

E2.1a Mesic permanent pasture of lowlands and mountains

Summary

This is the most common and widespread kind of traditionally managed pasture throughout temperate Europe, with many local types related to regional climate, terrain and pastoral traditions. Often species-rich with distinctive scarce and rare plants, it can withstand some changes in grazing regime and temporary shifts towards meadow management but it is vulnerable to any kind of substantial change in farming practice, particularly fertilising with slurry or chemicals rather than animal dung. It is also often now reseeded to produce more productive, species-poor, pastures, a change that often started early, particularly in western Europe, but which has been much encouraged in recent decades by agricultural subsidies. In some mountain areas and in eastern Europe, abandonment of grazing has led to scrub and woodland encroachment. Losses in extent and quality are now very widespread with little or no prospect of reduced change. Often once part of wider pastoral landscapes with distinctive associated meadows, vernacular architecture, place names and farming festivals, good examples now often survive more fragmentarily, even in eastern Europe, and only with financial support for conservation management. Restoration needs thoughtful intervention and is difficult once soil fertility has reached high levels or where successions to woodland are advanced.

Synthesis

High quality expert opinion on decline in extent in recent historic time (A1) for a large majority of the countries confirms an assessment of Vulnerable, supported by an average long term loss (A3) reported for half the countries.

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

Sub-habitat types that may require further examination

This is a very diverse habitat with sub-types in different climatic regions, at different altitudes and on soils of different base-status. These are varyingly threatened by extensive and substantial changes in a wide range of pastoral traditions which often cause a convergence to less species-rich and diverse pastures that are encouraged for productive agriculture.

Habitat Type

Code and name

E2.1a Mesic permanent pasture of lowlands and mountains



Mesic permanent pasture in the "Alpenweiden" of the Berner Oberland, Switzerland (Photo: John Janssen).



Mesic grazed-and-mown pasture of *Lino biennis*-*Cynosuretum cristati* in the lowlands of the Cantabrian Fringe. Bergara, Basque Country (Photo: Javier Loidi).

Habitat description

These are mesotrophic pastures on deep, well-drained, mesic soils occurring very commonly throughout temperate Europe, though more restricted in mountains to warmer and more Continental regions. Such pastures are the basis of stock-rearing across much of Europe but the grazing regime varies greatly, from rather intensive to light, year-round or only in summer and may involve cattle, horses, sheep, goats or various combinations of these. Semi-wild herds of horses or cattle may also be used in extensively grazed areas and wild herbivores such as deer, rabbits and hares may be locally important.

Transitions to E2.2 Low and medium altitude hay-meadows can occur, especially where these have been subject to increased grazing in spring and late summer but, in contrast to mown grasslands on similar soils, these pastures contain numerous leaf rosette plants and a smaller contingent of slender, taller grasses and herbs. Flowering is less concentrated in late spring than for meadows, but spread through the growing season. In well-managed grasslands of this type, much of the herbage is palatable and nutritious.

These grasslands are typically characterized by the combination of *Cynosurus cristatus*, *Bellis perennis*, *Trifolium repens* and *Lolium perenne* in lowlands and montane areas, and *Poa alpina* and *Leontodon hispidus* in upper-montane to alpine areas with some associated vicariant species pairs in these respective ranges, like *Phleum pratense* vs. *Phleum rhaeticum*, *Trifolium repens* vs. *Trifolium thalii* and *Poa pratensis* vs. *Poa alpina*. Other regional sub-types are found in southern Europe where, because of the favourable climate, the grasslands can be both grazed and mown, with *Agrostis castellana*, *Carum verticillatum*, *Linum bienne*, *Orchis coriophora* and *Gaudinia fragilis* in the south-west and *Hordeum bulbosum*, *Trifolium incarnatum* ssp. *molinerii* and *Vulpia ligustica* in the central and southern Apennines.

