

## E1.1j Dry steppic, submediterranean pasture of South-Eastern Europe

### Summary

These dry steppic pastures are typical of sharply-draining, base-rich soils developed over valley sides, dolines and sink-holes around the Adriatic coasts where the submediterranean climate is characterised by late autumn and spring rains. Dominated by often rich mixtures of graminoids and forbs, the habitat is dependent on extensive grazing, and abandonment of traditional farming has led to widespread losses in extent and quality and patchy survival within mosaics of scrub and woodland. Restoration depends on the re-instatement of traditional regimes of grazing and/or mowing.

### Synthesis

The habitat is assessed as Vulnerable (VU) in the EU28 based on the Criterion C/D1, and as Near Threatened (NT) in EU28+, based on Criteria A1 and C/D1. The reduction in biotic/abiotic quality over the last 50 years affected on average 50% of the EU28 and 48% of the EU28+ distribution, with a relative severity of 75%. The reduction in quantity in the last 50 years was of 28% in EU28 and 27% in EU28+, qualifying this habitat in both cases as Near Threatened under Criterion A1.

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

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

This habitat includes the endemic grasslands of the alliance *Hippocrepido glaucae-Stipion austroitalicae*, whose distribution is limited to the South-Eastern regions of the Italian Peninsula. They deserve special attention due to their very restricted distribution.

### Habitat Type

#### Code and name

E1.1j Dry steppic, submediterranean pasture of South-Eastern Europe



Dry steppic pasture with *Bromus erectus* and *Hippocrepis comosa* in the karstic region of Slovenia (Photo: John Janssen).



Dry submediterranean pasture of the association *Carici humili-Centaureetum rupestris* on Mount Biokovo, in the south-west of Croatia (Photo: Jozo Franjic)

#### Habitat description

This habitat type is composed of dry steppic, submediterranean pastures, found along the eastern coast of

the Adriatic Sea and the southeastern coastal districts of the Italian Peninsula. These semi-natural grasslands appear in the meso/supra-Mediterranean and Mediterranean-montane vegetation belts, where the zonal vegetation is represented by thermophilous deciduous forest, dominated by *Quercus pubescens* s.l., *Ostrya carpinifolia* and *Carpinus orientalis*, or locally (especially in Italy) by evergreen forests dominated by *Quercus ilex*. As the mountain chains extend parallel to the coastline, the climatic influence does not penetrate deeply into the inland regions of the Balkan Peninsula. The climate shows two peaks of precipitation during the year, with the main peak appearing in autumn (November) and a second peak in spring (May). The amount of precipitation can be very fluctuating and vary up to 3000 mm on mountain barriers. However, even when precipitation is relatively high, the water flows mainly underground due to the nature of the bedrock, which is mainly composed of carbonate. Due to the lack of precipitation and the high temperature reached during the summer, the vegetation suffers from drought during these months. Winters are mild, with temperatures that do not drop much below freezing.

Since the bedrock generally lies close to the surface, these habitats are characterized by many chamaephytes and can be used only as pastures. Sometimes the carbonate bedrock is substituted by "flysch" marls (terra rossa) and sandstones. The morphology of this habitat is characterized by valleys, dolinas and sink-holes with depositional soils and clay from decalcification at the bottom.

Two habitat subtypes may be distinguished based on their biogeographic distribution, which correspond to two alliances: *Chrysopogono-Saturejion subspicatae* for the Balkan Peninsula, and *Hippocrepido glaucae-Stipion austroitalicae*, which is endemic to southeastern Italy. The latter refers to steppe grasslands with the endemic species *Stipa austroitalica*.

This habitat type is the result of a long time of human influence. After the Second World War, abandonment of this habitat begun. Firstly, only the less productive pastures were abandoned, but later also other examples of this grasslands were not managed anymore. Nowadays, a mosaic with various stages of scrub encroachment is found. Succession towards forests begins with high stalk plants (e.g. *Umbelliferaea*) and scrub species (e.g. *Cotinus coggygia*). In order to maintain these habitats, traditional management (grazing, mowing) should be continued. In early successional stages, restoration is relatively easy by introduction of livestock. However, livestock intensification leads to the destruction of the habitat, so animal numbers should not be too high. In certain sites, this habitat is affected by urbanization.

