

## F7.4c Eastern Mediterranean mountain hedgehog-heath

### Summary

This habitat includes both the primary cushion heaths of the high, dry mountains of the East Mediterranean region with low, cushion-forming, often spiny shrubs, and the secondary, downslope extensions of these high-altitude communities developed through grazing. The dominant species vary in different regions and the flora includes endemics. The abandonment of summer pastoralism as well as heavy grazing are significant threats for the structure and function of the habitat, but there is also habitat fragmentation due to road construction up to higher altitudes. No conservation measures are necessary above the timberline if traditional practices continue.

### Synthesis

Although quantitative data on quality are lacking and also territorial data are not provided for all countries, the Red List criteria qualify for a Least Concern status. The extensive distribution of the habitat, with its varied plant communities throughout its range, in combination with the long-term interaction with traditional human activities (summer pasture-lands above the timberline), which has conserved the total species diversity and that of endemic/rare/endangered species, lead us with certainty to the same conclusion.

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

The altitudinally and ecologically differentiated alliances, and their corresponding vegetation communities (representing to the habitat sub-types) should be in the focus of further and systematic monitoring to detect species turnover related to the climate change as well as to the changes in the existing management practices.

### Habitat Type

#### Code and name

F7.4c Eastern Mediterranean mountain hedgehog-heath



## Habitat description

This diverse habitat includes both the primary cushion heaths of the high, dry mountains of the East Mediterranean region with low, cushion-forming often spiny shrubs, and the secondary, zoogenic downslope extensions of these high-altitude formations. More specifically, it includes: (a) the shrubby formations of dry, usually calcareous rocky places with strongly eroded humus-carbonate soils, with large amounts of skeletal material and rock outcrops including the spiny hedgehog-heaths, the cushiony formations of dwarf suffrutescents and/or the bush-dominated facies of stripped grasslands, (b) the downslope extensions of the high altitude formations in zoogenic forest clearings of the mountains of Greece, of the Moesian zone and of the central Balkan peninsula which are dominated by the same species, or specifically montane or steppic taxa (often *Genista*-dominated), and (c) the high altitude hedgehog-heaths that are developed on relatively humus-rich rendziniform soils at or above treeline and dominated by large hemispherical tussocks of the tragacanth *Astragalus rumelicus*, and/or *Astragalus parnassi*. Varieties, distinguished by the dominant taxa, include the tragacanth dominated cushion heaths of the eastern Mediterranean; the *Genista acanthoclada* dominated formations; the summit communities of Mt. Troodos (in Cyprus) with *Berberis cretica*, *Sorbus aria* subsp. *cretica* (= *S. graeca*) that also include the restricted endemics *Astragalus echinus*, *Alyssum troodii*, *Teucrium cyprium*, *Nepeta troodi*, *Satureja troodii*, *Onosma troodi* and *Scorzonera troodea*; the endemic-rich hedgehog-heaths of calcareous mountains of Aegean islands and mount Athos (in Greece); as well as the hedgehog-heaths of high mountains of Crete with *Astragalus creticus* subsp. *creticus*, *Astragalus angustifolius*, *Acantholimon androsaceum*, *Berberis cretica*, *Daphne oleoides*, *Prunus prostrata*, *Euphorbia acanthothamnus*, *Verbascum spinosum* and *Sideritis syriaca*.

Indicators of good quality:

- High species richness and occurrence of endemic species
- Low shrub cover (chamaephytes, nano-phanerophytes) more than 30%
- Significant presence of perennial grass species
- Regular grazing
- No indication of strong erosion eg. gully formation
- Absence or low cover of ruderal/nitrophilous species (species of Stellarietea or of the Artemisietea)
- Long-term habitat stability: absence of progressive or retrogressive succesional trends

Characteristic species:

*Acantholimon androsaceum*, *Achillea ageratifolia*, *Agropyron cristatum*, *Alyssum kionae*, *Alyssum troodii*, *Anthyllis aurea*, *Artemisia alba*, *Asperula cynanchica*, *Aster alpinus*, *Astragalus angustifolius*, *A. creticus* subsp. *creticus*, *A. echinus* subsp. *rumelicus*, *A. lacteus*, *A. parnassi*, *Berberis cretica*, *Bothriochloa ischaemum*, *Bromus riparius*, *B. scoparius*, *Centaurea chrysolepis*, *Cirsium hypopsilum* (*C. cylleneum*), *Convolvulus cochlearis*, *Daphne oleoides*, *Eryngium amethystinum*, *E. pusillum*, *Euphorbia acanthothamnus*, *Festuca dalmatica*, *F. stojanovii*, *F. thracica*, *Festucopsis sancta*, *Fumana procumbens*, *Genista acanthoclada*, *Globularia stygia*, *Hyacinthella leucophaea*, *Hypericum rumeliacum*, *Juniperus hemisphaerica*, *Linum flavum*, *Marrubium velutinum* subsp. *cylleneum*, *Minuartia stellata*, *Nepeta troodi*, *Onosma troodi*, *Paronychia kapela*, *Prunus prostrata*, *Rhodax canus*, *Rindera graeca*, *Satureja montana* subsp. *kitaibelii*, *S. troodii*, *Scorzonera troodea*, *Sesleria coerulans*, *Sideritis clandestina*, *S. scardica*, *S. syriaca*, *Sorbus aria* subsp. *cretica*, *Teucrium cyprium*, *T. montanum*, *Thymus boissieri*, *T. hirsutus*, *T. jankae*, *T. striatus*, *T. teucrioides*, and *Verbascum spinosum*.

## Classification

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

EUNIS:

F7.4 Hedgehog-heaths

EuroVegChecklist:

*Astragalo angustifolii-Seslerion coerulantis* Quézel 1964

*Eryngio multifidi-Bromion fibrosi* Quézel 1964

*Stipo pulcherrimae-Morinion persicae* Quézel 1964

*Astragalion cretici* Bergmeier 2002

*Verbascion spinosi* Zaffran ex Bergmeier 2002

*Colchico cretensis-Cirsion morinifolii* Bergmeier 2002

*Hyperico stenobotryos-Alyssion troodi* S. Brullo et al. 2005

*Asterion creticae* Zaffran ex Bergmeier et al. 2011

Annex I:

4090 Endemic oro-Mediterranean heaths with gorse

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 unit includes the xeric zonal grasslands, dwarf-shrub and thorn-cushion communities of the mountains of the East Mediterranean territories (Greece, E-Aegean, NW and W Anatolia) as well as of Southern Bulgaria (near the borders to Greece). Together with the hedgehog heaths of the western and central Mediterranean region this is a typical habitat for the highest belts in Mediterranean mountains.

