Ramsar Information Sheet

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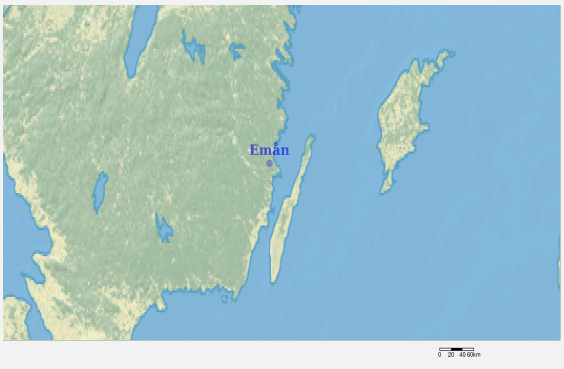
Sweden

Emån



Designation date	14 November 2001
Site number	1118
Coordinates	57°08'41"N 16°23'41"E
Area	1 527,00 ha

Color codes

Fields back-shaded in light blue relate to data and information required only for RIS updates.

Note that some fields concerning aspects of Part 3, the Ecological Character Description of the RIS (tinted in purple), are not expected to be completed as part of a standard RIS, but are included for completeness so as to provide the requested consistency between the RIS and the format of a 'full' Ecological Character Description, as adopted in Resolution X.15 (2008). If a Contracting Party does have information available that is relevant to these fields (for example from a national format Ecological Character Description) it may, if it wishes to, include information in these additional fields.

1 - Summary

Summary

Emån is the largest and probably the most important watercourse in the south-eastern part of Sweden. It has unique natural and cultural values. The site consists of the lower part and the outlet of Emån river, on the coast of the Baltic Sea. These parts are diverse and contain many well-developed and representative wetland types. At the site there are sections of the river, when it divides into a number of rivulets. The wide occurrence of extensive wetlands in the surroundings of the river, combined with large areas of swamp forests, creates a unique buffer zone along the river, which makes it relatively unaffected by chemicals and other human influence. The fauna and flora are rich, with several species included in the Swedish Red List. The site has a unique and rich occurrence of fish fauna with more than 30 species, for example, Salmo salar, Baltic Salmon, Salmo trutta, Herling and Silurus glanis, Wels catfish.

2 - Data & location

2.1 - Formal data

2.1.1 - Name and address of the compiler of this RIS

Compiler 1

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2.1.2 - Period of collection of data and information used to compile the RIS

From year	2012
To year	2017

2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)	Emån
Unofficial name (optional)	Emån (river)

2.1.4 - Changes to the boundaries and area of the Site since its designation or earlier update

(Update) A. Changes to Site boundary	Yes ◉ No ○
(Update) The boundary has been delineated more accurately	☑
(Update) The boundary has been extended	☑
(Update) The boundary has been restricted	☑
(Update) B. Changes to Site area	the area has decreased
(Update) The Site area has been calculated more accurately	☑
(Update) The Site has been delineated more accurately	☑
(Update) The Site area has increased because of a boundary extension	☑
(Update) The Site area has decreased because of a boundary restriction	☑

2.1.5 - Changes to the ecological character of the Site

(Update) 6b i. Has the ecological character of the Ramsar Site (including applicable Criteria) changed since the previous RIS?	Yes (likely)
(Update) Are the changes	Positive ◉ Negative ○ Positive & Negative ○
(Update) Positive %	20
(Update) No information available	☐
(Update) Changes resulting from causes operating within the existing boundaries?	☑

(Update) Changes resulting from causes operating beyond the site's boundaries? ☑

(Update) Changes consequent upon site boundary reduction alone (e.g., the exclusion of some wetland types formerly included within the site)? ☑

(Update) Changes consequent upon site boundary increase alone (e.g., the inclusion of different wetland types in the site)? ☑

(Update) Please describe any changes to the ecological character of the Ramsar Site, including in the application of the Criteria, since the previous RIS for the site.

Biotope improvements have been done. Large boulders and stones have been put on the bottom of the river to improve the biotope for fish. The power plant at Emsfors (a few kilometres from the outlet) has been removed, which is important in order to improve the possibility of fish to migrate up- and downstream. Another improvement is an introduction of protection zone in cases where the agriculture fields are directly adjacent to the river or wetlands. This reduces the leakage of nutrients to the river and wetlands. More careful and efficient use of fertilizer upstream in areas close to the river does improve the situation concerning the nutrient level in the water. Discharge of the nutrient from old, private sewage systems has been reduced during the last years.

The site has been better delineated, and there have also been extensions and exclusions. This has, in general, resulted in that more wetland areas (more of the river, a lake, adjacent marshes, peatlands and swamp forests) are included. Areas that have been excluded are in general dry forests, built-up areas, and also some smaller wetlands that are not part of the Emån wetland complex.

(Update) Is the change in ecological character negative, human-induced AND a significant change (above the limit of acceptable change) Yes ○

2.2 - Site location

2.2.1 - Defining the Site boundaries

b) Digital map/image
<1 file(s) uploaded>

Former maps: 0

Boundaries description

The boundaries of Emån within the site are very irregular and variable but in general they include parts consisting of the river, lakes and wetlands adjacent to the river. Parts of the border are consistent with the boundaries of the Natura 2000 sites, but many parts of the border is much more difficult to define.

