

D2.1 Oceanic valley bog

Summary

Oceanic valley bogs are essentially topogenous systems of shallow, permanently waterlogged, oligotrophic acid peats. They are maintained by a high ground water table seeping from impervious bedrocks or superficial deposits in low-relief landscapes. The habitat is mostly found in the oceanic parts of Europe, with isolated occurrences in locally suitable places within the Continental zone. With a waterlogged surface dominated by *Sphagnum* spp., often with a gentle hummock-hollow patterning and pools, the habitat is dependent on the maintenance of a high ground water table and some modest throughput, so abstraction or contamination of waters, together with droughts, pose the most important threats. Grazing of the heaths, which normally surround the habitat, can be important in limiting encroachment of shading scrub or woodland, though the active mire surface is generally itself too wet for shrubs or trees to thrive. Losses in extent and deterioration in quality have probably been substantial, reducing the overall range where damaged sites are marginal. The restoration of the habitat is problematic, dependent on landscape-scale interventions and continuing control.

Synthesis

Although the calculation for A1 reduction in extent over recent past time gives a range which extends into the Endangered (EN) category, the fragmentary nature of the data makes an assessment of Vulnerable (VU) for the EU28 the more reliable conclusion. For the EU28+ the habitat is Near Threatened (NT), because of degradation of quality, with values close to the thresholds for Vulnerable.

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

Sub-habitat types that may require further examination

No sub-habitats have been distinguished for further analysis.

Habitat Type

Code and name

D2.1 Oceanic valley bog



Oceanic valley bog with *Sphagnum papillosum* (lawns) and *Racomitrium lanuginosum* (hummocks) at Koltwasmyrre, Norway (Photo: Petra Hájková).



Oceanic valley bog in the New Forest, UK, showing gentle *Sphagnum* dominated hummock-hollow surface and bog pools (Photo: John Rodwell).

Habitat description

Oceanic valley bogs are essentially topogenous systems of permanently waterlogged, oligotrophic acid peats, maintained by a high ground water table seeping from impervious bedrocks or superficial deposits in low-relief landscapes of the oceanic parts of Europe, topographically completely isolated from other mire systems, though often embedded within landscapes of wet heath. The hydrological regime can be quite complex, with percolating waters sometimes channeled to a central soakway and outflow which has a more obviously soligenous character. The peat sustaining the valley bog habitat itself is usually thin, often less than 1.5m.

Although the valley mire flora may show some localised soligenous influence where water flow becomes more obvious, a poor-fen flora is typically sparse on the active surface and the usual dominants are peat-building *Sphagnum* species, which form a luxuriant carpet with a gentle hummock-hollow surface and bog pools in lower places. Compared with ombrogenous bogs, *Eriophorum vaginatum* and *Scirpus cespitosus* are very scarce and the usual monocotyledons are *Eriophorum angustifolium* and *Molinia caerulea*, both sometimes abundant, with *Rhynchospora alba* occurring around the pools. *Erica tetralix* and, on the gentle hummocks, *Calluna vulgaris* form a patchy canopy up to 3 dm tall and *Myrica gale* is locally abundant.

Among the associates, the most characteristic are *Narthecium ossifragum*, *Drosera rotundifolia* with, less commonly *D. intermedia* and *D. anglica*, *Potentilla erecta* and *Vaccinium oxycoccos*. Associated soakways may have vegetation resembling D2.3a Quaking mires with, for example, *Menyanthes trifoliata*, *Potamogeton polygonifolius* and *Hypericum elodes* or small sedges. Where valley mires occur within stretches of wet heath, grazing and burning often occur in the mire surrounds, but the high water table of healthy mires offers some protection against trespass of bigger herbivores .

Indicators of good quality:

- Water-table close to surface with wetter depressions and open pools.
- Absence of man-made ditches or gullies
- No patterns of erosion and drying
- (Relatively high) species richness (in flora and fauna)
- No indicators of ground-water eutrophication.

Characteristic species:

Vascular plants: *Calluna vulgaris*, *Drosera rotundifolia*, *Drosera intermedia*, *D. anglica*, *Erica tetralix*, *Eriophorum angustifolium*, *Molinia caerulea*, *Myrica gale*, *Narthecium ossifragum*, *Pinguicula lusitanica*, *Rhynchospora alba*, *Vaccinium oxycoccos* and in associated soakways *Menyanthes trifoliata*, *Potamogeton polygonifolius* and *Hypericum elodes*.

