



Ramsar Information Sheet

Update version, previously published on 1 January 2002

Sweden Hornborgasjön



Designation date	5 December 1974
Site number	22
Coordinates	58°18'31"N 13°32'08"E
Area	6 197,00 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

The site is one of the most famous and largest bird-lakes in Sweden, well-known for resting and displaying cranes. The lake is shallow, with a mixture of open water and submerged vegetation (large areas of Chara vegetation) and reed-beds. The lake is surrounded by wet woodland and wet meadows (some of them with calcareous vegetation). The site includes the main feeder water course.

2 - Data & location

2.1 - Formal data

2.1.1 - Name and address of the compiler of this RIS

Compiler 1

Name	Sofia Åström
Institution/agency	Länsstyrelsen i Västra Götalands län, (AA Naturvårdsverket)
Postal address	Länsstyrelsen i Västra Götalands län, 403 40 Göteborg, Sweden
E-mail	vastragotaland@lansstyrelsen.se
Phone	+46 10 224 40 00
Fax	+46 10 224 40 22

Compiler 2

Name	Jenny Lonnstad
Institution/agency	Naturvårdsverket (Swedish EPA)
Postal address	Naturvårdsverket, 106 48 Stockholm, Sweden
E-mail	jenny.lonnstad@naturvardsverket.se
Phone	+46 10 698 15 92
Fax	+46 10 698 16 00

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

From year	2002
To year	2015

2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)	Hornborgasjön
Unofficial name (optional)	Hornborgasjön (lake)

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 <input checked="" type="radio"/> No <input type="radio"/>
(Update) The boundary has been delineated more accurately	<input checked="" type="checkbox"/>
(Update) The boundary has been extended	<input checked="" type="checkbox"/>
(Update) The boundary has been restricted	<input checked="" type="checkbox"/>
(Update) B. Changes to Site area	the area has decreased
(Update) The Site area has been calculated more accurately	<input checked="" type="checkbox"/>
(Update) The Site has been delineated more accurately	<input checked="" type="checkbox"/>
(Update) The Site area has increased because of a boundary extension	<input checked="" type="checkbox"/>
(Update) The Site area has decreased because of a boundary restriction	<input checked="" type="checkbox"/>

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 (actual)
(Update) Are the changes	Positive <input checked="" type="radio"/> Negative <input type="radio"/> Positive & Negative <input type="radio"/>
(Update) Positive %	1
(Update) No information available	<input type="checkbox"/>
(Update) Changes resulting from causes operating within the existing boundaries?	<input checked="" type="checkbox"/>

(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.

Artificial bird breeding islands has been created. A new 18 ha nature reserve, Mårbysjön, has been formed.

Reed belts and Salix-vegetation are both important to breeding wetland birds at the site. Current changes in the distribution of these habitats affect the populations of breeding wetland birds. Some species gain, others loose.

The boundary for the site has been changed. Some arable land and forest (non-wetlands) have been excluded. Some arable land and grasslands within the nature reserves at the site have been included.

(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

Boundaries description

The boundaries are mostly drawn to include different kinds of wetland but also arable land used by migratory birds. In the south there are some parts of the boundary that is the same as for one of the nature reserves.

2.2.2 - General location

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

b) What is the nearest town or population centre?

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):

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

2.2.5 - Biogeography

Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
Udvardys Biogeographical Provinces	10 Boreonemoral
Bailey's Ecoregions	240 Marine division
WWF Terrestrial Ecoregions	Sarmatic mixed forest PA0436
EU biogeographic regionalization	Boreal
Freshwater Ecoregions of the World (FEOW)	406 Northern Baltic drainages

Other biogeographic regionalisation scheme

Nordiska Ministerrådet, 1977. Naturgeografisk indelning av Norden: Boreonemoral zone
EEA, 2002. Digital Map of European Ecological Regions: 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 lake has an important role for retention of nutrients, e.g. nitrogen, from the surrounding farmland. The site allows high fluctuation of the water level and helps regulating water flows in the downstream catchment area.

Other reasons

The site is a representative example of a river, wet meadows (some calcareous ones) and wet forests in the EU boreal region, and the large shallow lake with its Chara vegetation is a rare example.