The western boundary of the site begins about 4 km east of a small city called Fliseryd. Here the river makes a sharp turn to the north and it reaches two lakes and thereafter it turns into a network of rivulets. The eastern part of the site passes by an old power plant station called Emsfors (removed nowadays). The outlet in the eastern part of the river is situated close to a farm called Em.

2.2.2 - General location

a) In which large administrative region does the site lie? Kalmar

b) What is the nearest town or population centre? Mönsterås,Oskarshamn

2.2.3 - For wetlands on national boundaries only

a) Does the wetland extend onto the territory of one or more other countries? Yes ○ No ◉

b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party? Yes ○ No ◉

2.2.4 - Area of the Site

Official area, in hectares (ha): 1527

Area, in hectares (ha) as calculated from GIS boundaries: 1527.9

2.2.5 - Biogeography

Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
Udvardy's Biogeographical Provinces	10 Boreonemoral
Bailey's Ecoregions	240 Marine Division
WWF Terrestrial Ecoregions	PA0436 Sarmatic mixed forest
Other scheme (provide name below)	Sarmatic mixed forest
Freshwater Ecoregions of the World (FEOW)	Nordic Baltic drainages
EU biogeographic regionalization	Boreal

Other biogeographic regionalisation scheme

EEA, 2002. Digital Map of the European Ecological Regions (DMEER): Sarmatic mixed forest

3 - Why is the Site important?

3.1 - Ramsar Criteria and their justification

☑ Criterion 1: Representative, rare or unique natural or near-natural wetland types

Hydrological services provided	The meandering water course and the regular flooding of the grasslands along the river have a strong contribution to water retention in the basin. The yearly flooding of Emån over the grasslands contributes to a richer hay harvest by input of nutrients.
Other ecosystem services provided	The grassland wetlands have a long continuance of hay-making.
Other reasons	The site is a rare example of natural wetland types in the EU Boreal region (the river with its many rivulets, surrounded by flooded grasslands and wet shore forests). The habitat Fennoscandian natural rivers is very uncommon in southern Sweden.

☑ Criterion 2 : Rare species and threatened ecological communities

☑ Criterion 3 : Biological diversity

Justification	The main parameter of the biological diversity is the rich fauna of fish (30 species). Such abundance of fish is the driving force of the ecosystem in the river. Occurence of species like Salmo salar, Salmo trutta and Siluris glanis are particularly significant in the river. The site is also important for a number of bats. There was an inventory made of wood living beetles along Emån in the nature reserve Åby during 2005. They found 91 species of beetles of which 11 were in the Swedish red list.

☑ Criterion 4 : Support during critical life cycle stage or in adverse conditions

☑ Criterion 7 : Significant and representative fish

Justification	The site (Emån) is characterized by great fish diversity (30 species), which is very much in the FEOW Northern Baltic drainages. The river supports a significant proportion of several fish species including Salmo salar, Salmo trutta and Siluris glanis. The river has a specially great importance for ecological and biological processes connected to fish biotopes and dynamics.

☑ Criterion 8 : Fish spawning grounds, etc.

Justification	The river has an especially great importance of ecological and biological processes connected to fish biotopes and dynamics. The river inhabits 30 species of fish many of which are spawning and reproducing within the site area. The substrate on the bottom of the river and a couple of smaller lakes are favourable spawning habitats with rich occurrence of blocks, stones, gravel and sand. The lower part of the river is slowly flowing where erosion has created steep river bank which favours Silurus glanis. Occurrence of deciduous tree zones along the river strengthens the value of the river for fish fauna by providing nourishment to the water. The river is important for some migrating fish species and a lot of fish species forage at the site.

☑ Criterion 9 : >1% non-avian animal population

3.2 - Plant species whose presence relates to the international importance of the site

Scientific name	Common name	Criterion 2	Criterion 3	Criterion 4	IUCN Red List	CITES Appendix I	Other status	Justification
Cladonia parasitica	Fence-rail clad lichen	☐	☑	☐		☐	Swedish Red List 2015, NT.	See textbox below the table.
Coenogonium luteum	Orange pixie-hair lichen	☑	☑	☐		☐	Swedish Red list 2015, EN.	See textbox below the table.
Dichelyma capillaceum	Varnished hook-moss	☐	☑	☐		☑	The EC Habitats Directive, annex II. Swedish Red List 2015, NT.	See textbox below the table.
Festuca altissima		☑	☑	☐		☐	Swedish Red List 2015, EN.	Not a wetland species but is depending on moist local climate close to wetlands. See textbox below the table.
Fraxinus excelsior	Ash	☑	☑	☐	LC	☐	Swedish Red List 2015, EN.	See textbox below the table.
Leptogium cyanescens	Blue jellyskin lichen	☑	☐	☐		☐	Swedish Red List 2015, EN.	See textbox below the table.
Megalaria grossa	Very large dot lichen	☑	☑	☐		☐	Swedish Red List 2015, EN.	See textbox below the table.
Neottia nidus-avis	Bird's-nest Orchid	☐	☑	☐	LC	☐	Protected species in Sweden according to a statutory instrument, Artskyddsförordning (2007:845).	See textbox below the table.
Osmunda regalis	Royal fern	☐	☑	☐	LC	☐		See textbox below the table.
Peltigera collina	Gritty tree pelt lichen	☐	☑	☐		☐	Swedish Red List 2015, NT	See textbox below the table.
Poa remota		☐	☑	☐		☐	Swedish Red List 2015, NT.	See textbox below the table.
Rorippa amphibia	great yellowcress	☐	☑	☐	LC	☐		See textbox below the table.