Mosses: *Sphagnum capillifolium*, *S. papillosum* with *S. magellanicum* and *S. pulchrum* local, *S. auriculatum*, *S. cuspidatum* and *S. recurvum* in pools.

Liverworts: *Cephalozia connivens*, *C. macrostachya*, *C. bicuspidata*, *Cladopodiella fluitans*, *Kurzia pauciflora*, *Odontoschisma sphagni*.

Lichens: *Cladonia arbuscula*, *C. impexa*, *C. uncialis*.

Classification

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

EUNIS:

D2.1 Valley mires

EuroVegChecklist:

Oxycocco-Ericion tetralicis Nordhagen ex Tüxen 1937

Rhynchosporion albae Koch 1926 nom. ambig. propos.

and in localised soligenous areas: *Caricion fuscae* Koch 1926 (= *Caricion nigrae*) and *Hyperico elodis-Sparganion* Br.-Bl. et Tx. ex Oberd. 1957.

Annex 1:

No clear relationship, but it can include 7150 Depressions on peat substrates of the *Rhynchosporion*. It may also be considered as 7110 or partly 7140 in some countries.

Emerald:

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MAES:

Wetlands

IUCN:

5.4 Bogs, Marshes, Swamps, Fens, Peatlands

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

Yes

Regions

Atlantic

Justification

The habitat is especially concentrated in areas of oceanic climate with very small extent in locally suitable conditions elsewhere in Europe, although this character is reflected in the species composition mostly by the absence of some important dominants of circumpolar ombrogenous mires.

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>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Czech Republic</i>	Present	0.5 Km ²	Decreasing	Stable
<i>France</i>	France mainland: Uncertain	Unknown Km ²	Unknown	Unknown
<i>Germany</i>	Present	<10 Km ²	Decreasing	Decreasing
<i>Ireland</i>	Present	Unknown Km ²	Unknown	Unknown
<i>Netherlands</i>	Present	0.1 Km ²	Stable	Stable
<i>Portugal</i>	Portugal mainland: Present	0.2 Km ²	Decreasing	Decreasing
<i>Romania</i>	Present	5 Km ²	Stable	Decreasing
<i>UK</i>	United Kingdom: Present	22 Km ²	Stable	Decreasing