There are also variations related to soil differences. On calcareous soils *Plantago media*, *Briza media*, *Sanguisorba minor* and *Galium verum* indicate transitions towards calcareous grasslands (Habitat E1.2a Semi-dry perennial calcareous grassland), while in acidic, nutrient poor conditions transitions towards species-poor calcifuge grasslands (Habitat E1.7a Lowland to submontane *Nardus* grassland) indicated by *Nardus stricta*, *Potentilla erecta*, *Danthonia decumbens* and *Hieracium pilosella*. In boreal regions *Galium boreale* is an additional species, in alpine areas *Gentiana bavarica*, *Gentiana nivalis*, *Nigritella nigra* and *Crocus* species are found in this habitat and on moist, severely trampled situations in high mountains, *Poa supina* may dominate.

Indicators of good quality

- Continuation of traditional grazing management
- Diversity of species-rich examples in different regions

- Presence of distinctive rare species
- Presence of fungi indicative for “old grassland”
- No increase of nutrients by fertilization addition or atmospheric nitrogen deposition
- No overgrazing with spread of unpalatable weeds, like *Rumex* spp., *Cirsium* spp. *Senecio* spp.
- No under-grazing with spread of palatable coarse grasses such as *Arrheneatherum elatius*

Characteristic species:

Vascular plants : *Achillea millefolium*, *Agrostis capillaris*, *Agrostis castellana*, *Alchemilla vulgaris*, *Alchemilla xanthochlora*, *Anthoxanthum odoratum*, *Bellis perennis*, *Carum verticillatum*, *Cerastium fontanum*, *Chamaemelum nobile*, *Crepis aurea*, *Crepis capillaris*, *Cynosurus cristatus*, *Deschampsia caespitosa*, *Elymus repens*, *Euphrasia rostkoviana*, *Festuca pratensis*, *Festuca rubra*, *Gaudinia fragilis*, *Holcus lanatus*, *Hordeum bulbosum*, *Hordeum secalinum*, *Lathyrus pratensis*, *Leucanthemum vulgare*, *Leontodon autumnalis*, *Leontodon hispidus*, *Leontodon saxatilis*, *Linum bienne*, *Lolium perenne*, *Lotus corniculatus*, *Nardus stricta*, *Orchis coriophora*, *Phleum alpinum*, *Phleum pratense*, *Phleum rhaeticum*, *Plantago alpina*, *Plantago lanceolata*, *Plantago major*, *Poa alpina*, *Poa pratensis*, *Poa trivialis*, *Prunella vulgaris*, *Ranunculus bulbosus*, *Ranunculus repens*, *Rhinanthus minor*, *Taraxacum* sect. *officinale*, *Trifolium badium*, *Trifolium campestre*, *Trifolium dubium*, *Trifolium incarnatum* ssp. *molinerii*, *Trifolium micranthum*, *Trifolium pratense*, *Trifolium repens*, *Trifolium striatum*, *Trifolium thalii*, *Veronica serpyllifolia*, *Vulpia ligustica*.

Fungi: Especially in situations where grassland management has been long uninterrupted (so-called ‘old grasslands’), many rare waxcap and other basidiomycete fungi can be found.

Classification

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

EUNIS:

E2.1 Permanent mesotrophic pastures and aftermath-grazed meadows

EuroVegChecklist:

Cynosurion cristati Tx. 1947 (incl. Lino biennis-Gaudinion fragilis (Br.-Bl. 1967) de Foucault 1989)

Poion alpinae Gams ex Oberd. 1950

Poion supinae Rivas-Mart. et Géhu 1978 (marginal)

Annex 1:

6270 Fennoscandian lowland species-rich dry to mesic grasslands (partly)

Emerald:

-

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

It is a widespread type whose general characteristics relate more to soil characteristics and long histories of grazing throughout temperate Europe.

