TMAP Typology of Coastal Vegetation in the Wadden Sea Area

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TMAP-Typology of Coastal Vegetation in the Wadden Sea Area

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TMAP-Typology of Coastal Vegetation in the Wadden Sea Area

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Common Wadden Sea Secretariat
Trilateral Salt Marsh and Dunes Expert Group

Contents

1 Introduction

Coastal landscapes and their typical ecosystems like salt marshes and sand dunes are highly dynamic, characterized by steep environmental gradients and controlled by geomorphological, physical and biological processes. In addition, both direct and indirect human impacts are important factors that give shape to the spatial and temporal variation of coastal ecosystems. The conservation of these coastal ecosystems is a major aim of the Wadden Sea Plan (management plan of the Trilateral Cooperation). As a basis for conservation management, sound knowledge about the spatial distribution of coastal ecosystems and their temporal change is required. In the past, multiple regional vegetation or biotope typologies have been used to describe and map plant communities of coastal ecosystems in the Wadden Sea region (e.g. Westhoff & den Held 1969; Dijkema & Wolff 1983; Dierssen 1988; Preising et al. 1990; Schaminée et al. 1995, 1996, 1998; Petersen 2000, 2011; Petersen & Pott 2005; Drachenfels v. 2011). In addition, several regional or national classifications for mapping purposes have been developed (SALT-Code, Rijkswaterstaat, s. Jong de et al. 1998; Staatsbosbeheer-Code, s. Schipper 2002; Ringot-Code, s. Ringot 1992; SH-Code, LKN, s. Stock et al. 2005). For a trilateral assessment, however, these different regional approaches have been shown to be difficult to compare at first sight.

The Trilateral Monitoring and Assessment Programme (TMAP; 1997) aimed to harmonize these different approaches for the Wadden Sea region as a basis for improving conservation management and to reach the conservation targets listed in the Wadden Sea Plan (see CWSS 2010). Since 2000, the TMAP salt marsh expert group developed and discussed a common community typology for the Wadden Sea saltmarshes. This TMAP salt marsh typology, which the expert group endorsed in 2003, encompassed 29 different types or plant communities from the pioneer, low and high salt marshes and from brackish marshes, including reed beds (Bakker et al. 2005, Esselink et al. 2009). It is a simplified aggregation of vegetation types which is based on the presence of characteristic or dominant plant species. The TMAP salt-marsh typology has been widely used for monitoring the extent and composition of this ecosystem in both the Netherlands and in Germany for more than 10 years. In addition, a complementary TMAP dune typology was developed, in which 68 types of dunes and dune slacks are differentiated (Petersen & Lammerts 2005, Lammerts et al. 2009). However, a common TMAP synopsis of coastal ecosystems that covers both salt marshes and dunes of the Wadden Sea region was lacking so far.

The synopsis presented here aims to give a comprehensive overview about the existing salt marsh and dune vegetation types in the Wadden Sea region. Further, a 'translation' of these TMAP types to the typologies used in the different regions of the Wadden Sea is given. Last but not least, an assignment of the presented TMAP types to the habitat types protected by the European Fauna-Flora-Habitat directive (European Commission 2007, Drachenfels v. 2012) is also included in the synopsis.

The synopsis consists of two parts: In the first part, the most important TMAP types are presented on separate and similarly arranged pages. Here, information on typical plant species and on plant communities, which belong to this type, is included. Further, the use of the type in mapping programs in the Wadden Sea regions and the assignment to regional typologies are listed. Finally, a picture gives a visual impression of the described TMAP type. In the second part of the synopsis, a complete overview about all TMAP salt marsh and dune types of the Wadden Sea region is presented in a table. We, nevertheless, would like to emphasize that this synopsis is not thought to be used as a field key, allthough it has been successfully practised. Regionally field keys are available for this purpose.

We hope that the synopsis will be widely distributed and repeatedly used by nature conservation in all countries and regions of the Wadden Sea. We are sure that this synopsis will contribute to the harmonization of different typologies of coastal habitats, and that it assists us in the process towards a better understanding of the spatial and temporal variation of coastal habitats in the Wadden Sea region.

Finally, the synopsis has been developed to improve conservation management of coastal habitats in the Wadden Sea region and thus to contribute to the long-term preservation of the Wadden Sea Natural Heritage.

Kai Jensen, Hamburg University, chair of the TMAP expert group

2 Basic Information

Column header in table

TMAP Code and Type
Code and description of the TMAP types for dunes, dune slacks and salt marshes.
(Bakker *et al.* 2005 and Petersen & Lammerts 2005).

Standard TMAP Type
Description of the minimum standard/level of TMAP typology applied in each region. Since Denmark only maps habitat types the assignment to the standard TMAP typology constitutes an exception to the rule.

Typical / characteristic species
Descriptiom of the TMAP type; species written in bold are the important representative taxa; **+/-** means: not always all, but some of the following species indicate the TMAP type (Garve 2004, Hauck & de Bruyn 2010, Koperski 2011).

Typical / characteristic vegetation
Representative plant communities of the TMAP types (Westhoff & Held den 1969, Dierssen 1988, Preising et al. 1990, Pott 1995, Schaminée et al. 1995, 1996, 1998, BFN 2000, Petersen 2000, Petersen & Pott 2005).

Applied in country / federal state
Standard TMAP (in chapter 4-6 only Standard TMAP types are displayed)
Netherlands (**NL**),
Lower Saxony (**LS**),
Hamburg (**HH**),
Schleswig-Holstein (**SH**),
Denmark (**DK**).

Values in the columns
"**X**" = mapped/applied in this Wadden Sea region,
"**–**" = not mapped in this Wadden Sea region,
"**N**" = no occurrence in this Wadden Sea region.

Reference to other typologies
Natura 2000 Code: European Commission (2007).
Types of Annex 1 of Habitat Directive; in addition to the following tables the TMAP-types of salt marshes may also be part of 1130 (in estuaries).

Mapping Code, NL: Bas Kers (Rijkswaterstaat, NL),

RWS SALT 2008 Code, NL: Bas Kers (Rijkswaterstaat, NL),

Staatsbosbeheer Code, NL: Piet Schipper, Evert Jan Lammerts (Staatsbosbeheer, NL),

Biotope Code, LS: Olaf von Drachenfels (Nds. Landesbetrieb für Wasserwirtschaft, Küsten- und Naturschutz, GER),

Biotope Code, HH: Peter Körber (Nationalpark Hamburgisches Wattenmeer, GER),

Mapping Code SH: Martin Stock (Landesbetrieb für Küstenschutz, Nationalpark und Meeresschutz Schleswig-Holstein, GER),

Biotope Code, SH: Martin Stock (Landesbetrieb für Küstenschutz; Marinus van der Ende (Landesamt für Landwirtschaft, Umwelt und ländliche Räume des Landes Schleswig-Holstein, GER),

Mapping Code, DK identical with Natura 2000 Code: John Frikke (Miljøministeriet Naturstyrelsen, DK).

Photographs

Jörg Petersen (X.2.2, X.5, X.6.2, X.7.1, X.7.2, X.7.3, X.7.4, X.8.0, X.8.1, X.8.2, X.8.3, X.10, H.0, H.1.1, H.1.2, H.1.3, H.1.4, H.2.1, H.2.2, H.3.1, H.4.1, H.5.1, H.5.2, H.6.1, H.6.2, H.8, H.9, S.1.2, S.2.1, S.2.3, S.3.2, S.3.6, S.3.8, S.3.10, S.3.12, S.3.14, S.5.1, S.5.3),

Martin Stock (X.2.1, X.3.1, X.4.1, X.5, X.6.1, X.12, S.0.0, S.0.1, S.0.2, S.0.3, S.1.1, S.2.2, S.2.4, S.3.1, S.3.7, S.3.12, S.5.1, S.5.3),

Bas Kers (S.2.3, S.3.3, S.3.4, S.3.5, S.3.9, S.3.10, S.3.11, S.3.13, S.5.2, S.6.0, S.6.1),

Uwe de Bruyn (X.8.0, X.8.3).

3 Standard TMAP Types of Dunes

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
X.2.1	***Cakile maritima* type**	***Cakile maritima* and +/-** *Salsola kali*, *Honckenya peploides*, *Atriplex* species, *Elymus farctus* ssp. *boreoatlanticus*	*Cakiletum maritimae*

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbeheer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1210 (in LS 2110)	**XEd**	**Dxc, Dxh, Deu, Dxs**	**22-a, 22B1**	**(KDV)**	**KSV**	**KSa**	**CM**	**2110**

Notes:	Annual drift lines are short-lived and thus unstable stages during dune development (xeroserie). The vegetation is often of narrow-linear shape, developing on alluvial organic matter deposited during high water levels. A characteristic species in this environment is the Sea Rocket *Cakile maritima* (see picture).

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
X.2.2	***Crambe maritima* type**	***Crambe maritima*** **and +/-** *Honckenya peploides*, *Silene vulgaris* ssp. *maritima*, *Glaucium flavum*, *Eryngium maritimum*, *Rumex crispus*, *Leymus arenarius*	*Crithmo-Crambetum*, *Honkenya peploides* and *Silene vulgaris* ssp. *maritima* veg.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**N**	**N**	**N**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1220	**-**	**-**	**-**	**-**	**KSV**	**KSv**	**CR**	**-**

Notes:	Perennial drift-line vegetation at beaches with gravel and boulders, which usually consists of perennial, salt-tolerant and nitrophilous species. Typical species are e.g. Sea Sandwort (*Honckenya peploides*), Sea-Holly (*Eryngium maritimum*; see picture) and Yellow Horned-Poppy (*Glaucium flavum*; see small picture).

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
X.3.1	***Elymus farctus* type**	***Elymus farctus* ssp. *boreoatlanticus* (dominant) and +/-** *Leymus arenarius*, *Ammophila arenaria*, *Honckenya peploides*, *Salsola kali*, *Cakila maritima*	*Elymo-Agropyretum*, *Honkenyo-Agropyretum juncei*

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**X**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbeheer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2110	**Xef**	**Def, Deg, Dd**	**22A1, 22B1, 22B-a, 22-a, 23A1, 23B-a**	**KDV**	**KDV**	**KDv**	**EG**	**2110**

Notes:	Embryonic dunes are usually only a few decimetres high and their vegetation is often formed solely by Sand Coach (*Elymus farctus* ssp. *boreoatlanticus*; see picture). Embryonic dunes represent the earliest stage of dune development (xeroserie).

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
X.4.1	***Ammophila arenaria* type**	***Ammophila arenaria*, *x Calammophila baltica*, *Leymus arenarius*** **(at least one species dominant)** **and +/-** *Sonchus arvense*, *Oenothera parviflora var. ammophila*, *Hieracium umbellatum*, *Calystegia soldanella* (rare), *Eryngium maritimum* (rare), *Lathyrus maritimus* (rare), F*estuca rubra* ssp. *arenaria*, *Carex arenaria*, *Honckenya peploides*, *Elymus farctus* ssp. *boreoatlanticus*, *Cakile maritima*	*Elymo-Ammophiletum*, *x Calammophila baltica*-veg., *Potentillo-Leymetum arenariae* (*Potentillo-Elymetum*)

Applied in the country/federal state:					
Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**X**

Reference to other typologies:								
Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2120	**-**	**Dd**	**23B1, 23B-a, 23-a**	**KDW**	**KDW, KDl**	**KDw**	**EM, E**	**2120**

Notes:	White dunes are more stable than drift lines and embryonic dunes. They can form the highest dunes in coastal areas, for which a crucial factor is constant sand supply. If sand supply is reduced or stopped, dune vegetation will develop into later successional stages. Vegetation of white dunes is often patchy without a closed canopy. Typical species are European Marram Grass (*Ammophila arenaria*; see picture) and Lyme Grass (*Leymus arenarius*). Species richness of the vegetation is increasing in later successional stages.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
X.5	**Dune grassland**	species of X.5: ***Carex arenaria, Agrostis capillaris, Festuca rubra ssp. arenaria, Aira praecox, Anthoxanthum odoratum, Luzula campestris, Viola canina, Viola tricolor (ssp. curtisii), Jasione montana, Hieracium umbellatum, Rumex acetosella, Hypochaeris radicata, Galium mollugo, Cerastium semidecandrum, Lotus corniculatus, Hypnum cupressiforme, Dicranum scoparium, Polytrichum juniperinum, Campylopus introflexus, Ceratodon purpureus, Cetraria aculeata, Cladonia ciliata, C. portentosa, C. furcata, C. subulata, C. grayi, C. cervicornis, C. ramulosa*** and see: X.5.1 – X.5.5	*Koelerio-Corynephoretea*-veg.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**X**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staatsbosbeheer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2130	**-**	**Dd**	**14-c, 14-d, 14-g, 14-h, 14-l,m**	**KDG**	**KDG**	**KDg**	**TR**	**2130**

X.5.1

X.5.2

X.5.4

Notes:	Dune grasslands are characterized by mostly small-growing species. The canopy of the vegetation is often almost closed, organic material is slowly accumulating in the soil and sand supply occurs only occasionally. In this stage of dune development, cryptogams become established for the first time. The various sub-types clearly differ (see pictures: X.5.1, X.5.2 and X.5.4) and commonly co-occur within small areas.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
X.6.1	***Empetrum nigrum* type**	***Empetrum nigrum* (dominant) and +/-** *Polypodium vulgare*, *Calluna vulgaris*, *Hieracium umbellatum*, *Salix repens* agg., *Lonicera periclymenum*, *Carex arenaria*, *Agrostis capillaris*, *Anthoxanthum odoratum*, *Luzula campestris*, *Festuca ovina*, *Danthonia decumbens*, *Dryopteris dilatata*, *Ammophila arenaria*, *Hypnum jutlandicum* / *cupressiforme*, *Pleurozium schreberi*, *Dicranum scoparium*, *Pseudoscleropodium purum*, *Hylocomnium splendens*, *Cladonia portentosa*, *C. furcata*	*Hieracio-Empetretum*, *Polypodio-Empetretum*

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**N**	**X**	**X**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staatsbosbeheer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2140	**-**	**Dd**	**20A3, 20-a, 11A3, 11-b, 11/a**	**KDE**	**-**	**KDe**	**HE**	**2140**

