# Monitoring Specifications

Date: 2010-02-22

## Fish

## 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 - Fish

## 1.2 Definition

Fish and cyclostomata

## 1.3 Competent authority/ies

| | |
|---|---|
| Federal Government: | vTI, BfN |
| Hamburg: | BSU |
| Mecklenburg-Vorpommern: | LUNG, Lfa-Fischerei MV |
| Lower Saxony: | NLWKN, NLPV NI, LAVES, SFA |
| Schleswig-Holstein: | LKN-SH, LLUR |

## 1.4 Working group

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

# 2 Monitoring requirements

## 2.1 Necessity

### MSFD [1]

**Articles 4 and 7, Annexes III and IV**

Comments

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

- MSFD, Articles 4 and 7, Annexes III and IV

### HD [2]

**Articles 2 and 11**

Comments

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

- HD, Article 2
- HD, Article 11

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

- Krause et al., 2008

### WFD [3]

**Article 8(1); Annex V, 1.13, 1.14**

Comments

Under the WFD, fish must be monitored as a quality element in transitional waters at least every three years

- WFD, Article 8(1)
- WFD Annex 5, 1.1.3/1.1.4 and 1.2.3/1.2.4

No selection of species is prescribed.

### HELCOM

Comments

HELCOM has adopted a list of endangered species and habitats.

- List
- COMBINE Manual

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

### OSPAR

Comments

OSPAR has adopted a list of endangered species and habitats. According to this list, 19 fish species must be monitored at present. Monitoring instructions are being drawn up for this purpose.

- MASH 05/3/Info.4-E,L

**EcoQOs [4]**

Ecological quality objectives

Comments

Monitoring obligations for fish are to be derived from two EcoQOs (see 2.2) (ICES calculation).

- EcoQOs
- Summary of OSPAR monitoring requirements (I. Narberhaus)

## TMAP [5]

Comments

Fish monitoring is not a trilateral obligation at present.

- Stade-Deklaration 1997
- TMAP-Manual Kapitel 2

The TMAP ad hoc working group fish has recommended trilateral targets for fish stocks in the Wadden Sea. These will be discussed during the revision of the Wadden Sea Plan to be completed by 2010.

- Draft TMAP species list

## CFP

Comments

The EU Member States record the size of the stocks of commercially exploited fish species and forecast the development of these stocks. In future, fisheries management is intended to be complemented by ecosystem-oriented approaches.

## 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 protection and preservation of the marine environment over the long term 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, drafts of specified conservation targets for marine conservation areas have been drawn up.

### WFD

Achievement of a good ecological status of fish fauna in transitional waters by 2015.

- WFD, Annex V, 1.2.3

### HELCOM

- (1) 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
- (2) Thriving and balanced communities of plants and animals (coastal fish communities).
- (3) Viable stocks of fish.

### 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, Article 2(1)

Ecological Quality Objectives (EcoEcoQOs) for fish:

- (1) Spawning stock biomass of commercial fish species in the North Sea: The biomass should be above precautionary reference points that have been set by the relevant fisheries institutions. In this respect, fish mortality is to be taken into consideration by ICES.
- (2) Fish communities: changes in the ratio of large to small fish, i.e. average weight and average maximum length.
- (3) Sand eel availability.
    - EcoQO Manual (draft)

**TMAP**

The presence of typical Wadden Sea fish fauna and the preservation of the Wadden Sea's nursery function for fish are proposed as environmental targets to be formulated by TMAP.

**CFP**

Use and conservation of fish stocks within safe biological limits by use of the setting of scientifically based catch quantities, limitation of fishing operations and issue of technical regulations.

## 2.3 Threats

As far as most migratory diadromous fish species are concerned, the principle potential threats lie in non-marine waters (loss of spawning habitats, passability of migration routes, etc.). In marine waters, mortality due to bycatch levels in commercial fisheries represents the principle threat.

## 2.4 Spatial allocation

| | EEZ | 12- nm zone | Coastal waters 1) | Transitional waters |
|---|---|---|---|---|
| MSFD | x | x | x | - |
| HD | x | x | x | x |
| WFD | - | - | - | x |
| HELCOM | x | x | x | - |
| OSPAR | x | x | x | x |
| TMAP | - | - | - | - |
| CFP | - | - | - | - |

1) Under the WFD: baseline plus one nautical mile

# 3 Monitoring concept

## 3.1 Description of monitoring network

### Monitoring network

Biological data on fish stocks are currently being gathered by various institutions for different purposes. The data required for German marine monitoring are to be supplied from all the surveys listed here. Additional surveys that are required are listed in 6.2.