Criterion 2 and 3: The species status in the Swedish Red List and general information for that classification as well as their distribution etc can be found at http://artfakta.artdatabanken.se/.

The site supports the lichen species Leptogium cyannescens, EN in the Swedish red list, (criterion 2 and 3 applied for the species).

3.3 - Animal species whose presence relates to the international importance of the site

Phylum	Scientific name	Common name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7	8								
Birds																		
CHORDATA/ AVES	*Alcedo atthis*	Common Kingfisher	☑	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015, VU. EC Birds Directive Annex I.	Reproduction, foraging. See textbox below the table and in section 3.1
CHORDATA/ AVES	*Botaurus stellaris*	Eurasian Bittern	☐	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List. 2015 NT. EC Birds Directive Annex I.	Reproduction, foraging. See textbox below the table and in section 3.1
CHORDATA/ AVES	*Circus aeruginosus*	Western Marsh Harrier	☐	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	EC Birds Directive Annex I.	Reproduction, foraging. See textbox below the table and in section 3.1
CHORDATA/ AVES	*Crex crex*	Corn Crake	☐	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015, NT. EC Birds Directive, Annex I.	Reproduction, foraging. See textbox below the table and in section 3.1

Phylum	Scientific name	Common name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7	8								
CHORDATA/ AVES	*Cygnus cygnus*	Whooper Swan	☐	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	EC Birds Directive Annex I.	Reproduction, foraging, resting. See textbox below the table and in section 3.1
CHORDATA/ AVES	*Dendrocopos minor*	Lesser Spotted Woodpecker	☐	☑	☐	☐	☑	☐	☐	☐					☐	☐	Swedish Red List. 2015 NT	Reproduction, foraging. See textbox below the table and in section 3.1
CHORDATA/ AVES	*Dryocopus martius*	Black Woodpecker	☐	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List. 2015 NT. EC Birds Directive Annex I.	Reproduction, foraging. See textbox below the table and in section 3.1
CHORDATA/ AVES	*Emberiza schoeniclus*	Reed Bunting; Common Reed Bunting; Common Reed-Bunting	☑	☑	☐	☐	☐	☐	☐	☐				LC	☐	☐	Swedish Red List 2015, VU.	Reproduction, foraging. See textbox below the table and in section 3.1
CHORDATA/ AVES	*Grus grus*	Common Crane	☐	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	EC Birds Directive Annex I.	Reproduction, foraging, resting. See textbox below the table and in section 3.1
CHORDATA/ AVES	*Lyrurus tetrix*	Black grouse	☐	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	EC Birds Directive Annex I.	Reproduction, foraging, suitable habitats for leks/displaying, See textbox below the table and in section 3.1
CHORDATA/ AVES	*Mergellus albellus*	Smew	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐	EC Birds Directive Annex I.	See textbox below the table. See textbox below the table and in section 3.1
CHORDATA/ AVES	*Pandion haliaetus*	Western Osprey; Osprey	☐	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	EC Birds Directive, Annex I.	Reproduction, foraging. See textbox below the table and in section 3.1
CHORDATA/ AVES	*Podiceps auritus*	Horned Grebe	☑	☑	☐	☐	☑	☐	☐	☐				VU	☐	☐	EC Birds Directive Annex I.	Reproduction, foraging. See textbox below the table and in section 3.1
CHORDATA/ AVES	*Porzana porzana*	Spotted Crake	☑	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015, VU. EC Birds Directive Annex I.	Reproduction, foraging. See textbox below the table and in section 3.1
CHORDATA/ AVES	*Sterna hirundo*	Common Tern	☐	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	EC Birds Directive Annex I.	Reproduction, foraging. See textbox below the table and in section 3.1
CHORDATA/ AVES	*Tetrao urogallus*	Western Capercaillie	☐	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	EC Birds Directive Annex I	Reproduction, foraging, suitable habitats for leks/displaying, See textbox below the table and in section 3.1
CHORDATA/ AVES	*Tetrastes bonasia*	Hazel grouse	☐	☑	☐	☐	☑	☐	☐	☐					☐	☐	EC Birds Directive Annex I.	Reproduction, foraging. See textbox below the table and in section 3.1
CHORDATA/ AVES	*Vanellus vanellus*	Northern Lapwing	☐	☑	☐	☐	☑	☐	☐	☐				NT	☐	☐		Reproduction, foraging. See textbox below the table and in section 3.1
Fish, Mollusc and Crustacea																		
CHORDATA/ ACTINOPTERYGII	*Anguilla anguilla*	Eel	☑	☐	☐	☐	☑	☐	☑	☑				CR	☐	☐	Swedish Red List 2015, CR.	Migration route. See textbox below the table and in section 3.1
CHORDATA/ ACTINOPTERYGII	*Cobitis taenia*	Spine loach	☐	☐	☐	☐	☑	☐	☑	☑				LC	☑	☐	EC Habitat Directive, Annex II.	See textbox below the table and in section 3.1.
CHORDATA/ ACTINOPTERYGII	*Gobio gobio*	Gudgeon	☐	☐	☐	☐	☑	☐	☑	☑				LC	☑	☐	EC Habitat Directive, Annex II.	See textbox below the table and in section 3.1.
CHORDATA/ CEPHALASPIDOMORPHI	*Lampetra fluviatilis*	Lampern; Lampern	☐	☐	☐	☐	☑	☐	☑	☐				LC	☐	☐	EC Habitat Directive, Annex II and V.	See textbox below the table and in section 3.1.
CHORDATA/ CEPHALASPIDOMORPHI	*Lampetra planeri*	European brook lamprey	☐	☐	☐	☐	☑	☐	☑	☐				LC	☐	☐	EC Habitat Directive, Annex II.	See textbox below the table and in section 3.1.
CHORDATA/ ACTINOPTERYGII	*Leuciscus aspius*	Schied	☐	☐	☐	☐	☑	☐	☑	☑					☑	☐	EC Habitat Directive, Annex II.	See textbox below the table and in section 3.1.

