Monitoring Specifications

Date: 2010-02-22

Mammals

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 Assesment 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

Editorial information

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1 General

1.1 Subject area

Biological Monitoring - Fauna - Mammals

1.2 Definition

The following marine mammal species are to be included in the German marine monitoring:

- Common seal (*Phoca vitulina*)
- Grey seal (*Halichoerus grypus*)
- Harbour porpoise (*Phocoena phocoena*)

1.3 Competent authority/ies

Federal Government:	BfN
Hamburg:	BSU
Mecklenburg-Vorpommern:	LUNG
Lower Saxony:	NLWKN, LAVES, NLPV NI
Schleswig-Holstein:	LLUR, LKN-SH

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 surveyed and assessed by means of coordinated monitoring programmes.

- MSFD, Articles 8 and 11, Annexes III and V

HD [2]

Articles 2 and 11

Comments

The Member States shall undertake surveillance of the conservation status of the natural habitats and species referred to in Article 2 with particular regard to priority natural habitat types and priority species.

- HD, Article 2
- HD, Article 11

In addition to this, marine mammals are relevant for assessment procedures because they feature in the inventories of typical species for HD habitat types.

- Assessment schemes for habitat types

Regulation (EC) 812/2004

General [3]

Comments

Surveying of incidental catches of harbour porpoises in fisheries and amending Regulation (EC) 88/98.

- Regulation (EC) 812/2004

HELCOM

List of Threatened and/or Declining Species and Habitats [4]

Comments

HELCOM has adopted a list of threatened species and biotopes/habitats.

- List
- *Combine Manual*

Furthermore, indicators from which monitoring obligations will be derived are being drawn up.

OSPAR

EcoQOs [5]

Ecological quality objectives

Comments

Harbour and grey seal population trends

Bycatches of harbour porpoise

- MASH 05/3/Info.4-E,L
- EcoQOs
- Summary of OSPAR monitoring requirements

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

Comments

The harbour porpoise is included in the OSPAR List of Threatened and/or Declining Species and Habitats. With the respective OSPAR background document a "monitoring and assessment strategy" has been developed for this species.

- OSPAR Initial List of Threatened and Declining Species and Habitats (e.g. MASH 05/3/Info.4-E)
- OSPAR background document

TMAP [7]

Wadden Sea Plan (Stade Declaration, 1997)

Comments

The monitoring requirements for common seals are set out in the TMAP Manual, section 2. At the same time, they contribute to compliance with the obligations imposed by the Seal Agreement.

- Stade Declaration, 1997
- *TMAP Manual* section 2

At present, grey seal and harbour porpoise monitoring is not a trilateral obligation.

CMS/Seal Agreement

Seal Agreement, Articles V and VIII

Agreement on the Conservation of Seals in the Wadden Sea

Comments

Act on the Agreement on the Conservation of Seals in the Wadden Sea (Trilateral Seal Agreement) of 16 October 1990

Original version (English)

German version

Articles V and VIII:

In particular, the following parameters are to be monitored:

- population trends, for example by means of periodic aerial surveys and counts,
- seal migration,
- seal population parameters, e.g. diseases, survival, age structure, sex ratio,
- concentrations of substances that, in the light of research results, appear to play a major role in the conservation status of the seal population (in particular, in seal tissues and organisms that are preyed upon by seals).

ASCOBANS

Comments

Act on the Agreement of 31 March 1992 on the Conservation of Small Cetaceans of the Baltic and North Seas

Germany is subject to requirements concerning the monitoring of the harbour porpoise as its only domestic cetacean species. The monitoring requirements are set out in the second paragraph of the Annex.

With regard to the Baltic Sea, the ASCOBANS Parties put in place the Recovery Plan for Baltic Harbour Porpoises (JASTARNIA Plan) in 2002.

http://www.ascobans.org/

BDGD

(Conferences of the North Sea Ministers)

Comments

Harbour porpoise bycatches: Annual bycatches should be below 1.0 % of the best population estimate.

- Bergen Declaration, 2002
- Gothenburg Declaration, 2006

2.2 Environmental targets

MSFD

Implementation of marine strategies that serve the objective of achieving good status in the marine environment, at the latest by 2021, ensuring the permanent protection and preservation of the marine environment and preventing any deterioration of environmental quality.

- MSFD, Articles 1 and 5
- MSFD, Articles 9 and 10

HD

Ensuring biodiversity through the conservation of natural habitats and wild fauna and flora. Maintaining or restoring the favourable conservation status of natural habitats and species of wild fauna and flora.

