

NATURA 2000

IN GERMANY



Nature's jewels



FOREWORD

European Natural Heritage: Natura 2000 – challenges and opportunities

Nature is the key to our survival; it forms the basis of both our homeland and our cultural landscapes. One of the most important while at the same time one of the most demanding challenges of our time, is to preserve our natural heritage for future generations and, thus, to permanently retain our current quality of life. This challenge has been broadly recognized: In the Gothenburg declaration, the Heads of State of the European Union (EU) member states have committed themselves to halt the loss of biodiversity by the year 2010. In this context, biodiversity encompasses the diversity of both species and habitat types. During the Johannesburg World Summit on Sustainable Development (WSSD) in 2002, world leaders agreed to significantly reduce current rates of biodiversity loss by the year 2010. The “Potsdam Initiative – Biological Diversity 2010” resulting from the meeting of G8 environment ministers in March 2007 initiated concrete activities in favour of biodiversity protection. This includes a global study to assess the economic significance of the global loss of biological diversity.

Within the EU, the ecological network of protected areas – called Natura 2000 – is of key importance for the achievement of the 2010-target. The Natura 2000 sites have been designated based on the provisions stated in the Habitats Directive (1992) and the Birds Directive (1979). To me, the Natura 2000 sites represent the jewels of European nature conservation. Germany holds many precious natural assets and cultural landscapes. As a consequence, 14.1% of German territory has been designated as Natura 2000 sites. This comprises more than 10% of the European Natura 2000 network. Located in the heart of Europe, Germany has a specific responsibility for the preservation of the European natural heritage.

In May 2008, Germany will host the 9th Conference of the Parties to the UN Convention on Biological Diversity (CBD) and preside over the convention until 2010. The presidency carries a large responsibility for leading the way to halt the ongoing loss of biodiversity. Germany can be proud of its achievements

in implementing the Natura 2000 provisions. In Germany, Natura 2000 provides an excellent example for the preservation of the diversity of life in the context of cultural landscapes.

A strong EU legal basis for nature conservation provides the foundation for the preservation of the European natural heritage. The designation of the Natura 2000 sites was in part very controversial, but has now been largely accomplished. In the next step, it will be important to fill the Natura 2000 network with life. In the Federal Republic of Germany, this will be the task of the Bundesländer (Federal States). The European nature directives explicitly take into account the various interests and allow for compromise between interests of nature conservation and economic and social factors. I personally consider it very important for this reconciliation of interests to be applied in a successful, prospective way and without bureaucratic delays. In the long run, I would like to see strong public support for Natura 2000, and recognition that it is an innovative and future oriented approach to nature conservation.

I consider the implementation of Natura 2000 to be of key significance for regional economic gain, particularly for rural areas. The preservation of the European natural heritage offers opportunities for rural development, and, therefore, will provide opportunities for jobs in comparatively marginal areas.

This brochure is designed to explain the goals and concepts behind Natura 2000 in a compressed way. It includes examples relating to the implementation of the Natura 2000 network. The brochure targets the general public, policy and economic decision makers, as well as landowners and related professional groups such as farmers and foresters. Successful implementation of Natura 2000 depends on the integration and active support from these different groups. My particular concern is for the public to recognize the importance of the protection of our natural resources, and the Natura 2000 network in particular. This is an important investment in our future that is going to yield long-term benefit!

Sigmar Gabriel,
Federal Minister of Environment (BMU)



Photo: F. Grawe

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1. INTRODUCTION

Towards a common future

Coordinated efforts in the European Union (EU) have produced a common legal framework for nature conservation based on the Birds Directive and the Habitats Directive. The Natura 2000 network of reserves, complemented by specific provisions for the protection of endangered species of animals and plants, form the cornerstones for the implementation of the EU conservation directives. By committing 14.1% of its territory, Germany has provided an important contribution to the Natura 2000 network. The Natura 2000 network is key for the achievement of the political goal to "halt further loss of biodiversity by the year 2010" set by European Heads of State in 2001.

Germany's nature conservation in the heart of Europe

Germany is located in the heart of Europe. Within the Natura 2000 network of protected sites, it has the primary responsibility for the continued preservation of central European ecosystems such as beech forests and the Wadden Sea, which is absolutely unique on a global scale. Both beech forests and the Wadden Sea encompass several habitat types which are protected within the Natura 2000 network. Nine biogeographical regions comprise the reference and evaluation areas for the implementation of the EU conservation efforts. Since Germany is

Total area of SPAs (Special Protected Areas, Birds Directive) and SCIs (Sites of Community Importance, Habitats Directive) in Germany. SCIs formally protected under national legislation become Special Areas of Conservation (SACs) A national Natura 2000 list with 4,617 SCIs and 658 SPAs was forwarded to the European Commission. In part, identical sites have been listed as both SPA and SCI. Therefore, the total number of Natura 2000 sites in Germany amounts to 5,101 (as of July 2007, source BfN).

	SCIs/SACs	SPAs	Natura 2000 sites
total number of sites	4,617	658	5,101
combined total area (ha)	5,329,477	5,046,446	7,374,361
total area terrestrial sites	3,313,066	3,361,707	5,034,069
total area marine sites* (ha)	2,016,411	1,684,739	2,340,292
proportion of German territory	9.3%	9.4%	ca. 14.1%
proportion of German territorial waters*	ca. 35%	ca. 34%	ca. 41%

* including the EEZ (Economic Exclusive Zone)



Photo: B. Beinlich

The Eselsburger valley near the City of Heidenheim (Federal State of Baden-Württemberg) is part of the "Giengener Alb and Eselsburger Tal" Natura 2000 site. Over the centuries, sheep grazing produced characteristic pastures denuded of shrubs which resemble pastoral areas in the mediterranean region.

centrally located, the German territory provides a significant share of the Continental and the Atlantic regions. In addition, a narrow stretch of the Alpine region is also located in Germany. Corresponding to the natural areas they encompass, EU Member States contribute to the Natura 2000 network. For example mediterranean countries such as Spain contribute cork-oak forests, Nordic countries contribute boreal forest habitats, the Baltic States contribute large and intact bogs and fens. As a consequence, the beauty and diversity of many popular vacation sites for German tourists will be preserved within the Natura 2000 network (for example on the Canary Islands or on Madeira).

Vitalize Natura 2000

It took a long time after the passage of the EU nature conservation directives (the Birds Directive in 1979 and the Habitats Directive in 1992) before the selection and notification of the Natura 2000 sites were finally completed for Germany in early 2006. The next step will be to actually preserve and foster biodiversity in the selected sites. This will be achieved through successful implementation of good management practices. In the future, planning on all levels will have to consider the reserve network early on, in order to avoid adverse impacts. Within Natura 2000 reserves, land use practices, including those of forestry and agriculture, will have to be devised so that our natural and cultural landscapes, with their regional peculiarities and richness, can be preserved in the best way possible. Many Natura 2000 reserves require certain ways and means of land use. In the Natura 2000 network, nature conservation is not restricted to pristine areas. Rather, our species rich

cultural landscapes, with their particular habitat types, require continued land use. Our children will be grateful that we preserved nature's richness for future generations. In the global context, Natura 2000 serves as an example of how the diversity of life can be preserved through cultural landscapes that have evolved over centuries of continued use.

This brochure is designed to acquaint the reader with the uniqueness of our natural and cultural landscapes, and to allow for insights into the aims and practices of nature conservation in the European Union. European conservation directives are not theoretical guidelines from "far-away Europe". Rather, the European Union supports us to preserve our natural heritage here in Germany for future generations. Commitment to the protection of nature and the sustainable use of natural resources are preconditions for retaining and improving the quality of life for every citizen in Germany.



Old semi-natural beech forest (Habitat Type 9110) in the "Kellerwald" Natura 2000 site (Federal State of Hesse)

Photo: F. Grawe



DIVERSITY VERSUS UNIFORMITY – REMARKS ON THE SIGNIFICANCE OF SPECIES DIVERSITY

At the turn of the millennium, the "Millennium Ecosystem Assessment", an inventory of the world's ecosystems, was conducted.

The goal was not an update of an endangered species list at the beginning of a new millennium. Rather, more than 2,000 scientists were systematically surveyed and asked: how many ecosystem goods and services that humans consume or use for free or whose use is highly subsidized, are currently overused? The central question was, to what extent is natural capital already used up, since reinvestments into securing natural processes have been largely insufficient? The results of this assessment of natural capital were discomfiting, even frightening. Up to 40% of the natural capital has already vanished. It has been used up to subsidize unsustainable standards of living for 20% of the world's population in highly developed countries and for a small segment of wealthy people in the developing countries.

In order to secure economic development, natural capital is just as crucial as financial and human capital, or the social stability of a given society. Wherever natural diversity and ecosystem functions are lost, ecosystem goods and services that are provided for free by water and soils, by species diversity and forests, by atmosphere and oceans will be reduced or lost. Nature teaches us that stability is linked to diversity, that mono-structural systems carry high risk and lead to inflexibility. Preserving nature's diversity is certainly an ethical obligation; it is fundamentally linked to responsible behaviour towards the Earth and future generations. However, natural diversity is also the irreplaceable basis to overcome world-wide poverty. Preserving diversity is indispensable for the achievement of the "Millennium Development Goals" – goals that have been formulated and accepted by all heads of state in the year 2000 as a basic requirement of the global community. To preserve nature's diversity is an indispensable element of precautionary peace policies in our world. It is an indispensable investment to overcome poverty, an investment in creating a peaceful society.

Klaus Töpfer

(until 2006) Executive Director
United Nations Environment Programme

Photo: F. Grawe

Photo: F. Grawe



Atlantic wet heaths (Habitat Type 4010), United Kingdom

Photo: F. Grawe



Asperulo-Fagetum beech forest (Habitat Type 9130), Germany

Photo: B. Beinlich



Dehesa pastoral forest (Habitat Type 6310), Spain

The *Muschia aurea* flower, an endemic species protected according to Annexes II and IV of the Habitats Directive, Madeira

Photo: E. Schröder

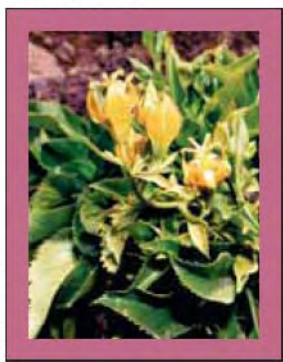


Photo: F. Grawe



Canarian Islands endemic pine forest (Habitat Type 9550) along the Teide Mountain, Canarian Islands

Photo: A. Szymank



Photo: B. Beinlich



Active raised bog with lake and bog woodland (Habitat Types 7110*, 3160 and 91D0), Estonia.

Photo: F. Grawe



Alpine ibex (Annex V-species), on alpine calcareous grasslands (Habitat Type 6170)

Steppic grassland, Bulgaria

Photo: E. Schröder

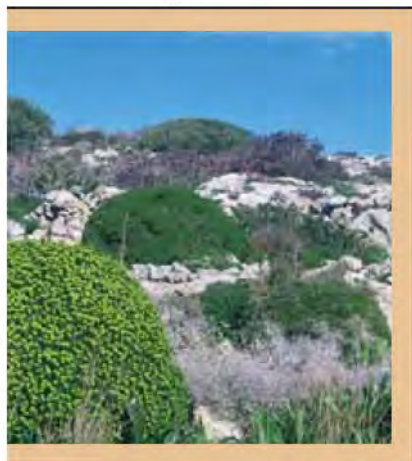
Thorny shrubs with endemic milkweed, *Euphorbia melittensis* (cliff-top phryganas, Habitat Type 5410), MaltaThe souslik (*Citellus citellus*), inhabiting the steppe and grasslands in southeastern Europe (Annex II species).

Photo: H.-J. Flinck



A total of 9 biogeographic regions are currently recognized within the European Union.

The German territory, located in the heart of Europe, is part of 3 of the biogeographic regions – Atlantic region, Continental region and Alpine region. The use of biogeographic regions is of major importance both for the selection and for the assessment of the conservation status of Natura 2000 sites. To evaluate comprehensive and overall quality of the site selection, biogeographic seminars were held for each region. Chaired by the EU commission, independent experts, the European Topic Centre for Biodiversity in Paris (ETC/BD) and representatives from the member states held two joint meetings for each of the biogeographic regions. For each species and habitat type, these seminars produced an evaluation as to whether the number and quality of selected sites were sufficient to grant favourable conservation status within the proposed Natura 2000 network. In case the site selection was found to be insufficient, member states were required to supplement their list of Natura 2000 sites with other possible sites. This process produced a fairly uniform quality and a high standard for site selection among all EU member states.

Axel Ssymank

Biogeographic regions

- Atlantic
- Continental
- Alpine
- Mediterranean
- Macaronesian
- Boreal
- Pannonian
- Steppe
- Black Sea

Source: Federal Agency for Nature Conservation 2007, Habitat Types provided with EU-Code



Photo: F. Grawe

2. GOALS AND CONCEPTS OF NATURE CONSERVATION IN THE EU

Nature is without borders. Therefore, commonly held European regulations are particularly important. It would not make sense to protect a species of songbird in Germany, that subsequently could be legally hunted along its migration routes! European regulations are also important economically and politically. Otherwise, competitive disadvantage may result from environmental legislation passed and subsequently applied only in single member states. The preservation of biological diversity is the most important target of European Union nature conservation efforts (see chapter 4). The Birds Directive (79/409/EEC) and the Habitats Directive (92/43/EEC) provide the basic foundation for nature conservation in the EU. These nature conservation directives are supplemented by environmental legislation which provides access for citizens of EU member states to information about the state of the environment.

Both EU nature conservation directives have legal status in the member states, but they are certainly not imposed upon the member states. Rather, intense negotiations among all the EU member

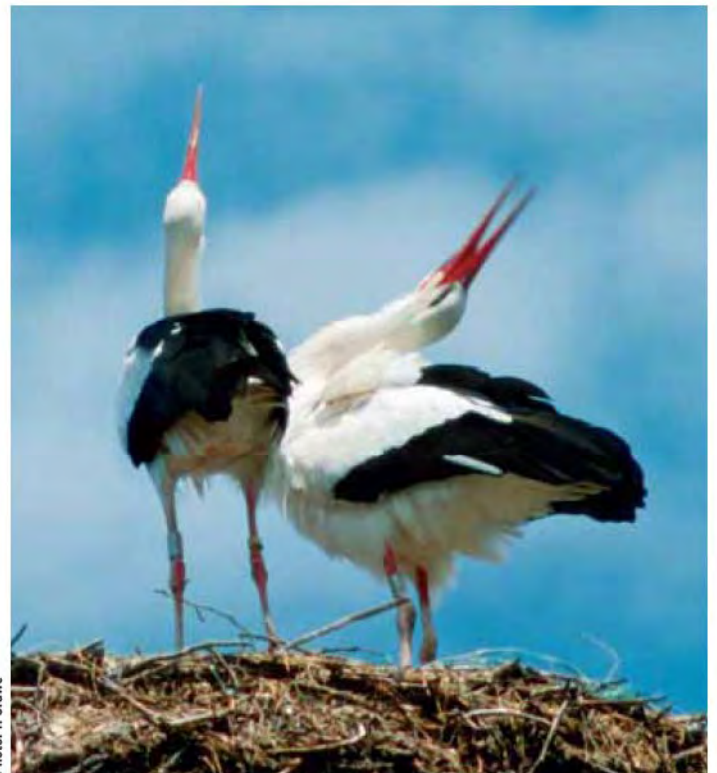


Photo: F. Grawe

White stork standing on its nest, clapping. Protected species according to Annex I, Birds Directive.



Alkaline fen (Habitat Type 7230) with orchids in the "Nethe" Natura 2000 site (Weser Mountains, Federal State of Northrhine-Westfalia)

states resulted in the draft and subsequent passage of these documents designed to effectively protect biological diversity.

The Birds Directive only protects birds. It is complemented by the Habitats Directive that applies to other animals, plants and habitat types endangered in the European Union. In the Federal Republic of Germany, both Directives are implemented at the national level through the Federal Nature Conservation Act and subsequently through state conservation laws. The Bundesländer (Federal States) are responsible for the delineation and management of the protected areas that form the Natura 2000 network. The responsibility of the Federal Government is limited to areas and species beyond coastal waters in the so called Economic Exclusive Zone (EEZ, 12-200 nautical miles off the coast).

The Natura 2000 Network

For the first time, a European-wide reserve system, named Natura 2000, has been established based on identical legal premises. The system includes both the protected sites under the Birds Directive (SPA, Special Protected Areas) and the protected sites under the Habitats



Natura 2000 in my view is the most developed and best known approach for efficient conservation of nature, especially in densely populated areas like our European home. For the first time in the history, we are creating a comprehensive and coherent system based on scientific knowledge, recognizing the principal role of natural habitats and their representativeness. One of the beauties of this approach is, that it does not exclude other activities – if they don't harm the substance. The key now is the right and flexible implementation.

Ladislav Miko
European Commission
DG Environment
Director
Directorat B (Natural Resources
Protection and Biodiversity)



Photo: F. Grawe

Red kite

Directive (SAC, Special Areas of Conservation). A very particular and important aspect of the Natura 2000 system is that site selection was solely based on the needs of endangered species and the quality of existing endangered habitat types. Political or economic arguments were not considered valid in the selection process. This site selection process is reasonable because endangered species and habitat types must be protected at the most suitable sites. Restricting site selection to areas that are not affected by current or future use or plans would certainly fail to provide effective protection. In fact, the best sites were selected to ensure long-term survival. In order to create uniformly understood guidelines for the delineation of Natura 2000 sites between EU member states, those habitat and species types requiring the selection of specific protected sites are listed in Annex I and II of the Habitats Directive. As soon as the Natura 2000 sites have

Annexes to the Habitats Directive

Annex I:	Natural habitat types of community interest whose conservation requires the designation of Special Areas of Conservation
Annex II:	Animal and plant species of community interest whose conservation requires the designation of Special Areas of Conservation
Annex III:	Criteria for the selection of Sites of Community Importance
Annex IV:	Animal and plant species of community interest in need of strict protection
Annex V:	Animal and plant species of community interest whose taking in the wild and exploitation may be subject to management measures
Annex VI:	prohibited methods and means of capture and killing and modes of transport

been selected, economic and social factors can be considered in the implementation of site management (Chapter 13), however, only as long as such considerations do not hamper the principal goals of nature conservation. In addition, regulations which are uniform throughout Europe apply to plans and projects that might impair the conservation goals of any particular site (Chapter 10).

The stag beetle (Annex II), our largest native beetle, depends on old growth oak trees exposed to the sun for their larvae to successfully develop.

The wolf (Annex II, IV) requires a large territory to obtain sufficient prey. The wolf returned to Germany a few years ago.



both Photos: F. Grawe





Photo lynx: F. Grawe

Photo montane spruce forest : E. Schröder



The European lynx (Annex II, IV), the largest European cat, has also returned to Germany. Its preferred habitat consists of large forests in the low mountain ranges.

Almost pristine montane spruce forest (Habitat Type 9410) in the « Kleiner Arbersee » Natura 2000 site, Bavarian Forest National Park (Federal State of Bavaria)

Species protection

Species protection outside reserves is the second pillar in the EU nature conservation agenda. Not every species can be effectively protected within reserve boundaries. Some species are migratory, others have large spatial requirements or use particular sites within whole landscapes to satisfy different basic needs (e.g. rearing of the young, food acquisition, hibernation). In these cases, rather than trying to delineate huge reserves, it is more sensible to impose a specific species protection regime to the whole EU territory. Such a protection regime provides flexible implementation of measures suited to the specific needs and occurrences of a species, without imposing unnecessary broad scale management restrictions. What has to be done and what is permissible, will only be applied where the species is present, and will be based on the actual needs of the particular species. The European approach to species protection is thus target oriented, and at the same time flexible in actual implementation.

