



Forest enskilment

Biodiversity inventory to protect Swedish old-growth forests: from a multisensorial practice to a citizen science project

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Abstract

Sweden's old-growth forests are disappearing due to the ever-increasing demand for timber. To protect them from logging, a specific articulation of environmental activism has gained momentum in recent years: biodiversity inventorying. Citizens (inventoryers) visit forests registered for logging to look for endangered species and turn their observation data into a powerful weapon of nature conservation. They use the available legal and administrative framework to make this data influence environmental governance, i.e. stop logging and if possible, achieve formal protection. My analysis of the phenomenon is based on ethnographic fieldwork conducted during inventorying trips with forest groups around Sweden. In order to understand this specific form of inventorying, I depart from Tim Ingold's notion of enskilment, a social and embodied process of acquiring skills through knowledge mobilization and sensorial education. My research shows that this practice strengthens place attachment and allows to politicize the issue of collapsing biodiversity by linking local struggles to a worldview critical of the extractivist approach of the forest industry and political representatives. It also empowers species and inventoryers and opens up alternative ways to weave new relationships with the non-human entities that dwell in forests ecosystems.

Keywords: old-growth forests; enskilment; citizen science; biodiversity inventory; environmental activism

Credit cover picture: photo by the author. Gallsjön, 4/7/2024.

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To Michel.

“Once they go unnamed, they go to some degree unseen. Language deficit leads to attention deficit. As we further deplete our ability to name, describe and figure particular aspects of our places, our competence for understanding and imagining possible relationships with non-human nature is correspondingly depleted”
(Macfarlane 2016, 24).

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List of terms

The following terms will be used in Swedish throughout this thesis:

Skogsvårdslagen: Forestry Code

Miljöbalken: Environmental Code

Skogsstyrelsen: Forest Agency

Naturvårdsverket: Environmental Protection Agency

Naturskyddsföreningen: Nature Conservation Society

Länsstyrelsen: Regional County Administration

Introduction

10/6/2023. Forest outside of Näsåker registered for logging. Old-growth, different trees with lichen hanging from the branches, surrounding a mire. We're separated into groups of 'experienced' and 'beginners' to cover as much ground as possible and to allow the beginners to focus on learning key species. There are students from SLU, inhabitants from Näsåker and members of Naturskyddsföreningen Västernorrland. We scan the ground, the trees, dead wood, looking for species, our senses alert [...].

It was 3°C in the morning; some took samples of frozen fungi to taste them later for a more accurate identification. [...] Many species found, including Creeping Lady's Tresses (*Goodyera Repens*), but also lichens and wood-decay fungi tied to boreal ecosystems. Several trees with rings of holes, attesting the presence of Eurasian three-toed woodpecker (*Picoides trydactylus*) [...].

I spotted a three-toed! Hopefully it will help when the inventory report is sent. David found a *Resinoporia crassa*, a very rare wood-decay fungus, red-listed as CR. Everyone gathered to see it, some took pictures, while Sebastian explained that such fungus only lives in very old forests and is a sign of long continuity [...].

10/22/2023. Skogsstyrelsen has partly banned logging on the inventoried forest. They seem to have only focused on observations of *Goodyera* and did not consider the three-toed woodpecker. The forest group will appeal the decision (fieldnotes, 10/6/2023 and 10/22/2023).

Old-growth forests are disappearing in Sweden. They stand at the heart of a polarized debate concerning their role in a warming climate, both as carbon sinks and as havens where species can thrive, but also for their importance in symbolic and economic terms. Environmental groups have long tried to hinder this destructive process and inform Swedish society about its impacts, but the trend is not shifting. Without formal protection, forests which have never experienced large-scale clearcutting are estimated to be entirely converted to plantations by 2070 (Ahlström, Canadell, and Metcalfe 2022). Yet, the use of conservation species (*naturvårdsarter*) – an umbrella term encompassing species that are red-listed, protected or indicators of forest continuity – as a weapon for protecting forests has in recent years gained momentum. Citizens from diverse backgrounds and places have taken up the task of politicizing old-growth forests and inventorying species to protect their habitats, but also to tell their story. However, time is running out, as Konrad, a forester involved in inventorying in Northern Sweden, puts it: “It is a race against the clock. The big forest

companies know that time is on their side. They are hurrying to log the last unprotected old-growth forests. Soon, they will all be gone. And people know nothing about this drama, it is not discussed in Sweden” (fieldnotes, 10/8/2023). These two excerpts from my fieldnotes provide an idea of the setting in which my research took place, where I focused on the way inventoryers (*inventerare*) learn and mobilize specific knowledge and skills in order to find species that are instrumental to protecting old-growth forests.



Figure 1. Right: ring holes from three-toed woodpecker. Left: looking for mosses and lichen on a goat willow (*Salix caprea*). Photos by the author, Näsåker, 10/6/2023.

Due to the current lack of sufficient funding for protecting old-growth forests (Sveriges miljömål 2023), the forestry sector finds itself in a paradoxical situation. On the one hand, it is pressured by the authorities to increase its timber production for the sake of the climate, while on the other it is criticized by environmental groups for affecting biodiversity negatively – see Chapter 1. My research focuses on inventorying as a strategy that has garnered attention in Sweden recently, thanks to its increasing success in protecting old-growth forests. Inventorying can be described as follows: environmental groups composed mainly of amateurs without any background in biology, go to unprotected old-growth to document conservation species, e.g. birds like the European three-toed woodpecker (*Picoides tridactylus*) or plants such as the Creeping lady’s-tresses (*Goodyera repens*) – see Figure 1 and Appendix II for the list of species mentioned. When such species are identified, a formal complaint can be filed to stop logging, potentially leading to filing a case in court. A network of groups around Naturskyddsföreningen and Skydda Skogen spread knowledge and educate individuals on species that are instrumental in this struggle. Their knowledge stems not only from the realm of biology (species names, forest ecosystems, soil

composition, forestry practices) but also touches on political and judicial aspects of forest management.

Inventorying species to protect the environment is a widespread practice among environmental groups globally. In this research, my entry point is through the process of gaining knowledge through *enskilment* (Ingold 2000), a social and embodied process of acquiring skills. Deriving from anthropology and phenomenology, this concept has been used in various settings, including forests (Asselin 2016), and highlights the interconnectedness of individuals with their social as well as ecological contexts. The specific articulation of biodiversity inventorying lies at the interface of citizen science and environmental activism, where digital tools are used by environmental groups to produce data and influence environmental governance in spaces where the State does not have the capacity or willingness to step in (Parasie and Dedieu 2019). Moreover, inventorying is based on the creative adoption and use of the available legal frameworks for protecting the habitats of certain species. In relation to this research, inventorying contributes to shaping a discourse, a worldview opposed to the extractivist approach of the forest industry. Finally, I posit that knowledge mobilization and sensorial education can be seen as a particular, situated way of being in the world (Ingold 2000): by being able to recognize and name species, a whole world opens up and these species can reveal themselves before the inventoryer's eyes.

Research questions

1. How do inventoryers gather and mobilize knowledge for forest protection?
2. How does one become a skilled inventoryer?
3. To what extent does this *enskilment* contribute to shaping different ways of perceiving nature?

Before diving into this topic, I will present the socio-political and ecological context of forestry and forest protection and situate this specific practice in the wider context of forest conflicts and struggles around power, governance and policymaking (Reimerson et al. 2024) in Sweden. After presenting the theoretical framework that has informed my analysis and the methodological approach used for gathering research data, the research questions will be answered in two phases. Chapter 4 will focus on the *enskilment* process, its sensorial, educational and collective aspects, while Chapter 5 will present the political, legal and ontological dimensions of inventorying.

1. A polarized debate

1.1. Old-growth forests, between exploitation and protection

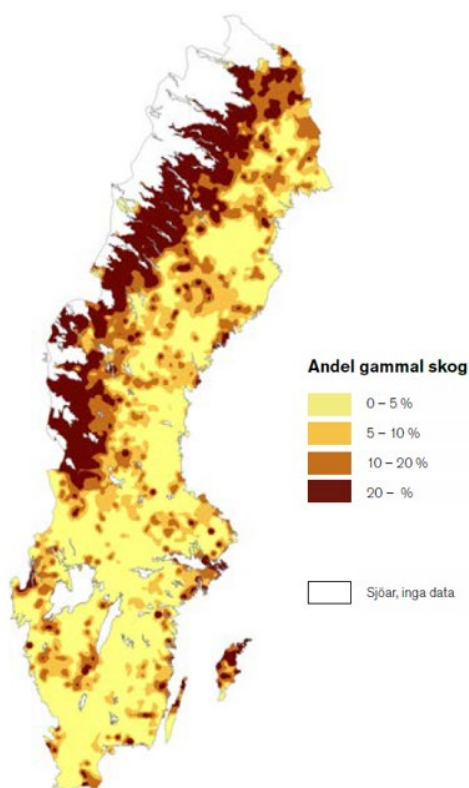


Figure 2. Proportion of old forest of the total productive forest land area. 2018–2022 (SLU 2023).

statistics on the latter type, Figure 2 can give an idea of old forests’ distribution, mostly concentrated in Northern and Northwestern Sweden while only small patches are found in the rest of the country.

Compared to monospecific planted forests, old-growth forests are irreplaceable in regard to the ecosystem services provided (Jonsson et al. 2020), the quantity and variety of species hosted (Bader, Jansson, and Jonsson 1995), the carbon stored (Stephenson et al. 2014) as well as their higher resilience to disturbances such as droughts (Messier et al. 2022). Therefore, protection is key to maintaining these ecosystem services (Moomaw, Masino, and Faison 2019) and has been identified as a prioritized conservation target in the European Commission’s forest strategy (2024).

Forest ownership varies greatly. Nearly 15% of productive forests are owned by the State through the government enterprise Sveaskog, approximately 35% are the property of large timber or paper companies and foundations, while the remaining half is owned by more than 300,000 private owners. All these actors have built links of interdependency,

Forests cover 70% of the Swedish territory, totaling 28 Mha, but only a fraction of these forests are old-growth. Three similar terms exist to qualify these forests: old forests (*gammelskogar*) are older than 120-140 years, amounting to 2.4 Mha (SLU 2023); primary forests (*urskog*) show no signs of human activity (Naturvårdsverket and Skogsstyrelsen 2023); old-growth forests (*naturskogar* and *kontinuitetsskogar*) bear little signs of human activity which “do not significantly disturb natural processes” (*Ibid.*, 11) and remind of undisturbed, primary forests. I will use the term “old-growth forests” to highlight three key aspects: the age of the forest, its natural undisturbed structure, and the conservation

species found in it. In the absence of official

sharing knowledge on new forestry practices and managing forests according to the “Swedish model” of “freedom with responsibility” (*fribet under ansvar*), where forest owners can manage their forests by themselves as long as they follow Skogsvårdslagen’s double objective of ensuring a stable timber production and taking care of the forest ecosystem and its species, both goals being equally prioritized (Appelstrand 2012).

Timber production in Sweden is primarily based on rotational clearcutting (Felton et al. 2010) – the practice of cutting down all or nearly all trees in a specific patch of forest, as seen on Figure 3 – and is used on over 97% of all productive¹ forest land (Lepikko 2021). Its large-scale implementation dates back to the 1950s, where it was integrated into a narrative of modernity and technical advancement (H. Lundmark, Josefsson, and Östlund 2013). After a clearcut is performed, the soil is scarified before trees of the same species are planted and their growth enhanced with the help of fertilizers (Ekholm et al. 2023). From an ecological perspective, it is generally admitted that intensive plantation forestry has negative impacts in terms of biodiversity (Hämäläinen et al. 2024; Strengbom et al. 2011), vulnerability to storms and droughts (Koelemeijer et al. 2022) as well as attack from European spruce bark beetles *Ips typographus* (Kamińska et al. 2021).



Figure 3. Clearcut in Pajala municipality.
Photo by Marcus Westberg.

¹ A productive forest produces more than one cubic meter of timber per hectare and year (Skogsstyrelsen 2019).

SLU Artdatabanken's last report on red-listed species (Eide et al. 2020) points out logging as one of the dominant factors affecting more than 1800 species² negatively, most of them dependent of forest continuity and having “difficulties to survive the clear-cutting phase and do not manage to re-establish themselves as their environments [...] do not have time to be created in modern managed forests”³ (Eide et al. 2020, 13). Furthermore, the felling of old-growth forests and its conversion to plantations threaten Sweden's Sámi communities' livelihood: it is well documented that the logging of old-growth forests has negative impact on reindeer husbandry in Northern Sweden (Kivinen et al. 2010, 271) due to the disappearance of arboreal and ground lichens, the reindeer's main food sources during the winter (Berg et al. 2008).

1.2. Dominant paradigm within Swedish forestry

Currently, Sweden is not on track to reach its environmental goal “Living Forests” (Skogsstyrelsen 2022), which aims to preserve some key forest biotopes and reduce the risk of species extinction. Skogsstyrelsen has deemed this trend negative, stating that despite certain actions to improve forest environments, the loss of important habitats in the forest landscape is of “particularly urgent nature” (*Ibid.*, 130). Despite this alarming statement, logging in Sweden is currently increasing (Skogsstyrelsen 2024c), including in old-growth forests (Ahlström, Canadell, and Metcalfe 2022). In the political sphere, the government has taken a clear stance in favor of a production increase in timber, which is framed as a “strategic resource” by Peter Kullgren, Sweden's minister for rural development and infrastructure, who considers that “an active forest exploitation [...] gives the highest climate efficiency in the long term” (Kullgren 2024). For him, it should be easier to exploit forests, control should be more voluntary, and appealing Skogsstyrelsen's decisions should be harder (Swedish Government 2024a). Clearly, the focus is on “maximising production without considering its possible dependence on including long-term climate change considerations within the production system” (Andersson and Keskitalo 2018, 79). Hence, forests that were previously deemed of little economic interest and therefore never underwent intensive forest exploitation, often at the periphery of the country, are now being logged, too, pushed by the increasing demand for raw material coupled with a reduction of available planted trees, as

² Clear-cutting is not detrimental to all biodiversity: some species, usually farmlands birds and insects, may benefit from clear-cuts (Ram et al. 2020; Sielezniew et al. 2024).

³ Translation by the author.

most of them are currently under the legal logging age⁴, pushing several companies to warn about future timber shortages (M. Johansson 2024; Nilsson 2024).

Forests' role in climate mitigation and in the green transition – through substitution of more carbon-intensive sources, such as oil and cement – has been demonstrated (T. Lundmark 2020), but it is not enough, neither in terms of volume needed for the transition, nor in terms of biodiversity conservation. This approach can be summed up by the formula “more of everything”: in the eyes of the government and the forest industry, Swedish forestry is not only sustainable, but its sustainable nature allows for an increase in timber yield (Beland Lindahl et al. 2017). Indeed, this claim is used “to reconcile a call to increase wood production with an ambition to mitigate climate change” (*Ibid.*, 50). By focusing on climate mitigation, neither the governing bodies nor the industry allow themselves to tackle the other burning issue of forestry, that of crumbling biodiversity.

Swedish foresters and forest owners have in past decades implemented tools to make their management practices more sustainable (Skogsstyrelsen 2023a). For instance, using lighter machines, tree retention – leaving several older trees standing on a logged parcel, as seen on Figure 4 – and reducing the use of pesticides (*Ibid.*) have yielded positive results in terms of biodiversity, but are regarded as insufficient to “maintain the structures and the microclimate that are important for species living in mature and old-growth forests” (Gustafsson, Kouki, and Sverdrup-Thygeson 2010, 304). Environmental certifications such as FSC and PEFC have also been efficient market-based mechanisms for reducing the negative impacts linked to clear-cutting as well as for setting aside at least 5% of a parcel before logging (FSC 2019; PEFC 2023).

⁴ Between 45 and 100 years old, depending on the tree type and region (Stridsman 2011).



Figure 4. *Left: Old-growth spruce forest. Varying age structure, fallen trees on the ground. Right: Spruce monoculture. Straight lines of planted trees, no age difference. Photos by Sebastian Kirppu.*

“Forestry is not just a science; it is an imperial enlightenment project of control, simplification and economic rationalisation” wrote Buijs and Lawrence (2013, 106). Indeed, the modern conception of forest originates from Western philosophy and strengthens the separation between nature and culture, where the subjugation of nature by culture relegates the former to playing the passive role of a resource, ready to be exploited (see Chapter 5). As Tsing (2012, 144) writes, “Human exceptionalism blinds us”, leading us to turn our backs on interspecies relationships and reinforce a division of the landscape, between “forests” and “countryside”, where forests as wild entities only have a right to exist in formally protected areas, the remaining ones being considered solely in terms of volume (Manceron 2022). This division hinders conscientization linked to environmental upheaval and implementation of necessary responses.

In the case of clearcutting, its use in forestry seems to be so engraved in the imaginary of the forest industry that no future for wood exploitation in Sweden can be envisaged without it. This regime of practice is strengthened by the main wood and paper companies, considered “the governing actor within the Swedish forestry system” (Andersson and Keskitalo 2018, 79), who strive to limit initiatives that are seen as detrimental to their economic interests, for example when deciding not to implement other methods favoring species and structural diversity such as Continuous Cover Forestry (Hertog, Brogaard, and Krause 2022). Indeed, because forest plantations have shaped modern forestry, we “tend to think of such arrangements as the only way” (Tsing 2012, 148) to manage forests.

1.3. A “knowledge war” around forests

Any production of knowledge can be seen as a “deployment of power” (Epstein 2005, 49). Here, two opposed worldviews can be distinguished, each of them representing one objective at the core of Skogsvårdslagen. The harsh debates currently taking place between proponents of and opponents to clear-cutting can be viewed as a form of “knowledge war” on how to best use forests in fighting a changing climate (Sténs et al. 2019). This increasing polarization has led to a deepening gap between environmental groups and the forest industry as well as Skogsstyrelsen.

On the one hand, the forestry sector, led by the largest companies who hold the “epistemic authority” on forest questions (Andersson and Keskitalo 2018), portrays forestry as key to finance welfare State and create jobs, but also that the current forestry model is modern and sustainable (Skogsindustrierna 2024): monospecific, even-aged planted forests are framed positively due to their high carbon intake during the first decades of growth and forestry products’ role in the green transition (Burstrom 2024a; 2024b). On the other hand, those who value other goals than increased timber production: protection of biodiversity and other services provided by forests such as social, recreative and aesthetic. Critics of the current model portray modern management practices as unsustainable in terms of biodiversity (Tas 2024; Engberg Dahl 2024) and harmful to ecosystems (C. Johansson and Bengtsson 2024). Therefore, one can consider the current polarized debates as an ontological disagreement on what a forest *is* and how to best balance its uses and services across time and space, making the debate difficult.

