Monitoring Specifications

Date: 2010-05-21

HD Habitat Type 1330
Atlantic Salt Meadows
(*Glauco-Puccinellietalia maritimae*)

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 - Habitats - HD Habitat Type 1330 - Atlantic Salt Meadows

1.2 Definition

1.2.1 EU definition (*Interpretation Manual*)

Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) (1330)

1) Salt meadows of Baltic, North Sea, English Channel and Atlantic shores. *Aster tripolium* can be present or abundant in most subdivisions.

2) Plants:

15.31 - *Puccinellia maritima*;

15.32 - *Halimione portulacoides*, *Halimione pedunculata*, *Aster tripolium*;

15.33 - *Armeria maritima*, *Glaux maritima*, *Plantago maritima*, *Frankenia laevis*, *Artemisia maritima*, *Festuca rubra*, *Agrostis stolonifera*, *Juncus gerardii*, *Carex extensa*, *Blysmus rufus*, *Eleocharis* spp.;

15.34 - *Spergularia marina*, *Puccinellia distans*, *Puccinellia fasciculata*, *Puccinellia retroflexa*, *Puccinellia maritima*, *Triglochin maritimum*, *Potentilla anserina*, *Halimione portulacoides*;

15.35 - *Elymus pycnanthus* (=*Agropyron pungens*) or *Elymus repens*;

15.36 - *Atriplex littoralis*, *Atriplex hastata*, *Beta maritima*, *Matricaria maritima*.

3) Corresponding categories

United Kingdom classification: 'SM10 Transitional low-marsh vegetation', '*SM11 Aster tripolium* var. *discoides* saltmarsh', 'SM12 Rayed *Aster tripolium* saltmarsh', 'SM13 *Puccinellia maritima - Triglochin maritimum* saltmarsh', 'SM14 *Halimione portulacoides* saltmarsh', 'SM15 *Juncus maritimus - Triglochin maritimum* saltmarsh', '*SM16 Festuca rubra* saltmarsh community', 'SM17 *Artemisia maritima* community', 'SM18 *Juncus maritimus* community', 'SM19 *Blysmus rufus* saltmarsh community' and 'SM20 *Eleocharis uniglumis* community'.

Nordic classification : 15.32 - '4231 *Puccinellia maritima*-typ', 15.33 - '422 Övre landstrandensvegetation'.

1.2.2 National definition (BfN)

Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*; Natura 2000-Code 1330):

Atlantic, Baltic Sea and North Sea salt marshes in their complete typical zonation from common salt marsh grass (natural, grazed or semi-natural), to creeping red fescue, mud rush swards and sea wormword scrub in higher locations, and high tide drift lines with *Agropyron pycnanthum*. This habitat type also includes sites that feature the sedges *Carex distans* and *Carex extensa* or *Eleocharis uniglumis* and *Eleocharis palustris*. The natural dynamics of inundation by sea water (North Sea) are important indicators of salt marshes. On the Baltic Sea, salt marshes may also occur on peat substrates ('inundated coastal bogs'), where they are the secondary outcome of the grazing of brackish reedbeds, etc.

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; Ad Hoc Working Group on Benthos and Benthic Habitats

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.

TMAP [6]

Wadden Sea Plan (Stade Declaration, 1997)

Comments

The Trilateral Wadden Sea Plan was adopted at the eighth Trilateral Government Conference between the three countries with coastlines along the Wadden Sea, Denmark, Germany and the Netherlands. It is inspired by the guiding principle of achieving, as far as possible, a natural, self-sustaining ecosystem in which natural processes can proceed in an undisturbed way. The Plan formulates joint conservation targets, including targets for water and sediments, beaches, dunes, salt marshes and marine mammals. Projects and measures are developed to promote the achievement of these targets. Since 1994, the Trilateral Monitoring and Assessment Programme (TMAP) has been the instrument that has enabled the parties to track the progress made towards the achievement of the targets throughout the Wadden Sea. Measurable physical, chemical, biological and socioeconomic variables are examined.

The TMAP results may be used in the context of HD monitoring as a data source for a number of habitat types and species of the Atlantic region (CWSS and TMAG, 2004). In future, data from this programme should be incorporated into the surveying of the following conservation resources: common seal, grey seal, harbour porpoise, and Habitat Types 1110 - 1330 and 2110 - 2190.

