

## E3.3 Submediterranean moist meadow

### Summary

The moist meadows belonging to this habitat type are typical of sandy to clayey, mesotrophic to eutrophic soils on riverside terraces and gentle slopes, mainly within the lowlands of south-eastern Europe, mostly in EU28+ but extending westwards to Central Italy. Inundation of the sites during winter and spring is common, and the humid to rather wet site conditions are often influenced by the presence of groundwater close to the surface but later in the season the ground may dry up. The floristic variation in these widely distributed grasslands reflects differences in the temperate and rainfall of the Mediterranean climate though quite often there is some saline influence in the soils which also has an effect on the species composition. Hay making takes place mainly in May and June and sometimes the vegetation is also grazed which may affect the species composition. Continuation of hay making and safeguarding of the appropriate hydrological conditions are key factors for maintaining these communities and the main threats are abandonment of the traditional management and agricultural intensification through fertilisation and drainage. At the European level, the percentages of degradation in both in quantity and quality seem to be low, although locally the losses in biodiversity may demand adequate protection measures.

### Synthesis

This habitat type is not threatened in both EU28 and EU28+. Recent declines in quantity and in quality are relatively small. However, for the future it has to be monitored whether the traditional land use of hay making can be maintained in enough sites on the Balkan to prevent the habitat from becoming threatened.

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

Although there is, in terms of syntaxonomic alliances, some variation in the various parts of the distribution area, there is no need for further examination of subtypes.

### Habitat Type

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#### Code and name

E3.3 Submediterranean moist meadow



Clovers like the pink flowering *Trifolium resupinatum* are often dominating the sub-mediterranean moist meadows of the alliance *Trifolion resupinati* (Photo: Vlado Matevski).



Moist hay meadow with *Orchis palustris* and *Scorzonera cana* on lowland karst area in Dalmatia, Croatia (Photo: John Janssen).

## Habitat description

This habitat type comprises hay meadows that cover riverside terraces and gentle slopes. It represents typical lowland communities, that sometimes appear at higher altitude, up to 1 000 m. The ground is generally flat, only rarely the inclination is more pronounced. The site conditions are humid to rather wet, due to relatively high amounts of rainfall and the fact that groundwater level is close to the surface. Often the sites are inundated during winter and spring. In July and August, the ground conditions may become rather dry. These wet meadows have a pronounced phenology. In early spring, yellow flowering *Ranunculus* species may prevail, while later on various *Trifolium* species as well as *Alopecurus rendlei* (*Alopecurus utriculatus*) appear. Hay making takes place mainly in May and June. Sometimes, grazing is practiced, that may change the species composition.

The climate is submediterranean and the habitat type can be found in the coastal region of the Adriatic Sea, in the central part of the Italian Peninsula, the southern edge of the Pannonian Basin and in the southern part of the Balkan Peninsula. The climax vegetation of the areas where the habitat occurs belongs to the class *Quercetea pubescentis*. The soil mainly consists of - rather sandy - clay, locally mixed with river deposits. Quite often the sites are moderately salted, which also effects the species composition. Nevertheless, the alliances that can be assigned to this habitat type do not vary that much that a division in subtypes is needed. The *Trifolion resupinati*, for instance, has its main occurrence in the central Balkans with its centre of distribution in Macedonia, whereas the *Trifolion pallidi* is found on floodplains that are less dry in summer, having its center of distribution in eastern Croatia and western Serbia. The *Molinio-Hordeion secalini*, of which the distribution stretches from Slovenia through Croatia to Bosnia and Herzegovina, is also rather humid. The *Trifolio-Ranunculion pedati* is sub-halophytic and restricted to the Pannonian plain; the *Ranunculion velutini* is bound to central Italy.

These grasslands are in good condition, when they appear on primary sites and are maintained through traditional management. In case the meadows are drained or watered artificially, the species composition would change dramatically. Since these sites are fertile, the surfaces can be ploughed out and converted to fields. On the other hand their surfaces will overgrow with shrubs and tall grasses in case of abandonment of traditional management. Regular mowing prevents the beginning of secondary succession towards forests. One of the threats is also use of fertilizers and sowing of seeds. One additional threat is the use of fertilizers and the sowing of seeds. Another treat is intensive grazing, that also changes species composition.

Indicators of good quality are:

- Species richness of the herb layer
- Absence of invasive, tall herb and shrub species

- Regular mowing
- Absence of intensive grazing

Characteristic species:

Vascular plants: *Achillea millefolium*, *Agrostis stolonifera*, *Alopecurus pratensis*, *Alopecurus rendlei*, *Anthoxanthum odoratum*, *Bromus racemosus*, *Carex distans*, *Carex hirta*, *Carex otrubae*, *Carex tomentosa*, *Carex vulpina*, *Centaurea jacea*, *Centaurea pannonica*, *Cichorium intybus*, *Cirsium canum*, *Clematis integrifolia*, *Convolvulus arvensis*, *Crepis setosa*, *Cynosurus cristatus*, *Daucus carota*, *Deschampsia cespitosa*, *Deschampsia media*, *Edraianthus dalmaticus*, *Elymus repens*, *Festuca pratensis*, *Galium debile*, *Galium verum*, *Gaudinia fragilis*, *Gratiola officinalis*, *Holcus lanatus*, *Hordeum murinum*, *Hordeum secalinum*, *Lathyrus nissolia*, *Lathyrus pannonicus*, *Lathyrus pratensis*, *Leucanthemum vulgare*, *Leucosium aestivum*, *Lolium perenne*, *Lotus corniculatus*, *Lychnis flos-cuculi*, *Lysimachia nummularia*, *Lythrum salicaria*, *Medicago arabica*, *Medicago hispida*, *Moenchia mantica*, *Molinia caerulea*, *Narcissus poeticus*, *Oenanthe silaifolia*, *Oenanthe stenoloba*, *Ophioglossum vulgatum*, *Orchis laxiflora*, *Peucedanum coriaceum*, *Plantago lanceolata*, *Poa pratensis*, *Poa trivialis*, *Poa trivialis ssp.sylvicola*, *Podospermum canum*, *Potentilla reptans*, *Prunella vulgaris*, *Ranunculus acris*, *Ranunculus marginatus*, *Ranunculus polyanthemus*, *Ranunculus repens*, *Ranunculus sardous*, *Ranunculus stevenii (acris)*, *Ranunculus velutinus*, *Rhinanthus minor*, *Rorippa sylvestris*, *Rumex acetosa*, *Rumex crispus*, *Scilla litardierei*, *Scutellaria hastifolia*, *Serratula tinctoria*, *Symphytum officinale*, *Taraxacum officinale agg.*, *Moenchia mantica*, *Tragopogon orientalis*, *Tragopogon pratensis*, *Trifolium balansae*, *Trifolium cinctum*, *Trifolium dubium*, *Trifolium fragiferum*, *Trifolium patens*, *Trifolium pallidum*, *Trifolium pratense*, *Trifolium repens*, *Trifolium resupinatum*.

