

Monitoring Specifications

Date: 2010-05-20

HD Habitat Type 1140 Mudflats and Sandflats Not Covered by Seawater at Low Tide





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

Editorial information

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1 General

1.1 Subject area

Biological Monitoring - Habitats - HD Habitat Type 1140 - Mudflats and Sandflats Not Covered by Seawater at Low Tide

1.2 Definition

*See [BfN definition](#) and the note on the tidal flat areas of the North Sea:

Mudflats and sandflats not covered by seawater at low tide (Natura 2000 Code 1140)

Areas of sand and mud in the coastal and brackish water areas of the North Sea and Baltic Sea and in adjoining inlets, coastal lagoons and salt meadows that are regularly exposed at LAT (lowest astronomical tide) (tidal flats of the North Sea) or in average weather conditions (wind flats of the Baltic Sea).

Special structures

- Seagrass populations (*Zosteretum marinae*)
- Shellfish banks with *Mytilus edulis*

Note on the tidal flats of the North Sea:

The area that is regularly exposed between LAT (lowest astronomical tide) and the mean high tide (MHT) line, including the seagrass meadows located in this area. The boundaries to the independent habitat types *Salicornia* and other annuals colonising mud and sand (1310), *Spartina* swards (*Spartinion maritimae*) (1320) and Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) (1330) are determined by the Land-specific definitions of these habitat types. Sandbanks that are still covered with water at MHT, but exposed at low water are surveyed as tidal flats down to the lowest astronomical tide (LAT) line.

The boundaries to anthropogenic structures such as stone facings and dykes lie at the foot of these structures. (i.e. they are not always identical with MHT).

The vegetation-free tidal flat areas of estuaries that belong to the Habitat Type 1130 biotope complex are to be delimited as a separate unit.

Note on the wind flats of the Baltic Sea

Wind flats is the term used to designate intermittently exposed shallow water zones in the Baltic Sea. In contrast to the periodic tidal rhythm of the North Sea, the wind flats of the Baltic Sea are subject to weather-dependent, aperiodic fluctuations in water level. Well developed wind flats occur on accreting coasts (spits, bars), in shallow water zones and on abrasion platforms in inner and outer coastal waters.

1.3 Competent authority/ies

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

1.4 Working group

Ad Hoc Working Group on Habitat Types

2 Monitoring requirements

2.1 Necessity

[MSFD \[1\]](#)

Article 11, Annexes III and V

Comments

On the basis of the initial assessment made pursuant to Article 8(1), Member States shall establish and implement coordinated monitoring programmes for the ongoing assessment of the environmental status of their marine waters on the basis of the indicative lists of elements set out in Annex III and the list set out in Annex V, and by reference to the environmental targets established pursuant to Article 10.

The monitoring programme should cover the essential features and characteristics and the environmental status of those waters, based on the indicative lists set out in Annex III.

The following aspects must be covered:

- a) The physical and chemical features, the habitat types, the biological features and the hydro-morphology.
- b) The predominant pressures and impacts, including human activity, on the environmental status of those waters.

[Birds Directive](#)

Article 10

Comments

(1) Member States shall encourage research and any work required as a basis for the protection, management and use 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

- a) National lists of species in danger of extinction or particularly endangered species, taking into account their geographical distribution;
- b) Listing and ecological description of areas particularly important to migratory species on their migratory routes and as wintering and nesting grounds;
- c) Listing of data on the population levels of migratory species as shown by ringing.

[HD \[2\]](#)

Article 11 [3]

Comments

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.

Article 17 [4]

Comments

Every six years [...] Member States shall draw up a report on the implementation of the measures taken under this Directive. This report shall include in particular information concerning [...] the main results of the surveillance referred to in Article 11.

