A2.5b Baltic coastal meadow

Summary

Baltic Coastal meadow occurs on clayey or gravelly coastal sediments around the Baltic sea, subject to only trivial tidal fluctuations with often rather brackish waters and best developed in large bays and sheltered rocky coves. Usually the vegetation is disposed over gently sloping ground without creeks and pans, and shows a zonation from below to above the mean water level, including both halophytic saltmarsh assemblages and more transitional plant communities above, even terrestrial grasslands. There is a boreo-arctic contingent in the flora which includes endemics developed since the Ice Ages. Traditionally grazed or mown, abandonment became widespread with succession towards reedbeds which are not included in the type. Just fragments now remain though restoration has been undertaken in many places. The quality is easier and faster to restore than the area and most of the sites that are managed today have a good or rather good quality.

Synthesis

The Baltic coastal meadows have declined all over its distribution area during the last 100-150 years. The decline has been going on for a long time and started earlier in the north than in the south, and threfore it is hard to assess how much has been lost over the last 50 years. The loss is at least 60%, but may even be more than 90%. According to criteria A1 (trend in area) the habitat is assessed at least as Endangered (EN).

Overall Category & Criteria			
EU 28		EU 28+	
Red List Category	Red List Criteria	Red List Category	Red List Criteria
Endangered	A1	Endangered	A1

Sub-habitat types that may require further examination

The gradient from north to south in baltic sea is continous so division into subtypes is not needed.

Habitat Type

Code and name

A2.5b Baltic coastal meadow

Baltic coastal meadow at Arholma, Sweden (Photo: Anders Jacobson).

Baltic coastal meadow at Arholma, Sweden (Photo: Anders Jacobson).

Habitat description

This habitat comprises natural or semi-natural grasslands along the coasts of the Baltic Sea. The habitat resembles A2.5c, Atlantic salt marshes, but in the Baltics tidal differences are much smaller, in the northern parts insignificant and the Baltic sea has a pronounced salinity gradient. Because of this, the species composition and zonation belts are different and the geomorphology is more flat, without pronounced levees and depressions. In general a zonation is found of specific communities in the lower parts, the hydrolittoral (below mean water level) and others in the higher parts (geolittoral, above mean water level). But species composition also changes in longitudinal direction over the area due to climatological as well salinity gradient that ranges from about 20‰ near the Kattegat, through 8‰ in the Darß-region to 2-5‰ in the Bothnian Gulf and Finnish Gulf. Tidal differences are small, and overruled by irregular, seasonal fluctuations in flooding regime due to storms, wind direction, changes in air pressure and drifting ice. The habitat is found on clayey sediments, sometimes mixed with gravelly substrates. Besides, the land upheaval of the northern parts of the Baltic Sea, continuing after the recession of the last glaciers in the ice ages, causes the development of saline meadows on non-sedimentary soils. Overall, the habitat is best represented in large bays, where clayey sediments are available, like in the Bothnian Bay and in Western Estonia.

In relatively saline areas, the most flooded, hydrolittoral and lower geolittoral belts harbour communities of the *Puccinellion maritimae*, with amongst others *Puccinellia maritima*, *Triglochin maritima* , *Spergularia maritima* and *Plantago maritima*, and of the *Spergulario-Puccinellion*, with *Puccinellia distans(*ssp. *distans* and ssp. *borealis)* and *Spergularia salina*. Sometimes *Salicornia europaea* is present. The total vegetation cover often is low (< 50%). However in areas strongly influenced by freshwater, like in the Darß, large helophytes or *Cyperaceae* of the *Scirpion maritimi* dominate the lower belts, mainly *Bolboschoenus maritimus*, but also *Schoenoplectus tabernaemontani*, *Eleocharis uniglumis* , *Carex paleacea* or *Carex halophila* may dominated such areas. The lower belt is especially pronounced in the northern part of the Bothnian Gulf, where the land uplift creates bare substrate that becomes colonized by pioneer species.

The higher, geolittoral belt has in general a closed vegetation cover and is characterized by communities of the *Armerion maritimae* and *Potentillion anserinae*, containing the following species: *Juncus gerardi*, *Festuca rubra*, *Agrostis stolonifera*, *Vicia cracca*, *Potentilla anserina*, *Carex nigra*, *Trifolium fragiferum*, *Lotus tenuis,* and *Calamagrostis stricta*. In many cases the species composition is a mixture of 'real' salt marsh species (halophytes) and more freshwater indicating species. In places with freshwater influence *Blysmus rufus* may dominate. On the higher edge of the meadows, the habitat may form transitions to or mosaics with grassland communities of the *Cynosurion cristati* (habitat E2.1a).

