

Trilateral Working Group

TWG 07-1

Delfzijl

18 - 19 April 2007



Agenda Item: 3
Subject: Evaluation Favorable Conservation Status
Document No. TWG 07/1/3-1
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Submitted by: Secretariat

PROPOSAL: The meeting is invited to discuss the document and to decide upon the proposals contained in chapter 5

1. Introduction

The decision to develop a management plan for the trilateral Wadden Sea was taken at the 6th Governmental Wadden Sea Conference (Esbjerg, 1991):

"The participants agree to undertake the necessary steps to establish a coherent special conservation area covered by a coordinated management plan for the Wadden Sea, stretching from Esbjerg to Den Helder, taking into account especially the requirements of the EC Bird Directive 79/409/EC, the forthcoming Habitat Directive and the Ramsar Convention."

The Wadden Sea Plan (WSP) was adopted at the 7th Governmental Wadden Sea Conference (Stade, 1997). In 2005 the decision was taken to further develop the Wadden Sea Plan.

One of the major changes that has occurred in the past 15 years is the increasing relevance of EU Directives for nature- and environment protection. This is reflected in §6 of the Schiermonnikoog Declaration, according to which Wadden Sea states will "further develop [...] the Wadden Sea Plan into a management plan for the Wadden Sea Area, in accordance with the stipulations entailed in the Habitats, Birds and Water Framework Directives and other European Union directives and regulations, in particular Article 6 (1) of the Habitats Directive."

In §6 Wadden Sea states also decide "to continue and further intensify our cooperation for the protection of the Wadden Sea as an ecological entity" and, therefore, to ensure "a coordinated and consistent implementation of European legislation in a transparent way."

Of particular interest in this respect is the setting of national objectives for environment and nature quality, as stipulated in the Water Framework, respectively Habitats Directive.

At TWG 06-2 a preliminary overview was presented of the situation with regard to the elaboration of conservation objectives in the Wadden Sea countries. It was agreed that the secretariat would be mandated to prepare a document for TWG 07-1, containing a detailed overview of the status of development of good ecological quality and favourable conservation status, as well as approaches on how to deal with national differences.

This document provides

- An overview of national procedures and developments regarding the setting of conservation objectives under the Habitats Directive (chapter 2);
- An analysis of differences and similarities of national conservation objectives, as well as a comparison with the trilateral Targets (chapter 3).
- Conclusions and proposals for how to link the requirements of the Habitats Directives with the trilateral Target concept, based upon the outcome of the analysis (chapters 4 and 5).

An overview and analysis of national implementation of the water framework are presented in separate document TWG 07/1/3-2.

2. Overview national implementation

This chapter consist of the following sections:

- 2.1 Favourable conservation status
- 2.2 Overview of national implementation procedures

2.1 Habitats Directive: Favourable conservation status

According to §1 of the Habitats Directive,

the conservative status of a **natural habitat** will be taken as "favourable" when:

- its **natural range and areas** it covers within that range are stable or increasing, and
- the specific **structure and functions** which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its **typical species** is favourable as defined in (i);

(i) conservation status of a **species** means the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within the territory referred to in Article 2;

The conservation status will be taken as "favourable" when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis;

2.2 Status national implementation

2.2.1 Netherlands

National Conservation objectives have now been published in its final form (June 2006). The Parliament has been informed in November 2006.

The country has been divided into 8 landscape types. Of these Wadden Sea is part of type "Wadden Sea, North Sea, Delta".

Recently, a specification of the objectives for the different landscapes has been carried out. A public consultation phase for Region-specific objectives for the Wadden Sea, the Wadden Sea islands and the North Sea will start on May 1st, 2007 and will be finalised before summer 2007. The formulation of the objectives is based upon an assessment of the favourable conservation status at the national level. Two important criteria have been used in the assessment, firstly the relative importance of the habitat or species (compared to the European situation) and, secondly, the actual conservation status.

There are, basically, two types of objectives:

1. Key objectives (Kernopgaven); these objectives relate to habitats and species for which, on the basis of the assessment, improvement is considered necessary (see Annex 2).
2. Conservation objectives (instandhoudingsdoelen); these relate to habitats and species for which the current conservation status is considered favourable and which must, generally, be maintained.

In the coming years a management plan for the Wadden Sea (incl. the islands) will be developed, also integrating the WFD requirements.

2.2.2 Germany

LOWER SAXONY

Conservation objectives will be formulated in cooperation with the National Park Administration in 2007.

HAMBURG

Hamburg has not formulated Conservation Objectives and refers to its National Park Law as a general basis for conservation.

SCHLESWIG-HOLSTEIN

In SH area-specific conservation objectives have officially been published by the government in 2006.

Wadden Sea relevant objectives were discussed in the advisory boards in the 2nd half of 2006. The area which is relevant for the trilateral cooperation, called "SH Wadden Sea and bordering coastal areas" consists of 5 sub-areas, i.e. the National Park Area incl. bordering coastal strip, the Halligen, the Wadden Sea islands, the marsh areas (Köge), and the Estuaries.

A differentiation has been made between overarching and habitat/species specific objectives. The overarching objectives are relevant for the whole designated area under consideration.

There are two types of objectives, namely conservation objectives (Erhaltungsziele) and restoration objectives (Wiederherstellungsziele). Restoration objectives apply to habitats and

species that have been classified as currently having an unfavourable conservation status. For all other habitats and species the type one objective applies (Annex 2).

2.2.3 Denmark

As a first step in setting conservation objectives Denmark has drawn up operational criteria (based upon the general criteria from article 1 of the Habitat Directive; see section 2.1) for the favourable conservation status of natural habitats and species listed in the Annexes I and II of the EEC Habitats Directive and of the species listed in Annex I of the Bird Protection Directive. These criteria shall form the basis for establishing conservation objectives, for nature planning, and for monitoring programmes for assessing the favourable conservation status of the natural habitats and the species.

The criteria are laid down in two reports, one for the terrestrial and freshwater habitats (and species and one for marine habitat.

It is expected that objectives will be formulated after management plans for the SACs have been developed.

3 Overview and analysis national conservation objectives

3.1 Overview

An overview of habitat and species (marine mammals only) types, designated within the Wadden Sea Area (also areas which are partly within the WSA), as applied in the Wadden Sea countries, is in **Annex 1**. This overview is a summary of more comprehensive and detailed information as provided on the CWSS website.

An overview of national conservation objectives for habitats and marine mammals is in **Annex 2**. The objectives have been structured in accordance with the trilateral Ecotargets. A comprehensive analysis of objectives for birds is in **Annex 3**.

It is emphasised that only in NL and SH conservation objectives have been officially adopted (see 2.2). In Denmark the criteria on which objectives will be based have been given (compare 2.1.3). The overview focuses on the main Wadden Sea habitat and species types, i.e. tidal area, offshore area, salt marshes, dunes and estuaries, marine mammals and birds.

3.2 Analysis

3.2.1 Habitat type qualification and designation

The overview in Annex 1 shows differences and similarities. Generally, it can be concluded that the main (typical) WS habitat types have been used by all (in some case almost all) WS countries.

It concerns:

OFFSHORE AND TIDAL AREA

1110 Subtidal sandbanks

1140 tidal flats

ESTUARIES

1130 estuaries

SALT MARSHES

1310 *Salicornia* zone

1320 *Spartina*

1330 Salt meadows

DUNES AND BEACHES (INCL. HEATHLAND)

2110 Embryonic shifting dunes

2120 Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)

2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)

2140 Decalcified fixed dunes with *Empetrum nigrum*

2160 Dunes with *Hippophae rhamnoides*

2170 Dunes with *Salix repens* ssp. *argentea* (Salicion *arenariae*)

2180 Wooded dunes of the Atlantic, Continental and Boreal region

2190 Humid dune slacks

4010 Wet heath

It must in this respect be realised that not all habitat types are present in all parts of the Wadden Sea. Therefore, a certain amount of differentiation, based upon local/regional differences, is to be expected. Also the size of the area is important, as becomes clear from the deviating situation for Hamburg.

The differentiation is highest for dunes, beaches, heath land and meadows.

However, where the same habitat types are present, a comparable habitat type classification may be expected. In this respect the following questions/observations have emerged:

HH: habitat type 1110 to be confirmed

NL: 1150 (beach lakes) lacking, although present

DK: 1170 (reefs) lacking, although present (mussel beds). In NL mussel beds are explicitly covered under 1110 and 1140.

