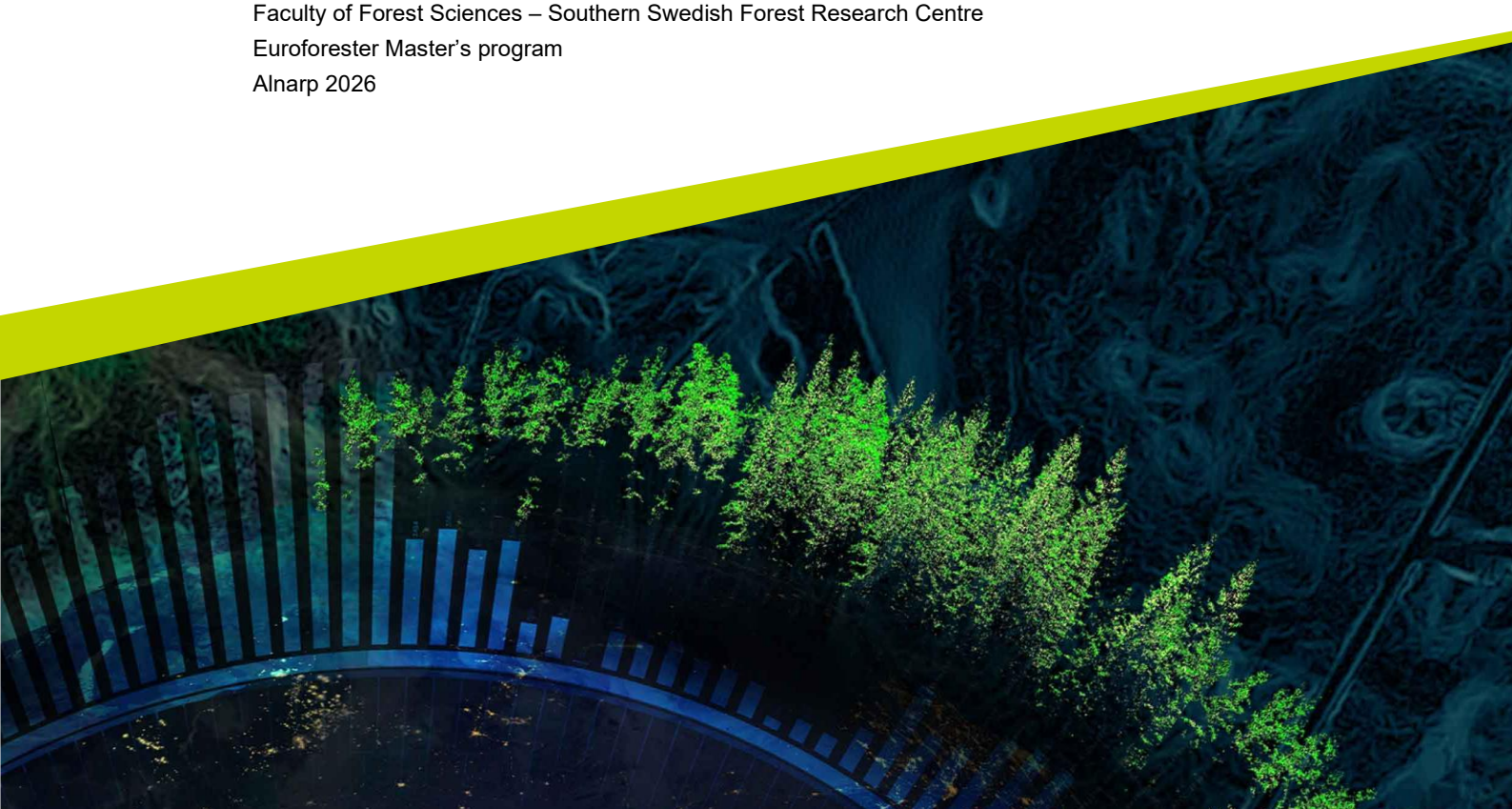
# Practicing Clearcut-Free

## (Re)configuration and Embeddedness of Private Forest Management in Sweden

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Swedish University of Agricultural Sciences (SLU)
Faculty of Forest Sciences – Southern Swedish Forest Research Centre
Euroforester Master's program
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# Practicing Clearcut-Free. (Re)configuration and Embeddedness of Private Forest Management in Sweden

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# Abstract

Swedish forests are predominantly managed by rotational forestry in monocultures. This management approach dominates as an industrial paradigm oriented toward economic optimisation and comes with implications for the socio-ecological landscape. Private forest management constitutes an element of this paradigm, due to the provision of materials to industries, the consumption of advisory services coupled to these industries, and the utilisation of machinery. Yet a few scattered private forest owners enact through local situated practices clearcut-free forest management. Illuminating these practice accounts creates understanding on what clearcut-free management is as a set of practices. In this thesis, I investigate what clearcut-free forest management constitutes in practice. This is to understand how practices interact in complexes in the wider social settings they are embedded in. I do so by drawing on social practice theory undertaking a secondary analysis of 25 practice accounts of private forest management performing clearcut-free management in Sweden. Interviews with private forest owners, sampled using a snowballing approach, were analysed in three coding steps. In these 1) data was inductively coded dismantling interview narratives, 2) practices were reconstructed, and 3) patterns of shared elements and complexes investigated as their reconfiguration of private forest management and embeddedness in wider settings. The analysis shows that it is not solely alternative silvicultural methods, but a reconfiguration of conventional private forest management. Two configurations are identified; i) *partial estate clearcut-free management*, emerging opportunistically in response to disturbances or testing-oriented in particular areas of a holding, and ii) *whole-estate clearcut-free management* rearticulates a rethinking of how forest is planned, managed, and worked. Across both configurations, established industrial practice elements, relationships, and economic meanings are reproduced. The here investigated clearcut-free management practiced in the private sphere is not understood as a departure from the industrial forestry paradigm, rather conventional practice elements are selectively retained and/or modified. It also includes forest owner pro-activeness, practical know-how, peer-based learning and legitimising, and reconfigured relations to advice. Peer networks can contribute to the reproduction of the practice through knowledge exchange, material examples and a sense of belonging, while trusted individual advisors can help owners to translate their visions into practice. Overall, clearcut-free forest management represents a partial reconfiguration of conventional private forestry strongly remaining embedded in the materials and meanings of the industrial forestry complex in Sweden. A few scattered private owners actively negotiate what meaningful clearcut-free forest management can be. This is investigation is a first step in dissecting alternative practiced forestry in Sweden. More research looking at actual practiced realities is needed.



*Keywords:* non-industrial private forest owners, hyggesfritt, continuous cover forestry, close-to-nature forestry, social practice approach

Common sense is a chaotic aggregate of disparate conceptions, and one can find there anything that one like.

*Antonio Gramsci*

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# Abbreviations

| | |
|---|---|
| AFM | Alternative Forest Management |
| CCF | Continuous Cover Forestry |
| EU | European Union |
| EUDR | European Union Deforestation Regulation |
| FOA | Forest Owner Association |
| NTFP | Non-Timber Forest Product |
| NIPF | Non-Industrial Private Forest |
| SPT | Social Practice Theory |

# 1. Introduction

Swedish forestry is dominated by an industrial paradigm prioritising economic optimisation through economies of scale based on rotation forestry in large-scale monocultures. This paradigm shapes forest management across large industrial holdings and privately owned forests (Ekström Pigot 2026). Despite its economic success, it is increasingly challenged by evidence that extensive clear-cutting and simplified forest structures with little regard to ecosystem functioning and ecological resilience thinking contribute to habitat fragmentation and a decline in biodiversity (Felton et al. 2022; Kyaschenko et al. 2022). Private forest owners collectively hold around 50% of Sweden's productive forest land, making it important to investigate what is practiced on these.

A changing context challenges the sustainability of this industrial enterprise. The ecological degradation through large-scale monocultures is foundation for ongoing conflicts in Sweden on different scales between intensive timber production and biodiversity conversation (Angelstam et al. 2018; Naumov et al. 2018), and its resilience capacities to future climate uncertainty is questioned (Lundmark et al. 2014). Climate change increases risk of drought stress, storm events, insect outbreaks, and wildfires in European forests, including Sweden, where these disturbances may interact and amplify their cumulative impacts (Seidl et al. 2017). Simultaneously, evolving EU strategies on climate and biodiversity efforts, including EU Biodiversity Strategy for 2030, the Nature Restoration Regulation, and the Deforestation Regulation (EUDR), pressure the Swedish forest sector and its actors, and thus forest management from the local to national level. With this changing context, there is increasing interest in alternative forest management approaches in private forest management which are thought to better align with these policy changes and to better meet future uncertainty.

Avoiding clearcuts and retaining forest cover may support forest residence under future conditions (Felton et al. 2022; Kiisel & Remm 2022). In academic and policy context, these approaches are referred to as continuous-cover forestry or close-to-nature forestry. Among practitioners, the ones managing forests through physical measures, these concepts are mainly referred to as clearcut-free *hyggesfritt*. *Hyggesfritt* translates to clearcut-free. It defines management by what it avoids, creating large and open land bits, *hyggen*. It is an apophatic term, a negation, defining itself by saying what it is not. This leaves room for interpretation. This space of what it means doing *hygesfritt*, is what this thesis intends to illuminate. According to the Swedish Forest Agency *Skogsstyrelsen* (2026), clearcut-free management *hyggesfritt skogsbruk* refers to forestry in which the landowner intends to manage the forest continuously without clear-cutting in which the forest remains

continuously tree-covered, with trees at least 10 m tall and stand density above the threshold specified by the Swedish Forestry Act, while avoiding larger clear-cut areas (maximum 0,25-hectare cuttings). Limited exceptions apply to gap-cutting and retention systems, provided that specified limits on gap size, stand density, and regeneration are maintained (Skogsstyrelsen 2026a).

Existing research has identified what motivates clearcut-free management and barriers to its implementation. Mapped motivations are primarily of environmental kind as maintaining biodiversity and adapting climate resilience, and of socio-cultural kind in the form of family traditions, aesthetics, and recreational values. Perceived benefits are enhanced ecosystem services as possible carbon sequestration, water regulation, and habitat preservation, together with higher-quality timber and non-timber forest products (Stryamets et al. 2026). Constrains for early adopters of clearcut-free management are socio-cultural norms stigmatising practicing alternatives to the clearcut paradigm (e.g. neighbours), limited advisory service due to streamlined forestry education and professional culture reproducing a shared clearcut-oriented view. Thus there is little provision of technical competence and/or advice support for clearcut-free silvicultural methods (Hertog et al. 2022). Constraining are as well underdeveloped value chains for high-quality timber while markets favour clearcut-based production. This is that industrial networks, timber buyer routines, and market specifications are set to medium-sized logs in a bulk industrial model where a corresponding demand affords simply extracted medium-sized stems from even-aged stands managed in rotations (Hertog et al. 2022; Dawson et al. 2025; Stryamets et al. 2026). This shapes the current conditions in Sweden perceived as a strong presence of a locked-in regime hanging on to its own standards making clear-cut free forest management alternatives not yet capable transitioning and applicable (Dawson et al. 2025).

Several studies use transition theory and a multi-level perspective (MLP) to explain why clearcut-free remains a niche (Hertog et al. 2022; Dawson et al. 2025; Stryamets et al. 2026). This is due to regime lock-ins, norms, and institutional barriers. However, there are different stories told when referring to what is perceived and what is practiced. Social practice-oriented work shows that private forest management behaviour overall is shaped through everyday practices, e.g. trust-based relations (Wallin 2017), having an emotional and material entanglements with the owned land (Lodin & Brukas 2021), or choosing what tree species to plant (Lodin et al. 2017). Despite this, there is little scientific work that uses a practice-based approach or social practice theory lens analysing clearcut-free forest management as a distinct configuration of practices in Swedish private forestry. . To do this in a fruitful way, it needs going beyond individual rationalities and neo-institutional norms and believes (Arts et al. 2014), dissecting the

complexities of social life. This is especially important with the investigated matter circulating in an arena where discourse is shaped by misunderstandings, disagreements on definitions (Brunner et al. 2025), and different viewpoints driven by opinion rather than facts (Jakobsson et al. 2021) in what e.g. a resilient forest is or what forests can contribute to society. We know enabling motivations and constraining factors for clearcut-free implementation, but we know relatively little on what clearcut-free management is as a set of lived practices among private forest owners in Sweden.

This thesis addresses this gap here by changing focus and moving knowledge beyond 'barriers versus enablers' to a practice-based account of how clearcut-free is done. Thus, allowing for a detailed theorisation of what continues and what changes private forest management when doing clearcut-free. For policy and advisory recommendation, understanding concrete materials, skills, and, meaning and how these are shared between practices constituting clearcut-free management can inform targeted support and regulation (Sutherland & Huttunen 2018). This is that "policies can shape practices by intervening in the availability and flow of materials, creating opportunities to build competences and (to some degree) shaping the meanings associated with practices" (Sutherland & Huttunen 2018:42). A practiced-based approach is capable of producing comprehensive descriptions of how forest management and environmental policies are enacted in practice (Krott & Giessen 2014), which is of importance when it comes to analysing forestry practices deviating from conventional and regime practices. There might be different understandings in how science and policy frame clearcut-free forest management and actual how clearcut-free forest management is done in practice. To look at lived realties might open for experiences and different entry points to how academia or legislative bodies develop concept or policy around clearcut-free forest.

There are practitioners out there, beyond the walls of the academic stronghold, somewhere in the Swedish forests practicing forestry differently. This investigation attempts to illuminate some of these practices to understand what meanings, competences, and materials they share, and what critical points of intersection are where practices embedded within wider settings are enacted. This is that clearcut-free approaches are practiced within a forestry sphere whose infrastructure, knowledge systems, and economic incentives, are aligned with and maintained by industrial norms and institutions (Hertog et al. 2022; Dawson et al. 2025).

## 1.1 Aim and research question

I aim to understand how clearcut-free forest management reconfigures private forest management in Sweden. Drawing on Social Practice Theory (SPT), I

investigate practices and practice complexes through which clearcut-free forestry is performed, the materials, competences, meanings constituting them, and how these are reconfigured in relation to conventional clearcut-based management. I investigate these related practices in wider settings. To do so, I ask these research questions;

(1) What social practices constitute clearcut-free forest management performed by private forest owners in Sweden?

(2) What are key shared materials, competences, and meanings constituting private clearcut-free forest management?

(3) What settings afford opportunities for, and intersect with, clearcut-free forest management and related practices?

## 1.2 (De)limitations and Positioning

This investigation focuses on private forest owners throughout Sweden who self-identify as practicing or experimenting with clearcut-free approaches. Ecological impacts nor macro-level policy analysis are not assessed. Also, this investigation is a secondary analysis from already collected data. I did not collect any of the data I analysed which has been a limitation. The analysed dataset however made it possible to investigate a greater amount of practice accounts of clearcut-free management within the time period of this thesis.

Clearcut-free forest management, whatever form it may take, is a possible pathway toward more resilient ways of management under future environmental change. This does not stem from the idea of 'having more eggs in the basket' to sustain a monetary baseline to be satisfied, but rather from a different deriving point. Clearcut-free forest management, if applied in an ecological resilient way, is an approach that places continued functioning and thriving of forests ecosystems at the centre of management.

Ontologically, I understand that forest management is socially but also materialistically situated and related, as it is orchestrating ecology. I understand the enterprise of forestry as socio-techno-ecological doings in different scales for managing ecological resources of system earth to direct production towards projected economic outcomes. With economics I do not solely refer to monetary returns where ecological transformation and impact are externalities. I think it is the human enterprise who orchestrates ecology, at least when it comes to Swedish landscapes containing trees, therefore there is need to investigate the doings of the socio-sphere. It is the technological advancement that developed along social

processes that e.g. accelerates extraction rates but also creates possibilities as improved plant material. And it is ecology, the study of our home, that needs to be deriving point for the study of the management of our home, economics. All these aspects are related. Dissecting these interrelations, producing episteme, is by interpreting how practitioners make sense of, justify, and enact private (clearcut-free) forest management. Doing so, it needs a reflexive awareness of the one analysing; I am also shaped by my context being a forestry student situated in an academic field, forestry science, which has and partly is contributing to a professionalisation of the forest sector.

Thus, it is important to outline that forestry is a multi-disciplinary field which is organised in themes instead to be problem oriented. This makes boundaries between disciplines being not or seldomly crossed; rather multiple disciplines are parallelly considered (Haider et al. 2018). This means that natural science and social science approaches are practiced in this multi-disciplinary forestry field, mainly separated from each other. Addressing this the gap between traditionally siloed scientific fields within forestry science, this thesis adopts a cross-disciplinary approach that necessitates strategic repetition/redundancy and multiple framings ensuring a broader accessibility.

# 2. Theoretical underpinnings

Investigating the dynamics of practices through which clearcut-free forestry and forest management are performed, I lean on Social Practice Theory (SPT). A relational framework that understands the social as constituted by shared, embodied, and normatively guided human activities. The analytical focus is on performed everyday practices and the conditions under which these can endure. In this way I ought to explain everyday behaviour, which is basis to being a forest owner and manager and its influences by shared and routinised activities. With the understanding that behaviour is indivisible rooted to societal doings and structures, it on the one hand can explain why habits change or do not change. On the other hand, SPT can give insights into the relation between practices and the social settings these are embedded in. This can help to map how e.g. access to materials or skills orchestrates why some can practice a certain practice and others cannot.

## 2.1 A pragmatic take on SPT

Pragmatism understands reality as dynamic, in flux, as an interactive process (Dewey 2008). Reality, whatever this might be from the beginning, exists somewhere between acting bodies and the environment that surrounds these acting bodies (Mays 1952). A relational understanding. Knowledge then is developed through practical engagement with the world (Dewey 2008; Rorty et al. 2009). Knowledge is considered provisional and situated in a certain context; explanations, where knowledge is a starting point for, are judged by how well they help to understand and engage with real-world problems rather than by a claim to represent an ultimate truth (Peirce 1878).

I dissect here private forest owners' doings of kinds of clearcut-free management; dissecting what they do, how they do it and what might be the reasons for it. This reflects a pragmatic take on social practice theory, in which practices are approached through their situated enactment and the conditions that make particular ways of doing possible or difficult. To see how their doings and sayings interact with materialities and the socio-ecological environment these are situated in, a pragmatic analysis.

I argue, since I apply a practice approach to understanding private forest(ry) requires consideration of the temporal character of forest management. This is that many management activities are not performed on a daily, sometimes yearly basis. Harvesting may occur only at relatively long intervals, while interactions with advisors and/or machine operators may occur occasionally. However, these practices can be sustained through the continued accessibility of their constituent

elements and through the know-how of their carriers. I do not equate practice solely with its immediate performance, a daily routine. I give attention to how the availability and accessibility of practice elements influence private forest owners to perform a practice when required. Practices are maintained across time through continued embodiment, accessibility, and reproduction in very different temporal dimensions. However, a common conceptualisation of social practices is through the notion of doings and sayings (Schatzki 2009; Brand 2010; Spaargaren 2011; Shove et al. 2012). Through their repeated performance, these doings and sayings reproduce and sustain social practices. Theory thus emphasises that such performances are rather embodied than actively and rationally chosen by an individual. As embodied, I understand a continuation of being able to perform a practice when needed, retrievable so to say.

## 2.2 Social Practice Theory (SPT)

### 2.2.1 Ontological and epistemological insights of SPT

SPT implies a relational understanding of reality, focusing on how things are connected and interact with each other, thus making sense of social phenomena. Practices are the basic unit of the investigation. Practices are routinely performed activities that are not deeply questioned but rather performed. Practices are fluid and its elements are constantly in flux evolving as the social enterprise continues. People act within social spheres, therefore social practice. This approach to understand and dissect the social phenomena of people practicing life in all its shapes has developed over the last four decades with contributions from several theorists.

Social practices are linked through shared understandings between people (Reckwitz 2002). Practice is then defined as a routinised type of behaviour, as configurations of interconnected elements. These include the use of material things, bodily and mental activities, background knowledge and know-hows, but also emotions and motivations. This means that the different forms of knowledge are embodied and practical, acquired in a tactic way through experience rather than from instructions. The human body is thus a trained carrier of a practice's routine. The individual mind is decentralised; mental activities as e.g. thoughts are tied to thinking patterns and believes, are understood as components of a practice itself. Material objects are important since these technologies and physical things are integral to practices, they are the things through which, partly, knowledge is gained through. A practice should not solely be understood as a habit or execution of action, but as a shared way of doing and existing, integrating these elements. Therefore, materiality, things and their use, is foundational to SPT since practices

cannot exist without these; objects and people's performances are interdependent. Desires and emotions are understood to be not solely internal, these are directed and influenced by the external social expectations which are tied to routines. This means a practice has internal goal(s) and motivation(s) leading emotional tones appropriate to a certain practice experienced in a person.

These practice elements are thus enacted and reproduced over time by different people carrying and performing a practice. The understanding of social is that its order emerges because a plurality of people enact similar practices and thus shared and recognisable. This reproducing of practice leads to social orders being persistent and with it its norms, institutions, and meanings. Therefore, Reckwitz (2002) argues that it is practices that are the primary building block of social life, and not institutions, attitudes, or choices and decisions.

Following Shove et al. (2012) and their translation of Reckwitz (2002) into a applicable theory approach, social practices consist of three interdependent elements. The theoretical deriving point is that a practice sustains when its elements remain linked. A practice is transformed when one or more of the elements changes. The elements that constitute a practice are:

(i) Materials → include physical or organisational matter, things ranging from technical infrastructures, natural resources to biological entities as a human body
(ii) Competences → include implicit and explicit knowledge, skills that are embodied, routines that are capable to perform
(iii) Meanings → refer to beliefs and convictions that have become self-evident and give foundation that things are done in certain ways

Shove et al. (2012) also distinguishes between (a) practice-as-entity which understands practice as recognisable delimitation, thus a convenient foundational unit for research, and (b) practice-as-performance, its enactments by individuals. A (a) practice-as-entity is the phenomenon that people recognise. It is the interconnected elements that make it to what it is. This entity of analysis is rather stable since it is reproduced of many performances enacted by practitioners. The (b) practice-as-performance is the actual enactment of a practice by a particular person in a particular place and at a particular point of time. This makes each performance unique since it occurred under specific circumstances. This differentiation into these two nuances, which are mutually dependent, is important because a performance reproduces but sometimes can modify a practice. One can say that (b) holds (a) alive. This distinction makes analysing practices accessible and concrete; data bits of (b) practice-as-performance are collected through e.g.

interviews and observations lying the foundation to reconstruct (a) practice-as-entity by identifying recurring configurations of materials, competences, and meanings across these collected performances. This allows for explanation not only of what people did in some places at some point of time, but to get insights how the underlying practice is organised. This in turn allows to understand the elements of a practice and how these might be changing, be able to develop, or to be reproduced.

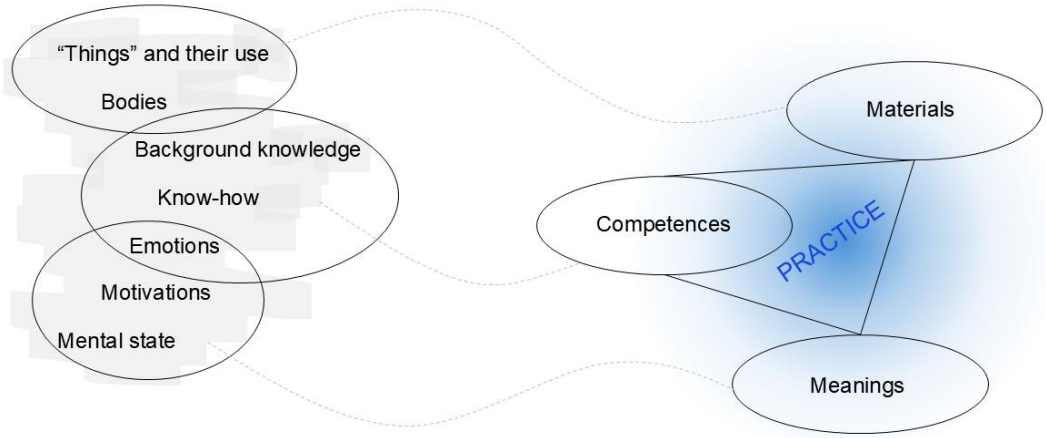



*Figure 1. From Reckwitz (2002) to Shove et al. (2012); from shared understandings to practice elements. My interpretation.*

Schatzki (2009; 2017) argues that practices are inherently connected in time, space, and material arrangements. Doing an activity might simultaneously involve several practices. This means that everyday life consists of multiple performed practices which intersect and thus are to be understood in nexuses of practices. In these nexuses practices depend on each other by sharing material arrangements and competing for time. One practice can as well stabilise or destabilise another practice. When multiple practices are unfolding simultaneously, these might share the same body, place, and time. Similarly, same objects can participate in multiple practices (Schatzki 2009; Hui et al. 2017). Shove et al. (2012) distinguishes the notion of nexuses into bundles and complexes of practices. Practice-bundles are distinct practices that regularly co-occur since they share time, site, materials, and practitioners. Practice-complexes are more integrated with each other, here involved practices become dependent upon each other. The theoretical idea is that a change of a practice might affect all other practices in the complex. This notion is key for understanding hidden webs of practices that reproduce unsustainable outcomes and/or investigate a sustainable practice complex and determine elements for its continued existence. Understanding these relationships helps to explain stability of social life but also possibilities for social change which in turn can alter

enacted practices. I continue here to refer to the concept of overlapping practices with sharing elements as practice complexes.

