

# Monitoring Specifications

Date: 2010-02-22

## Birds





## ARGE BLMP - Working Group for the North Sea and Baltic Sea Monitoring Programme

At the 34th North German Environmental Ministerial Meeting held on 17 April 1997, the competent departments of the German Federal Government and of the federal states of Hamburg, Mecklenburg-Vorpommern, Lower Saxony and Schleswig-Holstein agreed to establish a joint working group co-ordinating the monitoring of the marine environment of the North and Baltic Seas (ARGE BLMP Nord- und Ostsee).

Members of ARGE BLMP are:

- Federal Ministry of Food, Agriculture and Consumer Protection
- Federal Ministry of Transport, Building and Urban Development
- Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
- Federal Ministry of Education and Research
- Authority for Urban Development and Environment of the Free and Hanseatic City of Hamburg
- Mecklenburg-Vorpommern Ministry for Agriculture, the Environment and Consumer Protection
- Lower Saxony Ministry for the Environment and Climate Protection
- Schleswig-Holstein Ministry for Agriculture, the Environment and Rural Areas

The Monitoring Manual describes the current measuring programme implemented under BLMP. The monitoring requirements of the different EC Directives (Marine Strategy Framework Directive, Water Framework Directive, FFH, Birds Directive), marine protection conventions (OSPAR, HELCOM, Trilateral Monitoring and Assessment Program) and other bodies of regulations have been taken into account in the Manual. The Monitoring Manual is available free of charge on the BLMP website at [www.blmp-online.de/Seiten/Monitoringhandbuch.htm](http://www.blmp-online.de/Seiten/Monitoringhandbuch.htm)

## Editorial information

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# 1 General

## 1.1 Subject area

Biological Monitoring - Fauna - Birds

## 1.2 Definition

Seabirds and coastal birds, in particular the target species for marine and coastal SPAs and species typical of the relevant HD habitat types, as well as all further species listed in Annex I of the Birds Directive and regularly occurring species of migratory birds covered by Article 4(2) of the Birds Directive.

## 1.3 Competent authority/ies

|                         |   |
|-------------------------|---|
| Federal Government:     | <a href="#">BfN</a>                                   |
| Hamburg:                | <a href="#">BSU</a>                                   |
| Mecklenburg-Vorpommern: | <a href="#">LUNG</a>                                  |
| Lower Saxony:           | <a href="#">NLPV NI</a> , <a href="#">NLWKN / VSW</a> |
| Schleswig-Holstein:     | <a href="#">LLUR / VSW</a> , <a href="#">LKN-SH</a>   |

## 1.4 Working group

Ad Hoc Working Group on Vertebrates (Birds, Mammals, Fish)

## 2 Monitoring requirements

### 2.1 Necessity

#### [MSFD \[1\]](#)

##### Articles 8 and 11, Annexes III and V

Comments

The environmental status of European marine waters is to be recorded and assessed by means of coordinated monitoring programmes.

The requirements with regard to bird monitoring have not yet been specified by the European Commission.

#### [Birds Directive](#)

##### Article 01

Comments

The Directive relates to the conservation of all species of naturally occurring birds in the wild state in the European territory of the Member States to which the Treaty applies.

##### Article 04

Comments

(1) The species mentioned in Annex I shall be the subject of special conservation measures concerning their habitat. Trends and variations in population levels shall be taken into account as a background for evaluations. The species list corresponds to the species mentioned in Annex I.

(2) Member States shall take similar measures for regularly occurring migratory species not listed in Annex 1, [...] as regards their breeding, moulting and overwintering areas and staging posts along their migration routes. To this end, Member States shall pay particular attention to the protection of wetlands and particularly to wetlands of international importance.

No species list is prescribed.

##### Article 10

Comments

(1) Member States shall encourage research and any other work required as a basis for the protection, management and use of the population of all species of bird referred to in Article 1.

(2) Particular attention shall be paid to research and work on the subjects listed in Annex V.

##### Annex V

Comments

b) Listing and ecological description of areas particularly important to migratory species on their migratory routes and as overwintering and nesting grounds;

c) Listing of data on the population levels of migratory species as shown by ringing;

f) Determining the role of certain species as indicators of pollution;

g) Studying the adverse effect of chemical pollution on population levels of bird species.

