

F7.3 Eastern Mediterranean spiny heath (phrygana)

Summary

This habitat of low, thorny hemispherical shrubs and mat-formers is widespread at low and middle altitudes in the eastern Mediterranean and Anatolian regions. One of the most species-rich habitats of the Mediterranean basin, it occurs naturally on dry sites with shallow soils but its resistance to grazing and fire and its spread on to cultivated fields, make it often a secondary succession or regeneration stage. Then, natural patterns of regional variation tend to be obscured. Grazing at moderate intensity is one of the drivers that contribute to the preservation of a favourable structure but intensive grazing contributes to the deterioration of the habitat.

Synthesis

The habitat includes some of the most species rich plant communities of the Mediterranean basin and is assessed at the Least Concern status. This is because it has an extensive distribution in the Eastern Mediterranean and no decline has been recorded to the extent and the quality characteristics of the habitat during the last 50 years. Furthermore, due to the socio-economic changes of the last 50 years, the trend in quality and quantity is increasing and is predicted that also the future trend will be increasing.

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

This East Mediterranean habitat is very diverse based on the known number of syntaxonomic units at the level of association and plant community, and these are considered sub-habitats of the F7.3. The habitat includes different communities depending on or evolved after different human activities (grazing, fire, field abandonment). Further research focusing on the dynamics of the phrygana communities (permanent plot research to detect the role of grazing vs. non-grazing and fire) is needed. Factors such as grazing and fire, together with the abandonment of cultivated fields are strongly related to the dynamics of the eastern Mediterranean phrygana (secondary succession stage, post-fire regeneration stage), and should be thoroughly examined to lighten this controversial item in ecology.

Habitat Type

Code and name

F7.3 Eastern Mediterranean spiny heath (phrygana)



Phrygana communities with *Genista acanthoclada*, *Sarcopoterium spinosum*, *Thymra capitata* in the island of Sifnos, Kiklades, Greece (Photo: Panayotis Dimopoulos).



Costal phrygana dominated by *Centaurea spinosa* (grey cushions) and *Sarcopoterium spinosum* (green cushions), in Samothraki island, North Aegean, Greece (Photo: A. Strid).

