

# Sustainable Forests

## In-depth evaluation 2023



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## Preface

Sweden's environmental objective system was decided by the Parliament in 1999 and has since then guided the ambitions of Swedish environmental work. The environmental goals are followed up annually and at least every four years an in-depth evaluation of the conditions for achieving the goals is made.

The in-depth evaluation of the environmental objectives 2023 is the sixth of its kind and will serve as a basis for the government's policies and priorities, but also for the planning and prioritization of environmental work conducted by other authorities and organisations.

The report for Sustainable Forests is an in-depth evaluation of the environmental quality goal and describes the state of the environment in the forest today, measures implemented, analysis of conditions to achieve the objectives and a forecast for the continued development. Proposals for further efforts are also presented.

The in-depth evaluation in 2023 consists of a main report with proposals to the government and associated supporting reports. The report for Sustainable Forests is one of several reports describing Swedens sixteen environmental quality goals, which form the basis for the overall final report that the Swedish Environmental Protection Agency will report to the government in January 2023.

We warmly thank all employees and others involved for great work and valuable contributions.

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# 1 Summary

Environmental objective Sustainable Forests: "The value of forests and forest land for biological production must be protected, at the same time as biological diversity and cultural heritage and recreational assets are safeguarded."

The environmental quality objective Sustainable Forests aims to ensure that:

- the physical, chemical, hydrological, and biological qualities and processes of forest land are maintained,
- ecosystem services of forests are preserved,
- the biodiversity of forests is preserved in all natural geographical regions and species have the opportunity to spread within their natural range as a part of a green infrastructure,
- habitats and naturally occurring species associated with forest areas have a favourable conservation status and sufficient genetic variation within and between populations,
- threatened species have recovered and habitats have been restored in valuable forests,
- alien species and genotypes do not threaten the biodiversity of forests,
- genetically modified organisms that can threaten biodiversity are not introduced,
- the natural and cultural heritage values of forests are preserved and the conditions for continued preservation and development of these values are in place, and
- the value of forests for outdoor recreation is safeguarded and maintained.

The environmental quality objective Sustainable Forests has not been achieved and will not be achieved with existing policy instruments and measures. Developments in the forest environment are negative. The objective has been evaluated towards 2030.

Sustainable Forests is a broad goal. The report focuses on the main problems within the environmental quality objective.

There are many measures underway to improve the environmental condition of the forest landscape. Long-term formal and voluntary protection of forests with high conservation values as well as conservation management are examples of important initiatives whose value increases over time. The collaborative action on environmental objectives report *A national strategy for nature and cultural management of forests managed with nature conservation objectives* will strengthen the work on management of natural and cultural heritage values in formally protected and voluntarily set aside areas. Environmental considerations in harvesting mitigate negative effects on species and this benefit is expected to increase over time. The work of the forestry to improve environmental consideration within the work of the targets for good environmental consideration, as well as the collaborative action on environmental objectives *A more varied forestry*, are examples of other measures that are expected to have positive effects in the forest.

Environmental improvement measures which have been implemented have positive effects but are not sufficient to stop the loss of important habitats in the forest landscape. The measures make a difference and reduce the negative effects in forests and without them the environmental condition would be far worse.

The five most important problems to solve in order to reach Sustainable Forests are:

1. Lack of important habitats in the forest landscape. Several types of habitats are declining and becoming increasingly fragmented.
2. Unfavorable status or negative development for many forest-dwelling species. Many threatened and sensitive species are declining and populations are becoming increasingly fragmented.
3. Several of the forest ecosystem services have insufficient status.
4. Cultural heritage remains are destroyed in the forest landscape due to forestry measures.
5. Negative impact on watercourses of the forest landscape.