### Classification

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

EUNIS:

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EuroVegChecklist:

*Molinio-Hordeion secalini* Horvatić 1934

*Trifolion resupinati* Micevski 1957

*Trifolio-Ranunculion pedati* Slavnić 1948

*Trifolion pallidi* Ilijanić 1969

*Ranunculion velutini* Pedrotti 1978

Annex 1:

6540 Sub-Mediterranean grasslands of the *Molinio-Hordeion secalini*

Emerald:

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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

This habitat type is recorded from 6 countries, having its main distribution in the Balkan region; it furthermore occurs in Italy.

## 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>Bulgaria</i>	Present	unknown Km <sup>2</sup>	Unknown	Unknown
<i>Croatia</i>	Present	30 Km <sup>2</sup>	Decreasing	Decreasing
<i>Italy</i>	Italy mainland: Present	49 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	unknown Km <sup>2</sup>	Unknown	Unknown
<i>Bosnia and Herzegovina</i>	Present	315 Km <sup>2</sup>	Decreasing	Decreasing
<i>Former Yugoslavian Republic of Macedonia (FYROM)</i>	Present	315 Km <sup>2</sup>	Decreasing	Decreasing
<i>Serbia</i>	Present	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
EU 28	913850 Km <sup>2</sup>	60	>750 Km <sup>2</sup>	
EU 28+	926050 Km <sup>2</sup>	132	>750 Km <sup>2</sup>	

## Distribution map



The map provides a good picture of the range, but data gaps still exist everywhere on the Balkan. Data: NAT, EVA.

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

Only about 10% of the current distribution lies within EU 28, the largest areas of this submediterranean habitat type have been reported from Bosnia-Herzegovina and Macedonia.

### Trends in quantity

Recent trend EU28: -13.3%, Recent trend EU28+: -3.6. Although data lack from Serbia, where the habitat type is widely distributed, the figures seem to be quite reliable. Only few quantitative data are available on historical trend, showing more or less the same trends as during more recent years, ranging from stable to slight 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*

The EOO is larger than 50000 km<sup>2</sup>

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

No

*Justification*

The habitat type has a rather wide distribution in south-eastern Europe (reports from 5 countries); outside this area it also is reported from Italy.

## Trends in quality

Whereas most of the habitat type is situated outside the EU28+, the general conclusion is that there is only a small percentage of the area that is degraded (up to 20%), whereas the degree of degradation is slight (to moderate). Only in Bulgaria, the losses seem to be more considerable, but from this country no data on the extent of these grasslands is reported.

- Average current trend in quality

EU 28: Decreasing

EU 28+: Decreasing

## Pressures and threats

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Like other wet grasslands on Europe, the main threats for these submediterranean grasslands are agricultural intensification, including fertilisation and drainage. Other losses are due to changes in the (natural) hydrology of floodplains and habitat destruction by urbanisation and expansion of infrastructure (e.g. roads).

### List of pressures and threats

#### Agriculture

Agricultural intensification

Abandonment / Lack of mowing

Fertilisation

#### 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

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Although these grasslands are still available over large areas and under rather well conditions (mainly outside EU28+), there are certain risks for degradation. The main factors are continuation of the hay making systems and safeguarding the appropriate hydrological conditions.

### 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

### Conservation status

Annex I:

No assessment of conservation status of habitat 6540 is available, as this type was only added with the joining of Croatia of the European Union.

### When severely damaged, does the habitat retain the capacity to recover its typical



## character and functionality?

The habitat type is depending on human intervention for restoration, by re-introducing mowing regimes and improving hydrological conditions.

### Effort required

20 years
Through intervention

## Red List Assessment

### Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-13 %	unknown %	unknown %	unknown %
EU 28+	-3.6 %	unknown %	unknown %	unknown %

The values for 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 <sup>2</sup>	Yes	Yes		>50	Yes	Yes		
EU 28+	>50000 Km <sup>2</sup>	Yes	Yes		>50	Yes	Yes		

Negative trends are observed and expected for the future, but EOO, AOO and number of locations are above the thresholds for evaluating Criterion B, leading to the conclusion Least Concern (LC).

### 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	20 %	30-40 %	unknown %	unknown %	unknown %	%
EU 28+	20 %	30-40 %	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 were obtained from 6 countries.

Although this only comprises a limited portion of the area of distribution, there is no sign that the losses in quality are higher outside the reported countries (with possibly the exception of Bulgaria). No data are 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	LC	DD	DD	DD	LC	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	LC	DD	DD	DD	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

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

### Assessors

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## References

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