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The monitoring network currently being operated by vTI in the North Sea and Baltic Sea is shown in Figs. 1 and 3.

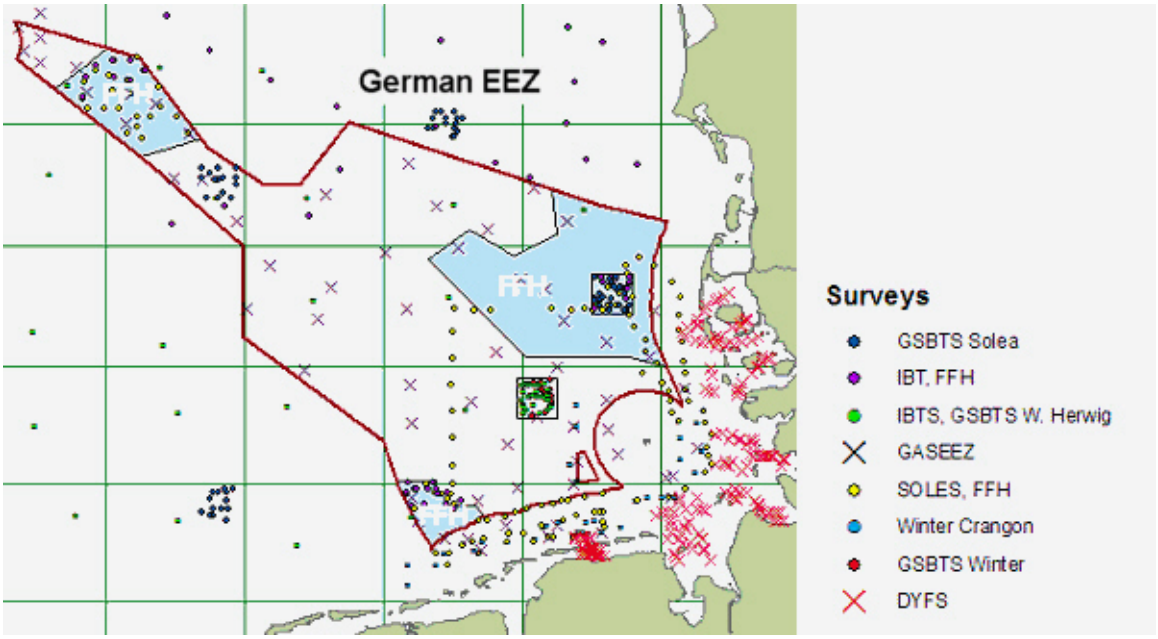


Fig. 1: Present vTI monitoring network in the North Sea (the Hydroacoustic Survey is not shown, as the stations used are alternated)