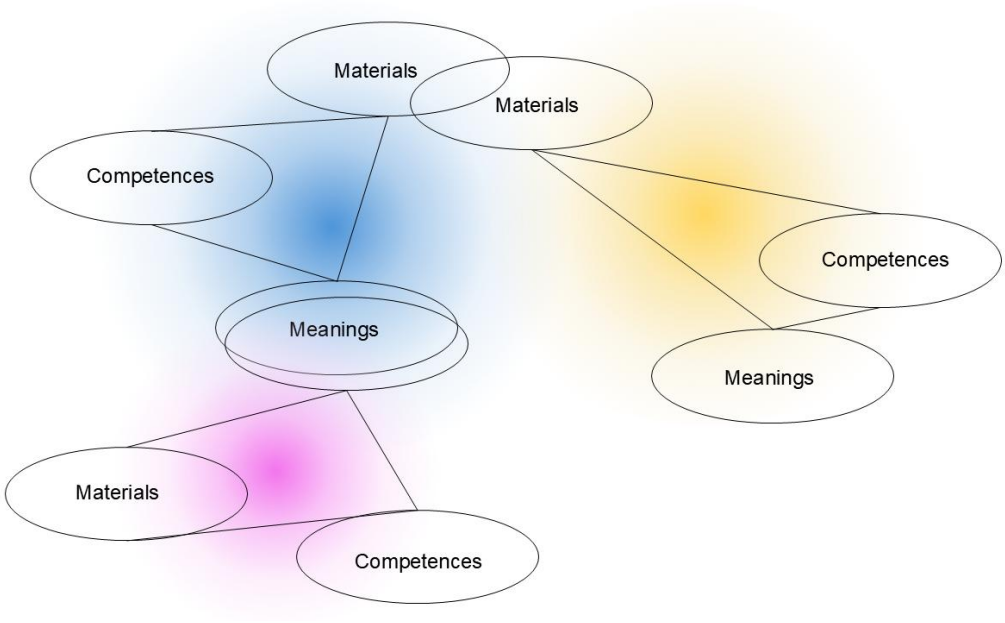



*Figure 2. Schematic and exemplary illustration of three practices with some sharing elements.*

*Contextualisation of SPT elements*

Adding to the understanding of every-day life constituted through complexes of practices (Schatzki 2009; Hui et al. 2017) and the configuration of SPT by Shove et al. (2012), Brand (2010; 2014) adds the social setting as an element to practice as an complementing element to consider, especially in sustainability transition efforts. Brand (2010) argues that webs of social practices are not to be understood in isolation, but as embedded within broader socio-technical, socio-ecological, and governing systems, thus contextualising practices. This theoretical build-on makes SPT relevant for studies investigating sustainability and transitions towards it. Brand (2014) also understands that practices are embedded in practice fields and societal sectors, which in turn build social arrangements with institutions and systems. Brand (2010) argues that the three-element model of Shove et al. (2012) can describe practices but has less explanatory power how practices are embedded in wider systems and thus are being stabilised. According to Brand (2010), the added element of social settings becomes the analytical bridge between macro-level arrangements, the social settings, and the micro-level, practice(s) and practice complex(es). Therefore, it is not to be understood as a constitutive element, as material, competence, and meaning is, but as the broader context shaping how these elements come together into practice(s), are reproduced, and might evolve.

*Dynamics of practice elements, practices, and complexes*

The dynamics of practices relies on the dynamic configuration of its elements (materials, competences, and meanings). Practice change occurs when these elements, or the links between them, are reconfigured (Shove et al. 2012). This might involve the introduction of new elements, transformation of existing ones, or novel relationships between elements, resulting in modification of how a practice is performed. A practice thus can decay, disappear, and/or transform. When links between elements fractures, the practice is not continued. A further important notion of SPT is the circulation of elements between practices, so elements are understood to not be permanently attached to a specific practice. Trough circulation, practices recombine or adapt elements leading so to practice innovation and/or transformation (Shove et al. 2012).

Reconfiguration of practice happens when the links between elements are disrupted and realigned. This can happen through internal reconfiguration or practice complex reconfiguration. For example, when a novel technology emerges (e.g. shift of working procedure for a worker from motor-manual work in the forest to sitting in the cabin of a harvester). Materiality changes, thus does the competence needed (Shove et al. 2012), from handling a handheld chainsaw to driving a harvester, and with that the competence to know which trees to cut and which not. Change of practice also occurs when elements from other practices circulate, or be taken over, into more recent evolving practices (Shove et al. 2012). Also, a practice needs a carrier performing it, a person, thus recruitment of carriers of a practice is important for its continued existence (Reckwitz 2002; Shove et al. 2012). Otherwise, a practice disappears. Here competence, as in the example with the technological change from chainsaw to harvest driver, is important. There might be more competent people when it comes to handling a chainsaw whereas driving a harvester might need a longer or varying education, which in turn is formed by the setting practices are embedded within.

Spaargaren (2011) relates to the notion of practice complexes by conceptualising these as domains of social life. A domain is a socially organised sphere in which a plurality of related practices is performed, reproduced, and coordinated. These domains refer to broader spheres of everyday life (e.g. eating, mobility, or leisure) in which practices related to each other and are reproduced. This is through specific configurations of meanings, materials, and competences. But there is a subtle distinction between practice complexes and domains of social life, which is important to have in mind during analysis. Domains of social life are the arenas of everyday life whereas practice complexes are practices relating to each other. Different arenas can have different logics in how practices related to each other. Domains can contain multiple practice complexes. But domains should not be

understood as being strictly hierarchical, rather as an overlap. This is, practices can cross domains, overlap and link different complexes. Domains have practical intelligibility and thus a practical logic how and why practices are enacted how they are. This inner logic should not be understood as a single rule that is followed, but rather as something produced through historically and socially established relationships among practices and their elements (Spaargaren 2011).

## 2.3 Conceptual and analytical framework

In this section I elaborate how the above discussed theoretical ideas and framings of SPT, are interpreted and applied in this investigation. The conceptual framework provides an analytical toolkit with the ontological insights of Reckwitz (2002), the relational perspective of Schatzki (2009; Hui et al. 2017), the operationalisations of Shove et al. (2010; 2012), and the consideration of social domains (Spaargaren 2011) as the contextual settings in a socio-techno-ecological sphere by Brand (2010; 2014). I come here back to the three elements of material, competence, and meaning that constitute a practice, elaborating on these with the theoretical nuances discussed. This is to provide an analytical map of how practice elements are interrelated and are here thought of.

Physical and technological components enabling and shaping practices are referred to as (i) materials. These include tangible objects in form of infrastructures, the human-built environment, natural resources, and the human body itself; things. An important understanding of materials is, that these do not contribute to practices, but that they are constitutive of them. The same material can participate in several practices becoming so a point where multiple practices intersect. For Brand (2010; 2014) materials have to be understood in relation to a broader social setting. The availability of material depends on institutional arrangements, economies, or regulations.

Practical knowledge, the innate know-how, which is required to perform a practice is understood as (ii) competence. This includes explicit knowledge, as that written down in scientific books or can be formulated through language, and tactic understanding which is gained through execution of activities and participation in practices. Here the latter is in focus, since practices are often doings that seem naturally to the one's performing them, and the underlying know-how is embodied rather than actively retrieved knowledge. The theoretical idea is that people learn to live and thus practices by performing them through observation of others, rather than formal instruction. Competences are based less on abstract reasoning than the embodied know-how, including technical skills, bodily abilities, interpretive capacities and problem-solving strategies, and habitual ways of doing something (Reckwitz 2002; Schatzki 2009; Shove et al. 2012). Theoretically, competences are

understood as socially distributed and collectively reproduced. A performer individual becomes competent because she is recruited into a practice and over time acquiring the necessary knowledge to perform it. Further, competences are always enacted within a practice complex; a competence developed in one practice frequently supports participation in other practices (Schatzki 2009; Hui et al. 2017). An opportunity to develop a competence depends on the social setting that surrounds the enactment including e.g. professional standards, family environments, and institutional support (Brand 2010).

Normative, emotional, and cultural dimensions are understood as (iii) meanings that make a practice or practice complex worthwhile. This element helps to explain why a practice is understood to be appropriate, desired, and/or necessary. Meanings include social norms, values and beliefs, emotions, identities expectations, but also cultural understandings and moral commitments (Reckwitz 2002; Schatzki 2009; Shove et al. 2012). These shared understandings can be understood as motivational knowledge and culturally meaningful that practitioners recognise and reproduce through practice. Schatzki (2009) contributes fundamentally here to SPT; meanings are the general understandings and rules, the underlying purposes, projects, emotions and orientations, that explain why certain actions and performances feel appropriate and/or desirable in a practice. Brand (2010; 2014) widens perspective; meanings are produced in the social sphere with its institutional and cultural settings. These include e.g. public discourse, media representation, professional norms, and policy narratives.

A practice exists when it constitutes material, competence, and meaning elements integrated dependently and performed repeatedly. Materials provide the physical and infrastructural basis for action, competences supply the embodied practical know-how needed to enact it, and meanings give orientation making a practice intelligible, somehow a shared logical agreement why something is good and/or tolerated to do. A material without competence(s) to handle it, makes it non-performable. A competence without available material(s) cannot be enacted. Meanings without practical enactment remain abstract values hovering in the dark, making it non-purposeful.

*From conceptual frame to analytical tool*

Figure 3 illustrates the conceptual framework I apply in this study to analyse the domain of private forest management with special focus on clearcut-free management enactment. Private forest management is understood as constellations of practices embedded in domain-specific social settings that stabilise, destabilise, or circulate their performance, while continuously co-evolving with the broader socio-techno-ecological conditions influencing the performance of private forest

management. Therefore, I suggest that private forest management practices should be understood as being embedded in, thus being influenced by and reciprocally shaping, (1) social relations, referring to the surrounding social environment in which practices are enacted. This can be family members, contractors, neighbouring forest owners, but also peer networks. These immediate relationships are source to e.g. knowledge, practical support, or trust. Beyond these relations lie (2) governance and policy arrangements; legislation as the Forestry act, public authorities as the Swedish Forest Agency, industrial or autonomous certification schemes as PEFC (Programme for the Endorsement of Forest Certification), FSC (Forest Stewardship Council), AEFC (Association for Ecological Forestry Certification), advisory systems in Sweden present through Swedish Forestry Agency, or private and cooperative advisors. These formal governance structures shape forest management. In section 3.3.4 conceptual moves following Arts et al. (2013) practice-based policy analyses are elaborated. The third sphere represents (3) societal arrangements capturing the broader economic and cultural structures in which forest management is embedded inThese include, for example, the timber market and industrial structures as the predominant bulk system in Sweden; the current climate and biodiversity loss discourses; broader economic trends; and wider societal expectations regarding forests and how to manage them. While more distant from everyday practices, these arrangements e.g. influence meanings related to different forms of forest management. Surrounding these social settings is (4) the factum of ecological conditions and biophysical boundaries characterising forested landscapes. This encompasses classical forestry metrics as site productivity, but also soil conditions, species composition, topography, climate, biotic and abiotic disturbances and catastrophes. These landscape configurations, ranging from microscopic environments in the soil to the biosphere in different scales, can modify or erode a forest ecosystem. These conditions are not social settings but yet they are foundation of what is possible to enact for forest management. With the notion of the Anthropocene, with human activity as dominant influence on earths ecosystems and climate, the influence of forest management on earth systems consisting out of biophysical matter is also to consider.

Within the domain of private forest management, practices are not isolated but continuously interact through interrelated dynamics of social practices. The reciprocal arrows (Fig. 3) illustrate that this relation is co-evolutionary, rather than one-directional. This is that social settings shape the performance of practices, while the ongoing enactment of practices influences and over time reshapes social relations, governance arrangements, societal structures, and ecological conditions. Within the context of Swedish forestry, with a strong industrial forestry sector setting, this reciprocal relation can be understood as the ongoing negotiation of what legitimate forest management might be.

The practices constituting forest management are influenced by the doings of the private forest owners, but also by the existing system of provision in form of e.g. technical infrastructures (e.g. location of nearby sawmills, forest roads, etcetera) or market supply of services (e.g. advisory service, certification, contractors, etcetera). This should not be understood as a dualistic structure, but more as sub-domains of forest management wherein social practices are enacted. In the Swedish forestry sector, professional entities and services can be regarded as having an inherent logic of their own, as well as an inherent logic of living life and owning a forest. The salient point is that there are two distinct dynamics to consider when undertaking a task in a forest: the first is the performance of a task on another person's forest, and the second is the ownership of one's own forest. Since private forest owners are the ones owning the forest, they are embedded in legislative owning rights and obligations. They have differing position and power to reconfigure practices than e.g. advisors or timber buyers. The latter are though (often) offering access to further market infrastructures and thus e.g. value chain pathways for the produced raw wood, another dynamic and position of power. This why I want to differentiate and underline these varying directionalities here.

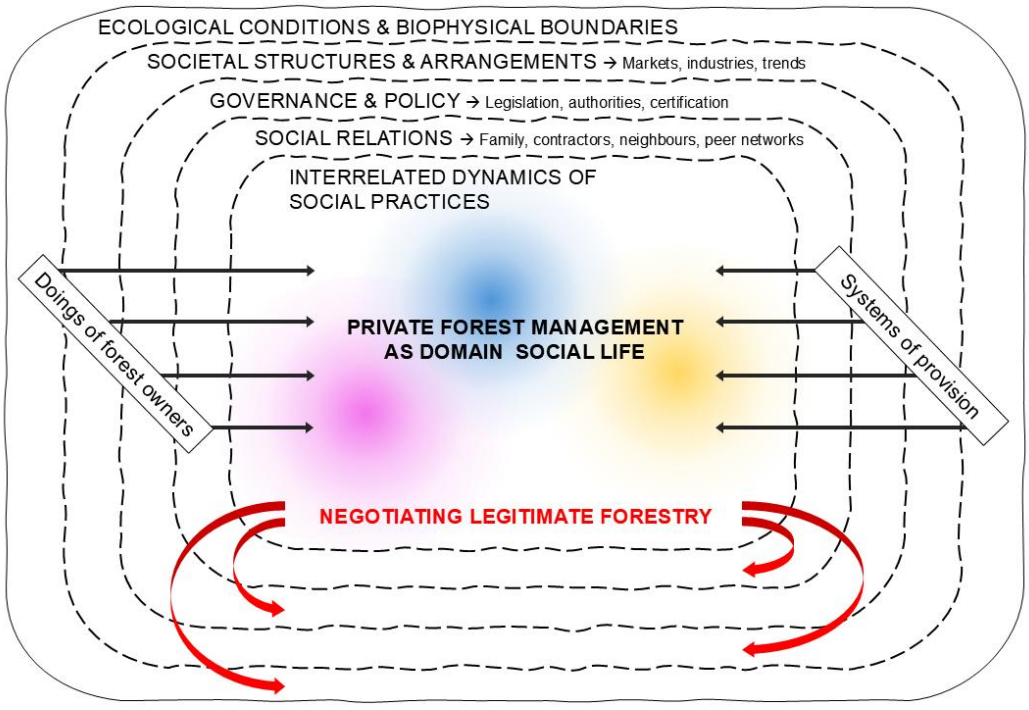



*Figure 3. Social practices' embeddedness; a conceptual framework for analysing non-industrial private forest management as a domain of social life inspired by Brand (2010) and Spaargaren (2011), and a forestry situatedness of Wallin (2017).*

However, dissecting beyond individuals' attitudes and explanations, SPT and its adaption into a developed conceptual framework (Fig. 3), I argue, crystallises for an analysis of the domain of private forest management focusing on clearcut-free and practices sustaining it.

# 3. Background and contextual settings

The private forest owners interviewed in this investigation belong to a heterogenous group of actors (Ekström et al. 2024). I derive here with the understanding that there is as many forest management approaches as there is forest managers. Thus, I consider a background investigation of how existing scientific literature understands and formulates social practices in forest management and the settings these are embedded within in Sweden.

## 3.1 Ecological and historical conditions of Swedish forest

Pre-historically, forests were used in various ways. From gatherers and hunters where forest might have been home and shelter, and providing food to more settled communities where forest products were used as fuelwood, grazing opportunity, and construction material (Wetterberg 2018). In the Middle Ages, forests were a common resource used in multiple ways, as timber, firewood, for tar, grazing, hunting and so on. Then forests where foundational for everyday life as opposed to today's usage as economical asset. With mining and iron production created also demand for charcoal, forest exploitation increased. In the 16$^{th}$ to 18$^{th}$ centuries, state regulation by the Swedish state increased. This was to secure forest resources for mining, ironworks, but also for the navy. In the 19$^{th}$ century, with the industrialisation forestry transformed. Steam-powered sawmills increased the amount of timber being cut. The northern Swedish forests were more heavily exploited, for national usage, private timber companies, but also for export markets. Along these developments, conflicts emerged over ownership and resource use. Further exploiting pressures on Swedish forest appeared with a broadening of pulp and paper industries in the late 19$^{th}$ century. During this time, cooperative forest owner associations developed. During the 20$^{th}$ century forestry became more numbers in spreadsheets and mechanised through scientific and technological advancements. The modernisation of forests encompassed a series of concepts, including reforestation, silviculture and genetics, which collectively contributed to the professionalisation of forest management. The main focus was to increase productivity which came along with a change in forest structures all over Sweden (Wetterberg 2018).

The around 70% of Sweden's land area covered in trees spans from the southern temperate or nemoral zone dominated by deciduous species, through the boreal zone with mainly coniferous species, to northern alpine and subalpine areas where trees are sparse. In the latter tundra occurs. Sweden stretches approximately 1,500 kilometres from north with the widest east-to-west width of circa 500 kilometres,

and a total area of around 450,000 square kilometres, or 45,029,500 hectares whereof 26,117,110 hectares or 261,171 square kilometres are classified as productive forestland (Skogsstyrelsen 2024). Productive forestland refers to land where tree plants can produce biomass beyond 1 $m^3sk$ (forest cubic meter *skogskubikmeter*) per hectare and year (*Productive forest land | slu.se* n.d.). Following the Swedish forestry act forest land is land with trees >5 m tall and canopy cover >10%, or able to reach that, similar to the definition as the Food and Agricultural Organisation.

Since the mid-20$^{th}$ century, the Swedish forest has shifted to large-scale mechanised monocultural management with conifer species. Norway spruce and Scots pine cover approximately 80% of Sweden's productive forest land (Felton et al. 2020). This has altered the baseline of biodiversity and ecology in several aspects. Habitat is homogenised; landscape heterogeneity is reduced due to coniferization in uniform age structures with missing old-grown trees. This disadvantage species which depend on old growth, deciduous trees, or a varying forest structure. Since the introduction of this hegemony of practicing forestry, more than 100 forest species have disappeared, more than 2000 forest associated species are red-listed, and frequent occurring species are declining as well (Felton et al. 2020). However, the Swedish policy response is mainly increasing area of set-asides or reserves (Felton et al. 2020), with little integrative effort. Sweden mainly applies a segregated approach where forest land is production or set aside (Angelstam et al. 2023). Clearcut-free forest management could be an approach being in between.

## 3.2 Societal arrangements around forestry

Today's Swedish forestry sector is recognised internationally for its productivity and contribution to international markets in form of timber, pulp and paper, as industries tied to bioenergy (Hussain & Bernard 2017). Since the end of the 19$^{th}$ century in North Sweden and since the mid-twentieth century in all of Sweden up to today, forestry is mainly organised through an industrial production understanding manifested in the landscape with monocultural forestry. Today's forests consist mainly out of Norway spruce and Scots pine in same-aged sections planned for clearcutting at the end of their rotation, followed by artificial regeneration with improved plant material of one of these tree species (Lundmark et al. 2013). This way of managing Swedish forest derives from a scientific forest management ideal, shaped by economic rationalisation and technical advancement to serve production maximisation (Ekström Pigot 2026).

Professional forestry develops specialised technologies and mechanisms for each stage of production, creating distinct fields of practice. This is reflected in how companies and scientific fields are organised and coordinated, from nurseries

producing seedlings and research breeding straighter, faster-growing trees to mechanised planting and harvesters that can fell, delimb and buck a 30-metre spruce in about 30 seconds, depending on terrain and other conditions.[1].

Over time, this production-oriented practicing became routinised around high timber yields and economic returns. It also shaped forestry norms, institutions, markets, culture, education and practiced advisory services(Hertog et al. 2022). Thus, achieving specific economic returns remains deeply rooted in Swedish forestry discourse (Ekström Pigot 2026). , shaping practices around generational transfers, forests as long-term financial reserves, and the overall meaning around forest management.

Such institutional arrangements contribute to lock-in mechanisms. Existing advisory routine(s), infrastructure(s), harvesting technology(s), and market logic(s) create path dependencies favouring industrial based clear-cut systems and the upkeep of high timber flows out of the forest (Andersson & Keskitalo 2018; Dawson et al. 2025). Besides this, these institutional and social system logics create a 'lock-in' effect that makes clearcut-free management associated as risky due to an economic uncertainty (Andersson & Keskitalo 2018).

Since the revision of the Forestry Act in 1993, Swedish forestry stakeholders have increasingly considered environmental, cultural and social values(Lindahl et al. 2017). However, this discourse relies on ecological modernisation and technical advancement, seeking to increase production, biodiversity and recreation simultaneously. These often-conflicting goals are difficult to reconcile. While policy broadens its objectives, it limits feasible outcomes and trade-offs, maintaining economic priorities at the expense of other sustainability dimensions(Lindahl et al. 2017).

*Clearcut-free in Sweden in numbers*

According to the Swedish forest agency, approximately 700,000 to 800,000 hectares are managed under some sort of clearcut-free forest management, *hyggesfritt skogsbruk* (Skogsstyrelsen n.d.). This represents an estimated 3–4% of Sweden's productive forest land, based on landowners' statements, and should therefore be treated as indicative rather than definitive.The share of privately owned forest managed clearcut-free appears to have declined since 2023, following a relatively stable trend from 2020 to 2025. (Fig.4).

[1] I do not use references in this paragraph, deliberately.

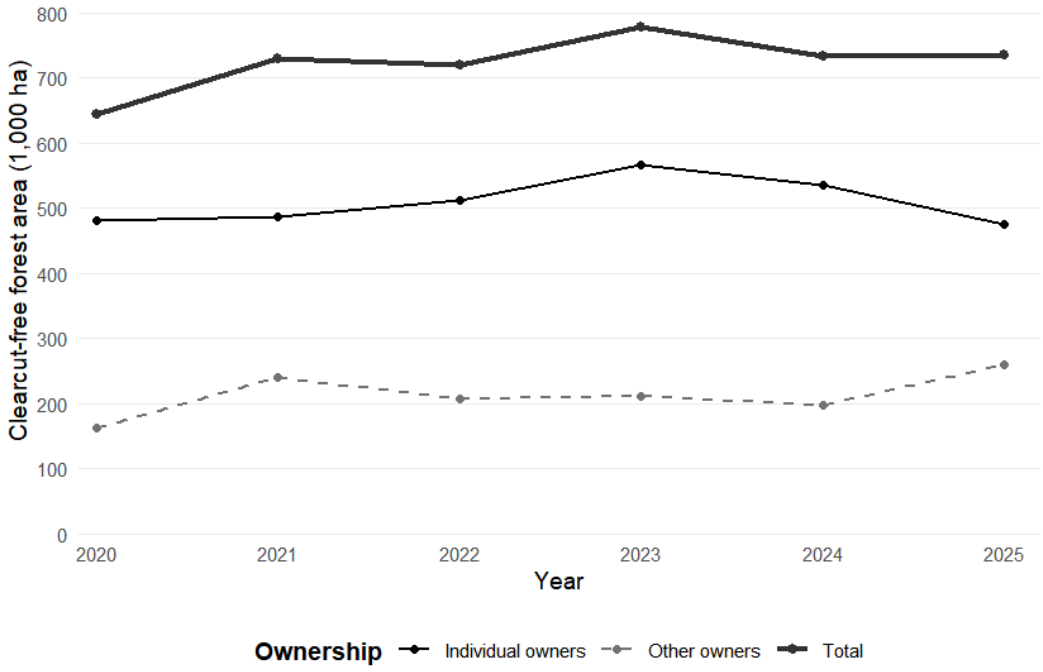



*Figure 4. Estimated area of productive forest land managed under clearcut-free forestry in Sweden by ownership class, 2020–2025. (Data source: Skogsstyrelsen 2025)*

The Swedish Forest Agency (*Skogsstyrelsen*) defines private forest owners as individuals, estates, and jointly owned properties. Remaining ownership categories include companies, corporate and institutional forest owners, the state, municipalities and other public owners. The number of private forest owners currently practising clearcut-free management in Sweden is unknown.

## 3.3 Governing private forests

### 3.3.1 Settings of Swedish private forestry

One of the main questions when it comes to (private) forest management is; who is actually managing forests in Sweden? Is it the state through policy, probably not. Not under the slogan "freedom with responsibility" at least. Is it advisory services and timber buying that is partially entangled with industries. Is it the forest machine operators implementing advisory routines or stakeholder visions, definitely since they are doing the physical measures in the forest. Is it the private forest owner herself?

The industrial forest paradigm developed through state-led promotion of industrial timber production, followed by the 1993 policy shift that transferred responsibility for production and nature conservation to individual forest owners and companies under the principle of "freedom with responsibility. (Löfmarck et al. 2017). Before

1993, private forest owners faced stricter regulations, including requirements for forest management plans and minimum timber harvests(Lundell, 2011 in Wallin 2017). Since the 1993 shift, which came with a deregulation of these obligations, governance has become more prominent in the Swedish forest sector. This is that the Swedish state forest agency *Skogsstyrelsen*, a market-based (PEFC) and an independent (FSC) certification scheme, forestry services provided through industrial and forest-owner associations, are holding varying stakes in influencing how forests in Sweden are managed (Wallin 2017).

