

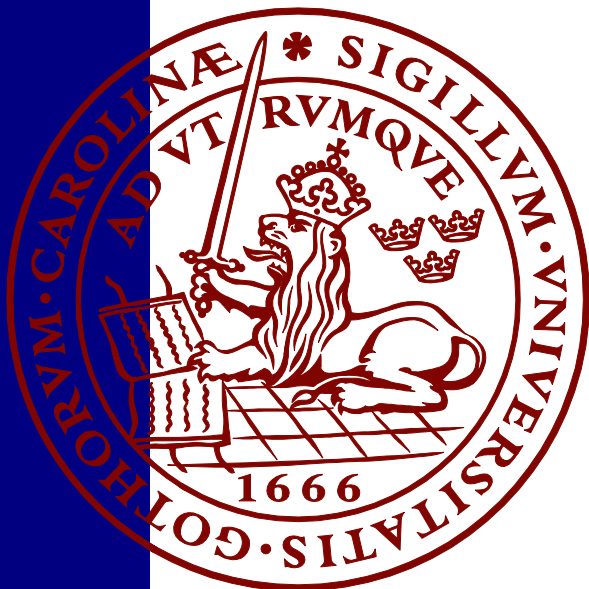
A Sound of Silence

The framing of forest bird diversity among Swedish forest owners

Jenny Bergenheim

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Abstract

Debates around biodiversity and forestry in Sweden have gotten increasingly polarised, with two conflicting forestry goals of production and environmental conservation. Significantly for forest birds, two different claims are occurring simultaneously: 1) forest bird abundance is increasing with positive population trends for some species while 2) there is a stagnation or even decline in forest bird species diversity. In this thesis I investigate where different forest owners in Sweden are situated in the debate. Through a framing analysis of annual and sustainability reports of the largest Swedish forest owners and associations, I uncover that concerns over forest bird diversity are not prevalent among forest owners. Instead, there is a tendency to focus on positive trends among forest bird populations and this, in turn, shapes solutions put forward with regards to conservation actions. Since the threat to forest bird diversity is obscured, few solutions to protect forest bird diversity are proposed.

Keywords: forestry, Sweden, biodiversity, forest birds, frames, framing analysis

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List of Acronyms

CBD – Convention of Biological Diversity
EU – European Union
FSC – Forest Stewardship Council
IPBES – Intergovernmental Science-Policy Panel on Biodiversity and Ecosystem Services
IUCN – International Union for Conservation of Nature
PEFC – Programme for the Endorsement of Forest Certification
SBS – Shifting baseline syndrome
SCA – Svenska Cellulosa Aktiebolaget
SFI – Swedish Forest Industries Federation
SLU – Swedish University of Agricultural Sciences
SSNC – Swedish Society for Nature Conservation




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1. Introduction

Birds are an integral part of the forest ecosystem. They are ecosystem engineers and provide a wide range of ecosystem services, from seed dispersal to pest control (Lindbladh et al., 2019). Through these regulatory services forest birds have an important role in maintaining forest resilience, for instance by preventing pest outbreaks and enabling plants to spread. Additionally, all bird species provide cultural ecosystem services to humans through recreational activities such as bird-watching and hunting. Table 1 offers examples of three Swedish forest birds, all of which are decreasing globally (IUCN, 2018; 2016a; 2016b), and the kind of ecosystem services they provide.

Table 1. Examples of Swedish forest birds and the ecosystem services they provide (IUCN, 2018; 2016a; 2016b; SLU, 2020c; 2020d; 2020e; 2020f; Photographs taken from Pixabay).

Species	Red-list Status	Ecosystem Service	Explanation
Lesser Spotted Woodpecker <i>(Dryobates minor)</i> 	Near Threatened (national); Least Concern (global)	Regulatory, Provisioning, Supporting	Pest control and ecosystem engineering.
Western Capercaillie <i>(Tetrao urogallus)</i> 	Not red-listed nationally; Least Concern (global)	Regulatory, Provisioning, Cultural	Seed dispersal, pest control and hunted for recreation and consumption.
Siberian Jay <i>(Perisoreus infaustus)</i> 	No longer red-listed nationally as of 2020; Least Concern (global)	Regulatory	Seed dispersal and pest control.

Given the wide range of services that forest birds provide, indications that bird populations are decreasing worldwide are alarming (Whelan, Sekercioglu & Wenny, 2016). This is by no means true of all species, though. Where some species are decreasing, others thrive. This is evident among forest birds in Sweden. In 2019 an inventory of Swedish birds was published, with a specific focus on forest birds. It was produced by BirdLife Sweden, the Swedish ornithological society, in cooperation with Svensk Fågeltaxering (Lund University) and ArtDatabanken (the Swedish University of Agricultural Sciences). Based on Svensk Fågeltaxering's estimations the total amount of forest birds in Sweden increased by between 7,4 and 8,1 million pairs during 1998-2018. However, the report also found evidence that the number of forest bird species experiencing negative population trends has increased during the last decade, from 28% in 1998-2008 to 54% in 2008-2018 (BirdLife Sweden, 2019). This negative trend in species diversity has several consequences. Beyond the ecosystem services that forest birds themselves provide, as outlined above, forest birds are widely seen as indicators of ecological health. Due to their acoustic and visual conspicuousness, allowing for the conduction of efficient inventories and surveys, as well as their general sensibility to environmental change and responsiveness to changes in forest management practices, forest birds are widely used as biodiversity indicators within science (Lindbladh et al., 2019; Martínez-Jauregui, Diaz, Sánchez de Ron & Soliño, 2016).

The negative trend in species diversity is by no means unique to forest birds in Sweden. Globally, biodiversity loss is increasing. In the latest IPBES report (2019) it was estimated that a quarter of all species assessed are threatened, which indicates the potential extinction of one million species. Particularly relevant for forests in Sweden, the report emphasises that monoculture tree plantations negatively affect biodiversity, as well as the expansion of economic activity (IPBES, 2019). Thus, the problem of decreasing forest bird populations and the potential loss of forest bird diversity in Sweden is firmly located within the wider context of global biodiversity loss exacerbated by human activities. Significantly, having signed and ratified the Convention of Biological Diversity (CBD) in 1993, Sweden has an obligation to protect biodiversity and prevent further biodiversity loss (Naturvårdsverket, 2021).

The BirdLife report (2019) concludes that something appears to have occurred in Swedish forests over the past decade, where a prior period of positive development has stagnated or for some forest-dependent species turned into a decline. It states:

In light of this we wish to again encourage increasing the actions taken within forestry at the end of the 1990s and early 2000s regarding nature conservation in general, but also more specific actions to benefit biodiversity. Birds are an important indicator for measuring the pressure on our forest resources and there is a lot indicating that the development has not gone in the right direction for biodiversity lately. (BirdLife Sweden, 2019, p. 19; own translation)

With this in mind, in this thesis I will conduct a framing analysis of several large forest owners and associations in Sweden in order to assess how forest birds are framed among big actors of Swedish forestry, and how these frames shape and offer solutions for the protection of forest birds. Research into framing puts emphasis on how a frame, as a certain perception on an issue, is communicated and how this problem identification shapes what solutions are made available (Kuypers, 2009; Entman, 1993). Thus, using framing theory I will conduct a framing analysis in order to answer the following research question: *How do Swedish forest owners frame threats to forest bird diversity and to what extent does this framing determine potential solutions for their protection?*

First, I will give a brief background on forestry in Sweden, forest birds and the conflict between production and biodiversity that gives cause for debate. Then, I will introduce the theoretical basis for the paper, rooted in framing and constructivism, before a methodology section outlines how I conducted the framing analysis that leads into the results of the thesis. Finally, I will discuss the results before reaching a conclusion.

2. Background

2.1 Forestry in Sweden

Being a highly forested country, with forests constituting about 69% of the total land area, Sweden has a long history of forestry (SLU, 2020a). The Forestry Act was established in 1903, with the sole aim of securing the regeneration of raw materials within privately owned forests. It gained momentum during the first half of the century and by 1948 its regulatory framework included the promotion of even-aged stand management with the goal of sustaining and increasing the yields, which provided important supplies for the country's industry. In 1979 the Forestry Act was extended, so that the regulations applied to all Swedish forests (Beland Lindahl et al., 2017).

However, in 1993 the Forestry Act was revised, which meant a significant policy shift for Swedish forestry. In this revision, the parliament relaxed the strong regulations and established a new environmental goal to be pursued alongside the firmly rooted goal of maintaining high wood production. As part of the relaxation of regulations, a new policy known as 'freedom with responsibility' was introduced. Rather than enforcing forest owners through regulations, this policy entailed an expectation of forest owners to improve the environmental conditions of their forests while simultaneously maintaining high wood production, in line with the goals of the Forestry Act (Beland Lindahl et al., 2017). This new freedom for forest owners to manage their land as they see fit, provided they equally pursue the environmental and production goals, has led to an increasingly polarised debate within Swedish forestry regarding the competing goals of environmental protection and production.

2.2 Forest birds in Sweden

There is a wide range of species of forest birds in Sweden, from passerines (perching birds such as the Siberian Jay) to landfowl such as the Western Capercaillie to several species of woodpeckers (IOC World Bird List, 2021). When discussing bird species within a given landscape it is common to divide them into two categories: generalists and specialists (BirdLife Sweden, 2019; Lindbladh et al., 2019; Ottvall et al., 2009; Ram et al., 2017).

Generalists, as the name implies, refers to species with few specific demands on the quality and diversity of their habitat and food supply. These species find it easy to adapt to new conditions and are thus the species that have experienced the greatest population increases in Sweden over the past two decades. Examples of generalist forest species that have

increased in numbers include the chaffinch (*Fringilla coelebs*), which has increased with about 1,4 million pairs between 1998 and 2018, and the great tit (*Parus major*), which has increased with about 1 million pairs during the same period (BirdLife Sweden, 2019).



Figure 1. Chaffinch and Great Tit (Photographs taken by the author in 2020, November 27 & 2020, May 31).

Specialists, in contrast, have higher and more specific demands on the quality of their habitat. It is primarily these species that have experienced negative population trends over the past decade or two. Examples here include the black woodpecker (*Dryocopus martius*), which has decreased with 28% in 1999-2018, and the coal tit (*Poecile cinctus*), whose population is estimated to have decreased with 70% during the same period. What these species have in common is that they both require more mature and structurally complex forests (BirdLife Sweden, 2019).



Figure 2. Black Woodpecker and Coal Tit (Photographs taken from Pixabay).

Forest birds have been researched quite extensively in relation to forestry in Sweden, and research indicates that forestry activities have adverse impacts on forest bird diversity. Since 84% of all forestland in Sweden is productive forests, Swedish forests are generally comprised of even-aged stands, primarily boreal plantations of spruce and pine. Norway

spruce (*Picea abies*) make up 40% of all trees in Sweden and Scots pine (*Pinus sylvestris*) make up about 39%, meaning that roughly 80% of all trees in Sweden are either spruce or pine (SLU, 2020a). Significantly, a study in southern Europe found that there are less pine-dwelling forest bird species in pine tree plantations than there are in natural pine forests (Martínez-Jauregui, Diaz, Sánchez de Ron & Soliño, 2016). Factors that increased forest bird diversity within pine stands included tree diversity (for instance the presence of broadleaved trees), forest maturity, unevenly aged forests and shrub coverage, which provides shelter and food (Martínez-Jauregui et al., 2016). This final factor is largely tied to the insect fauna, and thus food supply for forest birds, which tends to be richer in unmanaged forests as well as areas with a high level of deciduous trees (Enoksson, Angelstam & Larsson, 1995), which the majority of pine and spruce tree plantations in Sweden lack. These widespread plantations, a result of an intensified forest industry, threaten many species with habitat loss and fragmentation, and previously positive trends in habitat availability have recently slowed down (Felton et al., 2020).



Figure 3. Even-aged spruce stand in southern Sweden, with a clear-cut in the background (Photograph taken by the author in 2020, November 15).

In response to this, certification schemes have been named as potentially playing an important role in the diversification of forests (Felton et al., 2020). In Sweden, there are two dominant certification schemes, the Forest Stewardship Council (FSC) and Programme for

the Endorsement of Forest Certification (PEFC), that have been known to promote biodiversity conservation within production forests. However, there are studies indicating that since more forestry actions are taken on certified productive forestland the risk of harming biodiversity is subsequently increased. There is also little evidence that certified forests do in fact have a higher habitat quality (Johansson & Lidestav, 2011). In his study on forest passerines and tree retention levels in Sweden, Söderström (2009) found that the two main certification organisations in Sweden, FSC and PEFC, “prescribe that at least 10 retention trees per ha should be left at final harvest” (p. 216), while “the average size of retention cuts in Sweden is 4.2 ha” (p. 221). Meanwhile, it is estimated that a retention level of 60 trees per ha would nearly double the amount of territories among resident passerines (Söderström, 2009). Given that almost 13 million ha of forestland is FSC-certified and almost 15,9 million ha of forestland is PEFC-certified in Sweden (FSC, 2020; PEFC, 2019), certification schemes certainly have the potential to make an impact, while research indicates that certification demands are not sufficient for the conservation of a diverse forest bird community.

One important factor for forest bird diversity is the availability of dead wood. Many forest bird species are dependent on dead wood, primarily woodpeckers like the green woodpecker (*Picus viridis*), but also passerines such as the marsh tit (*Poecile palustris*) (Ram et al., 2017).



Figure 4. Green Woodpecker and Marsh Tit (Photographs taken from Pixabay).

Dead wood is important for forest birds for several reasons. It provides habitat for a wide range of insects, which is an important food source for many birds. In addition, many forest birds are hole-nesting species, both primary and secondary cavity nesters. The main group of primary cavity nesters are woodpeckers, a key-stone species that excavate the dead wood

which in turn favours many other species and organisms, such as secondary cavity nesters that include many species of tits, who nest in the holes excavated by the primary cavity nesters (Redolfi De Zan, Rossi de Gasperis, Fiore, Battisti & Carpaneto, 2016). In Sweden, formally protected areas are of key importance for dead wood availability for forest biodiversity (Jonsson et al., 2016). Formally protected forestland in Sweden constitutes about 8,7% of all forestland, with the largest areas being in or near the mountains in the north of the country. Of the productive forestland in Sweden, about 6% is formally protected. Formally protected forestland is a concept used to collectively describe different forms of protected forestland, which could be according to laws, ordinances or formally entered agreements (Naturvårdsverket, 2020a). Since the amount of dead wood in formally protected forests is significantly higher than that of other forests, constituting about 15% of all wood in formally protected forests and less than 6% in non-formally protected forests (SLU, 2020a), these areas are especially important for biodiversity. However, research shows that the diversity of dead wood in Sweden is low when it comes to species, diameter and decay class (Jonsson et al., 2016). Furthermore, within formally protected areas such as nature reserves, the dead wood volume is still far below expected natural values, with an average of 24 m³ per ha in Swedish nature reserves compared with expected natural values of 80-120 m³ per ha (Sandström et al., 2019). Therefore, in order to ensure a diverse forest bird community forestry must increase dead wood availability and diversify tree species and stand ages.



