



 Swedish Society for Nature Conservation

Report

Cutting the Edge

– the Loss of Natural Forests in Sweden

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The coverphoto show a cut down nature value tree of spruce with a fire-induced bole scar. According to the FSC-standard, nature value trees shall never be felled. This tree was, together with other nature value trees, logged in 2009 by SCA, despite the company’s knowledge of their exact location. SCA is currently certified by FSC. Photo: Hans Sundström

Foreword: Unique European forests are disappearing alarmingly fast

Old-growth natural forests in Sweden have unique biodiversity values in northern Europe. Since the 1950's, however, the Swedish forest industry has turned many of these valuable areas of pristine natural forests into vast oceans of production plantations. The remnants of the original forests only appear as small isolated islands. This has caused a devastating impact on forest diversity. All in all, nearly 2000 forest dwelling species are threatened according to scientists and hundreds of them face extinction.

Between 2007 and 2009, the Swedish Society for Nature Conservation has carried out field surveys and documented the ongoing destruction of more than 500 forests, owned by large companies as well as smallholders. The result is very disappointing and shows huge losses of biotopes for red listed species. Numerous forests with great importance for nature conservation are being logged at an alarming rate, even by companies certified by Forest Stewardship Council.

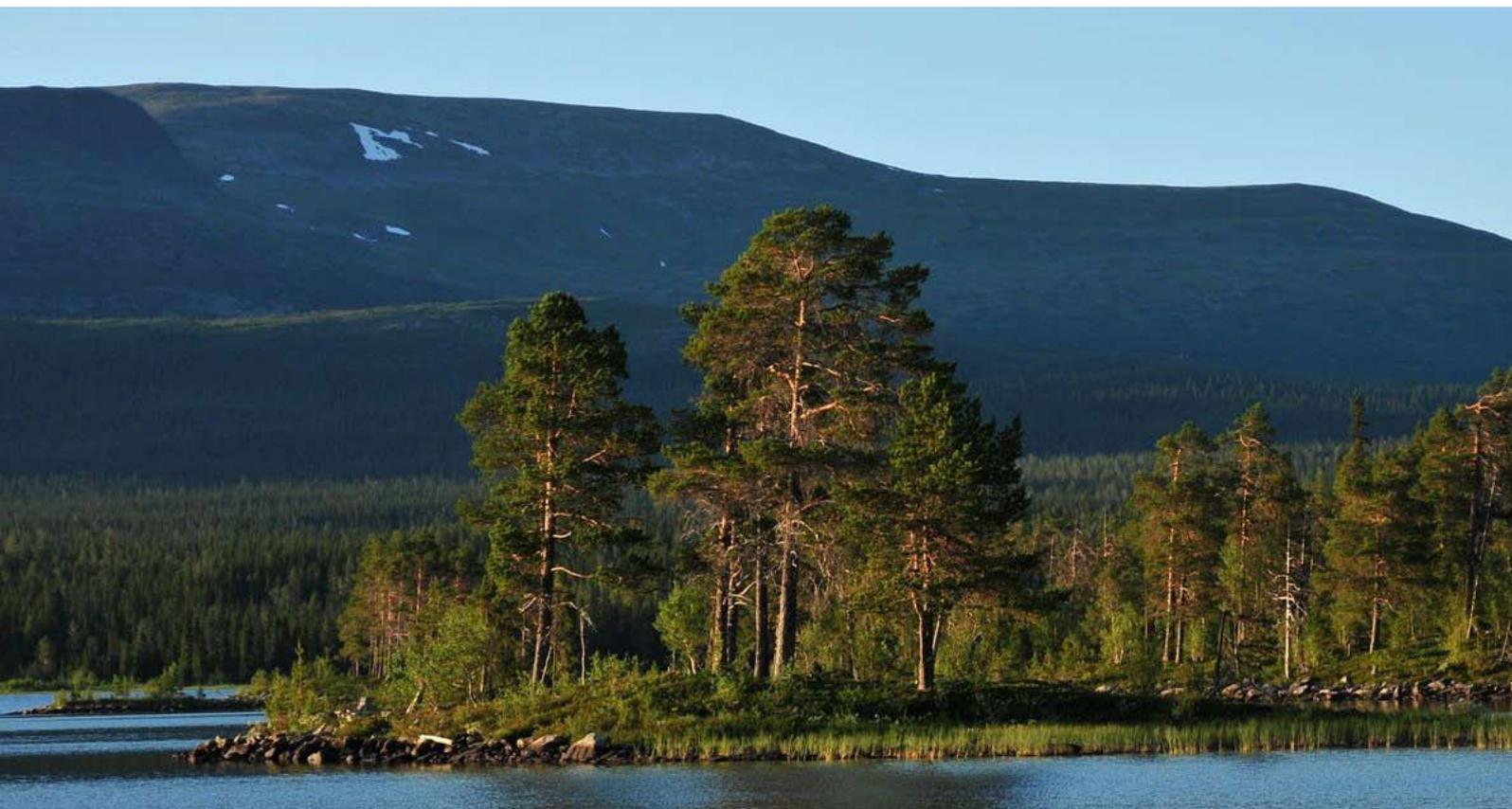
This report shows how acute the situation is for the remaining old growth natural forests in Sweden. We conclude that both the forest industry and the government fail to protect even what little that is left, and thereby how the forest cultivation violates not only the Swedish Parliament's environment objectives but also Sweden's international – and binding – commitments to protect biodiversity.

In some circles, the Swedish forestry model has a green washed reputation for sustainable practices. In reality, the few remaining natural forests are being logged – every day.



Mikael Karlsson
President, Swedish Society for Nature Conservation

Beautiful old-growth forest in the county of Jämtland, Sweden.owned byt the forest company Holmen skog. Photo: Hans Sundström



Introduction

2010 is the International Year of Biodiversity. A year dedicated to reflect on the achievements done to safeguard biodiversity. At the same time, the old-growth forests of Sweden are being clear-cut at an alarming rate, only to be replaced by homogeneous plantations with low biodiversity values.

Forests cover more than 50 per cent of Sweden. Of the productive forests, more than 90 per cent are affected by forest management, and often turned into industrial forest landscapes. Only 5 per cent of the natural old-growth forests having high conservation values remain below the montane region.¹ Despite this, Swedish forestry is regarded by some as an example of environmentally friendly production methods. On the international scene, the Swedish forestry sector is promoting the Swedish forestry model as the most sustainable and, at the same time, the most efficient way to cultivate the forest, for production as well as for nature conservation.² This model involves clear-cutting as the default method, soil scarification, systematic use of chemicals, plantation forestry and the use of non-native species.

This way of managing the remaining natural forests cause enormous damage to the biological diversity and the vital ecosystem that natural forests represent.

