

## E1.9a Oceanic to subcontinental inland sand grassland on dry acid and neutral soils

### Summary

This is a broadly defined habitat of moderately open to closed grasslands on nutrient-poor sandy soils, mostly acid to neutral though sometimes calcareous, through the lowlands and sub-montane belts of temperate Europe. Narrow-leaved graminoids dominate, associated herbs can be very numerous and more open swards can have rich annual and cryptogam floras. Across the wide range, there is considerable variety among the dominants and companions. Originating through clearance and low-intensity land-use, and maintained through grazing, mainly by sheep, this habitat is vulnerable to changes in traditional management and to eutrophication through agricultural improvement and atmospheric inputs and huge areas have been lost or declined in quality. Year-round grazing with robust breeds of sheep can probably be maintained as an economic concern but the habitat also warrants protection and conservation management.

### Synthesis

Based on a short-term reduction in area of 73% and a long-term reduction of even 77%, this habitat type is Endangered (EN) both in EU28 and EU28+. Furthermore, a significant reduction in biotic and abiotic quality results in a Near Threatened status (NT).

| Overall Category & Criteria |                   |                   |                   |
|-----------------------------|-------------------|-------------------|-------------------|
| EU 28                       |                   | EU 28+            |                   |
| Red List Category           | Red List Criteria | Red List Category | Red List Criteria |
| Endangered                  | A1, A3            | Endangered        | A1, A3            |

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

A set of vicariant subtypes may be distinguished within the broad range in Europe.

### Habitat Type

#### Code and name

E1.9a Oceanic to subcontinental inland sand grassland on dry acid and neutral soils



Stand of the *Diantho deltoideis-Armerietum elongatae* (alliance *Armerion elongatae*) with flowering *Galium verum*, *Thymus serpyllum*, *Dianthus deltoideis* and *Viola tricolor* at the footslope of a riverine dune in the Biosphere Reserve River Landscape Elbe, Brandenburg, Germany (Photo: Jürgen Dengler).



Stand of the *Plantagini subulatae-Agrostietum capillaris* (alliance *Armerio rumelicae-Potentillion*) with *Jasione heldreichii*, *Armeria rumelica* and the dominating moss *Racomitrium canescens* agg. in Northern Bulgaria (Photo: Jürgen Dengler).

### Habitat description

This habitat comprises semi-natural, moderately open to closed, relatively low-grown meso-xeric grasslands on nutrient-poor, acid to neutral, sometimes slightly calcareous sands in the lowlands and middle high mountains throughout temperate Europe. These grasslands are mostly dominated by tussock-forming, narrow-leaved graminoids (hemicryptophytes) of the *Festuca ovina* aggregate (namely *F. brevipila*, *F. filiformis*, *F. guestfalica*, *F. heteropachys*, *F. lemanii*, *F. ovina*), often accompanied by *Agrostis capillaris*, *Poa angustifolia* or *Carex praecox*. In good conditions they are relatively rich in herbs, forming an important nectar source for insects.

Characteristic herbs of the habitat are *Armeria maritima* subsp. *elongata*, *Artemisia campestris*, *Dianthus deltoides*, *Campanula rotundifolia*, *Galium verum*, *Sedum acre*, *Silene otites*, *Potentilla argentea* agg., *Thymus serpyllum*, *Trifolium arvense*, *Veronica prostrata* and *Herniaria glabra*. Present in most sites of this habitat are *Achillea millefolium*, *Plantago lanceolata*, *Hieracium pilosella*, *Rumex acetosella*, *Hypochaeris radicata* and *Jasione montana*. More open examples of this habitat contain a high cover of mosses and/or lichens and are rich in annual vascular plants (therophytes). Several 'steppe elements' have a western or northern outpost in this habitat, thanks to the extreme micro-climate, with high temperatures during the day, dropping down quickly at night. Examples of such species (most of them characteristic of the class *Festuco-Brometea*) are *Euphorbia cyparissias*, *Helichrysum arenarium*, *Phleum phleoides* and *Veronica spicata*. On the Balkans the vicariant alliance *Armerio-Potentillion* is described, with *Armeria rumelica*, *Agrostis castellana*, *Jasione heldreichii*, *Plantago subulata* and *Potentilla inclinata*.

