



Promoting the integration of nature conservation into sustainable forest management at the policy, practice and research level



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## Introduction

In the light of the high species eradication rates and degradation of natural habitats, the conservation of biodiversity has high political attention, both at the European and global level. Integrating biodiversity conservation in sustainable forest management is hence of critical importance in Europe. Foresters have developed and implement a rich portfolio of concepts and approaches in different parts of the continent to tackle this challenge, and knowledge based on research and practical experiences is steadily increasing.

At the same time, policy-makers, experts and scientists continue to debate about how to best achieve biodiversity conservation in forests. Some of these debates are characterized by distrust and indirect communication between the forest and conservation community, which can be a major obstacle for making further joint progress.

The overall objective of the European Network Integrate, established by decision of the Standing Forestry Committee of the European Commission, is to identify successful management practices that integrate nature conservation approaches, based on empirical experiences and on science. The Network aims at sharing and promoting

these practices across borders, and to transform them into recommendations targeted both at policy makers and forest practitioners. Thus, Integrate is advancing the integration of nature conservation into sustainable forest management involving three levels: the decision-making policy level, the level of forest practitioners/managers, and the level of research and academic knowledge.

The aim of this brochure is to provide an overview both of the activities of the European Network Integrate and the variety of cases in Europe. Furthermore, it presents some of the key observations and recommendations which have been generated over the first four years.

The European Network Integrate is voluntary and driven by the members. As previous and acting chairs of the network we highly value the informal member country driven approach. The rotating chairmanship provides chair countries with the initiative to take up relevant topics during their chairmanship. Inviting members to the host country for meetings and visits to the forest is a core part of the network approach. The voluntary approach allows each member country to gear up or down according to relevance and resources thus, creating a dynamic network facing



current discussions and actions on forest biodiversity in different corners of Europe. This is also demonstrated by the cases presented in this publication.

A great feature of Integrate is the tangible network of so-called marteloscopes. They are 1-hectare forest sites with full records of tree-data as well as economic and biodiversity values digitally available for field applications. Marteloscopes are available as demonstration and learning sites for education in the fields of forestry and nature protection, for school teaching and general public relations as well as for research. Almost 100 marteloscopes have already been established all over Europe, and more are to come.

The European Forest Institute (EFI) based on a project funded by the German Ministry of Food and Agriculture (BMEL) accompanies the process in its role as facilitator and scientific advisor, which has also been the case in the creation of this brochure.

The Integrate Network currently comprises close to 20 European Member States (both EU and non-EU countries) and involves about 50 representatives of policy and

research related to forests and environment as well as the European Commission. We hope this brochure will not only encourage all of us to continue with this important work under the future forest strategy of the EU, but also to inspire even more countries in Europe to join the Integrate network.

*Present and previous chairs of the Integrate Network:  
Denmark, Poland, Czech Republic, and Germany*





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**Our network members advance different approaches to integrate nature conservation into sustainable forest management**



## Member countries map and events



Bonn, Germany: *Network kick-off* (June 2017)

Plzeň, Czech Republic: *Combining ecology and economy* (March 2018)

Białowieża Forest, Poland: *Strategies to deal with beetle outbreaks* (June 2018)

Toruń, Poland: *Sustainable forest management post calamities* (April 2019)

Rold Forest, Denmark: *Integrating nature conservation and involving people in sustainable forest management* (October 2019)

Bonn, Germany: *Governing and managing forests for multiple ecosystem services across the globe* (February 2020)

Grib Forest, Denmark: *Integrating segregation in sustainable forest management* (April 2020)

Basel, Switzerland and Kandern, Germany: *How to balance forestry and biodiversity? A view across Europe* (July 2020)

Neuchâtel, Switzerland: *Forest management and biodiversity in 2080* (November 2020)

Country	Contact person	Organisation
Austria	Johannes Schima	Ministry of Sustainability and Tourism
Croatia	Srećko Juričić	Ministry of Agriculture
Czech Republic	Tomáš Krejzar	Ministry of Agriculture
Denmark (Chair)	Mogens Krog	Danish Nature Agency
England	Andrew Stringer	Forestry England
Estonia	Rauno Reinberg	Ministry of the Environment Estonia
Finland	Sanna Kasurinen	Finnish Forest Centre
Germany	Thorsten Mrosek	Ministry for Climate Protection, Environment, Agriculture and Consumer protection (NRW)
	Thomas Haußmann	Federal Ministry of Food and Agriculture (BMEL)
Hungary	András Szepesi	Ministry of Agriculture
Italy	Enrico Pompei	Ministry of Agriculture and Forestry
Ireland	Cormac Fitzpatrick	Department of Agriculture, Food and the Marine
Luxembourg	Michel Leytem	Ministry of the Environment, Climate and Sustainable Development
Poland	Magdalena Wolicka	Department of Forestry
	Marta Gaworska	Directorate General of the State Forest
Scotland	Jo O'Hara	Scottish Forestry
Slovenia	Simon Poljanšek	Ministry of Agriculture, Forestry and Food
Slovakia	Eva Hušťáková	Ministry of Agriculture and Rural Development
Spain	Leopoldo Rojo Serrano	Ministry for the Ecological Transition and the Demographic Challenge
	José Manuel Jaquotot Saenz de Miera	Ministry for the Ecological Transition and the Demographic Challenge
Sweden	Gerben Janse	Swedish Forest Agency
Switzerland	Christoph Dürr	Federal Office for the Environment (BAFU)
European Commission	Daniel Nuijten	DG Environment
European Commission	Alfonso Gutierrez-Teira	DG Agriculture and Rural Development

## Austria

Forests occupy 47.6% of the Austrian national territory. Preserving the forest and its multifunctionality is the central objective of the Austrian Forest Act. Sustainable forest management should ensure the various forest effects (economic, protective, welfare and recreational functions) on the entire forest area.

Securing the multifunctional effects is also anchored in the Forest Strategy 2020+, which was developed by the Austrian Forest Dialogue. In the forest programme, the guiding principle of sustainable, multifunctional forest management is concretised through principles, objectives, measures and indicators. The biological diversity of forests must be protected, conserved and used sustainably. According to the given possibilities, the tree species composition is to be adapted to climate change and preserved as carbon stores.

### **Development of a reference area system for scientific quantification of close to nature silvicultural methods**

The ReSynatWald – Forest Integrate Austria Project (2013-2016) was initiated by the Austrian Research Centre for Forests (BFW) in cooperation with Pro Silva Austria.

*by Dr Georg Andreas Frank*

A total of 12 reference areas were established in selected example forest enterprises as long-term monitoring areas for the integrative approach to forest management. They serve as best practice examples of near-natural forest management. For the first time in Austria, silvicultural, economic and ecological monitoring was combined on one and the same forest area. This pilot study laid the foundation for a long-term monitoring of reference areas of near-natural forest stands.

Reference areas are set up for long term research of near natural forestry methods. Based on the knowledge of forest treatment and development within the areas, recommendations for an economically efficient forest management can be concluded, but also factors for maintaining and promoting biodiversity can be identified.

The forest owners made a commitment to regularly record performed work and uses, income and expenses in a standardized way in order to secure economic indicators regarding the reference areas. Cooperation of Pro Silva Austria and the individual owners respectively managers is regulated by a formal contract.



With long term duration of the project scientific value is expected to increase. The joint collaboration of the partners – Austrian Research Centre for Forests (BFW), Pro Silva Austria and the forest enterprises – enables a combination of applied science and forestry practice.

The aim of a follow-up project **ReSynatWald 2.0 - Forest Integrate Austria** now underway is to extend the network of best practice examples representative of all ownership categories and forest types that do justice to near-natural silviculture and the integrative approach to biodiversity conservation. The cooperation with Pro Silva Austria guarantees the long-term nature of the project and direct cooperation with practitioners.



## The educational project “We look at our forests”

The project “We look at our forests” is an interdisciplinary educational project in which forestry, nature conservation and educational institutions work together on an equal footing.

The forest owners have a high level of knowledge about their forest. Of course, economic considerations are at the forefront of forest management. However, there is also always an emotional connection beyond economic considerations. This is exactly where the project starts. It aims to raise awareness of the value of biodiversity in their own forest by encouraging forest owners to see things that they have not yet consciously perceived. We want to convey the connections between forest management and biodiversity in a self-experienced, not instructive way.

Project participants are those who have had a so-called “Forest Ecological Dialog” with one of our trainers in their own forest and who then voluntarily agree to look at some of the focal points relevant to forest biodiversity by entering qualitative feedback online into a database once a year.



Currently, 670 forest owners spread all over Austria participate in the project, with forest enterprises of all sizes from a few hectares to several thousand hectares.

The Forest Ecology Dialogue is conducted by specially trained forest experts and forest ecologists who are active as trainers in our project throughout Austria. We have educated a total of over 80 trainers. The discussion takes place in the project participant's own forest and lasts about 3 hours. In this process, it is individually determined what is relevant for the conservation of biodiversity in the respective forest. And it is agreed on which aspects of biodiversity forest owners should voluntarily look at in the coming years. The forest owner is asked to report once a year via the Internet what she/he has observed and what measures she/he is taking to preserve the biodiversity in her/his forest.

Within the framework of the project, educational events are continuously being held throughout Austria, to which we invite our project participants. In addition, particularly committed and motivated forest owners have the opportunity to participate in the project as a "service enterprise" for an expense allowance and, for example,

to carry out excursions on their own farm with the involvement of experts.

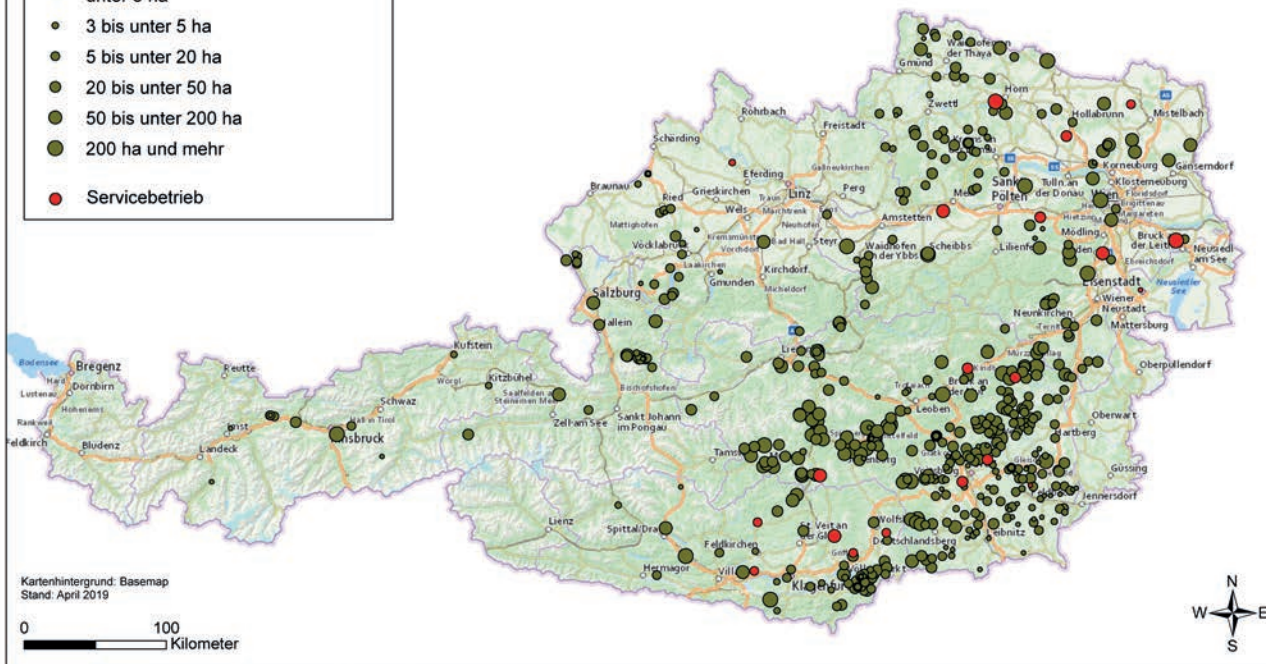
The project "We look at our forests!" is embedded in the framework of the educational projects "We look at our meadows!" and "We look at our mountain pastures!", which follow a similar educational approach in the agricultural sector. Information on all these projects is available on the website [www.biodiversitaetsmonitoring.at](http://www.biodiversitaetsmonitoring.at)