DK: 1320 (*Spartina*) lacking (considered invasive species)

SH: 2160 (Dunes with sea-buckthorn) not existing on SH Wadden Sea islands?

4010 (wet heath) lacking NL

4030 (dry heath) lacking NL, DK

For the categories Semi-natural dry grassland, Semi-natural tall-herb humid meadows, Mesophile grassland and *Sphagnum* acid bogs, designations are very non-uniform.

Generally, rural areas have not been designated.

3.2.2 Species qualification and designation

The analysis of species is limited to marine mammals and birds. Fish species have been partly investigated in the analysis of the Water Framework Directive implementation (Document TWG 07/1/3-2).

The analysis of marine mammals shows that all countries/states have designated the harbour porpoise (1351) and the harbour seal (1365). The grey seal (1364) has not been designated by Lower Saxony and Hamburg. Schleswig-Holstein has in addition designated the bottle nosed dolphin (1349) as "important" species.

For birds a separate analysis has been done by Kees Koffijberg. The full report is in Annex 3. Only few bird species (15, 13% of total number of species) are listed commonly as designating species in all countries. When Hamburg is included in Niedersachsen, as is usually done in the framework of TMAP monitoring programmes (including bird monitoring by JMBA and JMBA), a common species list includes 31 bird species (25% of all species) and covers most of the characteristic Wadden Sea species included in the trilateral monitoring scheme.

3.2.3 Conservation Objectives for habitats

The comparative analysis of the conservation objectives focuses on the "key" habitats, i.e. those that are in use by most countries and/or are considered typical for the Wadden Sea ecosystem.

The analysis shows that

1. Conservation objectives for the national habitat types are to a large extent comparable.
2. Conservation objectives are largely consistent with the Ecotargets.
3. The Habitat types and the Ecotarget classification are complementary concepts, the habitat types being on a management level and the Ecotargets at a policy/strategic level (see further 4.1).

3.2.4 Conservation Objectives for marine mammals and birds

For marine mammals Denmark and Schleswig-Holstein have developed criteria, respectively objectives, consisting of both population and habitat aspects. This is not the case for the Netherlands, which has only habitat quality related objectives.

Definitions for conservation objectives and definitions for favourable conservation status for birds differ between the Wadden Sea countries. Three different strategies can be distinguished:

- (1) no site-based conservation objectives at all (Denmark, Hamburg);
- (2) conservation objectives that focus on habitat (Schleswig-Holstein, Niedersachsen) and
- (3) conservation objectives that focus on the conservation status of single bird species (the Netherlands).

4. Discussion and Conclusions

4.1 Relation with the Ecotarget concept

The main conclusion from the analysis is that national conservation objectives for habitats are to a high extent comparable. This is related to their qualitative nature. Habitat types fitting within the Ecotarget category "Rural Area" have not been designated. This is consistent with the fact that the Rural Area Target focuses on bird conservation.

With regard to marine mammals, the Netherlands have formulated habitat-quality objectives only and not population-related objectives. Denmark and Schleswig-Holstein apply a combination of population and habitat-quality elements.

The second conclusion is that the conservation objectives comply to a large extent with the Ecotargets. The marine mammal objectives formulated by the Netherlands do not comply with the relevant Ecotarget, which addresses population aspects only.

Thirdly, the Target concept and the Habitat types are complementary. The matrix in Annex 3 shows that the Target concept overarches habitat types, thereby functioning as a transition between the individual habitat types and the WS ecosystem. This is schematically illustrated in table 1.

The Ecotargets represent the strategic political level, covering the whole ecosystem. The habitat and species types represent the management level, being a specification of the Ecotargets and focusing on the conservation of individual habitats and species.

The connection between the strategic and management levels is symbolised by the upward arrows in the shaded row of table 1, These arrows represent the integrated assessment of all habitats types and species belonging to the Ecotarget under consideration.

There are several advantages of applying the complementary Ecotarget-Habitat Type approach, especially in respect of evaluating the favourable conservation status.

Analysing and assessing the quality of Ecotargets through the integrated assessment of individual habitat types, including species belonging to those habitats, provides supplementary interpretative information about the quality of individual habitat types and species. This is illustrated by the double arrows in the shaded row in table 1, representing the process of assessing the Targets on the basis of an integrated evaluation of the habitat types and species.

In a second step also environmental quality objectives from the WFD can be included in this scheme, as illustrated by the last two rows of the Table.

Ecotargets: STRATEGIC LEVEL			Wadden Sea Ecosystem					▶	Guiding Principle	WSP
			Offshore Area	Tidal Area	Estuaries	Salt Marsh	Dunes/ Beaches		Rural Area	Targets
			▲	▲	▲	▲	▲	▲	▲	▲
Habitats Directive: MANAGEMENT LEVEL	Habitat Type		1110 1160	1110 1160 1140 1170	1130	1150 1310 1320 1330 1340	1150 1210 1220 2110 2120 2130 2140 2150 2160 2170 2180 2190	▶ ▶ ▶ ▶ ▶ ▶ ▶ ▶	Fav. Cons. Status (FCS)	National Reports
	Species	Mammals	1351 1349	1365 1364				▶ ▶ ▶ ▶	Fav. Cons. Status (FCS)	National Reports
		Birds						▶	FCS	NR
		Fish						▶	FCS	NR
									
		Quality (water, sed.)								

Table 1.

Reporting to the Commission

A clear indication of the usefulness of the complementary Ecotarget-habitat type approach can be derived from the guidance on the reporting to the Commission:

In the Notes and Guidelines, 2006, it is stated

"Collection of information related to mobile marine species should be shared between neighbouring Member States to avoid potential double counting of populations and provide better judgements on range."

In the guidance document DocHab-04-03/03 rev.3, 2005, it is stated

"Once MS have reported in 2007 to the Commission, the Commission will compile the information and assess the situation from an EU perspective, which will include assessments at a biogeographical level. In order to provide a synthesis report, which will be as informative, scientifically sound and as clear as possible, it should be considered whether the consultation of MS about the draft report should take the form of a new "biogeographic process", i.e. a

round of seminars which would bring MS experts, independent experts, ETC-BD and Commission together to debate the draft conclusions of the EU-analysis, to correct/fine-tune results where necessary and discuss priorities for future actions. *Such a process would also help to re-check quality of data, discuss transboundary issues where monitoring results from neighbouring regions seem not to match, favourable reference values, etc."*

The Ecotarget approach is not only useful with respect to reporting to the Commission. It also provides the basis for a comparable assessment of "extreme" local phenomena. Examples are the black spot event from 1996, and the topical cases of declining trends in bird populations and proliferation of the pacific oyster.

4.2 Bird designation and Bird Conservation Objectives

4.2.1 Designation of birds

Only few bird species (15, 13% of total number of species) are listed commonly as designating species in all countries. Hence, there is quite a variation among countries what species they have used. Probably, this can be explained by differences in abundance and national conservation status between the countries, like national Red List status. Moreover, especially the limited selection of Hamburg downscales the number of commonly used bird species considerably. When Hamburg is included in Niedersachsen, as is usually done in the framework of TMAP monitoring programmes (including bird monitoring by JMBB and JMMB), a common species list includes 31 bird species (25% of all species) and covers most of the characteristic Wadden Sea species included in the trilateral monitoring scheme. Basically, the species that have been included in the JMBB and JMMB monitoring schemes so far should be used as a common list of bird species for which conservation objectives should be endorsed. Additional bird species could eventually be included, provided that they (1) are relevant with respect to the EU-Birds Directive, (2) are relevant and characteristic Wadden Sea species and (3) implementation in the monitoring scheme will not be difficult for practical reasons (i.e. the species should be easy to cover with the trilateral methods used so far). It is proposed to discuss this aspect within the expert groups of JMBB and JMMB.

4.2.2 Bird conservation objectives

As pointed out above (3.2.3), national approaches for implementation of the EU-Birds Directive are rather different and lack a common denominator. Three strategies can be distinguished:

1. No site-based conservation objectives at all, but only national conservation status for the entire country (Denmark).

This strategy does not allow any evaluation of changes in bird numbers and distribution at site level, within individual SPAs in the Wadden Sea. Trends will be only reviewed at a national scale.

