A2.5a Arctic coastal salt marsh

Summary

Arctic salt marsh develops along the muddy intertidal shores of cold regions in arctic Europe, and is known from northern Iceland, northern Norway and Svalbard, therefore only outside the EU28. Although it shares some flora with Atlantic salt marsh, the distinguishing feature is an abundance of halophyte plants with a circumpolar distribution. Stands are usually small and there can be more open stretches of bare sediment. The habitat is under threat from coastal erosion, sea level rise, pollution and increased coastal recreation.

Synthesis

No historical decline is known, but a general decline in salt marsh area is expected for the arctic region as a whole, as a result of coastal erosion due to sea level rise. Without any quantitative data for the EU28+ region the future trend in area (criterion A2a) is assessed to be at least close to Vulnerable, leading to the conclusion Near Threatened (NT). The same conclusion results from the relatively low number of sites (AOO) in combination with a future threat causing declines (criterion B2).

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
-	-	Near Threatened	A2a, B2

Sub-habitat types that may require further examination

The species composition between Island, northern Norwaý and Svalbard differs rather much and three different subtypes may be distinguished.

Habitat Type

Code and name

A2.5a Arctic coastal salt marsh

White Sea coast with *Aster tripolium* near Kolezma village Belomorsky Russia (Photo: Tatiana Minaeva).

Salicornia pojarkova at Stråskogen in the region Finnmark, Norway (Photo: Mora Aronsson).

Habitat description

This habitat comprises the coastal salt marshes from the Arctic Sea, in Europe found in estuaries and fjords along the north coast of Iceland, Norway and Russia, and besides on acrtic islands like Svalbard and Nova Zembla. Several salt-marsh species of the Atlantic coastal marshes do not reach this region, while other, typical arctic species are mainly restricted to it and only incidentally are found more southwards. The

distinction between the Arctic region and the Northern Atlantic region is – of course – gradual, but for the salt marshes the presence of the alliances *Puccinellion phryganodes* (in lower salt-marsh belts) and *Caricion glareosae* (in higher belts) is a good indicator for the Arctic region. For the distinction between Atlantic and Arctic salt marshes we follow the boundaries and divisions given by Dijkema et al. (1984) for maritime plants (situated roughly between the 65 and 70°N latitudinal line). According to this definition the habitat type does not occur in the European Union, but within the EU28+ arctic salt marshes are found on the north-coast of Norway, the north-coast of Iceland, the Svalbard archipelago and Jan Mayen island. Besides the characteristic species of the mentioned alliances, *Puccinellia phryganodes* and *Carex glareosa*, other typical species of these arctic salt marshes are *Potentilla anserina* ssp*. egedii*, *Stellaria humifusa*, *Gentianella detonsa, Carex salina*, *Carex ursina*, *Carex subspathacea* and – in muddy places – the "Ice-Sea glasswort" *Salicornia pojarkova*. The habitat has several species in common with the Atlantic salt-marshes, like some species with a northern distribution in the Atlantic and Baltic (*Puccinellia distans* subsp. *borealis*, *Carex mackenziei*) and some widespread salt-marsh species like *Triglochin maritima, Plantago maritima, Agrostis stolonifera* and *Festuca rubra*, which this far north don't become dominant.

Arctic coastal salt marshes are under pressure from coastal erosion, changes in sea ice, increased industriell activities ofshore as oil-drilling, and pollution.

Indicators of good quality:

- Few open non-vegetated areas
- Dominance of typical arctic species
- No signs of erosion
- No tracks of recreation or pollution.

Characteristic species:

Flora

Vascular plants: *Agrostis stolonifera*, *Carex glareosa, Carex mackenziei, Carex salina, Carex subspathacea, Carex ursina, Cochlearia officinalis, Festuca rubra, Gentianella detonsa, Juncus bufonius, Puccinellia distans* subsp*. borealis, Puccinellia phrygnoides, Plantago maritima, Triglochin maritima, Potentilla anserina* subsp*. egedii, Stellaria humifusa*

Mosses: *Bryum salinum*, *Drepanocladus uncinatus*

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):

Puccinellion maritimae Christiansen 1927 (= *Festucion maritimae*)
Armerion maritimae Br.-Bl. et De Leeuw 1936
Puccinellion phryganodis Hadac 1946
Caricion glareosae Nordhagen 1954
Atriplicion littoralis Nordhagen 1940

Annex 1:

