F3.1e Temperate and submediterranean thorn scrub

Summary

This habitat comprises inland scrub dominated by thorny shrubs and small trees occurring throughout the temperate and submediterranean lowlands and foothills of Europe, more locally in dry and rocky mountain localities. It is found mostly on dry to mesic, well-drained, relatively base-rich and poor to moderately nutrient-rich soils and is generally a secondary vegetation type, a replacement for or successional stage on the way to mesic broadleaved forests. Typical of forest edges and clearings, abandoned pastures and more or less permanent features like hedgerows, it provides food and shelter for invertebrates, small mammals and birds. Increasing in many places as a result of abandonment of traditional land use, it is itself seen as a threat to species-rich grasslands and progresses, without interruption, to forest.

Synthesis

The quantitative data lead to the overall conclusion of Least Concern (LC) for the EU28 and the EU28+, for the criteria relating to trends in quality and trends in quantity, even though there is an overal negative trend in quality in most of the countries. In the north-west of the range the habitat is more threatened than in the more continental and submediterranean regions.

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

For Northwestern Europe a semi-natural subhabitat 'hedge rows' may be distinguished and assessed separately, as the data shows that the thorn scrub is much more threatened in this Atlantic part of Europe than elsewhere.

Habitat Type

Code and name

F3.1e Temperate and submediterranean thorn scrub

Prunetalia scrub on dry steppic soils in Romania (Photo: Javier Loidi).

Thorn scrub with white flowering *Prunus spinosa* in a cultural landscape of the Eifel mountains, Germany (Photo: John Janssen).

Habitat description

This habitat is an inland scrub type of about 1.5 to 3 meter high, made up of deciduous shrubs or low trees

species of the order *Prunetalia*, of which many have thorns and many produce berries. These scrubs occur in temperate and submediterranean lowlands and low mountains in Europe, but sometimes are found in dry and rocky localities in higher mountains. The habitat includes *šibljak*, a deciduous submediterranean scrub type from the Balkan, of which the plant communities are grouped in the order *Fraxino orni-Cotinetalia*.

The habitat occurs in forest edges and openings, as more-or-less temporary succession stages from grassland to forest, and as hedge structures in cultural landscapes. The scrub is in most cases found on dry to mesic, well-drained, relatively base-rich and poor to moderate nutrient-rich soils. In most cases it is a secondary vegetation, found in sites where *Carpinion betuli*, Quercio*n pubescenti-petraeae*, *Fagion sylvaticae* or *Aremonio-Fagion* are the climax forests, but some stands may grow on more extreme, primary sites, like on shallow, rocky soils and cliffs. The habitat also may occur semi-naturally as part of a mosaic with grassland and forest in extensively grazed areas. On more acidic, nutrient-poor soils in general *Rubus* scrub (F3.1b) or genistoid scrub (F3.1c) is found, or rather marginally developed mantles with *Frangula alnus* and *Sorbus aucuparia*, which can be considered part of the forest habitat.

The composition of the shrub layer varies over the wide range. Most characteristic species in Central and Western Europe are *Prunus spinosa*, *Rhamnus catharticus*, *Crataegus monogyna* and many species of *Rosa*, including many apomictic species. In some cases non-thorny shrubs may dominate. Saplings of trees are common, and one or a few trees may grow out taller than the scrub formation, indicating succession towards forest. Also the herb layer varies over the range, depending on the soil type and climatic region. It consists of a combination of species from adjacent forest, grassland and tall-herb communities. Climbing herbs are a characteristic feature of this habitat, including *Hedera helix*, *Clematis vitalba* and *Tamus communis*.

In the warmer (submediterranean) parts of the range and on dry, calcareous and south-exposed sites in temperate regions, *Prunus mahaleb*, *Acer monspessulanum*, *Ligustrum vulgare*, *Viburnum lantana*, *Cornus mas*, *Cotoneaster integerrimus, Cotoneaster tomentosus* and *Amelanchier ovalis* are characteristic species, in sites where forests of the alliance *Quercion pubescenti-petraeae* are the climax. Some of these shrubs are also typical in šibljak, a deciduous scrubland on shallow soils in the Balkan. Šibljak is supposed to be the primary vegetation in many sites, but it has extended after clearing of forests. Other characteristic deciduous shrubs and low trees of the šibljak are *Paliurus spina-christi, Fraxinus ornus, Cotinus coggygria*, *Syringa vulgaris* and *Rhamnus intermedia*. On Sicily and Corsica *Berberis aetnensis* is a dominant species of this habitat in the supra-mediterranean mountain belts, where it forms transitions towards oromediterranean hedgehog heath (F7.4b). *Berberis hispanica* fills such a position in oromediterranean mountains of Spain. However, communities with *Berberis cretica* in Greece are included in habitat F7.3 (phrygana).