Only for species that rely heavily on the Wadden Sea in each country, a direct link with the situation in the Wadden Sea will be possible.

2. Conservation objectives mainly based on habitat management, and using the extent of suitable habitat and suitable living conditions as prerequisites for conservation status of birds (Schleswig-Holstein).

In favour of such a strategy is the link between habitats and abundance of birds and the more integrated approach of the ecosystem as a whole, assuming natural geomorphological, chemical and biological processes to be determinant and regarding bird numbers as a result.

However, this strategy does not distinguish among single species, and does not directly address declining trends in bird species (i.e. favourable conservation status for birds is not defined).

3. Species-specific conservation objectives for SPAs in the Wadden Sea, using targets for allowed changes in bird populations and targets for number of breeding pairs and migratory/wintering birds to define conservation status (Netherlands).

This strategy allows a species-by-species approach and evaluation is rather simple, especially when - like currently in the Netherlands - the targets are directly linked to the output of monitoring programmes. This approach, however, has a strong focus on numbers and trends. Hence, criteria how to define the numerical targets for numbers and trends –preferably based on ecological principles- are essential and will have a major influence in evaluation later on, but are not easy to establish in all species concerned. Moreover, this approach does not always distinguish among habitats and natural processes and it does not address changes in distribution.

4.2.3 A harmonised approach

As made clear above using either a qualitative or a quantitative approach has certain disadvantages. Ideally, conservation objectives should address both habitat and species aspects, i.e. the extent and status of suitable habitats, as well as the favourable conservation status for single bird species, without fixing threshold values for population sizes (that would be difficult to define at the level of the trilateral Wadden Sea). Such an approach can be used to improve the current trilateral target system and serve as a model for national approaches.

A favourable conservation status is defined by population trends and distribution in the Wadden Sea and the basis population demographic parameters that influence them directly (breeding success and survival). Currently, trends and distribution are retrieved already from the JMBA and JMBA monitoring schemes. Preferably, the trend classification used in these schemes should be adopted to detect declining trends. In this manner, results of monitoring projects have a direct link to the targets, and evaluation is straightforward.

4.2.4 Proposal for assessment of trends in birds

For evaluation of the trilateral targets and communication of their results, tools to analyse and present monitoring data could be improved substantially.

For this purpose, a method developed in the UK could be implemented in the Wadden Sea. This includes so-called alert-limits. Alert-limits are pre-defined trend assessments, building on population changes in a pre-defined time-window (see examples in Annex 3).

Secondly, trends in bird species could be used to monitor changes in habitats distinguished in the Wadden Sea, i.e. salt marshes, tidal area, beaches and dunes, estuaries and offshore area.

Basically, for a group of species that is regarded representative for one of these habitats, trends of single species are aggregated to detect overall changes within a habitat type. By selecting species-habitat combinations, a set of indicators can be established that point at environmental changes within each habitat and that can be used to evaluate management measures taken at habitat level.

5. Proposals

The analysis presented in this paper is a second step in the process of the coordinated and consistent implementation of EU Directives, as stipulated in §6 of the Sch.D.

It is proposed that TWG agrees to continue the further development of a combined strategic-management approach as a basis for the further development of the Wadden Sea Plan. To this end it is proposed to mandate the secretariat to carry out the following activities:

1. Designation of habitat types and species types

Meetings/workshops on differences in interpretation and designation of habitat types and species types as analysed in 3.2.1 and 3.2.2.

2. Approaches to harmonisation of objectives and assessment procedures

- Further specification of differences and similarities and development of proposals for adaptation, including assessment procedures;
- Elaboration of an outline for the harmonisation of assessment procedures (the shaded row in Table 1), in particular in the framework of the elaboration of management plans (LIFE +).

3. Integration of WFD and HD

Connecting the Habitats and WFD requirements using the Ecotarget concept as the overall framework (compare Table 1).

Annex 1

OVERVIEW WADDEN SEA HABITAT TYPE AND MARINE MAMMALS DESIGNATIONS

Notes:

Listed are all habitat types within and partly within Wadden Sea Area

Habitats/Mammals designated in 4 or 5 countries have been marked yellow

Type	Description	NL	NdS	HH	SH	DK	Comment
Open sea and tidal areas							
1110	Sandbanks which are slightly covered by sea water all the time	X	X	(X)	X	X	
1130	Estuaries	X	X		X	X	
1140	Mudflats and sandflats not covered by seawater at low tide	X	X	X	X	X	
1150	Coastal lagoons		X		X	X	In SH and NdS interpreted as "beach-lakes"
1160	Large shallow inlets and bays		X	X	X		
1170	Reefs		X		X		In DK blue mussel beds are considered reefs (Dahl et al 2003). Sites designated in fjords but not in WS. In NL mussel beds part of type 1110 and 1140.
Sea Cliffs and Beaches							
1210	Annual vegetation of drift lines				X		
1220	Perennial vegetation of stony banks				X		
Atlantic and continental salt marshes and salt meadows							
1310	Salicornia and other annuals colonizing mud and sand	X	X		X	X	
1320	Spartina swards (Spartinion maritimae)	X	X		X		In DK Cordgrass considered invasive species
1330	Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>)	X	X		X	X	
1340	Inland salt meadows						
Sea dunes of the Atlantic, North Sea and Baltic coasts							
2110	Embryonic shifting dunes	X	X	X	X	X	
2120	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)	X	X	X	X	X	
2130	Fixed coastal dunes with herbaceous vegetation (grey dunes)	X	X	X	X	X	
2140	Decalcified fixed dunes with <i>Empetrum nigrum</i>	X	X		X	X	
2150	Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>)		X		X		
2160	Dunes with <i>Hippophae rhamnoides</i>	X	X			X	
2170	Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>)	X	X		X	X	

Type	Description	NL	NdS	HH	SH	DK	Comment
2180	Wooded dunes of the Atlantic, Continental and Boreal region	X	X		X	X	
2190	Humid dune slacks	X	X		X	X	
Inland Dunes							
2310	Dry sand and heath with Calluna and Genista				X		
Temperate heath and scrub							
4010	Wet heath with Erica tetralix		X		X	X	
4030	European dry heaths		X		X		
Semi-natural dry grassland							
6210	Semi-natural dry grassland on calcareous substrate*					X	
6230	Species-rich Nardus grasslands*	(X)	X			X	
Semi-natural tall-herb humid meadows							
6410	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco Brometalia)(*important orchid sites)	(X)					
Mesophile grassland							
6510	Lowland hay meadows		X		X		
Sphagnum acid bogs							
7140	Transition mires and quaking bogs	(X)			X		
Marine Mammals							
1364	Grey seal	X			X	X	
1365	Harbour seal	X	X	X	X	X	
1351	Harbour porpoise	X	X	X	X	X	
1349	Bottlenose Dolphin				X		

ANNEX 2

TARGET CONCEPT		HABITATS DIRECTIVE			
Habitat Spec.	Target	Type	Objective NL (area-specific) ¹	Objective SH (area-specific) ²	"Criterion" DK (general) ³
Off-shore Area	<p>An increased natural morphology, including the outer deltas between the islands</p> <p>a favourable food availability for birds;</p> <p>viable stocks and a natural reproduction capacity of the <i>common seal</i>, <i>grey seal</i> and <i>harbour porpoise</i>.</p>	Subtidal sandbanks H1110	<p><u>Maintain</u> surface area and improve quality, amongst others of biogenic structures with mussels.</p> <p>Also important as habitat for eider (A063), black scoter (A065) and nursery area for fish</p> <p><i>Clarification:</i> Improvements in quality are possible in respect of bottom fauna, and the formation of biogenic structures with mussels. The characteristic feature of this system is the functional cohesion of the various subsystems such as ebb and flow channels, transport channels and intertidal mudflats and sandflats. Recovery of fresh-salt transitions is also important for this habitat type.</p>	<p><u>Conservation of</u></p> <ul style="list-style-type: none"> natural geomorphological dynamics largely natural hydrophysical and hydrochemical conditions and processes largely natural sediment and current conditions in the coastal area biotope complexes, as well as habitat-typical structures and functions possibly high water quality 	<p><u>Stable or increasing</u></p> <ul style="list-style-type: none"> Area; Presence of coherent areas of benthic vegetation; water transparency; Cover benthic vegetation; Characteristic species <p><u>Preserve or improve</u></p> <ul style="list-style-type: none"> Macrofauna and benthic vegetation species numbers, biomass; species composition benthic vegetation;
Tidal Area	<p>A natural dynamic situation in the tidal area;</p> <p>an increased area of geomorphologically and biologically undisturbed tidal flats and subtidal areas;</p> <p>an increased area of, and a more natural distribution and development of <i>natural mussel beds</i>, <i>Sabellaria reefs</i> and <i>Zostera fields</i>;</p> <p>viable stocks and a natural</p>				<p><u>Stable or decreasing</u></p> <ul style="list-style-type: none"> nutrient conc. in water; (effects of) dangerous substances in sediment and biota