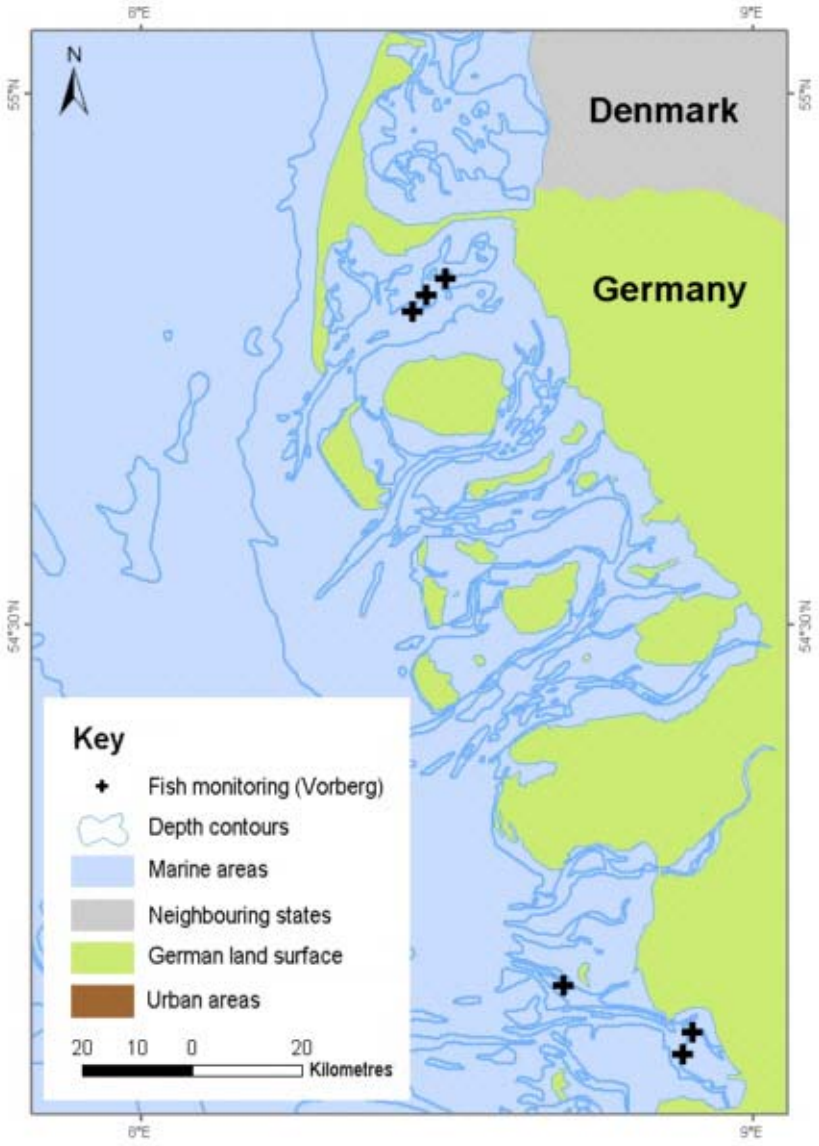


Fig. 2: NPV Schleswig-Holstein monitoring network (annual stow net fishing in the Wadden Sea)

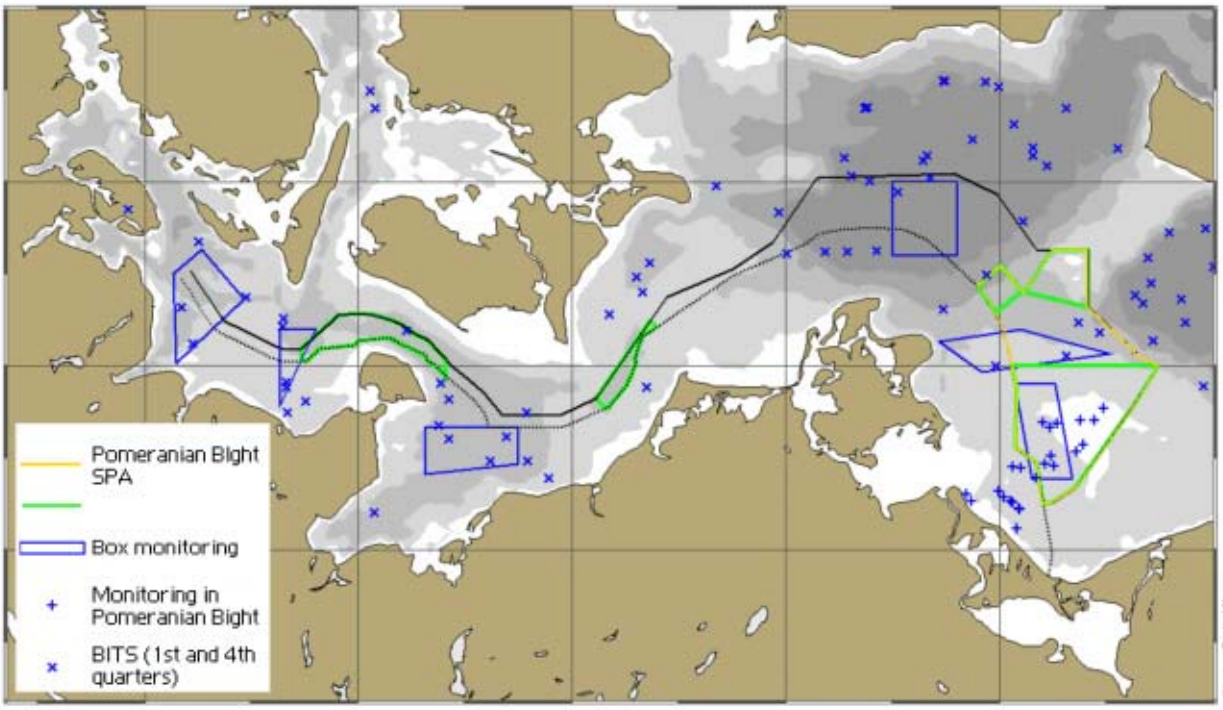


Fig. 3: vTI monitoring network in the Baltic Sea in relation to the boundaries of territorial waters (black dotted line) and the EEZ (black line), as well as the Pomeranian Bay SPA (yellow) and the proposed HD areas

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Data on the titles, purposes and durations of scientific fish surveys in the North Sea, the Baltic Sea and transitional waters are given in the tables below (see 3.2, Monitoring activities).