Some Mediterranean species may occur in šibljak, like the evergreen shrubs *Ruscus aculeatus* and *Phillyrea latifolia* and the climbers *Smilax asper*, *Clematis flammula* and *Asparagus acutifolius*, but if evergreen shrub species become co-dominant, the scrub is a form of Submediterranean pseudomaquis (habitat F5.3), of which some communities are classified in the order *Fraxino orni-Cotinetalia* as well. *Hippophaë rhamnoides* may be one of the thorny shrub species occurring in the thorn scrub habitat, but the physiognomically and ecologically distinct scrubs dominated by *Hippophae rhamnoides* on xeric, dry, gravelly river terraces, rarely subjected to flooding, are considered as a subset of the alluvial scrub (type F9.1).

Prunus spinosa and other characteristic species may also occur in other scrub types, like those dominated by *Rubus* species (type F3.1b) or *Juniperus* species (F3.1a). *Buxus sempervirens* dominated scrub is included under F5.3. In boreal and subarctic zones *Salix* species dominate the scrubs on similar soils, and such communities are grouped under habitat F2.3, together with subalpine scrubs. *Prunus fruticosa* is a shrub that may become dominant in moist grasslands on cacareous soils in the hemiboreal region. For

Bulgaria relict stands of this type have been described as a separate habitat type under the Habitats Directive. The syntaxonomical position of these low scrubs is unclear, but they are not considered here as part of thorn scrub. *Rubus* species may be locally dominant in the habitat, but in other cases they form its own habitat (F3.1b) as a “pre-mantle” formation in front of the thorn scrubs. In more mesic sites and in oceanic regions *Corylus avellana* may become mono-dominant, forming its own habitat F3.1g. Thorn scrubs in dunes are described under B1.6a and B1.6b.

The habitat has its main distribution in Western and Central Europe and on the Balkan. In the Mediterranean region it is restricted to mountains, to the north the habitat reaches to South-Scandinavia. In cultural landscapes it is one of the most important habitats in terms of diversity and functioning, the latter especially for animal species which find here shelter, breeding sites and food (berries). It is also one of the habitats which increase in dry grassland and agricultural fields after abandonment.

Indicators of quality:

The following aspects may be used as parameters for good quality:

- Diversity of scrub species
- Presence of rare Rosa species
- Absence of non-native species
- Presence of berries in autumn as a food source for mammals and birds
- Presence of flowers in spring as a nectar source for insects

Characteristic species:

Flora, shrubs/low trees*: Acer campestre, Acer monspessulanum, Acer tatarica, Amelanchier ovalis, Berberis aetnensis, Berberis hispanica, Berberis vulgaris ssp. cantabrica, Berberis vulgaris ssp. vulgaris, Carpinus betulus, Cornus mas, Cornus sanguinea, Corylus avellana, Corylus colurna, Cotinus coggygria, Cotoneaster granatensis, Cotoneaster integerrimus, Cotoneaster nebrodensis, Cotoneaster tomentosus, Crataegus granatensis, Crataegus laciniata, Crataegus laevigatus, Crataegus monogyna, Crataegus orientalis, Crataegus transalpina, Euonymus europaeus, Euonymus verrucosus, Hippophae rhamnoides, Ilex aquifolium, Ligustrum vulgare, Ligustrum vulgare*, *Paliurus spina-christi*, *Prunus institia*, *Prunus mahaleb, Prunus ramburii, Prunus spinosa, Pyrus elaeagrifolia, Pyrus pyraster, Malus sylvestris, Rhamnus alpinus, Rhamnus catharticus, Rhamnus intermedia, Rhamnus saxatilis, Ribes alpinum, Ribes uva-crispa, Rosa agrestis, Rosa canina* agg., *Rosa dumalis*, *Rosa micrantha*, *Rosa montana*, *Rosa obtusifolia, Rosa pouzinii, Rosa pendulina, Rosa rubiginosa, Rosa sherardii, Rosa sicula, Rosa tomentosa, Rosa villosa, Rosa vosagiaca, Rubus caesius, Rubus canescens, Rubus dalmaticus, Rubus idaeus, Rubus ulmifolius, Sambucus nigra, Sorbus aria, Syringa vulgaris, Ulmus minor, Viburnum lantana, Viburnum opulus.*

