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COMMUNICATION FROM THE COMMISSION TO THE COUNCIL, THE EUROPEAN PARLIAMENT, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

A MID-TERM ASSESSMENT OF IMPLEMENTING THE EC BIODIVERSITY ACTION PLAN

SEBI 2010 BIODIVERSITY INDICATORS

{COM(2008) 864 final}
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TABLE OF CONTENTS

Streamlining European 2010 Biodiversity Indicators (SEBI 2010) fact sheets 4

FOCAL AREA: STATUS AND TRENDS OF THE COMPONENTS OF BIOLOGICAL DIVERSITY 5

European Headline Indicator: Trends in abundance and distribution of selected species 5

01. Abundance and distribution of selected species 5

European Headline Indicator: Change in status of threatened and/or protected species 9

02. Red List Index for European species 9

03. Species of European Interest 12

European Headline Indicator: Trends in extent of selected biomes, ecosystems and habitats 15

04. Ecosystem coverage 15

05. Habitats of European Interest 19

European Headline Indicator: Trends in genetic diversity of domesticated animals, cultivated plants, fish species and trees of major socioeconomic importance 22

06. Livestock genetic diversity 22

European Headline Indicator: Coverage of protected areas 25

07. Nationally designated protected areas 25

08. Sites designated under the EU Habitats and Birds Directives 27

FOCAL AREA: THREATS TO BIODIVERSITY 31

European Headline Indicator: Nitrogen Deposition 31

09. Critical load exceedance for nitrogen 31

European Headline Indicator: Trends in invasive alien species 34

10. Invasive alien species in Europe 34

European Headline Indicator: Impact of climate change on biodiversity 39

11. Occurrence of temperature-sensitive species 39

FOCAL AREA: ECOSYSTEM INTEGRITY AND ECOSYSTEM GOODS AND SERVICES 40

European Headline Indicator: Marine Trophic Index 40

12. Marine Trophic Index of European seas 40

European Headline Indicator: Connectivity/ Fragmentation of ecosystems 43

13. Fragmentation of natural and semi-natural areas 43

14. Fragmentation of river systems 44

European Headline Indicator: Water quality in aquatic ecosystems 45

15. Nutrients in transitional, coastal and marine waters 45

16. Freshwater quality 48

FOCAL AREA: SUSTAINABLE USE 53

European Headline Indicator: Area of forest, agriculture, fishery and aquaculture ecosystems under sustainable management 53

17. Forest: growing stock, increment and fellings 53

18. Forest: deadwood 58

19. Agriculture: nitrogen balance 61

20. Agriculture: area under management practices potentially supporting biodiversity 63

21. Fisheries: European commercial fish stocks 68

22. Aquaculture: effluent water quality from finfish farms 71

European Headline Indicator: Ecological Footprint and biocapacity of European countries 75

23. Ecological Footprint of European countries 75

FOCAL AREA: STATUS OF ACCESS AND BENEFITS SHARING 78

European Headline Indicator: Percentage of European patent applications for inventions based on genetic resources 78

24. Patent applications based on genetic resources 78

FOCAL AREA: STATUS OF RESOURCE TRANSFERS AND USE 79

European Headline Indicator: Funding to biodiversity 79

25. Financing Biodiversity Management 79

FOCAL AREA: PUBLIC OPINION 81

European Headline Indicator: Public Awareness and Participation 81

26. Public Awareness 81

Streamlining European 2010 Biodiversity Indicators (SEBI 2010) fact sheets

This annex contains 26 “fact sheets” for the SEBI 2010 biodiversity indicators. The SEBI 2010 process was initiated in 2005 to select a set of indicators to measure and help achieve progress towards the European target to halt biodiversity loss by 2010. SEBI 2010 institutional partners are the European Environment Agency (and its European Topic Centre on Biological Diversity), ECNC (European Centre for Nature Conservation), UNEP-WCMC (World Conservation Monitoring Centre), DG Environment of the European Commission, the PEBLDS Joint Secretariat, and the Czech Republic (as lead country for the Kiev Resolution action plan on biodiversity indicators).

The SEBI 2010 process has to a large extent been made possible by the contributions of more than 120 experts from across the pan-European region and from international NGOs and IGOs.

A history of the SEBI 2010 process as well as technical specifications of the indicators can be found in EEA Technical report 11/2007 “Halting the loss of biodiversity by 2010: proposal for a first set of indicators to monitor progress in Europe” (http://reports.eea.europa.eu/technical_report_2007_11/en). Readers are encouraged to consult this publication if they need detailed information on the methodology for each indicator.

Data are currently available for 22 of the 26 indicators. The fact sheets in this annex contain a summary assessment of the latest data available for each indicator.

FOCAL AREA: STATUS AND TRENDS OF THE COMPONENTS OF BIOLOGICAL DIVERSITY

European Headline Indicator: Trends in abundance and distribution of selected species

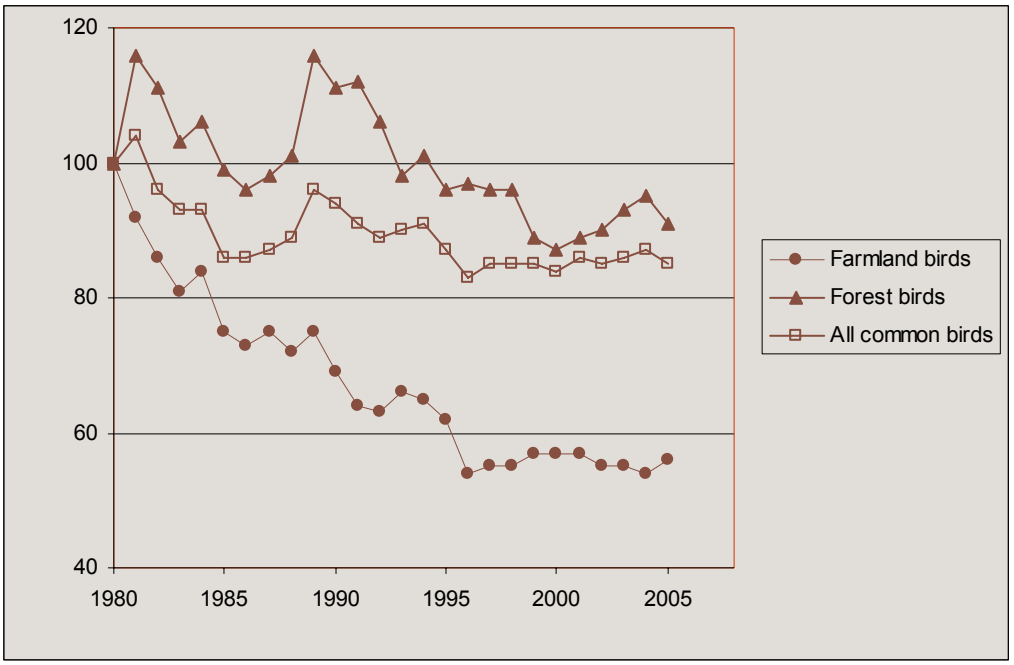
01. Abundance and distribution of selected species

Key Policy Question: Which species are being reduced in abundance and distribution in Europe?

Key message

Overall, Europe's common birds have declined by around 15% since 1980. Common farmland birds have declined most severely, by more than 40%, but common forest birds have also declined, by around 10%. Declines have levelled off since the late 1990ies. Europe's grassland butterflies have declined dramatically, by 60% since 1990, and this decline shows no sign yet of levelling off.

Common birds in Europe, population index (1980 = 100)



Source: EBCC/RSPB/BirdLife/Statistics Netherlands

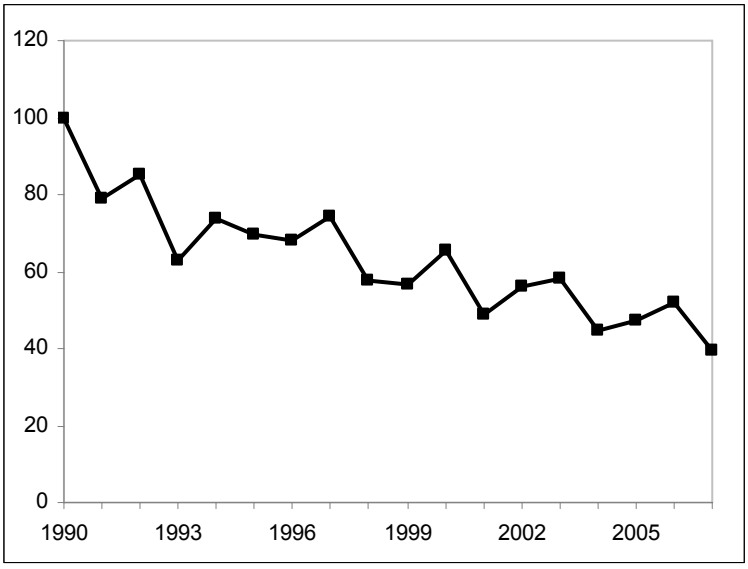
Notes:

1) Common farmland bird species (n=33), common forest bird species (n=28) and all common bird species (this line includes the farmland and forest birds, as well as a host of other common species that are not primarily associated with either of these habitats) (n=124). Country coverage (i.e. reflecting the availability of high-quality monitoring data from annually-operated common bird monitoring schemes, employing generic survey methods and producing reliable national trends): Ireland, UK, Netherlands, Denmark, Austria, Switzerland, Germany, Belgium, Sweden, Finland, Norway, Estonia, Latvia, Poland, Czech Republic, Hungary, France, Spain, Portugal, Italy.

2) In analysing this indicator, it should be underlined that the methodology for calculating the farmland bird index has recently changed. The new index presents a much sharper drop around the years 1995 and 1996. While the new index is recognised as integrating better expertise in terms of species selection, further investigation is necessary to explore what is behind this drop. In addition, the influence of both the inclusion of new species and new Member States in the selection, and the starting year of

monitoring schemes in some countries should be further investigated. In any case, the trend from 1996 onwards is consistent with the previous methodology and shows a fairly stable level of the index.

Grassland butterflies, Population index (1990 = 100)



Source: De Vlinderstichting/Butterfly Conservation Europe

Note:

For this graph data for grassland butterfly species from Butterfly Monitoring Schemes in nine countries were used: Belgium - Flanders (1991-2004), Estonia (since 2004), Finland (since 1999), France (since 2005), France - Doubs region (2001-2004), Germany (since 2005), Germany - Nordrhein Westfalen (since 2001), Germany - Pfalz region (Maculinea nausithous only, 1989-2002), Jersey (since 2004), Portugal (since 1998), Spain - Catalunya (since 1994), The Netherlands (since 1990), and United Kingdom (since 1976).

Assessment

Of the more common bird species, forest and particularly farmland birds have declined. The initial steep decline of farmland birds was associated with increasing agricultural specialisation and intensity in some areas, and large-scale marginalisation and land abandonment in others. The falling trend has levelled off since the late 1990ies, partly because of stabilising inputs of nutrients and pesticides and the introduction of set-aside in the EU15, and partly because of drastically lower inputs in the EU10 as a result of political reforms and the resulting economic crisis in the agricultural sector. An increase in agricultural production if linked to higher inputs of nutrients and pesticides in the east, combined with further land abandonment in some parts of Europe and the proposed abolition of set-aside may lead to a new decline.

Conservation measures adopted under the EU Birds Directive have proven effective in the recovery of rare bird populations (Donald *et al.* 2007), but not in the case of widespread birds, where different recovery mechanisms are now required. Well-designed agri-environment measures have been shown to reverse bird declines at local levels. The challenge now is to deploy them widely enough to help populations recover at national and European scales.

Over the past decade, grassland butterflies have suffered even bigger declines than birds, with a reduction of grassland butterfly abundance by almost 50%, with little sign of improvement.

Notes:

An increase means that there are more species whose populations have increased than species whose populations have decreased: it does not necessarily mean that the overall population has increased. It can be due to expansion of some species (typically generalists) at the expense of other species (typically specialists).

Geographical coverage

Birds

Butterflies

Web links

EBCC*:* European Bird Census Council*:* www.ebcc.info/

Butterfly Conservation Europe: www.bc-europe.org/

Sources and references

Europe's environment - The fourth assessment (2007)

Halting the loss of biodiversity by 2010: proposal for a first set of indicators to monitor progress in Europe (EEA Technical Report 11/2007).

Donald, P.F. et al. 2007. International Conservation Policy Delivers Benefits for Birds in Europe. Science 317, 810.

Version 26 November 2008

European Headline Indicator: Change in status of threatened and/or protected species

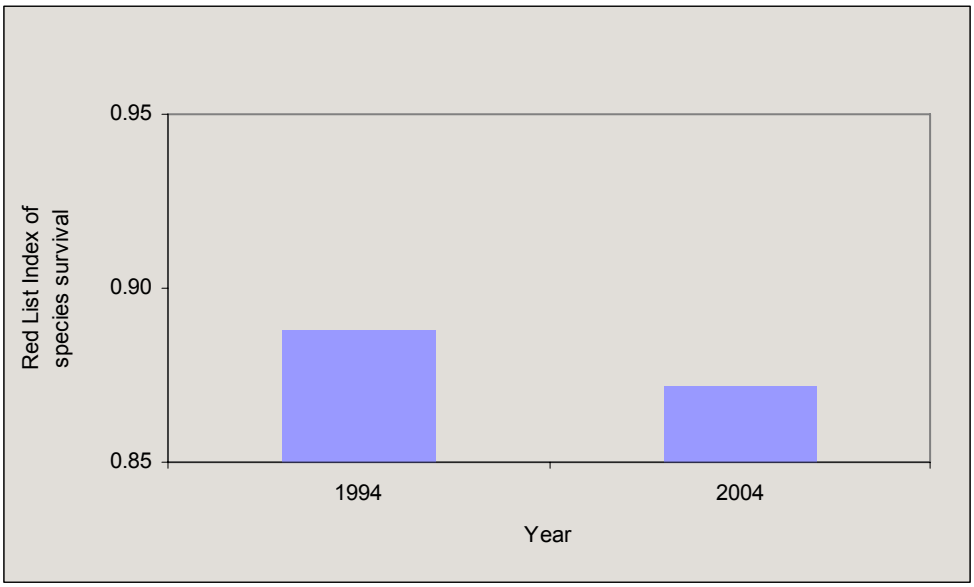
02. Red List Index for European species

Key Policy Question: Does the conservation status of European birds change?

Key message

The overall conservation status of Europe's birds generally has deteriorated over the last decade. While some species have improved in status owing to conservation action, many more have deteriorated owing to worsening threats and/or declining populations.

Red List Index (RLI) for European birds based on pan-European extinction risk 1994-2004



Source: BirdLife International.

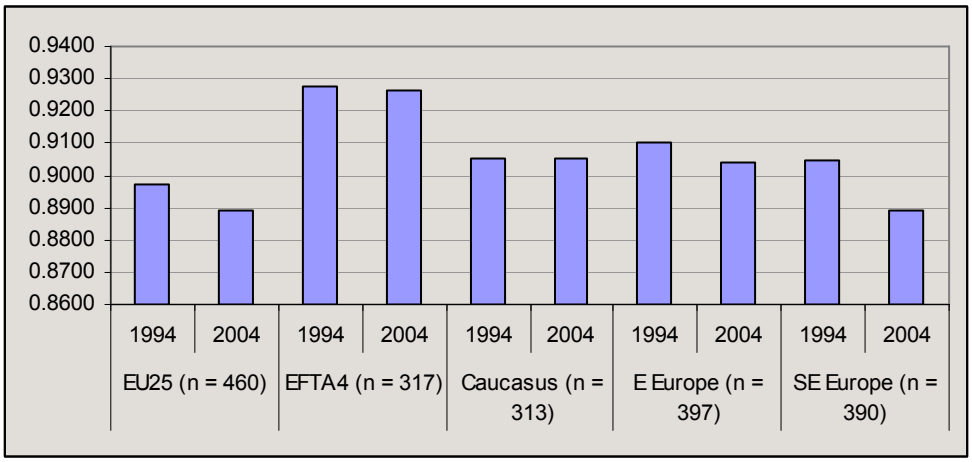
Note: n = 522 species

Assessment

Extinction risk overall is increasing for European bird species. In the figure above, for example, the decrease from a value of 0.89 to 0.87 reflects the balance between 19 species improving in status during 1994–2004, but 51 species deteriorating in status.

All European groups of countries show a consistent decline, except possibly the Caucasus. EU25 shows a continuing decline, from a starting point that was already lower than that in other sub-regions, indicating that species in the EU25 are more threatened overall.

Red List Indices (RLIs) for birds in the EU25, EFTA4, E Europe, Caucasus and SE Europe during 1994-2004, based on their extinction risk at Pan-European level



Source: BirdLife International

Note: n = 522 species

Country groupings: EU 25 (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, the United Kingdom, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia); EFTA (Iceland, Liechtenstein, Norway, Switzerland); Caucasus (Armenia, Azerbaijan, Georgia); Eastern Europe (Belarus, Republic of Moldova, Russian Federation, Ukraine); SE Europe (Albania, Bosnia and Herzegovina, Croatia, Former Yugoslav Republic of Macedonia, Serbia, Montenegro, Bulgaria, Romania, Turkey).

