

## B1.4a Atlantic and Baltic coastal dune grassland (grey dune)

### Summary

This habitat includes the grasslands that develop on the stabilised sands of older (so-called 'grey') dunes along the Atlantic (south to mid-Portugal), North Sea and Baltic coasts. The sandy substrate, thinly enriched with accumulating humus, is well drained and can dry out during summer. Typically with a more or less complete cover of (relatively low) grasses, herbs, mosses and lichens, sometimes with low shrubs, they comprise one of the most species-rich habitats on the temperate European coast. The flora can vary with the regional climate, with the character of the substrate, varying from acid to highly calcareous, and with the local dune topography. Individual dune systems can vary from narrow strips to enormous stretches, though most are not a dynamic stage in succession, but maintained in a more or less stable fixed state. Often grazed or mown in the past, which prevented development of scrub and woodland, the habitat is threatened in most countries by abandonment of traditional farming, by eutrophication through nitrogen deposition, and overuse and urbanisation, often related to tourism.

### Synthesis

The habitat is on the Red List as Vulnerable (VU) due to large declines in area (criterion A1) and large remaining areas negatively affected in quality (criterion C/D1). The decline in area is very close to the threshold for the category Endangered (EN).

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Vulnerable	A1, C/D1	Vulnerable	A1, C/D1

### Sub-habitat types that may require further examination

This is a very broadly defined habitat. A northern and southern sub-type can be distinguished, with southern types having affinity with Mediterranean grey dunes and containing relatively many endemic species. Alternatively or additionally a division in grey dunes on calcareous and acidic soils may be made, with calcareous dune grasslands being restricted to the British Isles and the southern part of the distribution range (Netherlands-Portugal), and acidic dune grasslands being more widespread and dominating in the Baltic region.

### Habitat Type

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#### Code and name

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Atlantic grey dune with *Ephedra distachya*, *Helichrysum staechas* and *Artemisia campestris* subsp. *lyodii* at the Dune de la falaise, Batz-sur-mer, France (Photo: Frédéric Bioret).



Extensive area of dune grasslands on the Wadden Sea Island of Texel, the Netherlands, near the dune slack Pompevlak (Photo: John Janssen).

## Habitat description

Stabilized or semi-stabilized dune grasslands or chamaephytic vegetations (grey dunes) of the Atlantic and Baltic coasts, dominated by grasses, herbs, mosses and/or lichens. This habitat is usually dominated by perennial species, with a certain proportion of therophytes. The type is distributed along the Baltic coast and the Atlantic coast, from southern Norway to halfway Portugal, including the British Islands, Ireland and (marginal) Iceland.

It is a grassland type of dry dune sands that has a broad diversity in species composition. Species composition changes over the climatic north-south and west-east gradients, but differs also within one site on different soils (acid to slightly calcareous sands) and under different microclimates (especially north versus south exposition). Most species of the European temperate coastal grasslands are also found in inland sand grasslands, but several dune chamaephytic species have their optimum in the coast. Especially in the south (Southwest-France to Portugal) communities of the order *Crucianelletalia* contain several coastal dune restricted and endemic species.

The occupied area of the type depends on the size of the dunes, which is relatively large along shallow, sandy seas with relatively large tidal differences. In stretches of rocky coast dunes and the associated grasslands are limited to small parts in the estuaries of rivers. In dynamic dune landscapes these grasslands may form temporary natural succession stages, which could be overgrown with shrubs, overblown with sand, or washed away during severe storms. Such situations are rare, however. In more stabilized dunes these grasslands are maintained by natural dynamics like wind, salt spray, drought and grazing (rabbits), in combination with semi-natural management by cattle and sheep grazing (decreasing drastically or abandoned in certain areas) or rarely by mowing.

Indicators of good quality:

In good conditions these grasslands are rich in forbs, mosses and lichens. They are threatened by natural succession towards shrubland (a.o. *Hippophae rhamnoides*, *Salix repens* subsp. *arenaria*) and forest (*Quercus* spp, *Pinus* spp), and by encroachment of tall or dense grasses (a.o. *Calamagrostis epigejos*, *Ammophila arenaria*, *Festuca rubra*), herbs and shrubs (incl. non-native species like *Prunus serotina*) under suboptimal conditions (for instance high atmospheric deposition, low dynamics, no grazing, eutrophication linked to human frequentation). The habitat is also locally threatened by trampling. Also the non-native moss *Campylopus introflexus* behaves as an invasive species. In cases of overgrowth with grasses, shrubs and trees, more intensive management may help maintenance of species diversity. A patchy pattern of grassland and shrubs on a landscape scale is, on the other hand, of importance for several typical bird species of coastal dune complexes.

