

B1.7a Atlantic and Baltic broad-leaved coastal dune woodland

Summary

Atlantic and Baltic dune woodland is a very diverse habitat, including both dry and wet broadleaved forest types and, to the south of the range, some mixed woodland with evergreen oaks and some Mediterranean species, vegetation that is often indistinguishable from the local inland types but here occurring on dunes. Such vegetation develops from open grasslands and scrub where sands have been stabilised and the influence of salty winds is negligible. The habitat is vulnerable to afforestation, urbanisation, recreation and infrastructure development but over a longer historical period may have increased with abandonment of pastoralism on dunes and continues stable or expanding.

Synthesis

The overall analysis of data leads to the conclusion Least Concern for recent, historical and future changes in quantity and quality. Although the negative trends in quality are small, the values are close to the thresholds for Near Threatened.

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Least Concern	-	Least Concern	-

Sub-habitat types that may require further examination

The habitat type is diverse, with dry and moist dune forests and different varieties in regions with a different climate. Southern varieties include evergreen oaks such as *Quercus ilex*, while northern dune forests consist entirely of broadleaved trees. Dune forests from moist and wet dune slacks form a small part of the type and are likely to be more threatened than the drier subtypes.

Habitat Type

Code and name

B1.7a Atlantic and Baltic broad-leaved coastal dune woodland



Morfa Harlech Nature Reserve in Wales is one of the few sites with dune woodland in the UK (Photo: Mike Alexander).



Betula pendula forest with *Mentha aquatica* and *Lycopus europaeus* in wet dune slack, Meijendel, The Netherlands (Photo: John Janssen)

Habitat description

This is a very broadly defined habitat of Atlantic coastal dunes, comprising a diversity of relatively open to closed woodlands which develop where more stable coastal sands are invaded by broadleaved trees

typical of the local soils and climatic conditions. It includes forests in dry and wet conditions, on calcareous and acidic sands and in the climatic gradient from southern Norway and the Baltics towards central Portugal. Many of these forests are indistinguishable in their floristic composition from inland examples of the same general type.

A first division can be made between forests of dry and moist soils. In moist dune slacks in the whole range of the habitat these forests are rather similar, with *Betula pendula* as one of the most important tree species, accompanied by *Populus tremula*. The understory consists of a combination of dune shrubs and common dune slack species, like *Mentha aquatica*, *Phragmites australis*, *Valeriana officinalis*, *Cirsium palustre*, *Eupatorium cannabinum* and *Calamagrostis epigejos* (alliance Ligustro vulgaris-Betulion pubescentis, sometimes considered as part of the Alnion incanae). In wetter conditions *Alnus glutinosa* or *Betula pubescens* may become dominant (Alnion glutinosae, Betulion pubescentis), with helophytic species like *Thelypteris palustris* and *Lycopus europaeus*. In some sites *Sphagnum* species dominate the moss layer. Rarely *Salix alba* will colonise wet dune slacks, forming woodlands.

The dry forests are more diverse, with *Quercus robur* as the dominant species in the Northwest-Atlantic and Baltic, and more thermophilous *Quercus* species (*Q. ilex*, *Q. rotundifolia*, *Q. suber*) in the warmer parts of the Atlantic coast, south of Loire estuary. In general these forests have a similar species combination to more inland forests on sandy soils, although some typical dune species like *Carex arenaria* and *Calamagrostis epigejos* will occur more frequently. The *Quercus* forests from the acidic dune sands in the northern and Baltic part of the range (alliance Quercion roboris) are often relatively species poor, with a heathy aspect beneath the trees, *Calluna vulgaris*, *Empetrum nigrum*, *Festuca ovina*, *Carex arenaria*, *Lonicera periclymenum*, *Polypodium vulgare* and other common species in the herb layer, and in many cases a high cover of bryophytes (*Pleurozium schreberi*, *Hypnum* spp., *Dicranum scoparium*, *Polytrichum* spp.) and lichens (*Cladonia* spp.). On slightly richer, more mature soils, *Fagus sylvaticus* may be dominant, or a combination of *Quercus robur*, *Ulmus minor*, *Acer pseudoplatanus* and *Fraxinus excelsior* (classified under Alnion incanae). The field layer may contain a set of geophytes, like *Scilla non-scripta* and *Galanthus nivalis*. Most different from inland types are the *Quercus robur* forests on calcareous dune sands, widespread in the central part of the Dutch dunes, but elsewhere rare. These, in many cases relatively young forests, contain a lot of shrubs, like *Crataegus monogyna*, *Rosa* spp., *Berberis vulgaris*, *Euonymus europaeus*, *Ligustrum vulgare*, *Hippophae rhamnoides* and *Rhamnus cathartica*. The herb layer differs, depending on the exposition of the dunes, but often includes a combination of species preferring dry, sandy soils and species of more humus-rich soils, with mixtures such as *Carex arenaria*, *Calamagrostis epigejos*, *Glechoma hederacea*, *Polygonatum odoratum*, *Convallaria majalis*, *Geranium robertianum* and *Galium aparine*. Sometimes rare species are found in the woodland edges, like *Scrophularia vernalis*. In the southern part of the distribution range more Mediterranean species are found in the canopy, like *Quercus ilex*, *Q. suber* and *Q. pyrenaica* sometimes mixed with *Pinus pinaster*, and in the understorey *Ruscus aculeatus*, *Cistus salviifolius*, *Arbutus unedo*, *Rubia peregrina*, *Ligustrum vulgare* and *Iris foetidissima*.