Especially, the more calcareous examples of the habitat contain several characteristic species of type E1.1g. On relative acid soils the habitat shows transitions towards grasslands of habitat 'Lowland to submontane *Nardus* grassland' (E1.7a, mainly alliance *Violion caninae*). More natural, pioneer stages of these grasslands, develop under relatively dynamic conditions along rivers, with active sand sedimentation. On inland sandy dunes the habitat forms a succession stage after the initial *Corynephorus*-grasslands (type E1.9b), as a result of humus accumulation. Some of the grasslands of this type are rather similar to Atlantic and Baltic coastal dune grasslands (type B1.4a), and such inland and coastal grasslands are united in the same alliances.

This habitat is found on high, rarely flooded levees in river valleys, on dry, sandy parts of plains and siliceous mountains, as well as on coastal sandy cliffs in the Baltics. Its main range covers France, the UK, the Netherlands, Northern Germany, South Scandinavia, Poland and the Baltic countries. It is less frequent in the southern half of Central Europe (in siliceous mountain ranges and on dune systems along the big rivers), becomes rarer to the South (Northern Iberia, Central France) and East (e.g. restricted to the valleys of the big rivers in Ukraine). Based on available data on vegetation and soils, there seems to be a second centre of distribution in the central parts of the Balkan Peninsula (Republic of Macedonia, Serbia, Bulgaria).

The habitat type corresponds to the phytosociological orders *Trifolio arvensis-Festucetalia ovinae* and *Thero-Airetalia* (class *Koelerio-Corynephoretea*), excluding their occurrences on coastal grey dunes. It occurs from the submediterranean to the southern boreal zones of Europe, where ever there are dry, moderately developed sandy soils, be it from dunes or as weathering product of siliceous bedrock. The range of E1.9a extends to Northern Iberia, France and the British Isles in the West, while in Eastern Central and Eastern Europe it co-occurs with the habitat type 'Pannonian and Pontic sandy steppe' (E1.1a, grasslands of the order *Festuco-Sedetalia acris*). There, type E1.9a is found on better developed soils, where it may be found side by side to habitat E1.1a on more xeric, poorly developed soils.

The habitat type mainly consists of five, largely vicariant alliances of meso-xeric perennial grasslands, differentiated by the matrix-forming graminoids: In the Atlantic region (mainly in the lowlands) the *Sedo-Cerastion arvensis* with *Festuca filiformis* occurs, in the subcontinental lowlands (mainly the areas covered by the Nordic Ice shield during the glaciations) the *Armerion elongatae* with *Festuca brevipila* and *Armeria maritima* subsp. *elongata* is widespread, the *Hyperico perforati-Scleranthion perennis* with *Festuca ovina* and *F. guestfalica* is mainly distributed in siliceous low mountain ranges and in Scandinavia, the *Agrostion*

*vinealis* with *Poa angustifolia* and *Agrostis vinealis* is typical for the big river valleys of East Europe (but probably not within EU28+) and the *Armerio rumelicae*-*Potentillion* with various *Agrostis* species, *Festuca valesiaca* and *Armeria rumelica* occurs on the Central and Northern Balkan Peninsula. There are two more alliances of perennial tussock grasslands that potentially or partly belong here. The *Koelerio-Phleion phleioidis*, described from the lower siliceous mountain ranges in the southern half of Central Europe is a transition between the *Hyperico perforati-Scleranthion perennis* and the *Armerion elongatae* on the one side and the *Festucion valesiaca* (belonging to the habitat type E1.2b) on the other side, and not accepted in the EuroVegChecklist. The *Armerion juncea* from Southern France has been preliminarily placed in the *Trifolio arvensis-Festucetalia ovinae* by the EuroVegChecklist, but this position is questionable. Lastly, there are the grasslands rich in winter-annuals (*Filago arvensis*, *F. minima*, *Vulpia* spp., *Aira* spp., *Trifolium* spp.) of the order *Thero-Airetalia* with the single alliance *Thero-Airion*, which occurs under similar site conditions in the Submediterranean-Atlantic parts of temperate Europe (Northern Iberia, France, British Isles), but can be found in small patches at disturbed sites within *Trifolio arvensis-Festucetalia ovinae* stands also further to the east.

Indicators of good quality:

Continuation of management is important, but under very dry conditions the structure and species composition may remain unchanged for rather long periods without management. Inadequate management (burning, no management) may cause dominance of a single graminoid species, and finally succession towards scrub and woodland.