Natura 2000 goes to school

“Cut trees?” – “This is absolutely necessary, we need the jobs” – “But there must be other solutions ...”.

This illustrates the dialog among students in a role play pertinent to the controversies over the formation of a management plan for a Natura 2000 site. The role playing activity is part of a workshop for schools (10th to 13th grade, age 15 to 18 years) in the Federal State of Rhineland-Palatine. During class, students will become familiar with opposing sides of the subject, which would then be studied in more detail during the workshop.

In the humorous role play, students will actually stage the conflicts arising around a Natura 2000 site and develop creative solutions. The role play will be complemented by a concluding field trip. The field trip provides opportunities for students to experience and understand nature and the complex interactions between stakeholders and nature conservation.

Michael Altmoos, Erika Mirbach



Photo: M. Baumhof-Fregitzer



Photo: E. Mirbach

Basic principles and challenges

The basic ideas and principals of European nature conservation are progressive. They can serve as an example for efficient conservation in cooperation with the local people in a mainly cultural landscape context. European conservation is oriented towards the actual needs of endangered species and habitat types. Natura 2000 sites basically are not off-limits to any kind of human activity or development. Human activity and even development is permissible, as long as it does not affect the conservation status of the protected species listed in the Annexes of the EU directives. On the other hand, activity and development even outside

Natura 2000 sites is not permissible, if there is the possibility for a significant negative effect on the conservation status of protected species and habitat types within the reserves. Based on clear targets, this system of protected sites allows for high flexibility with respect to implementation by EU member states, or in the Federal Republic of Germany, by the Bundesländer (Federal States).

Natura 2000 sites have been selected according to procedures that are standardized for all EU member states (Chapter 5). Economic concerns or overriding public interest can be considered when it comes to development (e.g. road construction, deepening of river beds for navigation) that might hamper conservation status of Annex species and habitat types in Natura 2000 sites. However, such development requires an impact assessment meeting certain general rules. The primary preconditions for implementation are that measures minimize harm to conservation status, that permanent damage to protected habitat types and species is avoided, and effective compensation is granted for unavoidable damage or losses (Chapter 13).

The successful implementation of the EU conservation directives is investigated through reports required in 6 year cycles, and by scheduled specific assessment of conservation status (monitoring). Effective monitoring is a necessary precondition for target oriented management adapted to site specific conservation needs.

Member states are responsible for providing the necessary financial means for successful implementation of the European conservation directives. In Germany this responsibility lies with the Bundesländer (Chapter 14). Implementation is supported by EU funding schemes in the areas of environment, rural and regional development (structural funds).

The lady's slipper, listed in Annex II and IV of the Habitats Directive, is the largest native orchid in Germany. Open deciduous forests are its preferred habitat.





Photo: F. Grawe

Active raised bogs harbour highly specialized biological communities. They are extremely endangered and thus considered a priority habitat type (Habitat Type 7110*). Pictured is the "Schwarze Moor" Natura 2000 site in the Bavarian High Rhön Mountains.

3. WHAT IS TO BE PROTECTED – SPECIES AND HABITAT TYPES OF COMMUNITY IMPORTANCE

Preserve natural diversity

Natural diversity in Germany is an invaluable treasure! There are 28,000 species of plants and mushrooms (including mosses, ferns and lichens) and 45,000 species of animals in approximately 690 different habitat types in Germany. Our landscape is characterized by rather typical habitat types: colourful flowering meadows, dunes along beaches, and beech and oak forests which provide shade and cover. We consider the availability of many products obtained from nature to be self-evident – nutrition, medicinal plants, and the wood for our fireplaces. How can this diversity be effectively protected? What species warrant specific protection? Long lists of endangered species and habitat types provide a clear indication: in Germany more than 2/3 of the habitat types and 40% of the plant and

animal species are considered to be endangered, many of them are at the brink of extinction. There are taxonomic groups where up to 70% of the native species are red listed. There is the possibility that a species which is severely endangered and very rare in Germany, is still common in Spain or Italy. The annexes of the Habitats Directive only list species "of community importance" – the basic condition for listing is for example: that the species and habitat types in question are endangered on a European scale (throughout the European Union), that severe decline has been recorded or that there is a particular European responsibility for the protection of a certain species.

Protected areas designated for habitat types and species

The Natura 2000 network of sites protects the following habitat types and species:

1. Habitat types according to Annex I of the Habitats Directive:

Overall, Annex I lists 231 habitat types of community importance. This includes 91 habitat types in Germany (see table). The list extends from marine and coastal habitat types, heathlands, grasslands, forests to high alpine rocks and screes.

2. Species according to Annex II of the Habitats Directive: Annex II lists species that require delineation of Natura 2000 sites (SAC). In the EU this includes approximately 900 species, 133 of these species occur in Germany.

3. Bird species according to Annex I of the Birds Directive

The Birds Directive requires the establishment of Natura 2000 sites (SPA) for the species listed in Annex I. This amounts to approximately 190 species EU-wide, including 85 species that regularly occur in Germany. In addition, the sites selected according to the Birds Directive are supposed to secure resting, moulting and hibernation sites for migratory species.

Some species and habitat types are severely endangered all over Europe. These are designated as "priority". Priority species and habitat types require a stricter degree of protection. This is reflected in the provision of the appropriate (impact) assessments. To date, no bird species have been designated as "priority".

Habitat types listed in Annex I of the Habitats Directive

* indicates priority habitat type; colour coding of the biogeographic regions: violet = Alpine, blue = Atlantic, green = Continental, see map pp. 8-9

Photo: H.-J. August



Code	Name of the habitat type	Region
		
Habitat type 1220		
1. Coastal and halophytic habitats		
1110	Sandbanks which are slightly covered by sea water all the time	● ●
1130	Estuaries	● ●
1140	Mudflats and sandflats not covered by seawater at low tide	● ●
1150	Lagoons *	● ●
1160	Large shallow inlets and bays	● ●
1170	Reefs	● ●
1210	Annual vegetation of drift lines	● ●
1220	Perennial vegetation of stony banks	● ●
1230	Vegetated sea cliffs of the Atlantic and Baltic coasts	● ●
1310	<i>Salicornia</i> and other annuals colonizing mud and sand	● ●
1320	<i>Spartina</i> swards (Spartinion)	● ●
1330	Atlantic salt meadows (Glauco-Puccinellietalia)	● ●
1340	Inland salt meadows	● ●
2. Coastal sand dunes and inland dunes		
2110	Embryonic shifting dunes	● ●
2120	Shifting dunes along the shoreline with (<i>Ammophila arenaria</i>) (white dunes)	● ●
2130	Fixed dunes with herbaceous vegetation (grey dunes) *	● ●
2140	Decalcified fixed dunes with <i>Empetrum nigrum</i> *	● ●

Photo: H.-J. August

2150	Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>) *	● ●
2160	Dunes with <i>Hippophaë rhamnoides</i>	● ●
2170	Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>)	● ●
2180	Wooded dunes of the Atlantic coast	● ●
2190	Humid dunes slacks	● ●
2310	Dry sandy heaths with <i>Calluna</i> and <i>Genista</i>	● ●
2320	Dry sandy heaths with <i>Calluna</i> and <i>Empetrum nigrum</i>	● ●
2330	Inland dunes with open <i>Corynephorus</i> and <i>Agrostis</i> grasslands	● ●
		
Habitat type 3150		
3. Freshwater habitats		
3110	Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)	● ●
3130	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletalia uniflorae</i> and/or <i>Isoëto-Nanojuncetea</i>	● ● ●
3140	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> formations	● ● ●
3150	Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> -type vegetation	● ● ●
3160	Natural dystrophic lakes and ponds	● ● ●
3180	Turloughs *	● ●
3190	Lakes of gypsum karst	● ●
3220	Alpine rivers and the herbaceous vegetation along their banks	● ●

3230	Alpine rivers and their ligneous vegetation with <i>Myricaria germanica</i>	●		●
3240	Alpine rivers and their ligneous vegetation with <i>Salix elaeagnos</i>	●		●
3260	Water courses of plain to montane levels with the <i>Ranunculus fluitans</i> and <i>Callitriche-Batrachion</i> vegetation	●	●	●
3270	Rivers with muddy banks with <i>Chenopodium rubri</i> p.p. and <i>Bidenton</i> p.p. vegetation		●	●

4. & 5. Heath and scrub

4010	Northern Atlantic wet heaths with <i>Erica tetralix</i>		●	●
4030	European dry heaths		●	●
4060	Alpine and Boreal heaths	●		●
4070	Bushes with <i>Pinus mugo</i> and <i>Rhododendron hirsutum</i> (<i>Mugo-Rhododendretum hirsuti</i>) *	●		●
40A0	Subcontinental peri-Pannonic scrub *			●
5110	Stable xerothermophilous formations with <i>Buxus sempervirens</i> on rock slopes (<i>Berberidion</i> p.p.)			●
5130	<i>Juniperus communis</i> formations on heaths or calcareous grasslands		●	●

Photo: F. Grawe



Habitat type 6510

6. Natural and semi-natural grassland formations

6110	Rupicolous calcareous or basophilic grasslands of the <i>Alyso-Sedion albi</i> *		●	●
6120	Xeric sand calcareous grasslands *		●	●
6130	Calaminarian grasslands of the <i>Violetalia calaminariae</i>		●	●
6150	Siliceous alpine and boreal grasslands	●		●
6170	Alpine and subalpine calcareous grasslands	●		
6210	Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites)	●	●	●
6230	Species-rich <i>Nardus</i> grasslands, on silicious substrates in mountain areas (and submountain areas in Continental Europe) *	●	●	●
6240	Subpannonic steppic grasslands * <i>Festucetalia vallesiacae</i>		●	●
6410	Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)	●	●	●
6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	●	●	●
6440	Alluvial meadows of river valleys of the <i>Cnidion dubii</i>		●	●
6510	Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>)	●	●	●
6520	Mountain hay meadows	●		●

Photo: B. Beinlich



Habitat type 7110 + 91D0

7. Raised bogs and mires and fens

7110	Active raised bogs *	●	●	●
7120	Degraded raised bogs still capable of natural regeneration	●	●	●
7140	Transition mires and quaking bogs	●	●	●

7150	Depressions on peat substrates of the <i>Rhynchosporion</i>	●	●	●
7210	Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> *	●	●	●
7220	Petrifying springs with tufa formation (<i>Cratoneurion</i>) *	●	●	●
7230	Alkaline fens	●	●	●
7240	Alpine pioneer formations of the <i>Caricion bicoloris-atrofuscae</i> *	●		

8. Rocky habitats and caves

8110	Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeops ietalia ladani</i>)	●		●
8120	Calcareous and calcshist screes of the montane to alpine levels (<i>Thlaspietalia rotundifolia</i>)	●		
8150	Medio-European upland siliceous screes			●
8160	Medio-European calcareous scree of hill and montane levels *	●		●
8210	Calcareous rocky slopes with chasmophytic vegetation	●		●
8220	Siliceous rocky slopes with chasmophytic vegetation	●		●
8230	Siliceous rock with pioneer vegetation of the <i>Sedo-Scleranthion</i> or of the <i>Sedo albi-Veronicion dillenii</i>		●	●
8310	Caves not open to the public	●		●
8340	Permanent glaciers	●		

Photo: F. Grawe



Habitat type 9110

9. Forests

9110	Luzulo-Fagetum beech forests	●	●	●
9120	Atlantic acidophilous beech forests with <i>Ilex</i> and sometimes also <i>Taxus</i> in the shrublayer (<i>Quercion robori-petraeae</i> or <i>Ilici-Fagenion</i>)		●	●
9130	Asperulo-Fagetum beech forests	●	●	●
9140	Medio-European subalpine beechwoods with <i>Acer</i> and <i>Rumex arifolius</i>	●		●
9150	Medio-European limestone beech forests of the <i>Cephalanthero-Fagion</i>	●	●	●
9160	Sub-Atlantic and medio-European oak or oakhornbeam forests of the <i>Carpinion betuli</i> [<i>Stellario Carpinetum</i>]		●	●
9170	Galio-Carpinetum oak-hornbeam forests		●	●
9180	Tilio-Acerion forests of slopes, screes and ravines *	●		●
9190	Old acidophilous oak woods with <i>Quercus robur</i> on sandy plain		●	●
91D0	Bog woodland *	●	●	●
91E0	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>) *	●	●	●
91F0	Riparian mixed forests of <i>Quercus robur</i> , <i>Ulmus laevis</i> and <i>Ulmus minor</i> , <i>Fraxinus excelsior</i> or <i>Fraxinus angustifolia</i> along the great rivers (<i>Ulmion minoris</i>)		●	●
91G0	Pannonic woods with <i>Quercus petraea</i> and <i>Carpinus betulus</i> *			●
91T0	Central European lichen pine forests		●	●
91U0	Sarmatic steppe pine forest			●
9410	Acidophilous <i>Picea</i> forests of the montane to alpine levels (<i>Vaccinio-Piceetia</i>)	●		●
9420	Alpine <i>Larix decidua</i> and / or <i>Pinus cembra</i> forests	●		

Species listed in Annex II of the Habitats Directive according to data submitted by the Federal States for the national report.

* indicates priority species; colour coding of the biogeographic regions: violet = Alpine, blue = Atlantic, green = Continental, see map pp. 8–9.


CODE	English name of the species	proposed names	Annex	Region	
 <p>European watercress</p>					
Ferns and flowering plants					
4068	Lilyleaf lady bells	<i>Adenophora lilifolia</i>	II, IV		●
1516	Waterwheel Plant	<i>Aldrovanda vesiculosa</i>	II, IV		●
1617	Marsh angelica	<i>Angelica (palustris)</i>	II, IV		●
1614	Creeping marshwort	<i>Apium repens</i>	II, IV	●	●
4066	Ladder spleenwort	<i>Asplenium adnigrum</i>	II, IV		●
1419	Little grapefern, least moonwort,	<i>Botrychium simplex</i>	II, IV	●	
1882	Great rye brome	<i>Bromus grossus</i>	II, IV		●
1832	Caldesia	<i>Caldesia parnassifolia</i>	II, IV		●
1887	Moss grass	<i>Coleanthus subtilis</i>	II, IV		●
1902	Lady's slipper orchid	<i>Cypripedium calceolus</i>	II, IV	●	●
4094	Bohemian gentian *	<i>Gentianella bohemica</i>	II, IV		●
4096	Marsh gladiolus	<i>Gladiolus palustris</i>	II, IV	●	●
1805		<i>Jurinea cyanoides *</i>	II, IV	●	●
1903	Fen orchid	<i>Liparis loeselii</i>	II, IV	●	●
1831	Floating water-plantain	<i>Luronium natans</i>	II, IV	●	●
1428	European watercress	<i>Marsilea quadrifolia</i>	II, IV		●
1670	Lake constance forget-me-not	<i>Myosotis rehsteineri</i>	II, IV		●
1601	Elbe water dropwort*	<i>Oenanthe conioidea</i>	II, IV	●	
1477	Pasque flower	<i>Pulsatilla patens</i>	II, IV		●
1881	Bavarian golden feather grass	<i>Stipa pulcherrima ssp. bavarica *</i>	II, IV		●
1437		<i>Thesium ebracteatum</i>	II, IV	●	●
1421	Killarney fern	<i>Trichomanes speciosum</i>	II, IV		●
Mosses					
1386	Green shield moss	<i>Buxbaumia viridis</i>	II	●	●
1383	Hair claw moss	<i>Dichelyma capillaceum</i>	II	●	
1381	Green fork moss	<i>Dicranum viride</i>	II	●	●
1380		<i>Distichophyllum carinatum</i>	II	●	
1393	Varnished hoo-moss	<i>Drepanocladus vernicosus</i>	II	●	●
1379	Mushroom-headed liverwort	<i>Mannia triandra</i>	II	●	●

Photo: B. Beinlich

1396	Short-horned liverwort	<i>Nothothylas orbicularis</i>	II		●
1387	Roger's bristle-moss	<i>Orthotrichum rogeri</i>	II		●
1394	Carinthian earwort	<i>Scapania massolongi</i>	II	●	
1399	Rudolph's trumpet moss	<i>Tayloria rudolphiana</i>	II	●	



Photo: F. Graue

Mammals					
1308	Barbastelle	<i>Barbastella barbastellus</i>	II, IV	●	●
1352	Wolf *	<i>Canis lupus</i>	II, IV		●
1337	European beaver	<i>Castor fiber</i>	II, IV	●	●
1364	Grey seal	<i>Halichoerus grypus</i>	II, V	●	●
1355	Otter	<i>Lutra lutra</i>	II, IV	●	●
1361	Lynx	<i>Lynx lynx</i>	II, IV	●	●
1323	Bechstein's bat	<i>Myotis bechsteini</i>	II, IV	●	●
1318	Pond bat	<i>Myotis dasycneme</i>	II, IV	●	●
1321	Geoffroy's bat	<i>Myotis emarginatus</i>	II, IV	●	●
1324	Greater mouse-eared bat	<i>Myotis myotis</i>	II, IV	●	●
1365	Harbour seal	<i>Phoca vitulina</i>	II, V	●	●
1351	Harbour porpoise	<i>Phocoena phocoena</i>	II, IV	●	●
1304	Greater horseshoe bat	<i>Rhinolophus ferrumequinum</i>	II, IV		●
1303	Lesser horseshoe bat	<i>Rhinolophus hipposideros</i>	II, IV	●	●



Photo: N. Schneeweiß

Amphibians and reptiles					
1188	European Fire-bellied toad	<i>Bombina orientalis</i>	II, IV	●	●
1193	Yellow-bellied toad	<i>Bombina orientalis</i>	II, IV	●	●
1220	European pond turtle	<i>Emys orbicularis</i>	II, IV		●
1166	Nothof great crested newt	<i>Triturus cristatus</i>	II, IV	●	●



Photo: B. Stemmer

Fishes and Cyclostomata					
1102	Allis shad	<i>Alosa alosa</i>	II, V	●	●
1103	Twaite shad	<i>Alosa fallax</i>	II, V	●	●
1130	Asp	<i>Aspius aspius</i>	II, V	●	●
1141	Danubian bleak	<i>Chalcalburnus chalcoides</i>	II		●
1149	Spined loach	<i>Cobitis taenia</i>	II	●	●