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>Austria</i>	Present	4000 Km ²	Decreasing	Stable
<i>Belgium</i>	Present	150-250 Km ²	Decreasing	Decreasing
<i>Bulgaria</i>	Present	Unknown Km ²	Increasing	Decreasing
<i>Croatia</i>	Present	150 Km ²	Decreasing	Decreasing
<i>Czech Republic</i>	Present	409 Km ²	Decreasing	Decreasing
<i>Denmark</i>	Uncertain	Km ²	-	-
<i>Estonia</i>	Present	15 Km ²	Decreasing	Decreasing
<i>Finland</i>	Finland mainland: Present	15 Km ²	Decreasing	Decreasing
<i>France</i>	France mainland: Present	15000 Km ²	Decreasing	Decreasing
<i>Germany</i>	Present	Unknown Km ²	Decreasing	Decreasing
<i>Hungary</i>	Present	1 Km ²	Decreasing	Decreasing
<i>Ireland</i>	Present	2300 Km ²	Decreasing	Decreasing
<i>Italy</i>	Italy mainland: Present	851 Km ²	Decreasing	Decreasing
<i>Latvia</i>	Present	90 Km ²	Decreasing	Decreasing
<i>Lithuania</i>	Present	120-130 Km ²	Decreasing	Decreasing
<i>Luxembourg</i>	Uncertain	Km ²	-	-
<i>Netherlands</i>	Present	60 Km ²	Decreasing	Decreasing
<i>Poland</i>	Present	4850 Km ²	Decreasing	Decreasing
<i>Portugal</i>	Portugal mainland: Present	63 Km ²	Decreasing	Unknown
<i>Romania</i>	Present	350 Km ²	Decreasing	Decreasing
<i>Slovakia</i>	Present	200 Km ²	Stable	Decreasing
<i>Slovenia</i>	Uncertain	Km ²	-	-
<i>Spain</i>	Spain mainland: Present	6116 Km ²	Decreasing	Decreasing
<i>Sweden</i>	Uncertain	Km ²	-	-
<i>UK</i>	Northern Island: Present United Kingdom: Present	30 Km ²	Decreasing	Decreasing

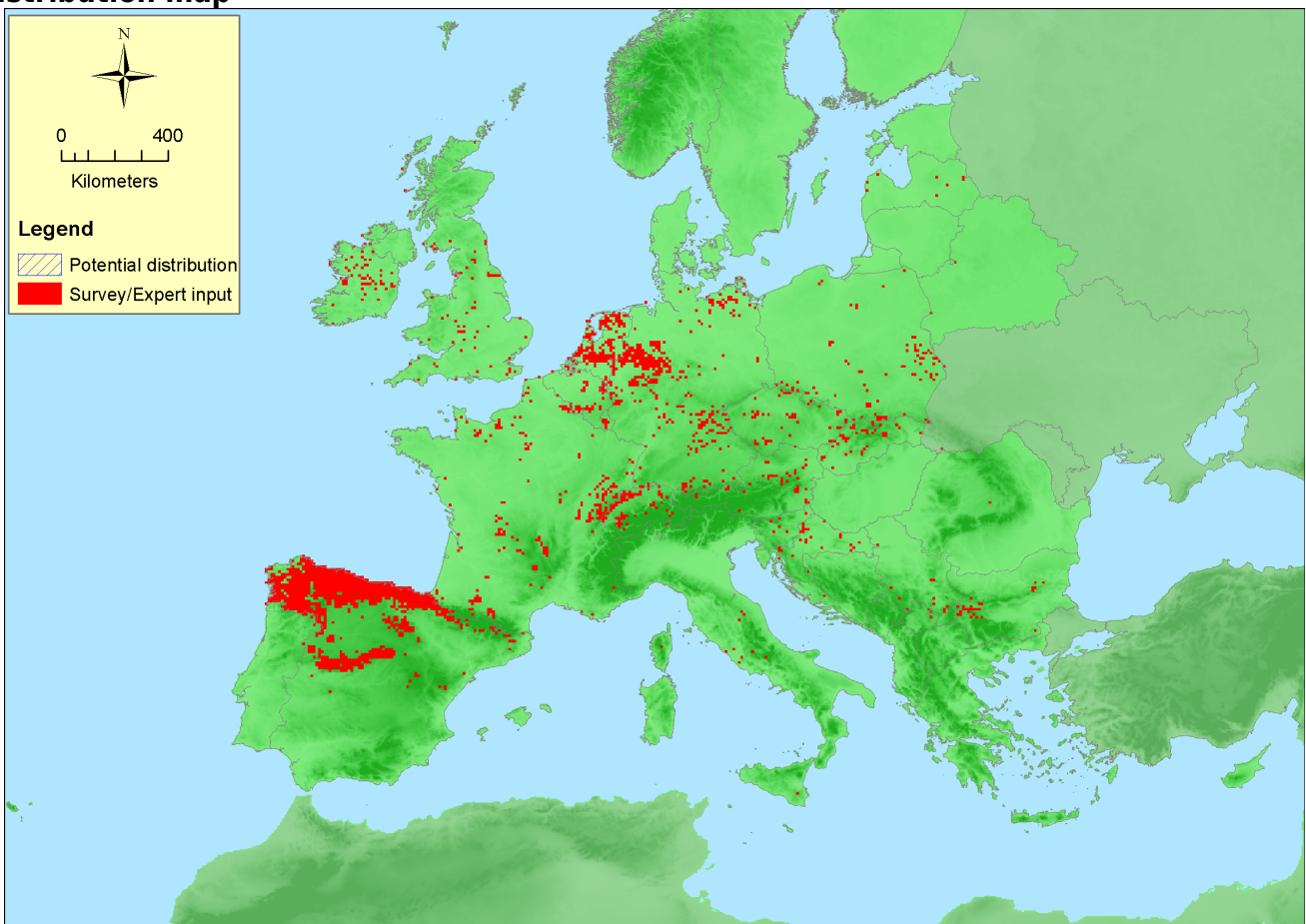
EU 28 +	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Bosnia and Herzegovina</i>	Present	70 Km ²	Decreasing	Decreasing
<i>Kosovo</i>	Present	Unknown Km ²	Decreasing	Decreasing

