E1.1g Perennial grassland on rocky outcrops at low altitudes in Central and Southeastern Europe

Summary

These grasslands occur on shallow, impoverished soils over both calcareous and siliceous bedrocks, through the lowlands and submontane zone of central and southern Europe. Essentially forming a natural habitat best developed on steeper ground uncongenial for agriculture, they have been extended where woodland clearance and grazing, particularly by goats, have been part of traditional farming. Perennial grasses generally dominate, with rich mixtures of associated rosette herbs, mat-formers and geophytes, and towards southern Europe especially, annuals. On south-facing and eroding slopes, the cover can be more open, with a bigger contribution from drought-resistant grasses and woody mats. Though vulnerable to quarrying and atmospheric nitrogen inputs and, in semi-natural stands, to abandonment of grazing, losses in extent seem to be small but there has been a more substantial reduction in quality. Conservation of semi-natural stands depends on appropriate grazing.

Synthesis

The reduction in quantity and in biotic and abiotic quality over the last 50 years are both relatively small and the habitat is widespread in central and eastern Europe. Therefore a Least Concern (LC) status is concluded for this habitat.

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

A further split maybe made in a central European and a south-eastern European subhabitat, the first one characterised mainly by *Festuca pallens*, the second one more diverse and different in species composition.

Habitat Type

Code and name

E1.1g Perennial grassland on rocky outcrops at low altitudes in Central and Southeastern Europe

Stand of the *Fumano-Stipetum eriocaulis* with *Stipa eriocaulis* at the Eastern margin of the Alps, above Vienna, Austria (Photo: Jürgen Dengler).

Stand of the *Saturejion montanae* in Parshevitsa, near Vratsa, Balkan range, Bulgaria. Among the recognisable plants are *Achillea clypeolata*, *Jovibarba heufelii* and *Satureja montana* subsp. *kitaibelii* (Photo: Jürgen Dengler).

Habitat description

These open to relatively closed perennial grasslands occur on outcrops and steep slopes of mostly calcareous but also siliceous rocks. They are dominated by graminoids such as *Bromopsis pannonica, Bromus riparius, Carex humilis, Festuca dalmatica, Festuca pallens* and various species of *Sesleria* and *Stipa*. Perennial herbs are common, whereas other life forms such as chamaephytes, therophytes and geophytes occur with various abundance, although they are found in most stands. The participation of annuals increases significantly in the southern parts of the habitat's range because of the stronger Mediterranean influence. From the phytogeographical point of view, these grasslands combine central European species with numerous submediterranean, continental steppic and de-alpine species. Especially on limestone or dolomite these grasslands can be species-rich and contain some species with narrow geographic ranges. Phytosociologically, this habitat type corresponds to the order *Stipo pulcherrimae-Festucetalia pallentis* (class: *Festuco-Brometea*).

These grasslands are distributed at low hilly and submontane areas of the Bohemian Massif, Alps, Carpathians, and low mountains and hilly lowlands of the northern and central Balkan Peninsula. Westwards the habitat reaches North-East France and adjacent Belgium, Germany and Switzerland. At many sites these grasslands represent natural vegetation, but in some places they developed as secondary vegetation of deforested areas on shallow soils. Especially on dolomite slopes continuous weathering of the parent rock into gravel particles maintains constant soil erosion which limits encroachment of woody plants and keeps the landscape open. On limestone and dolomite slopes there is often a distinct contrast in vegetation on slopes of different aspect. South-facing slopes harbor more open vegetation, often with less than 50% cover, with dominance of narrow-leaved tussock grasses and aromatic semi-scrubs. In contrast, north-facing slopes support denser grasslands dominated by various species of *Sesleria* that contain several species typical of higher altitudes of the Alps or the Carpathians which have scattered and in many cases probably relict occurrences at lower altitudes. Soils are various subtypes of Leptosol.