- Criterion 2 : Rare species and threatened ecological communities

- Criterion 3 : Biological diversity

Justification

The site support particular elements of biological diversity that are characteristic of the EU Boreal region. The site is an important breeding area for waterbirds and is also important as a moulting area for waterbirds and a staging area for migratory waterbirds. The site is also important for fishes, invertebrates and mammals. The water vegetation is rich in species. Totally 9 Chara species and 13 species of Potamogeton species have been found in the lake.

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

- Criterion 5 : >20,000 waterbirds

Overall waterbird numbers

30,000

Start year














2000

Source of data:

http://web05.lansstyrelsen.se/transtat_O/simfagel.asp

- Criterion 6 : >1% waterbird 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
<i>Alopecurus geniculatus</i> 		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LC 	<input type="checkbox"/>		See textbox below the table and in section 3.1.
<i>Bidens cernua</i> 		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LC 	<input type="checkbox"/>		See textbox below the table and in section 3.1.
<i>Bidens radiata</i> 		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	Swedish Red List 2015 (VU).	See textbox below the table and in section 3.1.
<i>Carex acuta</i> 		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LC 	<input type="checkbox"/>		See textbox below the table and in section 3.1.
<i>Dactylorhiza incarnata</i> 		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LC 	<input type="checkbox"/>		See textbox below the table and in section 3.1.
<i>Epipactis palustris</i> 		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LC 	<input type="checkbox"/>		See textbox below the table and in section 3.1.
<i>Potamogeton friesii</i> 		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	Swedish Red List 2015 (NT).	See textbox below the table and in section 3.1.
<i>Potamogeton rutilus</i> 		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	Swedish Red List 2015 (EN).	See textbox below the table and in section 3.1.

Chara rudis, eligible for criterion 2 and 3, Swedish Red List 2015 (VU).
Chara vulgaris and *Chara hispida* eligible for criterion 3.

Criterion 2 and 3: For all species, their status in the Swedish Red List and general information for that classification etc can be found at <http://artfakta.artdatabanken.se/>. Observations can be found in www.artportalen.se.

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								
Birds																	
CHORDATA / AVES	<i>Acrocephalus arundinaceus</i> 	Great Reed Warbler	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Swedish Red List 2015 (NT).	See textbox below the table and in section 3.1.
CHORDATA / AVES	<i>Alcedo atthis</i> 	Common Kingfisher	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Swedish Red List 2015 (VU). EC Birds Directive Annex I.	See textbox below the table and in section 3.1.
CHORDATA / AVES	<i>Anas clypeata</i> 	Northern Shoveler	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>		Staging during migration, foraging, breeding. See textbox below the table and in section 3.1.
CHORDATA / AVES	<i>Anas querquedula</i> 	Garganey	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Swedish Red List 2015 (VU).	Staging during migration, some pairs breeding, 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								
CHORDATA / AVES	<i>Anas strepera</i> 	Gadwall	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>		Staging during migration, foraging, breeding. See textbox below the table and in section 3.1.
CHORDATA / AVES	<i>Botaurus stellaris</i> 	Eurasian Bittern	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Swedish Red List 2015 (NT). EC Birds Directive Annex I.	See textbox below the table and in section 3.1.
CHORDATA / AVES	<i>Calidris alpina schinzii</i> 	Dunlin	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	Swedish Red List 2015 (CR). EC Birds Directive Annex I.	See textbox below the table and in section 3.1.
CHORDATA / AVES	<i>Chlidonias niger</i> 	Black Tern	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	55	2000		LC 	<input type="checkbox"/>	<input type="checkbox"/>	Swedish Red List 2015 (VU). EC Birds Directive Annex I.	Foraging and breeding. See textbox below the table and in section 3.1.
CHORDATA / AVES	<i>Fulica atra</i> 	Eurasian Coot	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	16000			LC 	<input type="checkbox"/>	<input type="checkbox"/>		See textbox below the table and in section 3.1.
CHORDATA / AVES	<i>Gallinago gallinago</i> 	Common Snipe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>		See textbox below the table and in section 3.1.
CHORDATA / AVES	<i>Grus grus</i> 	Common Crane	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	20000		8	LC 	<input type="checkbox"/>	<input type="checkbox"/>	EC Birds Directive Annex I.	Staging and displaying. See textbox below the table and in section 3.1.
CHORDATA / AVES	<i>Philomachus pugnax</i> 	Ruff	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Swedish Red List 2015 (VU). EC Birds Directive Annex I.	Staging and foraging during migration. See textbox below the table and in section 3.1.
CHORDATA / AVES	<i>Podiceps auritus</i> 	Horned Grebe	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU 	<input type="checkbox"/>	<input type="checkbox"/>	EC Birds Directive Annex I.	Staging and foraging during migration some pairs breeding. See textbox below the table and in section 3.1.
CHORDATA / AVES	<i>Podiceps cristatus</i> 	Great Crested Grebe	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>		Staging and breeding. See textbox below the table and in section 3.1.
CHORDATA / AVES	<i>Podiceps grisegena</i> 	Red-necked Grebe	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>		Staging and breeding. See textbox below the table and in section 3.1.
CHORDATA / AVES	<i>Podiceps nigricollis</i> 	Black-necked Grebe; Eared Grebe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	105	2000		LC 	<input type="checkbox"/>	<input type="checkbox"/>	Swedish Red List 2015 (EN).	Breeding. See textbox below the table and in section 3.1.
CHORDATA / AVES	<i>Tachybaptus ruficollis</i> 	Little Grebe	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>		Staging and foraging. See textbox below the table and in section 3.1.