The slogan "freedom under responsibility" has an interpretative flexibility which partly contributes to conflict in the forestry sphere. Freedom is understood by private forest owners strongly relating to property rights and that they are free to decide how to manage forest. Whereas the responsibility part is often minimised and interpreted as basic legal compliance, as e.g. active regeneration measures after final felling and respecting key habitats. Responsibility is understood as self-defined stewardship with own framings rather than following external environmental or societal framings (Uggla et al. 2016). The transfer of responsibility to forest owners raises questions about how nature values and biodiversity are identified and considered in forest management. Differences in owners' knowledge, alongside the demands placed on them by policy, may contribute to gaps between policy ambitions and management practices(Uggla et al. 2016).

At the end of private forest owners, the current industrial model of economies of scale are characterised by the integration of advisory services and timber buying through industrial companies. Advice to private forest owners is frequently given by forest owner associations that purchase the wood originating from their own advice (Curtis et al. 2023). The content and form of these advisory services is determined by a predominantly economic incentive of the timber buyers similar to the large forest industries in Sweden (Curtis et al. 2023). The practiced forest managements in private forest owner's forests are often strongly mediated by advisory actors whose counselling informs practices. These in turn can shape the overall perspective of what is possible through forest management in Sweden, thus possibly modifying practices of private forest owners. This dual role in counselling and procurement tends to steer private forest owners toward forest management options maximising the supply to established Swedish industrial value chains as pulp, sawmills, and bioenergy. Over time, the Swedish forest state agency ceased its advisory role and provides instead planning tools and oversight processes available for private forest owners (Curtis et al. 2023). This shift left responsibility for implementing forest policy from a state-led forest governance to the industries and private actors (Lidskog & Löfmarck 2016). By this the industrial thinking of

the Swedish forest sector applied on private forest holdings through advisory services was supported.

Overall, there can be said to be a liberal governing through sectorial responsibility when it comes to forests and their management in Sweden (Wallin 2017). This responsibility is understood to balance state-supported production and ecological preservation goals with each of similar importance. This is from soft governance through advisory services by state agencies or private actors to a few hard laws (e.g. need to have a certain amount of standing volume per hectare).

From a state perspective to reach their environmental goals and meet EU directives, the state thus depends on voluntarily action by private forest owners; there are economic incentives in form of financial aid for planting noble broadleaved species (Skogsstyrelsen 2026b) to public-private partnerships where the state enters into civil law agreements with private forest owners to protect valuable nature (Widman & Bjärstig 2017).

The governance of Swedish forests is influenced and will potentially be more influenced in the future by international policy as EU policy pillars and regulations (e.g. EU's Land Use, Land Use Change and Forestry (LULUCF), EU's Forest Strategy for 2030, EU Nature restoration law). An owner of a forest estate may face constraints on their proprietary rights when top-down environmental policies promote carbon sequestration, for example by encouraging reduced harvesting, longer rotations, or continuous-cover forestry. Such measures may depart from the prevailing clearcutting system, which is based on long-term harvesting cycles. As a result, forest owners may experience reduced timber revenues, with potential consequences for local socio-economic conditions (Pokorny-Kindlman 2024).

Sutherland & Huttunen (2018) underline that policy objectives are more likely to be achieved when these are connected to existing practices. They amplify this through the understanding that counterworking an information deficit is said to change undesirable behaviour. The practice-based approach differs from the 'information deficit' model, as information alone does not ensure action due to resource constrains, and competence gaps may also lie with advisors and forest harvester operators, highlighting interlinkages between advisory practices and forest management (Sutherland & Huttunen 2018). In the Finnish context, it was also found that policies mainly affect material availability; financial aid being available for afforestation in a UK context and for even-aged forestry in Finland.

### 3.3.2 Alternative Forest Management (AFM)

Alternative forest management (AFM) can be understood as an umbrella term defined by a wider repertoire of silvicultural and managerial practices motivated by the common main driver to move away from the one-sided intensive industrial focused forestry institution resulting in rotational and monocultural forest management (Mang 2025). In the Swedish context where industrial forest management with the aim of high-intensity production through clear-cutting in 60–120-year rotation cycles are perceived as status quo; every other way of managing forest can be understood as an alternative. The concept alternative forest management (AFM) opposes to a solely industrial production focus in forests without giving a further clear framing (Mang 2025). AFM can thus be understood as a collective understanding, within the scientific context, that there is the urgent need for change in forestry practices especially in the context of future uncertainties as climate change and its effects on forested ecosystems and the social sphere. The concept AFM and its terminology abandon the singular industrial perception of natural resource usage and give AFM a plurality in both definition and associated practices. This might be understood as weakness of the concept, since a non-clearly formulated understanding might lead to misconceptions and misinterpretations. However, to display clarity is not the aim of the AFM concept, it is much more a signal indicating that the current regime is under pressure with novel practices emerging in various shapes and with varying motivations (Mang 2025).

### 3.3.3 Clearcut-free

I use clearcut-free forest management as an umbrella term which is widely understood as being an alternative forest management (AFM), which differs from conventional rotational management based on planted monocultures and clearcutting. In Sweden, the term clearcut-free *hyggesfritt* is more common among practitioners. Using a descriptive term as clearcut-free is, reveals immediately clues what its meaning refers to. This is different with AFM, here background knowledge, in form of understanding what it opposes to and what it refers to, is necessary.

From a historical perspective, clearcut-free approaches as selective cutting can be seen as a precursor to the industrial paradigm. Selective cutting of the largest trees was blamed for the depletion and deforestation of large parts of Sweden(Lundmark et al. 2013). During industrialisation, trees were harvested successively, starting with the largest and moving to smaller diameter classes as larger trees became depleted. Regeneration of trees and forest was at that point not considered to the extent as it is today, since the large forest areas of Sweden seemed inexhaustible. This turned out to be a miscalculation that later motivated the introduction of

mandatory regeneration (Lundmark et al. 2013). Going even further back, in the era of farmyards with in- and out-lands, forests were used as needed, through clearcut-free practices such as selective cutting, grazing, and pollarding that maintained continuous forest cover if forest land was not transformed into agricultural fields (Axelsson et al. 2007). However, considering this forest related history suggests that clearcut-free usage of forests is not a novel concept, but rather one that comes with hesitation induced by history and its interpretation by discursive entities within the forestry sector (Axelsson & Angelstam 2011).

Clearcut-free forestry, *hyggesfritt skogsbruk*, is an umbrella term that avoids clearcuts and includes both uneven-aged and even-aged methods as selective cutting, gap cutting as checkboard cutting, shelterwood, and seed-tree systems (Hertog et al. 2022). Another concept associated with clearcut-free forestry is continuous-cover forestry (CCF). CCF is understood as subordinated to the umbrella of clearcut-free forestry since CCF has a harder definition boundary and ongoing discussion on this topic in science and policy (Brunner et al. 2025). A further concept that exists in the discourse when it comes to clearcut-free forestry, is close-to-nature forestry which lies importance to following and more rigours imitation of the natural ecosystem processes. This approach is framed by site-adapted species composition, avoidance of clear-felling, reliance on natural processes, as the development of mixed and uneven-aged forests (Vitali et al. 2026).

For readability and consistency with practitioners' terminology, I use clearcut-free to refer to all these forest management approaches, as they share the absence of clearcutting. Grouping these approaches makes the analysis more accessible by treating clearcut-free management as one conceptual unit and its practitioners as a group enacting social practices through their doings and sayings. Throughout this thesis, I occasionally use alternative terms, such as continuous-cover forestry and single-tree selection forestry. This is limited to paragraphs where I specifically refer to a certain paper and its findings, overtaking the authors' formulations. This is to not further abstract things but rather trying to be concise.

### 3.3.4 What is Non-Industrial Private Forestry (NIPF)

This background section on the concept NIPF exists since the here used data set used for secondary analysis is framed as NIPF owners. However, overall, in this investigation I use the term private forest management excluding the non-industrial. This is due to here found and discussed themes giving reason for conceptual critique.

Non-industrial private forest (NIPF) distinguishes privately owned, non-industrial forests from public and industrial forests. The concept and/or categorisation of

NIPF owners is strongly influenced by North American administrational practices (Staff 1998). Later, it was introduced as a scientific category of analysis and is now widely used in Swedish academia for research and policy. Non-industrial refers to that owners are producing trees and services on their owned forest land but are not processing or refining the produced wood (Staff 1998). This is done after the wood is bought by industrial actors. Private refers to owning by an individual, family, or non-cooperate groups. The concept non-industrial private forest uses partly an apophatic term to create meaning, defining through negation, as in the case of clearcut-free. This leaves room for interpretation of what NIPF means; the concept NIPF does not specify if an owner lives on her property, whether the land is inherited or bought as an investment, how active management is, whether an owner knows anything about forestry or not, whether the land is less than five hectare or larger than 1000 hectares and if it is owned alone or with siblings or other family members, how an owner identifies with her forest, and whether they regard themselves as a forest owner at all. This makes this group heterogenous. The term as such provides limited information about variation within the group.. However, the NIPF category provides a useful institutional classification encompassing owners with varying residential status, ownership structure, objectives and knowledge, and behaviour of management (Haugen et al. 2016; Ficko et al. 2019).

*Numbers on NIPF population in Sweden*

The NIPF owner population in Sweden encompasses circa 307,000 entities (Skogsstyrelsen 2024). These individual owners are together holding 11,323,000 hectares of productive forest land in Sweden, approximately 50% of the total productive forest land (*Ownership Structure* n.d.). The NIPF owner population deviates from the general population in Sweden. NIPF owners are older, more men are NIPF owners, but the educational gap of NIPF owners being less educated is narrowing rapidly (Haugen et al. 2016). Approximately 20% of NIPF owners are living in urban areas opposed to the whole population where every second Swede lives in an urban area. Also, every third NIPF owner living in a rural area does so by staying close to a small regional centre. Average size of a NIPF holding is approximately 50 hectares (Haugen et al. 2016).

*On NIPF owner typologies*

Non-industrial private forest (NIPF) owners in Sweden are a diverse group of actors practicing forestry with varying objectives (Danley 2019), driven by varying ownership ideologies (Takala et al. 2017a), with their management guided by various factors (e.g. size of holding, certification status, residential, member of forest owner association, etc.) and thus shaping varying management strategies and practices (Eggers et al. 2014). Within this large population of actors there are recurring patterns of behaviours and enactments, thus a typology. These recurring

patterns are ascribed to groups of e.g. multi-objective owners, recreationists, investors, farmers, indifferent owner, etc. Since I concentrate in this investigation on practices, NIPF owner typologies play no role in the result and discussion section. Also, I understand that a NIPF owner typology can create the illusion that there might be discrete groups rather than a continuous dimension. NIPF owner typologies often are quantitative clustering methods with two to six owner types (Ficko et al. 2019). These statistical clusters may become understood as social groups which can be problematic due to the risk of reifying method-dependent analytical constructs as objective categories of forest owners, seeing these internal as homogenous (Ekström et al. 2024). There is risk that both policy and science may start referring e.g. to recreationists as an objectively distinct category of Swedish forest owners. However, NIPF is the analysis unit I use here due to its usage in science and policy, as well as the framing of the data set I have access to using here. A table in the method section will provide background on the individual NIPF owners that are the accounts of practice, performing and enacting the here investigated practices.

*Trends in NIPF owner population*

There is a changing trend in NIPF owners in Sweden; the amount of non-residential NIPF owners, not living on the forest estate, is increasing (Haugen et al. 2016). Within this growing group non-residents, co-owner ship, women, and higher educational backgrounds are more represented as in other NIPF owner groups (Haugen et al. 2016). This partly has to do with the increase of urban residents who get forest owners. The latter characteristic leads to less economical dependency from forest. However, the previously larger and varying composition of NIPF owners (e.g. more male-dominated, less educated, and residential patterns) to the Swedish population is becoming more similar (Haugen et al. 2016). This change, especially the increase of forest owners living in urban areas, can possibly give variation in how forest is managed. It also can be an advantage for local communities due to the purchasing of local services by non-residential owners or of disadvantage for local communities due to a changed forest management This denotes a partial shift in the sphere of influence of forest management thus the shaping of the landscape, from the local rural context to the urban environment (Haugen et al. 2016).

Figure 5 illustrates changes in ownership patterns between 1999 and 2025, showing a gradual decline in total and locally owned units, alongside a slight increase in non-resident ownership (Skogsstyrelsen 2025).

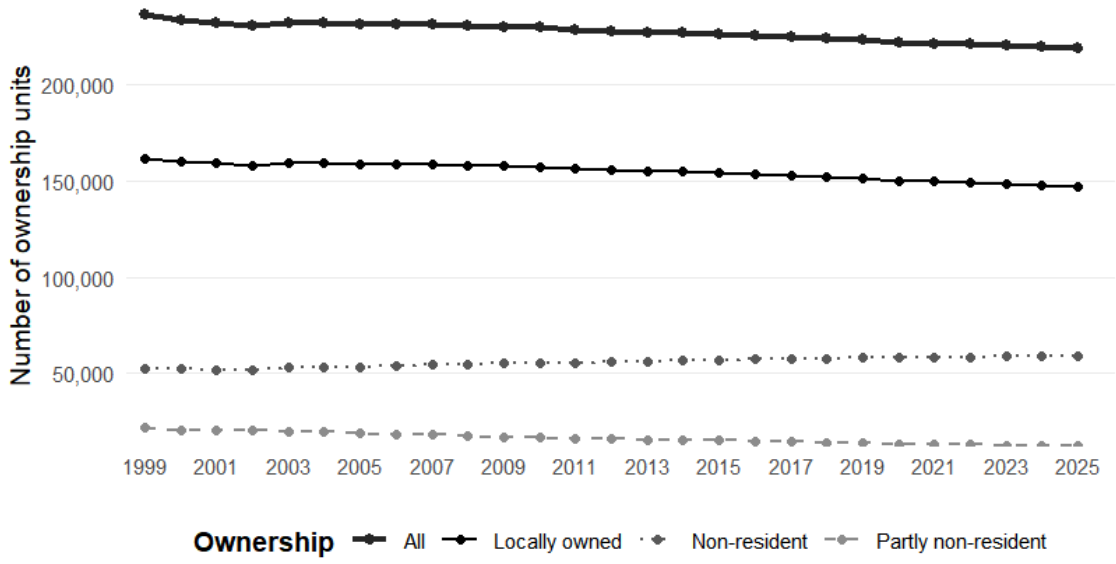



*Figure 5. Ownership trends of individual forest owners in Sweden, 1999 to 2025. (Data source: Skogsstyrelsen 2025)*

Another trend reported by the Swedish forest agency is that holding size of NIPF owners, considering individual owners by size-class, decreased from circa 355,000 individual owners in 1999 to circa 308,000 in 2025 (*Ownership Structure* n.d.). Holdings with areas up to 100 hectares have decreased while holding larger than increased. This means the average holding size has increased with 5 hectares over the given time period (*Ownership Structure* n.d.).

### 3.3.5 Conceptual moves in forestry policy analysis

The settings forest management practices are embedded within is amongst other things governance and policy. Arts et al. (2013; 2014) suggest that there are three sensitising concepts for analysing forest governance in a practice based approach. (1) Situated agency; human action and the capacity to choose are not totally independent, actors are not abstract decisionmakers. Instead, they are embedded in specific material, social, and institutional contexts. Agency thus emerges from how people act within a practice as e.g. advisory routines, harvesting operations, or certification processes, and not solely from isolated preferences. (2) Logic of practice; enacted practices have their own inner logic, this is that performed routines, tactical knowledge or the know-how, norms how things are done, and material arrangements guide forest owners' doings. It also forms what is understood as being legitimate to do. Arts et al. (2013) pinpoint that there might be differences in the logic of practices of the ones producing policy outcomes and the once living under these, thus giving insights of what institutions do or not do in practice. (3) Performativity; with this the authors refer to how governance instruments not only regulate the behaviour of forest owners and other practitioners, but also how these

instruments help constituting the practices themselves. This is that policies, certifications schemes or certain advisory tools might make it easier for certain practices to be reproduced and de-routinising others. For example, biodiversity datasets in science, certification standards embedded in market structures, or management guidelines shape what 'good forestry' is and what not, thus influencing how forests are managed. To view forestry from these concepts in the practice-based approach is particularly useful or understanding why policies have unintended effects, but also how local practices mediate international and national governance (Arts et al. 2013).

## 3.4 Social relations and forestry

Trusting is a key element in private forest management. It is determined by social practices as personal relationships with trust as a key element (e.g. trusting advisory service), "upholding and respecting local values through discussing forest management with neighbours" (p.80), existing within intergenerational forest ownership shaping emotional bonds to the owned forest, living in rural areas and thus working bodily (Wallin 2017).

Guillen et al. (2015) uncover with their investigation on social capital also social practices around trust, cooperation, and the influence of local networks constituting forest management. Trust is built through long-term personal relationships with an advisor, in their investigation from the Swedish Forest Agency, can be seen as practicing going to the trusted advisor for helping to make decisions on replanting, risk management. Thus, this shapes materially forest management outcomes. Long-lastingness and localness play crucial roles for establishing such a relationship of trusted advisors. It is also shown that the nature of advice, industrial and private versus public, plays a role in regard to relatedness and trust. This is that industrial priorities are understood to influence advice coming from industrial actors (Guillén et al. 2015). Further, forest management is embedded in local social relations; the doings of a forest owner, e.g. harvesting intensities, species choice, or how important conservation measures are, are understood to arise from the local web of relations rather than from individual owner preferences (Guillén et al. 2015; Wallin 2017). However, this paper highlights practices of relating and trusting, where materials as local offices and advisory structure are accompanied by competences of knowing whom to call when having questions or help with decisions, and knowing how to negotiate. These elements are in relation to the meanings of loyalty, reciprocity, and the industrial versus the public mission of advisory services. These elements shape trustful personal relationships as practice which in turn forms small-scale forest management.

## 3.5 The domain of private forest management

### 3.5.1 Practices relating to private forest management according to peer-reviewed literature

*Professional and traditional logic of practicing forest management*

Wallin (2017) distinguishes how social practices of private forest owners are either situated within a more local and traditional sphere or in a more professional oriented sphere. The latter is shaped through understandings of an owner as entrepreneur, where professional knowledge is seen as driver for active production optimisation. The surrounding local community is not a main influential factor. Nonetheless, private forest owners who employ a professional forestry logic continue to aspire to multiple values in their forests, in which aesthetics and recreation play a role. The traditional oriented private forest management is more influenced by family, neighbours, and other local actors and their opinions. There is a conflict between these two spheres since the professional logic of practicing forestry is eroding the traditional logic's values and thus local communities. (Wallin 2017).

Lidestav & Nordfjell (2005) offer a practice-theoretical conceptualisation of family forestry. They understand that the (forest) land that is owned and managed embedded in the contextual setting of property rights, inheritance rules and procedures, marriage, the practiced work of various family members, taxation, and of gender. Forest management is thus influenced by these dynamics inside a family, a more traditional way of practicing. Within this complex, work is interpreted mainly as self-employment; the owners and other family members practical and managerial labour on the holding. Also, self-employment among private forest owners, especially family forestry ones, is spread in Sweden and patterned. Self-employed owners are more likely to be male, residential, also engaged in farming, and members of forest owners' associations (FOA). Thus, self-employment is a routinised practice and can contribute to identity shaping embedded in family relations, generational logics, and local rural life (Lidestav & Nordfjell 2005).

*The role of advisory services*

Advisors, often also the ones buying the timber that is produced through the advice, contributing to practicing forest management can vary. There is a distinguishing between advisors and how they practice. There are the ones who are deliberated from the companies or owner associations they represent and thus their advice is coming to the heart of what a forest owner actually ask for (Wallin 2017). And there are advisors that give advice in line with the values and demands of the organisation they are employed at. The latter ones often strive for advice reproducing industrial management aiming at maximising production on the land of private forest owners

(Lodin & Brukas 2021), thus enabling for possible future forest raw material to industries.

*Real versus ideal forest management*

Lodin and Brukas (2021) investigated the difference between silvicultural ideals and real forest management of small-scale owners in southern Sweden through forest advisor perspectives. According to these, silvicultural ideals as recommended thinning regimes, rotation lengths, certain species mixes encounter resistance and/or are modified in everyday management by private forest owners. Instead, the actual practiced forest management by private forest owners in southern Sweden is formed by time constraints, a limited access to machinery, and varying goal setting influenced by local norms, and individual emotions towards certain forest stands (Wallin 2017; Lodin & Brukas 2021). Actual private forest management is thus a negotiated practice between professional advisory services and owners' practical circumstances and their driving meanings, instead of a rational implementation of recommended measures.

*Professionalisation of forest management*

The current production-oriented Swedish forestry model is sustained through policy and industrial organisation. These have historically formed the forest sector in advice, culture, and its norms. The outcome of this is that forest management practices are performed around quantifiable indicators stimulating a cost-effective thinking in the shape of economic returns, harvest volumes, harvest optimisation (Lindahl et al. 2017). These practices are supported by standardised forest management plans and decision-support systems and help to simulate and predict forest development and thus production outcomes under assumptions about management and price trends (Lämås et al. 2023). This suggests that forest management, when practiced within the national and regional norms, needs know-how in form of digital literacy for operating such decision-support systems (e.g. Heureka) and mathematical competences from calculating and/or understanding predicted production outcomes in relation to market standards as setting and price fluctuations. This is what I understand partly as a professionalisation of forestry in Sweden, as well since a daily exposure to digital forest prediction software and the market with its price trends, when e.g. being a forestry advisor, makes navigation more accessible and routinised. However, doing forestry essentially on digital screens where forest is translated into excel sheets and simplified graphical representations might create a distance between managed forest and manager, thus abstracting forest.

The example of the practice choosing a tree species is a socially and contextually embedded practice (Lodin et al. 2017), gives insights how contextuality influences

practices. It is not solely an individual choice of a risk-return calculation. Lodin et al. (2017) found that the overall logic for re-choosing monocultural planting of Norway spruce after wind damage goes in line with the overall contextual setting of forestry in which private forest owners act within. This is that profit-orientation in hand with trusted experience with spruce management, browsing pressures on Scots pine, a market asking for Spruce wood materials, and ecological conditions in form of soil composition and fertility are factors driving the continued choosing of Norway spruce for planting. Another finding is that natural regeneration of birch after a storm disturbance can be a possible species diversity pathway (Lodin et al. 2017). This reveals that the practice of species selection combines materials as site conditions, regeneration procedures, and the existing market with silvicultural and risk assessment competences, supported by understanding spruce as traditional choice reproducing thus a how-proper-forestry-is-done discourse. Many of these factors, when it comes to choosing tree species for regeneration, are re-produced over time manifesting the practice of choosing Norway spruce as the species to be chosen when regenerating forest.

Economic dependence on forestry has decreased within the private forest owner sphere. Due to the professionalisation of forestry in Sweden in the industrial sphere, in shape of rationalisation and mechanical advancement, both physical labour and importance of income from forest have been reduced for private forest owners (Haugen et al. 2016). This development of less economic dependence from the owned forest impacts how practices of private forest owners are performed, thus what its practices constitute for elements.

*Holding size as a material configuration*

Eggers et al. (2014) investigated among Swedish private forest owners what factors influence management strategies. They found that property size was a strong factor steering what management strategy was applied, more affecting than gender, residence or other owner characteristics. Larger properties, above 50 hectares, tend to being intensive and productivity-oriented management while smaller holdings, six to 20 hectares, are associated with passive or conservation-oriented strategies. This association is stronger represented in southern Sweden (Eggers et al. 2014).

*Practices in private forest management in neighbouring Finland*

In a Finnish context, which is partly within a similar boreal context and with Finland also having a large industrial forestry sector, Sutherland & Huttunen (2018) identified practice complexes that form forest management and relate to policy objectives. The Finnish Forest sector, having partial similarities to Sweden, has production-oriented practices embedded in advisory systems, market and cultural norms around that, coexisting with practices related to heritage preservation,

recreation, and conservation practices. More in detail, these practices include (1) creating an attractive place to live by managing their forest land as part of home and landscape where aesthetics, privacy, and shelter play a crucial role. Constitutive of this is the meaning to create a beautiful and restful scenery through multiple species forest, waterfronts, and old trees thus creating valuable sites. To do so it needs know-how valuing forest and seeing it as varying in sites. Related forest management practices are a reduced management, thinning solely for shaping views, avoiding tree removal. (2) Recreational activities (in the paper referred to as forest-based leisure) in the form of hunting, foraging berries and mushrooms, or walking. These are based on meanings such as supplementing one's diet, keeping up traditions, or simply taste preferences. Being able to do recreational activities it needs an availability of berries, mushrooms, game suitable habitat, and access to forest areas, but it also needs the competence being able to find, how to pick or observe. Related forest management practices are planting or maintaining a variety of tree species, pruning and thinning to design views, avoiding monocultures, limited management due to berry and mushroom protection. (3) Conserving nature and biodiversity through protecting certain habitats, leaving deadwood, avoiding clearcuts, or specifically managing for species. The meaning is the concern of the impoverishment of nature itself, and by being active in conserving forest demonstrating environmentalism. Being able to do so it needs knowledge of how to conserve certain species, and which species are central for wildlife and ecosystems. Related forest management practices are disapproving single-stage timber production equal to monocultural rotation forestry, continuous growth management, intentional planting of native species. (4) Maintaining family heritage and thus family identity. This is through meaningful action as keeping in forest in the family, honouring and passing on the doings of previous generations, and sustaining a sense of belonging. To do so it needs knowledge on history and cultural or family-related valuable sites, but also an intergenerational transfer of certain techniques as e.g. continuous growth forestry. Related forest management practices are often disapproving conventional approaches to timber production, continuous growth management and maintenance of certain landscape sites through single tree management. (5) Producing wood from forest. This can be through harvesting stems in conventional monoculture forestry or through alternative methods as continuous growth management. The further doings with the harvested wood can be for selling or for renewable heat consumption, specific tree management e.g. for Christmas trees, or other non-wood products. (6) Generating income through selling of that own produced timber, but also leasing or selling land, contracting, and tourism related activities are included. And (7) using forest for livestock production or animal husbandry by letting animals' pasture in forest. The meaning is that forest provides feed for the animals and simultaneously it is an easy forest management

where the ground vegetation is controlled. This needs know-how of what animals need diet wise and what possible impacts are on forest as e.g. regeneration.