Figure 5. Mixed forest stand in a nature reserve in southern Sweden, with larger diversity than productive stands (Photograph taken by the author in 2021, April 01)

2.3 Conflicts between production and biodiversity in Swedish forestry

Despite the 1993 reformation of the Forestry Act in which environmental goals were stipulated as being equally prioritised along production goals, the ‘Swedish forestry model’, a concept frequently used to describe the Swedish way of sustainable forest management, has been criticised (Beland Lindahl et al., 2017). At the heart of this criticism lies the argument that “too much focus on intensification of forest management for wood production threatens forest biodiversity” (Angelstam et al., 2018, p. 21). In part due to the long history in Sweden where forestry had the sole goal of maintaining wood production, it has been argued that the ‘freedom with responsibility’ policy merely reinforced the goal of maintaining wood production, while neglecting the environmental goal. This has, in practice, only meant the continued prioritisation of wood production and the economic aspect of sustainable development over environmental values, such as the preservation of biodiversity. Criticisms state that the ‘Swedish Forestry Model’ fails to meet environmental objectives and maintains a dominant focus on production. Blame has been placed on weak mechanisms for policy implementation and a lack of recognition of trade-offs between conflicting goals, which has caused a continued prioritisation of production over biodiversity within forestry in Sweden. This, in turn, has been placed within the broader context of

ecological modernisation as the dominant influence within Swedish forestry, emphasising a rather optimistic approach where it is possible to both increase production and environmental values simultaneously (Beland Lindahl et al., 2017).

The prevailing belief in Sweden that preserving biodiversity and increasing production can go hand-in-hand is problematic in that it contradicts much research. In their study of the Baltic Sea region, Angelstam et al. (2018) found that the “intensification of sustained yield forestry leads to a decrease in the proportion of forest development stages important for biodiversity conservation” (p. 20). The conclusion from their study, then, is that there are trade-offs between biodiversity and production and that policy-makers and planners must choose between conflicting priorities (Angelstam et al., 2018). This, of course, goes against the prevailing view Beland Lindahl et al. (2017) argue exists within Swedish forestry, in which ecological modernisation and a “more-of-everything” approach is favoured. Accordingly, the debate surrounding Swedish forestry has become increasingly polarised. This is evident in Uggla, Forsberg and Larsson’s (2015) framing analysis comparing written reports on biodiversity preservation between the Swedish Forest Industries Federation (SFI) and the Swedish Society for Nature Conservation (SSNC). Their results show that the SFI maintain that the ‘Swedish Forestry Model’ is sustainable, while the SSNC states the complete opposite. Due to scientific uncertainty the SFI were able to problematise concepts such as key habitats and the national red list, which in turn caused the two different organisations to have completely different opinions regarding the sustainability of Swedish forestry. It is therefore important to take scientific uncertainty into consideration when discussing biodiversity and forestry, and the challenges it causes for conservation.

Although there has been much debate and critique, it is important to acknowledge that Swedish forestry did change as a result of the new Forestry Act. Returning to the example of dead wood, a prevalent forest policy adopted in 1994 to increase and preserve the biodiversity of Swedish forests has been the aim to increase the amount of dead wood. However, in their study of the dead tree policy, Jonsson et al. (2016) found evidence that the increase in dead wood has been limited to the southern parts of Sweden, and that it can mainly be attributed to storm events. Furthermore, the heterogeneity of dead wood was low in terms of species, diameter and decay classes, which could negate benefits to biodiversity. They conclude that “despite two decades of focus on the role of dead wood, as expressed in the Swedish Forestry Act, forest certification standards and national

environmental objectives, we see limited direct effects of these policy ambitions on the ground” (Jonsson et al., 2016, p. 181). This is mainly attributed to current management methods that are based on short rotation periods and clear-cutting (Jonsson et al., 2016).

Another debate especially relevant with regards to forest owners and forest birds concerns the Species Protection Ordinance. It is the main implementation of the obligations outlined in the EU Birds and Habitats Directives, under which species are protected in Sweden. Additionally, the Hunting Ordinance applies in cases where there is intent to either capture or kill wild birds or mammals, but unlike the Species Protection Ordinance it has little impact on forest management and forestry activities. Since the Species Protection Ordinance is constituted of two EU Nature directives, there has been much debate regarding the interpretation of species protection in Sweden (Naturvårdsverket, 2020b). I discuss the conflicts between forest owners and the Species Protection Ordinance in relation to forest birds further on.

3. Theory

3.1 Framing theory

The concept of framing describes a way in which power is exercised in communication (Entman, 1993). Frames are essentially filters used by actors to shape world-views and highlight certain aspects of reality while obscuring others. As Kuypers (2009) emphasise, the process of framing is one in which “communicators act – consciously or not – to construct a particular point of view that encourages the facts of a given situation to be viewed in a particular manner, with some facts made more or less noticeable (even ignored) than others” (p. 182). By highlighting some aspects of reality over others, frames typically “define problems, diagnose causes, make moral judgements, and suggest remedies” (Kuypers, 2009, p. 182). Through problem definition, frames may determine the costs and benefits of a given issue, before moving on to make a diagnosis of the causes behind the problem. Then, by making a moral judgement, a frame effectively evaluates relevant agents and their effects, before suggesting remedies and justifying how to solve the problem. However, it is important to note that a frame in a text does not necessarily include all four of these functions (Entman, 1993).

Entman (1993) also suggests four locations that frames have in the communication process: the communicator, text, receiver and culture. The communicators frame an issue, consciously or unconsciously, which organises the belief system. The text contains the frames, for instance manifested through the presence (or absence) of keywords, phrases and images that thematically reinforce the facts that the frame presents. Through this, the frame guides how the receiver thinks about the specific issue at hand. In the case of my thesis, the forest owners are the communicators and the texts are annual and sustainability reports. Finally, the culture can be defined as the set of common frames that are on display in a given discourse that dominates the thinking within a specific group (Entman, 1993). In this sense, a frame operates within narratives and discourses as a central organising idea, by shaping how facts are interpreted (Kuypers, 2009). As Entman (1993) explains, “if the text frame emphasizes in a variety of mutually reinforcing ways that the glass is half full, the evidence of social science suggests that relatively few in the audience will conclude it is half empty” (p. 56). Furthermore, a frame not only determines the extent to which people notice and understand a problem, but also how the problem is evaluated and acted upon (Entman, 1993). As such, framing theory and framing analysis are appropriate for answering the

research question introduced earlier, regarding how the framing of threats to forest bird diversity among Swedish forest owners shape and offer solutions for their protection.

In line with this, Snow and Benford (1988) have further elaborated on the functions of frames in relation to social movements, referring to three core framing tasks as being diagnostic, prognostic and motivational. Although I do not analyse any social movements, these functions are still relevant for the case of forest owners in Sweden and I employ them in the framing analysis. The prognostic framing function is particularly relevant to answer the research question regarding how solutions are framed, but it is also important to consider the other two functions. This is especially true for the diagnostic frame function, which explains the current situation (Snow & Benford, 1988; Uggla, Forsberg & Larsson, 2016). This involves problem identification and the attribution of blame or responsibility. Prognostic framing, in turn, concerns the proposition of a solution to the problem that a diagnostic framing identifies. Generally, “there is a direct correspondence between diagnostic and prognostic framing efforts” (Snow & Benford, 1988, p. 201). Since the definition of a problem constrains the range of available solutions, a prognostic frame thus tends to be strongly shaped by a diagnostic frame. One example provided by Snow and Benford (1988) is that of a nuclear threat, if it is perceived as a technological problem the solution at the extreme end would be a complete rejection of the technology, while if the nuclear threat is considered a political issue the solution proposed could instead be the signing of a global treaty. It is thus important to consider the diagnostic framing thoroughly in order to evaluate the solution proposed by a prognostic frame. Finally, motivational framing articulates motives and the rationale for action, thus motivating why something should be done (Snow & Benford, 1988; Uggla et al., 2016).

In short, the theory of framing is important since human beings tend to make judgements in relation to easily accessible information, and frames have the capacity to influence or even determine public opinion (Entman, 1993; Kuypers, 2009). Accordingly, framing is used in this paper to determine some of the ways in which forest owners communicate threats to forest bird species diversity and to analyse what this entails for the longevity of species diversity among forest birds in Sweden.

3.2 Constructivism

Framing is a process of reality construction (Benford & Snow, 2000), the significance of which is further anchored within the theory of constructivism. Constructivism entails that environments that we tend to consider as natural are actually constructed, or even that the concept of nature is a human construction. By viewing objects commonly perceived as natural as being shaped and influenced by politics, culture and the human imagination, constructivist thinking ties in with the analysis of narratives, discourses and framings. In short, and significantly for my thesis, by adopting a constructivist lens it is possible to argue that changes to forestry management activities will not come about because biodiversity loss actually occurs, but because the accounts and beliefs considered as true is that biodiversity loss occurs (Robbins, 2012).

Constructivism, then, is a useful theory for this paper since it emphasises the central role of frames in shaping our perceptions of truth. Robbins (2012) has elaborated on a constructivist thesis, calling it the political objects and actors thesis, which is relevant for understanding the case of forest birds in Sweden:

Material characteristics of non-human nature and its components [...] impinge upon the world of human struggles and are entwined with them, and so are inevitably political. Yet as these characteristics and agents assume new roles and take on new importance, they are also transformed by these interactions [...] In recent history, hegemonic institutions and individuals [...] have gained disproportionate influence by controlling and directing new connections and transformations, leading to unintended consequences and often pernicious results. (Robbins, 2012, p. 23)

Thus, it is possible to trace how the material characteristics of Swedish forests have been politicised and shaped by human activities, and thereby transformed through human interactions. Throughout the 1900s the Swedish government incentivised increased production of wood, for instance by introducing clear-cutting as the dominant management regime in the mid 1900s. This fits well with the thesis as the government, a hegemonic institution, controlled and directed a transformation of Swedish forests, which negatively impacted biodiversity (Beland Lindahl et al., 2017). However, there are indications that non-human species have a growing role in influencing institutions, even directing political change

and economic growth (Robbins, 2012). In the Swedish context, this can be traced in the policy changes of the 1993 Forestry Act, where the introduction of the environmental goal provided greater consideration of non-human species and altered Swedish forestry management (Beland Lindahl et al., 2017). This presents a case of political change in favour of non-human species over national economic growth, and appears to have greatly benefited forest birds. However, in the past decade or so these positive population trends have begun to stagnate or even turn into declines for some forest-dependent species (Wirdheim, 2019). This might be attributed to the fact that, as Robbins (2012) emphasises, “the qualities of non-humans that are incongruent with state organization, capitalist accumulation, and various forms of social institutions cause them to resist or create friction with human activities” (p. 232). In line with this, it is possible to consider those forest bird species with higher demands on habitat quality as being incongruent with the intensive production of Swedish forestry, causing friction with human activities through their decreasing populations, which in turn raises concerns over Swedish management practices. This illustrates how the topic of forest bird diversity in the context of Swedish forestry can be understood through a constructivist lens.

4. Methodology

4.1 Framing analysis

Having gathered an understanding of forestry in Sweden and forest birds, I conducted a framing analysis in order to answer the research question: *How do Swedish forest owners frame the threat to forest birds and to what extent does this framing determine potential solutions for their protection?*

The first step involved identifying which Swedish forest owners to include in the analysis. Here, a key definition to make was whether to focus on productive forestland or total forestland. Since the data available was inconsistent this proved slightly problematic. The total area was available for most but for two forest owners associations only the hectares of productive forestland was available. Therefore, due to the available data, primarily total forestland has been used to determine the forest owners to include, but in some cases where total forestland was unavailable productive forestland has been included instead. However, important to bear in mind is that all actors included in the analysis are geared towards production and as such the majority of the forestland owned is productive forestland. Having consulted with a statistician at the Forest Agency, data ordered from Lantmäteriet (the Swedish authority for real estate division) in December 2017 of the ten largest forest owners of productive forestland in Sweden provided a starting point (Jacobsson, 2017), since there are generally few changes with these largest of forest owners. After a further investigation of the largest forest owners on the list several exclusions had to be made. These exclusions were based on 1) whether the forest owner still existed or not and 2) whether annual reports were available for at least the past five years for the forest owner. Since the analysis focuses on annual and sustainability reports I decided that there need to be at least five years worth of reports in order for there to be sufficient data for analysis. Since Bergvik Skog Väst AB had been dissolved and Bergvik Skog Öst AB was established in 2019 they were excluded from the study. The Swedish Environmental Protection Agency was also excluded from the study since its annual reports concern all their government assignments, going far beyond how they communicate as forest owners.

From the list of the ten largest forest owners five were selected for further analysis: Sveaskog, Svenska Cellulosa Aktiebolaget (SCA), Stora Enso, Holmen and Statens Fastighetsverk (see Table 2). State-owned Sveaskog is the largest forest owner in Sweden with almost four million ha of total land and about three million ha of productive forestland,

constituting 14% of all Swedish forestland (Sveaskog, 2020). SCA is privately owned and the second largest forest owner in Sweden, with two million ha of productive forestland and 2,6 million ha of total forestland in northern Sweden (SCA, 2019). Stora Enso is also privately owned, with about 1,4 million ha of total forestland (Stora Enso, 2019). The fourth-largest forest owner Holmen owns about one million ha of productive forestland, with 1,3 million ha of total forestland, and is also privately owned (Holmen Skog, 2019). Finally, state-owned Statens Fastighetsverk owns a total of 800 000 ha of forestland, with about 234 000 being productive (Naturvårdsverket, 2020c; Statens Fastighetsverk, 2021).

Table 2. List of selected Swedish forest owning companies, their ownership type, total hectares of forestland and percentage of Sweden’s total forestland (own creation).

