

THINKFOREST

Integrating biodiversity
conservation in
forest management

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This brief is based on the project carried out in 2011–2013 titled INTEGRATE – Integration of nature protection in forest management and its relation to other forest functions and services. It presents policy recommendations that are based on the findings of the final report of the project, published in 2013.

Reference to the full report:

Integrative approaches as an opportunity for the conservation of forest biodiversity. Daniel Kraus and Frank Krumm (editors).

European Forest Institute, 2013.

www.efi.int/portal/virtual_library/publications/project_publications/



HALTING BIODIVERSITY DECLINE: THE ROLE OF EUROPEAN FORESTS

Biodiversity is crucial for the well being of our society. It is part of the natural capital which provides ecosystem services such as carbon sequestration, water purification and soil protection that sustain our economy and ensure the resilience of our socio-ecological systems.

European forests are our most important green infrastructure. Forests cover more than one third of the land area in Europe, and are home to the greatest concentration of terrestrial biodiversity. 20% of forests are protected in the European Union. The remaining area of managed forest land also plays a central role in supporting biodiversity, ecosystem processes and connecting habitats.

However, changes in land use, habitat fragmentation, climate change, the increasing frequency of natural disturbances and the spread of invasive alien species are taking their toll on biodiversity. Only 17% of habitats and species and 11% of key ecosystems protected under EU legislation are considered by the EU to be in a favourable state.

Halting further biodiversity losses is on the agenda of policy makers at global, regional and EU levels:

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The **Convention on Biological Diversity** adopted a revised and updated Strategic Plan for Biodiversity in 2010, including 'Biodiversity Targets' for 2011–2020. The strategic plan calls for "effective and urgent action to halt the loss of biodiversity in order to ensure that by 2020 ecosystems are resilient and continue to provide essential services".

A goal of the **pan-European FOREST EUROPE process** is that "loss of forest biodiversity in Europe is halted and degraded forests are restored or rehabilitated".

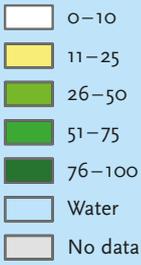
The EU-wide **Natura 2000 network** of nature protection areas is the centrepiece of EU nature and biodiversity policy. Established under the **1992 Habitats Directive**, it aims to ensure the sustainability of the most valuable and threatened species and habitats in Europe in the long term. Nearly 50% of Natura 2000 habitat sites are forests.

The **EU Biodiversity Strategy 2020** aims at "halting the loss of biodiversity and accelerating the transition towards a resource efficient and green economy". It emphasises that forest management plans based on the principles of sustainable forest management are key instruments for ensuring a balanced provision of multiple goods and services and maintaining and enhancing biodiversity.

The **2013 EU Forest Strategy** states the need for measurable improvement in "the conservation status of forest species and habitats by fully implementing EU nature legislation and ensuring that national forest plans contribute to the adequate management of the Natura 2000 network by 2020." It states that integrating biodiversity considerations within forest management plans or equivalent instruments, including Natura 2000 conservation objectives, should be given strong attention.

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Proportion of forest from land area
(% at 1km x 1km resolution)