Most of these grasslands occur in naturally treeless areas on steep and naturally eroded slopes that are difficult to access and unsuitable for agriculture. These grasslands are very stable and usually are not directly endangered unless they are destroyed by quarrying. However, secondary grasslands on less steep slopes were traditionally maintained by grazing, especially by goats. When grazing ceases, they are subject to encroachment of shrubs and trees.

Indicators of good quality:

Most valuable stands occur at sites with long historical continuity which contains steno-endemic species and species with isolated occurrences, in many cases probably of relict origin. Indicators of good quality include:

· Occurrence of endemic or rare species, or species at isolated localities far from their continuous range.

· No signs of spread of mesophilous species or development of dense grassland.

· No signs of encroachment of trees and shrubs.

· In secondary grasslands continuation of grazing by goats or sheep.

Characteristic species:

Flora

Vascular plants: *Achillea ageratifolia, Achillea clypeolata, Achillea coarctata, Achillea nobilis, Acinos arvensis, Agropyron cristatum, Allium albidum, Allium cupani, Allium flavum, Allium moschatum, Allium sphaerocephalon, Alyssum alyssoides, Alyssum montanum* subsp*. montanum, Alyssum saxatile, Anthemis*

carpatica, Anthericum ramosum, Anthyllis montanta, Anthyllis vulneraria, Artemisia alba, Asperula capitata, Asperula cynanchica, Asperula purpurea, Asphodeline lutea, Asphodelus albus, Asplenium ruta-muraria, Asplenium septentrionale, Asplenium trichomanes, Aster oleifolius, Astragalus onobrychis, Astragalus wilmotianus, Bromopsis cappadocica, Bromopsis pannonica, Bromus moesiacus, Bromus squarrosus, Carduus collinus, Carex caryophyllea, Carex humilis, Centaurea atropurpurea, Centaurea reichenbachii, Centaurea triniifolia, Chrysopogon gryllus, Clypeola jonthlaspi, Convolvulus cantabrica, Coronilla scorpioides, Dianthus carthusianorum, Dianthus giganteiformis, Dianthus giganteus, Dianthus gracillis, Dianthus gratianopolitanus, Dianthus spiculifolius, Edraianthus serbicus, Erysimum witmannii, Euphorbia cyparissias, Euphorbia myrsinites, Euphorbia seguieriana, Festuca dalmatica, Festuca pallens s.l., *Festuca pseudodalmatica, Festuca stricta, Fumana procumbens, Galium glaucum, Galium lucidum, Genista jaunensis, Globularia bisnagarica, Helianthemum canum, Helianthemum nummularium* agg., *Helictotrichon decorum, Hornungia petraea, Hyacinthella leucophaea, Hypericum olympicum, Hypericum rumeliacum, Hyssopus officinalis, Inula aschersoniana, Inula oculus-christii, Inula spiraeifolia, Iris pumila, Iris variegata, Jasione montana, Jovibarba heufelii, Jurinea glycacantha, Jurinea mollis, Koeleria macrantha, Koeleria splendens, Leontodon biscutellifolius, Leontodon crispus, Leontodon incanus, Linaria angustissima, Linum tenuifolium, Melica ciliata, Microthlaspi perfoliatum, Minuartia hirsuta, Minuartia verna, Orlaya grandiflora, Ornithogalum nanum, Paeonia tenuifolia, Paronychia cephalotes, Paronychia kapela, Petrorhagia saxifraga, Peucedanum tauricum, Pilosella officinarum, Poa bulbosa, Poa pannonica, Potentilla argentea* agg., *Potentilla cinerea, Potentilla incana agg., Psilurus incurvus, Pulsatilla halleri* subsp*. slavica, Queria hispanica, Rumex acetosella* s.l., *Sanguisorba minor, Satureja coerulea, Satureja montana, Satureja pilosa, Saxifraga paniculata, Scleranthus perennis, Scorzonera austriaca, Sedum hispanicum, Sedum sexangulare, Selinum silaifolium, Sempervivum marmoreum, Seseli gracile, Seseli leucospermum, Seseli osseum, Seseli pallasii, Seseli rigidum, Sesleria caerulea, Sesleria filiformis, Sesleria heuflerana, Sesleria latifolia, Sesleria rigida, Sesleria sadlerana, Silene armeria, Silene bupleuroides, Silene frivaldskyana, Silene nutans, Stachys recta, Stenbergia colchiciflora, Stipa eriocaulis, Stipa pulcherrima, Teucrium chamaedrys, Teucrium montanum, Teucrium polium, Thesium alpinum, Thymus comosus, Thymus praecox* agg., *Thymus striatus, Trifolium arvense, Trigonella gladiata, Trigonella monspeliaca, Trinia glauca, Velezia rigida, Veronica spicata, Viola jooi, Xeranthemum annuum, Xeranthemum cylindraceum.*

