

F2.3 Subalpine deciduous scrub

Summary

This habitat type comprises subalpine and subarctic scrub dominated by various deciduous shrubs and small trees, widely distributed on moist screes, river gravels and avalanche falls through Alpine and Boreal regions, in the Arctic lowlands and some temperate mountains. Well adapted to disturbance and snow lie, it is often a primary development in more natural situations but can also spread into abandoned pastures as part of a succession to forest. Cut out or burned from pastures still in use, it is also threatened by tourist developments and the spread of mountain settlements. Maintenance of traditional land-use and careful planning are needed for conservation.

Synthesis

The habitat was estimated as Least Concern (LC). The habitat is widely distributed in the Alpine and Boreal regions, and in almost all countries it has a stable or increasing area, mainly due to encroachment in grasslands after abandonment of management. Only minor parts of the habitat showed a decreased quality.

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 habitat is not well elaborated throughout Europe; there are no data from some mountainous countries in the temperate part of Europe, as well as some countries from boreal biogeographic regions.

Habitat Type

Code and name

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Subalpine deciduous scrub dominated by *Alnus viridis* on Črna prst in Slovenia (Photo: I. Dakskobler).



Steep lee side slope with boreal scrub and tall herb vegetation in Husfjord, Sørøya, Finnmark in Norway (Photo: P.K. Bjørklund, Skog og landskap).

Habitat description

This habitat type comprises (sub)alpine and (sub)arctic alder (*Alnus viridis*), willow (*Salix spp.*), dwarf birch (*Betula nana*) and other deciduous scrub. Also *Potentilla fruticosa* dominated scrub that appears in the

Bulgarian mountains (F2.336) is included. The stand height of the habitat in most cases is between 1 and 5 meters. Low dwarf willow communities are excluded from this habitat and instead included in type F2.1. Also excluded in the (sub)alpine and (sub)arctic belts are willow scrub on alluvial soils (habitat F9.1) and willow scrub in waterlogged fens and mires (habitat F9.2). *Alnus viridis* scrub is found throughout the subalpine belts of all mountain ranges of central Europe. This shrub is a pioneer species in humid sites on deeper soils that are regularly disturbed, like on steep, north-exposed slopes where avalanches occur occasionally. On sites cleared by avalanches, *Alnus viridis* may be found in lower (montane) altitudes as well. It is found in the Alps and Carpathians. On Corsica a different subspecies *Alnus viridis* subsp. *suaveolens* grows in a similar habitat. *Salix* species (*S. appendiculata*, *S. glabra*, *S. hastata*, *S. waldsteiniana*) may dominate a lower shrub layer or – in lower altitudes – form its own scrub type in similar sites. The type contains several *Salix* species that are (regional) rare in the temperate mountain regions. Accompanying species are often from tall herb communities, for example, *Adenostyles alliariae* or *Cicerbita alpina*, or from subalpine heathlands. In the southern outcrops of the Alps and along the Dinarides, *Rhamnus fallax* dominates communities of this habitat. In the subarctic and boreal regions on similar slopes *Salix lapponum*, *Salix glauca*, *Salix hastata*, *Salix phylicifolia* may grow in a mixture of tall-herb species and *Vaccinium myrtillus*, *Phyllodoce caerulea*, and/or *Juniperus communis*. The same willows are found along creeks and rivers, as part of the habitat alluvial scrub (F9.1). The geological substrate of the habitat is diverse, covering for example both marl and limestone. The habitat appears in open sites with high soil moisture and moderate-rich in nutrients. The species of the type are well adapted to low temperature and snow accumulation. These deciduous scrubs are the pioneer communities on scree and in areas cleared by avalanches because the shrub species are able to regrow from roots and stumps. Therefore, they also have a significant role in the prevention of erosion and snow slides. Propitious sites for these communities can be found also along streams because of humidity, small soil partitions and disturbance caused by the water stream. The habitat can also appear as a succession stage in subalpine pastures or meadows, where grazing or haymaking is no longer maintained. These communities are mainly of secondary origin. But as they survive snow slips better than tree species, they can build permanent (paraclimatic) communities under the influence of avalanches or streams, in sites where tree species cannot survive.