Notes:	Black Crowberry (*Empetrum nigrum*, see picture) is the dominant species of this type, in which Common Polypody (*Polypodium vulgare*, see picture) does regularly occur too. Organic material is accumulating in the soil at higher rates than in dune grasslands. Low soil pH values due to decalcification are characteristic.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
X.6.2	***Calluna vulgaris* type**	***Calluna vulgaris* (dominant) and + (nearly) no *Empetrum nigrum* and +/-** *Salix repens* agg., *Carex arenaria*, *Agrostis capillaris*, *Anthoxanthum odoratum*, *Luzula campestris*, *Festuca ovina*, *Danthonia decumbens*, *Hieracium umbellatum*, *Hypnum jutlandicum* / *cupressiforme*, *Pleurozium schreberi*, *Dicranum scoparium*, *Pseudoscleropodium purum*	*Hieracio-Empetretum - dom. Calluna vulgaris*

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**N**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2150	**-**	**Dd**	**20A1**	**KDC**	**-**	**KDc**	**CV**	**-**

Notes:	This dune type is characterized by the dominantly occurring Common Heather (*Calluna vulgaris*, see picture), whereas Crowberry (*Empetrum nigrum*) is mostly lacking. Accumulation of organic material in the soil and low soil pH values are characteristic for this dune type.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
X.7.1	***Hippophaë rhamnoides* type**	***Hippophaë rhamnoides* (dominant) and +/-** *Salix repens* (ssp. *dunensis*), *Sambucus nigra*, *Carex arenaria*, *Ammophila arenaria*, *Galium mollugo*, *Festuca rubra* agg., *Poa pratensis*, *Linaria vulgaris*, *Rubus caesius*, *Senecio jacobaea*	*Hippophao-Sambucetum nigrae*, *Salici arenariae-Hippophaetum*

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**N**	**X**	**X**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbeheer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2160	**-**	**Dd**	**37B1, 37B2, 37B3, 37B-c, 37B-d, 37B-e**	**KGS**	**-**	**KHh**	**HR**	**2160**

Notes:	This shrub vegetation usually occurs on the still calcareous transition zone between white and gray dunes. A characteristic species is the Common Sea-Buckthorn (*Hippophaë rhamnoides*, see picture). Elderberry (*Sambucus nigra*) is characteristic for later stages of this type.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
X.7.2	***Salix repens* agg. type**	***Salix repens* (ssp. *dunensis*) (dominant) and +/-** *Rosa spinosissima*, *Pyrola rotundifolia* **and +/-** *Carex arenaria*, *Ammophila arenaria*, *Galium mollugo*, *Festuca rubra* agg., *Poa pratensis*	dry *Salix repens* agg.-veg., *Pyrolo-Salicetum*, *Rosa spinosissima-Salix arenaria*-veg.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**X**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2170	**-**	**Dd**	**19-f, 20-a, 36A2**	**KGK, KBK**	**-**	**KHs**	**X**	**2170**

Notes:	Creeping Willow (*Salix repens*) is the dominant species of this dune type with shrubby vegetation at rather dry sites. Burnet Rose (*Rosa spinosissima*; syn. *R. pimpinellifolia*) and Round-Leaved Wintergreen (*Pyrola rotundifolia*, see small picture) are further typical species.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
X.7.3	***Rosa canina* type**	***Rosa canina*, *Rosa rubiginosa*, *Rubus fruticosus* s.l., *Crataegus* spp., less *Betula* spp., less *Populus tremula*, *Sambucus nigra*, *Sorbus aucuparia*, etc. (at least 1 species dominant) and +/-** *Salix repens* (ssp. *dunensis*), less *Hippophaë rhamnoides*, *Lonicera periclymenum*, *Rubus caesius*, *Carex arenaria*, *Ammophila arenaria*, *Galium mollugo*, *Festuca rubra* agg., *Poa pratensis*	*Rhamno-Prunetea*-veg.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**N**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
as sur-rounding Natura 2000 type	**-**	**Dd**	**37-f, 37B-b, 37-c, 37-e, 14-m, 15-d, 17A-b**	**KGH**	**-**	**KHg**	**GD**	**-**

Notes:	At dry to mesic sites, tall-growing shrubby vegetation dominated by Roses (*Rosa* sp., e.g. *Rosa canina*, see small picture), Common Hawthorn (*Crataegus monogyna*) or other woody species is developing.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
X.7.4	***Rosa rugosa* type**	***Rosa rugosa* (dominant)** **and +/-** species of the X.5/X.6/X.7	*Rosa rugosa*-veg.

Applied in the country/federal state:					
Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:								
Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
-	**-**	**Dd**	**-**	**KGX**	**-**	**-**	**GR**	**-**

Notes:	This type is dominated by the non-native Japanese Rose (*Rosa rugosa*, see picture). Stands often occur close to human settlements and/or were originally planted.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
X.8.0	**Dune woodland, unspecific**	***Populus alba*, *Prunus serotina* (at least one species dominant) and +/-** species of X.8	

Applied in the country/federal state:					
Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**N**	**X**	**-**

Reference to other typologies:								
Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
NL, DK 2180	**-**	**Dd**	**37B-b, 41A/c, 43-a, 43-h, 43-i**	**KGY**	**-**	**KHx**	**UW**	**-**

Notes:	Shrubby vegetation dominated by non-native species like White Poplar (*Populus alba*, see picture), Rum Cherry (*Prunus serotina*) or other woody species.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
X.8.1	***Populus tremula* type**	***Populus tremula*, *Betula pendula* / *Betula pubescens* (at least one species dominant) and +/-** *Sorbus aucuparia*, *Carex arenaria*, *Agrostis capillaris*, *Anthoxanthum odoratum*, *Dryopteris dilatata*, *Empetrum nigrum*, *Holcus lanatus*, *Lonicera periclymenum*	*Populus tremula* / *Betula pendula Quercus robur*-veg.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**N**	**X**	**X**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staatsbosbeheer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2180	**-**	**Dd**	**43-j**	**KGP**	**-**	**KHt**	**PT**	**2180**

Notes:	Shrubby vegetation at dry to mesic sites dominated by Eurasian Aspen (*Populus tremula*, see picture) or Birch trees (*Betula pendula*).

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
X.8.2	***Pinus* spp. type**	***Pinus sylvestris*, *Pinus mugo*, *Pinus nigra* (at least one species dominant) and +/-** species of X.8	*Pinus* spp.-veg.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**N**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbeheer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
-	**-**	**Dd**	**41-a, 41-b, 41A-b, 41A/a, 41A2,A3**	**KGY, WZK**	**-**	**KHp**	**KI**	**-**

Notes:	Coniferous forests at dry sites, usually with Scots Pine (*Pinus sylvestris*, see picture), Mountain Pine (*Pinus mugo*) or European Black Pine (*Pinus nigra*).

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
X.8.3	***Quercus* type**	***Quercus robur* (dominant) and +/-** *Betula pendula*, *Betula pubescens*, *Populus tremula*, *Sorbus aucuparia*, *Agrostis capillaris*, *Anthoxanthum odoratum*, *Carex arenaria*, *Dryopteris dilatata*, *Empetrum nigrum*, *Holcus lanatus*, *Lonicera periclymenum*	

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**N**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staatsbosbeheer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2180	**-**	**Dd**	**42A1,2, 42A-a,b, 42A-c, 43A1, 43A-b, 43B-c,d, 43B-e, 43B2, 43B-b,c, 43B-d, 43-d**	**KGQ**	**-**	**KHq**	**QR**	**2180**

Notes:	Deciduous forest at dry to mesic sites dominated by Pedunculate Oak (*Quercus robur*, see picture).

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
X.10	**Ruderal dune areas**	***Epilobium angustifolium*, *Cirsium arvense*, *Cirsium vulgare*, *Urtica dioica*, *Urtica urens*, *Rubus caesius*, *Anchusa officinalis*, *Rubus fruticosus*, *Linaria vulgaris* (at least one species dominant)** **and +/-** species of X.5	dry. veg. of *Urtica* spp., *Epilobium angustifolium*

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
as surrounding Natura 2000 type	**-**	**Dd, Rrl**	**14/a, 14E-a, 14-h, 15-d,e, 17A2, 17A-a, 31-e, 33-a, 33A1,4, 33A5, 33/a, 34A1, 37-g**	**KDR**	**KDW, KDG**	**KDr**	**EA**	**-**

Notes:	Dune areas dominated by species indicating nutrient enrichment such as Fireweed (*Epilobium angustifolium*, see picture), Creeping Thistle (*Cirsium arvense*) or Stinging Nettle (*Urtica dioica*).

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
X.12	**Drifting sand dune**		

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**N**	**N**	**N**	**X**	**X**

Reference to other typologies:

	Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
as sur-rounding Natura 2000 type (mostly 2120)	**-**	**Dd**	**KDO**	**-**	**-**	**KDm**	**WD**	**2120**	

Notes:	Drifting dune mostly without vegetation (see picture). Marram Grass (*Ammophila arenaria*) might occur occasionally (X.4.1).

4 Standard TMAP Types of Dune Slacks

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
H.0	**Dune slacks (humid)**		

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**X**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2190	**-**	**Dv**	**-**	**KN, KB**	**KDT**	**-**	**-**	**2190**

Notes:	Wet dune slacks arise either after the accretion of a new dune line (primary dune slack; mostly linear in shape and parallel to the coastline) or if sand from older dunes is blown out by wind (secondary dune slack; mostly of roundish appearance).

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
H.1.1	***Centaurium littorale* type**	***Centaurium littorale*, *Sagina nodosa* (at least one species)** **and +/-** species of hygroserie: *Juncus anceps*, *Agrostis stolonifera*, *Potentilla anserina*, *Juncus articulatus*, *Holcus lanatus*, *Mentha aquatica*, *Linum catharticum*, *Carex flacca*, *Bryum algovicum* **and +/-** species of xeroserie: *Leontodon saxatilis*, *Carex arenaria*, *Lotus corniculatus*, *Honckenya peploides*, *Festuca rubra*, *Ammophila arenaria*, *Sonchus arvensis*, *Sedum acre*, *Hippophaë rhamnoides* **and +/-** species of haloserie: P*lantago coronopus*, *Plantago maritima*, *Armeria maritima*, *Juncus gerardii*, *Odontites vernus*, *Glaux maritima*, *Carex distans*, *Carex extensa*, *Trifolium fragiferum*	*Centaurio-Saginetum* (*samoletosum*, *parnassiotosum*)

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staatsbosbeheer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2190	**HSs**	**Crs**	**27A2, 27A1**	**KNH**	**KDT**	**KPc**	**CS**	**2190**

Notes:	Plant community representing the earliest stage of vegetation development in wet primary dune slacks (hygroserie). Seaside Centaury (*Centaurium littorale*, see picture) and Knotted Pearlwort (*Sagina nodosa*, see picture) are characteristic species. This plant community is related to those of the xero- and haloserie, because dune and salt marsh species do also occur here.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
H.1.2	***Radiola linoides* type**	**R*adiola linoides*, *Anagallis minima*, *Juncus pygmaeus*, *Cicendia filiformis* (at least one species)** **and +/-** *Juncus bufonius*, *Gnaphalium uliginosum*, *Isolepis setacea*, *Eleocharis quinqueflora*, *Centaurium pulchellum*, *Sagina procumbens*, *Carex viridula*, *Plantago major*, *Poa annua*, *Calliergonella cuspidata*, *Drepanocladus aduncus*, *Ceratodon purpureus*, *Bryum spec*, *Pohlia nutans*, *Scapania irrigua*, *Fossombronia foveolata*, *Jungermannia gracillima*, *Cephalozia bicuspidata* **and +/-** species of H.1.4/H.3.1 **or +/-** species of H.2/H.2.1 **or +/-** species of S.0 and H.1.1	*Cicendietum filiformis*, *Isoeto-Nanojuncetea*-veg.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**N**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2190	**-**	**Dv**	**28A1**	**KNP (KNH)**	**KDT**	**KPr**	**RL**	**2190**

Notes:	The early successional Dwarf Rush community occurs at sites with different site conditions. The characteristic species All-Seed (*Radiola linoides*, see picture) and Chaffweed (*Anagallis minima*, see small picture) are commonly occurring, while Pygmy Rush (*Juncus pygmaeus*) and Yellow Centaury (*Cicendia filiformis*) occur very rarely.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
H.1.3	***Littorella uniflora* type**	***Littorella uniflora*, *Potamogeton polygonifolius*, *Eleocharis multicaulis*, *Deschampsia setacea*, *Apium inundatum*, *Pilularia globulifera*, *Scirpus fluitans*, *Baldellia ranunculoides*, *Samolus valerandi*, *Potamogeton gramineus*, *Juncus bulbosus*, *Lythrum portula*, *Sparganium minimum*** **(at least one species) and +/-** *Hydrocotyle vulgaris*, *Ranunculus flammula*, *Carex viridula*, *Juncus articulatus*, *Juncus anceps*, *Potentilla anserina*, *Eleocharis palustris* ssp. *palustris*, *uniglumis*, *Agrostis stolonifera*, *Carex nigra*, *Phragmites australis*, *Drepanocladus* spec., *Calliergonella cuspidata.* **and +/- (wet situation)** *Utricularia* spp. (often *U. australis*), *Chara* spp. (often *C. globularis*), *Myriophyllum* spp. (often *M. spicatum*), *Potamogeton* spp. (often *P. natans*), *Ranunculus peltatus* ssp. *baudotii*, *Hippuris vulgaris*, *Polygonum amphibium.* **(basic situation)** *Mentha aquatica*, *Carex flacca*, *Campylium polygamum*, and rare: *Scorpidium scorpioides*, *Drepanocladus sendtneri*, *Scorpidium revolvens*	*Littorelletea uniflorae*- veg.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**N**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2190	**-**	**Dv**	**06-a, 06C4**	**KNP (KNKn, KNT)**	**KDT**	**KPI**	**LU**	**2190**

Littorella uniflora (1)

Baldellia ranunculoides and *Potamogeton gramineus* (2)

