

A photograph of a mountain valley with a river and forest. The image shows a deep valley with a river flowing through it, surrounded by steep, rocky mountains. The foreground is filled with green trees, and the sky is blue with some clouds. The overall scene is a natural, wild landscape.

WRI

**WILDLAND
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Wilderness and Natura 2000

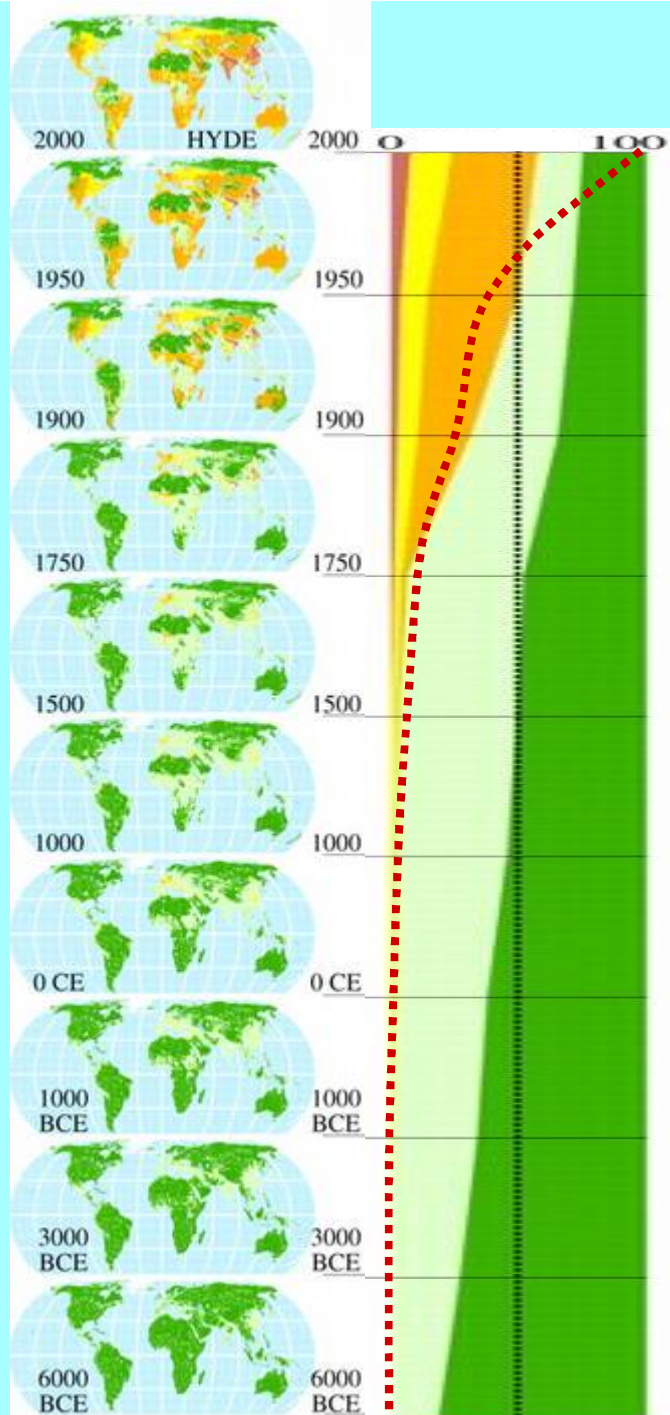
Mark Fisher - mn.fisher@leeds.ac.uk

Looking into Mala Piščenca Nature Reserve, Triglav National Park, Slovenia (IUCN category Ib)

Wilderness and Natura 2000

Summary

1. Is there any wilderness left in Europe?
2. What type of biome is the wilderness that is left?
3. How is wilderness protected in Europe?
 - National legislation for protected areas
 - EU legislation for protected areas
4. Ideas for a Natura 2000 wilderness interpretation
5. Do we need a Natura 2000 wilderness interpretation?

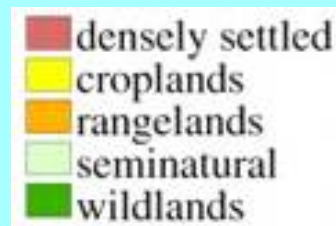


Anthropogenic transformation of the terrestrial biosphere, 6000 BCE to 2000

- Human land use from 6000 BCE was low intensity but highly extensive
- Intensity accelerates from 18th century along with population
- Wildlands (unused land) on a continual fall

Humans lived in a wildland matrix (80%) 8,000 years ago

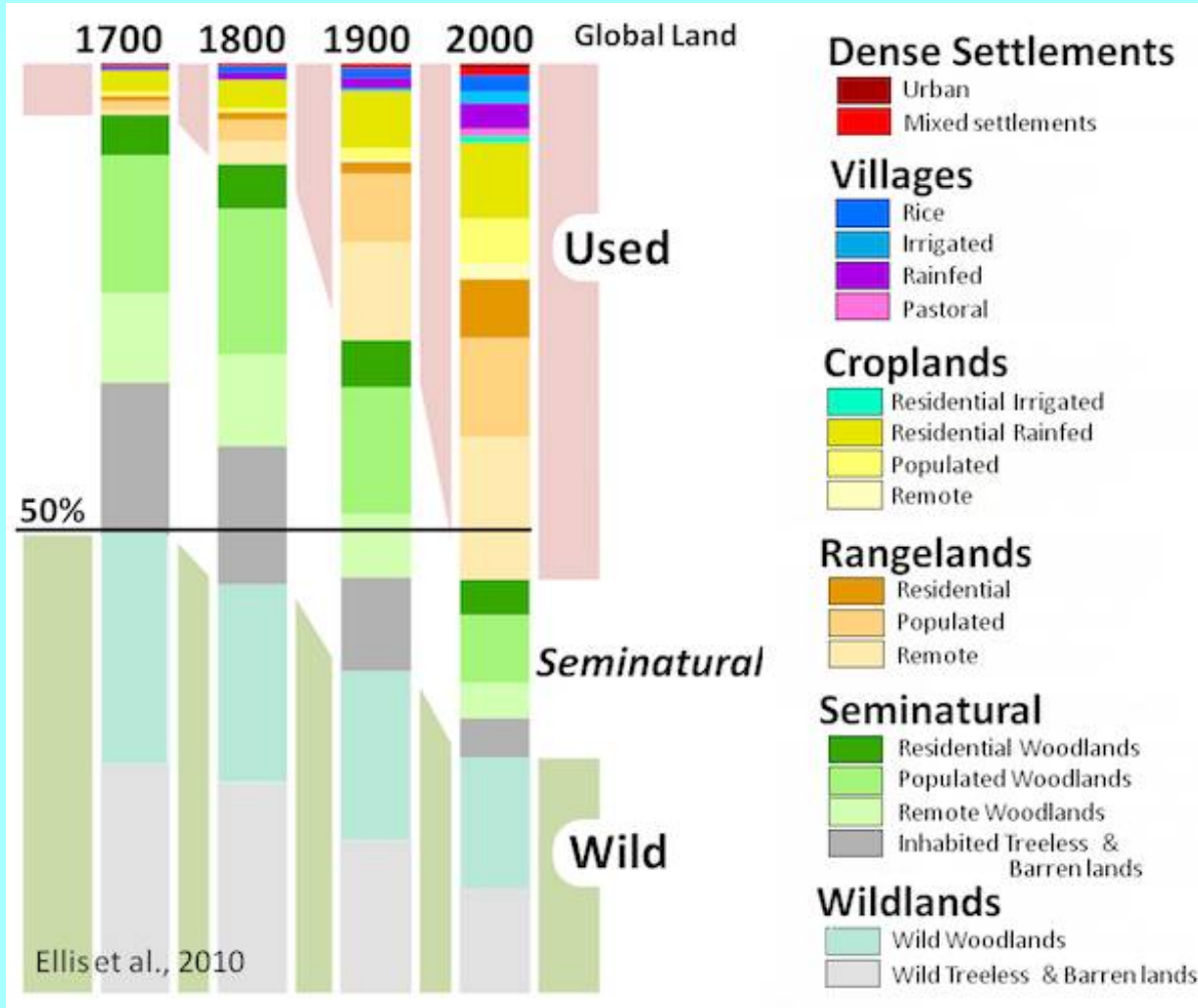
The matrix is now transformed land, with about 25% wildland left