Company	Type of owner	ha (total)	% of Swedish Total
Sveaskog	State	3,9 million	13,9%
SCA	Private	2,6 million	9,3%
Stora Enso	Private	1,4 million	5%
Holmen	Private	1,3 million	4,6%
Statens Fastighetsverk	State	800 000	2,9%
Total		10 million	35,7%

Predictably, all these largest forest owners in Sweden are either state-owned or privately owned companies. However, since about half of all Swedish forestland belongs to private individual forest owners I decided to also include them in the study (SLU, 2020a). Here, the three largest forest owners’ associations were initially chosen for analysis in the paper (see Table 3). The largest of these is Södra, consisting of roughly 52 000 forest owners that collectively own about 2,6 million ha of total forestland (Södra, 2019). The third largest is Mellanskog, consisting of roughly 26 000 forest owners that collectively own about 1,5 million ha of total forestland (Mellanskog, 2019). The second largest is Norra Skog, consisting of about 27 000 forest owners, collectively owning about 2,1 million ha of total forestland (Norra Skog, 2020a). However, Norra Skog was established as late as 2020 following the merging of two northern forest owners associations: Norrskog and Norra Skogsägarna (Norra Skog, 2020b). Having consulted with a communications officer at Norra Skog the annual reports for both Norrskog and Norra Skogsägarna were made available, and

as such they have both been included in the study instead of Norra Skog. Norrskog had, as of 2019, 11 079 members that collectively owned about 856 000 ha of total forestland (Norrskog, 2019), while Norra Skogsägarna had 16 630 members and about 1,29 million ha of productive forestland (Norra Skogsägarna, 2019). In the table below there is a brief summary of the forest owners associations included in the study, including their members and hectares of total or productive forestland, depending on what information was available.

Table 3. List of selected Swedish forest owners associations, their members and hectares of total and productive forestland and the corresponding percentage of Sweden’s total and productive forestland (own creation).

Association	Forest Owners	ha total (% of Swedish total)	ha productive (% of Swedish total)
Södra	52 000	2,6 million (9,3%)	
Mellanskog	26 055		1,5 million (6,4%)
Norra Skog	27 000	2,1 million (7,5%)	
<i>Norrskog</i>	<i>11 079</i>	<i>856 000 (3,1%)</i>	
<i>Norra Skogsägarna</i>	<i>16 630</i>		<i>1,29 million (5,5%)</i>
Total	105 055	4,7 million (16,8%)	1,5 million (6,4%)

The next step involved retrieving all available annual reports and sustainability reports from the selected forest owners (see Table 4). I did this through their respective websites, using the search terms “årsredovisning” and “hållbarhetsredovisning” to navigate to where the reports were available for downloading. For those cases where no reports or a very limited amount of reports were available communications officers were consulted. This was the case for Stora Enso, Statens Fastighetsverk and Norra Skog. Stora Enso’s reports have gone under different names over the years, therefore I consulted a communications officer at Stora Enso in order to establish which reports could be considered annual and/or sustainability reports. Annual reports for Stora Enso have three different names: Annual Report, Progress Book and Rethink, while sustainability reports are either called Sustainability Report or Global Responsibility Report/Performance. Statens Fastighetsverk only had reports as of 2015 available, but with help of an archivist I was able to retrieve

earlier reports as well. Similarly, for Norra Skogsägarna only the 2018 and 2019 annual reports were available for downloading on Norra Skog's website, but a communications officer at Norra Skog was able to send over earlier annual reports via mail. I downloaded all reports as pdf-files, with the exception of Norrskog where the annual reports were only available through Issuu, a media company enabling the uploading and distribution of publications online (<https://issuu.com/norrskog>).

Table 4. Overview of the reports of all forest actors included in the study (own creation).

	Time Span	Annual Reports	Sustainability Reports	Combined Reports	Total
Sveaskog	2006-2019	2		12	14
SCA	2006-2019	11	11	3	25
Stora Enso	2008-2019	10	12	2	22
Holmen	2006-2019	5	5	9	19
Statens Fastighetsverk	2002-2019	18			18
Södra	2001-2019	11		7	18
Mellanskog	2015-2019	4		3	7
Norrskog	2006-2019	14			14
Norra Skogsägarna	2004-2019	15	1		16

Having decided which forest owners to include in the study and having gathered the reports to be analysed, the next step involved establishing the search terms for the data processing (see Table 6). While both "bird" and "birds" are rather self-explanatory, I also selected more specific bird species in order to sort out relevant data. Species used as indicators for the Swedish Environmental Objective of 'Sustainable forests' provided a starting point. To assess 'Sustainable forests' one indicator is nesting forest birds, which in turn is divided into four indicator groups: Generally high nature values, dead wood, deciduous forests and older forests. For this study, all species were located in the first group and together they cover all other groups as well (see Table 5), making them all suitable for the thesis (Sveriges Miljömål, 2019).

Table 5. Selection of indicator species for the Swedish Environmental Objective ‘Sustainable forests’ (Sveriges Miljömål, 2019).

Species	Indicators
Western Capercaillie	General high nature values and older forests
Siberian Jay	General high nature values and older forests
Marsh Tit	General high nature values, dead wood and deciduous forests
European Green Woodpecker	General high nature values, dead wood and deciduous forests
Lesser Spotted Woodpecker	General high nature values, dead wood and deciduous forests
Eurasian Three-toed Woodpecker	General high nature values, dead wood, deciduous forests and older forests

Additionally, I conducted a brief informal interview with a researcher of forest birds in Sweden in order to determine further species important in relation to forestry. Two other species were identified during the interview: the white-backed woodpecker (falling under the “woodpecker” search term) and the golden eagle (“kungsörn”). The white-backed woodpecker population in Sweden is too small in order for it to be used as an indicator species, but forest owners often engage with this species through various protection programmes, making it relevant for analysis. Similarly, the golden eagle often comes into contact with forest owners through their nests and protected status, making them relevant for the analysis of forest owners’ communication (personal communication, February 15, 2021). Finally, I searched for “bird” or “birds” on the forest owners’ websites in order to uncover any additional potential species. Through this, both owl* (“uggl*”) and bunting (“sparv”) were added. Owls are often mentioned, being a charismatic forest species, and bunting was added primarily for the Ortolan bunting, a red-listed species known to frequent clear-cuts since they prefer open habitats (SLU, 2020b).

Table 6. List of search terms used during data processing (own creation).

Search Terms	Translations
Fågel	Bird
Fåglar	Birds
Entita	Marsh Tit
Hackspett	Woodpecker
Kungsörn	Golden Eagle
Lavskrika	Siberian Jay
Sparv	Bunting
Tjäder	Western Capercaillie
Uggj*	Owl*

Having established the search terms, the next step involved data processing. Using the search function, I screened all documents according to the determined search terms. All reports were processed in Swedish, with the exception of Stora Enso's reports, where most annual reports and sustainability reports were only available in English. Therefore, when available I used the Swedish version, but when the English version was the only one available I translated the search terms into English. I processed all reports using the search function. Wherever any of the search terms were found, I determined the framing of the text as diagnostic, prognostic and/or motivational (see Table 7). I deemed a piece of text mentioning one of the search terms outlined above as diagnostic if it described the current situation or problem, it was prognostic if it outlined something that should be done or a solution, and finally motivational if it explained why something should be done. At the end of this step I was able to conclude that both Statens Fastighetsverk and Norrskog had to be omitted from the analysis due to a complete absence of data.

Table 7. The three core framing functions and brief definitions (Snow & Benford, 1988; Ugglä et al., 2016).

Function	Definition
Diagnostic	Problem identification (describes the current situation).
Prognostic	Problem solution (explains what should be done).
Motivational	Rationale for action (motivates why something should be done).

5. Results

In total, I processed 153 annual and sustainability reports. Of these, 44 reports yielded results with the search terms across 84 different texts. Of these 84 texts mentioning birds, only six had a prognostic frame function.

Generally, the most common frame function used in the reports was diagnostic, describing a current situation. The second most common frame function was motivational, providing rationale for why something was being done or considered important. Finally, the least common frame function was prognostic, meaning that few annual and sustainability reports outlined actions that needed to be taken. Given the nature of annual reports, summarising the past year, it is not strange that the reports mainly describe the current situation and actions that have been taken. However, the fact that there were so few prognostic frames that looked ahead at what actions should be taken indicates that decreasing forest bird species diversity is not high on the agenda for forest owners. In the ensuing subsections I present a selection of the results according to each forest owner, but a table of the complete reports that met my criteria, containing any of the search terms I looked for, is available in the appendix. In the appendix the original quotes in Swedish can also be accessed.

5.1 Sveaskog

Out of the 14 reports that I processed, 10 reports yielded results in 15 different texts. Birds were commonly mentioned in relation to nature conservation and Sveaskog's ekoparks, which are large forest areas with high nature values where Sveaskog combines nature conservation with forestry and recreational activities (Sveaskog, 2016). The frame function usage followed the general pattern mentioned above: diagnostic, followed by motivational and finally prognostic. Sveaskog had two prognostic frame functions. Table 8 contains some of the results from Sveaskog's annual and sustainability reports that I discuss further in the next section.

Table 8. Selection of results from Sveaskog (own creation).

Sveaskog	Search Term	Theme	Function	Quote (own translation)
2019 Annual and Sustainability Report	Bird (1)	Biodiversity	Diagnostic	"We see that biodiversity within many areas, not in the least concerning some bird species, are increasing. This is positive, but we always strive to be even better. Working to combine a profitable forestry with nature and biodiversity conservation is to us a critical factor for success."
2018 Annual and Sustainability Report	Bird (1)	Ekopark	Diagnostic	"The result is large connected forests in landscapes that benefit species moving over large areas, for instance different bird species."
2015 Annual and Sustainability Report	Bird (1), Woodpecker (1)	Nature conservation	Diagnostic, Prognostic, Motivational	"More mixed forests: Swedish productive forestland is today dominated by boreal forests, but the share of deciduous-dominated forest is increasing. Larger mixed forests lead to an improved resistance against pests, higher recreation values and improved conditions for several bird species." ... "More viable populations: Today a large number of species risk extinction in Sweden, such as the white-backed woodpecker . Actions to preserve and recreate these species' habitats increase prospects for more viable populations."
2012 Annual and Sustainability Report	Bird (1)	Nature conservation	Diagnostic, Motivational	"Many bird species are dependent on dead wood, which is why high stumps and dead trees are left in the forest."
2011 Annual and Sustainability Report	Bird (1), Woodpecker (1)	Ekopark	Diagnostic, Motivational	"In the ekopark many rare species among woodpeckers , insects as well as lichen and moss that are dependent on old deciduous trees in open areas thrive." ... "Out of regard for the birdlife the nature conservation work is not conducted all year round."

2010 Annual and Sustainability Report	Bird (1), Birds (1)	External Cooperation	Diagnostic, Prognostic, Motivational	"The Effekt 20 project is part of this [cooperation with WWF], that is named after our goal that 20% of the productive forestland should be set aside for nature protection and consideration. The project follows up on the effects on the fauna by the set-asides. With the aid of birdwatchers regular large-scale inventories of forest birds in six chosen ekoparks as well as in reference landscapes, in order to compare results, are conducted."
2009 Annual and Sustainability Report	Woodpecker (1)	Ekopark	Diagnostic	"The traces of modern forestry are few and here bears, woodpeckers and rare mushrooms all thrive."
2008 Annual and Sustainability Report	Birds (1)	Nature conservation	Diagnostic, Motivational	"During felling and clearing we create new high stumps. High stumps are important from a nature conservation standpoint since they are used by insects, of which many species are red-listed, birds , lichen and fungi."

5.2 SCA

Out of the 25 reports processed, the 11 sustainability reports yielded results in 23 different texts. In addition to addressing birds in relation to common themes such as biodiversity and nature conservation, birds were also mentioned in relation to wind power on several occasions. With regards to frame functions, SCA used both diagnostic and motivational frames, but I uncovered no prognostic frame functions in relation to forest birds. Table 9 contains some of the results from SCA's sustainability reports.

Table 9. Selection of results from SCA (own creation).

SCA	Search Term	Theme	Function	Quote
2013 Sustainability Report	Golden Eagle (2)	Wind Power	Diagnostic, Motivational	"In connection to Stamåsen [wind power park] there is an artificial nest for golden eagles . During the predator inventory in 2008 four golden eagle nests were found and the artificial nest exists to attract the eagles further from the wind park and to improve the conditions for reproduction."

2012 Sustainability Report	Birds (1)	Biodiversity	Diagnostic, Motivational	"Another example: during felling all deciduous trees are left untouched in a 'diversity area' to create a habitat that is more attractive to some insects and birds ."
2011 Sustainability Report	Birds (1), Woodpecker (2)	Biodiversity	Diagnostic, Motivational	"A deciduous forest can for instance be rejuvenated to attract woodpeckers and insects." ... "This helps to guarantee a diverse habitat and enables access to food in the forest for animals and tall trees where birds of prey can build nests." ... "Overall more than every tenth tree is left to die from natural causes on SCA's forestland. These trees become part of the forest's lifecycle and provides food for insects, fungi and woodpeckers ."
2011 Sustainability Report	Owls (2)	Biodiversity	Diagnostic, Motivational	"We care about the owls . Biodiversity is a measure of how the ecosystem fares and to preserve biodiversity is a prioritised sustainability objective for SCA. One example is the creation of 'diversity areas' where at least half of the area consists of SCA-forests that are set-aside for nature conservation or that is managed to benefit nature values. Dead pinewood is an example of a scarce resource that is a prerequisite for life for insects and tree fungi. Therefore we leave more than every tenth tree to die of natural causes. With time old pine trees can become suitable nesting trees for ural owls ."
2010 Sustainability Report	Bird (1), Birds (1), Golden Eagle (2)	Biodiversity	Diagnostic, Motivational	"One example of this is the sparing of storm-resistant pine trees to create conditions for large birds of prey such as the golden eagle to nest in - the average age of pine trees with golden eagle nests is all of 270 years. Another example is that high stumps are left or created in order to establish long-term conditions for a insect- and birdlife ."

5.3 Stora Enso

Out of the 22 reports, 11 yielded results in 32 texts. Being a larger and more international company, many of these results involved different projects in countries such as Brazil and China, and are thus not directly relevant for Swedish forest birds. The results were mainly in relation to biodiversity and nature conservation, and the frame functions were overwhelmingly diagnostic, with some also being motivational, but no prognostic frame function was detected among Stora Enso's reports. Table 10 contains some of the results from Stora Enso.

