

# Monitoring Specifications

Date: 2010-05-04

## HD Habitat Type 2140 Decalcified Fixed Dunes with *Empetrum nigrum*





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

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

Members of ARGE BLMP are:

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

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

### Editorial information

Issued by  
Bundesamt für Seeschifffahrt und Hydrographie (BSH)  
Sekretariat Bund/Länder-Messprogramm für die Meeresumwelt von Nord- und Ostsee (BLMP)  
Bernhard-Nocht-Straße 78  
20359 Hamburg

[www.blmp-online.de](http://www.blmp-online.de)

# 1 General

## 1.1 Subject area

Biological Monitoring - Habitats - HD Habitat Type 2140 - Decalcified Fixed Dunes with *Empetrum nigrum*

## 1.2 Definition

### 1.2.1 EU definition

\* Decalcified fixed dunes with *Empetrum nigrum*:

Decalcified dunes colonised by *Empetrum nigrum* heaths of the coasts. Syntaxa associated to this habitat type: *Empetrium nigri*, *Calluno Genistion pilosae p.*, *Ericion tetralicis p.*

- The term "fixed" should be taken to mean the opposite of "shifting". The psychrophilic coastal association *Carici trinervis-Callunetum vulgaris* de Foucault & Géhu 78 may be included here.

### 1.2.2 National definition

Largely fixed, decalcified coastal dunes with dwarf scrub heaths that exhibit a high proportion of crowberry (*Empetrum nigrum*). Crowberry mostly colonises the wind-exposed sides of the dunes. The northern sides of the dunes, in particular, exhibit a several-centimetre-thick, intensively brown-coloured raw humus level on podzol-regosol soil.

This habitat type includes sites at Geest locations in contact with the coast.

### 1.2.3 Mapping procedure

The areas that have been delimited encompass coastal dunes and near-coastal Geest heaths on islands and the mainland with proportions of *Empetrum nigrum* or typical *Empetrum* heath (e.g. *Hieracio-Empetretum*). *Empetrum* sites in mosaic formations with *Calluna* heaths, coherent populations of common heather with notable proportions of crowberry and other small-scale mixed, transitional and mosaic formations are to be allocated to this habitat type or incorporated into the areas delimited.

The areas not surveyed include sites where *Empetrum nigrum* only occurs as individual specimens, in individual scattered cushions or in some other form that is evidently more or less random, and sites where overwhelmingly *Empetrum*-free *Calluna* heaths or *Calluna* populations cover wider areas and/or occur in defined locations, for example on exposed south-facing slopes (cf. 2150).

Scattered, small-scale fragments of dune grassland (e.g. grey hair-grass communities, ephemeral-rich Aira swards, crested hair-grass communities) in the m<sup>2</sup> range as gap and pioneer phases of crowberry heath and the sometimes strongly divergent vegetation of near-natural special structures in the dune complex, such as disturbed patches around bird colonies or rabbit burrows, are among the structures that are to be regarded as typical.

Delimitation from other habitat types:

2150: Significant, more than random occurrence of *Empetrum nigrum* (crowberry).

2190: Crowberry-rich heaths in humid dune slacks with considerable proportions of species indicative of humidity (e.g. *Erica tetralix*) should be allocated to Habitat Type 2190.

## 1.3 Competent authority/ies

Mecklenburg-Vorpommern:	<a href="#">LUNG</a>
Lower Saxony:	<a href="#">NLWKN</a> , <a href="#">NLPV NI</a>
Schleswig-Holstein:	<a href="#">LKN-SH</a> , <a href="#">LLUR</a>

## 1.4 Working group

Ad Hoc Working Group on Habitat Types

## 2 Monitoring requirements

### 2.1 Necessity

#### [HD \[1\]](#)

##### Article 11 [\[2\]](#)

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."

This provision is not limited to NATURA 2000 areas, while habitat types outside Habitats Directive areas are also to be included in the monitoring as appropriate.

##### Article 17 [\[3\]](#)

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 [...] the main results of the surveillance referred to in Article 11."

Article 17 governs the performance of the reporting obligations in general terms. DocHab 04-03/03 (European Commission, 2006) sets out further substantive standards and guidelines.

#### [TMAP \[4\]](#)

##### 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 most important instrument enabling 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 (cf. CWSS and TMAG, 2004).

