

Caring for the FUTURE?



Caring for the FOREST!

Report into the status
of the world's forests



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‘Youth in Action’ Programme

Youth in Action is a programme the European Commission has set up for young people. It aims to inspire a sense of active European citizenship, solidarity and tolerance among young Europeans and to involve them in shaping the European Union’s future. It promotes mobility within and beyond the EU’s borders, non-formal learning and intercultural dialogue, and encourages the inclusion of all young people, regardless of their educational, social and cultural background.

Source: <http://ec.europa.eu/youth>

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‘Caring for the future? Caring for the forest!’

Report into the status of the world’s forests



DECEMBER 2011

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INTRODUCTION

As 2011 is the **International Year of Forests**, Youth and Environment Europe decided to commemorate it by running an international information and education campaign - '**Caring for the future? Caring for the forest!**'. The main aim of the campaign has been raising awareness about the importance of forests in our lives and for our future and showing the vital role that they play in maintaining the stability of our climate, preserving biodiversity and offering us a healthy and enriching environment.

The report you have right now in front of you is part of this campaign. It presents the **state of the forests** in 6 European countries that have taken part in the project - **Albania, Czech Republic, Finland, Portugal, Russia and the United Kingdom** - by describing the richness of the local forests, their specificities as well as the threats they face nowadays. It is a way to share and observe what our local forests have in common as well as to see the differences between each country. We also looked at **forests worldwide** and we prepared for you a short insight about the different **forest types**, the **forest management practices** and the **main threats forests currently have to face**. At the end, you can also find a lot of inspiration for further reading, discovering and action in the concluding section 'Want to find out more?'.

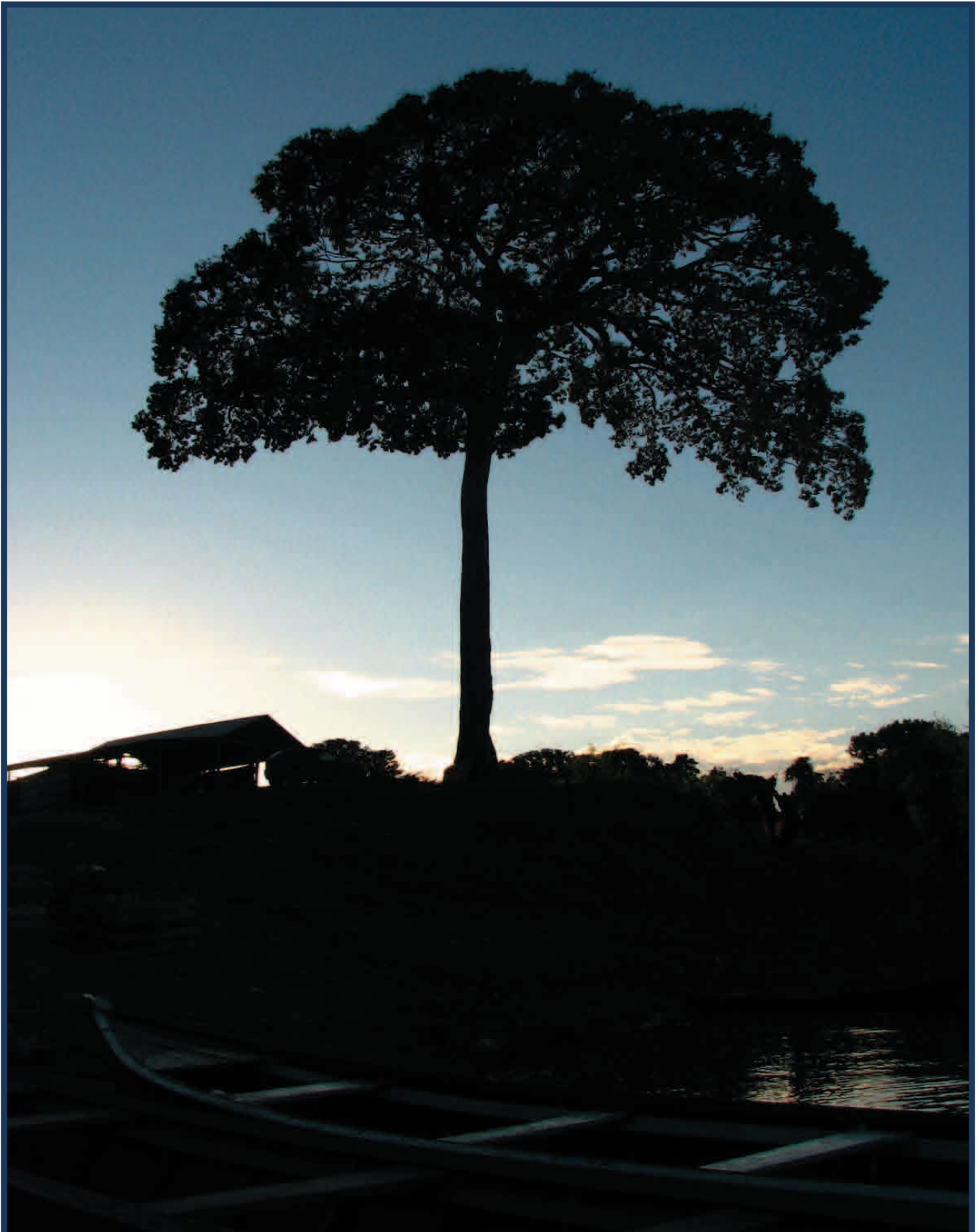
We hope and believe that after reading the next pages, you will feel encouraged to care more for the local forests around you as well as to take action to preserve forests worldwide.

We wish you a nice 'walk' through the forest with us!

*On behalf of the YEE Forest Campaign team
Adriána Harnúšková
YEE Secretary General*



I. THE STATUS OF THE WORLD'S FORESTS



Chapter 1: FOREST TYPES

Forests can be classified according to a wide number of characteristics, with distinct **forest types** occurring within each broad category. However, by latitude, the **three main types of forests** are **tropical**, **temperate**, and **boreal**.

TROPICAL FORESTS, SUBTROPICAL FORESTS, RAINFORESTS

As we know, the Earth is composed of different type of resources such as rocks, water, forest etc. In this, forests play an important role on the whole geographical area of the Earth.

The **rainforests** belong to the tropical wet climate group. The temperature in a rainforest rarely gets higher than 93°F (34°C) or drops below 68°F (20°C). It gets about 150 cm of rain per year and for this they are called rainforests. Scientists estimate that more than half of all the world's plant and animal species live in tropical rainforests. Seventy percent of the plants there are trees and they produce 40% of Earth's oxygen. We have to mention that about 1/4 of all the medicines we use come from rainforest plants.

There are **3 main regions of tropical rainforest**: in Central and South America, in West and Central Africa, and in Southeast Asia. The Amazon Basin forest is the largest, covering 6 million km².

Tropical forests are characterized by the greatest diversity of species. They occur near the equator, within the area bounded by latitudes 23.5 degrees N and 23.5 degrees S. One of the major characteristics of tropical forests is their distinct seasonality: winter is absent, and only two seasons are present (rainy and dry). The length of daylight is 12 hours and varies little.



Subtropical forests are in areas outside of the strict equatorial region but either within or bordering the tropical zone and have more noticeable seasonal changes. Although temperatures may vary only slightly over a year, rainfall may be distributed unevenly so that wet and dry seasons occur. However, the annual rainfall is still high. Because they share many species and characteristics in common, there is no clear-cut boundary between tropical and subtropical rainforests. In general, the latter community has less of every-

thing that is typically found in tropical rainforests. One major difference is that a smaller number of tree species form the canopy of subtropical rainforests, contrasting with the great range of species in tropical rainforests.

BOREAL FOREST (TAIGA)

Boreal forests, or **taiga**, represent the largest terrestrial biome. Occurring between 50 and 70 degrees north latitudes, boreal forests can be found in the broad belt of Eurasia and North America: about half in Russia with the rest in Canada, Alaska, Finland, Sweden and Norway. Seasons are divided into short, moist, and moderately warm summers and long, cold, and dry winters. The average length of the growing season in boreal forests is 130 days. The term boreal forest is sometimes, particularly in Canada, used to refer to the more southerly part of the biome, while the term taiga is often used to describe the more barren areas of the northernmost part of the taiga approaching the tree line. The term taiga is of Russian origin.



Typical for boreal forests are:

- Temperatures are low.
- Precipitation falls both as rain and snow, 20-100 cm annually.
- Soil is thin, nutrient-poor, and acidic.
- Canopy permits low light penetration, and as a result, understory is limited.
- Flora consists mostly of cold-tolerant evergreen conifers with needle-like leaves, such as pine, fir, and spruce.
- Fauna includes woodpeckers, hawks, moose, bear, weasel, lynx, fox, wolf, deer, hares, chip munks, shrews, and bats.

TEMPERATE FOREST



Temperate Deciduous Forest

Location: Eastern United States and Canada, Western Europe and parts of Russia, China and Japan.

Climate: There are four distinct seasons in temperate deciduous forests and precipitation falls throughout the year, as rain in the spring, summer and fall and snow in the winter. Temperate deciduous forests receive cca 75-150 cm of rain per year.

Soil: The soil in these forests is very fertile.

Plants: The forest floor in temperate deciduous forests supports mosses, ferns and wildflowers and the understory supports a variety of shrubs and ferns. Maple, oak and birch trees are some examples of the deciduous trees that dominate these forests. There are also small numbers of evergreen trees such as pines and fir.

Animals: Animals living in temperate deciduous forests must be adapted to cold winters. Common species found in temperate deciduous forests include red fox, hawks, woodpecker and cardinals.

Temperate Coniferous Forest

Location: Temperate coniferous forests are typically found in coastal areas with mild winters and heavy rainfall or in in-land mountainous areas with mild climates. Examples of where these forests are found are Pacific Northwestern United States and Canada, Southwestern South America, Southern Japan, New Zealand and small parts of Northwestern Europe (Ireland, Scotland, Iceland and Norway).

Climate: Temperate climate with temperature that fluctuates little throughout the year. High levels of precipitation (cca 125-510 cm per year) cause a moist climate and a long growing season.

Soil: Soils are generally rich with a thick layer of decaying material.

Plants: Evergreen conifers dominate these forests. Due to the high levels of precipitation and moderate temperatures, there is a long growing season, resulting in trees that grow very tall. Do-minant tree species found in temperate coniferous forests include cedar, cypress, Douglas fir, pine, spruce and redwood.

There are some deciduous trees such as maple, and mosses and ferns are common.

Animals: Examples of animals that live in temperate coniferous forests are deer, marmot, elk, black bear, salmon, spotted owl, marbled murrelet.



Chapter 2: FOREST MANAGEMENT PRACTICES

According to the Second Ministerial Conference on Forests protection in Europe in 1993:

‘Sustainable forest management is the management and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and the potential to fulfil, now and in the future, ecological, economic and social functions, at local, national and global levels, without causing any damage to other ecosystems.’

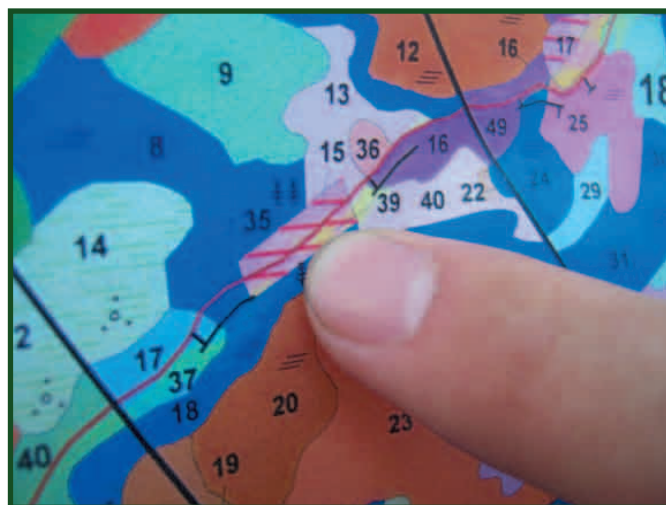
This is a clear conceptual evolution when compared with traditional definitions. Originally the term **sustainability** was used only in the sense of sustainable production, focusing on forests’ capacity to provide a constant amount of wood. In the last 10 years different kinds of pressures, especially environmental, have extended the scope of this concept.

