



Swedish Society for Nature Conservation

## Report

Under the Cover of the  
Swedish Forestry Model

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The coverphoto show a cut down *Salix caprea*, a tree with high biological values. The *S. caprea* constitute a habitat for the threatened, red listed and protected wood living fungi *Haploporus odorus*, a species practically only found on the *S. caprea*. According to the certification FSC, *S. caprea* shall not be felled, but be considered as a nature value tree. The clear felling where this logged tree, inhabited by the protected *H. odorus*, was conducted by SCA in violation with the FSC-standard. Photo: Hans Sundström

# Foreword

Even though forests cover practically half of Sweden's land mass there is a biodiversity crisis in the Swedish forests. Since the 1950's the Swedish forestry industry has turned enormous areas of pristine forests into vast oceans of production landscapes and today, more than 90 per cent of the productive forests are affected by forest management. Despite the fact that only 5 percent of the natural old growth forests with very high conservation values, known as *core sites*, remain below the montane region, natural forests with great importance for nature conservation are being clear felled at an alarming rate, even by companies holding a certification that promises sustainable forestry. For four years, the Swedish Society for Nature Conservation has documented the Swedish forestry model in practice. The result is very discouraging; forests with documented high biodiversity values are being slated for logging and often clear felled, as are forests with Woodland Key Habitat Structures. We have documented violations of the, so called, environmental certifications as well as the Forestry Act, together with destroyed biotopes for red listed species. Despite this, Sweden is considered to be prominent in the forestry sector, with a good reputation for what is perceived as a sustainable forestry. The Swedish forestry model is in reality contributing to growing monoculture in the forests, with clear cutting as the default method, soil scarification and the use of

non-native species.

The Swedish Red List of Species continues to grow; still we witness forests with biotopes for threatened, endangered, as well as critically endangered species being logged. The once vast areas of the pristine forests of Sweden have in the past 60 years turned into large areas of young forests, not yet ready to be logged. Therefore the remaining natural forests are disappearing – alarmingly fast.

In 2010 an agreement was made at the United Nation conference in Nagoya, stating that within 10 years, 17 per cent of the land area – in ecologically representative and connected areas – is to be protected. As the Swedish minister of environment has concluded, the biggest challenge in Sweden will be the protection of 17 per cent of the productive forests. Still, the environmental movement received the message from Nagoya and the Swedish government with hope and expectations for the future. In order to secure these areas, there has to be a stop to the destruction of the natural forests in Sweden - there is no time to wait.



Karin Åström,  
Vice President, Swedish Society for Nature Conservation

Photo: Frédéric Forsmark



# Introduction

The year of 2010 was the year when the loss of biological diversity should have been halted, according to the 2010 biodiversity target<sup>1</sup>. It was also the year when the Swedish Species Information Centre presented the new Red List of species, which concludes that the number of red listed species in forests has increased since 2005. As we are entering 2011, the year when the United Nations General Assembly will launch the International Year of Forests<sup>2</sup>, only 5 per cent of Swedish forests with very high nature conservation values, known as *core sites*, remain below the montane region.<sup>3</sup> 2011 is also a year when many natural forests with documented<sup>4</sup> high biodiversity values in Sweden are at very high risk of being clear felled.

Sweden's forests have long had a rich biodiversity of species that are adapted to the forest ecosystems that evolved after the melting of the inland ice, some 10 000 years ago. In these forests the conditions for the species were met, and for thousands of years, the Swedish forests and their biodiversity have developed naturally. The forests have experienced both small and large-scale natural disturbances, such as storm-fells, wild fires, insect infestation and flooding – disturbance regimes that are essential for a healthy forest ecosystem and create the necessary niches needed for the survival of a range of species. Since the early 1900s, however, modern forestry has suppressed and changed these natural influences drastically. At the same time the logging has intensified in many areas. As a consequence there is a biodiversity crisis in the Swedish forests. The once vast and coherent areas of old growth boreal forests in the northern part of Sweden are suffering a major transformation due to fragmentation. The former large areas of deciduous forests in the mid- and southern part of Sweden have almost disappeared within the last century.

This is all a result of modern forestry. There has been a large-scale conversion from the old growth and natural forest areas to homogeneous tree plantations, where the original tree species composition has been replaced by other species and with trees of the same age. In part, these plantations consist of non-native species.

The Swedish forestry model is, by the forestry sector, promoted nationally and internationally as being superior by reason of its sustainable forestry methods. This model recommends clear cutting as the default method. It also allows the systematic use of chemicals, soil scarification, plantation forestry and non-native species. The age distribution in the Swedish forests is very uneven, dominated by planted production forests of the ages 0-80 years. Only a fraction of forests over 120 years old remain in the country. Even so, these old forests are still being clear felled, every day, to feed the industry with raw material. Since the late 1950's, when the clear cutting epoch started, more than 90 per cent of the productive forestland has been transformed.

We face a huge challenge to save what is left of the biologically valuable forests and the forest biodiversity of Sweden. At least 20 per cent of the forests need long-term protection to secure the forest biodiversity, according to a long list of leading scientists in the field.<sup>5</sup>

This report is a sequel to the report "*Cutting the Edge – The Loss of Natural Forests in Sweden*" (published in March 2010 by SSNC, (<http://www.naturskyddsforeningen.se/upload/press/rapport-cutting-the-edge.pdf>), where some background facts are presented. In line with that report, SSNC argues that Sweden still has a long way to go before the forest biodiversity is secured. The threat to the natural forests is still acute. And very real.

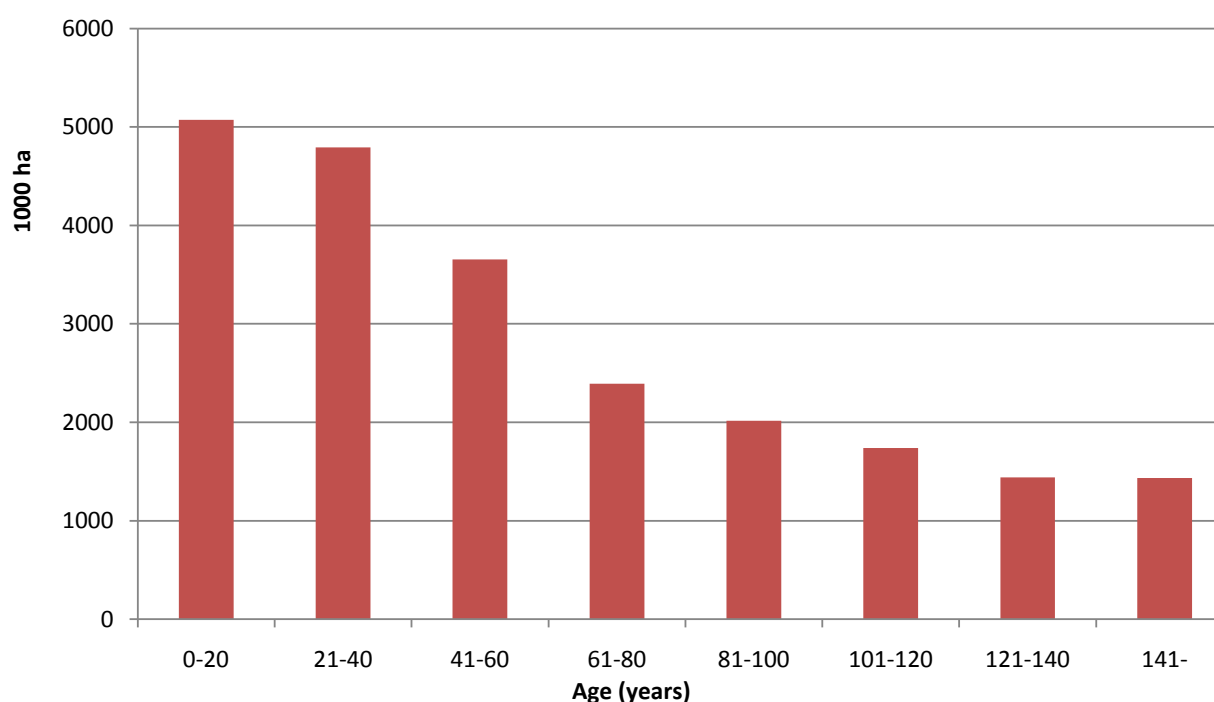
# The Swedish Forest Landscape – Past and Present

The Swedish boreal forest is part of the coniferous forest belt south and north of the Arctic Circle. The forests evolved when the thick inland ice started to melt, some 10 000 years ago. For thousands of years natural disturbances such as forest fires, storms and flooding formed the forest ecosystem. The Swedish natural forest landscape consisted, prior to human impact, of forests in different age classes; from young forests born from natural disturbances to old growth forests. The latter has been estimated to cover approximately 40 to 60 per cent of the landscape prior to human impact.<sup>6</sup> This stands in stark contrast to the age distribution in the forests of today where less than five per cent are classified as old growth forests.<sup>7</sup> Humans began using the fo-

rests early to create settlements, for fuel and implements, charcoal etc. Smaller parts of the forest were felled in order to make room for the agricultural development. The forest ecosystem was affected but generally not spoiled, and large coherent forests still dominated the country.