## Legende

### Waldausstattung der Teilnehmerbetriebe

- unter 3 ha
- 3 bis unter 5 ha
- 5 bis unter 20 ha
- 20 bis unter 50 ha
- 50 bis unter 200 ha
- 200 ha und mehr
- Servicebetrieb



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## Croatia

### **Demining, restoration and protection of forest and forestland in protected and Natura 2000 sites in Danube-Drava region – NATURAVITA**

Naturavita is a project in eastern Croatia at the crossroads of Danube and Drava rivers and on the territory of the Nature park “Kopački rit” and regional park “Mura Drava”. Through the project more than 25 km<sup>2</sup> of protected and Natura 2000 forest and forestland will be cleared of landmines and other explosive remnants of Croatian Homeland war. This will grant safe access to visitors and nature protection stakeholders, allowing implementation of forest and Natura 2000 management plans, biological restoration of more than 1.000 hectares of forests, construction of forest fire-fighting infrastructure and the establishment of water and ground water monitoring system that is extremely important for the future conservation of this biodiversity rich Dunav-Drava wetland areas.

Almost a third (28%) of Osijek-Baranja County is covered by forests and forest land, which makes forest ecosystems one of the most important resources in the county, and forestry a traditionally important economic branch. The county also abounds in waters, of which the Danube

*by Mrs. Irena Franjic*

and Drava rivers, with their tributaries, are certainly the most important. The areas along the Danube and the Drava rivers are the richest in forests, and their floodplain forests of willow, poplar and oak are among the last of its kind in Europe. The project area is extremely rich in biodiversity, protected by the Croatian legislation, The Ramsar Convention and is part of EU ecological network Natura 2000.

The project implementation period is from June 23, 2015 until September 23, 2023. The total value of the project NATURAVITA is 376.8 million HRK (49,9 million Euro). The total value of the eligible costs is 369.6 million HRK, of which 85% or 314.1 million HRK is financed by the EU through the Cohesion Fund.

So far, through demining activities, 25,34 km<sup>2</sup> of forest and forestland have been cleared of mines and other unexploded ordinances in the Nature Park Kopački Rit the Regional park Mura-Drava (100% of planned area). In the demined area, 5,611 explosive remnants of war have been found and destroyed, of which 1,762 are anti-personnel mines, 3,103 anti-tank mines and 746 are pieces of other unexploded ordinances.





The biological restoration of forests and forest land will be carried on a surface of 1.021 ha in the project area. This includes replacement of 441 ha of alien species (Euro-American poplar, American ash, maple ash, black locust, etc.) with indigenous forest stands.

Furthermore, it also includes restoration of forests that were contaminated and damaged by landmines, forests where timely restoration could not be carried out as a result of war activities and forests which were affected by drought and decline. The replacement of alien species and the restoration of forests is performed through planting seedlings and performing works of care on seedlings of white willow, oak, plain ash, black and white poplar. So



far, the activity has been implemented on 219 ha or on 21.5% of the planned area.

This activity will preserve and protect wet and floodplain forests, increasing their ecosystem services and maintaining the capacity of the project area to absorb large quantities of flood water, acting as an important green infrastructure along the Danube river basin in terms of flood protection.

Furthermore, the removal of woody vegetation will allow revitalization of 100 ha of protected floodplain grassland *Cnidion dubii* alliance. After the project is completed, lawn maintenance will continue with regular mowing, an essential activity to conserve this rare meadow community and establish preconditions for its further expansion.

The forest fire-fighting infrastructure will be restored through reconstruction and construction of 107 ha of fire brakes, 33 km of fire roads and 4 forest bridges, contributing to mitigate the negative effects of fires and other abiotic factors on forest ecosystems. This activity is designed to be in line with the nature protection requirements that and will contribute to control the expansion of the alien invasive species, the plant *Amorpha fruticosa*.



The project will increase public awareness on biodiversity, ecosystem services and sustainable forest management through establishment of the educational center Podravlje, development of 4 new ecological educational paths, development and implementation of the education and training programmers.

The beneficiary of the project is Hrvatske Šume, a state company responsible for the sustainable management of all publicly owned forests in Croatia (which equals 78% of all forest and forest land in the country).

Croatia is rich with forests: about 2.4 million hectares, or 47% of the national territory, are forests and forest lands,



with diverse indigenous flora and fauna and many endemic species. Hrvatske šume d.o.o. manages these publicly owned forests implementing strict sustainable forest management principles, on the basis of forest management plans developed in accordance with the Forest Law and the Nature Conservation Law. The beneficiary implements various projects whose purpose is to regenerate degraded and neglected forest land with the vision that “forests worth more tomorrow than they are today”.

Partners of the project are the Ministry of Interior (public mine action body), Croatian Waters (legal entity managing state water resources), the public institution Nature Park Kopački rit and the Ministry of Regional Development and EU Funds. “One of the project’s objectives is to clear the Danube river basin of land mines and revitalize the Natura 2000 forests eco-systems. The completion of landmine removal in an area of 25 km<sup>2</sup> will significantly improve the safety of visitors and the park’s employees”, says Prof. Tomislav Bogdanović, Director of the Nature Park Kopački Rit.





## Czech Republic

Forest cover is about 34 % of the state territory and forest area has been slightly increasing in the long term. In 2018 it increased by 1733 ha to reach overall 2,67 mill. ha. Forests in the Czech Republic can be divided into 3 categories: production forests, protection forests (on exposed and exceptionally unfavourable stands, where production is not efficient or possible) and special purpose forests (dedicated to fulfilment of certain specific function). Production forests occupy 74 % of forest area.

Over last decades, functions of production forests have been shifting so that, together with wood production, other (non-productive) functions have increasingly been accented. In last years, the pressure on forest owners to ensure those functions grows. Everybody has right to enter the forest at their own risk and thus the forest and its management come under the close scrutiny of general public.

The Czech forest law sets rules that support sustainable forest management, including its ecological component. It determines, inter alia, that clear-cut area must not exceed one hectare with the maximum width of the double of average height of the forest stand, prescribes minimum

*by Ph.D. Tomáš Krejzar and Ph.D. Lenka Lehnerová*

percentage of soil-improving and stabilizing tree species, lays down rules for treatment of seeds and seedlings of forest tree species, prescribes obligation to reforest the stand within 2 years and have forest stands fully established within 7 years after cutting, etc. The state have been supporting the increase in share of soil-improving and stabilizing species, use of nature friendly forestry technologies and conservation and reproduction of genetic resources by providing subsidies.

Over last decades, the most important instrument of landscape and nature protection has been territorial protection, which is executed through specially protected areas. Based on the Nature and Landscape Protection Act,





they are declared at biologically and aesthetically important and unique areas. Their protection aims at maintenance or improvement of their state or at setting them (or their part) aside without human interventions.

There have been established 4 national parks, 26 protected landscape areas, 126 national natural monuments, 110 national nature reserves, 1580 natural monuments and 816 nature reserves. Altogether they cover 16,7 % of the state's territory. Area of forests belonging to some of the protection regimes (including Natura 2000) was 970 909 ha in 2017, which corresponds to 37,52 % of all Czech forests. This figure increased by 17 719 ha between 2014 and 2017.

In the frame of the Czech-German Strategic Dialog an idea appeared to take part in the project of European Forest Institute (EFI) aiming at integration of nature protection in sustainable forest management and to establish a network of Marteloscope demonstration sites as a basis for discussion on biodiversity enhancement in ordinary production forests, as an alternative and complementary action to territorial nature protection.

In cooperation with EFI and Forests of the Czech Republic, state enterprise, the Forest Management Institute established 4 Marteloscopes in typical production forests; ordinary stands of main forest tree species so that the knowledge and findings collected could be easily applicable in a real daily practise. Marteloscopes have been utilized mainly for excursions and systematically as a training tool for the staff of the state forest enterprise. Utilization of the Integrate methodology was incorporated in the new development strategy of the state forest enterprise.





We also concentrate on the use of Marteloscopes in forestry teaching. Over last two years, 2 additional Marteloscopes have been established in forest districts of secondary forestry schools in Žlutice and Trutnov.

First, teachers have been trained. The idea of protection of habitat trees and their function in the forest ecosystem, as well as the educational application, were introduced to them. The application not only serves for demonstrating the role of habitat trees in the forest stand, but also for simulating various tending and regeneration measures with or without respect to habitat trees. Our aim is to include these exercises into curricula of forestry subjects.

A subsidy to support protection and monitoring of habitat trees in non-state forests (as part of Rural Development Programme 2021+) is under preparation.

It is not only the network of Marteloscopes that contributes to the discussion and implementation of the integrated forest management in the Czech Republic, there are also efforts of organizations, such as Pro Silva Bohemica, or projects such as forestry parks, model forests or biosphere reserves.

Climate change in progress (and related drought and bark-beetle outbreak) is a real threat for the Czech forests and will certainly lead to the change in their age structure and tree-species composition, but may provide many opportunities for the promotion of integrative approaches as well.





## Denmark

The forest cover in Denmark is - compared to other EU countries - relatively low, about 14.7 % and the Danish forests are relatively young as Denmark had only 2-3 % forest cover 200 years ago. Establishing forests has been an issue since and is still an important purpose in the Forest Act. Today approx. half of the forests area is mostly non-native conifers and half mostly native broadleaves. All forests are managed sustainably and multifunctional. In general, the forests are rather intensively managed (75%) but contains also areas with no forestry activities (approx. 5%).

Even the Danish forests and forest sector is small in terms of area, volumes and turnover, the state of the forests and of forest management is subject to political debate. That goes both for the contribution to biodiversity, bio economy and to several other goals.

The overall national goal is to increase the Danish forest cover. The Danish National Forest Program (2018) includes a goal to increase the cover of forest landscapes to 20-25 pct. in 2100.

There has been a debate among policymakers, researchers

*by M.Sc. Mogens Krog*

and NGOs, within the last 10 years, on the need for segregation of forest from forest production/forest management and instead set forests aside for nature conservation with no management. The debate has developed over time and advocates of untouched forest with no management have increasingly realized the need for some kind of forest restoration and management. Large grazing animals as catalyst for forest dynamics in large fences is preferred by some nature conservationists. The debate is still ongoing.