Swedish forest policy contains two overriding goals of equal status: one for production and one for safeguarding the environment, including biodiversity. In both law and practise though, production has priority. The industry's lobby groups strongly spread propaganda for the Swedish model with clear-cutting and regrowth as an important model for climate measures globally.³ To increase the production by 20 per cent by 2020 is a major target for the forestry industry, which claims this can be done without har-

ming the biological diversity.⁴

The forest landscape of today consists of large areas of young forests, not yet ready to be logged. Therefore, mature natural forests are being logged at an alarming rate. More than 1800 woodland species are red-listed by scientists, mainly due to the forestry methods of today. Nature conservation scientists have shown in consensus that at least 8-16 percent, (figures varying depending on region in Sweden) of the productive forests below the montane region must be protected. This minimum figure for protection of forest area is based on nature consideration simultaneously being taken to full measure outside the protected areas as stipulated in the Forestry Act.⁵ A new call by a long list of leading scientists in the field even points out that, on averaged, 20 percent of the productive forests must be protected⁶.

Today, however, less than 2 per cent of the forest below the montane region are nature reserves or under other legal protection, and The Swedish Society of Nature Conservation's (SSNC) field investigations very often show a lack of nature consideration both on logged sites as well as in forests planned for logging.

In this report, SSNC argues that the Swedish forestry model and the situation in the Swedish forests are not sustainable, and that the Swedish governmental authorities and the large forestry companies together bear a heavy responsibility for the alarming situation in the Swedish forests today. The report mainly considers the boreal forests in the northern half of Sweden. It does somewhat discuss the social and recreational values of the forests, but is mainly confined to the biological values of the natural boreal forest.

The Boreal Forests

– a threatened abundance of life

The Swedish boreal forest is part of the coniferous forest belt immediately south and north of the Arctic Circle. This forest belt is magnificent in size and comprises approximately one third of the world's forested area.

The natural forest is a vital ecosystem, able to renew itself without the interference of man. Healthy forest ecosystems are essential to all life. They maintain the chemical balance of soil, air and water, stabilize the climate, recycle nutrients, break down pollutants, clean the air and water, are vital to watershed protection, soil formation and carbon storage. Not least, they are the habitat for nearly countless of animal, plant and fungus species.

The natural forest is never in a stable state. For thousands of years the boreal forests have experienced both small and large-scale natural disturbances, such as storm-felled trees, wild fires, insect infestation and flooding. These disturbance regimes are essential for a healthy boreal forest ecosystem and creates the niches needed for the survival of a range of species.

”Ecosystem services cannot be provided by the degraded ecosystems left after the felling of a natural forest.”

Since the early 1900s, however, these natural influences in the boreal forests have, due to modern forestry, changed drastically. As a consequence we find poor variation in the environment and a biodiversity crisis in Sweden. The consequences of natural disturbances differ substantially from those of modern forestry such as clear-cutting, soil scarification and extraction of deadwood from the forest, which destroy the habitats and necessary substrates for woodland species. The view of the forestry sector on the forestland as a cultivation area for trees has in half a century transformed the boreal forests into vast production landscapes and changed the basic conditions for forest biodiversity. Ecosystem services cannot be provided by the degraded ecosystems left after the felling of a natural forest. These plantations and plantation-like forests consist of trees, all of the same age and species, which will be harvested again after 70-100 years.

The boreal ecosystem of Sweden will be at risk of a collapse if clearcut logging continues at the extent of today. Many disposable products such as toilet paper and newsprint paper are produced of forests like this one in the county of Värmland, Sweden. Photo: Olli Manninen



Old-growth Boreal forests –contributing to climate change mitigation

Research has shown that old-growth boreal forests constitute an enormous carbon bank. Boreal forest regions store larger amounts of carbon than any other terrestrial ecosystem, almost twice as much per acre as tropical forests.⁷ Canadian scientists recommend that at least half of the global boreal forests should be protected.⁸ Studies carried out in northern Sweden have found that as forests grow older, less carbon is stored above ground and more below due to a shift in plant community composition with increasing forest age.⁹ Approximately twice as much carbon is stored in the ground as above. Felling old-growth forests and preparing the ground will release this carbon as carbon dioxide (CO₂). Recent studies at the University of Lund show that

it takes some 30 years before the release of CO₂ due to clear-cutting is compensated by the regrowth of the planted forest.¹⁰ This research complies with other scientific data worldwide indicating that natural old-growth boreal forests maximize the storage of carbon^{11,12,13}. Contrary to these facts stated by leading scientists in the field, the Swedish forestry industry are internationally lobbying for the opposite, stating that cultivated forests are more effective as carbon sinks than natural forests. The only way, according to scientists, for the old growth boreal forests to serve as effective carbon sinks is to leave them in their natural state since the carbon stored in the ground exceed the uptake of CO₂ in the replanted trees.

Old-growth Boreal forests store more carbon below ground than above, once felled the carbon will be released as carbon dioxide. It will take some 30 years before this release is compensated by the regrowth of a planted forest. Photo: Hans Sundström



Old-growth boreal forests – threatened in violation with Sweden's international commitments

The forests on the Scandinavian Peninsula are the westernmost coniferous forests on the Eurasian continent. The development of these forests started after the melting of the inland ice, some 10,000 years ago. The forests then remained undisturbed for thousands of years, with only insignificant influence of humans. Although Sweden is a sparsely populated country, the forests now show the impact of many centuries of human use. Only in the northern interior are larger coherent and less affected forests to be found. More than half of Sweden's land area consists of forested land. Over 80 per cent of the forest is coniferous. The boreal forest in the north-western and northern part of the country consists of the largest continuous natural heritage area of Western Europe. Some parts of this area are still completely unspoiled, and the forest remains intact. Until now, these areas have been spared from forestry, but today there is a rising interest within the industry to log these biologically valuable forests.

”More than 90 per cent of the woodland landscape in Sweden has been heavily influenced by intense forestry methods.”

There is an ongoing ecosystem changeover in the Swedish forests. After more than a 100 years of intense logging, the Swedish forests have been harshly cultivated by the forestry industry, and the processes of the natural forests have been disrupted.¹⁴ Natural forests with great diversity have been felled on a large scale, and more than 90 per cent of the woodland landscape in Sweden has been heavily influenced by intense forestry methods. Vast amounts of formerly pristine forests have been turned into homogeneous, cultivated production forests as a result.

”These forests are of crucial importance for the more than 1 800 woodland species that are threatened in various degrees, hundreds of them facing the risk of extinction. This is more than 50 per cent of all red-listed species in Sweden, and the threat is mainly a result of the forest cultivation.”