## **1.1 State of the environment**

### **1.1.1 Loss of high conservation value forests that cannot be recreated in the foreseeable future**

Loss of high conservation value forests that cannot be recreated for the foreseeable future has been identified in the analysis as a problem of a particularly urgent nature. Remains of old-growth forest and other forests with natural values linked to long continuity are examples of such forests. The marginal effect when these environments are destroyed is high because their occurrence is very limited in the forest landscape. Harvesting of these environments therefore entails a major negative impact on Sweden's opportunities to preserve biodiversity in the forest landscape and achieve national and international objectives. Ensuring that remaining forests with very high conservation value are preserved is crucial and needs to be addressed urgently.

Sweden's opportunities to preserve biodiversity in the forest landscape require strong measures. The situation is serious for species linked to long continuity and species that need habitats that are currently uncommon in the forest landscape.

#### *1.1.1.1 There is a need for increased knowledge and awareness that many nature values cannot be recreated in the foreseeable future*

There is a need for increased knowledge and awareness that many natural values cannot be recreated in the foreseeable future and that the values are lost if these forests are harvested. When prioritizing policy instruments and measures, it is important to be aware of the fact that several habitats for endangered species cannot be recreated. Otherwise, there is a risk of an overreliance on the biological "healing capacity" of forests, where complex ecosystems are expected to be re-formed at a rate reminiscent of the cultivation cycle of forestry. Endangered species do not automatically reappear after a final felling just because the regenerated forest matures.

About two and a half percent of the productive forest land outside formal protections and the voluntary set-asides by large-scale forestry is estimated to consist of forests with high conservation values. Of these, about 120,000 hectares are known areas with documented knowledge of the natural values. The remaining part, 400,000 hectares, consists of unknown areas. The proportion of voluntary set-asides in small-scale forestry is not known because of lack of transparency in the location of these sites.

There are indications that the felling pressure on forests with high conservation values is high. One example is basiphilous coniferous forests in the county of Jämtland. Basiphilous coniferous forests are some of our most endangered, rare and at the same time most species-rich habitat types. Sweden has an international responsibility for these biotopes. Despite the fact that they are mostly small and fragmented in the landscape, their protection and management are of great importance for the overall goal of preserving forest biodiversity. In Jämtland, the County Administrative Board identified basiphilous coniferous forests and the landowners were informed of the survey results in the autumn of 2020. A large proportion of these forests have subsequently been notified for harvesting. The County Administrative Board's analysis shows that several of the notified forests that were identified as having the highest priority for protection were harvested a short time after they were identified.

### **1.1.2 The important concept of continuity**

Over the past century, Swedish forestry has succeeded in increasing the total volume and growth rate of standing trees. At the same time, this has led to a transformation of the forest landscape, which has changed the conditions for animals, plants and fungi. Many of the endangered species adversely affected by felling depend on long forest continuity, not just the trees getting old. Complex ecosystems require a long time to develop. When forest continuity is broken by clear-cutting, the habitat conditions for a variety of plant, fungal and animal species often disappear.

Forest landscapes with natural dynamics are dominated by ancient forests with great structural diversity. In contrast, the dominant forest management system in Sweden is based on stands of the same age with felling of biologically young trees. According to the Swedish National Forest Inventory at the Swedish University of Agricultural Sciences (SLU), the average age at final felling has fallen by about 20 years between 2004 and 2018. Final felling today is largely followed by soil scarification, planting and several instances of pre-commercial thinning, measures that usually further simplify the forest ecosystem. Comparisons between different forest landscapes that have been influenced by modern forestry for different lengths of time show a large difference in age structure between forest landscapes that have mainly been characterized by forestry with clear-cutting methods and forest landscapes that have to a greater extent been characterized by natural dynamics. Also a large number of other aspects have changed, such as the amount of dead wood, old trees and the presence of early stages of succession after disturbances. The cessation of forest grazing and other traditional management regimes, and reduced levels of forest fires also affect many endangered species. SLU Species Data Bank estimate that about 400 species are threatened (the

classes Critically endangered, Highly endangered or Vulnerable) due to forestry with clear-cutting.