### 3.5.2 Practices in clearcut-free forest management

Research on the practices constituting clearcut-free forest management in Sweden is limited. I therefore draw on studies using other methods and research from outside Sweden. I interpret literature using the multi-level perspective (MLP) through a practice-oriented lens to identify elements and dynamics of clearcut-free forestry. MLP follows a positivist-structuralist tradition, organising systems into three nested levels: landscape, regime and niche. (Geels 2011; 2019; 2024). Historical understanding, contemporary mapping, and future prediction are key-elements and usages. MLP functions as an instrument of abstraction and generalisation of causal factors into models to find leverage points in system problems.

Kiisel and Remm (2022) provide a practice-oriented analysis of continuous-cover forestry (CCF) in Estonia, a form of clearcut-free management. They map how CCF practice(s), situated at the niche level, are shaped by practical competence, access to suitable machinery and contractors, owner networks, advisory services, markets and value chains, and formal policy and prevailing norms. Owner's ecological orientation was associated with greater avoidance of clearcutting. Practical independence matter; being able to apply CCF in the forest affords having forestry competence and confidence as an owner. Local networks in Estonia are able to supply competence in form of advice, but also legitimacy. Also, private forest owners understand the concept of CCF in varying ways due to having different entry points of how they came to practicing CCF (Kiisel & Remm 2022).

The Swedish study by Stryamets et al. (2026) similarly demonstrates that clearcut-free forestry among private forest owners is sustained through environmental, socio-cultural, and practical configurations. In an environmental configuration, themes as biodiversity conversation, climate resilience, and provisioning of multiple ecosystem services including carbon sequestration, water regulation and more, are present. These are associated with a contained canopy and multi-layer forest structure. A more socio-cultural configuration of clearcut-free is related to family traditions, aesthetics, and the wellbeing of the nearby community. Forest's role goes beyond timber production, and is seen as provider for foraging, wildlife habitat, and site for education. The implementation of clearcut-free management is achieved through experimental procedures on specific and limited components of holdings. The concept of clearcut-free forestry is supported through knowledge-sharing in peer networks and novel emerging certification schemes. The pursuit of clearcut-free practices is rendered unstable by factors including knowledge gaps,

limitations in the provision of advisory services, and underdeveloped value chains for high-quality timber, as evidenced by the industrial market structures of bulk production.Also, there is a large span of terms and other concepts that are referred to and constitute the umbrella concept clearcut-free forestry including continuous cover forestry (CCF), continuations forestry, multi-use forestry, selective cutting *blädning*, or making smaller clear-cuts (~0.25 ha),(Stryamets et al. 2026).

Further, the master thesis by Morner (2023) provides a social practice based analysis using Shove et al.(2012) on CCF in Sweden. Here is to say, the findings elaborate on the practices constituting CCF overall, not solely considering the domain of private forest management. Five major practice complexes are found; (1) policy and regulation practices, (2) forest research practices, (3) forest service practices, (4) ownership practices, and (5) advisory practices. In these complexes, which are treated by Morner (2023) separately, several recurring elements appear. Contracts and institutional arrangements around service and timber selling appear to lock in clearcutting as practice, thus complicating CCF application. Also stand structure and inherited forest conditions, mainly in the form of monocultures, are material configurations that all the reported complexes must deal with. Machinery and related service infrastructures are mentioned as not suited for practicing CCF. Lacking competence among advisors, service workers, and contractors, but also in scientific knowledge production and among owners themselves is reported to destabilise CCF practicing. Routines and training are built around clearcutting practices. Competences around CCF instead are found either embodied in practitioners gained through self-learning, networking, or in collaboration with independent CCF actors ranging small private firms, individual entrepreneurs and consultancies, other CCF-practicing owners, or research working on CCF trials. Morner (2023) also underlines a structural and historical tension between production and conservation. This is due to a policy legacy with a Forestry Act with dual objectives along a historical trajectory of production-oriented mechanisation. Therefore, economic sustainability dominates over environmental goals. Also, the institutional separation of timber production and conservation plays a role creating a discursive and practical split. To this relates the fear of having high ecological values in forest being recognised as a possibility to get restricted in the management. Further, the dominant industry with its advisory dominance in their economic model regarding mainly production and biomass supply. This dominance of advisory practicing in turn partly shapes what good forest management is (Morner 2023).

The unpacked literature in this section is used with care and rather as food for thought in this investigation. This is since the findings are not investigated through a social practice lens (Kiisel & Remm 2022; Stryamets et al. 2026), or are not peer-

reviewed (Morner 2023). To elaborate on practices constituting from these, would include one more interpretative step and/or abstraction.

# 4. Methodology

## 4.1 Doing a secondary analysis

I conduct a theory-led qualitative secondary analysis, using existing data collected for an earlier study to address a different research question(Heaton 2008; Hughes et al. 2020a). Interview material produced for an earlier purpose is re-analysed. Asking new questions to data collected by others, should consider the conditions of original data generation (Hughes et al. 2020a). Mason (2007) calls for a re-analyst to investigate with and about data, meaning to be creative and interpretative in what one does from it.

The question containing the interview manual of the original study (available in Appendix 1) was not explicitly designed to bring forth responses to every element of practice in a systematic way. However, I understand this interview manual being capable to provide insights on the performance of clearcut-free management and constituting practice elements since it asks about doings, histories, resources, learning, relationships, challenges, and change over time.

What is missing here is direct observation of participants during interviews and the possibility to have reflexive insights. However, Hughes et al. (2020a) regard that interviews collected by others can be understood as socially organised encounters able to reveal practices, relations, cultural narratives, and wider social processes being not in foreground in an original study. A secondary analysis of material collected by others, creates a temporal and epistemic distance being a possible source of analytical value. This is that a later analyst may notice patterns and relations that were less visible when the interviews were originally made (Mason 2007; Hughes et al. 2020a). Meaning there is a certain valuable disconnectedness between analyst and practice accounts. This is because to do interviews and to participate in interviews in itself is a social practice, situated in a certain context. Interviewees bring certain purposes, assumptions, even strategies to the encounter (Hughes et al. 2020a). So do the one's interviewing.

There is the tendency in scientific discourse to treat the re-using of qualitative data as either ethically dubious and epistemologically invalid or automatically desired since archiving and sharing of data is efficient and economical (Mason 2007). Mason (2007) shifts the focus and underlines that is more important to understand what questions re-use of data can address and which it cannot address. Some interpretations are "only possible from a distance" (Mason 2007 par. 3.2). Also, there is a comparative distance of the analyst; data can be analysed along other material such as policy changes, historical evidence, empirical or scientific

material. Here the latter is of matter, since I ought to use scientific literature with a similar theoretical lens as a knowledge access point in this investigation.

## 4.2 Illuminating bits of realities

The here applied approach is interpretative, meaning I read and analysed the data, I created bits of data, I formulated findingsand contrasted these with existing knowledge on private forest management. I then concluded based on everything processed during this one-year thesis. There are many possibilities for passing important data bits unnoticed and focusing on other data bits more than others. Therefore, I understand that the here presented analysis and outcome should be seen as illuminated bits of practitioners' realities. Some relations, some constituting practices, some elements, some things are illuminated, while others are not. I would like to schematise this (Fig.4).



*Figure 6. Conceptual illustration of illumination of practicing and practiced realities.*

From a hermeneutic perspective, private forest management accounts are not treated as decontextualised data that provide direct access to an external social object called 'forest management'. Rather, practice accounts are understood as meaningful actions-in-context. What forest owners say about how they manage their forests is itself part of how they make sense of their practices, their experiences and the situations in which those practices take place. The accounts therefore cannot be separated entirely from the contexts, experiences and understandings through which they are produced.

Interpreting such accounts is consequently not a matter of extracting an objective meaning that is already contained within the text. Meaning emerges through an interpretive dialogue between what is said and the person who seeks to understand it. This dialogue does not require a direct conversation between researcher and forest owner. Instead, it can take place between the account and the researcher's situated horizon of understanding: between the practical understandings expressed in the account and the concepts, experiences and questions that the researcher brings to its interpretation (Wagenaar 2007). This means that the analysis involves moving between the particular account and the broader understanding of private forest management that is being developed.

For this study, this perspective is important because the aim is not solely to identify what forest owners do, but to understand what their accounts reveal about how clearcut-free forest management is made meaningful and practised. The accounts are therefore treated as situated interpretations of forest management rather than transparent descriptions of an independently existing practice. At the same time, my interpretation is also situated and cannot be understood as completely detached from the analytical perspective brought to the material. The findings consequently emerge through the encounter between the practical understandings expressed in the accounts and my interpretive engagement with them.

Drawing here on a practice-based approach, forest governance is understood to emerge through situated practices, not as an outcome of individual choice(s) or structural determination (Arts et al. 2013; 2014). This perspective seeks to move beyond a dualism between agency and structure, subject and object, human and nature. It directs focus toward ways in which forest owners, trees, material, knowledge, norms, institutions, rituals are mutually implicated in practices (Arts et al. 2013; 2014).

Moon and Blackman (2014) underline to be detailed why a practice-based approach and interpretative study of forest owners should not be evaluated solely by positivist criteria through prediction, generalising in hand with statistics, or in search for isolated casual variables. Following Moon and Blackman (2014), I recognise that a research design rests on interconnected ontological, epistemological, and theoretical assumptions. I approach in the analysis forest management as a situated social and material practice whose meanings, possibilities but also consequences are shaped through owners' experiences.

## 4.3 Data collection

The collection of the analysed sub-dataset was conducted by three interviewers through semi-structured interviews of private forest owners (for interview guide see Appendix 1). By the research group the interviewee framing was referred to as non-industrial private forest owners (NIPF). The sample of the 25 interviewed practice accounts of private forest owners (with in total 27 interviewees) was thought to cover a mixture of age, sex, education, and size of holdings (from small <10ha to larger ≈1000 hectares) all over Sweden. Three researchers independently identified interviewees through a process of snowball sampling. Each researcher commenced their investigation within their respective networks of known private forest owners. Subsequently, interviewees were located through a combination of peer networks and direct contact with previously identified owners who aligned with the criteria outlined for data collection. The saturation of participants was reached after a specified number, which could not be ascertained. Interviewees were to have some practical experience with clearcut-free forest management and implementation on their respective holding. The interviewed owners referred to their own practical experience of forest management as clearcut-free. The sample includes owners with varying degrees of engagement in and practical execution of clearcut-free, from early experimentation to more established practice. Interviews were conducted from November 2023 to January 2025 and lasted on average 59 minutes with the shortest interview lasting 23 minutes and the longest 121 minutes. Prior to transcription of the collected interviews by an external service, all interviews were anonymised. After transcription, the transcripts were reviewed for transcription mistakes and accuracy by the interviewers.

I provide here information I have access to the forest owners performing clearcut-free forest management (Table 1).

*Table 1. Background information and overview of the interviewed private forest owners and performers of clearcut-free forest management. (nd=no data)*

| Practice Account | Age(s) | Sex and no. of interviewees | Where in Sweden | Forest holding or (total land holding) size in hectares | Partial or whole-estate under clearcut-free (P/W) |
|---|---|---|---|---|---|
| 1 | 65+ | Male | South | 40 | W |
| 2 | 45-54 | Female + Male | South | 9 | P |
| 3 | 25-34 | Female | Middle | 80 | P |
| 4 | 65+ | Male | Middle | 254 | P |
| 5 | 35-44 | Female | North | 200 | P |
| 6 | 65+ | Male | Middle | 21 | P |
| 7 | 55-64 | Female | South | 68 | P |
| 8 | nd | Male | North | 9 | P |
| 9 | 35-44 | Male | South | 137 | P |
| 10 | nd | Male | North | 68 | P |
| 11 | nd | Male | North | (467) | P |
| 12 | nd | Female | North | (246) | P |
| 13 | nd | Male | North | (109) | P |
| 14 | nd | Male | North | (370) | P |
| 15 | nd | Male | South | 40 | P |

| | | | | | |
|---|---|---|---|---|---|
| 16 | nd | Male | North | (92) | P |
| 17 | nd | Male | Middle | (218) | P |
| 18 | nd | Female | Middle | (90) | W |
| 19 | nd | Female | Middle | (188) | P |
| 20 | nd | Female | Middle | (64) | P |
| 21 | nd | Female | South | (162) | P |
| 22 | nd | Female + Male | South | 120 | P |
| 23 | nd | Male | Middle | 34 | W |
| 24 | nd | Male | Middle | 60 | P |
| 25 | nd | Female | Middle | 130 | W |

The geographical distribution of the interviewed forest owners and the site of their holdings is showcased in Figure 5.

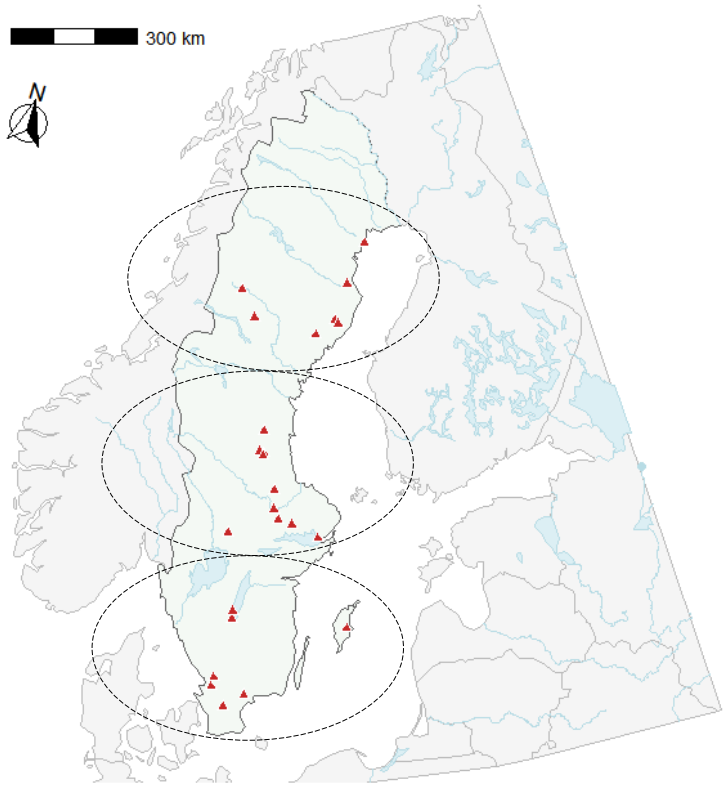



*Figure 7. Map of geographic distribution of 25 interviewees' holdings in Sweden, within the extent 54–70°N and 0–32°E. Dashed ovals on the map show how practice accounts in Sweden are divided into southern, middle, and northern areas.*

## 4.4 Data analysis

Applying the SPT lens, my analytical gaze is not directed toward individuals and their behaviours or decisions, but onto the constituting and shared elements of performed practices. Practices are central to this analysis. This is because I adopt a relational and practice-based approach in which the continued performance of clearcut-free management emerges from multiple interacting elements embedded in multiple settings.

An analysis of forest management understood through a practice-based approach, locating constituting social practices, was conducted through a literature search of peer-review publications. Included publications should relate to a Swedish context or have direct a direct relation to the Swedish forestry context. These findings serve as starting point for identifying how practices are reconfigured through clearcut-free management. Simultaneously, peer-reviewed publications served as guidance in what wider social settings, and the here formed used analytical tool, in the forestry sector might be influential for private forest management.

*Literature search*

Searching and analysing peer-reviewed literature for social practices constituting private forest management was done in an abductive process. Initial search was limited to literature using a "social practice*" or "practice based" approach in a "Swed*" context concerning "forestr*" and "forest management" (and/or "clearcut-free" OR "clearcut free" OR "clear-cut-free" OR "continuous cover" OR "close-to-nature" OR "gap cutting"). No literature was found. Thus, this investigation to a certain extent fills a knowledge gap. Later literature search was widened to "forest management", without the search string in brackets. Two papers where found (Lodin et al. 2017; Takala et al. 2017b). From there a snow-balling approach and AI-tool (connected papers) was used to identify further literature applying a social practice approach.

*Coding of interviews*

Following the social practice approach, the overall coding focused on expressions that referred to actual actions. One indicator of this is when an interviewee uses active present and/or past tense to refer directly to what they have done. Expressions that cultivated ideological reasoning, aimed for possible future outcomes or made other non-practical references to clearcut-free were only considered as practice meaning element.

Initial coding was to dissect the 25 interview narratives into meaningful units. These accounts of practice units include the interpretation of experiences, actions, resources, values, relationships, and conditions described by participants and lie foundation for the practices-as-performance account. This was done in an inductive way, where codes arise from data itself. These units are subsequently reassembled to examine how different elements combine a sustained performance of clearcut-free forest management practices. This first cycle of coding was thought to prepare for moving beyond the sequential structure of each interview, reducing influences of interview order, question order, and individual language styles.

In the second coding cycle, practices were analytically reconstructed and their constitutive elements (materials, competences, meanings) by grouping the units from the first coding round. This coding stage shifted the analysis from individual accounts towards practices constituting private clearcut-free forest management. Codes were grouped into a distinct practice when a recurrent configuration of these elements was oriented toward a recognisable and repeated activity across accounts, such as manoeuvring economic resources, regeneration management, or seeking advice. A shared element alone for example, concern for biodiversity or use of a chainsaw was not sufficient to constitute a practice. It was treated as an element that could recur across several practices. This second coding cycle was deductive, applying labels to the coded units based on the three practice elements (material, competence and meaning). Codes were only assigned to one of these labels if they were deemed to fit.

The third coding cycle focused on identifying recurring patterns across these reconstructed practices, and thus their shared practice elements and practice complexes. The relationship of these shared practice elements, practices, practice complexes as their interconnectedness within broader social settings were main focus during this coding cycle. Practices were grouped into practice complexes when owners' accounts repeatedly linked them in the performance of forest management and when practice elements were shared across different practices.

SPT coding is relational rather than categorical, meaning that coded materials, competences, and meanings are not simply a category, rather it is a statement about a social relation. To capture and elaborate on these relations, to make sense of things, the written result and discussion parts should be understood as partial illumination of the indivisible mass of clearcut-free practices. The here provided analysis is not a complete reconstruction of clearcut-free practices, but should rather be understood giving clues of how the private practitioner sphere enacts clearcut-free forestry in Sweden. All identified practices related to clearcut-free forest management can be found in the coding book in Appendix 2.

Interview quotes, which I use in the findings, refer to situated practice-as-performance, and give insight to how people talk about, justify, learn, and/or make sense of their doings within a practice. They illustrate e.g. how shared understandings and norms are expressed or how competences and meanings are described and negotiated. A quote for instance can illustrate how a practice is performed through several elements at once. It can also serve as a vehicle to demonstrate how meaning is produced or reproduced through the enactment of a practice.

*Analysing reconfiguration*

To understand how clearcut-free practice arrangements might reconfigure the domain of private forest management and forestry, I firstly went into dissecting scientific literature of how private forest management is performed and what for practices it might constitute. This was also a learning process; to see how social practice approaches are applied in qualitative research. Through an abductive analysis, jumping forth and back between practice accounts from the interviews and literature, an understanding of the domain of private forest management materialised. Here I could identify practices and/or elements that were varying to practices that constitute conventional forest management on private land. Due to a lack of literature using a practice-based approach in the Swedish context, I was in need to draw upon literature with different theoretical entrances or non-peer-reviewed literature. Eventually, the scope was widened to include other Scandinavian and Baltic literature (Sutherland & Huttunen 2018; Kiisel & Remm 2022), non-peer-reviewed literature (Morner 2023), and some non-social practice lens literature (Eggers et al. 2014; Kiisel & Remm 2022; Stryamets et al. 2026) on private forest management. However, the main function of section *3.5 The domain of private forest management* was to understand what constitutes, relates to, and influences this domain of social life. This was done being able to analyse how clearcut-free management might reconfigure this domain.

# 5. Findings

## 5.1 Practice complexes constituting private clearcut-free forest management

Clearcut-free forest management is not treated as a single practice, but as part of the domain of social life of private forest management, configured out of interconnected practices. In this section I illuminate dynamics of practices and their constituting elements that together form practice complexes bringing forth clearcut-free forest management in the private forestry sphere.

### 5.1.1 Two configurations

The interviewed forest owners did not constitute a homogenous clearcut-free management practice. Clearcut-free management rather is implemented to different degrees across holdings thus it is practiced differently. Two broad configurations were identified; whole-estate clearcut-free management (n=4) and partial-estate clearcut-free management (n=21). Three whole-estate configurations were found in the middle and one in the south of Sweden.

In the whole-estate clearcut-free configuration, clearcut-free methods were applied across the forest holding and thus configured management at an estate level. Approaches were; ongoing transition of forest holding to clearcut-free in collaboration with advisors and contractor with machines (Practice Account – PA 25), a fully self-employed forest owners executing all forest measures (PA23), only using thinning as a management measure (PA18), only harvest damaged stems out of forest, thus helping natural gap creation (PA1). These four whole-estate clearcut-free configurations are doing clearcut-free integrative, where several values are produced and maintained in the same forest. However, one of these is being capable living from timber harvesting (PA23). One is in an industrial manner, reframing measures and planning from clearcutting to selective cutting being able to maintain a canopy throughout the whole holding (PA25). Two practice accounts with small estates are focusing on different products and values where timber extraction is done but not because of economic gains, but in order to form forest into certain shape (PA1, PA18)

In the partial clearcut-free configuration, clearcut-free methods were combined with conventional clearcutting methods, either across different stands separated or as a reaction to site-specific objectives or conditions within a forest stand. The two configurations distinguish in their spatial extent, as in the relationship to conventional forest management, in planning and executing measures as e.g.

harvesting, economic organisation, and thus forest management is reconfigured comprehensively or selectively.

The whole- and partial-estate distinction is applied throughout this analysis. The practice complexes described below occur in both configurations, but their elements, relationships, and importance might differ whether clearcut-free management is applied across a whole holding or alongside conventional management. If they occur solely along one configuration, it is explicitly stated for every paragraph. If not specifically stated, elements and practices occur in both configurations.

*Determining clearcut-free as clearcut-free*

An example to elaborate on this difficulty is a practice account that can be theoretically seen as clearcut-free, depending on how things are framed. This is also done by a forest owner herself, reflecting on how to refer to her doings.

> We are limited by the fact that we only have 9 hectares. Basically, everything was logged back in the 70s, so the entire property is essentially middle-aged pine forest. We also have some former farmland that is becoming overgrown and is more deciduous in nature. In practice, then, we haven't done anything other than thinning. It also comes down to the timeframe. We could call it thinning, or we could call it continuous-cover forestry, I don't know. (PA 8, north)

This shows that firstly forest owners themselves can be critical toward the usage of terms, and secondly forest management farming of concepts can be arbitrary. I understand this specific practice account here as a partial-estate configuration. This is since so far, the actual forest structure is a thinned monocultural forest. Regeneration possibilities and status are not known. Most important is then what the owner is intending to do with the forest in the future when a theoretical final felling age is reached.

### 5.1.2 Cultivating forest as an economic and intergenerational asset

Owning a forest privately affords handling an economic enterprise. Private forest management practiced conventionally with clearcutting and/or with clearcut-free alternatives, has economy, in the shape of monetary gain, liquidity, or avoiding negative economic outcome as a central meaning. Holding forest is understood from an income-generating resource to cash-flow positive to self-liquidating asset. It is also frequently understood as a collateralizable investment possibility.

> Having a forest is a profitable investment. Both because it stands and grows and because you can get capital when you sell it. (PA 12, north)

This economic resource is as well thought of as being exclusory accessible by the private owners themselves, which mediates the ownership rights. However, the extent of how lucrative forestry practices must be according to private forest owners varies, thus economic thinking and meaning. This can stretch from holding forest to be understood as an economic asset when going into pension, as solely an investment that should produce market-related gains or returns for maintaining forest and owned land with its buildings, machinery used, and/or to pay entrepreneurs.

> I want to be paid as well as possible. I want to get out timber because that's what pays the best. That's why I clear and thin, but carefully, because I want to keep the forest feeling all the time. I sell the timber, but what I get for that, I used to pay for my machines. I have a good set of machines, and it's paid for with the forest I've sold. I probably won't make profit, but I pay for all the machines and the way I service the machines, I service them. (PA 24, middle)

This more circular take on the local economy is also recurring in the shape of usage of reinvestment into local expenditures, but also in using own produced firewood, so reducing costs for heating. The own produced wood is as well used as building material on owned holdings. This is that the clearcut-free management has the possibility to produce higher-quality wood due to growth under several forest layers thus more continuous and with more even year-rings. Also, to have forest in the family comes with economic meaning owning forest as a returning resource. This is understood as a status quo, what forest is and what is should bring to the table.