[WFD \[5\]](#)

Article 8

Comments

Member States shall ensure the establishment of programmes for the monitoring of water status in order to establish a coherent and comprehensive overview of water status within each river basin district:

Such programmes shall cover:

- i) the volume and level or rate of flow to the extent relevant for ecological and chemical status and ecological potential, and
- ii) the ecological and chemical status and ecological potential.

HELCOM

Comments

See the following monitoring specifications: [Macrophytes](#), [Macrozoobenthos](#), [Fish](#), [Birds](#), [Pollutants](#), [Hydrochemistry](#), [Hydrography](#), [Hydrology](#), [Substrate](#) and [Bathymetry](#)

OSPAR

Comments

See the following monitoring specifications: [Macrophytes](#), [Macrozoobenthos](#), [Fish](#), [Birds](#), [Pollutants](#), [Hydrochemistry](#), [Hydrography](#), [Hydrology](#), [Substrate](#) and [Bathymetry](#)

TMAP [6]

Comments

See the following monitoring specifications: [Macrophytes](#), [Macrozoobenthos](#), [Fish](#), [Birds](#), [Pollutants](#), [Hydrochemistry](#), [Hydrography](#), [Hydrology](#), [Substrate](#) and [Bathymetry](#)

Technical necessity

The monitoring frequencies required differ depending on the relevant law, directive, convention, etc. and the parameters to be considered. In each case, the monitoring frequencies are specified by reference to the individual parameters. On this topic, see the following monitoring specifications: [Macrophytes](#), [Macrozoobenthos](#), [Fish](#), [Birds](#), [Pollutants](#), [Hydrochemistry](#), [Hydrography](#), [Hydrology](#), [Substrate](#) and [Bathymetry](#)

2.2 Environmental targets

HD

Schleswig-Holstein

To guarantee, to the greatest possible extent, the undisturbed development of natural processes.

The following targets reflect this objective:

The conservation of

- largely natural geomorphological dynamics,
- largely natural hydrophysical and hydrochemical conditions and processes,
- largely natural sediment and current conditions,
- biotope complexes, and typical structures and functions,
- the highest possible water quality,
- largely unimpaired areas.

Lower Saxony

The overarching targets for the National Park are prescribed by the Lower Saxon Wadden Sea National Park Act (NWattNPG).

According to Section 2 NWattNPG, the targets are as follows:

- The protection of the singular character of the nature and landscape of the Wadden region off the Lower Saxon coast, including the characteristic appearance of the landscape
- The conservation of natural processes and biological diversity in the National Park, especially the preservation or restoration of a favourable conservation status for the habitat types, and animal and plant species mentioned in the Act

The objective is the conservation of the tidal flats (mudflats, sandflats and flats of mixed substrate) as an undisrupted habitat type with natural functions. The present area, in particular that of mudflats, must not be reduced further. Eulittoral shellfish banks and seagrass meadows are to be conserved or restored as formative components of the habitat type's natural development and manifestations. Areas with microbial mats deserve special attention. Particular significance attaches to the conservation or restoration of undisrupted hydrodynamics with an undisrupted supply of sediment to the tidal flats. This makes it possible for a complete sequence of sediments (essentially mudflats, sandflats and flats of mixed substrate) to occur across their natural range, with their natural properties and dynamics. The typical array of species is to be conserved with natural abundances and dominances, efforts are to be made to ensure the water column contains a natural suspension load. The function of the tidal flats in the decomposition of organic substances must be conserved. The function of the tidal flats as a food area is to be safeguarded. Apart from the pure availability of food, far-reaching freedom from disturbance is also to be ensured in order to guarantee this is possible. The objective is to conserve the tidal flats' 'resilience', i.e. their capacity to return to their original status following disruption. The conservation of shellfish banks, which constitute a naturally occurring hard substrate, is accorded particular significance in view of their importance as spawning grounds, feeding areas, retreat areas and

nurseries, as well as their distinctly increased species diversity, filtering function, deposition rates and the function they play in absorbing the force of waves.

