E3.5 Temperate and boreal moist or wet oligotrophic grassland

Summary

These meadows and pastures are typical of less nutrient-rich soils, wet for much of the year, though not inundated by flood-waters and drying out in summer, especially in more Continental regions. The soils may be somewhat acidic to base-rich, sometimes peaty above, and through the lowlands and sub-montane zones of Europe, they have been part of wider landscapes among fens and drier grasslands. Less productive than flood meadows, they are mown just once a year, and towards the west of the range, often lightly grazed, but they can be species-rich with some characteristic and striking species. The main threats are agricultural intensification with fertilisation and drainage, and abandonment of the traditional mowing. Other major losses are due to changes in the natural hydrological systems and habitat destruction by urbanisation and expand of infrastructure. Though still widespread, losses in extent and quality have been very substantial and maintenance of traditional hay making and safeguarding the appropriate hydrological conditions, both on site and landscape level, are the key factors for conserving this habitat type.

Synthesis

Based on a reduction in quantity over the past 50 years, this habitat type is Endangered (EN) both in EU28 and EU28+ (EN). Furthermore, a substantial reduction in biotic and abiotic quality results in a Vulnerable status (VU).

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Endangered	A1	Endangered	A1

Sub-habitat types that may require further examination

No sub-types in need of further examination. The reduction in quantity and quility refers to the whole range of the habitat type.

Habitat Type

Code and name

E3.5 Temperate and boreal moist or wet oligotrophic grassland

In the western distribution range of this habitat type, Cirsium dissectum is a striking species, as here in the Natura 2000 site 'Oldematen en Veerslootlanden' in the Netherlands (Photo: Joop Schaminée).

Wet oligotrophic grassland community of the 'Molinion' with Iris sibirica in Transylvania, Romania (Photo: John Janssen).

Habitat description

This habitat comprises meadows on nutrient-poor soils (both in nitrogen and phosphorus) that are wet during a large part of the year, but superficially may dry out in summer. This especially refers to the more continental regions of its distribution range. In spring, the sites are not flooded, which distinguishes these meadows from floodplain meadows belonging to habitat E3.4 (Moist or wet mesotrophic to eutrophic hay meadows). Due to their relatively low productivity, these grasslands are mown only ones a year, usually late in the season (July, August). The grasses *Molinia caerulea* and *Molinia arundinacea* quite often dominate these rather species-rich communities. Both *Molinia* species may form tussocks, up to 50 cm tall, but – especially in the more Atlantic regions – *Molinia* (*caerulea*) is sometimes less conspicuous and integrates more with other plant species in the stands. Companions are low-productive species of intermittently wet soils that generally also can be found in open forests. Some of the rather striking tall herbs may provide the vegetation a splendid sight in mid-summer. In the western part of its distribution range, the more peaty appearance of the communities goes along with the frequent occurence of sedges (like *Carex nigra* and *Carex panicea*) and rushes (like *Juncus acutiflorus* and J*uncus conglomeratus*); here the communities are sometimes grazed. In syntaxonomic literature, these grasslands are often described as distinct alliances (*Junco-Molinion* and/or *Juncion acutiflorae*). The habitat may occur from the lowlands up to the (sub)montane areas. The pH varies from more or less acidic to calcareous, with calcium carbonate as an important chemical compound. In fen-meadows, the peaty soils may temper the effect of the fluctuating water tables. When the water fluctuations become too intense, other species may take over, like *Juncus effusus*.

The following characteristics can be considered as indicators of good quality:

- High richness in herb species;
- Long-term habitat stability;
- Extensive management regime aimed at long-term continuation of yearly mowing, prohibiting a succesion towards woodland;
- Complex landscape setting, with fens or other kinds of mire vegetation on the one hand and drier grasslands on the other.

Characteristic species:

Vascular plants: *Betonica officinalis, Carex pallescens, Cirsium dissectum, Cirsium tuberosum, Crepis paludosa, Dianthus superbus, Galium boreale subsp. boreale, Gladiolus imbricatus, Iris sibirica, Molinia caerulea, Molina arundinacea, Sanguisorba officinalis, Scorzonera humilis, Selinum carvifolia, Serratula tinctoria, Silaum silaus, Stachys officinalis, Succisa pratensis, Tetragonolobus maritimus, Viola persiciflora.*

Mosses: *Calliergonella cuspidata, Climacium dendroides*

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

EUNIS:

E3.5 Moist or wet oligotrophic grassland

EuroVegChecklist:

Molinion caeruleae Koch 1926

Annex 1:

6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)

Emerald:

E3.5 Moist or wet oligotrophic grassland

MAES-2:

Grassland

IUCN:

4.4 Temperate grassland

Does the habitat type present an outstanding example of typical characteristics of one or more biogeographic regions?
No

Justification
The types has a wide distribution throughout Europe. It has been recorded from 32 countries.