1113	Houting *	<i>Coregonus oxyrhynchus</i>	II, IV		●	●
1163	European Bullhead	<i>Cottus gobio</i>	II	●	●	●
1098	Ukrainian brook lamprey	<i>Eudontomyzon vladykovi</i>	II			●
1124	Whitefin gudgeon	<i>Gobio albipinnatus</i>	II		●	●
2555	Balon's ruffe	<i>Gymnocephalus baloni</i>	II, IV			●
1157	Schraetzer	<i>Gymnocephalus schraetzer</i>	II, V			●
1105	Danube salmon	<i>Hucho hucho</i>	II, V	●		●
1099	River lamprey	<i>Lampetra fluviatilis</i>	II, V		●	●
1096	European brook lamprey	<i>Lampetra planeri</i>	II		●	●
1131	Soufie	<i>Leuciscus souffia</i>	II			●
1145	European weather loach	<i>Misgurnus fossilis</i>	II		●	●
2522	Sabre Carp	<i>Pelacus cultratus</i>	II, V			●
1095	Sea lamprey	<i>Petromyzon marinus</i>	II		●	●
1134	European bitterling	<i>Rhodeus sericeus amarus</i>	II		●	●
1139	Pearl roach	<i>Rutilus frisii meidingeri</i>	II, V			●
1114	Danubian roach	<i>Rutilus pigus</i>	II, V			●
1106	Atlantic salmon	<i>Salmo salar</i>	II, V		●	●
1160	Danube Streber	<i>Zingel streber</i>	II			●
1159	Zingel	<i>Zingel zingel</i>	II, V			●

Photo: F. Grawe



Stag beetle

Beetles

1914	Carabus menetriesi ground beetle	<i>Carabus menetriesi pacholei*</i>	II			●
1088	Great capricorn beetle	<i>Cerambyx cerdo</i>	II, IV		●	●
1086	Cucujus cinnabarinus flat bark beetle	<i>Cucujus cinnabarinus</i>	II, IV	●		●
1081	Great diving beetle	<i>Dytiscus latissimus</i>	II, IV			●
1082	Graphoderus bilineatus diving beetle	<i>Graphoderus bilineatus</i>	II, IV		●	●
1079	Violet click beetle	<i>Limoniscus violaceus</i>	II			●
1083	Stag beetle	<i>Lucanus cervus</i>	II		●	●
1084	Hermit beetle *	<i>Osmoderma eremita</i>	II, IV		●	●
1087	Rosalia longicorn*	<i>Rosalia alpina</i>	II, IV	●		●
1927		<i>Stephanopachys substriatus</i>	II	●		●

Damselfly- and dragonflies

1044	Southern damselfly	<i>Coenagrion mercuriale</i>	II	●	●	●
4045	Ornate damselfly*	<i>Coenagrion ornatum</i>	II		●	●
1042	Large white-faced darter	<i>Leucorrhinia pectoralis</i>	II, IV	●	●	●
1037	Green club-tailed dragonfly	<i>Ophiogomphus cecilia</i>	II, IV		●	●
1041	Orange-spotted emerald	<i>Oxygastra curtisii</i>	II, IV			●

Photo: A. Symank



Jersey tiger moth *

Butterflies

1078	Jersey tiger moth*	<i>Callimorpha quadripunctaria</i>	II	●	●	●
1074		<i>Eriogaster catax</i>	II, IV			●
1065	Marsh fritillary	<i>Euphydryas aurinia</i>	II	●		●
4035	Fisher's estuarine moth	<i>Gortyna borelii lunata</i>	II, IV			●
1052	Scarce fritillary	<i>Hypodryas maturna</i>	II, IV			●
1060	Large copper	<i>Lycaena dispar</i>	II, IV		●	●
4038	Violet copper	<i>Lycaena helle</i>	II, IV	●		●
1061	Dusky large blue	<i>Maculinea nausithous</i>	II, IV	●	●	●
1059	Scarce large blue	<i>Maculinea teleius</i>	II, IV	●		●



Freshwater pearl mussel

Molluscs

4056	Little whorl ramshorn snail	<i>Anisus vorticulus</i>	II, IV		●	●
1029	Freshwater pearl mussel	<i>Margaritifera margaritifera</i>	II		●	●
4064		<i>Theodoxus transversalis</i>	II, IV			●
1032	Thick shelled river mussel	<i>Unio crassus</i>	II, IV	●	●	●
1014	Narrow-mouthed whorl snail	<i>Vertigo angustior</i>	II	●	●	●
1013	Geyer's whorl snail	<i>Vertigo geyeri</i>	II	●		●
1016	Des moulins's snail	<i>Vertigo moulinsiana</i>	II		●	●



Stone crayfish *

Other invertebrates

1936		<i>Anthrenochernes stellae</i>	II			●
1092	White-clawed crayfish	<i>Austropotamobius pallipes</i>	II, V			●
1093	Stone crayfish *	<i>Austropotamobius torrentium</i>	II, V	●		●

Photo: H.-J. Troschel

Selected species listed in Annex I of the Birds Directive

CODE	English name of the species	species name
A294	Aquatic warbler	<i>Acrocephalus paludicola</i>
A229	Common kingfisher	<i>Alcedo atthis</i>
A255	Tawny pipit	<i>Anthus campestris</i>
A222	Short-eared owl	<i>Asio flammeus</i>
A031	White stork	<i>Ciconia ciconia</i>
A030	Black stork	<i>Ciconia nigra</i>
A084	Montagu's harrier	<i>Circus pygargus</i>
A236	Black woodpecker	<i>Dryocopus martius</i>
A001	Red-throated loon	<i>Gavia stellata</i>
A127	Common crane	<i>Grus grus</i>
A075	White-tailed eagle	<i>Haliaeetus albicilla</i>
A338	Red-backed shrike	<i>Lanius collurio</i>
A157	Bar-tailed godwit	<i>Limosa lapponica</i>
A272	Bluethroat	<i>Luscinia svecica</i>
A074	Red kite	<i>Milvus milvus</i>
A194	Arctic tern	<i>Sterna paradisaea</i>
A409	Black grouse	<i>Tetrao tetrix ssp. tetrix</i>
A108	Western capercaillie	<i>Tetrao urogallus</i>

Boreal owl (Annex I, Birds Directive)



Photo: F. Grawe



Photo: A. Szymank

Steep chalk cliffs (Habitat Type 1230) on the Island of Rügen (Federal State of Mecklenburg- Vorpommern)

The Lake Constance forget-me-not is restricted to the vicinity of Lake Constance (Federal State of Baden-Württemberg). Therefore, Germany has a specific responsibility for the preservation of this species listed in Annex II and IV.



Photo: RP Freiburg/ E. Stegmaier



Specific species protection

Certain rare or endangered animals and plants warrant specific protection. The Habitats Directive provides for specific protective measures for these species listed in Annex IV.

All specimen and the resting and breeding sites of Annex-IV-species in Germany or in the EU are strictly protected. Strict protection applies to the entire territory and is not restricted to specific reserves. Annex IV lists 950 species. Overall, 132 of the Annex IV species occur in Germany. Annex IV lists many endemic species (species with a very restricted range) particularly from the Mediterranean region.

For Germany, some bat species, amphibians and forest species with specific habitat requirements such as the European stag beetle are listed. Deliberate disturbance, capture or killing of individuals, destruction of breeding sites and resting places, or trade is not permissible for Annex IV species (Articles 12, 13). There are exemptions from strict protection in certain cases. However, preconditions

Photo: M. Wolke

The lesser spotted eagle – Germany's most endangered bird of prey

The lesser spotted eagle is specifically protected under Annex I of the Birds Directive. It reaches its western limit of distribution in northeast Germany. Contrary to the situation for white-tailed eagle and osprey, the number of lesser spotted eagle breeding sites has continued to steadily decline. The lesser spotted eagle breeds in undisturbed, richly structured deciduous forests which mostly grow in poorly drained soils, adjacent to grassland and fallow fields that offer a rich supply of prey. Its preferred prey includes small mammals and amphibians. In order to stabilize lesser spotted eagle populations, measures to secure and improve habitat quality are urgently needed.

Hermann Baier

There remain only about 100 pairs of the lesser spotted eagle in the Federal States of Mecklenburg-Vorpommern, Brandenburg and Sachsen-Anhalt.





Opportunities for the Elbe Water Dropwort

The Elbe water dropwort is a priority species according to Annex II of the Habitats Directive. To support extant populations the Botanische Verein zu Hamburg (Hamburg Botanical Club) has introduced the Elbe water dropwort to a newly established tidal creek in the Hamburg Elbe estuary. The tidal freshwater habitats and the new population of the Elbe water dropwort have flourished. Introduction of the species and the subsequent scientific monitoring were publicly funded through a Federal research and development project (www.botanischerverein.de). Knowledge gained from the project will be incorporated into similar nature conservation and environmental impact compensation measures.

Elisabeth Klocke

Photo: H.-J. Augst

The global distribution of the Elbe water dropwort is restricted to the tidal flats between the cities of Geesthacht and Glückstadt.

for derogation from the Annex IV restrictions include imperative reasons of overriding public interest of a project or plan, lack of a satisfactory alternative, and that the conservation status of the affected populations will not deteriorate (§ 43, Sec. 8, Federal Nature Conservation Act).

Some plant species, such as arnika have traditionally been used for medication or other purposes. Such species are listed in Annex V of the Habitats Directive. Continued sustainable use of these species is granted when, for example, the use does not endanger population size and, thus, long-term sustainable yield. There are approximately 200 Annex V species in the EU, 87 of these species are found in Germany.

Mainly as a result of historic developments and independent of their conservation status, all bird species naturally occurring in Europe are protected and subject to provisions similar to those for the Annex species of the Habitats Directive.

The Natura 2000 sites also protect those species of both plants and animals which are characteristic for Annex I habitat types. Since these particular habitat types are already protected, there was no need to include species that are characteristic for such habitat types in the Annexes devoted to species protection.



beide Photos: F. Grawe

According to the Habitats Directive, specific reserves are to be established in order to preserve Annex II species. In the case of the bats, protection of summer roosts is particularly important.

Greater mouse-eared bats (above) roost in the attics of larger buildings. This explains why the City Hall in Höxter/Westfalia (left), harbouring approximately 100 animals, has become a Natura 2000 site.



Photo: A. Nöllert



The European fire-bellied toad inhabiting north-eastern German lowlands is a species listed in Annex II and IV of the Habitats Directive.

Agency for the Environment, Nature Conservation and Geology, Federal State of Mecklenburg-Vorpommern



Floodplain bogs in Mecklenburg-Vorpommern

The network of floodplain bogs in north-eastern Germany developed about 10,000 years ago, near the end of the last glaciation period when huge quantities of meltwater flowed toward the Baltic Sea. As the sea level rose between 5,000 to 6,000 years ago, bog formation began and was enhanced by extensive forest clear-cutting during the medieval period. Harbours a large number of endangered habitat types and species which are well worth being protected, the Warnow, Recknitz, Trebel, Peene and Tollense river valleys form the backbone of the terrestrial Natura 2000 network in the Federal State of Mecklenburg-Vorpommern (green colour: Natura 2000 sites having floodplain bogs).

Hermann Baier

Besides habitat types characteristic of riverine wetlands, the Rustow-Randow polder in the Peene Valley harbours numerous species listed in the annexes of the Birds and Habitats Directives. These include beaver, fire-bellied toad, great bittern, black tern and bluethroat.

Photo: L. Wölfel





Photo: F. Grawe

A natural section of the Nethe River (Habitat Type 3260), a tributary to the Weser River. The Nethe River is a Natura 2000 site along much of its course.

4. FAVOURABLE CONSERVATION STATUS – BASIC MEASURE FOR SUCCESS

The central aim of the Habitats Directive is “to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest” (Art. 2(2)).

What is a favourable conservation status?

Conservation status results from all the influences affecting a certain protected habitat type (including characteristic species, structures and functions) or a protected species (including specific habitats and populations). The conservation status is favourable in the long term if range, distribution and population sizes are stable or expanding. Thus, favourable conservation status is more than just preventing species and habitat types from going extinct (which in Germany would correspond to assessment based on Red Data Books). Rather, favourable conservation status is intended to secure permanent protection of a habitat type and/or survival of a species of community interest in sufficiently large areas



Photo: M. Wolke

The kingfisher is a species that characterizes our streams (Annex I, Birds Directive). It breeds in self-made burrows along steep riparian banks characterized by erosion. Branches reaching above the water surface provide it perches for successful hunting of small fish.

and/or numbers in their natural surroundings. Assuring this is the key task to be accomplished by the “Natura 2000” network. Achievement of a favourable conservation status in the biogeographical regions is assessed by reports due every 6 years and by on site determination of conservation status (monitoring).

In summary: measures to implement the Habitats Directive are targeted at the achievement of an overall favourable conservation status for the species and habitat types listed in the Annexes I and II of the directive.

Measuring conservation status for Natura 2000 sites

Sites to be included in the Natura 2000 network were selected according to their importance for the preservation of habitat types and species of community interest (Annex I and II of the Habitats Directive). Sites were selected according to the criteria listed in Annex III of the Habitats Directive. For habitat types these include: a) degree of representativity; b) relative area; c) conservation status; and d) global assessment. Accordingly, for the Annex III criterias the site selection process includes site specific assessments for habitat types and species. These assessments are reported on the standard data form. The effort pays! Without detailed information on conservation status of protected habitats and species, conservation objectives for a certain area cannot be properly defined. Definition of conservation objectives is a precondition for identification of appropriate measures, conservation priorities and, thus, sound management.

Assessment of conservation status for Germany and Europe

Conservation status for habitat types and species is also assessed at the national and EU levels. Reference areas for assessments are the biogeographic regions. Evaluations are based on a simple “traffic light” scheme (green = favourable, yellow = unfavourable / inadequate, red = unfavourable/bad). The assessment protocol is standardized for the EU as a whole. The assessments of site specific conservation status provide a weighted component included in the overall evaluation on the biogeographic scale. The overall assessment does not only take into account occurrences within Natura 2000 sites, but all occurrences within Germany or the EU, respectively. The “traffic light” scheme is an important com-



Photo: M. Wölke

Extended areas with feather grass characterize the steppic grasslands (Habitat Type 6240*) in the “Kyffhäuser-Badraer Schweiz-Solwiesen” Natura 2000 site (Federal State of Thuringia)

Steppic grassland in the Kyffhäuser

The continental steppic grasslands in the Kyffhäuser Mountains are home to an unusual number of animals and plants from the southeastern European steppe and the Mediterranean regions. These include different species of feather grass, several globally endangered species of broomrape, spiders and blues (butterflies). Steppe and Mediterranean species take advantage of the extremely dry and warm climatic conditions and the open gypsum-karst landscapes in the Kyffhäuser region. The Kyffhäuser grasslands are maintained by traditional sheep or cattle grazing.

Jürgen Pusch

ponent of the monitoring and the status reports required by the EU Commission in 6 year cycles (see chapter 11).

Target oriented protection – on site flexibility

The actual occurrence and distribution of protected species and habitat types define the target areas for nature conservation within Natura 2000 sites. This is different from the “classical” German approach,

A, B or C ...?

Natural or semi-natural streams are rarely found today in Germany. Most streams have been altered by humans. In the past, the Diemel, a small river of the northern low-mountain region provides a good example of a stream altered by humans. Good water quality and high structural diversity characterize streams at an excellent (A) or good (B) conservation status. Steep streamside slopes, gravel and sand bars are a precondition for the presence of rare and protected species such as the European bullhead, the brook lamprey or the kingfisher.

Conservation status of semi-natural dry grasslands depends on continued, low intensity use. As pastoral use is abandoned over the years, these grasslands lose their value for nature conservation. Shrubs invade and competitively superior and rather common grasses replace the competitively inferior and often endangered vegetation which depends on greater light input.

Burkhard Beinlich

Channelised section of the Diemel River near Warburg / Westfalia with nearly complete destruction of Habitat Type 3260



Photo: F. Grawe

Natural section of the Aa River (Habitat Type 3260) flowing through an alluvial forest (Habitat Type 91E0) in the "Sätzer Moos" Natura 2000 site, Federal State of Northrhine-Westfalia.



Photo: F. Grawe

Photo: F. Grawe



Flowering aspect of the fragrant orchid in an intact and species rich dry grassland (Habitat Type 6210, conservation status A) within the "Warmberg-Osterberg" Natura 2000 site in the Diemel River valley, Federal State of Hesse

Photo: F. Grawe



Dry grassland that has been fallow for many years (Habitat Type 6210, conservation status C) and is now dominated by grassy vegetation within the "Kalkmagerrasen bei Ossendorf" Natura 2000 site in the Diemel River valley, Federal State of Northrhine-Westfalia.

where the reserve area is protected as a whole. A Natura 2000 site may hold "blind spots", i. e. patches without protected habitat types or species. Construction and other development projects may be implemented on the blind spots, provided that these projects do not negatively affect the conservation status of protected species and habitat types within the site. On the other hand, plannings or interventions outside a Natura 2000 site, usually are not eligible, if significant negative impacts might occur for protected habitat types and species inside a Natura 2000 site (see chap. 10).

For example, if the spawning area of a protected fish species is located within a Natura 2000 site, then building a dam 20 km downstream and outside the protected area is only permissible if mitigation measures (e. g. fish ladder, migration channel around the dam) allow for continued passage of fish toward their spawning areas.

Natura 2000 sites in Germany may be assigned different legal status such as nature reserve, landscape reserve, or they may be protected through local management contracts. The Bundesländer (Federal States) can choose the appropriate instruments to assure protection (see chapter 13).



Photo: K. Janke

Mudflats at low tide (Habitat type 1140) along the tidal coastline of the National Park "Wadden Sea of Hamburg"

5. ENVISIONING NATURA 2000 SITES

The Wadden Sea example

Protection of the Wadden Sea – a well recognized success story

One of the most important and largest Natura 2000 areas in Central Europe is located along the German coastline of the North Sea. The Wadden Sea is shaped by tidal dynamics. A band of the sea floor up to 20 km wide is exposed and reflooded twice a day.

As early as in 1978, the three countries bordering the Wadden Sea (The Netherlands, Denmark, and Germany) instituted the Trilateral Wadden Sea Cooperation for the protection of the Wadden Sea. The cooperation serves the sustainable development and the preservation of this unique landscape for future generations. Probably the most important result of this cooperation is the development of a

trans-boundary management system, which is also an outstanding model for international collaboration.

In Germany, the Federal States of Schleswig-Holstein, Hamburg, and Lower Saxony share the Wadden Sea. As a consequence, different SACs and SPAs had to be selected to protect the Wadden Sea environment. In terms of territory, SCIs and SPAs cover almost identical areas (see Table p. 32). In Germany alone, and within the 12 mile boundary of territorial waters, more than 730,000 ha are now protected by the provisions of the Habitats Directive.

The Hamburg, Schleswig-Holstein and Lower Saxony Wadden Sea National Parks are at the centre of the Natura 2000 sites. In 1998, the Lower-Saxony National Park was declared a Natura 2000 site. Since the autumn of 2004, all of the 3 national parks have become part of the European Natura 2000 network



Photo: H.-J. Augst



Photo: K. Janke

The sand beaches along the North Sea coast are separated from the inland by shifting white dunes (Habitat Type 2120) that are up to 20 m high. The dominant plant is the European beachgrass. Picture taken near the City of St. Peter Ording (Federal State of Schleswig-Holstein) in the "Nationalpark Schleswig-Holsteinisches Wattenmeer und angrenzende Küstengebiete" Natura 2000 site.

Over time the shifting white dunes transform into fixed coastal grey dunes (Habitat Type 2130*). These dunes are a priority habitat type according to the provisions of the Habitats Directive. Pictured are dunes from Sylt Island (Federal State of Schleswig-Holstein) covered with extended dwarf scrub heath.

(SACs and SPAs). In order to fulfill the provisions of the Habitats Directive, a modification of the Trilateral Wadden Sea management plan will be completed by 2010.