Samolus valerandi (3) left
Deschampsia setacea (4) right

Notes:	The early-successional vegetation type is named after the Shoreweed (*Littorella uniflora*, see picture 1). It is occurring in wet dune slacks, which regularly dry out during summer. Vegetation is characterized by a variety of typical species and can be divided into different sub-types. At sites with a rather high soil pH (pictures 2-3), Lesser Water-Plantain (*Baldellia ranunculoides*), Various-Leaved Pondweed (*Potamogeton gramineus*) and Brookweed (*Samolus valerandi*) regularly occur. At sites with a low soil pH (picture 4), Bog Hair-Grass (*Deschampsia setacea*) is a typical species.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
H.1.4	***Lycopodiella inundata* type**	***Lycopodiella inundata*, *Rhynchospora alba*, *Rhynchospora fusca*, *Drosera intermedia* (at least one species, and rare *Hammarbya paludosa*)** **and +/-** species of H.3.1: *Erica tetralix*, *Drosera rotundifolia*, *Vaccinium uliginosum*, *Empetrum nigrum*, *Narthecium ossifragum*, *Drosera rotundifolia*, *Oxycoccus palustris*, *Gentiana pneumonanthe*, *Molinia caerulea*, *Hydrocotyle vulgaris*, *Carex nigra*, *Carex panicea*, *Eriophorum angustifolium*, *Juncus bulbosus*, *Salix repens*, *Polytrichum commune*, *Dicranum scoparium*, *Sphagnum denticulatum*, *Drepanocladus exannulatus and other Drepanocladus*, *Sphagnum* spec. **and +/-** Liverworts: *Gymnocolea inflata*, *Scapania irrigua*, *Fossombronia foveolata*, *Jungermannia gracillima*, *Cephalozia bicuspidata*	*Lycopodiella inundata*-veg., *Sphagno-Rhynchosporetum*, *Lycopodio-Rhynchosporetum*

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**N**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2190	**-**	**Dv**	**11A1**	**KNE**	**KDT**	**KPi**	**LI**	**2190**

Notes:	A characteristic species of this pioneer community is the Marsh Clubmoss (*Lycopodiella inundata*, see picture). This vegetation type usually occurs in small patches within wet heathlands (H.3.1), often in areas with bare soil resulting from anthropogenic disturbances.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
H.2.1	***Carex trinervis* type**	***Carex nigra, Carex trinervis, Potentilla palustris* (at least one species present, often dominant) and +/-** *Salix repens* agg. (often dominant), *Calamagrostis canescens*, *Eriophorum angustifolium*, *Epilobium palustre*, *Stellaria palustre*, *Galium palustre*, *Viola palustris*, *Menyanthes trifoliata*, *Lycopus europaeus*, *Drepanocladus aduncus*, *Calliergon cordifolium*, *Sphagnum fimbriatum* **and +/-** species of H.2	*Caricetum trinervi-nigrae*, *Caricion nigrae* veg.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**N**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staatsbosbeheer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2190	**-**	**Dv**	**09A1, 09A3, 09A-a, 09-a,b,c, 09-e,f,h, 09B-b, 09/c**	**KNA**	**KDT**	**KMm**	**CN**	**2190**

Notes:	This vegetation type is characterized by the Three-Nerved Sedge (*Carex trinervis*, see small picture). It occurs in older, acidic dune slacks with generally high water level fluctuations. The vegetation is often a homogeneous mixture of sedges and creeping willows.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
H.2.2	***Schoenus nigricans* type**	***Schoenus nigricans*, *Liparis loeselii*, *Parnassia palustris*, *Epipactis palustris*, *Dactylorhiza incarnata*, *Pellia endiviifolia*, *Campylium polygamum*, *C. stellatum*, *Bryum pseudotriquetrum*, and rare: *Gentianella amarella*, *Carex pulicaris*, *Juncus subnodulosus*, *Taraxacum palustre*, *Fissidens adianthoides*, *Aneura pinguis*, *Preissia quadrata*, *Moerckia hibernica* (minimum three species) and +/-** *Mentha aquatica*, *Eleocharis quinqueflora*, *Carex flacca*, *Linum catharticum*, and rare: *Equisetum variegatum*, *Pedicularis palustris*, *Juncus arcticus* ssp. *balticus*, *Gymnadenia conopsea*, *Anagallis tenella* **and +/-** species of H.2 **and +/-** species of H.1.1/H.1.2	*Junco baltici-Schoenetum nigricantis*, *Juncus subnodulosus*-veg., *Parnassio-Juncetum atricapilli*, *Caricion davallianae* veg.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**N**	**N**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staatsbosbeheer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2190	**HSc**	**Dv, Dvs, Dvp**	**09C3**	**KNK**	**KDT**	**-**	**-**	**2190**

Schoenus nigricans (1)

Parnassia palustris (2)

Dactylorhiza incarnata (3)

Notes:	This calcareous fen, which is characterized by *Schoenus nigricans* (see picture 1), usually harbors several plant species with colorful flowers, e.g. Marsh Grass-of-Parnassus (*Parnassia palustris*; see picture 2), Fen Orchid (*Liparis loeselii*) and Early Marsh Orchid (*Dactylorhiza incarnata*, see picture 3). It colonizes pioneer sites in weakly brackish, young primary dune slacks, in secondary dune slacks and in enclosed or reclaimed coastal areas. Under favorable conditions, the vegetation type is persistent for long periods. This community contains higher numbers of "Red list species" than all other plant communities of the Wadden Sea islands.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
H.3.1	***Erica tetralix* type**	***Erica tetralix* (dominant) and +/-** *Empetrum nigrum, Narthecium ossifragum, Vaccinium uliginosum, Vaccinium oxycoccos, Vaccinium macrocarpos, Drosera rotundifolia, Juncus squarrosus, Gentiana pneumonanthe, Scirpus cespitosus ssp. germanicus, Aulacomnium palustre, Polytrichum commune, Sphagnum fimbriatum, S. subnitens, S. palustre, S. fallax, S. squarrosum, S. molle* **and +/-** *Salix repens agg., Calluna vulgaris, Potentilla erecta, Viola palustris, Carex trinervis, Carex panicea, Agrostis canina, Eriophorum angustifolium, Pedicularis sylvatica, Danthonia decumbens, Molinia caerulea, Nardus stricta, Hypnum jutlandicum / cupressiforme, Pleurozium schreberi, Dicranum scoparium, Pseudoscleropodium purum*	*Empetro-Ericetum, Narthecium ossifragum*-veg.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**N**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staatsbosbeheer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2190	**-**	**Dv**	**11A3**	**KNE**	**KDT**	**KMt**	**ET**	**2190**

Notes:	The coastal wet heathlands are characterized by the dominance of Cross-leaved Heath (*Erica tetralix*, see pictures). The community occurs in old, acidic dune slacks.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
H.4.1	***Phragmites australis* type**	***Phragmites australis* (dominant) and +/-** *Iris pseudacorus*, *Typha angustifolia*, *Typha latifolia*, *Schoenoplectus tabernaemontani* **and +/-** species of H.2	*Scirpo-Phragmitetum*, *Schoenoplecto-Phragmitetum*, *Typho-Phragmitetum*

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2190	**-**	**Dv**	**08B2, 08B3, 26-b**	**KNR**	**KDT**	**KMr**	**R**	**2190**

Notes:	This community occurs in wet dune slacks and consists of reed beds dominated by Common Reed (*Phragmites australis*, see picture).

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
H.5.1	***Salix cinerea* type**	***Salix cinerea* (dominant), *Salix repens* agg.** **and +/-** species of H.2/H.4/H.6	*Salix cinerea-Salix arenaria*-veg., *Salicetum cinereae – saliceto-sum repentis*

Applied in the country/federal state:					
Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:								
Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2190 (NL, DK 2170)	**-**	**Dv**	**36A2**	**KBH**	**KDT**	**KMw**	**SA**	**2170**

Notes:	This tall-growing willow shrubbery occurs in moist to wet dune slacks. It is usually dominated by Grey Willow (*Salix cinerea*, dominant, see picture). Creeping Willow (*Salix repens*) is another, commonly occurring species.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
H.5.2	***Myrica gale* type**	***Myrica gale* (dominant), *Salix repens* agg.** **and +/-** species of H.2/H.4/H.6	*Myricetum galis*

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**N**	**N**	**N**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2190 (NL, DK 2170)	**-**	**Dv**	**09-h, 36A-b**	**KBH**	**KD**	**-**	**-**	**2170**

Notes:	This tall-growing shrubbery dominated by Bog Myrtle (*Myrica gale*, see picture) does mainly occur on the West Frisian Islands in moist to wet dune slacks with a low soil pH.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
H.6.1	***Betula pubescens* type**	***Betula pubescens* (dominant) and +/-** *Carex nigra*, *Calamagrostis canescens*, *Hydrocotyle vulgaris*, *Mentha aquatica*, *Phragmites australis*, *Erica tetralix*, *Salix repens agg.*, *Salix cinerea*, *Calliergonella cuspidata*, *Sphagnum* spp. **and +/-** *Calamagrostis epigejos*, *Carex arenaria*, *Lonicera periclymenum*, *Agrostis capillaris*, *Empetrum nigrum*, *Dicranum scoparium*, *Rubus* spec.	*Betula pubescens*-veg., *Empetro-Betuletum carpaticae*

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**N**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staatsbosbeheer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2180	**-**	**Dv**	**40A2, 40A-c, 40A-d**	**KBA, KBR**	**KDT**	**KMb**	**BP**	**2180**

Notes:	This forest community in moist to wet dune slacks is mostly dominated by Downy Birch (*Betula pubescens*, see picture). In the herb layer, plant species indicating high soil moisture like Common Sedge (*Carex nigra*), Purple Small-Reed (*Calamagrostis canescens*) or Common Reed (*Phragmites australis*) do typically occurr.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
H.6.2	***Alnus glutinosa* type**	***Alnus glutinosa* (dominant) and +/-** *Carex nigra*, *Calamagrostis canescens*, *Hydrocotyle vulgaris*, *Mentha aquatica*, *Phragmites australis*, *Iris pseudacorus*, *Erica tetralix*, *Salix repens* agg., *Salix cinerea*, *Calliergonella cuspidata*, *Sphagnum* spec. **and +/-** *Calamagrostis epigejos*, *Carex arenaria*, *Lonicera periclymenum*, *Agrostis capillaris*, *Empetrum nigrum*, *Ribes nigrum*, *Dicranum scoparium*, *Rubus* spec., *Solanum dulcamara*, *Glyceria maxima*, *Thypha* spec., *Carex riparia*	*Alnus glutinosa*-veg.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**N**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbeheer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2180	**-**	**Dv**	**39A1,2, 39A-a,b, 39A-d,e, 39A-f**	**KBE**	**KDT**	**KMe**	**AG**	**2180**

Notes:	This forest community in moist to wet dune slacks is dominated by Common Alder (*Alnus glutinosa*, see picture). As in type H.6.1, plant species indicating high soil moisture like Common Sedge (*Carex nigra*), Purple Small-Reed (*Calamagrostis canescens*) or Common Reed (*Phragmites australis*) do typically occurr in the herb layer.

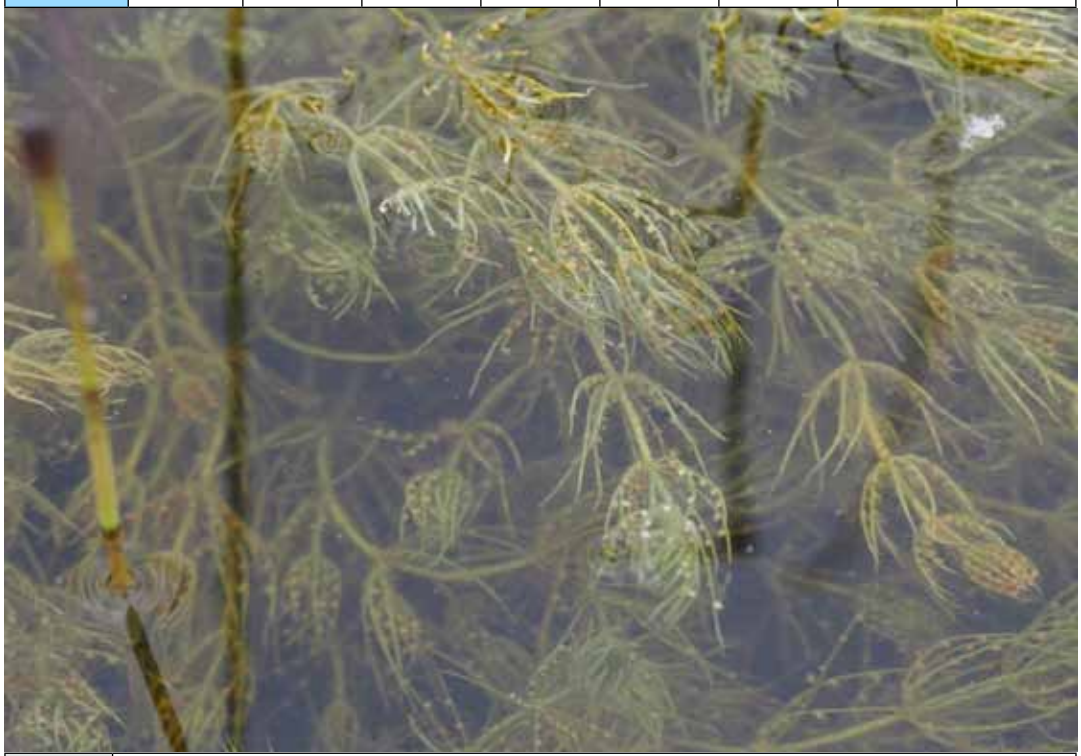
TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
H.8	**Aquatic vegetation in dune slacks – Hydroserie**	***Utricularia* spp. (often *U. australis*), *Chara* spp. (often *C. globularis*), *Myriophyllum* spp. (often *M. spicatum*), *Potamogeton* spp. (often *P. natans*), *Ruppia* spp., *Ranunculus peltatus* ssp. *baudotii*, etc. (at least one species dominant)**	*Charetea fragilis*, *Potamogetoneta*, *Utricularietea*-veg.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**N**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2190	**-**	**Dv**	**04-a, 04B2,3, 04C1,3, 04D1a, 04D1b, 05A1,2, 05A-a, 05E3, 05-f,h**	**KNT**	**KDT**	**KMf**	**HY**	**2190**



Notes:	Aquatic dune slack vegetation with Bladderworts (*Utricularia*), Watermilfoil (*Myriophyllum*), Pondweed (*Potamogeton*) or *Chara* (see picture).