Habitat description

This habitat includes low, thorny and chamaephytic communities of hemispherical shrubs, widespread at low and middle altitudes in the eastern Mediterranean and Anatolian regions. These phrygana communities occur at the coastal thermo-, meso- and the supra-Mediterranean zones of the Aegean islands, of mainland Greece and the Ionian islands, of coastal Anatolia and Crete (up to 1200 m a.s.l.), and are much more widespread and diverse than the western Mediterranean spiny shrub communities (F7.1-2). The *Sarcopoterium spinosum*-dominated communities, by far the commonest phrygana facies, are widespread in the Aegean archipelagos and Crete, with local outposts in continental Greece, the Ionian islands and coastal Anatolia. In this habitat are also included varied communities of supra- and oro-Mediterranean levels of Crete resulting from the broad contact between phryganas and hedgehog-heaths, with *Euphorbia acanthothamnus*, *Verbascum spinosum*, *Berberis cretica*, *Phlomis cretica*, *Satureja thymra*, *Sideritis syriaca*, *Hypericum empetrifolium*, *Origanum microphyllum*, *Micromeria juliana*, *Helichrysum italicum* subsp. *microphyllum*, *Genista acanthoclada* and *Astragalus angustifolius*. Here are also included phrygana communities rich in *Cistus*, *Erica* and *Genista* species which occur on calcareous (*Hyperico empetrifolii*-*Micromerion graecae*, *Micromerion julianae*, *Helichryso sanguinei*-*Origanion syriaci*), as well as on non-calcareous substrates (*Helichryso barrelieri*-*Phagnalion graeci*, *Hyperico olympici*-*Cistion cretici*, *Helichryso sanguinei*-*Origanion syriaci*), such as granite, gneiss and phyllitic schists, on serpentine, on hard and soft marls, on volcanic soils, and on sand. The distribution range of the *Helichryso barrelieri*-*Phagnalion graeci* includes Peloponnesus and Crete, the Ionian and the Aegean sides of the Greek mainland, the Central and South Aegean islands and the Aegean coast of Anatolia northward to approx. 39° N (Barbero & Quezel 1989, Mucina et al. 2009), i.e. a region where vegetation linked to the thermo-mediterranean belt is widely distributed (Quezel & Barbero 1985), although the communities of the alliance are not strictly limited to low altitudes (also vegetation relevés from the Pilion peninsula middle altitudes are placed in the *Helichryso barrelieri*-*Phagnalion graeci*). The distribution range of the *Helichryso sanguinei*-*Origanion syriaci* includes Cyprus, Turkey, Syria and Lebanon, where it occurs on calcareous and marl substrates as well as on serpentines and metamorphic substrates, at altitudes ranging from the sea level to 1200 m (thermo-, meso- and supra- Mediterranean vegetation belts). The distribution range of the *Hyperico olympici*-*Cistion cretici* and the *Micromerion julianae* includes Northern Greece (Central Macedonia, Thrace), Central Greece (Thessaly), where the phrygana communities occur on non-calcareous and calcareous substrates respectively. Included here are also the thorny cushion communities of the Thracian wooded steppe zone enclaved between the Black Sea, the Sea of Marmara and the Aegean, with *Sarcopoterium spinosum* and *Astragalus thracicus*. These are distributed in northeastern Greece and Turkey-in-Europe, with local representatives in the xerothermic oak belt of the hills and rim of the Northern Thracian plain (East Rumelian plain) of southeastern Bulgaria, in particular, in the Bakadzicita hills of the Yambol Tundzja basin and in the foothills of the eastern Rhodopes. Finally, the cushion-forming thermo-

mediterranean summer-deciduous phrygana communities of Cyprus are assigned to the *Sarcopoterio spinosi-Genistion fasselatae* alliance. They are mostly characteristic of the Cyprian central plains (thermo- and meso- Mediterranean altitudinal levels: 0-800 m a.s.l.), with a semi-steppic batha appearance (Irano-Turanian affinities) formed by *Sarcopoterium spinosum*, *Thymbra capitata*, *Lithodora hispidula*, *Onosma fruticosum*, *Galium suberosum*. They are distributed on sandy and loamy soils. This habitat can be of primary origin or having a climax character especially in the islands of the Aegean, as well as in the coastal zones of Anatolia, Cyprus, Syria and Lebanon. It is often the result of retrogressive succession of evergreen sclerophyllous vegetation.

Indicators of quality

- Low levels of soil compactness
- Absence of active secondary succession
- Low degree of shrub and grass encroachment
- Mosaics of the phrygana communities with screes, rocks, boulders
- Patchiness of shrubs with herbs/grasses, and potentially arborescent shrubs (e.g. *Pistacia lentiscus*, *Quercus coccifera*, *Juniperus phoenicea*) or single trees
- Natural, undisturbed relief
- Absence or low cover (<5%) of invasive and/or ruderal species