Indicators of quality:

These habitats are mainly of secondary origin. They are threatened by logging or burning, erosion or snow slips, and channeling of streams, as well as by succession towards forest. The following characteristics can be considered as indicators of good quality:

- species richness of shrub species,
- presence of breeding birds and other fauna,
- long-term maintenance because of natural disturbance regime.

Characteristic species:

Flora (Vascular plants):

Shrubs/low trees: *Acer pseudoplatanus*, *Alnus viridis* subsp. *viridis*, *Alnus viridis* subsp. *suaveolens*, *Rhamnus fallax*, *Ribes alpinum*, *Salix alpina*, *Salix appendiculata*, *Salix bicolor*, *Salix caesia*, *Salix foetida*, *Salix glabra*, *Salix glaucosericea*, *Salix hastata*, *Salix helvetica*, *Salix laggeri*, *Salix lapponum*, *Salix phylicifolia*, *Salix silesiaca*, *Salix waldsteiniana*, *Sorbus aucuparia*, *Sorbus chamaemespilus*, *Vaccinium myrtillus*.

Herbs: *Aconitum* spp., *Adenostyles alliariae*, *Chaerophyllum hirsutum* subsp. *villarsii*, *Cicerbita alpina*, *Doronicum austriacum*, *Dryopteris dilatata*, *Geranium sylvaticum*, *Geum coccineum*, *Geum rivale*, *Geum urbanum*, *Hypericum maculatum*, *Lonicera alpigena*, *Lonicera xylosteum*, *Milium effusum*, *Polygonatum verticillatum*, *Saxifraga rotundifolia*, *Senecio ovatus*, *Sesleria coerulea*, *Stellaria nemorum*, *Thalictrum*

aquilegifolium, *Veratrum album* agg., *Viola biflora*.

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:

Seslerio-Rhamnion fallacis Dakskobler et al. 2013

Lonicero-Rhamnion fallacis P. Fukarek 1969

Alnion viridis Schnyder 1930

Salicion pentandrae Br.-Bl. 1967

Salicion helveticae Theurillat et al. 1995

Salicion silesiaca Rejmánek et al. 1971

Salicion phylicifoliae Dierssen 1992 (partly, only non-alluvial communities with *Salix lapponum*)

Doronicion corsici Gamisans 1975 (incl. *Cymbalarion hepaticifoliae*)

Communities with *Alnus viridis* ssp. *suaevolens* in Corsica

Annex 1:

4080 Sub-Arctic *Salix* shrub

Emerald:

F2.32 Subalpine and oroboreal *Salix* brush

MAES-2:

Heathland and shrub

IUCN:

3.3. Boreal shrub

3.4 Temperate shrub

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

Yes

Regions

Alpine

Boreal

Justification

This scrub is a typical element of alpine and boreal regions.

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)