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
H.9	**Ruderal Dune slack areas with litter brushwood**	***Epilobium hirsutum*, *Cirsium vulgare*, *arvense*. (at least one species dominant)** **and +/-** species of H.2/H.4	Moist vegetation of *Epilobium hirsutum*, *Cirsium vulgare* a. *arvense*.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
2190	**-**	**Dv**	**32B2, 32B3, 32A1, 32-a, 32-b, 32-c, 32-d, 32-e, 32-f, 32-g**	**KNS**	**KDT**	**KMh**	**EH**	**2190**

Notes:	Areas in dune slacks with vegetation dominanted by species indicating high nutrient availability like Great Willowherb (*Epilobium hirsutum*, see picture), Spear Thistle (*Cirsium vulgare*) or Creeping Thistle (*Cirsium arvense*).

5 Standard TMAP Types of Salt Marshes

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
S.0.0	**Vegetation not present, disturbed**		

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
as sur-rounding Natura 2000 type	**Su***	**-**	**50A, 50B, 50C**	**-**	**KWO**	**KNx**	**90**	**-**

Notes:	Highly disturbed sites with bare soil without vegetation (see picture) within salt marshes are mapped as type S.0.0 (vegetation not present, unspecific).

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
S.0.1	**Open water**		

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

	Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
as sur-rounding Natura 2000 type	**Sw**	**water**	**-**	**KLA, KLZ**	**-**	**KNt**	**55**	**-**	

Notes:	Old creeks or inundated areas are mapped as open water without vegetation.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
S.0.2	**Bare sand or shells in salt marsh systems**		

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staatsbosbeheer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
as surrounding Natura 2000 type	**Ss**	**zand; schelp**	**-**	**(KS)**	**KWO**	**KNo**	**88**	**-**

Notes:	Bare sand or shell is mapped as type S.0.2.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
S.0.3	**Bare mud or clay in salt marsh systems**		

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
as sur-rounding Natura 2000 type, SH: 1140	**Sm**	**slik, Qq0p, Qq0e, QuO, Ss0**	**-**	**(KWK, KWB, KPH)**	**KWO**	**KWp**	**VO**	**-**

Notes:	The type 'bare mud or clay' is found at inundated sites in the salt marsh area or along the salt marsh shore below mean high tide.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
S.1.1	***Spartina anglica* type**	***Spartina anglica***	*Spartinetum anglicae*

Applied in the country/federal state:					
Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**X**

Reference to other typologies:								
Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1320	**SPs**	**Ss5, Ss3, Bs3, Bs5**	**24A1**	**KWG**	**KWG**	**KNs**	**S**	**1320**

Notes:	Common Cordgrass (*Spartina anglica*, see picture) is the first perennial species establishing around mean high tide. This vegetation can accelerate sedimentation and thus facilitate salt marsh development.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
S.1.2	***Salicornia* type**	***Salicornia* spp., *Suaeda maritima*, *Bassia hirsuta* (at least one species dominant)**	*Salicornietum strictae*, *Salicornietum rammosissimae*, *Salicornietum decumbentis*, *Suaedetum maritimae*, *Thero-Salicornion strictae*-veg., *Suaedo-Bassietum hirsutae*

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**X**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staatsbosbeheer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1310	**SPq**	**Qqp, Qqe, Qu**	**25A2, 25A-a, 26A-c**	**KWQ, KWQW, KWQV, KSF**	**KWQ**	**KQb, KQd, KQr, KQs,KQu**	**SS, SR, SD, U, BH**	**1310**

Notes:	This pioneer vegetation is characterized by a few annual plants as Long-Spiked Glasswort (*Salicornia stricta*) and Common Glasswort (*Salicornia europaea*, see picture). At nutrient-rich sites, the Annual Sea-blite (*Suaeda maritima*) and the Hairy Sea-blite (*Bassia hirsuta*, see small picture) can be dominant.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
S.2.1	***Puccinellia maritima* type**	***Puccinellia maritima* (dominant) and +/-** *Spergularia* spp., *Salicornia* spp., *Puccinellia distans*, *Spartina anglica*, *Suaeda maritima*, *Limonium vulgare*, *Aster tripolium*	*Puccinellietum maritimae*

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1330	**SLp**	**P, Pp, Ppq, P-d, P-q, P-u, Pps, Ppu, Pe, Pt, Pex, Pj, Pg**	**26A1, 26A-a**	**KHUP**	**KHU, KHW**	**KNd, KNp, KNv, KNw**	**P, Ps, PD, PSR**	**1330**

Notes:	Common Saltmarsh-Grass (*Puccinellia maritima*, see picture) is the characteristic species of the low salt marsh. The plant tissue of this species contains a high content of proteins and is therefore favoured by many herbivores.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
S.2.2	***Limonium vulgare* / *Puccinellia maritima* type**	***Limonium vulgare*** **and +/-** *Plantago maritima*, *Puccinellia maritima*, *Spergularia maritima*, *Aster tripolium*	(*Plantagini-Limonietum*)

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1330	**SLI**	**PpI, PI**	**26A2**	**KHUL**	**KHU, KHW**	**-**	**P**	**1330**

Notes:	Common Sea-Lavender (*Limonium vulgare*, see picture), a species with its optimum in the low salt marsh and with beautiful flowers, can create whole areas of purple colors. The flowers are also important for many nectarivore insects like butterflies (see small picture).

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
S.2.3	***Aster tripolium* / *Puccinellia maritima* type**	***Aster tripolium* (dominant) and +/-** *Puccinellia maritima*, *Spergularia maritima*, *Limonium vulgare*, *Plantago maritima*	*Aster tripolium*-veg.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1330	**Sla**	**Ppa, Pa, Jfa, Jja, Ppab, Ba**	**26A-b**	**KHUA**	**KHU, KHW**	**KNa**	**A**	**1330**

Notes:	This vegetation is characterized by the dominance of Sea Aster (*Aster tripolium*, see picture). The species with purple flowers is attractive for many nectarivore insects (see small picture) and is also favoured by herbivores. In moderately grazed brackish low salt marshes the species can reach a height of up to 1.5 meters.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
S.2.4	***Atriplex portulacoides* type**	***Atriplex portulacoides* (dominant) and +/-** *Puccinellia maritima*, *Spergularia maritima*, *Salicornia* spp., *Suaeda maritima*	*Halimionetum portulacoidis*

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staatsbosbeheer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1330	**SLh**	**Ph**	**26A3**	**KHUH**	**KHU, KHW**	**KNh**	**H**	**1330**

Notes:	This low shrubby vegetation is characterized by the dominance of Sea Purslane (*Atriplex portulacoides*, see picture). This type mainly occurrs in the low salt marsh on clayey soils. During cold winters, this vegetation severely suffers from ice formation.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
S.3.1	***Limonium vulgare* / *Juncus gerardi* type**	***Limonium vulgare* (dominant), *Juncus gerardii*, *Glaux maritima* and +/-** species of S.3	(*Plantagini-Limonietum*)

Applied in the country/federal state:					
Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:								
Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1330	**SHI**	**JjI, JfI**	**26A2, 26C-a, 26-a**	**KHOL**	**KHO**	**-**	**-**	**1330**

Notes:	This vegetation type with the Common Sea-Lavender (*Limonium vulgare*) occurs in inundated areas at higher, sandy salt marshes. Other characteristic species are Saltmarsh Rush (*Juncus gerardii*), Sea Milkwort (*Glaux maritima*), Red Fescue (*Festuca rubra*) and Sea Wormwood (*Artemisia maritima*).

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
S.3.2	***Juncus gerardi* type**	***Juncus gerardi*** *Glaux maritima* **and +/-** species of S.3	*Juncetum gerardii*

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1330	**SHj**	**Jj, Jex**	**26C1, 26C-c**	**KHOJ**	**KHO, KHI**	**KOj**	**J**	**1330**

Notes:	This usually grazed vegetation type with a dominance of Saltmarsh Rush (*Juncus gerardii*, see picture) occurs at regularly inundated areas at high sandy salt marshes. Sea Milkwort (*Glaux maritima*) is often co-dominant.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
S.3.3	***Festuca rubra* type**	***Festuca rubra* (dominant) and +/-** species of S.3	*Festuca rubra*-veg., *Armerio-Festucetum littoralis*

Applied in the country/federal state:					
Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:								
Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1330	**SHf**	**Jf**	**26C-b**	**KHOR**	**KHO, KHI**	**KOf**	**F**	**1330**

Notes:	This vegetation of the high salt marsh is dominated by Red Fescue (*Festuca rubra*). Other often occurring species are Sea Thrift (*Armeria maritima*), Creeping Bentgrass (*Agrostis stolonifera*) and Sea Couch Grass (*Elytrigia atherica*).

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
S.3.5	***Artemisia maritima* / *Festuca rubra* type**	***Artemisia maritima* (dominant) and +/-** *Festuca rubra*, *Elymus atherica*	*Artemisietum maritimae*

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1330	**SHz**	**Pz, Jf-z, Jz**	**26-c**	**KHOB**	**KHO, KHI**	**KOt**	**T**	**1330**

Notes:	This vegetation occurs at high marsh sites and is dominated by Sea Wormwood (*Artemisia maritima*, see picture). Other regularly occurring species are Red Fescue (*Festuca rubra*) and Sea Couch Grass (*Elytrigia atherica*).

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
S.3.6	***Juncus maritimus* type**	***Juncus maritimus* (dominant) and +/-** *Festuca rubra*, *Juncus gerardii*, *Elymus athericus*	*Juncus maritimus*-veg.

Applied in the country/federal state:					
Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:								
Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1330	**SHm**	**Pm, Jm**	**26-e**	**KHBN**	**KHO, KHB**	**KOm**	**MG**	**1330**

Notes:	This vegetation of the high salt marsh is dominated by Sea Rush (*Juncus maritimus*, see picture). Due to its stiff and stinging leaves it is hardly grazed by herbivores.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
S.3.7	***Elymus athericus* type**	***Elymus athericus* (dominant) and +/-** *Festuca rubra*, *Atriplex prostrata* species of S.3	*Agropyretum litoralis*, *Agropyretum pungentis*, *Atriplici-Agropyretum pungentis*, *Atriplici-Elymetum atherici*, *Elymetum pycnanthi*, *Astero-Agropyretum repentis*, *Elymus repens* ssp. *littoralis*-veg.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1330	**Shy**	**Py, Jy3, Jy5, Ry3, Ry5, By3, By5**	**26-d**	**KHQA**	**KHQ**	**KOq**	**Q**	**1330**

Notes:	The vegetation dominated by Sea Couch Grass (*Elytrigia atherica*) is late successional stage at high marshes, often occurring on ungrazed sites. Vegetation is mostly species-poor because of the tall grass with a dense cover and a thick litter layer.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
S.3.8	***Carex extensa* type**	***Carex extensa*** **and +/-** *Odontites vernus* ssp. *serotinus*, *Centaurium pulchellum*, *Glaux maritima*, *Juncus maritimus*, *Agrostis stolonifera*, *Parapholis strigosa* **and +/-** species of S.3	*Junco Caricetum extensae*

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1330	**SHe**	**Je**	**26C2**	**KHS, KHBN**	**KHB**	**KOc**	**CE**	**1330**

Notes:	Vegetation dominated by Long-Bracted Sedge (*Carex extensa*, see picture) is typical for high sandy salt marshes and upper beach plains. Other typical species are Lesser Centaury (*Centaurium pulchellum*), Red Bartsia (*Odontites vernus*), Sea Milkwort (*Glaux maritima*) and Sea Hard-Grass (*Parapholis strigosa*).

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
S.3.9	***Atriplex prostrata* / *A. littoralis* type**	***Atriplex prostrata*, *A. littoralis*** **(at least one species dominant) and +/-** *Tripleurospermum maritimum*	*Atriplex prostrata* / *littoralis* veg.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1330	**SHx**	**Xx, Xk**	**22A1, 29A3**	**KHM**	**KHO**	**KOl, KOp**	**AP, AX**	**1330**

Notes:	At high tide marks and guano-rich sites, a nutrient-rich vegetation with Orache (*Atriplex*) occurs (see picture). Typical species are Spear-Leaved Orache (*Atriplex prostrata*), Grass-Leaved Orache (*Atriplex littoralis*) and Sea Mayweed (*Tripleurospermum maritimum*).

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
S.3.10	***Agrostis stolonifera* / *Trifolium fragiferum* type**	***Agrostis stolonifera*** **and +/-** *Potentilla anserina*, *Festuca rubra*, *Trifolium fragiferum*, *Trifolium repens*, *Lotus corniculatus* **and +/-** species of S.3	*Trifolio fragiferi-Agrostietum stoloniferae*, *Agrostis stolonifera*-veg.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1330	**SHg**	**Jg, Rgf, Rpf, Rgc, Rgl, Rgt**	**12B2, 12B3, 12B-m**	**KHB oder KHF**	**KHI, KHO**	**KOa**	**W**	**1330**

Notes:	This dense grassland vegetation is characterized by Creeping Bent (*Agrostis stolonifera*) and different Clovers such as Strawberry Clover (*Trifolium fragiferum*, see small picture) and White Clover (*Trifolium repens*). It occurs in high salt marshes and in low dunes. Other typical species are Common Silverweed (*Potentilla anserina*), Lesser Centaury (*Centaurium pulchellum*), Red Bartsia (*Odontites vernus*), Red Fescue (*Festuca rubra*) and Bird's-Foot Trefoil (*Lotus corniculatus*).