In the middle of the 19th century, with the development of the sawmill industry, the demand for raw timber grew stronger, especially in the river valleys. Since then the exploitation of forests has increased, first with selective methods as high grading and later clear cutting. However, the most devastating transformation of the landscape has taken place mainly over the past 60 years. During the 20th century the forests have been heavily shaped by industrialized forest

Age distribution of productive forest 2005–2009



Source: Swedish National Forest Inventory.



Sörberget, municipality of Jokkmokk, County of Norrbotten. This area used to be part of the reindeer grazing land of the Sami. According to the Sami community in the area large parts of the grazing land was clear felled in the 1980s, and a large storm felled the rest of the forest in 1991. The picture is taken 15 years after the storm, when Sörberget had been further managed by removal of the stormfelled wood, soil scarification and plantation. The regeneration has not succeeded and the area is still unfit for reindeer grazing. Photo: Frédéric Forsmark

management.<sup>8</sup> Today, methods such as large scale clear cutting, plantation forestry, the introduction of exotic tree species, soil scarification and the use of pesticides characterize the Swedish forestry. Also, the rotation time for the majority of the forestland has shifted from several hundred years to 60-80 years. In the 1960s and 1970s the clear cutting method fully replaced the less devastating dimensional cuttings as the default method with the result that large areas of natural forests were turned into plantations, especially in the northern part of Sweden. This implies large scale changes within the natural forest dynamics with suppression of natural forest fires and short rotation time as well as forest fragmentation and changes in structure such as the reduction of natural forests, declining components of hardwood and dead wood.

As a result of this forest transformation, many indige-

nous forest species can no longer survive in the majority of Swedish forest stands. Despite the fact that more than 90 per cent of the forest has been transformed into managed forests, Sweden has not yet managed to protect the last remnants of the old-growth forests, nor safeguarded some of the most threatened species. The remaining old-growth forests are still being felled and due to the uneven age distribution in the forests, the industry has a predominant interest in logging old forests. Since the introduction of large scale forestry, Swedish forestry has mainly focused on production of conifers. To raise the production value of the forest land, wet deciduous forests were drained and pesticides were used to benefit the plantations of conifers. The result is a crisis for many endangered species dependent on deciduous forests.<sup>9,10</sup>

# The Swedish Forestry Model Depletes Forest Biodiversity

Under the terms of the Convention on Biological Diversity (CBD), Sweden has made a commitment to protect biodiversity and to use natural resources sustainably. Sweden still holds a large proportion of the remaining high conservation value forests in the European Union (EU), and therefore has a great responsibility to prevent the loss of forest biodiversity within the EU. Sweden is considered to be at the forefront in the forestry sector, and the Swedish forestry model has a reputation for sustainable forestry methods internationally. This image of sustainability in today's use of the forests in Sweden – created and energetically promoted by the industry itself – is highly misleading, however. The last old-growth forests in the country are being logged at an

alarming rate. Homogenous plantations can never achieve the diversity of the original forests that are disappearing.

The Swedish model is promoting a monoculture in the forests. Also, despite the fact that Sweden has signed international agreements committing not to spread alien species in the country, non-native tree species are being used on more than 2.4 per cent of the productive forest land, replacing the former old growth forests. In addition, an investigation commissioned by the government proposes increased production and intensive cultivation of forests, through intensified fertilization, use of spruce clones and exotic species to achieve these objectives.<sup>13</sup> The proposal involves large areas, almost 15 per cent of the productive forest in a forest

Example of the Swedish Forestry Model. A clear felling, performed by the state owned and FSC-certified company Sveaskog, of a natural forest in Norrbotten. Photo: Björn Mildh





Example of the Swedish Forestry Model. Clear felling, and soil scarification of a former natural pine forest in Värmland, preformed by the forest company Stora Enso. Photo: Sebastian Kirppu

ecosystem, much of which is already heavily degraded by impoverishing forestry practices. After 100 years of intensive forestry the forest landscape is predominantly comprised of managed forests and plantations in various stages of development from clear cuts.<sup>14</sup>

The Swedish Forest Policy from 1993 states two equally important targets: the production of raw forest material and the preservation of biological diversity. The latter target is formulated in detail in the environmental quality objective “Sustainable Forests”. It states that the value of woodlands for biological production must be protected, at the same time as biodiversity, cultural heritage and recreational assets are safeguarded.<sup>15</sup> The requirements of the Swedish Forestry Act, regarding environmental issues, are set very low but are based on a good deal of responsibility from the forestry sector. However, forests with high conservation values are being logged as of today. Also, the Act is focused mainly on profitable forest production rather than on the two, equal objectives. The fundamentals of the Swedish forestry model, regarding protection of biodiversity in forests, rely on a combination of formally protected areas, voluntarily set aside areas and general conservation consideration measures in forest management.<sup>16</sup> Also, the state and state-owned companies are expected to take considerable responsibility to preserve the natural values on their own land holdings.<sup>17</sup>

Monoculture of the exotic species *Pinus contorta* in Norrbotten. Only some very small patches of natural forest remain in the landscape (seen on the ridge of the hill). Photo: Hans Sundström







Sörberget in Jokkmokk, County of Norrbotten. Photo: Frédéric Forsmark.

### **Voluntarily Set Aside Forests**

Significant areas of woodland have been set aside for conservation purposes on a voluntary basis, in particular by the larger landowners. However, for voluntarily set aside forests, there is a considerable uncertainty about their quality and long-term protection. Land owners certified by the Forest Stewardship Council (FSC) and Programme for the Endorsement of Forest Certification (PEFC), are obliged to keep a certain percentage set aside for protection, but there is nothing to stop them from exchanging one area for another in order to log a previously set aside area.

Studies carried out by NGOs show that valuable set aside areas with high conservation values on productive forest land get exchanged<sup>18</sup>. Also, some of the set aside forests are low productive forests with less economical value compared to the more biological valuable, productive natural forests. In regards to the forest Act, the low productive forests are not allowed to be logged. Some forest owners have started an evaluation of their set aside areas, since little is known about their qualities even to the land owners. This evaluation has long been requested by NGOs. There is, however, no halt to the loggings of productive forests with documented high biological values during this evaluation. This is very serious, given that more than half of the long-term protection within the environmental quality objective "Sustainable Forests" is founded on voluntary set asides of still largely unknown biological qualities and importance.