Table 10. Selection of results from Stora Enso (own creation).

Stora Enso	Search Term	Theme	Function	Quote
2019 Annual and Sustainability Report	Birds (1)	Biodiversity	Diagnostic, Motivational	"Retention trees. Provide continuum of decaying wood for forest species, such as birds who need it for nesting."
2017 Sustainability Report	Birds (1)	Biodiversity	Diagnostic, Motivational	"Decaying wood provides habitats for many insects, which in turn provide food for larger animals and birds ."
2014 Global Responsibility Performance	Woodpecker (2)	Biodiversity	Diagnostic	"In Sweden, Stora Enso is working with Bergvik Skog in several projects that aim to conserve biodiversity and minimise the negative impacts of logging. Examples of endangered or threatened species that can be helped in this way include the beetle species <i>Tragosoma deparium</i> , the sand lizard (<i>Lacerta agilis</i>) and the white-backed woodpecker (<i>Dendrocopos leucotos</i>). Work on the conservation of white-backed woodpeckers has continued since the late 1980s, demonstrating the company's long-term commitment to biodiversity conservation."

5.4 Holmen

Out of the 19 reports processed, six annual and sustainability reports yielded results in six different texts. Interestingly, many of the results were about the same project, but the theme changed from revolving around wetlands to bird-watching. Two of these were also prognostic, outlining an objective of restoring or creating at least one wetland per year.

However, frames were mainly diagnostic and motivational. Table 11 contains some of the results from Holmen's reports.

Table 11. Selection of results from Holmen (own creation).

Holmen	Search Term	Theme	Function	Quote
2019 Annual and Sustainability Report	Golden Eagle (1)	Sustainable Forestry	Diagnostic	"The Knowledge forest in Kunnådalen is an excellent example of how we combine productive forestry with biodiversity. One of many good examples of this is that we have four of Sweden's five large predators in the area; wolverine, lynx, bear and golden eagle ."
2010 Sustainability Report	Bird (3)	Bird-Watching	Diagnostic, Prognostic, Motivational	" Bird -watching. Since the end of the 1990s Holmen and Svensk Våtmarksfond cooperate to create and restore wetlands. So far about forty wetlands have been created or restored. The primary purpose is to benefit the bird species that require wetlands for their reproduction. But the wetlands also serve a social function for bird -interested people. One of Holmen's environmental objectives is to create or restore at least one wetland each year on the corporation's lands. The wetlands should be functional and be made available to the public through directions, signs and lookout towers."
2009 Sustainability Report	Bird (3)	Wetlands	Diagnostic, Prognostic, Motivational	"Wetlands. Since the end of the 1990s Holmen and Svensk Våtmarksfond cooperate to create and restore wetlands. So far about forty wetlands have been created or restored. The primary purpose is to benefit the bird species that require wetlands for their reproduction. But the wetlands also serve a social function for bird -interested people. One of Holmen's prioritised environmental objectives is to create or restore at least one wetland each year on the corporation's lands. The wetlands should be functional and be made available to the public through directions, signs and lookout towers." ... "To benefit the bird life Holmen cooperates with Svensk Våtmarksfond since a decade ago to create/restore wetlands."

2008 Sustainability Report	Bird (2)	The Wetlands Project	Diagnostic, Motivational	"The Wetlands Project. Since the end of the 1900s Holmen and Svensk Våtmarksfond cooperate to restore wetlands. So far thirty-something wetlands have been restored. The primary purpose is to benefit the bird species that require wetlands for their reproduction. But the wetlands also serve a social function for bird -interested people. On several sites Holmen has placed paths, lookout towers and signs."
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5.5 Södra

Out of the 18 reports processed, three annual and sustainability reports yielded results in four different texts. Three of these were particularly relevant for this paper, of which two concerned a specific court case involving a capercaillie, causing conflict between a Södra member and the Species Protection Ordinance. The other text concerned a study conducted by Lund University in 2017, emphasising positive population trends for forest birds. All of these results, however, solely had a diagnostic frame function. Table 12 is a summary of the three top results with a translation of the direct quotes.

Table 12. Selection of results from Södra (own creation).

Södra	Search Term	Theme	Function	Quote
2018 Annual and Sustainability Report	Capercaillie (1)	Species Protection Ordinance	Diagnostic	"Unfortunately today many members feel exposed concerning their right to manage their forest according to the principle of freedom with responsibility. One current example is the so-called capercaillie -case where Södra has assisted the land owner that is a Södra-member and appealed the verdict that forbid felling."

2017 Annual and Sustainability Report	Bird (2), Birds (4)	Forest Birds	Diagnostic	<p>"Positive trend for forest birds. Scientists at Lund University have, with the help of data from 'svensk fågeltaxering and 'riksskogstaxering' tried to investigate whether there is any connection between changes in the bird fauna and the development in the forest. The studied period 1998-2015 showed that out of 58 species of forest birds 33 increased, 6 decreased and 19 species remained at a stable level. From 'riksskogstaxeringen' it is evident that the nature consideration of forestry has entailed that the area of deciduous forests and old forests has increased since 1995, just like the amount of dead wood and the amount retention trees. One factor that is also considered in the study is climate change with increasing summer temperatures. However, the study admits that there are no certain conclusions whether increased nature values or warmer climate, or a combination of both, is the explanation to the positive trend for several of the forest birds." ... "Increased nature consideration with more deciduous forests and dead wood has brought an increase in the number of forest birds."</p>
2017 Annual and Sustainability Report	Capercaillie (1)	Species Protection Ordinance	Diagnostic	<p>"We have also got properly engaged in the question of the species protection ordinance, for instance the unreasonable consequences such as the cases with the sarcosoma globosum and a capercaillie lek site has for the individual member and forest owner. That the land and environmental courts in different parts of the country make different interpretations of the species protection ordinance is close to scandalous."</p>

5.6 Mellanskog

Out of the seven reports processed, two annual and sustainability reports yielded results in three different texts. Similarly to Södra, one of the texts concerned a conflict between a landowner and species protection, caused by a Siberian jay. While the Siberian jay text merely had a diagnostic and motivational frame function, the other two texts were also

prognostic. They emphasised the need for further actions to increase the amount of dead wood. Table 13 provides the results with quotes.

Table 13. Selection of results from Mellanskog (own creation).

Mellanskog	Search Term	Theme	Function	Quote
2019 Annual and Sustainability Report	Bird (1), Siberian Jay (2)	Species Protection	Diagnostic, Motivational	"Members in Hälsingland are not permitted to fell their forest since the Siberian jay nests there. Mellanskog has supported the members in this principally important case, where we hold that Swedish authorities are over-interpreting EU's Birds and Habitats Directive. The Siberian jay is a bird that is located in many places with a favourable conservation status."
2019 Annual and Sustainability Report	Birds (2), Woodpecker (1), Owls (1)	Nature Consideration	Diagnostic, Prognostic, Motivational	"Additionally, the high stumps benefit forest birds , for instance woodpeckers, tits and owls that require high stumps both for food and nesting." ... "But in our middle-aged thinning stands, that were created before the 90s, there is a lack of coarser dead wood. Simultaneously it is the coarse wood that is important for many insects and birds . Treetops, thinning debris and self-thinning trees are weak and quickly rot away. They also benefit few of the species that require aid. - So it is extra important that we start with high stumps when thinning, says Åsa Öhman. We have during several years had a positive trend where we during several years have gotten better and better at dead wood. During the past two years the numbers have gotten worse, but now we will turn the trend during 2020!"
2017 Annual and Sustainability Report	Birds (1)	Environmental Objectives	Diagnostic, Prognostic, Motivational	"All felling on certified properties should be approved according to the PEFC-certification's demands regarding dead wood. Dead wood is for instance important for the forest's insects and birds . We see an improvement compared with previous years, but 8% of the objects

				were failed. Therefore the goal was not reached and actions and follow-up controls will be conducted."
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5.7 Norra Skogsägarna

Out of the sixteen reports processed, only one annual report yielded result in one brief text about the crowberry plant, in which both a diagnostic and motivational frame function was evident. Table 14 shows the result from Norra Skogsägarna.

Table 14. Result from Norra Skogsägarna (own creation).

Norra Skogsägarna	Search Term	Theme	Function	Quote
2011 Annual Report	Birds (1)	Crowberry	Diagnostic, Motivational	"The black berries have an insipid and a little bitter taste, are not particularly good to eat, but constitute an important food for birds - for instance for curlews during their flight south."

6. Discussion

6.1 Obscuring of threats to forest bird diversity

The general lack of prognostic frame functions in relation to forest birds stands out from the results, where only six out of 84 different texts mentioning birds were prognostic. Two of these were from Sveaskog, two from Holmen and two from Mellanskog. Notably, the two prognostic frames from Holmen were about the same wetlands project, while both of Mellanskog's prognostic frames concerned dead wood. This lack of results is a result in and of itself, highlighting that the forest owners included in the study do not frame forest birds as threatened or identify a need for further actions to ensure the longevity of a diverse forest bird community in their annual and sustainability reports. I find this significant since, according to framing theory, frames shape beliefs and world-views by emphasising certain aspects of reality and obscuring others (Kuypers, 2009). What this entails for forest birds, then, is that actions and solutions for their protection are largely obscured.

The obscuring of threats and solutions is especially problematic from a constructivist perspective, arguing for the constructed nature of reality (Robbins, 2012). This entails that if negative trends among forest birds are obscured, they are written out of existence by the communicator. And if no account or belief of threats to forest bird species diversity is presented and considered as true, no solutions for their protection will be suggested. Significantly, negative trends among species diversity are obscured in the more recent reports. For instance, the 2015 report from Sveaskog emphasises, through a combination of diagnostic, motivational and prognostic frame functions, that future actions need to be taken since "a large number of species risk extinction in Sweden, such as the white-backed woodpecker" (Table 8). In contrast, in 2019 Sveaskog instead emphasise that "biodiversity within many areas, not in the least concerning *some* bird species, are increasing" (Table 8; own emphasis).

While it is true that *some* bird species, primarily generalists, are indeed experiencing positive population trends, this sentence obscures the many specialist species that are in decline. As the BirdLife (2019) report states, rather than an increasing species diversity among forest birds, there is an increasing forest bird population, while simultaneously there is a higher risk of biodiversity loss among forest birds. The way in which framing can, as in this example, emphasise and obscure aspects of reality is especially problematic in relation to constructivist theory, since it then does not matter whether or not forest bird diversity is

threatened, as long as the view and account held as true is that populations of some forest bird species are increasing. This appears to be the case among forest owners, as Sveaskog is not alone in focusing on the positive trends among forest birds. In the 2017 annual and sustainability report, Södra discuss the results of a Lund University study in which a majority of forest birds were seen to experience positive population trends. Here, the fact the report only employs a diagnostic frame function reflects the view that, since forest birds are increasing, there is no need to outline actions needed to protect forest bird diversity. None of these reports address concerns over forest bird species diversity.

By focusing on positive trends and emphasising actions that are already taken within forestry to benefit birds, these frames construct a simplistic reality in which forest birds are thriving, rather than reflect concerns over species diversity that recent research emphasise. The general focus of the reports on positive trends among forest birds and actions that are already being taken can, of course, be attributed to the fact that these are annual and sustainability reports of companies and associations. Accordingly, their goal is to summarise the year that has passed and it is certainly in their best interest to emphasise the positive trends in order to promote their livelihood and a healthy image of Swedish forestry. While this is the case, I maintain that these reports are relevant since all companies and associations included in the study use these as a form of written communication. It is therefore important to highlight this trend among large forest owners in Sweden where negative trends in species diversity are obscured, whether it is being done consciously or not. It is important to emphasise the potential impacts and consequences of cases like this where the reports mainly focus on positive trends among some forest bird populations and do not address concerns over species diversity.

6.2 Concerns over dead wood amounts

Although the forest owners that I included in the thesis did not use any frame function emphasising negative population trends among forest bird, Mellanskog used two prognostic frames that raised concerns over dead wood amounts in relation to forest birds. In 2017 Mellanskog evaluated their compliance with the PEFC certification's demand concerning dead wood, motivated since dead wood is "important for the forest's insects and birds" (Table 13). This evaluation from the 2017 report acknowledges that there is room for improvement, and that further "actions and follow-up controls will be conducted" (Table 13). Two years later, the 2019 report again acknowledges that improvements can be made

with regards to leaving high stumps after felling in Mellanskog's forests. This time the text refers specifically to coarser dead wood, again motivating it by stating its importance for birds. Further action is also implied as the text states that "during the past two years the numbers have gotten worse, but now we will turn the trend during 2020!" (Table 13). This presents a case where negative trends regarding the amount of dead wood are emphasised rather than obscured, in combination with an emphasis on the potential for further action to reverse the negative trend. This stands in contrast to the case of forest birds where forest owners emphasise positive trends in some population numbers and negative trends among species diversity are ignored or obscured. This kind of framing of dead wood by Mellanskog instead creates a reality in which it is recognised that further actions are needed in order to solve a problem. However, this implies that the actual problem identified in Mellanskog's report is a lack of dead wood, rather than declining forest bird species diversity. This problem shift has implications for forest bird conservation. Although dead wood is important for a diverse forest bird community (Ram et al., 2017), research emphasises that factors such as tree species diversity, forest maturity, unevenly aged forests, the presence of shrubs and retention trees are also important for forest bird species diversity (Martínez-Jauregui et al., 2016; Söderström, 2009). It is therefore problematic for the protection of forest birds if the only issue that is recognised by forest owners is a lack of dead wood, and subsequently the only actions that are taken are to increase dead wood, since it does little to address other important aspects of forestry, such as diversified tree species and stand ages (Enoksson, Angelstam & Larsson, 1995; Felton et al., 2020; Martínez-Jauregui et al., 2016), that need to be taken into consideration to ensure the longevity of a diverse forest bird community.