The following characteristics may be considered as indicators of good quality, but these indicators differ in different regions:

- High species richness
- Presence of rare and/or threatened species (characteristic communities species)
- Absence or low presence of invasive or nitrophilous species
- Diversity within the type within an area and over the whole range
- High cover of lichens (in some varieties)
- Low vegetation structure
- Low cover of encroaching tall grasses, tall herbs and shrubs
- Low cover of alien and ruderal species
- Presence of typical fauna (birds, lizards, butterflies, other invertebrates)

Characteristic species:

#### Flora

Vascular plants: *Aetheorhiza bulbosa*, *Agrostis capillaris*, *Aira praecox*, *Alyssum loiseleurii*, *Anacamptis pyramidalis*, *Anthyllis vulneraria subsp. maritima*, *Asperula cynanchica*, *Artemisia crithmifolia*, *Asparagus officinalis ssp. prostrata*, *Asterolinum stellatum*, *Avenula pubescens*, *Calystegia soldanella*, *Carex arenaria*, *Cochlearia danica*, *Corynephorus canescens*, *Crucianella maritima*, *Dianthus arenarius*, *Dianthus hyssopifolius ssp. gallicus*, *Ephedra distachya*, *Erodium glutinosum*, *Erodium lebelli*, *Eryngium campestre*, *Euphorbia portlandica*, *Festuca polesica*, *Festuca filiformis (=tenuifolia)*, *Festuca vasconsensis*, *Festuca rubra*, *Galium arenarium*, *Galium verum*, *Gentiana campestris*, *Gentiana cruciata*, *Geranium molle*, *Geranium sanguineum*, *Helichrysum arenarium*, *Helichrysum stoechas*, *Hieracium umbelatum*, *Jasione montana*, *Lagurus ovatus*, *Lathyrus maritima*, *Koeleria albescens (=maritima, = cristata ssp. arenaria)*, *Linaria arenaria*, *Linaria maritima*, *Luzula campestris*, *Medicago littoralis*, *Medicago marina*, *Mibora minima*, *Myosotis ramosissima*, *Omphalodes littoralis*, *Ononis natrix ssp. ramosissima*, *Ononis repens*, *Phleum arenarium*, *Polygala vulgaris*, *Rosa pimpinellifolia*, *Rumex acetosella*, *Sanguisorba minor*, *Sedum acre*, *Silene conica*, *Silene nutans*, *Silene otites*, *Teesdalia nudicaulis*, *Thesium humifusum*, *Thymus praecox*, *Thymus serpyllum*, *Trifolium scabrum*, *Tuberaria guttata*, *Viola canina*, *Viola curtisii*, *Viola kitaibeliana*, *Viola littoralis*, *Viola rupestris*.

Mosses: *Brachythecium albicans*, *Tortula ruraliformis*

Lichens: *Cetraria spp.*, *Cladina spp.*, *Cladonia spp.*, *Peltigera spp.*, ... in the Baltic Sea region: *Racomitrium canescens*, *Ceratodon purpureus*, *Polytrichum juniperinum*, *P. piliferum*

#### Fauna

Mammals: rabbit (*Oryctolagus cuniculus*)

Birds: *Burhinus oedicephalus*, *Oenanthe oenanthe*, *Tadorna tadorna*

Reptiles: *Lacerta agilis*

Insects: many species of Coleoptera (ground beetles), Saltatoria (grass hoppers), Formicidae (ants) and Hymenoptera (bees, wasps), and Lepidoptera (butterflies)

Lepidoptera examples: *Argynnis niobe*, *Issoria lathonia*, *Mesoacidalia aglaja*

## Classification

This habitat may be equivalent to, or broader than, or narrower than the habitats or ecosystems in the following typologies.