> Forest runs in my family. We have an old family farm in *Småland* that has been owned for generations as far as the church records go. My father has forest and my brother has forest. The forest has somehow been an obvious part of being able to take out some money and strengthen the coffers. That's not wrong either. It's clear that there is an economic aspect to my forest, not just a fun feeling. But then the ambition may not be to make money from the forest, but the measures you take, they should at least go around. (PA 7, south)

With clearcut-free management comes the notion that practicing clearcut-free forestry partly shifts toward diversification of forest structures and possible product streams and thus shaping the practice of taking risk. There is a shared awareness that economic profits might change in the temporal scale and decrease in income relative to monocultural rotation forestry. In relation to this a long-term perspective is applied, thinking for e.g. future family generations, where these possible economic drawbacks are accepted knowingly. This is that future uncertainties, in form of altered ecological and social conditions through climate change, are the projected material conditions that are considered by shifting toward clearcut-free management. This future material condition relates to thinking sustainably for

future generations incorporated in the caring for other family members. Thinking family forestry (a more nuanced social grouping than private forest owners) through several dimensions and in long-term relates to practicing clearcut-free with the meaning to create more resilient forests for future climatic uncertainties. This for coming family generations where continued economic benefits are central for further existence of being a forest owner as a lifestyle, where ecological and social considerations are aimed for just as economical ones.

> It's almost like a guarantee that the farm can remain through the forest. If you don't take care of it, manage the forest in monocultures as it is now. You want to say that it's exactly like with the arable land. And that it will be the same climate [here] as in the Mediterranean in 80 years. Then you've dug your own grave a bit. You have to start the transition now. We had children and I don't know if they will want to live here. But, in order to even be able to give them a prerequisite to live here, we have to try to at least create the conditions for there to be the possibility of financing in the future, which I don't think we will if you keep ignoring the problem. (PA 25, middle)

Economic change on a temporal scale; with clearcut-free practices there is a regular economic yearly return. By this a more continuous access to monetary means leads the income from forest raw materials back into the own and/or local economy, a partially more circular economy from forest is practiced. This surely is related to holding size and whole- or partial-estate configuration as possible configurators.

> Long-term good economics. Continuously that you can make some kind of economy every year. Instead of waiting a hundred years for final felling. This comes with a continuity that there is the possibility of using the land for as many purposes as possible. (PA 15, south)

*Thinking production*

The production potential of forest is understood as baseline, where the industrialised planting of monocultures and the with-it coming production rates of forest are not re-visited but carried into practicing clearcut-free or other alternative ways of management without re-interpretation. By this every other doing and its monetary outcome is relative to this baseline. This is a recurring embodied understanding of what forest should be and do in relation to market dimensions. Economic payouts shift with clearcut-free on a temporal scale, but the amounts of gain are compared to clearcutting outcomes. A profit-oriented way of understanding forest in line with industrial standards.

> The research that we have read, in any case, says that production if you have continuous forestry decreases by 40%. And then you have also reduced the possibility of using processed plant material that can give another 10%. And then we are down to 50% of production. And I think it is so incredibly wrong to think that way. Based on this discussion about the need for carbon sequestration and active forestry. And the products that come. If you are advocating for us to have continuous forestry throughout the

> country, then you also have to accept that you are advocating for half of all timber trucks to be removed. Then it is half of all timber truck drivers who will also be unemployed in the countryside. Half of all sawmill workers, half of all pulp mills will be removed. Half of all our export revenues for forest products. Half of I don't know how many thousands of jobs will be removed. And then it should be balanced by the fact that there will be some new jobs by going out into the forest and making coffee with tourists. If I may be a little sarcastic. (PA 14, north)

This is not solely showing how there is a lock-in situation with the current forestry standard, but also that forest owners understand themselves (often) to be part of this industry complex. Private forest owners often understand themselves as being primary producer in the wider value chain of the industry, serving the forestry industry of Sweden. This can create a feeling of belonging or affiliation, being important, contributing to the national product. Simultaneously, private forest management is oriented toward the doings in the industry.

This way of thinking is partly translated into the private forestry landscape. Were the things done different as e.g. clearcut-free areas is economically internal cross subsidised by applying conventional monocultures on other parts of the holding. This embodies the economic logic that one part of an estate and/or the management method applied 'pays' for or makes possible certain doings in another part of the estate with another management method

> You have to clear fell so that you get back large parts of what you have paid for. Then you have a little more freedom how you manage the property otherwise. It makes things a little easier in certain parts, to be able to do and test other things. I have actually got quite a lot redeemed even in the last few years both in reserve formation and biotope protection. Which otherwise would have become voluntary provisions that now provided capital where you can amortise loans and other things. That gives you a lot of freedom how you can manage your forest too. (PA 11, north)

So, practicing clearcut-free is understood in need to be subsidised on one or the other way. This logic is vastly dominant in the partial clearcut-free configuration. This can be e.g. through state subsidies or through internal cross subsidisation of a holding where one forest management is 'paying' for another one.

*Living of the forest through private and clearcut-free forest management*

Several of the interviewed clearcut-free management enactors had their forest as a main source of income, including accounts with whole-estate clearcut-free configuration. Being able to make a living from their own forestry requires spending time in the forest working, not as a paid activity, but selling the extracted timber themselves generates income. Here is to say that one of the four whole-estate configurations is producing its main income from timber extraction. Whereas two other whole-estate clearcut-free configuration accounts focus on non-timber forest

products (NTFP). In these clearcut-free management and related timber extraction play one of several roles, economically. Therefore, it is difficult to state or define how a clearcut-free forest contributes to multiple-income sources. To give a picture; two whole-estate clearcut-free accounts were occupied with multiple ways of entrepreneurship. This stretches from cultural activities to cabin hotel to giving courses to foraging to selling of small patches of aesthetic forest land for holiday usage.

However, a further necessity is material, an own machine-park for work in the forest e.g. in the form of a tractor with a forwarder setup and a small sawmill for further wood processing. This is when the owner herself is actively in the applied measures. Or access to a contractor with machines and clearcut-free competent operators.

Self-employment in forest management, to work physically in the forest oneself as owner and manage several steps oneself, can more easily be put into practice when managing with clearcut-free methods. This is since the whole chain from planning, felling to processing of the timber to selling it is made manageable for one person.

> The main idea is to be self-employed, which means setting up your own business and creating your own work and income. I'm not encouraging to clear-felling, but I'm still trying to find employment and new ways to make more money from the raw material. I have a lot of nice old wood that I'd like to refine or sell in smaller batches. Otherwise, it becomes like large quantities and low profitability. And then there's the connection to some really scenic places, like those islands, which is why I was thinking about it even before buying. I'm trying to find ways to use this to extract values while keeping both the natural environment and visitor experience in mind. (PA 10, north)

The other practice account when forest was as a main income source, needed a large owned forested area where continuous income is generated and contractors are working on several occasions in a year on the holding. Competent advisory and contractor or machine operators are thus afforded. In this practice account, there was active turnover of advisors until the ‘right’ advisor was found, similarly with the machine operators.

### 5.1.3 Networking, learning, and legitimising clearcut-free

17 of the total 25 investigated practice accounts were part of a peer network. These included *Skogens mångbruk* a national network (n=10), *Spillkråkorna* a national network for women who own forest (n=3), *Biosfärområde Voxnadalen/Voxkedjan* an umbrella organization and economic network that brings together local forest owners and local wood-processing companies (n=3), and *Dryaderna* (n=1) a more local network communicating through the private internet platform (e.g. Facebook) which functions in this case as a limited public forum.

Doing clearcut-free proceeds a notion that I call here networking-learning-legitimising clearcut-free. Depending on the context, a precursor rearticulates practices such as searching for like-minded people through a continued canopy or responding to forest damage, without knowing how this may lead to management practices that promote the search for peers, trust, like-minded communities, or examples of clearcut-free forests. However, what I want to underline here is the interconnectedness of doings and sayings, to network, to learn, and to legitimise, which are source for adopting competences, developing meanings, and possibly sharing materials.

This can be acquiring know-how and trust into clearcut-free methods through peer networks. The practice of coming-together in peer networks which (often) contain enthusiasts (*eldsjälar)* on theoretical knowledge and practical know-how. The competence can stretch from academic levels (e.g. pensioned forestry scientist) to generational clearcut-free know-how in a family or professionals working as advisors having an openness to alternative forestry and a critical stance toward conventional forestry. This means there are carriers of competences who are sharing and transmitting know-how and/or meaningful perspectives related to clearcut-free. These competences are central to clearcut-free practicing.

> Yes, it's certainly true that we need someone who is passionate about this. Someone or preferably a few who are passionate and think that this is important and think that their thoughts or ideas are worth giving to others. (PA 1, south)

Private forest owners acquire the competences required for clearcut-free management through participation in a variety of peer networks, thereby becoming recruited into and contributing to the reproduction of the clearcut-free practice complex. Exchanging experiences with other forest owners and knowledge hubs cultivates clearcut-free practices. In the Swedish context, recurring peer networks include *Skogens Mångbruk*, *Spillkråkan*, and the biosphere programme *Voxnadalen*. These associations may be professionally organised, with yearly membership costs, as in the case of *Skogens Mångbruk* and *Spillkråkan*, or operate more dynamically through social media groups. The networks bring together passionate and skilled advocates of clearcut-free practices, academically based profiles with theoretical knowledge, and long-term practitioners, thereby combining technical know-how with competencies related to the meanings and values of clearcut-free forestry. A central element of these networks is the social establishment of meetings, both in forests and in evening gatherings at private or communal venues, where trusted individuals can share experiences and knowledge. In particular, encountering clearcut-free forests in person contributes to building competence and meaning, while the active exchange and combination of different forms of know-how during such meetings contributes to the recruitment of new

carriers and the reproduction and maintenance of existing carriers of clearcut-free management.

> It's the exchange of knowledge and sometimes having the opportunity to look at differences in a practical way. That is, to visit other people's land and see how things have been done there. (PA 7, south)

> I find that many people say when they come to meetings that they really appreciate being able to talk to others who are doing something similar and that there can be quite detailed discussions. (PA 8, north)

In regard to this, time-management around building novel competences and building trust in clearcut-free methods is another element to consider. This is that the activity in taking part at several steps in private forest management increases when performers are less work-life occupied.

Trees are slow growing, it needs a long time to have number-based evidence, which is often asked for when it comes to the recurring saying, ‘we need more knowledge’. By this is meant to have clear scientific results of how clearcut-free management is economical viable, what a sufficient regeneration under a canopy is, or how production outcomes might change relative to conventional management. However, some knowledge refers more to an experienced know-how that is transferred through long-term practitioners of clearcut-free who act as transmitters. This know-how is thus not of a practical character but of a trusted experience. This trusting gets relevant when a novel performer of clearcut-free is recruited. Similarly, but often including practical know-how, this process happens in generational forestry. This is that clear-cut free practices have been practiced throughout generations, where know-how is transferred through long-time accompanying of a parent or other family members practicing clearcut-free. Here, outcomes from clearcut-free management are embodied and experienced as status quo including economical outcomes and related procedures. Related procedures can here refer to planning and harvesting processes in forest, communication with advisory or governmental agencies.

To be networking and learning, there is an active engagement needed as is openness to participate in new social encounters, which can be seen as an embodied competence of owners and/or knowledge-carriers. There might be a tendency of what kind of people, with certain character traits and/or openness for social interaction, are participating in these forestry come-togethers, thus being practicing in this complex.

### 5.1.4 Organising forest work and performing clearcut-free silviculture

*Silvicultural approaches referred to in private clearcut-free management*

In this investigation, clearcut-free approaches and sub-concepts practiced by the interviewed private forest owners were referred to as clearcut-free *hyggesfritt*, selective felling *plockhuggning*, targeting diameter-class cutting *blädning*, continuous cover forestry (CCF) *kontinuitetsskogsbruk*, uniform shelterwood *överhållen skärm*, gap cutting *luckhuggning*, close-to-nature forestry *naturnära skogsbruk*, or simply doing thinning without a final felling *gallring utan slutavverkning*. Frequency and intensity of these specific clearcut-free methods applied in the forest, thus their outcome, their appearance, and productivity, may vary, but this is not in focus here.

*Opportunistic clearcut-free management*

Practicing clearcut-free management is partly practiced because of an opportunity created by biophysical happenings. This is something rather occurring in the partial clearcut-free configuration. Stress on production trees, mainly planted spruce trees being extreme water stressed, wind-felled or attacked by insects, or all three of these, results in patches of dead and dying trees. These open patches in the forest stand are understood by owners or guiding advisories to reduce the overall production of the forest. Instead of taking away the whole forest stand, these by (a)biotic stressors created patches are managed differently. This can be from re-planting for starting a multi-layered stand, to planting more shade-tolerant species creating a mixed-stand or relying on natural generation and thinning for a mixed-forest. However, the overall notion suggests that partial enactment of clearcut-free management is not solely practiced due to a deliberative action or a social or institutional setting but also due to a material condition. This is when the one-way structured production forest is affected by increasing stress. This material condition reconfigures the practice; the material condition of the forest is obviously changed, which can function as a wake-up call in itself, re-considering competences and meaning that monocultural production forests come with risks or one investment concentration, and thus that a continued canopy or a closer-to-nature approach upholds natural ecosystem functions in another way or that having several tree species in several layers' spreads risk more.

Reacting on abiotic and biotic impacts, mostly in the form of water-stressed planted trees targeted by bark beetles or wind felling, were recurring happenings that lead to regenerating these naturally created gaps in the forest. These experienced failures of the conventional forest management approach, mainly in in planted Norway spruce in dense monocultures, can relate to a re-evaluation of how regenerating can

be done in relation to adoption of future uncertainty. Several different approaches for regenerating forest gaps but also larger forest patches e.g. through partial cutting were reoccurring; relying on natural regeneration of mainly broadleaved trees, planting of other tree species or promoting naturally regenerated and released small spruce and/or pine. These measures to fill the forest with new production are related to the competence that the future forest structures will be multi-layered thus being in need to be managed as such. To actively fill forest again with producing trees, thus exploiting the full potential of the owned forest land is a recurring meaning. The related meaning is to alternate structure in the forest, from a one-layer forest structure to a varied one.

> Thankfully, I had to cut them down due to the spruce bark beetle. It was a 100 per cent spruce stand. So, I cut them down and I'm going to plant Siberian larch on one of the gaps and pine on the other. (PA 24, middle)

There are practices where owners only react to these created gaps, in the way that these determine where forest management is applied. Disturbances steer where damaged stems are taken out, as an only management measure.

> We harvest only what has blown down or what the bark beetle has killed off. You could say that's the level we've been operating at since 1995. (PA 1, south)

Only a hand-full of the here investigated practice accounts relies on natural regeneration with the meaning that tree species that thrive on a certain ecological site with its conditions will regenerate, thus being more adapted to local conditions. Also, practical implementation of clearcut-free is from below a hectare to several hectares, but never a large part of a holding when partially implemented.

Regenerating these forest gaps coming from (a)biotic damage can be promoted trough advice that considers ecological resilience of forests. For example, birds which find habitat in a more diverse forest are understood as ecological pest control. This derives from a two-way communication, a collaborating owner-contractor relationship, giving attention to an owner's interest and weighting these shaping management. A shift toward clearcut-free thinking and management that is enabled through an existing competence in advisory services which is part of the market sector. How reoccurring the access to this advisory competence for a private forest owner is, is another question.

> It's like [the advisor] says, how much bark beetle can you tolerate? We've been drilled the whole time we've owned this forest to take [the spruces] down when it's bark beetles. Our advisor asks instead how much we need to take down actually. Bring birds that will eat the beetles instead and then we try to create forest, let them stand if you think that's okay. And then we get birds here and we get those that eat these pests and maybe hopefully later on we'll replace these spruce plantations and put more leaved trees here.

> So, we gradually change the forest. I thought that advice sounded much better than being completely panicking about the beetles. (PA 25, middle)

*Access to machine park*

To be driving forestry machines needs access to a machine park which can include tractor, processor, cart, chainsaw, excavator in the forest. A continued processing of the extracted wood from the forest practiced by the owner herself can happen when there is a sawmill at the farm. It needs the competence to operate these listed machines which can be learned along other family members or in courses or auto-didactive. Within a family forestry context on farm, this early learning how to drive and use different machines or from workplace where larger agricultural machines are used. When it is the case, that a private forest owner herself actively works in the forest with machines it needs the competence to use these. The machine of choice when an owner herself operates is a set-up out of a tractor with a lift and grab, and a timber trailer. When forest owned and actively managed self over generations, the know-how of both machinery usage and clearcut-free management transfer often as a package, the know-how of using the tools and machines is embodied at a younger age.

> I work with farming tractor with a trailer and a wheelbarrow and a chainsaw. (PA 23, middle)

Using a machine park, needs both know-hows to manoeuvre machinery but also financial assets. The latter often are made possible through income gained by selling of self-harvested timber in form of delivery wood to industrial buyers. This income is invested in new machinery or maintenance of already owned machinery. To have own machines opens up for flexibility to act within own forest, both timewise and spatially.

*Organising and coordinating forest work*

Working independently in the forest as forest owner; this can be in form of executing silvicultural measures oneself in the forest, reaching from marking trees, to cleaning and thinning, to harvesting and getting the harvested stems out of the forest. For this to be practiced it needs the right machinery and know-how to operate these. However, forest(ry) is getting so main occupation of a forest owner workwise. When practicing clearcut-free, to extract continuously timber through selective cutting from forest makes this way of living more accessible or possible.

> Things have changed a little over time, they certainly have. For me the important thing is, as I first described, that I am self-employed and work all year round in the forest, and [clearcut-free cuttings] then to actually spread work out. I have bought myself work, so to speak, investing in the forest to then be able to pick out a little bit every year, a little value every year. Then of course there is a connection to the fact that I like a lot. I like

> the forest, I like forestry, being self-employed for many years, that you can do good things yourself, without giving everything into the hands of contractors. (PA 10, north)

Practically, the competence and possibility to do measures in the forest oneself as an owner gets accessible with clearcut-free management. This is since lesser trees are felled and to be taken out of the forest and in need to be further processed which decreases the need of heavy and/or industrial technology and machinery. This is within private forest management where holding sizes are relatively over-viewable, from two hectares to middle sized holdings. Here, the element of being self-employed plays partly in.

Harvesting stems, from small patches or due to a certain reached diameter, is coordinated and/or performed by the owners themselves. This can be in form of close collaboration with harvester drivers or moto-manual work with motorised handsaws by the owner herself where stems afterwards are extracted also by the owner. When practicing on whole-estate clearcut-free configuration, a larger scale, harvester running-time, and thus costs, is allocated to measures which are spatially smaller but at more sites. Meaning less time at the same spot but working at are more sites where harvesting measures are executed distributed over the whole estate, relative to conventional felling.

> We are doing more and often smaller measures now. That is thanks to the fact that we've rearranged the entire property. The machine moves, that's what a lot of people are talking about too. That it's so expensive with all the machine moves. But since we've rearranged the entire property, we're doing a lot of small measures throughout the property. And then the machine moves won't be as many. We can bring a machine here and then we'll do an action in area one, seventeen, twenty-five and thirty-four. And then next year we'll do actions in a few others but with the same machine. (PA 25, middle)

Entrepreneurs with harvester and forwarder are practicing with in advance planned time slots and following described work tasks. A fast change or acute measure application is therefore with entrepreneurs rather seldomly applied. However, there is overall a notion of forest owners ‘going back into the forest’ applying practical measures.

*Finding and collaborating with ‘the right’ contractor*

The performance of clearcut-free harvesting was frequently integrated by distributed competences shared between forest owners and contractors. Interviewees emphasized the importance of contractors who possessed both operational harvesting expertise but also understood and were willing to work with the owner's alternative or un-conventional management vision. At the same time, interviewees frequently described the limited availability of such contractors as eroding the wider performance of clearcut-free management.

> Finding the right actors. It's not easy. It starts with finding those who understand what we want with our forest and can also put it into practice alongside our vision. And it's also access to contractors and equipment that can handle a different kind of forestry. […] We had already tried a few different [contractors] before we had met a good person, but where it didn't last all the way. There was a miscommunication and so it was still done as usual. So, we continued to search and see if there was anyone more but honestly, there aren't that many more [competent contractors]. The risk is that we would have either ended up with someone where it hadn't turned out well, when they say yes, we'll do it even though they don't believe in it and then it won't be done well just to prove that it wasn't a good idea, strengthening their point. (PA 19, middle)

This illustrates how the competences required for clearcut-free management are distributed across owner-contractor relationships and the availability of visionary-collaborative contractors who are embedded in the broader market and professional environment.

Collaboration can be extended also to the collaboration between owner and advisor, thus reconfiguring the forest management complex. By changing forestry service entity, many of the interviewed private forest owners changed their advisor and/or entrepreneurs or both (since these sometimes exists as bundle) until they found for them reliable and trusted advisors and/or entrepreneurs. This change of available service provision was in several cases as well the starting point for clearcut-free management being implemented. The new service provider had competence in how this implementation could practically be done. As in the following example, where large machines and clearcutting were the only possible solution as seen by the previous advisor.

> And when we had our new advisor, he just said, no, it's just that we have to create roads to be able to handle it. With today's machines, of course we can use smaller ones, but then we can't handle the bigger trees. So, we have to have quite large machines, we only have to plan constant machine paths. That's what it's all about. And that we have to do a little more planning in our actions. (PA 25, middle)

A transition of the whole forest estate to clearcut-free needs willingness to be active in the implementation of the owner herself, going beyond norms which can come with harsh critiques of advisors, other family members, and other close-by people. Sometimes, it is about being able to deal with advisory perspectives that are not clearcut-free optimistic. Thus, practicing can require more than technical knowledge; it demands in several cases a social resilience and individual agency. This is related to a psychological skill of withstanding social isolation and/or biased advice as forest owner.

> We heard something from our advisor that it's not possible [to manage clearcut-free], because there are so many big machines these days. He said it is unfortunate, it's not possible to do clearing-free because they have to work on a broad front and take down

> everything. That's how it works these days, and there aren't any machines for anything else, he said. I said yes, but you shouldn't have to use a horse and cart because that's too hard to believe, there must be other options. (PA 25, middle)

A further step then is tending to test things. Being able to do so can be related to having a less-economical-dependent setting in regard to forest and an optimism that things will work out (since they do for others practicing clearcut-free). And when testing, being ready that outcomes might be not as thought of or predicted, or that outcomes might be even better. The economic viability of clearcut-free forestry, in a comparative sense to conventional forestry with clearcutting, is ongoingly discussed on in the sector creating a large spectrum of possible projected economic outcomes. However, having the competence, both as owner and advisor and maybe even as harvest driver, to look past these economic uncertainties because a meaningfulness of forestry is found in other aspects and dimensions; as reported e.g. providing resilient forest thus resilient financial resources for future generations in family.

> We've taken the first step now [transitioning the whole estate to clearcut-free]. We were pretty excited because we thought we were going to go back financially. Our advisor was serious, and he'd told us this won't ever be financially viable. What are you doing, are you stupid? I don't know how you'd even go about to transition the whole place! But I mean, this withdrawal, it was like. Yeah, I was surprised by how liquid it was. It was four times more liquid than I expected. And we didn't go back in a single area. So, we haven't taken the forest down, it is still there and the take outs are barely visible. (PA 25, middle)

### 5.1.5 Using forest beyond timber production

Multi-usage of forest is enacted through the competence knowing that forest has several values or services. Using forest's services that are contained with clearcut-free management relates here mostly to a diversified forest-based income outside of traditional forest industry and commodity sales. To manage and steward forest for production other than timber is a meaningful element depending on what for other possibilities a clearcut-free forest can offer but also directs material usage. However, to manage clearcut-free and being able to exploit multiple-usages thus multiple values from forest, takes time. A material caveat; trees growing slow.

> Clearcut-free has several positives, it could be the quality of the wood. It could be social values to develop industries linked to social values, tourism and other things. Natural values too, which have a value again when it comes to social values. So far, we have kind of created forests that it's a challenge if you want to do something different with it. It's difficult, how do you change? How do you get forest into several layers? It's also very long times in the forest to create something different. Restoring feels almost impossible in some cases. (PA 5, north)

Thinking of multiple use influences how forest is managed and what values and meanings are related to this. Meaningful here is the understanding that forest is a site of multiples. Multiples need consideration and/or weighting things. A present meaning is an economic one, as an asset.

> I want variation in the forest, partly because it's nice and because it's good for nature and for recreation, for sports and life. And especially in this area that is a little closer to the village and the electric light track. That's where it's extra important. Then there's an economic aspect to it, but the economic aspect doesn't have to mean taking out the maximum volume. But it might be better to take out something that's valuable, i.e. more timber. And that might mean not taking out almost anything but making a nice area where I can sell plots of land instead. (PA 16, north)

Another pathway of living from or producing from private forest management is to solely rely on clearcut-free forest without timber selling. This can be via building a business around the continued clearcut-free forest, as e.g. a hotel business that offers over nights in small tree houses in an older scenic forest. A further observed practice is managing forest toward forest with multi-layer characteristics through clear-cut free management being able so to leasing small land areas with huts in natural-forest-looking site or even planning to sell these at a later point of time. Further extraction and reported practices relating to non-timber forest products (NTPF) can reach from collecting berries, to cultivating mushrooms under a continued canopy, to extracting bark and making flour out of it.