TARGET CONCEPT		HABITATS DIRECTIVE			
Habitat Spec.	Target	Type	Objective NL (area-specific) ¹	Objective SH (area-specific) ²	"Criterion" DK (general) ³
Tidal Area (cont.)	<p>reproduction capacity, including juvenile survival of <i>common seal</i> and <i>grey seal</i>;</p> <p>favourable conditions for migrating and breeding birds: favourable food availability; a natural breeding success;</p> <p>sufficiently large undisturbed roosting and moulting areas;</p> <p>natural flight distances</p>	Mudflats/ Sandflats H1140	<p><u>Maintain</u> surface area and improve quality for the benefit of biodiversity. <u>Preservation</u> of flats for resting and foraging migratory birds - Oyster Catcher, Red Knot, Ruddy Turnstone and Eider Duck - and resting areas for Common and Grey Seal.</p> <p><i>Clarification:</i> As far as the quality is concerned important factors are the preservation of the morphological variation, variation between flats of differing elevation, the dynamics and sediment composition and the transitions between these features and to deeper channels and habitat types 1110 subtidal sandbanks and 1310 glasswort and other annuals colonising mud and sand. Opportunities for the restoration of the quality apply particularly to the restoration of intertidal mussel banks (and the associated biotic communities) and bottom fauna and to the extension of sea wrack and ruppia fields. In the case of the mussel banks on the intertidal flats an increase in the area is the aim, especially in the western part of the Wadden Sea.</p>	<p><u>Conservation of</u></p> <ul style="list-style-type: none"> natural geomorphological dynamics largely natural hydrophysical and hydrochemical conditions and processes largely natural sediment and current conditions in the coastal area biotope complexes, as well as habitat-typical structures and functions possibly high water quality habitat-typical structures and functions of mudflats and gullies 	<p><u>Stable or increasing</u></p> <ul style="list-style-type: none"> Area; Presence of coherent areas of sensitive faunal species; Benthic diatom biomass; Cover benthic vegetation; Characteristic species <p><u>Preserve or improve</u></p> <ul style="list-style-type: none"> Macrofauna species numbers, biomass; species composition <p><u>Stable or decreasing</u></p> <ul style="list-style-type: none"> nutrient conc. in water; coverage drifting algae (effects of) dangerous substances in sediment and biota

TARGET CONCEPT		HABITATS DIRECTIVE			
Habitat Spec.	Target	Type	Objective NL (area-specific) ¹	Objective SH (area-specific) ²	"Criterion" DK (general) ³
Tidal Area (cont.)		Coastal Lagoons H1150	Not designated	<p><u>Preservation of</u></p> <ul style="list-style-type: none"> • marine influenced permanent or temporary waters and their connection with the North Sea • largely natural hydrophysical and hydrochemical water conditions and processes and hydrological conditions in the surroundings of the waters, • determining Sediment, current and wave conditions in the coastal reach, as well as resulting morphodynamics • largely disturbance-free coastal stretches • habitat-typical structures and functions, especially ecological interactions with bordering amphibical habitats such as salt marshes, beaches, brackish tall herb stands, reeds, pioneer communities and river mouths 	<p><u>Stable or increasing area</u></p>
		Shallow inlets/bays H1160	Not designated	No specific objective	Not designated in Danish Wadden Sea
		Reefs H1170	Included in 1110/1140 (mussel beds)	<p>Preservation of natural, not or hardly mechanically (anthropogenically) damaged, largely free, as well as mophologically undisturbed parts of the sea floor or periodically emerging shallow water zones with hard substrates, such as erratic blocks, stones, natural mussel beds and sabellaria reefs, as well as mixed stands belonging to the category sand banks.</p>	<p>Not designated in Danish Wadden Sea (DK uses own definition of reefs, since guidance considered insufficient; Biogenic reefs, incl. mussel beds, only defined for deep waters) [source: NERI 488. 2004]</p>

TARGET CONCEPT		HABITATS DIRECTIVE			
Habitat Spec.	Target	Type	Objective NL (area-specific) ¹	Objective SH (area-specific) ²	"Criterion" DK (general) ³
Estuaries	Estuaries will be protected and restored according to the conditions as agreed on in § 15 (§15: The participants agree furthermore that the estuaries require special protection and management measures. They assure that valuable parts will be protected and that the river banks will remain, and as far as possible, be restored in their natural state)	Estuaries H1130	<p><u>Preservation</u> surface area and quality</p> <p>Restoration of freshwater/saltwater transitions (via sluice regime and fish traps), especially the Afsluitdijk, Westerwoldse Aa and Lauwersmeer/Reidiep fish grounds in relation to Drentse Aa (River Lamprey).</p> <p>Restoration of relationship between hinterland (freshwater estuary) and Twaite Shad (H1103) spawning grounds in Eems Germany.</p>	<p><u>Preservation</u> of</p> <ul style="list-style-type: none"> • Tidal influence with characteristic salt-brackish- and freshwater zoning of habitats, • biotope complexes and their characteristic structures and functions with f.e. sands, fresh- and saltmarshes, backwaters, gully systems, tidelines, reeds, reed marshes, muddy banks, beaches and river forests, • biotope determining hydrophysical and hydrochemical water conditions and processes of the coastal sea, the estuaries and their tributaries, • largely pristine stretches, • Sediment and current conditions, as well as natural dynamics in the river mouth and bank reaches, • function as migratory route for water-bound organisms, • ecological interactions with the terrestrial, limnic and marine environments. 	<p><u>Stable</u> or increasing</p> <ul style="list-style-type: none"> • Area; • Presence of coherent areas of benthic vegetation and related fauna; • Vertical proliferation of benthic vegetation; <p><u>Preserve or improve/increase</u> to a fixed level:</p> <ul style="list-style-type: none"> • Benthic vegetation species diversity • Macrofauna species numbers and biomass; • species composition; • Characteristic species <p><u>Stable</u> or decreasing</p> <ul style="list-style-type: none"> • nutrient conc. in water; • (effects of) dangerous substances in sediment and biota <p><u>Stable</u> or increasing</p> <ul style="list-style-type: none"> • water transparency
Salt marshes	<p>An increased area of natural salt marsh;</p> <p>an increased natural morphology and dynamics, including natural drainage patterns, of artificial salt marshes, under the condition that the present surface area is not reduced;</p> <p>an improved natural vegetation structure, including the pioneer zone, of artificial salt marshes</p>	Brackish colonising vegetation H1310	<u>Preservation</u> of distribution, surface area and quality	<u>Preservation</u> natural occurrence <i>Salicornia</i> species	<u>Stable</u> or increasing area
		Cordgrass swards (<i>Spartina</i>) H1320	<u>Preservation</u> of distribution, surface area and quality	<u>Preservation</u> areas with occurrence of <i>Spartina</i>	No objective because Cordgrass considered invasive species
		Salt-marshes and salt meadows H1330	<u>Preservation</u> saltmarshes and brackish grasslands (unembanked) with all succession stages, freshwater/saltwater transitions, diversity of substrate and tidal regime as well as high-water refuge.	<u>Preservation</u> or in certain cases restoration of salt marshes with characteristically developed vegetation and undisturbed vegetation succession	<p><u>Stable</u> or increasing</p> <ul style="list-style-type: none"> • area • characteristic species • balance between low and high growing forms of same habitat type <ul style="list-style-type: none"> • species composition within natural range <p>N deposition < agreed limit value</p>