Notes:

1. The IUCN Red List categorises species as Extinct, Extinct in the Wild, Critically Endangered, Endangered, Vulnerable, Near Threatened, Least Concern, Data Deficient and Not Evaluated. The RLI is calculated from the number of species that moved between categories between assessments owing to genuine improvement or deterioration in status. If for more species the extinction risk has increased instead of decreased the RLI goes down. Extinction risk for this indicator is assessed at the European level, i.e. the risk that a species goes extinct in Europe (even if the species may survive in other regions of the world).
2. Decreasing RLI values means that the rate of biodiversity loss is increasing. No change in RLI values means that the expected rate of species extinctions is unchanged (it does not mean that biodiversity loss has stopped, or that the biodiversity will remain unchanged). Increasing RLI values means that there is a decrease in the expected future rate of species extinctions (i.e. a reduction in the rate of biodiversity loss).
3. To date, the Red List Index has only been calculated for bird species at European level, so the information in the current indicator is limited to European birds.

Geographical coverage

Weblink

IUCN Red List: www.redlist.org

Sources and references

Europe's environment - The fourth assessment (2007)

Halting the loss of biodiversity by 2010: proposal for a first set of indicators to monitor progress in Europe (EEA Technical Report 11/2007).

IUCN (2003) Guidelines for application of IUCN Red List Criteria at regional levels: Version 3.0. IUCN Species Survival Commission. Gland, Switzerland and Cambridge, United Kingdom

Butchart, S. H. M., Akçakaya, H. R., Chanson, J., Baillie, J. E. M., Collen, B., Quader, S., Turner, W. R., Amin, R., Stuart, S. N., Hilton-Taylor, C. and Mace, G. M. (2007) Improvements to the Red List Index. Public Lib. Sci. One 2(1): e140. doi:10.1371/journal.pone.0000140

Version 26 November 2008

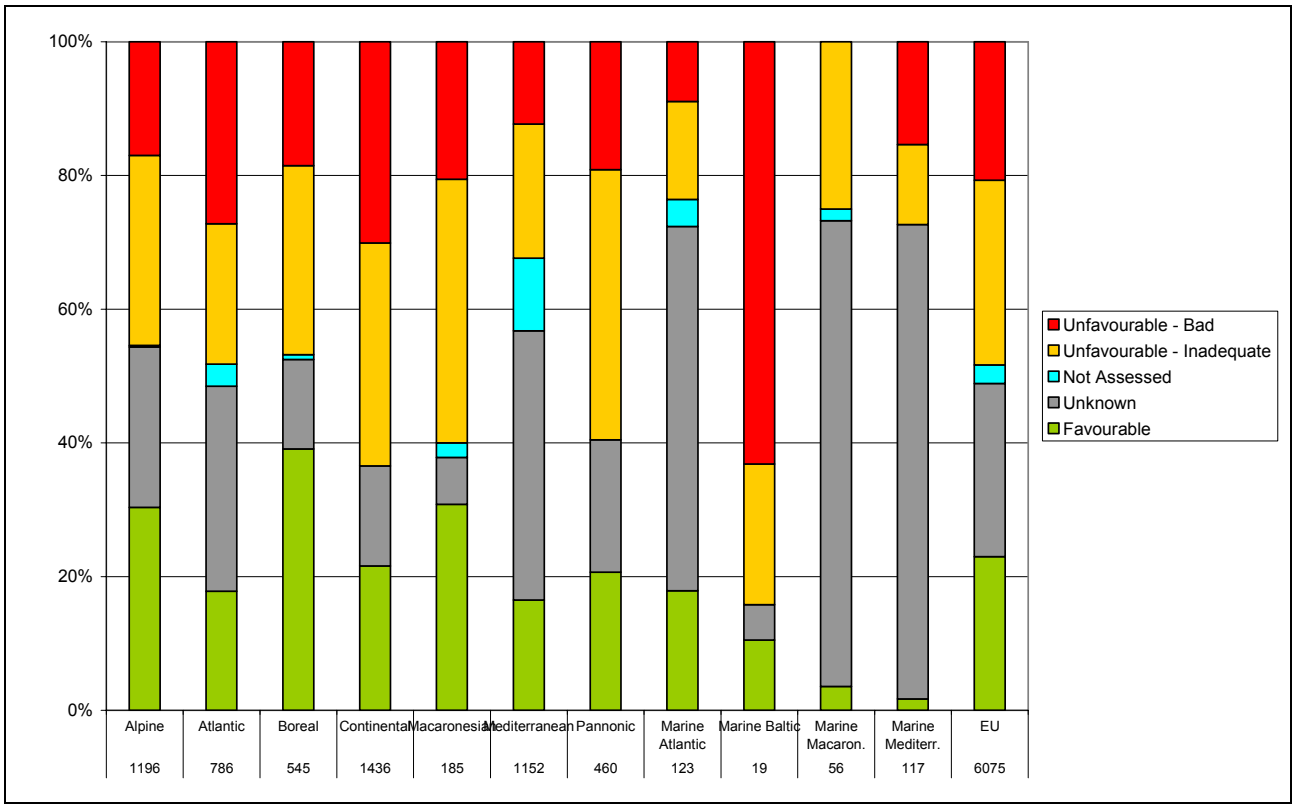
03. Species of European Interest

Key Policy Question: What is the conservation status of species of Community interest?

Key message

Around half of the species of Community interest (those species which, within the territory of the European Union are listed in Annexes II, IV and V of the Habitats Directive) have an unfavourable conservation status. The situation may even be worse, since there are still significant gaps in knowledge, especially for marine species.

Conservation Status – Species by Biogeographical Region

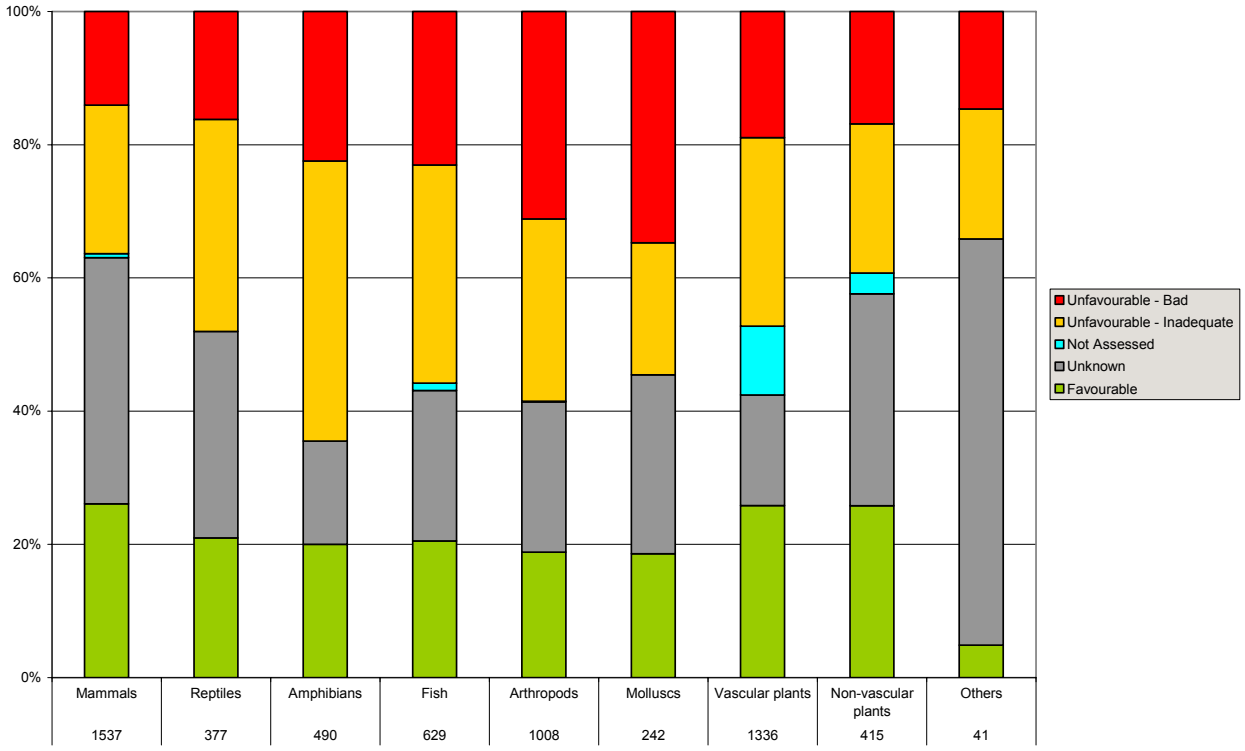


Numbers below the bars refer to the cumulated number of species assessments made by Member States.

Source: Data provided by 25 EU Member States (EU27 except Bulgaria and Romania which will be included in the next reporting phase in 2013) through their reports under Article 17 of the Habitats Directive. March 2008.

How to read the graph: In the alpine region, around 30 % of species are in favourable status and less than 20 % are in unfavourable-bad status.

Conservation Status – Species by Taxonomic Group



Numbers below the bars refer to the cumulated number of species assessments made by Member States.

Source: Data provided by 25 EU Member States (EU27 except Bulgaria and Romania which will be included in the next reporting phase in 2013) through their reports under Article 17 of the Habitats Directive. March 2008.

Assessment

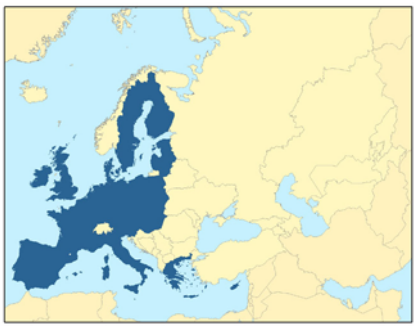
Unfavourable status is most frequently reported for the species in the marine Baltic region and the continental region (over 80 and 60%, respectively). The variation amongst species groups is limited, but amphibians appear to be most threatened, more than 60% having an unfavourable conservation status. Trend information was not available in most cases

Note

These graphs are based on assessments of species listed on Annexes II, IV and V of the Directive. Member States were required to assess each species in each biogeographical zone in which it exists in the country. The graphs therefore have multiple assessments of the same species in each column; e.g. 8 countries made assessments of otter (*Lutra lutra*) in the Atlantic biogeographical zone. In both graphs, the EU column is the total of all assessments in the other columns.

Recovery to favourable conservation status will take a considerable time for many species. The next evaluation in six years will aid assessment of the efficiency of the Directive.

Geographical coverage



Web links

About Species of European Interest

http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm

About Biogeographical Regions

http://ec.europa.eu/environment/nature/natura2000/sites_hab/biogeog_regions/index_en.htm

About conservation status assessment

http://ec.europa.eu/environment/nature/knowledge/rep_habitats/index_en.htm#csa

http://circa.europa.eu/Public/irc/env/monnat/library?l=/habitats_reporting/reporting_2001-2007/internet_consultation/draft_consultation/_EN_1.0_&a=d

Version 26 November 2008

European Headline Indicator: Trends in extent of selected biomes, ecosystems and habitats

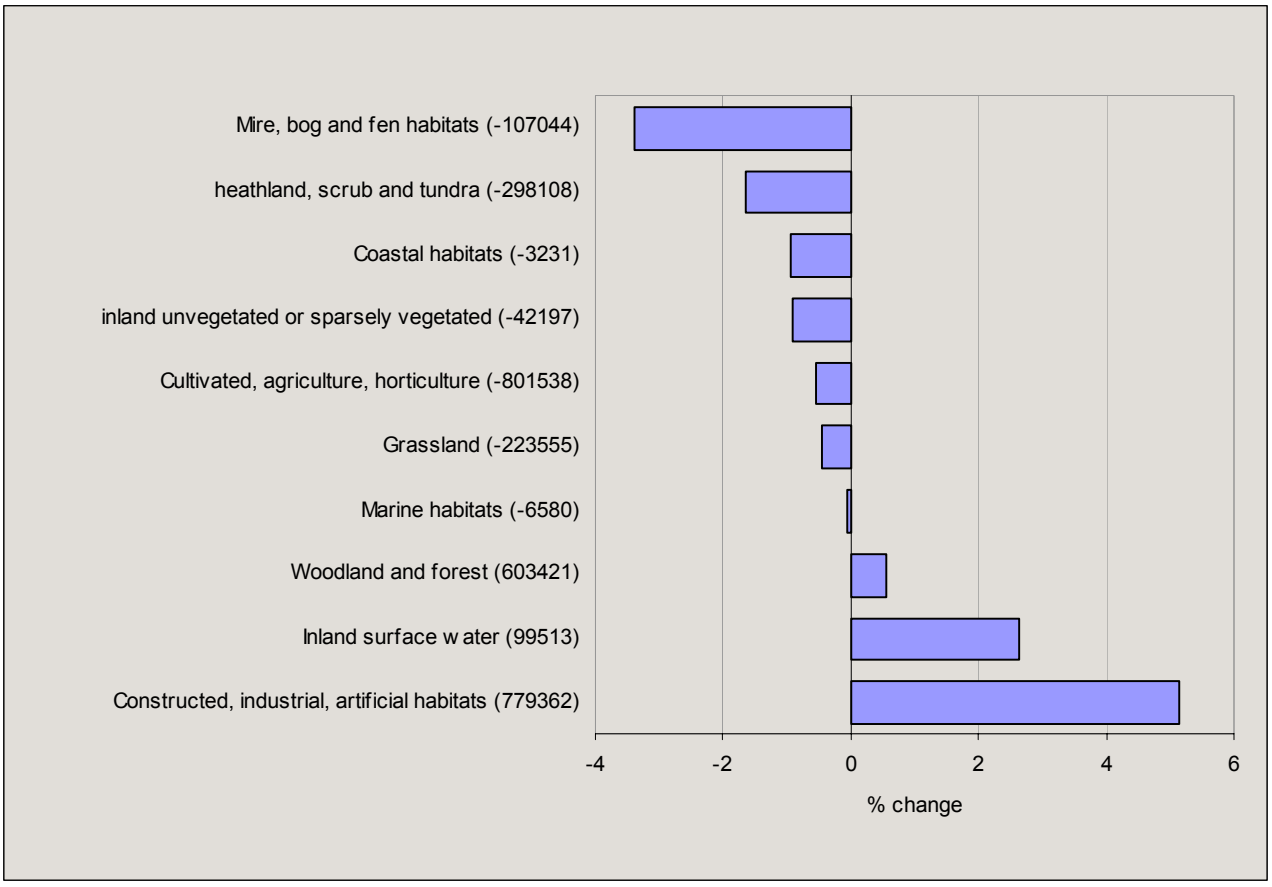
04. Ecosystem coverage

Key Policy Question: Which changes in distribution of Europe's ecosystems and habitats occur?

Key message

Built-up areas, infrastructure and woodland are increasing whilst agricultural land, semi-natural and natural habitats decrease. The overall statistics hide more detailed transition patterns. Wetlands, for example, are mainly substituted by forest; other (semi-)natural areas give primarily way to agriculture.

Land cover change: % net formation 1990-2000 (number of hectares in brackets)



Source: EEA

Note: Based on Corine and LEAC (Land and Ecosystems Accounts)

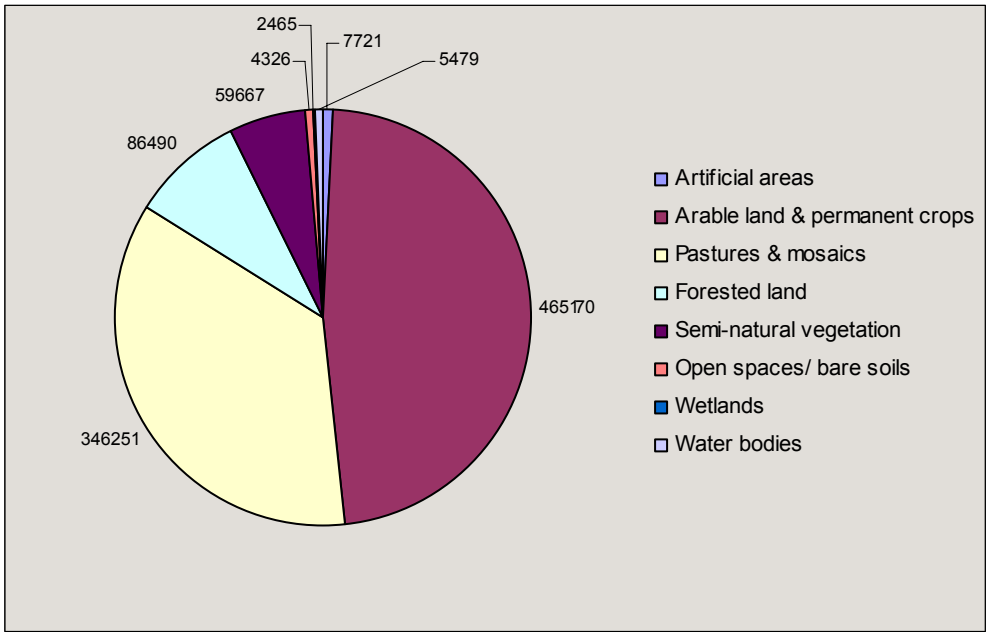
Assessment

The figure above shows land cover changes between 1990 and 2000. A large part of West and Central Europe has effectively become urban in character, with massive sprawl around the existing urban centres in much of lowland Europe, and along the coasts. In many places agriculture has been marginalised as an economic activity, often with resulting land abandonment. Elsewhere new areas may be taken into production, but on average the loss caused by land abandonment outweighs this.