Skogsstyrelsen plays a central role in this knowledge war: despite its supervising role in questions linked to forest exploitation, it has repeatedly been chastised for favoring economic interests over environmental ones. Two examples illustrate this criticized role. First, the way it manages the ca 60 000 yearly incoming logging notifications (Skogsstyrelsen 2024a), where only a fraction of them is handled manually (Skogsstyrelsen 2024b). From the moment a notification is submitted to Skogsstyrelsen, the agency has 6 weeks to make a decision regarding adaptation of the logging plan (Landsbygds- och infrastrukturdepartementet 1993). If no decision is officially made after the allotted time, the “non-decision” (*nollbeslut*) equals to a green light for logging. Second, the Agency has removed one of the central concepts that it had been using since 1990 specifically for assessing biotope structure and expected conservation species in forests (Wester 2016, 11): the “key biotope” (*nyckelbiotop*). This information was available to the public and was used by

Skogsstyrelsen when evaluating logging notifications⁵ as well as certifiers such as FSC – a company could not keep its certification if logging in a forest with high conservation species. However, the registration of key biotopes was entirely abandoned by Skogsstyrelsen in 2021 because it was considered a hinder to ownership rights (Skogsstyrelsen 2021).

1.4. Different forms of protection

To fulfil its goal to formally protect 30% of its area by 2030 (Sveriges miljömål 2023), Sweden needs to focus on forests, the nature type having “least proportion of protected areas” (*Ibid.*). Formal protection is achieved by creating a nature reserve (*naturreservat*), biotope protection area (*biotopskyddsområde*) or signing a nature conservation agreement (*naturvårdsavtal*) (Naturvårdsverket 2023b). Public agencies’ approach to protecting forests is utilitarian in terms of biodiversity and sees ownership rights and voluntarism from landowner as essential (Danley, Bjärstig, and Sandström 2021). The type of formal protection depends on the agreement reached between the owner and the authority involved and includes financial compensation. Another type of protection is based on voluntary initiatives (*frivillig avsättning*) of the forest owner as well as environmental considerations (*bänsynsytta*) represents most protected areas in productive forests (see Figure 5), but such voluntary protection can be annulled by landowners who decide to log provisioned areas after having set them aside. Note that Naturvårdsverket estimates the area of old-growth forests on productive forest land without formal protection to be around 1,4 Mha (Naturvårdsverket 2023a). The issue of old-growth forests’ protection is directly related to this goal and as shown in Figure 6, the focus should lay on Norrland, Sweden’s region with most old-growth forests.

⁵ A forest owner does not apply for a logging permit but “notifies” Skogsstyrelsen of a logging. Therefore, a notification cannot be rejected, but adaptation can be requested by the Agency before logging takes place (Skogsstyrelsen 2023b).

	Area (ha)		Proportion of total forest land	
	Productive Forest	Total Forest Land	Productive Forest	Total Forest Land
Total Area	24 808 300	27 873 000	89%	100%
Unproductive Forest	0	3 064 700	0,0%	11%
Total protected, all types	3 246 800	4 296 000	13,1%	15,4%
Formally Protected Forest (of which unproductive)	1 348 800	2 398 000 (1 049 200)	5,9%	8,6% (3,8%)
Voluntary Provision	1 372 500	1 372 500	5,8%	4,9%
Areas of Consideration	525 500	525 500	2,2%	1,9%

Figure 5. Statistics on forest land protection in Sweden (SCB 2023).

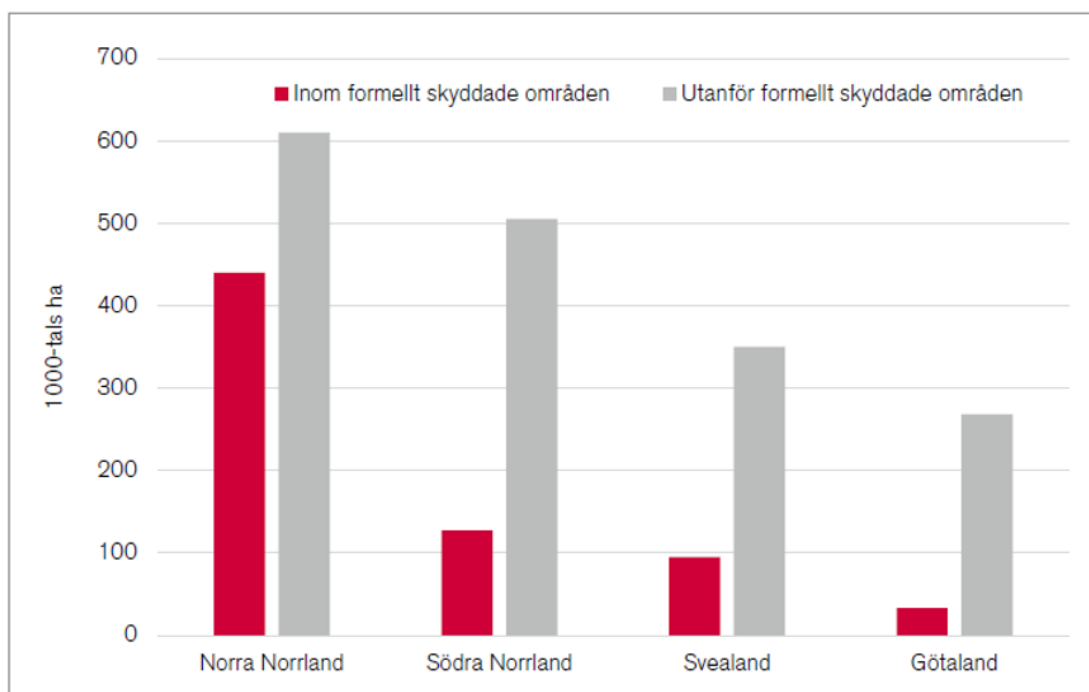


Figure 6. Distribution of old forests per region and protection type (SLU, 2023).

2. Inventorying, a skilled and political practice

An inventoryer's purpose is generally to find species which can "tell the story" of the landscape. This phenomenon has been studied in different contexts, where authors have generally produced analyses focusing on articulations of local identity (Dabezies and Taks 2021), citizen science's role in institutional governance (Fortier and Alphandéry 2017) and tradeoffs between stakeholders (Jakobsson, Olofsson, and Ambrose-Oji 2021). Here, the use of observation data within environmental legal framework serves not only to tell a story, but to achieve formal protection of forests that are deemed endangered. It can be seen as a practical engagement toward preserving a landscape and the non-human entities that inhabit it, but also an adherence to a discourse which advocates for a reevaluation of our relations with non-human entities (Callicott 2005).

To overcome the opposition between the naturalistic and culturalistic views of the landscape (Ingold 1993) – neutral and external to human activities on the one side, cognitive and symbolic on the other – Tim Ingold conceives it as an "array of related features" (*Ibid.*, 158) perceived by our senses and is associated with human activity and engagement. This embedded engagement is what Ingold calls dwelling, "a way of being at home in the world" (Ingold 2005, 503). Here, landscape is not seen as a fixed image akin to a postcard, rather it is perceived through a person's engagement and experiences with their environment and its myriads of past human as well as non-human activities.

Additionally, Ingold regards the notion of place as tied to the immediate and tangible experiences of a particular location in the landscape. A place "owes its character to the experiences it affords to those who spend time there - to the sights, sounds and indeed smells that constitute its specific ambience. And these, in turn, depend on the kinds of activities in which its inhabitants engage. It is from this relational context of people's engagement with the world, in the business of dwelling, that each place draws its unique significance" (Ingold 1993, 155). By analogy with the landscape, a taskscape can then be defined as an "array of related activities" (Ingold 1993, 158) through which "living beings create and transform the environments they inhabit and are in turn created and transformed themselves" (Gruppuso and Whitehouse 2020, 590). Despite the "apparent emphasis on harmony, flow and peacefulness" (*Ibid.*) of this concept, it also has proven useful to highlight conflicts of political nature, for example in Lorimer's study (2000) about deerstalking's

impacts on Scottish landscape preservation, analyzing the nexus between, power, knowledge and environmental governance.

2.1. Active engagement with the environment

Mobilizing one's senses toward the specific aim of finding species can be understood through the concept of *enskilment* (Ingold 2000), who situates the learning experience in its physical as well as social context. *Enskilment* is conceived as “the embodiment of capacities of awareness and response by environmentally situated agents” (Ingold 2000, 5). It also implies that learning is inseparable from doing, where someone educates their attention to the elements surrounding them. Becoming *enskilled* “involves the whole person interacting with the social and natural environment” (Pálsson 1994, 919). It is not only a cognitive process, nor does it reside in a person's cultural mindset, rather its core lies within the practitioner's perceptual system (Ingold 2000), in that inventoryers experience forest environments via clues received through their senses.

“Acquiring skill through practice implies a process of becoming familiar with areas and the actions that occur within them, and of using tools and applying them in the right context” (Asselin 2016, 9). Tools, according to Ingold, “extend the whole person” (Ingold 2000, 319). For inventoryers, their perception of the forest environment is mediated through tools such as magnifiers, binoculars, rulers, as well as digital tools e.g. mobile apps to facilitate bird or plant recognition (see Figure 7). The use of these tools is deeply social and embodied, “serving to draw components of the environment into the sphere of social relations [...] Their purpose [...] is not to control but to reveal” (*Ibid.*, 320). Ingold also challenges the notion of fixed routes and destinations because they reduce the world and our ability to interact with and within it, proposing instead to focus on improvisations where individuals continually navigate their surroundings in a dynamic and responsive manner, echoing inventoryers' efforts to continuously find their way in the forest and adapt their walk or “wayfinding” (*Ibid.*) depending on their intuition. As Tilley underlines, it is through movement that we come to understand and sensorily engage with the landscape (Tilley 2012), highlighting the intimate connection between movement, perception, and the environment.



Figure 7. Using a magnifier, a sensorial engagement. Left: photo Erik Danielsson, Dalarna, Sept 24, 2023. Right: photo by the author, Dalarna, Sept 23, 2023.

Inventorying also has social dimensions and acts as a cement that ties the community of inventoryers together, as we shall see in Chapter 4. Indeed, “knowledge as practice is the basis for the constitution of a community of practice” (Dabezies and Taks 2021) and for building a collective identity. Furthermore, such community “can cradle and nurture social and cognitive skills [...] value-laden stances, emotional patterns and engrained beliefs” (Grasseni 2007, 204). Within this community, the most knowledgeable inventoryers act as guides who reveal the landscape by steering novice’s attention. It is not sufficient for inventoryers to know plenty of species from theory and books and to look for them like artefacts displayed in a museum, it is necessary to be able to recognize species *in situ* (Asselin 2016), guided by more experienced inventoryers. Indeed, the variations and nuances of species require a multisensorial involvement of the inventoryer, in other words they need to “fall in with the rhythms of their environment” (Ingold 2000, 325). Another social dimension of enskilment is storytelling, through which the guide can “encode and transmit aspects of skill and knowing” (Wattchow and Prins 2019, 109). It is also key to replacing practice in the greater context of old-growth forests’ depredation and forest industries’ influence on national forest politics. This aspect also plays a central role for spreading knowledge within the community of inventoryers and politicizes the struggle.

2.2. Between citizen science and activism

In general terms, environmental activism is “a form of collective action aimed at creating social change for the benefit of the natural environment” (Mackay et al. 2021, 1). The notion of data activism (Milan and Velden 2016) puts data at the heart of the struggle to achieve protection of valuable nature. The authors underline the central role played by

data in all spheres of contemporary societies and describe the tools used by data activists such as “capacity building projects and knowledge sharing manuals increasingly targeting low-skill users” (*Ibid.*, 59) but also the new uses of data that activists create. By adding the idea of epistemic culture, namely the “arrangements [...] which make up how we know what we know” (Knorr-Cetina 1999, 1) and which “shape the way we relate to knowledge and its validation” (Milan and Velden 2016, 63), I can now distinguish inventorying as a practice where environmentalists engage with data and mobilize it toward a specific goal, while at the same time focusing on the ways to relate to the mobilized data – how it is produced, validated and used.

Another way to consider forest inventorying is through the lens of citizen science⁶. The voluntary gathering of observation data and its addition to the Swedish national observation database Artportalen – “one of the largest inscription and calculation centers in the world concerning nature, conservation and environmental issues” (Kasperowski and Hagen 2022, 451) – by non-scientists is at the very essence of citizen science as it opens for more intense and frequent collaborations between policymakers, citizens and scientists (Parasie and Dedieu 2019). In many instances of citizen science projects within the context of biodiversity, the aim is to monitor trends, requiring specification of purpose, comparability and interchangeability of the observers (Allard et al. 2023). In the present case, the data collected by volunteers is not initiated by a public or scientific body, but observations are nonetheless central to informing policies and environmental governance, a phenomenon far from unique – see e.g. (Dhillon 2017; Groom, Weatherdon, and Geijzendorffer 2017; van Noordwijk et al. 2021; Johnson et al. 2014).

In their study on deforestation monitoring in Brazil, Rajão and Jarke (2020) demonstrate the crucial role environmental data collection by NGOs and how it “invites multiple actors to develop their own data practices [...] and how these then impact decisively on environmental policy-making practices” (*Ibid.*, 147). Also, they highlight the importance of considering the data produced, “but also social activists, namely, ‘literate’ citizens that form publics that can act as ‘spokespersons’ for the data” (*Ibid.*, 129). Science can inform governance and policymaking, but it cannot by itself create an issue on the political agenda, so there needs to be pressure groups and environmental movements who push forward this issue and inform the public opinion (Epstein 2005). For example, several environmental

⁶ Defined as “a science which assists the needs and concerns of citizens” and “a form of science developed and enacted by citizens themselves” (Irwin 1995, xi).

groups have taken initiatives to fill in the information gaps left by public agencies, opening for greater data collection and more active use of such data. Skydda Skogen has in 2023 developed the tool *skogsmonitor* (“forest monitor”) (Skydda Skogen 2023b), a multi-layer map combining information on logging permits with data on protected areas as well as – which makes it unique in Sweden – an estimation on the likeliness of finding high natural values in a given forest.

Due to Miljöbalken’s requirement for forest owners and logging companies to gather necessary knowledge (Klimat- och näringslivsdepartementet 1998) prior to logging and the implementation of the EU directives for wild bird protection (European Parliament 2009) and habitats conservation (European Parliament 1992), its role has become increasingly central in all spheres of forestry and forest policies (Kasperowski and Hagen 2022). Such data is allowed to “travel” from the local of observation to the desk of the civil servant who will make a decision through different information systems and filters set up to “determine whether an observation is one that prompts further action” (Kasperowski and Hagen 2022, 453), i.e. its relevance in environmental governance. The high levels of trust of the observations listed in *Arportalen* contribute to empowering citizens whose observations are as trustworthy as anyone else’s after going through the portal’s validation process, pushing the inventorying taskscape into the political sphere.

The political aim of this form of inventorying is clear: not just to inform policies, but to achieve formal protection and organize their opposition to destructive practices by the industry, using the legal frameworks available. Anshelm, Haikola, and Wallsten (2018) have described the process of depoliticization within Swedish environmental governance because of neoliberal policies favoring private capital over public goods, “while it delegates responsibility for the environment to formalized procedures of expert, technocratic management” (*Ibid.*, 2). Studying the conflict around a planned limestone quarry in the Ojnare forest, they underline the importance of repoliticizing an environmental issue, i.e. by putting in at the center of the debates through alliances between diverse groups on regional and national levels, enhanced by a strong media presence. The opposition movement then successfully reached its protection goal, thanks to several tactics of scaling up through discourse coalition – framing the issue as a fight against capitalism and connecting it to other conflicts elsewhere – and through juridical processes. This repoliticization can be applied to my research subject and be combined with highlight new dimensions of the conflict to my analysis.

3. An ethnographic investigation

I gathered data through ethnographic methods, combining participant observation with semi-structured interviews and analysis of written sources, i.e. scientific literature, reports from public and private agencies or companies, inventory reports from forest groups (*skogsgrupper*), as well as a list of 450 newspaper articles and blog posts collected throughout 2023-2024. It provided me with a comprehensive overview of the ongoing debate, allowed me to identify the main actors, the recurring arguments, the success or failure of initiatives taken, and helped me prepare for interviews and field trips.

3.1. “Shadow inventorying”

Ethnographic material was collected through participant observation during inventorying trips organized by forest groups in order to learn “both the explicit and tacit aspects of their [...] routines” (Musante 2015, 251). Some of these were labeled as “inventorying course”, during which the focus was on acquiring skills and knowledge of forest ecosystems and conservation species, while others took place in forests registered for logging.

The goal of the participant observation was to gain a better understanding of how an inventorying took place, the ways in which actors learned and taught one another and looked for conservation species in both concrete – non-verbal communication, gestures, description of their actions – and discursive ways – how they explain what they did *in situ*. By accompanying inventoryers in the forest, I could “shadow them”, learn to inventory as well as focus on the lived experience of the practice, “getting to learn to see like [they] did, so that we could agree in our judgement” (Grasseni 2004, 43) of species, but also through physical engagement and movement, “by taking one's own body into places and landscapes and opening up one's perceptual sensibilities and experience” (Tilley 2012, 28). Furthermore, I could pay attention to implicit aspects of inventorying and elements that may not have arisen through direct questions or interviews and use them in my analysis.

Moreover, this research had an emic perspective, departing from the inventoryers' own perceptive categories and discourse on forest, forestry and science, trying to highlight what was pertinent to them (Olivier de Sardan 1998). This implied mastering the language used,

terms related to forest ecosystems, as well as not having preconceived judgements on what inventoryers said or how they said it. Finally, participating in inventories was an opportunity to deepen my understanding of the phenomenon studied by investigating how my own senses were educated, being an actor at the same time as an observer, observing others as well as observing myself (Pálsson 1994).

I conducted six fieldtrips to gather the necessary data: two preparatory trips to Dalarna (organized by Skydda Skogen) and Ångermanland (organized by a local group to stop the logging of several forests) in the autumn of 2023, followed by four inventories during March and April 2024 in Småland, Dalarna and Uppsala County, where I presented myself as a student writing a thesis on forest inventorying (see Figure 8). All fieldworks and interviews were conducted in Swedish, which is not my mother's tongue, which may have been to my advantage: I could often ask people to reexplain terms or stories to me, using such "moments of misunderstanding [...] to seek instruction from respondents" (Musante 2015, 271).



Figure 8. *Left: winter inventorying. Photo by the author, Dalarna, March 26, 2024. Right: Human ecologist inspecting dead wood. Photo by Erland Lindblad, Gallsjön, March 12, 2024.*

To get access to these different inventories, I reached out to groups involved in forest protection via e-mail or Facebook. My interest and experience in birdwatching made initial contact easier. The research was multisite and iterative (Olivier de Sardan 1995), i.e. including back and forth trips between forests for inventorying and my desk, which gave me time to set up interviews with people I had inventoried with, analyze the data collected, add perspectives with new readings, review interview questions and proceed to the next inventorying fieldwork, etc....