Following the development of a framework for sustainable forest management, it became clear that there was also a need to develop tools to assess progress towards meeting the new goals for forest management.

Thus, several initiatives arose with the aim of defining a set of criteria and indicators for **sustainable forest management**. In Europe the initiative came from the Pan-European Forest Protection in Europe process, which in the early 1990’s developed a set of criteria and quantitative and qualitative indicators. These criteria and indicators were designed to monitor and meet needs and values like the maintenance and appropriate increase of forest resources and their contribution to global carbon cycles; maintaining health and vitality of forest ecosystems; maintenance and encouragement of productive functions of forests (woody and non-woody); maintenance, conservation and promotion of appropriate diversity biological forest ecosystems; maintenance and development of appropriate protective functions in the management of forests (mainly oil and water); maintenance of other functions and socio-economic conditions.

SUSTAINABLE FOREST MANAGEMENT PLAN

Because of the complexity involved in managing a forest, it’s both useful and necessary to have a management plan. A **management plan** is a formal document which consists of pieces written and cartography that relates to a **management unit** – a given geographical area – contains a description of the management unit, clarifies management objectives for the entire management unit, provides a planned sequence of cultural interventions for each of the plots, explains the mechanisms to record the actions actually taken, the control mechanisms for monitoring compliance with the plan, the mechanisms and frequency of updating of the diagnosis of the state of the forest and review of actions. This plan guides the choices of the forest manager, as it ‘forces her/him’ to consider a number of different facets of the problem, and to seek the needed consensus among possibly conflicting management objectives.



The plan for sustainable forest management should consider different criteria such as **forest resources and carbon storage**. We must consider the volume and quality of the management unit and meet the total volume of forest stands and their structural variability. Another main function associated with forest ecosystems is their ability to assume the role of a carbon sink. The increase of the forest has a positive impact in this area, although the effectiveness of such retention is strongly given to products extracted from forest. Planting forests is good, since this will increase the storage of carbon, however the logging of forests results in release of this carbon.

It is also necessary to consider the type of regeneration used because the variables that most influence the quality of a forest stand is the quality of material used in the constitution of this settlement. Natural regeneration has the advantage of greater proximity to natural processes of regeneration, the low cost of installation, a better adaptation of the young plants to the management unit and the ease and natural mix of species. On the other hand, planting with quality plants (certified) allows you to intervene in a targeted manner on the genetic quality of population and loss of control installation, mixtures of species and the initial development of the stand.

A very important criterion for a sustainable forest management plan is the **health and vitality of forests**. Within this criterion, the **risk of fire** that depends on two important variables is considered: **meteorological and fuel characteristics**. While a forest management plan for a specific area has no control over the weather, it does have significant control over the second variable – fuel characteristics. Among the factors that influence the flammability of forest the most are the type, quantity and continuity of fuel. It is therefore important to manage the forest area so as to reduce flammability. It is also important to seek commitments to protect ground cover, either for the purpose of conserving soil and water or in order to conserve biodiversity.



Poor access to forest areas has been identified as a major cause of the large amount of damage **caused by fires**. The development of an infrastructure network and small roads thus minimizes the risk of fire in many forest areas. Along with accessibility, the existence of water sources in forest areas makes fire-fighting much easier. The presence of water points reduces the time it takes to re-stock a fire engine thus increasing their efficiency. Water points, even small ones, play a role in diversifying the landscape and promoting wildlife conservation.

Another way to study the vitality of the forest is to analyze its crown condition, by examining **defoliation (loss of leaves)**. This provides an indication of the tree's health and its response to various stresses. Some of these stresses are outside the control of forest management, but others are greatly influenced by good forest management practice. Among the factors that forest management cannot impact on are air pollution and drought. But good management can prevent and tackle pest attacks, plant disease, and of course poor forest management practice itself. However, whatever the cause of defoliation, it is important to intervene to counter possible causes of defoliation in a given forest area. It is also important to consider the nutritional deficiencies of plants. Nutrition is a dynamic process, influenced by different factors, which cannot be estimated by a simple laboratory evaluation of soil fertility. The pace of growth and symptoms of known deficiencies are important indicators of the quality of the station and for correction of any nutritional deficiencies.

The **productive function** of forest is a feature of great importance. Most forest areas are geared towards maximizing a given product (for example, in Portugal forests are a source of **cork, hunting, and fruit**). In most forests the main product is **timber**. In extremely simplified systems the main product is actually the only product extracted from the forest management unit. The growth rate of the forest has significant influence over determining the optimum time for harvesting **forest products**. If there are high growth rates in a forest, this enables logging, as well as the maximization of carbon sequestration and also indicates the presence of a healthy forest. However, beyond the core product, the forest often plays multiple roles and in most cases produces a broad spectrum of goods and services. In these cases, the diversification of production is desirable because it means that the forest can be a stronger and more reliable source of income, since people are not dependent on the fluctuating market prices of one item (e.g. timber).



It is increasingly essential and urgent, in a sustainable forest management plan to respect the **biodiversity of our forests**. The European Union typifies and classifies habitats whose need for conservation is the most urgent. From the list produced, many of the forest habitats are classified and can exist in areas of very small size, possibly within wider forest areas. The conservation of these habitats is of paramount importance. Riparian galleries are formations of the highest ecological value in a forest area. However, in addition to their ecological role they also play various important roles, such as acting as barriers to wildfires. The connecting zones between the forest habitats and other habitat types usually have a high biological diversity, since they concentrate typical forest species with species typical of other natural or cultural backgrounds. Forests are still a privileged site for many plant and animal species, which depend on the supply of food, shelter and breeding sites. Some of them have now diminished or have declining populations. The species that cause the biggest reasons for concern are identified in the **European Union Directives 'Birds' and 'Habitats'**. Some simple forestry steps can ensure maintenance and reinforcement of populations of some species.

Most forestry systems cut down trees long before they have reached maturity. As a result of this practice, forest areas generally have very few trees of advanced age. However, it is older trees with a large diameter that have the natural cavities which offer basic shelter for an important group of animals, in particular birds, but also some mammals. There is also a whole range of small organisms (fungi, animals and plants) that depend strictly on the **existence of dead wood** in different states of decomposition and sizes. In more intensive forestry systems these structures are removed from the forest, endangering this set of species.

One should also consider the **protective functions** related to soil and water. The amount of land is directly affected by the forestry practiced in a given management unit. Certain practices lead to soil erosion, while others allow for the proper conservation of this resource. In addition to the amount of land available, it is also important to assess soil quality. This assessment of fertility enables people managing a forest to see the impact their management practices are having. Increasing mechanization of forest operations leads to soil compression. Therefore it is necessary to evaluate the evolution of this parameter to correct less suitable forestry practices and introduce strategies to minimize further degradation.



The implementation of sustainable forest management respects the **social and economic functions** of forests, such as forest investment and operating costs. The characteristics of the forest investment make it often uninteresting, compared to alternative uses of capital. However, without a minimum investment



the likelihood of a high quantity and quality of forest production is reduced. The profit is, as in any other business, the ultimate objective of forestry. This requires diversification of revenue sources, the multiple use and continued production to make revenue from forest areas more financially attractive. We must also take into account employment and job security. Forestry has been identified as a solution for tackling high employment potential in rural areas. It is therefore important not only to clarify the contribution of forests to rural employment, but also to promote the quality of life of forest workers (promoting, among other qualifications, specialized training and gender equity in forestry work). The forest activity involves a

high risk compared with other professions. However, there are several safety codes that, when met by workers and service providers can reduce or eliminate the number of accidents and particularly the serious ones.

Forests are often rich in terms of **archaeology and property**. As evidence of our past and history, it is particularly important that forestry work protects these historical riches. It is necessary to preserve the landscape values by removing non-forest waste from the forest interior. Unfortunately, forests are often used as a deposit of waste from construction debris, material from excavation and demolition or household appliances. Typically, these deposits occur without the expressed consent of the owner or manager of the forest area. However, they should, together with the municipal authorities push for their removal.



Sustainable forest management systems are quite a complex topic, as you may have noticed from this article. Nevertheless, implementing such systems is vital if we want to protect our forests from over-exploitation and destruction, and to protect their impressive biodiversity.

Chapter 3: THREATS TO THE WORLD'S FORESTS

*"This great society is going smash;
They cannot fool us with how fast they go,
How much they cost each other and the gods!
A culture is no better than its woods."*

W.H. Auden

INTRODUCTION

Greenpeace reports that every 2 seconds we lose a football pitch of forest due to logging or destructive practices. It is shocking to read that 72% of the Indonesia's intact forest landscape and 15% of the Amazon rainforest have already been lost forever. And it's important to highlight here that even if new trees are planted (and often they are not) the new growth will not provide the same value to the environment as the older trees.

What are the reasons behind such rapid destruction of our world's forests? What are the threats to the forests we need to be aware of so that we can campaign for change? In this section of the report we aim to provide you with an overview of the threats faced by our forests, and what this could mean for our lives. We'll be focusing in particular on boreal forests and rainforests.

Firstly, it's really important to remember that the threats to the world's forests have a human face. For the past 10,000 years humans have been chopping down forests to make way for agriculture, and for timber. The upshot is that, according to the UN Food and Agriculture Organisation, forests now cover 31% of the Earth's land surface, and only one third of this is primary growth forest, with a large proportion of this in a degraded state.



THREATS TO THE TAIGA

What is the Taiga and why is it so important?

'Much world attention has focused on the loss and degradation of tropical forests over the past three decades, but now the boreal forest is poised to become the next Amazon.'

Corey Bradshaw, University of Adelaide's Environment Institute.

The term Taiga is used to refer to the biome (biome means type of habitat) of the evergreen forest. It is in fact the world's largest biome, and skirts the top of our planet, stretching across Eurasia and North America, also referred to as boreal forests. The winters in this habitat are cold, long and harsh, while the summers are humid and damp. However, climate change is resulting in warmer winters and drier summers, leaving the boreal forests at increased risk of forest fires.

While there is little point in claiming that one forest type is more vital than another, what is important is to ensure that the general public and policy-makers are just as aware of the threats to the Taiga as they are of the situation in the world's tropical rainforests. Here are some reasons why:

1. The northerly location of the boreal forests makes them **particularly sensitive to climate change**

2. and **boreal forests have a reciprocal impact on climate change**. This is partly due to their large size and the significant amounts of carbon they store. If the boreal forests are logged or burned they make the negative journey from carbon sink to carbon source.

3. But there is also the land in which the boreal forests grow – **deforestation will contribute to the melting of the permafrost**. And this will result in destructive release of methane gas, adding yet another contributor to climate change.

4. The Taiga is a place of **unique biodiversity** and **home to indigenous people** with a unique way of life and cultural heritage.



Perhaps you can ask your friends and family if they know much about the boreal forests and share these facts ... you can start raising awareness of this important issue today!

Now let's look at some of the threats to the boreal forests in more detail.

Deforestation of primary growth forests

What is the difference between primary and secondary growth forests, and why is it important? **Primary growth forests** contain the original trees, whereas secondary forests are those that have been replanted following logging by humans. The importance of primary forests lies firstly in their **longevity** – they have sequestered impressive amounts of carbon over their lifespan, and continue to absorb more. The problem is: as they are chopped down not only is **the carbon released into the Earth's atmosphere** (a particularly large proportion of emissions still come from the burning of wood), but what could be described as a wise old person, learned and **knowledgeable about how to store carbon is lost**.

A report from Friends of the Earth has countered the argument from some forest experts (in particular in the Scandinavian forest industry) that logging of primary growth forests could actually be a positive development in the struggle against global warming. Since younger forests absorb carbon dioxide more quickly than older forests it is argued that deforestation followed by replanting could help us deal with carbon dioxide emissions. In reality, the logging of the older forests will result in the eventual release of the large amounts of carbon these trees have been storing for hundreds of years.

The issue of the deforestation of primary growth forests is particularly important when we consider boreal forests. For example, in Finland 95% of primary growth forests have already been chopped down. While the large-scale planting of new trees counters this to some extent, continued logging of primary growth forests in the boreal region **threatens unique flora and fauna** as well as the way of life of native populations.