Forest cover in general has increased, about 8 000–9 000 km^2 per year since 1990. This expansion has primarily happened in the EU and EFTA, mainly due to decreasing grazing pressure and spontaneous re-growth, and afforestation on abandoned agricultural land.

Source: Europe's environment - The fourth assessment (2007).

Consumption of land cover (1990) by urban sprawl and sprawl of economic sites and infrastructures by 2000 (hectares)



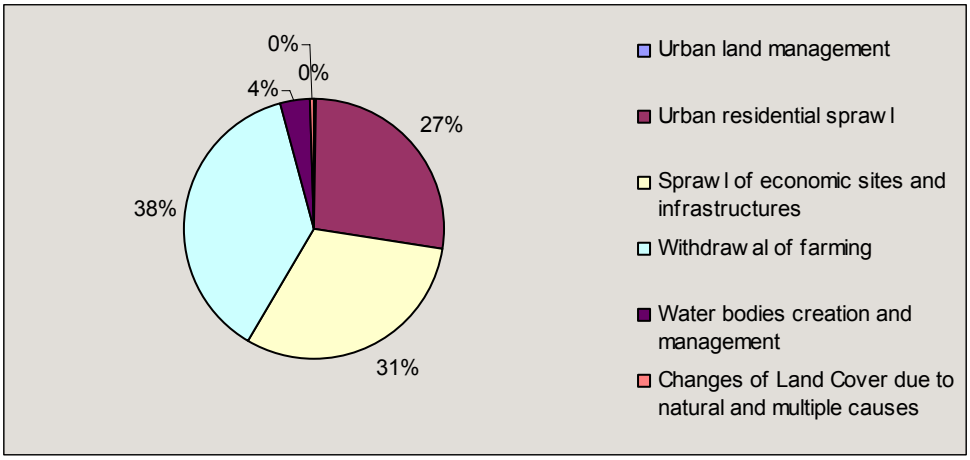
Source

EEA, LEAC

Note

Based on Corine Land Cover. Between 1990 and 2000, 977569 hectares were "consumed" by urban sprawl and sprawl of economic sites and infrastructures. The pie chart shows the share of land classes in this consumption.

Consumption of agricultural land cover (1990) by 2000 (% of surface consumed)



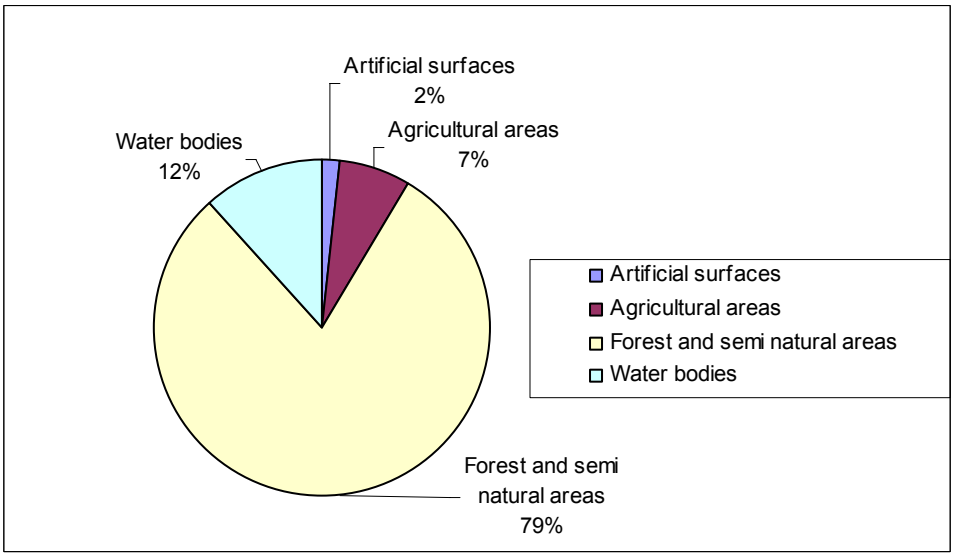
Source

EEA, LEAC

Note

Based on Corine Land Cover.

Conversion of wetlands into other classes, 1990-2000



Source: EEA

Note: Corine land cover classes used in the figures above comprise the following:

1. Artificial surfaces

1.1. Urban fabric

1.2. Industrial, commercial and transport

1.3. Mine, dump and construction sites

1.4. Artificial, non-agricultural vegetated areas

2. Agricultural areas

2.1. Arable land

2.2. Permanent crops

2.3. Pastures

3. Forests and semi-natural areas

3.1. Forests

3.2. Shrub and/or herbaceous vegetation associations

3.3. Open spaces with little or no vegetation

4. Wetlands

4.1. Inland wetlands

4.2. Coastal wetlands

5. Water bodies

5.1. Inland waters

5.2. Marine waters

Geographical coverage

Weblink

Corine Land Cover: http://reports.eea.europa.eu/COR0-landcover/en

Version 26 November 2008

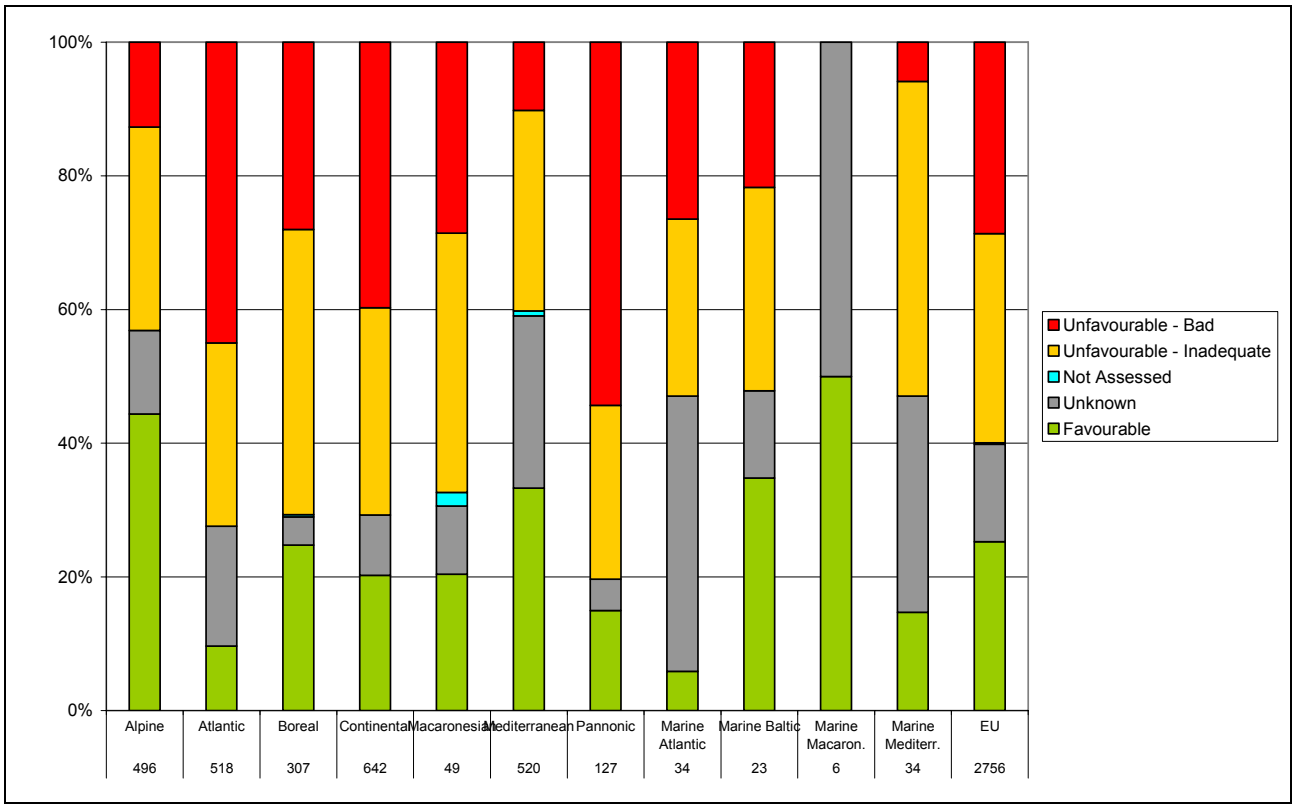
05. Habitats of European Interest

Key Policy Question: What is the conservation status of habitats of Community interest?

Key message

Between 40 and 80 % of habitats of Community interest (i.e. those habitats which, within the territory of the European Union are listed in Annex I of the Habitats Directive) have an unfavourable conservation status. That means their range and quality are in decline or do not meet the specified quality criteria. There are still significant gaps in knowledge, especially for marine habitats.

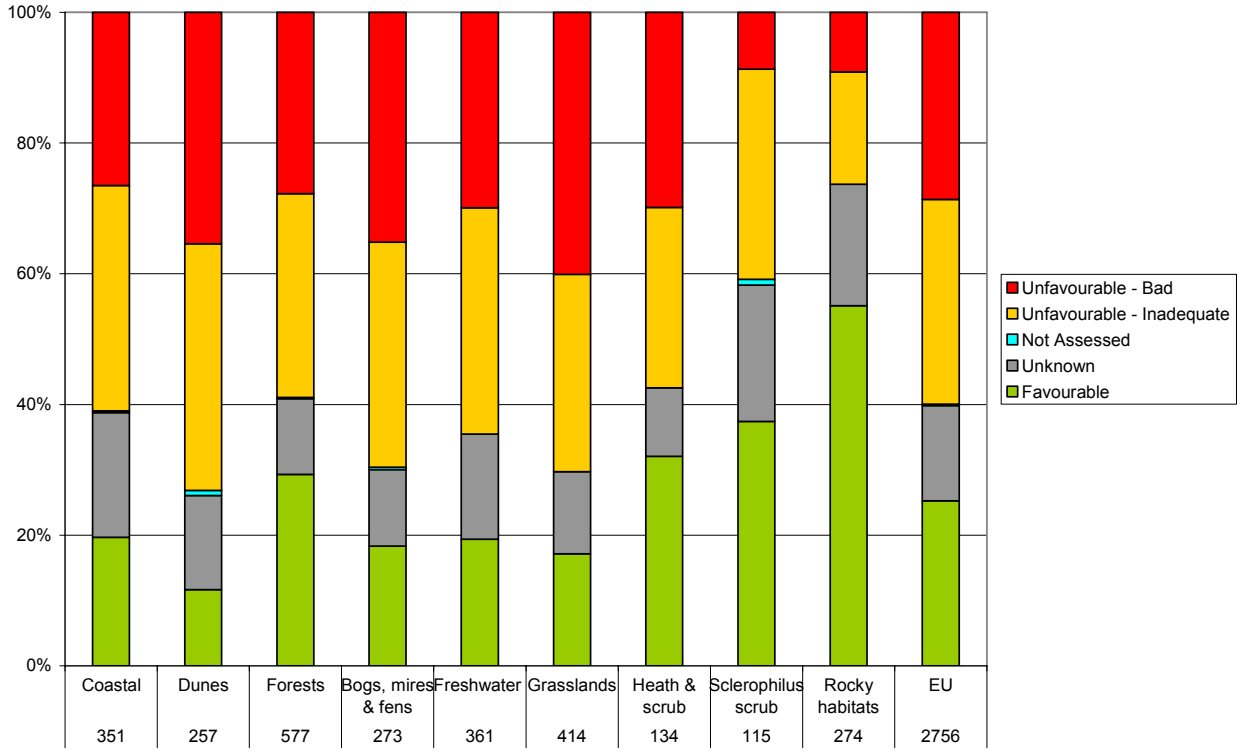
Conservation Status – Habitats by Biogeographical Region



Numbers below the bars refer to the cumulated number of habitat assessments made by Member States.

Source: Data provided by 25 EU Member States (EU27 except Bulgaria and Romania which will be included in the next reporting phase in 2013) through their reports under Article 17 of the Habitats Directive. March 2008.

Conservation Status by main type of habitats



Numbers below the bars refer to the cumulated number of habitat assessments made by Member States.

Source: Data provided by 25 EU Member States (EU27 except Bulgaria and Romania which will be included in the next reporting phase in 2013) through their reports under Article 17 of the Habitats Directive. March 2008.

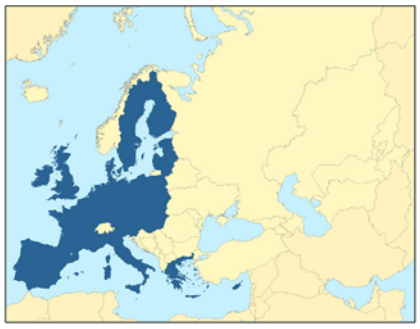
Assessment

Between 40 and 60 % of habitats of terrestrial Alpine region and marine Macaronesian region are in a favourable status. In other regions (Atlantic, continental, Macaronesian and Pannonian) around 70 % of habitats listed on Annex I of the Directive are in unfavourable status. Around 70 % of the bogs, freshwater habitats, grasslands and dunes are in unfavourable status. Trend information was not available in most cases.

Note:

These graphs are based on Member State's assessments of habitats listed in Annex I of the Directive. Member States were required to assess each habitat in each biogeographical zone in which it exists in the country. The graphs therefore have multiple assessments of the same habitats in each column; e.g. 9 countries made assessments for habitat 1130 in the Atlantic biogeographical zone. In both graphs, the EU column is the total of all assessments in the other columns. Please note that during the drafting of this report, real biogeographical assessments (based on MS data) were developed, but were not finalised in time for this report. For many habitats, recovery to favourable conservation status will take a considerable time; the next evaluation in six years will aid assessment of the efficiency of the Directive.

Geographical coverage



Web links

About Habitats of European Interest

http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm

About Biogeographical Regions

http://ec.europa.eu/environment/nature/natura2000/sites_hab/biogeog_regions/index_en.htm

About conservation status assessment

http://ec.europa.eu/environment/nature/knowledge/rep_habitats/index_en.htm#csa

http://circa.europa.eu/Public/irc/env/monnat/library?l=/habitats_reporting/reporting_2001-2007/internet_consultation/draft_consultation/_EN_1.0_&a=d

Version 26 November 2008

European Headline Indicator: Trends in genetic diversity of domesticated animals, cultivated plants, fish species and trees of major socioeconomic importance

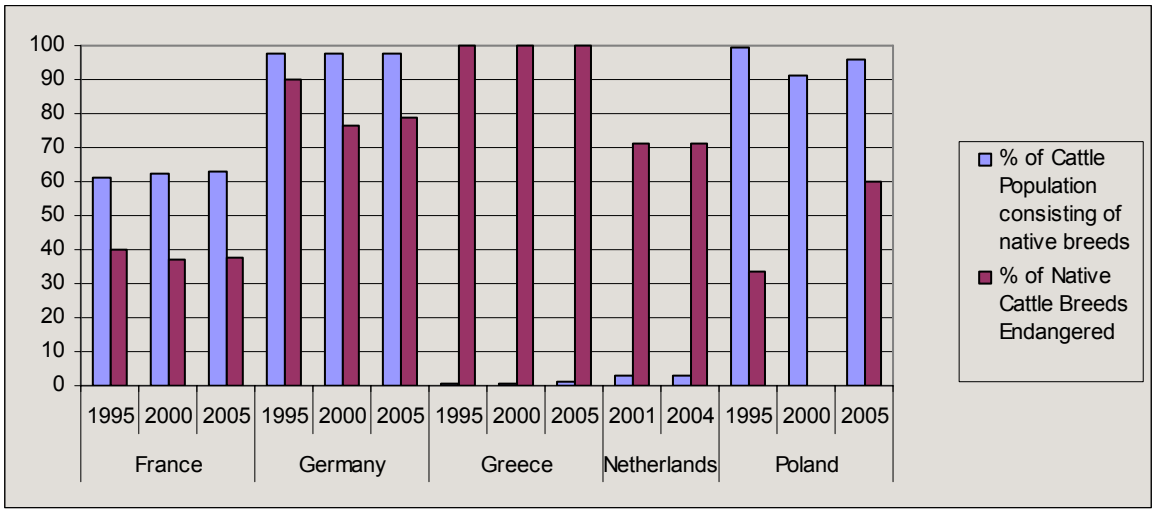
06. Livestock genetic diversity

Key Policy Question: Does the variety of European livestock breeds change?

Key message

In several countries, native breeds, although generally well adapted to local circumstances and resources, remain in critically low populations, being replaced by a few and widespread highly productive breeds, introduced for the purpose. A small percentage of native breeds populations and a high percentage of native breeds that are endangered indicates a potential loss of biodiversity. Even if data are available for only a few countries, these show that many native cattle breeds are endangered. The situation is problematic also for sheep. Overall, the situation is stable but negative.