1310 Salicornia and other annuals colonising mud and sand (*small part*)

Emerald:

-

MAES-2:

Marine inlets and transitional waters

IUCN:

12.5. Salt Marshes [Emergent Grasses]

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

Regions
Arctic

Justification
The habitat occurs only outside the European Union and only in the Arctic biogeographical region

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)

EU 28 +	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Iceland	Present	0.5 Km^2	Stable	Stable
Norway	Jan Mayen: Uncertain Norway Mainland: Present Svalbard: Present	1.0 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
EU 28	- Km^2	-	- Km^2	not in EU28
EU 28+	1587350 Km^2	38	1.5 Km^2	The area is manly based on expert judgement as very little data exist on this habitat

Distribution map
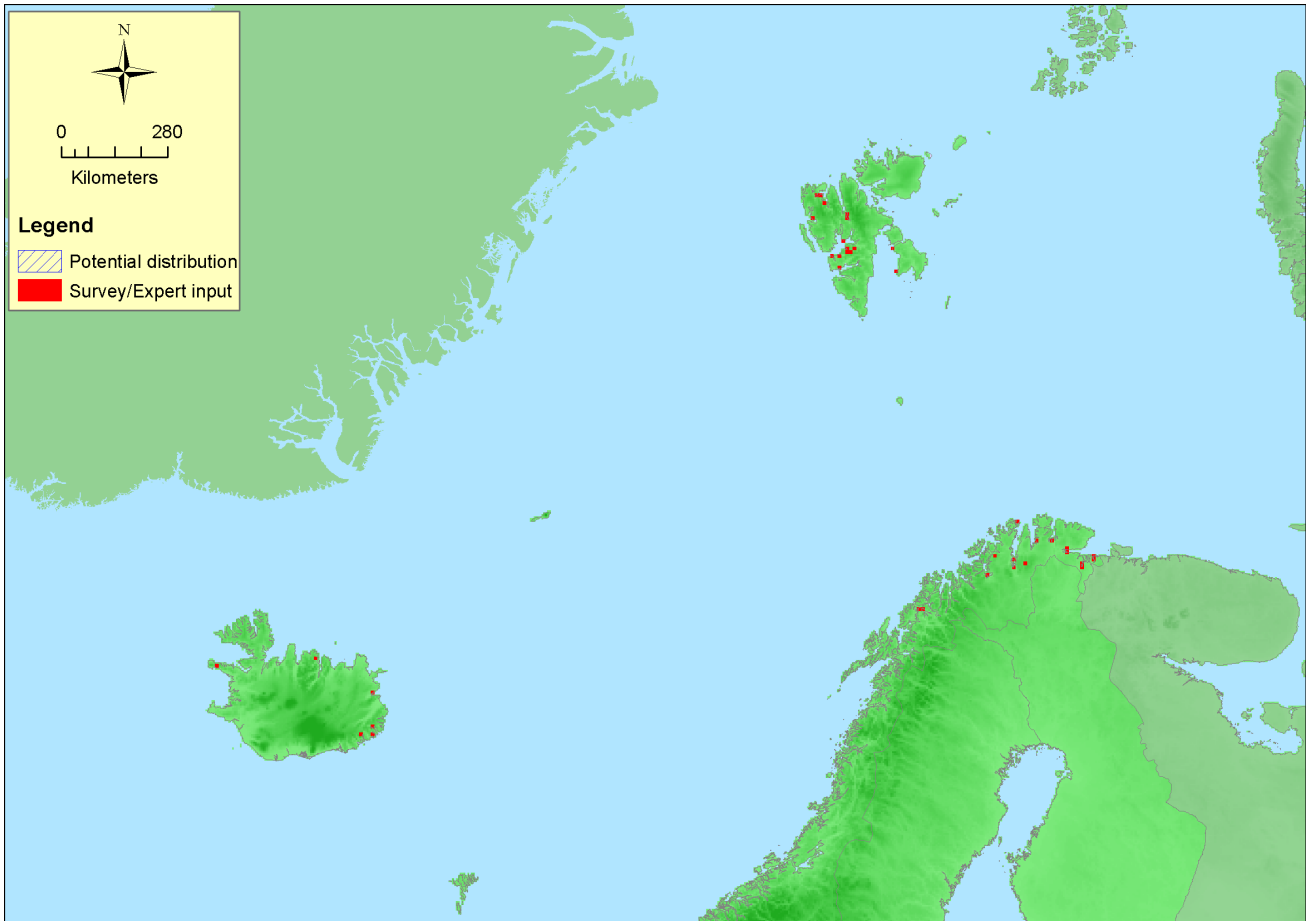
The map provides an underestimation of the distribution due to data gaps, although the range is well indicated. More sites are known in northern Iceland and northern Norway, and therefore the AOO is expected to be a bit higher than 50. On Svalbard several of the caracteristic species are rather common, an indication that the habitat occurs in several parts of western Svalbard, but within a small area. In general little information exists on shore habitats from Svalbard. Data sources EVA, GBIF.

