

## E5.2a Thermophile woodland fringe of base-rich soils

### Summary

These are fringe communities on neutral to base-rich soils in the transition zone between forests and open habitats or in similar situations alongside cliffs or under the shade of trees in lanes and on roadsides. They occur across large parts of Europe, in the lowlands of the north-west where they are associated with mesophilous broadleaved woodland, but also extending into more continental regions where they fringe more open thermophilous forests, and into cooler montane levels to the south and south-east. The diagnostic species are adapted to the half-shade of such situations but other plants of the neighbouring habitats can also find a place. Especially in calcareous landscapes, the plant communities belonging here can be more species rich, harbouring a lot of rare and/or endangered species. Characteristically, there is a limited amount of nutrients in the soil; otherwise, the vegetation transforms into nitrophilous tall forb communities. Such woodland fringes also provide a congenial habitat for small birds and invertebrates which benefit from the complex structure of the vegetation. Fringe communities have developed through millennia of human activities and are dependent on interventions like grazing and/or mowing for their maintenance. Major threats are agricultural intensification and direct habitat destruction. On the other hand, these fringe communities profit from the abandonment of land, although only for a limited time, as further succession will lead to shrubland and woodland. For this reason, although there is some reduction in extent across Europe, such a trend might be temporarily reversed in future.

### Synthesis

This habitat type is neither threatened in EU28 nor in EU28+, but the decline in the EU28+ is close to the Vulnerable threshold and therefore qualifies as Near Threatened (NT). However, the trend calculation is based on data from relatively few countries. The calculated figures for trends in quality over the last 50 years as well as the relatively large extent of occurrence and area of occupancy result in the Least Concern (LC) category.

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Least concern	-	Near Threatened	A1

### Sub-habitat types that may require further examination

No sub-habitats have been distinguished for further analysis.

### Habitat Type

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#### Code and name

E5.2a Thermophile woodland fringe of base-rich soils



Thermophile woodland fringe with *Quercus pubescens* and flowering *Dictamnus albus* in Slovenia. (Photo: John Janssen).



At higher altitudes in the Alps, thermophile species-rich fringe communities can be found on calcareous rocks and scree, like here in the Valle Maira in Piemonte (Italy). The prominent umbellifer on the photo is *Laserpitium siler*. (Photo: Rense Haveman).

## Habitat description

In the transitional zone between the open landscape and forests, habitats can be found that are characterized by a distinct species composition. Generally, two formations can be distinguished: one determined by shrubs, called mantle, and one – closer to the open landscape – built up by (tall) herbs and grasses, called fringe. Thus, fringe communities appear as a narrow belt along forests, but they also occur along scrublands and other formations. Even in the open landscape, e.g. along cliffs. In comparison with the generally rather species poor mantle communities, fringe communities are often harboring a large set of – colorful – flowers. This especially applies to the baserich soils, to which the heliophilous and thermophilous communities of Habitat type E5.2a are confined. Another prerequisite is a limited amount of nutrients; otherwise, the vegetation transforms into nitrophilous tall forb communities. The diagnostic species are adapted to the half-shadow conditions under the branches of trees and scrubs, but the small contact zone between the forest and the open landscape gives also room to the occurrence of species of these neighbouring formations. And this partly explains the species richness of the habitat.

In the subatlantic parts of Europe, fringes generally border mesophilous forests of the class *Carpino-Fagetea sylvaticae*. In the zone of thermophilous deciduous forest (*Quercetea pubescentis*), with relatively open canopy, most of the fringe species can also be found inside the forest communities. Fringe communities have developed through millennia of human activities. From a landscape ecological point of view, they may protect forests against unwanted effects from the open landscape, like the input of nutrients from agricultural land. Fringes provide important habitats for various animal groups, including birds and insects. Thermophile woodland fringes of baserich soils can be found in large parts of Europe. In Southern and Southeastern Europe, they also can be found in mountainous areas, but in the Northwestern parts of Europe, they are restricted to lowlands. Transitional zones are generally in need of well-balanced human activities, as changes in the neighboring formations (forest on the one side, open landscape on the other side) directly affects the quality of the fringe communities.