TARGET CONCEPT		HABITATS DIRECTIVE			
Habitat Spec.	Target	Type	Objective NL (area-specific) ¹	Objective SH (area-specific) ²	"Criterion" DK (general) ³
Beaches/ Dunes	<p>Increased natural dynamics of beaches, primary dunes, beach planes and primary dune valleys in connection with the offshore zone;</p> <p>an increased presence of a complete natural vegetation succession;</p> <p>favourable conditions for migrating and breeding birds.</p>	Embryonic dunes H2110	<p><u>Preservation</u> distribution, surface area and quality</p> <p>Room for natural sand drift</p>	<p><u>Preservation of</u></p> <ul style="list-style-type: none"> • natural sediment and current conditions in the coastal area with recently formed sands • natural sand dynamics and dune building processes • undisturbed vegetation succession • vegetation stands without bottom damage 	<p><u>Stable or increasing</u></p> <ul style="list-style-type: none"> • area; • stock of characteristic species • distance to areas in which fertilizers and pesticides are applied. <p>Habitat type must represent the whole Danish geographical habitat range; Species composition within accepted Danish range.</p> <p><u>Stable or decreasing</u></p> <ul style="list-style-type: none"> • influence of human activities (coastal protection, exploration, dumping) on natural erosion and sediment dynamics. • natural sand loss; <p>N-deposition may not exceed fixed limit</p>
		White dunes H2120	<p><u>Preservation</u> distribution, surface area and quality</p> <p>Room for natural sand drift</p>	<p><u>Preservation of</u></p> <ul style="list-style-type: none"> • Natural bottom development and natural water levels in dune reaches, • mosaic complexes with other characteristic habitats, • natural sand- and bottom dynamics, • unfixed offshore sands to guarantee sand supply, • natural dune building processes 	<p><u>Stable or increasing</u></p> <ul style="list-style-type: none"> • area; • stock of characteristic species • distance to areas in which fertilizers and pesticides are applied. <p>Habitat type must represent the whole Danish geographical habitat range; Species composition within accepted Danish range.</p> <p><u>Stable or decreasing</u></p> <ul style="list-style-type: none"> • influence of human activities (coastal protection, exploration, dumping) on natural erosion and sediment dynamics. • natural sand loss; <p>N-deposition may not exceed fixed limit</p>

TARGET CONCEPT		HABITATS DIRECTIVE			
Habitat Spec.	Target	Type	Objective NL (area-specific) ¹	Objective SH (area-specific) ²	"Criterion" DK (general) ³
Beaches/ Dunes (cont.)		Grey dunes H2130	Increase/improvement area and quality, also as habitat for bird species A277, A222 and A082, by counteracting proliferation of grass and shrubs	<u>Preservation of</u> <ul style="list-style-type: none"> richly structured grey dune complexes mosaic complexes with other characteristic habitats, natural bottom developments and largely undisturbed hydrological conditions, natural dune building processes, habitat-characteristic structures and functions 	<p>Stable or increasing</p> <ul style="list-style-type: none"> area; stock of characteristic species. <p>Stable or improved Lichen/moss ratio</p> <p>Habitat type must represent the whole Danish geographical habitat range; Species composition within accepted Danish range.</p> <p>Stable or decreasing</p> <ul style="list-style-type: none"> impact of touristic activities; coverage with non-native trees and shrubs; <p>pH within natural range</p> <p>N-deposition may not exceed fixed limit</p>
		Decalcified fixed dunes with <i>Empetrum nigrum</i> H2140	<u>Preservation and/or Increase/improvement</u> Area and quality	<u>Preservation of</u> <ul style="list-style-type: none"> dune complexes and structures with <i>Empetrum</i>, mosaic complexes with other characteristic habitats, natural bottom developments and largely undisturbed hydrological conditions, natural dune building processes, habitat-characteristic structures and functions 	<p>Stable or increasing</p> <ul style="list-style-type: none"> area; stock of characteristic species, share of area with extensive felling, grazing or other temporary activities, except for cases in which the choice has been made for undisturbed succession, as a general long-term goal <p>Habitat type must represent the whole Danish geographical habitat range; Species composition within accepted Danish range.</p> <p>Stable or decreasing</p> <ul style="list-style-type: none"> impact of touristic activities; coverage with non-native trees and shrubs; invasive species <p>pH <u>stable</u> or not substantially lower than natural local acidity</p> <p>N-deposition may not exceed fixed limit</p> <p>C/N ratio of humus within natural geographical range. Stable or improving.</p>

TARGET CONCEPT		HABITATS DIRECTIVE			
Habitat Spec.	Target	Type	Objective NL (area-specific) ¹	Objective SH (area-specific) ²	"Criterion" DK (general) ³
Beaches/ Dunes (cont.)		Atlantic decalcified fixed dunes H2150	Not designated	X	Not designated
		Dunes with <i>Hippophae rhamnoides</i> H2160	Preservation of Area and quality	Not designated	Stable or increasing • area; • stock of sea-buckthorn (2160)/Creeping willow (2170) • share of area with extensive felling, grazing or other temporary activities, except for cases in which the choice has been made for undisturbed succession, as a general long-term goal
		Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>) H2170	Preservation of Area and quality	Preservation of • dunes and dune valley complexes with <i>Salix repens</i> • Natural bottom development and natural water levels in dune reaches, • mosaic complexes with other characteristic habitats, • characteristic pH values	Species composition within accepted Danish range. pH stable or not substantially lower than natural local acidity. N-deposition may not exceed fixed limit
		Wooded dunes of the Atlantic, Continental and Boreal region H2180	Increase area and maintain or recover quality (humid subtype) Recovery hydrology and humidity gradients	Preservation of • natural dune building processes • habitat-characteristic structures and functions • mosaic complexes with other characteristic habitats, • largely undisturbed hydrological conditions, • coherent stands including shrubs, pre-forests and degeneration stages	Stable or increasing • area; • distance to areas in which fertilizers and pesticides are applied. Stable or decreasing Coverage with unwanted Tree species N-deposition may not exceed fixed limit
		Humid dune slacks H2190	Preservation area and recovery quality as habitat for species A021, A034, A082, A222, *H1340, H1014 H1903	Preservation of • humid and wet dune slacks • natural sand and bottom dynamics and natural dune building processes • habitat-characteristic structures and functions • mosaic complexes with other characteristic habitats, • largely undisturbed hydrological conditions • low nutrient conditions	Stable or increasing • area; • stock of characteristic species. N-deposition may not exceed fixed limit. pH stable or not substantially lower than natural local acidity. Stable or decreasing dredging or digging of channels. Coverage with trees and bushes within natural range (stable or improving). Species composition within natural range.
Rural Area	Favourable conditions for flora and fauna, especially migrating and breeding birds				

TARGET CONCEPT		HABITATS DIRECTIVE			
Habitat Spec.	Target	Type	Objective NL (area-specific) ¹	Objective SH (area-specific) ²	"Criterion" DK (general) ³
Marine Mammals	Viable stocks and a natural reproduction capacity, including juvenile survival	Grey seal H1364	<u>Preservation</u> of size and quality of habitat for conservation of population.	<u>Preservation</u> of <ul style="list-style-type: none"> viable stocks and a natural reproduction capacity, including juvenile survival nearly natural marine and coastal waters with shallow water zones and sandy beaches natural marine and coastal dynamics a possibly low pollution level of marine and coastal waters 	Viable stocks Stable or increasing <ul style="list-style-type: none"> stocks number of breeding sites total area of suitable breeding and resting places Regular occurrence in most important habitats
		Common seal H1365	<u>Preservation</u> of size and quality of habitat for conservation of population.	level of marine and coastal waters <ul style="list-style-type: none"> undisturbed resting sites very undisturbed Breeding sites undisturbed reaches with low underwater noise high diversity fauna (fish, shrimp, mussels, crabs etc) as feeding basis 	Viable stocks in Atlantic and continental region as well as in three out of five administrative units Stable or increasing <ul style="list-style-type: none"> stocks, both nationally and in three out of five administrative units number of breeding sites total area of suitable breeding and resting places Presence in all five administrative units.
		Harbour porpoise H1351	<u>Preservation</u> of size and improvement of quality of habitat	<u>Preservation</u> of <ul style="list-style-type: none"> viable stocks and a natural reproduction capacity, including juvenile survival nearly natural coastal waters, in particular shallow productive areas of less than 20 m depth low-disturbance breeding and rearing areas with low acoustic underwater disturbance fish food stocks <u>Securing</u> a possibly low pollution level of coastal waters <u>Prevention</u> of ship collisions <u>Prevention</u> of whale-impacting fisheries	Viable stocks Stable or increasing <ul style="list-style-type: none"> stocks area with presence harbour porpoise or of suitable habitats Breeding in all three administrative units Decreasing by-catch
Birds	Favorable conditions for migrating and breeding birds: = a favorable food availability; = a natural breeding success; = sufficiently large undisturbed roosting and moulting areas; = natural flight distances	For a detailed evaluation of bird conservation objectives, see Annex 3			