Global anthrome level maps and area changes derived from the History Database of the Global Environment (HYDE) land-use and population data; the global trend in human population is overlaid

Ellis, EC (2011) Phil. Trans. R. Soc. A 369:1010-1035

The acceleration in transformation from the 18th century



Settlements distribute and land use diversifies as global population takes off

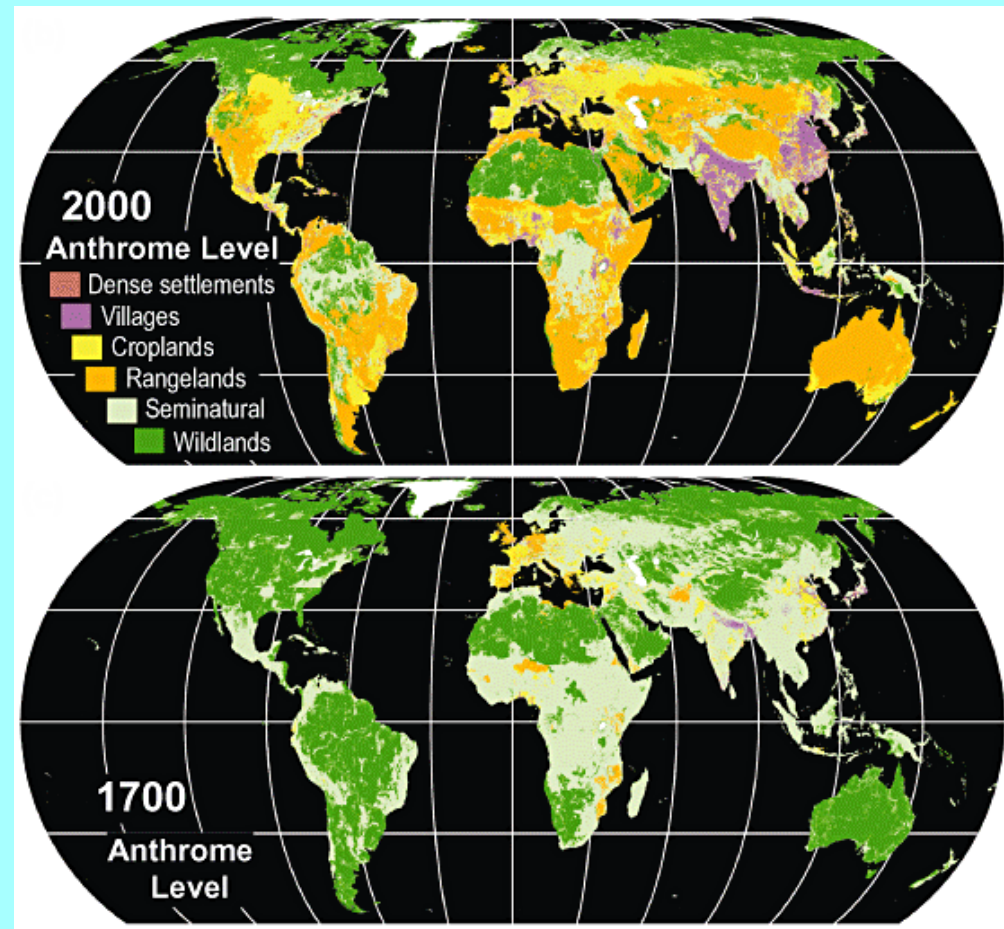
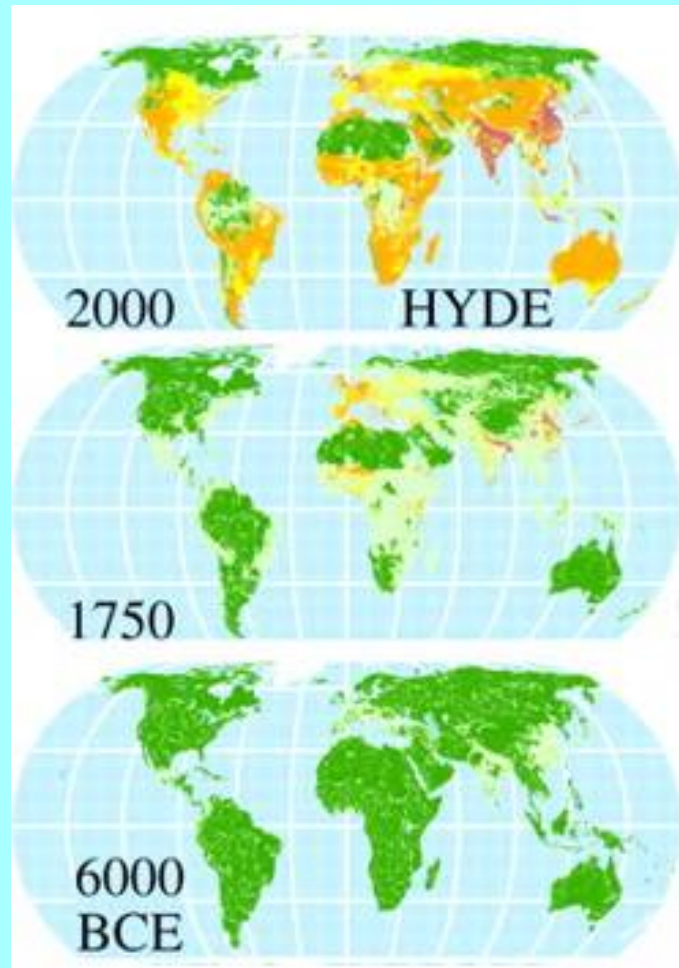
Extensively used land (semi-natural) turns into intensively used land

Remote, uninhabited and wild land reduces, turning into semi-natural land



The continuum of land transformation

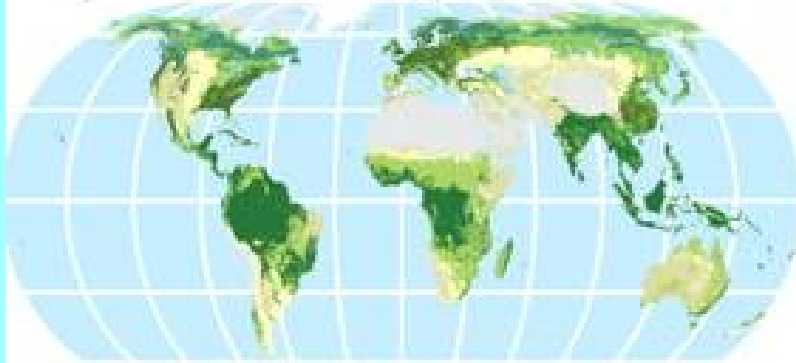
Spatial asymmetry in global transformation



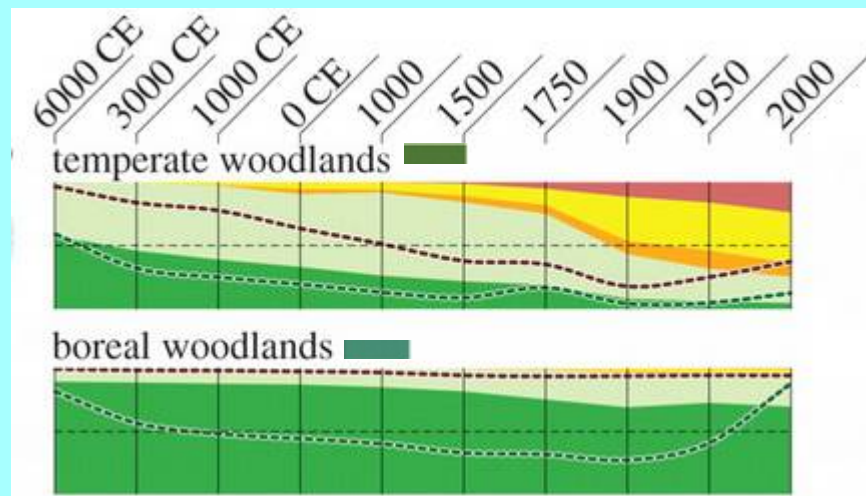
Transformation in Europe (plus central Africa and Asia) was far in advance
Acceleration elsewhere represents colonisation from Europe, bringing farming