Climate change

Friends of the Earth predict that it will be the boreal forests (alongside tropical rainforests) that will be most severely affected by climate change. The increase in temperatures will mean that the **southern portions of the boreal forest area will become grassland**. The disappearance of forest land in these southern areas

will be the result of increased frequency of fires, outbreaks of pests, drought, as well as competition from temperate woodland. Indeed, the boreal forests of Canada have already suffered due to an infestation of bark beetles due to warmer temperatures.

And the problem becomes more grave when we realise the downward spiral of global warming – the destruction of large amounts of boreal forest will result in the **release of large stores of carbon**, which will in turn speed up climate change, and thus lead to further forest loss.

Large-scale exploitation of boreal forests

The number of people aware of the threats to the boreal forests continues to be much lower in comparison to the rainforests. Indeed, what has in some ways set the boreal forests apart from tropical and temperate forests is that they remained untouched for so long. The harsh northern climate of the areas where boreal forests are to be found means a sparse population, and thus little exploitation of natural resources. But this is most certainly no longer the case.

The Taiga Rescue Network states that the world's **boreal forests are being treated as a paper mill**. In Scandinavia intensive forestry means that most forests are now secondary growth. While more intact forest remains in Canada, Alaska and Russia, logging continues to spread to previously untouched areas.

Indeed, a recent academic study published in the journal *Trends in Ecology and Evolution* notes that **the threats to the boreal forests are particularly severe in Russia** – it is there that the forests are most degraded, and also where the most damage has taken place in recent years.

A particularly serious threat to the boreal forests in Russia comes from **illegal logging**. In the wake of the fall of the Soviet Union the Russian Government was keen to open up forests to logging firms. Unfortunately, corruption and lack of regulation have also opened the forests to illegal logging, which is severely threatening not only the forests but the people who live there.



Natural habitat

Because of their relatively young age, boreal forests are relatively species-poor, for example in comparison to tropical rainforests. However, they are home to **a variety of unique flora and fauna**, which will become **increasingly endangered with the loss of their natural habitat**. For example, the wonderfully named lichen *Methusela's Beard*, grows in specific parts of the Taiga which have been left untouched by forest fires (mainly forests that grow on north facing slopes, near bogland). Unfortunately, the forestry model in Scandinavian countries has resulted in the near extinction of this lichen regionally. Indeed, according to the Taiga Rescue Network, **some of the most endangered species on the planet live in the boreal forests**, including the Far Eastern leopard and the Sika deer.

Cultural heritage

While the Taiga region is only sparsely populated, it is **home to various indigenous people**. Indeed, according to the Taiga Rescue Network over 80% of Canada's indigenous people live in the boreal region. The depletion of the forests threatens not only these people's livelihoods, but also their way of life, and us all with the loss of their rich traditional knowledge and culture.

In Russia, for example, indigenous people's rights to look after their reindeer herds and hunt in the vast swathes of lands they have inhabited for generations have been challenged by changing government priorities, and attempts to make them sign rental agreements.

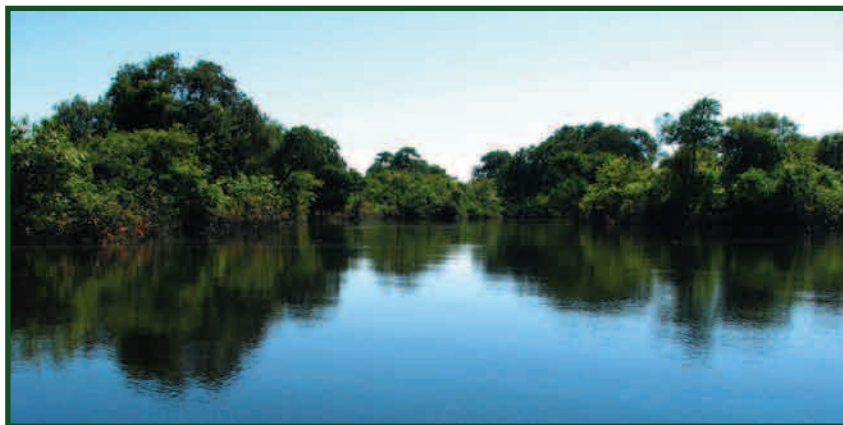
THREATS TO THE AMAZON RAINFOREST

What is the Amazon?

The Amazon is the world's largest tropical rainforest and river basin. It is also **one of the most important natural habitats on the planet**. Before speaking about some of the threats that endanger this region, here are few facts about why it is important from the global point of view: the Amazon is known to have **the largest biodiversity in the world** (one in ten known species on Earth lives there); it represents **half of the planet's remaining tropical forests** and it contains

one-fifth of all free-flowing fresh water on Earth. What is often forgotten is that it is also home to many **indigenous and ethnic groups** – all together 30 million people – who depend on its nature for their survival (food, shelter, livelihoods).

The rainforest contains between 90-140 billion metric tons of carbon therefore it helps to stabilize both local and global climate. With deforestation, significant amounts of this carbon are released and this can have negative consequences on the world climate.



What are the biggest threats to the Amazon?

The Amazon region is systematically being destroyed for short term gains. The greatest drivers of deforestation and river degradation are – **il/legal logging, unsustainable expansion of agriculture** (e.g. cattle ranching and soybean), **construction of roads and dams, extractive activities** (oil, gas and mining) and **climate change**.

Logging

One of the biggest dangers to the Amazon Rainforest is the rapid deforestation by logging which is primarily driven by demand for cheap timber. **Between 60 and 80% of all logging in the Brazilian Amazon is estimated to be illegal**. It is somehow a **vicious circle** as by building logging roads into the untouched rainforest, the logging industry opens the door to further devastation of the forest through clearing for cattle ranches and soya plantations, hunting, and mining. As industrial logging and other industries move further and deeper into what remains of the forest, many indigenous people's cultures are being threatened as well.



Brazilian Forest Code

At the moment, Brazil is standing on a real environmental crossroad as the proposed changes to Brazilian legislation put forests at big risk. The Brazilian Forest Code, legislation that protects the Amazon from deforestation, is under threat as several changes in its content are being discussed in the Brazilian government. If approved, the Forest Code will lead to increased deforestation which would consequently mean rise of global carbon emissions. In May 2011, members of the Brazilian House of Representatives voted in favor of altering the Forest Code. The draft legislation is now in hands of the Senate where it may be subject to modifications but it is very likely to pass there as well. After, the text of the law will be submitted to Dilma Rousseff, the President of Brazil who can decide to sign it or veto it.

Cattle and soybean

Two other main causes of the rainforest deforestation are **cattle ranching and soybean farming**. Soybean cultivation in the Amazon has expanded rapidly in recent years mainly due to improved infrastructure and rising demand for vegetable oils for food, industrial uses, and biodiesel production. This commercial agriculture is also a major threat to the region's biodiversity. More-over, because land productivity in the Amazon falls considerably after a few years, the farmers have to move. In this way they contribute to continuation of the cycle of destruction.



Infrastructure development

Major road projects provide access to and cause increased deforestation in newly accessible areas of the forest. Also **the construction of river dams for hydro-electrical power** (e.g. the controversial Belo Monte dam on the Xingu River that is supposed to be the third-largest dam in the world) brings other serious problems and consequences for the region such as floods, permanent drought, loss of agricultural lands and rivers' fish supply, displacement of millions of people, etc.



Climate change

Climate change (anticipated warmer and drier environment in the Amazon will lead to decrease in precipitation over the majority of the region) and deforestation may result in **significant changes in ecosystem types** – from tropical rainforest to dry savanna – thus leading to loss of species in many parts of the Amazon as well. This could also have important impacts on the world's biodiversity and climate.

As you can see, the threats the Amazon region is currently facing are very diverse and their seriousness cannot be underestimated. Due to the complexity of the topic, this text brings just a short insight into it. We hope it will trigger people's curiosity for further reading and proactiveness for taking action.

We believe that the most important thing is to spread the word and make people realize that even though the Amazon is thousands of miles away from them, it has an influence on their lives and therefore it is important for them to know what is happening there and make them act in some way.

THREATS WORLDWIDE

In this section of the report we have aimed to show you **how different types of forests around the world are affected by climate change and human activity**. What's perhaps the most interesting is that many of the threats are the same, even though the forest types are so different. And one thing is clear – humans are both part of the problem and the solution.

Why we should be worried?

'Forests are being destroyed at an alarming rate to give room to pastures, agricultural land, mineral exploitation and sprawling urban areas, but by doing so we are destroying our own capacity to survive'.

Olivier Langrand, Conservation International's international policy chief

Why should we be worried about the changes and destruction taking place in the world's forests? Recent research shows that we need to care about this problem because **the major changes to trees and forests could ultimately call into question the future habitability of our planet** (NY Times, Oct 2011).

The reason is that forests are absorbing about a quarter of the carbon dioxide emissions humans are spewing out into the atmosphere. If the trees disappear, so does this vital means of limiting the amount of carbon dioxide left in our atmosphere. Furthermore, the destruction of forests means the vast amounts of stored carbon are released into the atmosphere. As is hopefully becoming clear, we seem to be entering a vicious circle, in which climate change is causing the destruction of forests, releasing large amounts of greenhouse gases into the atmosphere and reducing the planet's ability to absorb human CO₂ emissions, which in turn contribute to global warming and thus even more hostile conditions for woodland.

A wave of massive demonstrations in Brazil as well as worldwide is taking place, trying to persuade Brazilian president to veto the Forest Code, to stop building the Belo Monte Dam, etc. What will you do to help protect forests both close to home and far away, whether in the far north of Siberia, or the deepest forests along the Amazon River? Will you stand up for the rights of the forest? Will you stand up for your rights?

II.

A DETAILED STUDY OF THE STATUS OF OUR LOCAL FORESTS



Chapter 4: ALBANIA

Author: Altin Sula, forest engineer

GENERAL INFORMATION

Albania is a country in South Eastern Europe, in the Balkans region. It stretches across 28,748 km² and has a **rich flora and fauna thanks to the diverse climate conditions, topography, geology and geomorphology**, which combine to ensure a diversity of habitats. These habitats include: forests (broad-leaved, coniferous, fused, natural, half natural, artificial etc), shrubs (deciduous, evergreen), alpine and subalpine meadows, pastures, marshes (natural, semi-natural, salty and improved), streams and rivers, lakes and reservoirs, coastal lagoons, sandy dunes and psammophile vegetation.

There are 3250 species in the Albanian flora and there are 30 endemic species and 180 subendemic species in Albania, Greece and the former Yugoslavia.

The forests in Albania cover 36% of the entire Albanian territory. They are composed of high forests (45.7%) and groves (54.3%). The forests populated only by one species cover 72.3% of the entire forest area and the forests populated by different species cover 27.7% of the surface.



If we look at Albania's forests in terms of **function** then 86% of the country's forests are productive while 14% are protected. Indeed, the protected forests occupy 5.8% of the entire surface of the country.

It is also interesting to highlight that **natural forests** cover 91.2% of the forest area and **artificial forests** cover 8.8% of the forest area. The areas with artificial forests were growing till the 1990s while after these years this growth stopped due to lack of investments. There are the so-called virgin forests, which are more than a hundred years old and cover 8.2% of the forest area. They can mainly be found in the north of Albania. We can also highlight the fact that 8.8% of the forest area is formed of semi-natural forests. These forests are aimed at natural regeneration and the conservation of the natural composition of species.

The **broad-leaved forests** cover 83.3% of the forest area and the most popular ones are the oak forests that cover 32.2%, beech forests with 19.2%, hornbeam forests with 8.8%. In the lower percentages, we can also find maple trees, hazelnut trees etc. The **coniferous forests** cover 16.7% of the forest area and are mainly represented by the black pine forests, which cover 10.4%, the Mediterranean pines forests (the stone pine, the Aleppo pine and coastal pine), which cover 3.3%, and the white fir forests which cover 1.6%.

The tables below give you a clearer overview of the figures mentioned:

Type of forest	Percentage of the forest area (%)
High forests	45.7
Groves	54.3
Mono dominant forests	72.3
Poly dominant forests	27.7
Productive forests	86.0
Protective forests	14.0
Natural forests	91.2
Artificial forests	8.8
Semi-natural forests	8.8
Virgin forests	8.2

Type of forest	Percentage of the forest area (%)
Broad-leaved forests	83.3
<i>Oak forests</i>	32.2
<i>Beech forests</i>	19.2
<i>Hornbeam forests</i>	8.8
Coniferous forests	16.7
<i>Black pine forests</i>	10.4
<i>Mediterranean pine forest</i>	3.3
<i>White fir forests</i>	1.6

There are **five main types of vegetation** in Albania:

1) *Mediterranean bushes*: they can be mainly found in the southern regions, in the mountain areas. Generally they are composed of evergreen shrubs like *Q. ilex*, *Q. cockier*, *A. unedo*, *M. Communis* etc, of deciduous shrubs and sometimes these are mixed with Mediterranean type of trees.