The productive forest land that has not been felled within the framework of clear-cutting methods remains mainly in northern Sweden, where widespread clear-cutting began to be conducted later than in southern Sweden. The area consisting of old-growth forests is now relatively small and is decreasing as a result of felling. This has a major negative impact on the endangered species of the forest landscape. Ongoing and expected increases in the amount of old forest through growth from younger age groups is expected to play a positive role for many species linked to old-growth forests, but in the short term, growth cannot compensate for the loss of forests with long continuity in the case of particularly demanding and sessile species. The reason is the unique properties of old-growth forests with long time horizons for the development of valuable structures and for the establishment of species.

A prerequisite for preserving the remaining values associated with long forest continuity is to preserve existing forests with high conservation values, while at the same time managing surrounding production forests with appropriate continuous cover forestry methods to a greater extent. Continuous cover forestry methods can also be positive for reindeer husbandry, recreational values and several other ecosystem services.

### **1.1.3 Green infrastructure**

Sweden's green infrastructure has major shortcomings. The task of creating a functional green infrastructure is urgently needed. The ongoing fragmentation of forests with high conservation values leads to impaired functional connectivity for several species, which makes future recolonizations more difficult. In the counties of Dalarna and Jämtland, for example, the functionality of habitat networks for old pine forest has decreased by 15-41 percent and old spruce forest by 15-88 percent, despite a rapid increase in formal forest protection and voluntary set aside forests from 2000 to 2019. This is due to the fact that the existence of areas with forests that have high nature values is becoming increasingly sparse. With ongoing climate change, it is particularly important to ensure pathways for the species in the landscape. In addition to preserving existing high conservation values, habitat restoration is needed both to create a functional green infrastructure and to reach above critical thresholds for endangered species in large parts of the forest landscape. Some structures require a very long time to be recreated, if they are lost during final felling. Examples of conservation qualities that take a very long time, sometimes several centuries to recreate, are very old oaks (>1000 years), large decomposing dead pines (500–1000 years), tree- and leaf litter in old hollow trees, and wetland forest (>300 years). Some other qualities take much less time, for example, certain deciduous forests with old-growth characteristics can be recreated in 60 years. The ecological qualities of the landscape affect the formation and development of natural values over time.

### **1.1.4 Dead wood, older deciduous forest and large trees**

The volume of dead wood in the productive forest land has an increasing trend. The hard dead wood accounts for the largest increase and the majority has been



added via storms, drought, and attacks by spruce bark beetle. A trend since the mid-1990s is that the volume of hard dead wood left after felling is increasing. Mainly, it is the smaller dimensions of dead wood that are increasing. The fact that the amount of dead wood continues to increase is positive. However, the volumes of different types of dead wood in the forest landscape are still far below the necessary level for several of the species that depend on dead wood. In addition, the dependence of most of the species is also not only on the volume of dead wood but also on various other aspects linked to the quality of the dead wood. Many specialised species require, for example, dense forest from slow-growing trees, the presence of burnt and charred wood, or hollow trees with tree litter. Pine trees, who die standing up and then are exposed to the sun and wind, get a dry and hard wood with special properties that some species depend on. Some species of mushrooms live mainly on trees or logs with a large proportion of heartwood. Several of the red-listed forest beetle species are primarily associated with coarse dead wood in late stages of decomposition or fungi on dead or dying trees. Thus, many species that depend on dead wood require the presence of special types of wood that are uncommon in the forest landscape.

The area of older deciduous forest is increasing in the boreonemoral and nemoral region. In the boreal forest, on the other hand, it is decreasing. The trends are similar even for younger deciduous forests. The area of older broad-leaved forests is very small in Sweden.

The area of forest with at least 60 large trees per hectare is increasing, with the largest increase in southern Sweden.

#### **1.1.5 The age of the forest**

The average age of productive forests is lower today than in the 1950s. For example, forests younger than 20 years old have increased by about 80 percent during the period. The main part of the country's productive forest land today is in the age classes up to 60 years or younger.