6.3 Shallow motivational frame functions

Similarly to how threats to forest bird species diversity were absent from all reports, no reports elaborated on why forest birds are important. Instead, they are more commonly referred to as part of a broader biodiversity in the reports. In discussing their nature conservation work, the forest owners tend to refer to birds along with other animals, insects and fungi as beneficiaries. It could for instance relate to high stumps left during felling, whose importance Sveaskog emphasises "from a nature conservation standpoint since they are used by insects, of which many species are red-listed, birds, lichen and fungi" (Table 8). The fact that Sveaskog use red-listed species to motivate their nature conservation work is worth highlighting, since it is possible to argue that these species are red-listed due to the

unsustainable ways of the industry and current forestry management (Beland Lindahl et al., 2017). This is indicative of how forest owners potentially prioritise small fixes rather than tackling larger, more systemic issues. Similarly, Stora Enso's work with decaying wood "provides habitats for many insects, which in turn provide food for larger animals and birds" (Table 10) and Mellanskog emphasises how "dead wood is for instance important for the forest's insects and birds" (Table 13). These motivational frames, in which birds and other forest species are used to motivate why certain forestry aspects and actions are important, were quite common throughout the reports of the forest owners. However, no reports elaborated on why these different species are important, or why certain species are red-listed.

6.4 Charismatic species

Another interesting point of discussion with regards to forest bird diversity is that there were some clear differences in exposure between the different species searched for in the reports. The search terms "woodpecker", "golden eagle" and "owl" yielded several results, while the marsh tit or ortolan bunting did not appear once. This despite the fact that the marsh tit is an indicator species for the Environmental Objective of 'Sustainable forests' that is experiencing a declining population and the ortolan bunting is a red-listed species that went from vulnerable to critically endangered in the recently published 2020 Red List (SLU, 2020b). I did, however, discuss the probability of this occurring during the informal interview with the Swedish forest bird researcher. Small birds such as tits and buntings tend to receive less attention compared to charismatic species such as eagles and owls (personal communication, February 15, 2021). Similar concerns over the prevalent use of charismatic species have been raised within conservation literature. Ducarme, Luque and Courchamp (2013) emphasise that the use of charismatic species represents a biased communication within biodiversity and conservation issues, even "creating a sort of class struggle between 'wealthy', successful animals and poor, doomed cast-off animals" (p. 4). Primarily, using charismatic species tends to lead to single-species management, and while a charismatic species can also be a keystone species that has a large impact on other species, or an umbrella species that bring other species under its protection, it is not a criterion for charismatic species. Therefore single-species management, depending on the species, can be deceptively simplistic in today's conservation science that emphasises holistic approaches when engaging with the complexity of ecosystems (Ducarme, Luque and Courchamp, 2013).

There appears to be a tendency to use a charismatic species approach to conservation among Swedish forest owners, where species like the marsh tit and ortolan bunting were not mentioned once in the reports. In contrast, Holmen, for instance, refer to species such as the golden eagle in several cases, one of which explicitly mentions it as a high-status species: “we have four of Sweden’s five large predators in the area; wolverine, lynx, bear and golden eagle” (Table 11). While the golden eagle requires trees with strong branches for nesting, which can be connected to older forests, and as an apex predator it can be used as an indicator of environmental toxins, it is not an indicator species for the ‘Sustainable Forests’ Environmental Objective (Naturvårdsverket, 2011; Sveriges Miljömål, 2019). By favouring species such as the golden eagle the importance of other forest birds as indicator species are undermined, where some species are completely obscured in the written reports of large forest owners. This, in turn, raises concerns for species diversity, since the exposure charismatic species receive among forest owners could lead to single-species management and threaten the broader diversity of forest birds. If all focus for framing solutions is in relation to one species, such as the golden eagle, efforts would predominately focus on protecting and increasing the amount of larger trees with strong branches for the eagles’ nests, rather than dead wood amounts or tree species diversity that are more important for many other species.

6.5 Conflicts due to species protection

The only smaller forest bird that was mentioned was the Siberian jay, in relation to a conflict between Mellanskog members and species protection. Since Siberian jays nest on forestland owned by members of Mellanskog they are not permitted to harvest the forest. Mellanskog maintains that this is an over-interpretation of the EU Birds and Habitats Directive by Swedish authorities. Furthermore, Mellanskog points out that “the Siberian jay is a bird that is located in many places with a favourable conservation status” (Table 13). The Siberian jay is protected under 19 § of the Forestry Law as a prioritised bird species, in which it is stipulated that any damage caused by forestry is to be prevented or limited in habitats where prioritised bird species are present. Similarly, in both the 2017 and 2018 reports Södra discusses a conflict between landowners and the Species Protection Ordinance over a capercaillie lek site. A lek site is where males gather in a competitive display in order to find a mate. The forest owner, a Södra member, was not permitted to fell their forestland where the site was located, as in the Siberian jay case. In 2017 Södra stated this has “unreasonable consequences” and that the “different interpretations of the species protection ordinance is

close to scandalous” (Table 12). In 2018 Södra further laments how “today many members feel exposed concerning their right to manage their forest according to the principle of freedom with responsibility” (Table 12). Evidently, species protection in its various forms creates conflicts between forest owners and forest birds in Sweden. This presents an obstacle to ensuring a diverse forest bird community, since the presence of certain birds means that forest owners will experience a loss in income. Here, a compensation for forest owners that are unable to harvest their trees due to the presence of a protected species is being discussed. An on-going government investigation of the Species Protection Ordinance due to be made public in May could propose this. Monetary compensation could certainly present a solution that benefits both forest birds and forest owners.

6.6 Social value

Similarly to how the threat to forest bird diversity and solutions for their conservation were largely obscured, their importance for people and societal value was generally not discussed in the reports. Cultural ecosystem services, which encapsulate nonmaterial benefits such as recreation, spiritual enrichment and aesthetic experiences, are considered especially difficult to conceptualise due to their intangibility (Stålhammar & Pedersen, 2017). This, in turn, has led to their underrepresentation in landscape management decisions (Müller, Peisker, Bieling, Linnemann, Reidl & Schmieder, 2019), which is evident in the forest owners’ reports. Studies show that descriptions of beauty or serenity are difficult to break down to extrapolate a value of the experience, even though landscapes are commonly used recreationally and appreciated for their aesthetics (Müller et al., 2019; Stålhammar & Pedersen, 2017). The fact that forest owners do not tend to discuss the social value of their forests is indicative of this struggle to value cultural ecosystem services, since recreational activities such as bird-watching appears to be low on the agenda when it comes to forestry and the reports focus more on the forests’ productive capacity. One exception, however, is Holmen and the evolution of their wetlands project. In 2008 Holmen introduced a wetlands project, emphasising that “wetlands also serve a social function for bird-interested people” (Table 11). This emphasis on the social role of birds was again prevalent in the piece on wetlands in the 2009 sustainability report. However, in 2010 the topic changed, from wetlands to bird-watching, while the text itself remained largely similar. In this case, bird-watching as an important social function appears to have become increasingly important for Holmen, and eventually found its way into the title of the wetlands project. Strengthening the status of cultural ecosystem services has been identified as a priority field of action

within landscape management (Müller et al., 2019), and emphasising the recreational value and social function that birds have provides impetus for their conservation.

6.7 Answering the research question

To answer the research question, Swedish forest owners do not frame forest bird diversity as being threatened, and accordingly few solutions are proposed for their protection. Instead, the frames construct a reality in which threats to a diverse forest bird community are obscured and, accordingly, there are no indications of further actions or solutions taken to ensure their protection. This, in turn, could be indicative of further negative trends among forest bird diversity in the future. This has implications for 1) biodiversity protection, 2) a more sustainable forest management that combines different objectives and 3) meeting national and international agreements and targets. As was mentioned in the introduction, forest birds in Sweden provide many important regulatory ecosystem services, such as pest control and seed dispersal that affect forest resilience. By consuming insects that damage trees and eating seeds and dispersing them across the forest, birds as part of the ecosystem ensure that forests grow and are more resistant to pest outbreaks in the long-term (Lindbladh et al., 2019). They also provide cultural ecosystem services that can be more difficult to measure, through activities such as bird-watching that has a recreational and spiritual value that affect human well-being both in the short- and long-term (Müller et al., 2019; Stålhammar & Pedersen, 2017).

These regulatory and cultural ecosystem services that birds provide occur on a local level all over the world, and threats to forest bird diversity due to forestry activities are also indicative of larger, global challenges. One such challenge is that of overcoming trade-offs between production and biodiversity, where the growth of the global economy increases demands on materials, such as wood (IPBES, 2019). This is exacerbated by the shift to the supposedly more environmentally friendly production of energy, where the bioenergy transition is increasing the pressure on forest raw materials. In Sweden's National Forest Programme of 2018 the development of a growing bioeconomy is in focus, emphasising that the production of bioenergy must increase in Sweden (Government Offices of Sweden, 2018). This increased focus on a developing bioeconomy in Sweden, in which increasing the production of bioenergy plays a large part, reflects larger international strategies such as the 2012 Bioeconomy Strategy of the European Union (Skånberg, Olsson & Hallding, 2016). Global trends calling for an increased bioenergy production, contingent on monoculture

plantations, will exacerbate threats to biodiversity (Felton et al., 2016). Today, the logging of forests is already one of the main activities related to land use change that threatens biodiversity globally (IPBES, 2019).

This begs the question, why? Why is forest bird species diversity not being framed as threatened and in need of protection among the Swedish forest owners? One potential answer and influencing factor here could be shifting baseline syndrome (SBS). It describes how the slow and gradual change in environmental conditions affect the accepted norms among people of what a natural state of the environment is. Soga and Gaston (2018) elaborate on the potential consequences of SBS to include “an increased tolerance for progressive environmental degradation, changes in people’s expectations as to what is a desirable state of the natural environment [...], and the establishment and use of inappropriate baselines for nature conservation, restoration, and management” (p. 222). This could be the case in Sweden, where the current diversity of species among forest birds is perceived to be an appropriate baseline. One example that was indicative of SBS was the conflict between Mellanskog forest owners and the Siberian jay. It is no longer nationally red-listed in Sweden, but remains a prioritised species for protection according to the Forestry Law. However, in the conflict Mellanskog presented the argument that the Siberian jay has a wide range and favourable conservation status. It is worthwhile taking into consideration whether or not the baseline Mellanskog is using in their argument is appropriate. The concept of SBS also has further implications for the future. Since there are no indications that threats to forest bird species diversity in Sweden are being addressed by forest owners, further environmental degradation risks shifting the baseline for what is considered a desirable natural state in Swedish forests to further inappropriate levels for forest birds and biodiversity in general. This, in turn, further threatens the resilience and ecological integrity of forests.

6. Conclusion

Birds are important for the ecological functions in a forest ecosystem, for instance through the numerous ecosystem services they provide. However, recent inventories and studies point to an increasingly threatened forest bird diversity in Swedish forests. These concerns do not appear to be shared by large forest owners in Sweden. Through a framing analysis of annual and sustainability reports of the nine largest forest-owning companies and forest owners associations in Sweden it is evident that forest bird diversity is not framed as being threatened. In line with this, there is a general lack of frame functions outlining further actions and solutions that need to be applied in order to protect forest bird diversity. Further research would be necessary to determine whether or not this obscuring of the threat to forest bird diversity is conscious or not. However, the fact that forest bird diversity is not perceived as being threatened has implications for the solutions proposed. If forest owners do not perceive forest bird diversity as threatened, as appears to be the case in their annual and sustainability reports, they are highly unlikely to take further actions to ensure their protection and longevity. This is reflected in my results, where only six out of 84 texts had a prognostic frame function. Rather than raising concerns over a threatened diversity, positive trends among forest birds are emphasised. While it is true that populations of generalist forest bird species are increasing in Sweden, this effectively obscures the threat to diversity among forest birds, and instead promotes a picture in which forest birds are thriving. If this is the only information that is being made available, that forest birds are not facing threats but are thriving, then there is no reason to focus on further solutions to protect forest birds. With regards to outlining solutions for the protection of forest bird diversity it would be interesting to conduct a similar study as this one focusing on the role of actors other than forest owners, such as the Forest Agency or the SSNC, to uncover how they work and communicate threats to forest bird diversity.

Among the forest owners, though, rather than perceiving a threat to forest bird diversity as a problem, concerns are instead raised over other aspects of forestry activities such as leaving dead wood. While the acknowledgment that a lack of dead wood is a problem and subsequent actions to increase dead wood will benefit forest birds, it obscures the many other aspects of Swedish forestry that threaten bird diversity. Similarly, certain species of forest birds are favoured in the reports of forest owners, at the expense of others. Charismatic species such as the golden eagle receive more attention, while important indicator species of aspects such as deciduous forests receive no mention whatsoever.

However, further research would be necessary in order to establish the extent to which charismatic species are used in the forest owners' reports. The results of the thesis also raise concerns regarding the Species Protection Ordinance and the interpretation of the EU Birds and Habitats Directive by Swedish authorities. When forest birds come into conflict with forest owners it merely presents further obstacles to protecting a diverse forest bird community. Here, the on-going government investigation of the Species Protection Ordinance that is due to be made public in May could have significant implications for forest birds and the conflicts that arise with forest owners.

To conclude, in this thesis I show that threats to forest bird diversity are obscured among major forest owners. I found that this, in turn, entails a lack of further actions and solutions for the protection of a diverse forest bird community. In spite of what was emphasised in the BirdLife Sweden (2019) report, there are no indications that forest owners are planning to increase "the actions taken within forestry at the end of the 1990s and early 2000s regarding nature conservation in general" or "more specific actions to benefit biodiversity" (p. 19; own translation). This is especially problematic from a sustainability perspective with social, ecological and economic implications. A loss of species diversity among forest birds could lower the resilience of Swedish forests in the future, due to a loss of services such as seed dispersal and pest control. Keskitalo et al. (2016) comment on climate change projections estimating that Swedish forests will be more exposed to droughts and fires in the future, particularly in the south. There is also a probability of increased wind damage, where spruce is the most sensitive. The risk of pest outbreaks in forests will also increase, potentially further exacerbated by the introduction of new species. All these factors, combined with the current forestry model consisting of even-aged monoculture stands, make Swedish forests and forestry highly vulnerable (Keskitalo et al., 2016). In addition to the ecological damage this would incur, there would also be economic implications. Swedish forests constitute about 69% of the total land area and forestry contributes to about 9-12% of Swedish industry's total employment, exports, turnover and added value (Skogsindustrierna, 2019; SLU, 2020a). Accordingly, if the resilience of Swedish forests is at risk and forest health deteriorates it would deal a significant blow to the national economy. Finally, forest bird diversity also has a social and cultural value through activities such as bird-watching and hunting. A loss of forest bird diversity would thus have large-scale ecological, economical and social impacts. It is therefore important to raise concerns over species diversity, since "birds are an important indicator for measuring the pressure on our

forest resources and there is a lot indicating that the development has not gone in the right direction for biodiversity lately” (BirdLife Sweden, 2019, p. 19; own translation).

