

# SPECIAL REPORT

Summer 2011

## BIODIVERSITY IN THE NORDIC FORESTS: Challenges and Responses

Forests are arguably our most important ecosystems. They host a huge share of world biodiversity, play crucial roles in the regulation of climate and the water cycle, and provide many other ecosystem services and renewable products. This has also been recognised in the European Commission's new biodiversity strategy adopted in May.

To mark the convergence of the International Year of Biodiversity (2010) and the International Year of Forests (2011), ACE and BirdLife have teamed up to exchange views and explore ways to enhance progress on forest biodiversity, through an enhanced dialogue and joint research projects detailed in this report.



Despite their well recognised value, forests are feeling the strain in many parts of the world. Deforestation continues to fast erode the world's tropical forest resources. In Europe, forests have been regenerating in the last decades owing to more sustainable management practices, but their ecological diversity remains a challenge. Ensuring a better stewardship of forests, at home and abroad, is essential if the EU is to meet its international commitments to reversing biodiversity loss by 2020 and stabilising the climate within a safe 2°C limit.

A coherent EU approach to forest protection is still missing. Last year's Green Paper on Forest Protection does well to highlight the need for quality data gathering and better harmonisation of national forest statistics. However, some inconsistencies need to be resolved, in particular between forest protection objectives and the EU's current energy policy. The Renewable Energy Directive and the Emission Trading Scheme are driving the use of biomass for energy and putting additional strains on the world's land and forest resources. These already face new pressures from agriculture as well as having to meet traditional demand for forestry products.

More generally, there is an urgent need to assess the global forest footprint of the EU, and the way all its policies affect forests. On the basis of such assessment, we need to start building coherence and synergies to reinforce and link the tools that can help ensure better forest management e.g. implementation of FLEGT, REDD+ and EU Nature Directives. In addition, a more balanced approach to EU bioenergy policies could reduce some of the unwanted pressure on forests, as would improved recycling and use of biomass waste.

In the last 2 years, biodiversity and forests have merged together near the top of the environmental agenda, both in Europe and globally. The leading role to be played by forests in meeting the biodiversity challenge is now widely recognised. Effective response to this challenge requires collaborative efforts between stakeholders, and it is in that spirit that ACE is approaching its partnership with BirdLife on two biodiversity projects (see back page for details).

Biodiversity protection is critical for the survival of sustainable forests and the ecosystem services they provide (see box on page 2), as well as for the beverage carton industry which sources its paper from these forests. To this end, ACE beverage carton manufacturing companies have a stewardship system in place to ensure the wood fibres used in packaging come from responsibly managed forests and can be traced back to their origin. Independently verified, this system helps to respond to biodiversity concerns and to guarantee that ACE member companies do not source timber from high conservation value forests. They are on the way to meet fully their traceability targets worldwide.

In addition to individual stakeholder initiatives, a key requirement for meeting the biodiversity challenge is an effective policy framework for forests. Building on FLEGT (Forest Law Enforcement, Governance and Trade), the EU illegal timber Regulation is a welcome step. Beyond this, there is a need to encourage the more sustainable use of forests and other natural resources. We share the concerns of BirdLife at forest resources being used for energy rather than being left standing or first serving as timber or paper products (the concept of 'cascade of wood use' supported by all forest industries).

# Europe's boreal forests: bounties of life, goods and services

**As a source of food, water and timber, forests sustain numerous ecosystem services: e.g. regulation of hydrological cycles, formation of natural landscapes and protection of soils and water courses.**

These benefits have been taken for granted and it is only now, when they are under pressure, that their immense economic & societal value is being acknowledged. Thus, the protection of biodiversity makes sense because its loss implies major economic and societal impoverishments as well as environmental degradation.

The boreal (or Nordic) forests are the largest continuous forest ecosystem in the world. They represent 33% of all forests, and in Europe are found in Norway, Sweden, Finland, Russia and Estonia, covering surface areas that range from 31% of Norway to 74% of Finland. Although dominated by only a few coniferous tree species (spruce and pine), the original boreal forests are rich in the biodiversity of forest-dwelling animals, plants and fungi. Many rare species depend on different natural developmental stages of forests, with mature trees and decaying wood, and disturbances such as storms and fire. With their mixed stands, including some deciduous trees like birch and alder, such forests will retain many species and natural processes not found elsewhere. They also need to be connected to each other and big enough to enable specialised species to survive.