**Methods**

**Surveying of stocks in transitional waters (North Sea)**

- Stow net fishing (pelagic fish fauna)
  - Vorberg, 1998
- Reports of rare species from professional and amateur fishermen and women
  - Thiel et al., 2007

**Surveying of stocks in coastal waters (North Sea)**

- Stow net fishing (pelagic fish fauna)
  - Vorberg, 1998
- Beam trawl fishing (demersal fish fauna)
  - DYFS
- Reports from commercial and amateur fishermen and women
  - Thiel et al., 2007

**Surveying of stocks in the EEZ (North Sea and Baltic Sea)**

- Trawl fishing
  - Survey Trawl Standardisation, ICES, 2005
  - IBTS Manual, ICES, 2006
  - GSBTS: Ehrich et al., 2007
- Reports from commercial and amateur fishermen and women
  - Thiel et al., 2007

## Parameters

**All the parameters for distribution, population and habitat quality provided for by the Habitats Directive can only be evaluated in combination with monitoring in rivers. The origins of the data required for the assessment of individual parameters are indicated in the species tables:**

- Table of target species for German marine monitoring
- Table of species by habitat type
- Schnitter et al., 2006

**General parameters for seabed monitoring:**

- Presence - distribution of "priority" species (see species list)
- Presence of "secondary" species (see species list)

**Supplementary information where possible:**

- Abundance
- Biomass
- Size composition
- Age structure (particular species, commercially important species)
- Habitat quality (at present, however, fish populations are most vulnerable outside marine waters in the habitats along migration routes and the spawning habitats in rivers.)

## Additional parameters for assessment

Only parameters derived for a marine subhabitat from the assessment schemes required by the various directives/conventions are to be listed. Coordination with river monitoring is absolutely essential for the overall assessment of additional parameters as well.

**Mandatory:**

**Water engineering and maintenance:**

Passability of structures at the transition from marine to brackish water
Habitat loss (due to dumping sites, improvement of shipping channels)

**Use:**

Fisheries (effort and landing figures from EU DCR)
Offshore exploration
Port construction measures
Marine mining

**Hydrography:**

Salinity, temperature at each monitoring station

**Optional:**

**Anthropogenic inputs of substances:**

Accidents
Inputs of warm water (limited to rivers)

**Biology:**

Invasive species, ...

**Hydrochemistry**

**Hydrography**

## 3.2 Monitoring activities

## North Sea

### Fish - North Sea - DYFS

**Methods:**

| | |
|---|---|
| **Title:** | **Demersal Young Fish Survey, DYFS** |
| **Priority:** | Monitoring absolutely essential |
| **Institution:** | vTI-SF |
| **Period:** | Since 1974 - ongoing |
| **Objective:** | Determination of spatial and temporal changes in fish communities in shallow coastal waters. |
| **Method:** | Annual monitoring with beam trawl in coastal waters. |
| **Supporting parameters:** | Hydrography (CTD) |

**Frequency:**

Annual monitoring

**Parameter:**

- Age structure
- Biomass
- Distribution of priority species
- Habitat quality (evidence about spawning habitats)
- Ratio of cyprinids to percids
- Size composition

### Fish - North Sea - GASEEZ

**Methods:**

| | |
|---|---|
| **Title:** | **German Autumn Survey EEZ (GASEEZ)** |
| **Priority:** | Monitoring absolutely essential |
| **Institution:** | vTI-SF |
| **Period:** | Since 2004 - ongoing |
| **Objective:** | Determination of spatial and temporal changes in fish communities |
| **Method:** | Annual monitoring at 80 permanent stations distributed over the whole EEZ in the North Sea. Deployment of bottom trawl and beam trawl in alternate years |
| **Supporting parameters:** | Hydrography (CTD) |

**Frequency:**

Annual monitoring - autumn

**Parameter:**

- Age structure
- Biomass
- Distribution of priority species
- Habitat quality (evidence about spawning habitats)
- Ratio of cyprinids to percids
- Size composition

**Fish - North Sea - GSBTS**

**Methods:**

| | |
|---|---|
| **Title:** | **German Small Scale Bottom Trawl Survey (GSBTS)** |
| **Priority:** | Monitoring absolutely essential |
| **Institution:** | vTI-SF |
| **Period:** | Since 1987 - ongoing |
| **Objective:** | Surveying of small-scale and long-term changes in demersal fish fauna in three permanent study areas. |
| **Method:** | Samples taken in permanent study areas (`boxes'), each measuring 10x10 nautical miles. Recording six-monthly in two boxes, annually in one box. GOV bottom trawl (see IBTS Manual) and cod net. - Link to GSBTS: Ehrich et al., 2007. |
| **Supporting parameters:** | Hydrography (CTD); since 1999: benthic epifauna, (2-m beam trawl) and, irregularly, infauna (van Veen grab), surveyed by the Senckenberg Institute (FIS) |