¹ Information NL based upon

Gebiedendocumenten 001 t/m 007 (Waddenzee, Waddeneilanden, Noordzee), ontwerp versie 14 dec 2006 (001, 007) en februari 2007 (002 t/m 006)

² Information SH based upon

Gebietsspezifische Erhaltungsziele der am 2. Oktober 2006 bekannt gemachten Gebiete, die nach Artikel 4 Absatz 1 der Richtlinie 92/43/EWG des Rates (FFH-Richtlinie) von der Bundesrepublik Deutschland der Kommission zu benennen sind einschließlich der am 6. Juni 2006 und 4. September 2006 im Amtsblatt für Schleswig-Holstein bereits bekannt gemachten Gebiete.

Erhaltungsziele für das als Gebiet von gemeinschaftlicher Bedeutung benannte FFH-Gebiet DE-0916-391 „Nationalpark Schleswig-Holsteinisches Wattenmeer und angrenzende Küstengebiete“ (7.11.2006)

³ Information DK based upon

Marine habitat types (1110, 1130, 1140, 1150, 1160, 1170):

Dahl et al (2005). Kriterier for gunstig bevaringsstatus for EF-habitatdirektivets 8 marine naturtyper. DMU faglig rapport 549

Dahl et al (2004) Tools to assess the conservation status of marine Annex 1 habitats in special areas of conservation. NERI technical report 488

All other habitats

Søgaard et al (2005) Kriterier for gunstig bevaringsstatus. DMU Faglig rapport 457 (3. udgave)

Annex 3

Inventory of national implementation of the EU-Birds Directive in the Wadden Sea and proposal for trilateral harmonisation of conservation targets in the Wadden Sea Plan

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SOVON Vogelonderzoek Nederland

Summary

This document reviews the national approaches used to implement the EU-Birds Directive in the Wadden Sea countries and assesses their use for a revision of the trilateral conservation targets for birds in the Wadden Sea Plan, that have to be in line with the requirements of the EU-Birds Directive. Implementation of the Birds Directive differs among the countries, both with respect to the bird species they have used to designate SPAs in the Wadden Sea (Tab. 1) and definitions for conservation objectives and definitions for favourable conservation status (Tab. 2). Here, countries have chosen three different strategies (1) no site-based conservation objectives at all (Denmark, Hamburg); (2) conservation objectives that focus on habitat (Schleswig-Holstein, Niedersachsen) and (3) conservation objectives that focus on the conservation status of single bird species (the Netherlands).

Revision of trilateral targets for birds should ideally both address habitat conservation and conservation status of birds. This outline results in a set of five targets: (1) a favourable conservation status of all bird species using the Wadden Sea, (2) a suitable extent of undisturbed habitats; (3) an undisturbed connectivity between breeding, feeding and roosting sites; (4) a natural extent of food stocks in all feeding habitats and (5) restoration of habitat, connectivity between habitats and/or availability of food stocks when a unfavourable conservation status in birds in the Wadden Sea occurs. Finally, a proposal to adapt the present monitoring scheme with respect to analysis and presentation of the data is made, including the use of alert-limits and indicator species. Both are important tools to present clear trend assessments and communicate the results.

1. BACKGROUND

Trilateral targets for the Wadden Sea Area have been formulated in the Wadden Sea Plan (1997). For breeding birds and migratory and wintering birds, these targets include (1) a favourable food availability, (2) a natural breeding success, (3) sufficiently large and undisturbed roosting and moulting areas and (4) natural flight distances. So far, changes in bird numbers have been reviewed with respect to these targets (Essink et al. 2005). Recently, implementation of the EU-Birds and Habitats Directives has made much progress in the three Wadden Sea countries (Denmark, Germany, the Netherlands). Ideally, national conservation objectives developed for the Special Protection Areas of the Birds Directive (SPA) and Special Areas of Conservation (SAC) of the Habitats Directive within the Natura 2000 network in the Wadden Sea countries should address

similar goals as the trilateral targets formulated in the Wadden Sea Plan, and fit in the same context.

In the framework of the further development of the Wadden Sea Plan and as a first step looking at the conservation objectives for birds, the Common Wadden Sea Secretariat has commissioned SOVON Vogelonderzoek Nederland to review the status and development of conservation objectives for the EU-Birds Directive in the Wadden Sea countries and develop a proposal for harmonisation between these conservation objectives and the trilateral targets of the Wadden Sea Plan. This document first presents an inventory of national approaches used to implement the EU-Birds Directive in the Wadden Sea countries and assesses its suitability for trilateral use. Finally, a proposal to harmonise the conservation objectives for the Birds Directive and the trilateral targets in the Wadden Sea Plan is made.

2. INVENTORY OF NATIONAL IMPLEMENTATION OF THE EU-BIRDS DIRECTIVE

2.1. Delineation of SPAs

Except the single SPA in the Wadden Sea of Hamburg, all states have designated a number of separate SPAs within their part of the Wadden Sea. Often, e.g. inland marshes, dunes areas and tidal flats have been treated as separate SPAs. Denmark has designated 9 SPAs within their part of the Wadden Sea, Schleswig-Holstein 3, Niedersachsen 4 and the Netherlands 7. Each of these SPAs might have different conservation objectives and a different number of species for which they have been designated. For this inventory, however, all SPAs in one country have been aggregated into one. The comparison thus focuses on differences between the countries, rather than differences between individual SPAs within or between the countries.

2.2. Species used for designation

For each SPA, a list of species has been formulated that was used to designate the site and delineate its boundaries. Table 1 summarises the number of species used for designation in each country (CWSS in prep.). It appears that only few bird species (15, 13% of total number of species) are listed commonly as designating species in all countries. Hence, there is quite a variation among countries what species they have used. Probably, this can be explained by differences in abundance and national conservation status between the countries, like national Red List status. Moreover, especially the limited selection of Hamburg downscapes the number of commonly used bird species considerably. When Hamburg is included in Niedersachsen, as is usually done in the framework of TMAP monitoring programmes (including bird monitoring by JMBB and JMMB), a common species list includes 31 bird species (25% of all species) and covers most of the characteristic Wadden Sea species included in the trilateral monitoring scheme. Basically, the species that have been included in the JMBB and JMMB monitoring schemes so far should be used as a common list of bird species for which

conservation objectives should be endorsed. Additional bird species could eventually be included, provided that they (1) are relevant with respect to the EU-Birds Directive, (2) are relevant and characteristic Wadden Sea species and (3) implementation in the monitoring scheme will not be difficult for practical reasons (i.e. the species should be easy to cover with the trilateral methods used so far). It is proposed to discuss this aspect within the expert groups of JMBB and JMMB.

Table 1. Comparison of the number of bird species ("qualifying species") used to designate SPAs in the Wadden Sea in Denmark, Schleswig-Holstein, Hamburg, Niedersachsen and the Netherlands. Both breeding and non-breeding species are listed. Data retrieved from inventory by G. Lürßen, CWSS, CWSS in prep.). Sources: (1) <http://www.skovognatur.dk>; (2) <http://www.umweltdaten.landsh.de>; (3) <http://fhh.hamburg.de>; (4) Umweltministerium and NLWK-N, Hannover; (5) Ministerie van Landbouw, Natuur en Voedselkwaliteit, Den Haag.

Country	Number of qualifying species	Source
Denmark	41	1
Schleswig-Holstein	89	2
Hamburg	23	3
Niedersachsen	103	4
the Netherlands	64	5
All countries	125	
Common list of species in all countries	15	

2.3. National approaches in implementation of the EU-Birds Directive

Recently, much progress has been achieved in implementation of the EU-Birds Directive in the Wadden Sea countries. This includes e.g. proposals for national conservation status of species (e.g. Denmark, Pihl et al. 2006) and definitions of conservation objectives for individual SPAs (e.g. Schleswig-Holstein, Amtsblatt/MLUR 2006). Table 2 provides an overview of the strategies countries have followed to arrive at a set of conservation objectives for their SPAs. Similar as in the species used for designation, countries have chosen rather different approaches.