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

0%. The habitat occurs only outside EU28.

Trends in quantity

As far as is known the habitat is stable over time and no present pressures causing area decline are known from the arctic region in the EU28+. However, declines in area are expected as a result of sea level change due to climate change. The International Arctic Science Committee a.o. (2011) mentions in the *State of the Arctic Coast 2010* that flooding of coastal zones is increasing in the arctic, leading to destruction or redistribution of existing salt marshes. They indicate that, because of the very low species diversity, the arctic salt marshes are expected to be extremely vulnerable to rapid changes, especially supratidal meadows, mud flats and marshes that are periodically inundated at high tides. While many salt marshes in temperate regions keep pace with slow sea-level rise through inorganic sedimentation and organic production, there are many observations of flooded tundra along Arctic coasts, where vertical accretion is clearly not keeping pace.

- Average current trend in quantity (extent)
  EU 28: -
  EU 28+: Stable
- Does the habitat type have a small natural range following regression?
  No

Justification

The habitat has a large range, covering the complete arctic region, and no data on decline is known from the last 50 years.

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

  Yes

  Justification

  The habitat is very rare in the part of Europe covered by the Red List, because the natural conditions to develop are very rare in the arctic region.

Trends in quality

No data on trends in quality are known.

- Average current trend in quality

  EU 28: -

  EU 28+: Unknown

Pressures and threats

No past and present threats are known, but in future climate change will cause sea level rise, which is expected to lead to erosion of salt marshes. Another possible future threat are effects from off shore oil production, if such wil be astablished in the area.

List of pressures and threats

Pollution

> Oil spills in the sea

Climate change

> Sea-level changes

Conservation and management

As the habitat is not under any actual threat, no conservation or managment are urgently needed, except that a representative number of sites should be protected as nature reserves. Further conservation measures to prevent erosion may be considered in areas with rising sea level.

List of conservation and management needs

No measures

> No measures needed for the conservation of the habitat/species

Measures related to wetland, freshwater and coastal habitats

> Other wetland related measures

Conservation status

Region not covered in Article 17 report.

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

It is hard to predict if a destroyed habitat will recover, because processes occur very slowly in the Arctic environment. The natural fragmentation of the habitat is high, which makes it unpredictable how long it will take for charcateristic species to find there way back to restored salt marshes under natural

conditions, although in general many salt marsh species may be dispersed relatively well by sea water or birds. If the natural contitions are restored and species come back there is still uncertanty about the success rate, because of the harsh climate.

Effort required

50+ years	200+ years
Through intervention	Naturally

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	- %	- %	- %	- %
EU 28+	0 %	decline %	unknown %	unknown %

No present or historical decline is known, but future declines are expected due to sea level rise, resulting in salt marsh erosion. Quantitative data on the expected declines are not known. Although precise data are lacking, the future trends are assessed as (at least) Near Threatened under criterion A2a.

Criterion B: Restricted geographic distribution

Criterion B	B1				B2				B3
	EOO	a	b	c	AOO	a	b	c	
EU 28	- Km^2	-	-		-	-	-		
EU 28+	158735 Km^2	No	Yes	No	>50	No	Yes	No	No

The AOO calculated from the map is 38, but as data gaps exist in the distribution map it is expected to be slightly higher than 50 in reality. The habitat occurs in more than 10 locations and is only known from outside the EU28. Sea level rise and resulting coastal erosion is a threatening process that is expected to cause a negative decline in future (B1b, B2b). As the AOO is expected to be slightly higher than 50, criterion B2 is assessed as Near Threatened, based on B2b.

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

No data on changes in quality are known.

Criterion E: Quantitative analysis to evaluate risk of habitat collapse

Criterion E	Probability of collapse
EU 28	-
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	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EU28+	LC	NT	DD	DD	LC	NT	LC	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
-	-	Near Threatened	A2a, B2

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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