1) Percentage of the total biogeographic population at the site

Criterion 2, 3, 4, 7, 8: For all species, their status in the Swedish Red List and general information for that classification etc can be found at <http://artfakta.artdatabanken.se/>. Observations can be found in www.artportalen.se.

Criterion 6: Grus grus 20 000 individuals of 260 000 (total for North-west Europe/Iberia & Morocco population).

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
Wet calcareous grassland	<input checked="" type="checkbox"/>	Calcifil grass communities with some herbs and brown mosses developed on soils waterlogged, with the water table at, or slightly above or below, the substratum. Base-rich and often calcareous water supply.	This is an uncommon habitat in Sweden where bedrock and soils with calcareous content is geographically limited and grazing animals not in sufficient numbers.

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

4.1 - Ecological character

Hornborgasjön is a large post-glacial lake, some 10 000 years old. The lowest laying bed rock consists of sandstone and is covered among other by limestone. The limestone has eroded, resulting in a three meters thick layer of lime deposit in the northern basin of the lake.

Shallow, open water dominates the area together with emergent vegetation, mostly reed *Phragmites australis*. About 80 % of open water is covered by submerged vegetation, where *Chara* and *Potamogeton* species dominate. But changes occur from year to year depending on the water levels. Within the reed-beds, some shrub vegetation still grows in the southern part, despite the raise of water level. To the south and east, some larger areas are dominated by *Carex acuta*. The wet meadows occur in the south and east part of the site, where the grasses such as *Deschampsia caespitosa* and *Alopecurus geniculatus* dominate. Large areas containing *Bidens* vegetation can also be found here. In restricted areas around the shoreline there are some wet forests left. Some small, calcareous areas occur on the wet meadows in north and in the Mårbysjön area in the south.

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

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		0	40	Representative
Fresh water > Lakes and pools >> Q: Permanent freshwater lakes		1	2300	Rare
Fresh water > Lakes and pools >> Tp: Permanent freshwater marshes/ pools		4	170	Representative
Fresh water > Marshes on peat soils >> U: Permanent Non-forested peatlands		0	85	Representative
Fresh water > Marshes on inorganic soils >> W: Shrub-dominated wetlands		3	240	Representative
Fresh water > Marshes on inorganic soils >> Xf: Freshwater, tree-dominated wetlands		0	60	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		2	450	Rare

Other non-wetland habitat

Other non-wetland habitats within the site	Area (ha) if known
Arable land	1150

4.3 - Biological components

4.3.1 - Plant species

Invasive alien plant species

Scientific name	Common name	Impacts	Changes at RIS update
<i>Elodea canadensis</i>		Actually (minor impacts)	No change