Because the coastal dunes of Europe have been relatively intensively used by man for many centuries, and in other parts are very dynamic, in general dune forests are relatively young and in many places also rare. Other woodlands have been created by planting, often with pine species, like dune areas between the Loire estuary and Les Landes in (South)western France. In general dune woodlands are restricted to the more inland parts of the dunes, but in some places low trees grow seawards as far as the first dune ridge, being reduced to a bonsai structure by the salty wind. Old plantations with dominance of deciduous trees with a similar structure and species composition as natural forests may be considered under this habitat. Pine forests on dunes belong to B1.7d (Baltics) or B1.7e (Mediterranean), while lower, shrubby woodlands, for example dominated by *Salix cinerea* in dune slacks or *Crataegus monogyna* on dry dunes, and *Sambucus nigra* woodland, in most cases growing together with *Hippophae rhamnoides*, are considered part of habitat B1.6a.

Indicators of good quality

These are relatively young woodlands, which often still are in a certain stage of succession. Open structures contribute to the richness of the species diversity.

- Variety of open woodlands (with many gradients towards shrub, heathland and grassland) and closed forests (with more typical species of shaded conditions)
- Dominance of broad-leaved species
- Absence of non-native or nitrophilous species
- Abundance of spring-flowering geophytes
- No or a low rate of disturbance by recreation

Characteristic species:

Tree canopy: *Acer pseudoplatanus*, *Alnus glutinosa*, *Betula pendula*, *Betula pubescens*, *Fagus sylvatica*, *Quercus ilex*, *Q. petraea*, *Q. pyrenaica*, *Q. robur*, *Q. suber*, *Ulmus minor*

Understorey/Herb layer: *Calamagrostis epigejos*, *Carex arenaria*, *Convallaria majalis*, *Crataegus monogyna*, *Hedera helix*, *Ligustrum vulgare*, *Lonicera periclymenum*, *Polygonatum odoratum*, *Ruscus aculeatus*, *Scilla non-scripta*, *Scrophularia vernalis*, *Teucrium scorodonia*.

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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EuroVeg Checklist:

Alnion glutinosae Malcuit 1929

Alnion incanae Pawlowski et al. 1928

Carpinion betuli Issler 1931

Ligustro vulgaris-Betulion pubescentis Géhu 2006

Quercion ilicis Br.-Bl. ex Molinier 1934

Quercion roboris Malcuit 1929

Annex 1:

2180 Wooded dunes of the Atlantic, Continental and Boreal region

Emerald:

B1.7 Coastal dune woods

MAES-2:

Woodland and forest

IUCN:

1.4 Temperate forests

Does the habitat type present an outstanding example of typical characteristics of one

or more biogeographic regions?

Yes

Regions

Atlantic

Justification

The type is mainly restricted to the Atlantic region with some occurrence on the Baltic coasts of the Boreal.

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	3 Km ²	Unknown	-
<i>Denmark</i>	Present	Km ²	-	-
<i>Estonia</i>	Present	1 Km ²	Unknown	-
<i>Finland</i>	Aland Islands: Uncertain Finland mainland: Present	0.8 Km ²	Unknown	Unknown
<i>France</i>	France mainland: Present	200 Km ²	Stable	Decreasing
<i>Germany</i>	Present	21 Km ²	-	-
<i>Ireland</i>	Present	0.1 Km ²	Unknown	-
<i>Latvia</i>	Present	Km ²	Decreasing	Decreasing
<i>Sweden</i>	Present	1 Km ²	Unknown	Decreasing

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>	429220 Km ²	288	424 Km ²	excl.
<i>EU 28+</i>	429220 Km ²	297	424 Km ²	excl.