#### [HD \[2\]](#)

##### Article 11

Comments

Birds are listed as relevant for assessment purposes in the inventories of species typical of various FFH habitat types:

- Link to the marine [HD 11 Habitat Assessment Matrices \(German\)](#)
  - 1110 - Sandbanks which are slightly covered by seawater all the time
  - 1130 - Estuaries
  - 1140 - Mudflats and sandflats not covered by seawater at low tide
  - 1150 - Coastal lagoons
  - 1160 - Large shallow inlets and bays
  - 1170 - Reefs
- Marine [HD 12 Habitat Assessment Matrices \(German\)](#)
  - 1220 - Perennial vegetation of stony banks
  - 1230 - Vegetated sea cliffs

- Marine [HD 13 Habitat Assessment Matrices \(German\)](#)
  - 1310 - Salicornia and other annuals colonising mud and sand
  - 1320 - Spartina swards
  - 1330 - Atlantic salt meadows
- Marine [HD 21 Habitat Assessment Matrices \(German\)](#)
  - 2110 - Embryonic shifting dunes
  - 2120 - Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes")
  - 2130 - Fixed coastal dunes with herbaceous vegetation
  - 2140 - Decalcified fixed dunes with *Empetrum nigrum*
  - 2150 - Atlantic decalcified fixed dunes
  - 2170 - Dunes with *Salix repens*
  - 2190 - Humid dune slacks

## HELCOM

### Baltic Sea Action Plan [\[3\]](#)

#### Comments

To date, HELCOM has defined 64 Baltic Sea Protection Areas (BSPAs), for which monitoring requirements are being formulated as part of a project:

Implementation of the Joint HELCOM/OSPAR Work Programme on Marine Protected Areas (HELCOM BSPA) (2004-2005)

(See: [http://www.helcom.fi/BSAP/en\\_GB/intro/](http://www.helcom.fi/BSAP/en_GB/intro/))

### List of Threatened and/or Declining Species and Habitats [\[4\]](#)

#### Comments

Species that occur in the region:

- Gavia arctica* - Black-throated diver (overwintering)
- Gavia stellata* - Red-throated diver (overwintering)
- Podiceps auritus* - Horned grebe (overwintering)
- Tadorna tadorna* - Common shelduck (breeding)
- Mergus serrator* - Red-breasted merganser (breeding)
- Sterna albifrons* - Little tern (breeding)
- Sterna sandvicensis* - Sandwich tern
- Cephus grylle* - Black guillemot (overwintering)
- Calidris alpina schinzii* - Dunlin (breeding)

## MONAS

#### Comments

A concept for bird monitoring (HELCOM MONAS, 2004) has already been adopted, but not yet implemented.

Additional species listed by HELCOM MONAS (2004):

- *Recurvirostra avosetta* - Pied avocet
- *Charadrius hiaticula* - Ringed plover
- *Tringa totanus* - Common redshank
- *Larus canus* - Common gull
- *Uria aalge* - Common guillemot

## OSPAR

### EcoQOs [\[5\]](#)

#### Ecological quality objectives

#### Comments

- Trends in seabird populations as an index for the status of seabird communities
- Seabirds: proportion of oiled guillemots among those found dead or dying on beaches should be 10 % or less.
- Fulmars and litter - EcoQO as OSPAR pilot project.
- Pollutants in bird eggs - EcoQO as OSPAR pilot project.

## List of Threatened and/or Declining Species and Habitats [6]

### Comments

The OSPAR Commission has set itself the objective of recording all species and habitats that need to be protected. This list is used by OSPAR to guide the setting of future priorities for its further work on conservation and the protection of marine biodiversity.

To date, the following bird species that occur in German waters have also been included in this list:

*Aythya marila* - Greater scaup

*Larus fuscus fuscus* - Lesser black-backed gull

*Melanitta fusca* - Velvet scoter

*Rissa tridactyla* - Black-legged kittiwake

*Sterna dougallii* - Roseate tern

## TMAP [7]

### Wadden Sea Plan (Stade Declaration, 1997), section 9

### Comments

The following monitoring programmes have been set up to assess the targets laid down in the Wadden Sea Plan (WSP) with regard to birds:

- Monitoring (number and distribution) of breeding birds (including species list)
- Monitoring (number, phenology and distribution) of resting birds (including species list)
- Monitoring of dead, beach-washed birds (all species)
- Pollutants in bird eggs (this point is dealt with in Monitoring Specifications: Organic Pollutants)
- [TMAP Manual, section II.7](#)

The revised TMAP provides for the monitoring of breeding success as an additional parameter (including species list). Apart from this, a further set of parameters is being proposed to take resting birds at sea and the occurrence of sea ducks into consideration.

## RAMSAR

### Article 1

### Comments

(2) For the purpose of this Convention, waterfowl are birds ecologically dependent on wetlands.

Monitoring and investigation of the ecological character of the RAMSAR sites and assessment of the status and development of wetlands.

## AEWA [8]

### Article II(1)

### Comments

(1) Parties shall take coordinated measures to maintain migratory waterfowl species in a favourable conservation status or to restore them to such a status.

The species are defined in Annex 2 to the Agreement. The species list corresponds to the species included in Annex 2.

### Article III(1)

### Comments

(1) The Parties shall take measures to conserve migratory waterfowl, giving special attention to endangered species as well as to those with an unfavourable conservation status.