3.2. Interviews and written sources

To complement the data collected during the fieldwork, I conducted 14 interviews with inventoryers and experts (see Appendix I) and analyzed both primary and secondary written sources from various stakeholders, including publications, reports, articles, etc.... Many of the interviews were conducted with people I had inventoried with, often on the same day, which built rapport and allowed me to ask them to put words to what we had been doing. Additionally, the semi-structured nature of the interviews opened for a wide variety of answers and let the interviewee go “off topic.” This flexibility helped to open up new perspectives, which provided me with the opportunity to pose new questions, a form of “recursivity” (Olivier de Sardan 1995, 9) where the informal setting of an interview is not only seen as a way to make the interviewed comfortable, but also an epistemological posture.

3.3. Doing ethnography in an activist setting

Although this specific form of inventorying can be considered a form of activism, I will avoid naming practitioners as “activists” as many of the inventoryers I spent time with did not consider themselves as such and some were even strongly opposed to it due to its heavy load. Consequently, I chose to name them “inventoryers”, the word they use to refer to each other. Two additional dimensions linked to doing ethnographic fieldwork in such a setting will now be presented.

One fundamental aspect is confidentiality. To what extent can this research divulgate strategies to protect forests? It may seem uncontroversial to publicly describe how a handful of individuals look for endangered species and how they perceive their practice, but there are organizational aspects, collaborations within the network of inventoryers and between different associations, and certain tools in use that are better left under the radar, far from the ears and eyes of the forest industry. This is an example of external confidentiality (Tolich 2004), where outsiders can identify persons or strategies within a specific group. As several inventoryers pointed out when divulging an inventorying strategy, they then quickly asked me to not mention that specific aspect. The reason for this caution is linked to the increasingly polarized debates surrounding the protection of old-growth forests. For instance, several inventoryers have experienced personal conflicts with forest owners or neighbors. An example illustrates this suspicion: Skydda Skogen’s refusal of my participation to their activities because they “could not control what I would write” (phone conversation, 2/7/2024). Due to time issues, I never managed to get an interview with a spokesperson,

although I did interview some of the organization's employees. Considering this cautionary posture, I made sure to anonymize all interviews of inventoryers and respected interviewees' wishes about what to disclose or not.

Another key aspect is linked to the activist nature of the subject: accessing it through ethnography requires "adhesion and participation" (Emperador Badimon 2017, 216), i.e. to prove that I not only agree with the purpose of inventorying, but also that I can contribute to protecting forests through my involvement and with my skills and knowledge. This is precisely what happened when I contacted an inventoryer from Småland, asking to follow him for an inventory. Over the phone, he asked me "Could you tell me again who you are and what you want?" I answered that I was a student sensitive to the question of logging in old-growth forests, who had participated in inventorying earlier, and was a birdwatcher... Almost instantly, he answered in a friendly tone "It is good that you also want to save forests... and very good that you know birds, then I know where we could go to look for species" (phone conversation, 2/28/2024). This example shows that my knowledge – here, of birds – was also considered in terms of its utility toward saving forests and my initial interest facilitated access to the fieldwork.

The notion of "legitimate peripheral participation" (Lave and Wenger 2001) helps connect this activist aspect to my own positionality as well as my own enskilment process. It starts from the novice-guide's form of apprenticeship (Pálsson 1994) where the novice progressively starts using the knowledge acquired during the practice in important although noncritical actions, proving his successful mastering of the new skills. For example, the inclusion in the species report of my finding of a three-toed woodpecker in Näsåker displayed the legitimacy of my own observations on the field.

3.4. Positionality

A classical ethnographic posture is to assume that the researcher knows less than the researched on their own culture (Geertz 1973). In the present case, the degree of engagement and depth of knowledge made the frontier between researcher and researched less obvious. I could contribute to finding species, which granted me a certain legitimacy since I could help others identify birds and steer their attention.

While on the field, I was constantly trying to navigate between a double role, namely doing my best to learn some of the conservation species that were presented to me, trying to

look for useful species, while at the same time reminding myself of the purpose of my presence, asking questions to participants and starting a discussion about my thesis project, etc.... “They do not have in their heads the scientific truth of their practice which I am trying to extract from observation of their practice”, reminds Bourdieu (2003, 288) of the duality of the ethnographic research, i.e. to extract information and turn it into a scientific analysis while at the same time not forgetting that this enterprise is mine as a researcher. Also, my presence may have influenced the sincerity and authenticity of the inventoryers. So, instead of trying to avoid this influence, I made sure to reveal my status by presenting myself as a student writing my thesis on the topic and completed my ethnographic analysis by taking into account the reactions of the persons studied due to my presence (Weber 2009), for example when inventoryers approached me to ask questions about my research topic, such as “what do you think all inventoryers have in common?”, and in some cases, gave constructive comments.

Participant observation can be seen as the “sharing of a worldview” (Grasseni 2004, 53) and in many ways, this is what happened to me and the situated knowledge (Haraway 1988) I acquired during my fieldwork. The new knowledge affected my analysis as I developed empathy toward the other participants. As Fook (1999, 12) writes on reflexivity, “how what you see is influenced by your own way of seeing, and how your very presence and act of research influences the situation in which you are researching”. Being aware of the limitations of this approach and of my own participation’s implications in the fieldwork helped me gain a more nuanced understanding of the studied phenomenon. Like any scientific paradigm, ethnographic research can only partially shed light on the research object, which could be completed by other approaches of diverse epistemological heritage to allow comparison and provide an even more complete insight on the subject.

4. Forest inventorying as an enskilment process

Different methods have been used in a complementary way to protect old-growth forests, such as media campaigns (Roberntz 2024), petitions (Skydda Skogen 2024), blockades and other acts of civil disobedience (Hansson 2021). Biodiversity inventorying, which catalogs the presence of endangered species to protect various ecosystems from environmental damage has long been utilized by Sweden's main environmental organization Naturskyddsföreningen, for example to stop building projects (interview 13, 4/22/2024). In recent years, inventorying in forests has increasingly been instrumental in Sweden due to three factors. First, the right of public access (*allemansrätten*) which allows everyone to access and enjoy nature on privately owned land. Secondly, Artportalen's essential role in making observations data available. Finally, the legislative framework such as Miljöbalken and the Aarhus Convention, which grants individuals and citizen organizations the right to environmental information, the right to public participation in decision making and the access to justice for environmental matters (United Nations Economic Commission for Europe 1998). This singular combination facilitates the use of inventories politically and empowers environmental groups, making it one of the preferred ways of action for them – a phenomenon that hasn't been observed on a large scale in countries with similar legal frameworks and observation database, such as Norway or Finland.

4.1. A disparate network

Forest inventoryers are part of a constellation of semi-autonomous groups (interview 14, 4/23/2024) that I conceive of as a “community of practice”, defined by the shared practice of inventorying where it acts as “a dispositive for people's education of attention” (Dabiez and Taks 2021, 31) but also crystallized around the conflicts in which the community is involved. Some of its most experienced members act as links between the different groups via interpersonal contacts. These groups' purpose fits with the broad definition of environmentalism as a “pragmatic approach that stresses the preservation and improvement of the [environment] and focuses on such issues as the exploitation of natural resources” (Giugni and Grasso 2015, 341). Among the key actors are Naturskyddsföreningen's regional branches with their own group focusing on forest questions that touch upon biodiversity, forest protection, but also alternatives to clearcutting

in forestry. Its national office also provides information and guidance to forest groups and members, for example with media communication or legal advice (interview 14, 4/23/2024). Other actors include BirdLife Sverige, the country's main ornithological society, and Skydda Skogen, which focuses solely on the issue of old-growth forests' protection, organizes a handful of inventorying activities each year, works with national and international communication and knowledge dissemination, and takes care of the development of skogsmonitor (Skydda Skogen, n.d.). Moreover, many members of one organization are also involved in other nature protection groups, which contributes to tightening the network of forest actions and building alliances to broaden "the scope of their construction of alternatives" (Del Bene, Scheidel, and Temper 2018, 624). According to Skydda Skogen, there are about 50 groups – linked to Naturskyddsföreningen or independent – around the country involved in protecting forests (Bäck 2023).

Legal momentum?

"People are waking up. [...] It has become an increased momentum right now", said Malin Sahlin from Naturskyddsföreningen (interview 14, 4/23/2024). In recent years, public opinion has opened its eyes thanks to popular books such as Lisa Röstlund's *Skogslandet* (Röstlund 2022) or the SVT documentary series *Slaget om skogen* ("The battle about the forest") (Brohult 2021), leading to an increased engagement in forest groups. A second factor contributing to this momentum is of a judicial nature. Several recent rulings at regional (Växjö Tingsrätt 2024), national (MÖD 2020) and EU-level (European General Court 2021) confirmed that all decisions taken under Skogsvårdslagen could be appealed according to the Aarhus Convention and underlined the need for increased species knowledge for decision-making (Darpö and Sandström 2021). Better and clearer opportunities for environmental groups to appeal decisions affecting forests opened widely with these rulings. Between 2019 and 2023, appeals have increased five-fold⁷ with a success rate of around 75% (*Ibid.*), demonstrating the increased power gained through knowledge utilization.

Through this evolution of judicial praxis, combined with widespread knowledge transfer within the network is remarkable, underlines Josia Hort of Naturskyddsföreningen (interview 13, 4/22/2024). As in other environmental conflicts, the use of scientific knowledge has led to a democratization of knowledge production – observation data is added to Artportalen – and shaping of the political agenda, which has challenged the

⁷ Mari Hansson, Skogsstyrelsen, email message to author, April 25, 2024.

monopolistic discourse on truth (Epstein 2005) in the hands of the forest industry. It has also contributed to placing the issue at the center of heated debates in the media and the political realm about the consequences of such actions on ownership rights (Lindahl 2024). This critique of inventorying is reminiscent of other environmental conflicts where state authorities and holders of economic interests attempt to “delegitimize and undermine” environmentalists’ modus operandi (Del Bene, Scheidel, and Temper 2018), e.g. when the use of species observations gathered on Arportalen is framed as being disconnected from reality (Holmgren and Jacobsson 2024). In turn, the current government has sought to address these concerns by starting an enquiry on how to apply environmental regulations without hindering forest exploitation, particularly due to “the presence of species found in large numbers in parts of the country, such as the currently protected species *Goodyera*” (Swedish Government 2024b).

An administrative struggle

Yesterday, I learnt about a logging notification regarding this area. [...] I drove past to have a look, and I think that it should be allowed to remain. But the question is whether there is enough to consider it worth protecting? (Songlife 2024).

The above call for help comes from the 17 000 member–strong Facebook group “Skydda Skogen – Protect the Forest”, managed by Skydda Skogen. Here, the question is indeed which species are found in the forest, but more importantly which species can achieve formal protection. Knowledge about the administrative procedure is central here: who to turn to and what to do with the observations so that they can travel to the right agency? This is where skilled inventoryers enter the stage as the success of the administrative and judicial actions depends almost entirely on their interpretation of the species found and their mastering of bureaucratic procedures, such as writing requests. The inventoryers assess the conservation values of the threatened forest and decide to organize one or several inventorying trip(s). Then, conservation species are added to *Arportalen*. What makes this inventorying different to for instance birdwatching as a hobby – where similar modes of attention and enskilment processes are at play, as studied by Manceron (2022) – is the use of observations to stop logging by an active participation and influence in the governance process.

Inventoryers have several administrative tools at their disposal. After writing an inventorying report with descriptions of its ecosystem characteristics – age and type of trees, soil, ... – as well as the conservation species found, this information can be sent in a

supervision request (*tillsynsbegäran*) to Skogsstyrelsen to ask them to evaluate the logging permit based on the observations reported. Often, Skogsstyrelsen does not reassess the presence of conservation species due to time and resources limitations. Inventoryers can then turn to the company responsible for logging as well as the certificate provider – usually FSC or PEFC – to remind them of their environmental commitments and ask them formally to withdraw the logging permit. As the following excerpt from an inventorying report shows: “Out of the 11 signal species found in the forests, 5 are red-listed and one, the lesser twayblade (*Neottia cordata*), is protected according to the Species Protection Regulation 8§. All these species are proof of the high biological values that are found in this forest, which should not be logged according to [company name]’s environmental policy and PEFC” (Kirppu, n.d.). The objective of filing a complaint to the forest company and the certifier is to put pressure on them. In some cases, the company may decide to withdraw its logging notification.

If this step is unsuccessful, there remains the possibility of appealing the decision in court, an action that has increasingly been used in recent years: “Just because we’ve properly inventoried a forest doesn’t mean that something positive will happen [...] and that the public agency will even try to apply the law. Rather we must be prepared to continue the battle in courts after we’ve sent a supervision request” (interview 6, 3/27/2024). An appeal sent to a regional environmental court may result in a ban on parts of or the entirety of the logging area. Regardless of an appeal’s outcome, going to court is a way to show the forest agency and forest industry that the possibility of re-examining a case exists, as underlined by Josia Hort (interview 13, 4/22/2024).

However, it is not always possible to go through each of these steps since the notification is valid for 36 months without any indication of the date when logging will take place. Time is a crucial element and can play in the favor of inventoryers, as Pontus’ example illustrates. One day, he received a phone call from a friend who had seen harvesters, the machines used for felling trees, enter a forest where she had recently found many *Goodyera*. She had sent a supervision request to Skogsstyrelsen a week earlier, but no answer had arrived yet. Pontus filed an appeal for the logging permit to the regional environmental court. Within a couple of hours, a judgement had been made and there was a ban on logging for the entirety of the forest in question. He quickly drove to the forest, where harvesters had started felling, and showed the court decision on his mobile phone to the drivers: they left instantly (fieldnotes, 3/27/2024).

Having a network to rely on is especially important in rural areas, where few engage with these questions. This emphasizes the need for the inventoryers' network to spread information about species and procedures to others and to empower them with this newly acquired knowledge, so that they can later act autonomously toward a desirable outcome, a phenomenon which presents similarities with other environmental conflicts, e.g. in northern Finland (Sarkki and Heikkinen 2010). Kajsa, an inventoryer from Ångermanland, sums it up as follows: "More people learn how to conduct inventorying and know who they should contact to file appeals and FSC-complaints. It is through these collaborations between the different associations and groups that everyone has got an incentive to go forward" (interview 7, 4/2/2024).

4.2. Motivations: drive and shock

The reasons to join a forest group and start inventorying species vary greatly. One salient element from my fieldwork is that most inventoryers are amateurs who do not have a background in biology – "The only thing you need is to be able to get GPS-coordinates", underlines David (interview 2, 3/14/2024). Territorializing environmental issues helps inventoryers realize that there are places to defend, and it can provide meaning and give scope to their inventorying.

Learning inventorying skills is open to everyone, as Skydda Skogen announced in an ad about inventorying trips on their website: "You do not have to be a biologist or know many species. But it is good if you are burning with curiosity and feel a drive to protect endangered forests. We adapt according to your experiences and capacity to move in the forest. [...] Your eyes will discover things that might never have been seen before – you matter!" (Skydda Skogen 2023a). Beginners joining inventorying trips will have to engage physically with their environment, adapting their search to the terrain, crawling between branches to look under a log during the inventory. They will acquire the knowledge necessary to protect forests through inventorying trips, resources available via Naturskyddsföreningen and Skydda Skogen or other key persons within the movement. They are nurses, high school teachers, engineers, students, scholars, XR activists, but also foresters, all sharing an attachment to forests – be it a local forest or any old-growth forest in Sweden – and the will to protect them. This heterogeneity shows similarity to what Hardt and Negri (2004, 100) call "the multitude", in which "internally different, multiple social subjects whose

constitution and action is based not on identity or unity ... but on what it has in common” act together toward a shared goal.

Experiencing a clear-cut can reveal the impacts of modern forestry and lead to an engagement to avoid what is perceived as an act of destruction. “It was quite shocking [...]. It’s completely normal forestry to erase all life in a place and plough it up and set new plants [...] that must grow as fast as possible” (interview 6, 3/27/2024). Pontus’ reaction exemplifies what many people I met felt when they found themselves in such a devastated landscape. “Then you start to read more about it, you realize” David explained, which linked increased knowledge of the context to explain why someone would be drawn toward inventorying conservation species. In his youth, he was a climate activist, but when he moved back to his hometown, he wanted to do “something” to stop the destruction of nature around him. However, inventorying wasn’t the obvious answer: “I thought the thing with inventorying seemed boring as hell. They just stood around there, really excited over a little slimy dot on some tree. I mean, I wanted to be an activist. These guys were just a bunch of nerds. [But then] we got our first forests protected, and I thought ‘damn, can we protect forests with these small mushrooms?’ Then I will learn about them” (interview 2, 3/14/2024).

Indeed, realizing the scale at which old-growth forests are disappearing in Sweden and instrumental role of species in stopping logging can be an eye-opener and trigger action. As Frida explained: “We wanted to look at all the forests around us that could be saved” (interview 5, 3/26/2024). At that point, thanks to the visibility of the forest network and to their frequent presence in the media and online, joining a forest group becomes available to everyone. In any case, attachment is one key value which facilitates participation in forest inventories, linked to a “particular worldview concerning the human-nature relationship [...] that emphasizes the interconnectedness of human society and natural ecosystems” (Giugni and Grasso 2015, 343). Taking action can help decrease feelings of powerlessness, especially when awareness of climate change’s consequences is high (Aitken, Chapman, and McClure 2011).

4.3. A sensorial education

Enskilment “is not a matter of formal schooling and the internalization of a stock of knowledge; rather it is achieved through active engagement with the environment” (Pálsson

1994, 916). Indeed, inventorying is a particular mode of attention to differences in the environment, listening “to what the landscape is telling” (interview 4, 3/24/2024). It is an evolutive process built upon regular practice. The following description of two inventorying trips in Gallsjön, Småland (see Figure 9), will shed light on the question of how to become a skilled inventoryer, with a focus on the sensorial mobilization and the collective dimension associated with the task.



Figure 9. Gallsjön forest. Photo by Louise Lundberg, Gallsjön, April 6-7, 2024.

Gallsjön

“Unique forest with 400 conservation species being destroyed near Gallsjön, Kalmar County, public agencies do nothing” (Bäck 2021), writes Skydda Skogen about a forest in Vimmerby municipality. For years, approximately 20 environmental groups have relentlessly tried to protect this forest to no avail. It is a unique place for Southern Sweden: a lake surrounded by 300 hectares of old-growth forests and wetlands, counting numerous conservation species and a “fairly unaffected water stream and great variety of soil types and vegetation” (Kalmar Länsförbund 2021), as Figure 10 shows – this screenshot from skogsmonitor displays the likeliness of conservation values around Gallsjön. At the request of Oskarshamn birding club, Kalmar Länsstyrelsen sent a biologist to investigate the area

who came to the same conclusion: the area is extremely rich in conservation species and should be protected (Sandin 2023). However, not all the 8 different landowners involved were interested in protecting the area. Despite agreeing on the interest of conserving such a unique place, no public authority consulted had the budget or the willingness to formally protect the area. This example highlights the importance as well as the limits of inventorying: even if the “right” species are found, a forest can only become protected if everyone agrees.