Bryophytes: *Ceratodon purpureus, Ditrichum flexicaule, Encalypta streptocarpa, Grimmia sp. pl*., *Polytrichum piliferum, Syntrichia ruralis* agg., *Tortella inclinata, Tortella tortuosa, Weissia longifolia.*

Lichens: *Cladonia convoluta*, *Cladonia magyarica, Cladonia pyxidata* agg.

Fauna

Birds: *Anthus campestris, Calandrella brachydactyla, Oenanthe hispanica.*

Reptiles: *Ablepharus kitaibelli, Elaphe sauromates, Eurotestudo hermannii, Testudo graeca.*

Insects: *Calliptamus italicus*, *Oedpioda caerulescens.*

Classification

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

EUNIS

E1.1 Pioneer and open perennial grasslands of inland sands and rocky terrain

EuroVegChecklist (alliances)

Alysso-Festucion pallentis Moravec in Holub et al. 1967

Asplenio septentrionalis-Festucion pallentis Zólyomi 1936 corr. 1966

Avenulo adsurgentis-Festucion pallentis Mucina in Mucina et Kolbek 1993

Bromo pannonici-Festucion csikhegyensis Zólyomi 1966 corr. Mucina

Chrysopogono-Festucion dalmaticae Borhidi 1996

Saturejion montanae Horvat in Horvat et al. 1974

Diantho lumnitzeri-Seslerion (Soó 1971) Chytrý et Mucina in Mucina et Kolbek 1993

Seslerion rigidae Zólyomi 1936

Saturejo-Thymion Micevski 1971 (? inclusion unclear, could also be E1.1j)

Annex 1

6190 Rupicolous pannonic grasslands (*Stipo-Festucetalia pallentis*)

62A0 Eastern sub-Mediterranean dry grasslands (*Scorzoneretalia villosae*) p.p. (types on the central and eastern Balkan Peninsula)

Emerald

E1.2 Perennial calcareous grassland and basic steppes

MAES-2

Grassland

IUCN

Temperate grassland

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

Regions
Continental

Justification
The main occurrences are found in the continental region and the lower parts of the Alpine region of the Balkan and Central 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)
Austria	Present	3.1 Km^2	Decreasing	Decreasing
Belgium	Present	Unknown Km^2	Unknown	Unknown
Bulgaria	Present	493 Km^2	Decreasing	Decreasing
Croatia	Uncertain	Unknown Km^2	Unknown	Unknown
Czech Republic	Present	4 Km^2	Decreasing	Decreasing
France	France mainland: Present	Unknown Km^2	Unknown	Unknown
Germany	Present	4.5 Km^2	Decreasing	Decreasing
Hungary	Present	5 Km^2	Stable	Decreasing