### Annex 3

### Comments

As an integral part of the Agreement (according to Article IV(1)), section 5 of the Annex obliges the Parties to carry out the following monitoring activities:

- (5.2) Parties are to endeavour to monitor the populations listed in [Tables 1 und 2](#).
- (5.4) The Parties are to cooperate with a view to determining the migration routes of all populations listed in Table 1, using available knowledge of breeding and non-breeding season distributions and census results, and by participating in coordinated ringing programmes.

## 2.2 Environmental targets

### MSFD

Creation of marine strategies that serve the objective of ensuring the marine environment achieves a good environmental status by the year 2021 at the latest, permanently guaranteeing its protection and preservation, and preventing its deterioration.

### Birds Directive

Article 2

Member States shall take the requisite measures to maintain the population of the species referred to in Article 1 at a level which corresponds in particular to ecological, scientific and cultural requirements, while taking account of economic and recreational requirements, or to adapt the population of these species to that level.

Species and area-specific conservation targets are currently only available in draft.

### HD

Ensuring biodiversity through the conservation:

- of natural habitats. (See HD, Article 2)

### HELCOM

Ecological Quality Objectives:

- Healthy Baltic Sea environment with diverse biological components functioning in balance, resulting in a good ecological status and supporting a wide range of sustainable human economic and social activities. (HELCOM, 25/2004)
- Viable seabird populations

### OSPAR

Ecological Quality Objectives:

- (1) The proportion of oiled common guillemots among those found dead or dying on beaches should be 10 % or less in all areas of the North Sea.
- (2) Seabird population trends: no background has yet been set.
- (3) Plastic particles in seabird stomachs: less than 10 % of northern fulmars having 0.1 g or more plastic in the stomach - in samples of 50-100 beach-washed fulmars found from each of five different areas of the North Sea over a period of at least five years.
- (4) EcoQO 3.5 (sand eel availability), see [Fish](#).

### TMAP

The Wadden Sea Plan sets out the following ecological targets for birds:

Favourable conditions for migrating and breeding birds:

- favourable food availability;
- natural breeding success;
- sufficiently large undisturbed resting and moulting areas;
- natural flight distances.

(See [Trilateral Wadden Sea Plan](#), Stade, 1997, section 9)

### RAMSAR

Wetlands of international importance, especially as waterfowl habitat (title of the Convention)

### AEWA

To maintain migratory waterfowl species at population level in a favourable conservation status or to restore them to such status. (Article II(1))

## 2.3 Threats

(From anthropogenic influences)

- a) Mortality in gillnets (due to entanglement and drowning; Baltic Sea)
- b) Oiling (mortality, poisoning)
- c) Disruption due to shipping traffic (scaring up/away)
- d) Reduction of food availability (e.g. due to the degradation and/or destruction of foraging grounds)
- e) Obstacles in the form of technical structures (risk of collision; disorientation due to the scarecrow effect, lighting; fragmentation and reduction of habitats)
- f) Pollutant accumulation (mortality, impairment of fitness)
- g) Accumulation of litter in the digestive tract (mortality, impairment of fitness)
- h) Entanglement in pieces of litter, e.g. net debris (mortality)

(a-h based on Garthe 2003)

- i) Restriction of natural dynamics in the Wadden Sea (coastal protection measures)
- j) Disruption due to tourism
- k) Agricultural use (e.g. grazing of North Sea salt marshes)
- l) Predation
- m) Climate change (frequency of flooding, etc.)

## 2.4 Spatial allocation

|                 | EEZ | 12- nm zone | Coastal waters 1) | Transitional waters |
|-----------------|-----|-------------|-------------------|---------------------|
| MSFD            | x   | x           | x                 | -                   |
| Birds Directive | x   | x           | x                 | x                   |
| HD              | x   | x           | x                 | x                   |
| HELCOM          | x   | x           | x                 | -                   |
| OSPAR           | x   | x           | x                 | -                   |
| TMAP            | -   | x           | x                 | x                   |
| RAMSAR          | -   | -           | -                 | -                   |
| AEWA            | x   | x           | x                 | x                   |

1) Under the WFD: baseline plus one nautical mile

## 3 Monitoring concept

### 3.1 Description of monitoring network

#### Monitoring network

##### **Future monitoring network**

The reporting duties and the bird monitoring activities associated with them relate to overall populations (national, Land-wide; inside and outside conservation areas). A catalogue of the species to be investigated in marine monitoring is available. Surveys are to be carried out specifically for individual species, spaces and periods.

##### **Breeding birds**

Monitoring of the breeding populations and breeding success of selected seabird and coastal bird species, in particular target species for the marine and coastal SPAs and species typical of the relevant HD habitat types, as well as further species listed in Annex I of the Birds Directive and regularly occurring species of migratory birds covered by Article 4(2) of the Birds Directive in the region.

##### **Migratory birds**

Monitoring of all seabird and coastal bird species with a focus on target species for the marine and coastal SPAs and species typical of the relevant HD habitat types, as well as further species listed in Annex I of the Birds Directive and regularly occurring species of migratory birds covered by Article 4(2) of the Birds Directive in the North Sea and Baltic Sea.

