

C5.4 Inland saline or brackish helophyte bed

Summary

This habitat includes helophyte beds developing in and around inland saline or brackish lakes, ponds and other standing or slowly flowing waters such as saline Mediterranean rivers that are subject to summer drying. The habitat may include, depending on the particular hydrological regime, emergent communities dominated by a variety of tall or tussocky species tolerant of brackish or saline conditions. Distributed in both the continental part of Europe and the arid Mediterranean region, where it can dry out completely in the summer and become hyper-saline. Threats include land reclamation for agricultural and urban expansion, anthropogenic changes in hydrology, input of freshwater to serve waterfowl hunting or ecotourism in dry areas. Safeguarding the distinctive hydrology and controlling spread of helophytes by grazing are the main conservation actions.

Synthesis

Saline reedbeds qualify as Endangered (EN) due to a very large historical decline in quantity (72%) based on estimations from three EU28 and one additional EU28+ countries. Although the number of countries is low, the analysed area is still more than 50% of the present area. The most severe historical decline took place in Hungary (-90%) and the Czech Republic (-98%). These values overrule a strong historical increase in Austria.

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Endangered	A3	Endangered	A3

Sub-habitat types that may require further examination

No sub-habitats have been distinguished for further analysis.

Habitat Type

Code and name

C5.4 Inland saline or brackish helophyte bed



Winter view of inland saline reed beds of the Neusiedlersee in Austria (Photo: David Paternoster).



Inland brackish stands with *Bolboschoenus maritimus* near the village of Bulgarene, Bulgaria (Photo: Rossen Tzonev).

Habitat description

This habitat includes helophytes beds developing in inland saline or brackish lakes, ponds and other standing or slowly flowing waters (such as saline Mediterranean rivers) subjected to dry out during summer. The habitat may include, depending by the hydrological regime, emergent communities dominated by species tolerant to brackish or saline conditions such as *Bolboschoenus maritimus*, *Typha laxmannii*, *Typha domingensis*, *Phragmites australis*, *Schoenoplectus tabernaemontani*, *Schoenoplectus triqueter*, or communities dominated by tall rushes, such as *Juncus maritimus*, *Juncus acutus* and *Juncus subulatus*. The communities are species-poor and often mono-dominant. Similar communities in dune slacks are considered part of habitats B1.8a or B1.8b.

In warmer and continental parts of Europe, during the hot summer, the water level in the wetlands may decrease and the water may even completely disappear. Several species inhabiting this habitat, especially reed, may survive even under such hypersaline conditions. *Bolboschoenus maritimus* is the most widespread middle tall helophyte on the water margins of wetlands with different levels of salinity, growing in a range from freshwater to hypersaline water. These communities mainly inhabit the water fringes, but when a wetland dries out during the year, they may expand and cover the whole bottom of a lake or pond.

This habitat is typically in contact with the habitats C1.5 (Permanent inland saline and brackish waters), C3.5 (Periodically exposed saline shores with pioneer and ephemeral vegetation) and E6 (inland salt steppes). It is distributed in the arid continental and Mediterranean parts of Europe.

Indicators of quality:

- Minimum salinity around 0.5 ‰
- Natural high electrical conductivity of the water
- No alteration of the natural salinity range
- Dominance of halophytic emergent species rather than freshwater emergent species
- Absence of overgrowing with shrubs and trees
- No signs of eutrophication and dominance of ruderal species
- No indicator of negative anthropogenic influence (e.g. regulation of the water level, chemical pollution)

Characteristic species:

Flora:

Vascular plants: *Aster tripolium*, *Bolboschoenus maritimus*, *Carex melanostachya*., *Carex extensa*, *Carex distachya*, *Cirsium brachycephalum*, *Juncus acutus*, *Juncus gerardii*, *Juncus maritimus*, *Juncus subulatus*, *Lotus tenuis*, *Melilotus dentatus*, *Mentha pulegium*, *Phalaris arundinacea*, *Phragmites australis*, *Puccinellia distans*, *Puccinellia limosa*, *Puccinellia peisonis*, *Schoenoplectus litoralis*, *Schoenoplectus pungens*, *Schoenoplectus tabernaemontani*, *Schoenoplectus triqueter*, *Scorzonera parviflora*, *Typha domingensis*, *Tripolium pannonicum*, *Typha laxmannii*

Fauna:

Invertebrates: *Lestes macrostigma*, *Scirpophaga praelata*

Vertebrates: wintering ducks (e.g. *Anas crecca*, *Anas acuta*, *Ana platyrhynchos*, *Netta rufina*), *Anser anser*, wintering and migrating waders (e.g. *Gallinago gallinago*, *Himantopus himantopus*), *Rallidae*