Indicators of good quality include:

- Long continuation of management (grazing, hay making or a combination of both)
- Occurrence of regional rare species (steppic elements) having an outpost in their European distribution range
- High richness in herb species, no development of dense, species-poor grassland with thick litter accumulation
- No encroachment of mosses (*Rhytidiadelphus squarrosus*), grasses (*Calamagrostis epigejos*, *Arrhenatherum elatius*), shrubs (*Rubus caesius*) or trees

Characteristic species:

Flora

Vascular plants: *Achillea millefolium* agg., *Agrostis capillaris*, *Agrostis castellana*, *Agrostis vinealis*, *Aira caryophylla*, *Aira elegantissima*, *Aira praecox*, *Allium schoenoprasum*, *Allium vineale*, *Anthoxanthum odoratum*, *Arenaria serpyllifolia*, *Armeria maritima* subsp. *elongata*, *Armeria rumelica*, *Artemisia campestris* subsp. *campestris*, *Bromus hordeaceus*, *Campanula rotundifolia*, *Carex arenaria*, *Carex ligERICA*, *Carex pairae*, *Carex praecox*, *Cerastium arvense* subsp. *arvense*, *Cerastium glutinosum*, *Cerastium semidecandrum*, *Dianthus armeria*, *Dianthus deltoides*, *Dianthus carthusianorum*, *Erodium cicutarium*, *Erysimum diffusum*, *Euphorbia cyparissias*, *Festuca brevipila*, *Festuca filiformis*, *Festuca guestfalica*, *Festuca heteropachys*, *Festuca lemanii*, *Festuca ovina*, *Filago arvensis*, *Galium verum*, *Helichrysum arenarium*, *Herniaria glabra*, *Hieracium hoppeanum*, *Hieracium pilosella*, *Hypochoeris radicata*, *Jasione heldreichii*, *Jasione montana*, *Koeleria macrantha*, *Luzula campestris*, *Myosotis ramosissima*, *Myosotis stricta*, *Ononis repens*, *Ornithopus perpusillus*, *Orobanche arenaria*, *Orobanche purpurea*, *Phleum phleoides*, *Pimpinella saxifraga* agg., *Plantago lanceolata*, *Plantago subulata*, *Poa angustifolia*, *Potentilla argentea* agg., *Potentilla inclinata*, *Potentilla tabernaemontani*, *Rumex thyrsiflorus*, *Saxifraga granulata*, *Scleranthus perennis*, *Scleranthus polycarpus*, *Sedum acre*, *Sedum reflexum*, *Sedum sexangulare*, *Silene nutans*, *Silene otites*, *Taraxacum* sect. *Erythrosperma*, *Thymus pulegioides*, *Thymus serpyllum*, *Trifolium arvense*, *Trifolium campestre*, *Trifolium striatum*, *Veronica arvensis*, *Veronica prostrata*, *Veronica spicata*,

*Vicia angustifolia*, *Vicia lathyroides*, *Viola tricolor*, *Vulpia bromoides*, *Vulpia myuros*.

Bryophytes: *Brachythecium albicans*, *Ceratodon purpureus*, *Dicranum scoparium*, *Hypnum cupressiforme* var. *lacunosum*, *Polytrichum juniperinum*, *Racomitrium canescens* agg., *Syntrichia ruralis* agg.

Lichens: *Cladonia fimbriata*, *Cladonia furcata*, *Cladonia pyxidata*, *Cladonia scabriuscula*, *Peltigera canina*, *Peltigera didactyla*, *Peltigera rufescens*.

Fauna

Reptiles: *Lacerta agilis*

Insects: *Decticus verrucivorus*

### **Classification**

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

EUNIS:

E1.9 Open non-Mediterranean dry acid and neutral grassland, including inland dune grassland

EuroVegChecklist (alliances):

*Armerio rumelicae-Potentillion* Micevski 1978

*Armerion elongatae* Pötsch 1962 (without stands on coastal grey dunes)

*Armerion juncea* Br.-Bl. ex Br.-Bl. et al. 1952 (unclear placement)

*Hyperico perforati-Scleranthion perennis* Moravec 1967 (without stands on coastal grey dunes)

*Sedo-Cerastion arvensis* Sissingh & Tideman 1960 (without stands on coastal grey dunes)

*Thero-Airion* Tx. ex Oberdorfer 1957

Annex 1:

2330 Inland dunes with open *Corynephorus* and *Agrostis* grasslands p.p. (only the most closed subtypes)

6120 Xeric sand calcareous grasslands p.p. (the most base-rich types of subcontinental Europe have partly been included here).