Using forest beyond timber production also relates with the action of ‘going back into forest’, both when it comes to living and working. Being place-based close to the forest creates a closeness which asks for more to utilise from forest, not only timber. There is a contrast when living in rural area but working in urban area, thus having economy in urban area. And vice versa, when living and being self-employed in the rural, economy is more localised.

> Forest contributes more to rural development with more activities in it. It is about opening eyes to makes more people think new things about their forest or the forest in their vicinity. Also, the forest as a resource. Developing activities with the forest as a base as it is called. Maybe to think or sort of understand that there are alternatives if you now want income from the forest, there are alternatives to just selling raw materials to industry. (PA 9, south)

### 5.1.6 Processing and selling wood-based products

When damage in forests occur, mainly reported in form of an intensified interaction by windthrow and bark beetles, the damaged wood is extracted out of the forest. Due to the market setting in Sweden of low prices for wood classified as damaged, owners use wood themselves or sell it to end-users directly. The wood classified as

damaged has often no physical distinction from un-damaged wood traded, thus being a similar material to handle but the surrounding setting prescribes prices. In order to circumvent this paradigmatic industrial value chain, , damaged wood is traded in the local and to private end-users or small businesses, if not used by an owner herself. To go besides the established value chain where timber is sold not to the industry but to end-users of the wood, it needs material conditions that make it possible to sell peu à peu.

> I think the most important thing is that you get customers. The second most important thing is that you don't have to sell. So, we can have these planks lying in our outbuildings here until someone comes who wants to buy them. The third most important thing is that we have a great saw. (PA 1, south)

This goes in hand with the shared meaning that there should be a nuanced market for different timber qualities. The current Swedish timber market, on the level accessible for private forest owners, is dominated by insufficient timber quality classification. Therefore, alternative ways to get income from forest raw sources, which are not extracted the common way in large quantities, are actively investigated and enacted by the interviewed private forest owners.

> I've got a small sawmill where I process a bit of timber and cut some logs myself. It's mainly to deal with windfall, so the volume is quite small. Otherwise, most of it goes out as deliveries. That is something I've been thinking about developing a bit, I've been in touch with a few joinery workshops and put together a small range of special quality wood products. I'm trying to spend more time myself on getting a better price for good raw materials. (PA 10, north)

The local, regional, and national processing and application of forest raw materials from the forest as a meaningful enterprise supports to being a seller and/or arranger for local value chains. This is both due to higher economic benefits but also because of wanting that their product, wood produced over a long time as experienced by human, is integrated into a 'purposeful and/or sustainable and/or long-lasting' manner. Since the setting of the forest industry complex in Sweden only partially provides this with the main focus being on pulp production and exports, engaging in finding and selling to private customers is part of this complex.

Networking can support further timber processing by connecting producers with customers and so affords a bypassing of industrial markets where large companies organise bulk deliveries. Forest owners come together to deliver to end buyers directly.

> Forest owner networks provide tips on what others have done. And in a further step, you try the tip and maybe even collaborate with others from the network. For example, if the furniture industry now wants hardwood. Maybe it's you how should with some other

> small owners who collect their wood go together. Everyone saws it at the sawmill and then you get together a proper delivery. That's what we do. We don't go to any further processors, but we go directly to the private customer, you could say. (PA 1, south)

This needs some kind of entrepreneurial know-how, the network delivering larger amounts of timber to private end use or local small-scale companies. This is being able to make financially sound use of clearcut-free or broadleaved forest products and not sending it to large industrial companies. This comes as well with the meaningful long-term usage thus carbon storage in wooden products.

### 5.1.7 Stewarding and identity practices

Physically working in forest is a bodily activity and way to stay active. This can be understood as a hobby to be involved with the land one owns. To exist and being longer periods in the forest, has the potential of creating a closer relation between an owner of land and on its existing ecology. Partially this is also related to the meaning of owning land, which can reach from a materialistic understanding to a stewarding understanding. Being capable of routinely working in forest, is more performed by practitioners in pension-age, or owners who are self-employed in their forest. Seeing it as an occupation or hobby shapes the scale of production and its monetary value. .

> I don't have the forest to make money from it. It's my interest, my hobby and my local environment and I want variety and diversity there and so on. Forests that you can walk in. (PA 24, middle)

Understanding the owned forest as a resource with multiple values and purposes. informs the stewarding competence to think beyond owning rights. This lifts gaze to societal needs and benefiting informing how forest is understood but also managed.

> I see myself as part of a long chain. I have a responsibility to preserve everything I own in a wise way, so that I produce it not only for myself and my family, but also so that it becomes products for society and jobs. In this way, I contribute to society, I think. And I contribute strongly to the global climate through active forest management. And I am proud that I can do this and at the same time have a forest property or own forest land, which many people find pleasant to be in. There are social values in it, if you put it that way, it is nice to be there, it is varied, there are a lot of natural values that I manage. Or manage… some of it I leave untouched, and some I manage. (PA 14, north)

This is not a universal competence among all clearcut-free enactors, can be contrasted by understandings which are oriented mainly toward financial return or toward aesthetical shaping. Here the size of owned productive forest land plays a certain role. However, owning a forest can be understood not just as a production

asset but also as stewarding ecology, placing this in context of a continuation of life even when oneself is not present anymore.

> It's about leaving behind a well-cared-for place that you've lived by. (PA 20, middle)

On the other side, private forest management when practicing clearcut-free is still related to owning rights and an independence in how forest can be managed. Private forest owners, want to have the upper hand and are happily compensated when infringed.

> Well, the species protection regulation, many people are negatively disposed to no-logging, because they connect it to the fact that when things are being preserved, then species protection comes in. And then I don't get paid. It needs political solutions that make it clear what species protection actually means. If I have something that needs to be protected, that I get paid for it, that it doesn't get complicated, that I have to wait 5-10 years to get that compensation. (PA 16, north)

*Concerning time of human realities and forest*

Becoming forest owner in a younger age can contribute to practicing site-specific and site relational, to develop know-how, a tactileness toward the doings in forest. This in turn can make the relation between the managers of forest and the managed forest to be meaningful in other terms than simple extraction possibilities and monetary profit; forest is thus a closer associate.

> I can only say that I think it is a favour to become a forest owner at the age of 25. Which is good, to start making decisions about your own forest very early in life. Now I am almost 40 years old. I have cleared forests and planted new forests. I have first thinned and even second thinned forests that I have planted myself. Then you get a different perspective on forest ownership and the dynamics of the forest when you follow the same forest all the time. It also makes you emotionally attached to your land because I have spent so much of my time actively working in my own forest. (PA 14, north)

## 5.2 Shared and linking key elements constituting clearcut-free

I provide here a summary of recurring practice elements and settings among the 25 practice accounts of both the partial- and whole-estate configuration. I interpret these recurring elements as linkages of practices into complexes constituting private clearcut-free forest management. Conceptually, I give nuances for each element. This is since separating things and structuring practices is somehow counterworking the theoretical idea itself. However, to pragmatically being able to report a brief summary of findings as well, I chose to depart form the three practice elements (materials, competence, and meaning) constituting practices.

### 5.2.1 Materials

Material elements of practices are physical and organisational matter including technology, infrastructures, ecological resources, or bodies. Conceptually, I distinguish material elements themselves from the ways they afford and organise practices. For example, dead or dying trees, machinery, processing facilities, and storage space are material elements, while their significance lies in how they shape forest management, harvesting, processing, and selling. Machinery is not simply a resource but part of a configuration involving operators' competences, owners' visions, and access to local networks. Similarly, peer networks have a material dimension through digital platforms and physical meeting places, which organise social interaction and knowledge exchange. This distinction helps showing that materials do not configure practices independently; their effects emerge through their integration with competences and meanings.

- (A)biotic damage, arising from increasing ecological uncertainty, transforms forest structures from monocultures into stands with gaps of dead or dying trees. This unintended and unforeseen material change reorganises forest management, often prompting clearcutting. In the examined practice accounts, however, clearcutting is avoided in favour of natural regeneration or planting in the gaps.
- Access to appropriate machinery and competent operators is a key element affording private forest owners to practise clearcut-free management. This configuration is context-dependent, involving, for example, self-employed owners of small forest holdings or contractors with relevant know-how and openness to clearcut-free approaches, sometimes supported by advisory services. Advisors who assign tasks to machine operators also organise the practice by translating owners' visions into action. Unlike the harvesters and forwarders of varying sizes commonly used by forest entrepreneurs in thinning, self-employed clearcut-free management often relies on hand-operated chainsaws, tractors with forestry-specific attachments (e.g. grapples, trailers, and lifting arms with de-barkers), and a capable, healthy body, sustained through daily physical work in the forest. Wood-processing equipment, such as a small sawmill on the owner's estate or one jointly owned through local networks, and storage space until sale further sustain private forestry enterprises. These material configurations enable owners to identify buyers and sell timber products incrementally. Access to, and the ability to maintain and operate, this machinery connects practices into complex small-scale local, and sometimes industrial, forestry enterprises spanning harvesting, transport to the farm or onward delivery, local processing, and sales to end customers.

- Peer networks provide arenas for knowledge exchange and the recruitment of potential practitioners of clearcut-free management. Their material organisation brings individuals together to share knowledge and experiences, partially materialising the social legitimation of clearcut-free forestry. Networks operate through digital spaces and occasional online meetings, as well as physical gatherings in forests where participants visit examples of clearcut-free management. They foster a sense of belonging among like-minded practitioners, legitimise particular approaches, and facilitate the exchange of competences and know-how, as well as connections to buyers of processed timber products.

### 5.2.2 Competences

Competences are practice elements that include both implicit and explicit knowledge, skills, and know-hows. These are embodied making performers capable of performing a practice.

Conceptually, the theme of trust is here understood as a condition through which competence is recognised and mobilised. However, it might be argued whether trust is an element of meaning or competence. Found trust themes are competences embodied in others which then are trusted by owners. Also, trusting practical know-how, beyond non-existing well-explored scientific knowledge when it comes to outcomes of clearcut-free in Sweden, can be understood as a competence rather than a meaning-making element.

- Trust in clearcut-free management is a competence that legitimises alternative management approaches through the expectation that forests can regenerate naturally, sustain production, and develop into multi-layered stands that deliver preferred outcomes. This trust is reproduced through intergenerational family forestry and peer networks, where know-how is shared through events and visits to established clearcut-free forests. Since tree growth exceeds observable human timescales, the transferability of observed outcomes from one forest to another cannot always be directly verified. Trust therefore also relies on word of mouth, others' experiences, and knowledgeable enthusiasts (*eldsjälar*) or long-term practitioners who carry and circulate clearcut-free know-how through peer networks. Trusting these carriers and their less standardised knowledge constitutes a competence in itself, as does recognising suitable advisors and contractors who possess relevant experience or openness to clearcut-free approaches.
- Understandings of forestry as an economic production resource are embedded in conventional Swedish forestry, where monocultural standards establish routinised expectations of growth and production rates. These

understandings are reproduced through everyday management and intergenerational family forestry, in which economic reasoning and practical knowledge are passed between generations. However, competence can also involve understanding forests as ecosystems with limits and processes that require stewardship. A reduced emphasis on maximising timber production may stem from intergenerational practices in which forests have never been understood primarily in monetary terms, or from the rearticulation of forest values through social interaction in peer networks. These alternative understandings enable owners to pursue clearcut-free management and forest uses beyond timber production.

- Advisory competence involves listening to, understanding, and purposefully discussing forest owners' visions, enabling collaborative management through two-way communication. Clearcut-free management requires not only practical silvicultural know-how but also advisors and machine operators who can engage with owners' ideas, even when they cannot fully translate them into practice. Owners exercise this competence by seeking and collaborating with advisors and contractors, including changing advisors within or between organisations to find a suitable match for their management vision. Each new contract can rearticulate advisory competence and reorganise the measures proposed or implemented by accompanying machinery operators. However, changing advisors also interrupts established trust and requires a new advisory relationship to be built from scratch. Suitable advisors and contractors thus connect owners' visions and economic objectives with the practical implementation of clearcut-free silviculture, while potentially affording forest uses beyond timber production.
- Entrepreneurial and self-employment competences afford forest owners to plan and implement their management visions, collaborate with advisors and contractors, actively manage their own forests, process timber, and identify customers. This competence also involves openness to new social encounters, linking timber processing and selling with networking and learning practices. Together, these competences connect forest management, advisory collaboration, practical forestry work, processing, and marketing, enabling owners to organise clearcut-free forestry as both an economic activity and a means of pursuing broader forest values.

### 5.2.3 Meanings

Meaning elements can come in the shape of beliefs and convictions which have become self-evident. It is sometimes the subconscious, sometimes a more conscious meaning-making that doings are done in certain ways. Conceptually, it is useful to distinguish meanings from anticipated outcomes. For example, resilience,

biodiversity, and long-term economic stability may function as meanings that give clearcut-free management purpose and legitimacy, while tighter growth rings, reduced costs, and alternative income streams may be understood as expected or experienced outcomes that reinforce those meanings.

- Long-term economic stability with resilience thinking broadens the meaning of forestry beyond economic profit maximisation. Clearcut-free management is associated with multi-layered, mixed-species forests that diversify production risks, here comes the idea of having "several eggs in the basket" from. This understanding of forests as more resilient, long-term productive resources is shared and routinised. It also relates to pluralistic forest values, whereby maintaining forest cover enables multiple services and income sources alongside timber production. Depending on the management method, these may include renting out forest cottages or other forest-based activities, and non-timber forest products (NTFP). Providing habitats for different species and enhancing biodiversity also contribute to these pluralistic values, although they remain secondary in most practice accounts.
- Self-sufficiency through clearcut-free management centres on using forest resources to meet owners' own needs rather than directing all harvested timber towards conventional markets. This includes using firewood and timber for heating and construction, as well as other forest resources for personal use. Clearcut-free management thereby connects forest management to everyday resource needs and the practical value of the owned forest. The practicality of smaller amounts of felled timber makes the handling of these more workable for forest owners themselves.
- Producing higher-quality timber and directing it towards long-lasting products constitutes an alternative meaning of forestry to conventional industrial production. Clearcut-free management is associated with tighter annual growth rings and more structurally stable timber, yet established markets are understood to lack differentiated channels for these wood qualities, with higher-quality timber potentially ending up in pulp production. Finding suitable buyers and selling timber through local, small-scale networks therefore connects forest management and timber production with the ambition to use high-quality wood in long-lasting, climate-friendly products. This meaning partially challenges routinised industrial understandings of forest production and timber use.
- Clearcut-free management can be practiced with greater autonomy from conventional forestry production systems and their costs. Avoiding clearcutting can reduce regeneration costs by eliminating or limiting expenditure on planting material and planting services. It is also associated

with less invasive soil preparation, with the topsoil disturbed only in patches or where gaps occur. Where suitable machinery, such as a quad bike or a tractor with a grapple, is available, owners may carry out this work themselves. These practices give meaning to clearcut-free management as a way of reducing costs, increasing self-reliance, and becoming less dependent on established forestry production systems.

- The protection and vulnerability of forest ownership rights constitute a recurring meaning shaping how owners understand forest management and their identities as owners and/or stewards. Increasing biodiversity and the potential legal protection of forest areas are understood by some owners as possible intrusion of their rights in managing their land. European policies, including the EU Deforestation Regulation (EUDR), are similarly perceived as potential threats to these rights. These concerns shape how clearcut-free management is implemented and discussed within peer networks, intertwining the meaning of forest ownership with concerns about external intervention. This tension between ownership autonomy and external regulation extends across both conventional and clearcut-free forestry. The tension is therefore not exclusive to clearcut-free forestry but reflects a broader question concerning who has the authority to determine how privately owned forests are managed. Clearcut-free practicing can thus mean a way to meet future international regulations, while it simultaneously could mean a restriction of management freedom through national environmental policy just due to high biodiversity increased through clearcut-free management. However, peer networks have been identified as a site for the discussion of such issues.

## 5.3 Recurring settings

Following Brand (2010; 2014), this analysis conceptualises private forest management practices as embedded within wider settings that shape their configuration and reproduction. These settings are organised into four dimensions: social relations; governance and policy; societal structures and arrangements; and ecological conditions and biophysical boundaries. Rather functioning as external context determining practices, these settings interact with materials, competences, and meanings. Thus, shaping conditions in which particular practices become possible, are sustained, or reconfigured.

These analytical dimensions are interconnected across different social scales. Social relations influence how knowledge, trust, and legitimacy are established and reproduced, while governance and policy establish regulatory obligations and influence access to financial resources. Societal structures and arrangements shape market opportunities, advisory systems, and the availability of time and resources

for forest management. Ecological conditions and biophysical boundaries, in turn, shape the material conditions and possibilities for management while also reflecting the effects of previous practices. These dimensions are therefore not mutually exclusive categories but analytical entry points for examining how different conditions intersect in the organisation of forest management.

*Social relations*

A family forestry setting can set the bar of what it needs to secure future generations prospering and economic existence. Existing peer networks stabilise competences related to clearcut-free forestry. And a two-way collaboration between owner and advisory services, occasionally including machine operators, affords a social relation setting with trust.

- Family relations shape the reproduction and transformation of forest management practices. Intergenerational relations can sustain clearcut-free management through the transfer of know-how but can also generate competing visions of how forests should be managed. For example, younger generations may challenge established practices maintained through long-standing relationships with advisors who follow conventional harvesting and industrial processing. Generational shifts can therefore disrupt established management practices and create opportunities for change.
- Peer networks sustain relations with individuals who possess clearcut-free competences, providing recurring opportunities to exchange knowledge, develop practical know-how, and legitimise alternatives to clearcutting. Unlike one-off encounters, such as forest excursions, ongoing participation maintains exposure to clearcut-free approaches and reinforces associated competences. Digital platforms help sustain these relationships between forest owners, network organisers, and other members when repeated in-person meetings are time-consuming. These networks can also substitute for relations with geographically close forest owners, particularly adjacent neighbours who practise clearcutting, thereby shifting the social relations through which management practices are reproduced.

Owner–advisor relations constitute a collaborative setting in which clearcut-free management emerges through negotiation between forest owners' visions and advisory competences. Rather than passively consuming advice, owners require relationships characterised by trust and two-way communication, in which their management objectives are heard, discussed, and considered alongside professional knowledge. The resulting management practices are therefore shaped by the interaction between owners and advisors rather than by advisory expertise alone. The distinction between public and private advisory is not made in this context. The analysis suggests that the competences of advisors are comprised of individual traits, including the ability to listen and negotiate in a two-way communicative manner, as well as a propensity to be interested in being part of a testing-things notion and 'wanting the best' for an owner.

*Governance & policy*

Private forest owners enact within an institutional setting in which national regulated production minimums, possible financial aids, and increased pressure through European policy interplay with practices constituting clearcut-free forest management.

- Forest ownership provides the material basis for clearcut-free management but also entails responsibilities under Swedish forestry legislation, including maintaining a certain level of production. These production requirements and the potential implications of biodiversity regulations for ownership rights form part of the setting in which private forest owners manage their land. They sustain a production-oriented understanding of forestry in which regeneration efforts remain necessary, including within clearcut-free management.
- Increasing EU legislation on land use and carbon exchange between terrestrial ecosystems and the atmosphere, particularly through the Land Use, Land-Use Change and Forestry (LULUCF) framework, was reshaping understandings of private forestry at the time of the interviews. By increasing accountability for carbon emissions and storage on forest land, these regulations may constrain conventional industrial forestry outcomes while affecting private forest owners perceived ownership rights, autonomy, management options, and economic returns. How these regulatory changes will transform forest management practices remains to be seen.
- State agencies, such as the Swedish Forest Agency *Skogsstyrelsen*, provide financial support for specific forest management measures, indirectly enabling aspects of clearcut-free management. Examples include subsidies for nature conservation management in NS-classified forests (Nature conservation with management), planting noble broadleaves and associated

fencing, and regional support for prescribed burning of grassland near forests, occasionally used by private owners as a clearing measure. However, these subsidies are not specifically designed to support clearcut-free forestry and accessing them can involve lengthy bureaucratic application and processing procedures. Applying for financial support therefore requires specific competences, often held by individuals with previous employment at the Swedish Forest Agency or established personal connections within the agency, including through trusted advisors.

*Societal structures & arrangements*

Societal arrangements afford the arena in which private forest owners can enact practices. Quality-wood selling is practiced in local settings, where direct contact between seller, the forest owner producing wood, and an end customer is established. This is due to a non-existing regional or national market for high-quality wood or special classed wood. Lifestyle design, being full time or part time working on a holding, having full-time job elsewhere, or being pensioned, arranges private forest management. Being full-time involved in a own holding as owner, self-employed or pensioned, is an emergent setting for clearcut-free implementation on private holdings. Different realities of 'living life' in the rural and urban areas configure how clearcut-free management is thought of and implemented.

- Existing market structures provide limited differentiation between timber qualities, as higher-quality wood is commonly channelled through bulk-processing systems rather than marketed according to its specific qualities. This limits opportunities to sell quality timber through conventional advisory and marketing channels. Advisory services, including those provided by forest owner associations, are often shaped by industrial forestry's emphasis on securing future timber flows. These arrangements can reproduce conventional management practices and undermine alternatives such as clearcut-free forestry, which may produce timber requiring more differentiated markets.
- Lifestyle, age, and time availability shape forest owners' engagement with their land and their capacity to practise clearcut-free management. Frequent practical engagement and prolonged exposure to forest diversity can strengthen owners' relationships with their forests and broaden the values informing management decisions. Such engagement is more feasible for those with time outside paid employment, including retirees and self-employed forest owners. Retirement can shift daily routines away from employment-related obligations, allowing the owned forest to become a more central activity or interest. This relationship is mediated by the interaction of available time, access to forest land, and the biological

timescales of forest growth, and overlaps with the conditions enabling self-employment in forestry. Conversely, employment and other lifestyle commitments may constrain the time available for active forest management.
- Rural areas are shaped by simultaneous processes of out-migration and in-migration. Young people may leave for education, employment, and urban lifestyles, while others move from urban areas to rural settings with different understandings of nature, land ownership, and entrepreneurship. These movements may reconfigure how forests are inhabited, managed, and valued. They can also generate tensions between established rural forestry practices and more entrepreneurial approaches associated with newcomers' understandings of rural life.

*Ecological conditions & biophysical boundaries*

Natural happenings create ecological settings, mainly open patches in the forest to which private owners react to with management. These happenings can as well functions as some sort of wake-up call that conventional management, in form of coniferous monocultures, might not be a as resistant or resilient forest structure in future climatic conditions. Natural regeneration is, besides artificial regeneration through planting, an applied approach using a forests ecological condition.

- Natural disturbances, including windthrow and insect attacks, alter forest structures and the material conditions with which forest owners work. Climate change and associated uncertainty about future ecological conditions further contribute to these transformations, making forests subject to increasingly difficult-to-predict disturbances that shape and reorganise management practices.
- Natural regeneration is relied upon following disturbances or deliberate felling, sometimes supported by localised soil disturbance that creates patches favourable to seedling establishment. The availability and quality of natural regeneration depend partly on previous land management, which shapes the existing seed bank and thus the ecological conditions and possibilities for subsequent forest management.

# 6. Discussion

## 6.1 Shared usage of terms and concepts

Clearcut-free forestry is an umbrella term referring to a toolbox of various managements and measures that have in common to not leave clearcuts in the landscape. There are multiple associated approaches and ways of managing private forests in Sweden that are practiced and do not include clearcutting. The here mentioned different clearcut-free silvicultural methods practiced by private forest owners, go in line with previous findings with similar sub-concepts of forest management associated in Sweden (Stryamets et al. 2026). This indicates that there is a shared understanding of what clearcut-free is through practicing rather than through a precise formulated definition framing a concept (Brunner et al. 2025), being negotiated in an arena where similar sub-concepts are recurring.

## 6.2 Private clearcut-free forest management as reconfiguration

Outcomes point also to where clearcut-free practices and Swedish forest policy intersect. The Swedish Forest Agency defines clearcut-free management partly through the forest owner's intention to maintain canopy cover. However, the required duration of this intention remains unclear: a decade, a century or indefinitely. Forests operate on timescales that are difficult for humans to grasp, further complicating this question. Since a forest can always be clearcut later, clearcut-free management remains a practice rather than a permanent condition.

Private clearcut-free forest management is better understood as a re-configuration of conventional private forest management than as an adaption of a distinct alternative silvicultural method. Its meaningfulness lies in how it reconfigures an established practice arrangement by retaining substantial parts of conventional forest management. This is particularly visible where clearcut-free management is practiced alongside conventional management. The different ways of reconfiguring conventional private forest management negotiate to different degrees what legitimate forest management is, in a societal setting where economic rationalisation translates to production maximation through technical development of the forest sector (Ekström Pigot 2026).

The extent of reconfiguration differs between partial- and whole-estate configurations. Partial clearcut-free management can emerge opportunistically or precariously, e.g. when natural disturbances create gaps that private owners regenerate or when owners 'test' clearcut-free on a smaller area. In these cases,

conventional forest management continuous to organise the wider holding and, as such, ‘pays’ for area clearcut-free managed. Whole-estate clearcut-free management involves a more extensive reconfiguration. This is that planning for movement and harvesting as a spatial organisation of forest work has to be implemented differently affording different competence and machinery movement. It also relates to an existential meaning-making that of e.g. transgenerational well-being. It also can shift focus from timber extraction to multiple dimension usage, accompanied by non-timber forest products (NTFP).