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Appendix

Sveaskog	Search Term	Theme	Function	Quote	Own Translation
2019 Annual and Sustainability Report	Bird (1)	Biodiversity	Diagnostic	"Vi ser att den biologiska mångfalden inom många områden inte minst när det gäller vissa fågel arter ökar. Det är positivt, men vi ska alltid sträva efter att bli ännu bättre. Arbetet med att kombinera ett lönsamt skogsbruk med bevarande av höga naturvärden och biologisk mångfald är för oss en kritisk framgångsfaktor"	"We see that biodiversity within many areas, not in the least concerning some bird species, are increasing. This is positive, but we always strive to be even better. Working to combine a profitable forestry with nature and biodiversity conservation is to us a critical factor for success."
2019 Annual and Sustainability Report	Bird (1)	Bird Watching	Diagnostic	"Skogen - en fantastisk resurs ... Fågelskådning "	"The forest - a fantastic resource ... Bird-watching "
2018 Annual and Sustainability Report	Bird (1)	Ekoparks	Diagnostic	"Resultatet är stora sammanhängande skogar i landskap vilket gynnar arter som rör sig över stora områden, till exempel olika fågel arter."	"The result is large connected forests in landscapes that benefit species moving over large areas, for instance different bird species."
2017 Annual and Sustainability Report	Bird (1)	Ekopark	Diagnostic	Ekoparkerna: "Resultatet är stora sammanhängande skogar vilket bland annat gynnar flera fågel arter."	Ekoparks: "The result is large connected forests that among others benefit several bird species."
2015 Annual and Sustainability Report	Bird (1), Woodpecker (1)	Nature Consideration	Diagnostic, Prognostic, Motivational	"Mer blandad skog: svensk produktiv skogsmark domineras idag av barrskog men andelen lövträdsdominerad skog ökar. Större blandskogar leder till bättre motståndskraft mot skadegörare, större rekreations- och upplevelsevärden och bättre förutsättningar för fler fågel arter." ... "Mer livskraft: Idag riskerar ett stort antal arter att dö ut i Sverige, bland annat den vitryggiga hackspetten . Åtgärderna för att bevara och återskapa arternas livsmiljöer ökar förutsättningar för mer livskraftiga populationer."	"More mixed forests: Swedish productive forest land is today dominated by boreal forests, but the share of deciduous-dominated forest is increasing. Larger mixed forests lead to an improved resistance against pests, higher recreation values and improved conditions for several bird species." ... "More viable populations: Today a large number of species risk extinction in Sweden, such as the white-backed woodpecker . Actions to preserve and recreate these species' habitats increase prospects for more viable populations."
2013 Annual and Sustainability Report	Woodpecker (1)	Word-list	Motivational	"Högstubbar: Stubbar kapade på ca 2-3 meter höjd med syfte att gynna	"High stumps: stumps cut at about 2-3 metres height, primarily in

ty Report				främst skalbaggar och hackspettar ."	order to benefit beetles and woodpeckers ."
2012 Annual and Sustainability Report	Bird (1)	Nature Consideration	Diagnostic, Motivational	"Många fågel arter är beroende av död ved, därför lämnas högstubbar och döda träd kvar i skogen."	"Many bird species are dependent on dead wood, which is why high stumps and dead trees are left in the forest."
2012 Annual and Sustainability Report	Birds (1)	Nature Consideration	Diagnostic, Motivational	"Partier med gamla träd har sparats för fåglar att sätta bo i,"	"Stands with old trees have been saved for birds to nest in,"
2012 Annual and Sustainability Report	Woodpecker (1)	Word-list	Motivational	"Högstubbar: Stubbar kapade på ca 2-3 meter höjd med syfte att gynna främst skalbaggar och hackspettar ."	"High stumps: stumps cut at about 2-3 metres height, primarily in order to benefit beetles and woodpeckers ."
2011 Annual and Sustainability Report	Owl (1)	Ekopark	Diagnostic	"I Ekopark Färna bor den lilla skickliga jägaren sparvugglan ."	"In Ekopark Färna the small skilled hunter the pygmy owl lives."
2011 Annual and Sustainability Report	Bird (1), Woodpecker (1)	Ekopark	Diagnostic, Motivational	"I ekoparken trivs många olika sällsynta arter av bland annat hackspettar , insekter samt lavar och mossor som är beroende av gamla lövträd i öppna lägen." ... "Av hänsyn till fågellivet pågår det naturvårdande arbetet inte året runt."	"In the ekopark many rare species among woodpeckers , insects as well as lichen and moss that are dependent on old deciduous trees in open areas thrive." ... "Out of regard for the birdlife the nature conservation work is not conducted all year round."
2011 Annual and Sustainability Report	Woodpecker (1)	Word-list	Motivational	"Högstubbar: Stubbar kapade på ca 2-3 meter höjd med syfte att gynna främst skalbaggar och hackspettar ."	"High stumps: stumps cut at about 2-3 metres height, primarily in order to benefit beetles and woodpeckers ."
2010 Annual and Sustainability Report	Bird (1), Birds (1)	External Cooperations	Diagnostic, Prognostic, Motivational	"Vi har ett flerårigt samarbete med Världsnaturfonden (WWF) som under det senaste året haft fokus på klimatanpassning av naturvård, skogen som energikälla, levande skogsvatten och ansvarsfull virkeshandel och import. Här ingår också projektet Effekt 20, som har fått sitt namn från vårt mål att 20 procent av den produktiva skogsmarken ska avsättas för naturskydd och naturhänsyn. Projektet följer upp effekter för faunan av dessa avsättningar. Med hjälp av fågelskådare görs med regelbundna intervaller storskaliga inventeringar av skogs fåglar i sex utvalda	"We have a multi-year cooperation with the World Wide Fund (WWF) that during the past year has focused on climate adaptation of nature conservation, the forest as an energy source, living forest water and responsible timber trade and import. The Effekt 20 project is part of this, that is named after our goal that 20 percent of the productive forest land should be set aside for nature protection and consideration. The project follows up on the effects on the fauna by the set-asides. With the aid of birdwatchers regular large-scale

				ekoparker samt i referenslandskap, för att ha som jämförelse."	inventories of forest birds in six chosen ekoparks as well as in reference landscapes, in order to compare results, are conducted."
2009 Annual and Sustainability Report	Woodpecker (1)	Ekopark	Diagnostic	"Spåren av modernt skogsbruk är få och här trivs både björnar, hackspettar och sällsynta vedsvampar."	"The traces of modern forestry are few and here bears, woodpeckers and rare mushrooms all thrive."
2008 Annual and Sustainability Report	Birds (1)	Nature Consideration	Diagnostic, Motivational	"Vid avverkning och röjning skapar vi nya högstubbar. Högstubbar är viktiga ur naturvårdssynpunkt eftersom de används av insekter, varav många rödlistade arter, fåglar , lavar och svampar."	"During felling and clearing we create new high stumps. High stumps are important from a nature conservation standpoint since they are used by insects, of which many species are red-listed, birds , lichen and fungi."
SCA	Search Term	Theme	Function	Quote	Own Translation
2016 Sustainability Report	Birds (1)	Word-list		"AOX, Absorberbara organiska halogener: Faktor som beskriver mängden klorhaltigt organiskt material. Vissa av dessa substanser kan ackumuleras i fiskar och fiskätande fåglar ."	"AOX, Adsorbable organic halides Factor that describes the amount of chlorine-containing organic material. Some of these substances can accumulate in fish and fish-eating birds ."
2015 Sustainability Report	Birds (1)	Word-list		"AOX, Absorberbara organiska halogener: Faktor som beskriver mängden klorhaltigt organiskt material. Vissa av dessa substanser kan ackumuleras i fiskar och fiskätande fåglar ."	"AOX, Adsorbable organic halides Factor that describes the amount of chlorine-containing organic material. Some of these substances can accumulate in fish and fish-eating birds ."
2014 Sustainability Report	Capercaillie (1)	Biodiversity	Diagnostic	"Mångfaldsparker: Under 2014 invigdes i Sverige två mångfaldsparker, Tjäderberget och Sörgraninge,"	"Diversity Parks: During 2014 two diversity parks were inaugurated in Sweden, Tjäderberget and Sörgraninge,"
2014 Sustainability Report	Birds (1)	Word-list		"AOX, Absorberbara organiska halogener: Faktor som beskriver mängden klorhaltigt organiskt material. Vissa av dessa substanser kan ackumuleras i fiskar och fiskätande fåglar ."	"AOX, Adsorbable organic halides Factor that describes the amount of chlorine-containing organic material. Some of these substances can accumulate in fish and

					fish-eating birds ."
2013 Sustainability Report	Golden Eagle (2)	Wind Power	Diagnostic, Motivational	"I anslutning till Stamåsen [vindkraftspark] finns ett konstgjort bo för kungsörn . Vid rovdjursinventeringen 2008 hittades fyra kungsörns bon och det konstgjorda boet är till för att locka örarna längre bort från vindparken och förbättra reproduktionsmöjligheterna."	"In connection to Stamåsen [wind power park] there is an artificial nest for golden eagles . During the predator inventory in 2008 four golden eagle nests were found and the artificial nest exists to attract the eagles further from the wind park and to improve the conditions for reproduction."
2013 Sustainability Report	Birds (1)	Word-list		"AOX, Absorberbara organiska halogener: Faktor som beskriver mängden klorhaltigt organiskt material. Vissa av dessa substanser kan ackumuleras i fiskar och fiskätande fåglar ."	"AOX, Adsorbable organic halides Factor that describes the amount of chlorine-containing organic material. Some of these substances can accumulate in fish and fish-eating birds ."
2012 Sustainability Report	Birds (1)	Biodiversity	Diagnostic, Motivational	"Ett annat exempel: under avverkningsen kan alla lövträd lämnas orörda i ett 'mångfaldsområde' för att skapa en miljö som är mer attraktiv för vissa insekter och fåglar ."	"Another example: during felling all deciduous trees are left untouched in a 'diversity area' to create a habitat that is more attractive to some insects and birds ."
2012 Sustainability Report	Birds (1)	Word-list		"AOX, Absorberbara organiska halogener: Faktor som beskriver mängden klorhaltigt organiskt material. Vissa av dessa substanser kan ackumuleras i fiskar och fiskätande fåglar ."	"AOX, Adsorbable organic halides Factor that describes the amount of chlorine-containing organic material. Some of these substances can accumulate in fish and fish-eating birds ."
2011 Sustainability Report	Birds (1), Woodpecker (2)	Biodiversity	Diagnostic, Motivational	"En lövskog kan exempelvis förnyas för att dra till sig hackspettar och insekter." ... "Detta hjälper till att garantera en varierad miljö och gör att det finns mat att tillgå i skogen för djuren och höga träd där rovfåglarna kan bygga bo." ... "Sammantaget lämnas mer än vart tionde träd på markerna som SCA förvaltar att dö en naturlig död. Dessa träd blir en del av skogens livscykel och tillhandahåller mat till insekter, svampar och hackspettar ."	"A deciduous forest can for instance be rejuvenated to attract woodpeckers and insects." ... "This helps to guarantee a diverse habitat and enables access to food in the forest for animals and tall trees where birds of prey can build nests." ... "Overall more than every tenth tree is left to die from natural causes on SCA's forest land. These trees become part of the forest's lifecycle and

					provides food for insects, fungi and woodpeckers."
2011 Sustainability Report	Owls (2)	Biodiversity	Diagnostic, Motivational	"Vi bryr oss om ugglorna . Biologisk mångfald är ett mått på hur ekosystemet mår och att bevara den biologiska mångfalden är ett prioriterat hållbarhetsmål för SCA. Ett exempel är bildandet av 'mångfaldsområden' där minst halva arealen består av SCA-skogar som avsatts för naturvård eller som sköts för att gynna naturvärden. Död tallved är ett exempel på en knapp resurs som är en livsförutsättning för insekter och trädsvampar. Därför lämnar vi kvar mer än vart tionde träd att dö av naturliga orsaker. Med tiden kan gamla tallträd bli lämpliga boträd för slagugglor ."	"We care about the owls . Biodiversity is a measure of how the ecosystem fares and to preserve biodiversity is a prioritised sustainability objective for SCA. One example is the creation of 'diversity areas' where at least half of the area consists of SCA-forests that are set-aside for nature conservation or that is managed to benefit nature values. Dead pinewood is an example of a scarce resource that is a prerequisite for life for insects and tree fungi. Therefore we leave more than every tenth tree to die of natural causes. With time old pine trees can become suitable nesting trees for ural owls ."
2011 Sustainability Report	Birds (1)	Word-list		"AOX, Absorberbara organiska halogener: Faktor som beskriver mängden klorhaltigt organiskt material. Vissa av dessa substanser kan ackumuleras i fiskar och fiskätande fåglar ."	"AOX, Adsorbable organic halides Factor that describes the amount of chlorine-containing organic material. Some of these substances can accumulate in fish and fish-eating birds ."
2010 Sustainability Report	Bird (1), Birds (1), Golden Eagle (2)	Biodiversity	Diagnostic, Motivational	"Ett exempel på detta är bevarandet av stormfasta tallar för att skapa förutsättningar för stora rovfåglar som kungsörnen att bygga bo - snittåldern på tallar med kungsörnsbo är hela 270 år. Ett annat exempel är att högstubbar lämnas eller nyskapas för att etablera långsiktiga förutsättningar för insekts- och fågelliv ."	"One example of this is the sparing of storm-resistant pine trees to create conditions for large birds of prey such as the golden eagle to nest in - the average age of pine trees with golden eagle nests is all of 270 years. Another example is that high stumps are left or created in order to establish long-term conditions for a insect- and birdlife ."