Phylum	Scientific name	Common name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7	8								
CHORDATA / ACTINOPTERYGII	*Lota lota*	Burbot	☐	☐	☐	☐	☑	☐	☑	☑				LC	☐	☐	Swedish Red List 2015, NT.	See textbox below the table and in section 3.1.
CHORDATA / CEPHALASPIDOMORPHI	*Petromyzon marinus*	Lamprey eel	☐	☐	☐	☐	☑	☐	☑	☑				LC	☐	☐	Swedish Red List 2015, NT.	See textbox below the table and in section 3.1.
CHORDATA / ACTINOPTERYGII	*Salmo salar*	Baltic salmon	☐	☐	☐	☐	☑	☐	☑	☑					☑	☐	EC Habitat Directive, Annex II.	Migration route. See textbox below the table and in section 3.1.
CHORDATA / ACTINOPTERYGII	*Salmo trutta*	Herling	☐	☐	☐	☐	☑	☐	☑	☑				LC	☐	☐		Migration route. See textbox below the table and in section 3.1.
CHORDATA / ACTINOPTERYGII	*Silurus glanis*	Sheatfish; Sheatfish	☑	☐	☐	☑	☑	☐	☑	☑	60		1	LC	☐	☐	Swedish Red List 2015, VU.	Number of reproductive individuals compared with total. See textbox below the table and in section 3.1.
CHORDATA / ACTINOPTERYGII	*Vimba vimba*	Baltic vimba	☐	☐	☐	☐	☑	☐	☑	☑				LC	☐	☐	Swedish Red List 2015, NT.	See textbox below the table and in section 3.1.
Others																		
CHORDATA / MAMMALIA	*Barbastella barbastellus*	Western Barbastelle	☑	☑	☐	☐	☑	☐	☐	☐				NT	☑	☐	Swedish Red List 2015, VU. Habitat Directive, Annex II & IV.	Foraging. See textbox below the table and in section 3.1.
CHORDATA / MAMMALIA	*Eptesicus serotinus*	serotine; Common Serotine	☑	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015, EN.	See textbox below the table and in section 3.1.
ARTHROPODA / INSECTA	*Exocentrus adspersus*		☐	☐	☐	☐	☑	☐	☐	☐					☐	☐	Swedish red list 2015, NT.	See textbox below the table and in section 3.1.
ARTHROPODA / INSECTA	*Gnorimus variabilis*		☑	☐	☐	☐	☑	☐	☐	☐					☐	☐	Swedish Red List 2015, EN. An action plan for the species exists.	See textbox below the table and in section 3.1.
ARTHROPODA / INSECTA	*Leucorrhinia pectoralis*	Yellow-spotted Whiteface	☐	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	EC Habitat Directive, Annex II. Protected species in Sweden according to a statutory instrument, Artskyddsförordning (2007:845).	Reproduction. See textbox below the table.
CHORDATA / MAMMALIA	*Lutra lutra*	European Otter	☐	☑	☐	☐	☑	☐	☐	☐				NT	☑	☐	EC Habitat Directive, Annex II. Swedish Red List 2015, NT.	Foraging. See textbox below the table and in section 3.1.
CHORDATA / MAMMALIA	*Myotis dasycneme*	pond bat; Pond Myotis	☑	☑	☐	☐	☑	☐	☐	☐				NT	☐	☐	Swedish Red List 2015, EN.	Foraging. See textbox below the table and in section 3.1.
CHORDATA / MAMMALIA	*Myotis nattereri*	Myotis nattereri	☑	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015, VU.	Foraging. See textbox below the table and in section 3.1.
CHORDATA / MAMMALIA	*Nyctalus leisleri*	Leisler's Noctule; lesser noctule	☑	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015, CR.	Foraging. See textbox below the table and in section 3.1.
CHORDATA / MAMMALIA	*Pipistrellus nathusii*	Nathusius's Pipistrelle	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐	Protected species in Sweden according to a statutory instrument, Artskyddsförordning (2007:845).	See textbox below the table and in section 3.1.
CHORDATA / MAMMALIA	*Pipistrellus pipistrellus*	Common Pipistrelle	☑	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015, CR. EC Habitat Directive, Annex IV.	Foraging. See textbox below the table and in section 3.1.
CHORDATA / MAMMALIA	*Plecotus auritus*	brown big-eared bat; Brown Long-eared Bat	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐	Protected species in Sweden according to a statutory instrument, Artskyddsförordning (2007:845).	See textbox below the table and in section 3.1.
ARTHROPODA / INSECTA	*Strangalia attenuata*		☐	☐	☐	☐	☑	☐	☐	☐					☐	☐	Swedish red list 2015, NT.	See textbox below the table.

1) Percentage of the total biogeographic population at the site

Criterion 2 and 3: The species status in the Swedish Red List and general information for that classification as well as their distribution etc can be found at http://artfakta.artdatabanken.se/.
Criterion 9: See section 3.1.