Accessibility, exploitability and land transformation

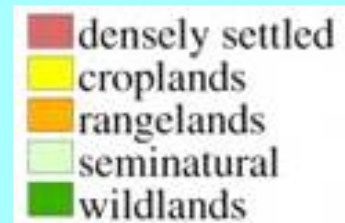
potential vegetation



The predominant potential vegetation of N. Europe is woodland: temperate and boreal



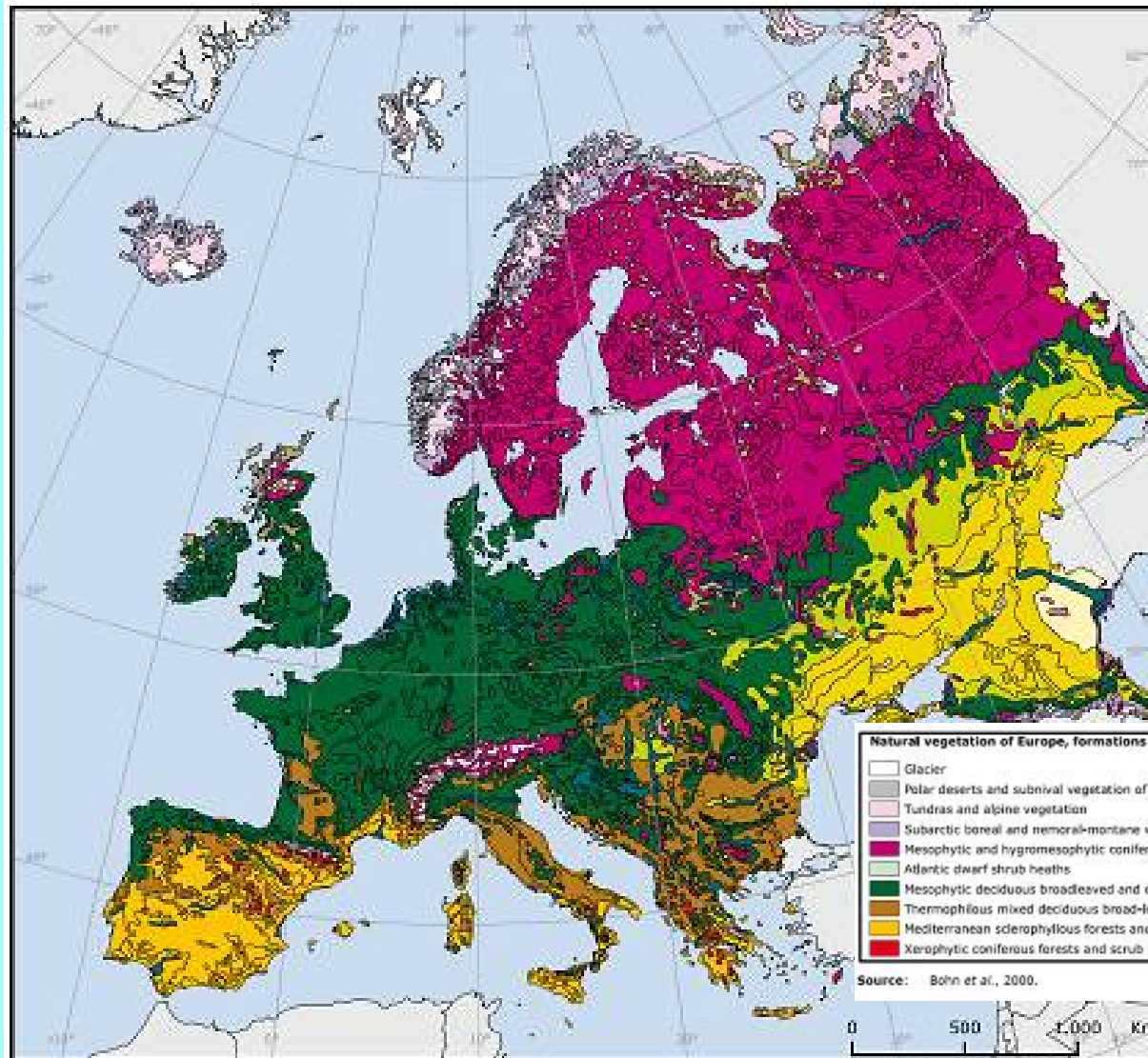
Transformation is greatest where the biome is most easily and more valuably exploited



Potential vegetation biomes are from a model of change derived from historical cropland inventory data and remotely sensed land cover classification data

Natural vegetation of Europe by forest type

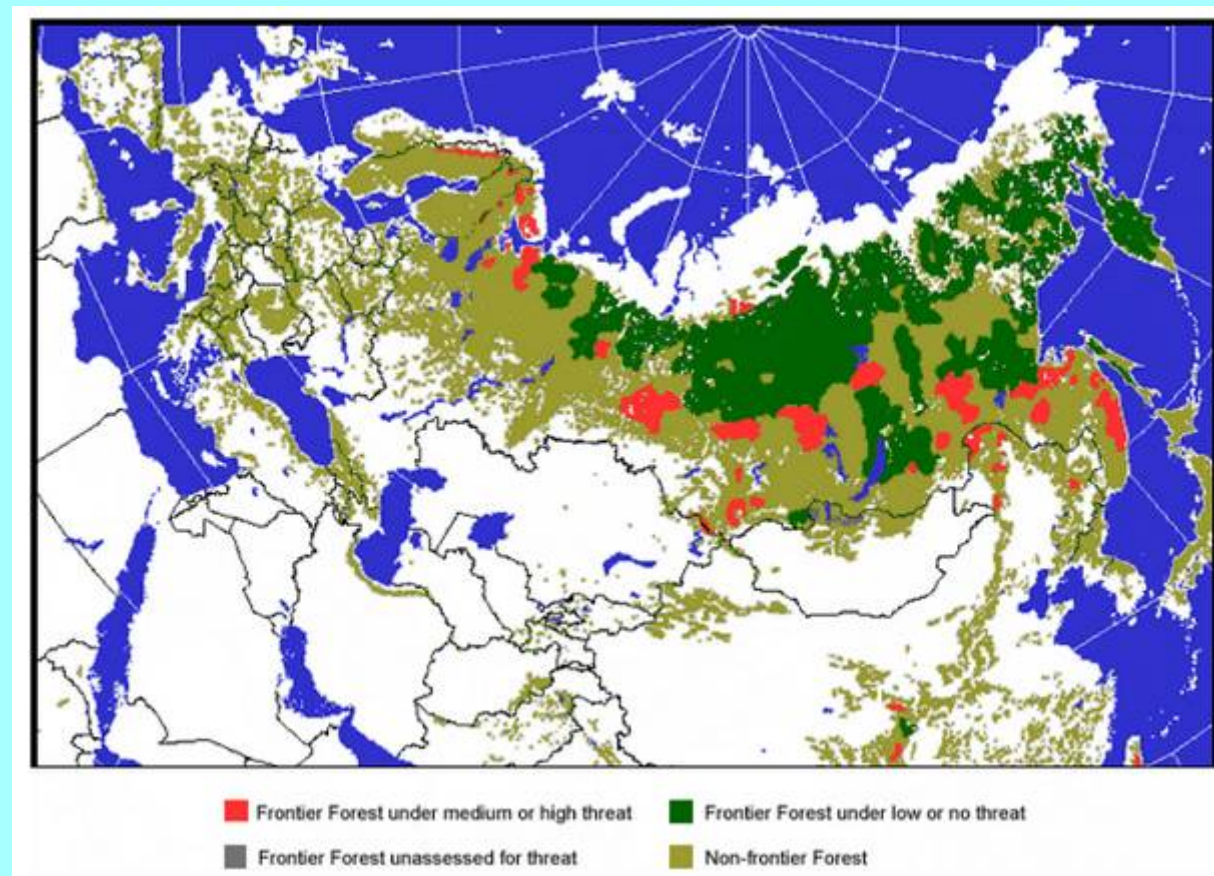
Map 2.1 Natural vegetation of Europe, Level I – formations