### **General Nature Consideration**

Mandatory by law, the general nature conservation considerations in forestry include leaving buffer zones along watercourses and lakes and retaining single trees and groups of trees on clear cuts in order to life-boat species that are dependent on the structures of the natural forest. What long-term effect this nature consideration has on the species is difficult to assess given that this has been a requirement only since the mid-1990's. A study carried out in 30 to 70 year old stocks shows that red listed species were found only on the retention trees left on the clear cuts.<sup>19</sup> This study also shows that very few species had colonized the younger trees, which, contrary to the trees in a natural forest, are fast-growing and will be clear felled again within 60-100 years. General consideration, even though it constitutes an important piece in the puzzle of sustainable forestry, can never replace the values of the natural forest that is felled. The retention trees that many red listed species depend on will eventually decay, and the replacing, fast growing and planted forest, offers no suitable habitat for the species to survive on in the long-term. Also, the Swedish Forest Agency's inventory program for monitoring progress toward the environmental objective of 2009 shows that as much as an average 29 per cent of the logged areas do not fulfill the low set requirements for nature conservation of the Forestry Act.<sup>20</sup>



A FSC-certified clear cut of a former natural pine forest conducted by Sveaskog in Norrbotten. Photo: Björn Mildh

### **Certification – a Market Tool Failing to Safeguard Nature Values**

An essential fundament of the Swedish forestry model is “freedom with responsibility”. This implies that the authorities, government and the forestry industry have a shared responsibility to contribute to a sustainable society through sustainable use of the forest.<sup>21</sup> Simply put; all forest owners have the freedom to decide how to manage their forests within the rather wide framework of the legislation. The responsibility comes with preservation of the forest biodiversity, which is a responsibility of all forest owners. Besides the legislation, FSC and PEFC certification makes an important contribution to the improvement of overall environmental awareness in logging.<sup>22,23</sup> This is despite the fact that these systems are voluntary, and far from all land owners are certified.

Field studies carried out by NGOs for several years show that a remarkable number of loggings do not fulfill the certification standards key requirements for nature conservation.<sup>24</sup> There are numerous examples of documented forests with Woodland Key Habitat (WKH) structures and qualities that are slated for logging by FSC-certified land owners, in spite of the fact that the FSC-certified companies have declared that they will not conduct forestry within WKHs for other purposes than to protect nature values. Another criterion in the FSC-standard states that natural forests with high nature values must not be felled.<sup>25,26</sup> Despite this criterion, SSNC has, for several years, documented hundreds of natural forests with high nature values being slated for logging as well as being felled.<sup>27</sup> Regarding the PEFC standard, the certification is no guarantee for protection of WKHs since the land owner is only obliged to set aside five per cent.

Any WKH outside these five per cent can be subject to logging in accordance with the PEFC-standards criteria.

Although SSNC initiated FSC in Sweden some 15 years ago, SSNC has now left the program.<sup>28</sup> The decision was based on the fact that FSC-certified companies violate the FSC standard without any effective measures taken by the FSC or the accredited Certification Bodies (CB). These companies even violate the weak Swedish Forestry Act. Despite all the shortcomings of the large forest companies to comply with the FSC-standard, the largest FSC certified companies in Sweden have joined forces to formulate a common position on certification issues to ensure that Swedish comments from the forestry sector will be considered in the development of a new international FSC-standard.<sup>29</sup>

#### **Woodland Key Habitat and FSC**

Woodland Key Habitat (WKH) is a qualitative concept that is based on a combined assessment of the habitat structure, species composition, history and physical characteristics. WKHs have tremendous significance for the flora and fauna of the forests. They contain, or can be expected to contain, red-listed species (source: Swedish Forest Agency). Unlike the formally protected forests, the WKHs lack legal status, and are therefore not effectively protected against logging. The national WKH Inventory (1993-1998 and 2001-2006) stated that only an estimated 20 per cent of the WKHs have been identified. (Source: Swedish Forest Agency). Forest owners, certified by the FSC have committed to not log WKHs. (Source: [www.fsc-sverige.org](http://www.fsc-sverige.org))

# Swedish Forest Industry has a Major Responsibility for the Extinction Debt

That forestry has a negative impact on forest biodiversity is an established fact. Destruction of important habitats for species naturally results in enormous consequences for the species dependent on these habitats. However, not all organisms die immediately after their habitat has disappeared. Extinction occurs with a certain delay.<sup>30</sup> This is referred to as “extinction debt”, and it may lead one to the conclusion that species richness is stable in an environment where certain species in fact are doomed to extinction due to habitat loss.<sup>31</sup> During the 20th century the forests have been increasingly shaped by industrialized management that has resulted in a landscape where only minor parts have the maintained traits characteristic of old growth forests.<sup>32</sup> As a result of this forest transformation, many indigenous forest species can no longer survive in the majority of Swedish forest stands.<sup>33</sup> Species are pushed back into

In 2009, SCA logged a WKH in Jämtland, failing to identify the forest's obvious high nature values. Photo: Hans Sundström



## The Red List

The Red List presents the extinction risk facing different species. The 2010 Swedish Red List is the result of an evaluation of the survival chances of almost 21 000 Swedish species. The species which are categorized as threatened are the ones that have met the criteria CR, EN or VU. The Red List is based on the post 1993 IUCN Red List Categories and Criteria. The categorical structure of the Red List is as follow (source: Swedish Species Information Centre);

RE – Regionally Extinct  
 CR – Critically Endangered  
 EN – Endangered  
 VU – Vulnerable  
 NT – Near Threatened  
 LC – Least Concern  
 DD – Data Deficient

shrinking isolated islands of natural forests in the production landscape. For nature conservation the phenomenon of extinction debt poses new challenges, especially in regions like old growth boreal forests in which large areas of natural habitats have been lost in recent decades. In such regions, many species can go extinct long after the destruction of habitats has been stopped.<sup>34</sup> Even though the loss of biodiversity should have been halted in 2010, the Red List of forest living species in Sweden has increased since 2005. Of the total of 4127 red listed species in Sweden today, 2131 species are forest living (51.6 per cent), and of these, 1787 are entirely dependent on forests.<sup>35</sup> The species loss in the forests is primarily caused by forestry practices –through direct loss of habitat and through indirect effects of forestry such as ditching or mechanical damages from forestry machines and transport.

# In The Importance of Biodiversity

Biodiversity is the degree of variation of all forms of life on Earth and within a given ecosystem. Even if there is a natural selection within and between species, all species depend on the services provided by other species to survive. It is a kind of unplanned cooperation which is often referred to as a “balanced ecosystem”. For the assessment of biodiversity, three attributes are considered<sup>36</sup>:

- Composition describes the parts of each biodiversity component in that area (for example, habitat types, species present, genetic diversity within species).
- Structure refers to the physical characteristics supporting that composition (for example, size of habitats, forest canopy structure, etc).
- Function means the ecological and evolutionary processes affecting life within that structure (for example, pollination, natural disturbances, predator-prey relationships)

The complexity of biodiversity is measured in terms of variations at genetic, species and ecosystem levels and the Earth’s biodiversity is in a constant state of flux.<sup>37</sup> Ecosystems provide direct benefits like the recycling of essential elements, such as carbon, oxygen, water and nitrogen which play a critical role in meeting human needs on which our survival depends. In a properly functioning ecosystem the

*Antrodia crassa*. Photo: Olli Manninen



components are inseparable and act upon each other.<sup>38</sup> Biodiversity is also crucial for mitigating pollution, protecting watersheds, and combating soil erosion. It is, of course, also the origin of agricultural crops as well as medicines etc. Biodiversity can also buffer against excessive variations in weather and climate as well as protect us from catastrophic events beyond human control.<sup>39</sup> The biodiversity is maintaining vital processes, and the extinction of each additional species brings the irreversible loss of unique genetic codes, the result of an evolutionary process over millions of years. The rate of species extinction, the most common measure of biodiversity loss, has never been higher. We are in the middle of the sixth mass extinction on Earth, the only one caused by one single species. Virtually all of the loss is caused by human activities, mostly through habitat destruction and overhunting. By threatening and overexploiting the ecosystem - and thus, the biodiversity - we are threatening our own existence.

## *Critically Endangered – Antrodia crassa*

The wood living fungus species *Antrodia crassa* is found on no more than approximately 20 localities in Sweden. The species grow in unevenly aged, natural conifer forests (preferably pine) that are untouched or only marginally affected by human activities.<sup>40</sup> The species lives exclusively on coarse, burnt conifer dead wood. The total number of the species in the country has been reduced, and is expected to decline further due to decreasing supply of substrate needed.<sup>41</sup> The total number of *A. crassa* is estimated to have declined more than 15 per cent over the last 20 years as a consequence of its biotopes being clear felled by the forest industry.<sup>42</sup> Since habitats for the *A. crassa* is still being felled, the number will most likely continue to decline. Despite recommendations from the Species Information Centre, that all known occurrences of the *A. crassa* must be protected, areas with documented findings of the species are still being felled. SSNC have documented localities with the species that, in spite of the land owners’ awareness of the species presence, have been logged.