Thick shelled river mussel, Unio crassus, occurs at the site. It's classified as EN in both the Swedish and IUCN red list; it is also included in the EC Habitats Directive Annex 2. The species fulfills criteria 2, 3, 4 and 8. It is dependent on host fishes during a parasitic stage of reproduction. Source: Management and conservation plan for nature reserve Emsfors-Karlshammar. The interaction of this species with fish makes it even important from the biodiversity point of view, criterion 3.

The following insects occur at the site and the criteria 3 and 4 (suitable substrates for larvae development) can be applied for them, for one of the species criterion 2 is also applicable;
Ampedus sanguinolentus (Swedish Red List 2015 NT)
Cis fusciclavis (Swedish Red List 2015 NT)
Mycetophagus fulvicollis (Swedish Red List 2015 NT)
Leiestes seminiger (Swedish Red List 2015 NT)
Orchesia fasciata (Swedish Red List 2015 NT)
Cis submicans (Swedish Red List 2015 NT)
Cis rugulosus (Swedish Red List 2015 NT)
Agrilus convexicollis (Swedish Red List 2015 VU)
Dicerca alni (Swedish Red List 2015 NT)

3.4 - Ecological communities whose presence relates to the international importance of the site

Name of ecological community	Community qualifies under Criterion 2?	Description	Justification
9080. Fennoscandian deciduous swamp woods	☑	Deciduous swamp forests under permanent influence of surface water and usually flooded annually. They are moist or wet, sometimes with a thin peat layer. Fraxinus, Betula, Alnus and Salix can be dominant tree species.	The habitat is listed in EC Habitats Directive Annex II. The habitat had an unfavourable conservation status in the Swedish part of the EU boreal region in 2013.
7140. Open bogs and marshes	☐	Peat-forming habitat on oligotrophic to mesotrophic waters, including characteristics intermediate between soligenous and ombrogenous mire types. Swaying swards, floating carpets or quaking mires are also included. It includes many plant communities.	The habitat is listed in EC Habitats Directive Annex II. The habitat had an unfavourable conservation status in the Swedish part of the EU boreal region in 2013.
3260. Water courses of plain to montane levels	☐	Water courses of plain to montane levels, with submerged or floating vegetation of the Ranunculion fluitantis and Callitricho-Batrachion (low water level during summer) or aquatic mosses.	The habitat is listed in EC Habitats Directive Annex II. The habitat had an unfavourable conservation status in the Swedish part of the EU boreal region in 2013.
3210. Fennoscandian natural rivers	☑	EU-boreal natural river systems with nutrient-poor water. The water level shows great amplitude, up to 6 m during the year. Especially high water level after snow melting. The water-dynamics can vary, contain waterfalls and rapid streams.	The habitat is listed in EC Habitats Directive Annex II. The habitat had an unfavourable conservation status in the Swedish part of the EU boreal region in 2013.
6430. High herb vegetation	☐	Wet and nitrophilous tall herb edge communities, along water courses and woodland borders.	The habitat is listed in EC Habitats Directive Annex II. The habitat had an unfavourable conservation status in the Swedish part of the EU boreal region in 2013.
91F0. Riparian mixed forests of Quercus, Ulmus and Fraxinus along the rivers	☑	Forests of hardwood trees of the river bed, liable to regular flooding by the river or by raised water table. These forests develop on recent alluvial deposits. The soil may be well drained or wet between inundations.	The habitat is listed in EC Habitats Directive Annex II. The habitat had an unfavourable conservation status in the Swedish part of the EU boreal region in 2013.

Optional text box to provide further information

4 - What is the Site like? (Ecological character description)

4.1 - Ecological character

The site includes the lowest parts of the basin of the river Emån. This section of the river consists of many bifurcations, rivulets and small creeks and the river has a strongly meandering course which altogether create a rich ecological dynamic network. Water level varies during the year with yearly occurring flooding over the surrounding grasslands and wetlands which provides the opportunity for hay-making. In the vicinity of the river, there are vast forests of a high conservation value, for example, Fennoscandian deciduous swamp woods, Bog woodland and Alluvial forest with Alnus and Fraxinus. The site provides good conditions for biological life especially for many species of fish due to river`s nearly intact physical status and water regime. Fish has the opportunity to migrate in both up- and downstream directions due to a relative lack of physical obstacles in the water course. The well functional downstream section of Emån (Ramsar site) is a condition for good and long-term sustainable ecological system in the upper part of the river with the occurrence of populations of Margaritifera margaritifera (endangered) and Unio crassus (endangered).

4.2 - What wetland type(s) are in the site?

Marine or coastal wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
F: Estuarine waters		4		Representative

Inland wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
Fresh water > Flowing water >> M: Permanent rivers/ streams/ creeks	Emån	1	1578	Unique
Fresh water > Lakes and pools >> O: Permanent freshwater lakes		3		Rare
Fresh water > Marshes on peat soils >> U: Permanent Non-forested peatlands		4		Representative
Fresh water > Marshes on inorganic soils >> W: Shrub-dominated wetlands		2		Representative
Fresh water > Marshes on inorganic soils >> Xf: Freshwater, tree-dominated wetlands		3		Representative

Human-made wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
4: Seasonally flooded agricultural land		3		Representative

Other non-wetland habitat

Other non-wetland habitats within the site	Area (ha) if known
Coniferous forest on dry land	

4.3 - Biological components

4.3.1 - Plant species

<no data available>

4.3.2 - Animal species

<no data available>

4.4 - Physical components

4.4.1 - Climate

Climatic region	Subregion
D: Moist Mid-Latitude climate with cold winters	Dfa: Humid continental (Humid with severe winter, no dry season, hot summer)

Some meteorological scenarios suggest that changing climatic conditions towards drier climate are already ongoing. This would in long-term affect the south-eastern part of Sweden. There is a high probability that the more frequent occurrence of periods of drought will affect adversely the dynamic of the basin of river of Emån as well as the whole ecological balance in this part of Sweden.