Classification

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

EUNIS:

C3.1 Species-rich helophyte bed

C3.2 Water-fringing reedbeds and tall helophytes other than canes

Annex 1:

1340* Inland salt meadows (*small part*)

EuroVegChecklist:

- Scirpion maritimi Dahl et Hadac 1941
- Phragmition communis W. Koch 1926
- Typhion laxmannii Losev et Golub in Golub et al. 1991
- Meliloto dentati-Bolboschoenion maritimi Hroudová et al. 2009
- Juncion maritimi Br.-Bl. ex Horvatić 1934

Emerald:

-

MAES-2:

Wetlands

IUCN:

5.14 Permanent saline, brackish or alkaline lakes

5.15 Seasonal, intermittent saline, brackish or alkaline lakes and flats

5.16 Permanent saline, brackish or alkaline marshes and pools

5.17 Seasonal, intermittent saline, brackish or alkaline marshes and pools

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

No

Justification

The habitat, although fragmented, is typical of shallow, temporary saline or brackish waters which are distributed over a large area in Europe and elsewhere.

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	160 Km ²	Increasing	Stable
<i>Belgium</i>	Uncertain	Km ²	-	-
<i>Bulgaria</i>	Present	Unknown Km ²	Decreasing	Decreasing
<i>Croatia</i>	Present	Unknown Km ²	Stable	Stable
<i>Cyprus</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Czech Republic</i>	Present	0.7 Km ²	Decreasing	Decreasing
<i>Denmark</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Estonia</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Finland</i>	Aland Islands: Uncertain Finland mainland: 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>France</i>	Corsica: Present France mainland: Present	unknown Km ²	Unknown	Unknown
<i>Germany</i>	Present	unknown Km ²	Unknown	Unknown
<i>Greece</i>	Crete: Uncertain East Aegean: Uncertain Greece (mainland and other islands): Present	156 Km ²	Unknown	Unknown
<i>Hungary</i>	Present	75 Km ²	Decreasing	Decreasing
<i>Ireland</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Italy</i>	Italy mainland: Present Sardinia: Present Sicily: Present	55 Km ²	Decreasing	Decreasing
<i>Latvia</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Lithuania</i>	Present	11 Km ²	Increasing	Stable
<i>Luxembourg</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Malta</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Netherlands</i>	Present	0.6 Km ²	Decreasing	Unknown
<i>Poland</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Portugal</i>	Madeira: Uncertain Portugal Azores: Uncertain Portugal mainland: Uncertain Savage Islands: Uncertain	Unknown Km ²	Unknown	Unknown
<i>Romania</i>	Present	20 Km ²	Unknown	Decreasing
<i>Slovakia</i>	Present	0.01 Km ²	Decreasing	Decreasing
<i>Slovenia</i>	Present	0.2 Km ²	Stable	Stable
<i>Spain</i>	Balearic Islands: Uncertain Canary Islands: Uncertain Spain mainland: Present	Unknown Km ²	Unknown	Unknown
<i>Sweden</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>UK</i>	Gibraltar: Uncertain Northern Island: Uncertain United Kingdom: Uncertain	Unknown Km ²	Unknown	Unknown