EUNIS:

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EuroVegChecklist (alliances):

*Euphorbio portlandicae-Helichrysion stoechadis* Géhu et Tx. ex Sissingh 1974

*Koelerion arenariae* Tx. 1937 corr. Gutermann et Mucina 1993 (incl. *Koelerion albescentis*, Galio-Koelerion, Tortulo-Koelerion)

*Helichrysion picardii* (Rivas-Mart., Costa et Izco in Rivas-Mart. et al. 1990) Rivas-Mart., Fernández-González et Loidi 1999

*Polygalo vulgaris-Koelerion macranthae* Weeda et al. in Schaminée et al. 1996

*Corynephorion canescentis* Klika 1931

*Thero-Airion* Tx. ex Oberd. 1957

*Violion caninae* Schwickerath 1944 (marginal)

*Cynosurion cristati* Tx. 1947 (marginal)

*Galio litoralis-Geranion sanguinei* Géhu et Géhu-Franck in de Foucault et al. 1983 (marginal)

*Armerion elongatae* Pötsch 1962 (= *Plantagini-Festucion*)

Annex 1:

2130 Fixed coastal dunes with herbaceous vegetation ('grey dunes')

(This habitat has been applied a bit broader, for example also for dune communities in the Northern Adriatic Sea and for Black Sea dune grasslands)

Emerald:

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MAES-2 :

Grassland

IUCN :

13.3 Coastal Sand Dunes

**Does the habitat type present an outstanding example of typical characteristics of one or more biogeographic regions?**

Yes

Regions

Atlantic

Justification

This habitat occurs in most of the coastal dunes of the 14 EU28 countries of the Atlantic region, where it has a much larger area than in the Baltic.