The contribution of boreal forests to biodiversity and thus to creating ecosystem benefits cannot be overstated. For example, in Sweden half of the 58,000 known plant and animal species occur in forests and host more than half of the endangered species on the Swedish Red List. Among birds dependant on old-growth forests and sensitive to human activities are the black stork, the Northern goshawk, the capercaillie and the three-toed woodpecker which have all declined in productive forests.

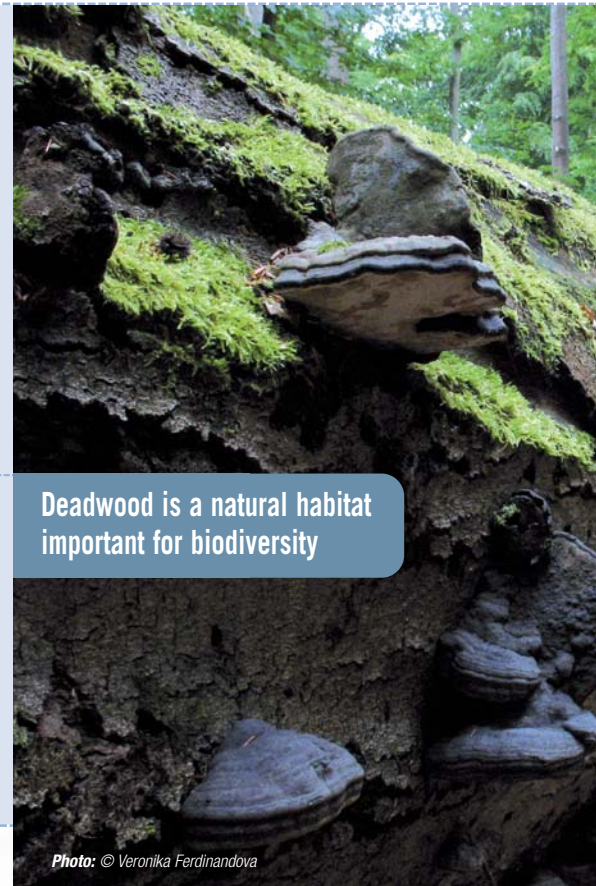
The boreal forests play an important role for our climate. On boggy and peat soils, for example, they retain twice as much carbon as the equatorial forests. Europe's forests have the second largest carbon stock among world forests, although in the boreal variety the vast majority of the carbon is stored not in the wood but in the soil and debris on the forest floor.

## ECOSYSTEM SERVICES

are the goods and services produced and sustained by functioning ecosystems. These services are often grouped as **provisional** (e.g. oxygen, water, timber and food), **regulative** (e.g. regulation of water flows and soil formation, carbon sequestration); **supporting** (e.g. ensuring nutrient cycles, photosynthesis, seed dispersal) and **cultural** (e.g. scientific discovery, recreation, relaxation and intellectual inspiration).

## BIODIVERSITY

is the variety of life on Earth in all its forms and levels of organisation. Forests are some of the most biologically diverse ecosystems on our planet. Forests offer a great variety of habitats for plants, animals, fungi and micro-organisms, a result of millions of years of evolution.



**Deadwood is a natural habitat important for biodiversity**



Photo: © Jan Södersved

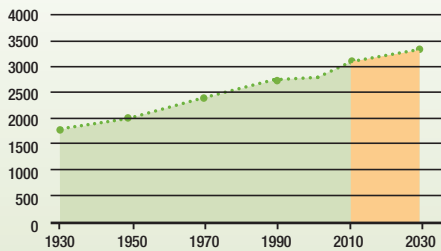
Photo: © Veronika Ferdinandova



# Factoring biodiversity into forest management: general and practical commitments

Protecting biodiversity is an important objective of the sustainable management of Europe's forests. Forests cover around 40% of the EU landmass and nearly half of them are certified under one of the two major forest certification systems (Forest Stewardship Council (FSC) & Programme for the Endorsement of Forest Certification (PEFC)). The surface area and growing stock of the boreal forests of Sweden and Finland, where ACE member companies source their wood fibre, has been expanding for nearly a century (for Sweden, see graph below).

