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Management concepts for selected species and habitats of the Habitats Directive

for an improvement of the conservation status of Natura 2000 conservation subjects in the Atlantic biogeographical region

Objectives, methods and selected results
of the identical Research and Development project
(F+E FKZ 3511 821600)

- abridged version for handout -

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Summary

The EU Biodiversity Strategy aims to halt the loss of biodiversity, improve the conservation status of protected species and habitats as well as maintain and restore ecosystems and their services.

In continuation of the Atlantic biogeographical process to support the EU Biodiversity Strategy and in close connection to the German National Strategy on Biological Diversity, the German Federal Agency for Nature Conservation (BfN) promoted a research and development project to devise management concepts which lead to an improvement of the conservation status of selected habitats and species protected by the Natura 2000 network in the Atlantic region of Germany.

In the context of the project “Contribution to the improvement of the conservation status of Natura 2000 habitats and species: development of conservation measures for selected Annex species and habitats of the Habitats Directive in the Atlantic biogeographical region” 59 management concepts for 38 selected habitats of Annex I and 21 species of Annex II, IV and V of the Habitats Directive have been developed. As a basis for the selection and description of the measures, an extensive review of related publications and research projects was conducted. Beside the detailed descriptions of management measures, the developed concepts contain distribution, conservation status, threads and pressures as well as future prospects of the selected habitats and species according to the 2013 German Report under the Habitats Directive. The respective management suggestions refer to selected threads and pressures and intend to be recommendations for measures counteracting these negative factors. Each management recommendation contains links to websites of the projects and bibliographic references for an easy access to further information.

A script of the Federal Agency for Nature Conservation presents the backgrounds and objectives as well as the methods and selected results of the project (in German only). It explains and complements the actual results of the project which are published as conservation measures on the website of the German Federal Agency for Nature Conservation under this address:
http://www.bfn.de/0316_verbesserung _erhaltungszustand.html

The conservation measures for each of the selected Natura 2000 habitat types and species are supposed to give all relevant information needed to improve the conservation status of as many species and habitat types as possible in the Atlantic biogeographical region of Germany. This script and the 59 management concepts on the BfN homepage address agencies and institutions assigned with the implementation of the Habitats Directive and especially the local stakeholders which are responsible for the realization of the conservation measures (for example biological stations, landcare associations).

Background and aims

The EU Biodiversity Strategy aims to halt the loss of biodiversity and ecosystem services in the EU, improve the conservation status of European species, habitats and ecosystems and help to stop global biodiversity loss by 2020. The increase of the amount of protected habitats and species with a favourable conservation status is a key factor to achieve this aim.

Target 1 of six complementary targets of the EU Biodiversity Strategy demands the full implementation of the Birds and Habitat Directive in all Member States. To reach this objective, the assessments of species and habitats protected by the EU nature law must show better conservation or a secure status for 34 % habitats and 26 % species by 2020. To meet this target, the completion of the Natura 2000 network as well as an increased consideration of the specific conservation and management requirements needed by the respective species and habitats - within and without Natura 2000 areas - is essential.

The EU commission launched the Natura 2000 Biogeographical Process at the biogeographical level to improve the necessary collaboration between Member States in general and the coordination of appropriate conservation and management measures. At the Atlantic Seminar in Bergen/Netherlands December 2012, the Member States were encouraged to continue this process through bi-/multilateral cooperation as well as concrete projects.

In continuation of the Atlantic biogeographical process, the German Federal Agency for Nature Conservation (BfN) promoted a research and development project to devise management concepts which can lead to an improvement of the conservation status of selected habitats and species protected by the Natura 2000 network in the Atlantic region of Germany.

In the context of the recently finished project “Contribution to the improvement of the conservation status of Natura 2000 habitats and species: development of conservation measures for selected Annex species and habitats of the Habitats Directive in the Atlantic biogeographical region” 59 management concepts for 38 selected habitats of Annex I and 21 species of Annex II, IV and V of the Habitats Directive have been developed.