6270 Fennoscandian lowland species-rich dry to mesic grasslands p.p. (dry types on sandy soils = *Armerion elongatae* or *Hyperico perforati-Scleranthion perennis*)

Emerald:

E1.12 Euro-Siberian pioneer calcareous sand swards

MAES-2:

Sparsely vegetated land

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 habitat is widespread in Europe, ranging from the Atlantic to the Continental and Boreal region.

## 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   | Unknown Km <sup>2</sup> | Unknown                                | Decreasing                            |
| <i>Belgium</i>        | Present   | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Bulgaria</i>       | Present   | 3 Km <sup>2</sup>       | Decreasing                             | Decreasing                            |
| <i>Croatia</i>        | Uncertain   | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Czech Republic</i> | Present   | 38 Km <sup>2</sup>      | Decreasing                             | Decreasing                            |
| <i>Denmark</i>        | Present   | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Estonia</i>        | Present   | 4.1 Km <sup>2</sup>     | Unknown                                | Decreasing                            |
| <i>Finland</i>        | Aland Islands:<br>Uncertain<br>Finland mainland:<br>Present | 0.7 Km <sup>2</sup>     | Decreasing                             | Decreasing                            |
| <i>France</i>         | France mainland:<br>Present                                 | 8.5 Km <sup>2</sup>     | Decreasing                             | Decreasing                            |
| <i>Germany</i>        | Present   | 9 Km <sup>2</sup>       | Decreasing                             | Decreasing                            |
| <i>Hungary</i>        | Uncertain   | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Ireland</i>        | Present   | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Italy</i>          | Italy mainland:<br>Uncertain                                | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Latvia</i>         | Present   | 9 Km <sup>2</sup>       | Decreasing                             | Decreasing                            |
| <i>Luxembourg</i>     | Uncertain   | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Netherlands</i>    | Present   | 4 Km <sup>2</sup>       | Decreasing                             | Decreasing                            |
| <i>Poland</i>         | Present   | 52 Km <sup>2</sup>      | Unknown                                | Decreasing                            |
| <i>Portugal</i>       | Portugal mainland:<br>Present                               | 43.4 Km <sup>2</sup>    | Unknown                                | -                                     |
| <i>Romania</i>        | Uncertain   | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Slovakia</i>       | Present   | 0.3 Km <sup>2</sup>     | Unknown                                | Decreasing                            |
| <i>Slovenia</i>       | Uncertain   | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Spain</i>          | Spain mainland:<br>Present                                  | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Sweden</i>         | Present   | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>UK</i>             | Northern Island:<br>Uncertain<br>United Kingdom:<br>Present | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |

