

G3.4d Mediterranean montane *Cedrus* woodland

Summary

In Europe, *C. libani* subsp. *brevifolia* woodlands are endemic to Cyprus occurring in a restricted area of the Paphos forest where there is a sub-humid bioclimate. They occur as pure stands or mixed with *Pinus brutia* or *Quercus alnifolia* and grow on shallow to deep serpentine soils. The main threats are fire, grazing and logging and the habitat needs legal protection and appropriate management.

Synthesis

The habitat is assessed as Vulnerable (VU) for the EU28 (and EU28+) based on the criteria B1, B2 and B3, due to the very few locations where the habitat is present, making it vulnerable to stochastic events, especially fire. For all other criteria for which data are available the habitat is assessed as Least Concern.

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Vulnerable	B1, B2, B3	Vulnerable	B1, B2, B3

Sub-habitat types that may require further examination

As concerns the habitat within its European-Mediterranean distribution limits, no differentiation in sub-habitat types is necessary, and no sub-habitats have been recognized within the Annex I habitat typology. If we take the distribution range as a total, beyond the Eu28+, we should distinguish sub-habitat types according to the dominant canopy tree for the *Cedrus* woodlands occurring in Morocco, Algeria, Syria, Turkey and Lebanon.

Habitat Type

Code and name

G3.4d Mediterranean montane *Cedrus* woodland



Cedrus libani subsp. *brevifolia* woodlands at the Paphos forest (Photo: Charalampos Christodoulou).



Mixed *Cedrus libani* subsp. *brevifolia* and *Pinus brutia* woodlands at the Paphos forest, with openings with *Quercus alnifolia* stands (Photo: Charalampos Christodoulou).

Habitat description

To describe the habitat, we refer at first to the native *Cedrus* species in the Mediterranean: *Cedrus atlantica* and *Cedrus libani*. The latter species includes two subspecies: *libani* and *brevifolia*. *Cedrus atlantica* is distributed in Morocco (Rif, Middle Atlas and north-east of the High Atlas) and Algeria (Aurès,

Belezma, Hodna, Djbel Babor, Djurdjura, Blida and Ouarsenis). *Cedrus libani* subsp. *libani* is distributed in Lebanon, Syria and Asiatic Turkey. In Turkey and especially on the Taurus Mountains it forms extensive forests, while in the other two countries it is represented by small populations.

Within the geographical scope of the Red List project only the woodlands with Cedrus libani subsp. brevifolia are of relevance. Cedrus libani subsp. brevifolia is endemic to Cyprus, growing in a restricted area of the Paphos forest. It is found in the meso-Mediterranean to the mid supra-Mediterranean zone (altitude 900–1.400 m a.s.l.) in areas with sub-humid climate. It forms pure forests or mixed ones with *Pinus brutia* or *Quercus alnifolia* and it grows mainly on serpentine (diabase) substrates and on shallow to deep soils.

Indicators of quality:

- No forest exploitations
- Natural composition of canopy, canopy of woodland species not fragmented and competitive dominance of *Cedrus* species against other tree species;
- Structural diversity/ complexity with (semi)natural age structure or completeness of layers
- Typical flora and fauna composition of the region
- Presence of old aged trees with spreading crown, large height and basal area and a variety of dead wood (lying or standing) and the associated flora, fauna and fungi
- Presence of natural disturbance such as treefall openings with natural regeneration
- Survival of larger stands of forest without anthropogenic fragmentation and isolation (to support fauna which need large undisturbed forests)
- Absence of non-native species in all layers (flora & fauna)
- No signs of disturbance (e.g. grazing, unregulated logging) or regressive succession;
- No man-induced very high population levels of ungulates

Characteristic species:

Trees: *Cedrus libani* subsp. *brevifolia*, *Quercus alnifolia*

Understorey: *Arrhenatherum album* subsp. *cypricola*, *Crepis fraasii*, *Cyclamen cypricum*, *Lactuca cyprica*, *Lecokia cretica*, *Pteridium aquilinum*, *Stellaria cilicica*

Classification

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

EUNIS:

G3.9 Coniferous woodland dominated by [Cupressaceae] or [Taxaceae]

EuroVegChecklist:

Querco-Cedrion libani Barbero et al. 1974

Annex I:

9590 **Cedrus brevifolia* forests (Cedrosetum brevifoliae)

Emerald:

G3.9 Coniferous woodland dominated by Cupressaceae or Taxaceae

MAES-2:

Woodland and forest

IUCN:

1.4 (Temperate Forest)

EFT:

6.10.9 Cedar forest

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

Yes

Regions

Mediterranean

Justification

The endemic *Cedrus* woodlands in Cyprus represent an outstanding example of the Mediterranean biogeographic region, as the genus *Cedrus* is native to the Mediterranean region of Morocco, Algeria, Syria, Lebanon, Turkey (Anatolia) and Cyprus.