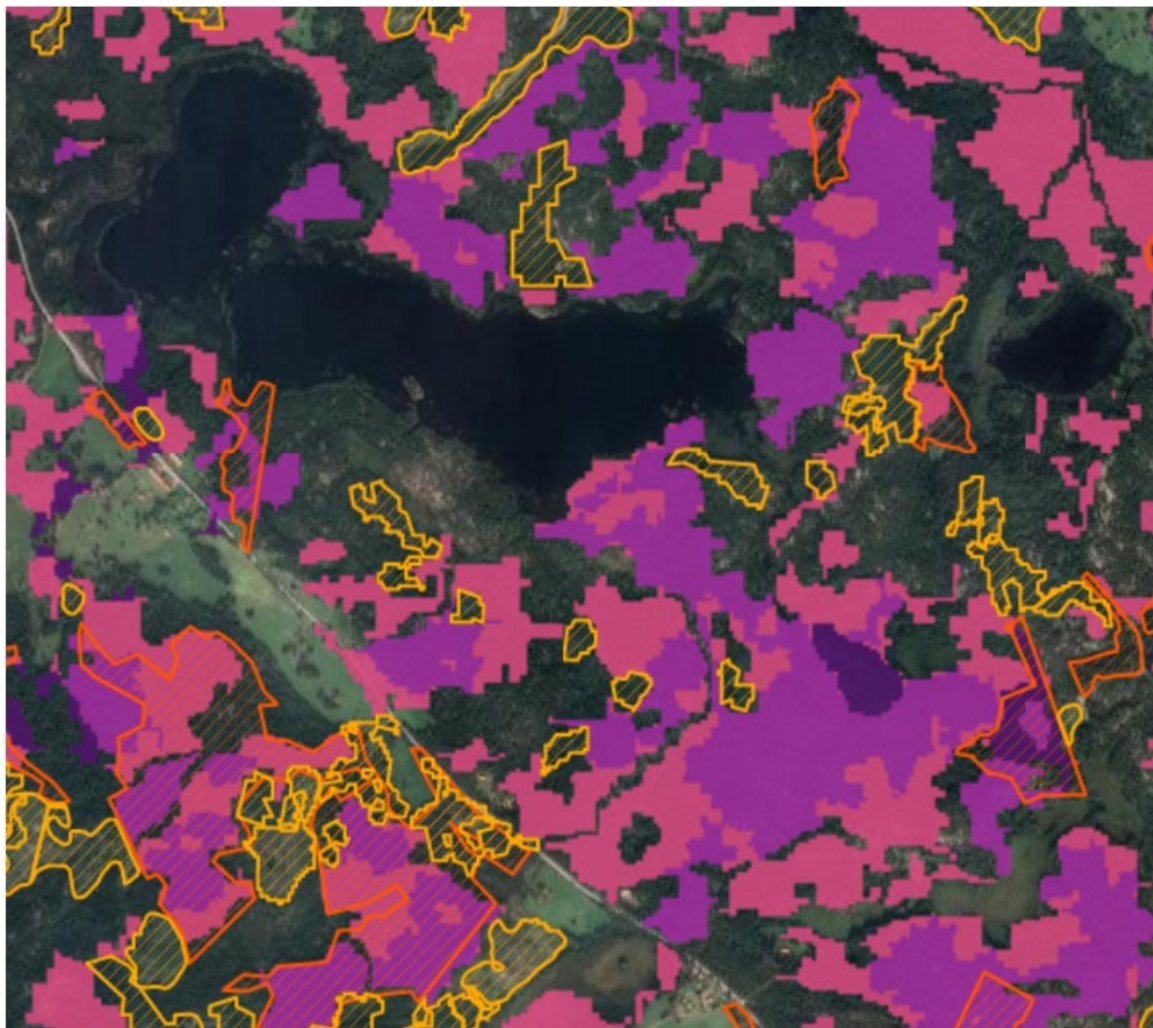


Figure 10. Gallsjön area as seen on skogsmonitor (Skydda Skogen, 2023b). Three levels of probable conservation values from lowest to highest: pink, light purple, dark purple. The dashed areas represent logging notifications (orange) and executed loggings (yellow).

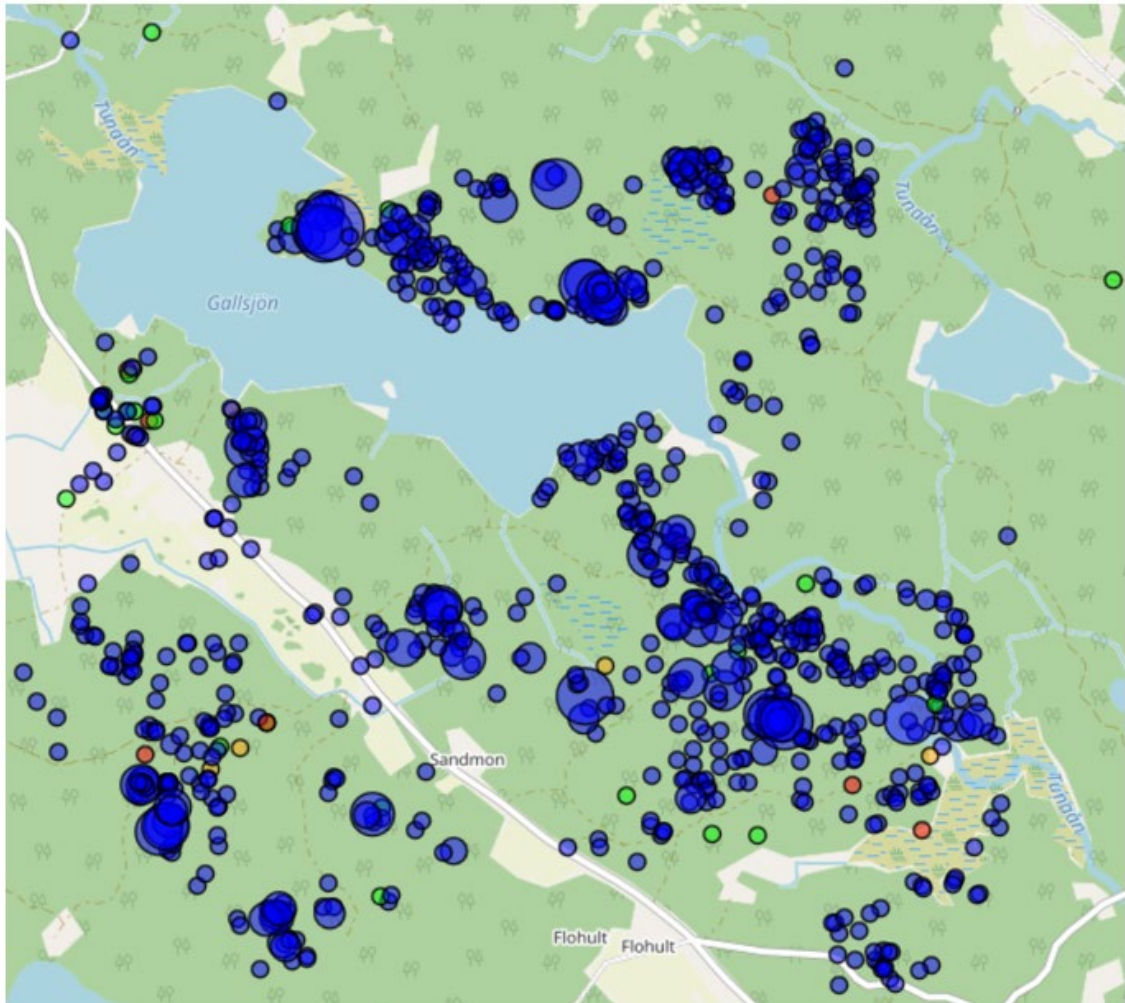


Figure 11. Visualization of 980 observations of red-listed species around Gallsjön. Extracted from Artportalen, period 4/1/2019-4/1/2024 (SLU Artdatabanken, n.d.). Each dot represents an | observation, the size shows the number of specimens observed, i.e. up to 200 for the biggest dots. Color differences are not relevant.

Twice this Spring, I participated in inventories in this forest. The first time, I accompanied two knowledgeable inventoryers living nearby, Eyvind and Jörgen, who've come to Gallsjön at different times of the year to have a species list as exhaustive as possible. Their knowledge of the place allowed them to focus on areas not yet inventoried with the help of Artportalen (see Figure 11), but also to inform the authorities if any new species of interest were found in the hope of strengthening their "case." After a one-hour drive on small forest roads, we got out of the car, and stayed silent for a while, already on the lookout for birds. We then entered the forest and followed Eyvind's steps (see Figure 12). The walk was slow as the forest was full of fallen trees in different stages of decay, mossy stones, small streams, and swamps. In the meantime, the three of us were scanning the environment separated from each other by 10-30 meters, each following his intuition of what "could be

found” on or under specific trees, an improvisation reminding of Ingold (2000). Our senses were awakened so that any irregularity, any color, or element of the environment “sticking out” could be inspected. Every now and then, the silence was interrupted by one of us screaming the name of a species or asking the others to “come and have a look.” Sometimes, we gathered to describe our finds and if one was deemed interesting, one of us reported it directly or saved our position on Avenza, a mobile application that stores maps offline. We were going back and forth between our amazement of the forest surrounding us and the reason for our presence, Eyvind telling us upon arriving on the edge of a mire: “such a view, you don’t usually get it here in Southern Sweden... it gives me such sense of wilderness (*vildmarkskänsla*)” (fieldnotes, 3/12/2024).



Figure 12. Left: Walking through Gallsjön forest. Photo by the author, Gallsjön, April 6-7, 2024.
Right: stream running through Gallsjön. Photo anonymous, April 6-7, 2024.

We ended our inventory at dusk. At least, that’s what I expected. Eyvind and I had started to walk back to the car when he told me “Now is the time to look for owls”. We stopped next to a river where Eyvind had previously heard a Eurasian pygmy owl (*Glaucidium passerinum*). He was right, we could hear it distinctly, and managed to approach the tree on which it was standing and observe it in the faint light. Afterwards, we took the car and started driving, but only for a short while, since Eyvind was hoping to observe more owls. He suspected that there were Tengmalm’s owls (*Aegolius funereus*) in the area – it had never been observed, but it was “the right environment”. We stopped again and with the help of our phones started to play the owl’s call, using the mobile app “as if it were an extension of [our] person” (Pálsson 1994, 910). After several minutes, an owl answered us: it was a match! Eyvind was very excited and for the next 30 minutes he walked feverishly around the car in complete darkness with his phone playing the bird’s call repeatedly. To our disappointment, it never answered again. This anecdote exemplifies the crucial role of tools which “mediate an

active, purposive engagement between persons and their environments” (Ingold 2000, 319). It also illustrates the double aim of the inventory: we wanted to see or listen to birds because of their very existence, their beauty and because it was “cool” (*häftigt*), but also because of the “receipt” (*kvitto*) that their presence meant for proving the biodiverse nature of the forest, linking both the physical and sensorial activity to its potential administrative and political outcomes.



Figure 13. *Left: teacher showing insect holes on a centenary oak. Right: Capercaillie droppings. Photos by the author, Gallsjön, April 6-7, 2024.*

My second visit to Gallsjön a month later was through an inventorying course organized by Oskarshamn Birding Club. The course lasted for two days, each day with about 20 participants from diverse backgrounds and knowledge levels. As soon as we gathered at the meeting place, Eyvind and Anna, the “teachers”, contextualized the task by describing the ecosystem that surrounded us – the soil, the type of trees, their age, etc.... – and named some of the species expected to be found. We then walked through the forest, each skilled participant gladly sharing their tips on how to identify a species with the help of clues and sensorial exploration: this lichen has a color “like dried IKEA meatballs sauce”, this fungus tastes like anis or leather ... Their role as guides (see Figure 13) is key to showing the learner “by being in the right place at the right time and pointing out aspects of the environment that would otherwise be missed” (Wattchow and Prins 2019, 103). An example of this was scratching the thick moss layer around a fungus to reveal a mycorrhizal network, whose presence can help differentiate species.

Our walk created a flow (Pálsson 1994), going back and forth from the individual, embodied task of scanning the environment to collective discussions about interesting finds. Novices were helped by more knowledgeable inventoryers, imitating their posture and the way they looked around and coordinating the “movements and the actions of others to ensure the continuity of the enterprise” (Pálsson 1994, 920). During our walk, we stumbled upon our first *Goodyera*, about 15 of them in a couple of square meters. A participant told me “Now that we’ve seen it, it will be easier to find more of them, I usually feel like I need to calibrate my eyes to it” (fieldnotes, 4/7/2024), denoting that he needed to develop attentiveness and enter the “*Goodyera* mode” to find the orchid. This calibration of the senses echoes Manceron’s work on birdwatching, conceived not solely as an activity, but also as a floating mode of attention that is “inevitably activated” (2022, 116) when the species is found.



Figure 14. Two wood-decay fungi found in Gallsjön forest: *Phlebia centrifuga* (left) and Sweden’s southernmost find of *Perenniporia subacida* (right). Photos by Louise Lundberg, Gallsjön, April 6-7, 2024.

At the end of the two-days course, the organizers summarized all the species encountered, including about 15 conservation species – birds, mosses, fungi, lichens, reptiles (see two examples on Figure 14) – and urged everyone to report their finds on Artportalen to “document the richness of the place” (fieldnotes, 4/7/2024). He later emailed all participants with a detailed species list as well as recommendations of literature for species identification, adding that there was still hope of protecting this forest, despite political and financial obstacles. As Rodman notes, “places are not inert containers. They are politicized, culturally relative, historically specific, local and multiple constructions” (1992, 641). Indeed, the struggle around Gallsjön is also about connecting the skills acquired and the species found to a greater conservation purpose. The forest is “conceived as a place of exchange, of

sharing various resources and skills [...] but also as a space for meeting and sociability where relationships of trust can be established, an essential cement to a lasting mutual commitment” (Fortier and Alphandéry 2017, 591)⁸ which echoes with injunctions by Sebastian Kirppu during courses to “talk about it among the group and review the species you’ve learnt, just like a rehearsal” (fieldnotes, 9/23/2023).

Storytelling

Linking this task to storytelling⁹ is essential in the process of enskilment, as it takes the beginner to “a new level of awareness” (Wattchow and Prins 2019, 106). Inventorying is constantly replaced in a greater context. First, by connecting species and ecosystems to scientific knowledge and nature conservation, e.g. when mentioning the conservation status of each species observed, such as “this is a Willow Tit, it is *NT* (Near Threatened).” Second, by connecting the practice to forest exploitation, especially when its effects are visible, such as deep ruts and bulges made by passing machines, leading inventoryers to express their discontent by commenting “Wow, they’ve been driving hard here!” or “What were they thinking?” Direct critiques of forest policies can also arise. For instance, during an inventory, we were supposed to see a “beautiful place with a stream surrounded by aspens”, but when we arrived, we noticed that some logging had already taken place, which infuriated some of the participants: “This is criminal!” one said, “Why would someone want to turn such a place into bioenergy?” asked another. Some took pictures of the damage and the tree stumps (over the legal logging age) to “prove that they don’t respect Miljöbalken”, simultaneously aware of their powerlessness, as chances for holding the company responsible for what can be considered an environmental offense were low. Some also used irony, while reporting a species exclaimed “This one is for Herman, he won’t be happy about it” (fieldnotes, 4/6/2024), referring to Herman Sundqvist, the General director of Skogsstyrelsen, known for its ties with the forest industry.

Thus, it is also frequent to remind an authority’s environmental commitments, for example in Gallsjön where “Kalmar County only has 3% of formally protected forests when the goal is 30%” (*Ibid.*). This example stresses the gap between official conservation goals and the realities of modern forestry, but it is not only informative. It strengthens the narrative of the depredation of old-growth forests by the industry with the complicity of

⁸ Translation by the author.

⁹ Storytelling is understood here in relation to the social dimensions of the enskilment process (Wattchow and Prins 2019) and its links with a greater narrative about environmental policies and species protection. It does not relate to metaphors of species “telling the story of the ecosystem.”

state authorities and politicizes the struggle by connecting a specific forest to successful inventories in other forests and further on to every endangered forest in Sweden, because inventoryers are aware that it is “significantly better[s] the odds for local protests gaining real influence over national policy” (Anshelm, Haikola, and Wallsten 2018, 19). Storytelling inspires inventoryers by unveiling the potential power of their activities.

Data cannot travel

Since Skogsstyrelsen has produced less data on biodiversity, it has relied increasingly on Artportalen’s observations, but they decide which data to retrieve from the database to feed their own systems. For example, only the strictest type of bird observations is now visible in their system, meaning in practice that if a bird is not observed close to its nest, it is almost impossible for the observation to travel to the civil servant making the decision on logging. As Mark Marissink, head of SLU Artdatabanken¹⁰, describes this situation: the portal “has become far too important in these decisions. [...] Only what’s in Artportalen makes it through” (interview 11, 4/19/2024).

Many of the volunteers have a “strong personal attachment to their data, and to the ways in which they hope that it will be used” (Lawrence 2010, 251). Thus, reporting an observation is essential and inventoryers remind each other regularly “Have you added a point in Avenza? Did you report it on Artportalen?” But the observation needs to be reported *and* play a role: Skogsstyrelsen’s strict use of observation data creates fear among inventoryers that their observations will disappear under the radar due to hard filtering. In addition to advice on how to increase the chances of making observation data travel, the development of GIS-tools such as skogsmonitor by environmental groups is another form of data usage (since these tools are also based on Artportalen), and they have been of great help for environmental groups, as confirmed during interviews (interview 6, 3/27/2024). Conclusively, attention to changes in how public authorities use data leads to constant adaptation of data collection methods and to some extent incentivizes creativity, e.g. by creating new monitoring tools. Citizen data collection projects such as these “affect the dynamics of social movements and civil society” and also shape “the conduct of political decision-making” (McCormick 2012, 7).

“The relationship between data and policy-making [is] constantly reconfigured as a practice that is not only based on the rationale of ‘data-driven decision making’ but in negotiating different data practices and different forms of data interpretation”, write Rajão

¹⁰ The department responsible for managing Artportalen.

and Jarke (2020, 146). This is exactly the case for inventoryers, who have to navigate between being informed by the latest scientific knowledge on forest ecosystems – as one of them told me, “If what we do wasn’t 100% science-based, people would not trust us” (fieldnotes, 2/15/2024) – while at the same time they are well aware that providing the right public authority with the correct data is not sufficient. To ensure that their data can influence governance, they will use the administrative and legal tools at their disposal and even raise awareness among local communities as discussed in Chapter 4. Furthermore, they are also aware that, as public authorities are so much in line with the forest industry, this collected data can also be used to argue for less strict environmental regulations. This development has been witnessed during the explosion of observations in recent years which have been utilized in the aforementioned attacks on the species protection regulation based on claims that species used by inventoryers are too common to be protected (Holmgren and Jacobsson 2024), as well as the government’s plan to remove the orchid *Goodyera*’s formal protection because it is “not threatened enough” (Stärn 2024). A similar risk exists at the local level, pushing inventoryers to “cover as much ground as possible”, because “if the owner sees that nothing on a specific area has been added to Artportalen, they can log it and claim that there are no red-listed species there” (fieldnotes, 3/12/2024), demonstrating that the *absence* of observations can be used as an argument for logging.