**Frequency:**

Summer and winter

**Parameter:**

- Age structure
- Distribution of priority species
- Habitat quality (evidence about spawning habitats)
- Ratio of cyprinids to percids
- Size composition

**Fish - North Sea - Stow Net Fishing in the Schleswig-Holstein Wadden Sea**

**Methods:**

| | |
|---|---|
| **Title:** | **Stow Net Fishing in the Schleswig-Holstein Wadden Sea** |
| **Priority:** | Monitoring absolutely essential |
| **Institution:** | NPV SH |
| **Period:** | Since 1991 - indefinite |
| **Objective:** | Monitoring is required under TMAP and will be required in future for Natura 2000. Furthermore, it contributes to the surveillance of the occurrence of Red List species. |
| **Method:** | Annual sampling in August with stow net at three stations in the Hörnum Deep and three stations in the Meldorf Bight. |
| **Supporting parameters:** | Hydrography (CTD) |

**Frequency:**

Annual sampling in August

**Parameter:**

- Age structure
- Biomass
- Distribution of priority species
- Habitat quality (evidence about spawning habitats)
- Ratio of cyprinids to percids
- Size composition

**Fish - North Sea - Hydroacoustic Survey**

**Methods:**

| | |
|---|---|
| **Title:** | **Hydroacoustic Survey (Herring)** |
| **Priority:** | Monitoring useful for assessment |
| **Institution:** | vTI-SF |
| **Period:** | Since 1987 - ongoing |
| **Objective:** | Surveying of stock parameters for herring and sprat as basis for fisheries assessment and management. |
| **Method:** | Annual acoustic monitoring with accompanying fish catches using pelagic trawl for validation of sonar readings. |
| **Supporting parameters:** | Hydrography (CTD) |

**Frequency:**

Annual monitoring

**Parameter:**

- Age structure
- Biomass
- Distribution of priority species
- Habitat quality (evidence about spawning habitats)
- Ratio of cyprinids to percids
- Size composition

**Fish - North Sea - IBTS**

**Methods:**

| | |
|---|---|
| **Title:** | **International Bottom Trawl Survey (IBTS)** |
| **Priority:** | Monitoring useful for assessment |
| **Institution:** | vTI-SF |
| **Period:** | Since 1991 - ongoing |
| **Objective:** | Determination of stock parameters for commercially exploited demersal fish species as basis for fisheries assessment and management. |
| **Method:** | Once a year in the 3rd quarter, trawl tow with GOV trawl (see IBTS Manual) in the ICES rectangles in the German Bight. |
| **Supporting parameters:** | Hydrography (CTD); since 1999: benthic epifauna (2-m beam trawl) and, irregularly, infauna (van Veen grab), surveyed by the Senckenberg Institute (FIS |

**Frequency:**

Once a year in the 3rd quarter

**Parameter:**

- Age structure
- Distribution of priority species
- Habitat quality (evidence about spawning habitats)
- Ratio of cyprinids to percids
- Size composition

## Fish - North Sea - Monitoring in the East Frisian Wadden Sea

**Methods:**

| | |
|---|---|
| **Title:** | **Monitoring in the East Frisian Wadden Sea** |
| **Priority:** | Monitoring useful for assessment |
| **Institution:** | AWI |
| **Period:** | Since 1998 - indefinite (?) |
| **Objective:** | Monitoring of species composition, abundance and biomass of all fish species and decapods was begun against a background of ecosystem research; currently being continued in the context of climate research activities. |
| **Method:** | Sampling with 3 m beam trawl twice a year (March and July/August) in the Spiekeroog and Langeoog tidal channel system, and along the 5 m line off both islands two hours before and after low tide. |
| **Supporting parameters:** | - |

**Frequency:**

Twice a year (March and July/August)

**Parameter:**

- Age structure
- Biomass
- Distribution of priority species
- Habitat quality (evidence about spawning habitats)
- Ratio of cyprinids to percids
- Size composition

## Fish - North Sea - Monitoring in the Sylt-Rømø Bight

**Methods:**

| | |
|---|---|
| **Title:** | **Monitoring in the Sylt-Rømø Bight** |
| **Priority:** | Monitoring useful for assessment |
| **Institution:** | AWI |
| **Period:** | 2006 - 2009 |
| **Objective:** | The data gathered should be incorporated into the ecological network analysis (ENA) model for the Sylt-Rømø Bight in order to, among other things, survey the influence of invasive fish species on the ecological network. |
| **Method:** | Six to seven samples taken at four locations per year, mini-bottom trawl and floating trawl. |
| **Supporting parameters:** | - |