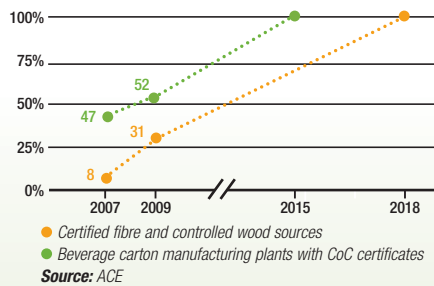
### Standing volume of forest stock in Sweden (million m<sup>3</sup>)



Source: Swedish Forest Agency

ACE member companies seek to respond to biodiversity challenges in two ways: by an overall commitment to responsible raw material sourcing, and also by supporting specific forestry practices favouring biodiversity.

### ACE Voluntary Commitment: Status 2010



First, they have publicly undertaken to trace back wood fibres they use to acceptable sources in their forest of origin (FSC & PEFC certified & FSC Controlled Wood). This global commitment, made in 2007, is to reach 100% chain-of-custody traceability for

the paperboard suppliers worldwide by 2015, and 100% certification for all the beverage carton manufacturing plants by 2018.

Second, through the supply chain they insist on sustainable forest management practices favouring biodiversity:

- Ecological landscape planning
- Identification and protection of key habitats and high conservation value areas
- Protection of water courses and riparian zones
- Controlled fires (where appropriate)
- Retention of trees and groups of trees on harvesting sites
- Protection of cultural sites
- Creation of new deadwood
- Guidelines and training for forest operations



Setting controlled fires to imitate natural disturbances; fires regenerate Northern coniferous forests in their natural states, enabling fire-dependent animals and plants to thrive.



“Natural” bridges to protect water courses from forest vehicles



# Past, present and future of forest biodiversity: turning threats into opportunities

The most important challenges facing biodiversity which forest management needs to address are:

- The fragmentation, degradation for many sensitive loss of habitats and species – drainage and ditching of peat bogs and moist forests
- Reduced amount of deadwood and ancient trees
- Loss of structural diversity and variation in the age of the stands
- Complete or partial suppression of the natural ecological processes that create and maintain this diversity, such as wildfires, flooding, wind-throws, and insect calamities which are responsible for the diversity of age and structure of natural forests.

Use of intensive forestry practices needs to be reviewed as a priority if the negative consequences for biodiversity are to be curbed. Unbridled intensification – which threatens biodiversity at both stand and landscape levels – leads to loss of species and of ecological diversity due to the ensuing simplification of the forest’s structure and processes. Over time this results in many forest-dwelling species becoming less viable or extinct. Hence proper conservation plans for landscape, stand and individual trees need to be set up if forest biodiversity is to be effectively promoted.

Measures that forestry managers should take include setting aside sufficiently large areas and implementing nature friendly practices in managed forests. Reducing the size of clear-cuts is another priority and one where some success has been achieved as the average clear-cut size has decreased in Europe in recent years. Selective logging, widely practiced in many Central European and mountainous regions, allows for quicker recovery of the forest after the intervention. An additional technique of green tree retention has been introduced (also as part of forest certification) to ensure continuity in biodiversity after the felling. Continuous cover forestry – a harvesting method which also avoids clear-cutting – can be adapted in some ecosystems. It combines in the most

profitable way revenues from timber and non-timber forest products with conservation and recreation objectives.

## Protecting valuable habitats in the productive forests

‘Key woodland habitats’ (KWH) is a system used to conserve habitats at serious risk at the level of the forest stand in Sweden. These are small forest patches that exhibit more of the features of original forests than the surrounding. KWH are expected to support threatened species but, to be effective, they need to be sufficient in size.

Action is also needed on a much broader scale. Protected areas need to be designated which are big enough and representative of all habitat types. Although national legislation in the Nordic countries and in international conservation agreements provide for this, the actual situation on the ground is different and needs to be improved. Recent research recommends that as much as 10% of the national forest area of Estonia and Sweden should be strictly protected (no wood harvesting) if biodiversity targets are to be met.

