

G3.6 Mediterranean and Balkan subalpine *Pinus heldreichii*-*Pinus peuce* woodland

Summary

This habitat of subalpine *Pinus heldreichii*-*peuce* woodland occurs in southern Italy (only with *P. heldreichii*) and in the Balkans on extremely sunny drought-prone situation with nutrient-poor, rocky soils, base-rich for *P. heldreichii*, base-poor for *P. peuce*. Although highly fragmented, several sub-populations of the two tertiary relict species are sustainable and little interest in the timber of the two species has reduced their forest exploitation. High intensity fires are the major threat and thereafter grazing can reduce the capacity of the habitat to recover its natural structure and composition. Site protection is needed for conservation.

Synthesis

Although the habitat is characterized by a wide range (EOO) and only a small decline of the area has been reported over the last 50 years, the high fragmentation and restricted distribution of the populations (AOO close to 50), accompanied by a continuing degradation in part of the current distribution, makes the habitat qualify as Near Threatened for the European Union under criterion B2. As the habitat is more widespread outside the EU in Balkan countries, the final category for EU28+ is Least Concern.

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Near Threatened	B2	Least Concern	-

Sub-habitat types that may require further examination

No subhabitats need to be distinguished.

Habitat Type

Code and name

G3.6 Mediterranean and Balkan subalpine *Pinus heldreichii*-*Pinus peuce* woodland



Pinus peuce woodland on subalpine scree in Macedonia (Photo: Vlado Matevski).



Detail of leaves and cones of *Pinus peuce* (Photo: Vlado Matevski).

Habitat description

This habitat comprises timberline coniferous woodland in southern Italy, the southern Balkans and Greece, dominated by the two pine species *Pinus peuce* and *P. heldreichii*, trees which survive better in the

summer-drought conditions of southern Europe than *Picea abies* or *Fagus sylvatica*, which extend as dominants to the timberline further north. Both these pines are considered to be Tertiary relict species, but these woodlands are not relicts, as pines survived glaciations at lower altitude. *P. peuce* can be found on non-carbonate bedrock, whereas *P. heldreichii* occurs on carbonate deposits. *P. peuce* can be found above altitudes of 1500 m and forms canopies of even 30-40 m tall, often mixed with *Picea abies*, *Fagus sylvatica* or *Abies borisii-regis*, but it also extends to lower altitudes and can dominate on sites that were originally occupied by *Fagus sylvatica* and deforested.

The soil in the stands is poor in nutrients with a lot of bedrock on the surface, which suggests that the stands of *P. peuce* can be of secondary origin. *Pinus heldreichii* grows at altitudes above 1000m and is a heliophilous tree, surviving better than *P. peuce* in dry conditions, growing more slowly and forming canopies up to 20-30m high. Its stands are often monodominant, especially on rocky, sunny slopes, but it can occur mixed with *P. sylvestris* or *P. nigra*, on Monte Pollino (Italy) also with *Abies alba* and *Fagus sylvatica*. The populations of both endemic pine trees are occur scattered and fragmented, due to the specific soil conditions.

Indicators of good quality:

- Overwhelming dominance of the pines
- Species richness
- Absence of logging and intensive grazing and consequent erosion
- Absence of intensive destructive fires

Characteristic species:

Vascular plants: *Abies alba*, *A. borisii-regis*, *Fagus sylvatica*, *Pinus heldreichii*, *P. peuce*, *Sorbus aucuparia*, *Sorbus graeca*, *Anemone nemorosa*, *Arenaria agrimonioides*, *Avenella flexuosa*, *Brachypodium pinnatum*, *Festuca penzesii*, *Calamagrostis arundinacea*, *Calamintha grandiflora*, *Cotoneaster nebrodensis*, *Daphne mezereum*, *Dryopteris filix-mas*, *Fragaria vesca*, *Galium rotundifolium*, *Gentiana asclepiadea*, *Geranium macrorrhizum*, *Geranium sylvaticum*, *Homogyne alpina*, *Juniperus communis*, *Juniperus hemisphaerica*, *Luzula luzuloides*, *Luzula sylvatica*, *Mycelis muralis*, *Orthilia secunda*, *Oxalis acetosella*, *Polystichum lonchitis*, *Pteridium aquilinum*, *Rosa pendulina*, *Vaccinium myrtillus*, *Veratrum album*, *Veronica chamaedrys*, *Veronica officinalis*, *Viola reichenbachiana*, *Wulfenia carinthiaca*.