Indicators of good quality:

- Species richness of the grasslands and presence of character species
- Absence of invasive species
- Absence of high tall herbs, shrubs and trees
- Regular grazing/mowing
- Absence of intensive grazing

Characteristic species:

Flora: Vascular plants: *Allium ochroleucon*, *Anthyllis montana* subsp. *jacquinii*, *Anthyllis vulneraria* subsp. *polyphylla*, *Asperula cynanchica*, *Aster linosyris*, *Betonica officinalis* subsp. *serotina*, *Botriochloa ischaemum*, *Bromus erectus*, *Carex humilis*, *Centaurea triumfetti* subsp. *adscendens*, *Chrysopogon gryllus*, *Cirsium pannonicum*, *Crepis chondrilloides*, *Danthonia alpina*, *Dianthus carthusinorum* subsp. *sanguineus*, *Dianthus garganicus*, *Eryngium amethystinum*, *Euphrasia illyrica*, *Festuca rupicola*, *Anacamptis pyramidalis*, *Fumana procumbens*, *Galium purpureum*, *Genista sericea*, *Gentiana tergestina*, *Globularia cordifolia*, *Helianthemum ovatum*, *Hippocrepis glauca*, *Inula ensifolia*, *Iris pseudopumila*, *Knautia illyrica*, *Koeleria splendens*, *Lathyrus latifolius*, *Lathyrus pannonicus*, *Leontodon crispus*, *Linum tenuifolium*, *Medicago falcata*, *Medicago prostrate*, *Narcissus radiiflorus*, *Onobrychis arenaria* subsp. *tomasinii*, *Plantago argentea* subsp. *liburnica*, *Plantago holosteum*, *Polygala nicaensis* subsp. *mediteranea*, *Potentilla australis*, *Ranunculus bulbosus*, *Rhinanthus freynii*, *Satureja montana*, *Satureja subspicata* subsp. *liburnica*, *Scabiosa*

*gramuntia, Scorzonera villosa, Sesleria tenuifolia, Stipa austroitalica, Stipa eriocalis* subsp. *austriaca, Teucrium montanum, Thapsia garganica, Thesium divaricatum, Thlaspi pracox, Thymus longicaulis, Thymus spinulosus, Tragopogon tomasinii, Trinia glauca.*

### Classification

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

EUNIS:

E1.2 Perennial calcareous grasslands and basic steppes

EuroVegChecklist:

*Chrysopogono-Saturejion subspicatae* Horvat et Horvatic 1934

*Hippocrepido glaucae-Stipion austroitalicae* Forte et Terzi in Forte et al. 2005

Annex I:

62A0 Eastern sub-Mediterranean dry grasslands (*Scorzoneretalia villosae*)

Emerald:

E1.55 Eastern sub-Mediterranean dry grassland

MAES-2:

Terrestrial - Grassland

IUCN:

4.4 Temperate grassland

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

Yes

#### Regions

Continental

Mediterranean

#### Justification

These dry grasslands are present both in the Continental and the Mediterranean Biogeographic regions, however their optimum occurs especially in the climatic transitional zone between the two regions. They concur in shaping a cultural landscape linked to the traditional land use of these areas, formerly characterized by extensive grazing systems, which are now increasingly at risk of disappearance due to different economic priorities and changing customs of the local populations.

### 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>Croatia</i>	Present	2,518 Km <sup>2</sup>	Decreasing	Decreasing
<i>Greece</i>	Crete: Uncertain East Aegean: Uncertain Greece (mainland and other islands): Present	505 Km <sup>2</sup>	Stable	Stable
<i>Italy</i>	Italy mainland: Present	989 Km <sup>2</sup>	Decreasing	Decreasing