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
S.3.12	***Ononis spinosa* / *Carex distans* type**	***Carex distans*, *Ononis spinosa* (at least one species)** **and +/-** species of S.3 **and +/-** species of X.3/X.5	*Onondo-Caricetum distantis*

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1330	**SHo**	**Ro**	**12B4**	**KHBT**	**KHB**	**KOo**	**OC**	**1330**

Notes:	This type occurs on low brakish dunes. Distant Sedge (*Carex distans*) and Spiny Restharrow (*Ononis spinosa*, see small picture) are typical species.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
S.3.13	**Elymus repens type**	**Elymus repens (dominant) and +/-** species of S.3/X.5	Agropyretum litoralis, Agropyretum pungentis, Atriplici-Agropyretum pungentis, Atriplici-Elymetum atherici, Elymetum pycnanthi, Astero-Agropyretum repentis, Elymus repens ssp. littoralis-veg.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1330	**SHr**	**Re**	**26-d, 16/c**	**KHQR**	**KHQ**	**KOd**	**DQ**	**1330**

Notes:	On high salt marshes and low dunes vegetation with Couch Grass (*Elytrigia repens*) as the dominant species can occur (see picture). If Sea Couch Grass (*Elytrigia atherica*) is also present, it is likely to find the bastard (*E. x oliveri*), too. On the small picture: left *E. repens*, middle: *E. x oliveri* and right: *E. atherica*.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
S.3.14	**Ruderal salt marsh areas**	**Cirsium arvense, Urtica dioica, Sonchus spec. (at least one species dominant)** **and +/-** species of S.0	

Applied in the country/federal state:					
Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:								
Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1330	**SHu**	**Rru, Rrc**	**-**	**KHQS**	**-**	**KOh, KOr**	**RU, CA**	**1330**

Notes:	At ruderal high salt marshes and low dunes vegetation with Creeping Thistle (*Cirsium arvense*) can occur. At more nutrient-rich sites, Stinging Nettle (*Urtica dioica*) can be dominant. Formerly classified as S.6.0 in SH

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
S.5.1	***Bolboschoenus* / *Schoenoplectus* type**	***Bolboschoenus maritimus* and / or *Schoenoplectus tabernaemontani* (at least one species dominant) and +/-** *Phragmites australis*, *Aster tripolium*, *Agrostis stolonifera* **and +/-** species of S.5	*Bolboschoenetum maritimae*

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1330 (LS partly)	**SBb**	**Bis, Bi3, Bi5**	**12B-d, 26-b, 08B2**	**KRS, KWRT, KWRS**	**KBS**	**KRb**	**B**	**1330**

Notes:	In brackish salt marshes at permanently wet sites, vegetation with Sea Club-Rush (*Bolboschoenus maritimus*, see picture) or Softstem Bulrush (*Schoenoplectus tabernaemontani*) can occur. Other typical species are Common Reed (*Phragmites australis*) and Creeping Bentgrass (*Agrostis stolonifera*).

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
S.5.2	***Phragmites australis* type**	***Phragmites australis* (dominant) and +/-** *Atriplex prostrata* **and +/-** species of S.5	*Phragmites australis*-veg. (brackish marsh)

Applied in the country/federal state:					
Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:								
Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1330 (LS partly)	**SBp**	**Bb, Bc**	**08-f, 26-a**	**KRP, KWRP**	**KBP**	**KRs**	**RH**	**1330**

Notes:	If vegetation of the brackish marsh reaches its climax stage, it will be dominated by Common Reed (*Phragmites australis*, see picture). It is very common in ungrazed areas, such as brackish dune slacks and at brackish marshes along estuaries.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
S.5.3	**Brackish flooded grassland type**	***Agrostis stolonifera*, *Potentilla anserina*, *Blysmus rufus*, *Cotula coronopifolia*, *Eleocharis uniglumis*, *Triglochin palustre*** **and +/-** species of S.5	*Blysmetum rufi*, *Eleocharis uniglumis*-veg., *Cotula coronopifolia*-veg., *Alopecurus bulbosus*-veg.

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
1330	**SBg**	**P—b, Pp-b, Pe-b, Bcs, Bg, Bt, Bj, Br, Bgt, Bgn, Bpj, Bo, Bpg, Bp**	**26C3**	**KHBN, KHF**	**KHB**	**KBc, KBe, KBr**	**BR, EU, C**	**1330**

Notes:	This community is an assemblage of multiple brackish pioneer and grassland communities. Most common species are Creeping Bentgrass (*Agrostis stolonifera*) and Common Silverweed (*Potentilla anserina*). Common Saltmarsh-Grass (*Puccinellia maritima*), Saltmarsh Rush (*Juncus gerardii*), Slender Spike-Rush (*Eleocharis uniglumis*) and at some places Red Goosefoot (*Chenopodium rubrum*), Saltmarsh Flat-Sedge (*Blysmus rufus*) or Golden Buttons (*Cotula coronopifolia*, see pictures) can be dominant.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species -vegetation	
S.6.0	**Fresh grasslands, unspecific**		

Applied in the country/federal state:

Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:

Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staats-bosbe-heer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
-	**SF***	**-**	**12B-m**	**G-types**	**G**	**KOr, KOh**	**CA, SP**	**-**

Notes:	This vegetation is mostly intensively grazed and occurs in high salt marshes, summer polders. Due to antropogenic influences in such areas, it's not a real salt or brackish vegetation by definition. These areas might be of less interest for nature managers, and are therefore mapped provisionally as 'grassland unspecific'.

TMAP Code:	TMAP Type:	Description: Typical / characteristic -species	-vegetation
S.6.1	***Lolium perenne*, *Cynosurus cristatus* and other fresh species types**	***Lolium perenne*, *Cynosurus cristatus*, etc. and +/-** species of S.6	*Lolio-Cynosuretum*, *Plantagini-Lolietum perennis*, *Polygonion* veg.

Applied in the country/federal state:					
Standard TMAP	Netherlands	Lower Saxony	Hamburg	Schleswig-Holstein	Denmark
X	**X**	**X**	**X**	**X**	**-**

Reference to other typologies:								
Natura 2000 Code EU	Mapping Code NL	RWS SALT 2008 Code NL	Staatsbosbeheer Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
as surrounding Natura 2000 type	**SFl**	**Dd, Dv, Rgv, Rp, Rgh**	**16C4**	**GM, Gl**	**GM**	**KGf, KGg, KGy**	**AR, MO, Y**	**-**

Notes:	At high salt marshes, summer dikes (see picture) and summer polders in intensively managed (grazed) areas, a vegetation with glycophytes can occur. Typical species are Perennial Ryegrass (*Lolium perenne*, see small picture), Crested Dogstail Grass (*Cynosurus cristatus*), White Clover (*Trifolium repens*), Meadow Barley (*Hordeum secalinum*), Broadleaf Plantain (*Plantago major*) and Common Silverweed (*Potentilla anserina*).

6 Overview of the complete TMAP Typology

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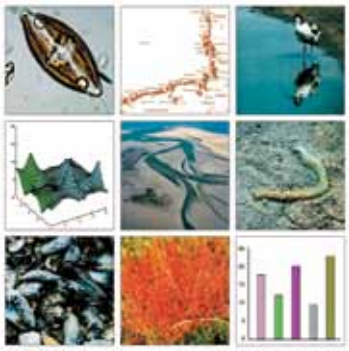

The Trilateral Monitoring and Assessment Program (TMAP)

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TMAP Code	Standard TMAP	Applied in country/ federal state					TMAP Type	Typical / characteristic -species	-vegetation	Natura 2000 Code	Mapping Code NL	RWS SALT Code NL	Staatsbosb. Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
		NL	LS	HH	SH	DK												
X.0	-	-	-	-	-	-	Dunes			-	XE	Dd	-	KD	KD	KDy	SW	-
X.1	-	-	-	-	-	-	Beach plains	No vegetation		-	Ss, X.1	zand	-	KS, KSN, KSB, KSP, KSI, (KSA)	KS	KSs	99	-
X.2	-	-	-	-	-	-	Beach driftline			2110, 1210, 1220	XE, SU*	veek	-	-	KSV	-	CM, CR	-
X.2.0	-	-	-	-	-	-	Beach driftline, unspecific			2110, 1210, 1220	XE*	-	-	-	KSV	-	CM, CR	-
X.2.1	X	X	X	X	X	-	*Cakile maritima* type	***Cakile maritima*** **and +/-** *Salsola kali*, *Honckenya peploides*, *Atriplex* species, *Elymus farctus* ssp. *boreoatlanticus*	*Cakiletum maritimae*	1210, (in LS 2110)	XEd	Dxc, Dxh, Deu, Dxs	22-a, 22B1	(KDV)	KSV	KSa	CM	2110
X.2.2	X	N	N	N	X	-	*Crambe maritima* type	***Crambe maritima*** **and +/-** *Honckenya peploides*, *Silene vulgaris* ssp. *maritima*, *Glaucium flavum*, *Eryngium maritimum*, *Rumex crispus*, *Leymus arenarius*	*Crithmo-Crambetum*, *Honkenya peploides* and *Silene vulgaris* ssp. *maritima* veg.	1220	-	-	-	-	KSV	KSv	CR	-
X.3	-	-	-	-	-	-	Embryonic dunes			2110	XE	Dd	-	KDV	KDV	-	EG	2110
X.3.0	-	-	-	-	-	-	Embryonic dunes, unspecific			2110	XE*	Dd	-	KDV	KDV	-	EG	2110
X.3.1	X	X	X	X	X	X	*Elymus farctus* type	***Elymus farctus* spp. *boreoatlanticus* (dominant)** **and +/-** *Leymus arenarius*, *Ammophila arenaria*, *Honckenya peploides*, *Salsola kali*, *Cakila maritime*	*Elymo-Agropyretum*, *Honkenyo-Agropyretum juncei*	2110	Xef	Def, Deg, Dd	22A1, 22B1, 22B-a, 22-a, 23A1, 23B-a	KDV	KDV	KDv	EG	2110
X.4	-	-	-	-	-	-	White dunes			2120	-	Dd	-	KDW	KDW	-	EM, E	2120
X.4.0	-	-	-	-	-	-	White dunes, unspecific			2120	-	Dd	50A, 50B, 50C	KDW	KDW	-	EM, E	2120
X.4.1	X	X	X	X	X	X	*Ammophila arenaria* type	***Ammophila arenaria*, *Ammocalamagrostis baltica*, *Leymus arenarius* (at least one species dominant)** **and +/-** *Sonchus arvense*, *Oenothera parviflora* var. *ammophila*, *Hieracium umbellatum*, *Calystegia soldanella* (rare), *Eryngium maritimum* (rare), *Lathyrus maritimus* (rare), *Festuca rubra* ssp. *arenaria*, *Carex arenaria*, *Honckenya peploides*, *Elymus farctus* ssp. *boreoatlanticus*, *Cakile maritima*	*Elymo-Ammophiletum*, *x Calammophila baltica-veg.*, *Potentillo-Leymetum arenariae* (*Potentillo-Elymetum*)	2120	-	Dd	23B1, 23B-a, 23-a	KDW	KDW	KDw, KDl	EM, E	2120

TMAP Code	Standard TMAP	Applied in country/ federal state					TMAP Type	Typical / characteristic -species	-vegetation	Natura 2000 Code	Mapping Code NL	RWS SALT Code NL	Staatsbosb. Code NL	Biotope Code LS	Biotope Code HH	Biotope Code SH	Mapping Code SH	Mapping Code DK
		NL	LS	HH	SH	DK												
X.5	X	X	X	X	X	X	Dune grassland	species of X.5: *Carex arenaria*, *Agrostis capillaris*, *Festuca rubra* ssp. *arenaria*, *Aira praecox*, *Anthoxanthum odoratum*, *Luzula campestris*, *Viola canina*, *Viola tricolor* (ssp. *curtisii*), *Jasione montana*, *Hieracium umbellatum*, *Rumex acetosella*, *Hypochoeris radicata*, *Galium mollugo*, *Cerastium semidecandrum*, *Lotus corniculatus*, *Hypnum cupressiforme*, *Dicranum scoparium*, *Polytrichum juniperinum*, *Campylopus introflexus*, *Ceratodon pupureus*, *Cetraria aculeata* *Cladonia ciliata*, *C. portentosa*, *C. furcata*, *C. subulata*, *C. grayi*, *C. cervicornis*, *C. ramulosa*	*Koelerio-Corynephoretea*-veg.	2130	-	Dd	14-c, 14-d, 14-g, 14-h, 14-l, 14-m	KDG	KDG	KDg	TR	2130
X.5.0	-	-	-	-	-	-	Dune grassland, unspecific			2130	-	Dd	-	KDG	KDG	-	TR	2130
X.5.1	-	X	X	X	-	-	***Corynephorus canescens* type**	***Corynephorus canescens*** **and +/-** *Polytrichum piliferum*, *Cladonia arbuscula*, *C. coccifera*, *C. floerkeana*, *C. gracilis*, *C. uncialis* **and +/-** species of X.5 and no or less species of X.5.2	*Violo-Corynephoretum*, *Corynephorion*-veg.	2130	-	Dd	14A1, 14A2	KDGA	KDG	-	TR	2130
X.5.2	-	X	X	X	-	-	***Koeleria arenaria* type**	***Phleum arenarium*, *Tortula ruralis* var. *ruraliformis*, *Koeleria arenaria*** **and +/-** species of X.5.2: ***Silene otites*, *Thalictrum minus*, *Anthyllis vulneraria*, *Galium verum*, *Trifolium arvense*, *Euphrasia stricta*, *Leontodon saxatilis*, *Rhinantus minor*, *Sedum acre*, *Poa pratensis ssp. irrigata*, *Myosotis ramosissima*, *Scleranthus perennis*, *Trifolium campestre*, *Senecio jacobaea*, *Brachythecium albicans*, *Hypnum lacunosum*, *Racomitrium canescens*, *Cladonia rangiformis*, *C. foliacea*, *C. scabriuscula*, *C. humilis*, *C. pocillum*, *Peltigera* spec. (min. 3-5 species)** **and +/-** species of X.5.3 **and +/-** species of X.5	*Tortulo-Phleetum*, *Phleo-Tortuletum*, *Festuco-Galietum*, *Airetum praecocis*, *Koelerion*-veg.	2130	-	Dd	14B1, 14D4, 14D-d, 14E1, 14E-a	KDGK	KDG	-	TR	2130
X.5.3	-	X	X	N	-	-	***Botrychium lunaria* type**	***Nardus stricta*, *Botrychium lunaria* (rare), *Antennaria dioica* (rare), species of the X.5.3: *Polygala vulgaris*, *Hieracium pilosella*, *Festuca ovina*, *Veronica officinalis*, *Danthonia decumbens*, *Potentilla erecta* (minimum 3 species)** **and +/-** species of X.5 **and +/-** species of X.5.2	*Botrychio-Polygaletum*, *Nardo-Galion*-veg.	2130	-	Dd	19A3, 19A-a, 19A-c, 19-b, 19-a	KDGB	KDG	-	TR	2130
X.5.4	-	X	X	X	-	-	***Carex arenaria* type**	***Carex arenaria* (dominant)** **and +/-** species of X.5	*Carex arenaria*-veg.	2130	-	Dd	14-i, 14-j	KDGS	KDG	KDg	TR	2130
X.5.5	-	X	X	-	-	-	***Deschampsia flexuosa* type**	***Deschampsia flexuosa* (dominant)** **and +/-** species of X.5	*Deschampsia flexuosa*-veg.	2130	-	Dd	19-d, 19A-d	KDGS	KDG	KDg	TR	2130
X.6	-	-	-	N	-	-	Dune heath			2140	-	Dd	-	KDE, KDC	-	-	HE, CV	2140