The proportions of old natural forest are very low compared to the planted industrial forests. Only approximately 5 per cent of the productive forestland, below the montane region, consists of old-growth forests with high biological value.¹⁵ SSNC's field studies have shown that apart from these 5 per cent, there are still forests with potential to develop high biological values if left alone, or restored for the sake of nature conservation. These forests are of crucial importance for the more than 1 800 woodland species that are threatened in various degrees, hundreds of them facing the risk of extinction. This is more than 50 per cent of all red-listed species in Sweden, and the threat is mainly a result of the forest cultivation.¹⁶

Sweden's environment policy is based on sixteen environmental quality objectives, adopted by the Swedish Parliament in 1999. The overall goal is to solve the major environmental problems within one generation.¹⁷ Sweden has undertaken national and international obligations to achieve the environmental objective “Sustainable Forests” by 2020. Recent reviews of the objective reveal that, due to the reasons outlined above, Sweden will fail to do so because of the intensive cultivation of the forests. Thereby Sweden also fails to meet its international commitment to halt biodiversity decline by 2010.

Swedish Forestry Model practices in natural forests are not sustainable

Sweden is considered to be prominent in the forestry sector and has in some circles a good reputation for what is perceived as a sustainable forestry. This image of Swedish forestry methods, portrayed by the Swedish Forestry Industry is highly misleading. The use of the forest today is far from being sustainable, since homogeneous plantations can never replace the diversity of the original forests. There have never been as few old-growth forests in Sweden as there are today, and the remaining few natural old-growth forests are still being felled.

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.

”as much as 25 per cent of the logged areas do not fulfil the requirements of the Forestry Act.”

The fundamental requirements of the Forestry Act state a minimum level of environmental consideration in forestry practices. This includes consideration of nature and cultural values such as leaving a protective zone of trees next to streams, lakes and wetlands. It also includes leaving single trees as well as tree groups on a clear-cut. These requirements are set very low, considering that natural forests with biological preservation values are being logged. In spite of these shortcomings, as much as 25 per cent of the logged areas do not fulfil the requirements of the Forestry Act.¹⁸

Another cornerstone of the Swedish environmental policy over the past 20 years or so is the “sector responsibility”. For the forestry sector, that means a responsibility to adjust their forestry operations to minimize the negative impact on the natural environment.

The Swedish Forest Agency is the authority charged to ensure that forestry is carried out in a sustainable way, while

at the same time preserving biodiversity. The forest policy structure is characterized by “freedom under responsibility”, where the government and the forestry industry have a shared responsibility to contribute to a durable development of society by a sustainable use of the forest.¹⁹ Unfortunately, the Forestry Act does not protect forests above the montane region, old-growth or virgin-like forests from being logged, nor does it guarantee that biodiversity will be preserved. The Forestry Act is focused on profitable forest production rather than on the two equal objectives of production and biological diversity.

”Furthermore, field studies carried out by Swedish NGO’s for the past three years show that a remarkable number of areas logged do not live up to the FSC-standard’s key requirements for nature conservation.”

Besides the legislation, the certification system put forward by the Forest Stewardship Council (FSC) constitutes an important contribution to the improvement of overall environmental awareness in logging.²⁰ The largest forestry companies in Sweden today are FSC-certified, which can be seen as a way to try to implement the “sector responsibility”. However, the system is by nature voluntary, and far from all forest owners are certified. Furthermore, field studies carried out by Swedish NGO’s for the past three years show that a remarkable number of areas logged do not live up to the FSC-standard’s key requirements for nature conservation. SSNC has also experienced serious weaknesses in the reporting system of the certification where, despite complaints from stakeholders, large companies, systematically and for many years, have failed to comply with the standards criteria for nature conservation, yet still hold their certificate. Also, the Swedish FSC-standard itself is mainly based on negotiation results rather than scientific conclusions from conservation biology. Thus it has many weaknesses – which have been pointed out by SSNC – and cannot be seen as a foundation for sustainable forestry, even if fully complied with.²¹

The Swedish model is contributing to a growing monoculture in the forests. Non-native tree species are being used on more than 550,000 hectares (2.4 per cent), of productive forestland, and the Swedish Forest Agency now proposes increased use of the exotic species, *Pinus contorta* (lodgepole pine).²² Despite the fact that Sweden has signed international agreements not to spread alien species in the country, modern forestry has led to a change in the genetic composition of naturally occurring forest trees due to the use of non-native species.²³ In addition, an investigation commissioned by the government proposes increased production and intensive cultivation of forests, using intensified fertilization, spruce clones and planting of exotic species to achieve these objectives.²⁴

”With only 3.3 per cent of the productive forest area under formal protection, the forestry sector has the sole right to 96.7 per cent of the productive forests of Sweden.”

With only 3.3 per cent of the productive forest area under formal protection, the forestry sector has the sole right to 96.7 per cent of the productive forests of Sweden. Below the montane region less than 2 per cent has formal protection. With 2.4 per cent of this area consisting of homogeneous plantation of non-native species, and the proposal for an increase in the use of the *Pinus contorta*, there is also a need to increase the formal and permanent protection of productive forestland.

FSC

FSC is an international not-for-profit organization that certifies forestry and forest products. It promotes responsible management of the world’s forests, with consideration to environmental responsibilities, socially beneficial and economically viable methods.



A managed forest landscape in the county of Västerbotten, Sweden.
Photo: Hans Sundström

More protection needed to safeguard the woodland biodiversity

The action plan for the Swedish environmental goal, “Sustainable Forests” states that 900,000 hectares (less than 4 per cent of the productive forest) shall be excluded from production by 2010. Of this total, 400,000 hectares are to be formally protected, in which case the state compensates the landowner economically. Since 2005, Swedish government policy has resulted in decreased subsidy for land acquisitions with the purpose of protection. At the same time, in order to approach the 2010 goal of Sustainable Forests, state-owned land has been protected with public funding. The remaining 500,000 hectares of the 2010 goal are to be voluntarily set aside by individual landowners. The quality of the voluntarily set aside forests is largely unknown, and these areas have no permanent protection since the forest owner can legally log it at his own discretion. Certified land owners are obliged to keep a certain percentage set aside for protection, but in practice can often exchange one area for another in order to log it. This results in uncertainty regarding the long-term security of the voluntarily protected forests. The Swedish government therefore relies to a big extent on uncertain and arbitrary voluntary measures as a

tool to achieve the objective for forest protection.