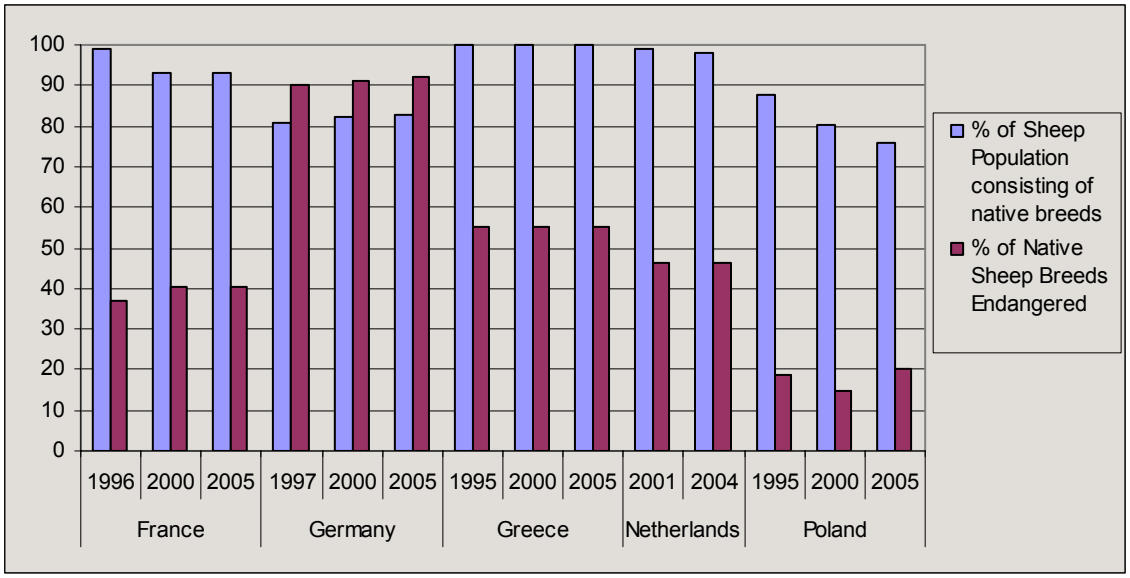
Cattle genetic diversity in selected countries



Source

ETC/BD and BRG Paris (Bureau des Ressources Génétiques)

Sheep genetic diversity in selected countries



Source

ETC/BD and BRG Paris (Bureau des Ressources Génétiques)

Assessment

The situation of endangered breeds is highly variable across countries and between cattle and sheep. In Germany and France which have implemented breed conservation strategies and programmes, the situation of endangered cattle breeds is slightly improving while it tends to worsen for sheep. In Poland, where conservation strategies are more recent, the situation fluctuates.

Cattle breeds are in a critical and stable situation in Netherlands and in Greece Animal breeds constitute a pool of genetic resources of considerable potential value in a changing society and environment. An increase in the proportion *of introduced (non native) breeds* shows a trend towards a homogenisation of the genetic pool across European countries, with widespread use of the same highly productive breeds. Generally this happens at the expense of native breeds populations which have their own genetic characteristics, more specific to a country, and which contribute to the overall genetic diversity across Europe. Thus, both the widespread use of the same highly productive introduced breeds and the decline of some native breeds represent a risk to the livestock genetic diversity.

While old native breeds may be less productive than highly specialised breeds, they are generally very well adapted to local circumstances and resources and may increase resilience in the long term.

Breeds with a low population are in general more vulnerable than those with a high population. The main response to loss of breed genetic diversity is specific conservation programmes for native breeds.

In the case of native breeds, the objective of all conservation programmes should be to increase the breeding female populations or at least to stabilise them.

Setting a target for the percentage of a country's cattle or sheep population that should consist of native species, is to some extent a societal choice. However, as regards the endangerment of native breeds, the target should be zero, if loss of genetic diversity is to be halted.

This indicator should be interpreted with care at this stage:

- there is still no agreement among countries on the definition of "native breeds" / "non-native". The figures provided are those reported by individual countries, based on their own definitions. This obviously determines the patterns seen in the graph.

- Where native breeds go from endangered to extinct, this can reduce the proportion of native breeds that is endangered, therefore this needs to be interpreted with care.

At EU level, the Community programme on the conservation, characterisation, collection and utilisation of genetic resources in agriculture (http://ec.europa.eu/agriculture/envir/index_en.htm), established by Council Regulation (EC) No 870/2004, co-funds actions for conserving genetic resources, increasing the use of under-utilised species and varieties in agriculture, and for improving the coordination of actions in the field of international undertakings on genetic resources. The budget allocated to this programme amounts to EUR 10 million.

The Community programme complements the actions co-funded by the new Rural Development Council Regulation (EC) No 1698/2005 [Article 39(5)] (http://ec.europa.eu/agriculture/rurdev/leg/index_en.htm) which gives opportunities to the Member States for promoting actions in favour of the conservation of genetic resources in agriculture and the Framework Programmes of the European Community for Research and Technology Development.

Geographical coverage

Web links

Bureau des Ressources Génétiques : http://www.brg.prd.fr/

FAO : http://www.fao.org/biodiversity/geneticresources/en/

http://ec.europa.eu/agriculture/envir/index_en.htm

http://ec.europa.eu/agriculture/rurdev/leg/index_en.htm

Sources and references

ETC/BD and BRG Paris

Version 26 November 2008

European Headline Indicator: Coverage of protected areas

07. Nationally designated protected areas

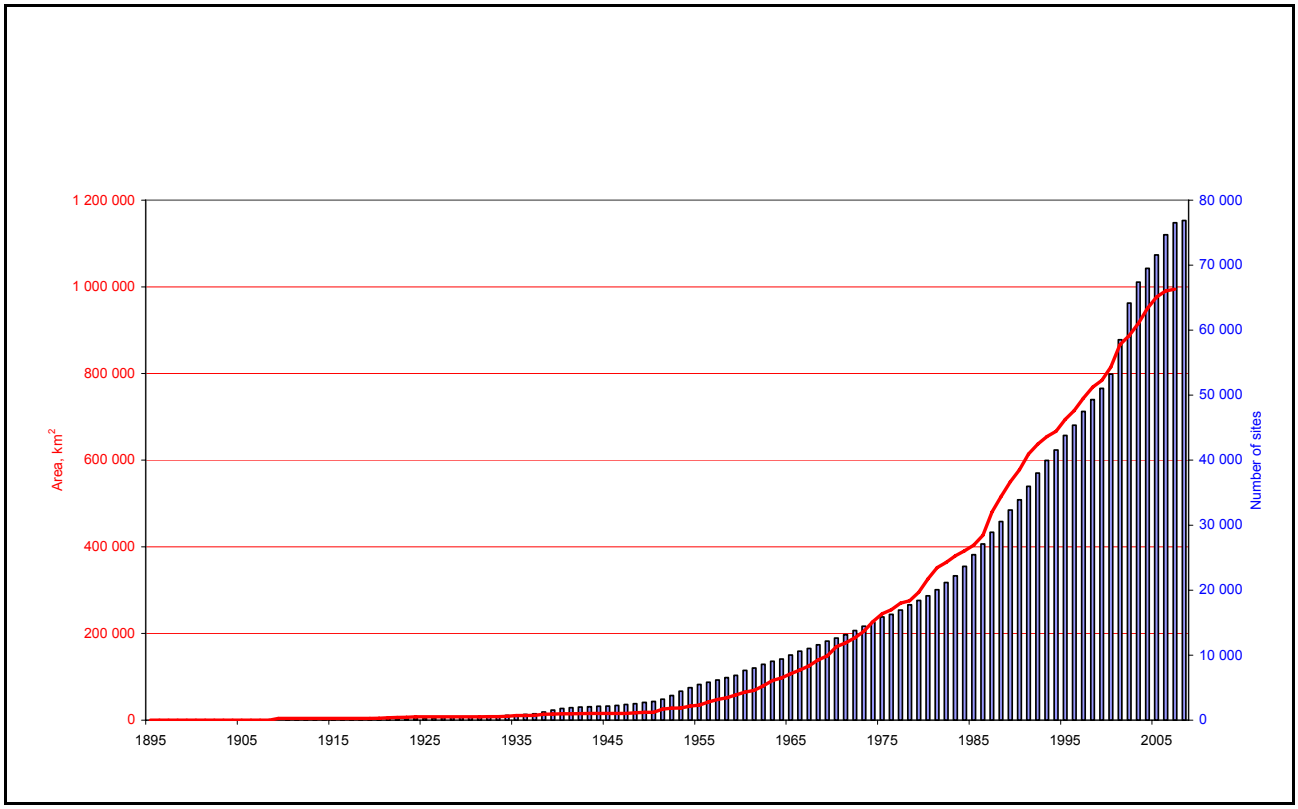
Key Policy Question: What is the progress with the national designation of protected areas as a tool for biodiversity conservation?

Key message

The total area of nationally-designated protected areas in Europe[1] has increased over time. The total area of nationally designated sites in 39 European countries was around 1 million square kilometres in 2007. In EECCA countries, the total area of nationally designated sites is at least 1.8 million square kilometres (30 % of sites have no size information).

This quantitative information needs to be complemented by a qualitative assessment of the efficiency and the representativeness of the network of designated areas including good management practices.

Growth of the nationally designated protected areas in 39 EEA countries



Source: CDDA (Common Database on Designated Areas) v7, 2007

[1] A "Nationally designated area" is an area designated by a national designation instrument based on national legislation. If a country has included in his legislation the sites designated under the EU Birds and Habitats directive, the Natura 2000 sites of this country is included in the figure.

Assessment

In 39 countries, on average 16 % of the terrestrial area has been designated as a national protected area.

The growth in nationally designated areas in 39 EEA countries has been exponential, and it has been levelling off in recent years. A precise assessment of trends over time is much more difficult to make for EECCA countries (source: WDPA December 2007 for EECCA countries (except Kyrgyzstan, Tajikistan, Turkmenistan)) because of gaps in the data. These countries contain around 18000 sites covering in total 1.8 million square kilometres. However, for more than 2 thirds of the sites no designation date is known, and for a third of the sites no size information is known.

Countries have national legislation that enables them to establish various types of protected areas. For nationally-designated protected areas, the total area protected in Europe continues to increase.

On one hand it is difficult to know exactly how far these areas contribute to halt the loss of biodiversity without any specific information on site management and quality. On the other hand, other indicators can show how much pressure on biodiversity outside those areas increases through growing urbanisation and transport infrastructures for instance.

Therefore, the expansion of protected areas and their role in protecting biodiversity have to be considered and assessed within the wider environment.

Geographical coverage

Web links

About Nationally designated areas

European dataset http://dataservice.eea.europa.eu/dataservice/metadetails.asp?id=1017

Global dataset
http://www.unep-wcmc.org/wdpa/index.htm?http://www.unep- wcmc.org/wdpa/download.cfm~summary_tab

Version 26 November 2008

08. Sites designated under the EU Habitats and Birds Directives

Key Policy Question: Have countries proposed sufficient sites under the Habitats and Birds Directives?

Key message

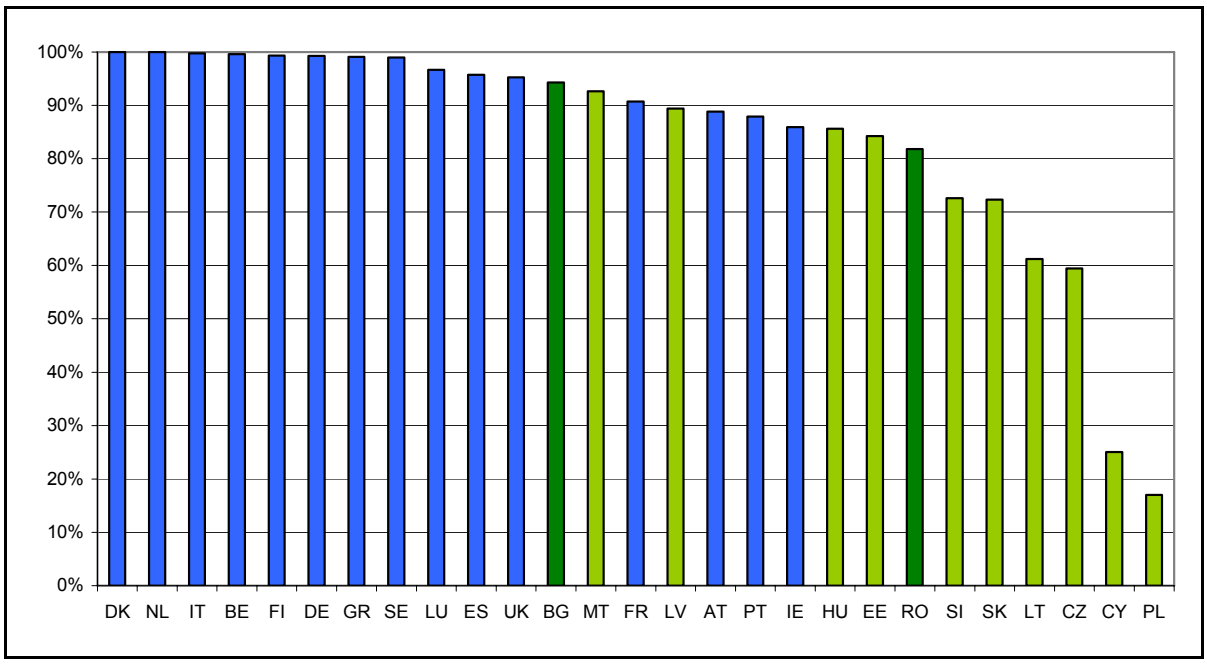
By mid 2008, the level of sufficiency in designating Natura 2000 sites is high for most EU-27 countries (21 countries have sufficiency above 80%) and the new Member States (EU 10+2) are doing well given their recent accession.

The proposals are evaluated as sufficient or not in terms of representativeness of species and habitats. To reach the full sufficiency, Member States may have to make additional proposals.

At EU level, around 10 % of the terrestrial territory is designated under the Birds directive and around 13 % under the Habitats directive.

State of progress by Member State in reaching sufficiency

for the Habitats directive Annex I habitats and Annex II species



Source: DG ENV, marine area excluded, June 2008

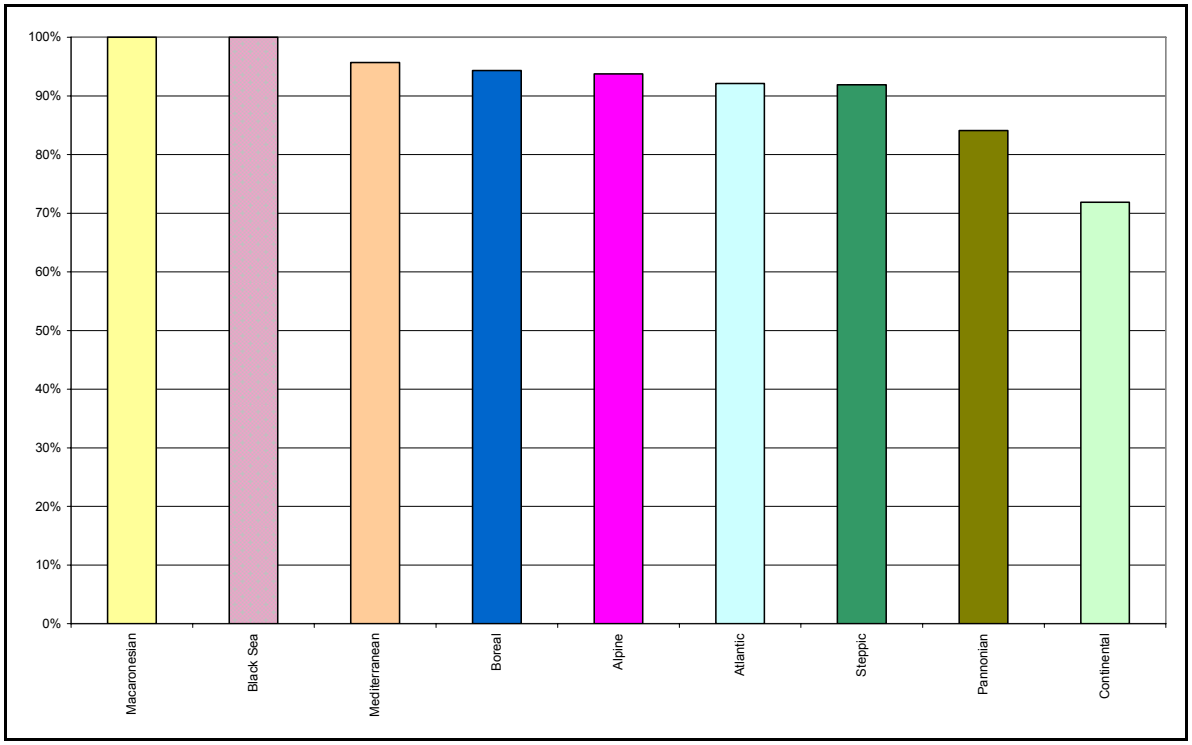
How to read the graph: Sites proposed by Denmark are sufficient to cover habitats and species of the directive present in Denmark. Sites proposed by Czech Republic only cover 60 % of species and habitats from the directive present in Czech Republic. Czech Republic must make additional proposals of sites to reach 100 % of sufficiency.