2) *Oak forests*: they can be found over the Mediterranean bushes area and are composed of different types of oaks and often they are also mixed with hornbeam, black pine, hazelnuts, maple etc.

3) *Beech forests*: they are the most common forests in Albania. They begin from 800m to 1600m in Northern Albania; from 1000m to 1800m in central Albania and from 1200m to 1900m in the South of Albania. These forests ensure important habitats for different kinds of animals like bear, wolf, fox, wild pig, pine marten, lynx etc.

4) *Fir forests*: these forests substitute the beech forests in the south part of the country and are represented by the 'Bredhi i Sotirit' in Gjirokastr and 'Bredhi i Hotoves' in Përmet, at an altitude of 1000-1700m.

5) *Pine forests* (*P. Leucodermis* and *P. Sylvestris*): they grow over the beech and fir forests in conditions of a harsh climate and poor soils at an altitude between 1600-2100m in North Albania and 1700-2300m in South Albania.



PROTECTED AREAS

In Albania there are the following **categories of protected areas** based mainly on the IUCN criteria and their management criteria in Albania:

Category I – Strict nature reserves/scientific reserves

Category II – National park

Category III – Nature monument

Category V – Protected soil/sea landscape

Category VI – Managed resources area

The **criteria** for the full or partial inclusion of the forest areas as **protected areas** are as follows:

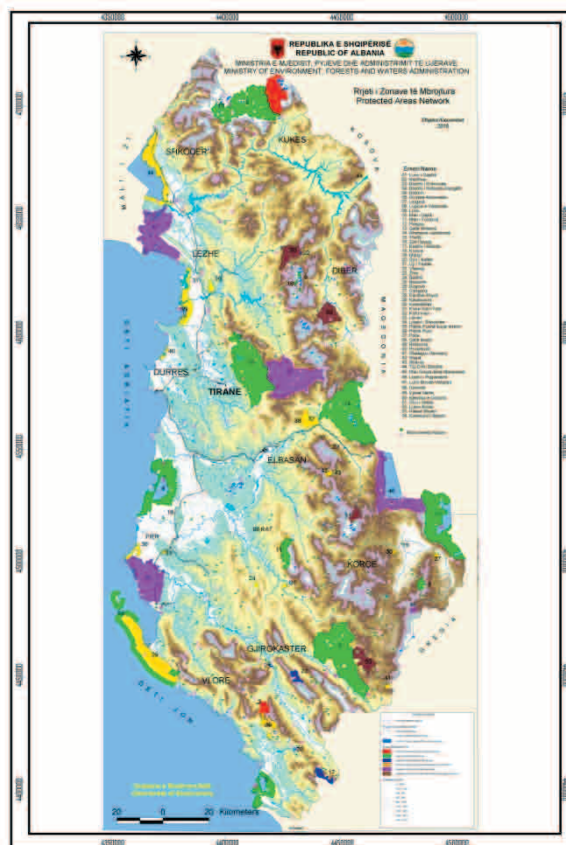
- High biodiversity
- The rate of representation of the area on national or regional levels
- The presence of threatened species and habitats on global, national and regional levels within the borders of the area

The government body that manages the protected areas and the forests in Albania on the national level is the Ministry of Environment, Forests and Water Administration (MoEFWA). The Regional Environmental Agencies and the Forestry Directorates manage the areas locally.

One of the most important objectives of the MoEFWA is the expansion and strengthening of the protected area as a basis for the development of the Ecological Network in the country. The Ministry is aiming to double the surface of these areas in Albania. The current figure is 361,568.70 ha or 12.58% of the entire surface of the country.

The map of the protected areas in Albania

	STRICT NATURE RESERVES/SCIENTIFIC RESERVES
	NATIONAL PARK
	NATURE MONUMENT
	MANAGED NATURE RESERVE
	PROTECTED LANDSCAPE
	MANAGED RESOURCES AREA



Source: Report on the environmental state in Albania, 2008 – Ministry of Environment, Forests and Water Administration and the Environment and Forests Agency

RISKS AND THREATS

Harvesting of wood material

The harvest of wood material in Albania happens at normal rates. The volume of wood material auctioned is not higher than the annual rate of exploitation. This provides a good indication that forests in Albania are not only valued as a source of wood material but for the other services they offer as well.

Usually the forests in Albania are used for fulfilling the needs of the population for heating and industrial processing.

Fires in forests and pastures

A very worrisome problem for the forests in Albania and for the pastures as well, is the fires. They can cause enormous danger in a very short time. The largest number of fires occurs at the end of spring and



during summer and sometimes even in September. They are caused mainly by the negligence of people and especially by the uncontrolled burning of pastures with the aim of renewal of the grass. In 2011 this phenomenon was very frequent and turned out to be one of the worst threats to the Albanian forests.

Offences in the forests and pastures

In some regions in Albania the level of damages in the forests is very worrying. It is true that the **deforestation** is being avoided but the **quarries** become more and more of a terrible threat for the Albanian forests. Furthermore, during recent years there have been considerable damages mainly for the smuggling of the wood material and for personal use.

The main offences are **illegal cutting, destroying forests for road construction, excavations, construction in general, illegal hunting, trade of wood material**, etc. In comparison to the other regions, the regions in the North Albania suffer the most from these offences.

In order to avoid these damages and to improve the situation of forests in Albania some **precautions** are undertaken, such as **street rehabilitations and the planting of seedlings**. **Planting and awareness-raising campaigns** have also been organized, where CSOs, private sector, central and local government and the donor community are involved. Indeed, more are planned for the future.

Apart from these factors there are some **natural factors and forest pests**. If we consider the level of damage in the coniferous woods it is around 19.22 % and for the broadleaves woods it is about 18.87%.



ENDANGERED WOOD SPECIES IN ALBANIA

Some of the **endangered wood species in Albania which require special attention** are as follows: *Pinus heldreichii* Crist (Bosnian Pine); *Pinus peuce* Gris (Macedonian Pine); *Quercus ilex* L (the Holm Oak); *Quercus robur* L (Pedunculate Oak); *Corylus colurna* L (Turkish Hazel); *Arbutus andrachne* L (Greek Strawberry Tree); *Cerastium tomentosum* (Snow-in-Summer); *Juniperus exelsa* (Greek Juniper); *Betula pendula* (Silver Birch); *Aesculus hippocastanum* (Horse-chestnut) and *Quercus macrolepis* (Valonia Oak).

Chapter 5 – CZECH REPUBLIC

Authors: Martin Kačmar, Frederik Rooks, Postgraduate students of botany at Charles University in Prague

BASIC CHARACTERIZATION

The Czech Republic lies in the **region of deciduous broad-leaved forests of the temperate belt**, and only in the mountainous regions of the country we find naturally occurring evergreen coniferous forests. The Czech Republic has a more continental climate than the rest of Western Europe, and this means it has drier and warmer summers and colder winters with substantial snowfall. **Forests cover one third of the country**, which is about the average level for the European Union. If species composition was purely natural, deciduous species would predominate. Deciduous trees would occupy 65% of the forest area while 35% of forest land would be covered by coniferous trees. The current composition, however, is 75% coniferous and 25% deciduous.



Natural forest types change with altitude. Oak-hornbeam forests (with lime and hedge maple) are found in the lowlands. Oak and beech forests (with admixed fir) grow in hilly country. The mountains host a typical Central-European mixture of beech, fir and spruce. Finally, natural spruce forests with rowans are native at the highest altitudes. Specific habitats with more extreme conditions are home to special types of forests such as pine forests on rocks or maple forests on scree slopes.

HISTORICAL DEVELOPMENT OF FORESTS

However, the abovementioned **natural forest types** have been **influenced by humans** for thousands of years, especially in lowland areas below 300m above sea level (about one third of Czech Republic falls into this category). These areas have been inhabited and farmed for seven thousand years – the occurrence of oak-hornbeam forests largely overlaps with the area of the oldest human colonization, and so the question arises: is this a purely natural type of forest? Traditional human management (mainly coppicing) supports oak and hornbeam while putting beech at a disadvantage. Farmers arrived in the lowlands probably before beech managed to spread there after the end of the glacial period. Essentially, farmers did not let beech in.

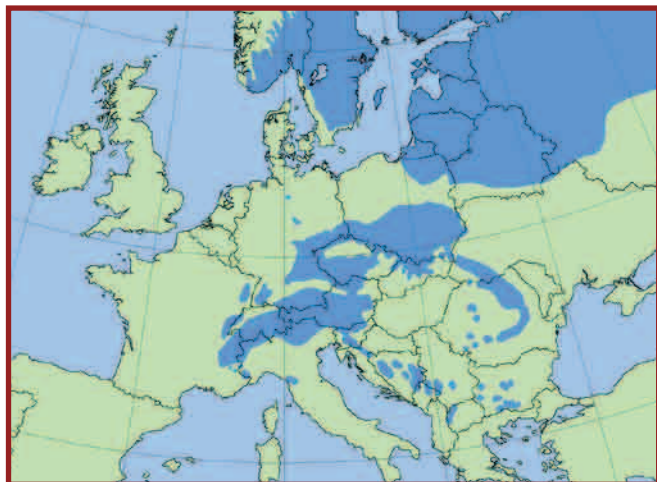
In the **13th and 14th century** came the colonization of the higher hilly country and the **transformation of natural forests into intermittently exploited forests**. Forests were harvested as need arose, either by the felling of whole areas or cutting down individual trees. Later, the forests were abandoned and spontaneously regenerated into a mixture of trees and shrubs. The **species composition also changed** - forests opened by logging favoured the spreading of light-loving trees (pine, oak and birch), whereas forest grazing helped fir.



By the **16th century**, colonization had reached into mountain regions, and **forests at higher altitudes were logged** to supply mines, smelteries, iron mills and glass factories. However, in places that were difficult to access a close-to-natural species composition was still preserved at that time.

This radically changed in the **19th century** with the **establishment of modern forestry**, which emerged in reaction to a serious shortage of wood

in the 18th century. Its objective was to **transition from the unorganized use of forests to a thought-out system**, which would exploit the wood production potential of habitats to the maximum. It was found that the greatest amounts of technically high-quality timber are obtained from even-aged plantations of spruce in which all trees are alike, nicely straight and tall. Here we can trace the influence of German precision. The end result is **the most characteristic trait of Central-European forestry – even-aged coniferous forests, especially of spruce**.



The area of natural occurrence of spruce extends to central European countries, which is where spruce-based forestry was developed.

Source: EUFORGEN 2009, www.euforgen.org

At the **end of the 19th century**, foresters realized that **spruce monocultures have one huge disadvantage**: when they reach an older age, they become very **vulnerable**. Windstorms or large insect populations can easily destroy an entire forest at once. It was because of this danger that around **the mid-20th century**, **close-to-nature methods of forest management became more popular**. Nevertheless, because of the established use of heavy machinery and the decreasing role of ever more expensive human labour, large-scale, even-aged forests continued to be preferred for economic reasons.

In the **western part of Europe**, the 1970s brought a turning point, as increasing attention was paid to **environmental issues**. It became common knowledge that spruce monocultures are unstable, biologically depauperate and also detrimental to the quality of the soil, and so ways to create and sustain **more diverse forests** were sought out. This was further facilitated by the development of mechanization able to work at finer scales. By contrast, in **countries ruled by communist regimes** there were unwise rulings that mandated that **timber should be produced regardless of other forest functions**. This means that the debates that happened in Western countries during the 1970s are only now being held in the Czech Republic. The result is that, while sustainable forest management practices are on the rise, in many places older methods continue to be used.

CURRENT STATE OF FORESTS

Today, **natural forests cover only 1.5% of Czech forest areas**, and most are to be found in protected nature reserves. Forests that developed spontaneously on agricultural soil abandoned in the 2nd half of the 20th century constitute approximately 4% of forest areas. All other forests are cultured forests. Even among these forests, however, there are large differences – some of them are close to being natural forests, on the other hand, a large number of them are insipid spruce monocultures.