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)
Austria	Present	125 Km^2	Decreasing	Decreasing
Belgium	Present	3.2 Km^2	Decreasing	Decreasing
Bulgaria	Present	3.8 Km^2	Decreasing	Decreasing
Croatia	Present	20 Km^2	Decreasing	Decreasing
Czech Republic	Present	84 Km^2	Decreasing	Decreasing
Denmark	Present	70 Km^2	Decreasing	Decreasing
Estonia	Present	Unknown Km^2	Unknown	Unknown
Finland	Aland Islands: Present Finland mainland: Present	0.3 Km^2	Decreasing	Decreasing
France	France mainland: Present	200 Km^2	Decreasing	Decreasing
Germany	Present	100 Km^2	Decreasing	Decreasing
Hungary	Present	90 Km^2	Decreasing	Decreasing
Ireland	Present	8.5 Km^2	Decreasing	Decreasing
Italy	Italy mainland: Present	82 Km^2	Decreasing	Decreasing
Latvia	Present	16 Km^2	Decreasing	Decreasing
Lithuania	Present	10 Km^2	Decreasing	Decreasing
Luxembourg	Present	Unknown Km^2	Unknown	Unknown
Netherlands	Present	3 Km^2	Decreasing	Decreasing
Poland	Present	251 Km^2	Decreasing	Decreasing
Portugal	Portugal mainland: Present	26 Km^2	Decreasing	Unknown
Romania	Present	37 Km^2	Decreasing	Decreasing
Slovakia	Present	5.3 Km^2	Decreasing	Decreasing
Slovenia	Present	70 Km^2	Decreasing	Decreasing

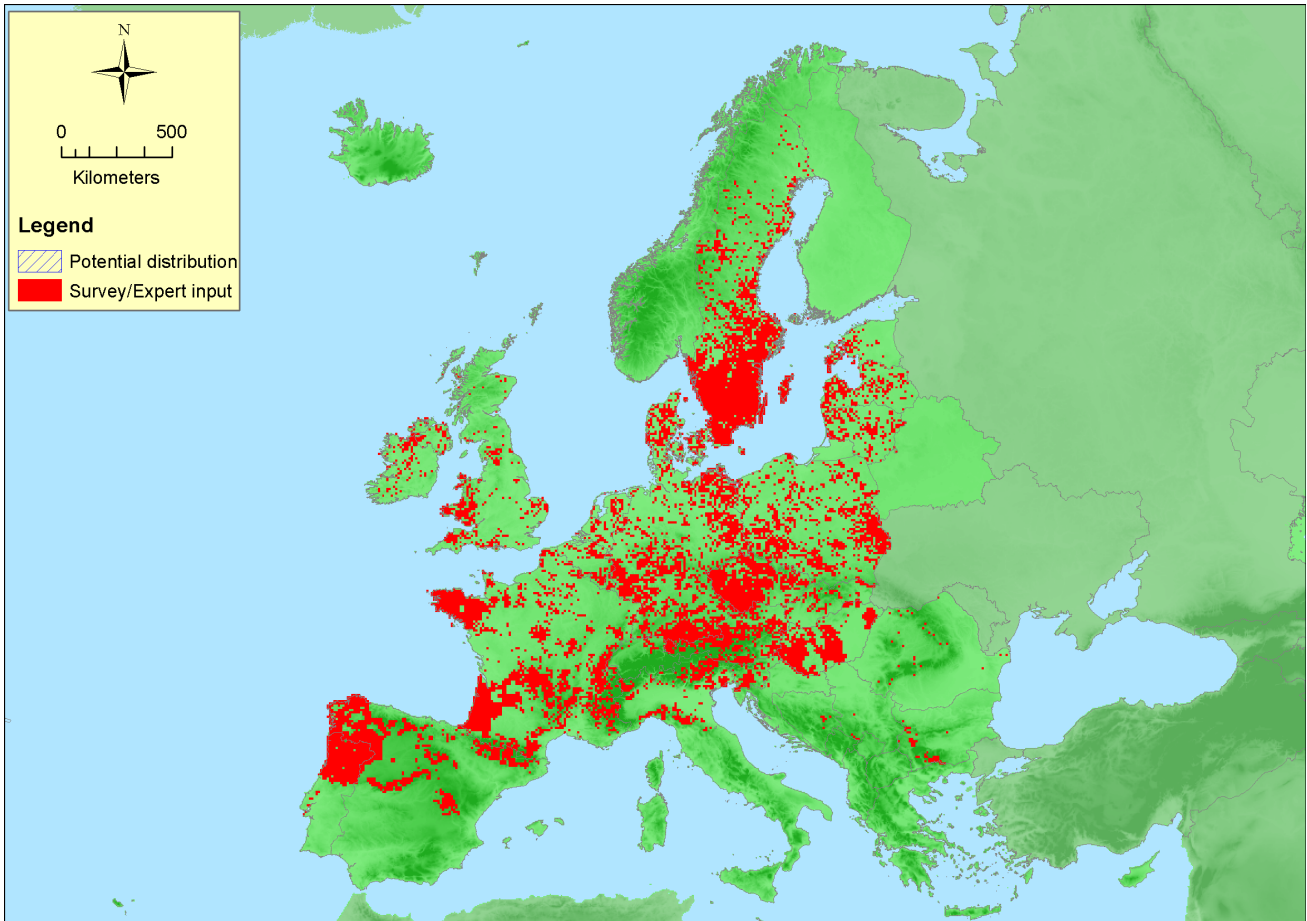| EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Spain	Spain mainland: Present	22 Km^2	Decreasing	Decreasing
Sweden	Present	Unknown Km^2	Unknown	Unknown
UK	Northern Island: Present United Kingdom: Present	36 Km^2	Decreasing	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)
Albania	Uncertain	Km^2	-	-
Bosnia and Herzegovina	Present	5 Km^2	Decreasing	Decreasing
Iceland	Uncertain	Km^2	-	-
Kaliningrad	Present	Unknown Km^2	Unknown	Unknown
Kosovo	Present	Unknown Km^2	Unknown	Unknown
Montenegro	Present	Unknown Km^2	Unknown	Unknown
Norway	Norway Mainland: Present	Unknown Km^2	Unknown	Unknown
Serbia	Present	Unknown Km^2	Unknown	Unknown
Switzerland	Present	100 Km^2	Decreasing	Decreasing

Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28	6528650 Km^2	10343	1263 Km^2	
EU 28+	6528650 Km^2	10377	1368 Km^2	

Distribution map

The map is complete for the EU, but likely more incomplete for Norway, Iceland (?) and the Balkan countries outside the EU. In the western part of the distribution (Ireland, UK, northwest-Spain) the map includes the distinctive rush dominated subtype of this habitat (*Juncion acutiflori*), but it is likely that this subtype has not been included in the reported area for the type in these countries. However, the decline is likely to be the same. Data sources: Art17, NAT, EVA.

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

80%

Trends in quantity

Recent trend EU28: -72.2% Recent trend EU28+: -71.7%. The calculation is based on >98 % of total area reported. Future trend (EU28 and EU28+): probably decrease will continu, but at low rate. Historical trend (EU28 and EU28+): few quantitative data are available, but reported data show an even larger decrease in the past.

- 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 50,000 km2
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  No
  Justification
  The types has a wide distribution throughout Europe (it has been recorded from 35 countries). The

surface of the sites can be quite large (up to several hectares).

Trends in quality

Within EU28: 56.8% is degradated with a weighted severity of 56%. Within EU28+: 57.3% is degradated with a weighted severity of 57%. Calculations are based on average values. When based on maximum values, the calculations result in slightly higher degradation scores, still within the thresholds of the same Red List category (VU).

- Average current trend in quality
  EU 28: Decreasing
  EU 28+: Decreasing

Pressures and threats

The main threats are agricultural intensification (fertilisation and drainage) and abandonment (lack of mowing). Other major losses are due to changes in the natural hydrological systems and habitat destruction by urbanisation and expand of infrastructure (e.g. road construction).

List of pressures and threats

Agriculture

Agricultural intensification
Abandonment / Lack of mowing

Urbanisation, residential and commercial development

Urbanised areas, human habitation

Natural System modifications

Landfill, land reclamation and drying out, general
Modification of hydrographic functioning, general

Conservation and management

Continuation of traditional hay making and safeguarding the appropriate hydrological conditions, both on site and landscape level, are the key factors for conserving this habitat type.

List of conservation and management needs

Measures related to agriculture and open habitats

Maintaining grasslands and other open habitats

Measures related to wetland, freshwater and coastal habitats

Restoring/Improving the hydrological regime

Measures related to spatial planning

Establish protected areas/sites
Legal protection of habitats and species
Manage landscape features

Conservation status

Annex 1 type:

6410: ALP U2, ATL U2, BLS U1, BOR U2, CON U2, MED U1, PAN U2, STE FV

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

The habitat type needs human intervention for restoration, by re-introducing traditional mowing regimes and improving the hydrological conditions. The latter may take a relatively long period to become effective. The presence of relict populations of key species is crucial for success on the short term.

Effort required

20 years
Through intervention

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-72.2 %	unknown %	unknown %	unknown %
EU 28+	-71.7 %	unknown %	unknown %	unknown %

The values fro A1 are calculated from the territorial data sheets. No data (%) 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	-	-		>50	-	-		
EU 28+	>50000 Km^2	-	-		>50	-	-		

EOO and AOO are above thresholds for evaluating 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	56.8 %	56 %	unknown %	unknown %	unknown %	unknown %
EU 28+	57.3 %	57 %	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%

The values for C/D1 are calculated from the territorial data sheets, which we obtained from 32 countries. No data available for C/D2 and C/D3. The degradation in quality refers to both biotic features and abiotic circumstances.

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	EN	DD	DD	DD	LC	LC	LC	VU	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	EN	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
Endangered	A1	Endangered	A1

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

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