## Deadwood and interconnected landscape: two other priorities

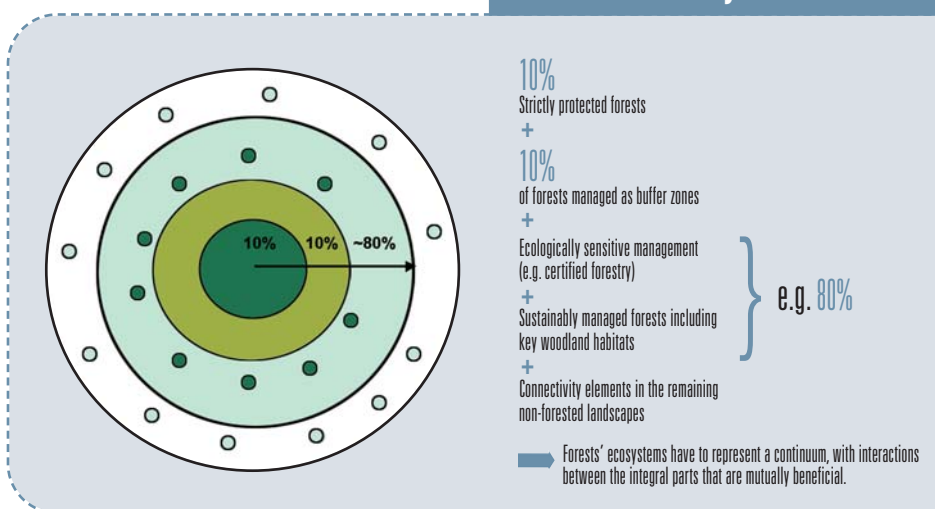
Deadwood – e.g. fallen trees, branches or stumps – is widely recognised as a key

indicator of the sustainable management of the forest ecosystem. Deadwood provides information about the state of the ecosystem, as a proxy for the state of many invertebrate species, whose status is otherwise difficult to measure. Some experts believe that the vast majority of temperate forest biodiversity is dependent on deadwood.

One of key threats to many less adaptable and less mobile species is fragmentation. Isolated fragments of even the best habitat cannot sustain viable populations of species which have little or no capacity to migrate due to loss of natural ecological linkages and past migration routes.

That is why small islands of protected ‘old growth’ forests alone are not sufficient. It is important that the surrounding forests are managed in a way that would ensure the possibilities for migration and connectivity between these ecological islands. Eventually, there is a need to protect all remaining natural old-growth forests in Europe as ‘biodiversity pools’, as well as to restore and maintain connectivity between them.

## BirdLife model for halting forest biodiversity loss





## Biodiversity: Action on the ground

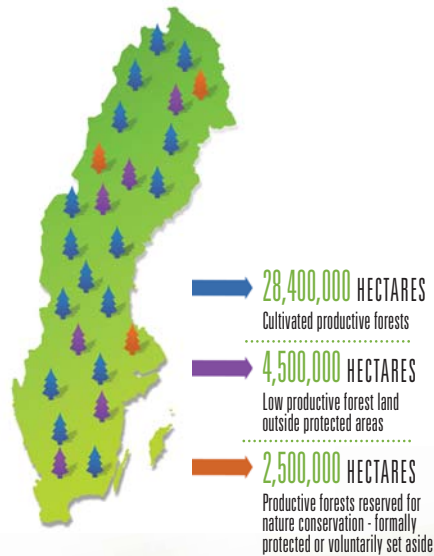
Everyday actions which implement the practical commitments made by the beverage carton value chain (see page 3) seek to incorporate biodiversity into forest management plans.

These on-the-ground actions include:

- 'Contiguous landscapes' forming corridors enabling species to move between habitats.
- Use of location technologies such as GPS that help foresters manage their 'site-adapted forestry' techniques with far greater precision.

For other examples demonstrating specific implementation of our practical commitments, see the case study below.

In the Swedish and Finnish boreal forests where ACE member companies mainly source their wood fibre, a portion of the forest is set aside for nature conservation.



Source: Swedish Forest Industries Federation, 2011

A significant portion of Nordic forests (here the Swedish example), is reserved for nature conservation, both by law and by voluntary set-asides.