The Wadden Sea - an environment subject to continuous change

The Wadden Sea is only a couple of thousand years old; making it very young on a geological time scale. The Wadden Sea formation is linked to the most recent glacial periods, giant sediment movements and the rise of the sea level that continues to date. The Wadden Sea is an example of landscape transformation over a relatively short period of time. The islands and the sand bar habitats protected under the

Habitats Directive continue to be highly dynamic; subject to the powers of the sea and winds, they continuously change their shape and location.

Towards the mainland, there is a transition from the regularly flooded mudflats to salt marshes, a habitat type also protected on a European scale under the Habitats Directive. These salt marshes contain highly specialized plant associations and their corresponding fauna which are tolerant of salt water. Wherever sandy beaches form the coastline, there is a dynamic succession from recent white dunes, to older grey and finally to brown dunes. This whole range of dune habitats is also protected on a European scale according to the Habitats Directive.

Mudflats – diversity associated with sand and mud

At a first glance, the habitats created by the Wadden Sea do not appear to be highly structured, supporting numerous species of plants and animals.

However, a closer look at the mudflats reveals intense activity caused by “underground” inhabitants. The numerous inhabitants of the mudflats, mainly worms, snails, muscles and crustaceans, leave characteristic tracks. Few species exist on the surface of the mudflats exposed after the water retreats. These include mussels capable of forming large living reefs, which provide habitat for other species of animals and plants.

The large tidal inlets – “Priele” in German – not only represent lifelines from the Wadden Sea, they also provide a window into the coastal marine environment. The tidal inlets host typical marine organisms that lack adaptations to life outside of the aquatic environment. Hermit crabs, starfish, sea anemones and other Hydrozoans, as well as numerous species of fish, enrich the spectrum of species found in the inlets. Other inhabitants of the inlets include several species of flat fish and shrimps (in German called “Krabben”). These species are highly valued by gourmets and are commercially exploited by coastal fishermen.

The North sea shrimp, known as “Nordseekrabbe” in Germany, is a keystone species in the Wadden Sea ecosystem. The shrimp is both a predator and an important prey item for fish, birds and seals. As a typical North Sea delicacy, it is also highly important for humans.

Photo: K. Janke



Photo: M. Wolke

The EU Birds Directive and the Ramsar Convention both target protection for migratory water birds (e. g. geese)

Ramsar Convention and Natura 2000 in the Federal State of Sachsen-Anhalt

The legally binding Ramsar Convention represents the agreement on the protection of internationally important wetlands, for example as a habitat for water and wading birds. Currently, 1,636 sites encompassing almost 1.5 Million km² in 154 nations are protected under the Ramsar convention. This includes 32 sites in Germany (e. g. Wadden Sea, Oder Valley, Lower Rhine floodplain, Steinhuder Meer, Chiemsee). Two wetlands of international significance are located in the lowlands of the Elbe and Havel Rivers in the Federal State of Sachsen-Anhalt – the Aland-Elbe-Lowlands / Elbe Floodplain and the Lower Havel Lowlands / Gülper Lake / Schollener Lake. Both Ramsar wetland areas have also been designated as Natura 2000 sites under the EU Birds Directive. Tens of thousands of ducks and geese use these areas as resting and wintering sites. The sites are important on a European scale for the protection of birds such as the crane, the whooper swan and the Bewick's swan, the bean goose and the white fronted goose. Natura 2000 and Ramsar sites – a strong alliance!

Benjamin T. Hill & Christoph Sudfeldt

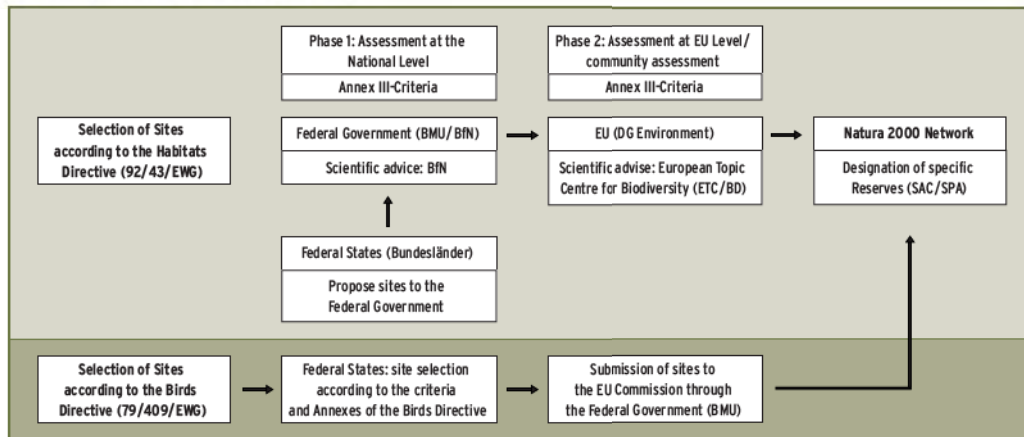
During migration, the Wadden Sea is an important hot spot for migratory birds. It then serves millions of birds as a resting site.

Photo: M. Wolke





Selection procedure for Natura 2000 sites



BMU = Federal Ministry for the Environment, Nature Conservation and Nuclear Safety; BfN = Federal Agency for Nature Conservation; EU DG Environment = Directorate General Environment of the European Commission; ETC/BD = European Topic Centre on Biodiversity in Paris; SAC = Special Area of Conservation (nationally designated protected sites according to the provisions of the Habitats Directive); SPA = Special Protection Area (nationally designated protected sites according to the provisions of the Birds Directive).



Photo: K. Janke

The common glasswort is one of few terrestrial plants that have been able to colonize the tidal zone (Habitat Type 1310). It uses specific adaptations to deal with the high salt concentrations of the sea water.

Table laid for hungry beaks

There is an abundance of food for hungry birds in the Wadden Sea. Up to 100,000 snails per m² have been recorded in the mudflats. Hence, it is not a surprise that the Wadden Sea developed into a very special habitat for birds. Every year, ten to twelve million birds use the Wadden Sea for breeding, moulting, overwintering or resting. It represents a “refuelling station” along the eastern Atlantic migratory route. The Wadden Sea, including the adjacent deeper marine regions, is highly important for the survival of many European waders, ducks, geese, sea swallows, and gulls. This is why the Wadden Sea has been designated as a Specific Protected Area (SPA) according to the Birds Directive.

In autumn and spring, birds provide a special nature experience for visitors to the Wadden Sea. While most of the breeding colonies are off limits, immense and spectacular flocks of migratory birds can easily be observed on the mudflats and in the skies above the Wadden Sea.



Photo: A. Hoffmann

Year round the Wadden Sea is characterized by rich bird life due to high food availability. Birds are particularly conspicuous during migration, when millions of water birds and waders rest in the "Wadden Sea" area to replenish energy reserves before continuing their migration.

Wadden Sea Natura 2000 sites

SAC-name	Site number	Area (ha)	Federal State
Schleswig-Holstein Wadden Sea National Park and adjacent coastal regions	0916-391	452,455	Schleswig - Holstein
Hamburg Wadden Sea National Park	2016-301	13,750	Hamburg
Lower Saxony Wadden Sea National Park	2306-301	276,956	Lower Saxony
North Frisian Islands (Sylt, Amrum, Föhr)	1016-391, 1115-391, 1115-391, 1116-391, 1115-301, 1315-391, 1316-301	6,586	Schleswig - Holstein
Coastal regions in Schleswig-Holstein and estuaries (e.g. Elbe, Weser, Ems estuaries)	1219-391, 1617-301, 1618-402, 1719-391, 2018-331, 2323-391, 2316-331, 2507-301, 2507-331	58,075	Schleswig-Holstein, Lower Saxony
total		807,822	

Source BfN (Federal Agency for Nature Conservation)

Satellite image showing the German North Sea Coast with the different Natura 2000 sites.



Satellite image: Brockmann-Consult

Photo: M. Klüber



Grasslands protected at a European scale in the Rhön Mountains

The higher ranges of the Rhön biosphere reserve harbour one of the largest and most diverse, contiguous complexes of protected grassland habitat types found in central Europe. Different types of mountain hay meadows (Habitat Type 6520) are interspersed with species rich Nardus-grasslands (Habitat Type 6230); tall herb communities (Habitat Type 6430) are encountered adjacent to the numerous brooks. For almost 20 years, conservation contracts have been awarded to local farmers to ensure continued low intensity use of the grasslands. Plots are cut late once every year, but still deliver hay that can be used as fodder. The Hochrhön grasslands offer much to visitors. From mid-May to the end of June, numerous grassland trails lead through a sea of wild flowers.

Michael Geier



SPA (Birds Directive)

SAC (Habitats Directive)
(white line)



Natural forests in Central Europe
are dominated by beech forests
of different age classes
(Natura 2000-site "Kellerwald").

Photo: A. Hoffmann





Beech forests – a World Natural Heritage

Extended beech forests are a European phenomenon, originating from a unique evolution and development of the vegetation, following the glacial and post-glacial period. It is widely agreed that beech forests must be preserved within their natural range; this includes their whole ecological and biogeographic variation. A cluster of European beech forest will be nominated for addition to the UNESCO World Heritage List. European beech forests are an “outstanding example for an important, ongoing ecological and biological process”. They, thus, meet one of the key criteria of the World Heritage guidelines.

Andreas Hoffmann

6. NATURA 2000 IN FORESTS

In the natural state, Germany would be largely covered by forest. Currently, approximately one third of our country is forested. Germany, thus, is one of most forest rich countries in central Europe. Some forests may appear rather pristine. However, pristine forests, not impacted by humans, do not exist in our country any more. Forests simply were too important economically to be left alone. In spite of their history of more or less intensive use, natural forests, in particular, fulfill a range of functions: they store water and carbon dioxide, provide oxygen, provide space for recreation and economic assets, and they are home to a large number of native European species of animals and plants. Forests are prime areas for local recreation from daily urban and professional stress. Every weekend, solitude, tranquillity, pure air and clear streams draw millions of city dwellers into the woods.

The beech – a true European

In Germany, natural forests are dominated by deciduous trees. While the oak is often assigned a central place in German myth and culture, the European

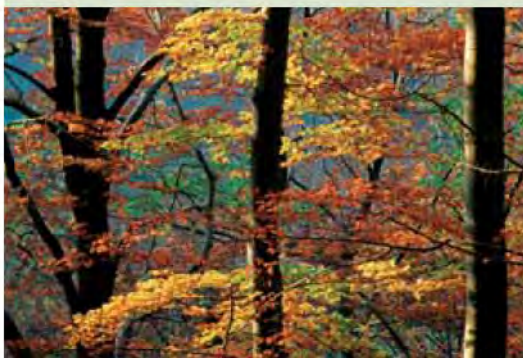


Photo: F. Grawe

Autumn colours in
a beech forest.



Photo: R. Schaal

In the Alps, larch and larch-arolla forests (Habitat Type 9420) form the upper forest limit and are important for avalanche prevention (Jenner Mountain, Berchtesgadener Alpen, Federal State of Bavaria).



Photo: A. Ssymank

Besides beech forests, which give central European low mountain ranges their characteristic appearance, numerous other forest types with unique habitat characteristics are protected by the Natura 2000 network. These include bog woodlands (Habitat Type 91D0).

Photo: F. Grawe



Beech, a straight growing tree with smooth bark, is particularly characteristic of German forests. The European Beech is restricted to Europe and has its centre of distribution in Germany. Therefore, Europe and Germany have a particular responsibility for the protection and preservation of beech forests. Germany has met this responsibility by the delineation of three national parks and numerous Natura 2000 sites mainly devoted to the protection of beech forests.

Beech forests vary! Depending on geological and soil conditions, the herbaceous communities associated with beech forests differ rather significantly. A rich herbaceous community, with many orchids in particular (including the rare lady's slipper), characterize the medio-european limestone beech forests (Habitat Type 9150). Particularly impressive is the spring flora in the *Asperulo Fagetum* beech forests. Before the leaves sprout in April and May, this forest floor is covered with corydalis, anemones or Bear's garlic. In contrast, the *Luzulo-Fagetum* beech forest on more acidic soils largely lacks an abundant herbaceous layer.

Luzulo-fagetum beech forest (Habitat Type 9110) in the "Hannoversche Klippen" Natura 2000 site (Solling Mountains, Federal State of Northrhine-Westfalia).

The Natura 2000 network harbours the 5 most important types of beech forest in Germany.

Protection of the forest associated diversity

Forests are one of the cornerstones of the Natura 2000 network in central Europe. While in the past efforts to protect forest were mainly aimed at



Photo: F. Grawe

In the spring before the leaves sprout, the forest floor of beech forests on limestone (Habitat Type 9130), turns into a sea of flowers. Particularly beautiful is the larkspur bloom ("Schwimelkopf" Natura 2000 site, Federal State of Northrhine-Westfalia).



Photo: F. Grawe

Bear's garlic or ramson in an "Asperulo-Fagetum" beech forest (Habitat Type 9130) in the "Hinnenburger Forst" Natura 2000 site (Federal State of Northrhine-Westfalia).

left: The *Rosalia longicorn* beetle is conspicuously colourful and its body up to 3.5 cm long (Annex II and IV). It is one of the most beautiful and most impressive beetles in the German fauna. Larvae develop in dead deciduous wood that is well exposed to sunlight. In central Europe, the European beech (*Fagus sylvatica*) is the preferred host for the larvae.



Photo: U. Bense

right: Contrary to his much better known white cousin, the black stork is inhabiting our forests; it is secretive and extremely sensitive to human caused disturbance.



Photo: M. Wolke

specific and unusual sites, Natura 2000 reaches beyond! In Germany, Annex I protects a range of 17 different forest types. Annex I forest habitat types within Natura 2000 sites encompass almost 800,000 ha; these correspond to 51% of the protected habitat type area in Natura 2000 sites and approximately 2% of the German territory. Apart from the different beech forests, oak and oak-hornbeam forests, and bog woodlands restricted to rather small patches, ravine forests and alluvial forests along rivers and streams, also contribute to the protected European natural heritage. Coniferous forests are mainly represented by high mountain and alpine spruce communities found in the Alps and the higher regions of the central low mountain ranges. In addition, certain pine forests and alpine larch and arolla pine forests are protected according to Annex I of the Habitats Directive.

Forestry and Natura 2000

For the most part, forestry operations will still be possible within Natura 2000 sites. Overall, 50% of the total area of the Natura 2000 sites in Germany is composed of forest (forest cover in Germany is 31%). Barely half of the forest land within Natura 2000 sites corresponds to habitat types that are protected according to Annex I of the Habitats Directive. Not protected by the Habitats Directive are lowland spruce plantations, most of the pine forests and all the specially planted cultivars such as stands of poplar. Notably, within Natura 2000 sites, there are no restrictions to forest operations in such stands. Except for stands that provide habitat for Annex species such as roosts of the black stork or courtship display areas of the capercaillie.

Even in stands which are protected according to the Annexes of the Habitats Directive, forestry operations may still be permissible, if such operations adhere to nature conservation targets. Some secondary oak-hornbeam forests may even require continued use for maintenance. Sustainable forestry

The European wildcat – a strictly protected species according to Annex IV of the Habitats Directive

Photo: M. Wölke



Photo: Archiv LBV / B. Fischer

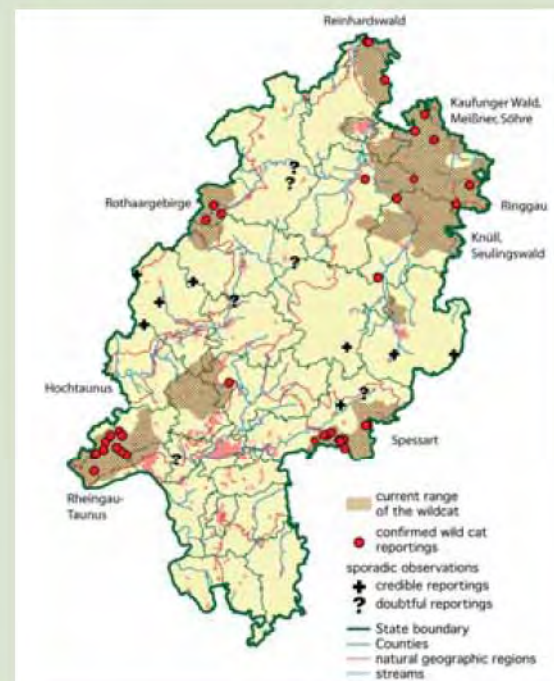
The black woodpecker is an important keystone species in our forests. The bird makes tree cavities which are subsequently inhabited by numerous other species.

and the preservation of biodiversity often do not conflict. It is decisive, that in spite of use, structural diversity is preserved in these forest associations. Animals like the black woodpecker or bats need a large assortment of old trees. Only old trees provide the cavities these species depend upon. Hundreds of species of beetles and mushrooms require dead wood as a basic component – these include spectacular beetles such as the *Rosalia longicorn* beetle and the great capricorn beetle. Forestry will have to rise to the challenge to preserve structural diversity while at the same time continue to use wood as a basic renewable resource. There are, however, some more demanding forest and dead wood species which require pristine relic areas; forest areas which are to be left without human use. In order to preserve the overall richness of forest species, the proportion of set aside forest within Natura 2000 sites should be increased. In these set aside areas, the importance of other functions such as flood and erosion protection, protection of drinking water and recreation will increase.

The Wildcat – silent paws wandering in the forest

The wildcat was formerly widespread over central Europe, but has suffered substantial reductions in total numbers since the beginning of the 20th century. Today, in the Federal State of Hesse, it is restricted to 4 disjunct centres of distribution: the Taunus Mountains, northeastern Hesse (e.g. Reinhardswald, Meißner, Ringgau), the Spessart and the Rothaar Mountains. Current studies show that the range of the wildcat has expanded over the past 15 years. Hesse has issued specific recommendations for the preservation of this secretive forest species in a series of leaflets on species conservation in forests ("Merkblätter zum Artenschutz im Wald").

Susanne Jokisch



Current distribution of the European wildcat in the Federal State of Hesse. Reports from 1991 through June 2004. (HMLV, Denk et al., 2004).



Photo: B. Beinlich

7. AGRICULTURE AND NATURA 2000 – PRESERVATION OF CULTURAL LANDSCAPES

Agriculture and landscape change

The varied central European cultural landscape has resulted from the labour of many generations of farmers. Until the middle of the last century, farming operations compensated for the lack of machinery with numerous farm workers and draft animals. It was not the power of the available machinery, but rather the condition of the draft animals that determined how much land could be farmed during any given day. Fields and meadows, in fact the whole landscape, were highly structured and patchy. These small varied landscapes provided abundant suitable habitat for many species. The overall shortage of nutrients produced sites with sparse vegetation and, thus, favourable for competitively inferior species. Today, the input of fertilizer is generally high, with up-to-date technology further contributing to the levelling of site differences, resulting in severe negative consequences for species diversity.



Dry calcareous grasslands (Habitat Type 6210) and beech forest (Habitat Types 9130, 9150) dominate the slopes of the Lauter River valley on the Swabian Alb Mountains (Federal State of Baden-Württemberg).

The Kaiserstuhl, an old cultural landscape in the Federal State of Baden-Württemberg, is famous well beyond Germany for viticulture and extended dry calcareous grasslands (Habitat Type 6210).

Orchid rich semi-natural calcareous grasslands are among the priority habitat types (Habitat Type 6210*) Pictured is the three-toothed orchid in the "Warmberg" Natura 2000 site (Federal State of Hesse).