- HD, Article 2(1) and (2)

Furthermore, specified conservation targets for marine protected areas under this directive (Sites of Community Importance / Special Areas of Conservation) have been drawn up in draft.

HELCOM

Ecological Quality Objective:

Viable populations of seals and harbour porpoises

- List of EcoQs

OSPAR

The Contracting Parties shall (…) take the necessary measures to protect the maritime area against the adverse effects of human activities so as to safeguard human health and to conserve marine ecosystems.

- OSPAR Convention, Art. 2(1)

Ecological Quality Objectives:

- Presence and extent of threatened and/or declining species in the North Sea.
- Seal population trends in the North Sea: No decline in population > 10 % over a period of ten years.
- Harbour porpoise bycatches: Annual bycatches should be below 1.7 % of the best population estimate.
- List of EcoQOs.

TMAP

Marine mammals (common seal, grey seal and harbour porpoise) that have viable populations and are able to reproduce naturally. In addition to this, as far as the grey seal and common seal are concerned, the survival of juvenile animals.

- Stade Declaration, Section 10

CMS/Seal Agreement

Article III: The Parties shall cooperate closely with a view to achieving and maintaining a favourable conservation status for the seal population.

Original version (English)

German version

ASCOBANS

2.1 The Parties undertake to cooperate closely in order to achieve and maintain a favourable conservation status for small cetaceans. Provisionally, ASCOBANS would like to achieve levels of growth that raise the populations to 80 % of the habitat's carrying capacity.

Jastarnia Plan

The aspiration is for bycatch levels to amount to a maximum of 1.7 % of the population of harbour porpoises. The absolute bycatch rate in the Baltic Sea will have to be reduced to two animals a year if this is to be achieved (Berggren et al., 2002).

2.3 Threats

Essentially, marine mammals are vulnerable to:

- Fishing
- Pollutants
- Shipping traffic (including leisure activities)

2.4 Spatial allocation

	EEZ	12- nm zone	Coastal waters 1)	Transitional waters
MSFD	x	x	x	-
HD	x	x	x	x
WFD	-	-	-	-
HELCOM	x	x	x	-
OSPAR	x	x	x	x
TMAP	-	-	x	x
CMS/Seal Agreement	-	-	-	-
ASCOBANS	x	x	x	x
Jastarnia Plan	-	-	-	-

1) Under the WFD: baseline plus one nautical mile

3 Monitoring concept

3.1 Description of monitoring network

Populations of common seals and grey seals are monitored by means of wide-area registration (as a rule, aerial, land- and ship-based counts) and, in the case of harbour porpoises, aerial transects. Acoustic under water monitoring is deployed in areas with low densities of harbour porpoises. Further parameters for population dynamics are determined by means of examinations of found-dead seals and samples taken from living animals among the wild population (common seals only).

Common seals in the Baltic Sea

- Potential and current haul-out sites: surveying of juvenile and adult animals monthly (June/July: every 14 days)
- Surveying of as many found-dead animals as possible and pathological examination of all suitable specimens

Common seals in the North Sea

Population:

- Two overflights at moulting time (August)

Reproduction:

- Three overflights at pupping time (May/June) (in addition to this, inspections are carried out on foot on Heligoland)

Found-dead animals:

- Surveying of as many found-dead animals as possible, dissection of animals that can be examined (at least 20) (pathology, where applicable virology)

Health status:

- One to two samples a year taken from living animals among the wild population (including blood and faeces)

Grey seals in the Baltic Sea

- Potential and current haul-out sites: surveying of juvenile and adult animals monthly (April: every 14 days)
- Surveying of as many found-dead animals as possible and examination of all suitable specimens (pathology)

Grey seals in the North Sea

Population:

- Two overflights or inspections on foot (Heligoland) at moulting time (March/April)

Reproduction:

- At least three ship-based/aerial surveys or inspections on foot (Heligoland) at pupping time (December/January)

Found-dead animals:

- Surveying of as many found-dead animals as possible (pathology)

Harbour porpoises in the Baltic Sea

Line transects by plane (Fig. 1):

- Baltic Sea west of Fehmarn (Area E under the MINOS area design, extended eastwards where necessary): twice in six years in summer, jointly with Denmark if possible
- Baltic Sea between Fehmarn and Odra Bank (MINOS Areas F and G): combined with bird surveys in winter