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		NL	LS	HH	SH	DK												
X.6.0	-	-	-	N	-	-	Dune heath, unspecific			-	-	Dd	-	KDE, KDC	-	-	HE,CV	2140
X.6.1	X	X	X	N	X	X	*Empetrum nigrum* type	**Empetrum nigrum (dominant)** **and +/-** *Polypodium vulgare*, *Calluna vulgaris*, *Hieracium umbellatum*, *Salix repens* agg., *Lonicera periclymenum*, *Carex arenaria*, *Agrostis capillaris*, *Anthoxanthum odoratum*, *Luzula campestris*, *Festuca ovina*, *Danthonia decumbens*, *Dryopteris dilatata. Ammophila arenaria*, *Hypnum jutlandicum / cupressiforme*, *Pleurozium schreberi*, *Dicranum scoparium*, *Pseudoscleropodium purum*, *Hylocomium splendens*, *Cladonia portentosa*, *C. furcata*	*Hieracio-Empetretum*, *Polypodio-Empetretum*	2140	-	Dd	20A3, 20-a, 11A3, 11-b, 11/a	KDE	-	KDe	HE	2140
X.6.2	X	X	X	N	X	-	*Calluna vulgaris* type	***Calluna vulgaris* (dominant)** **and + (nearly) no *Empetrum nigrum*** **and +/-** *Salix repens* agg., *Carex arenaria*, *Agrostis capillaris*, *Anthoxanthum odoratum*, *Luzula campestris*, *Festuca ovina*, *Danthonia decumbens*, *Hieracium umbellatum*, *Hypnum jutlandicum / cupressiforme*, *Pleurozium schreberi*, *Dicranum scoparium*, *Pseudoscleropodium purum*	*Hieracio-Empetretum - dom. Calluna vulgaris*	2150	-	Dd	20A1	KDC	-	KDc	CV	-
X.7	-	-	-	-	-	-	Dune scrub			-	-	Dd	-	KG	-	KHg	GD, HR, X	-
X.7.0	-	-	-	-	-	-	Dune scrub, unspecific			-	-	Dd	-	KG	-	-	GD, HR, X	-
X.7.1	X	X	X	N	X	X	*Hippophaë rhamnoides* type	***Hippophaë rhamnoides* (dominant)** **and +/-** *Salix repens* (ssp. *dunensis*), *Sambucus nigra*, *Carex arenaria*, *Ammophila arenaria*, *Galium mollugo*, *Festuca rubra* agg., *Poa pratensis*, *Linaria vulgaris*, *Rubus caesius*, *Senecio jacobaea*	*Hippophao-Sambucetum nigrae*, *Salici arenariae-Hippophaetum*	2160	-	Dd	37B1, 37B2, 37B3, 37B-c, 37B-d, 37B-e	KGS	-	KHh	HR	2160
X.7.2	X	X	X	X	X	X	*Salix repens* agg. type	***Salix repens* (ssp. *dunensis*) (dominant)** **and +/-** *Rosa spinosissima*, *Pyrola rotundifolia* **and +/-** *Carex arenaria*, *Ammophila arenaria*, *Galium mollugo*, *Festuca rubra* agg., *Poa pratensis*	dry *Salix repens* agg.-veg., *Pyrolo-Salicetum*, *Rosa spinosissima-Salix arenaria*-veg.	2170	-	Dd	19-f, 20-a, 36A2	KGK, KBK	-	KHs	X	2170
X.7.3	X	X	X	N	X	-	*Rosa canina* type	***Rosa canina*, *Rosa rubiginosa*, *Rubus fruticosus* s.l., *Crataegus* spp., less *Betula* spp., less *Populus tremula*, *Sambucus nigra*, *Sorbus aucuparia* (at least one species dominant)** **and +/-** *Salix repens* (ssp. *dunensis*), less *Hippophaë rhamnoides*, *Lonicera periclymenum*, *Rubus caesius*, *Carex arenaria*, *Ammophila arenaria*, *Galium mollugo*, *Festuca rubra* agg., *Poa pratensis*	*Rhamno-Prunetea*-veg.	**until 100 m² - as surrounding Natura 2000 type**	-	Dd	37-f, 37B-b, 37-c, 37-e, 14-m, 15-d, 17A-b	KGH	-	KHg	GD	-
X.7.4	X	X	X	X	X	-	*Rosa rugosa* type	***Rosa rugosa* (dominant)** **and +/-** species of the X.5/X.6/X.7	*Rosa rugosa*-veg.	-	-	Dd	-	KGX	-	KHr	GR	-
X.8	-	-	-	-	-	-	Dune woodland			-	-	Dd	36A2	KG	-	-	UW,PT, KI, QR	-

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		NL	LS	HH	SH	DK												
X.8.0	**X**	**X**	**X**	**N**	**X**	**-**	**Dune woodland, unspecific**	***Populus alba*, *Prunus serotina* (at least one species dominant)** **and +/-** species of X.8		**(NL, DK 2180)**	**-**	**Dd**	**37B-b, 41A/c, 43-a, 43-h, 43-i**	**KGY**	**-**	**KHx**	**UW**	**-**
X.8.1	**X**	**X**	**X**	**N**	**X**	**X**	***Populus tremula* type**	***Populus tremula*, *Betula pendula* / *Betula pubescens* (at least 1 species dominant)** **and +/-** *Sorbus aucuparia, Carex arenaria, Agrostis capillaris, Anthoxanthum odoratum, Dryopteris dilatata, Empetrum nigrum, Holcus lanatus, Lonicera periclymenum*	*Populus tremula* / *Betula pendula Quercus robur*-veg.	**2180**	**-**	**Dd**	**43-j**	**KGP**	**-**	**KHt**	**PT**	**2180**
X.8.2	**X**	**X**	**X**	**N**	**X**	**-**	***Pinus* spp. type**	***Pinus sylvestris*, *Pinus mugo*, *Pinus nigra* (at least 1 species dominant)** **and +/-** species of X.8	*Pinus* spp.-veg.	**-**	**-**	**Dd**	**41-a, 41-b, 41A-b, 41A/a, 41A2, 41A3**	**KGY, WZK**	**-**	**KHp**	**KI**	**-**
X.8.3	**X**	**X**	**X**	**N**	**X**	**-**	***Quercus* type**	***Quercus robur* (dominant)** **and +/-** *Betula pendula, Betula pubescens, Populus tremula, Sorbus aucuparia, Agrostis capillaris, Anthoxanthum odoratum, Carex arenaria, Dryopteris dilatata, Empetrum nigrum, Holcus lanatus, Lonicera periclymenum*		**2180**	**-**	**Dd**	**42A1, 42A2, 42A-a, 42A-b, 42A-c, 43A1, 43A-b, 43B-c, 43B-d, 43B-e, 43B2, 43B-b, 43B-c, 43B-d, 43-d**	**KGQ**	**-**	**KHq**	**QR**	**2180**
X.9	**-**	**-**	**X**	**X**	**X**	**-**	**Open dune areas**	no vegetation		**as surrounding Natura 2000 type**	**-**	**Dd**	**-**	**KDO**	**KDO**	**KDo**	**KD**	**-**

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		NL	LS	HH	SH	DK												
X.10	X	X	X	X	X	–	Ruderal dune areas	***Epilobium angustifolium***, ***Cirsium arvense***, ***Cirsium vulgare***, ***Urtica dioica***, ***Urtica urens***, ***Rubus caesius***, ***Anchusa officinalis***, ***Rubus fruticosus***, ***Linaria vulgaris*** **(at least one species dominant)** **and +/-** species of X.5	dry. veg. of *Urtica* spp., *Epilobium angustifolium*	as surrounding Natura 2000 type	–	Dd, Rrl	14/a, 14E-a, 14-h, 15-d, 15-e, 17A2, 17A-a, 31-e, 33-a, 33A1, 33A4, 33A5, 33/a, 34A1, 37-g	KDR	KDW, KDG	KDr	EA	–
X.11	–	–	X	–	X	–	Salty dune areas	species of X.5 and Salt marsh species **and +/-** *Cladonia rangiformis*, *Cladonia furcata* ssp. *subrangiformis*	Salty dune veg. (xeroserie-haloserie)	as surrounding Natura 2000 type	–	R.., C.., X.	–	KDF	–	KDn	DS	–
X.12	X	N	N	N	X	X	Drifting sand dune			as surrounding Natura 2000 type (mostly 2120)	–	–	–	KDO	–	KDm	WD	2120
H.0	X	X	X	X	X	X	Dune slacks (humid)			2190	–	Dv	–	KN, KB	KDT	–	–	2190
H.1	–	–	–	–	X	–	Pioneer dune slacks			2190	HS	Dv	–	KNP	KDT	KPy	PI	2190
H.1.0	–	–	–	–	–	–	Pioneer dune slacks, unspecific			2190	HS*	Dv	–	KNP	KDT	–	PI	2190
H.1.1	X	X	X	X	X	–	***Centaurium littorale*** type	***Centaurium littorale***, ***Sagina nodosa*** **(at least one species)** **and +/-** species of hygroserie: *Juncus anceps*, *Agrostis stolonifera*, *Potentilla anserina*, *Juncus articulatus*, *Holcus lanatus*, *Mentha aquatica*, *Linum catharticum*, *Carex flacca*, *Bryum algovicum* **and +/-** species of xeroserie: *Leontodon saxatilis*, *Carex arenaria*, *Lotus corniculatus*, *Honckenya peploides*, *Festuca rubra*, *Ammophila arenaria*, *Sonchus arvensis*, *Sedum acre*, *Hippophaë rhamnoides* **and +/-** species of haloserie: *Plantago coronopus*, *Plantogo maritima*, *Armeria maritima*, *Juncus gerardii*, *Odontites vernus*, *Glaux maritima*, *Carex distans*, *Carex extensa*, *Trifolium fragiferum*	*Centaurio-Saginetum* (*samoletosum*, *parnassiotosum*)	2190	HSs	Crs	27A2, 27A1	KNH	KDT	KPc	CS	2190

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		NL	LS	HH	SH	DK												
H.1.2	X	X	X	N	X	–	***Radiola linoides* type**	***Radiola linoides*, *Anagallis minima*, *Juncus pygmaeus*, *Cicendia filiformis* (at least one species)** *Juncus bufonius*, *Gnaphalium uliginosum*, *Isolepis setacea*, *Eleocharis quinqueflora*, *Centaurium pulchellum*, *Sagina procumbens*, *Carex viridula*, *Plantago major*, *Poa annua*, *Calliergonella cuspidata*, *Drepanocladus aduncus*, *Ceratodon purpureus*, *Bryum* spec, *Pohlia nutans*, *Scapania irrigua*, *Fossombronia foveolata*, *Jungermannia gracillima*, *Cephalozia bicuspidata* **and +/-** species of H.1.4/H.3.1 **or +/-** species of H.2/H.2.1 **or +/-** species of S.0/H.1.1	*Cicendietum filiformis*, *Isoeto-Nanojuncetea*-veg.	2190	–	Dv	28A1	KNP (KNH)	–	KPr	RL	2190
H.1.3	X	X	X	N	X	–	***Littorella uniflora* type**	***Littorella uniflora*, *Potamogeton polygonifolius*, *Eleocharis multicaulis*, *Deschampsia setacea*, *Apium inundatum*, *Pilularia globulifera*, *Scirpus fluitans*, *Baldellia ranunculoides*, *Samolus valerandi*, *Potamogeton gramineus*, *Juncus bulbosus*, *Lythrum portula*, *Sparganium minimum* (at least one species)** **and +/-** *Hydrocotyle vulgaris*, *Ranunculus flammula*, *Carex viridula*, *Juncus articulatus*, *Juncus anceps*, *Potentilla anserina*, *Eleocharis palustris* ssp. *palustris* + *uniglumis*, *Agrostis stolonifera*, *Carex nigra*, *Phragmites australis*, *Drepanocladus* spec., *Calliergonella cuspidate* **and +/-** (wet situation) *Utricularia* spp. (often *U. australis*), *Chara* spp. (often *C. globularis*), *Myriophyllum* spp. (often *M. spicatum*), *Potamogeton* spp. (often *P. natans*), *Ranunculus peltatus ssp. baudotii*, *Hippuris vulgaris*, *Polygonum amphibium* **and +/-** (basic situation) *Mentha aquatica*, *Carex flacca*, *Campylium polygamum*, and rare: *Scorpidium scorpioides*, *Drepanocladus sendtneri*, *Scorpidium revolvens*	***Littorelletea uniflorae*-veg.**	2190	–	Dv	06-a, 06C4	KNP (KNKn, KNT)	KDT	KPl	LU	2190
H.1.4	X	X	X	N	X	–	***Lycopodiella inundata* type**	***Lycopodiella inundata*, *Rhynchospora alba*, *Rhynchospora fusca*, *Drosera intermedia* (at least one species, and rare *Hammarbya paludosa*)** **and +/-** species of H.3.1: *Erica tetralix*, *Drosera rotundifolia*, *Vaccinium uliginosum*, *Empetrum nigrum*, *Narthecium ossifragum*, *Drosera rotundifolia*, *Oxycoccus palustris*, *Gentiana pneumonanthe*, *Molinia caerulea*, *Hydrocotyle vulgaris*, *Carex nigra*, *Carex panicea*, *Eriophorum angustifolium*, *Juncus bulbosus*, *Salix repens*, *Polytrichum commune*, *Dicranum scoparium*, *Sphagnum denticulatum*, *Drepanocladus exannulatus* and other *Drepanocladus*, *Sphagnum* spec. **and +/-** Liverworts: *Gymnocolea inflata*, *Scapania irrigua*, *Fossombronia foveolata*, *Jungermannia gracillima*, *Cephalozia bicuspidata*	*Lycopodiella inundata*-veg., *Sphagno-Rhynchosporetum*, *Lycopodio-Rhynchosporetum*	2190	–	Dv	11A1	KNE	KDT	KPi	LI	2190