2.3 Threats

The following anthropogenic influences are potential threats:

- Input of nutrients
- Input of hazardous substances
- Macroalgae coverage
- Exploration and extraction of raw materials (e.g. gas, oil, sediment, brine)
- Construction measures/installations, incl. energy pipelines (e.g. construction of port and industrial installations)
- Water engineering measures and installations (e.g. coastal defences)
- Shipping traffic and water engineering measures (e.g. navigation channels, training dykes)
- Recreational use/tourism
- Professional and sport fishing of all types (e.g. beam-trawl fishing, trawl fishing, gillnet fishing, angling, shell fisheries)
- Military exercises
- Disposal sites for sediment and dredgings/dumping activities
- Proliferation of neozoa and neophytes

2.4 Spatial allocation

Inner coastal waters of the North Sea and Baltic Sea.

Occurs extensively on the North Sea coast and islands as tidal flats. Smaller sites occur on the Baltic Sea coast as wind flats (areas exposed by offshore winds).

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

1) Under the WFD: baseline plus one nautical mile

3 Monitoring concept

3.1 Description of monitoring network

Monitoring units in the North Sea:

Monitoring units have been defined for the North Sea and are available within the BfN as shapefiles.

Monitoring units in the Baltic Sea:

Monitoring units have been defined for the Baltic Sea and are available within the BfN as shapefiles.

- Sediment structures and distribution (according to the monitoring specifications for [Substrate](#) and [Bathymetry](#))
- Sediment supply (in accordance with the monitoring specifications for [Substrate](#) and [Bathymetry](#))
- Oxidation layer (in accordance with the monitoring specifications for [Macrozoobenthos](#)) See also Testing Procedure SOP: *Macrozoobenthos Investigations in Marine Sediments (Soft Seabed)*
- Hydrology and morphology (in accordance with the monitoring specifications for [Hydrology](#), [Substrate](#) and [Bathymetry](#))
- Seagrass populations (in accordance with the monitoring specifications for [Macrophytes](#))
- Blue mussel banks (in accordance with the monitoring specifications for [Macrozoobenthos](#))
- Completeness of typical species inventory (in accordance with the monitoring specifications for [Macrophytes](#), [Macrozoobenthos](#), [Fish](#) and [Birds](#))
- Global input of nutrients (in accordance with the monitoring specifications for [Hydrochemistry](#))
- Global input of hazardous substances (in accordance with the monitoring specifications for [Pollutants](#))
- Exploration and extraction of raw materials, brine, gas and oil (official statistics and other sources)
- Sediment extraction (official statistics and other sources)
- Construction measures/installations, incl. energy pipelines (official statistics and other sources)
- Water engineering measures and installations, e.g. coastal defences, navigation channels, training dykes (official statistics and other sources)
- Shipping traffic (official statistics and other sources)
- Recreational use/tourism (partly from official statistics)
- Professional and sport fishing of all types, e.g. beam-trawl fishing, trawl fishing, gillnet fishing, angling, shell fisheries (official statistics and other sources)
- Military exercises (official statistics and other sources)
- Disposal sites for sediment and dredgings/dumping activities (official statistics and other sources)

3.2 Monitoring activities

North Sea and Baltic Sea

Surveying and Evaluation of Mudflats and Sandflats (1140)

Methods:

- Sediment structures and distribution (in accordance with the monitoring specifications for [Substrate](#), [Bathymetry](#))
- Sediment supply (in accordance with the monitoring specifications for [Substrate](#), [Bathymetry](#))
- Oxidation layer (in accordance with the monitoring specifications for [Macrozoobenthos](#)) See also Testing Procedure SOP: *Macrozoobenthos Investigations in Marine Sediments (Soft Seabed)*
- Hydrology and morphology (in accordance with the monitoring specifications for [Hydrology](#), [Substrate](#) and [Bathymetry](#))
- Seagrass populations (in accordance with the monitoring specifications for [Macrophytes](#))
- Blue mussel banks (in accordance with the monitoring specifications for [Macrozoobenthos](#))
- Completeness of the typical species inventory (in accordance with the monitoring specifications for [Macrophytes](#), [Macrozoobenthos](#), [Fish](#) and [Birds](#))
- Global input of nutrients (in accordance with the monitoring specifications for [Hydrochemistry](#))
- Global input of hazardous substances (in accordance with the monitoring specifications for [Pollutants](#))