Key actors in spreading knowledge

Knowledge is shared and spread among inventoryers through clues and repetition – one inventoryer told me that he looked at Nitare’s book *Skyddsvärd skog* (“Forest worth protecting”) ([2019] 2023) every morning for a year to “have the images and descriptions in mind when being in the forest” (fieldnotes, 3/27/2024). It is fragile and “needs to be maintained continuously” (*Ibid.*). Also, “The space coopts modes of attention as well as ways of being”¹¹ (Despret 2023, 123), which applies to inventoryers, whose practice will vary throughout the year, and highlights yet another way of perceiving forest environments, where one needs to attune one’s attention according to the seasons and species’ territorial behaviors (such as birdsongs that are only heard during the breeding season) and plants blooming periods. Thus, the guidance provided by knowledgeable inventoryers is essential for beginners to become enskilled. In order to link the inventorying activity to its end goal of formal protection through storytelling, knowledgeable inventoryers direct beginners’

¹¹ Translation by the author.

attention, give them tips on how to differentiate similar species, help them to use tools and concretely teach them how to efficiently scan the ground.

Four “accomplished practitioners” are often mentioned for “introducing novices into contexts which afford selected opportunities for perception and action, and by providing the scaffolding that enables them to make use of these affordances” (Ingold 2000, 354). Each of these key people has contributed to facilitating the identification of conservation species by inventoryers and their connection to a greater understanding of forest ecosystems. Their methods can be linked to inventoryers’ enskilment process and education of attention, allowing them to make a “skilled judgement” (Grasseni 2004, 43) and “tell the story” of the forest. By engaging with the environment through senses and guidance of experienced inventoryers, beginners get to “read” the landscape, which becomes “infused with human meaning [which] has not been ‘pinned on’ but is there to be ‘picked up’ by those with eyes to see and ears to hear” (Ingold 2000, 57).

The first one is Mats Karström, a biology high school teacher from Vuollerim who has built a method where one focuses on a handful of species in a systematic way to highlight the continuity of a forest (*skogskontinuitet*) consisting of soil, tree and dead wood (*låga*) (Karström 1997) and developed the concept of the value pyramid (*värdepyramid*) – see Figure 15 – which has a simple principle (Karström et al. 1993): based on the type of ecosystem, if one finds conservation species that are at the bottom of the pyramid, for example a *Phellinidium Ferrugineofuscum*, a wood-decay fungus that lives on dead spruce wood, this species will indicate a probability of finding rarer conservation species more demanding in terms of continuity, therefore helping to mentally and practically steer the inventoryer’s attention to specific species. This method helps not only to identify species but to “read” a landscape and understand its structure (interview 10, 4/15/2024).

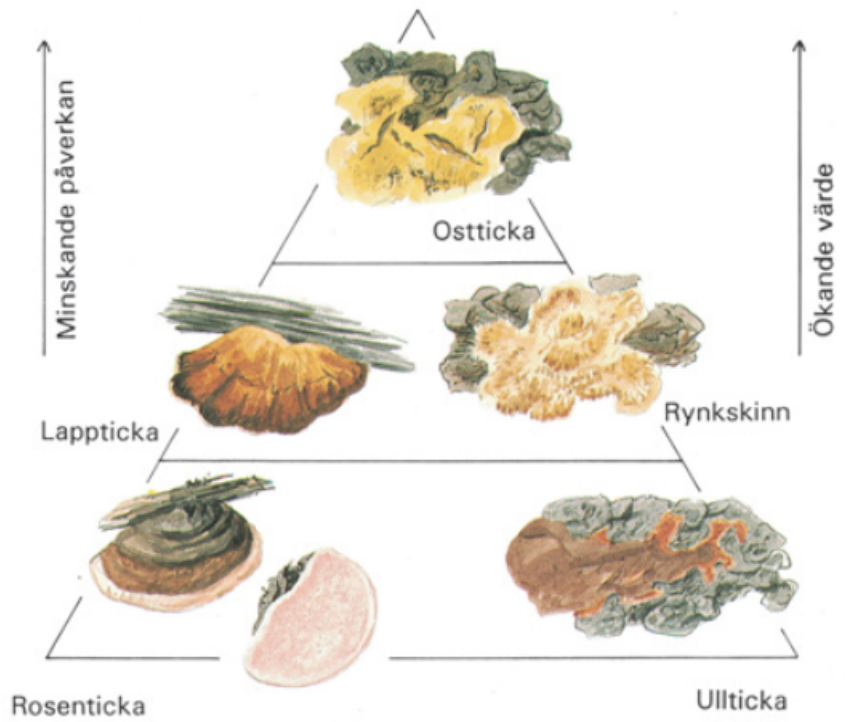


Figure 15. Example of value pyramid with different types of wood fungi in a boreal spruce forest (Karström et al. 1993, 29). A high position indicates a increasing conservation value (Ökande värde) and lesser impact from human activities on the ecosystem (Minskade påverkan).

Johan Nitare, a retired ecologist from Skogsstyrelsen, developed the concept of signal species (*signalarter*), that is a species, not especially endangered nor formally protected that indicates a certain richness of biodiversity within a given forest (Nitare [2019] 2023). Such a species can indicate specific characteristics of an ecosystem, for instance a limestone soil in the presence of common hepatica (*Hepatica nobilis*), which in turn can help an inventoryer adjust their attention and look for conservation species found on that type of soil. Like Karström, he, too, stresses the importance of learning to “read forest” because, to see conservations species, “you need to envisage the forest with a specific ‘lens’” (*Ibid.*, 5). The third person with an influential epistemological role is a Finnish environmental activist, Olli Manninen, who taught new methods to Swedish environmentalists. As explained by forest ecologist Sebastian Kirppu (interview 12, 4/21/2024), “With wood-decay fungi, you have to lift the dead wood [...] to be able to see something underneath. We had never done that in Sweden before” (see Figure 16).



Figure 16. Left: Documenting species. Photo by Erik Danielsson, Dalarna, Sept 24, 2023.
Right: Turning a log. Photo by the author, Ångermanland, Oct 7, 2023.

The fourth practitioner is Sebastian Kirppu, a “full-time inventoryer” who inventories year-round and gives courses and lectures. His frequent media presence makes him a resourceful guide on inventorying in Sweden. To help differentiate species worth identifying from trivial ones, he uses the term “shit species” (*skitart*) for trivial species and “shit forest” (*skitskog*) to qualify forests with little conservation values, both in an ironic way as well as a way to remember what to look for: “Don’t focus on this red-belted conk (*Fomitopsis pinicola*), it is beautiful and important, but it doesn’t tell anything about its habitat. We have to learn species that tell us something about their habitat so that we can have a story with us” (interview 12, 4/21/2024).

5. A reflexive, political and ontological task

Inventorying motivates practitioners who feel “satisfied to get another connection and knowledge of nature” (interview 4, 3/24/2024) but also joy when teaching others, as one inventoryer from Uppsala told me: “I experienced a joyful moment today [...]. I got to help someone when she reported her first observation. She was almost euphoric. That’s really what we want with this new forest group [...] to give people a chance they wouldn’t otherwise have had” (interview 4, 3/24/2024). Beyond the atmosphere of sharing knowledge of species, the level of “expertise” of inventoryers is often a way for them to define themselves and build an identity tied to their specific area of interest. This identity construction compares favorably with other environmental activists who are sometimes ignorant of species, whose species illiteracy is framed in terms of sorrow. As summarized by Siv, “All this richness that we have [...]. It is disappearing, and we do not even know what is lost” (interview 4, 3/24/2024). However, species literacy does not only “imply having a greater volume of accumulated information, but rather the development of the ability to coordinate perception and action in different situations” (Dabezies and Taks 2021, 32). This contrast between joy and sorrow points out the role played by emotions which need to be “acknowledged as a valid part of the human relationship with nature” (Buijs and Lawrence 2013, 109).

After inventorying, experienced participants will make sure that everyone has reported their observations so that they can *use* them to stop logging and hopefully achieve protection, not only *accumulate* them in Arportalen. This process also requires guidance, knowledge sharing and enskilment, although the number of inventoryers who carry out this task is much more limited due to a lack of time and resources. A taskscape “can be used to explore and understand conflicts within a frame that looks at practices and activities without denying the power of discourses, narratives and representations” (Gruppuso and Whitehouse 2020, 594). Here, its political and ontological dimensions will be discussed and linked to topics of ethics, justice and diplomacy.

5.1. A gate to making sense of nature in a new way

“When we look at a bird, we are actually looking at the sum of numerous ecological processes. One bird can embody the complexity of an entire ecosystem. That’s where the

broadening of perception comes in” (Angus 2024). These words by Australian birdwatcher Georgia Angus show a striking parallel with inventorying. Through this practice, education of attention and sharpening of sensorial perception add more nuances and complexity to the forest environment and the species present in it. What might have been unknown or invisible to an inventoryer becomes known and recognizable. Naming species contributes to making them visible and at the same time exist – from their own perspective and epistemologies that are inseparable from personal experience (Ingold 2000). As Arvid (interview 3, 3/14/2024) describes: “It’s like a universe that I wasn’t aware of before.” However, this enhanced perception is not activated in a mechanical or deterministic way, as inventoryers can be surprised to find species where they wouldn’t be expected, underlining the importance of the ability to improvise on the spot.

Such an eye-opening experience, mediated using tools and through mobilizing all senses, contributes to understanding the “story that species can tell us”, as shown by the following excerpt:

For me, it has rather opened up, that you suddenly see things. And that it also creates a form of “I know what this is”. You know that it is a pine cone (Porodaedalea pini). It means that the tree is approximately this old. [...] Knowing the place in a different way creates some form of anchoring and belonging. [...] It creates a form of ... maybe not intimacy, but kind of closeness to the place (interview 3, 3/14/2024).

Claims that inventorying creates a familiarity with places and species are recurrent. It engenders “forms of identification and companionship that contrast to hyper-domestication and private property as we know it”, writes Tsing (2012, 142). Indeed, familiarity reinforces attachment to the forest in which the inventory is performed and to other forests where similar species may be found. Attachment is not only strengthened by inventorying, but broadened in that this activity reshapes inventoryers’ preconceptions of forest environments. “Learning more species makes me have an eye for detail (*detaljseende*). I used to have it in a different way, because I have been in the forest picking berries and chanterelles” (interview 7, 4/2/2024). Such claims can be linked to Ingold’s “dwelling perspective”, where the landscape is shaped by the practices – i.e. nature conservation efforts, but also other activities such as picking mushrooms – of those who’ve dwelt within it (1993), leading to feeling “at home in the forest” (interview 2, 3/14/2024)”.

Place relation is upgraded and reaffirmed by practice, the inventoryer “perceives nature in a completely different way” (interview 6, 3/27/2024) thanks to an increase in perceived connectedness to nature, often leading to a stronger engagement in nature conservation projects, as pointed out by several studies (Richardson and Hamlin 2021; Richardson et al. 2022). However, it does not only yield positive feelings, as many inventoryers mentioned feeling stressed when being in forests threatened with logging: “I’ve got to find these species to protect this one, it’s up to me” (interview 2, 3/14/2024). Furthermore, an inventoryer must constantly navigate between the feelings of urgency linked to forest destruction and the invigorating feeling of being in the forest can give – it gives “energy and strength” (interview 7, 4/2/2024) – which is also why several inventoryers try to “forget about inventoried forests that have disappeared” and “focus on the ones that are still standing” (fieldnotes, 3/13/2024). In this context, inventorying can also be seen as a way to reduce one’s worries related to climate change, as described by Siv (interview 4, 3/24/2024): “The more I learn, the more these feelings go away. [...] You could believe that there is a stronger sense of worry in the body, but it is being held off stronger the more I am out [in the forest].”

5.2. Values of species

Since inventoryers tend to focus on species that are known to help protect forests, reports of certain conservation species on Artportalen have increased in the past years. The example of the orchid *Goodyera repens* illustrates this trend: in 2019, approximately 2000 observations were reported on Artportalen. Numbers increased to 13000 in 2023, which has led critics of inventorying to ask why *Goodyera* is still protected despite “record levels of observations” (Åsling 2024). If inventoryers focus on some species while discarding others, does a species have a value that is proportional to its conservation status and its contribution to the inventorying purpose?

The concepts of intrinsic and instrumental values can help us answer this question, where intrinsic value of a species equals valuing a species for itself, i.e. “that exists independently of humans and their motives” (Norton 2005, 302) and instrumental value of “something as a means to and end other than itself” (Callicott 2005, 280). The latter often reduces a species or ecosystem to the services it can provide to humans, quantified in monetary or carbon terms (e.g. the monetary weight of a woodpecker’s work by regulating insect populations, or the amount of carbon captured per tree), which fits well within a

utilitarian perspective. First, one can discern a utilitarian approach at the core of inventorying actions in that inventoryers tend to focus their attention on particular species for their role in forest protection. These can be seen as umbrella species, i.e. “whose conservation confers a protective umbrella to numerous co-occurring species” (Roberge and Angelstam 2004, 77). As Eyvind told me, “Species are like a receipt of what you see” (interview 1, 3/13/2024), which highlights their importance in confirming the state of an entire ecosystem or landscape. I posit that by assigning an instrumental value to certain species – which inventoryers often equate with conservation species – inventoryers contribute to empowering *all species* present in a given forest as well as the ecosystem itself. This can in turn be considered a way to give an intrinsic value to all species tied to old-growth forests. Thus, the intrinsic value of the totality of said species outweighs the sum of instrumental values as quantified through a utilitarian perspective¹².

Inventoryers use the utilitarian perspective to their advantage in their fight against the deterioration of living beings’ life conditions. For example, Mats Karström told me that he had developed his pyramid “because the forest industry is so good at quantifying cubic meters and crowns” (interview 10, 4/15/2024), seemingly using the industry’s own worldview to fight them with their own weapons. Inventoryers know that they need to be pragmatic due to a lack of time and resources to exhaustively inventory a parcel, therefore their attention needs to focus on the species that can give results. Furthermore, they try to instrumentalize new species to open up new protection opportunities, as Pontus explained, “We’re trying to get the willow tit (*Poecile montanus*) to become a species which plays a role in forest management since it’s red-listed” (interview 6, 3/27/2024).

However, isn’t the use of legal tools with the help of modern science and Linnean nomenclature to preserve certain forests from destruction another way of reinforcing the nature-culture divide? Inventoryer’s tactics question our relationship to nature and our ability to create alternative imaginaries, but there is also a risk of romanticizing old-growth forests by constructing a wild entity that does not need human intervention, something that has not been salient from fieldworks, although one interviewee thinks that “the only reason to go there is to document and report so that it can be protected [...]. But I often think that wow, when I leave a forest, I will never go there again. Because either it’s protected or it’s destroyed, but I’ll never go there again” (interview 7, 4/2/2024). Rather, most inventoryers

¹² Except in rare cases where a species is so instrumental that its conservation or reintroduction yields tremendous effects in terms of money and biodiversity, such as the sea otters conservation program off the west coast of the U.S (Callicott 2005).

recognized the need of forest exploitation in Sweden as long as it doesn't occur in old-growth forests, but they stressed the importance of having access to such environments. Where their perspectives differ is the kind of access that should be available: "you can go there and have a quick look (*en snabbis*)" said David (interview 2, 3/14/2024), while Siv stressed the importance of asking oneself "how much does it restrict another being's life" (interview 4, 3/24/2024) when going into the forest. Eventually, "people need the possibility to be in the forest so that they can value it. Because what you don't know, you don't care about" (interview 9, 4/7/2024). This quote illustrates how inventorying can help create an alternative discourse where non-human entities are given a more active and visible role. It also underlines that the intimacy and care arising from inventorying helps envision a closer cohabitation or collaboration between humans and non-humans.

5.3. Questioning private property

What happens to a landowner who isn't allowed to log their forest? In principle, landowners can be compensated for the loss of income from a non-logged forest, but the process can take years, leaving many owners without income from a forest they can't log (Darpö 2022). This topic is discussed intensely among forest groups. Although there is no common approach to all groups, the recommendation of Naturskyddsföreningen is to always ask oneself "who's your counterpart and how would they be affected?" (interview 13, 4/22/2024) when appealing a decision. Nevertheless, each forest group can freely decide which approach to adopt and who to "target", and the regional context and type of ownership also weigh in on their strategy. One thing everyone agreed upon is that it is unfair for landowners not to be compensated, but it is a systemic failure of the State. As Jörgen, who has been inventorying for 40 years, told me: "We understand them, it's their source of income. So, if they can't log because there are [species], then they must be compensated, but that doesn't happen" (interview 9, 4/7/2024). While some choose not to look at ownership and only focus on biodiversity protection, others focus solely on large forest owners such as SCA or the State-owned Sveaskog. Siv, an inventoryer from Uppsala, explained that they targeted Uppsala Akademiförvaltning, the foundation managing Uppsala University's real estate, "because they're the perfect enemies [...]. They employ many biologists at Uppsala University, should their salary be paid thanks to felling old forests?" (interview 4, 3/24/2024).

At the core of this conflict lies a profound disagreement around the idea of private property and the uses and duties linked to forest ownership which has fueled the current polarization. Since the 1940s, economic interests' holders and political parties advocating liberal economic policies have repeatedly attempted to limit *allemansträtten* to “limiting the public’s access to forests for recreation, and hindering people’s exploitation of resources like berries, mushrooms, and fish” (Sténs and Sandström 2014, 112) to keep their activities uninterrupted. Today’s critical discourse toward inventorying for forest protection follows similar arguments, as exemplified by this quote from Ola Kårén, Chief forester at SCA, Sweden’s largest private forestry company: “It is clear that private persons and groups, who don’t want to see the forests exploited at all have got powerful tools to stop it” (M. Berg 2023). In response to these critics, three members of Skydda Skogen wrote a debate article arguing that they prefer to be “forest activists than industry lobbyists” (van der Spoel, Kirppu, and Säfve 2022). Inventoryers often link their task to a “greater good”, criticizing the Swedish forestry model which favors ownership rights, increased timber production and self-regulation instead of increased supervision by public authorities. It is indeed the non-application of existing environmental regulations that is often mentioned as a reason to why inventories occur, as exemplified by the following quote, heard during every inventory I participated in: “We’re doing the job of the public agencies.”

Another dimension linking forests as a form of commons was also salient during my fieldworks. Claims like “it is our forest through *allemansträtten*” or “this forest is owned by Sveaskog, that means by our tax money” (fieldnotes, 4/7/2024) were frequent. As Asselin (2016, 8) writes, “Proper or good forest use [...] is an idea which represents engagement according to limited principles and priorities as determined by the social norms, experiences, and formal and informal education of individuals.” The underlying idea defended by inventoryers is here that forest should not be owned and used like a simple commodity, questioning the utilitarian worldviews that dominate within Swedish forestry. Rather, it should be co-managed through its different uses and by considering perspectives other than only that of the landowner, i.e. recreational users, berry pickers, but also non-humans, who also “own” the forest in which they dwell.