### Europe's Biodiversity strategy

Regenerating ecosystem services is a key priority set by the European Commission for 2020. By 2014 all Member states should audit the state of their ecosystems. A key role is assigned to forests and sustainable forest management. Measurable improvements are asked for in the conservation status of species and habitats and in related ecosystem services.

### TEEB

The Economics of Ecosystems and Biodiversity (TEEB) project, which assesses the economic value of biodiversity and of its loss, has had an important influence on Commission thinking. TEEB presents the economic rationale for biodiversity in the same way that the Stern report has done for climate change, thereby helping business to measurably account for the biodiversity factor.

## Case Study: White-backed woodpecker

### from Bergvik Skog, a forest company supplying wood fibres for beverage cartons' paperboard

#### Background:

The threat to the white-backed woodpecker, a critically endangered species in both Sweden and Finland, is the decrease of old deciduous forests containing deadwood. EU Life projects in both countries aim to protect existing habitats and develop new ones targeting population recovery to a level viable in the long term.

#### Description of the best practice:

The project participants have selected areas to form a network of existing and potential new territories for the species. Special management guidelines for these habitats have been developed e.g.:

- Increase the share of broadleaved trees by removing conifers, primarily spruce, through thinning.
- Creating dead hardwood habitat, especially from aspen, willow, alder and birch. Deadwood can be created by harvesters in the form of high stumps.
- Protecting existing dead hardwood habitat, in particular standing dead trees.
- Damage standing trees to develop future deadwood.
- Controlled burns to create burnt wood habitat.
- Control of deer and moose populations to allow broadleaves to develop.
- Create open clearings in the forests.
- Recreate broadleaved dominated wetlands with annual natural flooding by filling in ditches and removing dams.

The maintenance of forests inhabited by woodpeckers also protects other species of boreal natural forests. Without maintenance measures, the forests would gradually become spruce-dominated, and therefore unsuitable habitats for the nesting and feeding of the white-backed woodpecker.

Source: Sharing Experiences - Promoting biodiversity in the European pulp and paper industry, CEPI, 2009



## Joint Research Projects to Support Biodiversity

The cooperation between ACE and BirdLife Europe is intended to raise further the awareness and mutual understanding of forest biodiversity challenges and their solutions. Its initial phase consists of an informal dialogue and joint research projects. The projects aim to contribute knowledge on how to measure biodiversity and on the effect of forest certification on biodiversity conservation.

### 1. Birds as indicators of forest biodiversity

The project aims to evaluate the sensitivity of European forest birds as indicators of changes in forest habitats. Birds are important as indicators, because in practice they are the only species group for which sufficiently wide-ranging and regularly gathered data sets are available for most EU Member States.

The EU already uses a composite indicator of farmland birds as an official indicator of sustainability in that habitat. The results of the current project will be used to create an analogous indicator for forest habitats, which

makes use of annual results obtained from the Pan-European Common Bird Monitoring Scheme. The project will evaluate the potential of the forest bird species indicator through a comprehensive assessment of their habitat, nesting and feeding requirements at different stages of their life cycle and at different times of the year. Previous similar studies for species of agricultural habitats have demonstrated the potential of this approach to identify species suitable as indicators for habitat change. The research is undertaken in partnership with the University of Reading in the United Kingdom.



Photo: © David Dillort

### 2. Assessing the contribution of FSC certified forests to biodiversity goals

This project aims to evaluate effects on biodiversity conservation of FSC certification in terms of (1) the requirements of FSC national standards and (2) the outcomes on the ground. Little data exists either as to how well FSC national standards are working for biodiversity conservation or how the standards might be improved. There is no generally agreed way as yet to measure FSC certification's impact on biodiversity. Carrying out such an assessment will require a considerable amount of syntheses of knowledge about biodiversity and field data, the availability of which varies among countries.

The project is a partnership with the Swedish University of Agricultural Sciences, School for Forest Management, Faculty of Forest Sciences (SLU). A pilot project will be carried out in Sweden to clarify the efforts needed and assess which other countries could be studied using the method proposed.



Photo: © Jukka Könönen/GAVARC

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