4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres): 0

a) Maximum elevation above sea level (in metres): 24

- Entire river basin ☐
- Upper part of river basin ☐
- Middle part of river basin ☐
- Lower part of river basin ☑
- More than one river basin ☐
- Not in river basin ☐
- Coastal ☐

Please name the river basin or basins. If the site lies in a sub-basin, please also name the larger river basin. For a coastal/marine site, please name the sea or ocean.

The river Emån - SE74000 has its sources in the central south Swedish highlands. It has many tributaries along its way to the sea. The river has its outlet in the Baltic Sea. Several small tributaries enter the river Emån at the site. Several of them so small that they lack a name.

4.4.3 - Soil

- Mineral ☑
  - (Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○
- Organic ☑
  - (Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○
- No available information ☐

Are soil types subject to change as a result of changing hydrological conditions (e.g., increased salinity or acidification)? Yes ○ No ◉

4.4.4 - Water regime

Water permanence

Presence?	Changes at RIS update
Usually permanent water present	No change

Source of water that maintains character of the site

Presence?	Predominant water source	Changes at RIS update
Water inputs from surface water	☐	No change

Water destination

Presence?	Changes at RIS update
Marine	No change

Stability of water regime

Presence?	Changes at RIS update
Water levels largely stable	No change

Please add any comments on the water regime and its determinants (if relevant). Use this box to explain sites with complex hydrology:

The water course is strongly meandering in the part of river that is included in the site. Another characteristic of the river downstream is the frequent occurrence of bifurcations and small creeks. This provides special physical conditions and many small biotopes. The water regime is natural and water levels can rise with available water from snow melting or heavy rains.

4.4.5 - Sediment regime

- Sediment regime is highly variable, either seasonally or inter-annually ☑
  - (Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○
- Sediment regime unknown ☐

4.4.6 - Water pH

- Circumneutral (pH: 5.5-7.4) ☑
  - (Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○

Unknown ☐

4.4.7 - Water salinity

Fresh (<0.5 g/l) ☑

(Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○

Unknown ☐

Please provide further information on salinity (optional):

The Ramsar part of the river Emån consists entirely of fresh water. Brackish water occurs only in the end section where the river has its outlet into the sea.

4.4.8 - Dissolved or suspended nutrients in water

Mesotrophic ☑

(Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○

Oligotrophic ☑

(Update) Changes at RIS update: No change ◉ Increase ○ Decrease ○ Unknown ○

Unknown ☐

Please provide further information on dissolved or suspended nutrients (optional):

There are some sections of the river high upstream where there are high levels of eutrophication. At the Ramsar site Emån the levels of nutrients are within the limit of good status. In the very outlet of the river into the sea at a place called Em there is an increased level of eutrophication. Nutrient levels vary in different parts of the basin. The western part of the river with rivulets in the forest surroundings should have an oligotrophic state while the eastern part close to the outlet has a mesotrophic state.

It is probable that water in the western part of the site, characterized by the occurrence of many rivulets running through the forest landscape, has an oligotrophic nutrient level, while the part further downstream close to the outlet of the river into the sea has a more mesotrophic nutrient profile.

4.4.9 - Features of the surrounding area which may affect the Site

Please describe whether, and if so how, the landscape and ecological characteristics in the area surrounding the Ramsar Site differ from the site itself: i) broadly similar ○ ii) significantly different ◉

Surrounding area has greater urbanisation or development ☐

Surrounding area has higher human population density ☑

Surrounding area has more intensive agricultural use ☐

Surrounding area has significantly different land cover or habitat types ☐

Please describe other ways in which the surrounding area is different:

The area surrounding the site consists mainly of forest. Agriculture is of less significance in the surroundings. The river with its surrounding wetlands is not attractive or proper for urbanisation or other intense human activities. More distantly there are very small urban areas but they are assessed not to be affecting the river of Emån negatively.

4.5 - Ecosystem services

4.5.1 - Ecosystem services/benefits

Provisioning Services

Ecosystem service	Examples	Importance/Extent/Significance
Fresh water	Water for irrigated agriculture	Low
Fresh water	Drinking water for humans and/or livestock	Medium

Regulating Services

Ecosystem service	Examples	Importance/Extent/Significance
Hazard reduction	Flood control, flood storage	Low

Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Recreation and tourism	Recreational hunting and fishing	Medium
Recreation and tourism	Picnics, outings, touring	Medium
Spiritual and inspirational	Cultural heritage (historical and archaeological)	Medium

Supporting Services

Ecosystem service	Examples	Importance/Extent/Significance
Biodiversity	Supports a variety of all life forms including plants, animals and microorganizms, the genes they contain, and the ecosystems of which they form a part	High

Within the site: 10000

Outside the site: 50000

Have studies or assessments been made of the economic valuation of ecosystem services provided by this Ramsar Site? Yes ○ No ○ Unknown ◉