Forests over the age of 160 have increased since their lowest recorded levels in the early 1990s. The highest proportion is again found in the montane forest in northwestern Sweden. On the other hand, compared to the 1920s, the area of forest over 160 years has decreased by about 40 percent.

During the 1900s, the areas of old forest according to the SLU National Forest Inventory's definition (average tree age over 140 years in boreal region and over 120 years in the rest of the country) decreased sharply to their lowest levels in the mid 1980s. The area of old forest has more than doubled since 1985. The statistics include both voluntary set-asides and environmental consideration areas that have reached the age criterion.

#### **1.1.6 Forest ecosystem services**

Ecosystem services are nature's contributions to people. Forest ecosystem services are of great importance for human well-being. With the exception of the production of materials and bioenergy from trees, there is no monetary valuation of the 20 or so ecosystem services linked to the forests in Sweden. This shortcoming makes governance of ecosystems, and for society to reach an optimal resource

allocation of the ecosystem, difficult. Biodiversity, which is deemed to have insufficient status, is the basis for maintaining most of the other ecosystem services. The ecosystem service *Habitat creation and maintenance* that are closely linked to biodiversity are also considered to have insufficient status. There are many reasons why it is important to preserve biodiversity. For example, there is a relation between forest biodiversity and human health, diversity is important for biomass production, decomposition and nutrient metabolism, a large part of today's pharmaceuticals contain substances originally found in nature and many technical innovations arise after we have studied nature's solutions.

### **1.1.7 Montane forests**

The montane forest that runs along the entire mountain range of northwestern Sweden is a very important core area with great importance for the dispersal ecology of forest species in the otherwise more affected forest landscape in northern Sweden. From a European and global perspective, Sweden has a specific responsibility for the conservation of these forests. The montane forest is expected to play an important role in the conservation of biodiversity in a changing climate. Due to its location and distribution, it can provide an important refuge and dispersal route for northern species. Today, there are approximately 500,000 hectares of productive forest land with high conservation value outside formal protection in areas close to the mountains in Sweden according to an inventory that the county administrative boards have carried out on behalf of the Swedish Environmental Protection Agency. The inventory showed that there is a large, basically contiguous, area along the entire mountain range with high conservation values. Land cover consists of a mosaic of coniferous old growth forests, mountain birch forests, marshes and mountains and, due to their size and natural dynamics, they have a unique importance for the preservation of biodiversity.

### **1.1.8 Damage to ancient and cultural heritage remains in the forest**

During the period 2012 to 2021, the Swedish Forest Agency has inventoried close to 4,000 fellings and found 957 cultural remains with serious, irreversible damage and thus cannot be restored. According to the results of a random sample analysis, approximately 6,000 cultural remains are estimated to have suffered irreversible damage over the past ten years. Properly used, tree stumps cut at 1,3 meters around the remains have a high effect in reducing damage.

### **1.1.9 Consideration of forest landscape watercourses**

How forestry measures are carried out in practice can have a major impact on watercourses, their surrounding areas and on the species that live in and adjacent to the aquatic environments. Damages to soil and water caused by machines in forestry operations can lead to increased transport of methylmercury and mercury to water courses after final felling. Some transportation damages also cause increased formation of methylmercury. Conventional final fellings have increased the transport of methylmercury from forest land to lakes and streams by 6–30 percent, compared to if no fellings had been carried out. Threshold values for mercury are exceeded in all of Sweden's surface water bodies. Based on recent studies, there is great potential for improvement in terms of adaptations and consideration of watercourses in practice.

### **1.1.10 Objectives for good environmental consideration**

The fact that environmental considerations in fellings are of great importance is supported by many research results. Habitat for many species can be maintained in managed forests with the help of good environmental considerations and varied tree species mix, while other habitats need to be excluded from forestry. In a new study, research has shown, for example, that large deciduous trees that were left during felling in the 1990s have positive effects on bird life in otherwise homogeneous and bird-poor spruce plantations. They show that the positive effect of leaving habitat trees at harvesting continues in the regenerating forest.