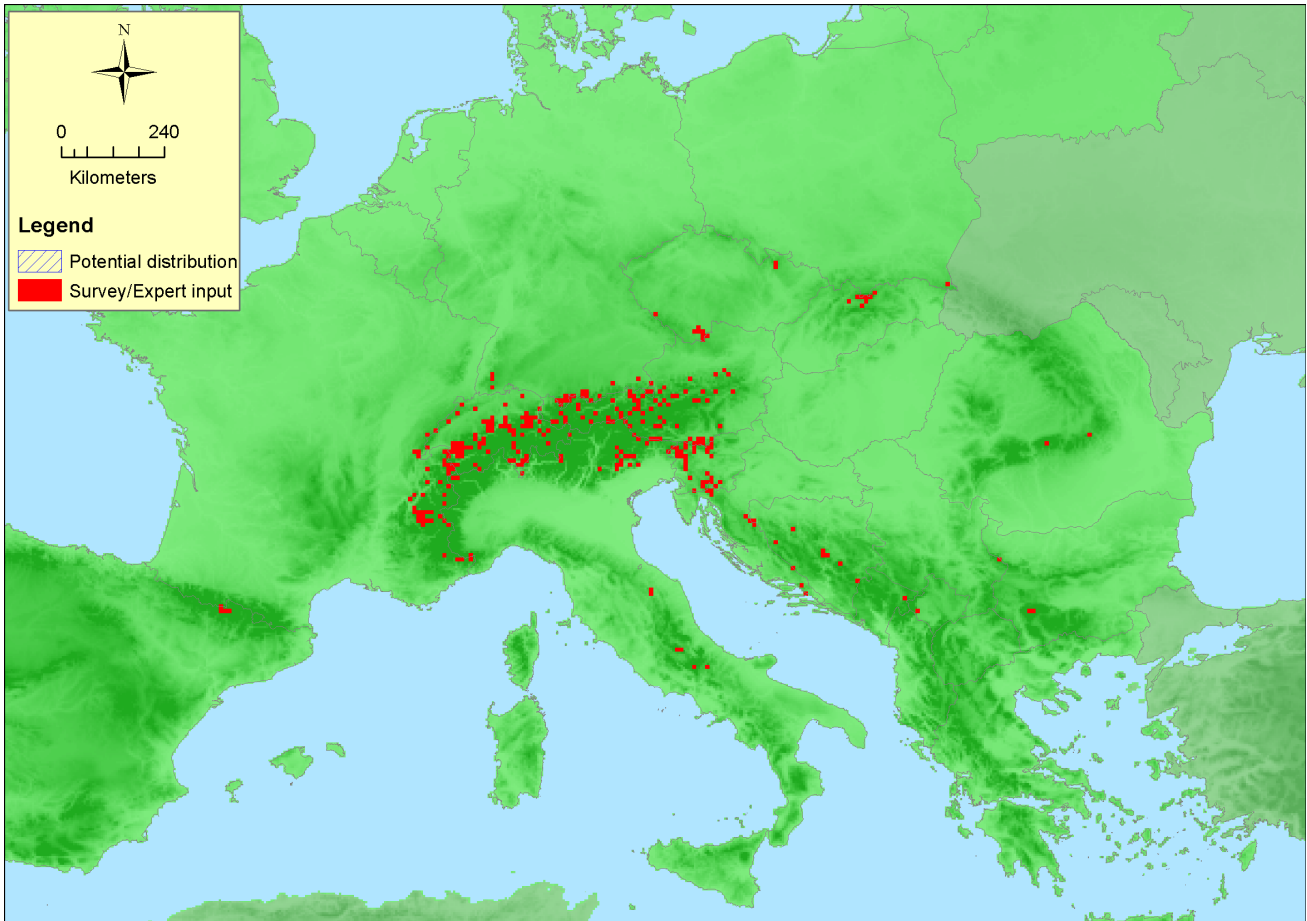
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Austria</i>	Present	unknown Km ²	Unknown	Stable
<i>Bulgaria</i>	Present	0.42 Km ²	Increasing	Increasing
<i>Croatia</i>	Present	3 Km ²	Stable	Stable
<i>Czech Republic</i>	Present	0.6 Km ²	Stable	Stable
<i>Finland</i>	Finland mainland: Present	170 Km ²	Stable	Decreasing
<i>France</i>	France mainland: Present	300 Km ²	Increasing	Unknown
<i>Germany</i>	Present	unknown Km ²	Stable	Stable
<i>Italy</i>	Italy mainland: Present	45 Km ²	Stable	Stable
<i>Poland</i>	Present	0.2 Km ²	Stable	Stable
<i>Slovakia</i>	Present	0.6 Km ²	Stable	Stable
<i>Slovenia</i>	Present	20 Km ²	Stable	Stable
<i>Spain</i>	Spain mainland: Present	0.82 Km ²	Stable	Stable
<i>UK</i>	United Kingdom: Present	0.12 Km ²	Increasing	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>Bosnia and Herzegovina</i>	Present	5 Km ²	Increasing	Increasing
<i>Switzerland</i>	Present	650 Km ²	Increasing	Stable

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>	>50000 Km ²	>50	541 Km ²	
<i>EU 28+</i>	>50000 Km ²	>50	1196 Km ²	

Distribution map



The Map provides good picture of the range but has data gaps in the whole range, and especially in the UK. This habitat type probably occurs also in Sweden and Norway, but no data have been provided for those countries. Data Sources: EVA, NAT.

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

According to the provided national data, about 45% of the European surfaces of this habitat type are within the EU28. If we take into consideration that data from Scandinavia are mostly missing and such habitats can be also found on Caucasus, we could estimate about 50% of this habitat type lies within the EU28.

