Information Sheet on Ramsar Wetlands (RIS) – 2006-2008 version

Available for download from http://www.ramsar.org/ris/key_ris_index.htm.

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.

2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.

3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

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1. Name and address of the compiler of this form:

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DD MM YY

Designation date | Site Reference Number

Peder Hedberg Fält, County Administrative Board of Västra Götaland, Hornborgasjön, SE-521 98 Broddetorp, Sweden.

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2. Date this sheet was completed/updated:
17 January 2009

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3. Country:
Sweden

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4. Name of the Ramsar site:
The precise name of the designated site in one of the three official languages (English, French or Spanish) of the Convention. Alternative names, including in local language(s), should be given in parentheses after the precise name.
Lake Östen (Östen)

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5. Designation of new Ramsar site or update of existing site:

This RIS is for (tick one box only)**:**
a) Designation of a new Ramsar site ❑; or
b) Updated information on an existing Ramsar site ☒

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6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area

The Ramsar site boundary and site area are unchanged: ☒

or
If the site boundary has changed:
i) the boundary has been delineated more accurately ❑; or
ii) the boundary has been extended ❑; or
iii) the boundary has been restricted** ❑

and/or

If the site area has changed:
i) the area has been measured more accurately ❑; or
ii) the area has been extended ❑; or
iii) the area has been reduced** ❑

** **Important note**: If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:
No major changes have occurred, but may take place in the future (see para 26 below) .

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7. Map of site:
Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the site, with clearly delineated boundaries, is included as:
i**) a hard copy** (required for inclusion of site in the Ramsar List): ❑;

ii**) an electronic format** (e.g. a JPEG or ArcView image) ❑;

iii) **a GIS file providing geo-referenced site boundary vectors and attribute tables** ❑.

b) Describe briefly the type of boundary delineation applied:
e.g. the boundary is the same as an existing protected area (nature reserve, national park, etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.
The borderline largely follows the border between areas affected by high water level (the lake proper and areas used by grazing) and land used for crop production, with the exception of some part in the south.

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8. Geographical coordinates (latitude/longitude, in degrees and minutes):
Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.
58º35'N 013º57'E

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9. General location:
Include in which part of the country and which large administrative region(s) the site lies and the location of the nearest large town.
Lake Östen is located in central southern Sweden between Sweden's largest lakes, Vänern and Vättern, about 20 km north of the town of Skövde, in the county of Västra Götaland (app. population 1 500 000), in the municipalities of Mariestad (app. pop. 24 000), Töreboda (app pop. 9 000), and Skövde (app. pop. 50 000).

10. Elevation: (in metres: average and/or maximum & minimum)
average 66 metres

11. Area: (in hectares)
1 010 hectares

12. General overview of the site:
Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.
Lake Östen is a shallow, eutrophic freshwater lake. The lake level is subject to considerable natural fluctuations, with extensive spring flooding. There is a rich submerged flora and the lake is surrounded by beds of *Phragmites* and *Scirpus*, giving way to *Carex* and grassland. The central and southern shores of the lake support thickets of *Salix* and *Alnus*. The site is important as a staging area for birds, notably whooper swan (*Cygnus cygnus*) and bean goose (*Anser fabalis*) which occur in internationally significant numbers. The number of resting whooper swans has been decreasing in recent time due to lack of flooded areas during spring migration.

13. Ramsar Criteria:
Tick the box under each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11). All Criteria which apply should be ticked.

1	2	3	4	5	6	7	8	9
☒	☒	☒	☒	❑	☒	❑	❑	❑

14. Justification for the application of each Criterion listed in 13 above:
Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).
1. Lake Östen contains a representative example of natural wetland types in the boreal region, partly affected by natural water fluctuations and offering attractive conditions for breeding and above all migrating wetland birds.

2. Nationally redlisted bird species include e.g. bean goose (*Anser fabalis*) (resting,VU), corn crake *Crex crex*) (breeding,VU), honey buzzard (*Pernis apivorus*) (resting, EN), lesser white fronted goose (*Anser erythropus*) (resting annually 1-5 individuals, nationally red listed as CR, globally as VU), ruff (*Philomachus pugnax*) (resting, VU), Great snipe (*Gallinago media*) (resting, VU) and spotted crake *Porzana porzana*) (breeding, VU). Other redlisted species are bar-tailed godwit (*Limosa lapponica*) (VU), caspian tern (*Sterna caspia*) (VU), hen harrier (*Circus cyaneus*) (VU), Montagu's harrier (*Circus pygargus*) (EN), all migrating birds and slavonian grebe (*Podiceps auritus*) (VU) (see also point 22)

3. The site supports populations of especially bird species important for maintaining the biological diversity of the biogeographic region, primarily large numbers of geese, swans and ducks. Whooper swan (*Cygnus cygnus*) and bean goose (*Anser fabalis*) both occur in significant numbers pairs during spring and autumn migration)
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4). The spring flooding areas with slender tufted-sedge, reed canarygrass and reed sweet-grass are important for feeding and staging whooper swans (*Cygnus cygnus*) (see also point 22)

6. The site supports more than 1% of the population of bean goose (*Anser fabalis*), peak number about 15 000 individuals in autumn and of whooper swan (*Cygnus cygnus*), peak number about 1 000 individuals in March, decreasing trend in recent time, however.