4.5.2 - Social and cultural values

i) the site provides a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland ☑

Description if applicable

The management of the wet grasslands has a long history. The yearly flooding provides nutrients to the grassland and a sustainable use of the wetland is possible.

ii) the site has exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland ☑

Description if applicable

As described above, during the several hundred or maybe thousands of years of continuity of hay-making characterized the site area. Another aspect is many remains in the river from former times. There still are several remains of cultural value like old mills (often not in use any more).

iii) the ecological character of the wetland depends on its interaction with local communities or indigenous peoples ☑

Description if applicable

The management of the wet grasslands is completely dependent of interaction with local people.

iv) relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland ☐

4.6 - Ecological processes

<no data available>

5 - How is the Site managed? (Conservation and management)

5.1 - Land tenure and responsibilities (Managers)

5.1.1 - Land tenure/ownership

Public ownership

Category	Within the Ramsar Site	In the surrounding area
Local authority, municipality, (sub)district, etc.	☑	☐

Private ownership

Category	Within the Ramsar Site	In the surrounding area
Other types of private/individual owner(s)	☑	☑

Provide further information on the land tenure / ownership regime (optional):

Both within the site area and in the surrounding area the ownership is mostly private except some limited areas owned by the Swedish EPA (Environment Protection Agency) and the Municipality of Oskarshamn (part of a nature reserve).

5.1.2 - Management authority

Please list the local office / offices of any agency or organization responsible for managing the site: The Administrative County Board in Kalmar.

Provide the name and title of the person or people with responsibility for the wetland: Tomas Järnetun and Daniel Hasselbratt, nature conservation officials

Postal address:
County Administrative Board in Kalmar.
Regeringsgatan 1
391 86 Kalmar
Sweden

E-mail address: kalmar@lansstyrelsen.se

5.2 - Ecological character threats and responses (Management)

5.2.1 - Factors (actual or likely) adversely affecting the Site's ecological character

Water regulation

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Drainage	Low impact	Low impact	☐	No change	☑	No change
Canalisation and river regulation		Low impact	☑	No change	☐	No change

Transportation and service corridors

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Roads and railroads	Low impact	Low impact	☑	No change	☐	No change

Biological resource use

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Fishing and harvesting aquatic resources	unknown impact	unknown impact	☑	No change	☐	No change

Human intrusions and disturbance

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Recreational and tourism activities	Low impact	Low impact	☑	No change	☑	No change

Natural system modifications

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Dams and water management/use	Low impact	Low impact	☑	No change	☑	No change
Vegetation clearance/ land conversion	Low impact		☐	No change	☑	No change

Pollution

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Industrial and military effluents	Low impact	Low impact	☑	No change	☑	No change

Climate change and severe weather

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Droughts	Low impact	Low impact	☑	No change	☑	No change

Please describe any other threats (optional):

Water regulation/Energy production and pollution: Since the beginning of the century, the lower reaches of the river have been affected by the release of cadmium, nickel and lead from a battery factory at Fliseryd, approximately 5 km upstream the site. Towards the end of the 1970's measures were taken to reduce pollution levels. They are now much lower, although cadmium levels are still too high. There are three existing power stations and dams within the site. Since 1992, however, establishment of new hydroelectric power stations, water controls or water extraction for power production purposes is not permitted. Sport fishing is encouraged, but a substantial percentage of the fish caught is returned to the river. Canoeing may locally disturb birdlife during nesting.

Water from the whole river system is being extracted by a number of industries, several municipalities and farmers. Industries have contributed in polluting different parts of the water system. PCB has contaminated the upper reaches of the drainage basin. Although some factories have been closed for more than 20 years, and local restoration projects have been carried out, metal levels are locally still high in river sediments.

There is no risk that human settlements or urbanization constitute any threat to the site. Site area and its surroundings are far from the nearest city.
Agriculture: Number of farms is low in the vicinity of the river. This aspect does not constitute any threat to the site which has a zone of forest along its watercourse.

Overall the site and the river are assessed as unexploited to a very high degree and the threats are few except for the old pollution. Even forestry with clearance of vegetation nearby the river and close to valuable wetlands may constitute a threat. In the forestry legislation, there are mechanisms to stop clearing the forest situated close to the valuable water system.

5.2.2 - Legal conservation status

Regional (international) legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
EU Natura 2000	Emåns vattensystem i Kalmar län (SAC) SE0330160	http://www.lansstyrelsen.se/Kalmar/SiteCollectionDocuments/Sv/djur-och-natur/skyddad-natur/natura2000/Bevarandeplaner/Fastställda%20bevarandeplaner/Mönsterås%20kommun/Emåns%20vattensystem%20i%20Kalmar%20län%20SE0330160.pdf	partly
EU Natura 2000	Våtmarker längs Emåns nedre lopp, SE0330173	http://www.lansstyrelsen.se/Kalmar/SiteCollectionDocuments/Sv/djur-och-natur/skyddad-natur/natura2000/Bevarandeplaner/Fastställda%20bevarandeplaner/Mönsterås%20kommun/Våtmarker%20längs%20Emåns%20nedre%20loppSE0330173.pdf	partly

National legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Nature reserve	Emsfors-Karlshammar	http://www.lansstyrelsen.se/Kalmar/sv/djur-och-natur/skyddad-natur/naturreservat/emsfors-karlshammar/Sidor/default.aspx	partly
Nature reserve	Åby	http://www.lansstyrelsen.se/Kalmar/sv/djur-och-natur/skyddad-natur/naturreservat/aby/Sidor/default.aspx	partly