##### **Beached birds**

Gillnet victims (Baltic Sea)

## (Tables 1 und 2)

## Overview of the future coastal monitoring programme

| Parameter            | Area                  | Period and frequency               | Species   | Derived from  | Survey programme   | Amendments needed   |
|----------------------|-----------------------|------------------------------------|---|---|--|---|
| Resting populations  | North Sea             | All year round, every 14 - 15 days | At least all waders and waterfowl, birds of prey and songbirds typical of the coast, including species listed in Annex I, <u>BD</u> | <u>TMAP</u> , <u>BD</u> , <u>FFH</u> , <u>Ramsar</u> , <u>AEWA</u> , <u>OSPAR</u> | Synchronous waterfowl count, spring tide counts, resting bird surveys at sea | SAS still not involved  |
| Resting populations  | Baltic Sea            | September - April, monthly         | Waders and waterfowl  | <u>BD</u> , <u>FFH</u> , <u>Ramsar</u> , <u>AEWA</u> , <u>HELCOM</u>              | Waterfowl census (IWC), resting bird surveys at sea (primarily by aircraft)  | Mecklenburg - Western Pomerania still not involved<br>Secure basis (coordination + evaluation of IWC carried out by associations/volunteers to date)                                      |
| Breeding populations | North Sea, Baltic Sea | April - June                       | TMAP species list, species listed in Annex I and endangered migratory breeding species covered by Article 4(2), <u>BD</u>           | <u>BD</u> , <u>FFH</u> , <u>HELCOM</u> , <u>OSPAR</u> , <u>TMAP</u>               | <u>TMAP</u> (Wadden Sea), breeding populations in conservation areas         | Baltic Sea?   |
| Breeding success     | North Sea             | April - July                       | At least oystercatchers, common terns   | <u>TMAP</u> , <u>BD</u>   | <u>TMAP</u>  | <u>TMAP</u> - species list<br>Eurasian Spoonbill, Common Eider, Oystercatcher, Avocet, Black-headed Gull, Lesser Black-backed Gull, Herring Gull, Sandwich Tern, Common Tern, Arctic Tern |
| Population structure | North Sea, Baltic Sea | Breeding period                    | At least oystercatchers, common terns   | <u>TMAP</u> , <u>BD</u>   | Ringing programmes   | Still to be implemented   |
| Gillnet victims      | Baltic Sea            | October - April                    | Waterfowl   | <u>BD</u> , <u>HELCOM</u>   |  | Still to be implemented   |

## Overview of the future offshore monitoring programme

| Parameter           | Area  | Period and frequency  | Target species                               | Derived from | Survey programme                  | Amendments needed       |
|---------------------|---|---|--|--------------|-----------------------------------|-------------------------|
| Resting populations | North Sea: comprehensive survey   | January, every three years  | Seabirds                                     | BD, OSPAR    | Aerial survey at sea              | Still to be implemented |
| Resting populations | North Sea: SPAs, Eastern German Bight and Schleswig-Holstein/Lower Saxon conservation areas | Winter, annually if possible, at least every two years            | <i>Gavia-Divers</i> , Little Gull            | BD, OSPAR    | Aerial survey at sea              | Still to be implemented |
| Resting populations | North Sea: SPAs, Eastern German Bight and Schleswig-Holstein/Lower Saxon conservation areas | Spring, annually if possible, at least every two years            | <i>Gavia-Divers</i> , Little Gull            | BD, OSPAR    | Aerial survey at sea              | Still to be implemented |
| Resting populations | North Sea: Schleswig-Holstein offshore, parallel to coast                                   | Alternating annually  | Common scoter                                | BD, OSPAR    | Aerial survey at sea, established | -                       |
| Resting populations | North Sea: Schleswig-Holstein offshore  | Alternating summer/post-breeding period annually                  | Terns, gulls, Helgoland cliff breeders       | BD, OSPAR    | Ship-based survey at sea          | Still to be implemented |
| Resting populations | Baltic Sea: comprehensive aerial survey, including shallow grounds and Greifswald Bodden    | January every three years   | Seabirds                                     | BD, HELCOM   | Aerial survey at sea              | Still to be implemented |
| Resting populations | Baltic Sea: Schleswig-Holstein shallow grounds  | January and spring, annually                                      | Sea ducks                                    | BD, HELCOM   | Aerial survey at sea, established | -                       |
| Resting populations | Baltic Sea: Schleswig-Holstein deep waters  | Spring, annually  | Sea ducks                                    | BD, HELCOM   | Aerial survey at sea, established | -                       |
| Resting populations | Baltic Sea: conservation areas, EEZ, Mecklenburg-Western Pomerania                          | Spring and August, annually if possible, at least every two years | Sea ducks, <i>Gavia-Divers</i> , Little Gull | BD, HELCOM   | Aerial survey at sea              | Still to be implemented |
| Resting populations | Baltic Sea: Pomeranian Bight SPA and neighbouring areas                                     | January every two years   | Sea ducks, horned grebe, <i>Gavia-Divers</i> | BD, HELCOM   | Ship-based survey at sea          | Still to be implemented |