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15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):
Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:
Boreal

b) biogeographic regionalisation scheme (include reference citation):
European Environment Agency. 2003. Europe's environment: the third assessment, p 231. Environmental assessment report No 10. Luxembourg: Office for Official Publications of the European Communities.

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16. Physical features of the site:
Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.
The lake has been lowered several times in the past, most recently at the end of the nineteenth century. The lake level is still subject to considerable natural fluctuations, with extensive spring flooding, which helps to free the lake from ice early in the year and creates a relatively large area of wet meadows.

Water permanence is very low due to a large catchment area in relation to the lake surface. The mean water flow is 15,4 m^3/s, with extreme highs and lows at 80 m^3/s and 1,6 m^3/s. The highest water flow used to be in March or April. But following a change in weather conditions in the last decade, resulting in milder winters, flooding now takes place less regular. Flooding during summers now occur more often due to more rain in the catchment area. The water level amplitude is 140 cm between mean highest water level and mean lowest water level. Between 1978 and 1986, the mean water depth in the lake was 112 cm, but this was lowered to 86 cm after removal of sediment at the outlet.

Phosphorus contents are extremely high, between 0,05-0,1 mg/l in the last years. Nitrogen contents are also very high, with levels between 1,0-2,0 mg/l .The outlet has very turbid water during flooding, due to fluvial deposits of clay and mud from agriculture. Therefore, sedimentation does not occur in the open water body, only in areas with shallow water and within *Phragmites* and *Scirpus* vegetation. The clearance depth is 1 m and pH is approximately 7,5 in the lake.

Average temperature in January/February is 1 – 4 C^o below zero, in July 15 – 16 C^o.

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17. Physical features of the catchment area:
Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).
Lake Östen is situated at the end of the river Tidan catchment area, which is 2 180 km^2. The size of lake Östen catchment area is 1 944 km^2 and the surface area is 480 ha (almost 5 km^2). The main inlets are Tidan (1 298 km^2) and Ösan (482 km^2).

The bed-rock is rich in lime and is therefore not affected by acidification. The soil in the upper parts of the catchment area is dominated by moraine, whereas the agricultural lands near lake Östen are dominated by clay.

The number of inhabitants in the catchment area is 95 000 and the rivers are recipients from the cities Tibro, Tidaholm and Skövde. The general land use is forestry (48%), agriculture (28 %), pastures (4%), cities (3%) and other land uses (15%)

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18. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Since water permanence is very low and the water flow through the lake is high, lake Östen has little function in flood control and nutrient trapping. There are no sufficient data on the speed of sedimentation. However, sedimentation does not normally occur in the lake, with the exception of shallow water with reed and other large macrophytes.

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19. Wetland Types

a) presence:

Circle or underline the applicable codes for the wetland types of the Ramsar "Classification System for Wetland Type" present in the Ramsar site. Descriptions of each wetland type code are provided in Annex I of the *Explanatory Notes & Guidelines.*

Marine/coastal: A • B • C • D • E • F • G • H • I • J • K • Zk(a)

Inland: L • M • N • <u>O</u> • P • Q • R • Sp • Ss • <u>Tp</u> Ts • U • Va •
Vt • W • Xf • Xp • Y • Zg • Zk(b)

Human-made: 1 • 2 • 3 • <u>4</u> • 5 • 6 • 7 • 8 • 9 • Zk(c)

b) dominance:

List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar site, starting with the wetland type with the largest area.

O, Tp, 4

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20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

The open lake is dotted with clumps of *Scirpus spp*. In the western part of the lake, submerged vegetation is dominated by water-milfoil (*Myriophyllum spp.*), pondweed (*Potamogeton spp.*) and some hornwort (*Ceratophyllum spp.*). Floating vegetation, such as water-lilies (*Nuphar spp.*) and bur-reed (*Sparganium spp.*), is also widespread in sheltered areas. The distribution of submerged vegetation changes between years due to the water level variation. The surroundings are dominated by *Scirpus* and *Phragmites* reeds, important to breeding birds like bittern (*Botaurus stellaris*) and marsh harrier (*Circus aeruginosus*). In recent years, the distribution of *Phragmites* has decreased in some parts of the lake due to intensive geese grazing. Large flat areas of grasslands that have not been fertilized or ploughed for a long time are important for breeding waders, ducks and species like corncrake.