Let's take a closer look at **the proportion of coniferous and deciduous trees**. If we put to one side the fractional area of natural mountain spruce forests and pine forests on rocks, we can regard forests with over 70% of conifers as cultural coniferous plantations, i.e. forests strongly different from the natural state. Spruce monocultures (over 90% spruce) take up 28% of the forest area, other coniferous monocultures (mainly pine) 6%. If we add other forests with a proportion of conifers over 70%, we arrive at 74% of predominantly coniferous forests. It can therefore be said that **three quarters of the forests in Czech Republic are very different from the natural state**. To these we can also add the 4% taken up by deciduous monocultures. What remains is only 22% of mixed forests, which are at least partially closer to natural forests. This applies mostly to so-called protected forests. These are forests in adverse habitats, whose main



function, although they are registered as timber forests, is not wood production but preservation of the forest itself (protection of the soil, water regime and surrounding forests). Forests composed of old deciduous trees are also close to the natural state of Czech forests. These forests have been preserved thanks to the fact that logging them is not as profitable as logging conifers.

Most timber forests are harvested by **clear cutting**. The maximum area cleared is limited by law, as is the amount of wood that is allowed to be felled annually. Moreover, there is a duty to reforest clearings within two years. Clear cutting, which people sometimes view as destruction of nature, is a regular stage in the

cycle of cultivating renewable wood material. This approach, however, is much less suitable for cultural forests with a more natural species composition and a large share of deciduous trees. To retain their species diversity, it would be better to use smaller-scale felling methods in these forests. Unfortunately, even here clear cutting management predominates. Still, some fine near-natural forests can be found which have been spared by individual foresters wise to the importance of these woodlands.

Mindful management is supposedly guaranteed in forests protected by the Nature Protection Law (natural reserves and national parks – circa 6% of forests) and in **forests protected according to the Forestry Law** (forests on particularly unfavourable habitats – 3% of forests). Here modern ecological forestry methods are applied, putting nature first, and parts of these forests are left to develop spontaneously. These unmanaged forests amount to circa 2.5% of woodlands and comprise 1.5% of forests that are impossible to manage (e.g. on rocks or in mires) and 1% that could be managed, but the decision has been made not to (e.g. in primeval forest reserves).

The average **age at which forests are felled** is 110 years for cultural forests, 120 years for forests in reserves and 150 for forests in unfavourable habitats. In the last 20 years, approximately 10% less wood is harvested each year than grows annually, so the **total amount of wood in forests is rising**. At the same time, the proportion of deciduous trees increases slowly because slightly more of them are planted than get felled each year. Around one third of all the harvested wood is exported abroad, mostly to Austria and Germany. Import, mainly from Slovakia, is three times lower. Two thirds of the wood obtained is used as material for various products from pencils to furniture and construction beams, one third for paper production and 5% as firewood. Already during felling, it has to be considered what the new forest will look like. We can either create an artificial plantation on a bare clearing (this happens in 85% of forests) or take advantage of natural regeneration. This involves progressive felling of old forests in a way that gives juvenile trees a chance to grow (this is done in 15% of the area).

State forests take up 60% of the area of Czech forests, of which 5% are military forests and 4% are inside national parks. Municipal and town forests comprise 16% and privately owned forests 24%, of which more than half are small forest properties with an area less than 50 hectares. Czech Republic is one of a few countries where **all forest owners are obliged to have a forest management plan** compiled and approved every ten years. Forest management plans determine in detail what will be done in the forest. It also contains an exhaustive description of the state of the forest. Thanks to this there is a unique database of forestry information with a tradition reaching back to the beginning of the 19th century.

Today, there are **two fundamental approaches towards forest management**, which are, unfortunately, sharply divided: the traditional forestry approach and the conservation-oriented biological approach. The **traditional forestry approach** is much older. It is rooted in German forestry of the 19th century and is based on long-term stable production of technically high-quality wood while exploiting the habitat to the maximum. **Modern forestry**, however, strives to fulfil three, often seemingly contrary, forest functions: economical, ecological and social. Biologists view natural forests as part of nature's diversity and a working ecosystem to which humans have nothing to contribute. They are interested in studying relationships among all organisms living in the forest, not only those that are important economically.

Foresters have the main say in an overwhelming majority of forests, biologists only in forests inside national parks. Foresters are supervised by authorities responsible for nature protection, who make decisions about scientifically valuable habitats and species. **Management in forests is thus governed by two basic laws: the Forest Law and the Nature Protection Law.** In some cases, these two laws are in conflict.

The treatment of forests is strongly influenced by the owner. **State forests are managed by three different organisations.** The largest part (51%) is managed by the Forests of the Czech Republic (a state enterprise). The Military Forests and Farms, another state enterprise, manages state forests inside military training areas. This enterprise, on the whole, is more friendly towards nature protection. Forests in national parks are managed by National Park Authorities. Municipal and town forests have the advantage that they are often small in area, so they do not offer a significant source of income. They therefore tend to be maintained for the welfare of the public. Here foresters have a pretty free hand to try various conservation and forestry experiments. By contrast, private owners of small forests usually fear untried practises and do not have sufficient means to carry out more substantial measures. These forests are therefore either largely left alone or are cleared and reforested by spruce trees planted in rows. Large private forest owners, mostly descendants of the few aristocrat families that withstood the revolutions of the 20th century, manage their property in the spirit of the 19th century: nature is allowed but only under strict control.



BIODIVERSITY OF NATURAL AND CULTURAL FORESTS

For most people, forests are synonymous with nature, but in reality most of our cultured forests are, from a naturalist's point of view, about as interesting as a corn field. If the whole country would be covered by

forests, there would be room for only about one third of the species living there today. **Most endangered in Czech Republic is nature associated with traditional agricultural management.** The most threatened types of forest are those that were once subjected to traditional rural activities – frequent cutting of firewood and cattle grazing. They resembled more a thicket than a forest, but many species of organisms, which would otherwise have nowhere to live, found their homes there. As late as in 1950, 7% were farmed in this way. Today there are about three such localities. Because they are neither a proper forest nor proper wilderness, these ecosystems were neglected by both foresters and conservationists. This is where numerous species go extinct right before our eyes. For example, out of 26 butterflies associated with these habitats, four have gone extinct, and another five are about to follow.

On the contrary, the last untouched **remnants of our primeval mixed forests in the highlands and mountains** are in relatively **good shape** and are usually **not immediately threatened by destruction**. Only if a reserve is too small and surrounded by spruce forests foresters must intervene, otherwise the mixed forest would turn into a spruce one. Native forest species have mostly found their place for life inside mixed cultured forests, and only a small number of them is tied to genuinely natural forests.

Forest reserves often tend to be fenced off. This is not to keep out people, but to protect against game. There are so many roe deer, red deer and wild boars in Czech Republic that they are 50-100 times more abundant than they would be naturally and graze uncontrollably on young trees, often completely precluding regeneration.

FORESTS INSIDE NATIONAL PARKS

National parks in cultured landscapes face the disadvantage that, to be of any appreciable size, they must necessarily include, besides near natural forests, also many downright artificial ones. **Often more than half the forests inside Czech national parks are therefore cultural plantations.** The proportion of cultural forests in Czech national parks is the following: Podyjí 25%, Krkonoše 60%, Šumava 85% and České Švýcarsko 90%. Forests inside national parks are managed directly by their park authorities, which are subordinate to the Ministry of the Environment.



Krkonoše

Krkonoše (Giant Mountains), **the oldest Czech national park was established in 1963 to protect the only mountain range with natural forestless alpine areas.** In the contemporary system of nature protection, only natural growths were protected, while in cultural forests (that is, in most of the area of the park) timber farming continued using intensive methods of forestry. For this reason, **the Krkonoše national park still does not fulfil the international criteria for national parks.** The 1970s and 1980s saw the large-scale demise of forests caused by acid emissions from lignite burning power plants. Altogether 20% of the forests in the park had dried up. All dead trees were felled, and new roads were built for this purpose. The mountains were, once again, reforested with spruce. A radical change happened in the 1990s, when forest management was transferred from the state-owned forest enterprise under the direct responsibility of the national park authority. The forest management philosophy changed immediately. Restoration of the natural species composition therefore became the main objective. Unmanaged areas taking up 12% of the area comprise mainly alpine vegetation above the timber line.

Šumava

Šumava, a forested mountain range, is the largest and most problematic national park – a place of a bitter conflict between production-oriented foresters and biologists. The park was founded in 1991 in a region of extensive cultural spruce forests. The original intention was to gradually turn these former spruce plantations into mixed forests. However, before this process could be properly initiated, strong windstorms struck in 1993, 2003 and 2007, causing severe damage to vast areas of even-aged spruce forest. **Windstorm damage combined with dry years led to repeated overpopulation of the European spruce bark beetle to the extent that it began to consume standing, seemingly healthy forests on a massive scale.** Foresters started felling infested trees, hoping that this would halt the bark beetle. Biologists challenged this approach, saying that it is better to have standing dry trees than an empty clearing and that the spread of the bark beetle would cease by itself after it would hit natural mountain spruce forests. Neither side was right about this. Loggers with all their machinery were unable to stop the bark beetle, and neither did the beetle shy away from infesting native spruce forests. It turns out that bark beetles can be stopped only by the weather. Wet and cold summers work best.



In the last 20 years, the direction of the park went through three complete U-turns. This is truly bizarre considering the 100-year perspective in which the park authority operates. There have been hundreds of resultless discussions. Directors were fired; criminal complaints were filed. Demonstrators tied themselves to standing trees, and some local residents even demonstrated against them. The area of zones of non-intervention fluctuated between 10 and 20% of the park's area. The result is that periods of frantic sanitation felling were alternated by periods of chainsaw inactivity. It therefore comes as no surprise that the end result is that neither is the bark beetle stopped nor are the forests allowed to undergo natural processes. This is misused by a strong group of politicians lobbying or giving up to lobbyism for a reduction of the area of the national park or its complete abolition.

Podyjí

Podyjí, named after the river Dyje (Thaya), is a forested river valley in a low-lying hilly area. It is **our smallest and least problematic national park** – the only one that is covered by deciduous forests. The unmanaged area takes up 42% of the park, mainly forests. In 3% of the park's area, traditional forest management is imitated for the sake of species associated with open forests.



České Švýcarsko

České Švýcarsko (Czech Switzerland) is a sandstone rocky plateau. Based on experience from the Šumava Mountains, the borders of the national park (founded in 1999) were proposed so as to minimize the number of included villages. **There are mostly artificial coniferous plantations, which are being, in small areas, turned into mixed forests.** The unmanaged area taking up 3.6% of the area comprise pine forests on rocks and small remnants of indigenous beech growths in inaccessible places. There is an interesting comparison with the neighbouring German national park Saxon Switzerland, where, in the same conditions, 40% of the area of the park are left without intervention to develop naturally. These are therefore predominantly cultured, non-natural forests that have been left to natural processes. The practise on the Czech side of the border is that old spruces and larches are felled and left to rot on the ground (wood is unimportant). Oaks and beeches are then planted in their place. On the German side of the border, coniferous trees are left alive until they dry naturally (as a result of a bark beetle attack, for example), after which they are left to collapse by themselves. Birch expands from surrounding rocks, followed later by other deciduous trees. This offers a **unique opportunity to observe**

two different conceptions of managing a national park in one cross-boundary area with identical natural conditions on both sides of the border.

Křivoklátsko

There is currently a **proposal to establish the Czech Republic's fifth national park in Czech Republic: Křivoklátsko**. The decision is currently pending and will be reached by a vote in Parliament. This area is home to rare, preserved deciduous forests, which once served as a hunting ground for Czech royalty. The management by the state-owned forest enterprise in the last fifty years is characterized by a **gradual expansion of coniferous forests at the expense of deciduous ones**. This is despite the fact that **the region is a Protected Landscape Area and a UNESCO Biosphere Reserve**. The authority of the protected area can only watch idly. This is the main reason why is seeking national park status, not least because it would allow the authority to take over the management of the forest. Strongly opposed to the newly proposed national park are foresters of the state enterprise, who would lose a lucrative source of wood, and hunters, who would lose the possibility to artificially overpopulate game.