The monitoring requirements under TMAP were specified in the Wadden Sea Plan (Stade Declaration, 1997) as the Common Package in Annex 2 (see also TMAP Manual, Chapter 2).

## 2.2 Environmental targets

#### HD

Maintenance of Habitat Type 2140 with a favourable conservation status or, where applicable, its restoration to such a status by means of the conservation, restoration and, where applicable, development of:

- Dune complexes and structures with crowberry
- Mosaic complexes with other characteristic habitats or scattered special locations such as cliff edges, damp patches, oligotrophic sandy grasslands, heathland areas
- Natural soil development and largely undisturbed hydrological conditions
- Natural dune formation processes
- Typical structures and functions (see assessment matrix)

#### TMAP

The following targets have been defined for grey dunes (Wadden Sea Quality Status Report 2004):

- Increased presence of a complete natural vegetation succession
- Favourable conditions for migrating and breeding birds

## 2.3 Threats

Current impairments according to the information given in the national report submitted under Article 17 of the Habitats Directive for the reporting period 2001 - 2006 (BMU, 2008):

- New afforestation, forest regrowth, in particular planting of non-autochthonous species
- Increasing proliferation of woody plants as a consequence of the restriction of natural dynamics by coastal protection measures
- Urban sprawl (dispersed settlement)
- Transport routes and installations
- Footpaths and cycle paths
- Sport and leisure facilities
- Golf courses
- Camping and caravan sites
- Sport and recreation (outdoor activities)
- Other recreational and tourism activities
- Trampling (visitor overload)
- Other forms of environmental pollution, human interventions and uses
- Changes in sea currents
- Dykes, embankments, artificial beaches
- Coastal protection measures (tetrapods, hard structures)
- Eutrophication (natural)
- Immigration of new species (invasive neophytes)

## 2.4 Spatial allocation

As the definition indicates, decalcified dunes with *Empetrum* are found, if at all, in particular habitat situations on the margins of coastal waters. The conservation status of decalcified dunes with *Empetrum* as part of a dune complex (see comments in section 4.1) is only indirectly dependent on their spatial allocation.

	EEZ	12- nm zone	Coastal waters 1)	Transitional waters
MSFD	-	-	-	-
Birds Directive	-	-	-	-
HD	-	-	x	-
WFD	-	-	-	-
HELCOM	-	-	-	-
OSPAR	-	-	-	-
TMAP	-	-	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 and BEHRENS, 2009).

Under the concept, a total census is to be carried out for this habitat type.

#### North Sea

On the North Sea coast, the sites are several times larger and are more widely spread (seven sites in Lower Saxony, six sites in Schleswig-Holstein). This habitat type is not found in the Hamburg area.

#### Baltic Sea

On the Baltic Sea, the sites are limited to Mecklenburg-Vorpommern (three sites).

The sites that have been delimited are geographically/topographically discrete areas, as a rule islands or parts of islands and/or sections of coast oriented towards adjacent seaward water bodies (subject to the WFD).

On the specification of the monitoring network, see section 3.2.

### 3.2 Monitoring activities

#### North Sea and Baltic Sea

##### Surveying and Evaluation of Decalcified Dunes (2140)

###### Methods:

The target variables are the status quo and trends in:

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

Representative sites may be selected from among decalcified dunes with *Empetrum* that display similar biotic and abiotic conditions. The sampling strategy must make it possible to obtain evidence about the ecological status of the habitat type, which is usually composed of various biotopes.

Use should be made of basic monitoring with loose grids, provided the species and habitats are in a good, stable situation, but selective monitoring (more intensive sampling) should be undertaken as soon as problems come to light in order to survey the scale of the problems and facilitate an adequate response.

###### Monitoring concept:

Area-wide surveying of the overall extent of the habitat type to ascertain its range and area. Selection and permanent specification of representative sample plots or transects for the detailed surveying of qualitative parameters (see below).

###### Basic monitoring and specification of the monitoring network

An area-wide survey of the habitat type is carried out in the course of the six-year reporting cycle in order to assess its 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.

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 and BEHRENS, 2009). Where a total census is to be carried out, each dune heath 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 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 individual sites should not be less than approx. 1,000 m<sup>2</sup> in area; the survey areas specified reflect the form and size of the sites delimited in the course of the area-wide mapping. Exception: smaller sites of particular significance and representativity (see selection criteria).

