

C2.5a Temperate temporary running watercourse

Summary

This habitat type includes temporary freshwater streams and rivers in the European temperate region, characterized by strong fluctuations in water level, which includes alternating dry and long periods of running water related to the level of the underlying water table and the amount of precipitation. Distinctive among these are the UK 'winterbournes' developed on pervious chalk with a striking seasonal flora of batrachion *Ranunculus* spp., but their wider distribution but Europe is uncertain. Abstraction from chalk aquifers and climate change pose the major threats.

Synthesis

The limited number and low quality of the data available have not allowed the use of any Red List criterion for the assessment. Only 15-20% (between 3 and 5) of the countries in which the habitat occurs were able to provide some quantitative or qualitative data. Most countries that were able to provide some kind of evaluation about the trend in quantity and quality stated that the habitat is declining and/or slightly damaged. The habitat has been assessed as Data Deficient (DD) due to the generalized lack of information and quantitative data.

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Data Deficient	-	Data Deficient	-

Sub-habitat types that may require further examination

Further investigations are necessary for this habitat type from all European countries.

Habitat Type

Code and name

C2.5a Temperate temporary running watercourse



Temperate temporary stream on turbidite geological substrate averagely permeable. Stream Fiumicello, Central Italy, 350 m a. s. l. (Photo: Flavia Landucci).

Habitat description

This habitat type includes temporary freshwater streams and rivers in the European temperate region. These water bodies are characterized by strong fluctuations in water level, which includes dry periods, alternating with long periods of running water. These fluctuations in water level are related to the level of

the underlying water table and the amount of precipitation. In the United Kingdom the term 'chalk streams' is used to describe watercourses developing on chalk rock formations. This very soft and porous geological substrate acts as temporary reservoir. More than 80 % of the annual stream discharge originates from the aquifer in these chalk-based systems. The slow release of water from the aquifer provides a relatively stable hydrological regime despite the concentration of rainfalls in some seasons. Chalk streams can be subdivided into different hydrological categories. Only the winterbourne ones have a natural dry period each year and are considered part of the habitat C2.5a Temperate, temporary running waters. Chalk streams and rivers that never dry out are not included in this habitat. The seasonal cycle of wetting and drying results into characteristic plant communities that have adapted to these situation. The main channels are often dominated in spring by aquatic *Ranunculus* beds, consisting mainly of *Ranunculus peltatus* or *R. penicillatus* subsp. *pseudofluitans*. Note that *Ranunculus fluitans* is not typical of this habitat, because require more stable water level. Grasses and herbs are dominating the shores and accompanying marshes. Those include a number of annual species that appear in autumn after re-wetting of the shores. These temporary streams differ from Mediterranean temporary rivers mainly for the duration of the completely dry period (that is shorter) and for the absence of clearly Mediterranean floristic elements. If the dry period is prolonged and the hydrologic conditions very irregular these temporary streams could also scarcely vegetated.

England is usually considered to have the major part of properly defined 'chalk streams' of Europe. They are located in and down-stream of areas of outcropping chalk. It is unclear which other countries have similar streams, but surely temporary streams with similar hydrology they occur also in other karst areas of Europe and on substrates averagely permeable such as turbidite deposits rich in calcareous elements. In former times in United Kingdom, 'chalk streams' were connected to floodplains and wet meadows, representing systems with a high biodiversity and luxurious plant growth. Nowadays they are generally highly modified systems.

Indicators of good quality:

- The periodical alternation of wet-and-dry regimes
- The absence of heavy anthropogenic activities that can alter the hydrogeological system (e.g. water capitation and drainage, artificial shores for flood defence)
- The absence of communities and species indicating an excessive nitrification or disturbance such as ruderal and exotic species
- Water course connected to floodplains and wet meadows

Characteristic species:

Vascular plants: *Alopecurus geniculatus*, *A. aequalis*, *Berula erecta*, *Callitriche* spp., *Helosciadium nodiflorum*, *Glyceria notata*, *G. fluitans*, *Ranunculus peltatus*, *R. penicillatus* subsp. *pseudofluitans*, *Mentha aquatica*, *Myosotis scorpioides*, *Nasturtium officinale*, *Veronica anagallis-aquatica*, *V. catenata*, *V. beccabunga*.

Bryophytes: *Drepanocladus* spp., *Fontinalis antipyretica*, *F. hypnoides*, *Rhynchostegium ripariodes*, *Warnstorfia* spp.