2010 Sustainability Report	Birds (1)	Word-list		"AOX, Absorberbara organiska halogener: Faktor som beskriver mängden klorhaltigt organiskt material. Vissa av dessa substanser kan ackumuleras i fiskar och fiskätande fåglar ."	"AOX, Adsorbable organic halides Factor that describes the amount of chlorine-containing organic material. Some of these substances can accumulate in fish and fish-eating birds ."
2009 Sustainability Report	Bird (1), Birds (1), Golden Eagle (2)	Sustainable Forestry	Diagnostic, Motivational	"Ett exempel på detta är bevarandet av stormfasta tallar för att skapa förutsättningar för stora rovfåglar som kungsörnen att bygga bo - snittåldern på tallar med kungsörnsbo är hela 270 år. Ett annat exempel är att högstubbar lämnas eller nyskapas för att etablera långsiktiga förutsättningar för insekts- och fågelliv ."	"One example of this is the sparing of storm-resistant pine trees to create conditions for large birds of prey such as the golden eagle to nest in - the average age of pine trees with golden eagle nests is all of 270 years. Another example is that high stumps are left or created in order to establish long-term conditions for an insect- and birdlife ."
2009 Sustainability Report	Birds (1)	Wind Power	Diagnostic	"Påverkan på rennäring och rovfåglar , elanslutning och förbättring av vägar är frågor som diskuterats."	"The impact on reindeer husbandry and birds of prey, electrical connection and improvements of roads are questions that have been discussed."
2009 Sustainability Report	Birds (1)	Word-list		"AOX, Absorberbara organiska halogener: Faktor som beskriver mängden klorhaltigt organiskt material. Vissa av dessa substanser kan ackumuleras i fiskar och fiskätande fåglar ."	"AOX, Adsorbable organic halides Factor that describes the amount of chlorine-containing organic material. Some of these substances can accumulate in fish and fish-eating birds ."
2008 Sustainability Report	Bird (1), Birds (1), Golden Eagle (2)	Sustainable Forestry	Diagnostic, Motivational	"Ett exempel på detta är bevarandet av stormfasta tallar för att skapa förutsättningar för stora rovfåglar som kungsörnen att bygga bo - snittåldern på tallar med kungsörnsbo är hela 270 år. Ett annat exempel är att högstubbar lämnas eller nyskapas för att skapa långsiktiga förutsättningar för insekts- och fågelliv ."	"One example of this is the sparing of storm-resistant pine trees to create conditions for large birds of prey such as the golden eagle to nest in - the average age of pine trees with golden eagle nests is all of 270 years. Another example is that high stumps are left or created in order to establish long-term conditions for an insect- and birdlife ."
2008 Sustainability Report	Bird (1)	Wind Power	Diagnostic	"Underlagen [för sex planerade vindkraftsparker] omfattar bland annat kartläggning av nyckelbiotoper,	"The basis [for proposal of six new wind power parks] covers amongst others mapping of key biotopes, populations of

				rovfågelbestånd, fornlämningar och geologiska undersökningar."	birds of prey, ancient remains and geological surveys."
2008 Sustainability Report	Birds (1)	Word-list		"AOX, Absorberbara organiska halogener: Faktor som beskriver mängden klorhaltigt organiskt material. Vissa av dessa substanser kan ackumuleras i fiskar och fiskätande fåglar ."	"AOX, Adsorbable organic halides Factor that describes the amount of chlorine-containing organic material. Some of these substances can accumulate in fish and fish-eating birds ."
2007 Sustainability Report	Bird (1), Birds (1), Golden Eagle (2)	Sustainable Forestry	Diagnostic, Motivational	"Ett exempel på detta är bevarandet av stormfasta tallar för att skapa förutsättningar för stora rovfåglar som kungsörnen att bygga bo - snittåldern på tallar med kungsörnsbo är hela 270 år. Ett annat exempel är att högstubbar lämnas eller nyskapas för att skapa långsiktiga förutsättningar för insekts- och fågelliv ."	"One example of this is the sparing of storm-resistant pine trees to create conditions for large birds of prey such as the golden eagle to nest in - the average age of pine trees with golden eagle nests is all of 270 years. Another example is that high stumps are left or created in order to establish long-term conditions for an insect- and birdlife ."
2007 Sustainability Report	Birds (1)	Word-list		"AOX, Absorberbara organiska halogener: Faktor som beskriver mängden klorhaltigt organiskt material. Vissa av dessa substanser kan ackumuleras i fiskar och fiskätande fåglar ."	"AOX, Adsorbable organic halides Factor that describes the amount of chlorine-containing organic material. Some of these substances can accumulate in fish and fish-eating birds ."
2006 Sustainability Report	Bird (3)	Bird Flu	Diagnostic	" Fågelinfluensa . För att vara förberedd inför hotet om en omfattande epidemi av fågelinfluensa , har SCA Asia Pacific utarbetat en krishanteringsplan och en krishanteringsorganisation har etablerats inom hela regionen där respektive division ansvarar för sitt område. Krishanteringsprogrammet har kommunicerats till ledningen vid samtliga verksamheter och implementerats vid personalmöten. SCA Asia Pacific har också lanserat en webbsida med information om fågelinfluensan och krishanteringsplanen."	"To be prepared for the threat of an epidemic of bird flu, SCA Asia Pacific has established a crisis management plan and a crisis management organisation has been established in the region where each respective division is responsible for their own area. The crisis management plan has been communicated to the heads at all organisations and been implemented at staff meetings. SCA Asia Pacific has also launched a website with information about bird flu and the crisis management plan."

2006 Sustainability Report	Birds (1)	Word-list		"AOX, Absorberbara organiska halogener: Faktor som beskriver mängden klorhaltigt organiskt material. Vissa av dessa substanser kan ackumuleras i fiskar och fiskätande fåglar ."	"AOX, Adsorbable organic halides Factor that describes the amount of chlorine-containing organic material. Some of these substances can accumulate in fish and fish-eating birds ."
Stora Enso	Search Term	Theme	Function	Quote	Own Translation
2019 Annual and Sustainability Report	Bird (2), Birds (1)	Biodiversity	Diagnostic, Motivational	Joint operation in Brazil: "Since 2015, the visitor centre has also developed ecotourism, with a special focus on birdwatching ." ... "In 2019, Stora Enso supported a migratory bird protection project in Beihai, China, which is an important flyway for birds ."	
2019 Annual and Sustainability Report	Birds (1)	Biodiversity	Diagnostic, Motivational	"Retention trees. Provide continuum of decaying wood for forest species, such as birds who need it for nesting."	
2017 Sustainability Report	Bird (1), Birds (2)	Biodiversity	Diagnostic	"Joint operation in Brazil: "Tree plantations resemble natural forests more than any other land uses, attracting small vertebrates like birds and eventually large predators such as jaguars," ... "During the seven-year project, we have monitored both migratory and resident birds at eucalyptus plantations as well as in non-eucalyptus woodlands." ... "Veracel's pulp mill and its eucalyptus plantations are located in an area that is becoming a popular destination for birdwatchers ."	
2017 Sustainability Report	Birds (1)	Biodiversity	Diagnostic, Motivational	"Decaying wood provides habitats for many insects, which in turn provide food for larger animals and birds ."	
2015 Sustainability Report	Bird (1)	Water	Diagnostic	"The River Mulde in Germany is a water source for our Sachsen Mill. The river is a Natura 2000 site with alluvial landscapes which provide habitat for many bird species."	

2014 Global Responsibility Performance	Bird (3), Birds (1)	Biodiversity	Diagnostic, Motivational	Joint operation in Brazil: "The aim is to restore Atlantic rainforest ecosystems and connect the remaining areas with ecological forest corridors, enabling birds and animals to move from one area to another." ... "Stora Enso is also cooperating with Fauna and Flora International (FFI) on biodiversity monitoring in the tree plantations. FFI are examining impacts on vegetation, bird species diversity, bird population numbers and bird behaviour."	
2014 Global Responsibility Performance	Bird (1)	Protected Area	Diagnostic	"38 300 ha within a landscape protection area, including a 1 895 ha bird reserve within the Natura 2000 programme."	
2014 Global Responsibility Performance	Bird (4), Birds (3)	Biodiversity	Diagnostic, Motivational	"We have additionally expanded the biodiversity programme that we are running together with Fauna & Flora International to examine the impacts of tree plantations on vegetation, insects, bird species diversity and bird population numbers over a seven-year monitoring period. Migratory bird species are an important element of biodiversity in our plantation operations, which are located on the East Asia-Australasia Migratory Bird Flyway. In connection with our monitoring work we have taken further action to protect birds by addressing the problem that local people often set up nets to trap wild birds for sale or for food. In 2014 we worked together with Fauna & Flora International, a non-governmental organisation and the local authorities to raise awareness of the importance of protecting migratory birds ."	

2014 Global Responsibility Performance	Bird (1)	Biodiversity	Diagnostic	Stora Enso commissioned report regarding Guangxi project: "Assessment of our Biodiversity and Bird Conservation Programme, realised by Fauna & Flora International"	
2014 Global Responsibility Performance	Woodpecker (2)	Biodiversity	Diagnostic	"In Sweden, Stora Enso is working with Bergvik Skog in several projects that aim to conserve biodiversity and minimise the negative impacts of logging. Examples of endangered or threatened species that can be helped in this way include the beetle species <i>Tragosoma deparium</i> , the sand lizard (<i>Lacerta agilis</i>) and the white-backed woodpecker (<i>Dendrocopos leucotos</i>). Work on the conservation of white-backed woodpeckers has continued since the late 1980s, demonstrating the company's long-term commitment to biodiversity conservation."	
2013 Global Responsibility Report	Bird (2)	Biodiversity	Diagnostic	"Stora Enso is also cooperating with Fauna and Flora International (FFI) on biodiversity monitoring in the tree plantations. FFI are examining impacts on vegetation, insects, bird species diversity and bird population numbers over a seven-year monitoring period."	
2013 Global Responsibility Report	Birds (1)	Biodiversity	Diagnostic, Motivational	Joint operation in Brazil: "This voluntary work is part of a government initiative designed to restore Atlantic rainforest ecosystems and connect the remaining areas with ecological forest corridors, enabling birds and animals to move from one area to another."	
2013 Global Responsibility Report	Bird (3)	Biodiversity	Diagnostic	"In Guangxi, China, we are cooperating with the local office of Fauna & Flora International (FFI) on studies of plantation vegetation and ways to use bird numbers as indicators of the ecological health of plantations. FFI researchers are identifying impacts on vegetation, insects, bird species numbers and bird	

				population numbers over a seven-year monitoring period."	
2013 Global Responsibility Report	Bird (1)	Protected Area	Diagnostic	"38 300 ha within a landscape protection area, including a 1 895 ha bird reserve within the Natura 2000 programme."	
2013 Global Responsibility Report	Woodpecker (2)	Biodiversity	Diagnostic	"In Sweden, Stora Enso is working with Bergvik Skog in several projects that aim to conserve biodiversity and minimise the negative impacts of logging. Examples of endangered or threatened species that can be helped in this way include the beetle species <i>Tragosoma depsarium</i> , the sand lizard (<i>Lacerta agilis</i>) and the white-backed woodpecker (<i>Dendrocopos leucotos</i>). Work on the conservation of white-backed woodpeckers has continued since the late 1980s, demonstrating the company's long-term commitment to biodiversity conservation."	
2012 Rethink	Bird (1)	Pulp Mill	Diagnostic	"Och har man tur kan man faktiskt se den typiska fågeln tero (sydamerikansk vipa) på området."	"And if you are lucky you can even spot the iconic bird tero (South American lapwing) in the area."
2012 Rethink	Owl* (2)	Paper	Diagnostic	"I Harry Potters värld är det ugglor som delar ut The Daily Prophet till prenumeranter. I framtiden kan dagstidningar, tryckta på smart papper, landa vid dörren med en logistikkedja där transportförpackningarna är ännu klokare än ugglan ."	"In the world of Harry Potter it is owls that deliver The Daily Prophet to subscribers. In the future daily newspapers, printed on smart paper, could land at your door with a logistics chain where the transportation packages are even wiser than the owl ."
2012 Global Responsibility Report	Birds (1)	Biodiversity	Diagnostic, Motivational	Joint operation in Brazil: "This voluntary work is part of a government initiative designed to restore Atlantic rainforest ecosystems and connect the remaining areas with ecological forest corridors, enabling birds and animals to move from one area to another."	

2012 Global Responsibility Report	Birds (1)	Biodiversity	Diagnostic	"In Guangxi, China, we have continued to run a water monitoring programme in our plantations together with Guangxi University. We are also cooperating with the local office of Fauna & Flora International on studies of plantation vegetation and ways to use the number of birds as indicators of the ecological health of plantations."	
2012 Global Responsibility Report	Bird (1)	Protected Area	Diagnostic	"38 300 ha within a landscape protection area, including a 1 895 ha bird reserve within the Natura 2000 programme."	
2012 Global Responsibility Report	Bird (2)	Water	Diagnostic	Sachsen Mill, Germany: "Natura 2000 site, due to alluvial landscapes which provide habitat for many bird species." ... Pori Mill, Finland: "Natura 2000 site, due to valuable bird habitats."	
2011 Global Responsibility Report	Birds (1)	Biodiversity	Diagnostic	"Stora Enso is cooperating with the local branch of Flora & Fauna International in Guangxi on studies of plantation vegetation and ways to use trends in birds' numbers as indicators of the ecological health of plantations."	
2011 Global Responsibility Report	Birds (1)	Biodiversity	Diagnostic, Motivational	Joint operation in Brazil: "This voluntary work is part of a government initiative designed to restore Atlantic rainforest ecosystems and connect the remaining areas with ecological forest corridors, enabling birds and animals to move from one area to another."	
2011 Global Responsibility Report	Bird (1)	Biodiversity	Diagnostic	"In Guangxi, China, we have started a water monitoring programme in our plantations together with Guangxi University. We are also cooperating with the local office of Fauna & Flora International on studies of plantation vegetation and ways to use the number of birds as indicators of the ecological health of plantations."	
2011 Global Responsibility Report	Bird (1)	Protected Area	Diagnostic	"7 084 ha within a landscape protection area, including a 1 895 ha bird reserve within the Natura	