The Swedish forestry sector maintains that close to 20 per cent of the Swedish forest is protected, 15.7 per cent by law, and 3.6 per cent voluntarily.²⁵ This figure is greatly misleading and does not comply with the national definition of protected forest land since it also includes non-productive and unstocked forest land. The Swedish definition of a forest excludes these two land types. In reality, according to the official Swedish definition, less than 3.3 per cent of Sweden’s productive forest has formal protection, and less than half of that area is located below the montane region.²⁶ Leading nature conservation scientists stated in 2007 that a minimum of 8-16 per cent (exact figure depending on region) of the forest in the country needs permanent protection in order to preserve the animal and plant species that are dependent on the natural forest for their survival.²⁷ However, a recent call by nearly 200 scientists in the field of nature conservation points out that on average, 20 per cent of the productive forest need to be protected from further forestry measures.²⁸

The Critically endangered species *Antrodia crassa* has only been found in about 20 areas in Sweden, still habitats suitable for the species is being logged.
Photo: Olli Manninen



Means of protection

National parks – consists of large areas of contiguous land that has been set aside in order to preserve certain types of landscapes in an unspoiled condition. The parliament and government decide on the establishment. A fundamental requirement is that the land is owned by the state.

Nature reserve – the most prevalent form of legal protection, with the main purpose to preserve biological diversity and conserve valuable natural habitats as well as recreational values. Municipalities and country administrative boards decide on the establishment. Landowners are compensated.

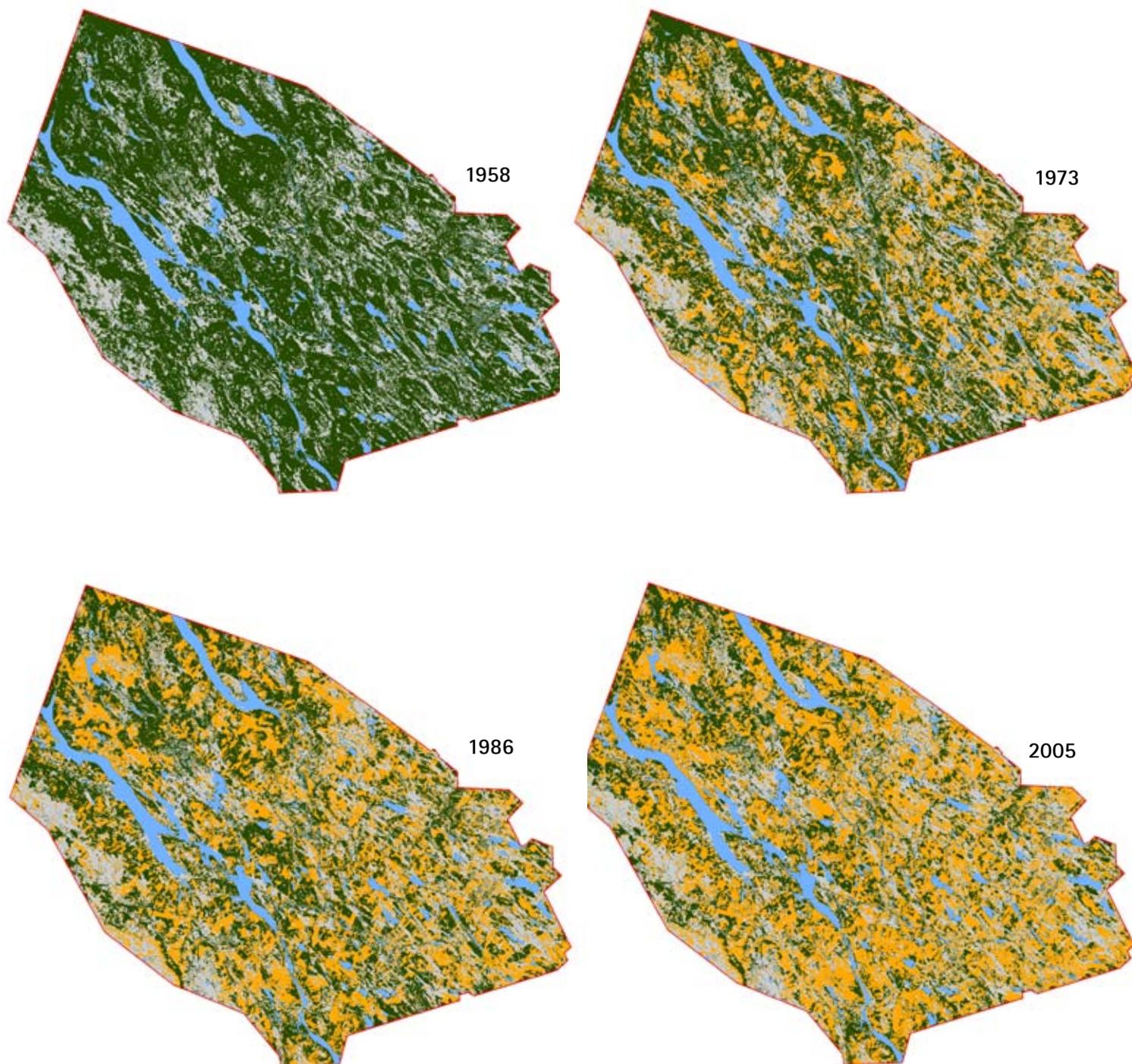
Habitat protection area – small protected area, usually consisting of key habitats. Landowners are compensated.

Nature conservation agreement – agreement between landowner and the state for restriction of timber production for the benefit of biodiversity. The agreement is based on the voluntary cooperation of the landowner. The maximum term is 50 years. The landowner is compensated in part.

Voluntarily set aside area – at least 0.5 hectare productive forest land spared from any activity that might harm its natural value. This form of protection is not permanent and can be exchanged at any time by the forest owner.

Unprotected old growth forest in the county of Jämtland, owned by the National Property Board. Photo: Olli Manninen





The above images show the results of an ongoing study carried out by the Swedish University of Agricultural Sciences (SLU) in a boreal forest landscape covering approximately 9000 km² in the municipality of Vilhelmina, in Västerbotten county. This sequence of maps illustrates the increase of clear cutting forestry since its introduction into the area in 1958 up to 2005. Extensive forestry with various degree of impact also occurred prior to the clear cutting époque. Despite this, the forested area still remained intact until the introduction of the modern forestry methods.

Source: Johan Svensson and Per Sandström. Swedish University of Agricultural Sciences. Department of forest Resource Management.

Woodland Key Habitats have no effective protection against logging

Woodland key habitat ("key habitat" in the following) is a qualitative concept that, based on a combined assessment of the habitat structure, species composition, history and physical characteristics, has tremendous significance for the flora and fauna of the forest. It contains or can be expected to contain, red-listed species.²⁹ Unlike the formally protected forests, the key habitats lack legal status, and are therefore not effectively protected against logging. In spite of this, they hold exceptionally valuable natural features. The forestry companies, certified by the FSC, have committed to not log key habitats. However, several field studies done by Swedish NGO's have shown logged key habitats, and forests slated for logging, which means that companies quite often does not comply with the FSC standard.