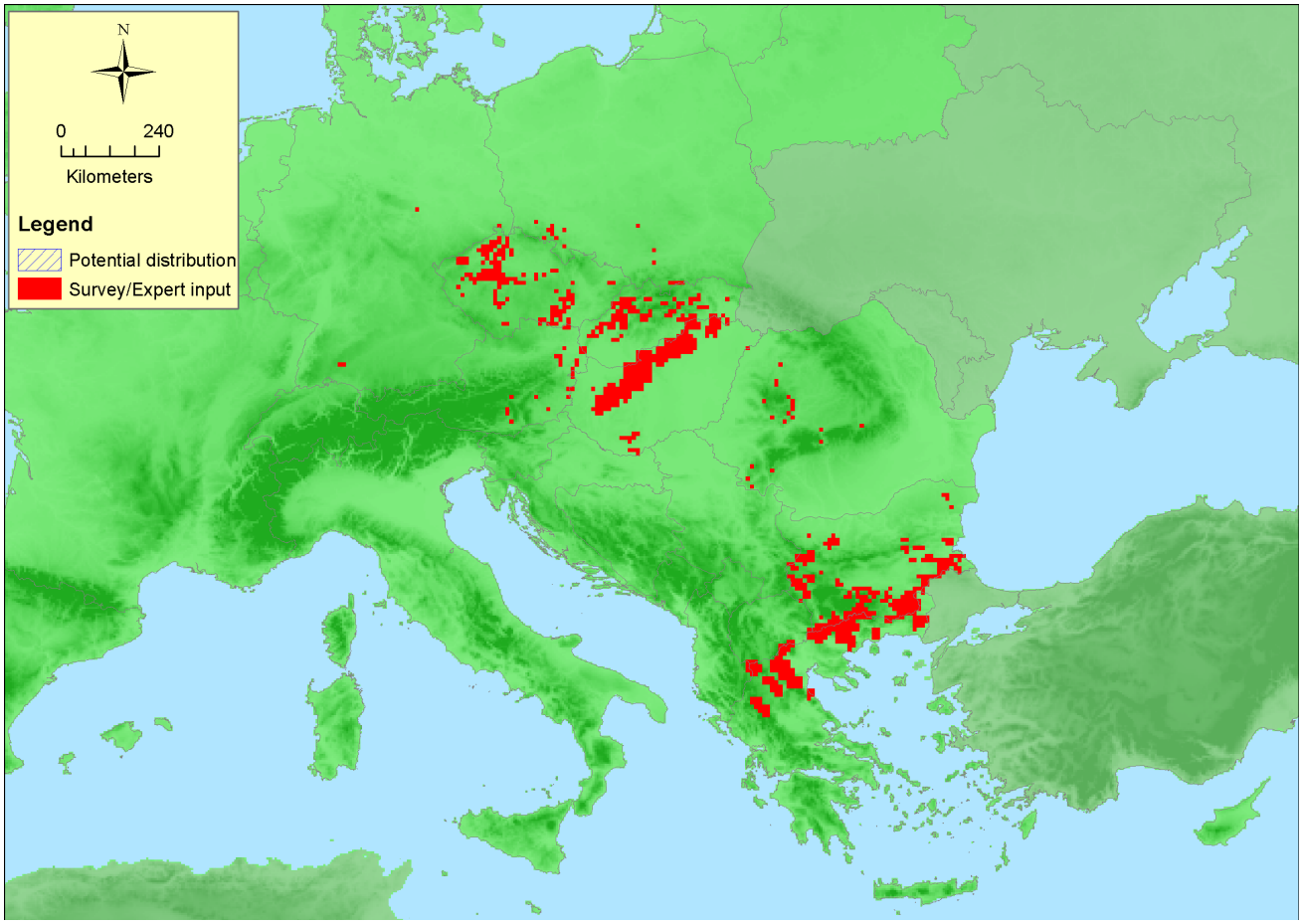
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Luxembourg	Uncertain	Unknown Km^2	Unknown	Unknown
Poland	Present	3.5 Km^2	Decreasing	Decreasing
Romania	Present	10 Km^2	Stable	Unknown
Slovakia	Present	9.7 Km^2	Decreasing	Decreasing
Slovenia	Present	Unknown Km^2	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)
Bosnia and Herzegovina	Present	25 Km^2	Decreasing	Decreasing
Former Yugoslavian Republic of Macedonia (FYROM)	Present	840 Km^2	Decreasing	Decreasing
Kosovo	Uncertain	Unknown Km^2	Unknown	Decreasing
Serbia	Present	Unknown Km^2	Decreasing	Unknown
Switzerland	Present	Unknown 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	1055500 Km^2	Not provided yet	848 Km^2	The estimate for Bulgaria might be too high based on an inconsistent interpretation of the habitat type
EU 28+	1055500 Km^2	Not provided yet	849 Km^2	The estimate for Bulgaria and the Republic of Macedonia might be too high based on an inconsistent interpretation of the habitat type