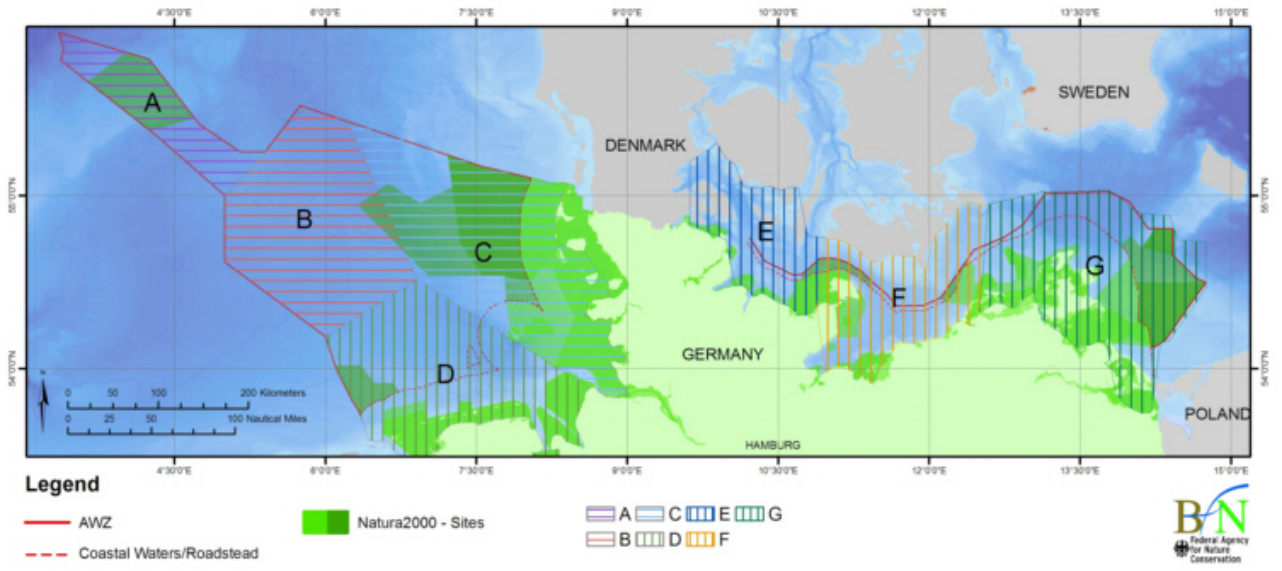

Fig. 1: MINOS area and transect design for harbour porpoise survey flights

Figure 1 as PDF-Document

Stationary Acoustic Monitoring (using PODs) (Fig. 2):

During all year:

- Kiel Bight (three MINOS stations: A1-A3)
- Baltic Sea around Fehmarn (five MINOS stations: B1, B2, B5-B7)
- Mecklenburg Bight (four MINOS stations: C8-C11)
- Darß (six MINOS stations: D8, D9, D10, D13, D14, E16)
- Rügen (three MINOS stations: E 17, F18, F21)
- Pomeranian Bay (six MINOS stations: G23, G25, H19, H21, H23, H28)