## Geographic occurrence and trends

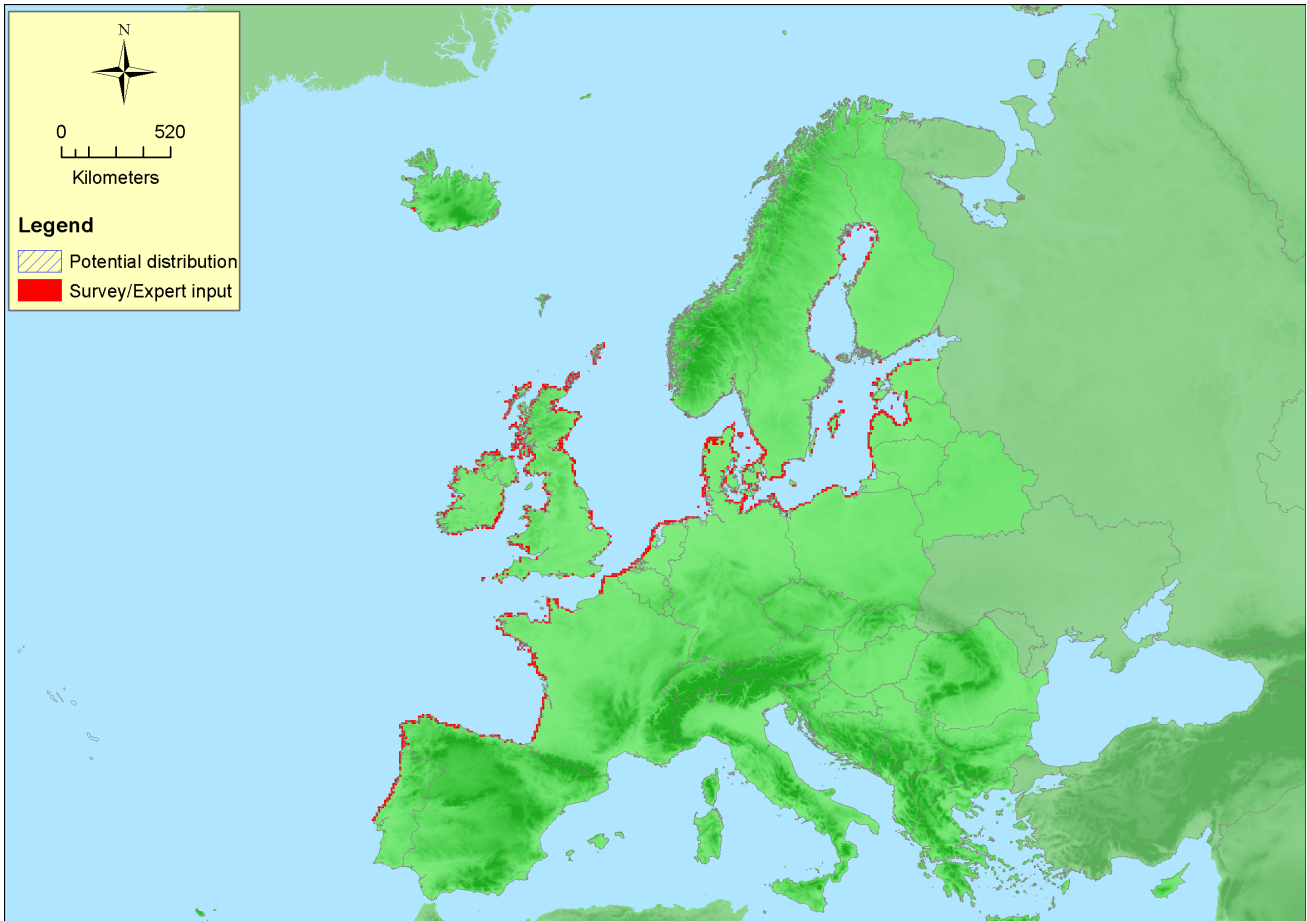
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Belgium</i>	Present	6.7 Km <sup>2</sup>	Increasing	Decreasing
<i>Denmark</i>	Present	154 Km <sup>2</sup>	Unknown	Decreasing
<i>Estonia</i>	Present	7 Km <sup>2</sup>	Stable	Unknown
<i>Finland</i>	Finland mainland: Present	2.4 Km <sup>2</sup>	Decreasing	Decreasing
<i>France</i>	France mainland: Present	124 Km <sup>2</sup>	Decreasing	Decreasing
<i>Germany</i>	Present	40 Km <sup>2</sup>	Decreasing	Decreasing
<i>Ireland</i>	Present	73 Km <sup>2</sup>	Increasing	Unknown
<i>Latvia</i>	Present	12 Km <sup>2</sup>	Decreasing	Decreasing
<i>Lithuania</i>	Present	8 Km <sup>2</sup>	Stable	-
<i>Netherlands</i>	Present	163 Km <sup>2</sup>	Stable	Decreasing
<i>Poland</i>	Present	23 Km <sup>2</sup>	Decreasing	Decreasing
<i>Portugal</i>	Portugal mainland: Present	13 Km <sup>2</sup>	Decreasing	Decreasing
<i>Spain</i>	Spain mainland: Present	16 Km <sup>2</sup>	Decreasing	Unknown
<i>UK</i>	Northern Island: Present United Kingdom: Present	224 Km <sup>2</sup>	Decreasing	Unknown

EU 28 +	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Guernsey</i>	Present	Km <sup>2</sup>	Unknown	Unknown
<i>Jersey</i>	Present	Km <sup>2</sup>	Unknown	Unknown

### Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
<i>EU 28</i>	3602600 Km <sup>2</sup>	1462	866 Km <sup>2</sup>	Based on existing data provided by EU member States
<i>EU 28+</i>	5990950 Km <sup>2</sup>	1480	app. 900 Km <sup>2</sup>	no available additional data

### Distribution map



Map rather complete, with data gaps in Iceland and Norway. Data sources: EVA, ART17.

### How much of the current distribution of the habitat type lies within the EU 28?

About 90% of this habitat is located in the EU28 countries (estimation).

### Trends in quantity

The general trend is decreasing including in countries where the habitat is well represented (United Kingdom, France, Germany, Spain). The trend is stable in the Netherlands and increasing in Ireland. The trends are similar for EU28 and EU28+, as the additional part of the habitat outside the EU28 is very small.

- Average current trend in quantity (extent)  
 EU 28: Decreasing  
 EU 28+: Decreasing
- Does the habitat type have a small natural range following regression?  
 No  
*Justification*  
 The EOO is larger than 50,000km<sup>2</sup>.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?  
 No  
*Justification*  
 In most sites the habitat occupies large patches.

### Trends in quality

The quality is decreasing in most areas due to trampling, urbanisation and eutrophication. The trends are similar for EU28 and EU28+, as the additional part of the habitat outside the EU28 is very small.

