

A2.5d Mediterranean and Black Sea coastal salt marsh

Summary

This salt marsh type can be found on fine sand and muddy coastal sediments around the more sheltered shores of the western Black Sea and Mediterranean, and extending around the SW Iberian coast into the Atlantic where tidal fluctuation is more pronounced. The vegetation is dominated by perennial and shrubby halophytes but the plant communities vary according to regional climate, the salinity (particularly in the Mediterranean with summer droughting) and sediment type. The habitat forms an important foraging and breeding habitat for wetland birds. Disturbance with tourism and other forms of coastal development, over-grazing and pollution are serious threats and the habitat needs strict protection, profiting from restoration of hydrologic functioning and regulation of salt production.

Synthesis

The reduction in quantity over the last 50 years is on average 13%. At the same time there is some quality decline (affecting 23-30% of the habitat with 51% severity). These trend values do not meet the thresholds for the different Red List criteria. However, the habitat type is assessed as Near Threatened (NT) because of the reduction in quality, meeting almost the thresholds for Vulnerable. The overall result may be slightly underestimated, as the most similar Annex I-habitats are in a relatively bad conservation status in the Mediterranean region.

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Near Threatened	C/D1	Near Threatened	C/D1

Sub-habitat types that may require further examination

The habitat type is relatively diverse, with different types of wetlands and different sizes. A main division could be made between the Mediterranean and the Black Sea salt marshes, as the former ones are much more diverse, and the second one resemble inland salt marsh habitats.

Habitat Type

Code and name

A2.5d Mediterranean and Black Sea coastal salt marsh



A2.5d *Juncetum maritimi* in Beloslavsko Lake near Varna, Northern Black Sea, Bulgaria (Photo: Rossen Tzonev).



A2.5d Mediterranean salt marsh in northern Croatia (Photo: J. Franjic).

Habitat description

These coastal salt marshes include various Mediterranean and western Black Sea plant communities of the classes *Juncetea maritimi* and *Salicornietea fruticosae* which are under influence of saline sea water. On the thermo-Atlantic coast along the SW Iberian Peninsula tidal flooding is relevant and determines communities zonation. The northern limit of this habitat along the Atlantic shores is the Mondego river mouth in Central Portugal. In the Mediterranean Sea and the Black Sea, soil texture, salinity and water content govern the main gradients. The vegetation is dominated by perennial and shrubby halophytes growing on the extreme upper shores of low sedimentary coasts, sheltered from the waves mechanical action.

The habitat can develop on a variety of sandy and muddy sediments, but in coasts with coarse sands beach communities develop (habitat B1.1b). The species composition is diverse, depending on the geographical range and the climatic conditions. On the Black Sea coast this habitat is presented mainly by mono-dominant communities of the tall rushes *Juncus maritimus* and/or *Juncus acutus*. Besides, shrub communities of *Halocnemum strobilaceum* occur in the Northern Black Sea coast of Romania and Ukraine. However, in the Danube Delta and on the marine sandbanks within the Razelm-Sinoe lagoon complex (known as the southern Delta), behind sand dunes or around saline ponds and lakes, salt marshes occur with vegetation more similar to continental inland salt marshes, for example with *Salicornia perennans*, *Puccinellia limosa* and *Juncus gerardi*.

In the Mediterranean the habitat is much more diverse, especially in the Iberian Peninsula and in southern Italy (Sicily, Apulia, Calabria), where soil salinity levels reach the highest values due to extreme climatic summer drought. In these parts of the range the habitat forms a mosaic of tall rushes mixed with shrubby and other herbaceous species, often with succulent stems and/or leaves, forming halophytic shrublands and thickets (alliances *Arthrocnemion glauci* and *Salicornion fruticosae*). In soils with brackish water beds of reed and other tall helophytes grow. Annual halophytic species (*Salicornia* sp., *Suaeda* sp) may exist in small spots occupying depressions between the communities of tall rush, shrub and thickets (class *Thero-Salicornietea*), while *Frankenia* spp. and *Sagina maritima* (class *Saginetea maritimae*) grow on the higher parts of sandy shores. The habitat further includes Mediterranean halo-psammophile meadows (*Plantaginion crassifoliae*), humid halophilous moors with the shrubby stratum dominated by *Artemisia caerulescens* (*Agropyro-Artemision caerulescentis*), halo-nitrophilous shrubby seablith thickets of *Suaeda vera* rarely inundated (*Suaedion verae*), shrub communities of *Limoniastrum* sp. (*Limonastrion monopetalii*, *Limonium algarvenso-lanceolatii*), and communities in the Dalmatian coastal region, in somewhat drier habitats with less salt, which are not directly affected by waves and tides (*Agropyro-Plantaginion maritime*). On intertidal muds, cord grasses (*Spartinion maritimae*) may grow, but these are relatively rare in the Mediterranean and more common along the Atlantic coast.

