

F9.1 Temperate and boreal riparian scrub

Summary

This habitat includes scrub vegetation developed more permanently on unsorted gravelly deposits on the banks and shoals of turbulent seasonally-flowing streams and flood-prone rivers through the uplands of nemoral, boreal and alpine zones, as well as temporary successional willow vegetation through the European lowlands. Early colonists anchor firmly in the gravels and can tolerate further flooding, as well as browsing from wild herbivores and stock and other species follow as accumulating gravels raise the ground surface higher above the flood, but periodic inundation is essential. Succession itself may thus be a threat where floods cease, though a bigger threat is catchment and river management which alters the natural regime. Invasive species also need control.

Synthesis

There has been an overall slight decrease of the habitat in both quantity and quality over the last 50 years, but not to a degree to meet any Red List category. The situation varies a lot over Europe and the habitat is much more threatened in lowlands and the Alps compared to the Balkan and the north. In Scandinavia this willow scrub has a good quality and even shows an increase in area.

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 the formal revision of EUNIS it is proposed to divide this habitat in two main types: F9.1a Arctic, boreal and alpine riparian scrub, and F9.1b Temperate riparian scrub. These two types can be clearly differentiated based on species composition, ecological functioning and biogeographical regions. It is likely that the lowland type is relatively more threatened than the boreal/alpine type. Additionally, subtypes with *Myricaria germanica* are widely reported to be threatened, and may require further examination.

Habitat Type

Code and name

F9.1 Temperate and boreal riparian scrub



Lowland riparian scrub with *Salix viminalis* and *Salix triandra* in the foreground and *Salix alba* forest in the back, growing along the river Elbe near Lenzen, Germany (Photo: Carsten Hobohm).



Boreal *Salix glauca* scrub along a river in the Saltdal community, Nordland, Norway (Photo: Per F. Bjørklund, Skog og Landskap).

Habitat description

This habitat includes scrub vegetation developed more permanently on unsorted gravelly deposits on the banks and shoals of turbulent seasonally-flowing streams and flood-prone rivers through the uplands of nemoral, boreal and alpine zones, as well as temporary successional willow vegetation through the European lowlands. In higher European mountains, common woody pioneers in such situations are *Myricaria germanica*, *Salix purpurea*, *S. eleagnos*, *S. daphnoides* and *S. nigricans* with *S. phylicifolia* often the leading pioneer in the Boreal zone. This kind of vegetation also extends into the Mediterranean zone of Spain where permanent flow protects streamside sediments against the seasonal drying of sediments and salinization that favours F9.3 Mediterranean riparian scrub. Here *S. salvifolia*, *S. pedicillata* and *S. cantabrica* are important colonisers.

These willows anchor firmly in the gravels and can tolerate further flooding, as well as browsing from wild herbivores and stock. Where accumulating gravels raise the ground surface higher above the flood, *Hippophaë rhamnoides* can also gain a hold, thriving in the lime-rich conditions that generally prevail here and coming to dominate in dense thickets. Such alluvial scrub, only incidentally flooded, is found both in temperate Europe and in the boreal regions. Where regular inundation ceases in the higher reaches of rivers, there can be a succession to G1.2 Riparian woodland dominated by *Alnus incana*.

These assemblages do not extend unchanged in composition into the lowlands of Europe and, in fact, where *S. eleagnos* persists along more mature riversides, it can attain the stature of a tree which excludes its stands from this habitat. However, on the sediments which are deposited by flood waters at these lower altitudes, *S. purpurea* can colonise with *S. triandra* to form willow scrub with a similar structure to that of mountain streamsides. Here, however, where the sediments stabilise, this vegetation is often a prelude to the development of G1.1 Riparian and gallery woodland dominated by *S. alba* and *S. fragilis*. However, in lowland rivers prone to repeated flooding, repeated setback of such succession can lead to re-establishment of the willow scrub.

In the boreal regions of Europe riparian scrub along rivers and mountains streams is dominated by a combination of *Salix lapponum*, *Salix glauca*, *Salix lanata* and *Salix phylicifolia*, and a herb layer of tall herbs, like *Filipendula ulmaria*, *Geum rivale*, *Calamagrostis purpurea*, *Rumex acetosa* and *Comarum palustre*.