- Average current trend in quality

EU 28: Decreasing  
EU 28+: Decreasing

## **Pressures and threats**

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In most of the countries this habitat is threatened by urbanisation including touristic infrastructures and human activities (trampling, eutrophication). In the northern countries nitrogen deposition is a problem, as well as more natural succession towards scrub and forest.

### **List of pressures and threats**

#### **Agriculture**

Abandonment of pastoral systems, lack of grazing

#### **Urbanisation, residential and commercial development**

Continuous urbanisation  
Discontinuous urbanisation

#### **Human intrusions and disturbances**

Trampling, overuse

#### **Pollution**

Nitrogen-input

#### **Natural biotic and abiotic processes (without catastrophes)**

Species composition change (succession)

## **Conservation and management**

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This habitat has a low resilience and needs to be protected against too much trampling as it takes several decades to recover. In the northern regions mowing or grazing is needed to prevent succession towards dune scrubland and forest.

### **List of conservation and management needs**

#### **No measures**

No measures needed for the conservation of the habitat/species

#### **Measures related to agriculture and open habitats**

Maintaining grasslands and other open habitats

#### **Measures related to wetland, freshwater and coastal habitats**

Restoring coastal areas

#### **Measures related to spatial planning**

Establish protected areas/sites

### **Conservation status**

Annex I:

2130: ATL U2, BOR U2, CON U2



## When severely damaged, does the habitat retain the capacity to recover its typical character and functionality?

The recovery process of degraded grey dunes is very low and as its structure and functionality have been affected. It requires physical protection to avoid frequentation and especially trampling.

### Effort required

20 years
Naturally

## Red List Assessment

### Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-48 %	unknown %	unknown %	unknown %
EU 28+	-48 %	unknown %	unknown %	unknown %

Values have been calculated from territorial data of 11 EU countries, including the countries with the largest areas. Criteria A1 indicates a strong reduction of quantity over the last 50 years and leads to the Vulnerable status (close to Endangered). The EU28+ value is the same as the EU28 value.

### Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	> 50000 Km <sup>2</sup>	Yes	No	No	> 50	Yes	No	No	No
EU 28+	> 50000 Km <sup>2</sup>	Yes	No	No	> 50	Yes	No	No	No

The EOO is larger than 50,000 km<sup>2</sup> and the AOO is larger than 50 km<sup>2</sup>, while the habitat is present in many locations. The conclusion for all B-criteria is Least Concern.

### Criterion C and D: Reduction in abiotic and/or biotic quality

Criteria C/D	C/D1		C/D2		C/D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	51 %	60% %	unknown %	unknown %	unknown %	unknown %
EU 28+	51 %	60% %	unknown %	unknown %	unknown %	unknown %

Criterion C	C1		C2		C3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	unknown %	unknown %	unknown %	unknown %	unknown %	unknown %
EU 28+	unknown %	unknown %	unknown %	unknown %	unknown %	unknown %

Criterion D	D1		D2		D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	unknown %	unknown%	unknown %	unknown%	unknown %	unknown%
EU 28+	unknown %	unknown%	unknown %	unknown%	unknown %	unknown%



Values have been calculated from territorial data of 11 EU countries, including the countries with the largest areas. Almost everywhere a decrease in quality is recorded. The average value for criterion C/D1 leads to the status Vulnerable (VU) for this habitat. Decline in quality relates to both abiotic and biotic changes.

### Criterion E: Quantitative analysis to evaluate risk of habitat collapse

Criterion E	Probability of collapse
EU 28	unknown
EU 28+	unknown

There is no quantitative analysis available that estimates the probability of collapse of this habitat type.

### Overall assessment "Balance sheet" for EU 28 and EU 28+

	A1	A2a	A2b	A3	B1	B2	B3	C/D1	C/D2	C/D3	C1	C2	C3	D1	D2	D3	E
EU28	VU	DD	DD	DD	LC	LC	LC	VU	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	VU	DD	DD	DD	LC	LC	LC	VU	DD	DD	DD	DD	DD	DD	DD	DD	DD

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Vulnerable	A1, C/D1	Vulnerable	A1, C/D1

### Confidence in the assessment

Medium (evenly split between quantitative data/literature and uncertain data sources and assured expert knowledge)

### Assessors

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### Date of assessment

11/04/2016

### Date of review

15/05/2016

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