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		NL	LS	HH	SH	DK												
H.2	-	-	-	-	-	-	Dune slack fens	species of H.2: *Salix repens* agg., *Hydrocotyle vulgaris*, *Ranunculus flammula*, *Agrostis stolonifera*, *Juncus articulatus*, *Juncus anceps*, *Eleocharis palustris* ssp. *palustris* + *uniglumis*, *Phragmites australis*, *Potentilla anserina*, *Calliergonella cuspidata*	Scheuchzerio-Caricetea fuscae-veg.	2190	HS	Dv		KN	KDT	-	CN	2190
H.2.0	-	-	-	-	-	-	Dune slack fens, unspecific			2190	-	Dv	09/a	KNS, KBK	KDT	-	CN	2190
H.2.1	X	X	X	N	X	-	***Carex trinervis*** type	***Carex nigra, Carex trinervis, Potentilla palustris*** **(at least one species present, often dominant)** **and +/-** *Salix repens* agg. (often dominant), *Calamagrostis canescens*, *Eriophorum angustifolium*, *Epilobium palustre*, *Stellaria palustre*, *Galium palustre*, *Viola palustris*, *Menyanthes trifoliata*, *Lycopus europaeus*, *Drepanocladus aduncus*, *Calliergon cordifolium*, *Sphagnum fimbriatum* **and +/-** species of H.2	*Caricetum trinervi-nigrae*, *Caricion nigrae* veg.	2190	-	Dv	09A1, 09A3, 09A-a, 09-a, 09-b, 09-c, 09-e, 09-f, 09-h, 09B-b, 09/c	KNA	KDT	KMm	CN	2190
H.2.2	X	X	X	N	N	-	***Schoenus nigricans*** type	***Schoenus nigricans***, ***Liparis loeselii***, ***Parnassia palustris***, ***Epipactis palustris***, ***Dactylorhiza incarnata***, ***Pellia endiviifolia***, ***Campylium polygamum***, ***C. stellatum***, ***Bryum pseudotriquetrum***, **and rare:** ***Gentianella amarella***, ***Carex pulicaris***, ***Juncus subnodulosus***, ***Taraxacum palustre***, ***Fissidens adianthoides***, ***Aneura pinguis***, ***Preissia quadrata***, ***Moerckia hibernica*** **(minimum 3 species)** **and +/-** *Mentha aquatica, Eleocharis quinqueflora, Carex flacca, Linum catharticum, and rare: Equisetum variegatum, Pedicularis palustris, Juncus arcticus ssp. balticus, Gymnadenia conopsea, Anagallis tenella* **and +/-** species of H.2 **and +/-** species of H.1.1/H.1.2	*Junco baltici-Schoenetum nigricantis*, *Juncus subnodulosus*-veg., *Parnassio-Juncetum atricapilli*, *Caricion davallianae* veg.	2190	HSc	Dv, Dvs, Dvp	09C3	KNK	KDT	-???	-	2190
H.2.3	-	X	X	N	-	-	***Calamagrostis epigejos*** type	***Calamagrostis epigejos*** **(dominant)**, ***Salix repens*** **agg., (and rare** ***Ophioglossum vulgatum*****)**, **and +/-** *Carex nigra*, *Phragmites australis*, *Lycopus europaeus*, *Holcus lanatus*, *Cirsium palustre*, *Lathyrus pratensis*, *Poa pratensis*, *Galium palustre*, *Hydrocotyle vulgaris*, *Agrostis stolonifera*, *Ranunculus flammula*, *Calliergonella cuspidata*, *Brachythecium rutabulum*	*Calamagrostis epigejos*-veg.	2190	-	Dv	09-d, 09/c	KNS	KDT	-	-	2190
H.3	-	-	-	N	-	-	Dune slack heath		*Oxycocco-Sphagnetea*-veg.	2190	-	Dv		KNE	KDT	-	ET	2190
H.3.0	-	-	-	N	-	-	Dune slack heath, unspecific			2190	-	Dv	-	KNE	KDT	-	ET	2190

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		NL	LS	HH	SH	DK												
H.3.1	X	X	X	N	X	-	*Erica tetralix* type	**Erica tetralix (dominant)** **and +/-** *Empetrum nigrum, Narthecium ossifragum, Vaccinium uliginosum, Vaccinium oxycoccos, Vaccinium macrocarpos, Drosera rotundifolia, Juncus squarrosus, Gentiana pneumonanthe, Scirpus cespitosus ssp. germanicus, Aulacomnium palustre, Polytrichum commune, Sphagnum fimbriatum, S. subnitens, S. palustre, S. fallax, S. squarrosum, S. molle* **and +/-** *Salix repens* agg., *Calluna vulgaris, Potentilla erecta, Viola palustris, Carex trinervis, Carex panicea, Agrostis canina, Eriophorum angustifolium, Pedicularis sylvatica, Danthonia decumbens, Molinia caerulea, Nardus stricta, Hypnum jutlandicum / cupressiforme, Pleurozium schreberi, Dicranum scoparium, Pseudoscleropodium purum*	*Empetro-Ericetum, Narthecium ossifragum*-veg.	2190	-	Dv	11A3	KNE	KDT	KMt	ET	2190
H.3.2	-	X	-	N	-	-	***Oxycoccus macrocarpos* type**	***Oxycoccus macrocarpos* (dominant)** **and +/-** species of H.3.1/H.2.1	*Oxycoccus macrocarpos*-veg.	2190	-	Dv	11-b	KNE	KDT	-	ET	2190
H.3.3	-	X	-	N	-	-	***Molinia caerulea* type**	***Molinia caerulea* (dominant)** **and +/-** species of H.3.1/H.2.1	*Molinia caerulea*-veg.	2190	-	Dv	10-e, 11-c	KNE, KNA	KDT	-	ET	2190
H.4	-	-	-	-	-	-	Dune slack reedbed		*Phragmitetea*-veg.	2190	-	Dv	08B3	KNR	KDT	-	R	2190
H.4.0	-	-	-	-	-	-	Dune slack reedbed, unspecific			2190	-	Dv	08-d, 08-e, 08-f, 08-g, 08-h, 08-k, 32-c, 32-f	KNR	KDT	-	R	2190
H.4.1	X	X	X	X	X	-	***Phragmites australis* type**	***Phragmites australis* (dominant)** **and +/-** *Iris pseudacorus, Typha angustifolia, Typha latifolia, Schoenoplectus tabernaemontani* **and +/-** species of H.2	*Scirpo-Phragmitetum, Schoenoplecto-Phragmitetum, Typho-Phragmitetum*	2190	-	Dv	08B2, 08B3, 26-b	KNR	KDT	KMr	R	2190
H.4.2	-	X	X	N	-	-	***Carex* spp. type**	***Carex pseudocyperus, Carex riparia, Carex acuta, Carex ovalis, Cladium mariscus, Carex* spp. (at least 1 species dominant)** **and +/-** species of H.4.1/H.2	*Magnocaricion*-veg.	2190	-	Dv	08C1, 08C2, 08C6, 08C-a, 08C-b, 08C-c, 08C-d, 08C-e, 08C-f	KNA	KDT	-	-	2190
H.5	-	-	-	-	-	X	Dune slack willow shrubbery			2190	-	Dv	36A2	-	KDT	-	SA	2170

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		NL	LS	HH	SH	DK												
H.5.0	-	-	X	-	-	-	Dune slack willow shrubbery, unspecific			2190 (LS 2170)	-	Dv	09/a	KBH	KDT	-	SA	2170
H.5.1	X	X	X	X	X	-	*Salix cinerea* type	***Salix cinerea* (dominant), *Salix repens* agg.** **and +/-** species of H.2/H.4/H.6	*Salix cinerea-Salix arenaria*-veg., *Salicetum cinereae – salicetosum repentis*	2190 (NL, DK 2170)	-	Dv	36A2	KBH	KDT	KMw	SA	2170
H.5.2	X	X	X	N	N	N	*Myrica gale* type	***Myrica gale* (dominant), Salix repens agg.** **and +/-** species of H.2/H.4/H.6	*Myricetum galis*	2190 (NL, DK 2170)	-	Dv	09-h, 36A-b	KBH	KDT	-	-	2170
H.6	-	-	-	-	-	X	Dune slack woodland			2180	-	Dv	-	-	KDT	-	BP, AG	2180
H.6.0	-	-	-	-	-	-	Dune slack woodland, unspecific			2190	-	Dv	-	KBS	KDT	-	BP, AG	2180
H.6.1	X	X	X	N	X	-	Betula pubescens type	***Betula pubescens* (dominant)** **and +/-** *Carex nigra*, *Calamagrostis canescens*, *Hydrocotyle vulgaris*, *Mentha aquatica*, *Phragmites australis*, *Erica tetralix*, *Salix repens* agg., *Salix cinerea*, *Calliergonella cuspidata*, *Sphagnum* spp. **and +/-** *Calamagrostis epigejos*, *Carex arenaria*, *Lonicera periclymenum*, *Agrostis capillaris*, *Empetrum nigrum*, *Dicranum scoparium*, *Rubus* spec.	*Betula pubescens*-veg., *Empetro-Betuletum carpaticae*	2180	-	Dv	40A2, 40A-c, 40A-d	KBA, KBR	KDT	KMb	BP	2180
H.6.2	X	X	X	N	X	-	*Alnus glutinosa* type	***Alnus glutinosa* (dominant)** **and +/-** *Carex nigra*, *Calamagrostis canescens*, *Hydrocotyle vulgaris*, *Mentha aquatica*, *Phragmites australis*, *Erica tetralix*, *Salix repens* agg., *Salix cinerea*, *Calliergonella cuspidata*, *Sphagnum* spec. **and +/-** *Calamagrostis epigejos*, *Carex arenaria*, *Lonicera periclymenum*, *Agrostis capillaris*, *Empetrum nigrum*, *Ribes nigrum*, *Solanum dulcamara*, *Dicranum scoparium*, *Rubus* spec., *Solanum dulcamara*, *Glyceria maxima*, *Iris*, *pseudacorus*, *Thypha* spec., *Carex riparia*, *Phragmites*	*Alnus glutinosa*-veg.	2180	-	Dv	39A1, 39A2, 39A-a, 39A-b, 39A-d, 39A-e, 39A-f	KBE	KDT	KMe	AG	2180
H.7	-	-	-	-	X	-	Open dune slack areas	no vegetation		2190	-	Dv	-	KNP	KDT	KMy	OD	2190
H.8	X	X	X	N	X	-	Aquatic vegetation in dune slacks - Hydroserie	***Utricularia* spp. (often *U. australis*), *Chara* spp. (often *C. globularis*), *Myriophyllum* spp. (often *M. spicatum*), *Potamogeton* spp. (often *P. natans*), *Ruppia* spp., *Ranunculus peltatus* ssp. *baudotii* (at least one species dominant)**	*Charetea fragilis*, *Potamogetoneta*, *Utricularietea*-veg.	2190	-	Dv	04-a, 04B2, 04B3, 04C1, 04C3, 04D1a, 04D1b, 05A1, 05A2, 05A-a, 05E3, 05-f, 05-h	KNT	KDT	KMf	HY	2190

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		NL	LS	HH	SH	DK												
H.9	X	X	X	X	X	-	Ruderal dune slack areas with litter brushwood	***Epilobium hirsutum, Cirsium vulgare + arvense*** **(at least one species dominant)** **and +/-** species of H.2/H.4	Moist vegetation of *Epilobium hirsutum, Cirsium vulgare* a. *arvense*	2190	-	Dv	32B2, 32B3, 32A1, 32-a, 32-b, 32-c, 32-d, 32-e, 32-f, 32-g	KNS	KDT	KMh	EH	2190
S	-	-	-	-	-	-	Salt marsh				-	-	-	-	KH	-	-	-
S.0	-	-	-	-	-	-	No vegetation				Su	-	-	-	-	KNo	88	-
S.0.0	X	X	X	X	X	-	Vegetation not present, disturbed			as surrounding Natura 2000 type	Su*	-	50A, 50B, 50C	-	KWO	KNx	90	-
S.0.1	X	X	X	X	X	-	Open water			as surrounding Natura 2000 type	Sw	water	-	KLA, KLZ	-	KNt	55	-
S.0.2	X	X	X	X	X	-	Bare sand or shells in salt marsh systems			as surrounding Natura 2000 type	Ss	zand; schelp	-	(KS)	KWO	KNo	88	-
S.0.3	X	X	X	X	X	-	Bare mud or clay in salt marsh systems			as surrounding Natura 2000 type, SH: 1140	Sm	slik, Qq0p, Qq0e, QuO, Ss0	-	(KWK, KWB, KPH)	KWO	KWp	VO	-
S.1	-	-	-	-	-	-	Pioneer zone	species of S.1: *Spartina anglica*, *Salicornia* spec., *Suaeda maritima*			SP	-	-	KW		-	-	-
S.1.0	-	-	-	-	-		Pioneer zone, unspecific				SP*	-	-	KW	-	-	-	-
S.1.1	X	X	X	X	X	X	***Spartina anglica*** **type**	***Spartina anglica***	*Spartinetum anglicae*	1320	SPs	Ss5, Ss3, Bs3, Bs5	24A1	KWG	KWG	KNs	S	1320