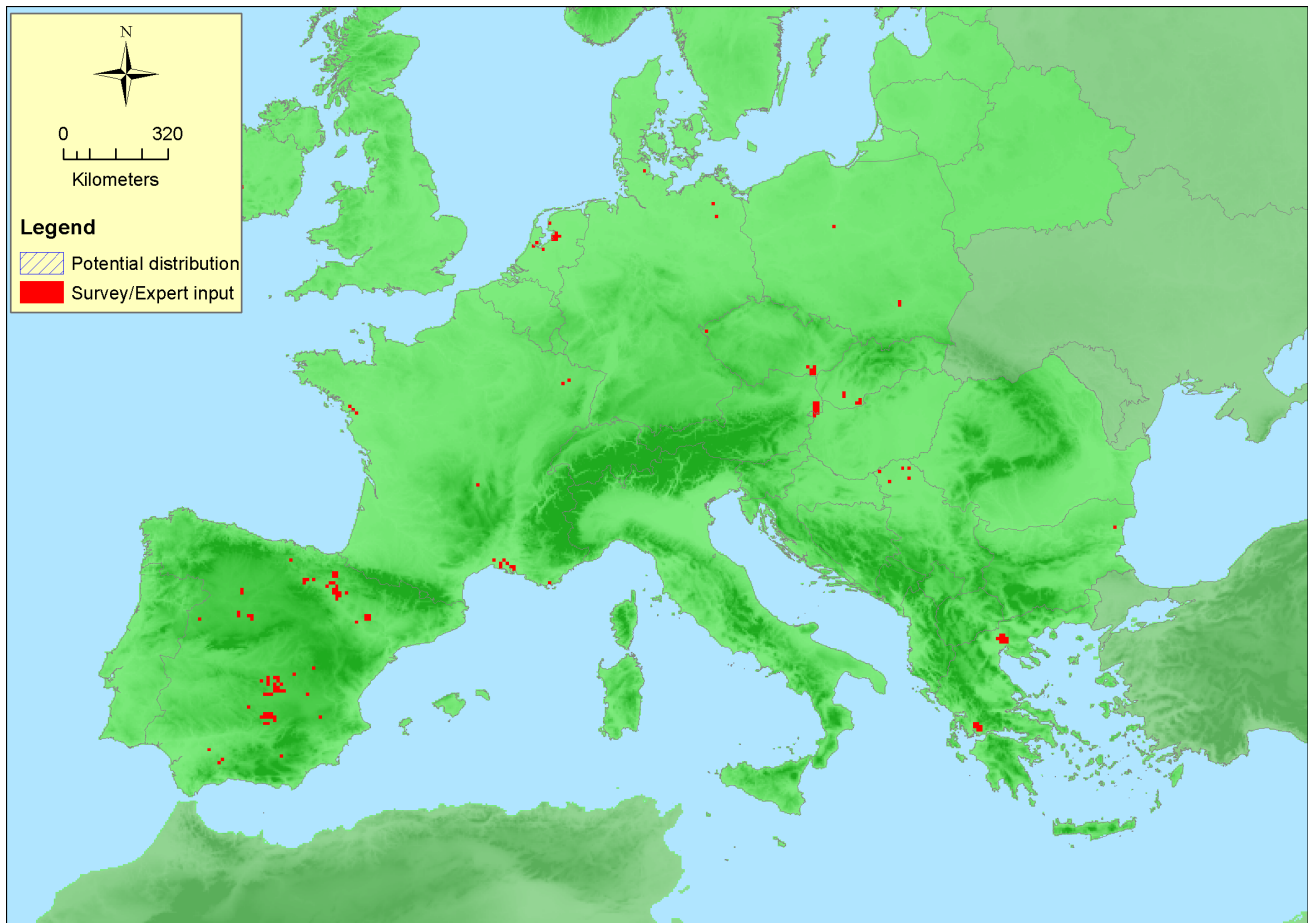
EU 28 +	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
<i>Albania</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Andorra</i>	Uncertain	Unknown Km ²	Unknown	Unknown

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>Bosnia and Herzegovina</i>	Present	3 Km ²	Decreasing	Decreasing
<i>Faroe Islands</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Former Yugoslavian Republic of Macedonia (FYROM)</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Guernsey</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Iceland</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Isle of Man</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Jersey</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>Monaco</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Montenegro</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Norway</i>	Jan Mayen: Uncertain Norway Mainland: Uncertain Svalbard: Uncertain	Unknown Km ²	Unknown	Unknown
<i>San Marino</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Serbia</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Switzerland</i>	Uncertain	Unknown Km ²	Unknown	Unknown
<i>Vatican City</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>	4121300 Km ²	144	478 Km ²	Estimates based on 10 countries
<i>EU 28+</i>	4121300 Km ²	149	481 Km ²	Estimates based on 11 countries

Distribution map



Map is incomplete with many data gaps, but the range is relatively well indicated. Data sources: ART17, EVA, EXP, LIT, NAT.

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

About 20%, assuming the habitat to be restricted to Eurasia and considering the slightly more restricted distribution of some of the typical species.

Trends in quantity

Recent trends, estimated based on 6 EU28 countries are -14,2% over the last 50 years (-14,5% for 7 EU28+ countries). Actually, the trends reported by 5 EU28 countries average -42,7%, while Austria reported a 45% increase for its area which accounts for 33% of the EU28 area. Historical trends for 3 EU28 countries calculated over a 133-230 yr period reveal a -87% decrease for an initial area of 2035 sq. km (-87% for 4 EU28+ countries for an initial area of 2044 sq km). Future trends are expected to decrease according to 6 experts (from -5 to -20%), to remain stable (Lithuania) or to increase (Austria), providing a mean quantitative estimate of -16,8%.

- 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 habitat is sparsely distributed over an area of more than 50 000 km² and has been either decreasing, stable or increasing over recent times.

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

Yes

Justification

As many wetlands, this habitat occupies typically small areas colonising parts of shallow lakes, ponds and rivers subjected to to dry out during summer.