The Danish Parliament has adopted a climate law with the aim of reducing CO<sub>2</sub>-emission to 70% by 2030 from the 1990 level. This ambitious target has raised a debate on the CO<sub>2</sub> emission from forest set-aside for conservation compared with multipurpose forestry with timber production.

The majority of the Danish forest area is planted within the last 200 years, thus lacking very old trees. In the state forest, 5 trees per ha are selected as habitat trees in order to grow old and later die for natural decay. In addition, 5 trees in middle aged stands are killed and left standing at the site, in order to raise the level of dead wood. The main





challenge is time, as it takes time to develop old growth elements especially very old trees. Private forest owners can apply for grants to set aside forests and to leave trees at the site for biodiversity purposes.

Many red-list forest species depend on open warmer or wetter areas in the forest and the transition zone between closed forest and open habitat. Such habitats have previously been drained and planted in order to optimize forest production. Meadows have disappeared due to lack of traditional management with grazing. Also the implementation of close-to-nature forest management in the state forests have increased focus on these forest habitats, as close-to-nature forest management by definition is a continuous cover forest with fewer open areas. Thus, segregated smaller areas of open habitat (meadows, wetlands etc.) and set-aside forest have been assigned separate forest development type as part of the Danish definition of close-to-nature forestry in order to maintain focus on and safeguard such habitats in the forest.

There is an increasing awareness of the need for grazing animals in the forest in order to maintain open habitats and grazing animals as an element for natural forest dynamics.

Some argue for large connected nature areas with all year grazing in large fences – some call this rewilding. However, this pose some practical challenges with fences, present legislation and conflicts between forest outdoor user groups as well as discussion about all year grazing, supplementary feeding and animal welfare etc.

Denmark has a well-developed market for wood fuel for bio energy; also, the technical capacity of harvesting of wood for energy makes it possible and profitable to harvest most wood, with the risk of not leaving any deadwood for biodiversity. Thus, the challenge is to find a balance between the need for more deadwood and the demand for wood fuel. The forest certification schemes have developed standards for the level of dead wood to be set aside in certified forest.

Sever storms, tree diseases and pests pose threats to entire forests or the survival of specific tree species, which may be a major challenge for forest biodiversity. However, some argue that these calamities are part of natural forest dynamics and is an opportunity for forest biodiversity and forest succession.



In 1999, the worst hurricane in 100 years had very severe impact on Danish forests. The stability of the forests suffered through the development of even-aged monocultures of non-native conifer species planted over the last 200 years. In 2002, the National Forest Program set a strategy for long-term resilience of the forests.

Consequently, in 2005, the action plan for conversion of state forest to close-to-nature forest management was launched in order to change from classical mono-species and even-aged management of stands into close-to-nature management characterized by more single tree and group management, incorporating natural regeneration and structural differentiation. The time frame for conversion is at least one tree generation (80-120 years) and conversion is thus still at an early stage. Since the hurricane in 1999, similar calamities have been stepping stones to promote conversion according to the action plan, thus promoting tree species mixtures and open habitats in the forest for long-term stability and biodiversity objectives.

Protection of biodiversity was the main purpose for a political agreement in 2016 “The nature package” which included financing of forest areas to be set aside and

managed with biodiversity protection as the main purpose. The initiative increased the state forest area to be set aside for forest conservation from 5% to 20% of the total state forest area. The tendency in Denmark is towards more segregation of forest for biodiversity conservation, which may lead to a debate on how to convert managed forest to set aside forest for biodiversity conservation and which tools, if any, to apply for forest restoration in order to diversify planted forest.

Further political initiatives for protection of forest biodiversity are expected in 2020.





## England

Although England has one of the lowest levels of woodland cover in Europe, at around 10%, over the last century woodland cover has doubled. In 1919 the Forestry Commission was founded by the UK government to restore Britain's woods and forests. The Forestry Commission has evolved from focusing on timber production to also protecting habitats for wildlife and opening up forests for people to enjoy.

UK government was the first in the world to get their entire public forest estate FSC certified – ensuring forests are managed for environmental and social benefits as well as economic ones. As a result, in 2001 Forestry Commission was given the World Wildlife Fund 'Gift to the Earth', their highest environmental award for taking the lead on sustainable forestry certification.

Today, Forestry England (an agency of Forestry Commission) looks after over 250,000 hectares of woodland and other natural environments, around 2% of England's entire land area. We manage 1,500 forests, producing 1.4 million cubic metres of timber each year, and welcome over 235 million visits from the public. Our core purpose is to secure and grow the social, economic

*by Andrew Stringer Ph.D.*

and natural capital value of England's public forests.

We put environmental sustainability at the heart of what we do. The land we manage provides a diverse range of homes for wildlife, including 42,000 ha of open habitats, and 16,000 ha of ancient woodland – woodland known to have been present since at least 1600 AD. Around 68,000 ha are Sites of Special Scientific Interest, a key legal protection for nature conservation areas in England. Many of these areas are also Natura 2000 protected sites.

56% of England's rarest and most threatened species have been found in our landscapes (Section 41 species defined by Natural England). Many of these are European Protected Species, such as bats, otters, dormice and snakes, and we have detailed guidance on how forestry operations can work alongside these species.

It takes effort to properly integrate biodiversity conservation and production forestry. Some forestry techniques can provide crucial win-wins for both biodiversity and production. For instance, Continuous Cover Forestry provides a diversity of age classes and a resilient forest structure that provides many more





opportunities for wildlife than a single-aged plantation. Biodiversity can also be promoted by carefully managing trees that are ancient, veteran, notable or rare for the microhabitats they provide. In addition, Forest Development Types offer not only a resilient method of production, but their diversity allows wildlife to thrive.

Our most pioneering site integrating biodiversity conservation within a multi-purpose forest is at Wild Ennerdale in the Lake District. We work with partners there to deliver a landscape shaped by natural processes, including restoring semi-wild cattle. In particular this has delivered a robust and expanding population of marsh fritillary butterfly (*Euphydryas aurinia*). Our management of the forest is aimed at allowing it to develop as a more diverse habitat with a dynamic mosaic of mixed species.

Reintroductions are a crucial tool, to restore biodiversity to our woodlands. Pine martens and white-tailed eagles were both lost from England because of human persecution. Five-year reintroduction projects have started this year for both the Forest of Dean (pine martens) and the Isle of Wight (white-tailed eagles). This year we also continued with the largest water vole reintroduction ever attempted

in Northumberland. We also have two captive beaver trials. Beavers have hugely beneficial impacts on wildlife, by naturally coppicing trees along streams and rivers they can increase light levels and volume of deadwood, boosting waterside vegetation, insect numbers, and amphibian populations. Restoring these missing pieces of an ecosystem can be valuable not only for the conservation of the species themselves, but also for the beneficial impacts they can have on other wildlife.

Natural capital accounting is a way of measuring and valuing the benefits that ecosystems and the natural world provide to society. We are instilling the natural capital approach into every choice we make; rather than only asking what a decision will do for our income, we are asking what it will do for our natural capital. By using a natural capital approach we balance the benefits that forests provide, by improving health and wellbeing, storing carbon, providing habitats for wildlife to thrive, as well as being a source of sustainable wood.





## Finland

A new way of conservation thinking: The voluntary-based METSO (Forest Biodiversity Programme for Southern Finland) is an important tool for improving the natural value of forests in Finland

METSO has changed the way of thinking of nature conservation in Finland. METSO also offers tools for sustainable forestry. It is the most important investment to voluntary conservation in Finland.

The voluntary-based approach has been warmly welcomed by forest owners, NGOs, forest companies and authorities. An increasing number of forest owners are interested in preserving ecologically valuable forest habitats by offering their forests either for temporary conservation or for permanent protection. Active nature management of the sites can be included.

Forest owners value the voluntary approach, the independence in decision-making and the chance to retain their property rights when participating in the available conservation measures. Forest owners get full financial compensation equivalent to the value of timber at the protected site.

*by Sanna Kasurinen*

The funding for the METSO programme has been approximately 30 million euros per year. This joint programme of the Ministry of the Environment and the Ministry of Agriculture and Forestry will continue until 2025.

The programme aims to:

- promote voluntary-based conservation
- improve the network of protected forests
- promote nature management in commercially managed forests
- increase collaboration between forest and environmental organisations, forest owners and other stakeholders
- improve the knowledge base on forest biodiversity
- improve communication and education on the biodiversity of forest habitats and ecosystem services

According to a recent assessment, the forest sites that have been protected through voluntary measures in the METSO programme generally have high ecological values.





More focus on biodiversity of forests in commercial use: Nature management conserves the biodiversity of commercial forests

Finnish forestry is based on the management of native tree species. The management of forests seeks to respect their natural growth and mimic the natural cycle of boreal forests. The objective is to secure the production of high-quality timber, and to preserve the biological diversity of forests as well as the preconditions for the multiple use of forest.

Nature management is a part of everyday forestry. The end result is always the sum of forest management and nature management objectives and measures. Nature management of forests:

- conserves valuable habitats
- leaves retention trees and game cover
- leaves buffer zones at the edges of river basins
- conserves decaying wood and creates rotten standing trees
- protects trees hosting birds of prey
- carries out controlled burning of forests and burning of retention tree stands



A significant share of the living species in Finland are directly or indirectly dependent on the forests. Thanks to the development of forestry practices and operating models, around 30 previously threatened species were removed from the threatened species list in 2019.

The ongoing MONIMETSÄ-project (freely translated as ‘diverse forest’) has developed and tested practical procedures for contributing companies working with forest owners to enhance forestry sustainability and increase the quality of nature conservation and diversity in commercial forests.

One aim of the project is also to find the right tools to define forest owners’ goals in nature conservation and to bind them together with the planning of cuttings and forest management actions. For example, geographic information of nature conservation is actively utilized in order to effectively target the guidance, planning and implementation.

12 per cent of forests in Finland are protected: The amount of protected forest area has tripled since the 1970s

Altogether 2.7 million hectares of Finnish forests are protected, which is equivalent to 12 per cent of the country’s forest area. That is more than half of the strictly protected forests reported in whole Europe.

Forest industry measures are not permitted in most of the protected areas. The majority of the protected areas are located in northern Finland.

For Finland and the Finnish people, forests are simultaneously a place and a resource, a source of income and welfare, a valuable part of nature and a significant natural resource. That’s why it is important to every one of us consider the forest nature issues every day.

More information of METSO and Finnish forests:  
<https://metsonpolku.fi/en-US>





## Germany

Forestry in Germany is sustainable and multifunctional. The aim is to manage the forests as close to nature as possible. In addition to that, our goal is to have 5% of all forests not used for timber production.

The ecological value of the forests in Germany has improved significantly in recent decades. The Red List of endangered biotope types of Germany also shows that development has stabilised in many forest biotopes.

However, some forest animal, fungus and plant species are still deemed to be endangered and, in part, threatened with extinction. This applies in particular to species that are dependent on old forests, undisrupted forest development and old stands and deadwood. Other species, on the other hand, are dependent on historical forms of forest management. It is therefore necessary to maintain the achievements and further improve the ecological condition of the forests with well targeted and effective measures. To this end, various positive approaches have already been taken both within Germany and, all the more, at European level. Germany therefore supports the practice-orientated and science-based exchange of experiences under the European Network Integrate. This active contribution

*by Thomas Haußmann (BMEL) and Andrea Bähringer (Wald und Holz NRW)*

to implementing the EU Forest Strategy and securing a sustainable forest management – i.e. the criterion of “maintaining and enhancing forest-related biological diversity” – will gain particular importance in 2020 but also over the coming years.