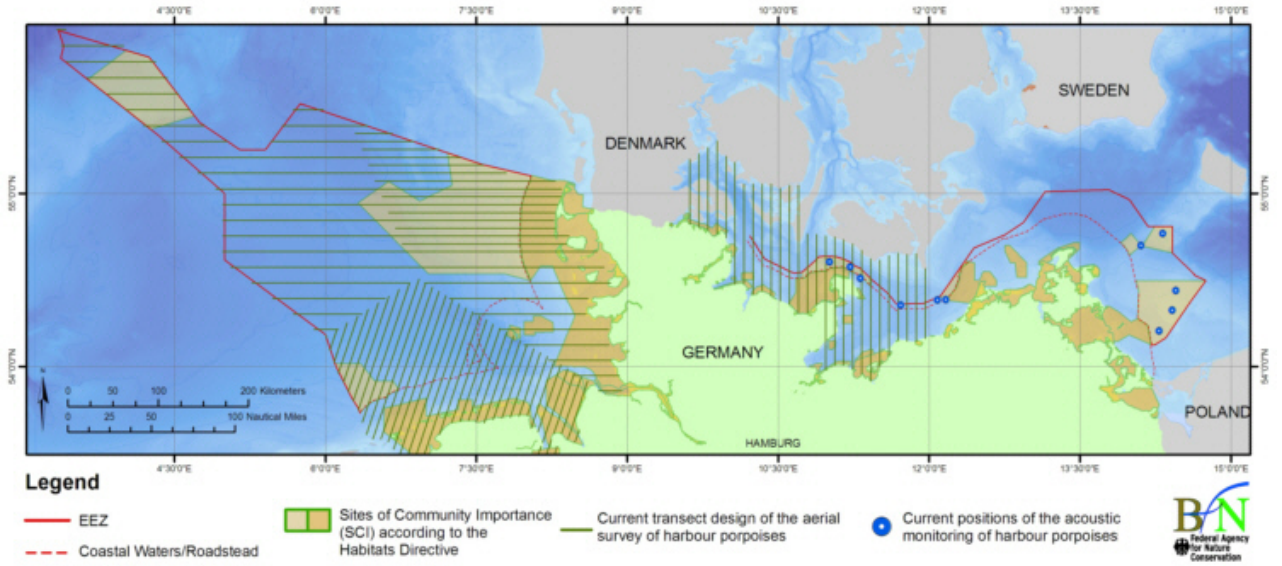

Fig. 2: Monitoring of harbour porpoises

Figure 2 as PDF-Document

Found-dead animals:

- Surveying of as many found-dead animals as possible and examination of all suitable specimens (pathology)

Bycatch:

- Complete, all-year-round surveying of bycatches in accordance with international obligations, examination of all suitable specimens (pathology)

Harbour porpoises in the North Sea

Line transects by plane (Fig. 1):

- Complete survey twice in six years in June (transects based on MINOS area design, Areas A-D), distance between transects: 10 km
- Surveying in protected areas annually: MINOS Area C (distance between transects: 5 km): twice in June/July
- Lower Saxon and Hamburg territorial waters with extension to Borkum Reef Ground SCI (distance between transects: 5 km): annually, twice in March/April

Stationary Acoustic Monitoring (POD):

During all year:

- Lower Saxon Wadden Sea National Park: two stations, Schleswig-Holstein Wadden Sea National Park: three stations (MINOSlocations)

Found-dead animals:

- Surveying of as many found-dead animals as possible and examination of all suitable specimens (pathology)

Bycatch:

- Complete, all-year-round surveying of bycatches in accordance with international obligations, examination of all suitable specimens (pathology).

3.2 Monitoring activities

North Sea and Baltic Sea

Mammals - Common Seals and Grey Seals

Methods:

Population:

North Sea: Seal Management Plan as amended to cover grey seal monitoring

- SMP

Baltic Sea: in accordance with the LUNG concept

Dissections and diagnosis of health status (Siebert et al., 2007, Müller et al., 2004)

Parameter:

- Distribution
- Habitat use/quality
- Health status
- Mortality due to bycatches
- Population size
- Reproduction/birth rate (proportion of mother/calf groups)

Mammals - Harbour Porpoises

Methods:

Line transects by aircraft (Buckland et al., 2001, Diederichs et al., 2002, Hiby & Lovell, 1998, Lovell, 1999)

Static acoustic monitoring (POD) (BSH StUK, 2007)

Dissections and diagnosis of health status (Siebert et al., 2001)

Parameter:

- Distribution
- Habitat use/quality
- Health status
- Mortality due to bycatches
- Population size
- Reproduction/birth rate (proportion of mother/calf groups)

3.3 Additional parameters

The following parameters are required additionally for the assessments::

- Fishing industry (techniques)
- Pollutants in prey organisms
- Shipping traffic
- Technical interventions

4 Assessment

4.1 Assessment procedures

North Sea and Baltic Sea

Title

Mammal Assessment Procedure

Guideline:

Various directives

Comments:

- Assessment schemes for HD species (Schnitter et al., 2006).
- OSPAR scheme (MASH 07/3/3-Add.4-E)

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 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

- LLUR
- MLUR
- BfN
- LUNG
- NLPV NI
- LAVES
- LKN-SH
- LVA-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).
- Buckland, S., Anderson, D. R., Burnham, K. P., Laake, J. L, Borchers, D. L. and L. Thomas, 2001: *Introduction to Distance Sampling: Estimating abundance of biological populations*; Oxford University Press Inc., New York.
- Diederichs, A., Nehls, G. und I. K. Petersen, 2002: 'Flugzeugzählungen zur großflächigen Erfassung von Seevögeln und marinen Säugern als Grundlage für Umweltverträglichkeitsstudien im Offshorebereich'.; *SEEVÖGEL*; 23 (2): pp. 38 - 46.
- Hiby, A. R. and P. Lovell, 1998: 'Using aircraft in tandem formation to estimate abundance of harbour porpoise'; *Biometrics*; 54: pp. 1280 - 1289.
- JAMP, 2004: *Guidelines on quality assurance for biological monitoring in the OSPAR area.*; ICES Techniques in Marine Environment Sciences; 32; 2004.
- Müller G., Kaim, U. Haas, L., Greiser-Wilke, I., Wohlsein, P., Siebert, U. and W. Baumgärtner, 2004: '*Phocine distemper* virus: characterization of the *Morbillivirus* causing the seal epizootic in northwestern Europe in 2002'; *Archive of Virology*.
- Siebert, U., Wohlsein, P., Lehnert, K. and W. Baumgärtner, 2007: 'Pathological Findings in Harbour Seals (*Phoca vitulina*): 1996-2005'; *J. Comp. Path.*; 2007; 137: pp. 47 - 58.
- Siebert, U., Wünschmann, A., Weiss, R., Frank, H., Benke, H. and K. Frese, 2001: 'Post-mortem findings in Harbour porpoises (*Phocoena phocoena*) from the German North and Baltic Seas'; *J. Comp. Path.*; 2007; 124: pp. 102 - 114.