5.2.3 - IUCN protected areas categories (2008)

Ia Strict Nature Reserve ☐

Ib Wilderness Area: protected area managed mainly for wilderness protection ☑

II National Park: protected area managed mainly for ecosystem protection and recreation ☐

III Natural Monument: protected area managed mainly for conservation of specific natural features ☐

IV Habitat/Species Management Area: protected area managed mainly for conservation through management intervention ☐

V Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation ☐

VI Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems ☑

5.2.4 - Key conservation measures

Legal protection

Measures	Status
Legal protection	Implemented

Habitat

Measures	Status
Hydrology management/restoration	Partially implemented

Species

Measures	Status
Threatened/rare species management programmes	Partially implemented

Human Activities

Measures	Status
Fisheries management/regulation	Implemented

Other:

During the several decades there have been plans to remove pollutions from old industries. The objective was and still is to remove pollutions accumulated in the sediments of the river.

In order to improve the migration of fish upstream the power plant at Emsfors was removed several years ago. This action was a very important step in order to restore a functioning ecological dynamic in the river (affects the whole river).

Carrying through the action plan for conservation of shied Leuciscus aspius and for wels catfish Silurus glanis. Conservation programs for these species are in a compilation stage. It is even important to point out that there is an action programme for Unio crassus, thick shelled river mussel. This programme will be accomplished by year 2018.

5.2.5 - Management planning

Is there a site-specific management plan for the site? Yes

Has a management effectiveness assessment been undertaken for the site? Yes ○ No ◉

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning processes with another Contracting Party? Yes ○ No ◉

Please indicate if a Ramsar centre, other educational or visitor facility, or an educational or visitor programme is associated with the site:

Karlshammar-Emsfors: Visitor programme is described in the nature reserve management plan. According to it, there is an intention to improve an existing parking place. A place for tenting shall be put in order. An existing path through the area shall be improved by regular cutting of small bushes. Four information boards with information about nature reserve shall be placed at appropriate places in the nature reserve.

Åby nature reserve: visitors can reach the southern part of the nature reserve using a graveled road. In the nature reserve´s western part there is a plan to create a combined area for a small information centre and a parking. At least two information boards shall be put on in the nature reserve.

5.2.6 - Planning for restoration

Is there a site-specific restoration plan? No, but restoration is needed

Further information

The restoration of the bottom of the river should continue. For example should large blocks and stones be placed in proper sections of the river in order to support fish (biotope measures). Removing of the fish migration obstacles like old power plant should continue. Bottom sediments will have to be restored from pollutions.

5.2.7 - Monitoring implemented or proposed

Monitoring	Status
Water regime monitoring	Implemented
Water quality	Implemented
Animal community	Implemented

6 - Additional material

6.1 - Additional reports and documents

6.1.1 - Bibliographical references

Fasth, T. & Larsson, A. 1997. PRO Natura: Naturinventering i Emåns dalgång. Emåprojektet, Meddelande 1997:1.

Havs- och vattenmyndighetens författningssamling. Havs- och vattenmyndighetens föreskrifter om klassificering och miljökvalitetsnormer avseende ytvatten. HVMFS 2013:19.

Markus Forslund (red). Natur i Östra Småland. 1997. Länsstyrelsen i Kalmar län.

Nathanson, Jan Eric. 2013. Åtgärdsprogram för Silurus glanis. Manuscript from 2013. Sveriges lantbruksuniversitet. Institution för akvatiska resurser. Sötvattenslaboratoriet.
Nature reserve conservation plan for Emsfors-Karlshammar. 2014. County Administrative Board in Kalmar.

Nature reserve conservation plan for Åby. 2014. County Administrative Board in Kalmar.

Palm, Stefan. Prestegaard, Tore. Dannewitz, Johan. Pettersson, Erik & Nathansson, Jan Eric. 2008. Genetisk kartläggning av svenska malbestånd. Fiskeriverket. Sötvattenslaboratoriet. Uppsala universitet.

Sallmén, Niina. 2016. Åtgärdsprogram för bevarande av asp Aspius aspius. Manuscript from 2016 (not stipulated yet). Sveriges lantbruksuniversitet. Institutionen för akvatiska resurser, Sötvattenslaboratoriet.

Yearly reports about water quality, the state of bottoms and the resultats of the fish catching data. Performed in the field by Emåförbundet.

VISS. Vatteninformationssystem Sverige (a webb based system containing a compiled infomation on water data). http://viss.lansstyrelsen.se/

6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)
<no file available>

ii. a detailed Ecological Character Description (ECD) (in a national format)
<no file available>

iii. a description of the site in a national or regional wetland inventory
<no file available>

iv. relevant Article 3.2 reports
<no file available>

v. site management plan
<no file available>

vi. other published literature
<1 file(s) uploaded>

6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:

Slow water course of Emån, downstream (*Daniel Hasselbratt, 22-09-2017*)

Ungrazed wetland near Emån (*Daniel Hasselbratt, 22-09-2017*)

Grazed wetland near Emån (*Daniel Hasselbratt, 22-09-2017*)

A stream water course of Emån, more upstream (*Daniel Hasselbratt, 22-09-2017*)

6.1.4 - Designation letter and related data

Designation letter
<1 file(s) uploaded>

Date of Designation: 2001-11-14