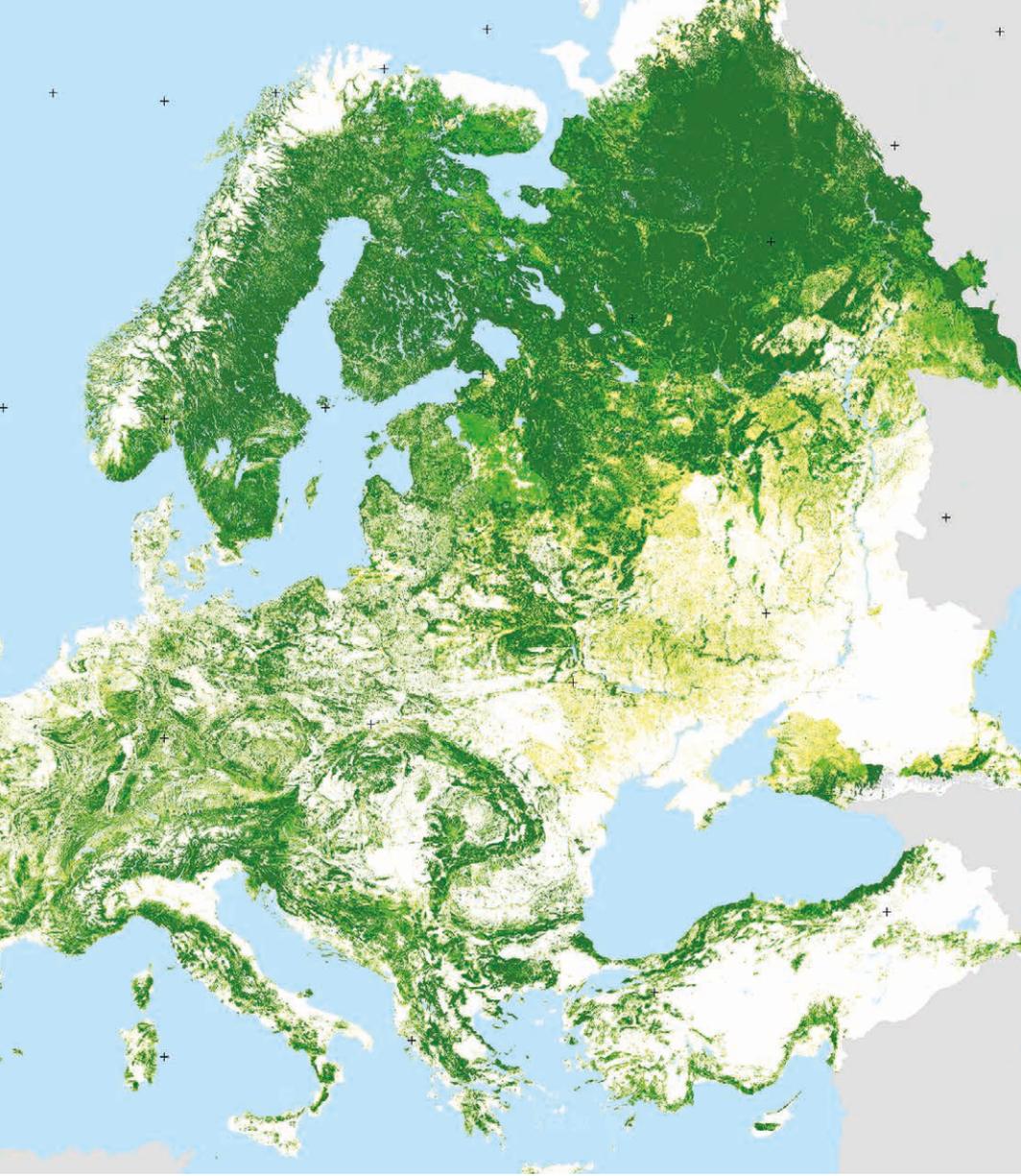


European forests are the most important green infrastructure of our continent.

MANAGING EUROPEAN FORESTS FOR BIODIVERSITY CONSERVATION

Forest biodiversity is protected in European countries within designated protected areas (ensuring regulatory compliance with the Habitats and Birds Directives). However, to guarantee the protection of forest biodiversity in a rapidly changing environment, **it is also necessary to embed effective biodiversity management within other forest areas – where multifunctional forests deliver a variety of goods and services in different places.**

From 2011–2013, the European Forest Institute coordinated a project on the integration of nature protection in forest management (INTEGRATE). This looked at the most recent knowledge, based on international scientific expertise, on how to embed forest biodiversity conservation into regularly managed forests, and the complex relationships, trade-offs and emerging challenges. The project concluded that integrative approaches to biodiversity conservation in forests should have four main pillars:



Use a conceptual framework

Including conservation measures is vital when developing new management concepts. As forests are expected to provide a multitude of services, the effectiveness of forest biodiversity conservation depends on the appropriate and complementary use of integrative and segregative conservation instruments.

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In **segregative forest management systems** strictly protected areas are embedded in a matrix of intensively managed forests or plantations.

Integrative forest management systems aim to maximise the intersection between different forest management goals: production, protection and conservation based on high forest management standards. As the area of synergy is limited, a certain amount of exclusive forest area is needed to meet the demands for different ecosystem services.

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Retain key biodiversity elements

Conservation of biodiversity in production forests is a question of retaining specific elements found in the natural development cycle of a forest. These include: old-growth forest elements; decaying wood in various stages; and the combination of larger and smaller protected areas and habitat trees. All require continuity and connectivity in time and space.

Demonstrate success with indicator species groups

The structures, processes and functioning of forest ecosystems directly and indirectly depend on the species assemblages they consist of. It is therefore vitally important to identify appropriate indicator species groups. To date, there have been some discrepancies between the species currently monitored (including butterflies, birds and plants), and forest species at risk (for example wood-inhabiting organisms).

Identify key challenges

Climate change, invasive species and ensuring genetic diversity are challenges for forest biodiversity management. The consequences for species may be serious, but often difficult to predict – although better understanding of trends and models allows forest managers to be better prepared.

POLICY RECOMMENDATIONS

Use indicators to monitor impacts of biodiversity policies

Biodiversity indicators can be used as a monitoring tool to assess the effects of forest biodiversity conservation policies. **Combining the monitoring of species, forest structures and habitats** is especially important when assessing the effectiveness of biodiversity-oriented management measures. Attention should be given to species groups that are specific to forests and/or potentially threatened.