*Critically Endangered – Pycnoporellus alboluteus*

*Pycnoporellus alboluteus* is a wood living fungus with very specific requirements since it demands virgin like, highly productive spruce forests.<sup>43</sup> Unfortunately, highly productive spruce forests are also of a great economic interest to the forest industry. The species is known to be found in seven localities in Sweden, all of which are protected. The acute threat to the species still remains, however, since their forest habitat is very rare outside reserves in Sweden due to the modern forestry – the lack of suitable habitats in the forest landscape is alarming.<sup>44</sup>

*Critically Endangered – Dendrocopos leucotos*

The white-backed woodpecker, *Dendrocopos leucotos*, is among the most endangered species in Sweden. This specialized species also serves as an umbrella species for more than 200 other different red listed species linked to the same habitat; deciduous old growth forests. Research has shown that a number of red listed cryptogam species expected to benefit from conservation actions directed at the white-backed woodpecker habitats where the woodpecker bred is higher compared to where it was absent.<sup>45</sup> The white-backed woodpecker has drastically and rapidly declined over the last decades. Earlier it was widespread within 17 of Sweden's 24 counties, today there are only approximately 10 individuals to be found in the whole country.<sup>46,47</sup> The species faces extinction if measures are not taken immediately. The primary reason for the decline in Sweden is due to the large scale transformation of the forest landscape by modern forestry.<sup>48</sup> The vast areas of deciduous forests with a high amount of dead wood, vital to the white-backed woodpecker, have within the last decades been replaced by monocultures of conifers. Despite a national action program for the white-backed woodpecker with protection and restoration of habitats, the species is still on the verge of extinction.



To the left: The critically endangered white backed woodpecker. Only, approximately, 10 individuals are to be found in Sweden and the species is facing extinction if measures are not taken immediately. Photo: Ingvar Stenberg

Below: The *Pycnoporellus alboluteus* (seen on the lying dead spruce) needs virgin like highly productive spruce forests for their survival. Due to the modern forestry and the high demand on raw material, this type of forest is very rare in the landscape of Sweden. Photo: Hans Sundström

**Umbrella Species**

The concept of an umbrella species has been used by conservationists to provide protection for other species dependent on the same habitat as the umbrella species. Animals identified as umbrella species typically have large home ranges that cover multiple habitat types. Therefore, protecting the umbrella species effectively protects habitat types and the many species that depend on those habitats.

**National Species Action Program**

Some species and biotopes are threatened to the extent that immediate measures are needed for their survival. For these species or biotopes, national action plans are established with specifically targeted efforts. The action plan is not formally binding but indicates measures needed for species survival.



# The use of Woody Biomass as Renewable Energy – a Threat to Biodiversity?

The demand for woody biomass for the production of bio-fuel is increasing. The EU Renewable Energy Directive, agreed at the end of 2008, requires that 20 per cent of the EU's energy consumption be derived from renewable sources by 2020.<sup>49</sup> 60 per cent of the EU's renewable energy production is based on biomass, 80 percent of this biomass is wood.<sup>50</sup> Today, the forests deliver 17 per cent of the energy consumed in Sweden, including residues such as tops and branches (GROT).<sup>51</sup> Until recently the stumps from logged trees were considered economically insignificant. Today there is a growing interest in stumps from the government for its potential as energy source, as well as the industry for its economical value. Seen in the light of the fact that natural forests are being logged at an alarming rate in Sweden, this potential energy source raises a new potential threat to the forest biodiversity.

Swedish silviculture of today has a significant impact on the forest ecosystem with well-known negative consequences for biodiversity and social values. If the government

Harvesting of stumps from a clear felled natural forest in Jämtland. The Swedish Church own the land and are responsible for the devastating effects on the natural environment due to massive soil damage, loss of habitats for red listed species and the felling of a natural forest in an already fragmented landscape. Photo: Hans Sundström



## The Boreal Forests – Massive Carbon Stores

Research has shown that old growth boreal forests constitute an enormous carbon bank, storing larger amounts of carbon than any other terrestrial ecosystem.<sup>56</sup> Canadian scientists recommend that at least half of the global boreal forests should be protected in order to mitigate climate change.<sup>57</sup> Approximately twice as much carbon is stored in the ground as above in the boreal forests. The cutting of old growth forests, with the accompanying soil scarification used in the Swedish forestry model, will release carbon from the ground to the atmosphere as carbon dioxide. Even so, the forestry sector argues that clear cutting followed by replanting is one of the solutions to reduce the emissions of greenhouse gases in Sweden.<sup>58</sup>

adopts the proposal of intensified forestry,<sup>52</sup> including harvesting of stumps, additional stress will be put on the environment. Also, residues might be used as an additional source of biomass. Dead wood, however, is an important habitat to various red listed and endangered species in the forest ecosystem. After a logging, it is of greatest importance that dead wood is left on the clear cut for the potential life-boating of these species. The importance of stumps for biodiversity and species must be taken into consideration when discussing the extent of harvesting of stumps. Stumps from felling of natural forests should never be harvested. Approximately 60 per cent of the coarse dead wood in the forest landscape is derived from felling of trees.<sup>53</sup> These stumps represent habitats for many insect species which would, with an increased harvesting of stumps, be likely to lose large quantities of vital substrate. Harvesting of stumps would also involve the use of heavy machines which may cause considerable disruption that could lead to soil erosion and depletion.<sup>54</sup> It may also negatively affect the carbon balance as well as the flow of emissions,<sup>55</sup> such as the release of mercury in the water streams.

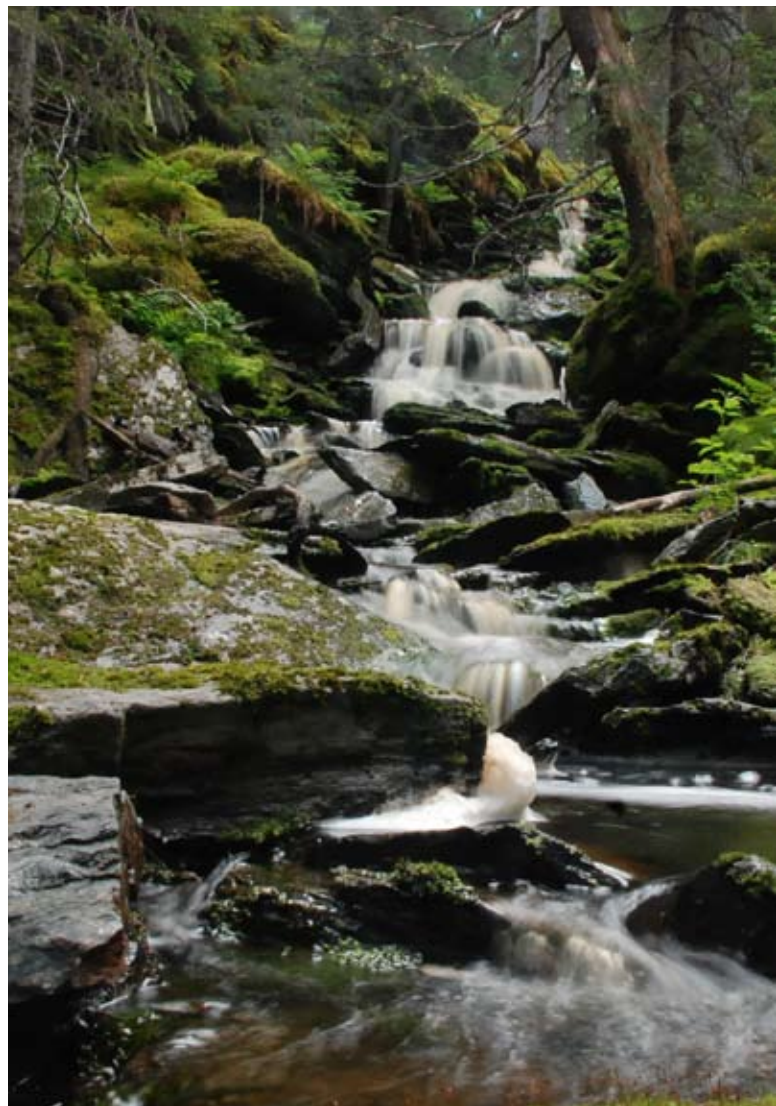
# The Swedish Forestry Model in Practice – Case Studies