## 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)
Bulgaria	Present	125 Km <sup>2</sup>	Decreasing	Stable

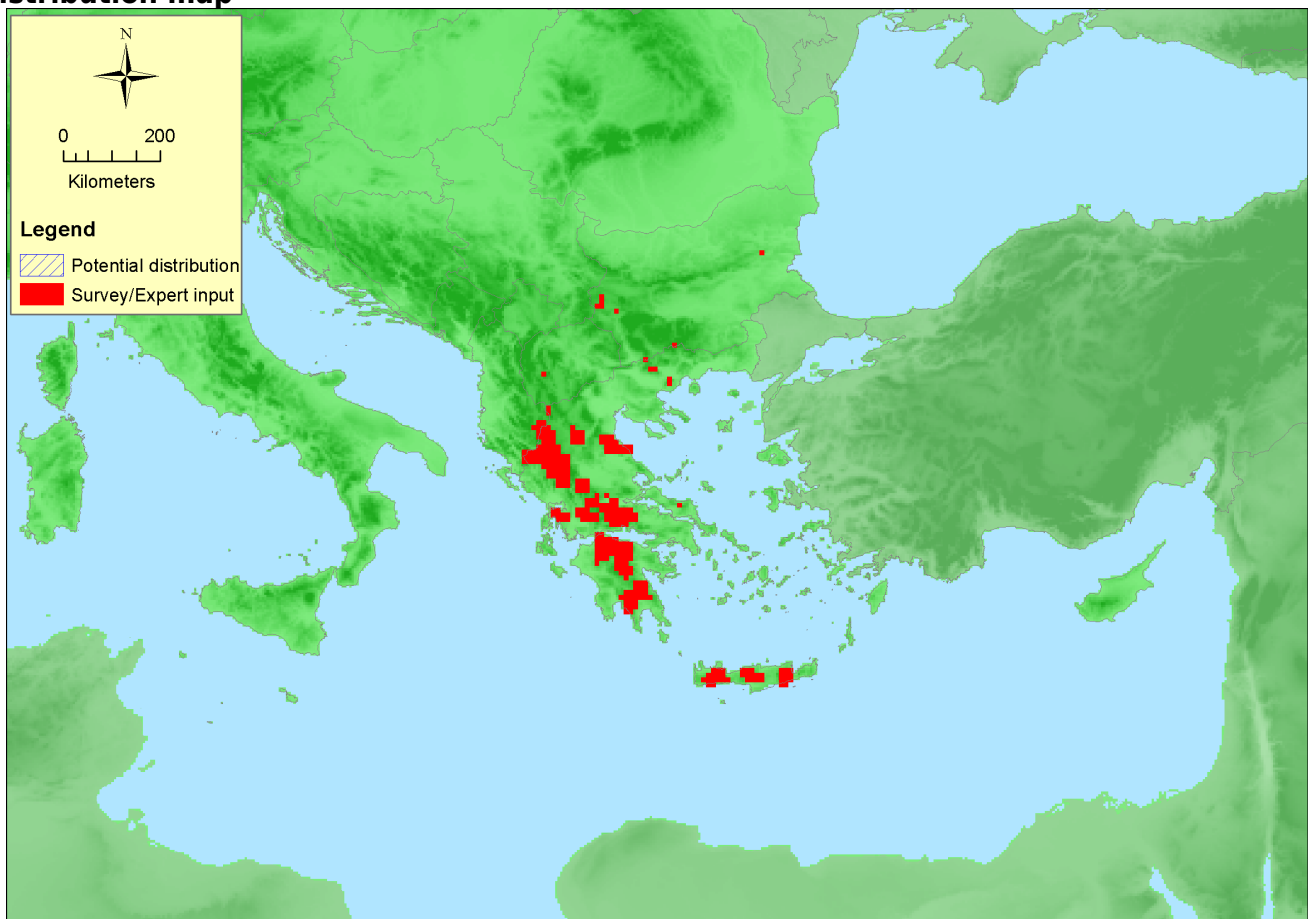
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Greece</i>	Crete: Present East Aegean: Present Greece (mainland and other islands): Present	1809 Km <sup>2</sup>	Stable	Stable

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>	Uncertain	Unknown Km <sup>2</sup>	Unknown	Unknown
<i>Former Yugoslavian Republic of Macedonia (FYROM)</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>	348000 Km <sup>2</sup>	295	2000 Km <sup>2</sup>	Based on the existing data provided by the EU Member States (GR & BG). This number is partially representing the current actual total area.
<i>EU 28+</i>	355150 Km <sup>2</sup>	300	2000 Km <sup>2</sup>	

### Distribution map



The map is complete or maybe a bit overestimated for the EU28, but the distribution in Macedonia and Albania is probably underestimated. Sources: EVA, Art17, GBIF.

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

>80%

## Trends in quantity

The trend in quantity is more or less stable or slightly decreasing (<5%) based on the available territorial data.

- Average current trend in quantity (extent)

EU 28: Stable

EU 28+: Stable

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

No

*Justification*

The habitat is widespread at high altitudes of the Eastern Mediterranean and no deterioration of the structure and functions or of its ecological characteristics has been reported.

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

No

*Justification*

The habitat is widespread in the oro-mediterranean belt of the south Balkan and west Anatolian mountains.

## Trends in quality

Both countries that have provided territorial data, report a stable situations with no trend in quality, although this is not documented by quantitative data. Overall in expert opinion, there is no negative trend in quality of the habitat throughout its distribution range.