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		NL	LS	HH	SH	DK												
S.1.2	X	X	X	X	X	X	***Salicornia* type**	***Salicornia* spp., *Suaeda maritima*, *Bassia hirsuta* (at least one species dominant)**	*Salicornietum strictae*, *Salicornietum rammosissimae*, *Salicornietum decumbentis*, *Suaedetum maritimae*, *Thero-Salicornion strictae*-veg., *Suaedo-Bassietum hirsutae*	1310	SPq	Qqp, Qqe, Qu	25A2, 25A-a, 26A-c	KWQ, KWQW, KWQV, KSF	KWQ	KQb, KQd, KQr, KQs, KQu	SS, SR, SD, U, BH	1310
S.2	-	-	-	-	-	X	Low marsh	species of S.2: *Puccinellia maritima*, *Atriplex portulacoides*, *Cochlearia anglica*, *Aster tripolium*, *Spergularia maritima + salina*, *Triglochin maritima*, *Limonium vulgare*, *Plantago maritima*, *Parapholis strigosa*, *Atriplex peduncolata*	*Puccinellion maritimae*-veg.	1330	SL	-	-	KHU, KHUS, KHUB,	KHU, KHW	-	-	1330
S.2.0	-	-	-	-	X	-	Low marsh, unspecific			1330	SL*	Pw	-	KHUZ	KHU, KHW	-	KU	1330
S.2.1	X	X	X	X	X	-	***Puccinellia maritima* type**	***Puccinellia maritima* (dominant)** **and +/-** *Spergularia* spp., *Salicornia* spp., *Puccinellia distans*, *Spartina anglica*, *Suaeda maritima*, *Limonium vulgare*, *Aster tripolium*	*Puccinellietum maritimae*	1330	SLp	P, Pp, Ppq, P-d, P-q, P-u, Pps, Ppu, Pe, Pt, Pex, Pj, Pg	26A1, 26A-a	KHUP	KHU, KHW	KNd, KNp, KNv, KNw	P, Ps, PD, PSR	1330
S.2.2	X	X	X	X	X	-	***Limonium vulgare* / *Puccinellia maritima* type**	***Limonium vulgare*** **and +/-** *Plantago maritima*, *Puccinellia maritima*, *Spergularia maritima*, *Aster tripolium*	(*Plantagini-Limonietum*)	1330	SLl	Ppl, Pl	26A2	KHUL	KHU, KHW	-	P	1330
S.2.3	X	X	X	X	X	-	***Aster tripolium* / *Puccinellia maritima* type**	***Aster tripolium* (dominant)** **and +/-** *Puccinellia maritima*, *Spergularia maritima*, *Limonium vulgare*, *Plantago maritima*	*Aster tripolium*-veg.	1330	Sla	Ppa, Pa, Jfa, Jja, Ppab, Ba	26A-b	KHUA	KHU, KHW	KNa	A	1330
S.2.4	X	X	X	X	X	-	***Atriplex portulacoides* type**	***Atriplex portulacoides* (dominant)** **and +/-** *Puccinellia maritima*, *Spergularia maritima*, *Salicornia* spp., *Suaeda maritima*	*Halimionetum portulacoidis*	1330	SLh	Ph	26A3	KHUH	KHU, KHW	KNh	H	1330
S.3	-	-	-	-	-	X	High marsh	species of S.3: *Artemisia maritima*, *Armeria maritima*, *Juncus gerardii*, *Glaux maritima*, *Festuca rubra*, *Elymus athericus*, *Juncus maritimus*, *Trifolium fragiferum*, *Plantago coronopus*, *Sagina maritima*, *Carex extensa*, *Carex distans*, *Ononis spinosa*, *Hordeum secalinum*, *Cochlearia danica*, *Odontites vernus ssp serotinus*, *Elymus repens*	*Armerion maritimae*-veg.	1330	SH	-	-	KHO	KHO, KHI	KOy	-	1330
S.3.0	-	-	-	-	X	-	High marsh, unspecific			1330	SH*	Jw	-	KHOZ	KHO, KHI	-	KO	1330

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		NL	LS	HH	SH	DK												
S.3.1	X	X	X	X	X	-	***Limonium vulgare* / *Juncus gerardii* type**	***Limonium vulgare* (dominant), *Juncus gerardi*** **and +/-** species of S.3	(*Plantagini-Limonietum*)	1330	SHl	Jjl, Jfl	26A2, 26C-a, 26-a	KHOL	KHO	-	-	1330
S.3.2	X	X	X	X	X	-	***Juncus gerardii* type**	***Juncus gerardii*** *Glaux maritima* **and +/-** species of S.3	*Juncetum gerardii*	1330	SHj	Jj, Jex	26C1, 26C-c	KHOJ	KHO, KHI	KOj	J	1330
S.3.3	X	X	X	X	X	-	***Festuca rubra* type**	***Festuca rubra* (dominant)** **and +/-** species of S.3	*Festuca rubra*-veg., *Armerio-Festcetum littoralis*	1330	SHf	Jf	26C-b	KHOR	KHO, KHI	KOf	F	1330
S.3.4	-	X	-	-	-	-	***Atriplex portulacoides* / *Artemisia maritima* type**	***Atriplex portulacoides* (dominant)** **and +/-** *Artemisia maritima*, *Festuca rubra*, *Juncus gerardii*, *Elymus athericus*	*Halimionetum portulacoidis*	1330	SHh	Jfh	26A3	KHUH	KHO		-	1330
S.3.5	X	X	X	X	X	-	***Artemisia maritima* / *Festuca rubra* type**	***Artemisia maritima* (dominant)** **and +/-** *Festuca rubra*, *Elymus athericus*	*Artemisietum maritimae*	1330	SHz	Pz, Jf-z, Jz	26-c	KHOB	KHO, KHI	KOt	T	1330
S.3.6	X	X	X	X	X	-	***Juncus maritimus* type**	***Juncus maritimus* (dominant)** **and +/-** *Festuca rubra*, *Juncus gerardii*, *Elymus athericus*	*Juncus maritimus*-veg.	1330	SHm	Pm, Jm	26-e	KHBN	KHO, KHB	KOm	MG	1330
S.3.7	X	X	X	X	X	-	***Elymus athericus* type**	***Elymus athericus* (dominant)** **and +/-** *Festuca rubra*, *Atriplex prostrata* species of S.3	*Agropyretum litoralis*, *Agropyretum pungentis*, *Atripl-ici-Agropyretum pungentis*, *Atriplici-Elymetum atherici*, *Elymetum pycnanthi*, *Astero-Agropyretum repentis*, *Elymus repens* ssp. *littoralis*-veg.	1330	SHy	Py, Jy3, Jy5, Ry3, Ry5, By3, By5	26-d	KHQA	KHQ	KOq	Q	1330
S.3.8	X	X	X	X	X	-	***Carex extensa* type**	***Carex extensa*** **and +/-** *Odontites vernus* ssp *serotinus*, *Centaurium pulchellum*, *Glaux maritima*, *Juncus maritimus*, *Agrostis stolonifera*, *Parapholis strigosa* **and +/-** species of S.3	*Junco Caricetum extensae*	1330	SHe	Je	26C2	KHS, KHBN	KHB	KOc	CE	1330
S.3.9	X	X	X	X	X	-	***Atriplex prostrata* / *A. littoralis* type**	***Atriplex prostrata*, *A. littoralis* (at least one species dominant)** **and +/-** *Tripleurospermum maritimum*	*Atriplex prostrata* / *littoralis* veg.	1330	SHx	Xx, Xk	22A1, 29A3	KHM	KHO	KOl, KOp	AP, AX	1330
S.3.10	X	X	X	X	X	-	***Agrostis stolonifera* / *Trifolium fragiferum* type**	***Agrostis stolonifera*** **and +/-** *Potentilla anserina*, *Festuca rubra*, *Trifolium fragiferum*, *Trifolium repens*, *Lotus corniculatus* **and +/-** species of S.3	*Trifolio fragiferi-Agrostietum stoloniferae*, *Agrostis stolonifera*-veg.	1330	SHg	Jg, Rgf, Rpf, Rgc, Rgl, Rgt	12B2, 12B3, 12B-m	KHB or KHF	KHI, KHO	KOa	W	1330

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		NL	LS	HH	SH	DK												
S.3.11	-	X	-	X	X	-	***Plantago coronopus* / *Centaurium littorale* type**	***Plantago coronopus*** **and +/-** *Sagina maritima*, *Centaurium littorale*, *Sagina nodosa*, *Cochlearia danica*, *Festuca rubra*, *Bupleurum tenuissimum*, *Sedum acre*, *Brachyhecium albicans*, *Leontodon saxatile*, *Bryum* spp. **and +/-** species of S.3	*Sagino-Cochlearietum* and *Centaurio-Saginetum trifolietosum*	1330 (in NL 1310)	SHc	Cc, Ccj, Ccs, Crt	27Aa1, 27Aa2	KHBT	KHS	KOs	SC	1330
S.3.12	X	X	X	X	X	-	***Ononis spinosa* / *Carex distans* type**	***Carex distans*, *Ononis spinosa*** **(at least one species)** **and +/-** species of S.3 **and +/-** species of X.3/X.5	*Ononido-Caricetum distantis*	1330	SHo	Ro	12B4	KHBT	KHB	KOo	OC	1330
S.3.13	X	X	X	X	X	-	***Elymus repens* type**	***Elymus repens*** **(dominant)** **and +/-** species of S.3/X.5	*Agropyretum litoralis*, *Agropyretum pungentis*, *Atriplici-Agropyretum pungentis*, *Atriplici-Elymetum atherici*, *Elymetum pycnanthi*, *Astero-Agropyretum repentis*, *Elymus repens* ssp. *littoralis*-veg.	1330	SHr	Re	26-d, 16/c	KHQR	KHQ	KOd	DQ	1330
S.3.14	X	X	X	X	X	-	Ruderal salt marsh areas	***Cirsium arvense*, *Urtica dioica*, *Sonchus*** **spec. (at least one species dominant)** **and +/-** species of S.0		1330	SHu	Rru, Rrc	-	KHQS	-	KOh, KOr	RU, CA	1330
S.5	-	-	-	-	-	-	Brackish marsh	species of S.5: *Bolboschoenus maritimus*, *Phragmites australis*, *Schoenoplectus tabernaemontani*, *Blysmus rufus*, *Agrostis stolonifera*, *Eleocharis uniglumis*, *Triglochin palustris*, *Cotula coronopifolia*, *Potentilla anserina*, *Juncus maritimus*, *Oenanthe lachenalii*, *Trifolium fragiferum*, *Festuca arundinacea*, *Alopecurus geniculatus*, *Juncus ambiguus*, *Chenopodium rubrum* and *C. glaucum*, *Apium graveolens*		1330	SB	-	-	KR	KB	-	-	1330
S.5.0	-	-	-	-	-	-	Brackish marsh, unspecific			1330	SB*	Bh	-	KRZ	KB	-	-	1330
S.5.1	X	X	X	X	X	-	***Bolboschoenus* / *Schoenoplectus* type**	***Bolboschoenus maritimus*** **and / or *Schoenoplectus tabernaemontani*** **(at least one species dominant)** **and +/-** *Phragmites australis* (*Aster tripolium*) **and +/-** species of S.5	*Bolboschoenetum maritimae*	1330 (LS partly)	SBb	Bis, Bi3, Bi5	12B-d, 26-b, 08B2	KRS, KWRT, KWRS	KBS	KRb	B	1330
S.5.2	X	X	X	X	X	-	***Phragmites australis* type**	***Phragmites australis*** **(dominant)** **and +/-** *Atriplex prostrata* **and +/-** species of S.5	*Phragmites australis*-veg. (brackish marsh)	1330 (LS partly)	SBp	Bb, Bc	08-f, 26-a	KRP, KWRP	KBP	KRs	RH	1330

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		NL	LS	HH	SH	DK												
S.5.3	X	X	X	X	X	-	Brackish flooded grassland type	***Agrostis stolonifera, Potentilla anserina, Blysmus rufus, Cotula coronopifolia, Eleocharis uniglumis, Triglochin palustre*** **and +/-** species of S.5	*Blysmetum rufi*, *Eleocharis uniglumis*-veg., *Cotula coronopifolia*-veg., *Alopecurus bulbosus*-veg.	1330	SBg	P–b, Pp-b, Pe-b, Bcs, Bg, Bt, Bj, Br, Bgt, Bgn, Bpj, Bpg, Bp, Bo	26C3	KHBN, KHF	KHB	KBc, KBe, KBr	BR, EU, C	1330
S.5.4	-	X	-	-	-	-	***Juncus maritimus* / *Oenanthe lachenalii* type**	***Juncus maritimus, Oenanthe lachenalii*** **and +/-** *Potentilla anserina* species of S.5		1330	SBm	Bm	26-e	KHBN	KHB	-	-	1330
S.6	-	-	-	-	-	-	Fresh grasslands	**S.6:** *Lolium perenne*, *Poa annua*, *Cynosurus cristatus*, *Bellis perennis*, *Taraxacum* spec., *Plantago major*, *Poa trivialis*, *Elymus repens*, *Capsella bursa-pastoris*, *Polygonum aviculare*, *Cirsium arvense*, *Rumex obtusifolius*	*Molinio-Arrhenatheretea*-veg.	-	SF	Dd/Dv	16-q, 16B-a, 16B-e, 16B3	G-types	G	KOh, KOr	CA	1330
S.6.0	X	X	X	X	X	-	Fresh grasslands, unspecific			-	SF*	-	12B-m	G-types	G	-	CA, SP	-
S.6.1	X	X	X	X	X	-	***Lolium perenne*, *Cynosurus cristatus* and other fresh species type**	***Lolium perenne*, *Cynosurus cristatus*** **and +/-** species of S.6	*Lolio-Cynosuretum*, *Plantagini-Lolietum perennis*, *Polygonion* veg.	as surrounding Natura 2000 type	SFl	Dd, Dv, Rgv, Rp, Rgh	16C4	GM, Gl	GM	KGf, KGg, KGy	AR, MO, Y	-
S.7	-	-	X	X	-	X	Intertidal brackish reed beds	***Bolboschoenus maritimus, Phragmites australis, Schoenoplectus tabernaemontani, Schoenoplectus triqueter, Typha angustifolia, Typha latifolia*** **(at least 1 species dominant)** **and +/-** species of S.5	*Scirpo-Phragmitetum*, *Bolboschoenetum maritimae*, *Schoenoplectus*-veg., *Typha*-veg.	1130	-	-	-	KWR	-	-	-	1130
S.8	-	-	X	X	X	-	Lagoons with or without submerged vegetation	***Ruppia maritima, Zannichellia palustris, Bolboschoenus maritimus, Phragmites australis***		1150, 1330 (as surrounding Natura 2000 type)	-	water or vegetation-types Wrc, Wrm, Wpp or bare soil types	-	KLM, KLS	-	KSe	LA	1330