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. Where appropriate, it is also possible for full-coverage site surveying to be implemented at small sites along the mainland coasts on the North Sea and Baltic Sea. 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.

#### **Frequency:**

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 for the relevant biogeographical region assessed, 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 and BEHRENS, 2009).

#### **Parameter:**

- Area of the habitat type
- Dune and vegetation structure
- Impairments (according to standardised list)
- Manifestation of the biotope complex (representation of all characteristic successional stages from embryonic shifting dunes to wooded dunes)
- Plant species (including lichens and mosses in permanent plots)
- Range and area
- Typical species spectrum and structural diversity

### **3.3 Additional parameters**

Selected animal groups (birds, wild bees/digger wasps, grasshoppers) may also be considered at permanent plots where this is possible (presence/absence of characteristic species).

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## 4 Assessment

### 4.1 Assessment procedures

#### North Sea and Baltic Sea

**Title**

HD Habitat Type - Decalcified Fixed Dunes with *Empetrum nigrum* (2140)

**Authors**

(KRAUSE et al., 2008)

**Guideline:**

HD

**Comments:**

Assessment Matrix Drawn up by the Federation-Länder Working Group on Habitats Directive Reporting Obligations for Marine and Coastal Sites within the Framework Laid Down in the 'Pinneberg Schema' (Updated: 27 May 2008)

The assessment matrices for the marine and coastal habitat types listed in Annex I of the Habitats Directive form the basis for the performance of the monitoring and reporting obligations established in Articles 11 and 17.

The typical species listed in the matrices under the assessment criterion 'Completeness of the typical species inventory' are intended to reflect the functional structure of a habitat type, since this is not evaluated in any other way. Given that 'typical species' may occur in various habitat types, they are not to be equated with 'characteristic species'.

The species lists set out here are not exhaustive. It remains possible for items to be added and deleted in order to take account of more recent findings. The species lists must be adjusted to specific regional circumstances for the mapping of the sites in question. The threshold values cited for some habitat and impairment parameters also have to be specified particularly for individual regions as appropriate.

The inventories of typical species for the habitat types represent one of the main ecological assets that have to be assessed in order to comply with the obligations placed on Member States with regard to reporting to the EU. Nevertheless, although they are to be assessed as indicators of the conservation status of the habitat type in question, no separate species monitoring needs to be carried out on individual typical species. Information on the presence of the species is sufficient for this purpose. Optionally, abundances, trends, etc. may be obtained to support the assessment.

On the assessment of coastal dunes (Habitat Types 2110-2190):

Coastal dunes are divided into nine different habitat types that correspond to particular successional stages and frequently form biotope complexes made up of intimate mosaics, which are (ideally) characterised by highly dynamic habitat and vegetation development.

In dune areas where there is nothing to restrict the natural processes of accumulation and erosion, it is therefore neither expedient nor actually possible to conserve a particular dune habitat type at a particular place in a particular condition. Rather, favourable conservation status is dependent on the dynamic processes that constantly create new pioneer stages (embryonic shifting dunes or young, still salt-influenced dune slacks) within a larger area, while in other parts of the area the successional process moves on to more mature stages, which may culminate in woodlands (Habitat Type 2180), provided the process is not set in train once again by extreme events. If the different manifestations of all habitat types relevant in a particular case constantly occur to a sufficient degree in a natural dune area of this kind (making up more or less varying proportions of the total area), the habitat type of this complex is to be assigned the conservation status A. In view of this, it would not be expedient to assess individual dunes on their own. Rather, coherent dune areas with uniform general conditions should be delimited in the course of the initial surveys. These delimited areas then form the assessment units. Such assessment areas should encompass a maximum of one island or the dune area of a particular section of coast. In the course of the monitoring, the proportions and manifestations of the habitat types within these assessment areas can then be determined and summarily assessed using suitable procedures (e.g. evaluation of aerial images in combination with the terrestrial surveying of transects).