5.4. Protecting something that doesn't have a voice

When inventorying, finding species is repeatedly put in a greater context of forest politics and species’ potential role in forest protection. Enskilment reinforces this perception

as collective practice while storytelling also strengthens attachment to unprotected forests. Moreover, it is linked to a critical discourse about forest industry's practices, framed as extractivist, unsustainable, and disrespectful of other living beings.

“Everything that is taking place in the forest, happens in silence” (interview 8, 4/6/2024), an inventoryer told me. The idea that the practice of inventorying helps protect voiceless species and their ecosystems was recurrent among practitioners. They elaborate modes of thought and collective action through which nonhuman agents can be integrated into political communities (Stengers 2005) by concretely making their observations travel and influencing environmental governance (Kasperowski and Hagen 2022). Therefore, is their practice a way to give endangered species and environments a voice and, if so, which voice and to which purpose?

Non-humans exceed our understanding and remain a subject of (in)difference. Consequently, inventoryers can only tell the stories of species from our perspective, without claiming to speak for them, as Siv describes: “Personally, I do not feel that I give them a voice. The point is that they need somewhere to live. They can only live in certain habitats. [...] And I can make sure to raise my voice, [...] so that we as a species will act less irresponsible towards these other species” (interview 4, 3/24/2024). The acquisition of a “skilled vision” (Grasseni 2004) is here linked to the project of giving a voice to silenced species: by knowing them better and closer, we can defend them better and “step into the landscape as advocates and participants” (Angus 2024).

Thus, how can inventoryers act as “spokespeople” for the collected data and what they represent? Stengers’ notion of the diplomat may help us understand this role. The diplomat is an initiator “of alternative imaginaries to envision cohabitation between various practitioners with diverse attachments to different nonhumans” (Janicka 2023, 27). This figure deploys “a form of constant attention to the variety of expressions of living beings and their interdependencies” (Janicka 2023, 34). It is tied to practices and nonhuman entities (Stengers 2005). Diplomacy in this sense is conceived as a way to pay attention to nonhumans and propose a new political as well as ontological project, not specifically representing the voice of nonhumans but rather co-constructing this project with them (*Ibid.*). The link with the concept of *enskilment* lies in the practical aspect of engagement with the environment, but ethnographic data also shows that inventoryers try, in many ways, to give species a voice through their practice. Furthermore, inventoryers as diplomats contribute to politicizing the issue of shrinking biodiversity in old-growth forests, which

empowers the species present in the territories they strive to defend. The practice of inventorying gives species, not only their observation, an active role in influencing environmental governance: an orchid like *Goodyera* needs specific ecosystem features to survive, and this need is translated into a powerful political tool.

Conclusion

At the crossroads between citizen science and environmental activism, inventorying plays a central role in the knowledge war about Swedish forests. The network of inventoryers is crucial for putting pressure on the forest industry and bringing the issue of disappearing old-growth forests onto the political agenda. Knowledge lies at the heart of this task and its utilization in the existing legal framework has in recent years proven remarkably successful in a Swedish context, empowering forest groups and environmentalists in their struggle against a powerful industry and their ideology. Inventoryers seize the opportunity to challenge dominant neoliberal worldviews and their utilitarian conceptions of forest ecosystems which allow the forest industry, with the blessing of the ruling parties, to go forward with their extractivist enterprise. Similarly, they question the near-religious views on private property and imagine an alternative political-ontological project where old-growth forests are conceived as a kind of commons.

Studying the enskilment process in the practice of inventorying allows to understand how senses can be mobilized and educated toward a “mode of attention” (Manceron 2022) under the guidance of experienced inventoryers (Pálsson 1994). Individuals become skilled by steering their gaze in order to read the landscape and eventually correctly identify species which can play a role in formally protecting a forest. During this sensory journey, participants navigate constantly between expression of personal emotions toward the fate and state of forests in Sweden – powerlessness before the number of forests being logged but also joy when loggings are stopped – while simultaneously striving to be rigorously objective and science based so that their observations can travel and influence environmental governance (Kasperowski and Hagen 2022). Participant observation has helped me understand the active and embodied engagement with the world at play through enskilment (Ingold 2000), thanks to the rich interactions I have experienced during my fieldwork. Furthermore, the storytelling that connects the concrete task of inventorying to a greater collective narrative of protecting old-growth forests (Wattchow and Prins 2019) acts as a social cement among the community of practice (Dabezies and Taks 2021). Moreover, becoming enskilled strengthens attachment to places and makes various non-human worlds visible. This attachment can be seen as the main driver for engaging in inventorying.

Gaining a better understanding of forest ecosystems opens the realm of new and different kinds of relationships to weave with nonhumans and the ways to value their existence and their habitats. Thus, species are appreciated for their intrinsic value as well as for the instrumental role some of them play in protecting the environment (Callicott 2005) – their observations are the “receipt” that inventoryers look for to “tell the story of the ecosystem.” Ethnography shows that “there are also ways of relating to and conceiving nature without considering it mute or at our disposal, [...] without imagining that they are non-reciprocal to the point of not recognizing any value in it” (Manceron 2022, 22). This is precisely where Stengers’ figure of the diplomat can play a role as “initiator of alternative imaginaries to envision cohabitation between various practitioners with diverse attachments to different nonhumans” (Janicka 2023, 27), which could be an interesting perspective to add in further research. Ultimately, inventorying might inspire environmental groups in other countries to engage in preserving their environment with similar weapons. “Because hope arises from action” (interview 4, 3/24/2024).

References

- Ahlström, Anders, Josep G. Canadell, and Daniel B. Metcalfe. 2022. “Widespread Unquantified Conversion of Old Boreal Forests to Plantations.” *Earth’s Future* 10 (11): e2022EF003221. <https://doi.org/10.1029/2022EF003221>.
- Aitken, Christopher, Ralph Chapman, and John McClure. 2011. “Climate Change, Powerlessness and the Commons Dilemma: Assessing New Zealanders’ Preparedness to Act.” *Global Environmental Change*, Special Issue on The Politics and Policy of Carbon Capture and Storage, 21 (2): 752–60. <https://doi.org/10.1016/j.gloenvcha.2011.01.002>.
- Allard, Anna, Claire Wood, Lisa Norton, Andreas Aagard Christensen, Veerle Van Eetvelde, Alan Brown, Henrik Persson, and Louise Eriksson. 2023. “Monitoring as a Field.” In *Monitoring Biodiversity*, by Anna Allard, E. Carina H. Keskitalo, and Alan Brown, 1st ed., 9–33. London: Routledge. <https://doi.org/10.4324/9781003179245-2>.
- Andersson, E., and E. C. H. Keskitalo. 2018. “Adaptation to Climate Change? Why Business-as-Usual Remains the Logical Choice in Swedish Forestry.” *Global Environmental Change* 48 (January):76–85. <https://doi.org/10.1016/j.gloenvcha.2017.11.004>.
- Angus, Georgia. 2024. “Birdwatching Changes the Way You Look at the World – It Truly Is the Gateway Drug to Environmental Awareness.” *The Guardian*, January 6, 2024, sec. Australia news. <https://www.theguardian.com/australia-news/2024/jan/07/birdwatching-changes-the-way-you-look-at-the-world-it-truly-is-the-gateway-drug-to-environmental-awareness>.
- Anshelm, Jonas, Simon Haikola, and Björn Wallsten. 2018. “Politicizing Environmental Governance – A Case Study of Heterogeneous Alliances and Juridical Struggles around the Ojnare Forest, Sweden.” *Geoforum* 91 (May):206–15. <https://doi.org/10.1016/j.geoforum.2018.03.003>.
- Appelstrand, Marie. 2012. “Developments in Swedish Forest Policy and Administration – from a ‘Policy of Restriction’ toward a ‘Policy of Cooperation.’” *Scandinavian Journal of Forest Research* 27 (2): 186–99. <https://doi.org/10.1080/02827581.2011.635069>.
- Åsling, Marcus. 2024. “LEDARE: Hur kan rödlistade arter vara så vanliga.” *Östersunds-Posten*, April 11, 2024. <https://www.op.se/2024-04-11/rekordfynd-av-knarot-men-arten-ar-rodlistad/>.
- Asselin, Jodie. 2016. “Experience and Place-Making in Contested Forests.” *Journal of Sustainability Education*, February.
- Bäck, Kristina. 2021. “Unikt skogsområde med 400 naturvårdsarter förstörs vid Gallsjön.” *Skydda Skogen* (blog). November 19, 2021. <https://skyddaskogen.se/unikt-skogsomrade-med-400-naturvardsarter-forstors-vid-gallsjon-i-kalmar-lan-myndigheterna-agerar-inte/>.
- . 2023. “Skydda Skogens kalender, 22: Engagera dig för att skydda skog!” *Skydda Skogen* (blog). December 22, 2023. <https://skyddaskogen.se/skydda-skogens-kalender-22-engagera-dig-for-att-skydda-skog/>.

- Bader, P., S. Jansson, and B. G. Jonsson. 1995. "Wood-Inhabiting Fungi and Substratum Decline in Selectively Logged Boreal Spruce Forests." *Biological Conservation* 72 (3): 355–62. [https://doi.org/10.1016/0006-3207\(94\)00029-P](https://doi.org/10.1016/0006-3207(94)00029-P).
- Beland Lindahl, Karin, Anna Sténs, Camilla Sandström, Johanna Johansson, Rolf Lidskog, Thomas Ranius, and Jean-Michel Roberge. 2017. "The Swedish Forestry Model: More of Everything?" *Forest Policy and Economics*, Alternative Pathways to Sustainability? Comparing Forest Governance Models, 77 (April):44–55. <https://doi.org/10.1016/j.forpol.2015.10.012>.
- Berg, Anna, Lars Östlund, Jon Moen, and Johan Olofsson. 2008. "A Century of Logging and Forestry in a Reindeer Herding Area in Northern Sweden." *Forest Ecology and Management* 256 (5): 1009–20. <https://doi.org/10.1016/j.foreco.2008.06.003>.
- Bourdieu, Pierre. 2003. "Participant Objectivation*." *Journal of the Royal Anthropological Institute* 9 (2): 281–94. <https://doi.org/10.1111/1467-9655.00150>.
- Brohult, Linus, dir. 2021. "Slaget om skogen." *Slaget om skogen*. SVT. <https://www.svtplay.se/vetenskapens-varld-slaget-om-skogen>.
- Buijs, Arjen, and Anna Lawrence. 2013. "Emotional Conflicts in Rational Forestry: Towards a Research Agenda for Understanding Emotions in Environmental Conflicts." *Forest Policy and Economics*, Forest Land Use and Conflict Management: Global Issues and Lessons Learned, 33 (August):104–11. <https://doi.org/10.1016/j.forpol.2012.09.002>.
- Burström, Michael. 2024a. "Insändare. Svar: Fler träd måste få växa upp och skapa klimatnytta." *Dagens Nyheter*, May 10, 2024, sec. Insändare. <https://www.dn.se/insandare/svar-fler-trad-maste-fa-vaxa-upp-och-skapa-klimatnytta/>.
- . 2024b. "Insändare. Svar: Trakthyggesbruk gör att skogen växer bättre." *Dagens Nyheter*, May 18, 2024, sec. Insändare. <https://www.dn.se/insandare/svar-trakthyggesbruk-gor-att-skogen-vaxer-battre/>.
- Callicott, J. Baird. 2005. "The Intrinsic Value of Nature in Public Policy: The Case of the Endangered Species Act." In *Contemporary Debates in Applied Ethics*, 279–97. Contemporary Debates in Philosophy 3. Malden, MA: Blackwell Pub.
- Dabezies, Juan Martin, and Javier Taks. 2021. "Environmental Knowledge and the Definition of a Community of Practice. Improvisation and Identity of the *Butiaceros* of Southern Uruguay." *Geoforum* 118 (January):30–37. <https://doi.org/10.1016/j.geoforum.2020.10.008>.
- Danley, Brian, Therese Bjärstig, and Camilla Sandström. 2021. "At the Limit of Volunteerism? Swedish Family Forest Owners and Two Policy Strategies to Increase Forest Biodiversity." *Land Use Policy* 105 (June):105403. <https://doi.org/10.1016/j.landusepol.2021.105403>.
- Darpö, Jan. 2022. "Artskydd Och Ersättning. Om Tre Nya Avgöranden Kring Skogsbruk Och Ersättning." *JPMiljönet*, 2022.
- Darpö, Jan, and Jonas Sandström. 2021. "Artskydd Och Beslutsprocesser." 7009. Naturvårdsverket Forskning. Naturvårdsverket. <https://www.naturvardsverket.se/978-91-620-7009-0>.

- Del Bene, Daniela, Arnim Scheidel, and Leah Temper. 2018. "More Dams, More Violence? A Global Analysis on Resistances and Repression around Conflictive Dams through Co-Produced Knowledge." *Sustainability Science* 13 (3): 617–33.
<https://doi.org/10.1007/s11625-018-0558-1>.
- Despret, Vinciane. 2023. *Habiter en oiseau: essai*. Babel 1867. Arles: Actes Sud.
- Dhillon, Carla May. 2017. "Using Citizen Science in Environmental Justice: Participation and Decision-Making in a Southern California Waste Facility Siting Conflict." *Local Environment* 22 (12): 1479–96. <https://doi.org/10.1080/13549839.2017.1360263>.
- Eide, Wenche, Karin Ahrné, Ulf Bjelke, Sanna Nordström, Elisabet Ottosson, Jonas Sandström, and Sebastian Sundberg. 2020. *Tillstånd Och Trender För Arter Och Deras Livsmiljöer: Rödlistade Arter i Sverige 2020*. SLU Artdatabanken Rapporterar 24. Uppsala: SLU Artdatabanken, Sveriges lantbruksuniversitet.
- Ekholm, Adam, Lars Lundqvist, E. Petter Axelsson, Gustaf Egnell, Joakim Hjältén, Tomas Lundmark, and Jörgen Sjögren. 2023. "Long-Term Yield and Biodiversity in Stands Managed with the Selection System and the Rotation Forestry System: A Qualitative Review." *Forest Ecology and Management* 537 (June):120920.
<https://doi.org/10.1016/j.foreco.2023.120920>.
- Emperador Badimon, Montserrat. 2017. "Observer le militantisme par intermittence : les effets de la discontinuité sur le terrain." *Politix* 118 (2): 209–32.
<https://doi.org/10.3917/pox.118.0207>.
- Engberg Dahl, Christopher. 2024. "Sveriges fulaste kalhygge är korat – ligger i Värmland." *Greenpeace Sweden* (blog). March 7, 2024.
<https://www.greenpeace.org/sweden/pressmeddelanden/skog/sveriges-fulaste-kalhygge-ar-korat-ligger-i-varmland/>.
- Epstein, Charlotte. 2005. "Knowledge and Power in Global Environmental Activism." *International Journal of Peace Studies* 10 (1): 47–67.
- European Commission. 2024. "Forest Strategy - European Commission."
https://environment.ec.europa.eu/strategy/forest-strategy_en.
- European General Court. 2021. *Föreningen Skydda Skogen mfl mot Länsstyrelsen i Västra Götalands län mfl*. European General Court of Justice, Second Chamber.
- European Parliament. 1992. *Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora*. OJ L. Vol. 206.
<http://data.europa.eu/eli/dir/1992/43/oj/eng>.
- . 2009. *Directive - 2009/147 - EN - Birds Directive - EUR-Lex*. <https://eur-lex.europa.eu/eli/dir/2009/147/oj>.
- Felton, Adam, Matts Lindbladh, Jörg Brunet, and Örjan Fritz. 2010. "Replacing Coniferous Monocultures with Mixed-Species Production Stands: An Assessment of the Potential Benefits for Forest Biodiversity in Northern Europe." *Forest Ecology and Management* 260 (6): 939–47. <https://doi.org/10.1016/j.foreco.2010.06.011>.

- Fook, Jan. 1999. "Reflexivity as Method." *Annual Review of Health Social Science* 9 (1): 11–20. <https://doi.org/10.5172/hesr.1999.9.1.11>.
- Fortier, Agnès, and Pierre Alphanbéry. 2017. "La maîtrise des données, un enjeu majeur pour les associations naturalistes à l'heure de la gouvernance de la biodiversité." *Revue française d'administration publique* 163 (3): 587–98. <https://doi.org/10.3917/rfap.163.0587>.
- FSC. 2019. "Skogsbruksstandard." Forest Stewardship Council. 2019. <https://www.se.fsc.org/se-sv/regler/skogsbruksstandard>.
- Geertz, Clifford. 1973. *The Interpretation of Cultures: Selected Essays*. New York: Basic Books.
- Giugni, Marco, and Maria T. Grasso. 2015. "Environmental Movements in Advanced Industrial Democracies: Heterogeneity, Transformation, and Institutionalization." *Annual Review of Environment and Resources* 40 (Volume 40, 2015): 337–61. <https://doi.org/10.1146/annurev-environ-102014-021327>.
- Grasseni, Cristina. 2004. "Skilled Vision. An Apprenticeship in Breeding Aesthetics." *Social Anthropology* 12 (1): 41–55. <https://doi.org/10.1017/S0964028204000035>.
- . 2007. "Communities of Practice and Forms of Life: Towards a Rehabilitation of Vision?" In *Ways of Knowing: Anthropological Approaches to Crafting Experience and Knowledge*, edited by Mark Harris. New York.
- Groom, Quentin, Lauren Weatherdon, and Ilse R. Geijzendorffer. 2017. "Is Citizen Science an Open Science in the Case of Biodiversity Observations?" *Journal of Applied Ecology* 54 (2): 612–17. <https://doi.org/10.1111/1365-2664.12767>.
- Gruppuso, Paolo, and Andrew Whitehouse. 2020. "Exploring Taskscapes: An Introduction." *Social Anthropology* 28 (3): 588–97. <https://doi.org/10.1111/1469-8676.12789>.
- Gustafsson, Lena, Jari Kouki, and Anne Sverdrup-Thygeson. 2010. "Tree Retention as a Conservation Measure in Clear-Cut Forests of Northern Europe: A Review of Ecological Consequences." *Scandinavian Journal of Forest Research* 25 (4): 295–308. <https://doi.org/10.1080/02827581.2010.497495>.
- Hämäläinen, Aino, Kadri Runnel, Thomas Ranius, and Joachim Strengbom. 2024. "Diversity of Forest Structures Important for Biodiversity Is Determined by the Combined Effects of Productivity, Stand Age, and Management." *Ambio*, January. <https://doi.org/10.1007/s13280-023-01971-9>.
- Hansson, Erik. 2021. "Blockaden Mot Sveaskogs Avverkning Har Pågått i En Vecka – Natursidan." *Natursidan*, April 30, 2021. <https://www.natursidan.se/nyheter/blockaden-mot-sveaskogs-avverkning-har-pagatt-i-en-vecka/>.
- Haraway, Donna. 1988. "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective." *Feminist Studies* 14 (3): 575–99. <https://doi.org/10.2307/3178066>.
- Hardt, Michael, and Antonio Negri. 2004. *Multitude: War and Democracy in the Age of Empire*. New York: The Penguin Press.