EU 28 +	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Norway	Norway Mainland: Present	281 Km ²	Decreasing	Decreasing
Switzerland	Present	1800-2000 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	5696600 Km ²	2101	35795 Km ²	Extent in Bulgaria, Germany and Belgium (Wallonia) unknown
EU 28+	5696600 Km ²	2187	38046 Km ²	

Distribution map



Map with many data gaps, for example in Portugal, Hungary, Romania, United Kingdom, Ireland and Balkan countries. Data sources: EVA, NAT.

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

97%

Trends in quantity

Where data/estimates are available (for about half the countries), the general long-term historical picture is one of substantial loss, particularly in the Czech Republic, Germany, Hungary, the UK and Estonia, where 65 to >90% of this habitat has gone largely due to shifts in farming practice, particularly a move to intensification of grass production. In many of these countries, the rate of loss has increased further in the

past 50 years. Only rarely have no loss (in Slovakia) or a modest increase (in Bulgaria) been recorded. In some countries the situation has stabilized but overall future prospects are gloomy with 10-50% further decline expected over the coming years, abandonment of pastures an increasing threat.

- 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 reduction in extent is substantial but widespread so the overall range is largely unchanged.

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

No

Justification

The habitat has a potentially very widespread and extensive range as a replacement maintained by grazing for many kinds of cleared temperate forest.

Trends in quality

Almost everywhere across the EU, slight to severe biotic and abiotic degradation has affected more than 30% of this habitat over the past 50 years, often up to 50%, sometimes up to 90%. A reliable picture for long-term historical trends is unattainable. In a majority of countries, decline in quality continues, sometimes it has stabilized, rarely (Bulgaria) has it been reversed and, where future estimates have been made, decline in quality is expected to continue.