4.3.2 - Animal species

Invasive alien animal species

Phylum	Scientific name	Common name	Impacts	Changes at RIS update
CHORDATA/MAMMALIA	<i>Neovison vison</i>	American Mink	Actually (minor impacts)	No change
ARTHROPODA/MALACOSTRACA	<i>Pacifastacus leniusculus</i>	Signal Crayfish	Potentially	No change

4.4 - Physical components

4.4.1 - Climate

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

Complementary information: The climate is typically continental with moderate temperature range between summer and winter. Average air temperature is in winter -2.8°C (mean December-February 1960-1990). The lake is covered with ice between the first of December and the first of April.

4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres)

a) Maximum elevation above sea level (in metres)

- 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 site lies within the river Lidan catchment area in the upper/middle part of the Göta älv river basin.

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	

Source of water that maintains character of the site

Presence?	Predominant water source	Changes at RIS update
Water inputs from surface water	<input type="checkbox"/>	No change
Water inputs from groundwater	<input type="checkbox"/>	No change

Water destination

Presence?	Changes at RIS update
To downstream catchment	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 current hydrological regime allows for spring flooding as well as low water levels during summer and winter. The maximum seasonal fluctuation of approximately 1.7 m, but the average amplitude during a year is just below 1.0 m. The mean depth during average water level is 0.8 m and the deepest part is 1.6 m. The catchment area is 620 km².

4.4.5 - Sediment regime

Significant accretion or deposition of sediments occurs on the site

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

Sediment regime unknown

4.4.6 - Water pH

Alkaline (pH>7.4)

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

Unknown

Please provide further information on pH (optional):

The concentration of calcium is high in in-flowing water, resulting in pH values around 8.0 during summer.

4.4.7 - Water salinity

Fresh (<0.5 g/l)

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

Unknown

4.4.8 - Dissolved or suspended nutrients in water

Eutrophic

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

Unknown

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

The lake is nutrient-rich, depending on high concentrations of phosphorus and nitrogen in in-flowing water. Most of the catchment area consists of farmland, which is leaking nutrients to the streams. Nitrogen concentration is about 2.0-4.0 mg/l and phosphorus 0.02-0.03 mg/l.

The lake also plays an important role for purification of nutrients. The inflow of nitrogen is on average (1992-2000) 530 ton per year and in out-flowing water the corresponding figure is 290 ton, resulting in a retention rate of about 45%.

But changes in purification occur between different years depending on the amount of precipitation in the area. The restored water regime has a more even water outflow and the new situation prevent high and very low peaks in out-flowing water, which favours the hydrological electric power and reduces farmland flooding downstream the lake.

(EOD) Water conductivity High concentrations of conductivity and alkalinity also occur in the lake.

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 i) broadly similar ii) significantly different site itself.

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

4.5 - Ecosystem services

4.5.1 - Ecosystem services/benefits

Provisioning Services

Ecosystem service	Examples	Importance/Extent/Significance
Wetland non-food products	Livestock fodder	Medium

Regulating Services

Ecosystem service	Examples	Importance/Extent/Significance
Erosion protection	Soil, sediment and nutrient retention	High
Pollution control and detoxification	Water purification/waste treatment or dilution	Medium
Hazard reduction	Flood control, flood storage	Medium

Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Recreation and tourism	Recreational hunting and fishing	Medium
Recreation and tourism	Nature observation and nature-based tourism	High
Recreation and tourism	Picnics, outings, touring	High
Spiritual and inspirational	Cultural heritage (historical and archaeological)	Medium
Scientific and educational	Major scientific study site	Medium
Scientific and educational	Educational activities and opportunities	High
Scientific and educational	Important knowledge systems, importance for research (scientific reference area or site)	High

Other ecosystem service(s) not included above:

Totally 250 000 people visit the lake per year, mainly during April, watching the famous dancing of the cranes. Besides bird-watching, angling and walking is popular at the site.