- Hertog, Iris, Sara Brogaard, and Torsten Krause. 2022. "Barriers to Expanding Continuous Cover Forestry in Sweden for Delivering Multiple Ecosystem Services." *Ecosystem Services* 53 (101392). <https://doi.org/10.1016/j.ecoser.2021.101392>.
- Holmgren, Peter, and Jonas Jacobsson. 2024. "Dags Att Hissa Röd Flagg För Rödlistan." *Altinget.Se*, June 26, 2024. <https://www.altinget.se/artikel/dags-att-hissa-rod-flagg-for-rodlistan>.
- Ingold, Tim. 1993. "The Temporality of the Landscape." *World Archaeology* 25 (2): 152–74. <https://doi.org/10.1080/00438243.1993.9980235>.
- . 2000. *The Perception of the Environment. Essays on Livelihood, Dwelling and Skill*. London: Routledge.
- . 2005. "Epilogue: Towards a Politics of Dwelling." *Conservation and Society* 3 (2): 501–8.
- Irwin, Alan. 1995. *Citizen Science: A Study of People, Expertise, and Sustainable Development*. 1. publ. Environment and Society. London: Routledge.
- IUCN. n.d. "The IUCN Red List of Threatened Species." IUCN Red List of Threatened Species. Accessed May 5, 2024. <https://www.iucnredlist.org/en>.
- Jakobsson, Rikard, Erika Olofsson, and Bianca Ambrose-Oji. 2021. "Stakeholder Perceptions, Management and Impacts of Forestry Conflicts in Southern Sweden." *Scandinavian Journal of Forest Research* 36 (1): 68–82. <https://doi.org/10.1080/02827581.2020.1854341>.
- Janicka, Iwona. 2023. "Reinventing the Diplomat: Isabelle Stengers, Bruno Latour and Baptiste Morizot." *Theory, Culture & Society* 40 (3): 23–40. <https://doi.org/10.1177/02632764221146717>.
- Johansson, Christer, and Daniel Bengtsson. 2024. "Den Nya Skogsutredningen Öppnar För Ett Ohållbart Skogsbruk." *Altinget.Se*, February 19, 2024. <https://www.altinget.se/artikel/den-nya-skogsutredningen-oppnar-for-ett-ohaallbart-skogsbruk>.
- Johansson, Måns. 2024. "Vidas bokslutskommuniké 2023." *Vida AB* (blog). March 13, 2024. <https://www.vida.se/topical/vidas-bokslutskommunike-2023/>.
- Johnson, McKenzie F., Corrie Hannah, Leslie Acton, Ruxandra Popovici, Krithi K. Karanth, and Erika Weinthal. 2014. "Network Environmentalism: Citizen Scientists as Agents for Environmental Advocacy." *Global Environmental Change* 29 (November):235–45. <https://doi.org/10.1016/j.gloenvcha.2014.10.006>.
- Jonsson, Micael, Jan Bengtsson, Jon Moen, Lars Gamfeldt, and Tord Snäll. 2020. "Stand Age and Climate Influence Forest Ecosystem Service Delivery and Multifunctionality." *Environmental Research Letters* 15 (9): 0940a8. <https://doi.org/10.1088/1748-9326/abaf1c>.
- Kalmar Länsförbund. 2021. "Gallsjön måste få skydd mot avverkning, NU!!!" *Naturskyddsföreningen Kalmar Län* (blog). June 25, 2021. <https://kalmar-lan.naturskyddsforeningen.se/2021/06/25/gallsjon-maste-fa-skydd-mot-avverkning-nu/>.
- Kamińska, Agnieszka, Maciej Lisiewicz, Bartłomiej Kraszewski, and Krzysztof Stereńczak. 2021. "Mass Outbreaks and Factors Related to the Spatial Dynamics of Spruce Bark Beetle (*Ips*

- Typographus) Dieback Considering Diverse Management Regimes in the Białowieża Forest.” *Forest Ecology and Management* 498 (October):119530.
<https://doi.org/10.1016/j.foreco.2021.119530>.
- Karström, Mats. 1997. “Indikatorarter För Identifiering Av Naturskogar i Norrbotten - Del 2, Inventeringsrapport För Jokkmokks Kommun.” 4692. Naturvårdsverket.
- Karström, Mats, Karin Beland Lindahl, Gunilla A. Olsson, and Mats Williamson. 1993. “Indikatorarter För Identifiering Av Naturskogar i Norrbotten - En Metodstudie För Användning Av Växtarter Som Indikatorer.” 4276. Solna: Naturvårdsverket.
- Kasperowski, Dick, and Niclas Hagen. 2022. “Making Particularity Travel: Trust and Citizen Science Data in Swedish Environmental Governance.” *Social Studies of Science* 52 (3): 447–62. <https://doi.org/10.1177/03063127221085241>.
- Kirppu, Sebastian. n.d. “Avverkningsplanerad Naturskog Med Höga Biologiska Värden i Avradsberg.”
- Kivinen, Sonja, Jon Moen, Anna Berg, and Åsa Eriksson. 2010. “Effects of Modern Forest Management on Winter Grazing Resources for Reindeer in Sweden.” *AMBIO* 39 (4): 269–78. <https://doi.org/10.1007/s13280-010-0044-1>.
- Klimat- och näringslivsdepartementet. 1998. *Miljöbalk (1998:808)*.
https://www.riksdagen.se/sv/dokument-och-lagar/dokument/svensk-forfattningssamling/miljobalk-1998808_sfs-1998-808/.
- Knorr-Cetina, Karin. 1999. *Epistemic Cultures: How the Sciences Make Knowledge*. Cambridge (Mass.): Harvard university press.
- Koelemeijer, Irena A., Johan Ehrlén, Mari Jönsson, Pieter De Frenne, Peter Berg, Jenny Andersson, Henrik Weibull, and Kristoffer Hylander. 2022. “Interactive Effects of Drought and Edge Exposure on Old-Growth Forest Understory Species.” *Landscape Ecology* 37 (7): 1839–53. <https://doi.org/10.1007/s10980-022-01441-9>.
- Kullgren, Peter. 2024. “Debatt: Skogsutredningen är grunden för ett konkurrenskraftigt skogsbruk.” *Land Lantbruk*, February 22, 2024, sec. Skogsbruk.
<https://www.landlantbruk.se/land-skogsbruk-skogsutredningen-ar-grunden-for-ett-konkurrenskraftigt-skogsbruk>.
- Landsbygds- och infrastrukturdepartementet. 1993. *Skogsvårdsförordning (1993:1096)*.
https://www.riksdagen.se/sv/dokument-och-lagar/dokument/svensk-forfattningssamling/skogsvardsforordning-19931096_sfs-1993-1096/.
- Lave, Jean, and Etienne Wenger. 2001. “Legitimate Peripheral Participation in Communities of Practice.” In *Supporting Lifelong Learning*, by Julia Clarke, Ann Hanson, Roger Harrison, and Fiona Reeve, 111–26. London: Routledge.
- Lawrence, Anna, ed. 2010. *Taking Stock of Nature: Participatory Biodiversity Assessment for Policy, Planning and Practice*. Cambridge: Cambridge University Press.
- Lepikko, Karin. 2021. “Så stort är hyggesfritt skogsbruk.” *Skogen*, September 16, 2021.
<https://www.skogen.se/nyheter/sa-stort-ar-hyggesfritt-skogsbruk/>.

- Lindahl, Helena. 2024. "Aktivisterna har fått fritt spelrum i Sverige." *ATL*, April 26, 2024, sec. Politik. <https://www.atl.nu/aktivisterna-har-fatt-fritt-spelrum-i-sverige>.
- Lorimer, Hayden. 2000. "Guns, Game and the Grandee: The Cultural Politics of Deerstalking in the Scottish Highlands." *Ecumene* 7 (4): 403–31. <https://doi.org/10.1177/096746080000700402>.
- Lundmark, Hanna, Torbjörn Josefsson, and Lars Östlund. 2013. "The History of Clear-Cutting in Northern Sweden – Driving Forces and Myths in Boreal Silviculture." *Forest Ecology and Management* 307 (November):112–22. <https://doi.org/10.1016/j.foreco.2013.07.003>.
- Lundmark, Tomas. 2020. "Skogen Räcker Inte - Hur Ska vi Prioritera?" 2020:4. Future Forests. Umeå: SLU Future forests, Swedish University of Agricultural Sciences.
- Macfarlane, Robert. 2016. *Landmarks*. London: Penguin Books.
- Mackay, Caroline M. L., Florencia Cristoffanini, Joshua D. Wright, Scott D. Neufeld, Hanna F. Ogawa, and Michael T. Schmitt. 2021. "Connection to Nature and Environmental Activism: Politicized Environmental Identity Mediates a Relationship between Identification with Nature and Observed Environmental Activist Behaviour." *Current Research in Ecological and Social Psychology* 2 (January):100009. <https://doi.org/10.1016/j.cresp.2021.100009>.
- Manceron, Vanessa. 2022. *Les veilleurs du vivant: avec les naturalistes amateurs*. Les empêcheurs de penser en rond. Paris: les Empêcheurs de penser en rond-la Découverte.
- McCormick, Sabrina. 2012. "After the Cap: Risk Assessment, Citizen Science and Disaster Recovery." *Ecology and Society* 17 (4). <https://doi.org/10.5751/ES-05263-170431>.
- Messier, Christian, Jürgen Bausch, Rita Sousa-Silva, Harald Auge, Lander Baeten, Nadia Barsoum, Helge Bruelheide, et al. 2022. "For the Sake of Resilience and Multifunctionality, Let's Diversify Planted Forests!" *Conservation Letters* 15 (1): e12829. <https://doi.org/10.1111/conl.12829>.
- Milan, Stefania, and Lonnie van der Velden. 2016. "The Alternative Epistemologies of Data Activism." *Digital Culture & Society* 2 (2): 57–74. <https://doi.org/10.14361/dcs-2016-0205>.
- MÖD. 2020. MÖD 2020:45 | lagen.nu. Land and Environment Court of Appeal.
- Moomaw, William R., Susan A. Masino, and Edward K. Faison. 2019. "Intact Forests in the United States: Proforestation Mitigates Climate Change and Serves the Greatest Good." *Frontiers in Forests and Global Change* 2 (June). <https://doi.org/10.3389/ffgc.2019.00027>.
- Musante, Kathleen. 2015. "Participant Observation." In *Handbook of Methods in Cultural Anthropology*, by Harvey Russell Bernard and Clarence C. Gravlee, Second edition, 251–92. Lanham, Maryland: Rowman & Littlefield.
- Naturvårdsverket. 2023a. "Översikt Kring Kontinuitetsskogar Och Naturskogar i Boreal Region." <https://www.naturvardsverket.se/49b870/contentassets/d9729845fa4a4b8fbb3d8770cc53d0e7/oversikt-kring-kontinuitetsskogar-och-naturskogar-i-boreal-region-16-maj-2023-webb.pdf>.

- . 2023b. “Skyddsformer för skog med höga naturvärden.” Naturvårdsverket. June 9, 2023. <https://www.naturvardsverket.se/amnesomraden/skyddad-natur/bevara-hoga-naturvarden-och-fa-ersattning/skyddsformer-for-skog-med-hoga-naturvarden/>.
- Naturvårdsverket, and Skogsstyrelsen. 2023. “Urskogar Och Naturskogar – Sammanställning Av Underlag Och Bedömning Av Arealer – Kunskapsunderlag till Miljömålsberedningen.” Dnr NV-02484-23. Naturvårdsverket & Skogsstyrelsen. <https://www.sou.gov.se/contentassets/e66f5e3eaaed43ddb8ae786a452eed39/underlagsrapport-urskogar-och-naturskogar---kunskapsunderlag.pdf>.
- Nilsson, Sten B. 2024. “Akut Brist På Skogar För Slutavverkning?” *Altinget - Miljö Och Energi*, March 6, 2024. <https://www.altinget.se/miljo/artikel/akut-brist-paa-skogar-for-slutavverkning>.
- Nitare, Johan. (2019) 2023. *Skyddsvärd skog - Naturvårdsarter och andra kriterier för naturvärdesbedömning*. Skogsstyrelsen. Jönköping.
- Noordwijk, Toos (C. G. E.) van, Isabel Bishop, Sarah Staunton-Lamb, Alice Oldfield, Steven Loisselle, Hilary Geoghegan, and Luigi Ceccaroni. 2021. “Creating Positive Environmental Impact Through Citizen Science.” In *The Science of Citizen Science*, edited by Katrin Vohland, Anne Land-Zandstra, Luigi Ceccaroni, Rob Lemmens, Josep Perelló, Marisa Ponti, Roeland Samson, and Katherin Wagenknecht, 373–95. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-58278-4_19.
- Norton, Bryan. 2005. “Values in Nature: A Pluralistic Approach.” In *Contemporary Debates in Applied Ethics*, 298–309. Contemporary Debates in Philosophy 3. Malden, MA: Blackwell Pub.
- Olivier de Sardan, Jean-Pierre. 1998. “Émique.” *Homme* 38 (147): 151–66. <https://doi.org/10.3406/hom.1998.370510>.
- Olivier de Sardan, Jean-Pierre. 1995. “La Politique Du Terrain: Sur La Production Des Données En Anthropologie.” *Enquête*, no. 1 (October), 71–109. <https://doi.org/10.4000/enquete.263>.
- Pálsson, Gísli. 1994. “Enskilment at Sea.” *Man* 29 (4): 901–27. <https://doi.org/10.2307/3033974>.
- Parasie, Sylvain, and François Dedieu. 2019. “À quoi tient la crédibilité des données citoyennes ?” *Revue d'anthropologie des connaissances* 13 (4). <https://doi.org/10.3917/rac.045.1035>.
- PEFC. 2023. “Svenska PEFC-Standarden.” January 16, 2023. <https://pefc.se/vara-standarder/svenska-pefc-standarden>.
- Rajão, Raoni, and Julian Jarke. 2020. “The Materiality of Data Transparency and the (Re)Configuration of Environmental Activism in the Brazilian Amazon.” In *Reassembling Activism, Activating Assemblages*, by Israel Rodríguez-Giralt, Isaac Marrero-Guillamón, and Denise Milstein, 125–51. London: Routledge.
- Reimerson, Elsa, Janina Priebe, Isabella Hallberg-Sramek, Auvikki de Boon, and Camilla Sandström. 2024. “Local Articulations of Climate Action in Swedish Forest Contexts.” *Environmental Science & Policy* 151 (January):103626. <https://doi.org/10.1016/j.envsci.2023.103626>.

- Richardson, Miles, and Iain Hamlin. 2021. "Nature Engagement for Human and Nature's Well-Being during the Corona Pandemic." *Journal of Public Mental Health* 20 (2): 83–93. <https://doi.org/10.1108/JPMH-02-2021-0016>.
- Richardson, Miles, Iain Hamlin, Lewis R. Elliott, and Mathew P. White. 2022. "Country-Level Factors in a Failing Relationship with Nature: Nature Connectedness as a Key Metric for a Sustainable Future." *Ambio* 51 (11): 2201–13. <https://doi.org/10.1007/s13280-022-01744-w>.
- Roberge, Jean-Michel, and Per Angelstam. 2004. "Usefulness of the Umbrella Species Concept as a Conservation Tool." *Conservation Biology* 18 (1): 76–85. <https://doi.org/10.1111/j.1523-1739.2004.00450.x>.
- Roberntz, Peter. 2024. "Regeringen tillsätter skogsutredning som andas 70-talspolitik." Världsnaturfonden WWF. February 7, 2024. <https://www.wwf.se/pressmeddelande/regeringen-tillsatter-skogsutredning-som-andas-70-talspolitik/>.
- Rodman, Margaret C. 1992. "Empowering Place: Multilocality and Multivocality." *American Anthropologist* 94 (3): 640–56. <https://doi.org/10.1525/aa.1992.94.3.02a00060>.
- Röstlund, Lisa. 2022. *Skogslandet: en granskning*. Stockholm: Forum.
- Sandin, Ossian. 2023. "Granskning: Sveriges skyddslösa gammelskog." *Syre*, April 15, 2023. <https://tidningensyre.se/2023/15-april-2023/granskning-sveriges-skyddslosa-gammelskog/>.
- Sarkki, Simo, and Hannu I. Heikkinen. 2010. "Social Movements' Pressure Strategies during Forest Disputes in Finland." *Journal of Natural Resources Policy Research* 2 (3): 281–96. <https://doi.org/10.1080/19390459.2010.487991>.
- SCB. 2023. "Formellt skyddad skogsmark, frivilliga avsättningar, hänsynsytor samt improduktiv skogsmark." Statistikmyndigheten SCB. June 29, 2023. <https://www.scb.se/hitta-statistik/statistik-efter-amne/miljo/markanvandning/formellt-skyddad-skogsmark-frivilliga-avsattningar-hansynsytor-samt-improduktiv-skogsmark/>.
- Skogsindustrierna. 2024. "Mer skog ger mer klimatnytta - Skogsindustrierna." March 27, 2024. <https://www.skogsindustrierna.se/om-skogsindustrin/en-viktig-bransch/klimat/mer-skog-ger-mer-klimatnytta/>.
- Skogsstyrelsen. 2019. "Statistik Om Formellt Skyddad Skogsmark, Frivilliga Avsättningar, Hänsynsytor Samt Improduktiv Skogsmark - Redovisning Av Regeringsuppdrag." Rapport 2019/18. Jönköping: Skogsstyrelsen.
- . 2021. "Skogsstyrelsen slutar helt registrera nyckelbiotoper." December 21, 2021. <https://www.skogsstyrelsen.se/pressmeddelanden/>.
- . 2022. "Levande skogar - Fördjupad utvärdering 2023." Rapport 2022/12. Skogsstyrelsen. <https://www.skogsstyrelsen.se/globalassets/om-oss/rapporter/rapporter-20222021202020192018/rapport-2022-12-levande-skogar--fordjupad-utvardering-2023.pdf>.

