

Spatial modelling of coastal habitats



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Many beaches and dunes along the Dutch North Sea shore are defined as Natura 2000-areas. The spatial distribution of important pioneer habitat types of beaches and white dunes is only partly mapped. Here we propose a method for mapping beach and white dune habitats of the sandy coast of the West Frisian islands.

Objectives:

- Mapping habitat types, their area and spatial distribution along the sandy coast.
- Mapping succession of the habitat types.

The main habitat types of importance are:

- Open sea and tidal areas:**
1140 Mudflats and sand flats not covered by seawater at low tide
- Atlantic and continental salt marshes and salt meadows:**
1310 *Salicornia* and other annuals colonizing mud and sand
1320 *Spartina* swards (*Spartina maritima*)
1330 Atlantic salt meadows (*Glaucopuccinellietalia maritima*)
- Sea cliffs and shingle or stony beaches**
1210 Annual vegetation of drift lines
- Coastal and in land dunes:**
2110 Embryonic shifting dunes
2120 Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)
2130 Fixed coastal dunes with herbaceous vegetation (grey dunes)
2170 Dunes with *Salix repens* ssp. *argentea* (*Salix arenaria*)

Methods and materials:

- Process:**
 Analysis of:
 - DEM (Digital Elevation Model)
 - Digital aerial photographs
 With:
 - image interpretation/ classification
 - spatial analysis tools
- Fieldwork for calibration, by systematical field visits:**
 - Localization of habitat types
 - Field check
 - Species composition of the habitats
 - Gain knowledge about how to digitalize the habitats

Aerial photographs

Year: 2006 & 2008

Type: False color

Resolution: 50x50 cm & 25x25 cm

Source: Rijkswaterstaat

DEM

Year: 2006

Spatial resolution: 50 x 50 cm

Source: Rijkswaterstaat

Results:

Digital map of the West Frisian island shore habitat types from the mean low tide level to the white dunes



Linking science to policy

- Insight in enhancing Soft Coastal Defence
- Mapping underexposed habitat types
- A first step to beach reserves
- Disseminating and popularizing project output
- TMAP, QSR, natural succession in habitat areas
- Monitoring, assessment and reporting for Natura2000