Facts on German forests (source: BMEL):

- 32% of the land area (11.4 million hectares) is covered by forests
- Tree species distribution: Spruce (*Picea Abies*) 25%; pine (*Pinus sylvestris*) 22%, beech (*Fagus sylvatica*) 15%, oak (*Quercus ssp.*) 10%
- Property structure (depending on the federal state): 48% private forest (2 million forest owners; approx. 50% of which is very small private forest < 20 ha); 19% communal forest; 29% state forest; 4% federal forest

North Rhine-Westphalia is the federal states' contact point for the European Network Integrate. The following are examples of the challenges to be met and the outlook and therefore refer to this particular federal state. With 18 million inhabitants, North Rhine-Westphalia is the federal



state with the highest population density in Germany, 27% of the land area is forested. The demands on our forests are very diverse: areas for rest, recuperation and leisure, sites for education, water reservoirs, air filters, carbon sinks and wood suppliers, but also habitats for many animal and plant species to conserve biological diversity.

From a legal point of view, all these functions are of equal value and very important. Finding the right balance between the different societal demands and the protective functions (e.g. ecosystem services and nature conservation) in light of climate change and the relevance of forests and forest products as carbon sinks is a major challenge.

At present, we have to deal with great damage to our forests as a result of storms, droughts and infestation with bark beetles. The greatest challenge is therefore to develop the vital and climate-resistant mixed forests of tomorrow that meet as many requirements as possible but also to maintain, secure and further develop the biological diversity of today.

At present, we can already observe a decline in biological diversity at the landscape level, e.g. in the species group

of insects. The reasons are manifold and range from the fragmentation of habitats to structural deficiencies. Here, too, there is need for action.

North Rhine-Westphalia has addressed these challenges by implementing different strategies:

With the help of a modern silvicultural strategy for all forest ownership categories, we want to develop climate-adapted forests consisting of site-suitable mixed forests with several, mostly indigenous, tree species. In this context, all the different demands on the forests should be taken into account, if possible. Sessile and pedunculate (common) oak play a major role in reforesting the many clear-cut areas as they are indigenous and, under many site conditions, climate-resistant tree species that provide high-quality timber and also function as biodiversity carriers in our forests.

Various instruments under Germany's nature conservation laws (e.g. nature conservation areas, Natura 2000 or the legal protection of biotopes and species) contribute to the conservation of biodiversity in our forests.

The protection of natural processes is also of great



importance in this respect: 12% of our forests are areas without any kind of forest management, including 6,330 ha in the Eifel national park, 7,740 ha of wilderness development areas and 1,680 ha of natural forest patches.

High professional standards, also in the context of the NRW Biodiversity Strategy, are maintained in our sustainably and near-naturally managed state forests: continuous cover forestry, selective harvesting instead of clear-cutting, natural regeneration, and no extensive forest traffic or soil tillage. In our private forests, which account for almost two thirds of our forest area, we co-fund nature conservation measures that are integrated in the proper management of these forests, e.g. the establishment and maintenance of forest edges, the promotion of rare tree species, the renaturalisation of watercourses and bogs or the conservation of biotope trees and deadwood.

A good example of the integration of nature conservation measures in the near-nature management of state forests is our biotope wood strategy “Xylobius”. Since 2014, ten habitat trees per hectare have been designated to this end in old forests. In addition to that, 40 m<sup>3</sup> of wood per hectare shall remain in the forests beyond their natural decay

and provide habitats for many different animal, plant and fungus species. In private forests, too, the designation of habitat trees receives financial support.

The development of climate-adapted forests that can sequester carbon, provide the renewable raw material of wood, preserve biodiversity and meet all other societal demands will take generations. Providing advice and information to our private forest owners is therefore a key element of our work as communication and awareness raising are the basis for the implementation of nature conservation measures. And the social discourse with different, sometimes conflicting, interests also forms part of that. The five demonstration and training sites (Marteloscopes) in North Rhine-Westphalia offer an opportunity to support the technical communication, and more of them are planned.

A wide variety of information and assistance material can be found at [www.waldinfo.nrw.de](http://www.waldinfo.nrw.de)





## Italy

The Italian forest area represents 36.4% of the total surface, covering about 11 millions of hectares, within which 9 million are classified as forest and 2 million as other wooded lands. Italy is a widely forested country, characterized by a mosaic of different forest types and structures, as well as forest management traditions.

Coppice forests prevail over the high forests (41.8% and 34.3% of forest area respectively), while the remaining forest area (23.9%) is classified as irregular, within which forest management is missed due to the abandonment of traditional silvicultural practices or because the newly-established forests on abandoned pastures and agricultural lands (forest gains 5% of surface in the period 2005-2015).

The fragmentation of forest ownership, 66% of forests are private forests -mainly single owners- while 34% are public forests, contributes to diversify the mosaic of rural landscape.

The harvesting rate is lower than the average felling rate of southern Europe (62-67%), ranging between 18% and 37%. The demand for other forest ecosystem services is increasing, especially for recreational use. Five thousands

*by Ph.D. Giovanni Santopuoli*

of people involved in the hiking associations and about 200 adventure parks. On the contrary, the production of non-timber forest products is reduced in the last years.

Protected forests, i.e. forest included in the protected areas (National Parks, Regional Parks, other protected areas and Natura 2000 network), counts for 3.8 million of hectares, about 43% of forests. Significantly important is the role of Natura 2000 network that counts for 3.4 million of hectares of forests. Nevertheless, 1.5 million are included in both Natura 2000 network and protected areas, while 1.9 million are only included in the Natura 2000 network. Forest certification, FSC and PEFC, counts for 9% of total forests.

Forests and forest management in Italy are the results of a long history of traditional forest management that allowed to maintain the current pool of biodiversity. Nevertheless, in the last two decades a continuous loss of biodiversity is ongoing as showed in the Habitat report (Article 17 of the EU's Habitats Directive).

In particular, in the period 2013-2018, the conservation status of forest habitats is Favourable only for 5 out of 39





forest habitats and it is Unfavourable-Inadequate for most of them and it is Unfavourable-Bad for most of the forest habitats of the continental biogeographic region.

This aspect is exacerbated by the current climate change scenario, which strongly impacts on the Mediterranean forests and mountain forest ecosystems. Promoting the integration of biodiversity conservation within the forest management strategies is mandatory to counteract the loss of biodiversity and at the same time to ensure the provision of other forest ecosystem services.

Recently, FRESH LIFE project demonstrated that remote sensing can strongly support sustainable forest management, through the monitoring of sustainable forest management Indicators. Within this project, a group of forest researchers developed a method to detect Habitat trees within the forests through LiDAR data.

The detection of habitat trees allows to identify and to map areas with high conservation value. The availability of georeferenced data represents one of the most important tool to support forest decision makers in defining silvicultural practices enable to promote the biodiversity



conservation in balance with timber production.

There is not a unique strategy to promote the conservation of forest biodiversity, but several aspects have to be considered.

First of all, the management strategies have to be dynamic and adaptive to the climate scenario and to the society, in order to satisfy the sustainable development goals. Biodiversity conservation as forest management, require a multidisciplinary expertise to guarantee a balance between the provision of a multitude of forest ecosystem services.

The cooperation among forest policy-makers, managers, researchers, and technicians is strongly necessary to assess forest variables and develop appropriate and benefits management and forestry guidelines. Furthermore, financing programmes, as for example EU LIFE programme, play a crucial role for testing, developing and replicating relevant forest management good practices.

Encouraging educational and training tasks, promoting divulgation and communication within forestry sector as well as with other sectors and general public, and supporting forest planning at different scales, could represent a viable

solution to enhance the sustainable forest management.

For more information, visit <https://freshlifeproject.net/>





## Luxembourg

Luxembourg is a small country in central Europe, between France, Germany and Belgium with a total area of 2.586 km<sup>2</sup>. The distance between the southern and the northern country borders is 86 km and the distance between the eastern and western borders is only 57 km, at the widest point.

Despite its size, Luxembourg exhibits large differences between the central, southern-, northern – and the eastern regions. The landscape and lifestyle in the north shows more agricultural tendencies, while the center and south are embossed by urban lifestyles and industrialization.

As a result, the majority of the Luxembourgish population is living in the south of the country. The east, with its natural beauty, meandering creeks and valleys is popular amongst tourists. Especially along the river Moselle and the “*Mëllerdall*”, the latter known as the Little Switzerland in Luxembourg.

Despite its urbanization in the south and agriculture in the north, a total of 91,400 hectares of Luxembourg are forested corresponding to 35% of the national territory. More than half of those areas are private forest (54 % in total), located

*by Michel Leytem and Michaela Plein*

mostly in the north of the country. Most of these private forests are very small (> half hectare) and therefore belong to a large number of owners (approximately 135,000). This makes the management rather difficult. The remainder of woodlands are publicly owned: 34% of the areas belong to local municipalities, 11% is state forest and 1% belongs to public incorporations.

Luxembourg’s forests communities mainly exhibit melic grass-beech forests, woodruff-beech forests, woodrush-beech forests, hornbeam-oak forests and thermophilic common oak forests.

Regarding the composition of tree species, we have 68% of deciduous trees forest and 32 % of coniferous forest. Nevertheless, there is a stark difference in the forest composition of public and private lands. While public forests exhibit 80% broad-leaved trees (mostly beech and oak), 45% of private-owned forests consist of conifers (mostly spruce).

On average Luxembourgish forests stock around 374 m<sup>3</sup>/ha and the total stock of wood in the accounts for 31,262,000 m<sup>3</sup>.







The most important stakeholders in the forestry sector in Luxembourg are the Ministry of Environment, Climate and Sustainable Development with the forestry department, the *Administration de la nature et de forets* (ANF), the municipalities and the “Lëtzeburger Privatbesch” (private forest owner association) for the NGO sector the nature conservation collectivities and the ProSilva Luxembourg.

Sustainable forestry has been established in Luxembourg in 1999 for the public forest sector and is based on continuous cover forest. The main objectives are to maintain old-growth forests across the whole stock and harvesting of individual trees rather than complete clear-cuts. This results in a succession of ages of trees within the forest which helps to protect the soils. These management practices allow the certification by FSC or PEFC of many public forests.

The ANF is responsible for the execution of the laws for forestry management and the conservation of nature. The goal is to create and maintain a healthy alliance between silviculture and nature conversation in the Luxembourgish forests and woodlands. Great efforts are made to transform the forests from even-aged into uneven-aged.

In uneven-aged forests, the ANF executes semi-natural measures for conserving the biodiversity. For example, 5% of public owned forest will be turned into reserves and in the remaining areas, four trees per hectare will be set aside as so-called habitat trees; in Natura 2000 areas this number increases to eight habitat trees per hectare.

To promote ecosystem services in private forest, owners have access to special subsidies not only for near-natural silvicultural interventions, but also for improving ecosystem services through the special management practices (such as grazing management by sheep, ...).

In the future subsidy standards shall provide the basis for climate resilient forests with site-adapted forest stands, the potential for carbon fixation and the conservation of biodiversity.

Last but not least, close-to-nature silviculture needs to be close to people. Acceptance among the population is key for the success of these management practices. The ANF therefore puts great emphasis on raising awareness for the importance of close-to-nature management from the young to the old.