- . 2023a. “Hänsyn.” July 4, 2023. <https://www.skogsstyrelsen.se/aga-skog/miljohansyn/hansyn/>.
- . 2023b. “När du planerar din avverkning.” November 13, 2023. <https://www.skogsstyrelsen.se/bruka-skog/avverkning/>.
- . 2024a. “01. Anmälda Föryngringsavverkningar Efter Tabellinnehåll, Region, Ägarkategori Och År. PxWeb.” March 13, 2024. https://pxweb.skogsstyrelsen.se/pxweb/sv/Skogsstyrelsens%20statistikdatabas/Skogsstyrelsens%20statistikdatabas__Avverkningsanmalan/01_Antal%20och%20areal%20avverkningsanmalningar.px/table/tableViewLayout2/?rxid=03eb67a3-87d7-486d-acce-92fc8082735d.
- . 2024b. “33 domar från mark- och miljödomstolen överklagas.” March 7, 2024. <https://www.skogsstyrelsen.se/nyhetslista/33-domar-fran-mark--och-miljodomstolen-overklagas/>.
- . 2024c. “Avverkningsanmäld areal ökade 2023.” March 12, 2024. <https://www.skogsstyrelsen.se/nyhetslista/avverkningsanmald-areal-okade-2023/>.
- Skydda Skogen. 2023a. “Forskningsresan i Naturvårdens Utmarker v. 30, juli 2023 Rätan, Jämtlands län.” *Skydda Skogen* (blog). March 31, 2023. <https://skyddaskogen.se/forskningsresan-i-naturvardens-utmarker-v-30-juli-2023-ratan-jamtlands-lan/>.
- . 2023b. “Skogsmonitor.” Skydda Skogen. <https://karta.skogsmonitor.se>.
- . 2024. “Namninsamling För Att Rädda Skogen Vid Pärälven.” Skydda Skogen. April 30, 2024. <https://skyddaskogen.se/namninsamling-for-att-radda-skogen-vid-paralven/>.
- . n.d. “Styrelsen och kontaktpersoner.” *Skydda Skogen* (blog). Accessed May 6, 2024. <https://skyddaskogen.se/om-oss/styrelsen/>.
- SLU. 2023. “Skogsdata 2023 - Aktuella Uppgifter Om de Svenska Skogarna Från SLU Riksskogstaxeringen Tema: Gammal Skog Enligt Miljömålsdefinitionen – Vad Kännetecknar Den Och Var Finns Den?” Riksskogstaxeringen. Umeå: SLU. https://www.slu.se/globalassets/ew/org/centrb/rt/dokument/skogsdata/skogsdata_2023_webb.pdf.
- SLU Artdatabanken. n.d. “Artfakta från SLU Artdatabanken.” Accessed May 10, 2024. <https://artfakta.se/>.
- Songlife, Niklas. 2024. “Skydda Skogen - Protect the Forest | Ett Åh Så Litet Område i Jämförelse Med Det Som Brukar Diskuteras Här, Men i Min Närhet Och Kryper Därför i Mig Ändå.. | Facebook.” *Facebook* (blog). April 7, 2024. <https://www.facebook.com/groups/54996954022/permalink/10160456009994023/>.
- Spoel, David van der, Sebastian Kirppu, and Viktor Säfve. 2022. “Debatt: Hellre skogsaktivist än industrilobbyist!” *Dala-Demokraten*, October 16, 2022. <https://www.dalademokraten.se/2022-10-16/debatt-hellre-skogsaktivist-an-industrilobbyist/>.

- Stärn, Jesper. 2024. "Regeringen vill ta bort knärot som hinder för skogsbruk." *ATL*, June 7, 2024, sec. Skog. <https://www.atl.nu/regeringen-vill-ta-bort-knarot-som-hinder-for-skogsbruk>.
- Stengers, Isabelle. 2005. "Introductory Notes on an Ecology of Practices." *Cultural Studies Review* 11 (1): 183–96.
- Sténs, Anna, Jean-Michel Roberge, Erik Löfmarck, Karin Beland Lindahl, Adam Felton, Camilla Widmark, Lucy Rist, et al. 2019. "From Ecological Knowledge to Conservation Policy: A Case Study on Green Tree Retention and Continuous-Cover Forestry in Sweden." *Biodiversity and Conservation* 28 (13): 3547–74. <https://doi.org/10.1007/s10531-019-01836-2>.
- Sténs, Anna, and Camilla Sandström. 2014. "Allemansrätten in Sweden: A Resistant Custom." *Landscapes* 15 (2): 106–18. <https://doi.org/10.1179/1466203514Z.00000000029>.
- Stephenson, N. L., A. J. Das, R. Condit, S. E. Russo, P. J. Baker, N. G. Beckman, D. A. Coomes, et al. 2014. "Rate of Tree Carbon Accumulation Increases Continuously with Tree Size." *Nature* 507 (7490): 90–93. <https://doi.org/10.1038/nature12914>.
- Strengbom, Joachim, Anders Dahlberg, Artur Larsson, Åke Lindelöw, Jonas Sandström, Olof Widenfalk, and Lena Gustafsson. 2011. "Introducing Intensively Managed Spruce Plantations in Swedish Forest Landscapes Will Impair Biodiversity Decline." *Forests* 2 (3): 610–30. <https://doi.org/10.3390/f2030610>.
- Stridsman, Monika. 2011. "Skogsstyrelsens Föreskrifter Och Allmänna Råd till Skogsvårdslagen." SKSFS 2011:7. Jönköping: Skogsstyrelsen. <https://www.skogsstyrelsen.se/globalassets/lag-och-tillsyn/foreskrifter-efter-amne/skogsvard/sksfs-2011-7-skogsstyrelsens-foreskrifter-och-allmanna-rad-till-skogsvardslagen-.pdf>.
- Sveriges miljömål. 2023. "Skyddad Produktiv Skog." 2023. <https://www.sverigemiljomal.se/miljomalen/ett-rikt-vaxt--och-djurliv/skyddad-produktiv-skog/>.
- Swedish Government. 2024a. "Dir. 2024:16 - En robust skogspolitik som ser skogen som en resurs." Regeringen och Regeringskansliet. <https://www.regeringen.se/rattsliga-dokument/kommittedirektiv/2024/02/dir.-202416>.
- . 2024b. "Kommande utredning ska ta fram nya bestämmelser om nationell fridlysning och ett ändamålsenligt regelverk för rätten till ersättning till markägare." Press release. Regeringskansliet. Regeringen och Regeringskansliet. June 7, 2024. <https://www.regeringen.se/pressmeddelanden/2024/06/kommande-utredning-ska-ta-fram-nya-bestammelser-om-nationell-fridlysning-och-ett-andamalsenligt-regelverk-for-ratten-till-ersattning-till-markagare/>.
- Tas, Amanda. 2024. "Insändare. Svar: Möt klimatförändringarna med levande ekosystem." *Dagens Nyheter*, April 24, 2024, sec. Insändare. <https://www.dn.se/insandare/svar-mot-klimatforandringarna-med-levande-ekosystem/>.
- Tilley, Christopher. 2012. "Walking the Past in the Present." In *Landscapes beyond Land: Routes, Aesthetics, Narratives*, 15–32. New York: Berghahn Books.

- Tolich, Martin. 2004. "Internal Confidentiality: When Confidentiality Assurances Fail Relational Informants." *Qualitative Sociology* 27 (1): 101–6.
<https://doi.org/10.1023/B:QUAS.0000015546.20441.4a>.
- Tsing, Anna. 2012. "Unruly Edges: Mushrooms as Companion Species: For Donna Haraway." *Environmental Humanities* 1 (1): 141–54. <https://doi.org/10.1215/22011919-3610012>.
- United Nations Economic Commission for Europe. 1998. "Convention on Access to Information, Public Participation in Decision-Making And Access to Justice in Environmental Matters (Aarhus Convention)." UNECE.
<https://unece.org/environment-policy/public-participation/aarhus-convention/text>.
- Växjö Tingsrätt. 2024. M 6616-23. Växjö Tingsrätt, Mark- och Miljödomstolen.
- Wattchow, Brian, and Alex Prins. 2019. "Learning a Landscape - Enskilment, Pedagogy and a Sense of Place." In *The Routledge Companion to Landscape Studies*, Second edition, 102–12. London ; New York: Routledge, Taylor & Francis Group.
- Weber, Florence. 2009. *Manuel de l'ethnographe*. Quadrige. Paris: PUF.
- Wester, Johan. 2016. "Nulägesbeskrivning Om Nyckelbiotoper." Rapport 7/2016. Skogsstyrelsen.
<https://shop.skogsstyrelsen.se/sv/publikationer/rapporter/nulagesbeskrivning-om-nyckelbiotoper.html>.

Appendix I. Interviews table

	Name	Role in research	Date	Location
Interview 1	<i>Eyvind</i>	Inventoryer	3/13/2024	Småland
Interview 2	<i>David</i>	Inventoryer	3/14/2024	Zoom
Interview 3	<i>Arvid</i>	Inventoryer	3/14/2024	Skåne
Interview 4	<i>Siv</i>	Inventoryer	3/24/2024	Uppsala
Interview 5	<i>Frida</i>	Inventoryer	3/26/2024	Dalarna
Interview 6	<i>Pontus</i>	Inventoryer	3/27/2024	Dalarna
Interview 7	<i>Kajsa</i>	Inventoryer	4/2/2024	Zoom
Interview 8	<i>Anna</i>	Inventoryer	4/6/2024	Småland
Interview 9	<i>Jörgen & Annika</i>	Inventoryers	4/7/2024	Småland
Interview 10	Mats Karström	Founder, <i>Steget Före</i>	4/15/2024	Zoom
Interview 11	Mark Marissink	Head of Department, <i>SLU Artdatabanken</i>	4/19/2024	Zoom
Interview 12	Sebastian Kirppu	Forest Ecologist, <i>Skydda Skogen</i>	4/21/2024	Skåne
Interview 13	Josia Hort	Environmental Lawyer, <i>Naturskyddsföreningen</i>	4/22/2024	Zoom
Interview 14	Malin Sahlin	Expert in forest questions, <i>Naturskyddsföreningen</i>	4/23/2024	Zoom

Table of interviews. Names of interviewees 1-9 are assumed.

Appendix II. List of Species

	Conservation Status
DD	Data Deficient
LC	Least Concern
NT	Near Threatened
VU	Vulnerable
EN	Endangered
CR	Critically Endangered
EW	Extinct in the Wild
EX	Extinct
NE	Not Evaluated

Source: IUCN Red List (IUCN, n.d.)

Aegolius funereus
(LC)



Fomitopsis pinicola
(LC)



Glaucidium passerinum
(LC)



Name English/Swedish

Tengmalm's owl
/
Pärluggla

Name English/Swedish

Red-belted conk
/
Klibbticka

Name English/Swedish

Eurasian pygmy owl
/
Sparvuggla

Threat from forestry

Habitat loss

Threat from forestry

No major threat

Threat from forestry

No major threat

Red list; protection

Protected

Red list; protection

/

Red list; protection

Protected

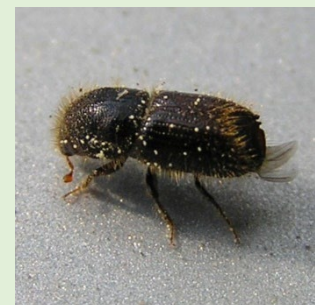
Goodyera repens
(VU)









Hepatica nobilis
(LC) – S¹³



Ips typographus
(LC)



¹³ S indicates a signal species.

Creeping lady's-tresses / Knärot	Common hepatica / Blåsippa	European spruce bark beetle / Granbarkborre
Habitat loss	No major threat	Favored by spruce plantations
Red-listed, Protected	Regionally protected	/
<i>Neottia cordata</i> (LC)	<i>Perenniporia subacida</i> (VU)	<i>Phellinidium ferrugineofuscum</i> (NT)
		
Lesser twayblade / Spindelblomster	No name / Gräddticka	No name / Ullticka
Habitat loss	Habitat loss, land drainage	Habitat loss, fragmentation
Protected	Red-listed	Red-listed
<i>Phlebia centrifuga</i> (VU)	<i>Picoides trydactylus</i> (NT)	<i>Poecile montanus</i> (NT)
		
No name / Rynkskinn	European three-toed woodpecker / Tretåig hackspett	Willow Tit / Talltita
Loss of dead wood, fragmentation	Habitat loss, loss of dead wood	Habitat loss, fragmentation
Red-listed	Red-listed, Protected	Red-listed, Protected

Porodaedalea pini
(NT)



Resinoporia crassa
(CR)



Salix caprea
(LC)



Pine conk
/
Tallticka

No name
/
Kritporing

Goat willow
/
Sälg

Habitat loss, fragmentation

Habitat loss, loss of dead wood,
fragmentation

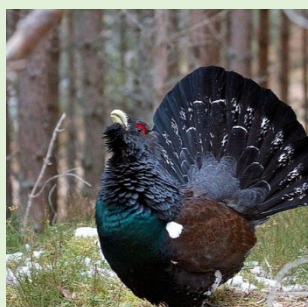
No major threat

Red-listed

Red-listed

/

Tetrao urogallus
(LC)



Western Capercaillie
/
Tjäder

Habitat loss, fragmentation

Protected

Image references

All pictures in the above list come from Wikimedia, except *Resinoporia crassa* (Daniel Rutschman) and *Crossocalyx bellerianus* (Sebastian Kirppu). Source for species data: artfakta.se (SLU Artdatabanken, n.d.).

- *Aegolius funereus*
 - o Неустроев Петр; this edit: MPF, Русский: Мохноногий Сыч в Момском Природном Парке, Якутия (Саха), March 24, 2016, March 24, 2016,

- File:Coba.jpg,
https://commons.wikimedia.org/wiki/File:Aegolius_funereus_magnus,_Momsky_Nature_Park,_Sakha_Republic,_Siberia.jpg.
- <https://artfakta.se/taxa/102622/information>
 - Fomitopsis pinicola
 - Roodgerande Houtzwam (Fomitopsis Pinicola).Jpg - Wikimedia Commons, accessed May 6, 2024,
[https://commons.wikimedia.org/wiki/File:Roodgerande_houtzwam_\(Fomitopsis_pinicola\).jpg](https://commons.wikimedia.org/wiki/File:Roodgerande_houtzwam_(Fomitopsis_pinicola).jpg).
 - <https://artfakta.se/taxa/4139/information>
 - Glaucidium passerinum
 - *English: Eurasian Pygmy Owl (Glaucidium Passerinum), Białowieża Forest, Poland*, April 4, 2023, April 4, 2023, Own work, from Sharp Photography, sharpphotography.co.uk,
[https://commons.wikimedia.org/wiki/File:Eurasian_pygmy_owl_\(Glaucidium_passerinum\)_Bia%C5%82owieza.jpg](https://commons.wikimedia.org/wiki/File:Eurasian_pygmy_owl_(Glaucidium_passerinum)_Bia%C5%82owieza.jpg).
 - <https://artfakta.se/taxa/102621/information>
 - Goodyera repens
 - Hans Hillewaert, *Goodyera Repens (L.) R. Br. (1813)*, July 8, 2011, July 8, 2011, Own work, [https://commons.wikimedia.org/wiki/File:Goodyera_repens_\(habitus\).jpg](https://commons.wikimedia.org/wiki/File:Goodyera_repens_(habitus).jpg).
 - <https://artfakta.se/taxa/220787/information>
 - Hepatica nobilis
 - Robert Flogaus-Faust, *English: Common Hepatica (Hepatica Nobilis = Anemone Hepatica) near Lago Di Ledro between Pieve and Molina, Italy*, March 30, 2011, March 30, 2011, Own work,
https://commons.wikimedia.org/wiki/File:Hepatica_nobilis_3_RF.jpg.
 - <https://artfakta.se/taxa/222498/information>
 - Ips typographus
 - Ips Typographus 3 Bialowieza Forest Beentree.Jpg - Wikimedia Commons, accessed May 12, 2024,
https://commons.wikimedia.org/wiki/File:Ips_typographus_3_bialowieza_forest_beentree.jpg.
 - <https://artfakta.se/taxa/106570/information>
 - Neottia Cordata
 - USFWS-Pacific Region, *Heart-Leaf Twayblade (Listera Cordata)*, November 30, 2015, November 30, 2015, *listera_cordata*,
[https://commons.wikimedia.org/wiki/File:USFWS_listera_cordata_\(23463270529\).jpg](https://commons.wikimedia.org/wiki/File:USFWS_listera_cordata_(23463270529).jpg).
 - <https://artfakta.se/taxa/221952/information>
 - Perenniporia subacida
 - caspar s, *Gräddticka*, July 5, 2015, July 5, 2015, *Perenniporia subacida*,
[https://commons.wikimedia.org/wiki/File:Perenniporia_subacida_\(19439027311\).jpg](https://commons.wikimedia.org/wiki/File:Perenniporia_subacida_(19439027311).jpg).
 - <https://artfakta.se/taxa/1179/information>
 - Phellinidium Ferrugineofuscum

- caspar s, Ullticka, August 3, 2011, August 3, 2011, Phellinus ferrugineofuscus, [https://commons.wikimedia.org/wiki/File:Phellinus_ferrugineofuscus_\(6058850057\).jpg](https://commons.wikimedia.org/wiki/File:Phellinus_ferrugineofuscus_(6058850057).jpg).
 - <https://artfakta.se/taxa/1202/information>
- Phlebia centrifuga
 - Olli Manninen, *Old Spruce Forest Indicator Species*, August 6, 2008, August 6, 2008, Own work, https://commons.wikimedia.org/wiki/File:Phlebia_centrifuga_pohjanrypykk%C3%A4_rynkskinn.jpg.
 - <https://artfakta.se/taxa/1209/information>
- Picoides trydactylus
 - Matvei Kiselev, *English: Picoides Tridactylus m., Gatchina*, September 2, 2020, September 2, 2020, Own work, [https://commons.wikimedia.org/wiki/File:Eurasian_three-toed_woodpecker_\(Picoides_tridactylus\)._Gatchina.jpg](https://commons.wikimedia.org/wiki/File:Eurasian_three-toed_woodpecker_(Picoides_tridactylus)._Gatchina.jpg).
 - <https://artfakta.se/taxa/100109/information>
- Poecile montanus
 - Estormiz, Suomi: Hömötiainen (Poecile Montanus) Kittilässä., March 10, 2022, March 10, 2022, Own work, https://commons.wikimedia.org/wiki/File:Poecile_Montanus_Kittil%C3%A4_20220310_03.jpg.
 - <https://artfakta.se/taxa/103021/information>
- Porodaedalea pini
 - Katja Schulz from Washington USA D. C., Porodaedalea Pini, Growing on Scots Pine, Pinus Sylvestris. East Vättern Scarp Landscape Biosphere Reserve, Jönköping, Sweden., October 29, 2014, October 29, 2014, Pine Bracket, [https://commons.wikimedia.org/wiki/File:Pine_Bracket_\(15744729576\).jpg](https://commons.wikimedia.org/wiki/File:Pine_Bracket_(15744729576).jpg).
 - <https://artfakta.se/taxa/5442/information>
- Resinoporia crassa
 - Photo by Daniel Rutschman.
 - <https://artfakta.se/taxa/6008693/information>
- Salix caprea
 - Bob Harvey, English: Salix Caprea, May 10, 2015, May 10, 2015, Geograph Britain and Ireland, https://commons.wikimedia.org/wiki/File:Salix_caprea_-_geograph.org.uk_-_4499014.jpg.
 - <https://artfakta.se/taxa/223284/information>
- Tetrao urogallus
 - sighmanb, Glenfeshie - Rogue Male Caper Which Attacks Anyone in Sight. It Chased Us down the Access Track to Make Sure We'd Left., March 22, 2013, March 22, 2013, Capercaillie, [https://commons.wikimedia.org/wiki/File:Capercaillie_\(8751340764\).jpg](https://commons.wikimedia.org/wiki/File:Capercaillie_(8751340764).jpg).
 - <https://artfakta.se/taxa/100138/information>