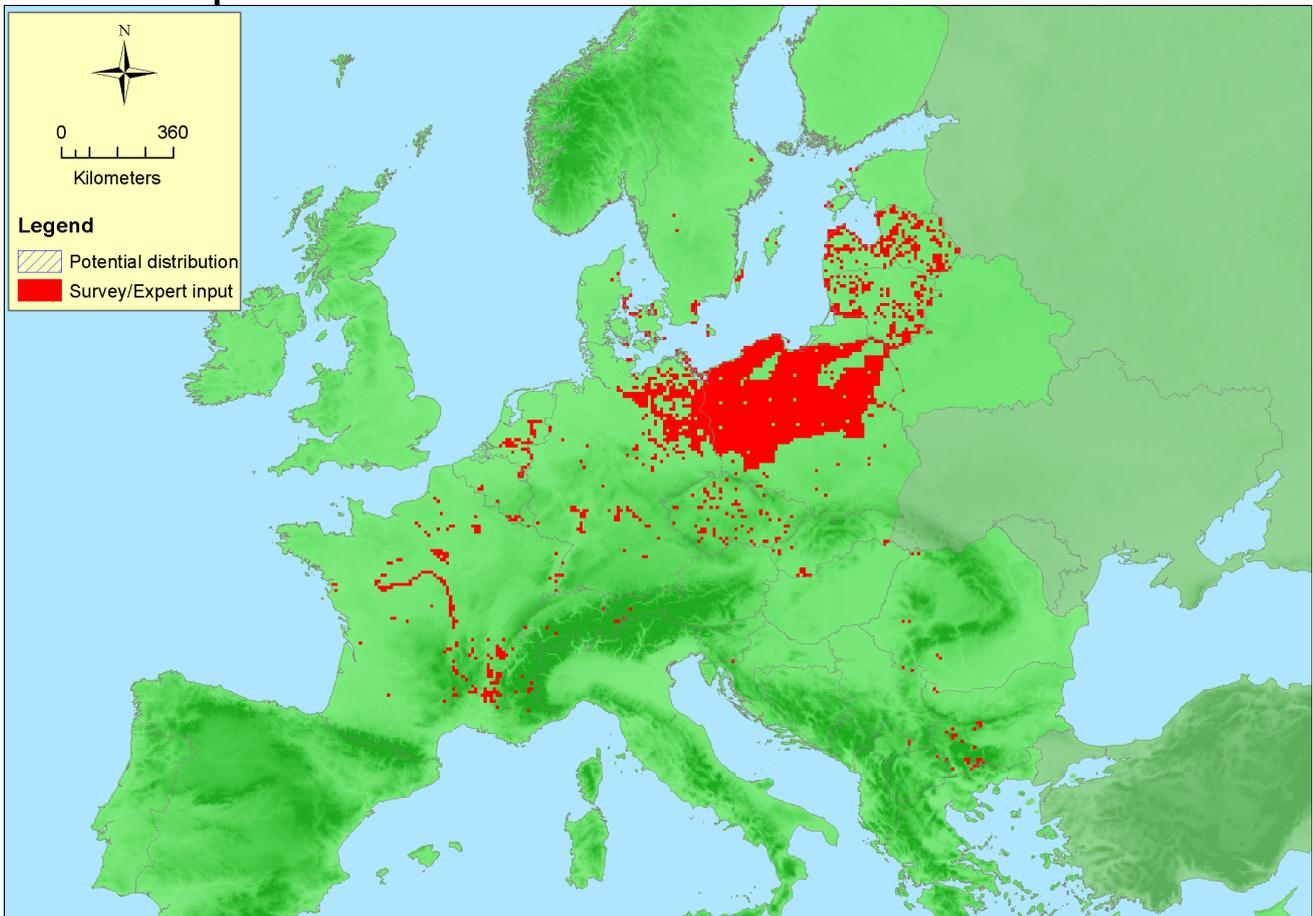
| EU 28 +   | Present or Presence Uncertain | Current area of habitat | Recent trend in quantity (last 50 yrs) | Recent trend in quality (last 50 yrs) |
|---|-------------------------------|-------------------------|--|---------------------------------------|
| <i>Bosnia and Herzegovina</i>                           | Uncertain                     | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Former Yugoslavian Republic of Macedonia (FYROM)</i> | Present                       | Unknown Km <sup>2</sup> | Unknown                                | 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>Kaliningrad</i> | Present                       | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Kosovo</i>      | Uncertain                     | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Montenegro</i>  | Uncertain                     | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Norway</i>      | Norway Mainland: Present      | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Serbia</i>      | Uncertain                     | Unknown Km <sup>2</sup> | Unknown                                | Unknown                               |
| <i>Switzerland</i> | Uncertain                     | Unknown 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>  | 2890200 Km <sup>2</sup>    | 2822                    | 1900 Km <sup>2</sup>         | The data provided by the country assessors (164 km <sup>2</sup> ) was due to a misleading habitat description far too low; 1900 km <sup>2</sup> is a conservative assessment based on field and literature knowledge of J. Dengle |
| <i>EU 28+</i> | 3057600 Km <sup>2</sup>    | 2832                    | 2600 Km <sup>2</sup>         | The data provided by the country assessors (164 km <sup>2</sup> ) was due to a misleading habitat description far too low; 2600 km <sup>2</sup> is a conservative assessment based on field and literature knowledge of J. Dengle |

**Distribution map**



The map gives an underestimation of the distribution with data gaps in Denmark, NW Germany, South Sweden, the British Isles, parts of the Northern Balkan Peninsula and northern Iberia.

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

90%

### Trends in quantity

Recent trend EU28: -73% - EU28+: -73% (based on 66% of the total area reported). Long-term trend EU28: -77% - EU28+: -77% (based on 39% of the total area reported). The reliability of this information is restricted because the majority of country assessors did not understand the habitat type as intended. For the future, all countries that provided an assessment assume a further moderate to strong decrease.

- 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*

EOO is >> 50,000 km<sup>2</sup>.

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

No

*Justification*

EOO is >> 50,000 km<sup>2</sup>.

### Trends in quality

Within EU28, 34% of the remaining area are degraded with 45% severity, while for none of the additional countries in EU28+ assessments were available, i.e. the calculated ratios were the same.