Vertebrates: *Salmo trutta*, *S. salar*, *Thymallus thymallus*, *Salamandrina terdigitata*, *Triturus cristatus*, *T. carnifex*, *T. alpestris*, *Rana* spp., *Pelophylax* spp.

Macroinvertebrates: *Potamon fluviatile*, *Austropotamobius pallipes*. Benthic invertebrates can also be present if the dry period is not too long.

Classification

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

EUNIS:

C2.5 Temporary running waters

EuroVegChecklist:

Glycerio-Sparganion Br.-Bl. et Sissingh in Boer 1942

Batrachion fluitantis Neuhäusl 1959

Ranunculion aquatilis Passarge 1964

Annex 1:

3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation

Emerald:

C2.33 Mesotrophic vegetation of slow-flowing streams

MAES-2:

Fresh water, Rivers and lakes, Inland surface waters (water coursed and bodies)

IUCN:

5.2. Seasonal/Intermittent/Irregular Rivers/Streams/Creeks

WFD:

R-C6

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

Unknown

Justification

The habitat is related to permeable geological substrates of temperate areas of Europe, but because the habitat is not recognized as independent habitat everywhere it is not possible to say the exact distribution.

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>	Uncertain	unknown Km ²	Unknown	Unknown
<i>Bulgaria</i>	Present	unknown Km ²	Decreasing	Decreasing
<i>Croatia</i>	Present	0.1 Km ²	Unknown	Unknown
<i>Estonia</i>	Uncertain	unknown Km ²	Unknown	Unknown
<i>Finland</i>	Finland mainland: Uncertain	unknown Km ²	Unknown	Unknown
<i>France</i>	Corsica: Present France mainland: Present	unknown Km ²	Unknown	Unknown
<i>Germany</i>	Present	unknown Km ²	Decreasing	Decreasing
<i>Greece</i>	Greece (mainland and other islands): Uncertain	unknown Km ²	Unknown	Unknown
<i>Ireland</i>	Uncertain	unknown Km ²	Unknown	Unknown