Distribution map



Map rather complete, but data gaps for Norway, Spain, UK; potential distribution in Baltic region. Data sources: ART17, BOHN.

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

95%

Trends in quantity

Average trend in area EU28 and EU28plus is -4.2%

- 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 habitat has a wide range.

- Does the habitat have a small natural range by reason of its intrinsically restricted area?

No

Justification

No. In the countries with largest areas the stands are very large.

Trends in quality

A wide variety of trends in quality have been reported, from no or marginal to 100% affected moderately. On average about half of the area has been negatively affected with slight severity.

- Average current trend in quality

EU 28: Decreasing

Pressures and threats

The main threats are intensive forestry, expansion of non-native species, urbanisation and expansion of infrastructure, disturbance by outdoor activities, natural fires (in Portugal) and (locally, for moist varieties of the type) changes of hydraulic conditions.

List of pressures and threats

Sylviculture, forestry

Forest and Plantation management & use

Transportation and service corridors

Roads, paths and railroads

Urbanisation, residential and commercial development

Urbanised areas, human habitation

Human intrusions and disturbances

Outdoor sports and leisure activities, recreational activities

Invasive, other problematic species and genes

Invasive non-native species

Natural System modifications

Human induced changes in hydraulic conditions

Geological events, natural catastrophes

Fire (natural)

Conservation and management

No management may be necessary in order to realize older stages of forests. Removal of non-native species may be relevant in some cases. In other cases continuation of coppice management or restoration of hydrological systems may be needed for conservation of species diversity.

List of conservation and management needs

No measures

No measures needed for the conservation of the habitat/species

Measures related to forests and wooded habitats

Restoring/Improving forest habitats

Adapt forest management

Measures related to wetland, freshwater and coastal habitats

Restoring/Improving the hydrological regime

Measures related to hunting, taking and fishing and species management

Specific single species or species group management measures

Conservation status

Annex 1-type:

2180: ATL U1, BOR U2, CON U1

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

This is a forest type, which needs relatively long time for complete restoration. The type itself may be realized within 20 years, but for a good quality with structural variation a longer time period is needed. As most Atlantic dune forests are relatively young in Europe, no exact indication of time-scale can be given (50 or 200 years).

Effort required

50+ years	200+ years
Naturally	Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-4.2 %	unknown %	unknown %	unknown %
EU 28+	-4.2 %	unknown %	unknown %	unknown %

Values for A1 have been calculated from territorial data sheets. Several countries report an increase of area over a longer historical time frame (A3), and also overall a slight increase is predicted for the near future (A2a). No quantitative data are available for A2a, A2b and A3.

Criterion B: Restricted geographic distribution

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

Figures for EOO and AOO are far above thresholds for B, and the number of locations is high. There are no continuing threats or processes that are likely to cause a decline in the next 20 years.

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	53 %	21 %	unknown %	%unknown %	unknown %	%unknown %
EU 28+	53 %	21 %	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%

Reported trends are in some countries biotic, in others abiotic or both, therefore no scores are reported for C1 or D1. No or little data are available on future trends (C/D2, C2, D2) or longer historical trends (C/D3, C3, D3).

Criterion E: Quantitative analysis to evaluate risk of habitat collapse

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

No data available on this criterion.

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	LC	LC	LC	LC	LC	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	LC	LC	LC	LC	LC	LC	LC	LC	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
Least Concern	-	Least Concern	-

Confidence in the assessment

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

Assessors

J. Janssen

Contributors

Habitat description: J. Janssen

Territorial data: P. Aarrestad, R-J. Bijlsma, J. Capelo, D. Espirito-Santo, P. Finck, A. Jacobson, T. Kontula, F. O'Neill, S. Provoost, V. Rašomavičius, U. Raths, U. Riecken, B. Renaux, I. Rove, I. Sell, A. Ssymank

Working Group Coastal: A. Acosta, F. Bioret, H. Gardfjell, J. Janssen, J. Loidi, R. Tzonev

Reviewers

J. Rodwell

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