The project, which was supported and funded by the German Federal Agency for Nature Conservation (BfN) and the Federal Ministry for Environment, Nature Conservation, Building and Nuclear Safety (BMUB), was implemented by the consultancy for applied environmental conservation (PAN) together with the Institute for Landscape ecology of the Westphalian Wilhelms-University Münster (ILÖK) and accompanied by a working group of federal and state experts.

The management concepts, which have been developed during the project, supplement and specify the exemplary “habitat management models” compiled for some habitats on a European level (http://ec.europa.eu/environment/nature/natura2000/management/habitats/models_en.htm, technical report 2008). They provide management suggestions, especially tailored for the Atlantic region, to improve the conservation status of 59 habitats and species in the Northwest of Germany.

The project started with an extensive review of related publications and research projects to create a basis for the selection and description of the measures. Beside the detailed descriptions of management measures, the management concepts contain the distribution, conservation status, threads and pressures as well as future prospects of the selected habitats and species according to the 2013 German Report under the Habitats Directive.

An exchange of information concerning possible conservation measures is an important aid for local stakeholders. Especially practical experiences facilitate decisions about the course of action on-site and can help to avoid ineffective measures and unnecessary costs. For this reason, information on each conservation measure has been provided with as many references, project examples and internet links as possible. A BfN-script (in preparation) explains and complements the project results, the management concepts, which will soon be published on the homepage of the Federal Agency for Nature Conservation (http://www.bfn.de/0316_verbesserung_erhaltungszustand.html).

The 59 management concepts for each of the selected Natura 2000 habitat types and species are supposed to give all relevant information needed to improve the conservation status of as many species and habitat types as possible in the Atlantic biogeographical region of Germany. The management concepts address agencies and institutions assigned with the implementation of the Habitats Directive and especially the local stakeholders which are responsible for the realization of the conservation measures (for example biological stations, landcare associations).

Selection of habitats and species / structure of the management concepts

The first step of the project process was the selection of habitats and species. The selection was conducted within all habitats of Annex I and species of Annex II, IV and V of the Habitats Directive with occurrences in the Atlantic region. Selection criteria comprised threads, conservation status and needs or possibilities for action. Based on an assessment of the affected federal states and the experts involved in the project, 38 habitats and 21 species have been selected (see table 1 and 2).

Tab. 1 Selected habitats and their conservation status (CS) in the Atlantic biogeographical region based on the 2013 German Report according to the Habitats Directive (2007 in brackets)

FV = favourable, U1 = unfavourable-inadequate, U2 = unfavourable-bad, XX = unknown; * priority habitat

Code	Name[1)]	CS
	Marine habitats	
1130	Estuaries	U2 (U2)
1150*	Coastal lagoons	U1 (U2)
	Coasts	
1330	Atlantic salt meadows	U1 (U1)
1340*	Continental (inland) salt meadows	U1 (U2)
2150*	Atlantic decalcified fixed dunes	U2 (U2)
2190	Humid dune slacks	U1 (U1)
	Inland dunes	
2310	Dry sand heaths with *Calluna* and *Genista*	U2 (U2)
2320	Dry sand heaths with *Calluna* and *Empetrum nigrum*	U2 (U2)
2330	Inland dunes with open *Corynephorus* and *Agrostis* grasslands	U2 (U1)