Assessment

The evaluation of sufficiency is based on the range of each species and habitat in the full territory of each Member State (MS) and within the sites proposed by each Member State. The representativeness is assessed by experts during scientific seminars led by the European Commission. Only terrestrial habitats and species are evaluated because marine areas are still under consideration. If the assessment is insufficient, proposed sites must be enlarged or new sites must be proposed to include a bigger proportion of species population or habitat area.

At biogeographical level, Macaronesian and black sea regions are complete but other regions need additional proposals through the Member States.

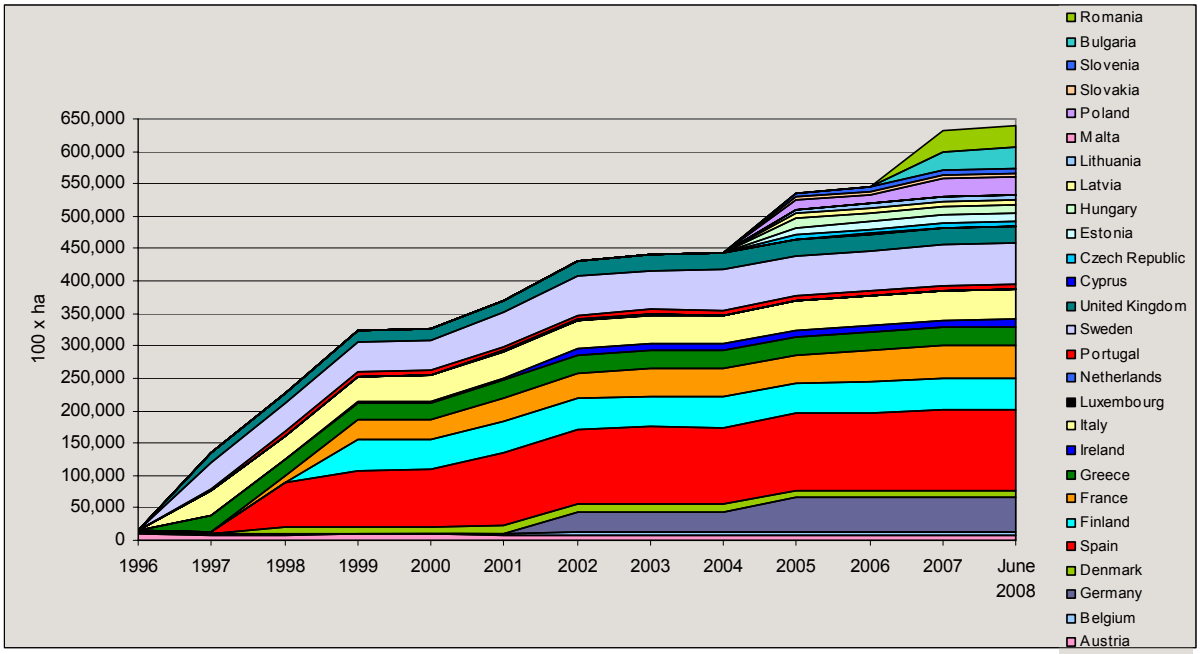
State of progress by Biogeographical region in reaching sufficiency for the Habitats directive Annex I habitats and Annex II species



Source: DG ENV, marine area excluded, June 2007

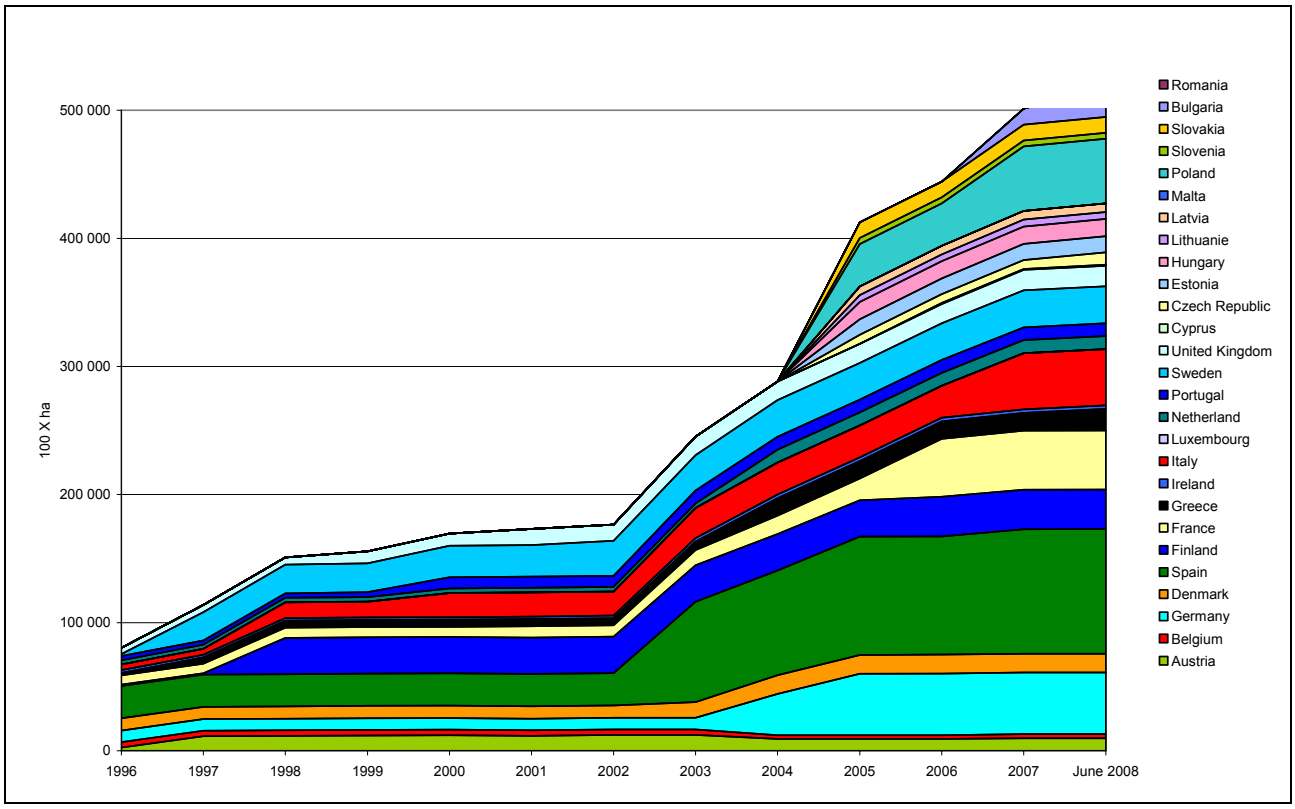
How to read the graph: Sites proposed within the Atlantic region are insufficient to cover habitats and species of the directive present in this region. Member States of this region must make additional proposal of sites to reach 100 % of sufficiency.

Cumulative surface area of sites designated for the Habitats directive over time



Source: DG ENV, SCIs database & SPAs database, all EU27, June 2008

Cumulative surface area of sites designated for the Birds directive over time



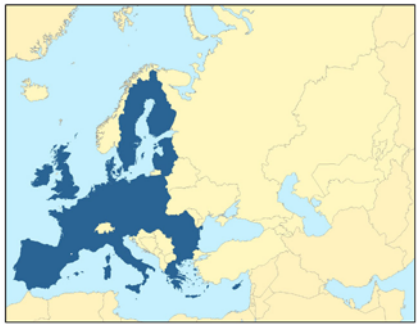
Source: DG ENV, SCIs database & SPAs database, all EU27, June 2008

Assessment

There was a steady increase in the cumulative area of the Natura 2000 network over the past years. Sites of Community Importance increased in coverage from 45 to more than 65 million hectares and Special Protected Areas increased from approximately 29 million hectares to 50 million hectares. These increases are mainly due to the 10 new countries joining the EU in 2004 and Bulgaria and Romania in 2007, but also due to new designations of protected areas by Member States particularly under the Birds Directive.

As of June 2008, eight Member States had designated more than 15 % of their territory as SCIs: Slovenia (31.4 %); Bulgaria (26.5 %); Spain (23.64 %); Portugal (17.4 %); Estonia (16.8 %); Greece (16.4 %); Luxembourg (15.4); and Hungary (15.0 %). As SPAs, only four Member States had designated more than 15 % of their territory: Slovakia (25.1 %); Slovenia (23 %), Bulgaria (20.4%) and Spain (19.1 %).

Geographical coverage



Web links

About Sites of Community Importance and Special Protected Areas

http://ec.europa.eu/environment/nature/natura2000/sites_hab/index_en.htm

http://ec.europa.eu/environment/nature/natura2000/sites_birds/index_en.htm

About Biogeographical Regions

http://ec.europa.eu/environment/nature/natura2000/sites_hab/biogeog_regions/index_en.htm

Version 26 November 2008

FOCAL AREA: THREATS TO BIODIVERSITY

European Headline Indicator: Nitrogen Deposition

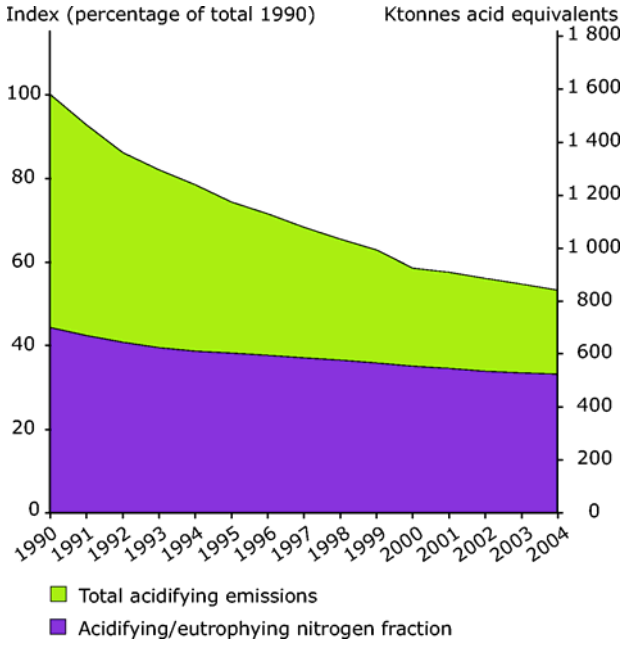
09. Critical load exceedance for nitrogen

Key Policy Question: Where in Europe does atmospheric nitrogen deposition threaten biodiversity?

Key message

Eutrophying nitrogen emissions and deposition nitrogen compounds have decreased since 1990 but relatively little compared to sulphur emissions. With sulphur emissions declining, nitrogen is now the principal acidifying component in our air. Agriculture and transport are the main sources of nitrogen pollution (EEA, 2007). Critical load exceedance is still significant.[2]

Total emissions of acidifying substances (sulphur, nitrogen) and of nitrogen in the EEA-32 for 1990- 2004



Source: EEA/ETC ACC

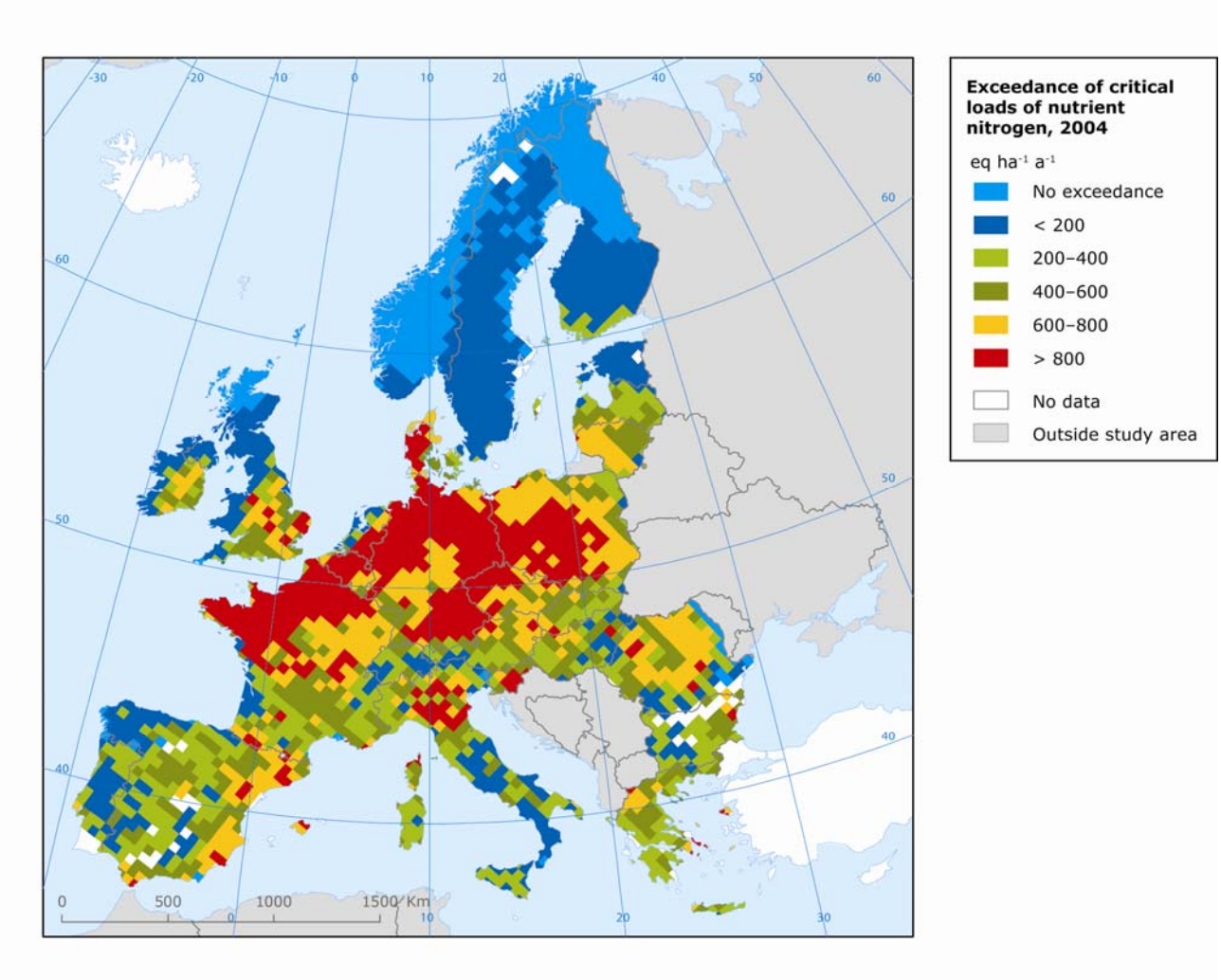
Assessment

Across the EU-25, the proportion of (semi-)natural ecosystem areas subject to nutrient nitrogen deposition beyond their critical load was approximately 47% in 2004 (CCE/EMEP, 2007). Ecosystem types in use by European countries for critical load calculations are forests, marine & coastal habitats, littoral zones, mire, bog & fen habitats, grasslands & tall forb habitats, heathland, scrub & tundra

[2] The critical load of nutrient nitrogen is defined as 'the highest deposition of nitrogen as NOx and/or NHy below which harmful effects in ecosystem structure and function do not occur according to present knowledge' (ICP M&M, 2004).

habitats, inland un-vegetated or sparsely vegetated habitats, agricultural habitats, inland and surface water habitats (for details see CCE, 2007). The height of the exceedance of critical loads varies significantly across Europe.

Exceedance of critical loads of nutrient nitrogen for the most sensitive ecosystems in each 50 x 50 km grid cell



Source: Critical loads by CCE and deposition data by EMEP/MSCW (figure from EEA, 2007).

Note: 2004 EMEP deposition data. Eq ha-1 a-1 = N equivalence per ha per year. The CCE does not use this kind of (5-)percentile maps anymore for the critical load and critical load exceedance calculations. The average accumulated exceedance (AAE) is now used (see CCE, 2007). The 2008 update of EEA CSI 005 will also use this approach.

Notes:

The nitrogen critical load indicator has been developed within the Coordination Centre for Effects (CCE). The CCE is the Data Centre of the International Cooperative Programme on Modelling and Mapping of Critical Levels and Loads and Air Pollution Effects, Risks and Trends (ICP Modelling and Mapping, ICP M&M). CCE supports the work of the Convention on Long-range Transboundary Air Pollution (LRTAP) of the United Nations Economic Commission for Europe (UNECE). The indicator is also part of the EEA's core set indicator (CSI) 005 'Exposure of ecosystems to acidification, eutrophication and ozone'. CSI 005 is in the process of being updated in close cooperation with the CCE.