				2000 programme."	
2011 Global Responsibility Report	Bird (2)	Water	Diagnostic	Sachsen Mill, Germany: "Natura 2000 site, due to alluvial landscapes which provide habitat for many bird species." ... Pori Mill, Finland: "Natura 2000 site, due to valuable bird habitats."	
2010 Rethink	Birds (1)	Plastic Pollution	Diagnostic	"Beräkningar visar att över en miljon sjöfåglar och 100 000 havsdäggdjur och havssköldpaddor dör varje år när de får i sig eller trasslar in sig i plast."	"Estimates show that over one million seabirds and 100 000 sea mammals and sea turtles die each year when they consume or get entangled in plastic."
2010 Rethink	Birds (1)	Nature Conservation Area	Diagnostic	In Brazil: "Fåglarna kvittrar lite försynt i kör i den fuktiga skogen som omger oss."	In Brazil: "The birds tweet a bit modestly in choir in the moist forest that surrounds us."
2010 Rethink	Woodpecker (3)	Interview		"Möte med en hackspett . När Carolina Graca studerade jordbruksteknik vid universitetet i Sao Paulo kallades skogsbruksstudenterna för hackspettar . 'Idag är jag nog närmare en hackspett än vad många av de andra är',"	"Meeting with a woodpecker . When Carolina Graca studied agricultural science at the university of Sao Paulo the forestry students were called woodpeckers . 'Today I am probably closer to a woodpecker than most of the others are!'"
2010 Global Responsibility Report	Bird (1), Birds (1)	Biodiversity	Diagnostic	"In China, Stora Enso and Fauna and Flora International launched a seven-year programme to monitor bird species in and around eucalyptus plantations. This programme forms part of biodiversity monitoring work in tree plantations in Guangxi province. A baseline survey of residential and migrant birds was conducted in 2010."	
2010 Global Responsibility Report	Bird (1)	Protected Area	Diagnostic	"7 084 ha within a landscape protection area, including a 1 895 ha bird reserve within the Natura 2000 programme."	
2009 Global Responsibility Report	Bird (1)	Protected Area	Diagnostic	"7 084 ha within a landscape protection area, including a 1 895 ha bird reserve within the Natura 2000 programme."	
Holmen	Search Term	Theme	Function	Quote	Own Translation

2019 Annual and Sustainability Report	Golden Eagle (1)	Sustainable Forestry	Diagnostic	"Kunskapsskogen i Kunnådalen är ett utmärkt exempel på hur vi kombinerar produktivt skogsbruk med biologisk mångfald. Ett av många bra exempel på detta är att vi har fyra av Sveriges fem stora rovdjur inom området; järv, lo, björn och kungsörn ."	"The Knowledge forest in Kunnådalen is an excellent example of how we combine productive forestry with biodiversity. One of many good examples of this is that we have four of Sweden's five large predators in the area; wolverine, lynx, bear and golden eagle ."
2012 Annual and Sustainability Report	Bird (1)	Bird-Watching	Diagnostic	"Holmens skogar är öppna för allmänheten genom allemansrätten. Det är fritt att vistas, campa, skåda fågel , plocka bär och svamp och bedriva andra fritidsaktiviteter i skogen."	"Holmen's forests are open to the public through the rights of public access. It is free to visit, camp, bird-watch , pick berries and mushrooms and conduct other recreational activities in the forest."
2010 Sustainability Report	Bird (3)	Bird-Watching	Diagnostic, Prognostic, Motivational	" Fågelskådning . Sedan slutet av 1990-talet samarbetar Holmen med Svensk Våtmarksfond om anläggande och restaurering av våtmarker. Hittills har ett fyrtiotal våtmarker skapats eller restaurerats. Det primära syftet är att gynna de fågelslag som behöver våtmarker för sin fortplantering. Men våtmarkerna fyller också en social funktion för fågelslagintresserade människor. Ett av Holmen Skogs miljömål är att skapa eller restaurera minst en våtmark per år på koncernens marker. Våtmarkerna ska vara funktionella och även göras tillgängliga för allmänheten genom vägvisning, skyltar och utsiktstorn."	" Bird-watching . Since the end of the 1990s Holmen and Svensk Våtmarksfond cooperate to create and restore wetlands. So far about forty wetlands have been created or restored. The primary purpose is to benefit the bird species that require wetlands for their reproduction. But the wetlands also serve a social function for bird-interested people. One of Holmen's environmental objectives is to create or restore at least one wetland each year on the corporation's lands. The wetlands should be functional and be made available to the public through directions, signs and lookout towers."
2009 Sustainability Report	Bird (3)	Wetlands	Diagnostic, Prognostic, Motivational	"Våtmarker. Sedan slutet av 1990-talet samarbetar Holmen med Svensk Våtmarksfond om anläggande och restaurering av våtmarker. Hittills har ett fyrtiotal våtmarker skapats eller restaurerats. Det primära syftet är att gynna de fågelslag som behöver våtmarker för sin fortplantering. Men våtmarkerna fyller också en	"Wetlands. Since the end of the 1990s Holmen and Svensk Våtmarksfond cooperate to create and restore wetlands. So far about forty wetlands have been created or restored. The primary purpose is to benefit the bird species that require wetlands for their reproduction. But the wetlands also serve a

				social funktion för fågel intresserade människor. Ett av Holmen Skogs prioriterade miljömål är att skapa eller restaurera minst en våtmark per år på koncernens marker. Våtmarkerna ska vara funktionella och även göras tillgängliga för allmänheten genom vägvisning, skyltar och utsiktstorn." ... "För att gynna fågel livet samarbetar Holmen sedan tio år med Svensk Våtmarksfond om att anlägga/restaurera våtmarker."	social function for bird -interested people. One of Holmen's prioritised environmental objectives is to create or restore at least one wetland each year on the corporation's lands. The wetlands should be functional and be made available to the public through directions, signs and lookout towers." ... "To benefit the bird life Holmen cooperates with Svensk Våtmarksfond since a decade ago to create/restore wetlands."
2008 Sustainability Report	Bird (2)	The Wetlands Project	Diagnostic, Motivational	"Våtmarksprojektet. Sedan slutet av 1900-talet samarbetar Holmen med Svensk Våtmarksfond om restaurering av våtmarker. Hittills har ett trettiotal restaurerats. Det primära syftet är att gynna de fågel arter som behöver våtmarker för sin fortplantering. Men våtmarkerna fyller också en social funktion för fågel intresserade människor. På flera ställen har Holmen ställt i ordning stigar, utsiktstorn och skyltar."	"The Wetlands Project. Since the end of the 1900s Holmen and Svensk Våtmarksfond cooperate to restore wetlands. So far thirty-something wetlands have been restored. The primary purpose is to benefit the bird species that require wetlands for their reproduction. But the wetlands also serve a social function for bird -interested people. On several sites Holmen has placed paths, lookout towers and signs."
2007 Sustainability Report	Bird (2)	The Wetlands Investment	Diagnostic, Motivational	"Våtmarkssatsningen. Sedan slutet av 1900-talet samarbetar Holmen med Svensk Våtmarksfond om restaurering av våtmarker. Hittills har ett trettiotal av Holmens våtmarker restaurerats. Det primära syftet är att gynna de fågel arter som behöver våtmarker för sin fortplantering. Men våtmarkerna fyller också en social funktion för fågel intresserade människor. Vid flera av dem har Holmen iordningsställt stigar, utsiktstorn och skyltar."	"The Wetlands Investment. Since the end of the 1900s Holmen and Svensk Våtmarksfond cooperate to restore wetlands. So far thirty-something wetlands have been restored. The primary purpose is to benefit the bird species that require wetlands for their reproduction. But the wetlands also serve a social function for bird -interested people. On several these Holmen has placed paths, lookout towers and signs."
Statens Fastighetsverk	Search Term	Theme	Function	Quote	

X	X	X	X	X	
Södra	Search Term	Theme	Function	Quote	Own Translation
2018 Annual and Sustainability Report	Capercaillie (1)	Species Protection Ordinance	Diagnostic	"Tyvärr känner sig många medlemmar idag utsatta när det gäller rätten att bruka sin skog enligt principen frihet under ansvar. Ett aktuellt exempel är det så kallade tjädermålet där Södra bistått markägaren som är Södramedlem och överklagat den dom som förbjöd avverkning."	"Unfortunately today many members feel exposed concerning their right to manage their forest according to the principle of freedom with responsibility. One current example is the so-called capercaillie -case where Södra has assisted the land owner that is a Södra-member and appealed the verdict that forbid felling."
2017 Annual and Sustainability Report	Bird (2), Birds (4)	Forest Birds	Diagnostic	"Positiv trend för skogens fåglar . Forskare vid Lunds universitet har med hjälp av data från svensk fågeltaxering och riksskogstaxeringen försökt utreda om det finns någon koppling mellan förändringar i fågelfaunan och utvecklingen i skogen. Den studerade perioden 1998-2015 visade att av 58 arter skogs fåglar har 33 ökat, 6 minskat medan 19 arter låg kvar på en stabil nivå. Av riksskogstaxeringen framgår att skogsbruket naturhänsyn har medfört arealen lövskog och gammal skog ökat sedan 1995, liksom mängden död ved och antalet hänsynsträd. En faktor som också vägs in i studien är klimatförändringen med stigande sommartemperaturer. Studien medger dock inga säkra slutsatser huruvida ökade naturvärden eller varmare klimat, eller en kombination därav, är förklaringen till den positiva trenden för flera av skogens fåglar ." ... "Ökad naturhänsyn med mera lövskog och döda träd har medfört att antalet skogs fåglar har ökat."	"Positive trend for forest birds . Scientists at Lund University have, with the help of data from 'svensk fågeltaxering and 'riksskogstaxering' tried to investigate whether there is any connection between changes in the bird fauna and the development in the forest. The studied period 1998-2015 showed that out of 58 species of forest birds 33 increased, 6 decreased and 19 species remained at a stable level. From 'riksskogstaxeringen' it is evident that the nature consideration of forestry has entailed that the area of deciduous forests and old forests has increased since 1995, just like the amount of dead wood and the amount of retention trees. One factor that is also considered in the study is climate change with increasing summer temperatures. However, the study admits that there are no certain conclusions whether increased nature values or warmer climate, or a combination of both, is the explanation to the

					positive trend for several of the forest birds. " ... "Increased nature consideration with more deciduous forests and dead wood has brought an increase in the number of forest birds. "
2017 Annual and Sustainability Report	Capercaillie (1)	Species Protection Ordinance	Diagnostic	"Vi har också engagerat oss hårt i frågan kring artskyddsförordningen, exempelvis de orimliga konsekvenser som fallen med bombmurklan och en tjäderspel plats får för den enskilde medlemmen och skogsägaren. Att mark- och miljödomstolar i olika delar av landet gör olika tolkningar av artskyddsförordningen är närmast en skandal."	"We have also got properly engaged in the question of the species protection ordinance, for instance the unreasonable consequences such as the cases with the sarcosoma globosum and a capercaillie lek site has for the individual member and forest owner. That the land and environmental courts in different parts of the country make different interpretations of the species protection ordinance is close to scandalous."
2008 Annual Report	Birds (1)	Cultivation	Diagnostic	"Idéerna handlade om allt från att hindra att transportörer slirar så att krukorna inte åker in i tvätten som de ska, till att minska problemet med att fåglar äter upp frön i växthusen."	"The ideas involved everything from preventing sliding during transportation so that the pots do not get into the cleaning process properly, to decreasing the problem with birds eating the seeds in the greenhouses."
Mellanskog	Search Term	Theme	Function	Quotes	Own Translation
2019 Annual and Sustainability Report	Bird (1), Siberian Jay (2)	Species Protection	Diagnostic, Motivational	"Medlemmar i Hälsingland får inte avverka sin skog eftersom lavskrikan häckar där. Mellanskog har stöttat medlemmarna i detta principiellt viktiga fall, där vi menar att svenska myndigheter övertolkar	"Members in Hälsingland are not permitted to fell their forest since the Siberian jay nests there. Mellanskog has supported the members in this principally

				EU:s artskyddsdirektiv. Lavskrikan är en fågel som finns på många platser och har god bevarandestatus."	important case, where we hold that Swedish authorities are over-interpreting EU's Birds and Habitats Directive. The Siberian jay is a bird that is located in many places with a favourable conservation status."
2019 Annual and Sustainability Report	Birds (2), Woodpecker (1), Owls (1)	Nature Consideration	Diagnostic, Prognostic, Motivational	"Dessutom gynnar högstubbarna skogens fåglar , till exempel hackspettar , mesar och ugglor som behöver högstubbarna både för mat och boende." ... "Men i våra medelålders gallringsbestånd, som uppkom innan 90-talet, är det ont om grövre död ved. Samtidigt är det just den grövre veden som är viktig för många insekter och fåglar . Toppar, gallringsris och självgallrande träd är kläna och ruttar snabbt bort. De passar också ganska få av de arter som behöver hjälp. - Så det är extra viktigt att vi kommer igång med högstubbar vid gallringen, säger Åsa Öhman. Vi har under flera år haft en positiv trend där vi under flera år blivit bättre och bättre på död ved. Under två år har siffrorna blivit sämre, men nu ska vi vända trenden under 2020!"	"Additionally, the high stumps benefit forest birds , for instance woodpeckers , tits and owls that require high stumps both for food and nesting." & "But in our middle-aged thinning stands, that were created before the 90s, there is a lack of coarser dead wood. Simultaneously it is the coarse wood that is important for many insects and birds . Treetops, thinning debris and self-thinning trees are weak and quickly rot away. They also benefit few of the species that require aid. - So it is extra important that we start with high stumps when thinning, says Åsa Öhman. We have during several years had a positive trend where we during several years have gotten better and better at dead wood. During the past two years the numbers have gotten worse, but now we will turn the trend during 2020!"
2017 Annual and Sustainability Report	Birds (1)	Environmental Objectives	Diagnostic, Prognostic, Motivational	"Alla avverkningar på certifierade fastigheter ska vara godkända enligt PEFC-certifieringens krav gällande död ved. Död ved är bland annat viktig för skogens insekter och fåglar . Vi ser en förbättring jämfört med föregående år, men 8% av objekten underkändes. Därmed uppnåddes inte målet och åtgärder och uppföljande kontroller kommer att genomföras."	"All felling on certified properties should be approved according to the PEFC-certification's demands regarding dead wood. Dead wood is for instance important for the forest's insects and birds . We see an improvement compared with previous years, but 8% of the object were failed. Therefore the goal was not reached and actions and follow-up controls will be conducted."

Norrskogen	Search Term	Theme	Function	Quote	
X	X	X	X	X	
Norra Skogsägarna	Search Term	Theme	Function	Quote	Own Translation
2011 Annual Report	Birds (1)	Crowberry	Diagnostic, Motivational	"De svarta bären har en fadd och lite best smak, är inte särskilt goda att äta, men utgör viktig föda för många fåglar - till exempel för spovar under deras flytt söderut."	"The black berries have an insipid and a little bitter taste, are not particularly good to eat, but constitute an important food for birds - for instance for curlews during their flight south."