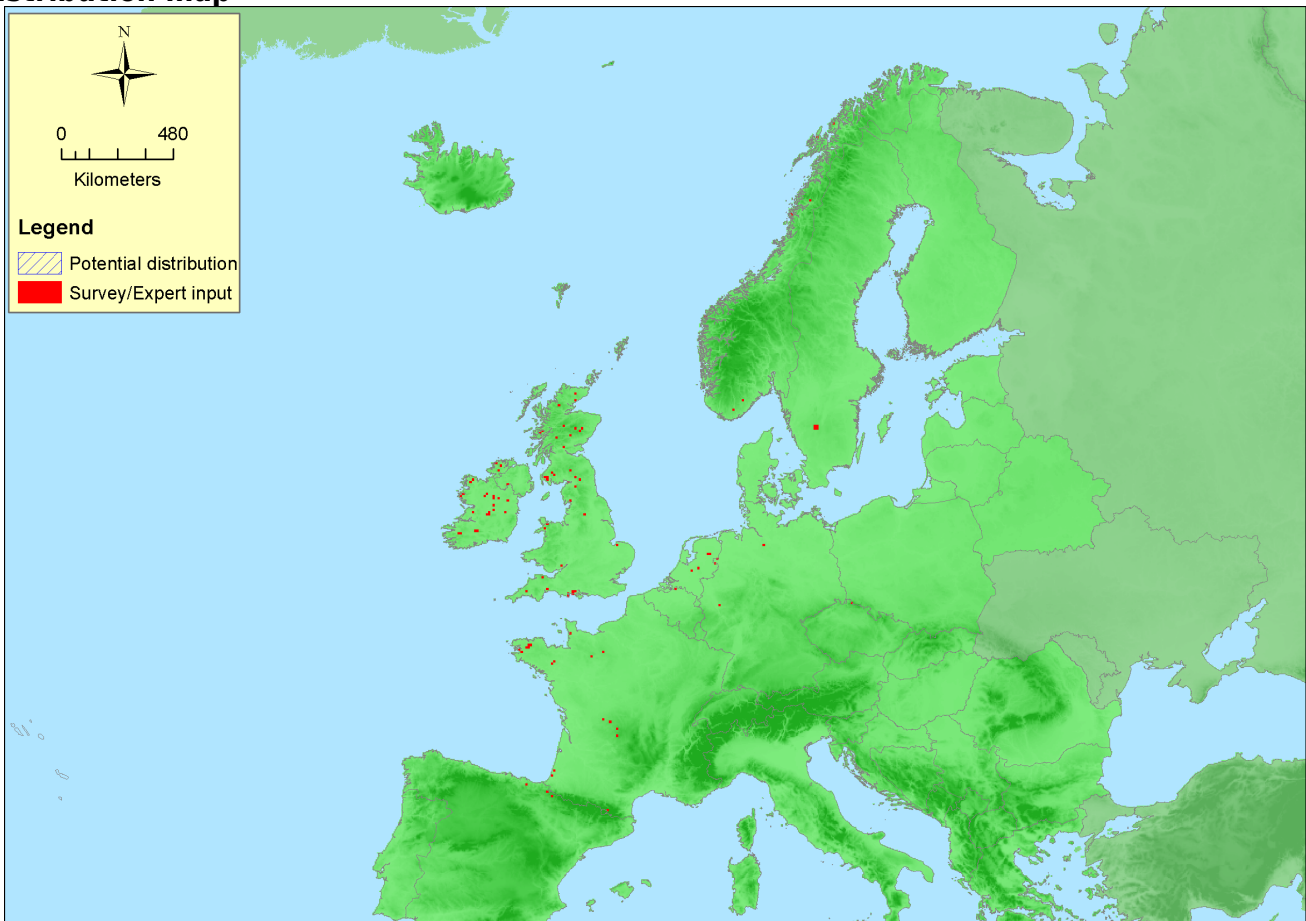
EU 28 +	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
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EU 28 +	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Norway	Norway Mainland: Present	1000 Km ²	Decreasing	Unknown

Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28	2132100 Km ²	138	38 Km ²	
EU 28+	3003650 Km ²	146	1038 Km ²	

Distribution map



Within the EU28, this habitat is reported as most extensive in Great Britain, with far-flung small occurrences in locally suitable parts of mainland Europe. It is surprising that there are no responses for Belgium or Brittany from where the vegetation of this habitat was first reported. Outside the EU28, by far the largest area has been reported from Norway (1000 km²). The reliability and completeness of the map are unclear. Maybe it overestimates at some points (France, Spain) the distribution, and underestimated it in other countries, for example in Norway. Data sources; EVA.

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

The habitat is restricted to the EU28+, but the largest area has been reported from Norway. This is interpolated data, so there is some uncertainty in it. Therefore it is estimated that about 10%-50% occurs in the EU28.

Trends in quantity

Ireland reported unknown extent and unknown current trends. The current situation in the UK, where most of this habitat in the EU28 occurs, is stable in England, unknown in Wales. In other parts of Europe, there is

a decrease in Germany, Portugal and the Czech Republic and a stable situation in The Netherlands. The habitat has been totally lost from Hungary. In Norway a decrease of 20% over the last 50 years was reported.

- 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

There has been some loss of suitable sites at the limits of occurrence in mainland Europe but the EOO does not seem to have shrunk to a great extent.

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

Yes

Justification

Most of the habitat occurs in the more oceanic parts of Atlantic Europe, related to the combination of oceanic climate and suitable lowland terrain. The area of the habitat is limited due to geologic and hydrologic conditions, except maybe in Norway, where relatively large patches occur.

Trends in quality

Almost everywhere the quality of this habitat is reported as decreasing.