- Average current trend in quality

EU 28: Decreasing

EU 28+: Decreasing

Pressures and threats

The habitat has been much changed by shifts in land-use and agricultural practices. Agricultural 'improvement' to increase fertility for dairying and beef-production, started early in western Europe and has become widespread, much increased in extent and intensity in recent decades through EU financial support. Addition of chemical fertilizers, top-sowing, cultivation and re-seeding has decreased the species-richness and regional diversity of this habitat across large parts of north-western Europe producing very species-poor pastures dominated by *Lolium perenne* and other highly productive and competitive grasses and clovers. Increased stock rates, causing soil-poaching, trampling and spread of weeds may also be problematic and in some regions there has been conversion to arable land. Particularly towards eastern and northern Europe, and especially in mountains, abandonment of traditional grazing in these pastures is common, with development of rank grasslands, scrub and woodland. Often this habitat persists now only in protected areas with some financial subsidy for the maintenance of traditional pasturing. Except in such cases and where there are local restoration programmes, there is no sign of any reduction in threats.

List of pressures and threats

Agriculture

Modification of cultivation practices

 Agricultural intensification

 Grassland removal for arable land

Grazing

 Intensive grazing

 Abandonment of pastoral systems, lack of grazing

Pollution

Air pollution, air-borne pollutants
Nitrogen-input

Conservation and management

Conservation of this habitat is directed towards maintaining as many of the traditional elements of farming practice as possible: appropriate levels of grazing and the use of only dung, urine, lime and mild phosphates as fertilisers. This usually means payments to farmers for income foregone since these days there is constant pressure to intensify stock production, or shift to arable cropping and various schemes of agri-environment funding have been implemented to administer this financial support. Where damaged, restoration aims, one way and another, to reinstate elements of traditional practice but is often hindered by the accumulated fertility (especially of bound phosphate) in the soils and by a wider shift to intensive farming led by market demand and subsidized by substantial incentives.

List of conservation and management needs

Measures related to agriculture and open habitats

Maintaining grasslands and other open habitats

Conservation status

Annex 1 types:

6270: ALP U2, BOR U2, CON U2

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

Restoration is more successful on pastures which still retain some measure of floristic diversity but, even where restoration is better, the wider fabric of traditional farming with its landscape-scale diversity, vernacular architecture, field names and festivals has often disintegrated.

Effort required

20 years	50+ years
Through intervention	Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-36 %	unknown %	unknown %	unknown %
EU 28+	-35 %	unknown %	unknown %	unknown %

The calculated trend is based on data supplied by the territorial experts and leads to the category Vulnerable (VU) for Criterion A1. The date used for recent past extent varies from 1955-1978 and there is often no actual extent figure for the earlier date; rather the figure is based on a back calculation of actual loss or expert opinion of loss from the known present distribution. In some cases (Bulgaria, Germany, Belgium Wallonia and, in EU28+, Kosovo), the present extent is also unknown. The longer term (A3) loss is unknown in about half the countries so an accurate overall calculation cannot be made but where an estimate is made, decline is supposed to be considerable, sometimes up to 90%. Insufficient

responses are available for any calculation of likely future losses (A2a, A2b) but in the fewcases where estimates are given, 10-35% loss is expected.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	5574600 Km ²	Yes	Yes	unknown	>>50	Unknown	Unknown	unknown	unknown
EU 28+	5637300 Km ²	Yes	Yes	unknown	>>50	Unknown	Unknown	unknown	unknown

This habitat has a huge EOO extent calculated from the map and at present an unknown but very large AOO (actual extent = 35795km²), so the main thresholds for Criterion B are not met, though there is a continuing decline in quality (B1aii) and continuing threat (B1aiii).

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	36 %	54 %	unknown %	unknown %	unknown %	unknown %
EU 28+	36 %	54 %	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 calculation is based on good quality territorial data from a majority of countries for the past 50 years, where an average reduction in quality of 54% severity over 36% of the extent gives a category of NT. Where a range of severity or extent is given, the average calculation does not exceed the NT threshold. Decline in quality is always both biotic and abiotic. Insufficient data are available for a longer term calculation but it is often supposed that deterioration began before 50 years ago. A majority of countries expect decline in quality to continue because of ongoing threats.

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+	VU	DD	DD	DD	LC	LC	LC	NT	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	Vulnerable	A1

Confidence in the assessment

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

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