The only non-forested lands would be:

- Steppes
- Tundra and Alpine
- Atlantic dwarf shrub
- Mires
- Deserts (Kazakhstan)

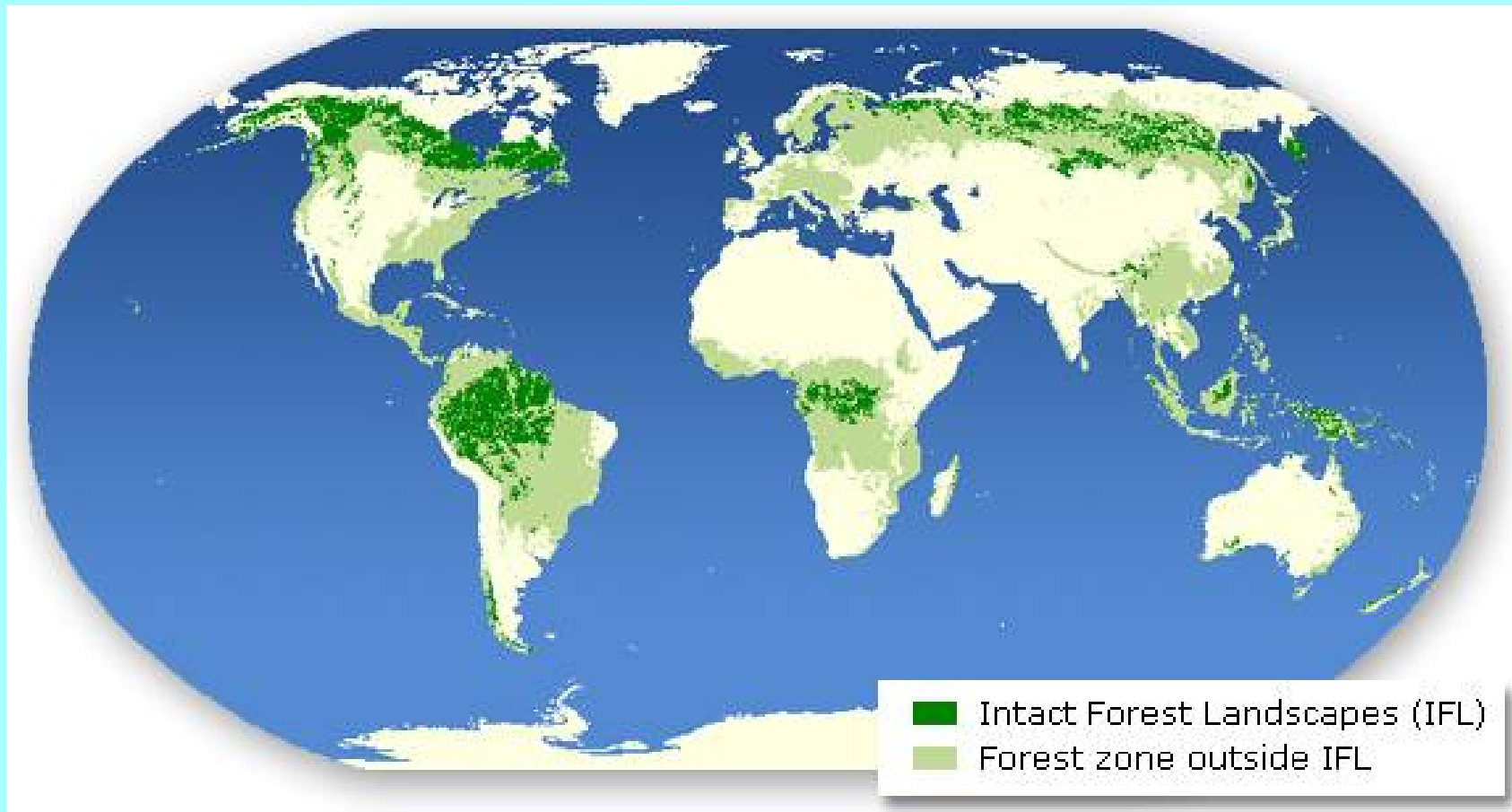
Threats to European Frontier Forests



Frontier Forests: large, unmodified forest ecosystems; structure and composition determined by natural events; resistant to natural disturbances

Threatened Frontier Forests: human activities (logging, agricultural clearing, mining) degrading the ecosystem through declines/local extinctions of plants & animals, or large-scale changes in the forest's age and structure