Indicators of quality:

- Stands of this scrub may be impermanent along very turbulent streams and rivers, developing again in the same or other places in following seasons, so discontinuity in a particular locality is not necessarily a sign of threatened quality
- the maintenance of seasonal flooding fed by snow-melt or upland rains.
- continuing dominance of shrubs without invading trees.
- low levels of browsing by wild herbivores and stock with no decline in shrub cover.

Characteristic species:

Flora, vascular plants: *Myricaria germanica*, *Salix cantabrica*, *Salix daphnoides*, *Salix eleagnos*, *Salix glauca*, *Salix lanata*, *Salix lapponum*, *Salix myrsinifolia*, *Salix nigricans*, *Salix pedicillata*, *Salix phylicifolia*, *Salix purpurea*, *Salix salvifolia*, *Salix starkeana*, *Hippophaë rhamnoides*.

Classification

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

EUNIS:

F9.1 Riverine scrub

EuroVegChecklist (alliances):

Salicion triandrae T. Müller et Görs 1958
Rubo caesii-Amorphion fruticosae Shevchyk et Solomakha 1996
Salicion eleagno-daphnoidis (Moor 1958) Grass 1993
Salicion phylificfoliae Dierßen 1992
Salicion salvifoliae Rivas-Mart. et al. 1984
Salicion discolori-neotrichae Br.-Bl. et O. de Bolòs 1958 corr. Rivas-Mart. et al. 2002
Salicion pedicellatae Rivas-Mart. et al. 1984
Salicion cantabricae Rivas-Mart., T.E. Díaz et Penas in Rivas-Mart. et al. 2011

Annex 1:

3230 Alpine rivers and their ligneous vegetation with [*Myricaria germanica*]

3240 Alpine rivers and their ligneous vegetation with [*Salix elaeagnos*]

4080 Sub-Arctic *Salix* ssp. scrub

Emerald:

F9.1 Riverine scrub

MAES:

Heathland and shrub

IUCN:

3.3 Boreal shrubland

3.4 Temperate shrubland

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

No

Justification

The habitat is spread all over Europe and occurs with some variation in all biogeographical regions. For the formal revision of EUNIS a subdivision has been proposed in two types. Of these the subtype F9.1a Arctic, boreal and alpine riparian scrub is typical for the boreal and alpine region, while the type F9.1b Temperate riparian scrub is widespread in lowland areas.

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	58 Km ²	Decreasing	Decreasing
<i>Belgium</i>	Present	0.01 Km ²	Unknown	Unknown
<i>Bulgaria</i>	Present	0.5 Km ²	Stable	Stable
<i>Croatia</i>	Present	48 Km ²	Decreasing	Decreasing
<i>Czech Republic</i>	Present	46 Km ²	Stable	Decreasing
<i>Finland</i>	Åland Islands: Present Finland mainland: Present	unknown Km ²	Stable	Stable
<i>France</i>	France mainland: Present	150-300 Km ²	Stable	Decreasing
<i>Germany</i>	Present	unknown Km ²	Increasing	Stable