Geographical coverage

Web links

RAINS/GAINS (CIAM): http://www.iiasa.ac.at/rains/
EMEP/MSCW: http://projects.dnmi.no/~emep/
CCE: http://www.mnp.nl/cce/

Sources and references

EEA (2007): Air Pollution in Europe 1990 – 2004. EEA Report No 2/2007.
CCE/EMEP (2007*): personal communication*; input to EEA, 2007.
CCE (2007): Critical Loads of Nitrogen and Dynamic Modelling. CCE Progress Report 2007. MNP Report 500090001/2007.
ICP M&M (2004): Manual on the methodologies and criteria for modelling critical loads and critical levels and air pollution effects, risks, and trends http://www.oekodata.com/icpmapping/index.html

Version 26 November 2008

10. Invasive alien species in Europe

Key Policy Question: Is the number of alien species in Europe increasing or decreasing? Which invasive alien species should be targeted by management actions?

Key message

The cumulative number of alien species introduced has been constantly increasing since the 1900s (based on data from 5 Nordic countries for terrestrial and freshwater species,[3] and from all European regional seas (including estuarine waters). While the increase may be slowing down or levelling off for terrestrial and freshwater species, this is certainly not the case for marine/estuarine species. According to experience a relatively constant proportion of the alien species established create a significant damage to native biodiversity, i.e. can be classified as invasive alien species according to the Convention on Biological Diversity. This increase in the number of alien species established thus implies a constantly growing risk of damage to native biodiversity caused by invasive alien species.

Whilst the majority of the ca 10 000 alien species recorded in Europe have not (yet) been found having major impacts, some are highly invasive. To identify the most problematic species to help prioritise monitoring, research and management actions, a list of 'Worst invasive alien species threatening biodiversity in Europe' presently comprising 163 species/species groups has been established.

Assessment

The data for the indicator cumulative number of alien species established in Europe comprise all European countries with marine/estuarine waters but for terrestrial and freshwater only 5 European countries.

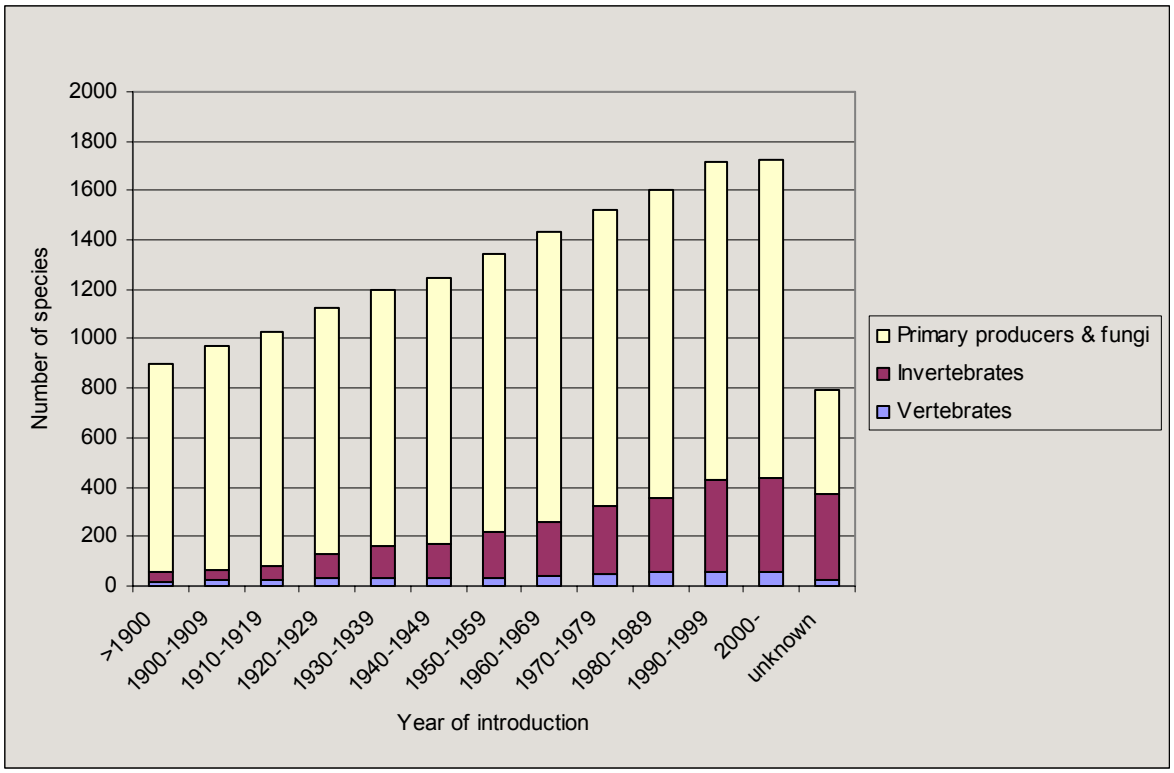
Nevertheless the indicator could be considered fairly representative for the European area. The data coverage on cumulative numbers of alien species established in Europe is expected in near future to be expanded to more European countries. The trend in establishment of new species indicates that the situation is far from under control, with impacts on biodiversity expected to increase because of the growing number of species involved, and an increasing vulnerability of ecosystems to invasions, which results from other pressures such as habitat loss, degradation, fragmentation, over-exploitation and climate change. Particularly worrying is the situation in marine and island ecosystems.

The number of invasive alien species establishing in Europe should be minimized and management actions should bring down the impact of at least the worst invasive alien species to acceptable levels. There is however no quantitative target for this indicator. The list of 'worst invasive alien species threatening biodiversity' identifies species which should be a priority for more detailed monitoring, research and management. The 163 species/species groups on the present list, of which vascular plants are the biggest taxonomic group with 39 species, are judged to have a significant impact on native biodiversity at the genetic, species or ecosystem levels, and may also affect human health, society or the economy. The map below shows a preliminary estimate of the number of these worst invasive species in European countries. Main conclusion of the map is that fairly high numbers of listed species can be found in all European countries. These country figures are only rough indications of the actual impact, which may differ markedly between species and regions.

[3] While the NOBANIS database covers 13 countries, currently only data for Denmark, Iceland, Norway, Sweden and Finland were available to calculate the indicator.

There is a consensus (e.g. in the context of the Convention on Biological Diversity) that the best strategy addressing invasive alien species would be control of pathways of introduction to prevent establishment of new alien species. Prospects of eradication of established alien species are best at an early stage (or in limited areas such as small islands). An early warning system identifying potentially invasive alien species, including newly established ones and/or species to be expected to spread would be of high value in this context. This indicator therefore will need to be complemented by an indicator showing European/EU and the countries' development and implementation of strategies to manage the problem of invasive alien species.

Cumulative number of alien species established in terrestrial environment

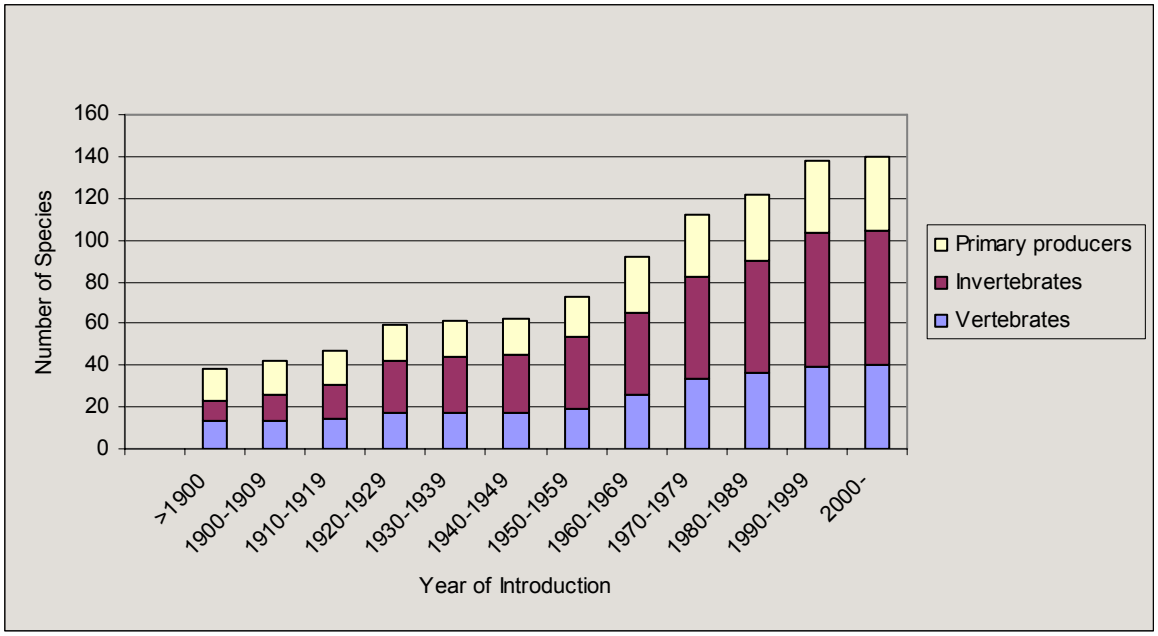


Source: EEA/SEBI2010; NOBANIS.

Note: Geographic coverage: Denmark, Iceland, Norway, Sweden and Finland.

Note: The period 2000- comprises only species established up to 2006.

Cumulative number of alien species established in freshwater environment



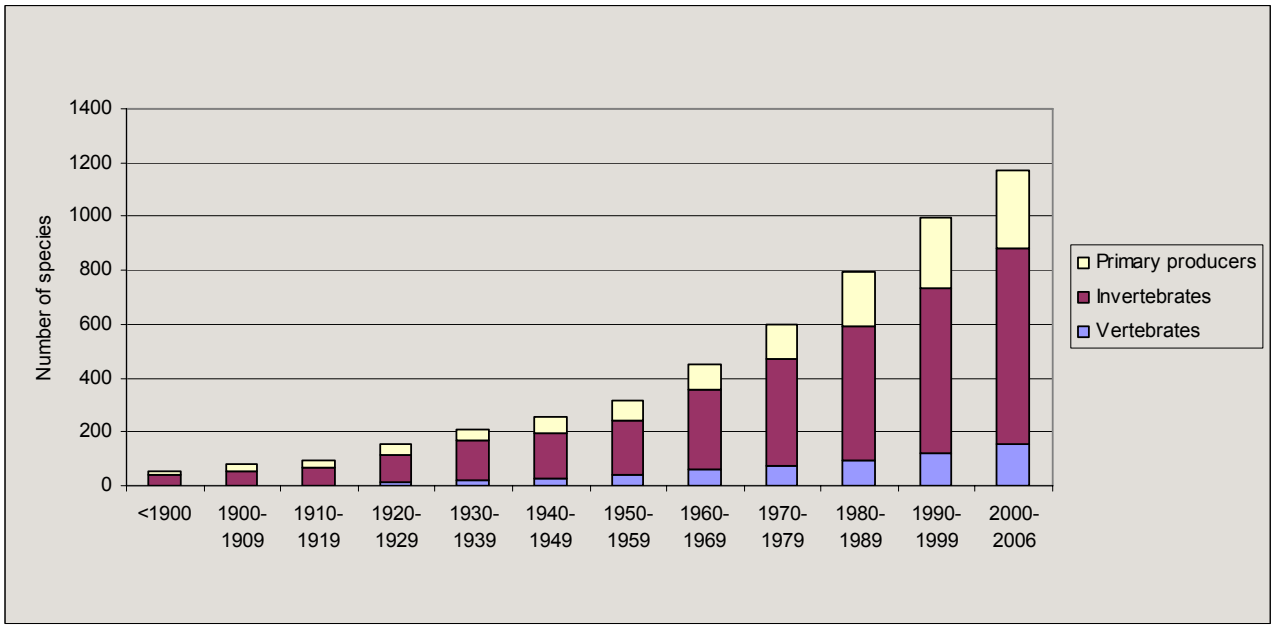
Source

EEA/SEBI2010; NOBANIS.

Note Geographic coverage: Denmark, Iceland, Norway, Sweden and Finland.

Note: The period 2000- comprises only species established up to 2006.

Alien species in European marine/estuarine Waters (April 2007)

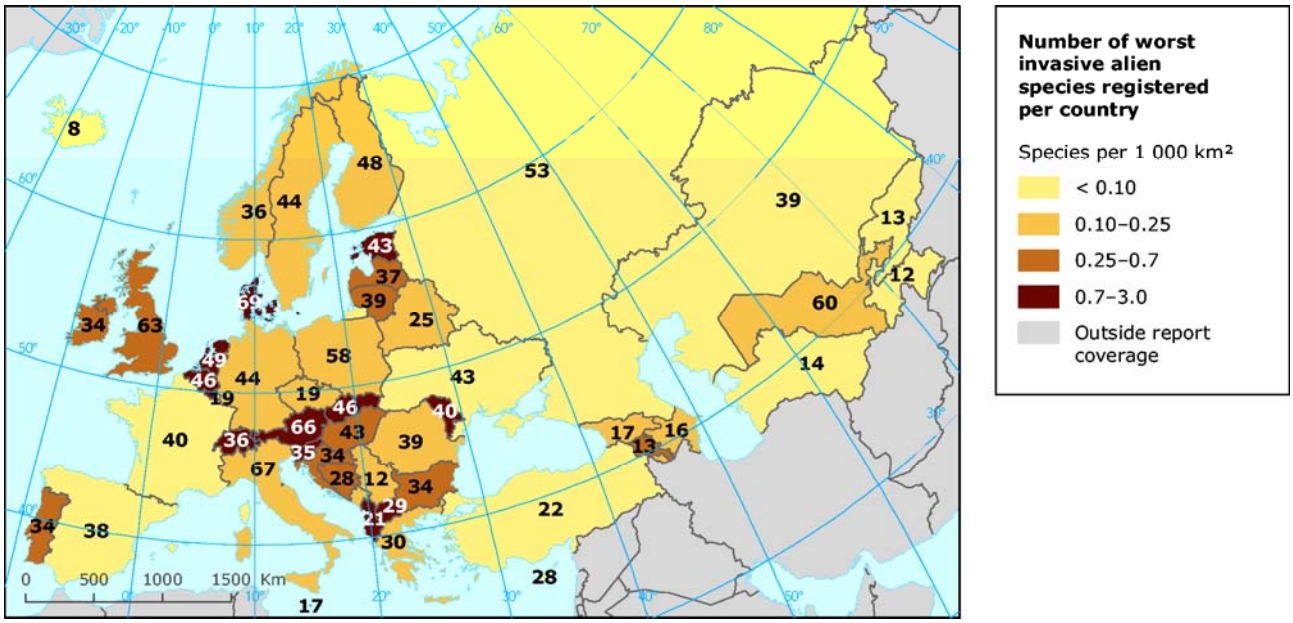


Source

SEBI 2010 Expert Group on invasive alien species, based on national data sets (e.g. Germany, Denmark, UK) available on the internet; review papers (e.g. Netherlands, Turkey); NEMO database for the Baltic; Black Sea database; HCMR data base for the Mediterranean; project reports (e.g. ALIENS); and contributions of experts for France, Spain, Russia during a dedicated workshop.

Note: Geographic coverage: All European countries with marine/estuarine waters. Casual species are to some extent included.

Number of the listed worst invasive alien species threatening biodiversity in Europe per country



Notes

1. The threat by invasive alien species is considered one of the major global pressures on biodiversity (Millennium Ecosystem Assessment, 2005). Invasive alien species are such species which introduction and/or spread outside the natural distribution range threaten biological diversity (Convention on Biological Diversity: Invasive Alien Species http://www.biodiv.org/invasive, accessed August 2008). Most recent introductions have happened unintentionally and are connected to the globalization of trade, transport and tourism. Not all alien species become invasive, but an increasing number of alien species presents and increasing risk of an invasive species damaging native biodiversity.

2. Based on a wide consultation of European experts on invasive alien species, a list of 'worst invasive alien species threatening biodiversity in Europe' has been drawn up to document those invasive alien species that to date most significantly negative impact biological diversity in Europe.

Geographical coverage

Marine species

Terrestrial and freshwater species

Web links

North European and Baltic Network on Invasive Alien Species *(*NOBANIS*)*: www.nobanis.org/

DAISIE (Delivering Alien Invasive Species Inventories for Europe): http://www.europe-aliens.org/

Sources and references

EEA/SEBI2010 Expert Group on trends in invasive alien species.

http://biodiversity-chm.eea.europa.eu/information/indicator/F1090245995/fol365614/F1115192484

Europe's environment - The fourth assessment (2007);

Halting the loss of biodiversity by 2010: Proposal for a first set of indicators to monitor progress in Europe (EEA Technical Report 11/2007);

MA, 2005. Millennium Ecosystem Assessment, 2005. Ecosystems and Human Well-being: Biodiversity Synthesis. World Resources Institute, Washington, DC.

Version 26 November 2008

European Headline Indicator: Impact of climate change on biodiversity

11. Occurrence of temperature-sensitive species

Key Policy Question: What are the negative (and positive) impacts of climate change on biodiversity?

Key message

n/a

The SEBI 2010 process recommended an indicator be developed that represents abundance of a selected set of species that are specifically sensitive to climate change (e.g. because they live in ephemeral habitats, or have limited capacity for dispersal). The indicator that is included in the SEBI 2010 Technical report (Halting the loss of biodiversity by 2010: proposal for a first set of indicators to monitor progress in Europe (EEA Technical Report 11/2007)) does show potentially negative impacts (thermophilic species spread and may stress existing local plant species) but will be replaced by an indicator that measures such impacts more directly when it becomes available.