"forests with key habitat structures and qualities are often found slated for logging, by both smaller forest owners and large forestry companies since they have not been registered with the Swedish Forestry Agency as key habitat areas."

Far from all of the key habitats were identified in the Key Habitat Inventory (NBI) of 1993-1998 and 2001-2006. It has been estimated that only 20 per cent of the key habitat area

has been found.³⁰ The NBI did not cover forests owned by medium-size and large-scale forestry operators, who conduct their own inventories. Therefore, forests with key habitat structures and qualities are often found slated for logging, by both smaller forest owners and large forestry companies since they have not been registered with the Swedish Forestry Agency as key habitat areas. During the NBI, forests with evident nature values, but not reaching key habitat status, were found. These woodlands, if left untouched, will develop high conservation values and, within 10-30 years, form possible future key habitats. They are of great importance in reaching the objective of Sustainable Forests and are a foundation upon which conditions for the long-term preservation of biological diversity in the Swedish forests outside the protected areas rely. They often constitute a bridge between key habitats and contribute to form a coherent and functional ecological system that is essential to species survival. Unlike the key habitats that are protected from logging by the FSC, according to its standard, woodlands with high nature values are at great risk of disappearing in the near future, leaving a fragmented landscape consisting of key habitats as islands in the industrial forest landscape.

Lill-Klumpvattnet, a Key Habitat in the county of Jämtland that SCA logged in 2009. Photo: Hans Sundström.



"Freedom with responsibility" – the reality in the Swedish forests

Field studies

Between 2007 and 2009, SSNC has reviewed the largest forestry companies of Sweden. Field documentation of close to 300 company-owned, threatened old-growth forests have been carried out. The majority of these forests are slated for logging by SCA, Stora Enso or Sveaskog; some of them were found already logged. The forests visited are mostly located in the northern and western half of Sweden. The documentation focuses mainly on forest structure and the occurrence of old-growth forest indicator species. Many of the old-growth forest-dwelling species are also red-listed according to the Swedish Species Information Centre,³¹ due to the drastic changes in Swedish woodland habitats.

The categorization of the red list is as follows: Regionally extinct (RE), Critically endangered (CR), Endangered (EN), Vulnerable (VU) and Near threatened (NT).

The findings of SSNC have been documented with GPS (Global Positioning System) coordinates. The forests' structure and history has been documented and thoroughly photographed.^{32,33}

The result of the field documentation is very discouraging. Despite the core principles of Swedish forest policy, with equally important environmental and production goals to safeguard all the values of forests, a large number of the visited forests have very high conservation values, and in many cases hold key habitat qualities. The forestry companies reviewed are all FSC-certified, and therefore committed to an environmentally responsible, socially beneficial and economically viable management of the forests.

The forestry companies

The field studies done on company-owned land involves the largest forestry companies in Sweden: SCA, Bergvik Skog (owned by Stora Enso), Holmen Skog, Korsnäs, the state forest company Sveaskog, and the National Property Board. This report discusses forest policy of three of the companies, and results from field studies in selected forests are presented.

SCA

SCA is a global company that primarily develops consumer products such as personal hygiene products and tissue paper. Sales are conducted in some 90 countries around the world. The five largest markets are Germany, Great Britain, France, USA and Sweden. Millions of consumers around the world use SCA products daily. Among the best-selling products produced by SCA are Tena, Libero and Tork (Global); Libresse (Europe); Bodyform (Great Britain); Danke (Germany) and Edet (Nordic region).³⁴

SCA is the largest private forest owner in Europe, with 2.6 million hectares of forests in Sweden, covering approximately 9 per cent of the country's area.

In the FSC audit of 2007-11-02, SCA was harshly criticized for poor nature conservation after repeatedly having logged woodland key habitats and forests of high conservation value. For this, SCA received two major CARs, the most serious complaint an FSC accredited certification body can raise. During 2008, SCA took necessary action for recertification of its forestry operations. Since then, SSNC has done follow-ups on many harvested sites. The result of the follow-ups shows that SCA has not managed to comply with either the FSC-standard or with its own environmental policies.

In its sustainability strategy of 2008, SCA sets a target of 100 per cent control over fresh fiber raw materials where no fresh fiber-based material shall originate from controversial sources, for example, timber from forests with high conservation value.³⁵



The remains of the logged forest of Mellanbergsmyrorna. Photo: Hans Sundström.

Examples of findings of SSNC inventories in forests owned by SCA

2007

Mellanbergsmyrorna in the county of Västernorrland

Mellanbergsmyrorna is a forested area in the municipality of Sollefteå in mid Sweden. The area logged in 2007 once consisted of a natural coniferous forest with traces of a forest fire some 130 years ago. In 2004 the county administrative board of Västernorrland made an inventory of the forest's biological values with a view to increase an adjacent nature reserve. On 10 September 2007 SSNC visited the area after learning that SCA had planned the area for logging. At the time of the visit, SCA had already logged the high conservation value forest and key habitats at Mellanbergsmyrorna. The clear-felling carried out by SCA violated, or otherwise infringed on, no less than eight criteria of the FSC-standard regarding environmental consideration.

2008

In 2008 SSNC discovered numerous high conservation value forests that had been logged by SCA. The documentation of these forests revealed that SCA, despite actions to improve nature conservation, failed to comply with many of the indicators of the FSC-standard. SCA had almost systematically felled high biodiversity trees, failed to protect deadwood from forestry measures, logged key habitats, and not

taken proper consideration of red-listed species. Below we relate one example of the documented forests, logged by SCA while the company was working to secure recertification.



This old-growth forest stand is directly adjacent to the logged site at Mellanbergsmyrorna and has equal, exceptionally high nature values. Photo: Hans Sundström



Logged nature value aspen trees on the clear felling at Åbojen in the county of Norrbotten. Photo: Elina Hinkkanen

Åbojen in the county of Norrbotten

Åbojen is a forest in the municipality of Boden. The forest was logged in February 2008. At the same time as the logging was in progress, the FSC carried out a follow-up audit of its CAR, i.e., its previous censure of the company for logging of high biodiversity value trees. The logged area consisted of mixed coniferous old-growth forest with old pines, aspen and sallow. 250-300 year-old trees with high biodiversity value were found cut down on the site at the time of SSNC's visit. The logging had been conducted with little

consideration of environmental factors. SCA had felled areas of key habitats. SSNC documented more than 50 violations of the FSC-standard regarding nature conservation on the 48 hectares of felled old-growth forest.