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

Description if applicable

Findings from the ancient shoreline suggest that the lake area supported human civilizations as early as 10 000 years ago. A lot of evidence is found in passage graves, stone cista, megalithic tombs and other artefacts from that time. Early humans by the lake were hunters that lived a mobile life. Gradually, humans became domiciled and started farming practices in the Hornborga valley. Just prior to the first drainage projects in the 1900th century, the lake played an important role for people living around the lake, using it for fishing and hunting as well as for food supply for domestic cattle in winter and reed for building material. Today the area has an important role for recreation activities such as bird-watching, angling, hunting and walking.

- iii) the ecological character of the wetland depends on its interaction with local communities or indigenous peoples
- 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
National/Federal government	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Private ownership

Category	Within the Ramsar Site	In the surrounding area
Other types of private/individual owner(s)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

5.1.2 - Management authority

Please list the local office / offices of any agency or organization responsible for managing the site:

Länsstyrelsen i Västra Götaland / County Administrative Board of Västra Götaland

Provide the name and title of the person or people with responsibility for the wetland:

Kontaktperson för Ramsarområden

Postal address:

Länsstyrelsen i Västra Götalands län, 403 40 Göteborg, Sweden

Local office:

Länsstyrelsen i Västra Götalands län, 521 98 Broddetorp, Sweden

E-mail address:

vastragotaland@lansstyrelsen.se

5.2 - Ecological character threats and responses (Management)

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

Human settlements (non agricultural)

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Unspecified development	Low impact	Low impact	<input checked="" type="checkbox"/>	No change	<input checked="" type="checkbox"/>	No change

Energy production and mining

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Renewable energy	Medium impact	Low impact	<input checked="" type="checkbox"/>	decrease	<input checked="" type="checkbox"/>	decrease

Invasive and other problematic species and genes

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Invasive non-native/ alien species	Low impact	Medium impact	<input checked="" type="checkbox"/>	No change	<input checked="" type="checkbox"/>	No change

Pollution

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Agricultural and forestry effluents	Low impact	Low impact	<input checked="" type="checkbox"/>	No change	<input checked="" type="checkbox"/>	decrease

Please describe any other threats (optional):

The area is attractive for housing, tourism and recreation. Developments of various kinds for these and other reasons may affect the site. The potential threat is low, the site has a high status for nature conservation.

The renewable energy considered is wind mills for energy production.

5.2.2 - Legal conservation status

National legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Natura 2000 SAC & SPA(1)	Hornborgasjön	http://www.lansstyrelsen.se/vast-ragotaland/SiteCollectionDocuments/Sv/djur-och-natur/skyddad-natur/natura-2000/bevarandeplaner/Skara/hornborgasjon-se0540084.pdf	partly
Natura 2000 SAC & SPA(2)	Rösjö mosse och Mårbynsjön	http://www.lansstyrelsen.se/vast-ragotaland/SiteCollectionDocuments/Sv/djur-och-natur/skyddad-natur/natura-2000/bevarandeplaner/Skara/rosjo-mosse-och-marbysjon-se0540301.pdf	partly
Nature reserve (1)	Hornborgasjön	http://www.lansstyrelsen.se/vast-ragotaland/Sv/djur-och-natur/skyddad-natur/naturreservat/lanets-naturreservat/skara/hornborgasjon/Pages/default.aspx	partly
Nature reserve (2)	Mårbykärret	http://www.lansstyrelsen.se/vast-ragotaland/Sv/djur-och-natur/skyddad-natur/naturreservat/lanets-naturreservat/falkoping/marbykarret/Pages/default.aspx	partly

Non-statutory designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Important Bird Area	Lake Hornborgasjön	http://datazone.birdlife.org/site/factsheet/lake-hornborgasjon-iba-sweden	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	Partially implemented

Habitat

Measures	Status
Hydrology management/restoration	Implemented
Habitat manipulation/enhancement	Implemented

Species

Measures	Status
Control of invasive alien animals	Implemented

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:

An information centre - Hornborga Naturum - was built 1985-86 at the eastern shoreline. The centre is open for the public from the end of March to the middle of August. The building offers exhibits, slide shows, cafeteria, and information about the lake, its history and its surroundings. The information centre is due to an update. A new exhibition was opened in March 2015 and the facilities are about to be renewed. Near the centre there are bird towers, hides and nature trails. There are guides to assist visitors. Every year 3-4 000 school children are guided, mainly in spring. A second information centre – Naturum Trandansen- is situated in the south part near the area, which is used by the cranes.