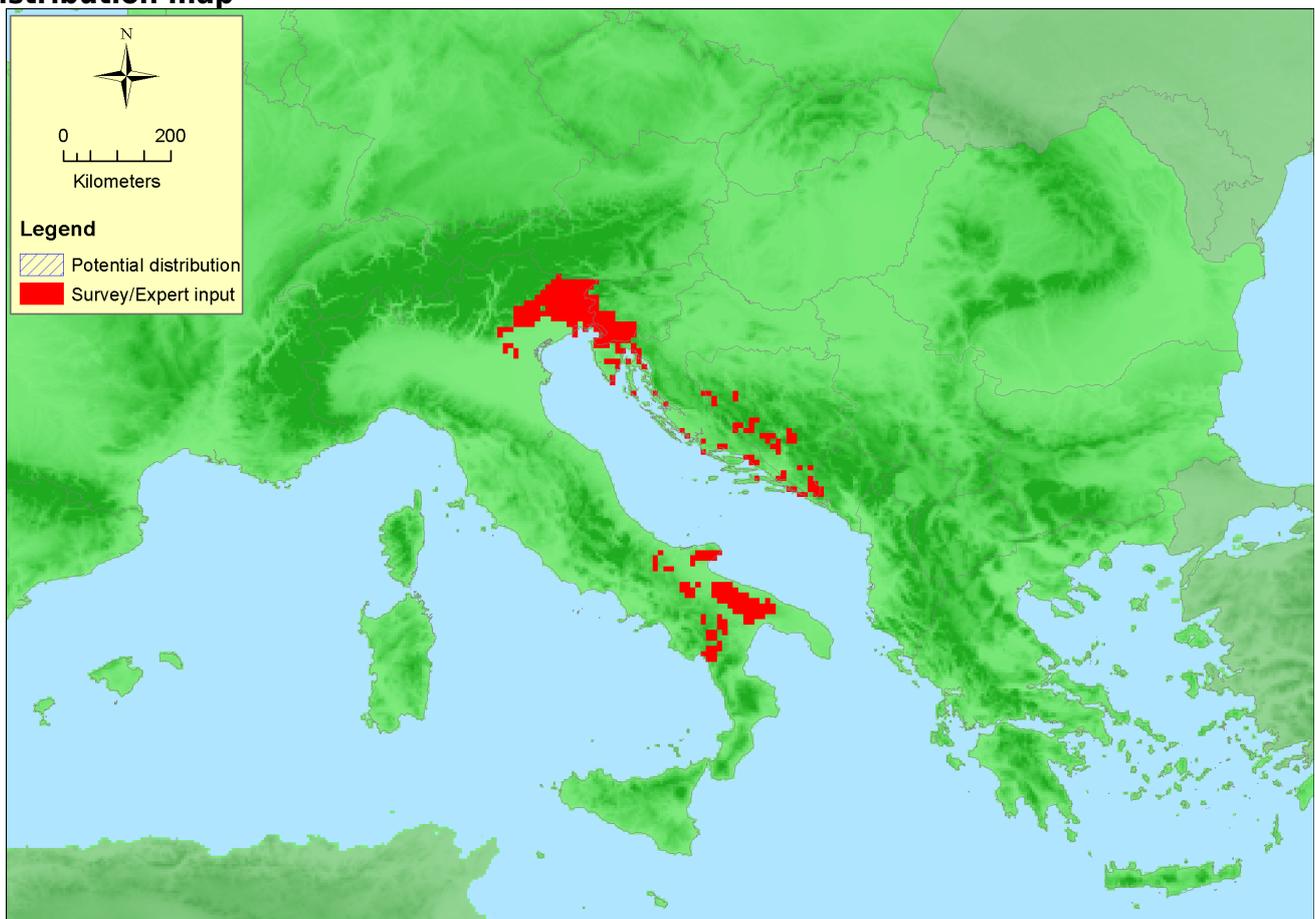
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Slovenia</i>	Present	150 Km <sup>2</sup>	Decreasing	Decreasing

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>Albania</i>	Present	90 Km <sup>2</sup>	Decreasing	Decreasing
<i>Bosnia and Herzegovina</i>	Present	60 Km <sup>2</sup>	Decreasing	Decreasing
<i>Former Yugoslavian Republic of Macedonia (FYROM)</i>	Uncertain	Km <sup>2</sup>	Unknown	Unknown
<i>Kosovo</i>	Uncertain	Km <sup>2</sup>	Unknown	Unknown
<i>Montenegro</i>	Uncertain	Km <sup>2</sup>	Unknown	Unknown
<i>Serbia</i>	Uncertain	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>	158550 Km <sup>2</sup>	252	4165 Km <sup>2</sup>	
<i>EU 28+</i>	227600 Km <sup>2</sup>	326	4315 Km <sup>2</sup>	

### Distribution map



The map represents the range rather good, but data gaps will exist. Data sources: EVA, Art17, NAT.

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

Considering that data from Montenegro, Serbia, Kosovo and Macedonia are still missing, 96.5% of the total distribution area of this habitat type lies inside the EU28 territory.

## Trends in quantity

Comprehensive quantitative past data are not available for the whole habitat range. However, during the past 50 years a general decreasing trend has been observed by territorial experts, mostly due to abandonment of the traditional grazing activities and consequent start of the successional processes. Some countries (e.g. Greece) report a current stable trend nevertheless. The overall decline in quantity, calculated based on the quantitative data and trends provided by the countries of occurrence, is 28% in the EU28, which is particularly severe in Slovenia (60%). The average decline in the EU28+ is of 27%. A future decline in quantity can be expected, due to ongoing abandonment. Similarly to other grassland types which are subject to intense dynamic processes of the vegetation as a consequence of the abandonment, the reported surfaces might be an underestimation since the patches currently in mosaic with the scrub vegetation generally can not be properly mapped. In any case, these areas are strongly affected by the successional processes and will be lost in the next years if no conservation measure is put into practice.

- 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 largely exceeds the indicated threshold (50,000 km<sup>2</sup>).

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

No

*Justification*

The habitat type does not have an intrinsically restricted area.