In February of 2008, SCA was granted recertification, despite the many previous violations of the FSC-standard documented by SSNC. SGS, the company that issued the FSC-certification of SCA, found SCA to have succeeded in its measures on improving nature



Lill-Gravberget after the felling. Photos: Hans Sundström

2009

In 2009, SSNC has raised no less than six complaints against SCA's forestry methods, all regarding forests logged after the recertification. In two of the cases, SSNC had paid previous visits to the forests and documented high conservation values and key habitat qualities. The results were forwarded to SCA, which, despite the knowledge of the area's significance for nature conservation, fulfilled its plan and

The forest on Lill-Gravberget before it got felled. It contained extremely high nature values. Despite this SCA decided to log it in 2009. Photo: Hans Sundström



logged the forests. During 2009, SSNC has again documented a great number of serious violations of FSC-standards concerning nature conservation. SCA has once again failed to honour its environmental undertakings. Below follow two examples from the total of six complaints filed in 2009.

Lill-Gravberget, County of Västernorrland

The forest area at Lill-Gravberget is located in the municipality of Ånge. A north-facing steep slope covered by a natural coniferous forest of very high conservation value, characterizes the area. SSNC had visited the area twice before some of it was logged and noted the abundance of species that thrive on the structures and history of an old natural forest. There were many areas in the forest that had key habitat qualities. A total of 455 findings of 24 different red-listed species were documented during the field visits, which makes the area one of the richest single forest stands for biodiversity ever documented in Sweden. SCA was given the coordinates for the findings. SSNC presented the area as one of the highly threatened forests visited in 2008 in our report, "Breakdown for nature conservation in the forest". SCA logged the forest at Lill-Gravberget in the winter of 2009, despite all the conservation attributes it held. SCA hereby violated indicators in the FSC-standard as well as its own procedures of what areas to prioritize as set aside forests in the local Ecological Landscape Plan (ELP).



One of the hundreds of biological valuable trees that got felled on the site of Blåbärstjärn. Trees with fire-induced bole scars shall never be felled according to the FSC-standard. Photo: Hans Sundström

In this area the logging team stopped the felling of Blåbärstjärn due to the difficulty not to cut down more trees with fire-induced bole scars. Thus, more than one hundred of these trees were felled at the site. Photo: Hans Sundström



Blåbärstjärn, County of Jämtland

In June 2009, SSNC discovered 40 hectares of the remains of what had been pristine ancient pine forest, recently logged, on a field visit to SCA-owned forests that were slated for logging in the municipality of Krokoms. The forest of Blåbärstjärn was, prior to logging practically untouched by man and bore the marks of a forest fire in the end of the nineteenth century. The harvesting site was planned with no consideration of the area's extremely high biodiversity values. Only the outer edges of the forest were marked. On the harvested site, hundreds of nature value trees with fire-induced bole scars were cut down and left in pieces on the site. More than 300 serious violations to the FSC-standard were documented with photographs and coordinates. The forest of Blåbärstjärn was part of a large, more or less intact old-growth forest landscape of high importance to biological diversity. In adjacent wooded areas SCA has planned many loggings of high conservation value forests.

Ecological Landscape Plan (ELP)

Landscape planning is a measure to get a general overview of large forest holdings in order to systematically safeguard valuable natural areas and necessary biotopes for naturally existing species



SCA harvesting forest of high biodiversity value by the lake Rången in the county of Jämtland. Photo: Malin Sahlin

Rången, County of Jämtland

40 hectares notified for final felling. The forest area by Lake Rången borders on the Helvetesbrännan nature reserve in the municipality of Bräcke. The area is characterized by an old-growth forest stand, mainly constituted of pine with a prominent fire history and high biodiversity values. Coarse lying deadwood, as well as standing deadwood is quite abundant. Altogether 172 findings of 13 different red-listed

species were found. At the time of the field visit SCA had already started logging the area. SSNC contacted the company and notified them of the extensive findings of red-listed species, as well as the forest's high conservation value and key habitat structures. SCA thereby stopped the logging and is now conducting a new logging plan. The future of the forest by Lake Rången is uncertain.

This part of the forest is still standing since SSNC visited the forest and notified SCA on the high nature values of the forest. Photo: Olli Manninen





Highly biological valuable forest by the lake Säxen in the county of Dalarna. This forest would have been logged without the alarm raised by SSNC.
Photo: Olli Manninen

Bergvik Skog and Stora Enso

Stora Enso is the world's leading manufacturer of paper, packaging and wood products. The company has production facilities in more than 35 countries and is one of the largest manufacturers of newsprint paper in Europe. Stora Enso does not directly own forest in Sweden. The company buys wood from private forest owners and Bergvik Skog. Stora Enso is the major shareholder of Bergvik Skog AB. Bergvik Skog owns 1.9 million hectares of productive forest land, covering approximately 8 per cent of Sweden. In 2004 Bergvik Skog acquired all of Stora Enso's forest holdings in Sweden. The majority of the logging in Bergvik forests is carried out by Stora Enso. Bergvik holds the FSC-certificate that Stora Enso has undertaken to comply with. Stora Enso's main objective concerning nature conservation is to ensure that all species of animals and plants will have a habitat and a chance of survival.³⁶

During field visits 2008 and 2009, SSNC has discovered that Stora Enso almost systematically slate forests with key-habitat qualities for logging. For several years NGO's in Sweden have alerted Bergvik Skog and Stora Enso to high conservation value forests that have been planned for logging. Both companies claim that the forestry operations carried out by Stora Enso in

the forests owned by Bergvik are in line with the FSC-standard, and that no key habitats are to be logged. In spite of this, in the counties of Jämtland, Dalarna and Värmland, SSNC has discovered a remarkable number of forests containing key habitats that Stora Enso has notified for final felling. The planning of these loggings demonstrate a lack of consideration of high nature values and a poor capacity to identify key habitats.

Examples of results of SSNC inventories in forests owned by Bergvik Skog

2008

Stora Säxen, county of Dalarna

In 2008 SSNC discovered that Stora Enso had built a logging road through, and into a forest key-habitat by Stora Säxen Lake in the municipality of Vansbro. Stora Enso had targeted several forests in the area for logging, failing to identify several key habitats. The Swedish Forest Agency visited the planned area and confirmed that numerous woodland key habitats had been slated for logging by Stora Enso. Thanks to the alarm raised by SSNC in the matter of Säxen, the area has now been excluded from the logging plan and added to the ELP.



Hovdhållan is part of the forest above the former conservation border that Bergvik Skog AB succeeded in redefining. Photo: Olli Manninen

Hovdhållan in the county of Jämtland

At the border of Sänfjället, a national park in the municipality of Härjedalen, Stora Enso has planned to clear-cut more than 100 hectares of sub montane old-growth pine forests. SSNC visited the area in 2008. The forests reviewed were all located above the former conservation border that, on the initiative of Bergvik Skog, was moved in 2004. The area is characterized by past forest fires and has all the essential values of a healthy coherent woodland ecosystem. Traces of old selective logging can be found in some areas. This has not disturbed the natural processes of the forest, which has high biodiversity values. 160 findings of 11 different red-listed species were found during the field visit. SSNC notified Stora Enso and Bergvik about the findings

and the forest's conservation value. In spite of this, Stora Enso has now logged some of the area and intends to log more of Hovdhållan in the future.