## Poland

Polish forests cover almost 30% of the country's area. Currently their area is 9.3 million ha. The ownership structure is dominated by public forests - 80.7%, including forests managed by the National Forest Holding "The State Forests" - 76.9%. Almost all forests in Poland are covered by forest management plans. The area certified by the FSC standard is 6.9 million ha, and PEFC 7.3 million ha. The main forest-forming species is pine, which has here optimal living conditions. The abundance of Polish forests is 283 m<sup>3</sup> / ha, and the annual current increment is 9.57 m<sup>3</sup> / ha, of which 76.8% is logged. Wood from Polish forests is a highly valued ecological resource. It is also a reservoir of carbon from the atmosphere. The amount of CO<sub>2</sub> absorbed by forests is estimated at 36.5 million tonnes per year, which corresponds to approximately 10.0 million tonnes of carbon.

Polish forests suffered greatly during both world wars of the 20th century. With great effort related to afforestation of land, they were restored by increasing forest cover from less than 21% (in 1945) to almost 30% today. The most valuable fragments have been protected for a long time. In the nineteenth century, private forest owners established nature reserves in their estates. After Poland regained

*by Magdalena Wolicka*

independence in 1918, nature reserves and the first Polish national parks (Białowieża National Park and Pieniny National Park) were created in the forests belonging to the state. The protection of individual species was initiated in Poland during the royal times. Species protection has been introduced, and restitution programs have been launched, including European bison (implementation since 1923 was a spectacular success), as well as other species such as beaver, moose, tarpan horse, bear and forest cocks: capercaillie and blackcock. All species significantly increased the size of their populations. Foresters played a key role in all activities.

Forests in Poland are covered by many different forms of nature protection. National parks - currently 23 - cover an area of approx. 315.1 thous. ha. Forests in national parks occur at 194.8 thous. ha, which represents 61.8% of their total area (194.8 thousand ha). 1501 nature reserves cover an area of 169.6 thous. ha. Most of the reserves (1284) are located in the State Forests, and the forest area in the reserves is a total of 109.1 thous. ha. We also have 123 landscape parks and 386 protected landscape areas. As part of the Natura 2000 network, 145 areas with special bird protection have been designated in Poland with a total





land area of 4911.4 ha and 849 special areas of habitat protection - 3491.3 thous. ha. The Natura 2000 network covers about 20% of the country's area, and the share of these areas in the area of the State Forests is 38%.

Abiotic threats arise, among others from climate change. Weather anomalies cause more frequent occurrence of extreme air temperatures, reduced amount of precipitation and violent winds. Changes in hydrological parameters in forests are also a problem, as they tend to decrease the water resources of habitats and increasingly difficult conditions to meet the water needs of forest stands. Atmospheric and hydrological droughts cause a decrease in soil and forest litter humidity, lower surface and ground water level, decrease in stands growth and their resistance to stress factors and increase fire risk.

For many years, our forests have been haunted by pests and natural disasters, as well as plagued by diseases. These problems have been dealt with differently in the past, always using the currently available knowledge and tools. In 2017, a hurricane wind destroyed a forest covering almost 80,000 ha doing the greatest damage in Bory Tucholskie. Today, thanks to the joint work of foresters



and various social groups, these areas are successively renewed.

The State Forests are successfully implementing a small retention project in mountainous and lowland areas, aimed at preventing floods and droughts. Another important activity for biodiversity is the protection and preservation of forest genetic resources, carried out by the Forest Gene Bank in Kostrzyca through DNA testing, seed collection and progeny testing programs.

Active protection of existing forests, sustainable and multifunctional forest management and increasing forest cover play a key role in Polish policy for sustainable development. In addition, Polish forest management is characterized by conducting close to nature forest management, where forest management is based on observation of natural phenomena, supported by many years of experience of many generations of foresters. Sustainability of forests, their stability and vitality, as well as ensuring their continuity are the main tasks of sustainable forest management - activities aimed at shaping the structure of forests and their use in a manner and at a rate that ensures permanent preservation of their biological

richness, high productivity and regenerative potential. The Act on forests (1991) is the basis for permanently sustainable forest management.



## The Slovak Republic

Forest land area reached 2,020 thousand ha (41.2% out of the total country area).

Percentage of the main forest tree species was the following: European beech 33.85%, Norway spruce 22.45%, English/Sessile oak 10.5%, Scots pine 6.7%, Hornbeam 5.9%, Silver fir 4.1%, European larch 2.6%, Turkey oak 2.6%.

The volume of growing stock was 481.8 mil m<sup>3</sup> underbark which represents 248 m<sup>3</sup> per hectare.

Total volume of timber felled was 9.86 mil m<sup>3</sup>, of that volume of incidental felling was 58%.

Total protected forest area in the Slovak Republic (SR) covers 62.8%. It consists of two mutually overlapping networks: the NATURA 2000 and national one, which also overlaps with sites protected under other international agreements. There are five levels of protection to conserve biodiversity. The 5th level is the strictest – with no active intervention (see table).

Forest management (including biodiversity) is directed by forest management plans, as the most important tool for

*by Ing. Eva Hušťáková*

sustainable forest management. Forest management plans are elaborated for all forests in the country.

They are adopted within administrative process by respective body of state administration on forestry with approval of respective state administration on nature protection. Forest owners cannot exceed planned total felling, must keep silvicultural system prescribed in their forests or apply more close-to-nature one and have to meet targeted tree species composition prescribed by management models corresponding to original natural forests.

### **Measure 12 of the Rural Development Programme of the SR 2014-2020**

Supported the NATURA 2000 areas of and other protected forest territories of the 5th level of protection (with no active intervention, no damaged soil and vegetation cover) with minimum area of 1 ha. Commitment period is 1 year with possibility to prolong it. Expected extent of supported areas is 28,450 ha with amount of support 52,75 €/ha. So far, it has been supported 62.3% of expected extent of area.



## **Measure 15 of the Rural Development Programme of the SR 2014-2020**

Payments for forestry-environmental commitments in the Sites of Community Importance (SCIs)

Payments for forestry-environmental commitments in the Special Protected Areas (SPAs/bird areas)

The conditions of support:

- to leave 5 living trees per ha in mature dimension after felling;
- to use only selection, purpose or small scale shelterwood silviculture systems with area less than 1.5 ha;
- to reach natural regeneration more than 60% before final cutting;
- to keep pioneer tree species in forest to last out and do not remove them during clearing and thinning as far their abundance is less than 10%

The applicant must respect the conditions of support during 5 years period, with the possibility of further prolongation. Expected extent of supported area is 24,000 ha (10,000 ha

for the SCIs with the 3th and the 4th level of protection, 14,000 ha for the SPAs with selected bird species). Amount of support is 42,45 €/ha for the SCIs and 39 €/ha for the SPAs. So far, it has been supported 115.4% of expected extent of area.

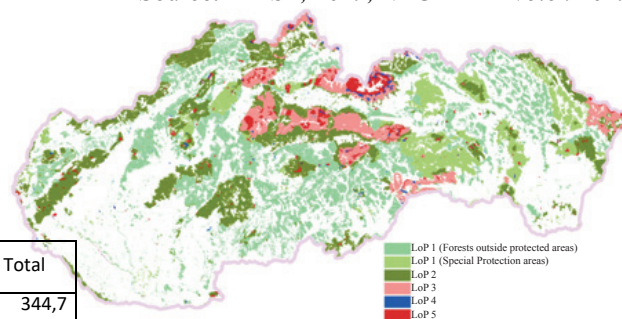
The expert analysis for Measure 15 of the Rural Development Program, prepared by National Forest Centre in Zvolen "Assessment of the state of development trends forest and plant species for evaluation Rural Development program 2014-2020" shows that naturalness of forest, in supported stands, improve in beech forests on 0,32% ; in mixed spruce - beech forests (more beech) on 3,16% and in beech-spruce forests (more spruce) on 11,48%.

The state forest enterprise LESY SR, š.p. is preparing two Marteloscope demonstration sites near to capital city Bratislava dedicated to beech and oak to communicate a positive message on active forest management measures relevant to increase biodiversity. The State Forest Tatra National Park is preparing a larch demonstration site near to a recreation centre. Three SR demonstration sites will be open in 2020 to celebrate the theme Forests and Biodiversity of the International Day of Forest.



## Forest land by a level of protection (LoP)

Source: ME SR, 2019, NFC-IFRI Zvolen 2019



## Protected forest area by category and level of protection

Protected areas		Level of protection (1,000 ha)					Total	
		1	2	3	4	5		
Protected Landscape Areas (PLA) <sup>1)</sup>		0	344,7	0	0	0	344,7	
National Parks (NP) <sup>1)</sup>		0	0	195,8	0	0	195,8	
NP buffer zones		0	151,8	0	0	0	151,8	
Zones of PLA <sup>2)</sup> and NP <sup>3)</sup>		LoP 5	0	0	0	0	6,0	6,0
		LoP 4	0	0	0	3,0	0	3,0
		LoP 3	0	0	25,6	0	0	25,6
		LoP 2	0	21,1	0	0	0	21,1
Small-scale Protected Areas (SSPA)	(National) Nature Reserves ((N)NR) <sup>3)</sup>	0	0	0	11,9	61,7	73,6	
	(National) Nature Monuments ((N)NM)	0	0	0	0,7	0,5	1,1	
	Protected Landscape Elements (PLE)	0	0	0	0	0	0	
	Protected Sites (PS)	0	1,6	2,5	1,2	0	5,3	
	SSPA buffer zones	0	0	1,0	3,0	0	4,1	
Sites of Community Importance (SCI) –outside the national network of PA		0	65,4	2,3	1,3	0,4	69,4	
Special Protected Areas (SPA)–outside SCI and national network of PA		321,8	0	0	0	0	321,8	
<b>Total</b>		<b>321,8</b>	<b>584,6</b>	<b>227,2</b>	<b>21,1</b>	<b>68,6</b>	<b>1 223,3</b>	

Notes <sup>1)</sup> Area without SSPA and zoned PLA and NP, <sup>2)</sup> Zoned PLA, <sup>3)</sup> Zoned NPs

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## Slovenia

*by Andrej Breznikar, Boris Rantaša, Kristina Sever, Aleš Poljanec (Slovenia Forest Service) and Simon Poljanšek (Ministry of Agriculture, Forestry and Food)*

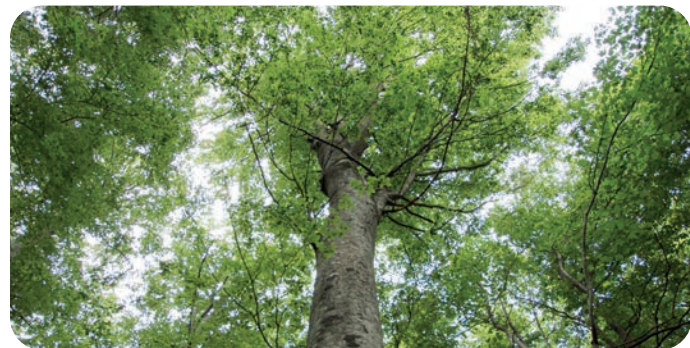
Slovenian forests span over 1,100,000 ha, cover about 58% of the country, feature 71 native tree species and approximately 200 forest vegetation types, and comprise of growing stock higher than 300 m<sup>3</sup>/ha on average. Diversity in forests, climate, landscape, topography and soil types result in a biodiversity hotspot with over 24,000 recorded species per hectare. This lushness position Slovenia among the countries with the largest share of forest cover, highest growing stock and largest number of species per hectare in Europe.