Indicators of good quality:

- Species richness
- Periodical cutting or grazing, protecting encroachment of the habitat by shrubs and trees
- Absence of woody species
- Absence of invasive species
- Low input of nutrients

Characteristic species:

Flora: Vascular plants: *Achillea millefolium*, *Anemone sylvestris*, *Anthericum ramosum*, *Betonica officinalis*, *Brachypodium pinnatum* agg., *Bupthalmum salicifolium*, *Bupleurum*

*falcatum*, *Campanula bononiensis*, *Campanula persicifolia*, *Campanula trachelium*, *Centaurea jacea*, *Chamaecytisus hirsutus*, *Chamaecytisus supinus*, *Clematis recta*, *Clinopodium vulgare*, *Coronilla coronata*, *Cruciata glabra*, *Cytisus nigricans*, *Dactylis glomerata*, *Dictamnus albus*, *Ferulago galbanifera*, *Festuca rubra*, *Fragaria vesca*, *Fragaria viridis*, *Galium album*, *Galium lucidum*, *Galium verum*, *Geranium sanguineum*, *Hieracium racemosum*, *Hieracium umbellatum*, *Hypericum perforatum*, *Inula hirta*, *Inula salicina*, *Knautia drymeia*, *Knautia illyrica*, *Laserpitium latifolium*, *Lathyrus pannonicus*, *Libanotis sibirica*, *Medicago falcata*, *Medicago falcata*, *Melampyrum cristatum*, *Melampyrum nemorosum*, *Origanum vulgare*, *Peucedanum cervaria*, *Peucedanum oreoselinum*, *Pimpinella saxifraga*, *Poa angustifolia*, *Polygonatum odoratum*, *Primula veris*, *Rosa pimpinellifolia*, *Serratula tinctoria*, *Silene italica*, *Silene nutans*, *Solidago virgaurea*, *Tanacetum corymbosum*, *Teucrium chamaedrys*, *Thalictrum minus*, *Trifolium alpestre*, *Trifolium rubens*, *Verbascum austriacum*, *Veronica chamaedrys*, *Veronica spicatum*, *Veronica teucrium*, *Vincetoxicum hirundinaria*, *Viola hirta*.

Bryophytes: *Camphotecium lutescens*, *Hylocomium splendens*, *Rhytidium rugosum*.

### **Classification**

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

EUNIS:

E5.2 Thermophile woodland fringes

EuroVegChecklist:

*Trifolion medii* T. Müller 1962

*Knaution dipsacifoliae* Julve ex Dengler et Boch 2008

*Geranion sanguinei* Tx. in T. Müller 1962

*Galio litoralis*-*Geranion sanguinei* Géhu et Géhu-Franck in de Foucault et al. 1983

*Stachyo lusitanicae*-*Cheirolophion sempervirentis* (Capelo 1996) Capelo in Mucina et al. 2013

*Dictamno albi*-*Ferulagion galbaniferae* (van Gils et al. 1975) de Foucault et al. ex Čarni et Dengler in Mucina et al. 2009

*Lathyro laxiflori*-*Trifolion velenovskyi* (Čarni et al. 2000) Čarni 2005

Annex I:

No relationship

Emerald:

No relationship

MAES-2:

No relationship

IUCN:

No relationship

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

No

## Justification

The habitat type has a wide distribution throughout Europe. It has been recorded in 30 countries.