	Water bodies	
3110	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)	U2 (U2)
3130	Oligotrophic to mesotrophic standing waters with vegetation of Littorelletalia uniflorae and/or Isoeto-Nanojuncetea	U2 (U2)
3140	Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.	U1 (U2)
3150	Natural eutrophic lakes with Magnopotamion or Hydrochariton-type vegetation	U2 (U2)
3160	Natural dystrophic lakes and ponds	U1 (U1)
3260	Water courses of plain to montane levels with Ranunculion fluitantis and Callitricho-Batrachion	U2 (U2)
	Heaths and shrubs	
4010	Northern Atlantic wet heaths with *Erica tetralix*	U2 (U2)
5130	*Juniperus com*munis formations on heaths or calcareous grasslands	FV (FV)
	Grassland	
6120*	Xeric sand calcareous grasslands (Koelerion glaucae)	U2 (U2)
6130	Calaminarian grasslands (Violetalia calaminariae)	U1 (U1)
6210(*)	Semi natural dry grasslands on calcareous substrates (Festuco-Brometalia)	U1 (U1)
6230*	Species-rich *Nardus* grasslands, on siliceous substrates in mountain areas	U2 (U2)
6240*	Subpannonic (subcontinental) steppic grasslands	U1 (U1)
6410	*Molinia* meadows on chalk and clay (Eu-Molinion)	U2 (U2)
6430	Hydrophilous tall herb fringe communities	U2 (U1)
6440	Alluvial meadows (Cnidion dubii)	U2 (U2)
6510	Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	U2 (U2)
	Bogs and fens	
7110*	Active raised bogs	U2 (U2)
7120	Degraded raised bogs (still capable of natural regeneration)	U2 (U2)
7140	Transition mires and quaking bogs	U1 (U2)
7150	Depressions on peat substrates (Rhynosporion)	U1 (U1)
7230	Alkaline fens	U2 (U2)
	forests	
9110	Luzulo-Fagetum beech forests	U1 (U1)
9130	Asperulo-Fagetum beech forests	U1 (U1)
9160	Sub-Atlantic and medio-European oak/-hornbeam forests (Carpinion betuli)	U1 (U1)
9190	Old acidophilous oak woods with *Quercus robur* on sandy plains	U2 (U1)
91D0*	Bog woodland	U2 (U2)
91E0*	Alluvial forests (Alnio-padion, Alnion incanae, Salicion albae)	U2 (U1)
91F0	Riparian mixed oak-elm-ash forests of great rivers (Ulmenion minoris)	U2 (U2)

[1)]: abbreviated names of the habitat types (for complete names see Annex 1 of the Habitats Directive)

Tab. 2 Selected species and their conservation status (CS) in the Atlantic biogeographical region based on the 2013 German Report according to the Habitats Directive (2007 in brackets)

FV = favourable, U1 = unfavourable-inadequate, U2 = unfavourable-bad, XX = unknown

Scientific name	**Common name**	**CS**
Amphibians		
Bombina variegata	Yellow–bellied Toad	U2 (U2)
Pelobates fuscus	Common Spadefoot	U2 (U1)
Fishes		
Alosa fallax	Twaite Shad	U2 (U1)
Cobitis taenia	Spined Loach	U1 (U1)
Misgurnus fossilis	Weatherfish	U1 (U1)
Thymallus thymallus	Grayling	U2 (U1)
Vascular plants		
Arnica montana	Arnica montana	U2 (U2)
Luronium natans	Floating Water-plantain	U2 (U2)
Lycopodiella inundata	Marsh Clubmoss	XX (U2)
Oenanthe conioides	Elbe Water dropwort	U2 (U2)
beetles		
Lucanus cervus	Stag Beetle	U1 (U1)
dragonflies		
Aeshna viridis	Green Hawker	U2 (U2)
Leucorrhinia pectoralis	Yellow-spotted Whiteface	U1 (U2)
Reptiles		
Coronella austriaca	Smooth Snake	U1 (U1)
Lacerta agilis	Sand Lizard	U1 (U1)
Mammals		
Barbastella barbastellus	Barbastelle	U2 (U2)
Cricetus cricetus	Common hamster	U2 (U2)
Lutra lutra	Otter	U1 (U1)
Myotis bechsteinii	Bechstein's bat	U2 (U2)
Nyctalus leisleri	Leisler's bat	U1 (U1)
Other		
Astacus astacus	Noble Crayfish	U2 (U2)

Facts of the habitat or species as well as information on the current distribution and assessment in the last two German Reports (2007, 2013) have been elaborated beside the description of measures for 59 selected habitats and species. Additional information on the threat status, threats and pressures as well as future prospects have been compiled based on the Red Lists of Germany and the Federal States, the National Report and the monitoring required by the Habitats Directive.

The management concepts are divided into the sections description & distribution, conservation status, threats and pressures, future prospects, recommended actions and references. They focus on the recommended actions with the description of concrete measures while the general information on the habitats and species is summarized.