The majority of Slovenian forests is located within the distribution areas of European beech (75% of Slovenian forest stands), silver fir and sessile oak, while the two main species are European beech and Norway spruce (33% and 30% of growing stock, respectively). For reasons named, European beech is entitled as “the queen of Slovenian forests”. Slovenian forests, being in the heart of European beech distribution area, also represented an important beech refuge during the last ice age.

Forest management approach in Slovenia, also named the *Slovenian Forestry School*, is based on the tree main principles: sustainability, multifunctionality and close-to-

nature forest management. This approach is put in practise in all forests, irrespectively of ownership. Supported by the Slovenian constitution, relevant legislation and operative documents, a special emphasis is put on nature protection, making it one of the most important aspects of ecological forest management. Nature conservation and biodiversity preservation are integrated in forest management planning processes at national, regional and local level, with nature protection organisations and decision-making bodies being actively involved in participatory oriented decision-making process.

Slovenian close-to-nature forestry has been formally used for over 50 years. It prescribes forest management methods







that promote the conservation of nature and forests, and which improve site conditions and productivity, while deriving tangible and intangible benefits from the forest.

Such forest management practices

- foster continuous forest cover and avoid clear-cutting,
- boost mixed forest structure and tree species composition,
- use site-adapted forest structure and tree species composition,
- promote natural regeneration with site-adapted tree species,
- encourage gap regeneration techniques,
- leave harvest residues (stumps, small branches, leaves, bark) in forest, and
- use adapted management and harvesting technology.

Thus, natural processes are altered as little as possible, while the financial profitability and ecological suitability of forest management are maintained or even increased through other ecosystem and social services. That enables preservation of forest as a natural ecosystem of diverse life forms and the relations between them.

Recognizing importance of biodiversity resulted in vastness of Natura 2000 areas, covering over 45% of Slovenian forests. This way, over 70% of all Natura 2000 sites in Slovenia are in forest. Preserved forest habitats are important for conservation of endangered plants and mosses, large carnivores (brown bear, grey wolf, Eurasian lynx), and birds (white-backed woodpecker and the Eurasian three-toed woodpecker). Furthermore, there are 171 forest reserves representing 1 % of Slovenian forest area (9,500 ha in total). Among them, 14 old-growth forests and forest remains are distributed across Slovenia with a total area of 540 ha. In 2017, Krokar virgin forest and Snežnik-Ždrocle forest reserve were declared as the UNESCO Natural Heritage, alongside with the other primeval beech forests in Europe.

Nature protection is an important goal of forest management and for this reason represents Slovenian network of forest reserves and old-growth forests a learning facility, where nature processes without human intervention are studied. Knowledge is applied in forming guidelines for the maintenance of the favourable status of species, their habitats and habitat types in and out of Natura 2000 areas. Forest management plans include these



conservation guidelines and for this reason they serve as Natura 2000 management plans. The implementations of concrete measures are supported both in state owned and private forests with the help of regulations, the national budget (e.g. Forest Fund) and projects (e.g. LIFE and the Operational Programme for the Implementation of the EU Cohesion Policy in the Period 2014-2020).

Climate change adaptation and mitigation measures are becoming more and more important part of forest management. The effects of climate change and their negative consequences have already influenced Slovenian forests. In past six years alone, over half of Slovenian forests have been damaged in natural disturbances, such as ice break (2014), bark beetle attacks (2015 - 2019) and wind throws (2017 -2018). Main emphasis is now given to the adjustment of forest tree species mixture, maintenance of vitality, stability and resilience of forest stands, realization of forest protection measures and limiting spread of invasive alien species. One of the key forest management actions, which ensure future of forests in climatically unstable environment, is continuous forest cover and maintenance of biological and genetic diversity.

Marteloscopes, a knowledge transfer tools, can greatly contribute to improvement of close-to-nature forest management and to facilitate climate change adaptation processes in forests. In Slovenia three marteloscope plots have been established so far (Pahernik, Ravna Gora and Studenec). Marteloscope Studenec, established within a forest seed stand, also represents LIFE GENMON project research plot, where genetic data is sampled and genetic variability investigated. Aim of this plot is to train foresters for specific treatment of forest seed stands and to investigate how silviculture measures influence genetic structure and forest stand diversity.





## Spain

Forest and other wooded land in Spain account for more than half of the country. An important part of the responsibilities for forest policy are assigned at subnational level. The Forest Law of 2003 was modified in 2015. The Spanish Forest Plan 2002-2032 is the reference for national forest policy. The National Forest Inventory combined with cartographic information provides the necessary basis for policy making and for international reporting.

32% of Spanish forests are under management plan or equivalent document. These plans are compulsory for certain forests, notably for protected and protective forests, and the plans are registered with an official body. 13% of forests are under a third-party certification scheme, mostly PEFC (see figure 1).

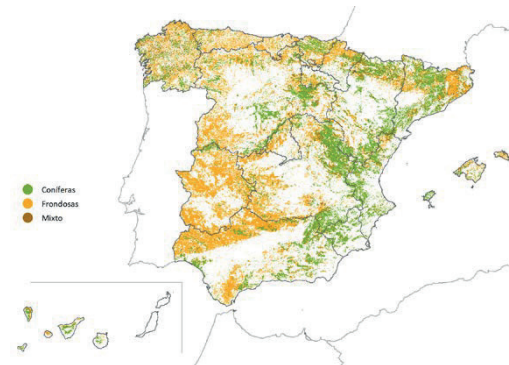
The forest area of Spain has been expanding steadily and now stands at 37.2% of total land area. In addition, nearly 19% of land area is covered by other wooded land. Growing stock has also been increasing and now stands at 60 m<sup>3</sup> under bark/ha on average. Above ground biomass has also been expanding, at a rate of 0.5%/year between 2010 and 2020.

*by Dr. Leopoldo Rojo Serrano*

In 2015, 23% of forest and other wooded land were protected for conservation of biodiversity (Ministerial Conference for the Protection of Forests in Europe Classes 1 and 2). 23.8% of forest and other wooded land were designated as protective forest (MCPFE class 3). No forest is considered undisturbed by man.

The National Forest Inventory provides detailed data of forest biodiversity parameters in 75% of the inventory sampled plots (see figure 2).

Removals fluctuate in the range between 14 and 17.5 million m<sup>3</sup> u.b. Fellings on forest available for wood supply were 55.5% of net annual increment.

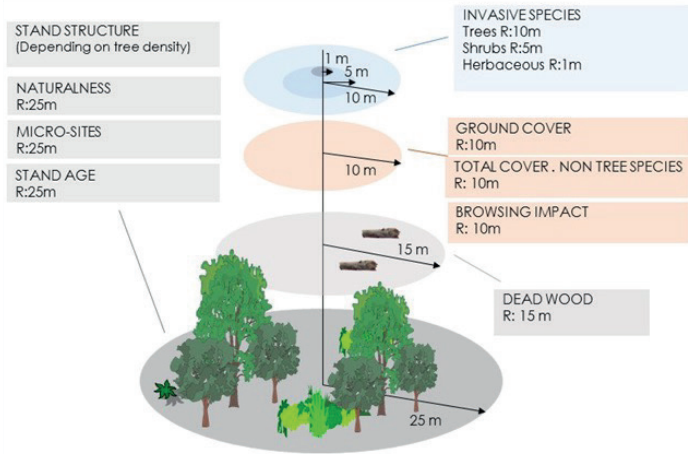




must be added to the drivers on Spanish forests.

Land abandonment along last 50 years provides increasing forest areas and connectivity as well as large undisturbed forests lands. This leads to a higher forest density, increased biomass and parallel risk of big and intense fires. In this scenario prevention and control of forests fires is a national priority and results are considered acceptable (two of every three fires during the decennium 2006-2016, affected less than 1 hectare). The overlapping of adverse climatic trends (longer and more intense droughts) on this scenario provides a new source of concern, exacerbated by the fact that growing biomass should survive on diminishing water availability and higher fire risk. The search of solutions turns to be more complex in this case.

Efforts to adapt to this new environment of forest and forestry starts with a robust setting of awareness among all the stakeholders involved, from politicians to local stakeholders as well as the general public. This has been reasonably reached in Spain. Significant efforts have been devoted to a plausible assessment of the impacts, present and future, and to the development of applied knowledge for adaptation, which encompass anticipative management.



Forest fires, which in 2015 damaged 0.4% of the area of forest and other wooded land have been the main destructive agent. Fire damage fluctuates considerably along annual series. Other biotic and abiotic damages show an increasing trend. High proportion of defoliated trees could be related to the observed climatic trend of more intense and longer drought periods.

Longer and more intense droughts and related abiotic and biotic forest damages from one side and land abandonment from the other, have arisen and taken the scene. They now



A wide body of sound knowledge is available for practical application (see references 1a and 1b. This work provides field examples of adaptive forest management (p. 501-613 reference 1a) most of which rely on a correct transference and interaction between science and management and the involvement of local stakeholders.

Another example is provided by the references 2, 3 and 4 as the genetic resources knowledge, availability and strategic use is envisaged as a key tool for adaptation of forest to global change, including a smooth migration of forest to a different geographic/climatic distribution.

These examples of sound and integrated knowledge application in the field provide the strategic way to follow for the coming decades of adaptation. This route is in tune with the arising issues in the institutional and political framework. At the national level (Ongoing review 2020 of the Spanish Forest Strategy) and at EU level (European Green Deal December 2019 and new EU Forest Strategy to be set along 2020).

Finally and closely related to the European Network Integrate, the Ministry of Agriculture, Fisheries and Food

has approved in December 2019 the installation of four Martelloscopes during 2020.

#### References

1a. Los bosques y la biodiversidad frente al cambio climático. Vulnerabilidad, impactos y adaptación en España. (2015) Herrero A & Zavala eds. Ministerio de Agricultura, Alimentación y Medio Ambiente. Madrid.

[https://www.upo.es/export/portal/com/bin/portal/upo/profesores/jclincal/books/1450811497284\\_bosques-biodiversidad-frente-al-cc.pdf](https://www.upo.es/export/portal/com/bin/portal/upo/profesores/jclincal/books/1450811497284_bosques-biodiversidad-frente-al-cc.pdf)

1b. Vulnerability and Adaptation to Climate Change in the forestry sector. Serrada R., Aroca MJ, Roig S., Bravo, A., Gómez, V. , 2011: Impacts,. Ministry of Environment, and Rural and Marine Affairs. Madrid.