Characteristic species

Cistus creticus, *C. salviifolius*, *Erica manipuliflora*, *Genista acanthoclada*, *Hypericum empetrifolium* subsp. *empetrifolium*, *Hypericum olympicum*, *Satureja thymbra*, *Helichrysum stoechas* subsp. *barrelieri*, *Calicotome villosa*, *Helichrysum sanguineum*, *Micromeria myrtifolia*, *Origanum syriacum*, *Phlomis viscosa*, *Teucrium brevifolium*, *Daphne gnidioides*, *Lactuca triquerta*, *Daphne sericea*, *Lomelosia argentea* (= *Scabiosa argentea*), *Fagonia cretica*, *Lomelosia brachiata* (= *Pterocephalus palaestinus*), *Onosma frutescens*, *Sarcopoterium spinosum*, *Genista fasselata*, *Euphorbia acanthothamnus*, *Verbascum spinosum*, *Berberis cretica*, *Phlomis cretica*, *Sideritis syriaca*, *Origanum microphyllum*, *Micromeria juliana*, *Micromeria graeca*, *Helichrysum italicum* subsp. *microphyllum*, *Centaurea spinosa*, *Stachys spinosa*, *Ballota pseudodictamnus*, *Lithospermum hispidulum*, *Fumana arabica*, *F. thymifolia*, *Teucrium divaricatum*, *T. polium*, *Salvia triloba*, *Phagnalon graecum*, *Phlomis fruticosa*.

Classification

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

EUNIS:

F7.3 East Mediterranean phrygana

EuroVegChecklist:

Hyperico olympici-Cistion cretici (Oberd. 1954) R.Jahn et Bergmeier in Mucina et al. 2009

Helichryso barrelieri-Phagnalion graeci (Barbero et Quézel 1989) R.Jahn in Mucina et al. 2009

Hyperico empetrifolii-Micromerion graecae Barbero et Quézel 1989

Helichryso sanguinei-Origanion syriaci Barbero et Quézel 1989

Micromerion julianae Oberd. 1954

Sarcopoterio spinosi-Genistion fasselatae Costa et al. 1984

Annex I:

5420 Sarcopoterium spinosum phrygas

5430 Endemic phrygas of the Euphorbio-Verbascion

Emerald:

F7 Spiny Mediterranean heaths (phrygana, hedgehog-heaths and related coastal cliff vegetation)

MAES-2:

Heathland and shrub

IUCN:

3.8 Mediterranean-type Shrubby Vegetation

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

Yes

Regions

Mediterranean

Justification

This habitat is extensively distributed in East Mediterranean and is the predominant vegetation in large areas at the thermo- and meso- Mediterranean regions, such as southern Greece and the Aegean.

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 ²	Unknown	Unknown
<i>Cyprus</i>	Present	192 Km ²	Stable	Stable
<i>Greece</i>	Crete: Present East Aegean: Present Greece (mainland and other islands): Present	7910 Km ²	Increasing	Stable
<i>Italy</i>	Italy mainland: Present Sicily: Present	16.4 Km ²	Decreasing	Stable
<i>Malta</i>	Present	1 Km ²	Unknown	Unknown