## Trends in quality

Comprehensive qualitative past data are not available for the whole habitat range. However, during the past 50 years a clear decline, from slight to severe in the different territories, has been observed by the territorial experts, mostly due to abandonment of the traditional grazing activities and consequent start of the successional processes, with important changes in the floristic composition, loss of rare species and settlement of taxa typical of shrubby and fringe communities. The overall severity of decline in quality, calculated on the basis of the values of extent and severity of qualitative decline provided by the countries of occurrence, is 75% on average, affecting 50% of the total habitat surface in EU28 and 48% in EU28+. A future qualitative decline can be expected due to ongoing abandonment.

- Average current trend in quality

EU 28: Decreasing

EU 28+: Decreasing

## Pressures and threats

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This is a typically semi-natural habitat, whose maintainance is strictly dependent on traditional activities and a sustainable land use based on extensive grazing. Consequently, the major threat for this habitat is represented by the abandonment of pastoral systems, followed by successional processes which promote the settlement of shrubs and herbs from forest fringes. Overgrazing can also pose a problem to this habitat, since an excess of grazing load can damage the soil structure and chemical composition, the vegetation structure and its flora. Due to an ongoing abandonment, further declines can be expected in

the future. The habitat can be also threatened by intense urbanization and climate change, the latter especially in case of extreme prolongation of summer drought, which favours therophyte species.

## **List of pressures and threats**

### **Agriculture**

- Agricultural intensification
- Intensive grazing
- Abandonment of pastoral systems, lack of grazing

### **Urbanisation, residential and commercial development**

- Urbanised areas, human habitation

### **Natural biotic and abiotic processes (without catastrophes)**

- Biocenotic evolution, succession
- Species composition change (succession)

### **Climate change**

- Droughts and less precipitations

## **Conservation and management**

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Continuation, promotion and in many cases reintroduction of the traditional pastoral managing systems (including grazing and mowing) are the most effective ways to maintain this habitat type. During the last 50 years, a large amount of these areas have been progressively abandoned because of their poor productivity, causing a strong development of scrub and woody vegetation. In early successional stages restoration is relatively easy by introduction of livestock, but when the successional processes have acted for a long time, the conservation measures should include the mechanical eradication of the shrubs, before being used again as extensive pastures. It should also be considered that the intensification of livestock leads to the destruction of the habitat, so the number of animal individuals should not be too high. In some sites the habitat is threatened by urbanization.

## **List of conservation and management needs**

### **Measures related to agriculture and open habitats**

- Maintaining grasslands and other open habitats

### **Measures related to spatial planning**

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

## **Conservation status**

Annex I:

62A0: CON U2, MED U1

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

This habitat is characterised by dry, shallow and rocky soils. The successional process consequent to the abandonment could have affected the soil condition, thus it may require a longer period for the re-establishment of the typical flora now, even after the mechanical removal of the shrubs. Better results can

be expected when adopting the traditional land-use practices based on extensive grazing.

### Effort required

20 years
Through intervention

## Red List Assessment

### Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-28 %	Unknown %	Unknown %	Unknown %
EU 28+	-27 %	Unknown %	Unknown %	Unknown %

The average quantitative trend in the last 50 years shows a reduction of 28% in EU28 and 27% in EU28+, and therefore it qualifies as Near Threatened under Criterion A1. The trend reported in the countries of occurrence is mostly of a decrease. Croatia accounts for the most remarkable surface loss, with about 1,000 km<sup>2</sup> (30% of the former area) lost during the last decades. Additionally, Slovenia and Bosnia and Herzegovina reported high rates of area reduction (respectively 60% and 25%). There is no information available regarding future and historical declines.

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

The ongoing tendency to abandon the traditional grazing activities represents a threatening process likely to cause continuing decline in quantity and/or quality for this habitat type within the next 20 years, as a consequence of the dynamic processes of the vegetation, causing floristic and phytocoenotical changes affecting the biotic quality of the habitat. For this reason, a further reduction in the spatial extent can be realistically expected. The values of EOO and AOO largely exceed the thresholds for a threatened category and as a consequence the assessment under Criterion B results in Least Concern.

### 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	50 %	75 %	Unknown %	Unknown %	Unknown %	Unknown %
EU 28+	48 %	75 %	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 reduction in biotic/abiotic quality over the last 50 years affected 50% of the total extent of the habitat in EU 28 and 48% in EU28+, with a relative severity of 75% in both cases. The habitat is assessed in the EU28 as Vulnerable under Criterion C/D1, while it is assessed as Near Threatened in the EU28+. The reduction for most countries is both biotic and abiotic. There is no information on the historical reduction in quality. The indications for future trends in the different countries, when available, agree that a further decrease should be expected, although a precise assessment based on Criteria C/D3 is not possible due to lack of data.

### 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	NT	DD	DD	DD	LC	LC	DD	VU	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	NT	DD	DD	DD	LC	LC	DD	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	C/D1	Near Threatened	A1, 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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