There are observation platforms and hides for watching birds at the site.

URL of site-related webpage (if relevant): www.hornborga.com

5.2.6 - Planning for restoration

Is there a site-specific restoration plan? Yes, there is a plan

Further information

Repeated agricultural drainage projects between 1805 and 1935 lowered the lake water level and reduced the extent of wet areas around the lake. By mid-1960, little open water remained. As a result of increasing conservation awareness, the government commissioned the Swedish EPA to explore the possibilities to secure the lake Hornborga as a bird-lake for future. The restoration plan was presented in mid-1980. The restoration measures included the construction of a 3 km long retaining dam and an outflow sluice, which allowed a rise of the water level. Approximately 500 ha of forest and shrubs were cut and almost 1200 ha of reed were burnt and/or chopped, using specially designed amphibious machinery. Following the new water regime, about 800 ha of former arable land have been transformed into wet meadows, currently mainly managed by grazing or used for hay production. Previous lowering of the lake level by nearly 2.0 m between 1805 and 1935. Restoration of the lake in 1992-95 resulted in a rise in water level by 0.85 m.

5.2.7 - Monitoring implemented or proposed

Monitoring	Status
Water quality	Implemented
Water regime monitoring	Implemented
Animal community	Implemented
Plant community	Implemented
Plant species	Implemented
Animal species (please specify)	Implemented
Birds	Implemented

The restoration of the lake is one of the largest single nature conservation project ever carried out in Sweden. The main goal of the project was to restore the wetland conditions for birds and therefore the birds play a very important role in the monitoring program. A monitoring program was established to survey the changes in especially fauna and flora.

Animal species monitored are red-listed breeding birds such as Slavonian grebe (*Podiceps auritus*), Black tern (*Chlidonias niger*) and Ruff (*Phimomachus pugnax*) and migrating wetland birds such as Common crane (*Grus grus*), Whooper swan (*Cygnus cygnus*), Teal (*Anas crecca*) and Smew (*Mergellus albellus*).

Other items monitored are vegetation, flora, fish fauna, invertebrate fauna, hydrology and water quality. There is a combined office and field station at the site, close to the information centre.

6 - Additional material

6.1 - Additional reports and documents

6.1.1 - Bibliographical references

Hertzman, T. and Larsson, T. 1999. Lake Hornborga, Sweden – the return of a bird lake. Wetlands International Publ. 50, Wageningen, Netherlands.

Hertzman, T. and Larsson, T. 1991. Lake Hornborga - A Case Study. In: Finlayson, C.M. & Larsson, T. (Eds) 1991: Wetland

www.hornborga.com

Ljungstrand, E. 2010 Svensk botanisk tidskrift 104:1

Management and Restoration. - Proc. Workshop, Sweden 1990, Swedish Environmental Protection Agency. Report 3992.

Remissversion: Rödlistade arter i Sverige 2015. ArtDatabanken, SLU, Uppsala.

6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)

<1 file(s) uploaded>

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

<1 file(s) uploaded>

vi. other published literature

<1 file(s) uploaded>

6.1.3 - Photograph(s) of the Site

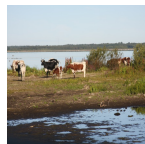
Please provide at least one photograph of the site:



Hornborgasjön (
Länsstyrelsen i Västra
Götalands län, 2013)



Visitor centre naturum
Hornborgasjön (
Länsstyrelsen i Västra
Götalands län, 2013)



Grazing cattle (
Länsstyrelsen i Västra
Götalands län, 2013)



Bidens radiata (
Länsstyrelsen i Västra
Götalands län, 2013)

6.1.4 - Designation letter and related data

Designation letter

<1 file(s) uploaded>

Date of Designation 1974-12-05