**Frequency:**

Six to seven samples taken per year

**Parameter:**

- Age structure
- Biomass
- Distribution of priority species
- Habitat quality (evidence about spawning habitats)
- Ratio of cyprinids to percids
- Size composition

**Fish - North Sea - Sole Survey**

**Methods:**

| | |
|---|---|
| **Title:** | **Sole Survey** |
| **Priority:** | Monitoring absolutely essential |
| **Institution:** | vTI-SF |
| **Period:** | Since 1976 - ongoing |
| **Objective:** | Determination of spatial and temporal changes in fish communities |
| **Method:** | Annual monitoring of demersal fish with beam trawl in coastal waters and, since 1999, selected areas of the EEZ (HD areas). |
| **Supporting parameters:** | Hydrography (CTD) |

**Frequency:**

Annual monitoring

**Parameter:**

- Age structure
- Biomass
- Distribution of priority species
- Habitat quality (evidence about spawning habitats)
- Ratio of cyprinids to percids
- Size composition

## Eider

**Fish - Transitional Waters - Fish Monitoring in the Eider**

**Methods:**

| | |
|---|---|
| **Title:** | **Fish Monitoring in the Eider** |
| **Priority:** | Monitoring absolutely essential |
| **Institution:** | LLUR |
| **Period:** | Every three years since 2006 |
| **Objective:** | Monitoring and assessment of fish communities |
| **Method:** | Stow net fishing during two tides, once in early summer and once in autumn |
| **Supporting parameters:** | - |

**Frequency:**

Every three years (early summer and autumn)

**Parameter:**

- Age structure
- Biomass
- Distribution of priority species
- Habitat quality (evidence about spawning habitats)
- Ratio of cyprinids to percids
- Size composition

## Elbe

### Fish - Transitional Waters - Fish Monitoring in the Elbe

**Methods:**

| | |
|---|---|
| **Title:** | **Fish Monitoring in the Elbe** |
| **Priority:** | Monitoring absolutely essential |
| **Institution:** | Elbe Water Quality Office (WGE) |
| **Period:** | Since 2000 - indefinite |
| **Objective:** | Monitoring is carried out together with the monitoring of pollutants in fish, which has been a component of the German Marine Monitoring Programme (BLMP) since 1986. |
| **Method:** | Stow net fishing |
| **Supporting parameters:** | - |

**Frequency:**

Not stated

**Parameter:**

- Age structure
- Biomass
- Distribution of priority species
- Habitat quality (evidence about spawning habitats)
- Ratio of cyprinids to percids
- Size composition

## Ems

### Fish - Transitional Waters - Fish Monitoring in the Ems

**Methods:**

| | |
|---|---|
| **Title:** | **Fish Monitoring in the Ems** |
| **Priority:** | Monitoring absolutely essential |
| **Institution:** | LAVES |
| **Period:** | Investigations in 2006 |
| **Objective:** | Monitoring and assessment of fish communities |
| **Method:** | Stow net fishing |
| **Supporting parameters:** | - |

**Parameter:**

- Age structure
- Biomass
- Distribution of priority species
- Habitat quality (evidence about spawning habitats)
- Ratio of cyprinids to percids
- Size composition

## Weser

### Fish - Transitional Waters - Fish Monitoring in the Weser

**Methods:**

| | |
|---|---|
| **Title:** | **Fish Monitoring in the Weser** |
| **Priority:** | Monitoring absolutely essential |
| **Institution:** | LAVES |
| **Period:** | 2002, 2003, monitoring planned as of 2007 |
| **Objective:** | Monitoring and assessment of fish communities |
| **Method:** | Stow net fishing |
| **Supporting parameters:** | - |

**Frequency:**

Not stated

**Parameter:**

- Age structure
- Biomass
- Distribution of priority species
- Habitat quality (evidence about spawning habitats)
- Ratio of cyprinids to percids
- Size composition

## Baltic Sea

### Fish - Baltic Sea - BITS

**Methods:**

| | |
|---|---|
| **Title:** | **Baltic International Trawl Surveys (BITS)** |
| **Priority:** | Monitoring absolutely essential |
| **Institution:** | vTI-OSF |
| **Period:** | Since 1991 - indefinite |
| **Objective:** | Determination of stock parameters for commercially exploited demersal fish species as basis for fisheries assessment and management |
| **Method:** | Twice a year in the 1st and 4th quarters, approx. 50 trawl tows (see ICES WG BIFS BITS Manual) in ICES Subdivisions 22 and 24. - Link to BITS Manual |
| **Supporting parameters:** | Hydrography (CTD) |