5.3 Standards

5.4 Current status

There are instructions on standardised surveying methods for all subfields of mammal monitoring. In every case, their application presupposes advanced knowledge of the identification and counting of species in each specific situation (where necessary at long distances), which can as a rule only be acquired as a result of good training and/or as many years of experience as possible. There is consequently a great need for training in monitoring skills.

Standards that cover the methods for the evaluation and quality assurance of POD data are still to be developed. TPODs must be calibrated before their deployment and subsequently at regular intervals. The German Oceanographic Museum (DMM) has developed a suitable calibration method, and all TPODs deployed by the Museum and the FTZ West Coast are calibrated there. A large number of the measuring devices deployed in Germany and internationally by various institutions and companies have also been calibrated at DMM.

Intercalibration exercises

Not yet available

Workshops

- ECS Workshop on Static Acoustic Monitoring of Cetaceans, 2006
- Static Acoustic Monitoring (SAM) as a Tool for Environmental Impact Studies with Emphasis on Offshore Wind Farm Constructions, MINOSplus Workshop at DMM, 2006
- SCANSII Final Workshop, 8 December 2006
- ECS Workshop on Estimation of G(o) in Line Transect Surveys of Cetaceans, 2004

6 Literature

- Conservation and Management Plan for the Wadden Sea Seal Population 2007-2010.
- 'Draft Monitoring and Assessment Strategy for *Phocoena phocoena* (Harbour Porpoise) Populations in the OSPAR Maritime Area'; (MASH 07/3/3-Add.4-E)

7 Activities required to implement the concept

7.1 Changes to the current monitoring programme

To date, no attention has been devoted to mammals under the BLMP. The ongoing monitoring activities and the methods for the monitoring of common seals, grey seals and harbour porpoises developed under various projects (JASTARNIA, MINOS, SCANS) are suitable for compliance with the monitoring requirements imposed by the conventions and directives as a whole (cf. 3.1-3.4).

7.2 Working steps required

Priorities

- Establishment and anchoring of the present concept as a permanent programme in the context of marine monitoring.
- Completion of detailed harbour porpoise and seal monitoring concepts for the whole German Baltic Sea.
- Completion of detailed concepts for stationary POD monitoring in the Wadden Sea.
- Determination of the costs for the introduction or amendment of monitoring parameters.
- Decision-making on and coordination of the joint award of monitoring contracts (for example, harbour porpoise surveys at sea).
- Measures for the transposition of EU Regulation 812/2004 on the monitoring of incidental catches of harbour porpoises into German law. Amendment of the coastal fisheries ordinances of the Länder to provide for a duty to report bycatches. Furthermore: the drafting of a concept for the comprehensive monitoring of harbour porpoise bycatches, remuneration of expenses for the delivery of incidentally caught animals.
- Description of the exact channels through which the monitoring data used to assess individual parameters are derived when complying with the reporting duties, contact to be taken up with the competent bodies in Denmark (Baltic Sea), and Denmark, the Netherlands and the UK (North Sea) for the spatial-temporal and methodological harmonisation of harbour porpoise surveys in accordance with the HD reporting duties.

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 the 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 marine mammal monitoring or adjustments made to existing 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 amended and suitable sample SOPs for mammal 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

Since the monitoring concept has been formally agreed, an appropriate data management concept is to be developed in order to guarantee that the various institutions provide the data necessary for the purposes in question. To this end, the Sub-Working Group on Vertebrates is to specify who the data suppliers are and what information has to be made available (e.g. geographical position, date, method). Once this has been done, data import and export interfaces are to be created.

Harmonisation with existing national and international databases such as the ASCOBANS international database, the SAS database, the MINOS database, and the databases of the Federal Government and Länder.

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) Surveying of incidental catches of harbour porpoises in fisheries and amending Regulation (EC) 88/98.

(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).