Photo: F. Grawe

Agriculture in Natura 2000 sites

In Germany, the proportion of farmed land within Natura 2000 sites amounts to approximately 40% of the terrestrial Natura 2000 area. Fertile fields and intensively used grassland is not among the habitat types protected according to Annex I of the Habitats Directive. However in some regions, fields and grassland managed for high intensity production might actually harbour species that are protected according to the annexes of the Habitats and Birds Directives (for example resting geese and cranes). Overall, open landscape Annex I-habitat types comprise approximately 6% of the area covered by Natura 2000 sites. Most protected habitat types are located in marginal areas or in those cultural landscape segments, where intensity of use is low. Protected habitat types include heathlands, dry grasslands, species rich hay meadows in lowland and mountainous regions, and alluvial grasslands. The above mentioned habitat types along with their characteristic species were created by farming activities. Continued use is thus required for the maintenance of favourable conservation status at these sites. Farmers, who refrain from maximum output, preserve our natural resources – biological diversity and landscapes suited for recreation. Under these

Landscape conservation management at the Humperts

Species rich grasslands have frequently been reduced to small remnant patches. This has hampered use that is economically profitable. The Humpert family from Löwendorf in Höxter County (Federal State of Northrhine-Westfalia) have demonstrated, that low intensity use of species rich grasslands can be economically feasible. Overall, they manage 60 ha of grassland with their 800 sheep. This includes 20 ha of dry calcareous grassland and 10 ha of pastoral wetlands rich in orchids. The Humperts use old breeds of sheep – Baltic domestic sheep otherwise called "Skudden" sheep and white hornless heathsheep. Since these rather small animals are difficult to profitably market via conventional routes, the Humpert family uses the attraction of a 400-year old farm to directly sell their products. Mrs. Humpert, a mother of three, uses excursions and guided tours for students, both young and old, to not only advertise her products, but also to promote sheep keeping and the preservation of calcareous grasslands. She has been quite successful! Her effort is an example to be followed!

Burkhard Beinlich



Photo: B. Beinlich



Photo: F. Grawe

Shepherd Ortrun Humpert with her Skudden sheep.



Photo: B. Beinlich

The Lüneburg heathlands are an old and peculiarly charming cultural landscape.

circumstances, it is obvious that farmers should be compensated for their additional efforts which enhance nature conservation.

Cultural landscapes for recreation

Agriculture has created some key elements of our cultural landscapes. Examples include:

- **Heathlands:** Each year the “Lüneburger Heide” heathland attracts thousands of visitors into what are perceived as wild and romantic natural areas. But, the flowering heathlands resulted from specific land use practices and can only be maintained by land use practices adapted to the needs of the biological communities. Without the “4-legged lawn-mowers” – the “Heidschnucken” (heathland sheep) – there would neither be heathland, nor rare animals dependent on this habitat type, such as the heath cock, woodlark or European viper.
- **Species rich meadows:** Once widely distributed, species rich meadows that are cut once or twice each year are now hard to find. Today, these flower-rich meadows portrayed in the past, and thus “preserved” in so many paintings, are a rather rare sight. They are among the most severely endangered habitat types listed in Annex I of the Habitats Directive.
- **Scatter orchards:** extended orchards composed of large and scattered fruit trees are another typical habitat type of the cultural landscape. The orchards form a sea of flowers in the spring made up of colourful meadows and blooming trees. And, fruit trees not only please those, who love nature. They also deliver tasteful products such as honey, cider or aromatic distilled beverages. Old fruit trees, in particular, provide holes for cavity nesting birds such as the ortolan bunting, minerva owl and wryneck.

Photo: F. Grawe



Flower-rich hay meadow with meadow sage (Habitat Type 6510) in the SAC “Kalkmagerrasen bei Ossendorf”, Diemel Valley (Federal State of Northrhine-Westfalia).



Photo: F. Grawe

Orchards provide valuable produce. In addition, they harbour a large number of threatened species such as the little owl.



Photo: M. Wolke

The little owl (Annex I, Birds Directive) used to be common and widespread in scatter orchards, but has become increasingly rare.

Each traditional cultural landscape has its associated valuable grassland: Nardus-grasslands with Arnica in the siliceous low mountain ranges, dry chalk grasslands in calcareous regions, alluvial grasslands in the floodplains of large rivers.

Birds flying.....

In some regions, certain protected farmland species are important: the hamster in the loess regions of eastern lower Saxony, the whiskered brome (*Bromus grossus*) in southwestern Germany, or meadow breeding birds in certain grassland dominated regions. A different kind of agricultural plot might be temporarily important for migratory birds. Every year in winter, the grasslands along the lower Rhine or Elbe rivers change into a hot-spot for geese from northern Europe. In the autumn, cranes choose plain and regular fields in northern Germany to rest and gather food: Here “the birds of fortune” acquire the

The common hamster (Annex IV) is a synantropic species that prefers to build its dens in loess and clay fields.



Photo: Archiv LBV / R. Groß

necessary reserves for their subsequent long-distance flight to hibernation sites in southern Spain.

The cultural landscape as an economic factor!

Farmers can and should profit from Natura 2000. Through agri-environment programs, funds are available for the maintenance of the cultural landscape and for specific landscape care measures (Chapter 14). In the future, more such funds will be directed to compensate for low intensity land use practices in Natura 2000 sites. The Natura 2000 network, therefore, will deliver a reliable source of income for farming operations. Not only through the compensation provided for refraining from maximum production, but also through the publicity to be gained in agro-tourism and direct farm marketing. They already exist – farms which have Natura 2000 as a cornerstone for reliable income.

Arnica (Annex V) is an important medical plant. It typically occurs in Nardus grasslands.



Photo: M. Woike

Crane courtship display.



Photo: P. Leopold

Bogs and heathlands are the preferred habitat of the black grouse (Annex I, Birds Directive).

Photo: M. Woike



Natura 2000 within agri-environment programs – support for management of species rich grasslands in Baden-Württemberg

Low intensity use of agricultural lands creates diversity of plants and animals, but reduces agricultural yields. Agri-environment programs help compensate farmers for lost yields, fostering acceptance of nature and nature conservation. The MEKA agri-environment program in the Federal State of Baden-Württemberg specifically targets species rich grasslands within Natura 2000 sites. In the process of drawing up the State list of Natura 2000 sites, an inventory of species rich grasslands was compiled by specialists. As a result of this professional effort, the farmer does not need to prove the conservation quality of his land in order to obtain funding for these specific grasslands. Easy to implement conservation restrictions that can be handled in a flexible way are negotiated with the local conservation administration. This is an example of how the Habitats Directive approach can be translated into workable local action: target-oriented management rather than inflexible regulations. Target-oriented agri-environment programs can be less bureaucratic, provide measures that are shaped according to individual needs, and do not carry a heavy liability burden. Such programs offer a reliable and attractive source of income for farmers!

Martin Dieterich



Photo: J. Einstein

The Baden-Württemberg State agri-environment program MEKA specifically honours use of cutter-bars for environmentally friendly grassland management.



8. NATURA 2000 – EUROPE-WIDE PROTECTION FOR INLAND WATERS

Water – the basis of life

Life on Earth arose from aquatic systems and continues its strong dependency on water. Humans, animals and plants need water – to satisfy basic physiological needs on a small scale cellular level and on a large scale as ecological habitat. Water forms landscapes; water is a key element shaping lakes, rivers and streams, springs, and wetlands. Hence, there are very good reasons to specifically protect aquatic ecosystems and wetlands under European law.

Natura 2000 protects inland waters

A significant proportion of endangered species inhabit aquatic or wetland ecosystems. Species such as salmon, sturgeon, lampreys, European pond turtle, fire bellied toad and the thick shelled river mussel have vanished from many of our inland waters. Mammals such as the river otter have disappeared or have been at the verge of extinction in the western German Federal States. Now, all these species and many others are protected by the Habitats Directive. Their populations should be able to recover!

Within Natura 2000 sites, different aquatic habitat types are also protected under the Habitats Directive. These include certain types of lakes, ponds, and streams. Overall, our inland waters, including the estuaries, comprise almost 9% of the habitats that are specifically protected by the terrestrial Natura 2000 network in Germany (Annex I habitats).

Since the end of the year 2000, the European Water Framework Directive (WFD) has been in effect, covering protection and management of European water resources. Assessments conducted under the WFD confirm that the ecological status of about 60% of our running waters is unsatisfactory. The same holds true for approximately 50% of our lakes!

In the coming decades, Natura 2000 and the WFD will significantly contribute to the improvement of the ecological status of inland waters and, thus, also help those species directly dependent on aquatic and wetland ecosystems.

Photo: F. Grawe

left: Natural headwater stream (Habitat Type 3260) in the Natura 2000 site "Selbitz, Muschwitz und Höllental", Franconian Forest, Federal State of Bavaria

below: The European bullhead, listed in Annex II of the Habitats Directive, inhabits the headwater reaches of our streams.



Photo: R. Altmüller

Causes for degradation

Most German lakes are impacted by nutrient and pollutant loads. Basic structural components of our streams have been severely damaged. Straightening of rivers, fortifying banks, construction of dams or dykes, and drainage of whole landscapes have caused severe ecological degradation of our aquatic systems. As a consequence, many stream habitats and stream species are highly endangered at the national level.

Natura 2000 generates hope

Natural streams and their floodplains are highly species rich – biodiversity hot spots. Where land and water meet, the power of the water causes



Photo: HPA

To be honest: we were pretty shocked when we realized in 2004 that the whole Elbe estuary including access to the Hamburg port was going to be designated a protected Natura 2000 site.

However, now we understand that Natura 2000 designation provides an opportunity for joint activities: detailed studies using different approaches, including a 3-D-computer model. Also, experiences in other European estuaries have shown us that economic development and nature conservation can compliment each other. Nature conservation, flood protection, fisheries, economy and tourism, can equally benefit from sustainable development of the Elbe estuary.

Our goal is to minimize effects from siltation, which causes problems for all involved parties, by dampening tidal energy through river engineering, creation of floodplains and a holistic approach to sedimentation management.

Heinz Glindemann
Director River
Engineering
Hamburg Port Authority



Alluvial forests (Habitat Type 91E0) are inseparably linked to water courses. These priority habitats are strictly protected under the Habitats Directive (Sieg River, Federal State of Northrhine-Westfalia).

Photo: Ch. Buchen



Heath pond in the "Oberlausitzer Teichlandschaft" biosphere reserve and Natura2000 site (Federal State of Saxony).

Photo: Archiv LFUG / G. Fünfstück

Pond landscape in the Oberlausitz

In terms of surface area the Oberlausitzer Heideland (heathland) is among the largest SPAs and SACs in the Federal State of Saxony. On both a national and a European scale, a varied cultural landscape is an important refuge for species that depend on healthy aquatic ecosystems. Here, the otter (*Lutra lutra*), which in the past was rigorously pursued for its fur and as a competitor for fish, has its highest population density in Germany. Similarly, the extremely rare floating water plantain (*Luronium natans*), which depends on nutrient poor ponds exposed to sunshine, is more abundant here than anywhere else in Germany. Many other species listed in the Annexes of the Habitats Directive such as the pond bat, the European wheather loach, the fire bellied toad, the large white-faced darter, and the moss grass find suitable habitat in the Oberlausitzer heathland ponds.

Benjamin Hill



Photo: H.-J. August

Rivers and streams with floating vegetation (Habitat Type 3260) are protected under the Habitats Directive (flowering aspect of the white water-buttercup, Osterau River, Federal State of Schleswig-Holstein).

continuous change and structural diversity, yielding a wide range of habitat types. Pure dynamics! Natura 2000 supports the restitution of natural stream dynamics. In addition, active restoration will be required if the conservation status of Annex I stream habitat types is poor. Additional engineering affecting diversity in the channel, along the riparian areas or in the floodplain will be prevented! Discharge of nutrients and pollutants into lakes is to be reduced or eliminated! The water of lakes shall become clearer; and, as a consequence, beautiful beds of aquatic plants will again develop and become a notable feature of our landscape.

Water Framework Directive and Natura 2000 – promising interactions

It is the stated goal of the WFD to preserve or restore the favourable ecological and chemical status of all surface waters, to preserve or restore favourable chemical and quantitative status of groundwater; and to protect and improve the conservation status of Natura 2000 sites which are directly dependent on aquatic resources. According to the WFD, favourable

Photo: R. Köhler / DGL AK Tauchen



Photo: M. Woike



center left: Lake Stechlin, a clear water lake with different species of stonewort (Habitat Type 3140) in the Natura 2000 site "Stechlin" (Federal State of Brandenburg).

lower left: Wide shallow lake margins with large-leaved floating vegetation and reedbeds characterize the Habitat Type "Natural Eutrophic Lakes" (Habitat Type 3150). Pictured is the Kellener Altrhein, Federal State of Northrhine-Westfalia.



The otter (Annex II and IV) finds ideal conditions in the Oberlausitz.

Photo: adpic/ M. Kempf



status of aquatic systems exists when the human impacts on aquatic systems only cause slight deviation from the natural reference state of the lake or stream type in question.

Both, the WFD and the Habitats Directive include provisions that require EU member States to prevent further degradation of the ecological status of aquatic systems. According to both directives, efficient inventory and monitoring programs are a prerequisite to assess and subsequently guide future development. In this context, suitable management measures are to be devised to significantly improve the ecological status of inland waters in the immediate coming years and future decades.

While the WFD targets favourable ecological status of all inland waters – with possible exceptions only under certain conditions – Natura 2000 focuses on specific endangered aquatic habitat types and species. Natura 2000 also targets the preservation and improvement of the ecological status of small water bodies, whereas the WFD focuses on lakes >50 ha and catchments >10 km².

The interaction of WFD and Natura 2000 holds enormous potentials for positive outcomes. This will benefit all parties – nature, landscape, and, above all, the people!

Gravel bars above and below the water surface characterise natural streams in German low mountain ranges. Many species of fish such as grayling, trout and salmon depend on gravel bars for spawning.

The stepping stone concept for the protection of migratory fish – coherence matters

About 90 of the 450 European species of freshwater fish occur in Germany. Each of these fish species migrates. Their migration distances vary, however. The fish species that migrate over long distances are in particular need of resting areas (e.g. mouths of tributaries, backwaters or protected zones behind islands).

Fish species protected under the Habitats Directive, in addition to requiring spawning sites, also need protection of all the different habitat types they use during their life cycle. In order to ensure migration between different habitat types, the “stepping stone” concept was developed in the Federal State of Baden-Württemberg. This concept requires designated resting and recovery areas in rivers and streams. These designated areas are to be established every 10–20 km, extend over at least 2–3 km and span the river from bank to bank.

Ronald Fricke

Photo: B. Stemmer



The salmon is the most popular migratory fish (Annex II). It has become indigenous in Germany again during the last few years.

Photo: F. Grawe



Harbor Porpoise

The harbour porpoise (*Phocoena phocoena*), a relative of dolphins, represents one of the smallest species of whale (maximum length 2 m). It also is a protected species listed in Annex II and IV of the Habitats Directive. The harbour porpoise mainly feeds on fish and inhabits shallow coastal waters in the northern hemisphere. After almost no recordings of their presence in the North Sea during the 1970's, the population there has recovered and apparently stabilized. It is estimated that currently there are about 38,000 individuals in Germany's EEZ alone. However, the situation is much worse in the Baltic Sea. There, the harbour porpoise is reduced to small numbers in western areas. Permanent fishing nets on the sea floor, under water noise pollution, contaminants, over fishing of prey species and shipping accidents are considered the major threats to the harbour porpoise. In 1999, a harbour porpoise rearing area was established west of the Islands of Sylt and Amrum as the first European reserve designated to the protection of these whales. Fisheries and shipping in the area are subject to specific ordinances. Most importantly, and for the first time, local people and local policy makers have realized that we have whales in our coastal waters that need protection!

Thomas Borchardt



9. UNKNOWN BEAUTY FAR OFF THE COAST

The Natura 2000 European network of protected sites aims to preserve and restore the diversity of habitats and species on land and in the open sea beyond the 12 mile boundary. When thinking about the sea, people usually associate the offshore regions with distant horizons, wind, waves, and storms; i.e. the ocean surfaces, far away from more familiar, secure land environments. Rarely does one imagine the abundance of life below the surface. Of course, the sea is also relied on for human commerce. In this context it is seen by each industry in terms of its practical implications regarding, for example shipping, fisheries, wind power, underwater cables and pipelines, oil and gas drilling or sand and cobble extraction. But, there is much more in our seas and oceans.

The secrets of oceanic life are still largely unknown and only recently has marine ecological research begun to gain insights into this realm. Some key



Photo: B. Lammel

Harbour porpoise



Photo: F. Groß

Far off the North Sea coast.

The coastal waters of the North Sea provide habitat for the harbour seal, protected according to Annex II of the Habitats Directive.



Photo: K. Janke

questions for marine biodiversity research off the German coasts have included:

- Where are the most valuable sand banks and reefs located?
- Where do seals and porpoises obtain their food, where do they rest?
- Which species of endangered sea-birds hibernate, moult and feed off the coast?

In recent years, research projects in the German Exclusive Economic Zone (EEZ: zone between 12 and 200 nautical miles off the coast) have been supported by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and coordinated by the Federal Agency for Nature Conservation (Bundesamt für Naturschutz, BfN). This has involved partnerships with German

research institutions specializing in the particular research questions being addressed. The Federal government through its Federal Agency for Nature Conservation (BfN) is responsible for conservation issues in the EEZ, whereas the Bundesländer (Federal States) are responsible within the Territorial Waters (0 – 12 nautical miles zone).

Results from the research projects fed into spatial analyses, were then verified and refined through an intensive consultation processes. Ultimately, ten marine Natura 2000 sites were delineated in the German EEZ and nominated to the EU Commission.



Photo: Photolatur / H. Duty

The Baltic Sea is a major wintering site for the long tailed duck (Annex II, Birds Directive)

Bird protection in the Baltic Sea – the Pomeranian Bay nature reserve

During dark cold winter, when the northern parts of the Baltic Sea become covered by ice, many sea ducks, divers and auks will gather in the southern parts of the Baltic Sea on the Odra Bank in the Pomeranian Bay. Even during very harsh winters, the Baltic Sea will retain open water in these areas. Here, the sandbanks and reefs are easy-to-access feeding grounds which at the same time are far away from the disturbances of major shipping routes. More than 200,000 ha in this region are reserved for the protection of birds. This considerable size is necessary since up to 245,000 long-tailed ducks (more than 40 % of the Baltic Sea population) and 55,000 velvet scoters overwinter in this area on the sea. In addition, birds like red-throated and black-throated divers, red-necked and horned grebes arrive from their summer breeding grounds, which are further north in Scandinavia and Russia, to spend the winter on the Pomeranian Bay. With the return of long summer days, the Pomeranian Bay nature reserve is not left empty! It is frequented by up to 100,000 common and velvet scoters during their moulting season; under scoring why this nature reserve is so vital to birds.

Jochen Krause



Photo: BfN / D. Schories



Photo: BfN / D. Schories

Reef (Habitat Type 1170) in the Baltic Sea with red algae and starfish



Photo: BfN / Krause-Hübner

Rather bizarre inhabitants of the North Sea reefs (Habitat Type 1170) – Plumose anemone (upper left) and sea urchins (lower left).

While moulting their plumage, geese and ducks are incapable to fly for a certain period. During this phase many species depend on remote marine refuges such as sand banks in the coastal areas.