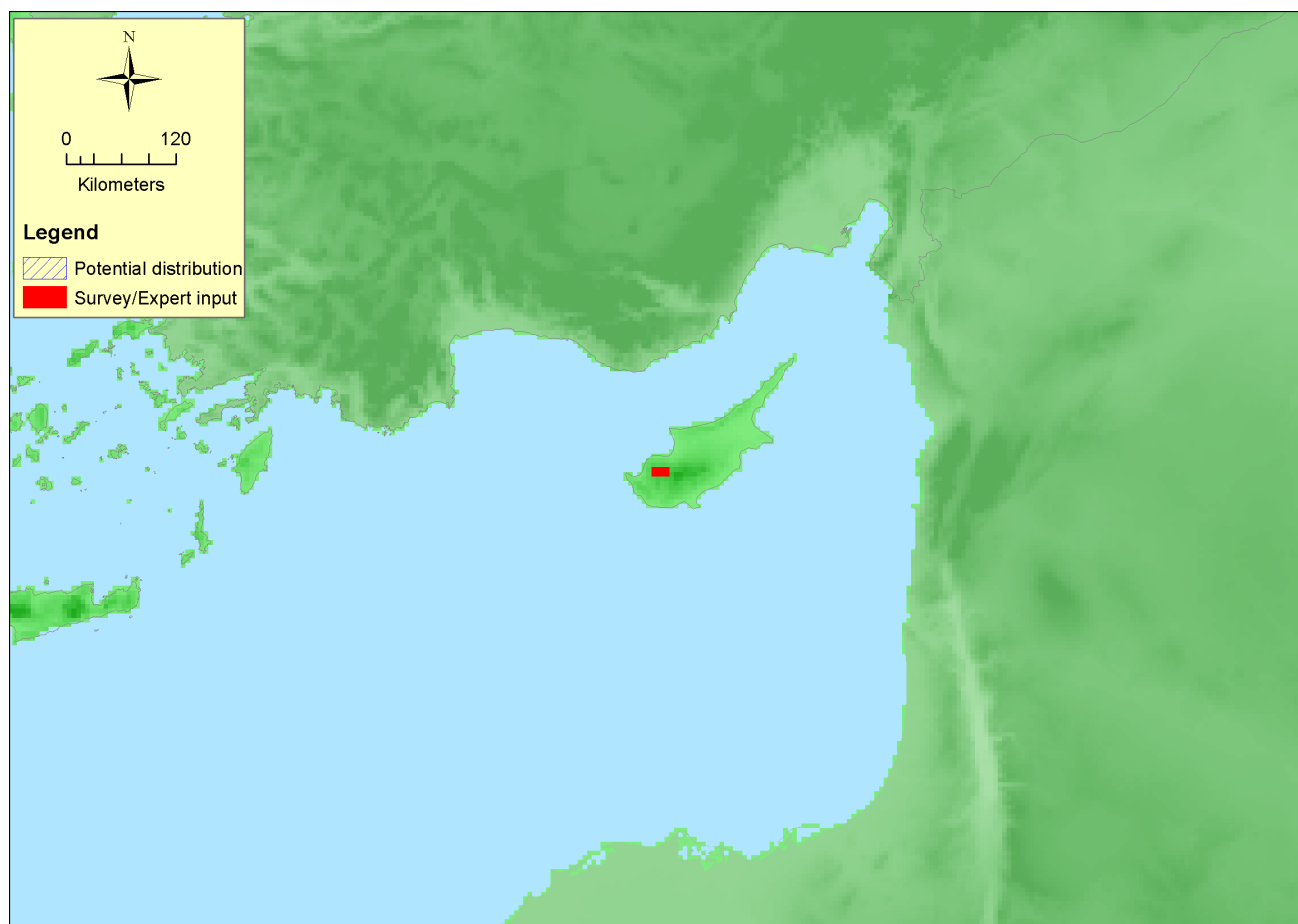
Geographic occurrence and trends

EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Cyprus	Present	2.9 Km ²	Stable	Stable

Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28	200 Km ²	2	2.9 Km ²	Only in Cyprus
EU 28+	200 Km ²	2	2.9 Km ²	More widespread outside the EU28+

Distribution map



Map is complete. Data sources: Art17.