It is difficult to elaborate here distinct notions and practice elements, since most of the practice accounts are partial configuration. This makes analysis difficult in understanding what practice accounts are related solely to clearcut-free, or to both, or solely to conventional management. However, solely clearcut-free or as a shared configuration with conventional management have an economical thinking as essential meaning. This can reach from production maximation to that forest production pays for the management of the forest itself, where most clearcut-free practice accounts lie somewhere in between. The here investigated practice accounts are enacted on different holding sizes, where production-orientation is present throughout but in varying degrees. As found by Eggers et al. (2014), passive or conservation management is practiced more frequent on smaller private holding sizes whereas larger, above 50 hectares, are production oriented. This seems to be as well the case when it comes to clear-cut free, regarding both partial and whole estate configuration. A further question is how clearcut-free affects economic dependence of forestry of private forest owners, which is said to be decreasing (Haugen et al. 2016), who are practicing clearcut-free. A handful of partial-configurations, then also practicing further processing and small-scale selling of timber, and one whole-estate configuration were dependent solely on income from their forest.

### 6.2.1 Competence and trust

One of the substantial reconfigurations of private forest management through clearcut-free implementation is where competence and know-how as well as trust are located. Conventional forest management, practiced through a negotiation between industrial advisory services accompanied by timber buying practices, and a forest owner (Lodin & Brukas 2021), is related to scientific knowledge and its professionalisation in which forest development and production outcomes are predicted and quantified. The finding that clearcut-free management is occasionally described as lacking ‘knowledge’ reflects what counts as legitimate forestry knowledge. It is scientific knowledge that quantifies management approach outcomes. This is still a dominant notion of what knowledge in relation to clearcut-free means, notably reproduced by professional advice.

Practical know-how is shared through peer networks and among long-term performers of clearcut-free forest management. This suggests that clearcut-free management does involve also a reconfiguration of what knowledge is relevant and who is recognised as knowledgeable. Instead of relying solely on professional knowledge in private forestry verging on an outsourcing of management of private forest land to industry representatives, trust is distributed differently along clearcut-free forestry. Trust related to what is a legitimate knowledge is distributed between experienced peers, a trusted and vision-intaking advisor and contractors, and forest owners themselves. Here a reconfiguration of conventional management through clearcut-free happens. This is that long-lastingness and localness as trust elements in relation to advice given (Guillén et al. 2015) are partially reorganised to novel social meetings with individuals with new ideas, and to regional or even national peer networks. This does not mean that long-lasting trust and localness are decoupled, rather trust elements are diversified. In some cases, advice is disregarded by private owners when implementing clearcut-free on their holding; in others individual advisors remain important when they are open to an owner's vision of clearcut-free. Thus, advisory competence becomes not only a translation of technical silvicultural knowledge into practical measures, but also being able to understand, collaborate, and realise alternative approaches to forestry than clearcutting. Enacting clearcut-free management practices has been demonstrated to result in the diversification of competence and trust elements within the associated practice complexes.

Clearcut-free management application reconfigures also the way forest owners take part in management itself. The distinction between self-active and collaborative reflects this. Some owners enact clearcut-free through own practical involvement, control over materials in e.g. coordinating and operating machines themselves or through collaborative effort with machine operators. Others collaborate with advisory process in a two-way communication rather than just consuming management measure suggestions. This can be seen as a partial rearticulation of competence needed, in both forest owner and advisor. Forest owners 'going back into forest' can therefore mean becoming involved in forest work, but it can also mean to be more active in defining and controlling how forest management is carried out, thus negotiating it. This negotiation is not solely in regard to practicalities on time constraints, local norms, and emotional relations to certain sites in forest (Lodin & Brukas 2021). It involves juxtaposing professional advice with the knowledge and know-how of peer networks and experienced clearcut-free forest owners to determine what is relevant to a specific forest holding.

*Production planning and forest management plans*

The interviews did not address production forecasts or forest management plans directly, but the open questions allowed participants to raise these topics. Production forecasting did not emerge in accounts of either clearcut-free or conventional forest management, despite its central role in professional Swedish forestry (Lindahl et al. 2017; Lämås et al. 2023).

This absence may indicate that predictable production outcomes are less central to the participants' clearcut-free practices. However, economic returns and sustainability remained important. The lack of quantified outcomes may also relate to forest owners' references to missing scientific knowledge, which Sténs et al. (2019) identify as a potential barrier to clearcut-free management. Production forecasting may instead be carried out through advisory services and timber buyers. Since all participants practised clearcut-free management on part or all of their estates, these findings cannot be generalised to forest owners who practise only clearcutting.

Natural regeneration, reported by some participants, reduces the need for costly measures such as scarification and planting. Lower investment may reduce the pressure to achieve predictable returns and allow for more varied production outcomes. This suggests that clearcut-free management may reconfigure the relationship between economic returns, investment and planning.

Forest management plans were mentioned mainly as practical tools for navigation, mapping soil conditions and communicating with advisors and machine operators. Rather than serving primarily as a basis for production forecasts and cost-effective planning, plans may thus become shared materials for coordination and collaboration. This suggests a shift in their use from reproducing industrial standards and quantitative indicators (Lämås et al., 2023) towards supporting clearcut-free forest management practices.

### 6.2.2 Clearcut-free within industrial forestry hegemony

The findings help explaining why industrial forestry thinking remains present also in private forest management with a clearcut-free configuration. Swedish private forest management is embedded in a professionalised system in which production optimisation for viable economic returns (Lindahl et al. 2017; Ekström Pigot 2026), prediction of production and following timber market price trends (Lämås et al. 2023), choosing tree species due to market settings rather than site-specific conditions (Lodin et al. 2017), and private forest management as a negotiation between advisor and forest owner due to practical circumstances (Lodin & Brukas 2021), are practiced. Clearcut-free management does not remove these practices,

rather they become re-connected to meanings such as uncertainty about future production or continuation of forest production after disturbance and damage. However, the majority of clearcut-free accounts is a partial configuration, where conventional forest management is understood to 'pay' for the clearcut-free area, thus for the in this area created multiple values. This suggests a capital-oriented thinking where the status quo, an embodied baseline what forest should produce (in m3), and thus a industrial forest paradigm thinking (Takala et al. 2017b), remains.

This can be exemplified by how private forest management uses as segregated approach between production and other values, just as the industries do, (Angelstam et al. 2023) where the conventional pays for the unconventional (biodiversity conversation, aesthetics, etcetera) in Sweden. Practically, in the landscape forest is separated into production forests where simple to manage large-scale monocultures are predominant and nature reserves or set asides are established scattered where ecological values are present. In the private forest sphere, this seems to be reproduced where area is set and managed for production and set-asides including passive management or nature conversation management or clearcut-free management. Thus, clearcut-free is rather understood and enacted as a side project. Here the a-side formulation is to be underlined, suggesting something done parallel and of less influence, meaning, or importance. This tendency that clearcut-free forested areas on private holdings, the materials outcome of management, are understood as some kind of set aside, 'where nature can thrive and people recreate', is present in the partial-estate clearcut-free configurations. This suggests a continued understanding of private owners to hegemonic application of forestry. This contrasts what e.g. continuous cover forestry (CCF) or close-to-nature forestry (CTNF) as concepts are aiming at, an integrated approach to forestry; in this multiple uses and services or forest are generated in the same forest (Brunner et al. 2025; Vitali et al. 2026), not in separated areas of forest.

The limited use of natural regeneration, which is understood to be more relating to resilient clearcut-free approaches as continuous-cover and/or close-to-nature forestry (Brunner et al. 2025; Vitali et al. 2026), and the continued reliance on artificial regeneration illustrates that established and routinised silvicultural competences and related productive-upholding meanings persist when the forest is managed clearcut-free.

## 6.3 Critical points of intersection and possible futures of private and clearcut-free forest management

### 6.3.1 Breaking free from the industrial in non-industrial

Clearcut-free forest management complicates the distinction between industrial and non-industrial forestry. Forest owners may work more actively in their forests, process timber locally and rely on peer networks while remaining connected to industrial advisors, contractors and markets. A forest owner practicing in the forest should therefore not be understood as returning to pre-industrial forestry, but a reconfiguration of practices, competences and meanings within existing industrial relations. Clearcut-free management may retain timber production as a central meaning while introducing new meanings and diversifying competences.

As forest owner are 'going back to the forest' in various ways, to practice clearcut-free forest management is constituted also by a shift away from non-industrial themes. This is that non-industrial can be understood as non-further processing of the grown trees on a private forest holding (Harrison et al. 2002). The production of wood, to have growing trees standing on land classified as forest land, is non-industrial. As soon as the harvested wood is processed by the private forest owner, the classification of non-industrial should be questioned. If one can call it industrial private forest management, or if there is a certain need of scale for this classification, should be clarified in future studies. However, what has been established is that the notion of being industrial or being non-industrial does not solely have to do with forest holding size, but also with what is done by whom with harvested wood (Harrison et al. 2002). This shift from solely primary producing wood to production diversification happens through adding value in form of processing (with help of small home sawmills, finding buyers, selling the processed timber product) to the primary produced material (Calvano et al. 2025). Thus dual-sector enterprises are established. When secondary manufacturing takes over main capital form primary production, then practicing can be called industrial (Sathre & Gustavsson 2009).

Private owners practicing clearcut-free forestry relying on advice from industrial companies can complicate this distinction. An individual advisor who supports clearcut-free management, wanting management to be good and meaningful for the owners as a primary incentive rather than following a raw material supply to the industry, can also be questioned to be industrial. This leans on the findings that trusted advisors are a major influence on forest management. There are two logics related to this, an industrial one and a traditional one, tensioning with each other (Wallin 2017).

Overall, private forest owners' practices cannot be understood as uniformly non-industrial. Clearcut-free management may reflect family heritage, local knowledge and long-term economic security while continuing to supply timber to industry. Some owners also process timber and sell products directly to customers, extending their practices into local value chains. These activities challenge the analytical distinction between industrial and non-industrial forestry without necessarily making the holdings themselves industrial.

I therefore argue that the applicability of the NIPF category in research and policy requires further examination. The category risks obscuring differences in how forest owners organise production, process timber and relate to industrial markets. Rather than treating NIPF owners as homogeneous social groups, research should examine the practices through which forest owners as practitioners organise management and production (Ficko et al. 2019).

### 6.3.2 Diversifying forest-use practices relates to rural development

The findings here suggest that private forest owners practicing clearcut-free forestry are extracting also non-timber forest products (NTFP). This goes in hand with Stryaments et al. (2026) who found that forest owners practicing clearcut-free forestry diversify their income streams, underlining that novel forest owners and in particular women emphasise these products. According to Weiss et al. (2020) these diversified income streams produce more local or regional small-scale value chains. These can entail tourism activities, hunting rights, space for camping, or food provisioning. Due to societal development and a pursuit towards connectedness with ecology, people are willing to pay for non-commodity products, experiential offers. These have the characteristic being more cultural value in shape of traditional and regional products, as interactive products with customers as educational or entertainment services (Weiss et al. 2020).

Considering that private clearcut-free practices are finding ways to practice in local niche markets and the multi-use of forest, I argue that clearcut-free forestry is a notion that has capacity contributing to rural development. This is that more small-scale and local industrial private forestry, the more possibilities for rural development and circular economies. Clearcut-free forestry asks not only for a more pro-active involvement of the private forest owner into the actual management but also diversifies forest-use practices. Pro-activeness of an owner can be physically being active and/or through having a vision that is to be translated into reality. Collaborating management and/or managing forest by oneself as an owner, practices that often contributes to forest owners getting more site-based on

in their forest, whether for housing or workplaces and businesses around their forest. This in turn again creates small patches of small-scale private forestry enterprises in the landscape, or small-scale industrial hubs. These include further processing of small patches of felled timber and selling of products resulting from this and/or having businesses that produce NTFPs and provide income from these in varying degrees. NTFPs can stretch, as found here, from hotel businesses located within clearcut-free forests to foraging berries and produce food products to using the own clearcut-free forest as course and teaching location for practical tree felling courses or forest bathing sessions. However, the key notion is here that private forest owners are getting entrepreneurial or business actors producing an own and thus shorter value chain. This needs the competence in form of e.g. entrepreneurship, pro-activeness in the own forestry enterprise, networks for selling products.

A shorter value chain is judged to be more profitable and thus successful when it comes to NTFPs (Meinhold & Darr 2019). However, this is strongly dependent on the product offered. Meinhold & Darr (2019), coming from a German context, also stress that this notion of the operationalisation of NTFPs through forest owners themselves create a short value chain, often functions more as an economic safety net. Income from NTFP is argued to be unregular or too small to be re-invested into the business. Therefore, NTFPs should not be seen as creating job opportunities and rural development through this pathway (Meinhold & Darr 2019). Also, the concept of NTFPs should be understood and used with caution since it is an overly broad category, thus unstable and not automatically sustainable or beneficial in the local sphere (Delgado et al. 2023). However, I want to underline here solely the usage of NTFPs as a possible diversification of forest-use practices. Sustainability of these then, must be assessed from product to product and practice by practice. Because a management system cannot be simply labelled sustainable for NTFPs just because it avoids clearcutting. This can be material for future investigations, how different NTFPs by Swedish private forest owners are commercialised and how sustainable these are. This nuance is important since forest owners' enterprises might fall between forest policy, food regulation, tourism policy with access-rights, and/or state regulated financial rural support. And this might be hindering a further diffusion of clearcut-free practices in Sweden.

All in all, practicing clearcut-free forestry of private forest owners possibly can help the establishment of small-scale private forestry industries which in turn possibly decentralise practices and so economies and raw material distribution from the main forestry industries in Sweden. This is that clearcut-free forest management contains a plural provision of NTFPs and timber and thus diversifies forest-use practices. However, the number of private forest owners practicing clearcut-free in Sweden,

thus creating a multi-use possibility of forest and reproducing practices, is probably one factor that over time shapes the settings private forest management is embedded within.

## 6.4 Reflections and limitations

*Theoretical lens used*

I began this investigation by seeking to understand how clearcut-free silvicultural practices are enacted within an industrial forest regime and how their uptake might be promoted. Initially, I approached clearcut-free forest management as a niche innovation, drawing on the multi-level perspective to examine its diffusion and potential (Geels 2019; 2024). However, I came to recognise that understanding diffusion pathways first requires an empirical, bottom-up investigation of what clearcut-free forest management means and how practitioners enact it. This theory-grounded approach describes existing practices and examines how they are experienced and performed.

To do so, I applied social practice theory (SPT), which focuses on everyday doings and sayings, to identify the practices that constitute private forest management, with particular attention to clearcut-free management and its elements: materials, competences, and meanings. I then examined how these practices relate to one another within practice complexes (Schatzki 2009; Hui et al. 2017). and how these complexes are situated within social domains and socio-techno-ecological settings(Brand 2010; 2014; Spaargaren 2011). This bottom-up approach, going step by step in the analysis, gave an understanding of how practices are enacted and how they are integrated, sustained, and/or destabilised by the settings they are embedded within.

Applying SPT to forestry science can broaden the field by examining lived realities. This is by understanding and interpreting lived theserealities, the source of orchestration of ecologies. My analysis points to a gap between how clearcut-free forest management is conceptualised in professional institutions, such as universities, and how it is enacted by practitioners. A similar gap exists between the forest management promoted through professional advisory services and the practices of private forest owners (Lodin & Brukas 2021).

*On data*

Access to a large, pre-collected interview dataset made this one-year master's thesis possible. Collecting, transcribing and analysing this volume of data independently would not have been feasible within the available timeframe. The dataset allowed

me to identify recurring elements constituting clearcut-free practices, although secondary analysis also has limitations (Mason 2007).

I could not observe facial expressions or other non-verbal communication that might add emotional context to the interviews. However, the distance from data collection allowed me to approach the transcripts inductively, identify practice elements and compare them with literature on Swedish forest management through a social practice theory (SPT) lens. Not having participated in data collection also allowed me to assess the interview material independently of the original research process and its underlying assumptions
(Hughes et al. 2020b).

Future research should combine semi-structured interviews with observations of forest management in practice. Shadowing practitioners over time could document activities and material interactions as they occur (McLean et al. 2025). More detailed data on the area managed clearcut-free, forest characteristics, management intervals and specific measures would also improve understanding of the material elements of clearcut-free and other alternative forest management practices. This is something this investigation lacks.

Using solely private forest owner accounts, was a way to limit this investigation. However, future research should also include advisors, peer-network organisers, representatives of the Swedish Forest Agency, timber buyers and machine operators. These actors participate in forest management through their advice, coordination, market relations and practical work. Machine operators, whether forest owners themselves or professional contractors, are particularly relevant because their activities directly shape forest structure and the landscape.

The analysis also examined whether recurring practice elements varied geographically across northern, central and southern Sweden. No clear regional patterns emerged. However, three of the four whole-estate clearcut-free configurations were located in central Sweden and one in southern Sweden. Further research should investigate how geographical conditions relate to clearcut-free practices, using an interview guide designed around social practice theory. This is not only for a geographic configurational understanding but also for a multi-material understanding, beyond interviews (McLean et al. 2025). Overall, interviews should be accompanied by observations in everyday settings and material usages, followed by follow-up interviews (McLean et al. 2025). Questions regarding geographic configurations should enquire details in regard to abundance, quality, and distance of practice elements.

*Me in the text*

A practice-based approach raises questions about how practices are defined, how their explanatory power can be strengthened beyond description, and how analytical neutrality relates to implicit normative orientations (Krott & Giessen 2014). Scholars should state their normative framework explicitly and use it to interpret findings while respecting the internal logic of scientific practices. I have sought to address this throughout the thesis. Clearcut-free forest management, considered in relation to ecological resilience, is relevant to ecosystem degradation, future uncertainties, and the continued conditions for life in Earth's biosphere.

## 6.5 Future clearcut-free investigations

Understanding more comprehensively how clearcut-free forest management practices in Sweden align or clash with policy and governance objectives when it comes to biodiversity, climate mitigation, and production should be done in future investigation. The here elaborated on and identified practices and notions could serve as a good deriving point for such an analysis. An analysis this way has been done with multifunctional forestry practices in Finland and the UK (Sutherland & Huttunen 2018).

Here found affecting settings suggest that the policy introduction of the European Union Deforestation Regulation (EUDR), formally applying in Sweden in the end of 2026, is a possible influence to clearcut-free management (*Deforestation Regulation implementation - Green Forum - European Commission* n.d.). This is that vague framings of the EUDR policy of what possibly forest degradation could mean is a uncertain setting (Garg 2025), increased bureaucratic processes might be confronting owners due to traceability demands (Jeansson & Kronholm 2025), or a meaningful invasion of property rights via EU-monitored digital systems sharing coordinates and other information (Kaniecka 2023). Clearcut-free as a concept is seen occasionally as a meaningful and legitimated vehicle to accommodate these policy and governance settings. However, a more detailed analysis of the national and international policy landscape can give further insights create a setting that affords or erodes the here found constituting practices of clearcut-free forest management.

As posited by Berge and Ingerman (2017), the application of multiple theoretical lenses as an analytical strategy to the same qualitative dataset has the potential to yield a more comprehensive and nuanced interpretation than that achievable with a single framework. I adopted here a practice-based approach to understand how clearcut-free forest management is actually enacted and performed in Sweden. A next step, to get a more multi-dimensional understanding, could be through relating the here found elements and understandings to wider picture. This could be done

through situating these within a multi-level perspective (MLP), thus being able to analyse a clearcut-free configuration of private forest management in a ‘vertical and horizontal’ manner (Keller et al. 2022).

This investigation has also shown that the concept of non-industrial private forest (NIPF) needs to be re-visited. This is that on the one hand the over-simplification of lived realities and multi-dimensional practiced practices into choice or attitudes categories can be misleading of what is contains. For more on this see section 6.3.1.

# 7. Conclusion

I examined private clearcut-free forest management in Sweden through a social practice lens, focusing on its constituting practices, key shared practice elements, and the settings these are embedded in. I found that clearcut-free practiced by private forest owners is a partial (re)configuration of private forest management. Some established relationships between materials, competences, and meanings are maintained while others are rearticulated, decoupled, and bundled differently. Privately clearcut-free practices should not be understood as adapting solely an alternative silvicultural method, nor as a straightforward development from conventional forest management.

The extent of reconfigurations varies across practice accounts. Most of the investigated clearcut-free practices were partial-estate configurations, often emerging from a testing ambition or as an opportunistic response to (a)biotic disturbances. In the latter, clearcut-free management is a post-disturbance behaviour rather than an outcome of rethinking forest management. In the partial-estate configuration clearcut-free is incorporated into an already established practice arrangement, where conventional management continues to be spatially separated on the holding and effectively 'pays' for the clearcut-free area. Whole-estate clearcut-free management, in contrast, requires a more proactive involvement from forest owners. This can be expressed through physical involvement in the own forest, active planning, or bringing a particular vision of forest management into practice.

Economic meanings of forest management remain mostly unchanged in both configurations. Clearcut-free management does not necessarily challenge the established industrial understanding of the forest as a financial asset and/or a commodified resource. Instead, it can reconfigure how economic outcomes are organised by more frequent harvesting of smaller amounts and potentially a more continuous cash flow. In partial-estate configurations, conventional forest management can provide the economic basis for maintaining clearcut-free areas. In whole-estate configurations, however, the economic system related to timber extraction itself can become substantially reconfigured.

This means that clearcut-free management does not simply replace the industrial forestry logic with an alternative one. It is not delinked by meanings concerning biodiversity, aesthetics, local conditions, family heritage or long-term stewardship. These rather become attached to the economic understanding of forest in which clearcut-free is linked to long-term economic sustainability. Clearcut-free management mainly remains embedded in the market-oriented and professionalised

logic of Swedish forestry even when additional values are recognised. Economic meaning is reproduced through materials, professional competence in form of advisors and contractors, continued engagement in industry timber markets while some are searching for alternative local selling points, and production-maintaining meanings. Continued silvicultural measures as artificial regeneration exemplify how embodied competences concerning control and production persist. Similarly, timber produced through clearcut-free management continuous entering established industrial value chains, despite it being understood producing potentially higher quality timber thus more valuable if sold to other ends.

What is reconfigured is the linkage between elements of practices and who participates in their enactment. Findings indicate a shift in competence and trust. Forest owners become more active, 'going back to the forest', develop practical know-how of clearcut-free through peer-networks which stretch beyond local hubs, exercise greater control over measure implementation, and selectively use professional advisory services. Professional forestry expertise, strongly linked to scientific quantitative forestry, does not become irrelevant, rather its role is decoupled as primary source of legitimate knowledge towards being one of several knowledge configurations. Other competences include owner knowledge and vision, peer networks, and entrepreneurial know-how and communicative skills. Clearcut-free is consequently enacted through both self-active and collaborative-active configurations. In the self-active configuration, owners are directly involved in planning and physical forest work and may use their own machinery, knowledge and networks to enact their vision. In the collaborative-active configuration, owners remain proactive but work with advisors, contractors or other competent individuals. In both cases, the important change is not simply that the owner 'goes back into the forest', but that the owner becomes more involved in defining, negotiating or controlling how forest management is enacted.

Peer networks become important for legitimising clearcut-free and for recruitment. This is that competences of knowledgeable individuals, visits to practical examples of clearcut-free forest, and encounters with like-minded emerge and support the reproduction of clearcut-free practices. As such peer networks provide practical knowledge and a sense of belonging, thus competence and legitimacy can be crystallised through relationships outside the classical professional advisory setting.

Reconfiguration of private forest management complicates the distinction between industrial and non-industrial in private forestry. Through clearcut-free implementation forest owners can become more active in the forest, process timber locally and occasionally develop alternative timber sale dynamics, while often simultaneously remaining connected to industrial advisors, contractors, markets

and value chains. ’Going back into the forest’ should therefore not be understood as a return to a pre-industrial form of forestry. Rather, it can be understood as a reconfiguration of relationships between forest owners, professional actors, materials, knowledge, and markets.

Private clearcut-free forestry diversifies forest use through non-timber forest products, tourism, education, and small-scale timber processing. These diversified practices create opportunities for local value chains and rural development, potentially decentralising forest production and value creation beyond Sweden’s dominant industrial forest regime. However, their contribution to rural development depends on the specific products and practices involved and needs further investigation.

Taken together, findings show that private clearcut-free management remains embedded in the industrial forestry logic in Sweden. Meanings and competences concerning what constitutes legitimate forest management continue to be shaped by a professionalised forestry system in which production is central. Yet, this logic is not consequently reproduced across all practices. Some forest owners introduce and/or rearticulate meanings related to heritage, local awareness, biodiversity, aesthetics or meaningful use of wood, practice more practically involvement in their forests; develop relationships and competences through peer networks; or do further wood processing and local value creation. These practices constituting clearcut-free demonstrate that the established industrial forestry logic can be negotiated, even when it remains materially and economically important.

Transitioning or wandering to a better prepared forest management for future uncertainties cannot be done through solely communicating an alternative silvicultural method to be e.g. better or more friendly for biodiversity. If practices are sustained through relations between materials, competences, and meanings, transformation depends on whether private forest owners can access materials, develop practical competences, encounter alternative examples, build tow-way communicative relationships and attach legitimacy to alternative ways of managing forest. The practice perspective therefore contributes not only to understanding why conventional forest management persists within clearcut-free practices, but also how alternative configurations can emerge within, and partly transform peu à peu the established system.