2009

SSNC has made field visits to a number of Bergvik's forests in Dalarna during 2009. The majority of the areas visited are natural pine forests, many with visible history of forest fires and large findings of red-listed species. Based on the large number of high conservation value forests that are either already logged or planned for logging, with poor, or no consideration to nature conservation, SSNC concludes that Stora Enso lacks adequate knowledge and respect of these forests' nature values.

Conservation border (Naturvårdsgräns)

In the 1980's, industrial forestry had reached the montane forests. After an intense debate between conservationists and the forestry industry about the future of the montane and sub-montane forests, SSNC presented a proposal for a conservation border. Above this border only modified and limited forestry is allowed; some areas are fully protected. In the FSC-standard, the conservation border regulates forestry practices.

In 2004, Bergvik Skog AB took the initiative to a process that ultimately resulted in a redefinition of a great part of the conservation border in the County of Jämtland. This opened large areas of biologically valuable montane forests for logging.

In 2006, Bergvik Skog AB again took the initiative to redefine the conservation border, this time in the County of Dalarna. Due to the results of the redefinition in Jämtland, where forests of high biological importance got logged, SSNC in Dalarna opposed this process and Bergvik withdrew the proposition.



The forest of Grotthöjden partly consists of a Woodland Key Habitat and hold high nature values such as multiple findings of red listed species. Photo: Olli Manninen

Grotthöjden, County of Dalarna

Grotthöjden is located in the municipality of Mora. Although the reviewed forest borders on enormous clear-cuts carried out by Stora Enso, the area now slated for logging is part of a large, coherent natural woodland area of 800 hectares. Grotthöjden is yet an example of a woodland key habitat that was planned for logging before SSNC alerted the company and the Swedish Forest Agency. When Stora Enso planned the area for logging they did not recognize the nature values, not even the 7-hectare of woodland key habitat that is now, thanks to the alarm raised by SSNC, registered with the Swedish Forest Agency. Stora Enso has now withdrawn the logging plan for the key habitat, in accordance with the FSC-standard. The forest surrounding

the key habitat, however, is still planned for logging, despite the high conservation value and the many findings of red-listed species in the area. The Swedish Forest Agency has recommended that Stora Enso except 40 per cent of the remaining forest from logging, unfortunately this recommendation is not binding and the forest is still acutely threatened. If it were not for the alarm raised by voluntary nature conservationists, either Stora Enso, or the Swedish Forest Agency would never have acknowledged the conservation values of Grotthöjden. Grotthöjden with the surrounding 800-hectare forest probably consists of more key habitats and the area need further inventories to safeguard nature values.



The forest by Dryvistjärn got felled by Stora Enso, despite the findings of red listed species. Stora Enso did not manage to define the nature values of the forest. Photo: Sini Saarela

A lone pine on the clear felling of the forest by Dryvistjärn.
Photo: Hans Sundström



Dryvistjärn, County of Dalarna

In May 2009 SSNC visited the old-growth pine forest by Dryvistjärn in the municipality of Malung. The forest was characterized by sparse old-growth forest with pine trees. Several large dead logs of pine existed within the area. There were signs of an old forest fire and some former selective logging. Despite this, the forest had all the features of a healthy natural forest. In total, 45 findings of a total of 8 different red-listed species were found. Despite the biological values of the area, the forest got felled shortly after the field visit. The alarm from SSNC came too late to save the forest, and Stora Enso failed to recognize the nature values of the area.



Despite the notification to Sveaskog on the high biodiversity values of the forest at Guttukojan, the forest is now felled. Many red-listed species were found at SSNC's field visit to the forest, for example *Cladonia parasitic*, a species dependent on the hard dead wood of pine or oak found in natural forests. Photo: Olli Manninen

Sveaskog

Sveaskog, a state-owned company, is the largest forest owner in Sweden. Sveaskog owns 3.3 million hectares of forest, covering approximately 14 per cent of the Swedish land area. Of this, 650,000 hectares of productive forest are set aside. With 20 per cent of productive forest set aside, Sveaskogs ambitions for nature conservation exceed any other Swedish forestry company. A closer look at these 20 per cent, however, shows that 250,000 hectares consist of general nature consideration taken at loggings, such as separate trees left on clear-fellings as well as protection zones toward water, which is mandatory by law. Despite Sveaskog's environmental targets and its FSC-certification, SSNC's review of the company shows that it still plans to log state owned old-growth forests with high conservation values.

Examples of results of SSNC inventories in forests owned by Sveaskog

2008

During the field season of 2008, SSNC documented several old-growth pine forests owned by Sveaskog that were planned for logging. Sveaskog was notified about the high biological values of these forests.

Guttukojan, County of Dalarna

Guttukojan is located in the municipality of Älvdalen. When SSNC carried out its field visit to the area, it was designated for final felling. The forest consisted of sparsely growing pine trees in terrain strewn with boulders and blocks of stone. Biologically valuable deadwood in different stages of decay and thickness was abundant in places. Fire and some selective logging had historically affected the forest. More than 60 findings of red-listed species were recorded in the area. Although SSNC notified Sveaskog of the forest's high biodiversity value, Sveaskog has now logged it.

2009

Sveaskog has in 2009 responded to SSNC's notifications about red-listed species found in the company's old-growth forests that are planned for logging. Sveaskog intends to continue felling of old-growth pine forests, but are going to take particular consideration of the specific substrates vital to many red-listed species in the natural pine forests.³⁷ The problem is that the species demand more than the specific substrate to survive in the long term. The surrounding forest is vital for renewal of the important hard deadwood that the species thrive on. In a planted, fast-growing forest, the quality of wood is poor, and the species will most likely eventually disappear from the area. In 2009, SSNC did several field reviews of Sveaskog and again visited numerous forests with high conservation values that the company has planned to clear-cut.



Eternity tree left on the clear felling of the pristine old-growth pine forest at Granåsen. Photo: Olli Manninen

Granåsen, County of Dalarna

In August 2009, when SSNC visited Granåsen in the municipality of Älvdalen, Sveaskog had logged approximately 19 hectares of pristine old-growth pine forest. A low-productive forest that had been affected only by moderate selective logging characterized the area. In large parts of the felled forest there were no traces of earlier human disturbance; the logged forest was virgin-like. Many of the trees logged were 200-300 years old and carried visible marks of old fo-

rest fires. Numerous trees with fire-induced bole scars were found logged. At the felling Sveaskog had taken no consideration of the substrates vital to red-listed species or other nature values, and the company violated several FSC criteria regarding environmental consideration. More than 120 cases of violations were observed at the clear cut. A complaint to FSC regarding Sveaskog's forestry methods at Granåsen was raised by SSNC in August of 2009.