Dune areas where natural dynamics are severely restricted - mostly due to coastal protection measures - should be examined separately. As a matter of principle, progressive ageing of dunes is to be found in these places. Even where an individual dune or dune slack still exhibits typical, well developed vegetation (e.g. a lichen-rich grey hair-grass grey dune sward or a reedbed), downgrading is necessary if more immature stages in the relevant area are receding or have now disappeared on account of the general anthropogenic conditions. If only more mature developmental stages were still to occur, the consequence would be the loss of particular habitat types (e.g. 2110, embryonic shifting dunes) or a

considerable proportion of a habitat type's typical species, unless this were countered by means of management measures intended to restore pioneer stages or development measures intended to restore natural dynamics. The less mature stages are accorded particular significance because they provide habitats for most of the species that occur only or predominately on coastal dunes. By contrast, the most mature stages of coastal dunes and dune slacks (including *Calluna* heath, forests, grey willow scrub), at least those in which well investigated species groups are found, host only a few coastal specialists, if any.

Accordingly, closer examination of the individual habitat types is required in heavily anthropogenically influenced dune areas, in which respect it is not the individual dune, but the coherent overall complex of the habitat type in question that should be assessed here as well. Only in this way can the representation of all developmental stages be taken appropriately into consideration.

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.

Reference areas: biogeographical regions

[Assessment matrix](#)

## 5 Quality assurance

### 5.1 Monitoring institutions

- [LUNG](#)
- [NLWKN](#)
- [NPV SH](#)
- [NLPV NI](#)

### 5.2 Guidance documents

- Council of the European Communities, 1992: Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora; *Official Journal*; L 206: pp. 7-50.
- Drachenfels, O.v.; 2004: *Kartierschlüssel für Biotoptypen in Niedersachsen unter besonderer Berücksichtigung der nach § 28a und § 28b NNatG geschützten Biotope sowie der Lebensraumtypen von Anhang I der FFH-Richtlinie: Stand März 2004: 6., völlig überarb. Aufl.*; Naturschutz Landschaftspfl. Niedersachs.; A/4; 240 pp.
- European Commission, DG Environment, 2006: *Assessment, monitoring and reporting under Article 17 of the Habitats Directive: Explanatory Notes & Guidelines: Final Draft*.
- European Commission, DG Environment, 2007: *Interpretation Manual of European Union Habitats*.
- Krause, J., Drachenfels, O.v., Ellwanger, G., Farke, H., Fleet, D.M., Gemperlein, J., Heinicke, K., Herrmann, C., Klugkist, H., Lenschow, U., Michalczyk, C., Narberhaus, I., Schröder, E., Stock, M. and K. Zscheile (2008): *Bewertungsschemata für die Küsten- und Meereslebensraumtypen der FFH-Richtlinie: Ergebnis Bund-Länder-Arbeitskreis "FFH-Berichtspflichten Meere und Küsten": Stand: 27.05.2008*.
- Sachteleben, J., Behrens, M. et al., 2009: *Konzept zum Monitoring des Erhaltungszustandes von Lebensraumtypen und Arten der FFH-Richtlinie in Deutschland: Ergebnisse des F+E-Vorhabens "Konzeptionelle Umsetzung der EU-Vorgaben zum FFH-Monitoring und Berichtspflichten in Deutschland" (Stand: November 2008)*; commissioned by the Federal Agency for Nature Conservation.
- State Agency for Nature and Environment of the Land Schleswig-Holstein, 2007: *Hinweise zur Bewertung des Erhaltungszustandes von FFH-Lebensraumtypen in Schleswig-Holstein: 1. Fassung, Juli 2007*.
- State Agency for Nature and Environment of the Land Schleswig-Holstein, 2007: *Steckbriefe und Kartierhinweise für FFH-Lebensraumtypen in Schleswig-Holstein: 1. Fassung, Mai 2007*.
- 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**

HD Habitat Type 2140 must be monitored in accordance with the methodology described in sections 3 and 4.

### **7.2 Working steps required**

#### **Priorities**

- Data management: GIS and Land databases, future BfN data sheet, updating of Standard Data Forms
- Conclusive compilation of current habitat type site shapes (at present, still not available for Mecklenburg-Vorpommern)
- Conclusive specification of transects/survey areas in Schleswig-Holstein (carried out as part of or directly following the current, ongoing HD habitat type monitoring or the extended Schleswig-Holstein TMAP procedure; due to be concluded in 2012)
- Evaluation with a view to management plans and/or necessary measures

## Footnotes

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

**(2)** 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.

**(3)** 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).

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