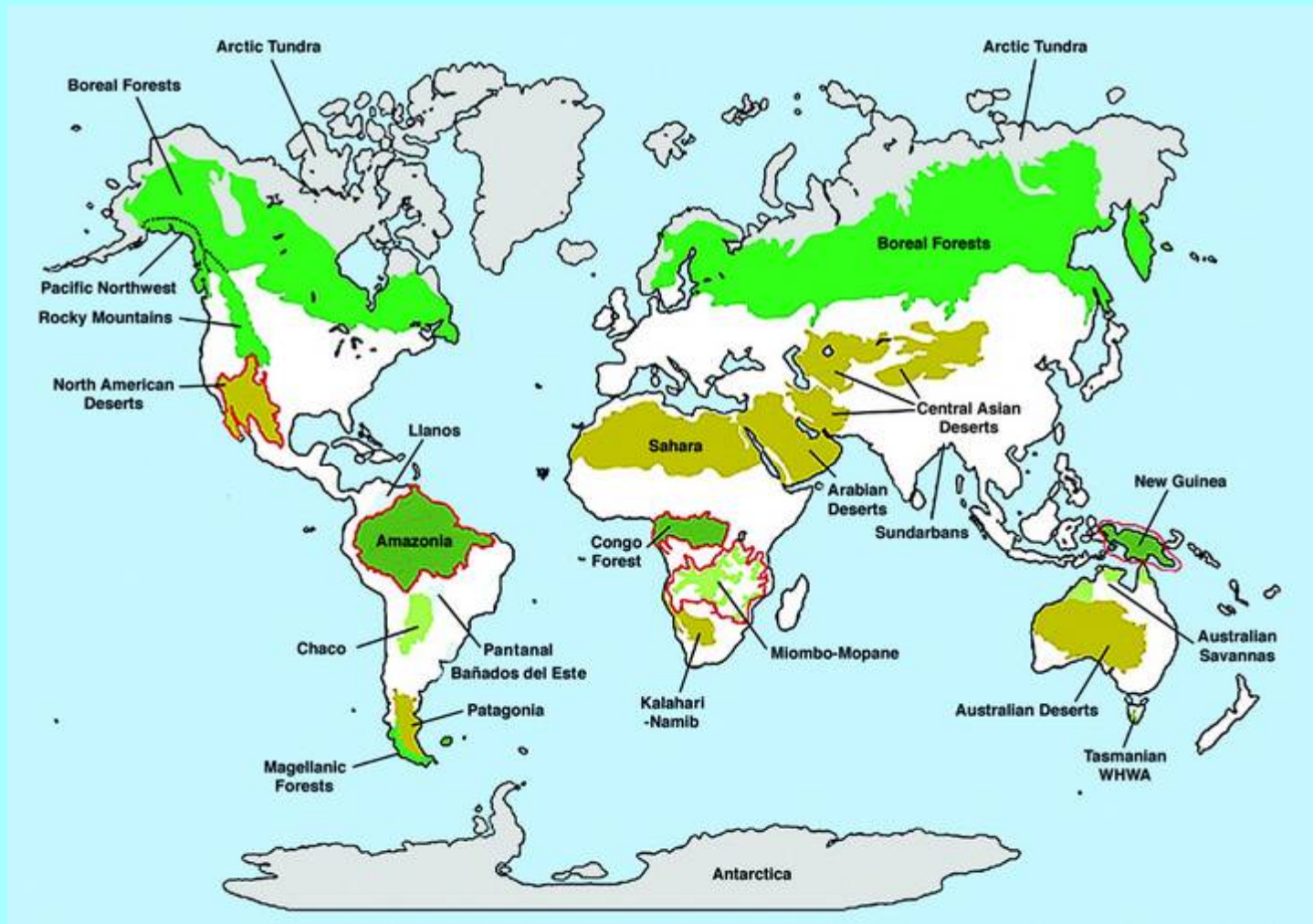
Intact Forest Landscapes



- **unbroken expanse of natural ecosystem within the zone of current forest extent**
- **no signs of significant human activity - undisturbed**
- **large enough (at least 500 sq km) that all native biodiversity, including wide-ranging species, can be maintained**
- **some IFLs may contain extensive naturally tree-less areas: grasslands, wetlands, lakes, alpine areas, & ice**

High spatial resolution satellite images - Popatov (2009) Global mapping and monitoring the extent of forest alteration: the intact forest landscapes method. Forest Resources Assessment Working Paper 166

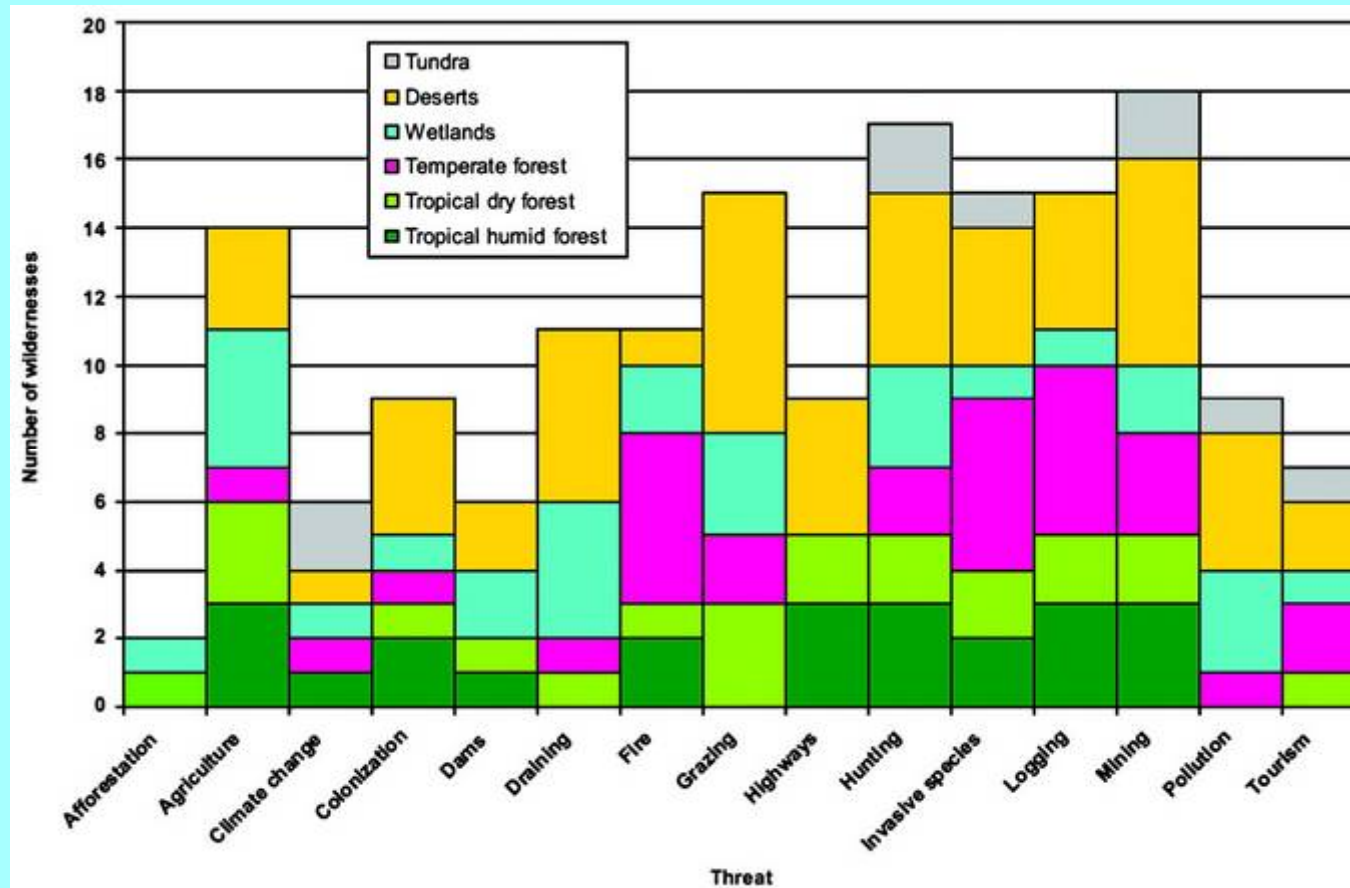
The value for nature conservation of remaining wilderness



24 wilderness areas, covering 44% but inhabited by only 3% of people
“wilderness areas lie at one end of a continuum of human impact”

Wilderness areas shown as biomes, with five high-biodiversity wilderness areas outlined in red. A wilderness area had to have a minimum size of 10,000 sq. km, < 5 people per sq km, and at least 70% of its historical habitat extent (500 years ago). Mittermeier, RA et al. (2003) PNAS100:10309-10313

Threats to the wilderness areas by biome



Agriculture, grazing, hunting, invasive species, logging, and mining are the most pervasive. Fire is an issue for temperate forest

Threats evaluated from extensive literature search and contact with 200 specialists

How are wilderness areas protected in Europe?

National legislation for protected areas

All countries in Europe have national legislation for protected areas with a range of protected area types that correspond to some or all of the IUCN Categories:

- Nature reserve (Cat I/IV)
- National Park (Cat II)
- Natural monument (Cat III)
- Protected landscape (Cat V)
- Managed resource (Cat VI)



31/45 use the IUCN Categories for their protected area types (Turkey over two Acts); Finland, France, Italy, Liechtenstein & Norway have three; Cyprus & the UK has two; and 7 have one

25 countries have **strictly protected area types** (Cat I) in their national legislation, where resource use is prohibited

22 countries have **strictly protected core areas** in the legislation for their **National Parks**

38 countries classify **protected areas in Category I** - Belgium, Bosnia-Herzegovina, Germany, Hungary, Montenegro, Netherlands & UK do not

The language of national protected areas legislation

Lack of disturbance is a widespread aim in the national protected area legislation:

“undisturbed **natural development**; undisturbed **natural environment**; undisturbed **life cycles**; undisturbed **natural processes** and dynamic development; undisturbed **state**; undisturbed **progression**, as far as possible, **of natural processes** in their **natural dynamics**; undisturbed **by human intervention**; **natural processes**, in their **natural dynamics**, can take place in the most undisturbed manner possible; ensuring long-term undisturbed **natural processes** and **dynamic developments**”

This rhetoric **has to be matched by restrictions on activity** for protected area types that are classified in IUCN Category I. Apart from the specific restrictions themselves, the legislation uses phrases such as:

- **excludes any human intervention** in natural processes
- **without human intervention**
- **minimal human intervention**
- Habitats are called natural when their existence is **not due to human intervention**.
- self-regulation **without direct human intervention**
- complete and **permanent cessation of direct human intervention** in the health of ecosystems
- nature protection is the **restriction of interventions** that can endanger, damage or destroy conditions and forms of life
- the protection of the ecological integrity of ecosystems and **prevention of interventions and activities** that could endanger that;
- undisturbed, dynamic development be left and in which **all human activities** are undesirable

Resource use prohibited in strictly protected areas

| | | |
|---------------|--|---|
| Albania | Strict Nature Reserve | No cutting of trees and shrubs, hunting and fishing, grazing, livestock, extraction of minerals and peat |
| Armenia | State Reserve | No logging, hunting and fishing, cattle grazing, exploitation of water resources |
| Azerbaijan | State Reserve | No collection of firewood, hunting and fishing, use of pastures for economic purposes, use of ground and underground waters for economic purposes |
| Belarus | Reserve | Fully withdrawn from economic turnover |
| Bulgaria | Reserve | All activities are prohibited in the reserves |
| Croatia | Strict Reserve | No economic and other activities |
| Estonia | Strict Nature Reserve | All human activities prohibited |
| Finland | Strict Nature Reserve | Hunting, logging, grazing, mining prohibited |
| France | Strict Biological Reserves | No management or access |
| Georgia | State Reserve | No destruction and modifying of natural ecosystems, exploitation or disturbance of any natural resources |
| Greece | Absolute nature protection area | Any activity prohibited |
| Italy | State Nature Reserve | Hunting, logging, mining prohibited |
| Latvia | Strict Nature Reserve | All natural resources are completely excluded from economic and other activities |
| Liechtenstein | Forest Reserve | All human activities are undesirable |
| Luxembourg | Protected area of national interest - Nature Reserve | Prohibition of hunting, fishing and forestry |
| Moldova | Scientific Reserve | No grazing, hunting, fishing, prospecting and extraction of natural resources |
| Norway | Nature Reserve | Absolute protection from all activity, projects and access or passage |
| Romania | Scientific Reserve | Any human activity is prohibited |
| Russia | State Natural reserve | No economic use of specially protected natural complexes and objects |
| Serbia | Strict Nature Reserve | Economic and other activities prohibited |
| Slovakia | Nature Reserve | No clear-cutting, trapping, killing or hunting animals, grazing animals |
| Slovenia | Strict Nature Reserve | No interventions or pursue the activities that undermine the preservation of the protected area |
| Sweden | Nature Reserve | No logging, hunting and fishing |
| Turkey | Nature Protection Area | Absolute protection of rare, endangered ecosystems, species and natural events |
| Ukraine | State Reserve | No economic and other activities contrary to the intended use of the reserve |

How are wilderness areas protected in Europe?

EU legislation for protected areas



EU Member States incorporate the **Habitats Directive 1994** (conservation of natural habitats and of wild fauna and flora) into their legislation

Protected area type: **special area of conservation** for listed habitats (Annex I) and species (Annex II)

Criteria of protection: **natural** habitat types and the species' habitats be maintained or restored at a **favourable conservation status** in their natural range

Method of designation: **devolved** to Member States

-16 Member States incorporate IUCN Categories and Natura 2000 in their national protected area legislation – likely to be **co-designation**

-Poland & Greece allow that national protected areas may overlap with Natura 2000

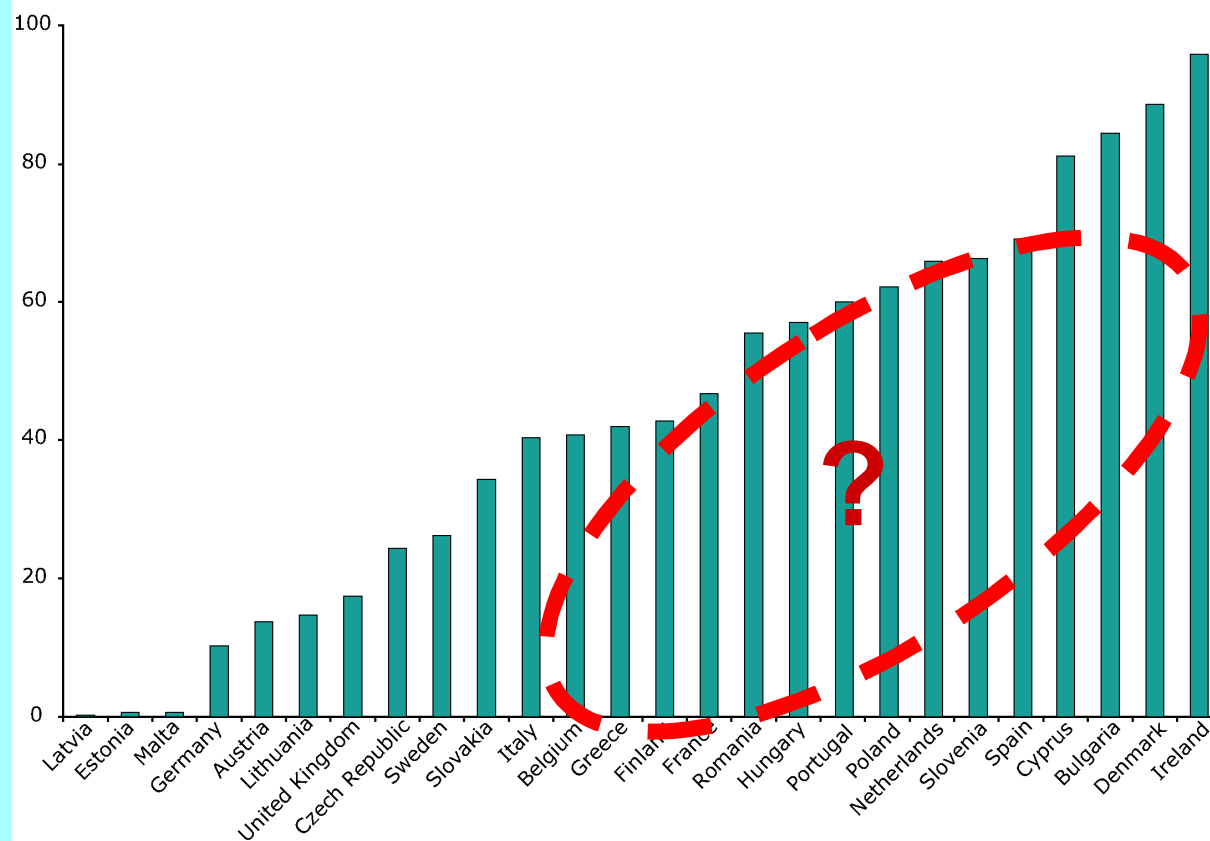
-Non-statutory contractual or administrative agreements are allowed in the legislation of Czech Republic, Finland, France and Germany

-Only Luxembourg reports Natura 2000 sites to the EEA Central Database for Designated Areas under the obligations of the Convention on Biological Diversity

UNCLEAR how Member States designate and thus protect Natura 2000 sites

Overlap of national protected areas with Natura 2000

% of Natura 2000 site area not designated under national designations



- 3 with almost 100% (Latvia, Estonia, Malta)

- 4 with > 80%

- 10 not reaching 50%

- 3 with < 20% overlap (Ireland, Cyprus and Bulgaria)

How can these Natura 2000 sites be protected? What is being protected?

Primary and Secondary habitats in the Natura 2000 network

How *natural* are the habitat types listed in Annex I?

Biodivers Conserv (2011) 20:2365–2378
DOI 10.1007/s10531-011-9989-z

ORIGINAL PAPER

Which habitats of European importance depend on agricultural practices?