Grazing or hay cutting on the wet meadows is very important for breeding ducks and waders. About 50% of the wet meadows are grazed by cattle. The lake shore is mainly dominated by

slender tufted-sedge (*Carex acuta*), reed canary-grass (*Phalaris arundinacea*) and reed sweet-grass (*Glyceria maxima*). These species are disfavoured by the grazing of the wet meadows. In the upper part of the shore smaller species of *Carex*, especially common sedge (*Carex nigra*), and different species of grass take over. These species are favoured by the grazing.

Wet forest with alder (*Alnus spp.*) and willow (*Salix spp.*) is typical in some parts of the site. There are also arable fields in the area, especially in the southern parts. The spring flooding areas with slender tufted-sedge, reed canarygrass and reed sweet-grass are important for feeding and staging whooper swans (*Cygnus cygnus*)*.

About 90 % of the fish biomass consists of prey species (”whitefish”) while the remaining part is predatory species.

* = species listed in the EU birds directive

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

The flora does not include any noteworthy species, but is represented by species typical for wetland habitats in this region (see above).

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

The site is important to staging wetland birds during spring and autumn, especially geese and whooper swans (*Cygnus cygnus*)*, with a maximum of 500-1.000 swans/day in the middle of March. Within the flocks of whooper swans, some Bewick´s swans (*C. columbianus bewickii*)* (1-25) may occur.

The most numerous among the geese is the bean goose (*Anser fabalis*) (VU) (autumn 15.000-20.000 and spring 5.000-10.000). Other staging geese are grey-lag goose (*Anser anser*) (5.000-10.000, autumn), white-fronted goose (*Anser albifrons*) (50-150), lesser white fronted goose (*Anser erythropus*)* (1 - 5 individuals, nationally red listed as CR, globally as VU), pink-footed goose (*Anser brachyrhynchus*) (100-150) and barnacle goose (*Branta leucopsis*)* (50-150). The geese are feeding on the surrounding arable fields and rest in the lake during days and nights. In autumn an increasing number of white-tailed eagles (*Haliaetus albicilla*)* (5-10) feed on geese and other birds.

Staging ducks are favoured by the flooding of the wet meadows during April. The number of pintail (*Anas acuta*) (normally 5-15), wigeon (*Anas penelope*) (100-600) and teal (*Anas crecca*) (200-1.500) depends on the area of flooding. Other duck species of importance is the smew (*Mergus albellus*)* (10-40). Staging waders also use the flooded wet meadows in spring, e.g. great snipe (*Gallinago media*)* (1-7), ruff (*Philomachus pugnax*)* (VU) (20-100) and wood sandpiper (*Tringa glareola*)* (50-500).

Species that breed in the lake or in the surroundings are bittern (*Botaurus stellaris*)* (1-3 booming males), marsh harrier (*Circus auruginosus*)* (3-5 pairs), osprey (*Pandion haliaetus*)* (3 pairs), corncrake (*Crex crex*)* (VU), (10-15 males), kingfisher (*Alcedo atthis*)* (VU) (1 pair), spotted crake (*Porzana porzana*)* (VU) (1-3 males), and crane (*Grus grus*)* (5-10 pairs). In the nearby forest black woodpecker (*Dryocopus martius*)* (1-2 pairs), lesser spotted woodpecker (*Dendrocopus minor*) (5-10 pairs) and honey buzzard (*Pernis apivorus*)* (EN) (1-2 pairs) breed.

* = listed in the EU Birds directive, Annex I.

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23. Social and cultural values:

a) Describe if the site has any general social and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

The area is an important archaeological site with relicts from the Stone Age. One of the most important Iron Age grave fields in Sweden is situated in Askeberga, close to lake Östen

A fishery management association sells fishing licenses for anglers. Agriculture is intensive near the lake.

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning?

If Yes, tick the box ❑ and describe this importance under one or more of the following categories:

i) sites which provide 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) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:

iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:

iv) sites where 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:

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24. Land tenure/ownership:

a) within the Ramsar site:

The area is mainly privately owned but approximately 8 percent of the area is owned by the state.

b) in the surrounding area:

The area is mainly privately owned.

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25. Current land (including water) use:

a) within the Ramsar site:

The site itself is used for nature conservation purposes, fishing and livestock grazing.

b) in the surroundings/catchment:
The nearby surrounding areas are used for agriculture and some forestry.