Technical necessity

Overview of monitoring frequencies and cycles:

	WFD	HD	BD	OSPAR	HELCOM	TMAP	MSFD
Frequency	Annual, or every three years	Every six years	N.a.	N.a.	N.a.	Number: not stated; wide area: every six years; sample areas: annual	Annual

2.2 Environmental targets

MSFD

MSRL targets

Birds Directive

BD conservation targets for Schleswig-Holsteins

BD conservation targets forHamburg 1
BD conservation targets for Hamburg 2

BD conservation targets for Niedersachsen

BD conservation targets for Mecklenburg-Vorpommern

HD

HD conservation targets for Schleswig-Holsteins

HD conservation targets for Hamburg 1
HD conservation targets for Hamburg 2]

HD conservation targets for Niedersachsen

HD conservation targets for Mecklenburg-Vorpommern

WFD

WFD-targets

TMAP

TMAP Wadden Sea Plan

2.3 Threats

The following anthropogenic influences are potential threats:

- Input of nutrients
- Input of hazardous substances
- Exploration and extraction of raw materials (e.g. gas, oil, sediment, brine)
- Construction measures/installations, including energy pipelines (e.g. construction of port and industrial installations)
- Water engineering measures and installations (e.g. coastal defences)
- Dyke building projects, hard structures along the coast
- Grazing, turf extraction
- Shipping traffic and water engineering measures (e.g. navigation channels, training dykes)
- Recreational use/tourism
- Disposal sites for sediment and dredgings/dumping activities

2.4 Spatial allocation

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

1) Under the WFD: baseline plus one nautical mile

3 Monitoring concept

3.1 Description of monitoring network

The foundation for the network is provided by the Concept for the Monitoring of the Conservation Status of Habitat Types and Species under the Habitats Directive in Germany (*Konzept zum Monitoring des Erhaltungszustandes von Lebensraumtypen und Arten der FFH-Richtlinie in Deutschland*), which was drawn up at the federal level for terrestrial habitat types on the basis of the results of an R+D project (Sachteleben et al., 2009). Under the concept, a total census is to be carried out for this habitat type.

The sites that have been delimited are based on physical regional/geographical and geomorphological units (islands, sections of foreshore). This means every island, Hallig or section of foreshore on which the habitat type actually occurs is regarded as a site.

North Sea:

On the North Sea coast, there are 19 sites in Schleswig-Holstein, 26 sites in Lower Saxony and three sites in the Hamburg Wadden Sea.

Baltic Sea:

On the Baltic Sea, 21 sites are located on the Schleswig-Holstein coast and 13 sites in Mecklenburg-Vorpommern.

3.2 Monitoring activities

North Sea and Baltic Sea

Surveying and Evaluation of Atlantic Salt Meadows (1330)

Methods:

The target variables are the status quo and trends in:

- Occurrence, range and area
- Typical species spectrum and ecological structural diversity

Monitoring concept:

Area-wide surveying of position, size, and vegetation zoning and typification derived from digital infrared aerial images by means of classification and field mapping.

Plus qualitative surveying of selected permanent plots/transects.

Basic monitoring and specification of the monitoring network:

An area-wide survey of habitat types is carried out in the course of the six-year reporting cycle in order to assess their range and area as characteristic variables. Both on the North Sea and on the Baltic Sea, this survey is carried out using aerial images and the biotope mapping keys issued by the Länder and/or the TMAP typology and the associated mapping key. The primary goal is the uniform identification and assessment of HD habitat types across the different Länder.

Depending on what is known about the changes in certain areas, it may be sufficient to carry out reviews of known sites based on aerial images in alternation with area-wide terrestrial surveys. This is a matter to be decided by the relevant specialist authorities at Land level. In the case of marine habitat types and estuaries, substantive, structural synergy effects between the surveying of habitat types and the monitoring required by the WFD are to be secured.

Representative survey areas along the transects are established and surveyed or the transects surveyed in their entirety in order to record characteristic qualitative variables (characteristic structures, functions and species, impairments) (for general comments on the specification of survey areas, see Sachteleben, Behrens et al., 2009). Where a total census is to be carried out, each site must be covered by at least one transect. The transects or the survey areas within the transects represent the various sites in terms of their manifestation, variability and conservation status (selection criteria: topographical, geomorphological and habitat situation, structure and size). The data that are required for the assessment of the criteria mentioned in the assessment matrix (see below) are gathered in these areas. The number of transects and the survey areas specified within the transects must be sufficient to adequately depict the variance of the manifestations and conservation statuses at the qualitative and quantitative levels.

As a rule, the transects run at right angles to the coastline in order to optimise the representation of the sequence of habitats. Depending on the size of the site or the complexes of sites, the survey areas may range in size from single, permanent plots to several large, spatially specified survey areas along transects and transects in their entirety. In the case of small mainland coastal sites along the North Sea and Baltic Sea, it is also possible for full-coverage site surveying to be implemented. The "structured

walks" procedure may be deployed in this context. Where appropriate, the transects encompass all the habitat types found on the relevant section of coast or island. This is the best way of incorporating natural transitions and dynamic changes into the assessment.

The survey areas along the transects or the transects themselves are to be plotted using GPS with the highest possible positional accuracy (approx. 1 - 5 m), so that they can be surveyed again when the mapping procedure is repeated. Where the sites change to a considerable extent, the boundaries of the transects or survey areas must be adjusted as necessary. The length of the transects may be increased in areas where a habitat type is expanding or decreased where a habitat type is shrinking.