A joint project between the Swedish Forest Agency, other government bodies, forest companies and landowner organisations has resulted in a number of objectives for good environmental consideration, which have been widely implemented in forestry. They have resulted in knowledge enhancement and increased consensus on good environmental considerations. No conclusion regarding the final effects on various environmental values of the objectives can currently be drawn as there is no analytical basis, but it is reasonable to assume that the objectives have positively affected the environmental considerations taken by the forestry sector.

Knowledge on which natural values are lost during felling is still lacking. Today, forests with high conservation values and sensitive biotopes are felled without this being systematically followed up. What constitutes an appropriate consideration depends on the natural values that exist in the felling area. The Swedish Forest Agency is currently working on a new method to follow up environmental considerations after felling, but it is unclear whether or how the natural values present before felling will be followed up. The question of whether environmental considerations have improved after setting the objectives will probably not be able to be answered, since the old and new methods to follow up on environmental consideration have low comparability.

### **1.1.11 Time delays and the comprehensive assessment**

Many different factors need to be taken into account in analyses of forest biodiversity trends. Time delays in the delivery of important substrates and in the re-establishment of species in forests where good environmental consideration has been taken into account since the early 1990s mean that it may remain several years before today's and yesterday's nature conservation gives full effect. At the same time, continued loss of old growth forest habitats and the time delay of local species extinctions mean that the negative consequences of forestry on biodiversity can be underestimated. The expected effects of the above ecological time delays have been taken into account in the overall assessment that the development of the environmental objective is expected to be negative at national level by 2030.

## **1.2 Instruments and measures**

In order to govern towards Sustainable Forests, the authorities have a variety of different types of policy instruments and measures available, including advice and information, formal and strict protection, financial support and supervision of current legislation. Today, however, there is a lack of sufficient instruments to be

able to ensure preserved biodiversity in the forest and to maintain all the forest's ecosystem services over time.

### **1.2.1 Why environmental problems arise in forestry**

Market failures in the form of externalities and collective goods are fundamental explanations for the emergence of environmental problems in forests. Landowners make decisions that mean that there are both positive and negative external effects, the latter can be about reduced biodiversity in the forest. The foremost explanation for the fact that environmental problems arise in the forest is that there are strong business incentives in the form of timber prices that steer towards production-oriented forestry, while the economic incentives to focus activities on other forest ecosystem services, including biodiversity, are weak or non-existent. Production-oriented forestry creates societal benefits but contribute to reduced production of other societal benefits. From a societal perspective, this entails a substantial risk that the various benefits of the forest will not be optimally utilized. The Swedish model of freedom in the choice of forest management is faltering in that in practice, with few exceptions, the incentives mean that the only rational business model and option is to maximizing timber production. Overall, the freedom of choice of management has not been combined with incentives to actually benefit biodiversity, rather there are predominant obstacles.

### **1.2.2 Profit driven timberbuying organizations**

Timberbuying organizations are profit driven, which means that they will make decisions where the expected utility or revenue is greater than the cost. The result is strong incentives to maintain production-oriented forestry with a focus on quantitatively large timber production. This is reflected in the timber buyers' organisations' advice to forest owners and how forestry measures, including felling, are carried out. As noted above, there is no matching incentive structure that enable forest owners, on a business perspective, choosing a more nature conservation oriented management where, for example, stands with high conservation values are identified and excluded from felling or where felling of older tree stands is postponed in time.