In Denmark, criteria to define conservation status are in progress (Søgaard et al. in prep.). For birds, Pihl et al. (2006) have made a preliminary assessment, looking at trends and distribution of relevant species for the whole of Denmark. Based on these aspects, they have proposed national conservation status of all bird species relevant in the context of the EU-Birds Directive.

Schleswig-Holstein has nearly finalised definitions for site-based conservation objectives (MLUR 2006), only for the National Park area they are still discussed. Conservation objectives in Schleswig-Holstein have been developed in line with the existing trilateral targets in the Wadden Sea Plan. They focus on qualitative statements, addressing habitat conservation and habitat restoration and species that should benefit from that. Some important species are mentioned specifically, but specific guidelines dealing with conservation status of single bird species have not been included; they result from the aims for habitat management. In Hamburg, conservation objectives have not been formulated so far. Management of the Wadden Sea in Hamburg is arranged in the

National Park legislation from 2001. There is no intention to develop specific conservation objectives for the EU Birds-Directive.

In the Wadden Sea of Niedersachsen, definitions for site-based conservation objectives are foreseen for 2007. It is expected that they will follow a similar strategy as used in Schleswig-Holstein, addressing mainly habitats relevant for birds, rather than species-specific conservation objectives to address conservation status.

In the Netherlands, a comprehensive scheme has been set up by the national government (Ministerie van LNV 2006). For each bird species that was used for designation, specific conservation objectives are formulated. These include numerical criteria for good, moderate and poor conservation status. Trends in bird numbers are reviewed against these criteria. For each species, population size (breeding pairs) and numbers of migratory and wintering birds (annual mean) have been formulated as a target, both parameters directly linked to the output of national monitoring programmes (e.g. SOVON & CBS 2005). For the the first series of SPAs, designation and conservation objectives were finalised in 2006. The second series, including the SPAs in the Wadden Sea, will be finalised in 2007.

Based on this information, we can conclude that national approaches in implementation of EU-Birds Directive are rather heterogeneous. They range from no specific conservation objectives (Denmark, Hamburg) to general and qualitative conservation objectives addressing mainly habitat conservation (Schleswig-Holstein, probably also Niedersachsen) and numerical targets to assess conservation status for each species (the Netherlands). From a trilateral point of view, there is no common denominator that would easily result in trilateral conservation targets.

3. ASSESSMENT OF NATIONAL APPROACHES OF IMPLEMENTATION OF THE EU-BIRDS DIRECTIVE

As pointed out above, national approaches for implementation of the EU-Birds Directive are rather different and lack a common denominator. Three strategies can be distinguished in the overview given in table 2:

- No site-based conservation objectives at all, but only national conservation status for the entire country;
- No species-specific conservation objectives for SPAs in the Wadden Sea, but conservation objectives mainly based on habitat management, and using the extent of suitable habitat and suitable living conditions as prerequisites for conservation status of birds.
- Species-specific conservation objectives for SPAs in the Wadden Sea, using targets for allowed changes in bird populations and targets for number of breeding pairs and migratory/wintering birds to define conservation status.

Table 2. *National approaches in implementation of EU-Birds Directive in Denmark, Schleswig-Holstein, Hamburg, Niedersachsen and the Netherlands.*

Country	National approach	Status / Progress (Feb. 2007)
Denmark	Only criteria for conservation status (Søgaard et al. in prep.) and national conservation status has been assessed, based on abundance and general trends in Denmark (Pihl et al. 2006). There is no intention to formulate site-based conservation objectives for birds and SPAs in the Wadden Sea	Assessment of criteria and national conservation status preliminary, not yet finalised.
Schleswig-Holstein	Conservation objectives have been published in 2006 in three 'Amtsblätter' of the 'Ministerium für Landwirtschaft, Umwelt und Ländliche Räume (MLUR 2006). Conservation objectives have been formulated in general (qualitative) terms and focus on habitat conservation and management (maintain or development specific habitats). Specific targets for birds focus on food availability, disturbance-free breeding and roosting sites and predation-free breeding sites, but no species-specific objectives for conservation status are included. High similarity to current conservation targets in Wadden Sea Plan (though described in more detail).	Finalised, except for National Park Schleswig-Holsteinisches Wattenmeer, where conservation objectives are discussed.
Hamburg	No specific conservation objectives have been formulated; these have been arranged in the National Park legislation (Hamburgisches Gesetz- und Verordnungsblatt, Nr.13/2001 vom 18. April 2001).	Finalised in last amendment of National Park legislation (2001), no specific conservation objectives regarding EU-Bird Directive will be formulated.
Niedersachsen	No site-specific conservation objectives formulated yet.	In the course of 2007 conservation objectives will be endorsed, following similar approach as in Schleswig-Holstein.
the Netherlands	National conservation status and separate conservation objectives for all SPAs, including the Wadden Sea, have been formulated (or are in preparation; Ministerie van LNV 2006). Conservation objectives and conservation status have been defined quantitatively. Targets for numbers of breeding pairs and targets for migratory and wintering birds have been formulated and are directly linked to output of national monitoring scheme. Formulated are also conservation aims to maintain the present situation and/or scenarios for restoration.	Conservation objectives according to latest ministerial proposal December 2006, finalisation (ratification) will take place in 2007. Following this process, management plans for SPAs are prepared to achieve the targets aimed for.

Definition of national conservation status, as is done in Denmark, does not allow any evaluation of changes in bird numbers and distribution at site level, within individual SPAs in the Wadden Sea. Trends will be only reviewed at a national scale. Only for species that rely heavily on the Danish Wadden Sea, a direct link with the situation in the Wadden Sea will be possible.

The second strategy does address conservation objectives for SPAs in the Wadden Sea, as done in Schleswig-Holstein, but does not distinguish among single species, and does not directly address declining trends in bird species (i.e. favourable conservation status is not defined). Conservation objectives aim for suitable extent of necessary habitat and favourable living conditions for birds in general, like the trilateral targets that have been formulated in the Wadden Sea Plan so far. In favour of such a strategy is the link between habitats and abundance of birds and the more integrated approach of the ecosystem as a whole, assuming natural geomorphological, chemical and biological processes to be determinant and regarding bird numbers as a result. They use qualitative statements like "suitable extent", "free of disturbance", "natural flight distances", "natural breeding success" and "natural extent of food stocks", however, without defining them clearly and without regarding (presumed) human impact on them. Research to define e.g. "natural flight distances" and "natural breeding success" has not been carried out so far, and such studies are not included in the current monitoring schemes of JMMB and JMBB. Also knowledge on interactions between abundance of birds and e.g. available food stocks or available breeding habitat is scant. Thus, monitoring of these conservation objectives is difficult, since results of monitoring schemes will allow a lot of discussion when it comes to interpretation of changes in bird populations. Furthermore, the lack of a species-specific approach does not allow separation of species that are highly endangered in the Wadden Sea and which might request more urgent conservation measures than other species.

Using conservation objectives with pre-defined targets for trends and abundance of birds to assess conservation status, as used in the third strategy, allows a species-by-species approach and evaluation is rather simple, especially when - like currently in the Netherlands - the targets are directly linked to the output of monitoring programmes. This approach, however, has a strong focus on numbers and trends. Thus, well-though definitions of the numerical targets, preferably based on ecological assumptions is essential, but are not easy to establish in all species concerned. Moreover, this approach does not always distinguish among habitats and natural processes and it does not address changes in distribution. For example, when a decline of a species in a natural habitat is compensated for by increases in man-made habitat, numbers will not show a decline ("the conservation status remains favourable"), although the dependance on man-made habitat might not be a favourable situation. A species for which such a situation existed some time ago is the Kentish Plover (Koffijberg et al. 2006). Conservation objectives for habitats will overcome this problem only to some extent.