Main focus of the management recommendations

Within the R&D project, management concepts with almost 400 descriptions of measures have been composed for 38 habitats and 21 species. The descriptions of the measures as well as their objectives for different habitats and species are often similar. However, the separate management recommendations are tailored individually to the needs of the respective habitat or species and can differ in important details like necessary nutrient supply, water balance, intensity of utilisation, resilience, autecology or habitat requirements.

Nevertheless, threats and pressures of habitats with similar environmental conditions or species with comparable habitats require a similar range of management measures. Therefore, it is possible to highlight shared emphases of some groups and especially important measures for the improvement of the conservation status which give an impression of the content of the suggested management measures and are summarised below.

For example, the management measures of the four **coastal habitats** primarily comprise grazing but customized extensive mowing as well, whereby different emphases and the consideration of particularities have to be considered. The small-scale creation of shallow ponds and open soil is important for habitat types like Atlantic salt meadows (1330) or Continental (inland) salt meadows (1340), while sod plugging of the top soil on subareas is suggested for Atlantic decalcified fixed dunes (2150) and Humid dune slacks (2190). The conservation and promotion of characteristic tidal and saline conditions play an important role for habitats such as Salt meadows or Humid dune slacks.

The situation is similar for habitats on **inland dunes**, where grazing and mowing, possible removal of shrub and the installation of potential buffer zones are paramount. For Dry sand heaths with *Calluna* and *Genista* or *Empetrum nigrum* (2310, 2320) sod plugging or controlled burning are important management measures to regenerate these habitats, while Inland dunes with open *Corynephorus* and *Agrostis* grasslands (2330) need grazing with different kinds of grazers (sheep, goats, donkeys) or the creation of small areas for initial vegetation („pioneer habitats“) by raking or sod plugging. Information on starting a redevelopment of the habitats is given for all three habitat types.

For all five habitats of **standing water bodies**, the conservation or regeneration of the characteristic water quality is vital, which can be achieved by the creation of sufficiently sized buffer zones and technical measures aiming at the reduction or termination of the discharge of water pollutants.

Desludging and weed control and/ or the removal of riparian woods and non-characteristic vegetation can frequently improve the conservation status of habitats of standing water bodies. In individual cases special measures may be necessary, for example to counteract a severe acidification of Oligotrophic waters containing very few minerals of sandy plains (habitat type 3110) or to ensure an extensive grazing regime of oligo- to mesotrophic standing waters to enable the development of *Littorella* or *Isoetes* vegetation (habitat type 3130) on the banks. For hard oligo-mesotrophic waters with benthic vegetation of Chara formations (Habitat type 3140) and Natural eutrophic lakes with

Magnopotamion or Hydrochariton-type vegetation (3150), measures related to the water body have been suggested, for example a specific reduction of the fish stock (removal of fishes feeding on plankton and benthic organisms) which has an effect on the amount of phytoplankton and thus the water turbidity.

For some **grassland habitats** extensive grazing or mowing (once or twice a year) are most suitable as management measures. A more intensive application of both measures can also be taken into consideration for soil impoverishment of eutrophic grasslands. Without these management measures, the conservation of grassland habitats usually is not possible. If areas are fallow for some years, the removal of shrubs is generally necessary before the reintroduction of an adequate usage. Nutrient-poor grassland habitats like Xeric sand calcareous grasslands (6120), Calaminarian grasslands (6130), semi natural dry grasslands on calcareous substrates (6210), Species-rich *Nardus* grasslands (6230), Subpannonic steppic grasslands (6240) and Molinia meadows on chalk and clay (6410) need buffer zones to minimise the nutrient input from neighbouring areas. For moist formations of calcareous grassland or Molinion meadows, measures are crucial which conserve or restore the characteristic hydrological conditions. Furthermore, different measures concerning the transfer of species, e.g. transfer of grass cuttings, are described which are suitable to enhance the diversity of autochthonous species on degraded areas as well as for the establishment of characteristic species as part of new grassland development.