## Geographic occurrence and trends

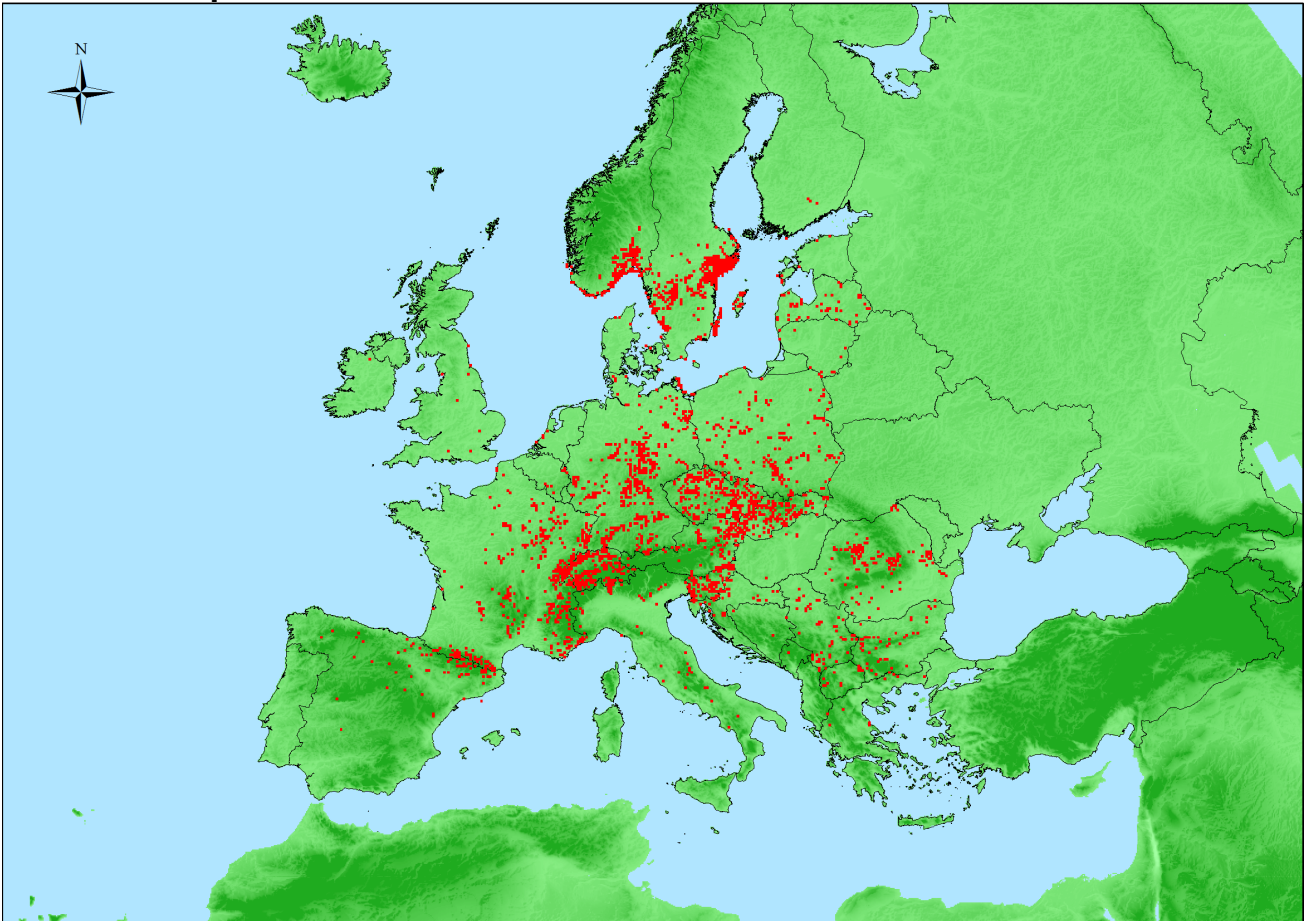
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Austria</i>	Present	4 Km <sup>2</sup>	Decreasing	Decreasing
<i>Belgium</i>	Present	Km <sup>2</sup>	Unknown	Unknown
<i>Bulgaria</i>	Present	Km <sup>2</sup>	Increasing	Stable
<i>Croatia</i>	Present	40 Km <sup>2</sup>	Stable	Stable
<i>Czech Republic</i>	Present	6 Km <sup>2</sup>	Decreasing	Stable
<i>France</i>	France mainland: Present	Km <sup>2</sup>	Increasing	Unknown
<i>Germany</i>	Present	Km <sup>2</sup>	Increasing	Decreasing
<i>Hungary</i>	Present	10 Km <sup>2</sup>	Unknown	Stable
<i>Italy</i>	Italy mainland: Present	98 Km <sup>2</sup>	Increasing	Decreasing
<i>Latvia</i>	Present	3 Km <sup>2</sup>	Unknown	Unknown
<i>Lithuania</i>	Present	5 Km <sup>2</sup>	Stable	Unknown
<i>Netherlands</i>	Present	1 Km <sup>2</sup>	Stable	Decreasing
<i>Poland</i>	Present	11 Km <sup>2</sup>	Unknown	Decreasing
<i>Portugal</i>	Portugal mainland: Present	6 Km <sup>2</sup>	Increasing	Unknown
<i>Romania</i>	Present	1 Km <sup>2</sup>	Decreasing	Decreasing
<i>Slovakia</i>	Present	4 Km <sup>2</sup>	Increasing	Decreasing
<i>Spain</i>	Spain mainland: Present	Km <sup>2</sup>	Stable	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)
<i>Bosnia and Herzegovina</i>	Present	30 Km <sup>2</sup>	Decreasing	Decreasing
<i>Former Yugoslavian Republic of Macedonia (FYROM)</i>	Present	Km <sup>2</sup>	Unknown	Unknown
<i>Kosovo</i>	Present	Km <sup>2</sup>	Increasing	Stable
<i>Switzerland</i>	Present	33 Km <sup>2</sup>	Decreasing	Decreasing

## 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 <sup>2</sup>	>50	190 Km <sup>2</sup>	Some important countries are lacking data: e.g. Bulgaria, France, Germany, Spain.
<i>EU 28+</i>	> 50000 Km <sup>2</sup>	>50	253 Km <sup>2</sup>	Some important countries are lacking data: e.g. Bulgaria, France, Germany, Spain, Macedonia, Kosovo.

## Distribution map



The map underestimates occurrences in Hungary, Bosnia & Herzegovina and – possibly – other Balkan countries.