Photo: H.-J. August

These sites host outstanding examples of sandbank and reef communities, providing habitat for benthic organisms such as starfish, sea anemones and mussels, as well as endangered migratory fish species such as the twaite shad and river lampreys. Migrating long distances, common seals, harbour porpoises and grey seals use the marine protected areas for feeding and reproduction. Offshore, in the German EEZ, rare birds like red throated and black throated divers, long-tailed ducks, and common and velvet scoters occur in densities that are significant at the international level. Outside of the breeding season, these birds rest, feed and moult in these important foraging grounds.

The newly established Natura 2000 reserve system in the German offshore waters is a significant step forward in the preservation of marine biodiversity. However, further steps are required; in particular efforts to limit human impact to levels that ensure sustainability of marine flora and fauna and that guarantee a healthy marine environment in the future. Many questions relating to the sustainable management of these unique marine habitats are still unanswered, and research continues to seek the best solutions available.



Photo: BfN / Krause-Hübner

Dead man's fingers, a coral attached to the rocks of Sylt Island's outer reef (Habitat Type 1170).

Reefs in the North and the Baltic Seas

In earlier times, before the advent of accurate nautical charts, underwater reefs had a bad reputation among sailors since they represented an invisible underwater hazard upon which ships could founder. Today, many scuba divers, snorkelers and photographers have peered beneath the surface to discover the diverse, sometimes bizarre and often colourful organisms encountered on reefs. Reefs in the German North and Baltic Seas are usually built of rock deposits formed during the last ice age. The hydromorphological differences in both seas facilitate the settlement of different plant and animal communities. In the Baltic Sea, algae and mussel beds dominate the reef communities of the Adlergrund and the Kadettrinne, whereas the outer reefs along the Island of Sylt in the North Sea are predominantly colonised by sea anemones, keeled tubeworms and dead man's fingers. Sea urchins graze the micro organisms on the surface of the boulders. In Germany 2,173 km² of reefs have been described and inventoried. Currently, approximately 30 % of these reefs are protected by the Natura 2000 network.

Jochen Krause



Photo: BfN / Krause-Hübner

Common mussels build biogenous reefs (Habitat Type 1170) that provide habitat to numerous marine organisms ("Adlergrund" in the Baltic Sea).



Photo: DEGES

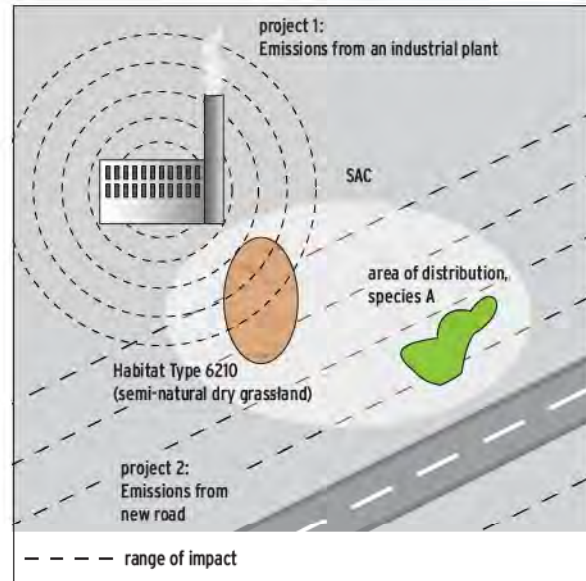
The A20 motorway crossing of the "Peene Valley" SAC (Habitats Directive) and SPA (Birds Directive)

10. PROTECTION TO A REASONABLE DEGREE – APPROPRIATE ASSESSMENTS FOR PLANS AND PROJECTS

Natura 2000 – what does it mean for development?

The Natura 2000 network of protected sites is designed to secure the beauty and values of European natural heritage for future generations. Natura 2000 contains Europe's most endangered habitat types and species. It is absolutely essential that the EU protect these habitat types and species from further loss. Consequently, deterioration of conservation status within Natura 2000 sites is not permissible (Art. 6, Sec. 2, Habitats Directive). There is no explicit ban on plans and projects for development and infrastructure. However, there is an obligation to conduct appropriate assessments at different levels to ensure protection of habitat types and species.

Appropriate assessments are required of plans and projects which individually or in combination with other plans and projects, might negatively affect the conservation status of protected species and habitat types in Natura 2000 sites (Habitats Directive (Art. 6, Sec. 3). Significant impact may also result from plans and projects to be conducted outside a protected site. Roads, for example, might cause increased noise and emission of pollutants, dissection of important migration routes and lowering of the water table, thus, impacting Natura 2000 sites.



Cumulative effects – smaller impacts when considered in isolation might not affect favourable conservation status, but when added up all together for a specific area or site could create an overall impact that does. Impact assessments must take cumulative impacts into account. For example, in order to produce a valid impact assessment that would gauge the effects on favourable conservation status, emissions from an industrial plant combined with impacts from nearby road construction must be considered jointly.

In order to maintain administrative efficiency, appropriate assessments are conducted in three subsequent phases: initial screening, appropriate impact assessment, assessment for exemption. Passage of an earlier phase is the prerequisite to enter a subsequent assessment phase.

Screening – a quick and efficient procedure for cases that are not critical

The initial screening determines if there is a possible impact to the favourable conservation status of species and habitat types within a Natura 2000 site due to a plan or proposed project. If the possibility of negative impacts can be excluded with certainty, then a project may go ahead without a more detailed assessment. The precautionary principle has to be applied in these initial screenings, since the Habitats Directive clearly states that a more detailed assessment is mandatory when a negative impact can not be excluded. The initial screening procedure can aid the implementation of small projects and other projects that border Natura 2000 sites, without the necessity of a more detailed assessment.

Appropriate (impact) assessment – checking for significant impacts

An impact assessment requires detailed analysis of the possible impacts of plans, proposed projects and measures on the conservation status of protected habitat types and species, and the conservation objectives defined for a given Natura 2000 site. At the same time, measures designed to minimize damage can and should be devised. Possible modifications that would avoid significant impacts should be considered while devising plans. If significant impacts to the conservation status of a Natura 2000 site remain, then, in principle, the project in question is not permissible. However, if under these circumstances, the project is to be continued after all, there is a possibility for an exemption assessment.

Assessment for exemption – projects that may cause significant impact

The exemption assessment first examines possible alternatives that might allow the desired project goals to be attained, but at the same time are more favourable for the preservation of existing conservation status. If there are reasonable alternatives, then these must replace the original plans. If there are no reasonable alternatives, then the project can only be completed provided there are impera-

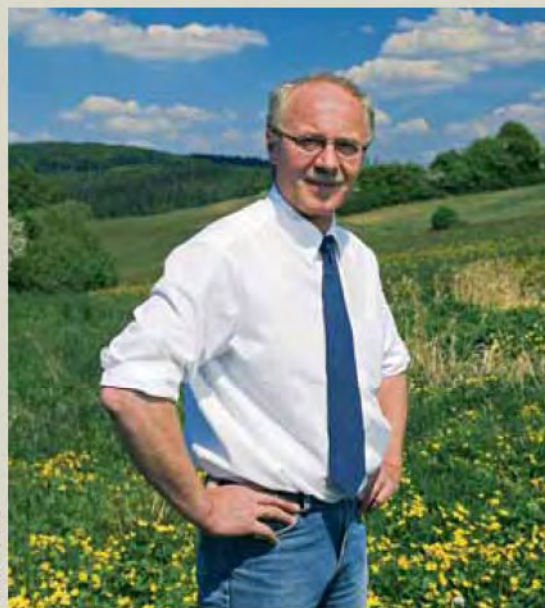


Photo: F. Grawe

NATURA 2000 – A NUISANCE?

It can not be stated that the terms Natura 2000 and Habitats Directive are fully understood by everybody. Local politics is not exempt in this matter. A closer look at Natura 2000 provides a new image with amazing perspectives. Globally, Natura 2000 is about the shared responsibility for the preservation of habitat and species diversity. In our region, Natura 2000 is primarily about the maiden pink, a flowering plant shaping the character and appearance of species rich grasslands. Elsewhere, the maiden pink may be replaced by the lady's slipper orchid, a species protected through the Habitats Directive. At the local policy level, Natura 2000 offers hands on opportunities for agriculture and nature conservation. The EU will honour the preservation of valuable habitats and, thus, will provide economic incentives to achieve this end. This is extremely important for securing agriculture in lowmountain regions.

Dr. Reinhard Kubat
Mayor, City of Frankenau (Hessen)

Appropriate assessment (impact assessment) according to the provisions of the Habitats Directive – appropriate consideration of nature conservation objectives rather than blockage of economic development

Ravensburg County (Federal State of Baden-Württemberg), covering 1,632 km², is one of the larger rural counties in Germany (28 % forests, 60 % agricultural area, 10 % settlements and traffic infrastructure, 2 % waters and other usages). Approximately 8.4 % of the county has been designated as Natura 2000 sites (based on 2006 figures). Overall, applications for approximately 1,000 projects and plans were considered by the nature conservation authority within the county administration in 2006. Only about 10 % of these projects and plans relate in some way to the Natura 2000 network (significant impacts possible, see figure below). Of the 100 cases that relate to the Natura 2000 network, based on appropriate screening, 40 projects were determined to have no significant impact on a Natura 2000 site. For the remaining 60 cases, appropriate assessments were conducted according to the provisions of the Habitats Directive. As most of these cases were small scale projects with only limited environmental impact, the assessment was performed using a standardized 6-page form developed in the State of Baden-Württemberg especially for smaller or simpler cases. This form allows rapid and cost efficient assessment meeting the provisions of Art. 6 of the Habitats Directive. Only 6 out of these 60 cases required a detailed assessment. Ultimately, only 1 project was not approved. In this case, the appropriate assessment revealed that in view of the conservation objectives, significant negative impact on the site could not be excluded and alternative solutions were not feasible.

Reinhold Schaal

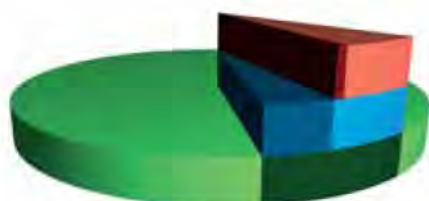


The Blitzenreuther Lakes with Häckler Pond and Lake Buchsee in the Natura 2000 site "Feuchtegebiete um Altshausen" (Ravensburg County, Federal State of Baden-Württemberg).

tive reasons of overriding public interest. Thus, these reasons must rank higher than the public interest associated with the protection of biodiversity to be achieved through the Natura 2000 network. In any case, impacts must be mitigated in order to permanently secure the functionality of the Natura 2000 network of protected sites.

Species protection – the European way

Certain rare or endangered animals and plants are protected in the EU territory as a whole - inside and outside the Natura 2000 network. These species are listed in Annex IV of the Habitats Directive. Protection includes prohibition of deliberate disturbance, capture or killing of specimens, deterioration or destruction of breeding sites or resting places and commercial sale (Art. 12, 13 of the Habitats Directive).



Case example, Ravensburg County. Overall, a total of 1000 plans and projects were considered for potential impact.

90 %	irrelevant cases (no possible negative effects on Natura 2000 sites)
10 %	relevant cases (negative effects on Natura 2000 sites feasible)
4 %	screening excludes significant negative effects
6 %	impact assessment required
~ 5,4 %	minor environmental effects, standardized assessment sufficient (assessment form)
~ 0,6 %	detailed impact assessment necessary



Photo: F. Hofmann

Motorways constitute insurmountable barriers for wildlife. A total of five “Green bridges” were built across the A 20 motorway in order to minimize fragmentation effects.

Photo: DEGES/Rochow



Case example for an appropriate assessment – the A 20 motorway between Lübeck and Stettin

The Peene Valley, listed as a Special Area of Conservation (SAC) according to the Habitats Directive, and as a Special Protected Area (SPA) according to the Birds Directive, had to be crossed for the construction of the A 20 motorway between the cities of Lübeck and Stettin. Permission to build the road was subject to specific alignment restrictions, reduced width of the bridge and the ramps leading to the bridge, and requirements for environmentally friendly construction methods. In spite of these restrictions, favourable conservation status of the Peene Valley-Natura 2000 site was significantly affected. Therefore, permission to build the road was dependent on the exemption clause of the Habitats Directive (Art. 6 (4)). Because priority habitat types were concerned, an opinion by the EU Commission was required. The EU Commission agreed to the Peene Valley crossing only after intense scrutiny and after issuing additional restrictions. During the construction phase, a working group was established to monitor compliance with all the restrictions imposed. Measures to assure continued integrity and coherence of the Natura 2000 sites included the development of large habitat patches and the establishment of corridors between them.

Dirk Bernotat

Exemptions from strict protection can be granted only, if the planned measures are necessary for imperative reasons of overriding public interest, and if the conservation status of populations of the protected species will not be negatively affected (§43, Sec. 8 BNatSchG, German Federal Nature Conservation Act).

In summary: species and habitat types require adequate protection. Proposed projects which might affect European conservation goals require adequate assessment.



Photo: F. Grawe

Long migrations are typical of large wildlife such as red deer, wild cat or European lynx. Motorways and other busy roads can only be crossed safely on appropriate structures built for wildlife crossing.



Assessment of
crested newt
population size
done with bow nets.

Photo: F. Grawe

11. MODERN CONCEPTS – CONTROLLING SUCCESS AT THE EUROPEAN SCALE

No corporation functions well without a business report

Corporations can not be managed without regular business reports. Similarly, the implementation of the Birds Directive and the Habitats Directive legally requires monitoring and reporting. Reports need to cover conservation status of species and habitats and the implementation of conservation measures. The reports must not only address means and measures. Rather, these reports must also assess actual success! Success does not simply correspond to the number of reserves delineated or to the number of ordinances passed. Success is linked to achievements made on the conservation status of species and habitat types (Chap. 4). A publicly available report to the EU Commission is due every 3 years for the Birds Directive and every 6 years for the Habitats Directive (Art. 17). The EU Commission assembles and analyses the reports of the member states, and then produces its summary report on the state of biodiversity within the territory of the European Union.

The “traffic light scheme” provides an overview

In order for the above mentioned reports to be comparable, EU-wide rules for the assessment of conservation status incorporated the traffic light example:

green indicates favourable, yellow indicates unfavourable/inadequate and red indicates unfavourable/bad conservation status. Separate evaluations are provided for every habitat type and species listed in the Annexes of the Directives. The reference areas are the different biogeographic regions. Biogeographic regions as reference areas allow for the consideration of key regional differences in the evaluation. For example, if the range of a species with a disjunct distribution covers the whole of Germany, then there will be three separate German evaluations assessing the conservation status of this species in the Atlantic, Continental and Alpine biogeographic regions. The second German national report (reporting period 2001 – 2006) was presented to the EU Commission in Brussels at the end of 2007 (www.bfn.de/0316_bericht2007.html).

Assessment criteria – the facts behind the balance

Standardized assessment criteria were established for the EU as a whole. The assessment criteria for the conservation status of species contain four parameters: range, population, habitat for the species and future prospects. Four parameters are also used to assess conservation status of habitat types. Assessment criteria for habitat types include: range, total area covered by habitat type, specific structures

Bird monitoring
– biologist
conducting a
bird census

Photo: F. Grawe



and functions (including typical species) and future prospects. Standardized limits for assessment categories and the resulting classification in the “traffic light scheme” have been established. These limits provide expert standards that are similar to the more familiar technical standards relating to air and water quality.

Only save the jewels?

Systems of protected areas like Natura 2000 are important cornerstones for the protection of species and habitats. However, even a European network like Natura 2000 is not sufficient to effectively protect all the endangered species populations but only selected species. For an overall assessment, the EU directives require a statement relating to the conservation status inside and outside the listed Natura 2000 sites. The comparison of conservation status inside and outside the protected sites allows for a proper assessment of Natura 2000 efficiency. If the conservation status degrades in the entire territory, the overall assessment will provide for timely initiation of counter measures. The national and composite reports will, thus, serve as an early warning system to indicate an unfavourable change. In order to provide an effective overall assessment, monitoring the conservation status of endangered species and habitat types can not be restricted to the Natura 2000 sites. Rather, monitoring programs must also include sampling outside the protected site boundaries (monitoring according to article 11).

Steering on solid ground

Would these reports be “just for Europe” or simply to provide a report for its own sake? Certainly not! Solid knowledge about the conservation status of habitat

The peregrine falcon was almost extinct in Germany due to large scale application of the pesticide DDT. In the recent past, peregrine falcon numbers have increased. The peregrine falcon is protected according to Annex I of the Birds Directive. Today this elegant predator again roams over almost all of the major landscapes in Germany.



Photo: F. Grawe

Bird monitoring in Germany

The Birds Directive protects all wild bird species. Birds are excellent indicators for conservation status evaluation due to their dependence on specific habitats and structures. Many bird species are characteristic of habitat types protected at the EU scale and listed in Annex I of the Habitats Directive. For example, the black woodpecker is an indicator for habitat quality in beech forests. Therefore, the Dachverband Deutscher Avifaunisten (DDA, Federation of German Avifaunists) has launched several monitoring programs to survey breeding and migratory birds in Germany. Particularly noteworthy are the Monitoring Program of Common Breeding Birds in Typical Landscapes and the Atlas of German Breeding Birds (ADEBAR, Atlas deutscher Brutvogelarten) published with the collaboration of the German Bird Monitoring Trust. The data obtained from these two surveys provide valuable information for the assessment of Natura 2000 sites. In addition, the “Sustainability Indicator for Species Diversity” may be based on these data. The “Sustainability Indicator for Species diversity” is one of the 21 key indicators selected to supervise sustainable use of natural resources in Germany. The data also support the development of Red Data Lists for endangered species and help the German federal government to implement international treaties.

Christoph Sudfeldt & Alexander Mitschke



Photo: R. Altmüller

Stream restoration for the freshwater pearl mussel – provided pearls in the past, but is now almost extinct

“Lutter”, a large scale Federal nature conservation project is currently underway in the “Lutter, Lachte, Aschau” Natura 2000 site. The project is managed by the counties of Celle and Gifhorn (Federal State of Lower Saxony) and is designed to develop a clean water ecosystem to provide habitat for severely endangered species such as the freshwater pearl mussel. Financial support is provided by the Federal Government and the Lower Saxony State Government. The Lutter catchment, extending over approximately 150 km², 75 % of which is forested, is well suited for the implementation of this project.

Extensive land acquisition, change of usage patterns and river engineering targeted at restoration were needed to achieve the project goals. A public information campaign accompanied implementation of the plan. Project success can be measured from the increased population of the freshwater pearl mussel and other endangered species listed in the Annexes of the Habitats Directive. There is a plan to guide visitors through the area in a conservation-friendly way to familiarize the broader public with the beauties of this landscape.

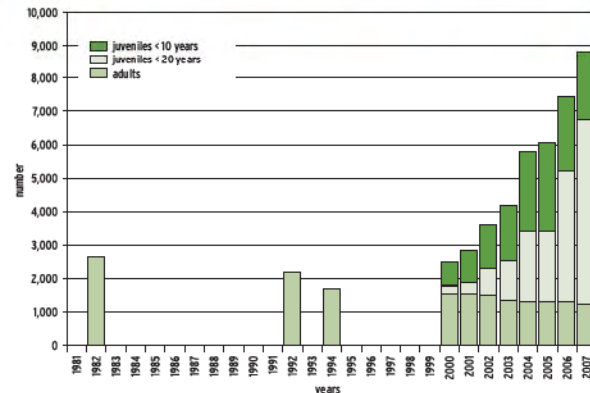
Reinhard Altmüller & Andreas Thiess

The Lutter River (Federal State of Lower Saxony) harbours a freshwater mussel population of national importance.