3.3 Additional parameters

The following parameters are required additionally for the assessments::

- Construction measures/installations, incl. energy pipelines (official statistics and other sources)
- Disposal sites for sediment and dredgings/dumping activities (official statistics)
- Exploration and extraction of raw materials, brine, gas and oil (official statistics)
- Military exercises (official statistics and other sources)
- Professional and sport fishing of all types, e.g. beam-trawl fishing, trawl fishing, gillnet fishing, angling, shell fisheries (official statistics and other sources)
- Recreational use/tourism (partly from official statistics)
- Sediment extraction (official statistics and other sources)
- Shipping traffic (official statistics and other sources)
- Water engineering measures and installations, e.g. coastal defences, navigation channels, training dykes (official statistics and other sources)

4 Assessment

4.1 Assessment procedures

North Sea

Title

HD Habitat Types - Mudflats and Sandflats Not Covered by Seawater at Low Tide (1140)

Guideline:

HD

Comments:

The assessment matrix for Habitat Type 1140 can be downloaded by clicking on the following link:

[Assessment matrix](#)

The assessment must be carried out using the assessment procedures for the various components, such as macrophytes, hydrology, etc. These assessment procedures must be adjusted for this purpose.

5 Quality assurance

Comments

5.1 Monitoring institutions

Commissioning organisations (coordinating agencies)

- [LLUR](#)
- [NLPV HH](#)
- [LUNG](#)
- [NLWKN](#)
- [NLPV NI](#)
- [LKN-SH](#)
- [NPA-MV](#)

5.2 Guidance documents

- See the following monitoring specifications: [Makrophytes](#), [Macrozoobenthos](#), [Fish](#), [Birds](#), [Hydrochemistry](#), [Hydrology](#), [Substrate](#), [Bathymetry](#) und [Pollutants](#)

5.3 Standards

- See the following monitoring specifications: [Makrophytes](#), [Macrozoobenthos](#), [Fish](#), [Birds](#), [Hydrochemistry](#), [Hydrology](#), [Substrate](#), [Bathymetry](#) und [Pollutants](#)

5.4 Current status

See the following monitoring specifications: [Makrophytes](#), [Macrozoobenthos](#), [Fish](#), [Birds](#), [Hydrochemistry](#), [Hydrology](#), [Substrate](#), [Bathymetry](#) und [Pollutants](#)

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7 Activities required to implement the concept

7.1 Changes to the current monitoring programme

7.2 Working steps required

The HD assessment matrix for mudflats and sandflats not covered by seawater at low tide on the BfN homepage must be replaced with the harmonised version referred to in these monitoring specifications.

Since the assessment has to be carried out using the assessment procedures for the various components, such as macrophytes, hydrology, etc., these assessment procedures must be adjusted.

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)** Article 11 (monitoring of habitats and all species listed in Annexes II, IV and V) imposes the obligation to monitor the conservation status of all habitats (listed in Annex I) of Community interest. In consequence, this provision is not limited to NATURA 2000 areas, but habitat types outside the Habitat Directive areas are also to be included in the monitoring as appropriate.
- (4)** Article 17 governs the performance of reporting obligations. The Habitats Directive imposes binding obligations concerning the submission of reports to the European Commission (Articles 11 and 17).
- (5)** 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.
- (6)** The monitoring requirements under TMAP were specified in the Wadden Sea Plan ([Sylt, 2010](#)) (see also [TMAP Manual, section 2](#)).