Assessment

n/a

Version 26 November 2008

FOCAL AREA: ECOSYSTEM INTEGRITY AND ECOSYSTEM GOODS AND SERVICES

European Headline Indicator: Marine Trophic Index

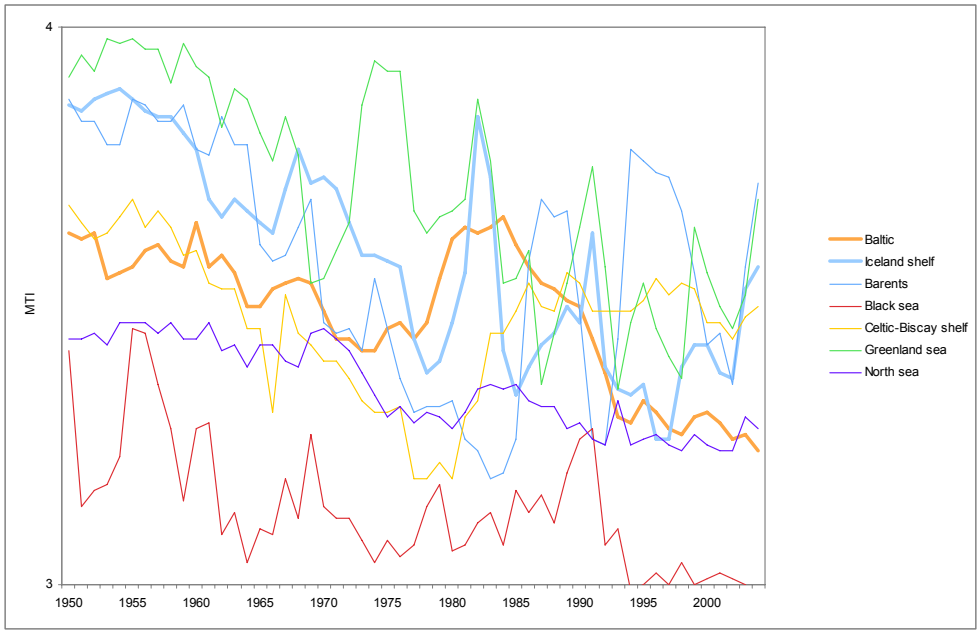
12. Marine Trophic Index of European seas

Key Policy Question: What is the impact of existing fisheries and maritime policies on the health of fish stocks in European seas?

Key message

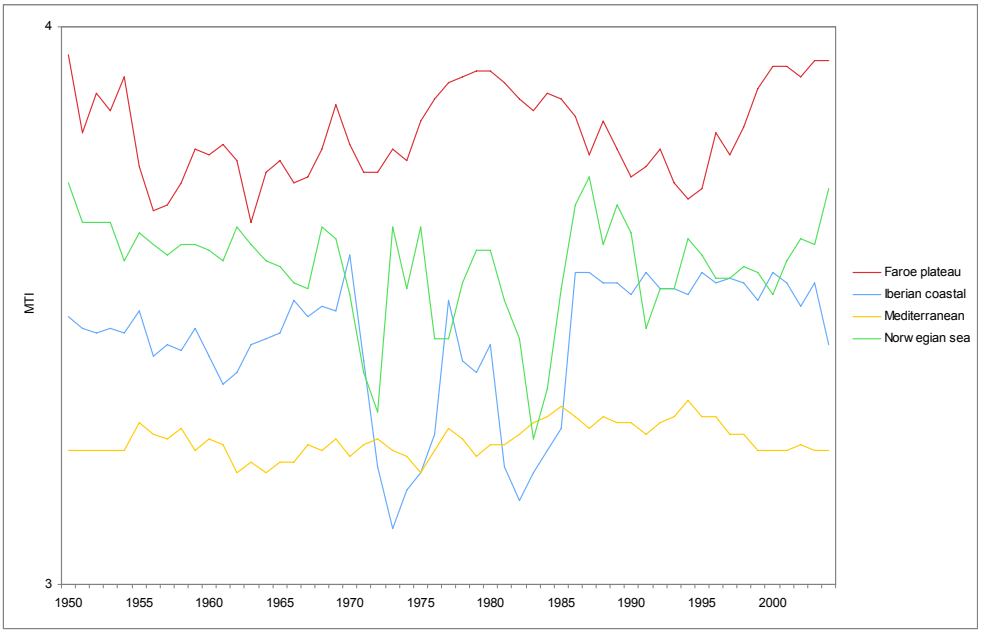
In the majority of European seas, the Marine Trophic Index declined since the mid 1950s showing that predatory fishes decline to the benefit of small fishes and invertebrates. A multispecies fishery can safely be assumed to be unsustainable if the mean Trophic Level of the species it exploits keeps going down.

Marine Trophic Index for selected European seas (1)



Source: www.seaaroundus.org

Marine Trophic Index for selected European seas (2)



Source: www.seaaroundus.org

Assessment

The decline in MTI is at different rates in different seas, and 4 seas show no overall change in their MTI since 1950. More analysis of the individual fisheries is required to assess causes of declines and effects in the marine ecosystem in more detail. Figures 1-2 above show the MTI in European seas for two groups of seas. Seas have been grouped according to the evolution in their MTI since 1950. Figure 1 shows seas with strong declines in the MTI. Figure 2 shows those seas where the trend is more stable. It is noteworthy that the trend since 1950 is different for most seas from the trend considered over a short time period (since 2000).

The levelling off since 2000 however may still mean that biodiversity has significantly been lost, because large declines had already happened before 1950 (e.g. the North Sea). The increase in the Barents and Norwegian sea since 1980 and the Greenland sea and Iceland shelf since 2000 is in any case a positive sign for biodiversity. It is also worth noting that when a country halts the fishery of a species with a low Trophic Level, the MTI will go up, which distorts the message.

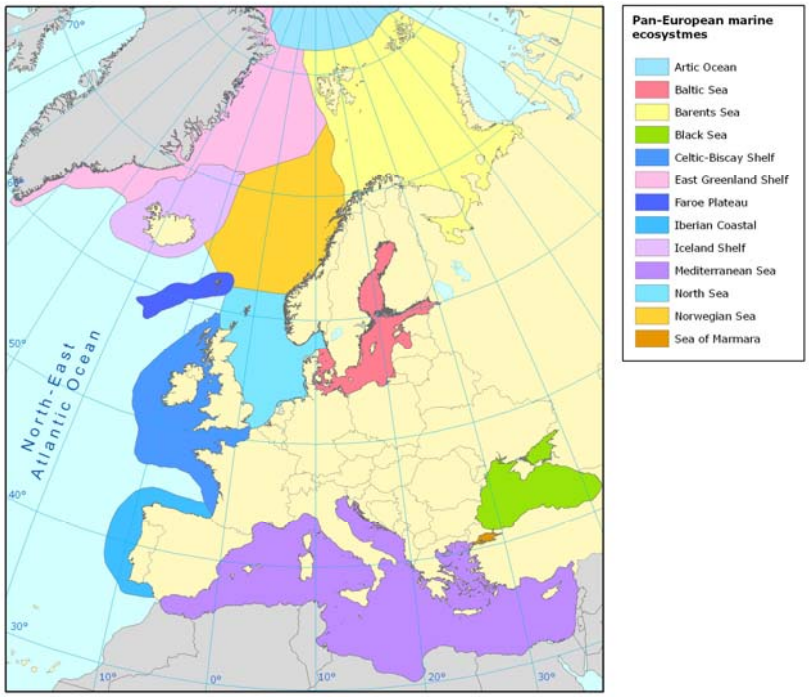
For the EU, Member States will make an integrated 'initial assessment' of the environmental situation of their marine waters pursuant to the Marine Strategy Framework Directive Art. 8 by mid-2012.

Note:

1. Preferred fish catches consist of large, high value predatory fishes, such as tuna, cod, sea bass and swordfish. The intensification of fishing has led to the decline of these large fishes, which are high up in the food chain. As predators are removed, the relative number of small fish and invertebrates lower in the food chain increases, and the mean trophic level (i.e. the mean position of the catch in the food chain) of fisheries landings, goes down. The mean trophic level of a species is a calculated value which reflects the species abundance balance across a trophic range from large long lived and slow growing predators to fast growing microscopic primary producers and is therefore a reflection of the biodiversity status of the system. It is derived by assigning a numerical trophic level to selected taxa, established by size, diet or nitrogen isotope levels.
2. The MTI thus describes a major aspect of the complex interactions between fisheries and marine ecosystems and communicates a measure of species replacement induced by fisheries. What is most important in the MTI is the trend, rather than the specific value.

3. Some improvements of this indicator (calculating an MTI using commercial landings and existing lists of trophic level of adult fish by species as well as supplementary indicators have been suggested. Some of these will be explored during 2008-2009.
4. For this assessment, data for the following European seas were used:
    - Arctic ocean
    - Baltic
    - Barents
    - Black sea
    - Celtic-Biscay shelf
    - Faroe plateau
    - Greenland sea
    - Iberian coastal
    - Iceland shelf
    - Mediterranean
    - Norwegian sea
    - North Sea

Geographical coverage



Web links

Marine Trophic Index at the Sea Around Us project: http://www.seaaroundus.org/sponsor/cbd.aspx

Sources and references

Pauly, D. and R. Watson. 2005. Background and interpretation of the 'Marine Trophic Index' as a measure of biodiversity, Phil. Trans. R. Soc. B (2005) 360, 415–423.

Version 26 November 2008

European Headline Indicator: Connectivity/ Fragmentation of ecosystems

13. Fragmentation of natural and semi-natural areas

Key Policy Question: How fragmented are European natural and semi natural landscapes?

Key message and smiley

n/a

There have been methodological problems with the indicator proposed in the SEBI 2010 Technical report (Halting the loss of biodiversity by 2010: proposal for a first set of indicators to monitor progress in Europe (EEA Technical Report 11/2007)). The Report suggested that other measurements of ecosystem integrity should be proposed especially dealing with fragmentation / connectivity in relation to species. Indicators that focus on ecologically more relevant characteristics than 'mean habitat patch size' have been developed and tested and will later in 2008 be calculated for natural and semi-natural areas (cf. the JRC Ispra work on change in spatial pattern of selected ecosystems (see http://forest.jrc.it/biodiversity/)).

Assessment

n/a

Version 26 November 2008

14. Fragmentation of river systems

Key Policy Question: How fragmented are rivers in Europe, thus potentially affecting the fish species living in them?

Key message

n/a

This indicator is not yet available.

Assessment

n/a

Version 26 November 2008

European Headline Indicator: Water quality in aquatic ecosystems

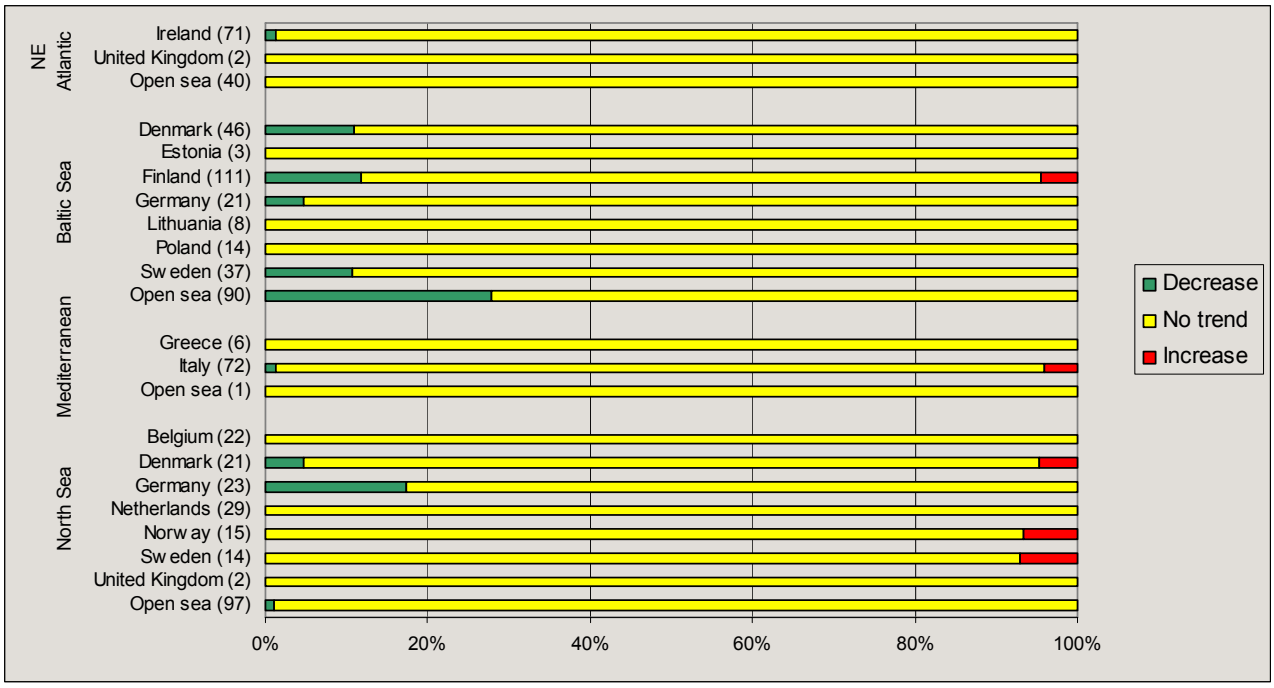
15. Nutrients in transitional, coastal and marine waters

Key Policy Question: What is the status of transitional, marine and coastal waters in Europe?

Key message

Concentrations of oxidized nitrogen and orthophosphate in transitional, coastal and marine waters have to a large extent (85 and 82% of stations respectively) remained unchanged in countries that have reported data. In stations with changes, decreases were more common than increases.

Trends in mean winter time oxidised nitrogen concentrations in the Atlantic, the Baltic Sea, the Greater North Sea, the Skagerrak and part of the Mediterranean in 1985-2005



Source

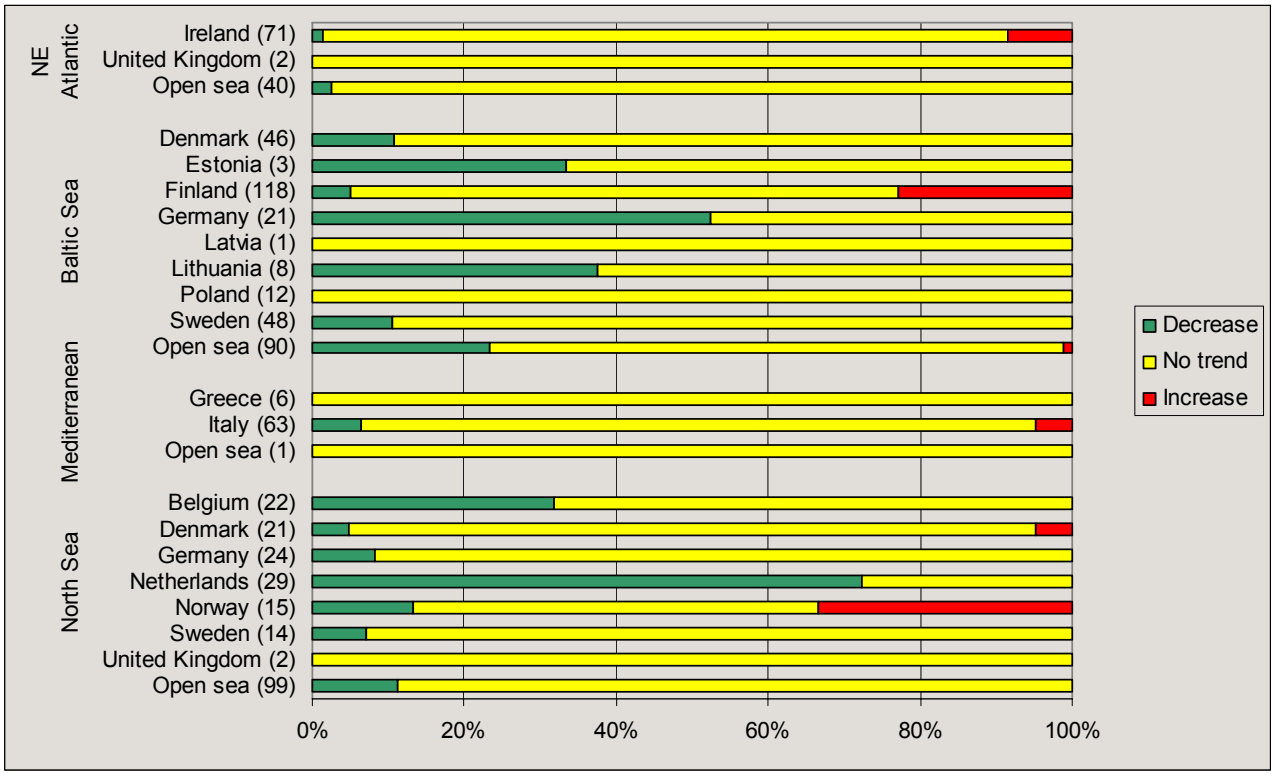
EEA Waterbase/Core Set Indicator 21 (Nutrients in transitional, coastal and marine waters)

Note

For some countries the data include stations with observations made in 2005, for some only up to 2004. The full data set is available via http://themes.eea.europa.eu/IMS/ISpecs/ISpecification20041007132008/IAssessment1116503188454/view_content

Countries included in the analysis: Belgium, Denmark, Estonia, Finland, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Sweden, United Kingdom. Bulgaria, France, Iceland, Malta, Portugal, Romania, Slovenia, Spain and Turkey.