SSNC has for several years, in the field, reviewed the forestry practices in Sweden with regard to nature conservation consideration as well as the enforcement of the legislation and certification. The purpose of the field visits is to map forests with high conservation values with the overall objective to save as much of the remaining natural forests as possible. The field investigations have mainly been focused on the large forest companies in Sweden, but some small holders have also been reviewed. More than 700 threatened natural forests have been visited by SSNC since 2007. The majority of the forests visited have been slated for logging or already logged at the time of the visit. The field studies focus on mid- and northern Sweden since there still are some coherent boreal forests left in these regions. The documentation focuses mainly on forest structure and the occurrence of old growth forest indicators and red listed species. Many of the species found are threatened directly by the drastic changes in Swedish woodland habitats.<sup>59</sup> Still, their habitats are being slated for logging as well as being logged systematically. The findings have been documented with GPS (Global Positioning System) coordinates and the forests' structure and history have been documented and thoroughly photographed. Despite the core principles of Swedish forest policy, in which the dual targets for environment and production, respectively, are equally important, and "forest sector responsibility", which holds the landowner responsible for adjusting their forestry operations so as to minimize the negative impact on the natural environment – the majority of the visited and documented forests slated for logging have – or had – high conservation values. This is unacceptable, especially considering how few high quality forests there are left in Sweden today. The forest companies as well as the Swedish Forest Agency and County Administrative Boards have been informed of the nature values found in the forests by SSNC; still many of the visited areas have been, or are planned to be, logged.

The forestry practices of three of the largest forest companies in Sweden: SCA, Sveaskog and Stora Enso will be

accounted for in the following pages. This does not relieve other forest companies of their responsibility for the negative impact on the natural environment that the forest industry has caused within the last decades. Among the other companies and forest owners reviewed are Holmen Skog AB, Korsnäs, the National Property Board, the Church of Sweden, Weda Skog, Mellanskog, Prima Skog, Norrskog, Norske Skog, Lima Forest Commons and Orsa Forest Commons. In clear fellings conducted or initiated by all these companies, SSNC has found major deficiencies in nature consideration.

A threatened forest in Jämtland. The company Persson Invest has notified the forest for clear felling. Practically no visible consideration was, at the time of SSNC's visit, taken to the stream. Photo: Malin Sahlin





A service road built by SCA through a forest on Bräntkullarna that, determined by the Swedish Forest Agency, is a WKH. SCA had planned to clear cut the valuable forest. Photo: Olli Manninen

## SCA

SCA is an international company which primarily develops consumer products such as personal hygiene articles and tissue paper. SCA's largest markets are found in Germany, Great Britain, France, USA and Sweden. Products such as Tena, Libero, Tork, Libresse, Bodyform, Danke and Edet are all produced by SCA and certified by FSC.<sup>60</sup> SCA has a long history of poor nature consideration including loggings of WKH and forests of high conservation value, as well as the felling of nature value trees and poor consideration to red listed species.<sup>61</sup> In 2009 and 2010, SCA initiated several measures in order to conduct their loggings in a more sustainable fashion and to comply with their own sustainability strategy as well as the FSC-standard. The results from field studies on SCA landholdings show, however, these measures to be far from satisfying. SCA still, in 2010, notifies forests with WKH structures for logging, cut down nature value trees and fail to recognize nature values when planning forests for logging.

### SCA, Bräntkullarna – County of Västerbotten

In the summer of 2010, a local branch of SSNC, in the municipality of Vilhelmina, discovered a beautiful, spruce do-

minated, old-growth forest which had been notified for logging. The forest consists of a largely primeval spruce forest with very high conservation values.<sup>62</sup> During SSNC's field visit over 200 findings of 39 different red listed and endangered species were found. Much of the forest held woodland key habitat features, something that is confirmed by the Swedish Forest Agency. Despite these high values, SCA had already cleared some of the forest in order to build a service road into the core of the area. Also, the company had opened the possibility of establishing a rock quarry in the forest.

Over the years, SCA's has FSC accredited certification body (CB) has repeatedly reprimanded the company for failing to preserve WKHs. The most recent occasion was in 2009, when SCA logged a WKH, as well as many other forests of high conservation values, proving that the company still fails to recognize the values that it, through certification, has undertaken to protect. As a result of the alarm raised by SSNC, there is now an ongoing discussion between SCA and the County Administrative Board to form a nature reserve in the area of Bräntkullarna. SSNC has filed a formal complaint to FSC regarding the forest road built straight through a woodland key habitat.



### SCA, Andsjön – County of Jämtland

SCA has a long history of not complying with the criteria and principles of the FSC-standard. Since 2007 SSNC has documented several clear fellings where the company has failed to comply with the standard by cutting down nature value trees logged several WKH.<sup>63</sup> In the FSC audit of 2007, SCA received two major CARs, the most serious complaint a FSC accredited CB can raise, as a result of the company's lack of nature consideration at loggings. They were raised after SCA had cut down several nature value trees and logged a WKH. In 2009, SSNC discovered several logging sites where SCA had logged hundreds of nature value trees with fire induced bole scars in violation of the FSC-standard, as well as a logged WKH and primeval forest. Despite their blatant violations of the FSC-standard, SCA did not lose their certificate and in the summer of 2010, at Andsjön, in the municipality of Åre, county of Jämtland, SSNC discovered an ongoing logging where SCA was in the process of cutting down several nature value trees. Once again SSNC's conservationists had to witness the destruction of a biologically valuable forest by SCA. Parts of the trees, felled in violation of FSC rules, were transported from the site for industrial purposes.

A cut down tree with high biodiversity values at the site of Andsjön, logged in 2010. SCA failed to recognize the many nature value trees on this logging site, as they have done for several years on many logging sites. Once again SCA failed to comprise the FSC-standard. Photo: Hans Sundström



In this natural pine forest in Norrbotten, SSNC documented the critically endangered species *Antrodia crassa*. The land owner, SCA, was notified of the finding, but ignored the fact that the forest was a suitable habitat for the *A. crassa* and clear felled it. Photo: Per-Erik Mukka

### SCA, Långsjön – County of Norrbotten

In the municipality of Arjeplog SCA has clear felled almost 30 hectares of natural pine forest. SSNC visited the forest, before it got felled, in the summer of 2010. The forest had visible traces of old forest fires and held an abundance of lying dead wood, crucial for many threatened and endangered species. During SSNCs field visit the critically endangered species *Antrodia crassa* was documented. SCA was notified on the forests high nature values but decided to clear fell the forest despite the fact of the forests importance as a habitat for a critically endangered species. Forests with documented occurrences of endangered species are often slated for logging, and logged by SCA. Långsjön is only one of the many examples SSNC has gathered through the years.<sup>64</sup>



More examples of SCA's forestry practice found in 2010:  
*Hållands-NyvalLEN, Åre Municipality, County of Jämtland.*

At Hållands-NyvalLEN, SCA has clear felled a natural forest with preservation values, and driven heavy machinery through wet areas causing irreversible damage to the fragile soil. Photo: Hans Sundström



*Kråktjärn, Härnösand Municipality, County of Västernorrland*

At Kråktjärnen, SCA has notified a forest with very high preservation values for clear felling. SCA has failed to recognize threatened species such as *Usnea longissima* – a species dependent on the forest surrounding it. *U. longissima* will not survive a clear cut. At Kråktjärn, SSNC documented 504 findings of 19 different redlisted species. Photo: Hans Sundström

## Sveaskog

Sveaskog, a state-owned company, is the largest forest owner in Sweden. It is also the owner of vast areas of high conservation value forests, many of which are not formally protected despite the fact that they are owned by the state.<sup>65</sup> Sveaskog has approximately 20 per cent of their forests set aside for nature conservation, which exceeds any other forest company by far, although 7,5 per cent of them consists of general considerations taken at loggings (eg. separate trees left on clear cuts as well as protection zones near shorelines and along streams), mandatory by law. SSNC and other NGOs have, for several years, documented forests with very high conservation values slated for logging by Sveaskog. The company has been notified of the biological values of the forests, but has in several cases ignored these and followed through their logging plans. Areas with documented findings of endangered species have been logged despite Sveaskog's knowledge prior to the felling. Besides forestry, Sveaskog is also selling forests. During 2010, SSNC documented several controversial land sales of forests with high conservation values, often adjacent to protected areas. These biologically valuable forests are now subject to clear fellings.