The Bothnian Gulf is one of the few areas in Northern-Europe where after the Ice Ages new, endemic taxa have developed. Endemics of the saline meadows are *Deschampsia cespitosa* ssp*. bottnica* (= *Deschampsia bottnica*), characteristic of gravelly shores within the salt meadows, and *Euphrasia bottnica*, which grows in the higher parts of the meadows. Also a high amount of boreal-arctic species is found here, having (sometimes rare) relict populations from a period when there existed a connection between the Baltic and the White Sea. Examples of such species are mainly found in brackish conditions, like *Puccinellia phryganodes* and *Primula nutans* ssp*. finmarchica*, more characteristic of Arctic salt marshes (habitat A2.5a), and *Carex glareosa*, *Carex mackenziei*, *Carex paleacea* and *Carex halophila* (in both habitat A2.5a and A2.5b). Most of these species grow in low grasslands and depend on grazing for their sustainable survival. Rare species in the saline meadows of the Baltic States is *Angelica palustris*, while along the East-German and Polish Baltic coast, Middle Sweden, southern Finland and Estonia the rare *Eleocharis parvula* forms pioneer communities on muddy, brackish soils in sheltered lagoons.

Traditionally the saline meadows have been more-or-less intensively grazed or mowed for ages, but due to recent abandonment of this type of land-use, in several parts of the Baltics the habitat is threatened by succession towards reed beds. Unlike for the Atlantic salt-marshes, such reed beds are not considered part

of the habitat itself, but are in the definition of C5.1.

The habitat forms an important breeding and resting sites for many water birds and migratory birds. It also contains a set of specialized insects, in many cases living on just one or a few halophytic plant species.

Indicators of good quality:

The following characteristics are considered as indicators of good quality:

- Regularly flooding with brackish water
- Low vegetation structure
- Absence of large stands of Phragmites australis
- Absence of shrubs
- Presence of rare or endemic species
- Presence of several zonation belts
- Reguarly erosion by sea ice

Characteristic species:

Flora
Vascular plants: *Agrostis stolonifera, Blysmus rufus, Bolboschoenus maritimus, Calamagrostis stricta,Carex glareosa, Carex mackenziei, Carex nigra, Carex paleacea, Centaurium littorale, Centaurium pulchellum, Eleocharis acicularis, Eleocharis parvula, Eleocharis uniglumis, Festuca rubra, Glaux maritima, Juncus gerardi, Odontites littoralis, Ophioglossum vulgatum, Phragmites australis, Plantago maritima, Potentilla anserina* subsp*. anserina, Potentilla anserina* subsp*. egedii, Puccinellia capillaris, Puccinellia distans, Salicornia europaea* (very rare)*, Spergularia maritima, Spergularia salina, Trifolium fragiferum, Triglochin maritima, Vicia cracca.*

Fauna
Birds: Dunlin (*Calidris alpina schinzii*)

Classification

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

Annex 1:

1630 Boreal Baltic coastal meadows, In the German and Polish Baltic coast included under 1330

EuroVegChecklist (alliances):

Festucion maritimae Christiansen 1927 (= Puccinellion maritimae)
*Armerion maritima*e Br.-Bl. et De Leeuw 1936
Atriplicion littoralis Nordhagen 1940
Thero-Salicornion Br.-Bl. 1933
Puccinellio maritimae-Spergularion salinae Beeftink 1965
Scirpion maritimi Dahl et Hadac 1941
Loto tenuis-Trifolion fragiferi Westhoff et Den Held ex de Foucault 2009 (= *Potentillion anserinae* Tx. 1947 p.p.)

Emerald:

A2.5 Coastal saltmarshes and saline reedbeds

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
Boreal
Continental

Justification
It is a very typical for the Baltic Sea coast.