- Average current trend in quality

EU 28: Decreasing

EU 28+: Decreasing

Pressures and threats

The most important threats to this habitat are various modifications of the ground water: height of the water table and the strength of soligenous input which are affected by drainage schemes and water abstraction; and also changes in the water quality, where input of nutrients from fertilising of surrounding farmland and contamination from settlements can occur. Increased frequency and intensity of drought and input of atmospheric nitrogen are also concerns. Surrounding landscapes are often grazed by farm stock and deer and, though larger herbivores cannot readily trespass on the wet mire surface, they may be important in limiting the encroachment of shrubs and trees on the neighbouring wet heaths. Recreation can cause problems of trespass by horses and people.

List of pressures and threats

Agriculture

Modification of cultivation practices

Agricultural intensification

Grazing

Non intensive grazing

Human intrusions and disturbances

Outdoor sports and leisure activities, recreational activities

Other human intrusions and disturbances

Pollution

Pollution to groundwater (point sources and diffuse sources)

Air pollution, air-borne pollutants

Nitrogen-input

Natural System modifications

Human induced changes in hydraulic conditions

Conservation and management

The conservation of this habitat depends upon landscape-scale control of the underlying water table and of water quality, together with an ability to influence local farming (the predation of stock) and tourism (trespass of people and horses).

List of conservation and management needs

Measures related to agriculture and open habitats

Maintaining grasslands and other open habitats

Measures related to forests and wooded habitats

Other forestry-related measures

Measures related to wetland, freshwater and coastal habitats

Restoring/Improving water quality

Restoring/Improving the hydrological regime

Managing water abstraction

Conservation status

No clearly related Annex I type. Small parts may qualify for 7150, and locally the habitat may have been assigned under Annex I type 7110.

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

This habitat probably needs careful and lengthy interventions to control the flow and quality of ground water which are likely to be the most damaging threats. There is little evidence of how well restoration can work.

Effort required

10 years	20 years	50+ years	200+ years
Unknown	Unknown	Through intervention	Through intervention

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-34 %	unknown %	unknown %	unknown %
EU 28+	-21 %	unknown %	unknown %	unknown %

It is difficult to derive a reliable average for recent past losses. Ireland made no assessment of present or past extent, though reports that decrease was likely. The UK, where most of the remaining extent occurs, made no assessment of past extent or reduction. The calculation is dominated by the German data, where a range of 50-80% loss is reported on what is actually ca. only 26% of the current extent. Germany alone reports any figure for long-term historical loss, at >90% but this is unlikely to be matched in the UK where

most of the surviving extent occurs. For the EU28+ average trends are lower, due to large areas in Norway, from which a -20% decline was reported.

Criterion B: Restricted geographic distribution

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

EOO, AOO and number of locations are larger than the thresholds for criterion B.

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	45 %	50-65% %	unknown %	unknown %	unknown %	unknown %
EU 28+	45 %	50-65% %	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%

This calculation is dominated by the results from the UK and Germany where the bulk of the remaining extent of this habitat occurs, and Germany reports a range of severity.

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	NT	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	LC	DD	DD	DD	LC	LC	LC	NT	DD	DD	DD	DD	DD	DD	DD	DD	DD

Overall Category & Criteria	
EU 28	EU 28+

Overall Category & Criteria			
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Vulnerable	A1	Near Threatened	C/D1

Confidence in the assessment

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

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References

- Dierssen, K. 1982. *Die wichtigsten Pflanzengesellschaften der Moore NW-Europas*. Conservatoire et Jardin Botaniques, Geneve.
- Dierssen, K. 1996. *Vegetation Nordeuropas*. Verlag Eugen Ulmer, Stuttgart.
- Duvigneaud, P. 1949. Classification phytosociologiques des toubieres de l'Europe. *Bulletin de la Societe Royale de Botanique de Belgique* 81, 59-129.
- Moore, J.J. 1968. A Classification of the Bogs and Wet Heaths of Northern Europe. In *Pflanzensoziologische Systematik*, ed. R. Tuzen, pp. 306-320, Junk, Den Haag.
- Newbould, P. 1960. The ecology of Cransemoor, a New Forest valley bog. *Journal of Ecology* 48, 361-383.
- Rodwell, J.S. editor 1991. *British Plant Communities*, Volume 2 Mires & Heaths. Cambridge University Press, Cambridge.