4. PROPOSAL FOR A HARMONISED TRILATERAL APPROACH REGARDING EU-BIRDS DIRECTIVE AND WADDEN SEA PLAN

4.1. Harmonised trilateral targets

Both the qualitative and quantitative approaches used at national level can be used to design trilateral targets that are in line with the conservation objectives of the EU-Birds Directive. Ideally, trilateral targets should address the extent of suitable habitat and available food resources and also include a target for restoration if significant declines have occurred that are linked to habitat and food availability in the Wadden Sea ecosystem. These targets address the necessary habitat requirements and living conditions for birds in the Wadden Sea. Additionally, a target to address conservation status in birds, as requested from the EU-Birds Directive to conserve biodiversity in birds, should be added as well. According to this outline, trilateral targets should aim for:

- A favourable conservation status of all bird species using the Wadden Sea, i.e. their numbers and distribution should be stable or not declining and underly natural breeding success and survival;
- A suitable extent of undisturbed breeding, feeding and roosting sites for breeding, migratory, wintering and moulting birds;
- An undisturbed connectivity between breeding, feeding and roosting sites;
- A natural extent of food stocks in all feeding habitats;
- Restoration of breeding, feeding and/or roosting sites, connectivity between these sites and/or availability of food stocks in cases of an unfavourable conservation status in birds in the Wadden Sea.

This approach combines the advantage from the national strategies followed in Schleswig-Holstein and Niedersachsen to aim for habitat-linked conservation objectives, but adds the important aspect of a favourable conservation status in single bird species used in the Netherlands, without fixing them to threshold values for population size that might be difficult to assess. A favourable conservation status is defined by population trends and distribution in the Wadden Sea and the basis population demographic parameters that influence them directly (breeding success and survival). Currently, trends and distribution are retrieved already from the JMBB and JMMB monitoring schemes. Preferably, the trend classification used in these schemes should be adopted to detect declining trends (Blew & Südbeck 2005, Koffijberg et al. 2006). In this manner, results of monitoring projects have a direct link to the targets set. Pure qualitative targets, as formulated in the current Wadden Sea Plan, should be avoided as they can not be evaluated properly, and/or baseline studies to assess them (e.g. natural flight distance) have not been carried out so far.

4.2. Proposal for assessment of trends in birds

The JMMB and JMBB monitoring schemes that are carried out in the framework of TMAP annually produce high-quality data (Blew et al. 2005, Blew & Südbeck 2005, Koffijberg et al. 2005, Koffijberg et al. 2006). For evaluation of the trilateral targets and

communication of their results, tools to analyse and present monitoring data could be improved substantially. For this purpose, a method developed in the UK could be implemented in the Wadden Sea. This includes so-called alert-limits. Alert-limits are pre-defined trend assessments, building on population changes in a pre-defined time-window. In the UK, they use smoothed and average population indices in a three-year period (to buffer outliers in annual fluctuation), and compare them with a similar three-year period 5, 10 and 25 years ago (short-term, moderate-term and long-term trends respectively) (Austin et al. 2003, Atkinson et al. 2006). A "medium alert" is flagged when a population declined with 25-50% compared to the previous time-period; a "high alert" when the decline was >50%. Basic principles of this assessment are exemplified in figure 1 for two breeding bird species in the Wadden Sea. In the UK, additional species-specific filters are used to fine-tune the assessment, e.g. adding filters for species-specific tolerance for large (natural) population fluctuations or including an assessment of expected life-span of a species (trends have different impact for short- and long-living species). Implementation of alert limits in the Wadden Sea has been proposed before by JMMB (Blew & Südbeck 2005) and would expand the possibilities for a proper communication of the results of the monitoring schemes.

Secondly, trends in bird species could be used to monitor changes in habitats distinguished in the Wadden Sea, i.e. salt marshes, tidal area, beaches and dunes, estuaries and offshore area.

Basically, for a group of species that is regarded representative for one of these habitats, trends of single species are aggregated to detect overall changes within a habitat type. For this purpose, a matrix of species-habitat combinations is necessary, eventually distinguishing food preferences, e.g. wader species in the tidal area that prefer worms for food and wader species that rely on benthic prey, or birds on salt marshes that prefer tall vegetation for breeding and bird species that prefer short vegetation for breeding and feeding. By selecting species-habitat combinations, a set of indicators can be established that point at environmental changes within each habitat and that can be used to evaluate management measures taken at habitat level.

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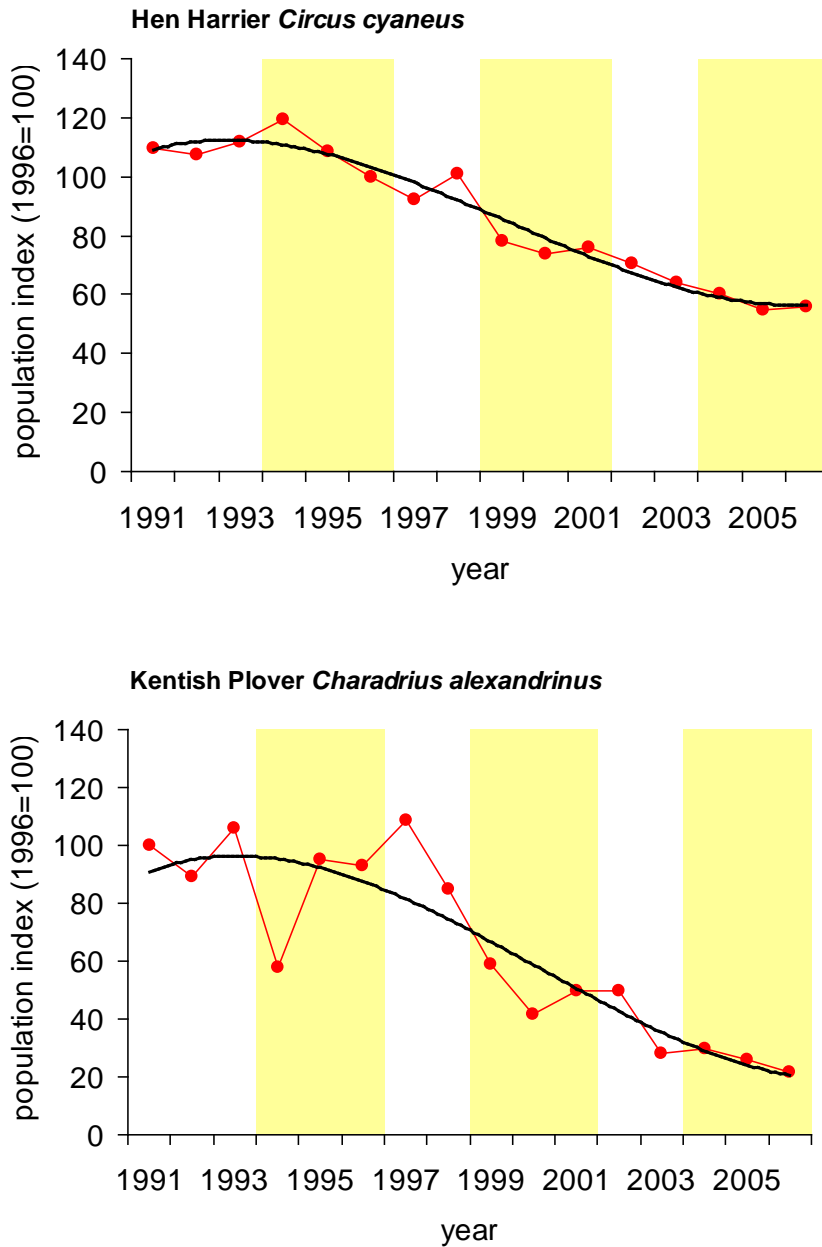


Figure 1. Basic principles of alert limits, exemplified by breeding Hen Harrier and Kentish Plover in the Wadden Sea in the Netherlands (data after Koffijberg et al. 2006 and SOVON, 2006 preliminary data). Area shaded in yellow represents periods that are compared; red dots are annual population indices and black line is smoothed index. This smoothed population index in 2004-2006 is compared to that of 1999-2001 (short-term trend) and 1992-1996 (medium-term trend). For Hen Harrier a "medium alert" would be flagged for both the medium-term trend (population change -48%) and the short-term trend (-25%). Kentish Plover would get a "high alert" for medium-term trend (-69%) and a medium alert for short-term trend (-49%). Since data before 1991 are not available, a long-term trends could not be assessed.

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