Individually owned forests occupy a special position with great opportunities to further develop traditional and new value chains based on the forest owners' own visions, needs and goals. However, this requires advisors with a broader focus than the timber buyers' organizations whose main mission in a well functional market economy is to maximize profits via the mobilization of forest raw materials at as low a price as possible for industrial processing. It should be emphasized that when the timber buying organizations maximize profit, it is natural and positive and a basic prerequisite for a functional market economy whose outcome creates the greatest possible welfare benefit. The state must only intervene with policy instruments in the event of market failures such as reduced biodiversity. Forest owners will have greater freedom of choice if biodiversity is incorporated into the market economy and becomes a profitable business model.

### **1.2.3 Increased freedom of choice - preserving and developing nature conservation forests should be a profitable business model**

Today, production-oriented forestry is completely dominated by one forest management system: clear-felled areas with environmental considerations in mind.

The dominant value chain is based on industrial processing of wood raw materials. Swedens forestry act stipulates that environmental objectives and production goals are of equal importance. However, there is an imbalance here, in that it is only for one objective that business incentives exist. A broadening to more than one business model would increase freedom of choice for the landowner and interest and values in entrepreneurship would more than today guide the direction in the management and use of the forest.

A solution to achieve the political ambition of the Parliament and the government not to fell forests with high conservation values, is that nature conservation management in order to preserve and develop high conservation value forests can be a profitable business model for forest owners in the same way as timber production-oriented management is today.

Proposed measure 5: The Swedish Forest Agency and the Swedish Environmental Protection Agency are given an assignment by the government, in collaboration with other relevant authorities, to examine and propose economic policy instruments and measures aimed at making and incorporating nature conservation forests and forests with high conservation values into the market economy in the same way as timber production forests, in order to create a more optimal production and allocation of biodiversity for the society. Proposals should be based on volunteerism and cost-effectiveness. Proposals shall be made on the scope and financing of the measures. The choice of funding source must be justified from a socio-economic perspective. The proposals will aim to create conditions for increased freedom of choice among forest owners through more interesting business management methods.

Several examples exist of policy instruments that could enable biodiversity to become an integral part of a new business model, such as: *incentives for forest conservation, ecological compensation, environmentally responsible procurement, crowdfunding to finance nature conservation measures in the forest and reverse auction.*

#### **1.2.4 Contradictory political signals and the Swedish Forest Agency's restrictive application of Chapter 12. Section 6 of the Environmental Code**

The political signals about high conservation value forest are contradictory. The ambiguity has been further strengthened after the Forest Bill, which was decided in Parliament earlier this year. In a statement from the environment and agriculture committee and in its report stated that:

*...Sweden has high conservation value forests throughout the country and these forests should not be felled but preserved either through formal protection or through voluntary set-asides. Forests with high conservation values are of great importance for the forest's plants and animals ...it is important that these forests are protected as many natural values cannot be recreated for the foreseeable future and the values are lost if remaining forests with high conservation value are felled.*

The new political signals also emphasize that the Swedish Forest Agency's regulatory work is an important tool for ensuring that the Forestry Act and the parts of

the Environmental Code that concern forestry measures are complied with, and that the Environmental Code applies in parallel with forestry legislation and that the Environmental Code also applies to forestry measures.

At the same time, there is a clear emphasis on the fact that formal protection of forests should be voluntary and that the initiative for protection should be that of the landowner. In general, property rights should be strengthened. In addition, the authority's work on formal protection and law supervision is guided by how much resources the authority is allocated.

The consequence of the ambiguity is that certain interpretations, decisions and trade-offs that normally belong at the political level are instead moved down to the level of the authorities. There is therefore a need for clarification of today's contradictory political signals about how forests with high conservation values should be handled.

#### *1.2.4.1 Unclear political signals explain the Swedish Forest Agency's restrictive application of the Environmental Code and lead to important balancing issues being moved down to the authority level*

An important area where the unclear political signals mean that important balancing issues are moved down at the authority level is linked to the Swedish Forest Agency's restrictive application of Chapter 12. Section 6, fourth paragraph, of the Environmental Code. The Forestry Act and the Environmental Code *both* apply to forestry measures. It follows from Chapter 12, Section 6, fourth paragraph of the Environmental Code, that the supervisory authority may order the notifier to take the measures necessary to limit or counteract damage to the natural environment. If such measures are not sufficient and are necessary for the protection of the natural environment, the authority may prohibit the activity. Provisions on the right to compensation in the event of such an injunction or prohibition are contained in Chapter 31.