THREATS AND RECOMMENDATIONS

The existence of forests themselves in Czech Republic is not currently threatened in any way. To the contrary, their area has been increasing slightly in the last decades. What is bad, though, is **the health and resilience of forests**, which has been crippled by excessive planting of coniferous species in the past and by soil deterioration under the influence of extreme atmospheric pollution in the 1970s and 1980s. **Forests therefore fall victim to wind, drought and insects**. It is crucial that more deciduous trees are planted, but this is against the economic interests of foresters. Their notions of the target species composition of Czech forests differ from those of scientists by dozens of percent. Natural forest regeneration is often limited or prevented by extremely large game populations.



Biodiversity is threatened mainly in traditionally managed open forests, which have almost disappeared in the last half-century. Moreover, the area of forests left to develop spontaneously is insufficient. Forestry in the past twenty years has undergone a significant shift towards more sustainable management. Still, **the protection of biodiversity often loses out to economic interests**. It is therefore necessary to support the role of scientists in decision making when scientifically valuable forests are concerned. Another current problem is the mutual malice between foresters and scientists. Both groups spend more time fighting with each other instead of looking for a consensus about the management of forests, which often lacks a meaningful long-term plan.

Chapter 6 – FINLAND

Authors: Sini Saarela, Olli Manninen and Birthe Weijola, the Finnish Nature League's forest group

There are 22.9 million hectares of forests (forest and scrublands) in Finland and they cover some 75% of the total land area. Strictly protected forests cover 5.1% of the forest land and, if the scrublands are included, the total proportion stood at 8.9% in 2008. No silvicultural management (wood harvest and regeneration) is allowed in these areas. Most of the protected forests in Finland are situated in the northernmost parts of the country.

Forests are the most important ecosystem for endangered species in Finland. 564 species (37%) of all endangered species live in forests. Forestry is also the most common reason why both species and habitats become endangered. It was estimated in 1995 that some 5% of the Finnish forests were old-growth forests and only half of them were protected. Not much is known about other biologically valuable forest types, because they have never been systematically mapped.

The forest industry and forestry have been significant for the national economy throughout the whole 20th century. The forests have been in 'intensive care'. For example 120 000 kilometers of forest roads have been constructed and some 5 million hectares of peat lands have been ditched for forestry purposes. Some 120 000 – 150 000 hectares of clear-cuts are carried out annually. Young forests (age less than 40 years) currently cover one third of the Finnish forests (37%) while forests older than 120 years cover only 12%.



Forests are managed with clear cuts, thinning and soil preparation as a common practice. This causes damage to the species communities, as well as to functions of the forest ecosystem, such as carbon binding. During the past few years logging residues (branches and stumps) have been collected from many cutting areas to be used in energy production.

37% of the endangered species in Finland live in forests. Forestry has caused a large decrease in the amount of dead wood in the forest, a resource on which 20-25% of all the forest dwelling species in Finland are dependent. There is only an average of 5 m³ of dead wood per hectare in the managed forests

whereas in similar natural forests there can be found up to 50-100 m³/ha. Also other key characteristics have changed – for example, the amount of old deciduous trees have decreased.

The forests with the highest biodiversity in Finland are located in the south



Forests in Southern Finland are the richest in the country in terms of habitat and species diversity. These forests are also important for people for many reasons: recreation, education and nature services like berry picking and hunting.

The southern part of the country has been intensively inhabited for a long time: the growing cities and the population have brought more land use in terms of agriculture and forestry. The biggest industries, including paper and wood industry are based in Southern Finland. This has all led to a heavily managed and fragmented

landscape. Today the forests and forest biodiversity are threatened because of the same reasons.

Most of the forest land in Southern Finland is owned by private individuals (74.1%). Other big owners are the companies (12.0%) and the state (7.6%). The biggest company owners are the three biggest Finnish paper companies - UPM, Tornator/Stora Enso and Metsäliitto Group.

Only 1.9% of the forest land in Southern Finland is protected (according to the Finnish Forest Research Institute). The biggest threat for the unprotected forests is pressure from the paper and wood industry and increased land use in populous areas.

There is no governmental or regional system for effective protection of the valuable forests in the southern part of the country. The existing protection programme METSO is advancing too slowly and its funding is too small to be able to provide the needed protection alone. Many valuable forests are still being cut on private, company and state owned lands.

RECOMMENDATIONS

Due to the heavy forestry history both in the forests and on peat lands, **ecological restoration of areas is needed**. In all vegetation zones 15-20% of the typical forest and peat land nature should be strictly protected. Greenbelts need to be created in order to enhance the protection efficiency. By effective protection measures it is possible to preserve a lot of forest biodiversity and habitats despite the earlier degradation and fragmentation.

More information about Finnish forests can be found on www.forestinfo.fi and nordicforests.org.



Chapter 7 – PORTUGAL

Author: Joana Lima, Environmental science and technology expert

Thanks to the Iberian Peninsula's geography, geology, history and climate, it has **one of the richest and most varied flora in Europe**, with around 7500 to 8000 species, 15% of which are endemic to the area. Portugal's forests are a rich mosaic of biodiversity due to the climatic conditions and human influence, with oak, pine, poplar, eucalyptus, cork oak, chestnut and laurisilva groves all to be found in the country's landscape.

In **Continental Portugal**, forests occupy 38% of the territory, with different rates of afforestation in the various regions of the country. Pine (*Pinus pinaster*), cork oak (*Quercus suber*) and eucalyptus (*Eucalytus globulus*) are the three most common species and also the species which attract the most economic interest. As a whole, they occupy more than 50% of the current forest.

However, the **typical vegetation of Mainland Portugal** since the Quaternary Period Ice Age are Quercíneas, oaks of several types that provide habitat for many animal species, leading to forests with high biodiversity of fauna and flora. In spite of the fact that these forests have suffered much degradation in recent centuries, you can still find some patches of native forest in Portugal.



In the north the patches of oak forest are dominated by deciduous oak, mountain oak (*Quercus robur*) on the coast at low altitudes, the Pyrenean oak (*Quercus pyrenaica*) at higher altitudes. In the undergrowth evergreen trees such as holly (*Ilex aquifolium*) and *Prunus lusitanica ssp. Lusitanica* can also be found. Portuguese oak (*Quercus faginea*) dominates the center of the country and is a marcescent leaf tree, which makes the transition between deciduous oaks and evergreen trees. In this species the leaves remain dry on the branches until the appearance of new foliage. In the south, oaks trees are nearly all evergreen, such as oak (*Quercus suber*), which occupies the coastal strip and holm oak (*Quercus rotundifolia*) which occupies inland areas.



The Portuguese forest is still made by other ecosystems, including stands of chestnut. This specie, *Castanea sativa*, is now distributed throughout the Mediterranean, and is not sure its spontaneity in Portugal, so its distribution around Portugal, results from an ecological adaptation to farming conditions, which in some way are similar to the territory of origin. Thus, we find larger patches of Chestnut in Portugal in the country mountains (Lousã, Açor and Estrela), in rainy areas of Beiras, Minho

and mid-latitude zones in Trás-os-Montes.

Along water courses, there is a very specific ecosystem – the riparian ecosystem – which is very rich in diversity of fauna and flora, but also very sensitive to human pressures. This biotope is the transition between terrestrial and aquatic systems, resulting in areas where flooding periodically occurs, as well as sedimentation and erosion related to the river dynamics. Hence, this biotope is influenced by the watercourse, which also influences it. The connections between water and earth in these specific areas enable plants and animals to create a unique natural community.

Riparian zones are characterized by their woody formations that sustain a richer community in wildlife species than adjacent land areas.

In Portugal, **river formations** can be alluvial (with some deep soils permanently waterlogged or too wet), riparian (on stream banks and other similar wetlands), and swamp formations on river Tejo and its borders. The **tree communities in these ecosystems are predominantly deciduous trees** such as poplar (*Populus spp.*), willow (*Salix spp.*), ash (*Fraxinus spp.*), elm (*Ulmus spp.*), alder (*Alnus glutinosa*), birch (*Betula Celtiberian*) and some oaks. A large part of the Portuguese forest has suffered many anthropological pressures, whether through farming, animal grazing or fire. It is possible to see small patches of vegetation not modified in areas not accessible to humans - such as the top of some very steep hills or cliffs. There exist, even today, unique habitats with flora which by their rarity, ecological and phytogeographic properties can be called living relics. It is in these spaces in the higher lands that can dazzle small patches of birch (*Betula Celtiberian*), yew (*Taxus baccata*), holly (*Ilex aquifolium*), junipers (*Juniperus communis ssp. Nana*) and *Sorbus aucuparia*.

Two archipelagoes in the Atlantic Ocean are still part of Portugal – the Azores and Madeira. These are part of Macaronesia, and **dominated by Laurisilva forest.** This type of forest has similar levels of complexity as tropical forests, with multiple layers and rich in epiphytes, vines, large leaves trees, evergreen (particularly Lauráceas), which give the woods a leafy green and moist aspect.

Madeira and the Azores have considerably different soil and climate conditions in comparison to the Portuguese mainland, particularly in terms of temperature, humidity and rainfall. These conditions gave rise to unique plant communities and a very rich shrub, although this has been heavily degraded since the islands were settled by the Portuguese, with the introduction of exotic species. This aggressive colonization has endangered many of the islands' native species.



THREATS AND DECLINE OF NATIVE FOREST

The **decline of native Portuguese forest** began, just like in the rest of the world, due to **anthropological pressures**, when the human species were no longer nomadic and agriculture and grazing intensified. But it was in the 15th century that degradation began to intensify and expand during the Age of Discovery, due to trees being cut to build sailing ships (carracks). Each carrack required on average 1000 trees.

Oak, a slow growth species, due to its morphophysiology, **did not regrow following the felling for ship-building**, leading to a drastic decrease in the number of individuals of *Quercus* species in the entire country. At this time also began **the decline of the islands' Laurisilva forests, because of the mass cut by settlers to create clearings in the forests and for building houses.** In order to re-forest the islands, *Cryptomeria (Cryptomeria japonica)* was introduced, a species that came to dominate several Azorean islands, endangering the survival of some endemic species (fauna and flora) that saw their ecosystem radically changed.

At the end of the 19th century planting of maritime pine intensified. In the mid-20th century, **eucalyptus**, a fast-growing exotic species from Australia **was introduced and much exploited by the pulp industry.** Today, eucalyptus occupies a total of 700 000 hectares, the same area as cork oak. Its rapid growth (10 years profitability) makes eucalyptus very desirable for the pulp industry.

However, eucalyptus is an exotic species and therefore not integrated into local Portuguese ecosystems. The trees consume very large amounts of water, and also deplete the nutrients in the soil, thus weakening the land. Furthermore, heavy machinery is used to plant eucalyptus trees, further weakening the soil. In general, compared with other forest formations, monocultures (such as large areas planted with eucalyptus trees) have a negative impact on flora and fauna, and this negatively affects the forest.

Portuguese forest is still threatened by other **invasive plants** such as *Acacia longifolia*, australian blackwood (*Acacia melanoxylon*), mimosa (*Acacia dealbata*), black locust (*Robin pseudoacacia*), ice plant (*Carpobrotus edulis*), wandering jew (*Tradescantia fluminensis*), which occupie more and more territory and all efforts that have been made to control these plants have so far been unsuccessful.

Fires are another problem affecting Portuguese forests. In 2006 the European Commission announced that Portugal was the country that had suffered the most forest fires in the previous 25 years in southern Europe and which has the largest area of land destroyed by forest fires. Between 2000 and 2005 the forest area burned was 531.057ha.

There are **various causes of these fires**, but the human ones are the most important, especially criminals that see profits within such fires. Pine is the species that is the most affected by fires. In terms of forest sustainability and management, Portugal has 93% of the country's forest area in the hands of private owners, which represents more than 400 000 owners, and the remaining area of state responsibility and vacant lots. This means that you cannot think of a national forestry strategy at the political level and that given its fragmentation most owners face low profitability. This problem is particularly serious in the country's northern and central forests, as well as some southern mountainous areas, resulting in fewer forests which need to be managed, contributing to the already existing problem of depopulation of rural areas.