26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:
a) within the Ramsar site:
In the beginning of the1990´s the lake became gradually overgrown by vegetation invading the wetland. This is due to a decline in traditional grazing, as well as previous hydrological interference at the lake's outlet and artificial fertilization of cultivated land by nitrates and phosphates leaching from nearby agricultural regions. As a result of the gradual changes in the vegetation, nesting habitat for waders has declined substantially. Therefore, a restoration project started in 1999 to improve grazing and hay cutting within the area (see below). Since then, most of the wet meadows are grazed by cattle.

Also reed vegetation, *Phragmites* and *Scirpus* increased in the lake during 1993 to 1999, but has decreased during last years. The reason is not clarified, but increasing number of grazing geese, especially Grey-lag goose, seems to be one factor.

b) in the surrounding area:
Fertilization of surrounding cultivated land contributes to high levels of nitrates and phosphates in the water.

27. Conservation measures taken:
a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:
In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.
Lake Östen is listed as being of national importance for nature conservation and is an EU Special Protection Area (SPA). There is a small nature reserve and a larger nature conservation area within the site:

- Östen Nature Conservation Area – total area 1 401 hectares, of which water covers 480 hectares. In 2008, 19 ha was transferred to Logården Nature Reserve (see below). Protected since 1994 and privately owned. An officially approved management plan exists. The area is managed by the County Administrative Board of Västra Götaland in consultation with landowners.
- Logården Nature Reserve – total area 89 hectares. Protected since 1979 and revised 2008. A 10-year management plan was approved in 1979. In 2008 the Management Plan was revised and the Reserve was added by 19 ha from the Östen Nature Conservation Area. Approximately 95 % is state-owned. The area is also managed by the County Administrative Board.
- The site belongs to the EU Natura 2000 network, SE0540062 Östen (1 481 ha) – SPA.

- A restoration project of lake Östen was carried out 1999-2003. In order to improve the wetland for migrating birds and to prevent the lake from overgrowing, spring flooding water levels were raised. An application to increase autumn water levels as well was denied by the Environmental Court. Other restoration measures within the project were carried out, e.g. restoration of 219 ha of wet meadow for either grazing by cattle or hay cutting.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

Ia ❑;Ib ❑; II ❑; III ❑; IV ☒; V ❑; VI ❑

c) Does an officially approved management plan exist; and is it being implemented?:
A management plan according to EU regulations has been adopted in 2006 and is being implemented.

d) Describe any other current management practices:

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28. Conservation measures proposed but not yet implemented:
e.g. management plan in preparation; official proposal as a legally protected area, etc.
Measures to introduce a variation in water level more beneficial to the wetland habitats and wetlands birds are looked into from time to time.

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29. Current scientific research and facilities:
e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.
The bird conservation association, "Skövde Fågelklubb", monitors the most important staging and some breeding bird fauna annually, focusing on migrating whooper swans and geese.

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30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:
e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.
An old homestead association runs an Information Centre at the southwest of the lake, called Logården. The centre contains a small exhibition together with information booklets and a cafeteria. The association also arranges guided tours around the lake.

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31. Current recreation and tourism:
State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.
Lake Östen and its surroundings attract many visitors annually. To avoid disturbance of flora and fauna it has been important to direct visitor flows. As a result, there are three bird watching towers with additional nature trails within the area. The natural values of the area are described on information signs near the parking facilities.

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32. Jurisdiction:
Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept of Agriculture/Dept. of Environment, etc.
County Administrative Board of Västra Götaland.

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33. Management authority:
Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.
County Administrative Board of Västra Götaland, Hornborgasjön, SE-521 98 Broddetorp, Sweden.

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34. Bibliographical references:
Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

- Bevarandeplan för Natura 2000-området SE0540062 Östen (*Management plan for Natura 2000 site Östen).* Länsstyrelsen i västra Götalands län 2006.

- European Environment Agency. 2003. Europe's environment: the third assessment, p 231. Environmental assessment report No 10. Luxembourg: Office for Official Publications of the European Communities.
- Bergman, F. 2000. Utbredningsförändringar hos vassbälten och sävruggar i sjön Östen- en jämförelse mellan åren 1993 och 1999. Report. University of Lund.
- Jannert, J. 2003. Restoration of Lake Östen-a wetland of international importance for migrating birds. County Administration of Västra Götaland, Mariestad.
- Neuendorf, M. 2001. Kommentarer till vegetationskarta over sjön Östen upprättad efter IR-fotografier tagna i juli 1999. Report. Göteborg.
- Pehrsson, O. 1999. Östens vattenregim-förslag till reglering. Report. Olof Pehrsson Ekologi-Konsult.

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