Classification

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

EUNIS:

G3.6 Subalpine Mediterranean Pinus woodland

EuroVegChecklist:

Pinion heldreichii Horvat 1946

Pinion peucis Horvat 1950

Annex 1:

95A0 High oro-Mediterranean pine forest

Emerald:

G3.6 Subalpine mediterranean Pinus woodland

MAES-2:

Woodland and forest

IUCN:

1.4 Temperate Forest

EFT:

10.5 Alti-Mediterranean pine forest

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

Yes

Regions

Mediterranean

Justification

The habitat is restricted to mountains in Southern Italy and submediterranean parts of the Balkan.

Geographic occurrence and trends

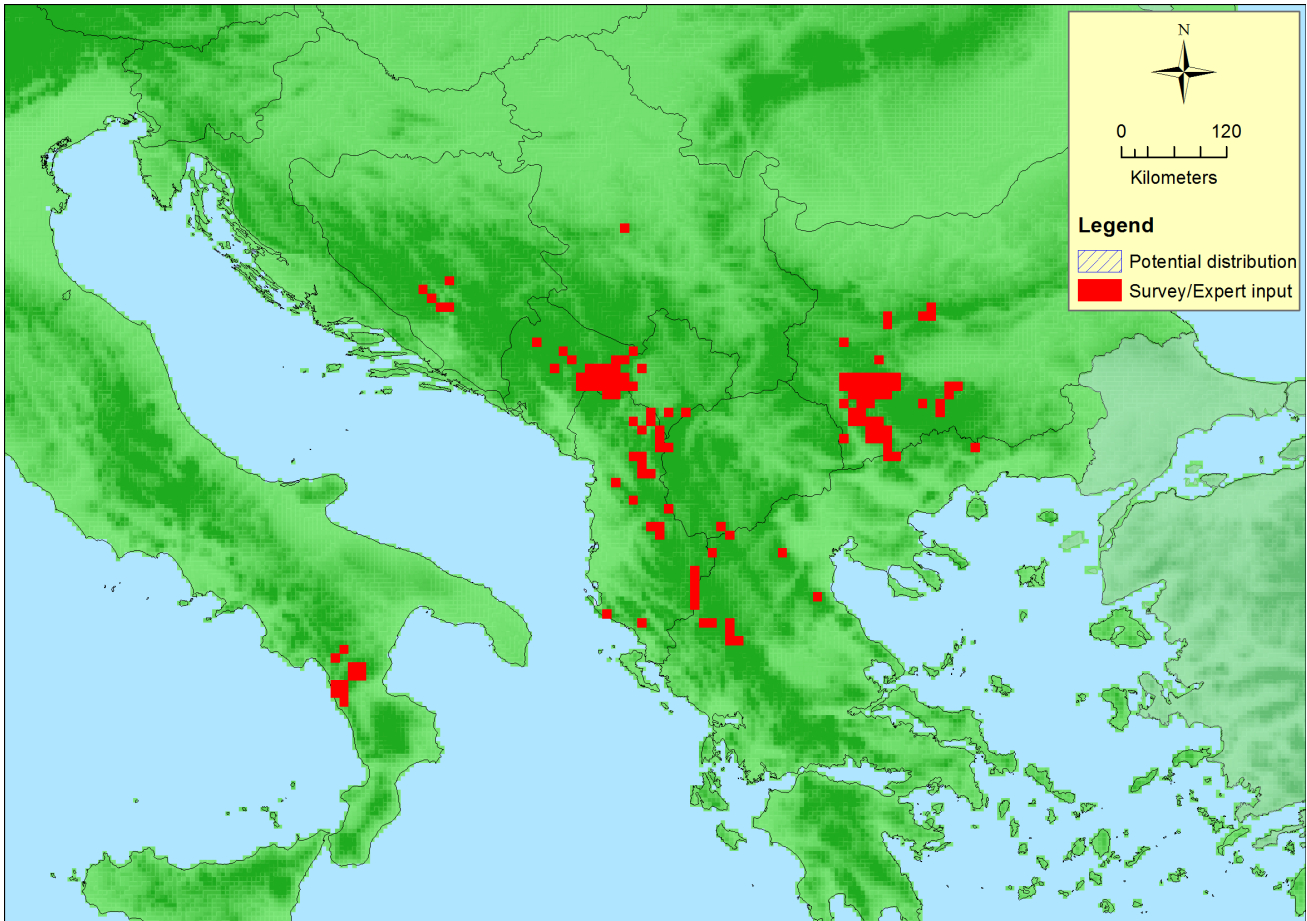
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Bulgaria</i>	Present	65 Km ²	Decreasing	Decreasing
<i>Greece</i>	Greece (mainland and other islands): Present	286 Km ²	Stable	Increasing
<i>Italy</i>	Italy mainland: Present	3.5 Km ²	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>Albania</i>	Present	Unknown Km ²	Unknown	Unknown
<i>Bosnia and Herzegovina</i>	Present	65 Km ²	Decreasing	Decreasing
<i>Former Yugoslavian Republic of Macedonia (FYROM)</i>	Present	20 Km ²	Increasing	Stable
<i>Kosovo</i>	Present	3.8 Km ²	Decreasing	Decreasing
<i>Montenegro</i>	Present	189 Km ²	Decreasing	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
<i>EU 28</i>	147300 Km ²	77	445 Km ²	
<i>EU 28+</i>	285700 Km ²	135	722 Km ²	Data from Albania, Kosovo and Serbia are still missing (for EOO and AOO). Kosovo habitat area has been included in Current estimated Total Area