Despite Sveaskog's high ambitions in the field of nature conservation, SSNC's field investigations show that the company's forestry practices in areas with endangered species and high biological values are not sustainable and do not comply with the FSC criteria.

### Sveaskog, Guttukojan – County of Dalarna

Guttukojan in the municipality of Älvdalen was visited by SSNC in 2008. The forest had high conservation values in terms of, for example, endangered species, biologically important dead wood and, in some areas, WKH qualities. Sveaskog was well aware of the forest's nature values, and had been given the coordinates for each of SSNC's observations of red listed species. However, Sveaskog decided to ignore these facts and logged Guttukojan. In 2010, SSNC revisited the logged site and found numerous breaches of the FSC-standard. Sveaskog had destroyed dead wood in areas where they had first hand information on sitings of red listed species. Also, they had logged areas with WKH structures. In an answer to SSNC regarding the violations of the FSC-standard on the clear felling at Guttukojan, Sveaskog claimed to have conducted the logging in a good manner with no breaches to the FSC standard. SSNC has filed a formal complaint to Sveaskog's CB.



The forest of Guttukojan before it got clear felled by Sveaskog, whom, despite the knowledge of the forests high preservation values, logged the forest. Photo: Olli Manninen

In 2010, SSNC revisited the logged site at Guttukojan and found numerous breaches of the FSC-standard. Sveaskog claim to have conducted the destruction of Guttukojan in good manner. Photo: Hans Sundström





In the forest at Abborrtjärn SSNC found endangered species in 2008. The forest held high conservation values and should never have been felled.  
Photo: Teppo Rämä



In 2010 SSNC visited the logged site at Abborrtjärn where Sveaskog, despite the knowledge of the coordinates of the red listed species, decided to log the forest. Photo: Hans Sundström

### Sveaskog, Abborrtjärnen – County of Dalarna

Abborrtjärnen is located in the municipality of Älvdalen, where SSNC has performed extensive field visits to Sveaskog's land holdings since many pine forests with high biological values have been notified for clear felling, as well as logged in the area lately. Abborrtjärnen is one of these forests, visited by SSNC in 2008. SSNC found Abborrtjärnen to be a dry pine forest with a good continuity and abundance of dead wood. Endangered species were found within the notified forest where SSNC documented altogether findings of 16 different red listed species. Sveaskog was informed of the high nature values of the forest but, as in the case of Guttukojan, ignored the values and went through with their logging as planned, without even conducting a reevaluation of the forest's values. In 2010, SSNC revisited the site and found that Sveaskog again had failed to comply with several criteria in the FSC-standard. Sveaskog had also severely damaged the soil by driving heavy forest machinery on fragile soil. SSNC has filed a formal complaint to the CB for the logging of Abborrtjärn since Sveaskog claims that they have not violated any criteria of the FSC-standard.



At Drevfjället, Sveaskog sold a pine forest above the nature conservation boarder with high preservation values. The forest is also adjacent to the Drevfjället Nature Reserve. The forest is now notified for logging by the new owner. Photo: Olli Manninen



The logging site of the biologically valuable forest at Juvan. Sveaskog sold the forest to a private landowner. The company Mellanskog, who claim to not log WKHs, clear felled the forest that held clear WKH structures. Photo: Olli Manninen



By the time of SSNC's visit to Juvan, some of the forest was still standing. SSNC notified Mellanskog on the high biodiversity values of the forest. Despite this, Mellanskog clear felled also this forest. Photo: Olli Manninen

### Sveaskog land sales, Juvan – County of Jämtland

Sveaskog claims to observe special nature consideration with regard to valuable forests. SSNC has, however, documented sales of several high conservation value forests by Sveaskog. These forests would have been difficult to clear cut without violating the FSC-standard.<sup>66</sup> Juvan is just one example of the controversial land sales by Sveaskog which SSNC discovered during our field inventories in 2010. This forest is now clear felled. The forest at Juvan – a pine forest with high conservation values – was located adjacent to the National Park of Sonfjället in the municipality of Härjedalen. The service road was built in an area of WKH quality, and parts of the forest which was still standing by the time of the visit, were primeval with very little visible evidence of human activities. On the logged site SSNC documented numerous felled nature value trees with fire induced bole scars as well as numerous red listed species exposed and left to die on the site. Due to the land sale of Juvan, the large, coherent wilderness area, of which Sonfjället National Park is a part, has been fragmented on its northeastern border.

Other controversial land sales conducted by Sveaskog include pine forests in the county of Dalarna, as seen on the previous page, where the company sold biologically valuable forests adjacent to nature reserves and above the nature conservation border where Sveaskog normally only engages in limited forestry. These areas are now acutely threatened to be clear felled since they already are slated for logging by the new owner.



**More examples of Sveaskog's forestry practice in 2010**  
*Frönberget, Älvdalen Municipality, County of Dalarna*

At Frönberget Sveaskog has notified two forests for clear felling. The forests are both adjacent to the Långfjället Nature Reserve and above the nature conservation boarder. During SSNC's field visit to the two areas, more than 180 findings of more than 20 different red listed species were documented. The bird on the picture is the red listed *Perisoreus infaustus*, a bird dependent on old growth forests. In the background, a plantation of the exotic species *Pinus contorta* is visible. Further fragmentation to this valuable forest area is at high risk since Sveaskog does not consider the forests to be valuable enough to set aside. Photo: Sini Saarela



**Gränjåsvålen, – Älvdalen Municipality, County of Dalarna**

In the acutely threatened forest at Gränjåsvålen, Sveaskog has planned to clear cut more than 50 hectares of natural forest. SSNC visited the forest in 2010 and documented more than 150 findings of 23 different red listed species. The endangered species *Pulsatilla vernalis* was documented in the threatened forest. Sveaskog has failed to recognize the forests high preservation values during the planning. Photo: Erik Öberg



During the logging of the valuable natural forest at Stamboknölen, Stora Enso caused large damage to the wet forest floor, and also drove heavy machinery through their own conservation area. At the inspection of the site, several breaches to the FSC-standard's principles on nature conservation were documented. Photo: Malin Sahlin

### **Bergvik Skog and Stora Enso**

Stora Enso is the world's leading manufacturer of paper, packaging and wood products with production facilities in more than 35 countries. Stora Enso does not own forest in Sweden but buy wood from private forest owners and Bergvik Skog. The majority of the logging in Bergvik Skog's forests is carried out by Stora Enso. Both companies are FSC-certified, but since Bergvik owns the forest, they are also responsible for the actions on their land holdings. For several years SSNC have discovered that Stora Enso almost systematically slates forests with WKH qualities for logging. NGOs have alerted both companies about high conservation value forests which have been planned for logging. However, these alerts have not always been heeded and Stora Enso has carried on with their logging plans and clear felled forests of high biological values. Also, during 2010, Stora Enso has failed to comply with Swedish legislation; they have, for example, logged in a habitat protection area, logging a site without permit from the Swedish Forest Agency. They have also cut trees in a formally protected nature reserve.<sup>67 68 69</sup>

### **Bergvik Skog and Stora Enso, Stamboknölen – County of Värmland**

In the municipality of Torsby, Stora Enso has clear felled 64 hectares of valuable spruce forest surrounded by woodland key habitats on Bergvik Skog's land holdings. In 1999 the

forest was designated as a voluntary set aside by Stora Enso, due to its high nature values. Ten years later the forest had been clear felled. A field visit to the logged site revealed several breaches of the FSC-standard which both companies has committed to comply with. Nature value trees were felled, trees with red listed species were felled and extensive soil damage was documented. The logging of Stamboknölen was performed right up to one of the adjacent woodland key habitats, and some of the felled forest held the same values and structures as this adjoining area. SSNC has filed a formal complaint to FSC regarding these breaches. Despite the high nature values lost, as well as the soil damage, Stora Enso argues that the logging was conducted in a proper manner.