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

80%

## Trends in quantity

According to the quantitative data as provided by the territorial data sheets, the recent trend in EU28 is a decrease of -20.5% and the recent trend in EU28+ is a decrease of -29.0%. However, the majority of countries reported that no quantitative data are available. The actual figures are calculated on data from only 6 EU28 country reports and 2 additional EU28+ countries. Based on the ongoing changes in land use, with many hay meadows gradually changing into fringe (tall forb) communities, we expect that the figures are less negative. For quite a number of countries, especially in Eastern Europe, this habitat type probably will be increasing.

- 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 EOO is larger than 50,000 km<sup>2</sup>.

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

No

*Justification*

The habitat type has a wide distribution throughout Europe, its occurrence has been recorded by 30 countries. The surface of the sites varies with its character, in the case of spatial transitions (like forest margins) the sites are generally small, in the case of temporal transitions (meadows that are not managed anymore) the sites might be much larger. In the latter situation, the communities only exist during a certain time span and will gradually change into shrub and woodland.

### **Trends in quality**

Within EU28, about 24% of the total area are degraded with a weighted severity of 20%. Within EU28+, 29% of the total are degraded with a weighted severity of 34%. The figures, however, are based on quantitative data from only 9 EU28 countries and 2 additional EU28+ countries (out of a total of 21 countries that reported information) and are substantially influenced by a relatively large area in Italy. Nevertheless, the trends seem to be rather convincing, with limited losses in extent and severity.

- Average current trend in quality

EU 28: Decreasing

EU 28+: Decreasing

### **Pressures and threats**

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Changes in land use largely affect the extent and quality of this habitat type. Agricultural intensification (especially fertilisation) is the major threat. On the other hand, abandoning of pastureland and meadows is leading to a larger extent of this type, although this effect is only temporally (further succession will lead to shrubland and ultimately woodland). Another threat is habitat destruction (e.g. by urbanisation and related changes in infrastructure).

### **List of pressures and threats**

#### **Agriculture**

Agricultural intensification

Intensive grazing

Fertilisation

Removal of hedges and copses or scrub

#### **Urbanisation, residential and commercial development**

Continuous urbanisation

### **Conservation and management**

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Fringe communities per definition are vulnerable as they depend on gradients in the landscape, which can be temporal or spatial. Changes in land use therefore always have an effect on such communities. On the one hand, intensification of land use will lead to direct losses, on the other hand abandoning of grazing and mowing systems may lead to an increase of the habitat (although only for a certain period, as succession will go on, gradually transforming the fringe communities into shrubland and woodland).

### **List of conservation and management needs**

#### **Measures related to agriculture and open habitats**

Maintaining grasslands and other open habitats

#### **Measures related to forests and wooded habitats**

Restoring/Improving forest habitats

## Measures related to spatial planning

Manage landscape features

### Conservation status

There is no Annex I type assigned to this habitat type.

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

Extensive grazing and/or mowing are prerequisites for this habitat type. The maintenance of this habitat type is a matter of balance and depends on an appropriate management regime: when the sites are overgrown with shrubs and trees, these woody plants have to be removed. In intensively used landscapes, a reduction of fertilisation is needed. As the habitat type harbours a large number of rare species, the management of the sites needs full attention.

### Effort required

20 years
Through intervention

## Red List Assessment

### Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-20.5 %	unknown %	unknown %	unknown %
EU 28+	-29.0 %	unknown %	unknown %	unknown %

The values for A1 are calculated from the territorial data sheets. The countries that reported complete quantitative data, that could be used for the calculation, covered about 33% of reported area in the EU28, and about 50% of reported area for the EU28+. The trend in the EU28+ qualifies the habitat for Near Threatened, based on strong declines in Switzerland and Bosnia & Herzegovina. No data (percentages) available for 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 <sup>2</sup>	Yes	Yes	No	>50	Yes	Yes	No	No
EU 28+	>50000 Km <sup>2</sup>	Yes	Yes	No	>50	Yes	Yes	No	No

Both EOO and AOO are above the thresholds for evaluating criterion B.

### 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	24 %	20% %	unknown %	unknown %	unknown %	unknown %
EU 28+	29 %	34% %	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 values for C/D1 are calculated from the territorial data sheets, which we obtained from 21 countries (altogether the occurrence of the habitat type is reported by 30 countries). No data available for C/D2 and C/D3. The degradation in quality refers to both biotic features and abiotic circumstances.

### 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+	NT	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	-	Near Threatened	A1

### Confidence in the assessment

Low (mainly based on uncertain or indirect information, inferred and suspected data values, and/or limited expert knowledge)

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**References**

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Gils, H.A.M.J. van, 1978. *Forb fringes and forb stages between semi-dry grasslands and deciduous forests on loess and hard bedrock in Europe; distribution, classification and site*. PhD Thesis, Catholic University Nijmegen.