FOREST MANAGEMENT

The entry of Portugal into the European Union in 1986 marked a **turning point in management of the countryside**, with the implementation of the Common Agricultural Policy reform that triggered changes in the forms of farm, livestock and forestry. Lack of incentives for agricultural production and forestry support reinforcements led to **the abandonment of large areas under cultivation, leading to a profound change in the landscape with increasing areas of scrub and forest**. These changes in landscape and wildlife habitats have changed faunal communities, particularly hunting species, such as wild boar and deer, which have seen their territory extended. These policies also caused adverse effects such as lack of adaptation of some species e.g. rabbit, partridge and species of small hunt and led to increased forest fires, due to absence of vegetation management and consequent accumulation of increased fuel load.



However, **Portuguese forests continue to have great weight in the national economy**, representing 3.2% of Gross Domestic Product, which corresponds to 165 000 direct jobs and 11% of total exports of the country. **Portugal is the largest producer and exporter of cork**, responsible for 57.4% of world production, with a considerable economy weight.

Portuguese forest management takes the forest as a whole, as a multipurpose space where different activities can be combined, as the production of wood and fruit, forest grazing, hunting, fishing, beekeeping, hiking, nature tourism, providing a continuous and regular income, where humans and nature come out winning, with combined policies of all smallholders and giving the forest time to regenerate and maintain its natural biodiversity.

Chapter 8 – RUSSIA

Author: Viktor Grishenkov, Deputy Director of National Park "Ugra" for forest resources

Russia is the world's largest country – not only in terms of overall landmass, but also in terms of forests. **Russia is the country with the largest amount of forest on its territory.** Indeed, more than half of the world's timber resources are concentrated on the territory of the Russian Federation.

1.2 million hectares in Russia is covered by forest, and the standing volume of trees is 82 billion m³. This means that for every Russian there are almost 5.5 hectares of forest, in comparison to a world average of less than 1 hectare per person. And the numbers are just as stark if we examine them for standing volume of trees – there are 561 m³ of trees for every Russian, in comparison to a world average of 65 m³ per person.

It is difficult to overestimate the contribution of Russian forests to the global process of carbon sequestration and prevention of the negative effects of global climate changes. Annually, Russian forests absorb 262 million tons of carbon emissions.



The main forest areas are concentrated in Siberia, Northern European Russia and in the Far East. And the areas with the largest amount of forest land can be found in the Irkutsk Region, Primorsky Region, the south of Khabarovsk Kray, Southern Yakutiya, Krasnodar Region, as well as the Komi, Vologda, Kostroma and Perm Regions. There are also areas in Russia with relatively low concentration of forests – for example, Southern European Russia and the plains of the tundra.

Forests in Russia are divided by their purpose into protected, operational and reserved. The purpose of protected forests is water protection, sanitary, health and other useful functions. Operational forests must be cultivated in order to provide high quality wood and other forest resources while also preserving the useful functions of a living forest. In reserved forests no wood procurement is allowed during a 20 year period.

According to Russian forest legislation, forests can be used for wood procurement, collection of non-timber forest products, for farming and hunting, scientific research, leisure, religion, development of forest and household infrastructure and more.

There are various basic types of forest in Russia: **coniferous forests** – spruce, pine, fir, cedar; **deciduous forests** – broad-leaved and **mixed forests** – where the principal species are oak, lime tree, elm tree, spruce, fir, pine, beech, and horn beech. There are also **small-leaved forests** which consist mostly of birch, asp, and alder. **Floodplain forests** are formed in the river valleys where willow, poplar, and alder trees grow.



Analysis of species composition provides us with the following data: **conifers make more than ¾ of the volume of Russian forest reserves** – 5.8 billion m³ (77.8%), and cover an area of more than 500 million ha (71%). A significant portion of coniferous forests in Russia (about 67%) belongs

to the **boreal forests**, which grow in cold, moderately cold and temperate climates. 80% of Siberian region forests grow in the permafrost, where the average value class is not higher than Class IV.

Broad-leaved forests cover an area of 17.5 million hectares (2.4%) and **small-leaved** 119.7 million hectares (16.7%). From the Urals to the Altai we find mainly birch trees. In the southern part of Kamchatka, Sakhalin and Primorsky Region you can see the sparse stands of birch park-type rock. Despite the relatively small area that they cover, deciduous forests play an important role as regulators of water regimes.

The remaining 10.1% of the forested area are bushes planted in the **pre-tundra forest band** (cedar, birch shrub) – **this type of forest is almost entirely concentrated in the Asian part of the country.**



Forests play an **important role in the Russian economy** as a source of both timber and many raw materials such as mushrooms, berries, wild plants, and animal products (meat, furs, drugs, etc.). Many people in Russia spend a large part of their lives living in a forest environment. Furthermore, forests represent an important recreational resource for Russians. Unlike in most European countries, amateur picking of berries, mushrooms and plants, as well as hunting are not only economic activities, but are an important part of our lifestyle. Even in the landscapes of Russian artists and writers we can see that forests predominate over other landscapes.

Despite the huge amount of forests, Russia – just like many other countries – **faces the problem of the depletion of its forest resources.** This phenomenon is especially true for the European-Ural region, but also for forests in the eastern part of the country, easily accessible by transportation. The presence of huge forest areas which are not affected or only slightly affected by human activities, almost does not change the situation as they are either low-productivity forests, or forests, which are located in remote areas.

Enormous damage to the Russian forest is caused by **fires**. Every year, forest fires affect an area of 2-2.5 million hectares. Another challenge for Russia is that its **forest industry is not very efficient.**

Depletion of forest resources is the result of the meaningless logging of large areas of forested land (more than 2 million hectares), destruction of forest soils, water logging, shoaling of rivers. Forests lose their important ecological functions for a long time, recover slowly or are replaced with less valuable ecosystems.

According to official statistics, the forest area in Russia increased annually by 0.5%, but environmentalists believe that this figure is merely the result of bureaucratic formalities and the regeneration process happening on some agricultural land.

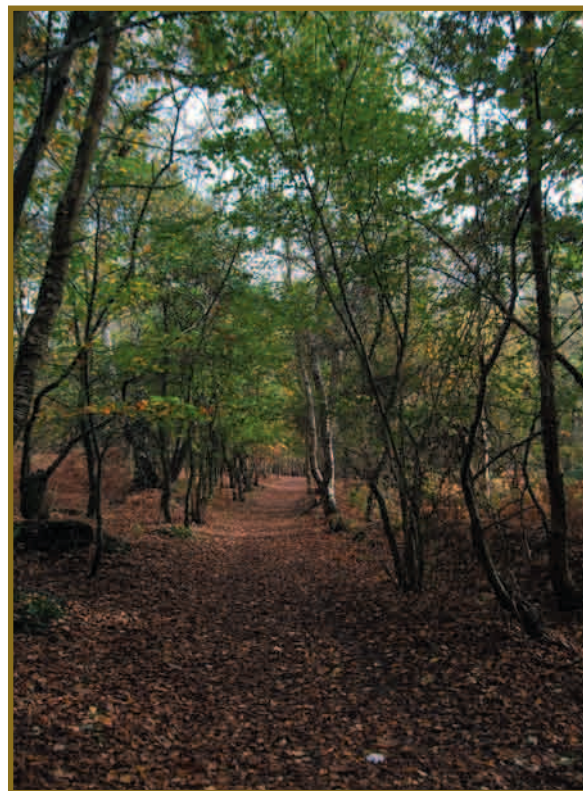
Today Russia faces some serious challenges in forest management, the economics of forest management and the modernization of forest industries, which must be resolved in the nearest future.

Chapter 9 – UNITED KINGDOM

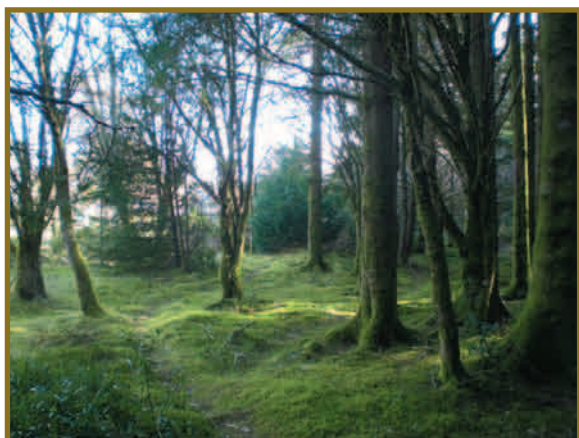
Author: Katy Harris, Small Woods Association and Co-founder of Look East Wild Earth

Forest cover in Great Britain is significantly lower than average for Europe, around 10% of total land area (slightly higher in Scotland and Wales). Much of the original forest cover (which would have been around 75%, 6000 years ago) was lost in prehistoric and Roman times, due to the spread of agriculture. By the year 1086, only 15% of forest cover was remaining, and forest cover reached an all-time low of 5% following World War I.

The natural forests of Great Britain are mainly temperate forests with predominant species being oak, ash, beech, elm, hazel, birch, willow and alder. In the north of Scotland the forests are boreal, with mainly Scots pine, birch and rowan trees. The Western coast of Wales, England and Scotland is officially 'Atlantic temperate rainforest' (defined as areas with more than 1250mm of rain per year), with oak trees, and lots of ferns and creepers in the understory. The majority of British forests are small isolated fragments within a primarily agricultural landscape. This is particularly true for the ancient semi-natural woodlands which often have the highest biodiversity value. Only 1.5% of British land area is ancient and semi-natural woodland.



The majority of the forested areas of Britain are non-native spruce and fir plantations, planted mainly in the early 20th century. During and after World War I, Britain was no longer able to rely on imported timber, and had seriously depleted forest stocks, and therefore began to investigate ways to develop British woodland resources. This led to the formation of a state Forestry Commission in 1919, which remains today as Britain's state forestry service, in charge of overall forest policy as well as ownership of state forests. A massive reforestation programme took place in the 1920's, resulting in the afforestation of large areas of upland moorland, mainly with non-native quick-growing coniferous species. The main demand for these trees was as pit-props for the roofs of coal mines – as coal was the main energy source in Great Britain. Following World War II, other demands for timber soared, and new pulp and paper mills were built which also used large amounts of wood.



By the 1970's and 80's, public concerns were being raised about environmental conservation of forestry, and the Forestry Commission began to pay more attention to this in policy and planning. Today, there is a move towards more sustainable forestry practices such as continuous-cover forestry instead of clear cuts. More attention is paid towards recognizing the importance of forests in flood prevention, as community resources, and as a biodiversity habitat. There is currently a revival of interest in traditional woodland management methods such as coppicing, which can benefit biodiversity while also creating a woodland resource.

Today, 35% of UK forests are owned by the Forestry Commission, while 44% are owned by private individuals. The rest is managed by a range of other public bodies (17%), forestry companies (2%), other

private businesses (11%), charities, or other ownership. **The Forestry Commission is responsible for regulating the management of privately-owned forests** through policy and management support grants, as well as taking direct responsibility for managing their own estate. **A National Association of Small Woodland Owners supports individuals owning and managing their own woodland.**

For the last decade, the Forestry Commission has been decentralized, and differing forest policy occurs in Scotland, England and Wales. For example, in 2010, the Forestry Commission England announced plans to sell a large portion of the state owned forests (this plan has been shelved due to huge public outcry – for now), while forest privatization has not been proposed in Scotland and Wales. In Scotland, a new policy aims to increase forested area in Scotland from 17% to 25% by the second half of this century, as a strategic national resource – this policy has not been mirrored in England or Wales. In Scotland, local communities also have the right to buy local state-owned forests, through the National Forest Land Scheme, by forming community-owned not-for-profit companies or charities, to own-manage the forests on behalf of all local people. No equivalent scheme exists in England or Wales.

The involvement of local communities in forests, and the importance of ‘social forestry’ and recreation in forests has been an important trend in recent years in Great Britain. The Forestry Commission, previously focused on timber extraction, now also runs forest visitor centers and recreational facilities such as mountain bike trails. In the last decade, national associations to support local community woodland groups to have more involvement in local woodlands, have been formed in Scotland and Wales and numerous initiatives promote community involvement in local woodlands, supported by agencies involved in rural and urban community development, regeneration, education, social work or similar. A nationally recognized qualification is available in Forest School leadership, to enable teachers and other providers of education to offer high-quality education in the forest.