However, in addition to the parts relating to the Species Protection Regulation, the Swedish Forest Agency applies Chapter 12. Section 6 of the Environmental Code very restrictively when forests with high conservation values are notified before felling or for measures such as thinning in such areas. The restriction applies to both prohibitive decisions and decisions on adaptations of the measure beyond what the Forestry Act encroachment restriction allows. This means that when forests with high conservation values are reported for felling, the Swedish Forest Agency often applies the Forestry Act instead of applying the Environmental Code. Since the encroachment limitation of the Forestry Act is often not sufficient to preserve the environmental values of forests with high conservation values, it often means that large parts of the value are felled and that the natural values in these parts are destroyed.

The Swedish Forest Agency's restrictive interpretation to when Chapter 12. Section 6 of the Environmental Code applies to forestry measures cannot be justified on legal grounds. The current restrictive stance is instead explained by the fact that the authority has taken into account the government and parliament's more general forest policy signals to the authority in its application of the law. Thus,

there are no strictly formal impediments to the application of Chapter 12, Section 6 of the Environmental Code to a greater extent.

The Swedish Forest Agency's view that there is no room from politics to fully apply the legal tools available within the framework of existing legislation means that forests with high conservation values continue to be felled. When forests with natural values linked to long continuity are harvested, it has a serious negative impact on biodiversity, which means that Sweden's opportunities to preserve biodiversity, achieve environmental quality goals and international commitments are significantly limited.

There is thus an existing legal instrument that, from a legal perspective, can probably be applied to a greater extent to ensure that forests with high conservation values are not felled and thus reduce one of the biggest problems within Sustainable Forests. However, the Swedish Forest Agency currently has a restrictive application due to its interpretation of overall political signals. In the latest forestry bill and in the subsequent report, there are political signals that also point in a different direction.

Proposed measure 3. The Swedish Forest Agency will investigate the possibilities of requesting the government for clarification of today's contradictory political signals on how forests with high conservation values should be handled. The consequence of unclear and contradictory political signals means that certain interpretations, decisions and trade-offs that normally belong at the political level are instead delegated to the level of authority. A clarification allows for more clear and transparent political governance. The fact that important political trade-off issues are moved down to the authority level is very much relevant, for example, regarding the Swedish Forest Agency's interpretation of the political signals that form the basis for a restrictive application of Chapter 12, Section 6 of the Environmental Code. It is important that the policy gives a clear answer to whether it is considered to be in order for landowners to harvest forests with high conservation values despite the fact that it has a serious negative effect on Sweden's opportunities to preserve biodiversity and that the effects will be long-term, and whether the Swedish Forest Agency should continue to assume a restrictive application of Chapter 12, Section 6 of the Environmental Code.

Proposed measure 4. The government ensures increased resources for the relevant authorities to carry out more supervisory activities in order to achieve better compliance with the law. For example, supervision can be expanded for the areas of driving damage, consideration of watercourses and sensitive biotopes, cultural heritage remains and to identify felling notifications relating to habitats that house species linked to the Species Protection Ordinance and forests with high conservation values.

### **1.2.5 Formal protections at the initiative of the landowner**

The Government believes that property rights should be strengthened in the formal protection of forests by relying to a greater extent on voluntary action and the

landowner's own initiative. Basically, it is about promoting and harnessing the incentives of landowners. In its report, the Parliament stresses the importance of a restrictive use of the exemption from voluntary action. A new research report asks whether it is possible to reach the goals of Sustainable Forests by voluntarily protecting more forest. The results show that only one in ten forest owners is in favour of voluntarily doing more for nature conservation. A knowledge on high conservation value forests and advisory resources is needed to develop an appropriate approach to the protection of forests based on landowners initiative. Personal advice on the property's natural and cultural heritage values and why the values are important to preserve, as well as what choices exist within the framework of formal protection, are expected to increase the interest of landowners.