Distribution map



The map is rather complete, but some data gaps may exist in Macedonia. Data sources: EVA, Art17, LIT, GBIF.

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

About 50% of the habitat is found in the EU, while 100% of the habitat is confined to the EU28+ region.

Trends in quantity

A small reduction of about 5% over the last 50 years is reported for Bulgaria, Italy and Bosnia. In Greece the habitat is stable, while in Macedonia a slight increase is shown. Past quantitative data are not reported for Montenegro, which has a current area of 189 sqkm with an undefined decrease. The overall recent trend is a small reduction of about 2 %. Historical estimates indicate a reduction for Bulgaria and Bosnia, respectively of 10 and 20 %. Future estimates forecast a general small decrease (5%) with the exception of Macedonia.

- 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 habitat has a EOO for both EU28 and EU28+ of 349100 km² and the reported average decline is only about 2%.

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

Yes

Justification

Despite the range, the habitat occurs in fragmented and relatively small populations on specific soil

conditions.

Trends in quality

Estimates of recent quality trend report a slight decrease for Bosnia and Bulgaria, and a stable trend for Greece and Macedonia. Although highly fragmented, many forest stands of the two characteristic species of the habitat are healthy and in regeneration. So the trends are slightly decreasing.

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

Pressures and threats

Fire, forest management activities including afforestation and plantation and building of winter touristic infrastructures are considered the most significant pressures. A risk of hybridization with *Pinus nigra* is also hypothesized for *Pinus heldreichii*.

List of pressures and threats

Sylviculture, forestry

- Forest replanting
- Forestry clearance
- Grazing in forests/ woodland

Natural System modifications

- Burning down

Natural biotic and abiotic processes (without catastrophes)

- Species composition change (succession)

Conservation and management

Several locations of the habitat are already within protected areas. As both of the characteristic species are minor timber trees, natural stands are less intensively exploited than in the past.

List of conservation and management needs

Measures related to forests and wooded habitats

- Restoring/Improving forest habitats
- Adapt forest management

Conservation status

Annex 1 types:

95A0: ALP U1, MED U1

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

In general the habitat has a significant capacity of recovering after damage. Only a combination of factors such as high intensity fire and grazing may prevent this.

Effort required

10 years	20 years	50+ years	200+ years
Through intervention	Through intervention	Naturally	Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-1.8 %	unknown %	unknown %	unknown %
EU 28+	-2 %	unknown %	unknown %	unknown %

Only an overall quantitative assessment for the recent trend was possible.

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	unknown	78	Yes	No	unknown	unknown
EU 28+	>50000 Km ²	Yes	No	unknown	136	Yes	No	unknown	unknown

The EOO is larger than 50000, leading to Least concern for B1. However, the AOO is characterized by a number of distribution grid cells slightly higher than 50 for the EU28, and relatively more for the EU28+. As there are some continuing declines in quality in part of the EU-range (Bulgaria, Italy), the assessment leads to Near Threatened for the EU28 under B2, but Least Concern for EU28+ under B2, because of the larger AOO.

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 %	42 %	unknown %	unknown %	unknown %	unknown %
EU 28+	20 %	42 %	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 %

Calculations were based only on data from Bulgaria and Bosnia & Herzegovina. The values result in the category Least Concern.

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	NT	DD	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	LC	DD	DD	DD	LC	LC	DD	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
Near Threatened	B2	Least Concern	-

Confidence in the assessment

Medium (evenly split between quantitative data/literature and uncertain data sources and assured expert knowledge)

Assessors

F. Attorre

Contributors

Type description: A. Carni

Territorial data: E. Agrillo, L. Casella, M. Dimitrov, P. Dimopoulos, G. Giusso del Galdo, C. Marcenò, F. Millaku, V. Stupar, V. Matevski, N. Velkovski

Working Group Forests: F. Attorre, R.-J. Bijlsma, M. Chytrý, P. Dimopoulos, B. Renaux, A. Ssymank, T. Tonteri, M. Valderrabano

Reviewers

J. Janssen

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