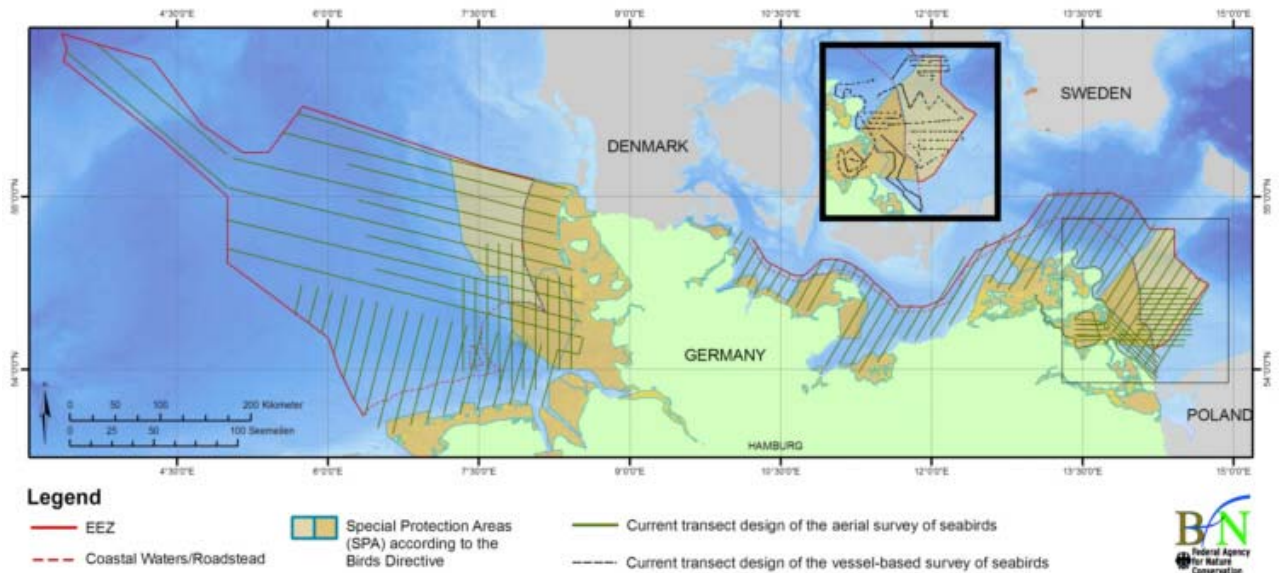


Figure 1: Monitoring of seabirds

[Figure 1 as PDF-Document](#)

## Frequency and timing

### General

#### Breeding birds

- Population survey of colony breeders and selected species annually
- Population survey of other species on the species list annually at sampling plots, area-wide survey every six years
- Measurements of indicator species' breeding success at selected breeding sites
- Studies of population structure (ringing programmes)

#### Resting birds

##### North Sea

- Mid-winter count (January) of seabirds and coastal birds, complete count along the entire coastlines
- 26 surveys per year at representative resting sites at spring tide (around high tide)
- Annual, species-specific surveys ((Branta-)geese twice, sanderling once at spring tide around high tide, common eider at least twice and moulting common shelduck three times around low tide)
- Twice in six years: one complete aerial survey of seabirds in the German North Sea in winter (if possible synchronous with coastal mid-winter count in January)
- Annually if possible, at least every two years: two aerial surveys in the offshore conservation areas, one each in winter and spring (focus on *Gavia*-Divers and Little Gull)
- Annually: one ship-based survey in the offshore conservation areas of Schleswig-Holstein and Lower Saxony, alternating summer and autumn/post-breeding period with a focus on terns, gulls and Helgoland cliff breeders
- Annually: one aerial survey in the offshore area (territorial waters parallel to coast) with a focus on common scoter at alternating seasons

##### Baltic Sea

- Mid-winter count (January) of seabirds and coastal birds, complete count along the entire coastlines
- Eight mid-monthly counts of all wader and waterfowl species carried out from land (September-April)
- Twice in six years: one aerial survey of the entire German Baltic Sea in mid-January, if possible synchronous with coastal mid-winter count
- Annually: two aerial surveys of the Schleswig-Holstein shallow grounds in January and spring with a focus on sea ducks
- Annually: one aerial survey of the deep-water areas of Schleswig-Holstein in spring with a focus on sea ducks
- Annually if possible, at least every two years: two aerial surveys of the conservation areas in the EEZ and off Mecklenburg-Western Pomerania in spring and August
- Every two years: one ship-based survey of the Pomeranian Bay SPA and neighbouring areas in mid-January
- Monitoring of found-dead birds: gillnet victims, representative random samples in October-April