Trends in quantity

According to the territorial data, we can see that the surfaces have increased by 11.4% within the EU28 and 15.1% within the EU28+, respectively, over the last 50 years. This is the result of abandonment of grazing in the mountains, which has especially lead to an increase of *Alnus viridis*-communities in the Alps and *Salix bicolor*-communities in the Pyrenees, whereas other types remained more or less stable. We can expect that this trend will continue in the future.

- Average current trend in quantity (extent)
EU 28: Increasing
EU 28+: Increasing
- Does the habitat type have a small natural range following regression?

No

Justification

This habitat type is about to expand. The main reason is the abandonment of grazing leading to a spread of these scrub habitats. The EOO is > 50000 km².

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

No

Justification

The habitat has a large natural distribution, from south European mountains to the boreal region.

Trends in quality

We have detected a negative trend in quality: 33.7% (EU28) and 14.6% (EU28+) of the total area have been affected by an average slight decrease in quality over the last 50 years. On sites, where the abandonment of grazing has led to an expansion of this habitat type, it represents a successional stage that needs some time to settle in its characteristic composition.

- Average current trend in quality

EU 28: Decreasing

EU 28+: Decreasing

Pressures and threats

The main threat is the abandonment of traditional agriculture in the mountains (pastoralism). After abandonment, the former pastures are overgrown with subalpine deciduous scrub, but further progress of succession leads to reforestation. On the other side, there is a local loss of habitats due to the construction of touristic facilities in mountain areas (e. g. ski resorts). Activities like mountaineering and skiing can cause deterioration and degradation of scrub habitats. Furthermore, global warming has to be considered also as a potential threat, that could have an impact on specific characteristics of this habitat type or its altitudinal shift.

List of pressures and threats

Agriculture

Abandonment of pastoral systems, lack of grazing

Human intrusions and disturbances

Mountaineering & rock climbing

Skiing complex

Natural biotic and abiotic processes (without catastrophes)

Erosion

Species composition change (succession)

Climate change

Temperature changes (e.g. rise of temperature & extremes)

Conservation and management

One of the main conservation goals is to maintain the traditional land use in the mountains (especially grazing). Though the scrubs have often been a subject of cutting, burning and eradication, the present appearance of this habitat was built under such pressures. After the abandonment of former pastures, first stages of secondary succession are built by subalpine deciduous scrubs that develop further into forests (reforestation). Other, natural sites of this habitat are found on the edges of scree, where the initial stages of succession (scrubs) are maintained by avalanches. We also have to take care of this habitat when it comes to construction of touristic infrastructures (roads, ski resorts, paths etc.).

List of conservation and management needs

Measures related to agriculture and open habitats

Maintaining grasslands and other open habitats

Measures related to spatial planning

Establish protected areas/sites

Measures related to urban areas, industry, energy and transport

Specific management of traffic and energy transport systems

Conservation status

Annex 1 types:

4080: ALP U1, ATL U2, BOR, FV, CON U1

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

The habitat appears under hard mountainous conditions. We can estimate that it can recover its typical character within 10 years after intervention and naturally within about 20 years in case of proper habitat connectivity.

Effort required

10 years	20 years
Through intervention	Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	+11.4 %	unknown %	unknown %	unknown %
EU 28+	+15.1 %	unknown %	unknown %	unknown %

The provided figures have been calculated using the information from the territorial data sheets. The habitat shows an increase in surface, most probably due to abandonment of pastoralism in the mountains.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	>50000 Km ²	Unknown	Unknown	unknown	>50	Unknown	Unknown	unknown	unknown
EU 28+	>50000 Km ²	Unknown	Unknown	unknown	>50	Unknown	Unknown	unknown	unknown

The EOO is larger than 50000 km² and the AOO is > 50, so these criteria are not met.

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	33.7 %	0.25% %	unknown %	unknown %	unknown %	unknown %
EU 28+	14.6 %	0.25% %	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%

The provided figures have been calculated using the territorial data sheets. To a certain extent the habitats are a part of succession series of subalpine pastures and these early successional stages do not have the typical characteristics of this habitat type. Other reasons for the degradation in quality are due to overgrazing, especially burning, cutting and eradication of shrubs. Furthermore, there is a negative influence because of the construction of infrastructure (e.g. roads, ski resort and similar). Degradation can also be caused by climate change.

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

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

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Date of assessment

09/09/2015

Date of review

27/04/2016

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