Geographic occurrence and trends

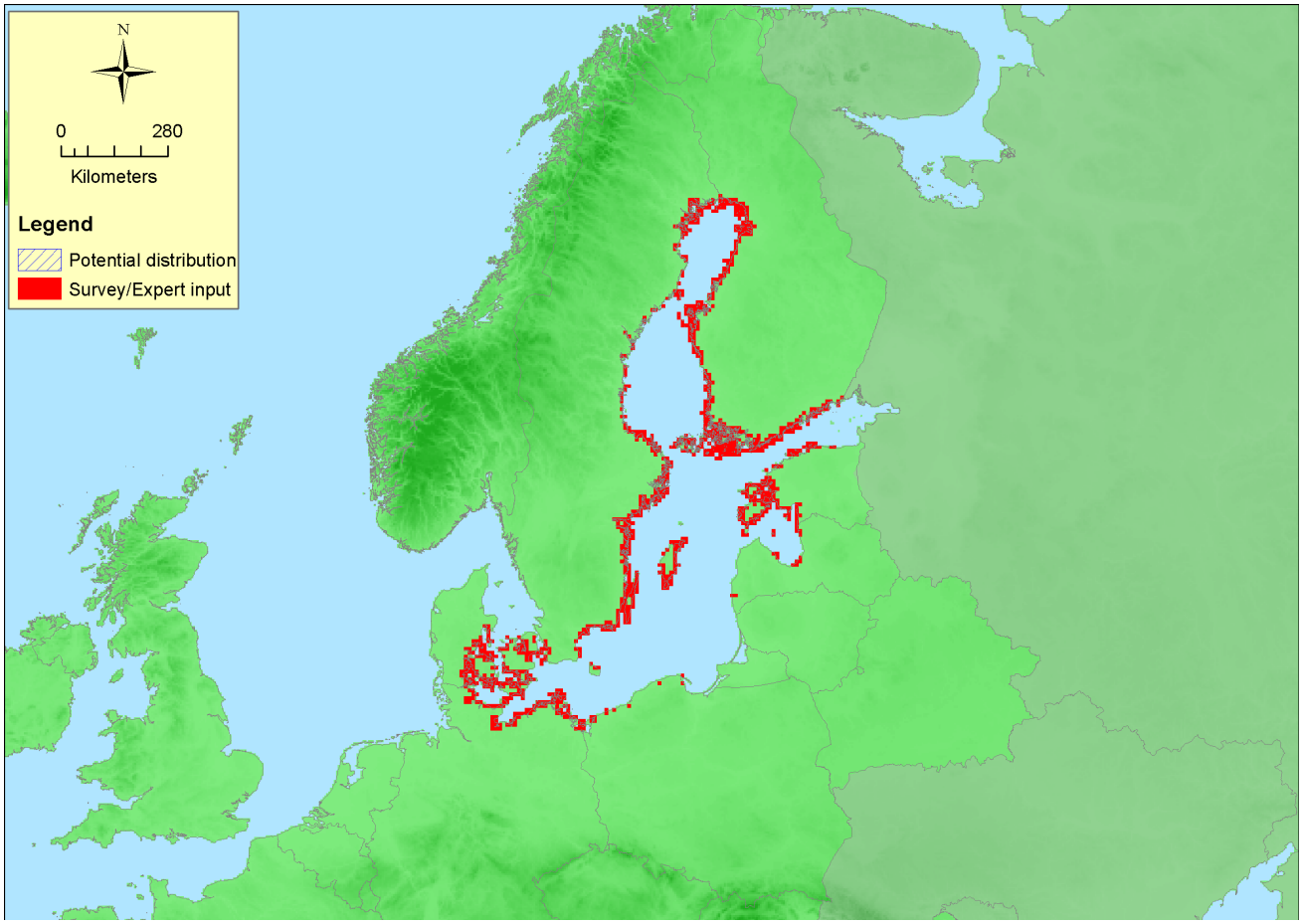
EU 28	Present or Presence Uncertain	Current area of habitat	Recent trend in quantity (last 50 yrs)	Recent trend in quality (last 50 yrs)
Denmark	Present	50 Km^2	Stable	Stable
Estonia	Present	205 Km^2	Stable	Decreasing
Finland	Aland Islands: Present Finland mainland: Present	60 Km^2	Decreasing	Decreasing
Germany	Present	40 Km^2	Decreasing	Decreasing
Latvia	Present	1.8 Km^2	Decreasing	Decreasing
Poland	Present	3.5 Km^2	Increasing	Stable
Sweden	Present	59 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)
Kaliningrad	Uncertain	Km^2	-	-

Extent of Occurrence, Area of Occupancy and habitat area

	Extent of Occurrence (EOO)	Area of Occupancy (AOO)	Current estimated Total Area	Comment
EU 28	814600 Km^2	1086	303 Km^2	Information is possibly lacking from Lithuania.
EU 28+	814600 Km^2	1086	303 Km^2	Data is lacking from Russia (Kalingrad, Saint Petersburg oblast).