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# Popular science summary

Swedish forests are largely managed according to an industrial model of forestry. In this model, forests are commonly managed in rotations as even-aged stands, with clearcutting as harvesting method. In this, forest is primarily treated as an economic resource, and forest management is closely connected to professional advice, machinery, timber industries and established markets. Some private forest owners in Sweden manage their forests without clearcutting. These owners are few and scattered, but their practices provide an opportunity to understand how forest management can be organised differently.

This thesis examines what clearcut-free forest management looks like in practice and how it changes the way private forests are managed. Rather than treating clearcut-free management simply as the use of different silvicultural methods, the study looks at forest management as a set of practices involving materials, knowledge and skills, and meanings. The analysis is based on existing accounts of private forest management from forest owners across Sweden. Data was collected through interviews.

The results show that clearcut-free forest management is best understood as a reconfiguration of conventional private forestry. In other words, forest owners do not necessarily abandon the established way of managing forests. Instead, they retain some elements while changing, combining or replacing others.

Two broad configurations of clearcut-free management can be identified. The first is partial-estate clearcut-free management, where only parts of a forest holding are managed without clearcutting. This can emerge when forest owners want to test another way of managing the forest, or when a disturbance such as wind damage or beetle damage creates a gap in the forest to manage an area differently. In these cases, conventional forestry often continues elsewhere on the holding. The income from conventional management is often understood to ‘pay for’ the areas managed without clearcutting.

The second configuration is whole-estate clearcut-free management, where the ambition extends across the entire forest holding. This requires a more active involvement from the forest owner. Owners may take a greater role in planning, spend more time physically working in the forest, and develop a particular vision for how their forest should be managed. Clearcut-free management can therefore involve a shift in who makes the main decisions and who possesses the knowledge needed to put those decisions into practice.

Importantly, clearcut-free management does not necessarily mean that economic considerations disappear. Forests can still be understood as economic resources, and timber production remains important. However, the way economic outcomes are organised can change. Instead of relying on fewer, larger harvests, clearcut-free management can involve harvesting smaller amounts more frequently and potentially creating a more continuous flow of income. In some cases, forest owners also explore local processing or alternative ways of selling timber.

Clearcut-free management can also bring other values into forest management. Biodiversity, aesthetics, local conditions, family heritage and long-term stewardship can become more important alongside economic considerations. These values do not necessarily replace economic thinking. Instead, they can become connected to it. For example, clearcut-free management may be understood as contributing to long-term or resilient economic sustainability. In this way, economic and other values become more closely intertwined rather than forming two completely separate approaches to forestry.

The findings also show that the established forestry system continues to matter. Clearcut-free forests can remain connected to professional advisors, contractors, machinery, timber markets and industrial value chains. Timber produced through clearcut-free management can still enter established industrial markets. Some practices, such as artificial regeneration and the emphasis on timber production, also continue. Clearcut-free management therefore both reproduces and reconfigures conventional private forestry.

One important change concerns knowledge and competence. Forest owners who practise clearcut-free management often become more actively involved in their forests. They develop practical knowledge, exercise greater control over how management measures are carried out, and more selectively use professional advice. Professional forestry knowledge does not become irrelevant, but it becomes one source of knowledge among several. Private forest owners' knowledge and visions, peer networks, practical experience and entrepreneurial and communication skills are part of a reconfiguration.

Peer networks play a particular role. Meeting other forest owners, visiting forests managed without clearcutting, exchanging knowledge and encountering people with similar ideas can provide both practical knowledge and a sense of belonging. These relationships can help forest owners develop both competences and confidence needed to practise clearcut-free management. In this way, knowledge and legitimacy do not only come from traditional professional advisory

relationships; they can also develop through relationships between private forest owners and others with competence.

The findings point towards two ways in which owners can actively enact clearcut-free management. In a self-active configuration, forest owners are directly involved in planning and physical forest work and may rely heavily on their own knowledge and machinery. In a collaborative-active configuration, owners remain proactive but work together with advisors, contractors or other knowledgeable people. In both cases, the important change is that private forest owners become more involved in defining, negotiating and controlling how their forests are managed. The more a private owner practices clearcut-free on the whole holding the more active in doing she gets.

All this also challenges a simple distinction between industrial and non-industrial private forestry. A forest owner can become more physically involved in the forest, develop local timber processing or alternative ways of selling wood, and still remain connected to industrial advisors, contractors, markets and value chains. A private forest owner "going back to the forest" therefore does not mean returning to a pre-industrial form of forestry. Instead, it describes a reconfiguration of the relationships between forest owners, professional actors, knowledge, materials, markets and the forest itself.

Overall, the thesis shows that private clearcut-free forest management in Sweden remains largely embedded in the industrial forestry systems, including markets, silviculture, and economic objective. Thus, it reproduces its logic. The established understanding of the forest as an economic resource, together with production-oriented knowledge, materials, markets and professional relationships, continues to shape how clearcut-free management is practised. At the same time, forest owners can negotiate and modify this established system by introducing other values, developing practical knowledge, building and being active in peer networks and becoming more actively involved in their forests.

Private clearcut-free management is therefore neither simply a rejection of industrial forestry nor a straightforward alternative to it. It is a partial reconfiguration of private forest management, in which existing elements are retained while relationships between materials, competences and meanings are changed.

This has implications for how changes in forest management may take place. Policy introducing alternative silvicultural methods alone may not be enough to support new ways of managing forests. If forest management is sustained through

connections between materials, knowledge, skills and meanings, change also depends on whether forest owners can access suitable materials, develop practical competences, encounter examples of alternative management, build trusted relationships and find meaning and legitimacy in different ways of managing their forests. The experiences of private clearcut-free forestry accounts show how alternative practices can emerge within the established forestry system and, at the same time, partly reconfigure it.

# AI statement

I used two AI agents to assist me along this thesis. Agent 1 assisted with literature searches, summaries of academic sources, and functioned as a discussion partner on theory and its application for qualitative coding. In these processes, AI outputs were checked against original sources. Agent 2 was used as a supportive tool to improve language and clarity and refine academic phrasing after receiving comments from the examiner. AI was thus overall used as an aid for writing or finding literature, while initial formulations, thesis structure, research concept, analysis, interpretations, and final conclusions remain my own.

# Appendix 1 – Interview guide of primary study

The semi-structured interviews of the 25 private forest owners with varying degrees of experience and implementation of clearcut-free forest management followed the following guided questions. The first question was thought to be the main question with other questions being follow up or in-depth questions. All of equivalent importance. Since the interviews were held in the Swedish language, I provide here a translated version in English (Table 2) and the Swedish original (Table 3).

Note: The interview manual contains a section on peer networks. The section in brackets [Skogens Mångbruk] functions as a placeholder and can be replaced according to the peer network to which an interviewee belonged. If an interviewee was not part of a peer network, these questions were omitted from the interview.

*Table 2. Semi-structured interview guide with its questions and possible follow-up questions (in English).*

| QUESTION CODE | |
|---|---|
| | ABOUT FOREST LANDSCAPES |
| Q2.1 | In your opinion, what are the most important current and future challenges/opportunities for forests in Sweden? [… for your local community?] What are your thoughts on the current development of the Swedish forestry sector? |
| Q2.2 | In your opinion, what should be done to ensure sustainable development in forest landscapes in Sweden? [… sustainable rural development in Sweden?] |
| Q2.3 | Institutional actors' views on alternative silvicultural approaches and their scope for action to work with these within the forestry sector. |
| Q2.4 | How do you define alternative silvicultural approaches in forestry? (E.g. "close-to-nature forestry" / "continuous-cover forestry"?) |
| | |
| Q4 | ABOUT PRIVATE FOREST OWNER (SOCIO-DEMOGRAPHIC) |
| Q4.1 | How many people are involved in your forest management? |
| Q4.2 | How many people in your household have jobs outside the farm? |
| Q4.3 | What types of forest do you own? |
| Q4.4 | What is the total area of land that you manage/own? |
| Q4.5 | How many separate parcels is the land divided into? |
| | |
| Q6 | PRIVATE FOREST OWNER'S SKOGSBRUK |
| Q6.1 | Tell me about your forest management. What silvicultural methods do you use, and why? Do you manage the forest yourself, or do you use contractors? |
| Q6.2 | When and why did you start these activities? |
| Q3.7 | What are your main objectives with these activities? Why are these objectives important to you? Have the objectives changed over time? How? |
| Q3.2 | What were the most important factors that enabled you to succeed with these activities? |
| Q3.18 | What are you most proud of? |
| Q3.8 | What are the main challenges/opportunities for achieving these objectives? |
| Q6.3 | What products/services do you provide? Are they for your own household use or for sale? How much do you sell? How do you sell them? To whom? |
| Q6.4 | How profitable are these products/services? |

| | |
|---|---|
| Q6.5 | Do you receive any subsidies/financial support for your production? How much? How important is this support? |
| Q6.6 | Do you have any other business activities that are carried out within the household? |
| Q6.7 | Are your lands positively or negatively affected by nearby landscape elements such as roads, nature reserves, etc.? By other landowners' production methods (e.g. use of pesticides, etc.) or by other factors? How? |
| Q6.8 | What are your views on the future of your farm/production? What do other farmers and forest owners in your area think? |
| | |
| Q7 | ABOUT PEER NETWORKS (if interviewee is in a peer network) |
| Q7.1 | How long have you been a member of [Skogens Mångbruk]? |
| Q7.2 | How did you hear about [Skogens Mångbruk]? |
| Q7.3 | Why did you decide to participate in [Skogens Mångbruk]? Important factors/people…? What were the most important factors that enabled your participation? |
| Q7.4 | Describe how you participate in [Skogens Mångbruk] step by step. How actively? How much time…? Participation in idea formulation, decision-making…? |
| Q7.5 | How is your production affected by your participation in [Skogens Mångbruk]? Is it easy to participate? What does participation cost you in terms of time, money, or other resources? Have you had to change anything in order to participate in [Skogens Mångbruk]? Have you learned anything through participating in [Skogens Mångbruk]? |
| Q7.6 | What are the main opportunities and benefits of participating in [Skogens Mångbruk]? In the beginning? Now? In the future? How have you managed to make use of such opportunities? How have these affected your continued participation in [Skogens Mångbruk]? |
| Q7.7 | What are the main challenges/disadvantages of participating in Skogens Mångbruk? How have you dealt with these challenges? |
| Q7.8 | Do you think [Skogens Mångbruk] has changed in any way over time? How? |
| Q7.9 | In your opinion, what are the most important factors for [Skogens Mångbruk] to succeed? What do you think needs to be improved about [Skogens Mångbruk]? |
| Q7.10 | Describe the communication and cooperation between the participants in the network. |
| Q7.11 | Would you recommend [Skogens Mångbruk] to other farmers/forest owners? Why (or why not)? |
| Q7.12 | Do you participate in any other networks? Why? When was this network established? Who initiated it? What is your role in this network? |
| Q7.13 | In your opinion, how does [Skogens Mångbruk] contribute to development in your local area, or to rural areas in Sweden in general? Economically, socially, environmentally, in terms of governance…? |

*Table 3. Semi-structured interview guide with its questions and possible follow-up questions (in Swedish)*

| QUESTION CODE | ABOUT FOREST LANDSCAPES |
|---|---|
| Q2.1 | Enligt dig, vilka är de viktigaste nuvarande och framtida utmaningar/möjligheter …för skogen i Sverige? [... för ditt lokala samhälle?] Vad tänker du om nuvarande utveckling inom svensk skogssektor? |
| Q2.2 | Enligt dig, vad borde göras för att säkra en hållbar utveckling ….i skogslandskap i Sverige? […. en hållbar landsbygdsutveckling i Sverige?] |
| Q2.3 | Institutionella aktörers syn på alt. skötselformer och deras handlingsutrymme att jobba med detta inom skogssektorn |
| Q2.4 | Hur definierar du alternativa skötselformer inom skogsbruket? (Ex. "naturnära skogsbruk"/hyggesfritt?) |
| | |
| Q4 | ABOUT PRIVATE FOREST OWNER (SOCIO-DEMOGRAPHIC) |
| Q4.1 | Hur många människor är inblandade i ert skogsbruk? |
| Q4.2 | Hur många människor i ditt hushåll har jobb utanför gården? |
| Q4.3 | Vilka typer av skog äger ni? |

| | |
|---|---|
| Q4.4 | Hur stor är totala arealen av marken som du brukar/ äga? |
| Q4.5 | Hur många skiften är marken uppdelad i? |

| Q6 | PRIVATE FOREST OWNER'S SKOGSBRUK |
|---|---|
| Q6.1 | Berätta om ditt skogsbruk. Vilka skogsskötselsmetoder använder du/ni och varför? Brukar du/ni skogen själv, eller använder ni av entreprenörer? |
| Q6.2 | När och varför började du med dessa aktiviteter? |
| Q3.7 | Vilka är huvudmålen för dig med dessa aktiviteter? Varför är dessa mål viktiga för dig? Har målen förändrats över tid? Hur? |
| Q3.2 | Vilka var de viktigaste faktorerna för att du ska lyckas med dessa aktiviteter? |
| Q3.18 | Vad är du mest stolt över? |
| Q3.8 | Vilka är huvudutmaningarna/ möjligheterna för att du ska uppnå dessa mål? |
| Q6.3 | Vilka produkter/ tjänster? För eget hushållsbruk eller försäljning? Hur mycket säljer du? Hur säljer du? Till vem? |
| Q6.4 | Hur lönsamma är dessa produkter/ tjänster? |
| Q6.5 | Får du några subventioner/ ekonomiskt stöd för din produktion? Hur mycket? Hur viktigt är detta stöd? |
| Q6.6 | Har du några andra företagsaktiviteter som sköts inom hushållet? |
| Q6.7 | Påverkas dina marker (positivt eller negativt) av närliggande landskapselement såsom vägar, naturskyddsområden, osv? Av andra markägares produktionsmetoder (t ex bruk av pesticider, mm) eller andra faktorer? Hur? |
| Q6.8 | Hur ser du på framtiden för din gård/ produktion? Vad tycker andra jord- och skogsbrukare i ditt område? |

| Q7 | ABOUT PEER NETWORKS (if interviewee is in a peer network) |
|---|---|
| Q7.1 | Hur länge har du varit medlem i [Skogens Mångbruk]? |
| Q7.2 | Hur fick du veta om [Skogens Mångbruk]? |
| Q7.3 | Varför bestämde du att delta i [Skogens Mångbruk]? Viktiga faktorer/ människor…?<br>Viktigaste faktorer som möjliggjorde ditt deltagande? |
| Q7.4 | Beskriver hur du delta i [Skogens Mångbruk] steg-för-steg. Hur aktivt? Hur mycket tid…? Deltagande i idéformulering, beslutsfattande…? |
| Q7.5 | Hur påverkas din produktion av ditt deltagande i [Skogens Mångbruk]?<br>Är det lätt att delta? Vad kostar det dig i tid, pengar, eller andra resurser att delta?<br>Har du behövt ändra på något för att kunna delta i [Skogens Mångbruk]?<br>Har du lärt dig något genom att delta i [Skogens Mångbruk]? |
| Q7.6 | Vilka är de huvudsakliga möjligheterna och fördelar med att delta i [Skogens Mångbruk]?<br>I början? Nu? I framtiden? Hur har du lyckats utnyttja sådana möjligheter? Hur har dessa påverkat ditt fortsatta deltagande i [Skogens Mångbruk}? |
| Q7.7 | Vilka är de huvudsakliga utmaningarna/ nackdelarna med att delta i [Skogens Mångbruk]? Hur har du hanterat sådana utmaningar? |
| Q7.8 | Har [Skogens Mångbruk] ändrat på något sätt över tid, tycker du? Hur? |
| Q7.9 | Enligt dig, vilka är de viktigaste faktorerna för att [Skogens Mångbruk] ska lyckas? Vad tror du behöver förbättras med [Skogens Mångbruk]? |
| Q7.10 | Beskriv kommunikationen och samarbetet mellan nätverkets deltagare? |
| Q7.11 | Skulle du rekommendera [Skogens Mångbruk] till andra jord-/ skogsbrukare? Varför (inte)? |
| Q7.12 | Deltar du i något annat nätverk? Varför? När etablerades detta nätverk? Vem initierade det? Hur är ditt roll i detta nätverk? |
| Q7.13 | Enligt dig, hur bidrar [Skogens Mångbruk} till utvecklingen i din bygd, eller till landsbygden i Sverige generellt?<br>Ekonomiskt, social, miljömässigt, styrning…? |

# Appendix 2 – Coding

I lean on social practice theory, also referred to as practices-based approach, where realities are constituted by practices with several elements. Its constituting elements are shared often with several practices. To make the codes accessible to the reader, I provide an overview of found, described, and discussed practices constituting clearcut-free forest management in Sweden with examples of materials, competences, and meanings (Tabel 4). In the table, if marked in orange, the practice is part of whole-estate configuration, rather a change process than a practice.

*Table 4. Excerpt of coding handbook.*

| **Practices constituting clearcut-free forest management** | ***Description and criteria for inclusion*** | **Examples of materials** | **Examples of competences** | **Examples of meanings** |
|---|---|---|---|---|
| Handling private economy | *Practices through which owners manage the economic dimensions of forest ownership and management. Including income, investment, liquidity, risk, and future possibilities.* | Applied investment thinking; mathematical literacy; being able to navigate in today's economy and related practices and settings | Investment thinking; assessing income, costs and liquidity; comparing economic outcomes | Monetary gain; liquidity; economic security; understanding forest as income-generating resource and a collateralizable investment |
| Taking/reducing risk | *Practices through which owners assess, distribute or reduce economic, ecological and climatic risks associated with forest management.* | Composition of forest stands; different tree species; future climate and ecological conditions; alternative sources of income | Risk assessment; comparing management options; diversification thinking | Diversification; resilience; "several eggs in the basket" |
| Reinvesting in holding<br>+<br>Using self-sufficiently forest resources in property management and operational funding | *Using income or other resources generated through forest ownership to maintain, develop or improve the holding.*<br>+<br>*Using timber, firewood and other forest resources directly for maintaining the property or financing forest operations.* | Yearly/periodic income; machinery; buildings; forest infrastructure; holding<br>+<br>Firewood; timber; forest products; machinery; property infrastructure | Investment thinking; allocating income; long-term financial planning<br>+<br>Harvested timber processing; practical resource management (storage) | Maintaining/developing the holding; circularity; continuity<br>+<br>Self-sufficiency; reduced dependence; keeping value within the holding |
| Thinking of sustaining family forestry as a lifestyle | *Practices and orientations concerned with maintaining forest ownership and management as a family-based way of life across time.* | Forest itself as a family resource; holding; family property | Long-term consideration of forest management actions and its affecting for future family generations; investment thinking | Future climatic uncertainties affecting forest; sustainable thinking in social, ecological, and economical dimensions; monetary gain or liquidity; caring of close ones and/or surrounding |
| Selling of own produced timber (often in the local to private end-users or small businesses) | *Practices through which owners process, market and sell timber, often through local/private end-users or small businesses.* | Timber; digital/physical marketplaces; transport/logistics | Finding buyers; entrepreneurial engagement; negotiating and arranging sales | Higher income; purposeful use of wood; local/sustainable use |

| | | | | |
|---|---|---|---|---|
| Living of the forest, (clearcut-free) private forest management | *Forest management as a means of generating livelihood or economically supporting the owner/household, including under clearcut-free management.* | Forest; timber; harvested wood; forest products; active body; access to machinery | Combining forest management, production and economic planning | Economic enterprise; livelihood; economic independence |
| Controlling execution of clearcut-free measures done | *Monitoring and directing how forest-management measures are carried out, either personally or by others.* | Forest stands; access to machinery; contractors; management plans | Assessing work; communicating management objectives; monitoring implementation | Control; autonomy; ensuring that management vision is respected |
| Trusting advisory services in their doings | *Engaging with advisors and relying on their expertise when making or implementing management decisions.* | Advisory services; management information; forest plans | Evaluating and interpreting advice; weighting between different advices/knowledges; communicating management goals; applying advice | Trust; confidence; reduced uncertainty |
| Owning and operating machine park | *Acquiring, maintaining and using machinery needed to perform forest-management and processing activities.* | Chainsaw; tractor; forwarder; sawmill; other semi-professional forest machinery; funds to purchase machinery | Know-how to operate machines; mechanical maintenance; repair; machine selection; operational planning | Independence; self-reliance; control |
| Working independently in the forest | *Performing forest-management work without relying extensively on external labour or contractors.* | Own forest; tools; machinery; healthy body | Practical forestry skills; planning and executing measures independently | Autonomy; self-sufficiency; control; uphold healthy body |
| Finding and collaborating with “the right” contractor | *Selecting, communicating with and coordinating contractors whose expertise and working approach fit the owner's management vision* | The ‘right’ contractor; machinery | Evaluating contractor competence; communicating management vision; coordinating work | Trust; compatibility; confidence that the management vision is respected |
| Regenerating forest in gaps | *Practices aimed at establishing or maintaining regeneration through gaps rather than clear-felling.* | Damage in forest due to (a)biotic stressor; seed trees; planting material; regeneration; surrounding trees | Assessing regeneration potential; | Maintaining forest production high/no production loss; forest continuity; natural regeneration; planning for clearcut-free management in future |
| Reacting on (a)biotic stresses and damages | *Practices through which owners identify and respond to damage or disturbance affecting forest stands.* | Damaged trees/stands; windthrow; drought; pests; disease | Recognising damage; assessing consequences; adapting management measures | Maintaining forest production; adapting to changing conditions; resilience thinking |

| | | | | |
|---|---|---|---|---|
| Natural broadleaf tree establishment | *Supporting or managing natural establishment of broadleaf trees in the forest.* | Broadleaf trees (mainly birch); seedlings; regeneration sites; seed trees; seed bank | Identifying regeneration; supporting desirable species; managing competition | Maintaining forest production; biodiversity; tree species diversity in owned forest; resilience; "several eggs in basket" |
| Harvesting stems (under clearcut-free forest management) | *Selective harvesting of individual trees/stems as part of continuous-cover or clearcut-free management.* | Trees in certain diameter and/or in gaps; machinery (from motor-manual to tractor to harvester) | Coordinated and/or performed by the owners themselves or by controlled entrepreneurs (+ super-engaged advisor); tree selection; felling; extraction; coordinating or performing harvesting | Continuous production; maintaining forest cover; monetary gain; liquidity |
| Acquiring know-how and trust into clearcut-free methods | *Practices through which forest owners acquire knowledge, mental skills, experience and confidence in alternative/clearcut-free management.* | Forest meetings; peer networks; physical examples of clearcut-free forest; demonstrations of clearcut-free measures; communities | Learning from experienced owners, enthusiasts *eldsjälar*; evaluating scientific methods and experienced know-how; exchanging practical knowledge; trusting | Confidence; legitimacy; spreading alternative practices; economic continuity; resilience |
| Using forest's contained services, thus multiple usage | *Using multiple products, services and benefits provided by the forest beyond conventional timber production.* | Forest; NTFPs; recreational and aesthetic appealing sites; landscape; game; berries/mushrooms and other species | Knowing the own/surrounding forest; recognising different site qualities and resources | Diversification of income streams; multiple benefits; place-based value; monetary gain |
| Creating an attractive place/site on owned forest land | *Managing forest areas to maintain or create places perceived as attractive, valuable or enjoyable.* | Forest landscape; recreational and aesthetic appealing sites nature values; paths | Knowing the own/surrounding forest; recognising different site qualities and resources | Attractiveness; enjoyment; attachment to place; diversification of income streams; forest with heterogenic structure |
| Doing recreation (foraging, hunting, walking,..) | *Recreational use of the forest through activities such as walking, hunting and foraging.* | Forest; paths; game; hunting/foraging sites; NTFPs; forest with heterogenic structure | Knowing the own/surrounding forest | Recreation; enjoyment; wellbeing |
| Doing measures to conserving forest ecology | *Practices aimed at maintaining ecological qualities, biodiversity and site-specific natural or cultural values.* | Property suitable for biodiversity initiatives; own forest; habitats; trees; water; culturally valuable sites | Identifying ecological values; adapting management to ecological conditions | Preservation of site-specific cultural and ecological qualities; biodiversity sites |
| Transition of the whole estate to clearcut-free management | *Configuration/change process rather than a practice in itself. Included when owners describe reorganising the management of the entire holding around clearcut-free principles.* | Own forest estate; stands; machinery; forest management vision | Advisors listening and collaborating; estate-level planning; integrating management across stands; planning continuous forest roads; clear | Coherence; long-term continuity; sustaining future economic gain; well-being of future generations; stewardship of landscape; management autonomy |

| | | | | |
|---|---|---|---|---|
| | | | expressed vision; two-way communication | |
| Maintaining family identity/tradition, existing within intergenerational forest ownership shaping emotional bonds to the owned forest | *Practices through which forest ownership and management reproduce family identity, practical forest skills, and attachment to forest across generations.* | Own forest; inherited property; family history | Intergenerational knowledge transfer; understanding family management history | Identity; tradition; continuity; emotional attachment; well-being of future generations; |
| Stewarding forest land | *Practices involving long-term care of the forest as a socio-ecological system and responsibility for its future condition.* | Own forest; trees; soil; biodiversity; ecosystem | Seeing forest as a system holistically; integrating ecological, social and economic considerations; long-term planning | Contributes positively to the global climate; responsibility; care; "leaving behind a well-cared-for place of which one lived"; well-being of future generations; |
| Forestry as an occupation/hobby | *Forest work performed as an occupation, leisure activity or meaningful embodied activity, including practical management work.* | Tools; machinery; trees; healthy body | Knowing how to do measures as e.g. thinning, cleaning, felling, machine usage | Meaningful activity; enjoyment; identity; staying active/healthy |

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