Trends in quality

Extent of degradation over the last 50 years is estimated at 34% with a severity of 48% based on 4 EU28 and 5 EU28+ countries. Current trends are considered as decreasing (7 countries) or stable (5 countries). Very few experts have opinion about future trends (only one, expected decrease) and two reported historical decrease.

- Average current trend in quality

EU 28: Decreasing

EU 28+: Decreasing

Pressures and threats

Land reclamation for expansion of agricultural and urban areas are probably responsible for most of the historical decline in inland saline or brackish helophyte beds in europe. Declines over the last decades are mostly associated with human induced changes in hydraulic conditions: modification of catchment areas or changes in water allocation will translate into reduced hydroperiod leading potentially to more terrestrial vegetation, while input of freshwater to serve human uses such as waterfowl hunting or ecotourism in dry areas will translate into increased flooding and decreased salinity favouring tall helophyte dominated vegetation.

List of pressures and threats

Agriculture

Cultivation

Grazing

Abandonment of pastoral systems, lack of grazing

Irrigation

Natural System modifications

Human induced changes in hydraulic conditions

Landfill, land reclamation and drying out, general

Canalisation & water deviation

Flooding modifications

Modification of hydrographic functioning, general

Modification of standing water bodies

Saltwater intrusion of groundwater

Other human induced changes in hydraulic conditions

Climate change

Droughts and less precipitations

Conservation and management

Avoid input of freshwater that would modify water (soil) salinity and prevent seasonal dry periods. Avoid embankment, modification of cathment area or water derivation that would result in absence of flooding (which can be corrected by water input in some areas). From a broader nature conservation point-of-view tall helophytes may form a threat to more endangered saline or brackish grasslands. Therefore extensive grazing should be promoted where tall helophytes are at risk of expansion.

List of conservation and management needs

Measures related to wetland, freshwater and coastal habitats

Restoring/Improving the hydrological regime

Conservation status

In some inland sites the habitat type may be considered as a small part of Annex 1-type 1340. Also some sites may have been considered under 1410, but 1410 relates to coastal habitats.

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

Yes, if adequate water levels/hydroperiods or shores can be restored. Pending on the situation, this can be done through indirect intervention (eg improving catchment area functionality) or naturally (by stopping water input).

Effort required

20 years
Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-14 %	unknown %	unknown %	-72 %
EU 28+	-14 %	unknown %	unknown %	-87 %

The estimated reduction in quantity over the last 50 years is calculated based on territorial data of 6 EU28 countries and one additional EU28+ country, leading to an average value of -14.2% for EU28 and -14.5% for EU28+. In fact, the trend reported by 5 EU28 countries averages -42.7%, while Austria reported a 45% increase for its area which accounts for 33% of the EU28 area. Historical trends for 3 EU28 countries calculated over a 133-230 year period reveal a -72% decrease for an initial area of 2035 sq. km². Also here Austria reported an increase, which is overruled by large decreases in Hungary and the Czech Republic.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	> 50 000 Km ²	No	No	No	>50	No	No	No	No
EU 28+	> 50 000 Km ²	No	No	No	>50	No	No	No	No

The EOO, AOO and number of locations of the habitat are larger than the thresholds for 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	33 %	38 %	unknown %	unknown %	unknown %	unknown %
EU 28+	31 %	38 %	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%

Degradation in quality over the last 50 years is estimated to have affected about 31% of the area with a severity of 38%, based on data from 6 EU28 and 1 EU28+ countries. Current trends are considered as decreasing (7 countries) or stable (5 countries). Very few experts have data on future trends and only two countries reported quantitative values for historical decrease.

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	EN	LC	LC	LC	LC	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	LC	DD	DD	EN	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
Endangered	A3	Endangered	A3

Confidence in the assessment

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

Assessors

B. Poulin

Contributors

Habitat definition: R. Tzonev

Territorial data: S. Armiraglio, S. Assini, G. Buffa, A. Čarni, P. Finck, N. Juvan, A. Mikolajczak, Z. Molnár, D. Paternoster, V. Rašomavičius, U. Raths, U. Riecken, J. Šibík, A. Ssymank, K. Šumberová, R. Tzonev, D. Viciani, E. Weeda

Working Group Freshwater Habitats: G. Arts, F. Landucci, J.A. Molina, B. Poulin, H. Toivonen

Reviewers

J. Janssen

Date of assessment

14/12/2015

Date of review

18/01/2016

References

Hroudová, Z., Hrivnák, R., Chytrý, M. 2009. Classification of inland Bolboschoenus-dominated vegetation in Central Europe. *Phytocoenologia* 39:205-215.