Characteristic species:

Vascular plants: *Aeluropus littoralis*, *Artemisia caerulescens*, *A. gallica*, *A. santonicum*, *Arthrocnemum macrostachyum*, *Aster tripolium*, *Atriplex hastata*, *Bassia hirsuta*, *Carex extensa*, *C. distachya*, *Centaureum tenuiflorum*, *Centaurea dracunculifolia*, *Elymus athericus*, *Elymus elongatus*, *Limbarda crithmoides*, *Iris spuria*, *Juncus acutus*, *J. maritimus*, *J. subulatus*, *Gladiolus communis*, *Gypsophila tomentosa*, *Halocnemum strobilaceum*, *Halimione portulacoides*, *Frankenia hirsuta*, *F. pulverulenta*, *Limoniastrum monopetalum*, *Limonium algarvenso-lanceolatum*, *L. bellidifolium*, *L. gmelini*, *L. narbonense*, *L. oleifolium*, *Limonium supinum*, *L. virgatum*, *Linum maritimum*, *Lotus presili*, *L. tenuis*, *Plantago crassifolia*, *P. cornuti*, *P. maritima*, *Rumex pulcher*, *Puccinellia convoluta*, *P. festuciformis*, *Schoenus nigricans*, *Salsola soda*, *Sarcocornia fruticosa*, *S. perennis*, *Senecio aurícula*, *Sonchus crassifolius*, *S. maritimus*, *Suaeda maritima*, *S. splendens*, *S. vera*, *Triglochin bulbosum*.

Indicators of good quality:

In good conditions the habitat is a complex of different salt-marsh meadows, perennial herbs and halophytic succulent shrubs, annuals, halo-nitrophilous communities and beds of tall helophytes. It is sensitive to changes in the water regime (drainage, flooding), which quickly change the balance between the communities in the salt marshes due to aridification or over wetting. The following characteristics may be considered as indicators of good quality, but these indicators differ in different regions and between communities:

- occurrence of mosaics and gradients between the different plant communities in the salt marshes, with no over-representation of some groups;
- long-term stability in the dynamic of flooding and the water salinity.

Classification

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

EUNIS:

A2.5 Coastal saltmarshes and saline reedbeds

EuroVegChecklist alliances:

- *Agropyro-Artemision coerulescentis* Pignatti 1953
- *Agropyro-Plantaginion maritimi* Horvatic 1934
- *Agrostio-Elytrigion athericae* S. Brullo et Siracusa 2000
- *Arthrocnemion glauci* Rivas-Mart. et Costa 1984
- *Frankenio laevis-Armerion maritimae* Géhu et Géhu-Franck 1975
- *Juncion maritimi* Br.-Bl. ex Horvatic 1934
- *Limoniastrion monopetali* Pignatti 1952
- *Limonion algarvenso-lanceolati* Costa et al. 2012
- *Plantaginion crassifoliae* Br.-Bl. in Br.-Bl. et al. 1952
- *Polypogonion subspathacei* Gamisans 1990
- *Romuleo bulbocodii-Saginion* (Wolff 1968) Mucina 2012
- *Salicornion fruticosae* Br.-Bl. 1933
- *Spergularion macrorhizae* Gamisans 1990
- *Spartinion glabrae* Conard 1935
- *Suaedion verae* (Rivas-Martínez, et al. 1990) Rivas-Martínez et al. 1999
- *Thero-Salicornion* Br.-Bl. 1933;

Annex 1:

1310 Salicornia and other annuals colonising mud and sand

1320 Spartina swards (*Spartinion maritimae*)

1410 Mediterranean salt meadows (*Juncetalia maritimi*)

1420 Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*)

Emerald:

A2.5 Coastal saltmarshes and saline reedbeds

MAES:

Marine inlets and transitional waters

IUCN:

13.4 Coastal Brackish/Saline Lagoons/Marine Lakes

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

Yes

Regions

Black Sea

Mediterranean

Justification

The habitat is representative for the climatic and biotic conditions in the Mediterranean and the Black Sea 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)
<i>Bulgaria</i>	Present	50 Km ²	Decreasing	Decreasing
<i>Croatia</i>	Present	2.7 Km ²	Decreasing	Decreasing
<i>Cyprus</i>	Present	4 Km ²	Stable	Stable
<i>France</i>	Corsica: Present France mainland: Present	213 Km ²	Decreasing	Decreasing
<i>Greece</i>	Crete: Present East Aegean: Present Greece (mainland and other islands): Present	69 Km ²	Decreasing	Decreasing
<i>Italy</i>	Italy mainland: Present Sardinia: Present Sicily: Present	377 Km ²	Decreasing	Decreasing
<i>Portugal</i>	Portugal mainland: Present	126 Km ²	Decreasing	Decreasing
<i>Romania</i>	Present	4 Km ²	-	-
<i>Slovenia</i>	Present	1.2 Km ²	Stable	Stable
<i>Spain</i>	Spain mainland: Present	296 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)
<i>Albania</i>	Present	15 Km ²	Decreasing	Decreasing
<i>Montenegro</i>	Present	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
EU 28	4614900 Km ²	1737	1137 Km ²	
EU 28+	4614900 Km ²	1741	1137 Km ²	

Distribution map



The map is rather complete, except for some data gaps in Croatia and Albania. Data sources: ART17, EVA.