Freshwater pearl mussel (Annex II species) can grow to be more than 100 years old. Only a few populations remain in Germany.

Photo: R. Dettmer



Numbers of freshwater pearl mussels in the Lutter River after implementation of targeted species support programs.

types and species, actual “well being” or “poor condition”, allows us to set sensible priorities for nature conservation, to initiate well targeted measures, to steer site management and to actually react to change. In addition, the reports provide important guidelines for policy makers deciding about funding priorities and programs, and they promote cross boundary management and cooperation. The reports point out both successes and failures. Failures require a detailed analysis of causes. It is quite possible that following the reports, measures and management plans will have to be adapted. With immanent global climate change, reports might also serve as early warning systems and help promote international counter measures.

What reports and when?

	monitoring and conservation status / efficiency of the directives	exemptions – species protection
Birds Directive	>> art. 12 (I) report on the implementation of national provisions (every 3 years) >> art. 12 (II) composite report (EU Commission)	>> art. 9 (3) annual report on derogations from bird species protection
Habitats Directive	>> art. 11: monitoring of the conservation status of Habitat Types (Annex I) and species (Annex II, IV, V) in the EU territory >> art. 17 (1) national report on the implementation of measures and on conservation status of Annex I habitat types and Annex II species every 6 years >> art. 17 (2) composite report (EU Commission)	>> art. 16 (2) report on derogations from species protection (every 2 years)



The semi-natural dry grasslands (Habitat Type 6210) around the volcanic basalt cone in the “Desenberg” Natura 2000 site are isolated islands in the Warburger Bördenlandschaft (Federal State of Northrhine-Westfalia)

12. COHERENCE AND EMBEDDING INTO THE LANDSCAPE – A GOOD NEIGHBOURHOOD MATTERS

Islands in stormy waters ...

In our increasingly fragmented and transformed cultural landscape, it would be inconceivable to try to conserve nature without considering spatial and functional coherence and connectivity. Like islands in stormy waters, Natura 2000 sites offer safe haven to their inhabitants. Unfortunately, the surroundings of the reserve islands often resemble a hostile desert which does not provide the necessary means for survival. Large islands offer space for many inhabitants and species. Small islands can be species rich only if they are located in close vicinity to other such islands. Small islands do not provide adequate refuge during disasters. A single catastrophe may be sufficient to wipe out small island reserve populations. However, disasters may also develop slowly. The slow change of key environmental parameters can cause the loss of whole islands; nutrient poor chalcareous grasslands may be overgrown, water bodies may desiccate.

On safe paths

In addition to the Natura 2000 network, the Habitats Directive provides support to the establishment and maintenance of landscape features that by virtue of their linear and continuous structure or their function as stepping stones, are essential for the migration, dispersal and genetic exchange of wild species (Art. 10). In order to secure long-term survival

in reserve islands, animals and plants must be able to move between these islands. Migration allows for recolonisation after catastrophic disturbance or for spatial avoidance of changing environmental conditions. Migration can be enhanced by the presence of numerous small stepping stones that help “lower the barrier” between suitable patches, while making the surrounding desert less hostile. Creating corridors or generally improving the permeability of the landscape surrounding habitat islands are other possible ways to enhance migration and dispersal.



The former boarder between the two Germanys offers refuge for a large number of endangered species. Due to its extent and permeability the so called “Green Belt” has become one of the most important nature conservation corridors in Germany. Pictured is the “Green Belt” near Coburg-Sonneberg between the Federal States of Thuringia and Bavaria.

Photo: K. Leidorf



Photo: A. Didion

German-French cooperation in the Management of Natura 2000 sites

Nature does not stop at national borders. "Semi-natural dry grasslands and scrubland facies on calcareous substrates (important orchid sites)" (Habitat Type 6210) extend across the German and French border (Saar-Lorraine area). In Germany the grasslands are part of the "Himsklamm" Natura 2000 site, extending across the border into the "Pelouses à Obergailbach" Natura 2000 site in France. To protect and to restore orchid rich dry grasslands, LIFE-nature projects co-funded by the European Union were instigated on both sides of the border. The projects were administered by private conservation organisations: Naturlandstiftung Saar in Germany and Conservatoire des Sites Lorrains in France. Conservation measures were coordinated, land was acquired and a cross-boundary trail was established. Bilingual boards provide information relating to the Natura 2000 sites. They include information on German-French cooperation as well as information on fauna and flora. Circumventing bureaucracy, cooperation has generated a common French-German Natura 2000 site.

Axel Didion & Joachim Gerstner

The orchid rich semi-natural dry grasslands (Habitat Type 6210) along the slopes of the Buchenberg Mountain are protected through the French-German transboundary Natura 2000 sites "Pelouses à Obergailbach" and "Himsklamm"

Over the past couple of years, the pyramidal orchid has spread in the "Himsklamm" Natura 2000 site (Federal State of Saarland)

Photo: A. Didion

Independent of the European nature conservation provisions, the German government has recognized the significance of coherence. The Federal Nature Conservation Act (BNatSchG § 3) requires the establishment of provisions to create an ecological network for all habitats and wild species. The Bundesländer are encouraged to secure 10% of their respective territory as core areas for this ecological network. The requirement in the Federal Nature Conservation Act aids the Natura 2000 network. Natura 2000 sites are usually considered core areas in the ecological network. Restoration zones, connecting elements such as corridors or stepping stones, and possibly buffer zones, may be needed to complement the core areas. The national ecological network does not only improve the overall quality of the Natura 2000 network, it also provides the flexibility for species and habitat types to deal with environmental change, such as land use change or global climate change.

Ecological coherence is more than simply linking identical elements

Coherence encompasses a suitable population size, distribution and density of occurrences of species and habitat types, as well as low spatial resistance in the landscape surrounding conservation sites. Coherence allows for genetic exchange, migrations and dispersal, and is indispensable for sustaining favourable conservation status. For habitat types, coherence means the complete preservation of ecological variation, including different development and successional stages, and the full maintenance of the species characteristic and typical for that habitat. It also includes characteristic interactions of habitats with the surrounding landscape (e. g. wetlands and drainage basins). The necessary habitat mosaic must be provided for species that require different habitats to satisfy basic needs. Such species



along with many migratory species require corridors or functional habitat mosaics to successfully complete their life cycle. Bats that lack hibernation sites or caves to raise their young will go extinct. The same holds for fish that can no longer reach their spawning grounds.

Not every patch or linear landscape element is equally suited for ecological networks. Therefore, measures to foster coherence must be targeted to the individual needs of the species and habitat types in question. Such measures can not be prescribed or planned at the EU level. Rather, they must be designed according to specific regional needs.

Migrants between different worlds ...

Coherence is particularly important for animal species that migrate over long distances, for example, migratory birds and amphibians. There are, however, other less known groups and species that migrate at a large scale. These include bats, certain species of fish, large mammals such as otter, lynx and red deer. Central Europe is densely populated and many former migration routes have become ineffective due to insurmountable barriers such as busy roads or dams. Therefore, from a nature conservation perspective, additional fragmentation of the landscape should be avoided as much as possible, and the effects of existing barriers should be minimized.

Streams represent the life lines of landscapes and provide natural corridors in ecological networks.

Photo: H.-J. Augst



Photo: F. Grawe

Sheep function as a living transport system in ecological networks. Migratory herding of sheep provides an outstanding linkage between different sites and habitat types.

Transhumance - tradition meets the modern times

The term transhumance describes the migration of herdsmen and their animals between summer and winter pastures. Particularly in lowmountain regions, migration allows livestock owners to avoid needing stables or acquisition and storage of winter fodder. In southern Germany, right until the middle of the 20th century, large flocks of sheep were an integral part of the landscape. Today, there are still about 200 shepherds migrating from the Swabian Alb mountain range to the lowlands and back each year. They represent traditional land use in a high tech region! Sheep grazing maintains favourable conservation status of the precious dry calcareous grasslands. In addition, sheep's wool functions as a carrier of plant seeds and animals with limited mobility such as snails and grasshoppers. Moving sheep ensures exchange of individuals between isolated pastures. Sheep provide a means for ecological coherence which is badly needed for the long term survival of species assemblages in calcareous grasslands.

Benjamin Hill, Burkhard Beinlich
& Martin Dieterich

Preservation of regular resting sites for migratory birds outside the "Special Protected Areas" is also important. Pictured is such an important resting site at Lake Constance (Federal State of Baden-Württemberg).

Photo: A. Hafen





Many semi-natural habitats (cultural landscape habitats) such as dry calcareous grasslands in the "Hellenberg-Scheffelberg" Natura 2000 site require regular management to secure favourable conservation status.

Photo: F. Grawe

13. CORPORATIONS NEED MANAGEMENT - FLEXIBILITY IS KEY TO SUCCESSFUL IMPLEMENTATION

Successful corporations need management! The preservation of our European natural heritage can not be accomplished without management. Management defines conservation objectives, measures to achieve these objectives and mechanisms to assess the success of implementation. As a basic goal, transmission of the proposed list of Natura 2000 sites to the European Commission implies maintenance or improvement of conservation status in these prospective Special Areas of Conservation (SAC's). Actual ways and means to achieve this goal have to be individually defined on site for each SAC.

Management plans - avoidance of conflict

Drawing up a management plan is the prerequisite for the implementation of measures and monitoring success. According to the Habitats Directive (Art. 6 (1)), management plans are not obligatory. However, management plans are important, if, for example, current or past land use must be continued or maintenance measures are required to sustain conservation status, if there are conflicting objectives, or if there is a need for restoration. Integrated management plans help reconcile user demand and

conservation objectives. Such plans are advantageous in many respects, particularly when it comes to actual implementation. Management instructions must incorporate the maintenance and development goals identified for protected species and habitat types in a specific area. A lowland hay meadow may require mowing twice, supplemented by moderate fertilization; whereas, a calcareous grassland with Junipers can effectively be grazed with sheep (low intensity grazing, no fertilization) in order to maintain favourable conservation status.

Most of the forests in Natura 2000 sites are used for timber production. In this case, management would be geared toward the incorporation of natural processes. This includes aging and subsequent natural decay of old trees. Old and dead wood provides habitat for numerous animals and particularly mushrooms (see chapter 6).

Land use in accordance with the nature conservation objectives will be decisive for most of the protected habitat types and species within Natura 2000 sites.

Conservation friendly ditch management in the Bremen marshlands

The north German City of Bremen has been surrounded by a circle of wet grassland that was established in the 12th century. This includes a ditch system which is significant for nature conservation and historic reasons. The ditches provide habitat for species protected under the Habitats Directive such as the spined loach, the European weather loach and the green hawker and, therefore, have been included in the Natura 2000 network. In ditches, silting is part of natural succession and will cause the small channels to lose their significance for nature conservation. Therefore, after inspection and receiving expert advice, the ditches will be cleared in autumn in a conservation-friendly way every 3 to 5 years using a "Mähkorb" (mowing basket). Long term studies show, that regular clearing of ditches preserves the plant and animal assemblages of high conservation value.

Henrich Klugkist

Photo: H. Klugkist



Nature friendly ditch management (clearing) in the Hollerland (City of Bremen)

Photo: B. Stemmer



The European water loach is listed in Annex II of the Habitats Directive. The water loach is highly specialized and can even survive desiccation while buried in the sediment.

Photo: F. Grawe



Early and comprehensive information for stakeholders and landusers, like in the "Wälder bei Beverungen" Natura 2000 site (Federal State of Northrhine-Westfalia), is conducive to the implementation of Natura 2000 management plans

Forest management partnerships

Forest associated biodiversity can only be preserved in cooperation with the forest owners. As early as in 1992, the "Warburger Vereinbarung" ("Warburg Agreement") between State and forest owners was reached in the Federal State of Northrhine-Westfalia. The Warburg Agreement defines rules for cooperative nature conservation in the forest. For protected areas, regulations are limited to absolute necessities. The basic protective measures and accompanying regulations are developed in a dialogue with forest owners and tailored to the specific needs of each area. The local forest administrations proposed supplementary "immediate measures" to secure and improve favourable conservation status for forest Sites of Community Importance (SCIs). Implementation of the measures is now achieved through voluntary agreements with the forest owners (contracts). Measures are financed through a specific state funding program. The fact that plans originate from well known and trusted forest administrations, is an important precondition for high levels of forest owner participation.

Ralf Schlüter

This includes restoration if necessary (e.g. restoration of bogs and fens).

The participatory approach – a key to success

It is important that land owners and land users are integrated into the planning process early on! A continuous and efficient dialogue is a precondition to achieving acceptance for Natura 2000 planning. Only if farmers and foresters are informed and integrated early on, can regular farming and forestry operations be taken into consideration when devising maintenance or development measures. Based on mutual agreement, required land use practices can then be implemented in line with conservation objectives.

It will not always be possible to accommodate all user interests. There is a limit if certain practices imperil maintenance and development objectives in the Natura 2000 sites. It will not be possible to turn protected grassland into an agricultural field, or to drain a wetland. Land users can be compensated for unbearable restrictions in the management of their plots that might cause losses in yield (see chapter 14).



Photo: PhotoNatur/T. Askani

In order to prevent encroachment of woody vegetation and to keep the land open, large herbivores like the wild “Przewalski horses” will be introduced to former military training grounds in the Federal State of Brandenburg.

“Pasture Wilderness” in Brandenburg

Characterized by a mosaic of open sand, heathlands, ponds and forests, the former soviet military training grounds in the Federal State of Brandenburg have acted as a refuge providing optimal conditions for numerous species listed in the Annexes of the Habitats and Birds Directives. However, the open landscape habitat types, in particular, are endangered by succession and associated shrub encroachment. Mechanical landscape maintenance is often impossible, due to the fact that the soil is contaminated with ammunition remains. In the future, wildlife is to maintain the open landscape habitats in the Döberitzer Heide (Döberitz heathlands), a former Sovjet military training ground at the gates to the City of Berlin. Largely unaffected by human intervention and year-round, European bison, Przewalski horses, deer and roe deer will help create and maintain a diverse, open pastoral landscape of approximately 2,000 ha. The resulting mosaic, composed of forest, clearings and a diversity of different successional stages, will provide the basic conditions for high biodiversity in the area. Large scale introduction of several species of large herbivores with different foraging preferences – including the European bison – is a unique and innovative attempt to retain favourable conditions for species of semi-open and open landscapes on areas that contain high concentrations of unexploded ammunition.

Thomas Schoknecht

Local alliances

In order to develop Natura 2000 management concepts and plans in co-operation with the local population, local alliances were initiated in many regions of the Federal State of Schleswig-Holstein. The management plan, designed to foster implementation of site specific conservation goals, is best achieved from a broadly based participatory process. The institution of local alliances is particularly important for those Natura 2000 sites that have been shaped in a highly diverse way by private use. Good examples from the Treene and the Aukrug regions have shown that in order to effectively coordinate local alliances, a paid management position must be established. Establishment of such a position can be supported through State funds. As a joint venture with the Deutscher Verband für Landschaftspflege (DVL, German Association for Landscape Maintenance), the State of Schleswig-Holstein has instituted a position for state-wide coordination of local alliances.

Thomas Wälter

Natura 2000 site management planning in the Federal State of Schleswig-Holstein is conceived as a participatory approach including local people. Example from the “Eider, Treene, Sorge” Natura 2000 site.

Photo: H.-J. Augst



Photo: F. Grawe



Quite often the conservation status of Annex I Habitat Types is not satisfactory. This picture shows restoration management designed to regain and later on to maintain favourable conservation status in a calcareous fen in the "Nethe" Natura 2000 site (Federal State of Northrhine-Westfalia).

14. FINANCING OF NATURA 2000

Natura 2000 pays off

Natura 2000 and European approaches to species protection contribute significantly to the maintenance of biodiversity. Ecosystem functions and products such as drinking water, food, genetic resources, and, consequently, our well-being and quality of life are dependent on biodiversity. Natura 2000 is a life insurance for the future. The monetary gain of long term ecosystem functions is difficult to balance. The gain often is disproportionately higher when compared to the current cost of preservation. Positive effects of intact nature often directly pay off today in fields such as preventive health services, tourism and marketing of ecological products.

Natura 2000 is not for free

The protection of nature for future generations is not for free! Rather, it requires continued work to be primarily financed through public funds. The European Union estimates funding requirements for the implementation of the Birds and Habitats Directives within the EU territory at 6.1 Billion Euro each year. This includes costs related to the establishment

of the Natura 2000 network, management of these reserves, measures to maintain or improve conservation status of protected habitat types and species, and monitoring for success. Also included are costs for environmental education and nature experiences. A crude assessment estimates the cost to be borne by Germany at 620 Million Euro each year. This is modest when compared to public expenses for culture or agriculture.

Who bears the cost?

It is the task of the individual EU member States to provide funding for Natura 2000. However, member States are supported by EU co-financing. EU funds are provided through EU budgets allocated to rural and regional development. In order to use the EU funds, in Germany, the Federal States have to develop implementation programs which are subsequently approved by the EU Commission. In addition, some of the Federal States have developed programs that do not require EU co-financing. Agri-environment programs and conservation contracts have proved to be suitable instruments for fostering conformity

Inland salt meadows in Thuringia

Salt meadows are one of the rarest inland habitat types in Europe. As a consequence, they are classified as priority habitat types in Annex I of the Habitats Directive. The Federal States of Saxony-Anhalt and Thuringia have the most important salt meadows in Germany. Especially in the surroundings of the Kyffhäuser Mountains in northern Thuringia, a number of salt meadows were selected as Natura 2000 sites. The conservation status of these salt meadows is to be enhanced by a 5-year LIFE-nature project with an overall volume of 2.44 Million Euro, and co-financed by the EU (75 % of the total funds are provided by the EU). Primary goals of the project include: optimisation of the water regime, enhancement of low intensity grassland management, land acquisition and measures targeted at optimising conditions for habitats and species, and a comprehensive public information campaign.

Heiko Böttcher

Restoration of the water body of a formerly drained bog by closing ditches as part of the LIFE project "Habitat optimisation Blitzenreuther Seenplatte"



Photo: S. Harms

between nature conservation and land use, and, thus, for fostering the preservation of biological diversity. Services provided by farmers and foresters, fishermen and landscape maintenance crews are paid for through programs designed to protect flora, fauna, biotopes and cultural landscapes.

Much can be supported

In theory, all the Natura 2000 related sectors mentioned above can be supported through EU funds. The European Agricultural Fund for Rural Development (EAFRD) is most important for Germany. The degree of support depends on the contents of the implementation and financing programs devised by the Federal States (Bundesländer).

For instance, delayed mowing and low intensity grazing in Natura 2000 sites can be supported through agri-environment programs or conservation contracts. The maintenance and expansion of sheep grazing is particularly important to secure habitat networks (see chapter 12). According to Bundesländer provisions, forestry environment programs may support leaving old and dead trees, distribution of nesting boxes and planting of valuable tree species. Application for support may be made through conservation, agriculture and forestry administrations, and through Landscape Maintenance Associations or Biological Stations. It is noteworthy that only measures reaching beyond basic legal requirements can be co-financed through the EU budget.