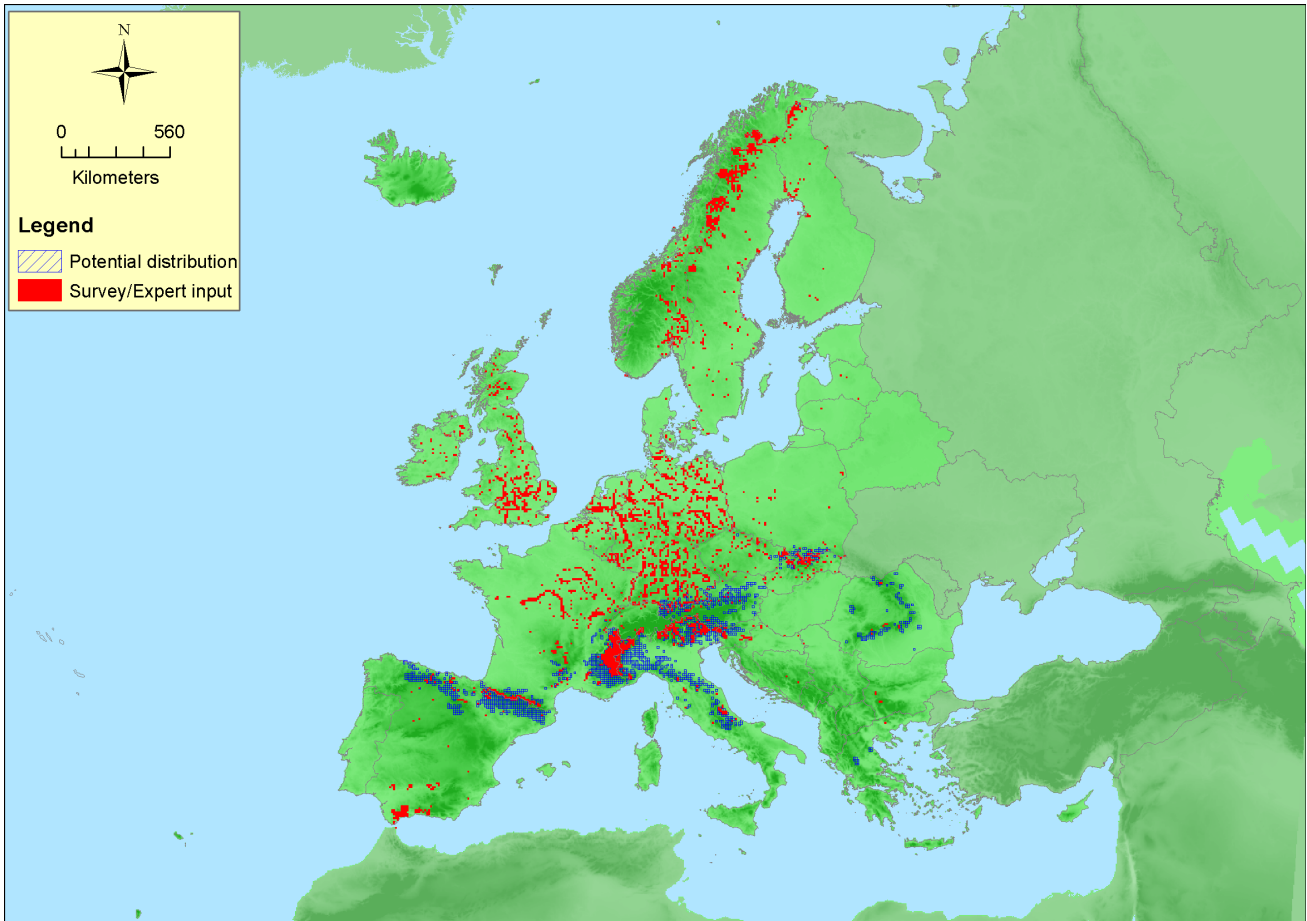
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Greece</i>	Greece (mainland and other islands): Present	0.5 Km ²	Stable	Stable
<i>Hungary</i>	Present	140 Km ²	Stable	Stable
<i>Ireland</i>	Present	5 Km ²	Stable	Unknown
<i>Italy</i>	Italy mainland: Present	203 Km ²	Decreasing	Decreasing
<i>Lithuania</i>	Present	<12 Km ²	Stable	Stable
<i>Netherlands</i>	Present	10 Km ²	Decreasing	Decreasing
<i>Romania</i>	Present	2 Km ²	Decreasing	Decreasing
<i>Slovakia</i>	Present	1.1 Km ²	Stable	Stable
<i>Slovenia</i>	Present	27 Km ²	Decreasing	Decreasing
<i>Spain</i>	Spain mainland: Present	282 Km ²	Decreasing	Decreasing
<i>Sweden</i>	Present	270-385 Km ²	Increasing	Increasing
<i>UK</i>	Northern Island: Present United Kingdom: Present	80 Km ²	Stable	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	Stable	Decreasing
<i>Norway</i>	Norway Mainland: Present	29 Km ²	Unknown	Unknown
<i>Switzerland</i>	Present	45 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
<i>EU 28</i>	6986850 Km ²	4916	1475 Km ²	Lacking data from Finland, that has a substantial part of the habitat
<i>EU 28+</i>	6986850 Km ²	5078	1554 Km ²	

Distribution map



The map is incomplete, with data gaps throughout the range but especially in Scandinavia and distribution of Annex I type 4080 as potential occurrences. Data sources: EVA, Art17, GBIF.