The frequency for the surveys of the transects or survey areas ranges from once a year to once per reporting period. In the latter case, the survey cycle is to be intensified as necessary, depending on the actual dynamics of change at the specific location. The concrete specification of the transects and survey areas and, where appropriate, the specification of a different survey cycle are matters to be decided by the relevant specialist authorities at Land level.

The results from the individual survey areas are compiled and the conservation status of the habitat type assessed for the relevant biogeographical region, incorporating the results of the area-wide mapping, in order to carry out an overall assessment of the habitat type site in question (see Sachteleben, Behrens et al., 2009).

The positioning of the survey areas may be modified in exceptional cases in order to guarantee their representativeness where land is lost, other major changes occur in the relevant site or complex of sites, or on account of other findings.

Mapping instructions for Schleswig-Holstein

The typical structures include beach ridges and dunes, the diversity of the near-natural tidal channel system with, e.g. scour holes, flood pools and salt pans, vegetation-free patches, erosive edges, other structures generated as a result of the dynamics and development of salt meadows, anthills and other zoogenic or use-related formations, small patches of brackish reedbeds and other vegetation types, small-scale sweet-water intrusions, small-scale salt marsh pioneer stages (e.g. *Salicornion*, *Saginion*) and drift line material that has been washed ashore, e.g. accumulations of shells and flotsam.

The structures mentioned are not included if they are allocated to other habitat types listed in Annex I and can be mapped as such. Above all, coastal lagoons (1150), perennial vegetation of stony banks (1220), embryonic shifting dunes (2110), and *Salicornia* and other annuals colonising mud and sand (1310) may be identified.

Delimitation from other habitat types

1130: Estuaries may include salt meadows, which are usually incorporated completely into the estuary site, but surveyed separately. Transitions to alluvial grassland and perennial grass meadows are included, providing species typical of saline habitats still occur. Small-scale sites reached by marine and river-influenced high waters without any identifiable influence from brackish water may be incorporated into Habitat Types 1330/1130 as part of mosaic formations. Larger areas clearly separated from the sea by estuarine salt meadows without any identifiable influence from brackish water belong to Habitat Type 1130.

1310: Position clearly below MHT, vegetation light to open, with or without very scattered salt meadow species (often common salt marsh grass).

2110/2130: Gappy salt meadow pioneer stages (e.g. Amrum/Kniepsand, sandflats) are to be distinguished from embryonic shifting/grey dunes by the fact that they only exhibit unclear dune formation and host a significant proportion of salt meadow species. They are to be mapped as Habitat Type 1330.

6430: Fresh water and brackish reedbeds rich in tall herbaceous plants where salt meadow species occur (see above). Only relevant within estuaries, in other river mouth areas, on small feeder streams and springs flowing into the sea, as well as in similar situations where, by definition, 6430 may occur adjacent to 1330.

3.3 Additional parameters

The following parameters are required additionally for the assessments::

- Impairment and threat factors
- Impairments (according to standardised list)
- Plant species or plant communities
- Range and area
- Relief and tidal channel structure
- TMAP units and biotope types according to the mapping keys issued by the Länder
- Typical species spectrum and structural diversity
- Vegetation zoning and structure

4 Assessment

4.1 Assessment procedures

North Sea and Baltic Sea

Title

HD Habitat Types - 13 Habitat Types

Authors

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Guideline:

HD

Comments:

The assessment matrix for Habitat Types 1310, 1320 and 1330 can be downloaded by clicking on the following link: http://www.bfn.de/0316_ak_marin.html

The habitat type profiles and assessment matrices drawn up by the specialist authorities at Land level are used to supplement the assessment of the manifestations of this habitat type that are specific to the physical region/Land in question.

5 Quality assurance

Comments

The participating institutions are striving to build up uniform QA standards using a quality management system.

5.1 Monitoring institutions

- LLUR
- NLPV HH
- LUNG
- NLWKN
- NLPV NI
- LKN-SH
- NPA-MV

5.2 Guidance documents

- Mapping keys for biotope types issued by the Länder
- TMAP Manual

5.3 Standards

- To be specified by the Quality Assurance Panel at the UBA as necessary.

5.4 Current status

6 Literature

7 Activities required to implement the concept

7.1 Changes to the current monitoring programme

Not required.

7.2 Working steps required

Priorities

- The digital aerial surveying method should be implemented uniformly throughout Germany. Information is required concerning the flying conditions (time, solar elevation and water level), the camera technology used, the visual data requirements (scale, coverage, resolution, positional accuracy, channels, etc.) and the visual data to be supplied (mosaics, surface model, projection, etc.).
- Standardisation of mapping in terms of effort and mapping keys is desirable.
- Complete depiction of the TMAP vegetation typology in the Lower Saxon National Park.
- The Ad Hoc Working Group on Habitat Types is working to draw up a joint methodological manual for salt meadows. All methodological details should be specified and described in the TMAP Manual.

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).