Lubos Halada · Doug Evans · Carlos Romão · Jan-Erik Petersen

63/231 habitats in Annex I are **Secondary, agro –ecological** habitats, arising from and dependent on the continuation of agricultural activity

They are **semi-natural** NOT natural e.g. lowland and moorland heath in the UK

4010 Northern Atlantic wet heaths with *Erica tetralix* - 4030 European dry heaths

Natural habitats are **Primary** habitats that are maintained by the **natural forces of nature** without our intervention

A Primary habitat in one continental location can be a Secondary habitat elsewhere e.g. blanket bog in Estonia compared to the UK 7130 Blanket bog

Natura 2000 sites may contain Primary and Secondary habitats, the management of the latter putting at risk the former

ENVIRONMENT

European Commission

European Commission > Environment > Nature & Biodiversity

Home | Who's who | Policies | Integration | Funding | Law | Resources | News & Developments

NATURE & BIODIVERSITY

- EU Biodiversity Policy
- EU Nature Legislation
- Natura 2000 Network
- Species protection
- Green Infrastructure
- Invasive Alien Species
- Climate Change

Management of Natura 2000 sites: Best Practice

THE PROBLEM!!!

The aim of the Natura 2000 Network is to protect vulnerable habitats and species across their natural range in Europe and ensure that they are restored to, or maintained at, a favourable conservation status.

Natura 2000 is however not merely a system of strict nature reserves where human activities are systematically excluded. It adopts a different approach - Natura 2000 fully recognises that man is an integral part of nature and the two work best in partnership with one another. Indeed, many sites in the Natura 2000 Network are valuable precisely because of the way they have been managed up to now.

Natura 2000 is **NOT EVEN** a system of *strict nature reserves* where *human activities are systematically excluded*

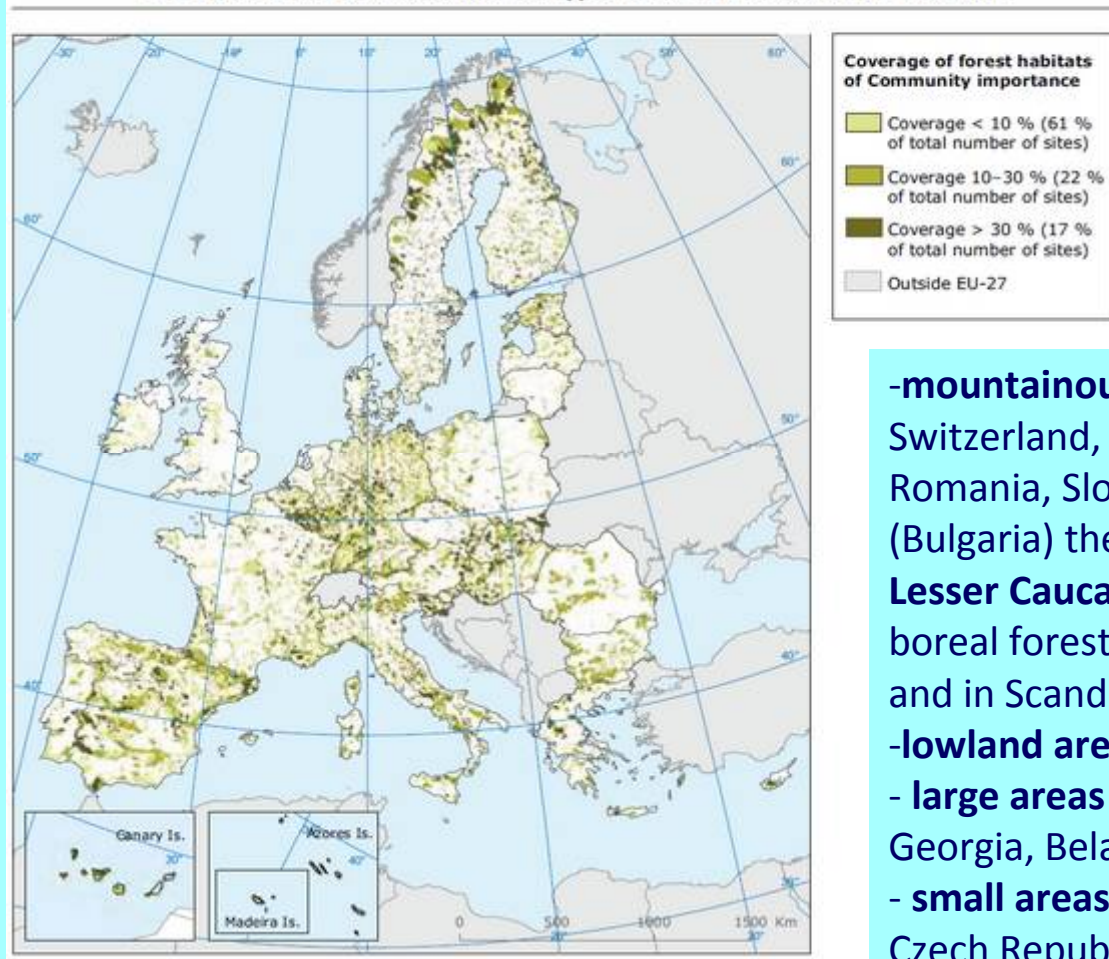
Natura 2000 is **compositionalist strategy** for nature conservation, based on site selection for listed species and habitat types of “community interest” and which maintains the site in **stasis**

Contrast that with the **functionalist criteria** for protected areas exemplified by the strictly protected IUCN categories that protect **natural processes within areas containing whole ecosystems**

Does Natura 2000 protect Primary, undisturbed forest in Europe?

Primary forest: native trees, flora and fauna; dead wood; natural age structure and natural regeneration processes; recovered from any significant human intervention

Map 5.2 Sites proposed under the Habitats Directive (Natura 2000 sites) which include at least one of the 85 'forest habitat-type' listed in Annex I of the Directive



Found in 29 countries in Europe, in **inaccessible areas** for commercial logging, or where there are **difficult terrain and soil conditions** for agriculture

- mountainous areas** of the **Alps** (Italy, Liechtenstein, Switzerland, Slovenia) the **Carpathians** (Poland, Romania, Slovakia, Ukraine) the **Balkan range** (Bulgaria) the **Caucasus Mountains** (Georgia) the **Lesser Caucasus Mountains** (Turkey, Azerbaijan) boreal forests of the **Ural Mountain taiga** in Russia, and in Scandinavia (Norway, Sweden)
- lowland areas** of Estonia, Latvia and Lithuania
- **large areas** >1,000 sq km Sweden, Turkey, Estonia, Georgia, Belarus, Bulgaria, Romania Slovenia, Russia.
- **small areas** Albania, Bosnia & Herzegovina, Croatia, Czech Republic, Denmark, France, Poland, Portugal

Incompatibility of Natura 2000 with non-intervention management



Overall, European conservation directives do not provide for adequate protection of ecological and evolutionary processes in pristine forests. NATURA 2000, even if properly implemented, would not provide sufficient means to preserve ecosystem integrity of natural forests. The requirement, inherent in the NATURA 2000, to ensure favorable conservation status of only the selected bird species or habitats (plant communities) implies a necessity to intervene in their favor when their numbers or amount decrease. Restoration or even retention of the status quo, however, demands "active conservation," which is incompatible with noninterference. Still worse, NATURA 2000 requirements could be used as a justification for timber extraction in the last of the primeval old-growth forests.

- strict Forest Reserve of 4,747ha of the Białowieża Forest was designated in 1921
- incorporated into the Białowieża National Park when that was formed in 1947
- Białowieża Forest designated a Natura 2000 site in 2001

Strictly protected core is too small to preserve the primeval forest and its natural processes over the long term

Wesolowski calls for a **ban on all logging** in the natural stands of the wider Białowieża Forest, a Natura 2000 site

The Natura 2000 system does not act as a driver for wildland.....