Flora, climbers: *Asparagus acutifolius*, *Clematis flammula*, *Clematis recta, Clematis vitalba, Hedera helix, Humulus lupulus, Lonicera arborea, Lonicera periclymenum, Lonicera splendida, Lonicera xylosteum, Smilax asper*, *Tamus communis.*

Fauna, mammals: Hazel dormouse (*Muscardinus avellanarius*)

Fauna, birds: Cirl Bunting (*Emberiza cirlus*), Yellowhammer (*Emberiza citrinella*), Melodious Warbler (*Hippolais polyglotta*), Red-backed shrike (*Lanius collurio*), Tree sparrow (*Passer montanus*)

Fauna, butterflies: *Aporia crataegi*, *Dysauxes punctata*, *Iolana iolas*, *Satyrium acaciae*, *Satyrium pruni*, *Satyrium spini*, *Thecla betulae*, *Meganola togatulalis*, *Iphiclides podalirius*, *Synanthedon stomoxiformis*, *Rhagadea pruni*

Classification

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

EUNIS:

F3.1 Temperate thickets and scrub

F3.2 Submediterranean deciduous thickets and brushes

EuroVegChecklist:

Berberidion vulgaris Br.-Bl. ex Tx. 1952 nom. conserv.

Carpino-Prunion spinosae Weber 1974

Frangulo alni-Pyrion cordatae Herrera et al. 1991

Tamo communis-Viburnion lantanae (Géhu et al. 1983) Mucina stat. nov. hoc loco

Pruno spinosae-Rubion ulmifolii O. de Bolòs 1954

Lonicero arboreae-Berberidion hispanicae O. de Bolòs 1954

Berberido aetnensis-Crataegion laciniatae Gianguzzi et al. 2011

Berberido creticae-Prunion cocomiliae Bergmeier 1990

Asparago verticillati-Crataegion tauricae Korzhenevsky et Klyukin 1990

Lamio purpureae-Acerion tatarici Fitsailo 2007

Fraxino orni-Cotinetalia Jakucs 1960

Paliuro-Petterion Fukarek 1962 (=*Rhamno-Paliurion* Trinajstic (1978) 1996)

Eryngio campestris-Paliurion spinae-christi (Jovanovic 1985) Matevski et al. 2008

Fraxino orni-Cotinion Soó 1960

Pruno tenellae-Syringion (B. Jovanovic 1979) Carni et al. 2009

Syringo-Carpinion orientalis Jakucs 1959

Annex 1:

40A0 *Subcontinental peri-Pannonic scrub (*small part*)

40C0 * Ponto-Sarmatic deciduous thickets

Emerald:

F3.247 Ponto-Sarmatic deciduous thickets

MAES:

Heathland and shrub

IUCN:

3.4 Temperate shrubland

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

No

Justification

This is a very widespread habitat, occurring all over Europe in temperate 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)
Austria	Present	Unknown Km^2	Decreasing	Decreasing
Belgium	Present	Unknown Km^2	Decreasing	-
Bulgaria	Present	9 Km^2	Decreasing	Decreasing
Croatia	Present	207 Km^2	Increasing	Stable
Czech Republic	Present	500 Km^2	Increasing	Decreasing
Denmark	Present	Unknown Km^2	Unknown	Unknown
France	Corsica: Present France mainland: Present	Unknown Km^2	Unknown	Unknown
Germany	Present	Unknown Km^2	Decreasing	Decreasing
Greece	Greece (mainland and other islands): Present	Unknown Km^2	Unknown	Unknown
Hungary	Present	400 Km^2	Stable	Decreasing
Ireland	Present	671 Km^2	Decreasing	Unknown
Italy	Italy mainland: Present Sardinia: Present Sicily: Uncertain	3941 Km^2	Increasing	Decreasing
Lithuania	Present	1 Km^2	Increasing	Decreasing
Luxembourg	Present	Unknown Km^2	Unknown	Unknown
Netherlands	Present	20 Km^2	Decreasing	Decreasing
Poland	Present	250 Km^2	Increasing	Decreasing
Portugal	Portugal mainland: Present	16 Km^2	Decreasing	Unknown
Romania	Present	100 Km^2	Decreasing	Decreasing
Slovakia	Present	9 Km^2	Increasing	Stable
Slovenia	Present	80 Km^2	Increasing	Stable
Spain	Spain mainland: Present	1534 Km^2	Increasing	Decreasing
Sweden	Uncertain	Km^2	-	-
UK	United Kingdom: Present	500 Km^2	Decreasing	Decreasing

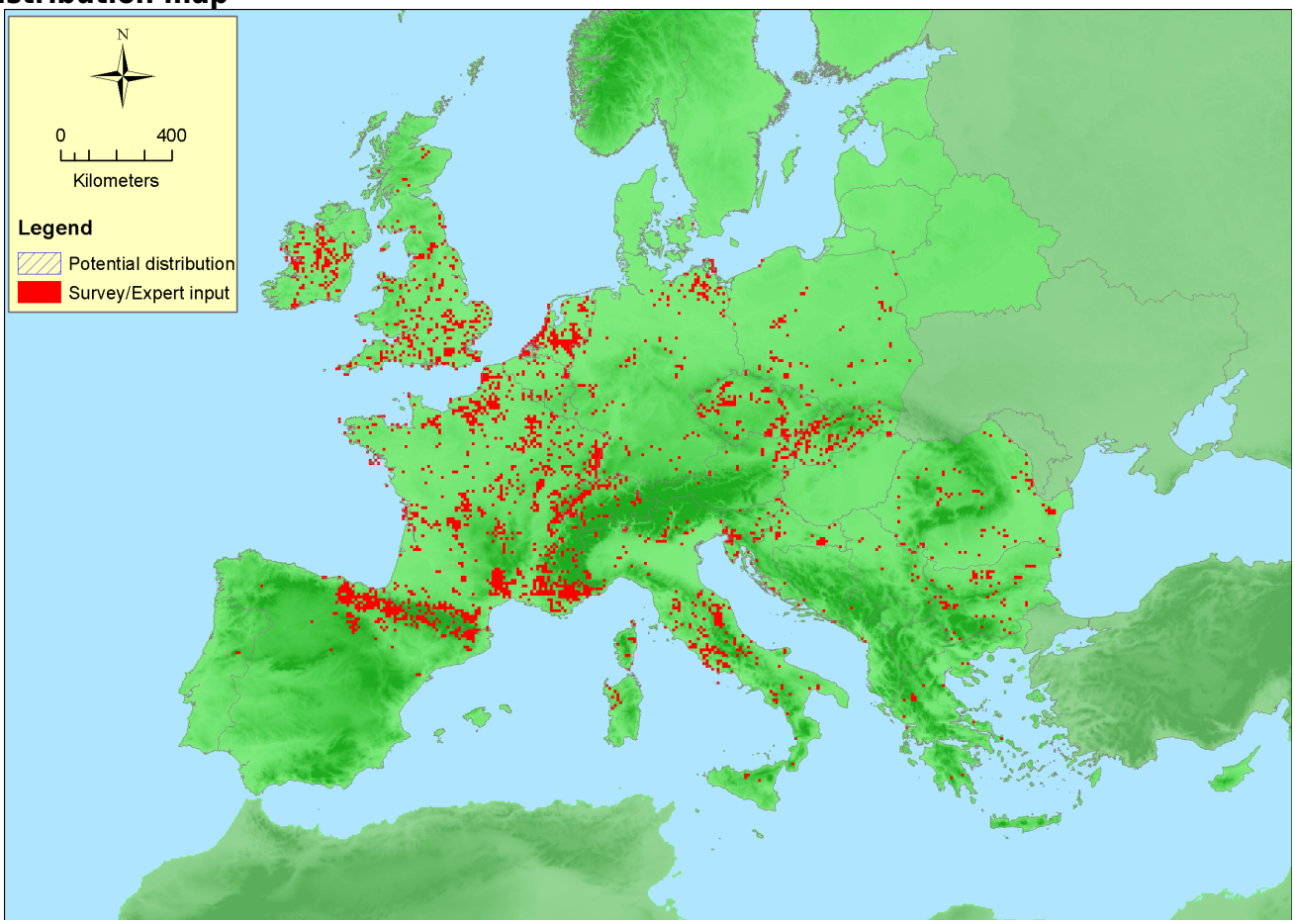
EU 28 +	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Albania	Present	Unknown Km^2	Unknown	Unknown
Bosnia and Herzegovina	Present	900 Km^2	Increasing	Decreasing
Former Yugoslavian Republic of Macedonia (FYROM)	Present	Unknown Km^2	Unknown	Unknown
Guernsey	Present	Unknown 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)
Isle of Man	Present	Unknown Km^2	Unknown	Unknown
Jersey	Present	Unknown Km^2	Unknown	Unknown
Kaliningrad	Present	Unknown Km^2	Unknown	Unknown
Kosovo	Present	Unknown Km^2	Unknown	Unknown
Montenegro	Present	Unknown Km^2	Unknown	Unknown
Norway	Norway Mainland: Present	Unknown Km^2	Unknown	Unknown
Serbia	Present	Unknown Km^2	Unknown	Unknown
Switzerland	Present	600 Km^2	Decreasing	Decreasing

Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28	5167850 Km^2	2633	9200 Km^2	estimated from terr. data and interpolation
EU 28+	5167850 Km^2	2751	12000 Km^2	estimated from terr. data and interpolation

Distribution map



TThe map is incomplete through the whole range, but especially for the Balkan. Data sources: EVA, Art17.

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

80%

Trends in quantity

The overall trend in quantity is slightly positive. This is mainly caused by increases in surface in eastern and southern (submediterranean) parts of the EU. In the north-western part of the EU however important losses in area occurred. The trend calculations have been based on 16 countries. Data from France is missing, unfortunately, as the habitat probably covers large areas there.

- 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 is a widespread habitat, occurring in all temperate areas of the EU and only lacking in true Mediterranean and Boreal-Arctic regions.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  No
  Justification
  It may form small stands or mantles of forests, but in other sites it occupies larger stands. It also occurs semi-natural as hedges in a cultural landscape.

Trends in quality

In contrast with the positive trend in quantity there is a slightly negative trend in quality in most countries.

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

Pressures and threats

The most important threat in the countries where the area has decreased is agricultural intensification, especially with regard to removal of hedge structures (refered to as A10 in the list of pressures and threats). Also eutrofication (from agriculture) is considered a threat for the quality of the habitat. For the more natural stands, that are mainly increasing in surface and often considered a threat to other types, especially grasslands, natural succession towards forest is a main threat. Finally forestry (plantations) is reported by several countries as an important threat, as well as encroaching of non-native invasive species.

List of pressures and threats

Agriculture

Agricultural intensification

Agriculture activities not referred to above

Sylviculture, forestry

Forest and Plantation management & use

Invasive, other problematic species and genes

Invasive non-native species

Natural biotic and abiotic processes (without catastrophes)

Species composition change (succession)

Conservation and management

In a semi-natural landscape this habitat forms a succession stage between grasslands and forest that can be maintained by extensive grazing. A problem is that due to land abandonment the habitat is increasing in large parts of Europe, causing a decrease of grasslands and in a longer time succession towards forest. In the more intensive agricultural landscapes of Northwestern Europe hedges of this habitat form an important refuge and food source for animals and plants. Where hedges have been removed over large scales restoration should be considered, together with some shrub management for long-term, sustainable conservation.

List of conservation and management needs

Measures related to agriculture and open habitats

Maintaining grasslands and other open habitats

Conservation status

Annex 1:

40A0: BLS U1, CON U1, PAN U1

40C0: CON U1, STE U1

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

The habitat can recover relatively easy (10-20 yrs), but for reaching a higher diversity of shrub species longer time periods may be required (50 yrs or more).