[https://www.miteco.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/SECTOR%20FORESTAL\\_DOCUMENTO%20COMPLETO\\_tcm30-178472.pdf](https://www.miteco.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/SECTOR%20FORESTAL_DOCUMENTO%20COMPLETO_tcm30-178472.pdf)

2. Regiones de procedencia de especies forestales en España

[https://www.mapa.gob.es/es/desarrollo-rural/temas/politica-forestal/recursos-geneticos-forestales/rgf\\_regiones\\_procedencia.aspx](https://www.mapa.gob.es/es/desarrollo-rural/temas/politica-forestal/recursos-geneticos-forestales/rgf_regiones_procedencia.aspx)

3. Situación del Registro y Catálogo Nacional de Materiales de Base

[https://www.mapa.gob.es/es/desarrollo-rural/temas/politica-forestal/informeannual2016\\_situaciondelregistroyemb\\_tcm30-139340.pdf](https://www.mapa.gob.es/es/desarrollo-rural/temas/politica-forestal/informeannual2016_situaciondelregistroyemb_tcm30-139340.pdf)

4. Red Española de ensayos genéticos forestales (GENFORED)

<https://sites.cita-aragon.es/genfored/es/bienvenido-al-sitio-web-genfored/>



## Switzerland

One third of Switzerland is covered with ecologically diverse forests and an according richness of habitats and species. Different forms of traditional forest use since the Bronze age contributed to this diversity, with positive effects on light demanding species and/or species that can handle impoverished soils due to human use. Biodiversity in Swiss forests is strongly marked by the long lasting co-evolutionary process between nature and human impacts.

Most factors and proxies to measure forest biodiversity show a positive trend since several decades. These encompass increasing quantities of deadwood as well as large forest areas that have not been managed for 50 or more years – mainly in higher elevations and south of the Alps.

Deficits are more important in light demanding species and/or species that depend on soils poor in nutrients for their competitiveness. These are typically plants and animals that took advantage from traditional forms of forest utilization.

Cross-sectoral issues with negative effects on forests and biodiversity include high nitrogen immissions with direct

*by Christoph Dürri*

impacts on species composition. Game population (roe deer, deer and chamois) in some regions is threatening the diversity of natural regeneration with a strong impact on tree species like silver fir or oak with a high adaptive capacity under climate change.

To tackle remaining deficits of biodiversity, specific interventions address e.g. maintenance or creation of forests with sparse tree cover to favour light demanding and thermophilic species; promotion of oak forests; creation and management of wet forests environments; securing old growth forest patches to allow late decay stages of the forest life cycle, and structured forest edges.

The most comprehensive leverage for biodiversity conservation is close to nature forest management and the abandonment of forms of unappropriated forest managements such as, for example, coniferous plantations in low altitude areas. Elements are natural regeneration and different measures to foster biodiversity aspects, e.g. leaving dead wood or old trees to serve species that depend on late decay structures or favouring deciduous tree species. A central feature is the consideration of forest sites or forest plant communities in the tradition of Braun-



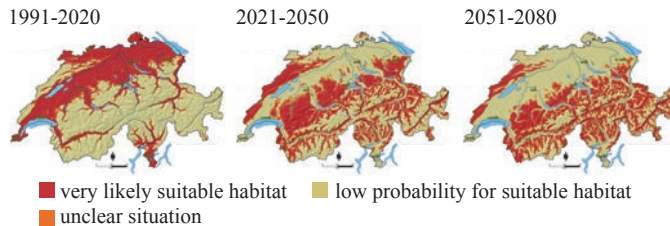


Blanquet as a base for silvicultural interventions.

Climate change and its impacts will be the major challenge for forests and its biodiversity in the decades to come. In order to develop the necessary knowledge base and qualified decision-making support, a comprehensive research program on “Forest and Climate Change” was conducted between 2009 and 2018.

A central finding concerns the shift of altitudinal vegetation zones up to 500 to 700 metres in altitude until the 2080ies. Connected is a dislocation of habitat of tree species which will tremendously alter as a consequence of changing temperature and precipitation patterns.

### Spruce habitat suitability



*Influence of climate change on the distribution of Spruce - losing ground. Source: Zimmermann et al. [www.wsl.ch/lud/portree](http://www.wsl.ch/lud/portree)*

Between the summer drought of 2003 and 2018, forest practitioners in many parts of Switzerland did experience several periods of die back of spruce, especially in Swiss lowlands. This together with a market focussed on coniferous timber, resulted in an accelerated reduction of spruce stocks in the Swiss lowlands.

In 2018, beech started to die back in several lower areas. This continued in 2019 with a massive die back of beech in Ajoie, the northern part of Canton of Jura. As important markets for died back beech timber are weak for the time being, forests will have an important and probably long-lasting increase in dead wood. This trend will benefit specialized forest biodiversity.

On the other side, the shift of vegetation zones of 500 to 700 metres in altitude will not only impact on trees, but on the whole biodiversity of a given site, as usual growth conditions will be disrupted and the collapse of certain forests will be locally beneficial to forest species needing more open and brighter environment.

Under climate change, close to nature forest management



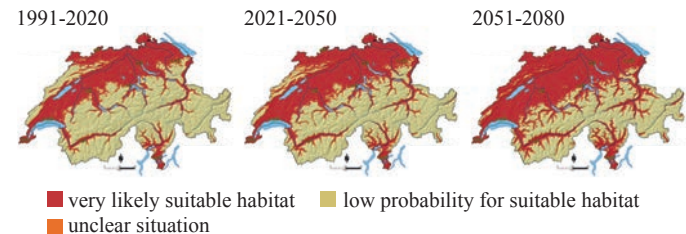
– referenced also in the national forest legislation - will remain the point of reference, although “close to nature” has become a moving target. Accordingly, the Swiss research program did develop a methodology that allows to take the shift of vegetation zones into account (see references).

The approach allows for any place in Swiss forests to project the future plant community under a given climate scenario. Forest practitioners are in a position to promote already today tree species with a high adaptive capacity by preferentially relying on natural processes and taking advantage of natural genetic diversity. Where such seed trees and their regeneration are missing, additional plantation might be necessary. The importance of this approach for biodiversity lies in the fact that the new tree species will form a framework for natural migration for other elements of the corresponding plant community.

Climate change has the potential to disrupt the prevalent paradigm and measures for nature conservation. Conservation goals in protected habitats might become obsolete. Old growth forests e.g. could fast degrade, forest biodiversity hotspots loose key species. Safeguarding

forest biodiversity will become a challenge that needs to be tackled in an integrative, continual adaptive and dynamic way, hand in hand with the preservation of all other forest functions like production, protection, carbon mitigation or recreation.

### Sessile oak habitat suitability



*Influence of climate change on the distribution of Sessile Oak - recovering ground. Source: Zimmermann et al. [www.wsl.ch/lud/portree](http://www.wsl.ch/lud/portree)*

#### References:

<https://www.wsl.ch/de/publikationen/standortkundliche-grundlagen-fuer-die-waldbewirtschaftung-im-klimawandel.html> (German)

<https://www.wsl.ch/fr/publications/bases-stationnelles-pour-la-gestion-forestiere-face-au-changement-climatique.html> (French)



## PROSILVA

PROSILVA is a European association which promotes close-to-nature forestry and continuous cover forest (CCF) systems. It was established in 1989 in Slovenia.

At present, PROSILVA forms a network in 29 European States with 22 full members and some under development. Further, PROSILVA is developing a network for the promotion and experience exchange about CCF around the globe: we have associated members in the US, Brazil, India, Canada and further interest from China, Japan and other countries.

PROSILVA represents a network of more than 5.500 individual members - forest practitioners, -managers, -owners, -administration and -science to bring their ideas to the forests and woodlands!

PROSILVA promotes forest management strategies which optimise the maintenance, conservation and utilisation of forest ecosystems in a way that the ecological and socio-economic functions are sustainable. The general approach to management, which is advocated by PROSILVA, includes market and non-market objectives, and takes the whole forest ecosystem into consideration. With reference

*by Eckart Senitza*

to sustainability in its broadest sense PROSILVA believes that CCF forests are the key component for green rural bioeconomy and of benefit to society.

PROSILVA is based on four principles (published in 2012, available in 5 languages) which are:

- holistic conservation of ecosystems
- protection of soil, biotopes and habitats, species, water, genetic variations and others.
- production of timber and other products
- recreation, amenity, and cultural aspects

They invoke a standard of commitment upon forest owners and managing foresters. These issues concern: the basic principles of responsible forest management and forest utilisation, the maintenance of biodiversity, the adaptation to man-made changes to environmental conditions related to the ecologically sustainable use of energy, the use of exotic species, and the ecological role of forests in the landscape.

PROSILVA promotes its principles and concepts through a Europe-wide program of silvicultural education. Increasingly, the members are also involved as partners in



national or international research and networking projects. A European network of PROSLIVA exemplary forests is being developed. Following PROSILVA principles, ecological and economic risks are reduced, forest resilience is increased.

PRO SILVA is convinced that it is possible to convert from a regimented type of forest management to Continuous Cover Forestry silviculture advocated by PRO SILVA at almost any stage of stand development. A Guideline with the toolbox for adopting CCF / PROSILVA silviculture is available in 3 languages.



PROSILVA supports the implementation of CCF management in the following ways:

- Exchange of information within regional working groups;
- Establishment of exemplary forests and reference forest stands with a detailed dataset;
- Meetings and excursions in exemplary forests;
- Cooperation with educational and scientific institutions, and other bodies.

PROSILVA published policy statements, which cover a “good management of carbon, forest and energy principle paper”, “principles for Mediterranean forest”, for “non-indigenous tree species”, as well as “landscape protection” and further declarations.

PROSILVA believes that a combination of medium and small scale segregation elements, such as a network of natural forest reserves, biotope stands and also a lot of integrative elements such as deadwood and habitat trees with rich tree related micro habitats offers the best compromise to cover biodiversity on the level of species protection, protection of natural dynamics and have the most efficient effect on large areas. A further increase of



set-aside areas is shortsighted; the concept of Natura2000 must change, due to effects of climate change and shifting protections goals.

For this reason, PROSILVA supports the work of the European Network Integrate as well as the training programmes via Marteloscopes.

What we need is a major paradigm shift. The latest scientific evidence must be implemented to forest practices: structured, mixed forests with dynamic processes relying on natural regeneration stabilize forest and are the most resilient forest management system. Nevertheless, we should be open to non-indigenous tree species and to the use of different provenances.

Europewide - selective - over-browsing by ungulates prevent natural regeneration and often lead to extinction of important tree species like silver fir and oak, which cannot regenerate without fencing or other artificial protection. The adapted hunting directives must be implemented to control ungulate populations and to prevent this invisible forest dieback.

PROSILVA promotes active forest management for the production of timber for use in construction of buildings, houses, furniture, paper and other wood products and at the end of the chain also renewable energy. The effect of carbon sequestration in long term timber use in combination with keeping and building up rich soil and humus conditions can't be over-stated. - close-to-nature forestry should retrieve tax benefits in a carbon balancing tax system!

PROSILVA demands active forest management in a sustainable Close-to-Nature way. All European states are encouraged to develop the legal and financial framework for implementing Close-To-Nature forest management in public and state forests, as well as in private forests.

For more information visit [www.prosilva.org](http://www.prosilva.org)





## Marteloscope demonstration sites

Marteloscopes are 1 hectare forest plots, in which tree measurements and innovative software for mobile devices are linked to provide a framework for virtual tree selection exercises.

The main goal is to train and eventually improve decision-making related to the integration of biodiversity aspects into forest management. The I+ software on mobile devices gives immediate and on-site feedback on silvicultural decisions and related ecological and economic impacts.

Forest managers are often not trained to identify these elements and structures supporting species diversity. However, it is crucial to consider them in forestry operations and planning procedures in order to achieve a functional integrated forest management.