Distribution map



Map is rather complete for the EU28, but data gaps exist for Bosnia & Herzegovina, Montenegro and Albania. The type is also more widespread in Germany, and it also occurs in NE France and S Belgium and Slovenia. The occurrences in Romania are under-, those in Hungaria probably overestimated. Data sources: Art17, EVA.

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

Based on the data provided and assuming some occurrences in Ukraine, 37% of the current distribution of the habitat type lies within the EU 28; however, if the questionable figure for the Republic of Macedonia should actually be overestimated, the fraction located in the EU28 could be significantly higher (> 50%))

Trends in quantity

The recent trend in quantity shows a slight decline (-13% and -10% in EU28 and EU28+, respectively, based on 100% of the total area reported). The long-term trend is lower (-4% and -10% in EU28 and EU28+ respectively, based on 97% of the total area reported). For the future, countries assume developments that range from stable to slight (-moderate) 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 km².
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  No
  Justification

EOO is >> 50,000 km².

Trends in quality

Within EU28, 22% of the remaining area are degraded with 41% severity. Within EU28+, 15% of the remaining area are degraded with 48% severity.

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

Pressures and threats

As far as the territory of this habitat has been enlarged by clearing of forests and grazing, it suffers from natural succession following abandonment of such traditional pasture systems. Both natural and semi-natural sites are negatively affected by atmogenic nitrogen input, direct destruction in case of quarries and outdoor sports, such as rock climbing.

List of pressures and threats

Agriculture

Abandonment of pastoral systems, lack of grazing

Mining, extraction of materials and energy production

Open cast mining

Human intrusions and disturbances

Mountaineering, rock climbing, speleology

Pollution

Nitrogen-input

Natural biotic and abiotic processes (without catastrophes)

Biocenotic evolution, succession

Conservation and management

While natural stands of this habitat do not need special measures, for semi-natural stands the maintenance of the traditional grazing is essential, possibly accompanied by removal of woody encroachment. Additionally, direct destruction of well-developed examples of this habitat type by quarries or by rock climbing and similar outdoor sports should be prevented.

List of conservation and management needs

No measures

No measures needed for the conservation of the habitat/species

Measures related to agriculture and open habitats

Maintaining grasslands and other open habitats

Measures related to special resouce use

Regulating/Management exploitation of natural resources on land

Conservation status

6190 ALP FV, CON U1, PAN U1

62A0 ALP U2, BLS U1, CON U2, MED U1

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

Overgrown semi-natural sites possibly can be restored by removal of woody encroachment and re-introduction of a proper grazing system within perhaps 10 years.

Effort required

10 years
Through intervention

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-13 %	Unknown %	Unknown %	-4 %
EU 28+	-10 %	Unknown %	Unknown %	-10 %

The values for Criteria A1 and A3 are calculated from the territorial data sheets, which provided trend data for 10 and 6 countries, for the 50 yr and long-term trend, respectively. The provided data were far too incomplete to allow assessment based on Criteria 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^2	Yes	No		>50	Yes	No		no
EU 28+	>50000 Km^2	Yes	No		>50	Yes	No		no

EOO and AOO are far larger than the thresholds for the Criteria B1 and B2. The habitat type has many occurrences in various countries.

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	22 %	41 %	Unknown %	Unknown %	Unknown %	Unknown %
EU 28+	15 %	48 %	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 Criteria C/D1 were calculated from the territorial data sheets, which provided assessments for 7 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	LC	DD	DD	LC	LC	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	LC	DD	DD	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)

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