## Methods

**Breeding population surveys** based on Südbeck et al. (2005), [Hälterlein et al. \(1995\)](#)

**Breeding success** based on [Thyen et al. \(1998\)](#) (new version in prep.)

**Resting population surveys** based on Wahl et al. (in preparation)

**Spring tide counts** based on [Rösner \(1995\)](#)

**Resting bird surveys at sea (Seabirds at Sea):**

- **Ship-based survey** based on [Garthe et al. \(2002\)](#)
- **Aerial survey** based on [Diederichs et al. \(2002\)](#), [BSH \(2007\)](#)

**Surveys of sea ducks at low tide** based on [Kempf and Eskildsen \(2000\)](#), Wahl et al. (in preparation)

## Parameters

### Breeding and resting birds (all directives):

Population  
Distribution  
Phenology (resting birds)  
Population structure  
reproductive success

### Beached birds (OSPAR, TMAP, HELCOM)

- Oiling rate of guillemots
- Proportion of plastic particles in fulmar stomachs (North Sea);
- Extension to oiling rates and gillnet victims (Baltic Sea; proposal on basis of HELCOM MONAS, 2004)

## Additional parameters for assessments

**Only parameters that derive from the assessment matrices for the various directives/conventions on the marine subhabitat are to be listed.**

### Biology:

*Food availability (TMAP):*

"Food availability" was defined as an objective for birds under the Wadden Sea Plan, Stade, 1997. This can only be monitored by analysing data on benthos, (small) fish, seagrass and salt marshes. It is to be taken into consideration accordingly when the individual monitoring parameters are conceived and their specifications drawn up.

### Hydrography:

Tide (spring tide counts), water levels

### Fisheries:

Scope of gillnet fishing

## 3.2 Monitoring activities

### North Sea and Baltic Sea

#### Breeding Birds

##### Methods:

- Breeding population surveys based on Südbeck et al. (2005), [Hälterlein et al. \(1995\)](#)
- Breeding success based on [Thyen et al. \(1998\)](#)
- Ringing programmes

##### Frequency:

- Population survey of colony breeders and selected species annually
- Population survey of other species on the species list annually at sample sites (Census areas), complete survey every six years
- Breeding success measurements of indicator species at selected breeding sites annually
- Studies of population structure (ringing programmes)

##### Parameter:

- Distribution
- Population

#### Beached Birds

##### Methods:

- Driftline monitoring: see [TMAP Monitoring Handbook](#)
- Monitoring of gillnet victims (Baltic Sea only): to date, only point monitoring in Mecklenburg-Western Pomerania carried out, method for whole area must be developed

##### Frequency:

Monitoring of gillnet victims:



Driftline monitoring: 13 surveys from October to April

##### Parameter:

- Gillnet victims
- Oiling rate of guillemots
- Proportion plastic particles in stomach

## North Sea

### Resting Birds - North Sea

#### Methods:

- Resting population surveys based on Wahl et al. (in preparation)
- Spring tide counts based on [Rösner \(1995\)](#)
- Resting bird surveys at sea (Seabirds at Sea):
  - Ship-based survey based on [Garthe et al. \(2002\)](#)
  - Aerial survey based on [Diederichs et al. \(2002\)](#), [BSH \(2007\)](#)
- Surveys of sea ducks at low tide based on [Kempf and Eskildsen \(2000\)](#), Wahl et al. (in preparation)

#### Frequency:

- Mid-winter count (January) of seabirds and coastal birds, complete count along the entire coastlines
- 26 surveys a year at representative resting sites at spring tide around high tide
- Annual, species-specific surveys ((Branta-)geese twice, sanderling once at spring tide around high tide, common eider at least twice and moulting common shelduck three times around low tide)
- Twice in six years: one aerial complete survey of seabirds in the German North Sea in winter (if possible synchronous with coastal mid-winter count in January)
- Annually if possible, at least every two years: two aerial surveys in the conservation areas in offshore waters, one each in winter and spring (focus on Gavia-Divers and little gull)
- Annually: one ship-based survey in the offshore conservation areas of Schleswig-Holstein and Lower Saxony, alternating summer and autumn/post-breeding period with a focus on terns, gulls and Helgoland cliff breeders
- Annually: one aerial survey in offshore waters (territorial waters parallel to coast) with a focus on common scoter at alternating seasons

#### Parameter:

- Distribution
- Phenology
- Population

## Baltic Sea

### Resting Birds - Baltic Sea

#### Methods:

- Resting population surveys based on Wahl et al. (in preparation)
- Resting bird surveys at sea (Seabirds at Sea):
  - Ship-based survey based on [Garthe et al. \(2002\)](#)
  - Aerial survey based on [Diederichs et al. \(2002\)](#), [BSH \(2007\)](#)
- Surveys of sea ducks at low tide based on [Kempf and Eskildsen \(2000\)](#), Wahl et al. (in preparation)