- Average current trend in quality

EU 28: Decreasing

EU 28+: Decreasing

## Pressures and threats

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This habitat type largely emerged due to low-intensity grazing (or also alteration of arable fields with abandonment) of sandy landscapes during past centuries and is characterised by nutrient-poor, sandy soils. Since such low-intensity grazing systems are not economically viable any more in most European countries, they have been abandoned. The former sites are then subject to free succession or conversion to forests or arable fields. Eutrophication by atmospheric nitrogen input is a second major threat as it speeds up the natural succession and also might facilitate expansion of competitive high-grown grasses, such as *Arrhenatherum elatius* or *Calamagrostis epigejos*. Some country assessments additionally mentioned mining and quarrying, direct habitat destruction and regulation of river courses as additional threats.

### List of pressures and threats

#### Agriculture

Grassland removal for arable land

Abandonment of pastoral systems, lack of grazing

#### Sylviculture, forestry

Forest planting on open ground

## Pollution

Nitrogen-input

## Natural biotic and abiotic processes (without catastrophes)

Biocenotic evolution, succession

## Conservation and management

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The main measure to maintain this habitat type and keep it in a good state is to continue or re-introduce low-intensity grazing systems, with sheep, cattle or best multi-species assemblages. With robust breeds that allow year-round grazing, the habitat type can even be maintained under current economic conditions via so-called large-scale pasture landscapes. Since this habitat type is still missing or neglected in many national habitat classifications, it is probably also underrepresented in the current network of conservation areas and thus well-developed large-scale examples should be put under legal conservation.

### List of conservation and management needs

#### Measures related to agriculture and open habitats

Maintaining grasslands and other open habitats

#### Measures related to spatial planning

Legal protection of habitats and species

### Conservation status

Annex I:

2330 ATL U2, BOR U2, CON U2, MED U1, PAN FV

6120 ATL U2, BOR U2, CON U2, MED XX, PAN U2

6270 ALP U2, BOR U2, CON U2

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

If only a moderate succession/eutrophication of the habitat has occurred due to abandonment of grazing, often simply the reestablishment of a proper grazing scheme will suffice, potentially accompanied by some mechanical removal of woody encroachment at the beginning. Restoration of meso-xeric sandy grasslands from afforested sites is possible if there is still a seedbank in the soil. Even arable fields can be reconverted to this habitat type under certain conditions (if they were hardly fertilized); this can be facilitated by hay transfer or other means of diaspore input of target species.

### Effort required

| 10 years             | 20 years             |
|----------------------|----------------------|
| Through intervention | Through intervention |

## Red List Assessment

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### Criterion A: Reduction in quantity

| Criterion A | A1    | A2a       | A2b       | A3    |
|-------------|-------|-----------|-----------|-------|
| EU 28       | -73 % | Unknown % | Unknown % | -77 % |

| Criterion A | A1    | A2a       | A2b       | A3    |
|-------------|-------|-----------|-----------|-------|
| EU 28+      | -73 % | Unknown % | Unknown % | -77 % |

The values for A1 and A3 are calculated from the territorial data sheets, which provided trend data for 10 and 3 countries, for the 50 yr and long-term trend, respectively. Overall the value for reduction in quantity has only low to moderate reliability because many countries within the distribution range did not provide data and those who provided data in their majority seemingly did only assess small parts of the habitat type (caused by unclear original habitat description). The provided data were far too incomplete to allow assessment of A2a and A2b.

### 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 | Yes |   | >50 | Yes | Yes |   | no |
| EU 28+      | >50000 Km <sup>2</sup> | Yes | Yes |   | >50 | Yes | Yes |   | no |

EOO and AOO are far larger than the thresholds for the criteria B1 and B2. The habitat type has many occurrences throughout large parts of Europe.

### 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        | 34 %            | 45 %              | Unknown %       | Unknown %         | Unknown %       | Unknown %         |
| EU 28+       | 34 %            | 45 %              | 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 data for C/D1 were calculated from the territorial data sheets, which provided assessments for 11 countries. No data were available for C/D2 and C/D3. The degradation 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  | EN | LC | LC | LC | NT   | DD   | DD   | DD | DD | DD | DD | DD | DD | DD |
| EU28+ | EN | DD  | DD  | EN | 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 |
| Endangered                  | A1, A3            | Endangered        | A1, A3            |

### Confidence in the assessment

Low (mainly based on uncertain or indirect information, inferred and suspected data values, and/or limited expert knowledge)

### Assessors

J. Dengler

### Contributors

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