#### **Habitat Protection Area**

A relatively small area of land or water that provides habitat for plants or animals threatened with extinction, or which is worthy of protection for some other reason. Commercial activities that might damage the natural environment may not be conducted on such sites. The Swedish Forest Agency decides on the establishment of habitat protection areas on forest land, although county administrative boards also are empowered to do so. In most cases, this kind of protection is used to protect WKH





The endangered species *Antrodia infirma* was found at the planned site by Korsköllåstjärnen. Stora Enso's planners had not recognized the suitable habitat for the species and the area around the finding is threatened to be clear felled. Photo: Olli Manninen

### **Bergvik Skog and Stora Enso, Korsköllåstjärnen – County of Jämtland**

At Korsköllåstjärnen in the municipality of Härjedalen, Stora Enso has slated 49 hectares of beautiful pine forest for logging. The forest contains an abundance of dead wood, important to many threatened species. The forest has never been clear felled before, and the sparse dimensional cuttings some 100 years ago have not reduced the biodiversity of the forest since many of the felled trees have been left in the forest. Today these trees are habitats for many species, including the endangered species *Antrodia infirma* which was documented within the area Stora Enso planned to clear cut. At the field visit to the forest, SSNC documented an impressive 210 findings of 21 different red listed species. Stora Enso has apparently failed to recognize these high values when planning the forest prior to logging since no consideration areas was marked around the many substrates where the red listed species were found.



The threatened forest by Korsköllåstjärnen. Photo: Mikael Gudrunsson.



The natural forest of Stamyrberget. This area is now clear felled. Stora Enso and Bergvik did not consider the forests preservation values and the coherent forest area valuable enough to set aside despite the fact that there is a shortage of coherent natural forests in the County of Värmland. Photo: Olli Manninen

The forest at Stamyrbergen could not be saved since Stora Enso did not consider the area valuable enough to set aside. Photo: Olli Manninen



### **Bergvik Skog and Stora Enso, Stamyrbergen – County of Värmland**

In the municipality of Torsby, Stora Enso has logged several forests with high conservation values and many findings of red listed species. The area was part of a larger, coherent old-growth forest area, which – due to the extensive loggings that has been conducted – is rare within the municipality. The forest was affected by fire some 120 years ago and some historical dimensional cuttings were documented, but these had not affected the forest’s high biological values. SSNC visited the area during the ongoing logging and found 21 different red listed species in the forest. Old pine trees were spread out in the area, and trees with ages ranging between 280 and 400 years were documented. Since large, coherent forests are very rare in the county of Värmland, Stamyrbergen could have been a very valuable addition to Bergvik’s voluntarily set aside forests. Unfortunately Bergvik intends only to set aside WKHs, since these cannot be logged within the framework of FSC. Since no WKHs were formally registered in the area the ecologically functional and biologically valuable old-growth forest of Stamyrbergen was not prioritized and was cut down in the summer of 2010.



More examples of Bergvik Skog and Stora Enso's forestry practice in 2010

*Stora Tomsjön, Hällefors Municipality, County of Örebro*

At the previous clear felling of a natural forest by Stora Tomsjön, Stora Enso had left part of the forest. Leaving areas of the forest at clear felling is important for the sake of nature consideration and to life-boat threatened species. Photo: Swedish Society for Nature Conservation



When the logged site by Stora Tomsjön was revisited in October 2010, Stora Enso had felled the forest that was previously spared from logging, this time only leaving a few trees as nature consideration. Photo: Swedish Society for Nature Conservation



A cut down natural forest with high biological values. The company Weda Skog is responsible for the logging of this forest in 2010. Photo: Sebastian Kirppu

To learn more about threatened and logged forests visited by SSNC between 2007 and 2010, visit following links.

<http://picasaweb.google.com/swedishforests2010>

<http://picasaweb.google.com/swedishforests2009>

<http://picasaweb.google.com/swedishforests4>

<http://picasaweb.google.com/swedishforests3>

<http://picasaweb.google.com/swedishforests>

<http://picasaweb.google.com/swedishforests2>

<http://picasaweb.google.com/destroyedforests>

## Discussion

As we are entering 2011, the UN International Year of Forests, there is hope for the Swedish forest ecosystem. On October 29th, 2010, the UN Convention on Biodiversity set out goals to be implemented within the next ten years to help tackle the mass extinction of species around the world. These goals include increasing the area of protected land to 17 per cent by the year 2020. The 17 per cent is to comprise areas that are well connected, ecologically representative and valuable with good continuity. Perhaps the greatest challenge for Sweden is the protection of productive forest land, the environment of which the majority of the red listed species are dependent. However, this challenge is preceded by a couple of problems yet to be solved. First, only a fraction of the agreed 17 per cent has been protected to date. Second, there is probably not even enough productive forests with high biodiversity values left to protect in Sweden to reach 17 per cent. The Swedish forestry practices have been very good at producing raw material, but good at producing red-listed species as well. The majority of the forestland has been converted into plantations, and there is great need for restoration of forests, especially in the southern part of the country.

Despite assurances from the industry sector that the Swedish forestry model is sustainable and that nature values are not threatened, the investigations of forests carried out by SSNC for four years have shown that the destruction of natural forests is ongoing and very rapid. The parole of the Swedish forestry model is "Freedom with responsibility". This is the foundation of the Swedish Forestry Act, a weak law based on the idea of considerable responsibility taken by the land owners. The industry has committed itself to conduct forestry sustainably, a process in which the PEFC- and FSC-certification could play a significant part. Case studies carried out by Swedish NGOs show, however, that a remarkable number of loggings conducted by FSC-certified companies do not fulfill neither the modest environmental targets in the legislation, nor to the higher principles and

criteria of the FSC-standard. Furthermore, when SSNC have filed complaints on clear violations of the FSC-standard, the sanctions for companies are none or too marginal to have a practical impact. Answers such as "*The FSC system is very clear on that it does not require perfection... As perfection cannot be expected at any given time, repeated deviations will also to some extent have to be accepted*"<sup>70</sup> have been received from one CB after a formal complaint regarding repeated loggings of nature value trees. This is unacceptable, both considering the effect on biodiversity and the effects on the market. This way, some forest companies gain positive market effects without complying with the rules mutually agreed upon amongst parties of the forestry industry.

The present Swedish forestry model is not only devastating to the forest ecosystem and its biodiversity; it also contributes to an excessive release of CO<sub>2</sub> into the atmosphere. Scientific data indicate that clear cut forestry practices often release more greenhouse gases than forestry without clear cuts.<sup>71</sup>

Since the clear cutting method, which is almost exclusively in practice, is the strongest driver behind the biodiversity crisis in the forests of Sweden today, there is a great need for alternative methods to be developed and used on a large scale. Alternative methods should not be used in forests with high conservation values, however; these forests should be left alone, or managed (when necessary), for the sake of nature conservation.

Among positive features of recent, the Swedish Government put large areas of state owned forests under protection and has given the state owned forestry company Sveaskog an assignment to trade 100 000 hectares of forests in order to establish nature reserves, aiming at fulfilling the 2010 interim target of the environmental objective "Sustainable Forests", a target far below the 17 per cent agreed in Nagoya. Even if the governmental initiative is a huge step in the right direction, the interim target has not been reached in time. This is not least due to the fact that

100 000 hectares were supposed to trade into approximately 80 000 hectares protected land but are more likely to end up corresponding to 55 000–60 000 hectares protected forests, since there are large amounts of clear cuts and very young forests within the 100 000 hectares to be exchanged.<sup>72</sup>

Within 10 years, as the Swedish minister of environment has concluded, 17 per cent of the productive forests are to be protected as a consequence of the UN agreement in

Nagoya, 2010. Sweden has a long way to go, with very little valuable forests left to help reach the target. Unfortunately, the legislation, budget and certifications of today do not prevent the felling of forests with high nature values. An immediate halt to all loggings of these forests is necessary. The Earth is in midst of the sixth mass-extinction of species, and the human species is the driving force behind. What we have destroyed must be repaired as far as possible. We cannot afford to wait.