#### Frequency:

- Mid-winter count (January) of seabirds and coastal birds, complete count along the entire coastlines
- Eight mid-monthly counts of all wader and waterfowl species carried out from land (September-April)
- Twice in six years: one aerial survey of the entire German Baltic Sea in mid-January, if possible synchronous with coastal mid-winter count
- Annually: two aerial surveys of shallow grounds off Schleswig-Holstein in January and spring with a focus on sea ducks
- Annually: one aerial survey of the deep-water areas off Schleswig-Holstein in spring with a focus on sea ducks
- Annually if possible, at least every two years: two aerial surveys of the conservation areas in the EEZ and off Mecklenburg-Western Pomerania in spring and August
- Every two years: one ship-based survey of the Pomeranian Bay SPA and neighbouring areas in mid-January
- Monitoring of beached birds: gillnet victims, representative random samples, October-April

#### Parameter:

- Distribution
- Phenology
- Population

## 3.3 Additional parameters

The following parameters are required additionally for the assessments::

- Food availability (birds)
- Scope of gillnet fishing
- Tide (e.g. for spring tide counts)
- Water level

## 4 Assessment

### 4.1 Assessment procedures

#### Breeding birds

#### North Sea and Baltic Sea

**Title**

TMAP Alert System

**Authors**

Koffijberg 2007, see section 6

**Guideline:**

Various directives

#### Resting Birds

#### North Sea and Baltic Sea

**Title**

BfN, *Profiles of Seabirds and Waterfowl of the German North and Baltic Seas*

**Authors**

Mendel et al., 2008, see section 6

**Guideline:**

Birds Directive

## 5 Quality assurance

- Quality Assurance Panel (at the UBA (workshops, intercalibration exercises, first draft of a species list, standardisation with DIN, CEN and ISO, support for the establishment of QM systems, drafting of sample SOPs, performance of audits))

### Comments

The Quality Assurance Panel at the Federal Environment Agency is responsible for the coordination of quality assurance under the BLMP. Each of the monitoring institutions bears responsibility for establishing and administering its own quality management systems. The institutions involved in the BLMP coordinate their activities within the framework of the Working Group on Quality Assurance and the Ad Hoc Working Group on Vertebrates.

### 5.1 Monitoring institutions

- [NLWKN / VSW](#)
- [NLPV HH](#)
- [BfN](#)
- [LUNG](#)
- [NPV SH](#)
- [NLPV NI](#)
- [LLUR / VSW](#)
- [NPA-MV](#)

### 5.2 Guidance documents

- BLMP Quality Assurance Panel at the UBA, 2008: *Muster-Qualitätsmanagementhandbuch für Laboratorien des Bund/Länder-Messprogramms nach DIN EN ISO/IEC 17025 (BLMP Sample Quality Management Manual)*; Version: 01 of 1 February 2008; Federal Environment Agency.
- BSH, 2007: [Standard - Investigation of the Impacts of Offshore Wind Turbines on the Marine Environment \(StUK 3\)](#).
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- Thyen, S., Becker, P.H., Exo, K.-M., Hälterlein, B., Hötter, H. und P. Südbeck, 1998: ['Monitoring Breeding Success of Coastal Birds. Final Report of the Pilot Study 1996 - 1997'](#); *Wadden Sea Ecosystem*; 8: pp. 7 - 55, Common Wadden Sea Secretariat and Trilateral Monitoring and Assessment Group, Wilhelmshaven.
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### 5.3 Standards

## 5.4 Current status

There are instructions on standardised surveying methods for all subfields of bird monitoring. In every case, their application presupposes advanced knowledge of the identification and counting of birds in each specific situation (where necessary at long distances), which can as a rule only be acquired through good training and/or as many years of experience as possible. There is consequently a great need for training in bird monitoring skills. Some of the training courses are organised by the competent authorities (cf. 1.3), the nature conservation associations that work in this field, university-based contractors and the specialist ornithological associations.

### Intercalibration exercises

Not yet available

### Workshops

- Quality Assurance Meetings of the Joint Monitoring Group for Breeding Birds in TMAP, since 1993

### Training for breeding and resting bird surveys

- Full-time employees and civilian service conscripts/ecological year volunteers working with authorities and associations are trained annually under TMAP.
- Institutions involved in Seabirds at Sea monitoring currently train their counters independently. The concept also includes the training of qualified trainers and proposals for intercalibration exercises.

## 6 Literature

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## 7 Activities required to implement the concept

### 7.1 Changes to the current monitoring programme

See the information on the individual programmes in 3.2.

[Table 1 und 2](#) contain detailed recommendations.

### 7.2 Working steps required

#### Priorities

Formal agreement of the proposed monitoring programme with the specification of its methodology, and its subsequent establishment and anchoring as a permanent programme in the context of marine monitoring.