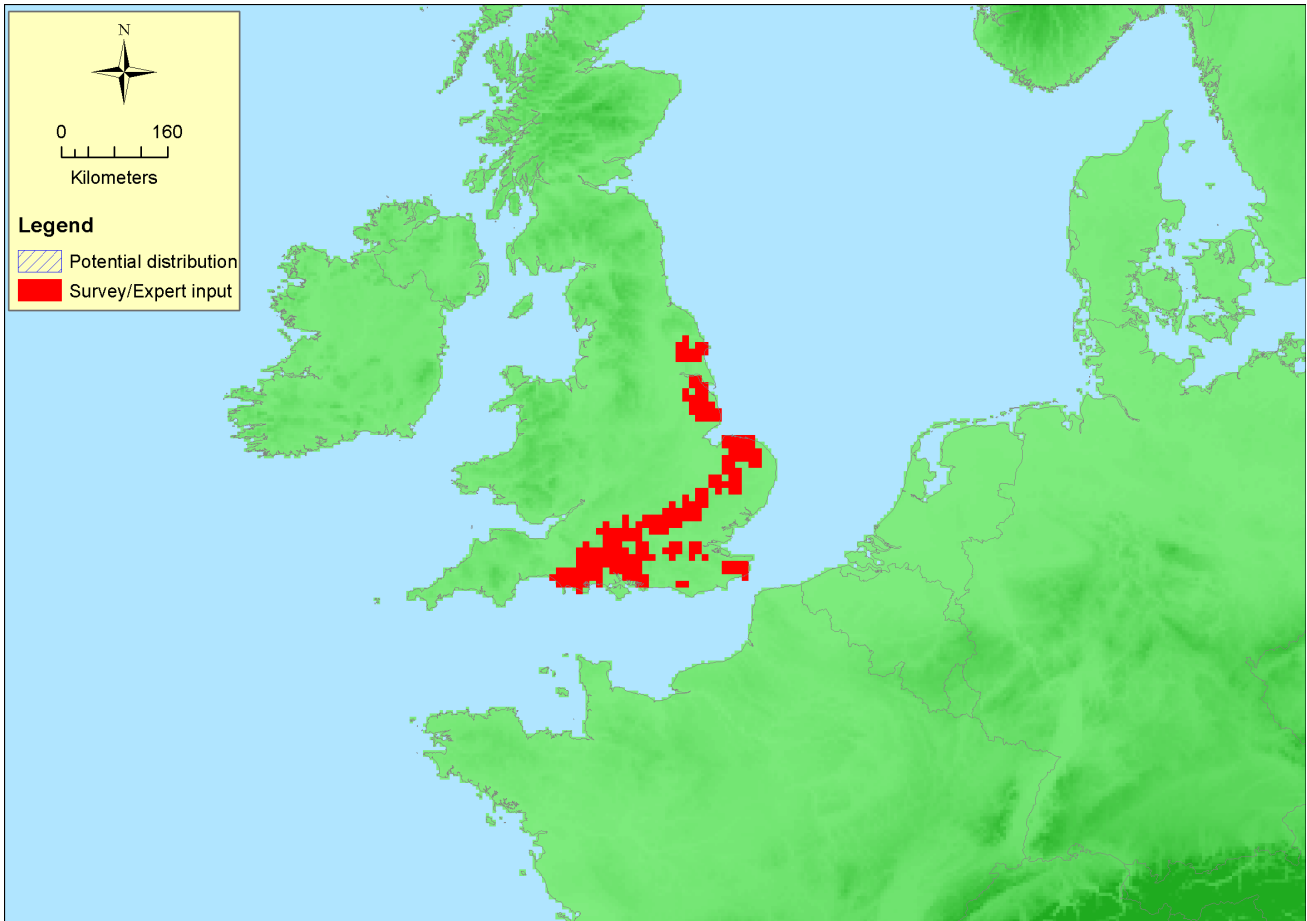
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Italy</i>	Italy mainland: Present	111 Km ²	Decreasing	Decreasing
<i>Latvia</i>	Uncertain	unknown Km ²	Unknown	Unknown
<i>Lithuania</i>	Uncertain	unknown Km ²	Unknown	Unknown
<i>Luxembourg</i>	Uncertain	unknown Km ²	Unknown	Unknown
<i>Poland</i>	Uncertain	unknown Km ²	Unknown	Unknown
<i>Portugal</i>	Portugal mainland: Uncertain	unknown Km ²	Unknown	Unknown
<i>Romania</i>	Uncertain	unknown Km ²	Unknown	Unknown
<i>Slovakia</i>	Present	0.01 Km ²	Decreasing	Decreasing
<i>Slovenia</i>	Present	0.1 Km ²	Decreasing	Decreasing
<i>Spain</i>	Balearic Islands: Present Canary Islands: Present Spain mainland: Present	unknown Km ²	Decreasing	Decreasing
<i>Sweden</i>	Uncertain	unknown Km ²	Unknown	Unknown
<i>UK</i>	Gibraltar: Present Northern Island: Present United Kingdom: 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)
<i>Albania</i>	Uncertain	unknown Km ²	Unknown	Unknown
<i>Bosnia and Herzegovina</i>	Uncertain	1 Km ²	Increasing	Stable
<i>Former Yugoslavian Republic of Macedonia (FYROM)</i>	Uncertain	unknown Km ²	Unknown	Unknown
<i>Kaliningrad</i>	Uncertain	unknown Km ²	Unknown	Unknown
<i>Kosovo</i>	Uncertain	unknown Km ²	Unknown	Unknown
<i>Montenegro</i>	Uncertain	unknown Km ²	Unknown	Unknown
<i>Serbia</i>	Uncertain	unknown Km ²	Unknown	Unknown

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>	77700 Km ²	224	112 Km ²	Only few countries were able to provide numerical data. Difficult to distinguish this habitat from others
<i>EU 28+</i>	77700 Km ²	224	113 Km ²	Only few countries were able to provide numerical data. Difficult to distinguish this habitat from others

Distribution map



Map indicates only chalk rivers in England (from a downloaded file), and is incomplete for the rest of Europe due to lack of data. Data source: NAT.

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

This habitat could be present in every country where karst systems are extensively developed in temperate areas (excluded Mediterranean areas) of EU 28 and EU 28+. However real extension and distribution is not known because no data are available for most of the countries due to the difficulty in distinguishing this habitat type from others.

Trends in quantity

The trend in quantity is impossible to estimate because there are no sufficient data available about the present and past surface of the habitat. Only between 15-20% of the countries in which the habitat is expected to occur were able to provide quantitative data and they always stated that the number provided are very rough. However several countries reported according to expert assessment that the habitat is decreasing.