Distribution map



The map is almost complete, with data gaps only in the Russian part of the Baltic Sea coast. Data sources: ART17.

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

More than 95%. Outside the EU28 the habitat may occur in the Saint Petersburg oblast and Kaliningrad.

Trends in quantity

In Finland, Germany, Sweden and Latvia the habitat has undergone negative trends over the last 50 years. The situation in Denmark is stable, Estonia unknown and Poland increasing. Overall the trend is a decline.

- 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 EOO is relatively large, as the habitat is widespread on the Baltic Sea coasts.
- Does the habitat have a small natural range by reason of its intrinsically restricted area?
  No
  Justification
  The relatively widespread habitat may form large stands in some sites, smaller ones in others.

Trends in quality

Quality is decreasing in most countries excpet Poland and Denmark (stable), but a decrease in quality has occurd in all contries over the last 50 years

- Average current trend in quality

EU 28: Decreasing
EU 28+: Decreasing

Pressures and threats

The most significant threat to this hibitat is that it is abandonment of pastoral system, in Sweden and Finland and probaly more of the countries the grazing has mowed to other habitats and the grazing that still occur in the shore meadows is payd with nature conservation money

List of pressures and threats

Agriculture

Abandonment / Lack of mowing
Abandonment of pastoral systems, lack of grazing
Fertilisation

Urbanisation, residential and commercial development

Dispersed habitation

Pollution

Marine water pollution

Conservation and management

The most important messure is to continue with grazing in grazed areas and areas with abandoned pastures should be restored with grazing

List of conservation and management needs

Measures related to agriculture and open habitats

Maintaining grasslands and other open habitats

Measures related to wetland, freshwater and coastal habitats

Restoring coastal areas

Conservation status

Annex I:

1630: BOR U2, CON U2

In Germany, Denmark and Poland minor parts of the Red List type have been registered under Annex I type Atlantic salt meadows, 1330.

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

As a seminatural habitat dependent on grazing it could not recover naturally, but with management it could be restored by quantity rather fast, but to restore the quality if it had gone lost it will take several decades before most species are back.

Effort required

10 years	20 years
Through intervention	Through intervention

Red List Assessment

Criterion A: Reduction in quantity

Criterion A	A1	A2a	A2b	A3
EU 28	-61 %	unknown %	unknown %	unknown %
EU 28+	-61 %	unknown %	unknown %	unknown %

Baltic coastal meadows have declined all over its distribution area during the last 100-150 years, but how much is hard to say, because there are few quantitative data on the area 50 or 100 years ago. The decline has been going on for a long time and started earlier in the north than in the south of the Baltic region, and also therefore it is hard to say how much is lost over the last 50 years. However, the loss is at least 60%, but may even be more than 90%. A decline of 61% leads to the category Endangered (EN). A few countries reported slightly higher percentages over a long historical timeframe, and - assuming this trend is similar for the whole range - this leads to the category Vulnerable (VU).

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 is larger than 50000 km^2 and the AOO larger than 50 km^2, so the habitat does not fulfill the criteria for 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	75 %	30 %	unknown %	unknown %	unknown %	unknown %
EU 28+	75 %	30 %	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%

Based on territorial data an average decline in qaulity has been calculated of 75% of the area being negatively affected in a moderate way (30%). The figures are minimum as data do not occur for all contries and are aven hard to compare betrween different sources. The figures are close to the thresholds for Vulnerable (VU) and therefore result in a Near Threatened assessment for C/D1.

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	EN	LC	DD	VU	LC	LC	LC	NT	DD	DD	DD	DD	DD	DD	DD	DD	DD
EU28+	EN	LC	DD	VU	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
Endangered	A1	Endangered	A1

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

Assessors
M. Aronsson

Contributors
Habitat Definition: J. Janssen

Territorial data: P. Finck, A. Jacobson, T. Kontula, U. Raths, U. Riecken, E. Roosaluste, S. Rusina, A. Ssymank

Working Group Coastal: A. Acosta, F. Bioret, H. Gardfjell, J. Janssen, J. Loidi, R. Tzonev

Reviewers
J. Janssen

Date of assessment
15/04/2016

Date of review
14/05/2016

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