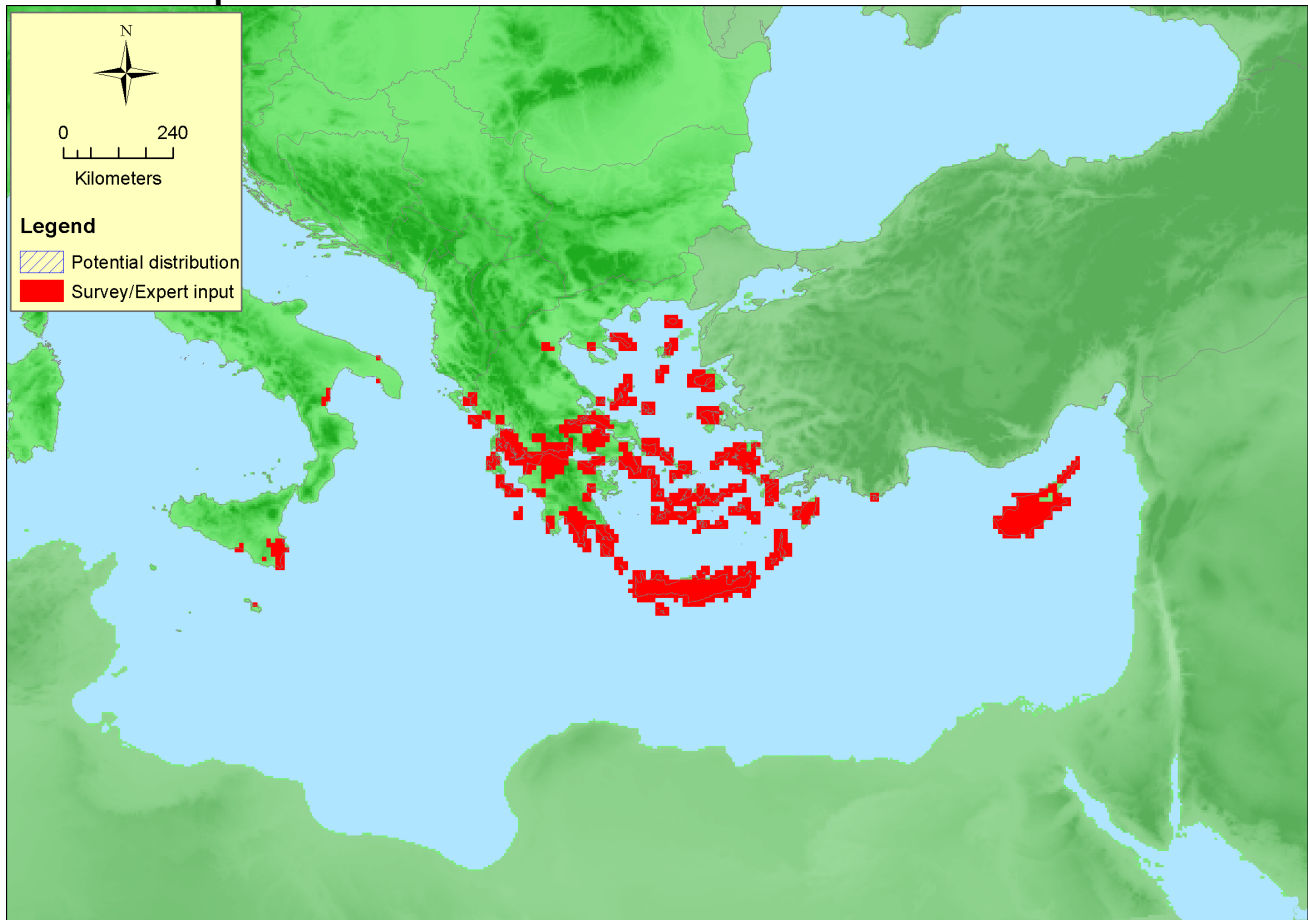
EU 28 +	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Former Yugoslavian Republic of Macedonia (FYROM)</i>	Present	Unknown Km ²	Unknown	Unknown
<i>Serbia</i>	Present	Unknown Km ²	Unknown	Unknown

Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
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	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28	873500 Km ²	1147	8186 Km ²	The current estimated total area is based only on the territorial data provided and we have also added the current area given for the Annex I habitat type 5420 Malta.
EU 28+	873500 Km ²	1148	8186 Km ²	No quantitative data exist for additional EU 28+ countries.

Distribution map



The map likely provides the complete distribution of the habitat in Greece, Italy and Cyprus, but some occurrences in southern Albania are possible and the distribution in Bulgaria is missing. Data sources: Art17.

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

>95%

Trends in quantity

Due to the socio-economic changes (abandonment of cultivated fields, fires) happened the last 50 years in the European part of the East Mediterranean distribution range of the phrygana vegetation (especially in Greece and Cyprus where the phrygana predominate in large areas), and taking into account the dynamics of the phrygana (primary natural vegetation, post-fire regeneration stages of woodland and rangeland vegetation, initial but durable stage within the secondary succession of abandoned fields) the trend in quantity is increasing.

- Average current trend in quantity (extent)

EU 28: Increasing

EU 28+: Unknown

- Does the habitat type have a small natural range following regression?

No

Justification

There has been no significant regression of the natural range of the habitat the last 50 years. The opposite could be documented due to the secondary succession of abandoned fields.