- 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 natural range of the habitat is probably much higher than 50 000 Km².
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
 No
Justification

The geographical range of the habitat (EEO) is supposed to be quite extended.

Trends in quality

The trend in quality is impossible to estimate because there are not sufficient data about the present and past surface of the habitat and its abiotic and biotic quality trend. However some countries (20% of those where the habitat is expected) reported according to expert assessment that the habitat quality is decreasing.

- Average current trend in quality

EU 28: Decreasing

EU 28+: Decreasing

Pressures and threats

The most frequent pressures consist of alteration of the morphology and hydrology of the streams through canalization, melioration, catchment of groundwater and extraction of sand and gravel. Eutrophication and in general pollution are other important pressures directly connected with agriculture and industrial activities in the stream basin. Climate change may represent a pressure for the habitat in some areas, contributing to alter the natural periodic regime of flooding and drying out. Fishing represents also a pressure in some streams, especially if outside protected areas.

List of pressures and threats

Agriculture

Use of biocides, hormones and chemicals

Fertilisation

Irrigation

Mining, extraction of materials and energy production

Mining and quarrying

Sand and gravel extraction

Pollution

Pollution to surface waters (limnic, terrestrial, marine & brackish)

Pollution to groundwater (point sources and diffuse sources)

Soil pollution and solid waste (excluding discharges)

Natural System modifications

Human induced changes in hydraulic conditions

Climate change

Changes in abiotic conditions

Droughts and less precipitations

Flooding and rising precipitations

Changes in biotic conditions

Habitat shifting and alteration

Conservation and management

The conservation and management actions should include regulation of water abstraction, agricultural and industrial activities in the stream basin, fishing and extraction of sand and gravel from the river bed. The restoration and improvement of the water quality and hydrological regime may be necessary in those

cases where the habitat was damaged. The inclusion of some streams in protected areas could be useful to control and manage the water exploitation and other human activities such as fishing.

List of conservation and management needs

Measures related to agriculture and open habitats

Adapting crop production

Measures related to wetland, freshwater and coastal habitats

Restoring/Improving water quality
Restoring/Improving the hydrological regime
Managing water abstraction

Measures related to spatial planning

Establish protected areas/sites
Legal protection of habitats and species
Manage landscape features

Measures related to hunting, taking and fishing and species management

Regulation/Management of fishery in limnic systems
Specific single species or species group management measures

Measures related to urban areas, industry, energy and transport

Urban and industrial waste management

Conservation status

Annex I:

3260: ALP U1, ATL U2, BLS U1, BOR U2, CON U1, MED U2, PAN U1, STE FV

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

The capacity of this habitat to recover naturally differs according to the type of damage that the habitat has undergone. If the damage influences the hydrology and morphology of the stream or its basin the recovery time can be very long or even impossible. If the damage is represented by pollution of superficial or even ground- water, the habitat can be restored in a relatively short time (10 years, or even less) through intervention and complete removal of the causes of pollution.

Effort required

10 years	20 years	50+ years	200+ years
Through intervention	Naturally	Naturally	Naturally

Red List Assessment

Criterion A: Reduction in quantity

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

Despite the habitat occurs in 21 countries within EU 28 and 7 within EU 28+, most of them were not able to estimate past and current area of the habitat. Only Italy, Slovenia, Slovakia and Croatia reported values

of the current area and stated that the habitat is decreasing in the last 50 years. According to the very few data available the habitat seems to be rather abundant in Italy and the calculated reduction is around 10% for the 4 countries mentioned before.

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

Despite the EOO and AOO of this habitat are probably higher respectively than 50 000 Km² and 50 Km² there are no sufficient data available about decline of spatial extent, and abiotic or biotic quality.

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	unknown %	unknown %	unknown %	unknown %	unknown %	unknown %
EU 28+	unknown %	unknown %	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%

Only Slovenia, Croatia and Italy provided quantitative data for the assessment of the trend in quality, therefore the results of calculation of this trend were considered not possible to generalize to the whole of Europe. According to the calculation performed the extent of the degradation in these countries was around 25% with a severity of 30%.

Criterion E: Quantitative analysis to evaluate risk of habitat collapse

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

No data available for applying criterion E.

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	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	DD	DD	DD	DD	DD	DD	DD	DD	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
Data Deficient	-	Data Deficient	-

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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