**Frequency:**

Twice a year in the 1st and 4th quarters

**Parameter:**

- Age structure
- Biomass
- Distribution of priority species
- Habitat quality (evidence about spawning habitats)
- Ratio of cyprinids to percids
- Size composition

**Fish - Baltic Sea - Box Monitoring in the Western Baltic Sea**

**Methods:**

| | |
|---|---|
| **Title:** | **Box Monitoring in the Western Baltic Sea** |
| **Priority:** | Monitoring absolutely essential |
| **Institution:** | vTI-OSF |
| **Period:** | Since 2003 - indefinite |
| **Objective:** | Surveying of small-scale and long-term changes in demersal fish fauna |
| **Method:** | Samples taken in five permanent study areas ('boxes') once a year (June), ten tows/box with TV trawl |
| **Supporting parameters:** | Hydrography (CTD) |

**Frequency:**

Samples taken once a year (June)

**Fish - Baltic Sea - Hydroacoustic Surveys**

**Methods:**

| | |
|---|---|
| **Title:** | **Hydroacoustic Surveys (Sprat and Herring)** |
| **Priority:** | Monitoring absolutely essential |
| **Institution:** | vTI-OSF |
| **Period:** | Since 1992 - indefinite (October survey); since 2001 - indefinite (May survey) |
| **Objective:** | Surveying of stock parameters for herring and sprat as basis for fisheries assessment and management |
| **Method:** | Annual international acoustic monitoring with accompanying pelagic trawl tows for validation of sonar readings. The October survey covers ICES Subdivisions 22 and 24, the May survey only covers ICES Subdivision 24 (see *Manual for the Baltic International Acoustic Surveys (BIAS)* (ICES 2003). - Link to BIAS Manual |
| **Supporting parameters:** | Hydrography (CTD) |

**Frequency:**

Annual monitoring

**Parameter:**

- Age structure
- Biomass
- Distribution of priority species
- Habitat quality (evidence about spawning habitats)
- Ratio of cyprinids to percids
- Size composition

**Fish - Baltic Sea - Monitoring in the Pomeranian Bay**

**Methods:**

| | |
|---|---|
| **Title:** | **Monitoring in the Pomeranian Bight (previously Eel Survey)** |
| **Priority:** | Monitoring absolutely essential |
| **Institution:** | vTI-OSF |
| **Period:** | Since 1993 - indefinite |
| **Objective:** | Surveying of long-term changes in demersal fish fauna |
| **Method:** | 15 tows with eel trawl on each occasion and, since 2002, additional surveying of small fish fauna with 2 m beam trawl |
| **Supporting parameters:** | Hydrography (CTD) |

**Frequency:**

Not stated

**Parameter:**

- Age structure
- Biomass
- Distribution of priority species
- Habitat quality (evidence about spawning habitats)
- Ratio of cyprinids to percids
- Size composition

## 3.3 Additional parameters

The following parameters are required additionally for the assessments::

- Accidents
- Fishing industry (techniques)
- Habitat loss
- Hydrochemistry
- Hydrography
- Inputs of warm water
- Invasive species
- Marine mining
- Offshore exploration
- Passability
- Port construction measures
- Sediment composition

# 4 Assessment

## 4.1 Assessment procedures

**North Sea and Baltic Sea**

**Title**

Fish - General

**Guideline:**

Various directives

**Comments:**

At present, there is no standardised, uniform procedure for the assessment of the ecological status of fish in transitional waters, coastal waters and the EEZ. The development of an interregional assessment instrument of this kind for marine monitoring should be considered.

**North Sea and Baltic Sea**

**Title**

Fish - Transitional Waters

**Authors**

Scholle et al 2006

**Guideline:**

WFD

**Stretch of Water:**

Transitional waters

**Comments:**

- Scholle et al. 2006

**North Sea and Baltic Sea**

**Title**

Fish - HD Assessment Procedure
Monitoring in Germany under Articles 11 and 17 of the Habitats Directive

**Guideline:**

HD

**Comments:**

**Habitats Directive (species)**:

- Schnitter et al., 2006

**Habitats Directive (habitats)**:

- Krause et al., 2008

**North Sea and Baltic Sea**

**Title**

Fish - HELCOM Assessment Procedure

**Authors**

HELCOM

**Guideline:**

HELCOM

**Comments:**

- Link to HELCOM Assessment Procedure (in development)

**North Sea and Baltic Sea**

**Title**

Fish - OSPAR Assessment Procedure

**Guideline:**

OSPAR

**Comments:**

- OSPAR Assessment Procedure (to date, coverage of sturgeon und whitefish only)