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

Probably more than 70%. The area of the habitat in the other Mediterranean and Black Sea countries, like Montenegro, Turkey, Northern-African countries, Ukraine and Russia is unknown, but it is probably less than in the Mediterranean countries of the European Union.

Trends in quantity

The decrease is about -13% for EU over about the last 50 year (based on calculations from territorial data, covering circa 80% of the reported area). After 1960 the habitat has decreased about 20% in Spain, Portugal and Croatia, and about 10% in Italy, Greece and Bulgaria, mainly because of touristic development and drainage of wetlands. The reduction in Romania, France, Slovenia and Cyprus has been less or is more-or-less stable. A slight is expected to continue in Bulgaria, Spain, Portugal, France and probably Croatia and Greece, but the habitat area is more or less stable in Romania, Italy and Slovenia. Outside the EU28, only data from Albania (slight decrease) was reported.

- 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 widely distribution over the Mediteranean and Black Sea coastal region.

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

No

Justification

The habitat on most sites occurs in relatively large areas.

Trends in quality

On average the decline in quality affects 23% of the extent of the habitat, with an intermediate severity of decline (51%). The trends have been calculated from the reported trends in quality (extent and severity) by Spain (25%), Portugal (30%), Bulgaria (30%), Italy (35%), Greece (3%) and Croatia (10%) in the

territorial data. The severe decline is mostly caused by touristic development, changes in hydraulic conditions, global climatic processes and pollution. For the EU28+ countries only a slight decrease with also slight severity was reported from Albania.

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

Pressures and threats

The most important threats are (1) new urbanised areas and human habitations in or near coastal sites, because of touristic development, (2) changes in the hydraulic conditions of salt marshes, (3) different kinds of pollution, (4) overgrazing, (5) industrial salt production, and (6) climatic change.

List of pressures and threats

Agriculture

- Agricultural intensification
- Grazing
- Intensive grazing

Urbanisation, residential and commercial development

- Urbanised areas, human habitation

Pollution

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

Natural System modifications

- Human induced changes in hydraulic conditions
- Saltwater intrusion

Climate change

- Changes in abiotic conditions

Conservation and management

The most important conservation measure is a strict protection of the salt marshes, including their hydraulic conditions, as the habitat is very sensitive to changes in flooding and hydrological functioning. Projects for the restoration of some habitat areas include restoring of the hydraulic conditions of salt marshes and regulation of salt production.

List of conservation and management needs

Measures related to wetland, freshwater and coastal habitats

- Restoring/Improving water quality
- Restoring/Improving the hydrological regime
- Restoring coastal areas

Measures related to spatial planning

- Establish protected areas/sites

Measures related to special resource use

- Regulating/Management exploitation of natural resources on land

Conservation status

Annex 1:

1310: BLS U1, MED U1

1320: MED XX

1410: BLS U1, MED U2

1420: MED U2

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

The habitat has some capacity to recover naturally but it is dependent on geomorphological processes which occur relatively slow. It could be restored in some areas especially with the restoring of hydraulic conditions, management of salt production, ect.

Effort required

20 years	200+ years
Through intervention	Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-13% %	unknown %	unknown %	unknown %
EU 28+	-13% %	unknown %	unknown %	unknown %

The decrease is -13% for EU28 over about the last 50 year, based on calculations from territorial data, covering circa 80% of the reported area. The habitat has decreased about 20% in Spain (now is 296 km²), 10% in Bulgaria (50 km²), 21% in Portugal (126 km²), 12.5% in Italy (now 377 km²), 10% in Greece (now 69 km²) and 20% in Croatia (2.7 km²) during the last 40 to 60 years. In total it was reduced from 1318 km² to 1142 km², about 13%. The decrease in Albania is only about 1%. There is no information on longer historical trends. In future a small further decline is expected, but quantitative data is not available.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	686055 Km ²	Yes	Yes	no	1742	Yes	Yes	no	no
EU 28+	686055 Km ²	Yes	Yes	no	1742	Yes	Yes	no	no

There are threatening processes and negative trends, but the habitat is too widely distributed to meet the criteria for B1, B2 or 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	23-30 %	51 %	unknown %	unknown %	unknown %	unknown %
EU 28+	23-30 %	51 %	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 overall extent and severity are the weighted average calculated from reported data from Spain, Portugal, France, Italy, Croatia, Greece, Cyprus, Slovenia, Bulgaria and Romania. The involved countries could not provide enough information on long historical or future trends in quality (CD2, CD3, C2, C3, and D2). The changes in quality are both abiotic (changes in hydraulic conditions, climatic changes) and biotic, so C/D1 has not been split into C1 and D1. As some countries reported ranges in extent, also a maximum extent has been calculated. This value is about 30%. The combined scores of 30% extent affected with a severity of 51% lead to the conclusion Near Threatened. The overall result may be slightly underestimated, as for the similar Annex I-habitats (1410, 1420) the overall conclusion for the MED region was U2.

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	NT	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	LC	DD	DD	DD	LC	LC	LC	NT	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
Near Threatened	C/D1	Near Threatened	C/D1

Confidence in the assessment

Medium (evenly split between quantitative data/literature and uncertain data sources and assured expert knowledge)

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