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

No

Justification

The habitat has an extensive distribution range in the East Mediterranean region.

Trends in quality

The trend in quality, that is mainly related to the structure of the habitat (including the species composition), is stable to increasing.

- Average current trend in quality

EU 28: Increasing

EU 28+: Unknown

Pressures and threats

The habitat can either be considered as natural vegetation (primary origin) on dry sites with shallow soils (islands of the Aegean and Crete, as well as in the coastal zones of Anatolia, Cyprus, Syria and Lebanon) or of secondary origin (the result of retrogressive succession of evergreen sclerophyllous vegetation). More specifically, in some parts of its distribution, phrygana communities are established as a result of disturbance of former woodland or maquis. In other parts, phrygana communities have been established on ex-arable land or elsewhere after abandonment; in other cases different phrygana communities form stages of post-fire succession. Human action has eliminated the original variability of the phrygana communities related to climatic factors particularly in continental Greece; as a result, most of the phrygana communities in this part of the country are the result of human impact. Grazing at moderate intensity is one of the drivers that contribute to the preservation of a favourable conservation status of the habitat structure but intensive grazing contributes to the deterioration of its structure. The actual phryganic ecosystems are in most cases stages of man-made degradation of the original Mediterranean forest.

List of pressures and threats

Agriculture

Grazing

Intensive grazing

Transportation and service corridors

Roads, paths and railroads

Urbanisation, residential and commercial development

Urbanised areas, human habitation

Natural biotic and abiotic processes (without catastrophes)

Biocenotic evolution, succession

Species composition change (succession)

Geological events, natural catastrophes

Fire (natural)

Conservation and management

No conservation management measures have been applied to the phrygana vegetation along its distribution in the Eastern Mediterranean. Different phrygana vegetation communities are established after the abandonment of cultivated fields (and depending on the crop, different species are predominating).

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 spatial planning

Manage landscape features

Conservation status

Annex I:

5420: MED FV

5430: MED U1

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

Depending on the dynamics of the different phrygana communities assigned to this habitat along its East Mediterranean distribution, different restoration/recovery times are expected. Some phrygana communities represent initial but durable stages within the secondary succession of abandoned fields, other communities form part of a series of post-fire regeneration stages of woodland and rangeland vegetation, and finally other communities in thermo- and meso-Mediterranean regions such as southern Greece and the Aegean (as well as in the coastal zones of Anatolia, Cyprus, Syria and Lebanon), mature phrygana occur which are considered to represent at least partly primary natural ecosystems. The natural recovery of the habitat after complete deterioration or destruction is rapid and no management measures are needed.

Effort required

10 years
Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-0.4 %	unknown% %	unknown% %	unknown% %
EU 28+	-0.4 %	unknown% %	unknown% %	unknown% %

Estimation of the decline is based on the assessment provided by national experts. A slight decline has been recorded to the extent of the habitat the last 50 years.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	>50000 Km ²	No	Unknown	Unknown	>50	No	Unknown	Unknown	Unknown
EU 28+	>50000 Km ²	Unknown	Unknown	Unknown	>50	Unknown	Unknown	Unknown	Unknown

Based on literature and the AOO and EOO as provided by Alterra, we come to the conclusion that there is no continuing decline in spatial extent, not to the abiotic or biotic quality of the habitat.

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	0 %	0 %	Unknown %	Unknown %	Unknown %	Unknown %
EU 28+	0 %	0 %	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 %

Both biotic and abiotic quality of the habitat have not substantially reduced the last 50 years. Decline in quality (regarding the species composition and structural elements of the phrygana communities assigned to this habitat) has been summarized on the basis of the national experts assessments. From the calculations on the trend in quality, it is evident that the last 50 years as an average no decline in quality (extent of degradation equals 0%) has been reported..

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.

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

High (mainly based on quantitative data sources and/or scientific literature)

Assessors

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