Biodiversity protection is recognized in a variety of environmental and forest policy and practice, and a number of categories of officially ‘protected forests’ exist in the UK. Most protected forests are small, fragmented areas (as are most non-protected forests) and the UK has virtually no ‘wilderness’ forests where no management is required. **Protected forests** include areas protected and/or managed by the state authorities Natural England, Countryside Council for Wales and Scottish Natural Heritage. These



include National Nature Reserves (NNR), Special Areas of Conservation (SAC), and Sites of Special Scientific Interest (SSSI). **Only 2% of British forests are included in the highest level of protected SAC.** This may seem low, but reflects the small proportion of British forests which are ancient and semi-natural woodland, where a high level of protection is justified. Other forests are protected through being part of a wider landscape-scale protection such as a National Park or an Area of Outstanding Natural Beauty (AONB). Local Authority Nature Reserves are managed by the local authorities and also protected from development or

degradation of biodiversity. Other areas are given protection through forest policy and require special management plans, although they are not formally designated as statutory protected areas – these include Ancient Semi-Natural Woodland (ASNW), and plantations on Ancient Woodland Sites (PAWS). Other legislation such as a Tree Protection Order protects individual trees.

Voluntary sector organisations (NGOs) play an important role in protection and management of high biodiversity woodland in the UK. Several large national charities exist which both own and manage woodland with the principal aim of biodiversity conservation – these include the Woodland Trust, National Trust, Wildlife Trusts and Royal Society for the Protection of Birds (RSPB). All these charities are NGOs funded principally from donations from individual members and supporters. NGO ownership of forests is around 3% of the total forested area, yet the percentage of protected forests owned by charity is much higher. Around 22% of forested SSSI's, for example, are owned by NGOs. Around one third of the ancient and semi-natural woodland in Great Britain which is under 'protective' ownership and management is owned by NGOs.

Despite a high level of protection in the law, there is **a number of challenges and threats to British woodlands.** These include:

- Threat from development of land and land use change
- Poor woodland management (or lack of management) which does not protect biodiversity (e.g. clear felling, no control of invasive species, planting of mono-species plantations)
- Habitat fragmentation
- Climate change
- Threats from invasive parasites and tree disease (which are increasing due to climate change)
- Significant increase in use of woodland resource for biomass fuel over the last decade (which is potentially both an opportunity and a threat to forests).

Many woodland owners and agencies involved in forest management and environmental conservation recognize these challenges, and therefore **a number of policies and initiatives are in place** to help counteract them. These include: a recognition of the need to predict climate change and make woodlands more robust in the face of change, through planting a wide variety of species and trying to create 'corridors' between fragmented patches of biodiverse woodlands, to assist species migration due to climate change; an interest in using the increasing demand for local wood fuel to fund better woodland management, while not allowing woodlands to be over-harvested; the importance of restoring native and semi-natural woodland in place of plantations, due to its importance to biodiversity and more robust nature in the face of climate change or flooding; and the importance of managing woodlands as an important natural and multi-functional resource which contributes to community wellbeing, flood defense, biodiversity protection, and landscape enhancement, as well as a timber resource.



It must be remembered that currently, **over 80% of the timber and wood products consumed in the UK is imported from overseas.** British forests are unlikely to be able to meet this large demand, and so Great Britain is likely to remain dependent on other countries to meet our timber needs. However, it is **important that British timber and wood products are used prudently** and in ways that encourage 'added value' production, and sustainable management of British woodland. This will encourage better use of local resources, protect biodiversity and natural landscapes, and minimize Britain's large 'global forest footprint' derived mainly from using timber and forest products imported from other countries.

CONCLUSION - WANT TO FIND OUT MORE?

We hope you have enjoyed reading this report, and following us in our journey through the varied, beautiful, and important forests of Europe and further afield. We worked together to research, write, and source expert articles for this forest report with the aim of increasing people's awareness of the threats, challenges, and (not forgetting!) opportunities that our Earth's forests face.

The report forms part of a broader project entitled 'Caring for the future? Caring for the forest!', which YEE and a group of its member organisations organised to mark the International Year of Forests in 2011. We organised forest clean-ups, movie nights, tree plantings, woodland games and art, and photo exhibitions so as to share with others the important role that forests play in regulating the world's climate, supporting assorted flora and fauna, and providing humans with sources of income and relaxation.



If after reading this report you are keen to find out more about forests and what you can do to protect them, then we suggest you check out some of the following organisations and sources of information.

The YEE Forest Campaign website:

<http://yeenet.eu/index.php/campaigns/548>

Official website of the 2011 International Year of the Forests:

<http://www.un.org/en/events/iyof2011/>

WWF's forest conservation work:

http://wwf.panda.org/what_we_do/how_we_work/conservation/forests/

A special report from the Economist on the state of the world's forests:

<http://www.economist.com/node/17062713>

Greenpeace's forest work:

<http://www.greenpeace.org/international/en/campaigns/forests/>

The Taiga Rescue network:

<http://www.taigarecue.org/>

GLOSSARY

Biome

A large community of plants and animals that occupies a distinct region. Terrestrial biomes, typically defined by their climate and dominant vegetation, include grassland, tundra, desert, tropical rainforest, and deciduous and coniferous forests. There are two basic aquatic biomes, freshwater and marine, which are sometimes further broken down into categories such as lakes and rivers or pelagic, benthic, and intertidal zones.

<http://www.thefreedictionary.com/biome>

Bog

Wet, spongy ground with soil composed mainly of decayed vegetable matter.

An area or stretch of such ground.

<http://dictionary.reference.com/browse/bog>

Bogland

Marshy, swampy land.

<http://www.wordreference.com/definition/bogland>

Carbon cycle

The carbon cycle is the biogeochemical cycle by which carbon is exchanged among the biosphere, pedosphere, geosphere, hydrosphere and atmosphere of the Earth. It is one of the most important cycles of the earth and allows for carbon to be recycled and reused throughout the biosphere and all of its organisms.

http://en.wikipedia.org/wiki/Carbon_cycle

Carbon storage

Carbon capture and storage (CCS), alternatively referred to as carbon capture and sequestration, is a technology to prevent large quantities of CO₂ from being released into the atmosphere from the use of fossil fuel in power generation and other industries.

http://en.wikipedia.org/wiki/Carbon_capture_and_storage

Coniferous forest

A type of forest characterized by cone-bearing, needle-leaved trees (such as pines, spruces, and firs).

<http://dictionary.reference.com/browse/coniferous+forest>

Deciduous forest

Deciduous means 'temporary' or 'tending to fall off'. Thus, it refers to a forest with trees that lose their leaves each year.

http://www.biology-online.org/dictionary/Deciduous_forest

Depletion

The act of decreasing or reducing something markedly.

<http://www.thefreedictionary.com/depletion>

Endemic species

A species which is only found in a given region or location and nowhere else in the world.

<http://www.biodiversity-worldwide.info/endemism.htm>

Fern

Any of numerous flowerless, seedless vascular plants having roots, stems, and fronds and reproducing by spores.

<http://www.thefreedictionary.com/fern>

Forest pests

Animals that injure trees and shrubs in forests. The great majority of forest pests are insects.

<http://encyclopedia2.thefreedictionary.com/Forest+Pests>

Forest resources

Forest resources are any value or benefit deriving from the forest. They include forest products, of course, but also fish and wildlife habitat, watershed protection, air and water purification, and recreational opportunities.

<http://www.forestresources.org/ABOUT/faq.html>

Forest stand

The basic unit of forest mapping; a group of trees that are more or less homogeneous with regard to species composition, density, size, and sometimes habitat.

<http://encyclopedia2.thefreedictionary.com/forest+stand>

Game

Wild animals, birds, or fish hunted for food or sport.

<http://www.thefreedictionary.com/game>

Greenbelt

A belt of parks or rural land surrounding a town or city.

<http://www.thefreedictionary.com/greenbelt>

Infestation

The state of being invaded or overrun by parasites.

<http://www.thefreedictionary.com/infestation>

Logging of forest

The work of cutting down trees for timber.

<http://www.thefreedictionary.com/logging>

Mixed forest

A vegetational transition between coniferous and broad-leaved deciduous forest, especially in the Northern Hemisphere. 'Mixed forest' also may denote a forest with two or more dominant tree species.

<http://www.britannica.com/EBchecked/topic/386405/mixed-forest>

Peatland

An area of land consisting of peat bogs, usually containing many species of flora and fauna

<http://www.thefreedictionary.com/peatland>

Peat bog

Wet spongy ground of decomposing vegetation; has poorer drainage than a swamp; soil is unfit for cultivation but can be cut and dried and used for fuel

<http://www.thefreedictionary.com/peat+bog>

Precipitation

Any form of water, such as rain, snow, sleet, or hail that falls to the earth's surface.

The quantity of such water falling in a specific area within a specific period.

<http://www.answers.com/topic/precipitation>

Quarry/Quarries

An open excavation or pit from which stone is obtained by digging, cutting, or blasting.

<http://www.thefreedictionary.com/quarry>

Riparian

Relating to or inhabiting the banks of a natural course of water. Riparian zones are ecologically diverse and contribute to the health of other aquatic ecosystems by filtering out pollutants and preventing erosion.

<http://www.thefreedictionary.com/riparian>

Seedlings

A young plant, especially one that grows from a seed rather than from a cutting.

<http://www.thefreedictionary.com/seedling>

Scrublands

An area of scrub vegetation; an uncultivated region covered with scrub vegetation.

<http://www.thefreedictionary.com/scrubland>

Scrub

Vegetation consisting of stunted trees, bushes, and other plants growing in an arid area.

<http://www.thefreedictionary.com/scrub>

Shrub

A woody plant of relatively low height, having several stems arising from the base and lacking a single trunk; a bush.

<http://www.thefreedictionary.com/shrub>

Subendemic

Largely localized in one natural area; occurring mostly in one environment.

<http://www.merriam-webster.com/dictionary/subendemic>

Timber

Wood suitable for building houses, ships, etc., whether cut or still in the form of trees; A large, heavy, dressed piece of wood used in building; Trees or forests collectively.

<http://www.yourdictionary.com/timber>

Understory

An underlying layer of vegetation, especially the plants that grow beneath a forest's canopy.

<http://www.thefreedictionary.com/understory>

SOURCES

THE STATUS OF THE WORLD'S FORESTS

Forest types:

- <http://www.ucmp.berkeley.edu/exhibits/biomes/forests.php#boreal>
- http://www.defenders.org/wildlife_and_habitat/habitat/forest.php
- <http://www.forest.fi/>

Forest management practices:

- Critérios e Indicadores de Gestão Florestal Sustentável ao Nível da Unidade de Gestão Direcção Geral das Florestas - Divisão de Fomento e Produção Florestal; Ministério da Agricultura, do Desenvolvimento Rural e das Pescas

Threats to the world's forests:

- <http://www.blueplanetbiomes.org/taiga.htm>
- <http://www.conservation.org/newsroom/pressreleases/Pages/The-Worlds-10-Most-Threatened-Forest-Hotspots.aspx>
- <http://www.economist.com/node/17062713>
- http://www.taigaescape.org/index.php?view_article=70
- <http://www.sciencedirect.com/science/article/pii/S016953470900189X>
- <http://www.greenpeace.org/canada/en/campaigns/boreal/archive/threats-to-the-boreal-forest/>
- http://www.nytimes.com/2011/10/01/science/earth/01forest.html?_r=2&ref=temperaturerising
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- <http://www.wwf.org.br/informacoes/?27443/Codigo-Florestal-Entenda-o-que-esta-em-jogo-com-a-reforma-de-nossa-legislacao-ambiental>



Partner organizations of the campaign 'Caring for the future? Caring for the forest!'

EDEN Center, Albania
www.eden-al.org

Hnutí Brontosaurus, Czech Republic
www.brontosaurus.cz

Luonto-Liitto, Finland
www.luontoliitto.fi

Ecoclubes, Portugal
www.ecoclubes.org

EcoCenter Zapovedniks, Russia
www.wildnet.ru

Look East Wild Earth, United Kingdom
www.lookeast.org.uk



This publication was created by Youth and Environment Europe.

Youth and Environment Europe (YEE) is an umbrella organisation uniting European environmental youth non-governmental organisations. Since its foundation in 1983, YEE has been a platform for many organisations that study nature and are active in the field of environmental protection.

The aim of YEE is to provide a platform where these organisations can cooperate and to encourage youth to be involved in environmental protection. YEE creates an opportunity to contact other European organisations, to exchange experiences, ideas and to work together.

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