Trends in mean winter time orthophosphate concentrations in the Atlantic, the Baltic Sea, the Greater North Sea, the Skagerrak and part of the Mediterranean in 1985-2005



Source

EEA Waterbase/Core Set Indicator 21 (Nutrients in transitional, coastal and marine waters)

Note

For some countries the data include stations with observations made in 2005, for some only up to 2004. The full data set is available via
http://themes.eea.europa.eu/IMS/ISpecs/ISpecification20041007132008/IAssessment1116503188454/view_content

Countries included in the analysis: Belgium, Denmark, Estonia, Finland, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Sweden, United Kingdom. Bulgaria, France, Iceland, Malta, Portugal, Romania, Slovenia, Spain and Turkey.

Assessment

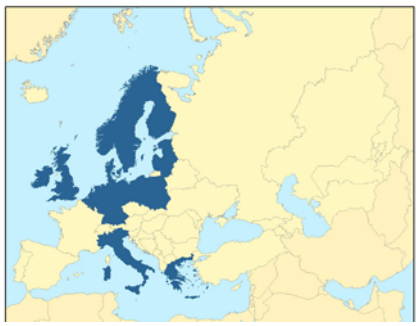
12% of stations report a decreasing trend in oxidised nitrogen concentrations, reported to the EEA in 2005, increasing trends were found at 3% of stations, and the majority of stations (85%) indicate no statistically significant change.

Decreasing trends in orthophosphate concentrations were found at 11% of stations, increasing concentrations were found at 7% of stations, and the majority of stations (82%) indicate no statistically significant change in orthophosphate concentration.

Nitrogen (N) and phosphorus (P) enrichment can result in a chain of undesirable effects, starting with excessive growth of plankton algae that increases the amount of organic matter settling to the bottom. This accumulation may be enhanced by changes in species composition and functioning of the pelagic food web, which leads to lower grazing by copepods. The consequent increase in oxygen consumption can lead to oxygen depletion, changes in community structure and death of the benthic fauna.

For the EU, the Water Framework Directive will bring in better information on ecological status of transitional and coastal waters.

Geographical coverage



Web links

EEA CSI 21: http://themes.eea.europa.eu/IMS/ISpecs/ISpecification20041007132008/IAssessment1116503188454/view_content

Sources and references

Halting the loss of biodiversity by 2010: proposal for a first set of indicators to monitor progress in Europe (EEA Technical Report 11/2007) and EEA Core Set Indicator 21 (Nutrients in transitional, coastal and marine waters).

Version 26 November 2008

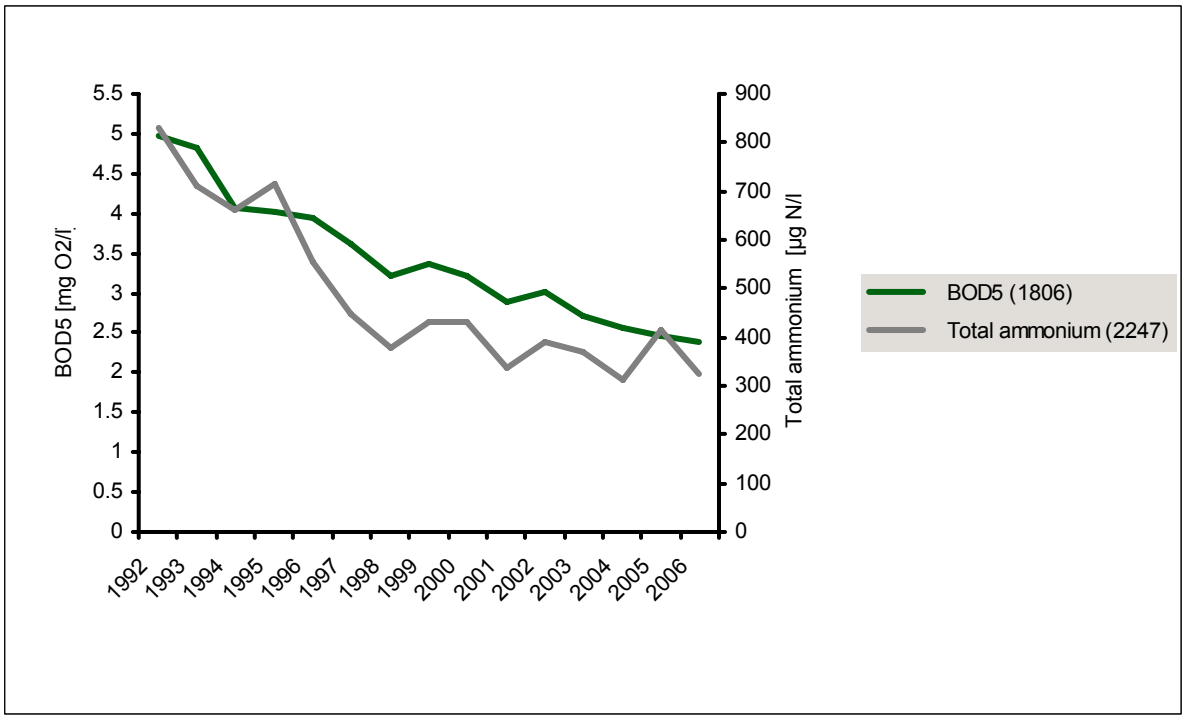
16. Freshwater quality

Key Policy Question: What is the status of freshwater in Europe?

Key message

Pollution of rivers with organic matter and ammonium is decreasing, and nutrients in freshwater (rivers, lakes and groundwater) are decreasing. This reduces stress on freshwater biodiversity and improves ecological status.

Fig. 1: Biochemical Oxygen Demand (BOD5) and total ammonium concentrations in rivers between 1992 and 2006



Source: Waterbase Version 7

Note

Number of river monitoring stations included in analysis noted in brackets. BOD5 data from Albania, Austria, Belgium, Bulgaria, Czech Republic, Denmark, France, Hungary, Ireland, Luxembourg, FYR of Macedonia, Poland, Slovakia, Slovenia, Spain and United Kingdom. BOD7 data from Finland, Estonia, Latvia (1996-2001) and Lithuania (1996-2005). BOD7 data were recalculated into BOD5 data. Total ammonium data from Albania, Austria, Belgium, Bulgaria, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Latvia, Lithuania, Luxembourg, FYR of Macedonia, Netherlands, Norway, Poland, Slovenia, Spain, Sweden and United Kingdom.[4]

[4] Concentrations are expressed as the station weighted mean of the annual mean concentrations by countries. Stations with time series consisting of minimum seven years are included. The number of available mean concentrations/stations per year is different, except for Luxembourg and Norway with constant number.

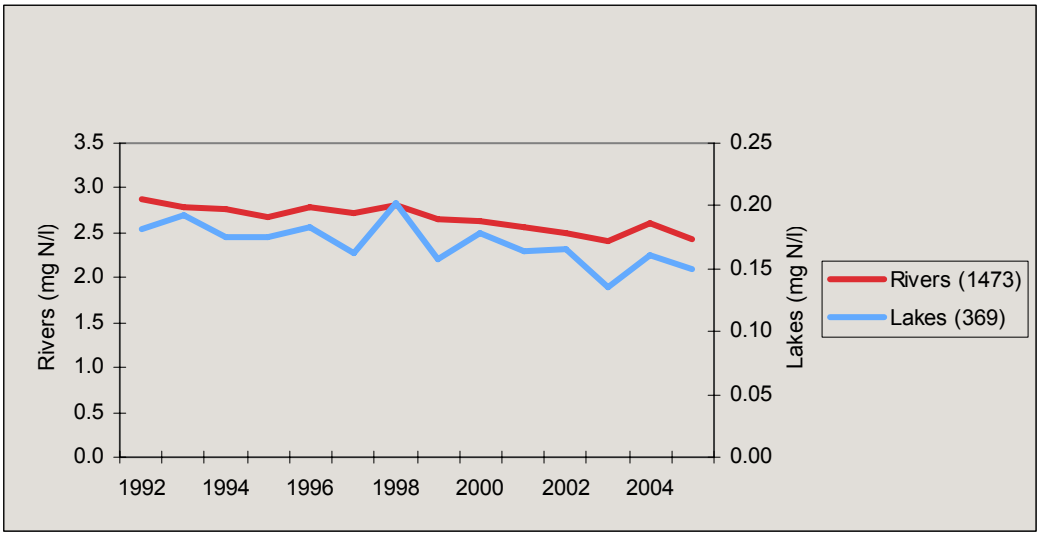
Assessment

BOD and total ammonium concentration have decreased in European rivers in the period 1992 to 2005, corresponding to the general improvement in wastewater treatment. BOD and ammonium concentration are generally highest in eastern, southern and south-eastern European rivers. The largest declines in BOD and ammonium concentration are evident in the rivers of the Western and Eastern European countries, respectively.

BOD and ammonium concentration are key indicators of organic matter and oxygen content of water bodies. The values of these normally increase as a result of organic pollution caused by discharges from waste water treatment plants, industrial effluents and agricultural run-off. Severe organic pollution may lead to rapid de-oxygenation of river water, a high concentration of ammonia and the disappearance of fish and aquatic invertebrates.

The most important sources of organic waste load are: household waste water; industries such as paper industries or food processing industries; and occasionally silage effluents and slurry from agriculture. Increased industrial and agricultural production, coupled with a greater percentage of the population being connected to sewerage systems, initially resulted in increases in the discharge of organic waste into surface water in most European countries after the 1940s. Over the past 15 to 30 years, however, the biological treatment of waste water has increased, and organic discharges have consequently decreased throughout Europe.

Fig. 2: Concentrations of nitrate in European rivers and lakes in the period 1992-2005



Source: Waterbase Version 6

Note

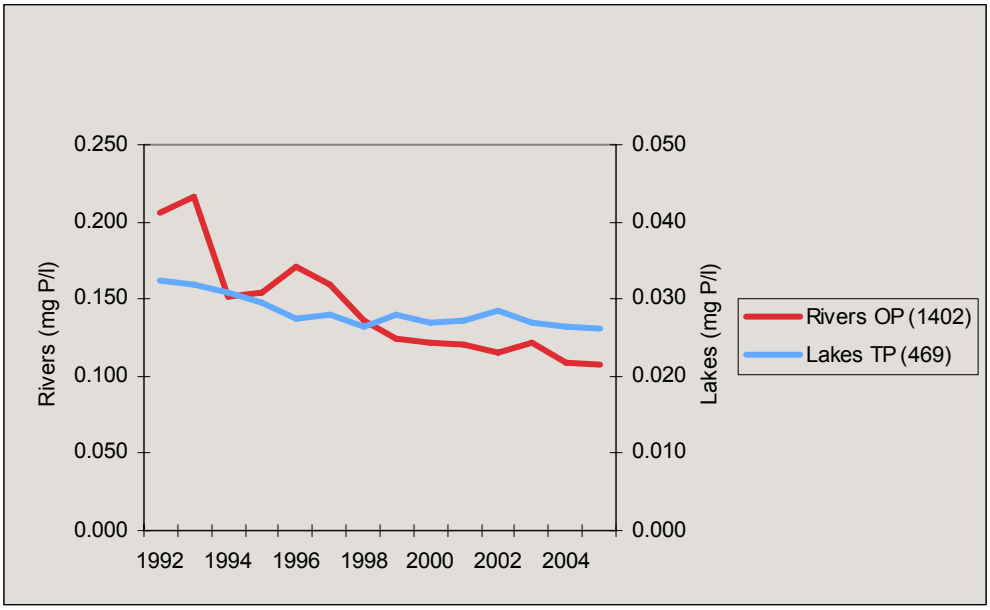
Concentrations are expressed as annual mean concentrations for groundwater, and station weighted mean of annual mean concentrations for rivers and lakes. Only stations with time series consisting of minimum seven years are included. The number of stations included per country is given in parenthesis.[5]

Nutrients in freshwater (rivers, lakes and groundwater) are decreasing. The average nitrate concentration in European rivers has decreased approximately 10 % since 1998 from 2.8 to 2.5 mg N/l, reflecting the effect of measures to reduce agricultural inputs of nitrate. Nitrate levels in lakes are in general much lower than in rivers, but also in lakes there has been a 15 % reduction in the average nitrate concentration.

[5] Nitrate in rivers//total oxidized nitrogen*: AT (145), BE (23), BG (82), CZ (70), DE (125), DK* (39), EE (53), FI* (131), FR (287), GB* (139), HU (98), LT (64), LU (3), LV (47), NL* (9), NO (10), PL (104), SE* (113), SI (24), SK (52). Nitrate/total oxidized nitrogen* in lakes: DE (6), EE (5), FI (21), GB (21), HU (16), LT (8), LV (8), NL* (7) NO (92), SE* (181), SL (4).

Agriculture is the largest contributor of nitrogen pollution, and due to the EU Nitrate Directive and national measures the nitrogen pollution from agriculture has been reduced in some regions during the last 10-15 years, this reduced pressure is reflected in lower river and lake nitrate concentrations. Also the European air emissions of nitrogen oxides have been reduced by one third over the last 15 years and the deposition of nitrogen on inland surface waters have decreased.

Fig. 3: Concentrations of phosphorus (OP (orthophosphate) or TP (total phosphorus)) in European rivers and lakes in the period 1992-2005



Source: Waterbase Version 6

Note

Concentrations are expressed as annual mean concentrations for groundwater, and station weighted mean of annual mean concentrations for rivers and lakes. Only stations with time series consisting of minimum seven years are included. The number of stations included per country is given in parenthesis.[6]

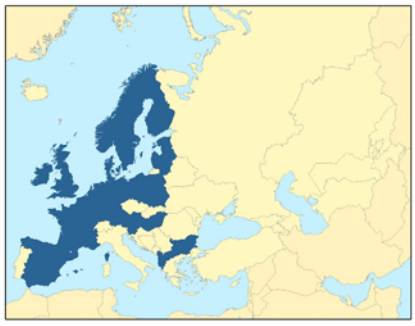
Phosphorus concentrations in European rivers and lakes generally decreased during the last 14 years, reflecting the general improvement in wastewater treatment and reduced phosphate content of detergents over this period. In many rivers the reduction started in the 1980s. During the past few decades there has also been a gradual reduction in phosphorus concentrations in many European lakes. The decrease is due to the measures introduced by national and European legislation, in particular the Urban Waste Water Treatment Directive, which involves the removal of nutrients. As treatment of urban wastewater has improved and many waste water outlets have been diverted away from lakes, point sources pollution is gradually becoming less important. Agricultural sources of phosphorus are still important and need increased attention to achieve good status in lakes and rivers.

Improvement of the status of groundwater is also important as it can be a source of nitrate in rivers adversely affecting associated river and lake water bodies, wetlands and dependent terrestrial ecosystems. At the European level, annual mean nitrate concentrations in groundwater have remained relatively stable since the mid-1990s after an increase during the first half of the 1990s.

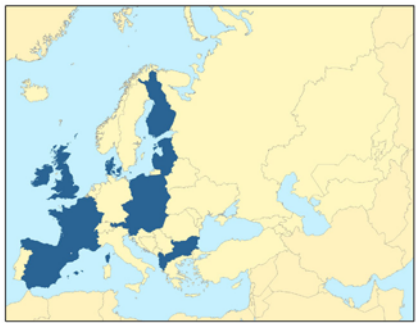
[6] Orthophosphate in rivers: AT (134), BE (26), BG (64), CZ (65), DE (133), DK (40), EE (53), FI (116), FR (241), GB (69), HU (98), LT (64), LV (47), NO (10), PL (100), SE (113), SI (23), SK (6).
Total phosphorus in lakes: AT (5), DE (7), DK (23), EE (5), FI (207), GB (18), HU (10), IE (7), LT (7), LV (8), NL (7), SE (165).

Geographical coverage

Total ammonium concentrations (Fig.1)



Biochemical Oxygen Demand (BOD5) (Fig. 1)



Concentrations of nitrate (Fig. 2)

Concentrations of phosphorus (Fig. 3)

Web links

EEA Core Set indicators
http://themes.eea.europa.eu/IMS/ISpecs/ISpecification20041007131940/IAssessment1116505271445/view_content and
http://themes.eea.europa.eu/IMS/ISpecs/ISpecification20041007131957/IAssessment1116497150363/view_content

Sources and references

Halting the loss of biodiversity by 2010: proposal for a first set of indicators to monitor progress in Europe (EEA Technical Report 11/2007)

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