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

100% for the endemic habitat with *Cedrus libani* subsp. *brevifolia*. However, if the habitat is defined to include all Mediterranean *Cedrus* woodland, the percentage within the EU is less than 1% (the total *Cedrus* woodland area is estimated to be 2800 km²).

Trends in quantity

The trend in the area covered by the habitat, as well as its distribution is stable within the EU (Cyprus). It is decreasing to stable in the not EU28+ countries of the distribution of the Mediterranean montane *Cedrus* woodland.

- 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

As far as it is known, there are no records of reduction in the natural range of the *Cedrus libani* subsp. *brevifolia* woodlands due to deterioration or destruction of their stands in Cyprus. So, even if the range is very small, the answer is No.

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

Yes

Justification

The pure forests or mixed ones with *Pinus brutia* or *Quercus alnifolia* of *Cedrus libani* subsp. *brevifolia* which are endemic to Cyprus, occur in a restricted area of the Paphos forest on serpentine (diabase)

substrata.

Trends in quality

Based on the conservation status of the structure and functions of the habitat type 9590, it is evident that the current quality is favourable and the future prospects are also favourable. All the indicators of quality document the current trend in quality:

- Regeneration of *Cedrus* species as well as of the other typical tree species of the *Cedrus* forest communities;
- Existence of old aged trees with spreading crown, large height and basal area;
- Existence of dead wood with cover higher than 5%;
- Natural stand (not formed by reforestation);
- Competitive dominance of *Cedrus* species against other tree species;
- No signs of disturbance (e.g. grazing, unregulated logging) or regressive succession;
- Canopy of woodland species not fragmented;
- Low levels of soil compactness, absence of trampling and erosion (especially in the form of rills and gullies), high cover of litter and well developed Ah horizon.
- Average current trend in quality
EU 28: Increasing
EU 28+: -

Pressures and threats

The main threat to the habitat is related to the climate change and the possible effects to the structure and functions of the *Cedrus libani* subsp. *brevifolia* forests in Cyprus. Outside Europe (non EU 28+), in the countries of its distribution, grazing, logging, fire, winter sports and urbanization are the main threats for the conservation the habitat woodland stands.

List of pressures and threats

Sylviculture, forestry

Removal of forest undergrowth
Grazing in forests/ woodland

Urbanisation, residential and commercial development

Discontinuous urbanisation

Geological events, natural catastrophes

Fire (natural)

Climate change

Temperature changes (e.g. rise of temperature & extremes)
Droughts and less precipitations

Conservation and management

The management measures applied at the *Cedrus libani* subsp. *brevifolia* forests within the Natura 2000 site "Koilada ton Kedron-Kampos" is sufficient and effective for their conservation at Favorable status.

List of conservation and management needs

Measures related to forests and wooded habitats

Other forestry-related measures
Restoring/Improving forest habitats
Adapt forest management

Conservation status

Annex I:

9590: MED FV

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

As far as known there is no scientific documentation on the recovery of the *Cedrus brevifolia* forests in Cyprus. However it should be mentioned that *Cedrus libani* subsp. *brevifolia* has been used the previous years by the Forestry Department for reforestation efforts implemented at the forests of Troodos, Pafos and Adelfoi.

Effort required

20 years	50+ years
Through intervention	Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	0 %	unknown %	unknown %	unknown %
EU 28+	0 %	unknown %	unknown %	unknown %

A stable trend for the recent past was based on territorial data provided by the national experts in Cyprus and information provided from the Forestry of Department in Cyprus.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	200 Km ²	No	No	Yes	2	No	No	Yes	Yes
EU 28+	200 Km ²	No	No	Yes	2	No	No	Yes	Yes

The AOO and EOO are extremely small, but the subcriteria (a) and (b) for B1 and B2 are not met, as there are no continuing declines or current threatening processes. However, the habitat can be assumed to exist at very few locations (< 10); thus in the case of fire (a stochastic event) may cause a decline in area in the future. Therefore, the habitat is assessed as Vulnerable under B1 and B2 according to subcriteria (c) and under B3.

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 %

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 %

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 during the last 50 years in the stands of the habitat in Cyprus.

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	VU	VU	VU	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	LC	DD	DD	DD	VU	VU	VU	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
Vulnerable	B1, B2, B3	Vulnerable	B1, B2, B3

Confidence in the assessment

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

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Date of assessment

20/12/2015

Date of review

09/03/2016

References

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