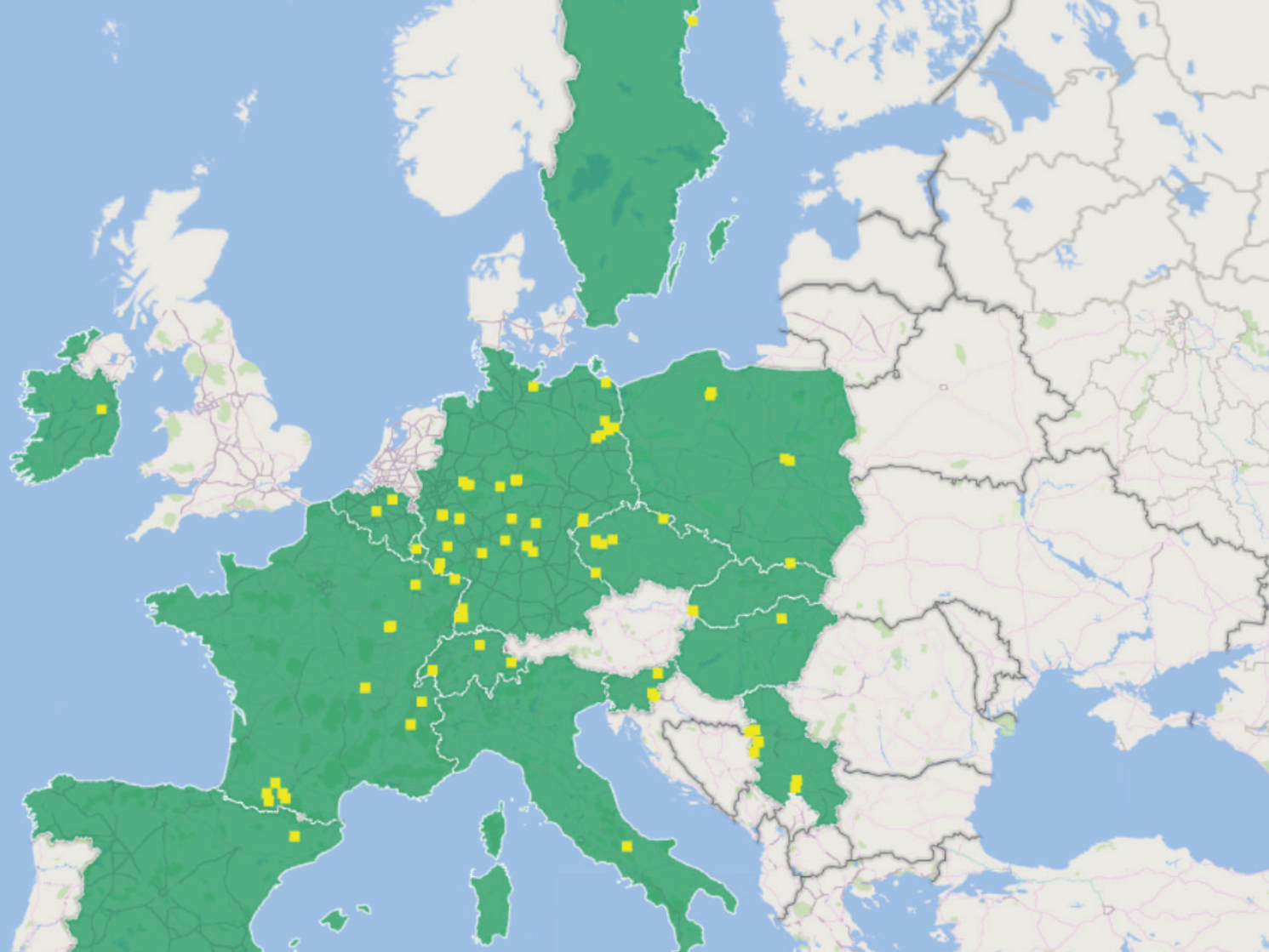
The indicators for biodiversity used in the I+ software are the tree microhabitats as described in the Catalogue of tree microhabitats. This Catalogue helps to identify and describe tree microhabitats in the course of Marteloscope exercises. It can also find use as illustrative material in forest education and as background documentation for other training events and field excursions.



Find out more about the I+ Software at [iplus.efi.int](http://iplus.efi.int)







## Białowieża Science Initiative-a science-based approach to conflicts around forest

The Białowieża Forest is a large forest complex situated on the border between Poland and Belarus and known worldwide for its high conservation value. During last three decades the Polish part has been subject to a polarized conflict regarding its management and conservation. The controversy peaked recently due to a large outbreak of the European spruce bark beetle, leading to discussion about if and how to manage the outbreak.

This intensified the conflict among different groups of stakeholders: forest managers, conservationists and the general public, as well as policy makers at different levels. The controversy related to questions about forest management and biodiversity conservation, for example, on the effectiveness of sanitary cuttings, the management of natural disturbances, the consequences of climate change and the prioritization of protected species.

The conflict engaged a substantial portion of Polish society, was widely covered by international media, and resulted, among other things, in a decision by the European Court of Justice against Poland to cease active forest management operations in the forest. While the controversy thrived on partially contradicting scientific arguments, researchers

presenting diverse views rarely met for joint discussions. Open discussions were also hampered by the political nature of the debate. The controversy has some analogies to similar controversies in other protected forest areas in Europe, e.g. in the Bavarian Forest in Germany, the Romanian Carpathians or the Tatra Mountains in Slovakia.

The aims of the initiative organised by the European Forest Institute were to:

- collect and review existing scientific knowledge about the Białowieża Forest (BF)<sup>1</sup> in relation to the controversy about forest conservation and use in the region
- create a space for an open scientific discussion, based on scientific evidence regarding the current and future situation in the BF
- identify consensus and dissent points from the perspective of science, and make different viewpoints visible based on the best available scientific knowledge
- draw lessons/conclusions from the Białowieża case for other areas in Europe facing similar challenges
- publish the findings of this science dialogue in an interdisciplinary multi-author paper that is also accessible for decision makers, media and society.



The Initiative consisted of four steps:

I. Preparation of evidence statements: for each of the main topic areas, scientists with complementary views were asked to prepare an evidence statement reviewing the available scientific knowledge for their topic area.

II. Scientific workshop in the BF: the evidence statements were presented and discussed in a workshop with all the scientists involved, under Chatham House Rule setting; this was accompanied by two field trips and general discussion rounds.

III. Compilation of a multi-author evidence paper: after the workshop, a multi-author evidence paper was prepared, engaging all scientists. The paper presents and discusses scientific evidence for the four topic areas in a comprehensive manner and is the basis for this information sheet.

IV. Presentation and subsequently publication of the findings (Brussels May 2019, Warsaw November 2019).

#### Five topic areas



For more information



## What's to come

Maintaining and enhancing resilience and biodiversity, and providing broad ecosystem services by European forests based on people's needs have become an ever-growing challenge for policy makers, forest owners, forest managers and nature conservationists.

The role of multifunctional managed forests in Europe will remain an important pillar in the coming decades against the effects of climate change and towards the agreed Sustainable Development Goals (SDGs).

Achieving this multifunctionality goal for forests encompasses the necessity to connect people from forest management practice, science and policy making. It also means to learn across sectors and societal groups and to exchange experiences across countries. Therefore, the work of the European Network Integrate continues to be both timely and important.

It is commonly understood that the enhancement of biodiversity conservation in forests is a key goal. In the context of forest management, this needs to be transparently weighted with other demands on forests in a holistic and feasible way, building on scientific evidence

for all measures. Fortunately, there is already a rich diversity of good practice examples throughout Europe on how to integrate conservation and forest management for other purposes effectively. To exchange about such success stories and lessons learnt, but also about ongoing challenges related to this integration will remain a core focus of the Network.

The number of countries participating in the Network has further increased over the last years. Currently, it contains almost 20 European members. This demonstrates the importance of the topic across borders, and the interest in informal, open exchange involving practical examples from forest management. The Network remains open to all European countries, relevant EU Commission Services as well as relevant non-governmental organisations from forestry and conservation. Participants view the Network as an excellent example of a Member State-driven approach to guide and drive the implementation of the EU Forest Strategy.

What does a member of the Network do?  
Membership means to actively support the idea of open exchange and learning related to the integration of



biodiversity conservation in forest management. Members are invited to initiate and participate in activities that are agreed upon by the Network, to share knowledge and expertise, and to provide one or more concrete forest sites where the integration of nature conservation to managed forests is practically demonstrated in a typical manner for the respective context. Thus, we extend an open invitation to all EU Member States and non-EU Member States to join our network. Please send your inquiries or expression of interests to the Network Secretariat (EFI).

The vision of the network remains to be the European platform for fact-based exchange on enhancement of biodiversity integration in sustainable forest management. For achieving this, all actors need to help build the knowledge base on:

1. how to effectively balance biodiversity enhancement with other important demands on forests in both forest policy and forest management practice, and
2. fact- / science-based and effective best practices recommendations for integrating nature protection into sustainably managed forests

It is crucial that the Network Integrate acts flexibly in proactively providing fact-based, and timely support to its members as well as to all other interested stakeholders.

Current challenges like biodiversity conservation, climate change mitigation and adaptation, urbanising societies and their changing demands on forests, as well as the necessity to move more and more away from the exploitation of limited and often environmentally harmful non-renewable resources towards a circular bioeconomy come along with increased and accelerated challenges for forest management.

The Agenda 2030 with the Sustainable Development Goals, the Paris Agreement, the pending post-2020 framework for biodiversity and the Green Deal of the EU are – like for many other sectors – amongst the new important references for forest and forestry development in Europe. At local level, they need to be put in context with people’s needs and the existing status of but also stresses on forests.

The Network will advance exchange and learning on these issues focussing on biodiversity conservation in the context of integrated forest management. It will explore

and practically showcase how these different demands and challenges can be implemented in integrated forest management practices, and what policies are needed to support this.

To be successful at the large scale with such approaches, it is of utmost importance that both foresters/forest owners and the environmental community engage in this together, respecting each other's standpoints, rights and interests. In this way, integrated forest management may become more widely accepted by both forest owners/managers and the environmental community, and viewed as a key contribution for addressing the current and future challenges that our forests face.

Last, but not least, the European Network Integrate stands ready to continue supporting the broader policy discussions on biodiversity enhancement in European forests at EU level. It will do so through its regular presentations of lessons-learnt for a broader discussion at sessions of its mother forum, the Standing Forestry Committee, and of other Committees, but also through its publications and written recommendations.



## Photo credits

Cover page: Jose Bolaños (*Rold Forest, Denmark*)

P. 3: Jose Bolaños (*Network meeting, Toruń*)

P. 4: Danish Nature Agency (*Almindingen Forest*)

P. 11: Barbara Steurer

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P. 15: (*Forest restoration activities in Mura Drava Regional Park*)

P. 16: (*Implementation of mine clearance in the Nature Park Kopački Rit*)

P. 17: (*Biodiversity rich ecosystem dependent on water in Nature Park Kopački Rit*)

P. 18: Ing. Martin Smrž (*Habitat tree? Křivoklát Forest District*)

P. 19: Ing. Martin Smrž (*Training at Křivoklát Marteloscope*)

P. 21: Ing. Martin Smrž (*Training at Křivoklát Marteloscope*)

P. 25: Tobias Markussen (*Bidstrup Forest*)

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*Kottenforst*)

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