-Brandenburg Foundation's ex-military training areas are designated as managed nature reserves (NSG) under Lander and national legislation, as well as being Natura 2000 sites

-NSG Forst Zinna-Jüterbog-Keilberg, Reicherskreuzer Heide und Schwansee, Lieberoser Endmoräne, Pinnower Läuiche und Tauerische Eichen and Heidehof – Golmberg

-nature reserves designated under the Brandenburg Conservation Act require the "permanent protection and conservation" of listed features

- all the NSGs/Natura 2000 sites are designated for 4030 European dry heath, a **secondary habitat**

Secondary habitat designated under the Natura 2000 system would need that habitat designation **removed** or additional, **primary habitats designated** for the Natura 2000 site if there was an **aspiration** for the protected area to take on more of the **characteristic of wildness**

WOLVES!!!!!! Wolf is listed in Annex II and Annex IV for strict protection



Increasing wolf numbers in Germany could mean designating Natura 2000 sites for wolf

..... unless there is the presence of large carnivores!

ANNEX II

ANIMAL AND PLANT SPECIES OF COMMUNITY INTEREST WHOSE
CONSERVATION REQUIRES THE DESIGNATION OF SPECIAL
AREAS OF CONSERVATION

(a) *ANIMALS*
VERTEBRATES

MAMMALS

Canidae

- * *Alopex lagopus*
- * *Canis lupus* (except the Estonian population; Greek populations: only south of the 39th parallel; Spanish populations: only those south of the Duero; Latvian, Lithuanian and Finnish populations).

Ursidae

- * *Ursus arctos* (except the Estonian, Finnish, and Swedish populations)

Mustelidae

- * *Gulo gulo*
- Lutra lutra*
- Mustela eversmanii*
- * *Mustela lutreola*
- Vormela peregusna*

Felidae

- Lynx lynx* (except the Estonian, Latvian and Finnish populations)
- * *Lynx pardinus*



The large carnivores are **keystone species** that given a choice, depend on sufficiently **large, undisturbed areas**, with fully functioning ecosystems – they show a **wilderness dependency**

The habitat type of Natura 2000 sites that might support the wilderness dependent species were identified in the core areas of a number of national parks known to support the presence of brown bear, lynx or wolf - Central Balkan National Park in Bulgaria, Kalkalpen National Park in Austria, Tatra National Park in Slovakia, and the Bavarian Forest National Park in Germany

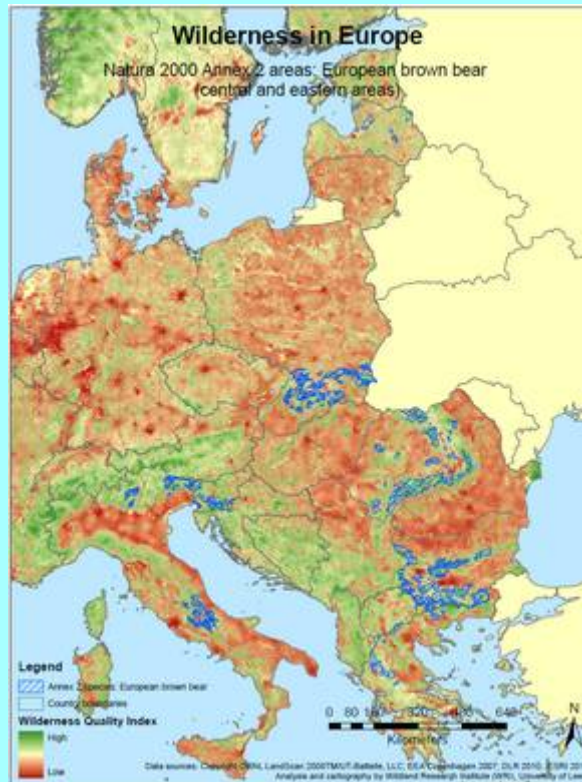
These core areas are predominantly made up of **Primary forest habitats** in which **no management intervention** takes place

Last of the wild, PAN Parks 2009, As nature intended, PAN Parks 2009

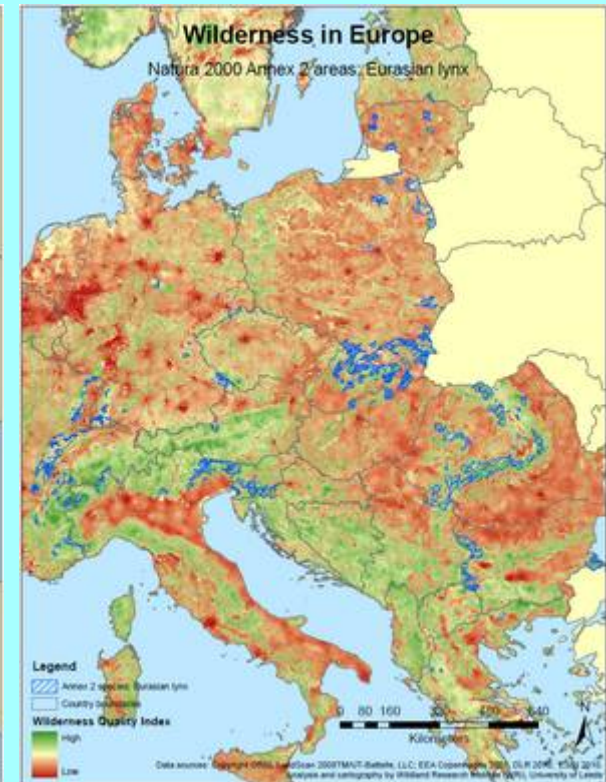
WRI established that large carnivore Natura 2000 sites were in the right place!



Wolf



Bear



Lynx

High correlation between Natura 2000 sites for large carnivores and high WQI

Natura 2000 and IUCN systems are **complementary** where there are **keystone, wilderness dependant species** and **dynamic primary habitats**, and Natura 2000 may not be a threat to wildland, or prevent the development of wildland

Ideas for a Natura 2000 wilderness interpretation

1,400 Natura 2000 sites across EU member states that are designated for one or more of the large carnivores: **wolf, bear, lynx (both), arctic fox & wolverine**



It could be argued that to maintain their **favourable conservation status** requires that the ecosystem processes in these sites are **maintained sufficiently wild** to support them - all predator prey interactions, primary habitats, lack of human extraction. This would mean **large areas of wilderness**, complete with their prey species

The impact of interpreting this is best understood for the Natura 2000 sites that are designated for more than one of the large carnivores:

- **133 are designated for wolf, bear and lynx**
- **146 sites where there is bear and either wolf or lynx**
- **88 have both lynx and wolf**
- **140 sites just have bear, which is probably the most wilderness dependent of the three large carnivores**

A third of the large carnivore Natura 2000 sites could be maintained as wilderness

The rest have either lynx or wolf. Current evidence of distribution indicates a fuzzier distinction on wilderness dependence for wolf and lynx, especially on the leading edges of their distribution

However, these single species sites are deserving of strict protection now so that they become the next group of designated and properly protected **secondary wilderness areas** in Europe

Do we need a Natura 2000 wilderness interpretation?

High correlation of large carnivore Natura 2000 sites with high WQI is also matched by IUCN Category I sites. So **what is the coverage of Natura 2000 sites with strictly protected areas?**

- overlap investigated using their respective spatial data sets and GIS. It was calculated that there was 98.7% coverage of Natura 2000 by IUCN Category I – these are likely to be the large carnivore sites
- second approach cross referenced data on overlap in the Natura 2000 database with Category I areas. Three countries across the spectrum of overall coverage were used: Estonia showed almost 100% coverage; Bulgaria showed less than 20% overlap; and Romania was between the two at around 45%
 - both Estonia and Bulgaria showed 100% coverage with Natura 2000. For Romania, 14 of its 77 Category I sites were not overlapped by Natura 2000, representing 5.2% of the total area of Category I. Probably due to the lack of completeness of dataset

Based on Estonia, Bulgaria and Romania, EU member states are more likely to have **co-designated their IUCN Category I national protected areas with Natura 2000 sites** than they have their national protected areas in the lower IUCN Categories

Countries with **strict protection** in **national legislation** have the means to **protect wilderness without Natura 2000**

With **no strict protection** in **national legislation**, the presence of **large carnivores in Natura 2000** sites could be the **wilderness protection**