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

Approximately 25%. Some characteristic species of the habitat are distributed eastwards up to Siberia (*Salix viminalis*, *S. triandra*) or the Ural mountains (*Salix nigricans*).

Trends in quantity

There is large variation in reported trend data between the countries. In many countries with a small area the decline is very high. On the other hand some countries with large area have a very small decline. In Scandinavia and Finland the habitat is even increasing, due to recover from former usage of the river shores for grazing.

- 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 range is much larger than 50,000 km².
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
 Yes
Justification
 In most sites the habitat occurs in small patches on the shores of rivers and rivulets.

Trends in quality

The average degradation in quality has been calculated from territorial data. About 20% of the area has been affected with an average severity of about 50% in EU28 and EU28+.

- Average current trend in quality

EU 28: Decreasing

EU 28+: Decreasing

Pressures and threats

Threats on this habitat are acting on different scale and the most drastic are damming of rivers for hydrological power plants. If the dams are large, like in northern Scandinavia, the habitat will be totally destroyed. In other rivers the threats are more gradual, with small changes in hydrology, introduction of invasive species and changes in use of the landscape in the neighbourhood of the watercourse.

List of pressures and threats

Invasive, other problematic species and genes

Invasive non-native species

Natural System modifications

Large scale water deviation

Lack of flooding

Modifying structures of inland water courses

Reservoirs

Small hydropower projects, weirs

Dykes and flooding defense in inland water systems

Conservation and management

Most important management is to restore the water regime to a level that water fluctuations are as close as possible to natural conditions. Other measures are to eradicate invasive species and to protect sites with a representative set of good examples of the habitat.

List of conservation and management needs

Measures related to wetland, freshwater and coastal habitats

Restoring/Improving the hydrological regime

Measures related to spatial planning

Legal protection of habitats and species

Manage landscape features

Measures related to urban areas, industry, energy and transport

Other measures

Conservation status

Annex I:

3230: ALP U2, CON U2, MED U1

3240: ALP U1, ATL U1, CON U1, MED U1

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?

Restoration of watercourses may have effect in a relatively short time if the measures are robust enough. Several full scale restoration projects have been carried out, most of them with great success.

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 %	Unkown %	Unkown %	Unkown %
EU 28+	-14 %	Unkown %	Unkown %	Unkown %

The average decline in Europe was calculated from quantitative territorial data from seven countries in the EU28 and two additional countries in the EU28+. The result is a slight decrease, not high enough to meet any threat category. The conclusion for criterion A1 is Least Concern, while for other criteria under A no data are available.

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	No	>50	Yes	No	No	No
EU 28+	>50000 Km ²	Yes	No	No	>50	Yes	No	No	No

The EOO, AOO and number of locations are much larger than the thresholds for criteria under B, leading to the conclusion Least Concern.

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 %	56 %	Unkown %	Unkown %	Unkown %	Unkown %
EU 28+	21 %	51 %	Unkown %	Unkown %	Unkown %	Unkown %

Criterion C	C1		C2		C3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	Unkown %	Unkown %	Unkown %	Unkown %	Unkown %	Unkown %
EU 28+	Unkown %	Unkown %	Unkown %	Unkown %	Unkown %	Unkown %

Criterion D	D1		D2		D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28	Unkown %	Unkown%	Unkown %	Unkown%	Unkown %	Unkown%

Criterion D	D1		D2		D3	
	Extent affected	Relative severity	Extent affected	Relative severity	Extent affected	Relative severity
EU 28+	Unkown %	Unkown%	Unkown %	Unkown%	Unkown %	Unkown%

Based on territorial data from 11 EU28 and 2 EU28+ countries the average European trends have been calculated. The figures lead to the conclusion Least Concern.

Criterion E: Quantitative analysis to evaluate risk of habitat collapse

Criterion E	Probability of collapse
EU 28	Unkown
EU 28+	Unkown

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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References

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