Effort required

10 years	20 years	50+ years
Naturally	Naturally	Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	+7% %	unknown %	unknown %	unknown %
EU 28+	+5% %	unknown %	unknown %	unknown %

Trend calculation based on data from 13 EU countries and 2 countries outside the EU, covering approximately 90% of the surface of the habitat. Almost no (quantitative) data has been reported on future trends and long historical trends. The reported data is too poor for assessing criteria A2a, A2b and A3.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	>50000 Km^2	-	-		>50	-	-		

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

The EOO, AOO and number of locations of the habitat are much larger than the thresholds for criteria B1, B2 and 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	19 %	21 %	unknown %	unknown %	unknown %	unknown %
EU 28+	20 %	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 extent and severity of quality decline have been calculated using territorial data of 13 EU countries and 2 additional countries from outside the EU. The data is estimated to cover 75-80% of the surface of the thorn scrub. The reported data on quality decline refers both to abiotic and biotic declines; it is not possible to separate between these. Almost no data (and no quantitative data at all) has been reported on future trends in quality or long-historical trends in quality.

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

Overall Category & 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
J. Janssen

Contributors
Habitat definition: J. Janssen

Territorial data: E. Agrillo, S. Armiraglio, S. Assini, F. Attorre, S. Bagella, G. Buffa, J. Bölöni, J.A. Campos, J. Capelo, L. Casella, M. Chytrý, R. Delarze, M. Dimitrov, D. Espírito-Santo, P. Finck, C. Giancola, D. Gigante, G. Giusso Del Galdo, R. Haveman, J. Janssen, Z. Kącki, K.J. Kirby, C. Marcenò, D. Paelinckx, D. Paternoster, P. Perrin, G. Pezzi, V. Rašomavičius, U. Raths, U. Riecken, S. Sciandrello, J. Šibík, Z. Škvorc, A. Ssymank, V. Stupar, L. Wibail

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

Reviewers
A. Ssymank

Date of assessment
17/11/2015

Date of review
23/03/2016

References

Arnáiz, C. 1983. Esquema sintaxonómico de las comunidades del orden *Prunetalia spinosae* R. Tüxen 1952 en la Península Ibérica. *Colloques Phytosociologiques* 8: 23–31.

Bardat, J., Bioret, F., Botineau, M., Boullet, V., Delpech, R., Géhu, J.-M., Haury, J., Lacoste, A., Rameau, J.-C., Royer, J.-M., Roux, G. & Touffet, J. 2004. *Prodrome des végétations de France.* Muséum national d'Histoire naturelle, Paris, FR.

Čarni, A. 1998. Mantle vegetation in submediterranean Slovenia. *Itinera Geobotanica* 11: 291–297.

De Foucault, B. & Julve, P. 2001. Syntaxonomie der Strauchgesellschaften der *Rhamno catharticae-Prunetea spinosae* Rivas Goday & Borja-Carbonell 1961 in Europa. *Verhandlungen der Zoologisch-Botanischen Gesellschaft in Österreich* 138: 177–243.

Géhu, J.-M., de Foucault, B. & Delelis-Dusollier, A. 1983 ('1979'). Essai sur un schéma synsystématique des végétations arbustives preforestières de l'Europe occidentale. *Colloques Phytosociologiques* 8: 463–479.

Oberdorfer, E. 1987. Süddeutsche Wald- und Gebüschgesellschaften im europäischen Rahmen. *Tuexenia* 7: 459–468.

Rodwell, J.S. (ed.) 1991. British plant communities. Vol. 1. Woodlands and scrub. Cambridge University Press, Cambridge, UK.

Schwabe, A. 1989. Gebüsche und Staudensäume in der Natur- und Kulturlandschaft und ihre ökologische Bedeutung. *Berichte der Naturforschenden Gesellschaft im Freiburg i. Breisgau* 77–78: 99–130.

Weber, H.E. 1997. Hecken und Gebüsche in den Kulturlandschaften Europas – Pflanzensoziologische Dokumentation als Basis von Schutzmaßnahmen. *Berichte der Reinhold-Tüxen-Gesellschaft* 9: 75–106.