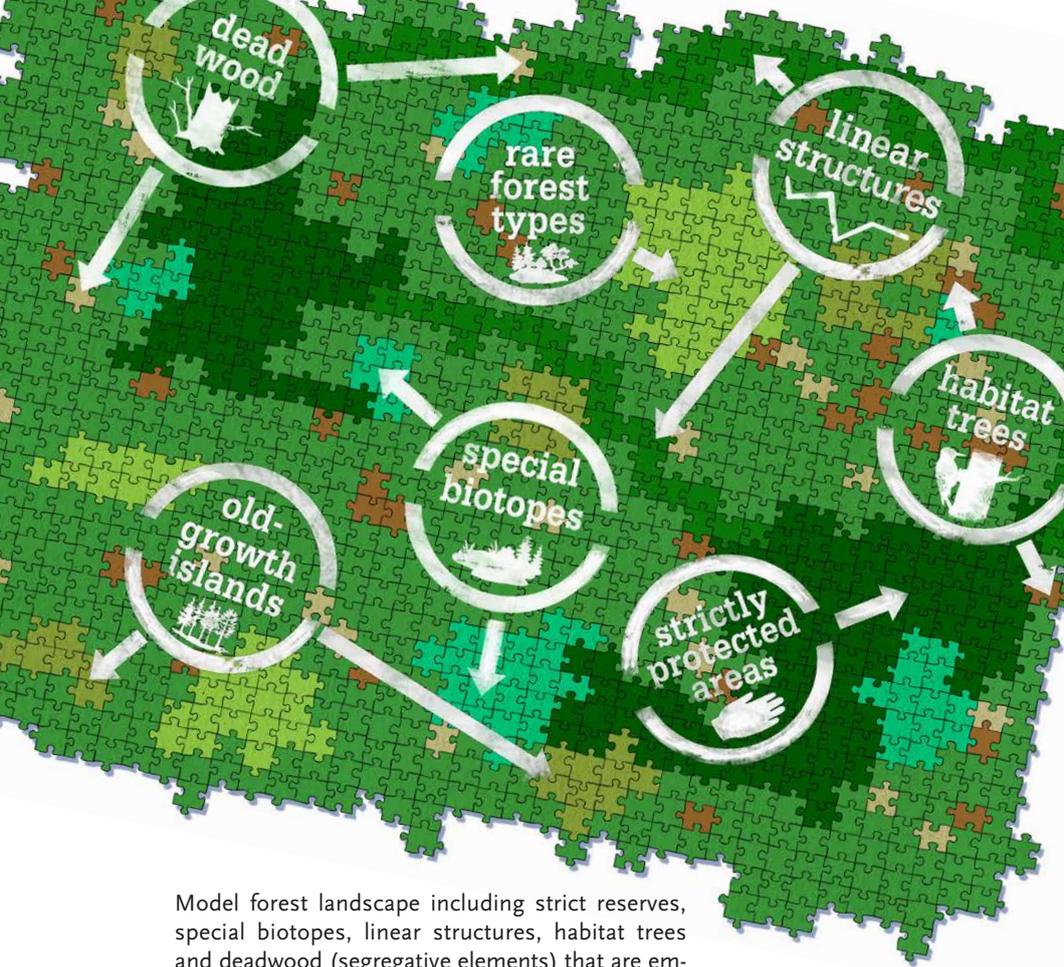
Combine integration and segregation approaches for successful conservation of biodiversity

Effective conservation and restoration of habitats relies on well-developed instruments such as designated protected forest areas that complement forest management practices that embed biodiversity conservation on a larger scale. There is a need for comprehensive multi-scale strategic spatial planning (European, national and regional) **combining integration and segregation approaches for the conservation** of representative forest species. It needs to be ensured that strategic spatial planning for forest biodiversity is integrated with other policies, such as the EU Green Infrastructure Strategy and the EU Water Framework Directive.

Note the importance of deadwood in forest ecosystems

Deadwood in forest ecosystems is a key element for species associated with the decay of wood on living and dead trees. It also plays an important role for carbon sequestration, nutrient supply and water retention. The **ecological threshold for deadwood** quantities





Model forest landscape including strict reserves, special biotopes, linear structures, habitat trees and deadwood (segregative elements) that are embedded within a forest managed according to close to nature principles.

should be reached within a network of forest areas at landscape scale rather than aiming for a lower mean amount over the whole forest area.

Adapt conservation policies and management approaches

Climate change will affect the suitability of forest habitats of various species. Further it is important to better understand how much additional area, structural and connecting elements are needed to ensure habitat cohesion. Therefore, current conservation policies and conservation management should be reviewed to allow better adaptation and response to these challenges.

Value forest biodiversity

The full value of forest biodiversity needs to be made more visible to society. **Harmonized valuation frameworks and the development of suitable financial incentives** to integrate biodiversity conservation into forest management need to be urgently adopted. This way the targets of the EU Biodiversity Strategy can be implemented in a more effective manner. Forest biodiversity conservation could be supported where possible by specified measures in Rural Development Programmes, by nationally specific nature conservation policies or other innovative means involving payments for environmental services (e.g. the Finnish Forest Biodiversity Programme, METSO).

There is a growing need to strengthen communication between the science community and key policy makers in the EU. For this reason, the European Forest Institute (EFI), after consultation with leading experts on forest policy in Europe, is supporting and facilitating a high-level discussion and information-sharing forum, “ThinkForest”.

ThinkForest provides an active and efficient science-policy interface and fosters an inspiring and dynamic science-policy dialogue on strategic forest-related issues.



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