A logged *Salix caprea*, a tree with high biological values that, according to FSC, should never be logged. On the tree is the protected and redlisted species *Haploporus odorus*. SCA conducted the logging in the county of Västernorrland. Photo: Hans Sundström



# Swedish Society for Nature Conservation demands

The forest industry must shoulder full responsibility for preventing the depletion of the natural forests of Sweden. SSNC calls for a voluntary and immediate moratorium on loggings of any forest with documented high nature values, in order to enable the fulfilment of national goals for protection of biodiversity and fulfil international agreements.

→ *Unprotected forests with high biodiversity values are still being clear felled, even by FSC-certified forest companies. In addition, the voluntarily set aside forests do not always constitute the most valuable areas, and the quality of the set asides are to a great extent unknown. The proposed moratorium is supported by a good number of researchers who estimate that about 20 per cent of the forested land needs to be protected in order to prevent biodiversity decline<sup>73</sup>. In March 2010, SSNC proposed that 20 per cent of the forested land below the montane conservation border should be protected or restored for the sake of nature conservation. Above the conservation border; all forests must be protected from large scale forestry<sup>74</sup>. Due to the UN Convention on Biodiversity agreement and the Nagoya target of 2020, stating 17 per cent protection of well connected, ecologically representative and valuable land areas, there is an urgent need to halt the logging of valuable forests if the target ever is to be reached..*

SSNC calls on the government to arrange substitute of more state owned production forests for ecologically valuable areas of private and corporate land owners.

→ *State owned companies and the state owns approximately 17 per cent of the productive forest land in Sweden<sup>75</sup>. Of these 17 per cent, some consists of production forests, some of unprotected or protected high conservation value forests. It will require substantial efforts in order to reach the target of the UN Convention on Biodiversity. To use state owned forests for exchanges in order to preserve and protect biodiversity on private or corporate land would not only be a fast solution, it would also move Sweden closer to the target and open up for a possibility of actually reaching it.*

SSNC calls for prohibiting loggings of Woodland Key Habitats and areas with documented occurrences of endangered species. The government should also work for imposing an efficient sanction system for violations of environmental concerns stipulated under the Forestry Act.

→ *The two equal targets of production and preservation in the Forestry Act need both to be operationalised. Today there is no legislation against logging of WKH or localities of endangered species, and the certifications FSC and PEFC have proven not sufficient to protect valuable forest habitats. During the National WKH inventory, only an estimated 20 per cent of the WKH were documented. The remaining 80 per cent of WKH are at risk of being clear felled unless they get discovered and also confirmed by the Swedish Forest Agency. The Forest Agency does not conduct inventories on large forest company's land holdings, but investigations carried out by several NGO's show that many forests with WKH structures and endangered species are being slated for logging and logged.*

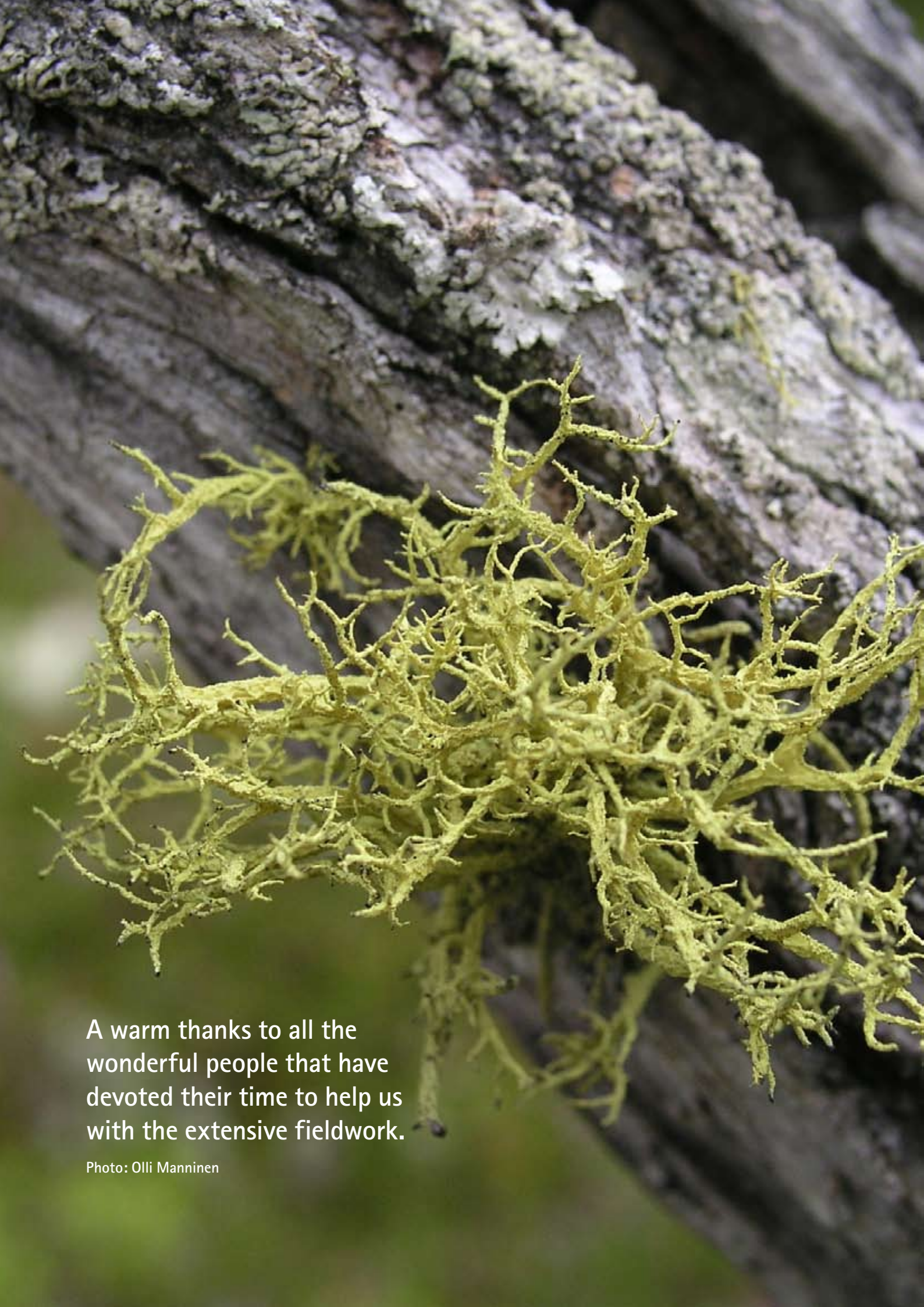
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Photo: Olli Manninen

There is a biodiversity crisis in the Swedish forests. More than 90 per cent of the productive forest is affected by forest management and the industrial forest landscape is dominating the forest land. A large species loss in the forests is primarily caused by forestry practices – both direct and indirect. The Swedish way of cultivate the forests, known as “The Swedish Forestry Model”, involves clear-cutting as the default method as well as soil scarification, systematic use of chemicals, plantation forestry and the use of non-native species. This way of managing the remaining natural forests is resulting in a growing monoculture, causing enormous damage to the biological diversity and the vital ecosystem that the natural forests represent. Still the forest industry argues that the Swedish Forestry Model is the most sustainable way to cultivate the forests.

In this report Swedish Society for Nature Conservation argues that the Swedish forestry model is depleting the forest biodiversity. Loggings of forests with endangered species as well as serious violations to the certification FSC and continuous fragmentation of natural forest areas have been documented by Swedish Society for Nature Conservation for several years. Even though forests cover practically half of Sweden’s land mass, the forest biodiversity is at stake as the natural forests are disappearing at an alarmingly rate – every day.



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The Swedish Society for Nature Conservation is an environmental organisation with power to bring about change. We spread knowledge, map environmental threats, create solutions, and influence politicians and public authorities, at both national and international levels. Moreover, we are behind one of the world’s most challenging ecolabellings,

“Bra Miljöval”(Good Environmental Choice). Climate, the oceans, forests, environmental toxins, and agriculture are our main areas of involvement.

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