Amendment of current programme elements or establishment of new programme elements, including costings:

- Additional dates for waterfowl counting in Mecklenburg-Western Pomerania
- Implementation of breeding success monitoring (Baltic Sea)
- Monitoring of gillnet victims (Baltic Sea)
- Implementation of resting bird surveys at sea
- Incorporation of survey activities undertaken by volunteers/associations into marine monitoring (e.g., waterfowl census, breeding populations on Helgoland, breeding and resting populations in the Lower Saxon Wadden Sea)

Consideration of further bird species for OSPAR and HELCOM monitoring (in particular, the Baltic Sea Action Plan).

Creation of an assessment system for all relevant bird species on the basis of the trilateral alert system and the BfN species profiles.

Decision-making on and coordination of the joint award of monitoring contracts (e.g. surveys of resting birds at sea).

#### Further activities required

##### Resting and breeding birds

- Extension of QA activities to areas outside the Wadden Sea National Parks, including the drafting of standards concerning the type/scope of training and optical equipment for staff (to be implemented by the specialist ornithological associations, in particular DDA).
- "Food availability" was defined as an objective for birds under the Wadden Sea Plan, Stade, 1997 (new version 2010). This can only be monitored by analysing data on benthos, (small) fish, seagrass and salt marshes. It is to be taken into consideration accordingly when the individual monitoring parameters are conceived and their specifications drawn up.

##### Found-dead birds

Evaluation of methodology and results of examinations of gillnet victims (Mecklenburg-Western Pomerania), and implementation of Baltic Sea-wide monitoring.

##### Resting birds at sea

The counts from ships and aircraft are to be calibrated.

##### Quality assurance

The participating institutions are striving to build up and introduce uniform QA standards by means of the introduction of a DIN EN ISO/IEC 17025 quality management system (BLMP Study Group decision, 2006), which would ideally lead to the accreditation of these institutions. The establishment of DIN EN ISO/IEC 17025 quality management systems under the BLMP should be concluded by 1 January 2012.

In some cases, specific quality assurance methods have to be developed and established for the field of bird monitoring or adjustments made to current quality management documents.

In this context, apart from the development of uniform quality standards (QM system), efforts should also be made to ensure that the participating institutions work largely in accordance with shared guidelines when the SOPs are being drafted. To this end, the current Sample Quality Management Manual is to be adapted and suitable sample SOPs for bird monitoring drawn up. This work is expected to begin in 2010.

The DIN EN ISO/IEC 17025 quality management system includes the following elements:

- documented validation/verification of the investigation methods deployed for the determination of performance characteristics,
- storage of reference and comparative collections,
- the qualification and regular training of personnel for the procedures deployed,
- the regular performance of internal and external audits,
- regular participation in national and international interlaboratory comparisons, intercalibration exercises, training courses and workshops, and their evaluation.

## **Data management**

As far as the development of a future data management system within marine monitoring is concerned, it is to be noted that structures and information systems for the acquisition of bird monitoring data already exist at various levels. The following steps are therefore essential:

- Creation of structures where these are not yet in place (by specialist institutions/associations)
- Central acquisition of (meta)data from the programmes (e.g. via NOKIS)
- Agreements on data management with specialist institutions/associations
- Creation of interfaces
- Agreements on data storage and use/intellectual property rights
- Reimbursement of expenses to specialist institutions, where applicable

## Footnotes

**(1)** Marine Strategy Framework Directive; Directive 2008/56/EC of 17 June 2008. This also applies to transitional waters and coastal waters covered by Directive 2000/60/EC, where pertinent aspects of the protection of the marine environment not dealt with in Directive 2000/60/EC are at issue.

**(2)** Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

**(3)** Baltic Sea Action Plan, HELCOM 2007

**(4)** HELCOM adopted a 'List of threatened and/or declining species and biotopes/habitats' in December 2006, but has not adopted further measures, although it is planning this in the context of the Baltic Sea Action Plan (see below).

**(5)** It is still necessary for appropriate monitoring concepts to be specified for the monitoring of the Ecological Quality Objectives (see 2.2, Environmental targets). Since the monitoring concepts for the EcoQOs are currently being drawn up, there are still no standards for the frequency of monitoring.

**(6)** The OSPAR Commission has set itself the objective of recording all species and habitats that need to be protected. This list is used by OSPAR to guide the setting of future priorities for its further work on conservation and the protection of marine biodiversity.

OSPAR is currently drawing up instructions for the monitoring of the species and habitats on the list.

**(7)** The monitoring requirements under TMAP were specified in the Wadden Sea Plan ([Sylt, 2010](#)) (see also [TMAP Manual, section 2](#)).

**(8)** As an integral component of the Agreement, the Action Plan (Annex 3) obliges the Parties, among other things, to undertake the following activities that are to be classified as monitoring (section 5):

- Monitoring of the populations listed in Table 1: The results shall be [ . . . ] sent to international institutions, to enable reviews of population status.
- Migration routes of the species listed should be determined. Counts during and outside the breeding season and census results should be taken into consideration in this respect.