**North Sea and Baltic Sea**

**Title**

Fish - TMAP Assessment Procedure

**Guideline:**

TMAP

**Stretch of Water:**

Coastal waters

**Comments:**

- Link to TMAP Assessment Procedure (trend calculation procedure in preparation)

# 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

- NLPV HH
- Lfa-Fischerei MV
- NLPV NI
- AWI
- LAVES
- vTI
- ARGE ELBE
- SFA
- LKN-SH

## 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).
- EU data collection programme: Regulations 1639/2001 and 1581/2004.
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## 5.3 Standards

- DIN EN ISO/IEC 17025, 2005: General requirements for the competence of testing and calibration laboratories.
- DIN EN 14996, 2006: Water quality - Guidance on assuring the quality of biological and ecological assessments in the aquatic environment.
- DIN EN 14962, 2006: Water quality - Guidance on the scope and selection of fish sampling methods.
- DIN EN 14757, 2005: Water quality - Sampling of fish with multi-mesh gillnets.
- EU data collection programme: Regulations 1639/2001 and 1581/2004.
- ICES, 2005: Survey Trawl Standardisation
- ICES, 2006: Manual for the International Bottom Trawl Surveys.
- BSH, 2007: Standard - Investigation of the Impacts of Offshore Wind Turbines on the Marine Environment (StUK 3).

## 5.4 Current status

There are instructions on standardised surveying methods for all subfields of fish monitoring. In every case, their application presupposes advanced knowledge of the identification and surveying of fish in each specific situation, which can as a rule only be acquired through good training and/or experience as possible.

**Intercalibration exercises**

Not available yet

**Workshops**

- Still to be completed

**Deficiencies to be remedied**

- There is no uniform sampling strategy for flowing waters and their river basins, coastal areas and the EEZ. It should be adapted to the circumstances as far as meaningfully possible.
- The comparability of fish data from different water types is limited.
- The compilation and evaluation of data from different sources is limited.
- Lack of surveying methods for fish on rocky and reef seabeds.
- Taxonomic workshops on species that are difficult to identify (e.g. how to distinguish lampreys, young Atlantic salmon and lake trout, shad/twaite shad, dragonet, pipefish and goby species, lesser sand eels, seasnails and turbots).
- Formal agreement of evaluation guidelines for long-term datasets
- Optimisation of the storage and redistribution of electronic catch data

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# 7 Activities required to implement the concept

## 7.1 Changes to the current monitoring programme

**North Sea:**

- Establishment of stow net fishing in at least two areas in the coastal waters of Lower Saxony (comparable to Schleswig-Holstein)
- Fishing industry catch reports (proposal: development of a reward system to improve information about rare species)

**Baltic Sea:**

- Fishing industry catch reports (proposal: development of reward systems to improve information about rare species)
- Identification and drafting of a monitoring concept for twaite shad spawning sites in the Oder Lagoon
- Establishment of fish monitoring in Bodden waters and the lower reaches of rivers in Mecklenburg-Western Pomerania

## 7.2 Working steps required

**Priorities:**

**Monitoring programmes**

- 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.
- Continuation of the coordination work begun (25 September 2008) on migratory fish species with colleagues who work on inland waters to arrive at operationalised assessment criteria of the kind discussed by Schnitter et al. (2006) and carry out joint overall assessments under the HD. The BfN in Bonn (Division I 1.3) has been requested to manage contacts with marine monitoring (Sub-Working Group on Vertebrates).
- Decision about the establishment of fish monitoring in Bodden waters and the lower reaches of rivers in Mecklenburg-Western Pomerania by Mecklenburg-Western Pomerania.
- Action to ensure the permanent, long-term availability of AWI data (see 3.1) as part of future fish monitoring.

**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 fish 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 adapted and suitable sample SOPs for fish monitoring drawn up. This work is expected to begin in 2011.

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**

Once 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.

**Further activities:**

### EU DCR

Integration of effort and landing data (EU DCR) into marine monitoring.

Under the EU's Common Fisheries Policy, the Member States have committed themselves to forward effort and landing figures to the EU for the control of quotas (EU DCR). The landing quantities for each stock (management unit) are forwarded to the ICES. These data should also be used for the evaluation of monitoring results on other quality elements (e.g. macrozoobenthos).

### Additional catch reports

Information sent in by fishermen, anglers and expert observers (e.g. at fish passes) should also be incorporated into the figures. This may make it possible for the occurrence of fish kills and HD species, for example, to be monitored qualitatively. A suitable reward system should be developed for this purpose.

# 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)** EC Water Framework Directive; Directive 2000/60/EC. The coastal waters subject to ecological assessment under the WFD extend 1 nautical mile beyond the baseline.

**(4)** 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.

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