Two findings of the endangered species *Antrodia infirma* were done in the acutely threatened forest at Smekmyrtjärnen. The greatest threat to this species is final felling of their habitats. Despite the findings of this species, Sveaskog intends to clear cut the forest. Photo: Olli Manninen.

Smekmyrtjärnen, Country of Dalarna

Smekmyrtjärnen is located in the municipality of Älvdalen. 50 hectares of this beautiful old growth pine forest is acutely threatened by logging. During SSNC's field visit to the planned logging site in August 2009, an amazing 240+ findings of 15 different red-listed species were documented, including four findings of three different species classified as EN (endangered) on the red list. Sveaskog has answered SSNC that it still intends to log 85 per cent of the forest, despite the exceptionally high conservation values, leaving only 15 per cent (7.5 hectares) as nature consideration. These 7.5 hectares would not even consist of one coherent area, but of small patches and solitary retention trees at the future loggingsite. The endangered species found in the forest at Smekmyrtjärnen generally require continuous old natural woodlands, and the largest threat to them is final felling of their habitats. By exploiting Smekmyrtjärnen Sveaskog is deliberately destroying the exceptional old-growth wood-

land biodiversity values of the area. This forest is just one of the extremely biological valuable old-growth pine forests SSNC has visited, where Sveaskog intends to carry out their logging plans.

To learn more about threatened and logged forests visited by SSNC between 2007 and 2009, visit following links.

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

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

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

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

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

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

Conclusions

The threat to the last old-growth forests in Sweden is very real. The clear cut-based, so-called modern forestry has resulted in a biodiversity crisis, which is indicated by the large number of forest-dwelling species on the Red list for threatened and endangered species. Natural processes, like changes in species composition in different stages of succession in the woodland landscape, have been disrupted, and large-scale rotation forestry is converting the natural forest ecosystem into a large mono-crop of export timber. With less than 5 per cent of the natural forests below the montane region left, a change in the Swedish forest policy is a matter of great urgency. Still, money contributed by the government to purchase forestland with the purpose of nature conservation has been reduced by 41 per cent in the interval 2005-2009. Without a substantial increase in funds for formal protection of old-growth and high conservation value forests, these will continue to be logged at the same alarming rate as they are today. The formally protected areas of today are not enough to preserve the biological diversity; therefore, it is absolutely necessary to take immediate measures to preserve the key habitats and connecting forests with high conservation values.

In spite of the FSC's intention to increase the certified forest owners' consideration of nature conservation, the situation for the old-growth forests remains acute. The majority of the certified companies show little or no interest in voluntarily protecting more forests than required of them by the certification.

On the contrary, NGO's still often find woodland key habitats and high conservation value forests planned for logging by certified companies. Thus, FSC-certification offers no reliable guarantee that such areas will not be logged. The regulatory framework of FSC is not clear on the targets and leaves plenty of room for different interpretations of the

criteria, where the certification bodies auditors have the preferential right of interpretation. By field studies SSNC has experienced that the FSC fails to prevent the destruction of both key habitats and high conservation value forests. The protection of biologically important woodlands is a responsibility of both authorities and forest owners. Priority should be given to the remaining forests with high nature conservation values, regardless of their location. Due to the small per centage of remaining old-growth forests, there is also a need for restoration of woodlands that lack the old-growth characteristics, not least in the southern parts of Sweden.

The present Swedish forestry model is not only devastating to the forest ecosystem and its biodiversity; it also contributes to an excessive release of CO₂. Scientific data indicate that clear-cut forestry practices release more greenhouse gases than forestry without clear-cuts.³⁸ Therefore, a conversion to a more sustainable forestry model with alternative methods on part of the forest land would better mitigate climate change. It is important to make it clear that the alternative methods should be used only in production forests, not in old-growth or high conservation value woodlands. These should be exempted from all management other than measures that in some places are needed to keep or improve biodiversity.

Sweden is failing to fulfil its national and international environmental commitments. The increase in production proposed by the government and the forestry sector, using an even more intensified practise of the forestry methods of today, will only accelerate the depletion of the biological diversity. The basic precondition for the preservation of old-growth forests and forests with high nature conservation value is that they get protected.

Swedish Society for Nature Conservation demands

- Ensure protection of the remaining old-growth forests below the conservation border and increase restoration of woodlands to secure the biological diversity of the woodlands. According to new scientific calls, as much as 20 percent of the forested land needs to be protected in order to prevent biodiversity decline. SSNC proposes that 20 per cent of the forested land below the 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 and high nature concern must characterise any measure taken.
- Increase the state budget for measures to preserve and enhance biological diversity and for formal protection of woodlands with conservation values. The funding should be set at a rate that will secure biodiversity for the future.
- Let the forestry industry shoulder a larger responsibility for the major negative impacts on the forest ecosystem due to current industrial forestry methods. This could be achieved by contributing to the cost of formal protection by paying a "logging-fee". Alternatively, a paper consumption fee could be imposed and used for supporting nature protection measures.
- Operationalise the two equal targets of production and preservation in the Forestry act by stipulating stricter detailed regulations for nature considerations, including a prohibition for the general logging of Woodland key habitats, and impose an efficient sanction system for violations of the act.
- The Swedish FSC forestry standard must be improved on a number of points. In particular, the standard must be followed and violations of the standard must be dealt with swiftly and with stringency.

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A warm thanks to all the wonderful people that have devoted their time to help us with the extensive fieldwork.
Photo: Olli Manninen

Forests cover more than 50 per cent of Sweden. Of the productive forests, more than 90 per cent are affected by forest management, and often turned into industrial forest landscapes.

The Swedish forestry model is regarded by some as an example of a sustainable way to cultivate the forest. Still, more than 1800 woodland species are threatened or endangered, mainly due to the forestry methods of today.

Between 2007 and 2009, the Swedish Society for Nature Conservation has carried out field surveys and documented the ongoing destruction of more than 500 forests, owned by large companies as well as smallholders. The result of the field documentation is very discouraging; forests with very high conservation values are being slated for logging systematically.

In this report Swedish Society for Nature Conservation argues that the Swedish forestry model and the situation in the Swedish forests are not sustainable. The way of managing the remaining natural forests today has caused enormous damage to the vital ecosystem that natural forests represent. Action has to be taken immediately to save what is left, time is running out for the Swedish old-growth forests.



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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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