screenshot of the top-level question and non-question specific codes and the codes under *Q1. Definitioner* (Definitions) from NVivo 14. The codes concern age and structure, the EU's regulations and laws, conflicts, natural values, word choice and other values, respectively.