- Average current trend in quality

EU 28: Stable

EU 28+: Stable

## Pressures and threats

---

The abandonment of summer pastoralism (which means lack of grazing) might be one of the most significant threats for the structure and functions of the habitat. The intensive grazing which once might have had significant effects on the floristic structure of the habitat and its sub-habitats, currently seems not the case in the mountain ranges of mainland and insular Greece (Crete, Evvoia and other large Aegean islands with high mountains, such as the island of Samos) because of the average decrease in the number of sheep and goats in the Greek mountains, although locally there can still be some evidence of heavily grazed areas. Another pressure and threat is the habitat fragmentation due to road construction up to the upper altitudinal mountain belts, which leads to a reduction of habitat connectivity or loss of specific habitat features.

## List of pressures and threats

### Agriculture

Grazing

Intensive mixed animal grazing

Abandonment of pastoral systems, lack of grazing

## Natural System modifications

- Other ecosystem modifications
- Anthropogenic reduction of habitat connectivity

## Natural biotic and abiotic processes (without catastrophes)

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

## Conservation and management

---

The grassland and dwarf-scrub/thorny-cushion vegetation communities of the Eastern Mediterranean mountain areas included in this habitat are used as summer pastures above the timberline since ancient times, traditionally with sheep and goats but recently also with cows and they have been indispensable for stock-breeding and grazing. The traditional character of the summer pastoralism which is still in practice should continue, avoiding heavy grazing through management measures for rational grazing intensity, and controlling the road and cistern constructions. Monitoring is necessary to study the combined effects of heavy grazing and all activities related to this.

### List of conservation and management needs

#### Measures related to agriculture and open habitats

- Maintaining grasslands and other open habitats

#### Measures related to spatial planning

- Manage landscape features

#### Measures related to hunting, taking and fishing and species management

- Other species management measures

### Conservation status

4090: MED FV

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

Only the destruction of the habitat connectivity might affect dramatically habitat conservation. The time of recovery is related to/dependent on the disturbance or the destructive factor.

### Effort required

20 years
Naturally

## Red List Assessment

---

### Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-0.3 %	unknown %	unknown %	unknown %
EU 28+	-0.3 %	unknown %	Uknown %	Uknown %

A slight reduction in quantity has been reported from one of the countries (Bulgaria) that provided territorial data; less than 5% in the total extent of the habitat has been affected as has been reported.



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

The habitat is widespread in the East Mediterranean mountain ranges (reaching to the southern limits of Bulgaria) and Western Anatolia: large EOO and AOO (EOO > 50000 km<sup>2</sup> and AOO > than 50 km<sup>2</sup>).

## 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%

Based on the countries that have provided data, reduction in quality is totally absent or affects a small area (0-5%) at low severity. The current trend regarding the biotic and abiotic quality of the habitat is stable to increasing.

## 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 to estimate 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+

Overall Category & Criteria			
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)

### Assessors

P. Dimopoulos

### Contributors

Type description: P. Dimopoulos, F. Xystrakis

Territorial data: P. Dimopoulos, Ch. Gussev, V. Matevski

Working Group Heathland & Scrub: M. Aronsson, F. Bioret, C. Bita-Nicolae, J. Capelo, A. Čarni, P. Dimopoulos, J. Janssen, J. Loidi

### Reviewers

J. Rodwell

### Date of assessment

09/09/2015

### Date of review

28/01/2016

## References

---

Bergmeier E (2002). The vegetation of the high mountains of Crete a revision and multivariate analysis. *Phytocoenologia* 32(2): 205-249

Georgiadis T, Dimopoulos P (1993). Etude de la végétation supraforestière du Mont Kyllini (Péloponnèse-Grèce). *Botanica Helvetica* 103 (2): 149-175.

Maroulis G, Georgiadis T (2005). The vegetation of supra-forest meadows and rock crevices of Mount Erimanthos (NW Peloponnisos, Greece). *Fitosociologia* 42 (1):33-56

Parolly G (2004). The High Mountain Vegetation of Turkey - a State of the Art Report, Including a First Annotated Conspectus of the Major Syntaxa. *Turk J Bot* 28: 39-63.