Inland salt meadows (Habitat Type 1340) like the one in the Natura 2000 site "Esperstedter Ried" (Federal State of Thuringia, upper left) are among the priority habitat types (see chapter 3). The meadows harbour salt tolerant plants such as the sea milkwort (lower left) that otherwise are restricted to the coastal zone.

both Photos: T. Stephan

Foundation based financing

The Stiftung Naturschutzfonds Baden-Württemberg (Nature Conservation Foundation) provides funds for projects which will inform stakeholders and the general public about opportunities resulting from Natura 2000. To this end, the foundation supports education and information campaigns, inventories and management measures for Natura 2000 sites, and the implementation of LIFE-Nature projects. These activities contribute to the successful implementation of the Natura 2000 network in the Federal State of Baden-Württemberg.

A completely new instrument for the disbursement of funds is currently being tested in the LIFE-Nature project "Rohrhardsberg", located in the central region of the Black Forest. Specifically targeted donations and matching funds from the "Kulturlandschaft Rohrhardsberg im FFH-Gebiet" foundation have been used to secure continued funding for site management. The foundation approach may eventually foster lasting acceptance of the European natural heritage by transferring responsibilities to the local and regional levels.

Monika Baumhof-Pregitzer



Species rich Nardus grassland (Habitat Type 6230) with Arnica along the Rohrhardsberg Mountain, Black Forest (Federal State of Baden-Württemberg).

Photo: R. Gottfriedsen

Supported by EU co-financing, some Bundesländer provide compensation for farmers and foresters who must adhere to management restrictions within reserves. For example, support is provided if farmers abstain from using fertilizer or pesticides, or if they use grassland in a restrictive way (low intensity use). Restrictions also apply to grasslands used as breeding, resting or feeding sites by rare birds such as the aquatic warbler, great bustard or corncrake. Application for compensation of loss resulting from management restrictions usually can be submitted to the agriculture or forestry administration.

Some Natura 2000 sites require specific measures for the restoration of the water regime (e.g., protection of bog habitat types), the restoration of natural fluvial dynamics or the creation of passages for migratory fish. Removal of drainage systems, moving dykes further away from the river, restoration of streams and rivers and the construction of fish passages can also be co-financed by the EU.

The European Regional Development Fund (ERDF) provides funding specifically for measures that enhance economic development in the eco-tourism sector. This includes, for example, information centres or hiking trails.

The Financial Instrument for the Environment (LIFE+) allows for funding of innovative model projects that help Natura 2000 sites, or initiatives for communication, or monitoring. National co-financing is also required for LIFE+ projects.

Voluntary agreements

Legally binding regulations are not the first choice for nature conservation in Germany. Dialogue and voluntary contracts are much more preferred to attain the goals of European nature conservation. Usually, the Federal States will not impose ordinances that prescribe, for example, how meadows are to be managed. Rather, the species and habitat types to be protected determine the conservation objectives

LEADER+ supports Natura 2000

The EU has devised the LEADER+ program to fund innovative projects in rural areas. Supported by funds from LEADER+ and the HIT environmental foundation, the Landscape Management Association Westerzgebirge was able to initiate a Natura 2000 information and coordination position. Among other things, this allowed offering guided tours to different Natura 2000 sites (Natura 2000 tours, see chapter 15), and to hold Natura 2000 days. An activity designed for schools allows students to experience Natura 2000 "live". Land users managing plots within the Natura 2000 sites are specifically informed about conservation oriented management and funding. The public is cordially invited to visit the beautiful mountain meadows, bogs and fens, streams and forests belonging to the Natura 2000 network in the Westerzgebirge region, and to obtain funding information.

Elke Ott



Photo: M. Scheffler

Mountain hay meadows (Habitat Type 6520) in the Westerzgebirge Mountains (Federal State of Saxony).

to be attained. The means and methods to attain these objectives, and optimal sites for effective implementation, will be discussed with the land user (e. g. farmer or forester). Consensus between all parties is highly desired to develop plans for the achievement of conservation objectives. Such consensus must consider the experiences and operational needs of farming or forestry enterprises. Many times dialogue results in voluntary agreements within agri-environment or forestry environment programs.

EU-Funds potentially available for co-financing
the Natura 2000 network.

The implementation of the funding opportunities given in the table depends on specific eligibility criteria and matching programs in the Federal States.

Abbreviation and administrative code of Directive	Full Title	Funding opportunities are recorded in:
EAFRD 1698/2005	European Agricultural Fund for Rural Development	
EFF 1198/2006	European Fisheries Fund	
ESF 1081/2006	European Social Fund	
ERDF 1080/2006	European Regional Development Fund	
LIFE+ 614/2007	Financial instrument supporting environmental and nature conservation projects	
FP7	7. Framework Program for research	

Photo: F. Grawe



Forested mountain areas are attractive destinations for hikers.

15. TOURISM, SPORTS AND RECREATION IN NATURA 2000 SITES

Nature tourism is trendy

Nature is attractive! Do sports; enjoy and experience nature; find recreation. There are many reasons to spend weekends and vacations outdoors in nature. Forest covered low mountain ranges, romantic heathlands or clear lakes – it does not really matter where you go! Without realizing it, many tourists and recreationists spend their time in Natura 2000 sites. Beautiful landscapes offer something for everybody – hikers, bicyclists, horse back riders or water lovers. Nature sports such as mountain biking, rock climbing, or canoeing have gained much popularity. To experience nature becomes a key motive for choosing vacation sites. Thus, the number of visitors in reserves has been steadily increasing. This emphasizes the significance of precious natural areas for tourism.

In terms of nature and landscapes, protected areas in Germany supply whatever vacationers demand: the largest “Wadden Sea” landscape on the earth in

the North, high mountains in the South, coasts, rivers and enchanting cultural landscapes. Many know from their own experience that the recreational value of an old beach forest exceeds that of a spruce plantation; in the same way, a natural riverine landscape beats a stream that has been degraded into a canal. Thus, our large protected areas, which are the central building block of the Natura 2000 network, are particularly popular. When compared to other parts of the country, the most popular vacation regions in Germany are endowed with the highest proportion of Natura 2000 sites – the North Sea and Baltic Sea coast, the mountain areas and the Alps.

Tourism and nature conservation – not necessarily a contradiction

Nature conservation and tourism are mutually interdependent. Tourists and outdoor enthusiasts can take advantage of relatively undisturbed natural areas. On the other hand, overuse will damage the resource. The consequences of overuse are com-

The Pfaueninsel – effective synthesis between nature conservation and monument preservation

The Pfaueninsel is one of the most valuable nature reserves within the boundaries of the city of Berlin. The nature reserve is part of a UNESCO World Heritage site. The Pfaueninsel represents a historic cultural landscape shaped by natural elements consisting of a diverse mosaic of important habitat types encompassing rare and endangered species. These include the hermit-beetle, the great capricorn beetle and species rich bat and bird communities. The hay meadows and xeric sand grasslands rich in wildflower communities, were mostly established for aesthetic purposes during the 19th century. Together with mixed oak woodland, containing large numbers of ancient oaks, these grasslands produce a unique landscape. For a long time, the Pfaueninsel has been one of the most popular sites for short trips in Berlin, and is visited by hundreds of thousands of people each year.

In the past, the somewhat different requirements of nature conservation and monument preservation were successfully coordinated in close cooperation with the Stiftung Preussische Schlösser und Gärten (Foundation for Prussian Castles and Gardens). Preservation of the old trees has created a particular problem when trying to provide safe trails and paths through areas with a potential for accidents from falling wood. The Pfaueninsel has been designated a Site of Community Importance (SCI), and a management plan has been devised that specifies conservation needs in order to reach or to retain favourable conservation status. Management will be based on a continued balance between nature conservation and monument preservation.

Martina Wagner & Jochen Halfmann

Photo: F. Grawe



Natural streams are preferred for canoe and kayak trips.

Photo: F. Grawe



Bicycle tours in Natura 2000 sites – there is an increasing demand for this recreational activity.

The great horned owl and the peregrine falcon breed on rock faces. It is self-evident that recreational activities should avoid disturbing these sensitive species.

A harmonious co-existence of culture and nature characterizes the "Pfaueninsel" Natura 2000 site in Berlin.

Photo: J. Halfmann



Photo: F. Grawe



plex and varied. They encompass negative impacts on animals, plants and their habitats, as well as massive traffic problems and the increased use of limited resources.

Disturbance as a result of tourism and recreational activities may severely impact animals such as the black stork or the heath cock by reducing breeding success and, thus, imperilling the preservation of these species.

Management plans provide opportunities to reconcile protection and tourism through visitor guidance concepts. Solutions to existing problems and avoidance of future problems require information and communication. Players in the sports and tourist sectors (e. g. tourism offices) must be included when devising management plans.

Natura 2000-tours in the Westerzgebirge

Eight across-boundary hiking tours and four bicycle tours across different Natura 2000 sites were organised to more effectively utilize the potentials of the Erzgebirge region for tourism and recreation. Overall, the routes cover more than 250 km and include several Natura 2000 sites. Each tour is offered on particular dates, but can also be individually booked by groups. Two brochures inform about the Natura 2000 sites, the specific tours and other locations in the vicinity worth visiting. The www.natura2000-touren.de website supports outreach to the public, as well as organisation and implementation of the tours. "Natura 2000-tours" and "across-boundary Natura 2000-tours" provide for tourism in line with nature conservation. They offer opportunities for the region that are well received by the general public.

Elke Ott



From the beginning, outdoor sports have welcomed and supported Natura 2000. The extensive European Natura 2000 network offers opportunities on a large scale to permanently maintain intact nature in a sustainable manner. This is in the immediate interest of outdoor sports !

In order to successfully work as a team in the interest of nature and its preservation, different interest groups need to be involved and fully informed in a timely manner. These include sporting organisations and associations. Early involvement and information assures support and acceptance for Natura 2000 within the sports community.

Franz Brümmer
Kuratorium Sport und Natur e. V.

Hiking in the German-Czech border region.

Photo: M. Brunnhuber





Photo: A. Zeidler

The Karwendel Mountains – pure nature experience

The “Karwendel mit Isar” Natura 2000 site is one of the last remaining wilderness landscapes in Germany. Many closely intertwined habitat types have persisted in the abrupt mountain ranges and the steep valleys. These include natural stream and river courses, mountain meadows and montane forests, pine scrublands, alpine mats, screes and areas with bare rock.

For 150 years, the Karwendel Mountains have been a tourist region. Providing nature experiences for visitors is the basis of the region’s tourist industry. Sports such as mountain biking and flying kites are popular, but may conflict with the protection of sensitive species and habitats. Concepts on how to provide information on environmental assets and visitor management help reduce the potential conflicts. To achieve consensus, when it comes to solving conflicts, and cooperation are key goals in one of the biggest protected areas in the eastern Alps. Information and opportunity rather than restrictions and bans secure both the future of tourism and the preservation of natural assets in this region.

Rainer Fetz

Rough mountains and narrow valleys characterize the Karwendel region (“Karwendel mit Isar” Natura 2000 site, Federal State of Bavaria)

In the summer, millions of flowers such as those of the stemless gentian transform the high mountains into a sea of colours.

Photo: Nationalpark Berchtesgaden

Natura 2000 – a prime tourist destination?

Natura 2000 is important to enhance the attraction of reserves for recreation and tourism. It can considerably strengthen the regional economic sector: rising numbers of visitors bring more income in the tourism sector, and, thus, strengthen the regional economies by securing and creating of new jobs.

In many regions, the potential economic gains from tourism taking advantage of Natura 2000 sites have not yet been realized. In some regions organized hiking or canoe trips in the Natura 2000 network of sites, provide income for the local population and highlight the European significance of these areas.

Tourism supports economic development of regions. It raises the profile and acceptance of Natura 2000 protected sites, and associated measures aimed at maintaining favourable conservation status.

The golden eagle – ruler of the sky and rare species protected according to Annex I of the Birds Directive (“Karwendel mit Isar” Natura 2000 site, Federal State of Bavaria).



Photo: H.-J. Fünfstück



Term	Definition
Art.	Article, uppermost hierarchical level in laws.
Appropriate (Impact) assessment	According to Article 6 of the Habitats Directive the appropriate assessment of possible impacts of plans and projects on Natura 2000 sites with their protected habitat types, and species listed in the Annexes of the Habitats and the Birds Directives.
Berne Convention	Council of Europe convention on the conservation of European wildlife and natural habitats. It secures preservation of endangered habitat types and species outside the EU in the → Emerald Network.
Biogeographical Region	Geographical evaluation frame for the selection of → Sites of Community Importance (SCI) for the Natura 2000 Network. There are 9 biogeographical regions in the EU territory: Continental (central Europe), Atlantic (western Europe), Mediterranean (southern Europe), Alpine (high mountains), Macronesian (Canary islands, Azores, Madeira), Boreal (Scandinavia), Pannonical (southeastern Europe) as well as the Steppe and Black Sea region.
Biotope	A distinct area in that is uniform in environmental conditions and characterized by an associated community of animals and plants.
Biotope complex (Habitat complex)	Characteristic combination of biotope types (habitat types).
Biotope type (Habitat type)	An abstract class/grouping of similar biotopes/habitats.
Birds Directive	Directive 79/409/EEG on the preservation of wild birds and their habitats (last amended by the Directive 2006/105/EG).
Coherence	Coherence refers to a functional and spatial network of habitat types and protected sites. The term takes into account the interactions of species and habitat types within their respective environment. Coherence is intended to contribute to the longterm survival of species and habitat types.
Conservation	According to the Habitats Directive, a term that describes measures designed to maintain or restore natural habitats and populations of species at a favourable status. This may potentially include the reintroduction of locally extinct species.
Directive	EU legal document (law).
Ecological network	Spatial or functional relation between biotopes/habitats that allows for functional coherence and connectivity. Ecological networks allow for gene flow between populations, dispersal, migration and recolonization.
Emerald Network	Council of Europe network of protected areas (Resolution 3/1996, → Berne Convention)
Endemic species	species occurring exclusively in a small, limited geographical area (e. g. island, mountain top). In the Habitats Directive usually used to denote species that occur in only one member state and do not occur outside the EU.
European Commission	Executive body of the European Union (EU) residing in Brussels.
European Court of Justice (ECJ)	Judicial body of the European Union residing in Luxembourg.
European Topic Centre on Biological Diversity (ETC/BD)	Topic centre for biodiversity in Paris supervised by the European Environmental Agency (Kopenhagen).
Exclusive Economic Zone (EEZ)	12–200 mile zone off the coast over which the German government claims sovereignty in the North and the Baltic Seas. In Germany the Federal Government is responsible for the listing of protected areas in the EEZ.
Favourable conservation status	<p>The conservation status of a natural habitat type will be established as favourable, when: a) the natural range and areas covered within that range are stable or increasing; b) the specific structure and functions necessary for its long term maintenance continue to exist; and c) the conservation statuses of its typical species are favourable.</p> <p>The conservation status of a species will be taken as favourable when: a) it is maintaining itself on a long term basis as a viable component of its natural habitats; and b) its natural range is not likely to be reduced; and c) there will continue to be a sufficiently large habitat area to maintain its population.</p>
Federal Agency for Nature Conservation (Bundesamt für Naturschutz, BfN)	The German Federal Government's scientific advisory body for nature conservation that coordinates the implementation of the Habitats Directive which includes assessment at the Federal level.
German Federal Environment Ministry (Bundesministerium für Umwelt-, Naturschutz und Reaktorsicherheit, BMU)	Federal ministry politically and administratively responsible for environmental issues, e. g., the implementation of the Habitats Directive.
German Federal Nature Conservation Act	The German Federal Act for Nature Conservation which provides the legal framework for legislation by the Federal States (Bundesländer).
Habitat	In the original definition an area or environment where an organism or a species lives or occurs; in the English language it is also used to denote an area that provides a suitable environment for a population or community (→ Biotope).

Term	Definition
Habitat of a species	Denotes the places and environment defined by specific abiotic and biotic factors, in which the species lives at any stage of its biological cycle (living places).
Habitats Committee	According to Art 20 and 21 of the Habitats Directive and chaired by the EU Commission, committee to support the implementation of the Habitats Directive. In Germany one member represents the Federal Ministry for the Environment (BMU) and one member represents the Federal States.
Habitats Directive	Council Directive 92/43/EEC on the conservation of natural habitats and wild fauna and flora (last amended by Directive 2006/105/EEC).
Habitat types (natural habitat types)	Certain habitat types and habitat type complexes of Community interest listed in Annex I of the Habitats Directive and protected under the umbrella of the Natura 2000 network.
LIFE+	EU funding instrument for nature conservation and the environment. One of its prime tasks is to provide financial support for the implementation of the Natura 2000 network.
Management plan	According to Art. 6 of the Habitats Directive, plans for Natura 2000 sites designed to safeguard the ecological requirements of the protected habitat types and species.
Monitoring, surveillance requirements	According to Art. 11 of the Habitats Directive obligatory whole scale monitoring of conservation status of Annex I habitat types and Annex II species (in and outside Natura 2000 sites).
National assessment	Assessment or evaluation of the Natura 2000 site proposals at the national level, according to Art. 4 (Annex III, phase 1) of the Habitats Directive.
Natural range	Denotes the entire area where a given species naturally occurs.
Natura 2000	Coherent EU-wide network of protected sites consisting of Sites of Community Importance according to the → Habitats Directive (→ Special Areas of Conservation, SACs) and the → Birds Directive (→ Special Protection Areas, SPAs).
Obligatory reporting	Comprehensive summary for state of implementation, exemptions granted or measures to assess the Natura 2000 network. According to the provisions in the → Habitats Directive, reports relating to the protection of species are due every two years (Art. 16). Comprehensive national reports outlining the implementation of the Habitats Directive are due once every 6 years. According to the Birds Directive, comprehensive reporting is required every 3 years.
Priority habitat types and species	Species and habitat types for which the EU has particular protection responsibility ("*" denotes priority species and habitat types in the Annexes of the Habitats Directive).
Proposed Sites of Community Importance (pSCI)	National List of sites proposed to be included in the Natura 2000 network and submitted to the EU Commission by the member States according to the provisions of the Habitats Directive. (proposed Sites of Community Importance pSCI) (→ national assessment)
Scientific working group of the habitats committee (SWG)	Expert group chaired by the EU Commission (DG Environment) established to resolve scientific questions raised by the → habitats committee.
Screening	Preliminary first step in the appropriate impact assessment procedure for projects and plans
Special Area of Conservation (SAC)	Site of Community Importance according to Article 4 (4) of the Habitats Directive which is formally and legally protected at the national level (in Germany by the Federal States/ Bundesländer)
Special Protection Area (SPA)	According to Art. 4 (1) and (2) of the → Birds Directive a protected area formally established and legally protected at the national level (in Germany by the Federal States/ Bundesländer)
Site of Community Importance (SCI)	Based on the provisions of the Habitats Directive (Art. 4, Annex III, Phase 2 Habitats Directive), sites for the Natura 2000 network selected by the EU Commission from lists submitted by the Member States → national list of sites (pSCI).
Standard Data Form	Standardized Natura 2000 data form and official document used for the submission of Natura 2000 sites selected according to the provisions of the → Habitats Directive and the → Birds Directive.
Stepping stones	Habitat structures that usually are not well suited for long term persistence of a species, but help link core habitats by providing temporary refuge for the dispersal of individuals and, thus, increasing the biological permeability of landscapes.

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Wild cat in beech forest (Fotos: A. Hoffmann, Th. Stephan)

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Note

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Additional Sources

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