The construction of buffer zones around **bogs and fens** is a repetitive management suggestion for this habitat group because of the high sensitivity to nutrient input and to changes in water balance. Essential criteria to determine the size and boundaries of the buffer zones are the current usage, the inclination, the soil permeability and the soil water balance of the adjacent areas as well as the inclination of the bog habitat. It is frequently necessary to restore the characteristic hydrological conditions through rewetting measures. Different methods are elucidated. Shrubs frequently need to be removed on degraded areas before the rewetting is possible. In some cases (esp. habitat type 7150), grazing, mowing or soil plugging in small areas can be useful after the removal of shrubs.

For the seven **forest habitats**, the emphasis is placed on an environmentally adapted forest management. Important measures are the promotion of biotope trees and a sufficient amount of old growth and dead wood trees as well as the conservation and promotion of near-natural outer and inner forest edges. The different possibilities and limits of non-utilisation and redevelopment are discussed for the different forest habitats. Historic forms of forest management as an option for Sub-Atlantic and medio-European oak/-hornbeam forests (9160) and Old acidophilous oak woods with *Quercus robur* on sandy plains (9190) are explained as well as the problem of neophytes related to the particularly afflicted habitat types 9190, 91E0 (Alluvial forests) and 91F0 (Riparian mixed oak-elm-ash forests of great rivers).

The two **amphibian species** Yellow–bellied Toad (*Bombina variegata*) and Common Spadefoot (*Pelobates fuscus*) show only few similarities regarding the management measures. These partly have the same names like “construction of spawning waters” and “defragmentation of habitats and creation of migration routes”, but contain information especially adapted to the respective species. The Yellow–bellied Toad needs the creation of open soil, for example by grazing, or an adapted forest management, especially of near-natural alluvial forests. The Common Spadefoot requires areas of open soil as well but only in open landscapes. For this species, the management measures focus on an extensive usage of the spawning waters.

All four **fish species** require management measures to connect their habitats and restore free passage through rivers as well as prevent the input of nutrients and pollutants. Possibilities of ecologically adapted ditch clearance are given for the Spined Loach and the Weatherfish. Options of restocking are discussed for the respective species.

The management measures for both reptile species Smooth Snake (*Coronella austriaca*) and Sand Lizard (*Lacerta agilis*) have identical names like “restriction of afforestation”, “species adapted utilisation of the habitats” and “optimisation of the habitat” but they are adapted to the particular species. Measures to connect and redevelop suitable habitats are discussed for both species as well as possibilities for relocation in case of unavoidable interference.

For the three bat species Barbastelle (*Barbastella barbastellus*), Bechstein’s bat (*Myotis bechsteinii*), and Leisler’s bat (*Nyctalus leisleri*), it is important to improve the feeding areas and to increase the amount of roosts in the forest. To achieve these objectives, the following measures are suggested: longer rotation periods to increase the area of old forests, promotion of old trees and stands of old growth, thinning for more canopy space of extremely old trees (esp. oaks), marking of roost trees and potential roost trees and their long-term protection through appropriate arboricultural measures, preservation of forest clearings/ gaps as well as increase the inner forest edge length. Crucial for Barbastelle and Bechtein’s bat are the protection of wintering grounds like crevices, caves, tunnels, bunkers and cellars, which is described in the management measures. All three bat species need the construction of crossing aids if transport projects result in habitat fragmentation.

The management concepts for the remaining species (four plant species: *Arnica montana*, Floating Water-plantain *Luronium natans,* Marsh Clubmoss *Lycopodiella inundata,* Elbe Water dropwort *Oenanthe conioides*; both dragonfly species: Green Hawker *Aeshna viridis* and Yellow-spotted Whiteface *Leucorrhinia pectoralis*; the Stag Beetle *Lucanus cervus*, the Noble Crayfish *Astacus astacus*, the Common hamster (*Cricetus cricetus*) and the otter *Lutra lutra*) contain very different management suggestions and cannot be summarized.

All 59 management concepts are published on the homepage of the German Federal Agency for Nature Conservation as pdf-files (in German, http://www.bfn.de/0316_verbesserung_erhaltungszustand.html).

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