There must also be sufficient funds for the formation of formal protection areas so that the landowner actually has the freedom of choice to opt for formal protection in the near future and does not have to wait several years.

More conservation management is needed in many different environments to preserve biodiversity and develop natural and cultural heritage values. Not least, there is a great need for conservation management in many of the habitat protection areas established by the Swedish Forest Agency. Since both the creation of formal protections and conservation management are urgent measures to preserve biodiversity, it is important that the measures do not compete with each other for resources so that the result is that one is at the expense of the other.

Proposed measure 1: Funding to the The Swedish Forest Agency and the Swedish Environmental Protection Agency joint assignment to develop digital maps on natural and cultural heritage values in forest as a complement to field inventories needs to be continued and intensified. The government allocates funds so that the authorities can urgently handle the task of producing maps on where there is a high probability that the forest has high natural and/or cultural heritage values. The data will provide support to the landowner at an early decision-making and planning stage. The data is also needed for the authorities' work and should be able to show potential areas where it is relevant to proceed with in-depth analysis and supplementary data. It is important that the maps are of good quality.

Proposed measure 2: The Government ensures that there are the necessary funds for the authorities in the work of compensating landowners for formal protection, for conservation management in the formally protected areas where necessary, and for other management of the formally protected areas. In the work with formal protection, authorities will work to increase the landowner initiative from forest owners and that decisions on formal protections should mainly take place voluntarily. In connection with this initiative, the government should also allocate funds that cover the great need for resources for advising landowners.

### **1.2.6 Continuous cover forestry methods**

Continuous cover forestry methods increase the variation in the landscape and some methods can help maintain continuity values. A prerequisite for preserving



the remaining continuity values is to preserve existing forests with high conservation values, while at the same time managing surrounding production forests with appropriate continuous cover forestry methods to a greater extent. Some continuous cover forestry methods can also be positive for reindeer husbandry. A continuity of lichen-rich forests with a higher age structure is crucial for the survival of reindeer husbandry. Appropriate clear-cut methods can make a contribution to the work of maintaining/recreating a continuity of lichen-abundant forest in the core areas of Sami grazing lands. Today, there are insufficient incentives and/or instruments to conduct continuous cover forestry methods to a greater extent.

Proposed measures 5. The Government should develop a package of measures to develop and promote continuous cover forestry methods. The package includes:

- Design an incentive grant that can be offered to landowners who want to use continuous cover forestry methods in forestry and have forests suitable for these. The Swedish Forest Agency and the Swedish Environmental Protection Agency should be assigned to examine how the grant can be designed and administered.
- Govern towards an increased use of continuous cover forestry methods.
- Strengthen the authorities' work with knowledge and methods in continuous cover forestry methods.
- Decide on an intermediate objective for continuous cover Forestry methods.

### **1.2.7 Monitoring of biodiversity and the need for new milestones to formalise commitments for biodiversity**

There is a lack of systematic follow-up for many species groups of forestliving species and for the development of biodiversity throughout the forest landscape. The shortage is exacerbated by the Swedish Forest Agency ending the survey to monitor biodiversity in key habitats. New milestone objectives are needed to formalise how Sweden will achieve the national environmental quality objective and international commitments for biodiversity. This includes objectives and commitments regarding both forest protection and effective and functional environmental considerations.

Proposed measure 8: The Swedish Forest Agency should get a assignment to systematically monitor biodiversity throughout the forest landscape.

Proposed measure 7: The Government develops new milestone objectives for biodiversity to formalise how Sweden will achieve the national environmental quality objectives and international commitments for biodiversity.