

Information Sheet on Ramsar Wetlands (RIS) – 2009-2012 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 14, 3rd edition). A 4th edition of the Handbook is in preparation and will be available in 2009.
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.

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

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

July 2013

3. Country:

Sweden

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.

Vindelälven

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

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:

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
Included in the GIS file for all Swedish Ramsar sites version 2013.

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 Ramsar site boundary follows the shoreline of the river Vindelälven and its tributaries (including associated lakes).

Due to the complicated delineation of the river and all its tributaries, the border may have to be somewhat adjusted in the future.

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.

65°38'N, 17°27'E

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.

The 450 km long River Vindelälven flows through the county of Västerbotten (population 260 000), There are only smaller municipalities and villages along the river. The biggest municipality close to the site is Umeå (116 600) south of the river's outlet in river Umeälven.

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

80 – 1 300 metres above the sea level.

11. Area: (in hectares)

66 395 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.

Vindelälven is a free flowing river with no hydropower dams in its main channel and a large number of impressive, untamed rapids. Vindelälven is one of four large Swedish protected national rivers. It is 450 kilometers long, originates in the alpine region and stretches to the coast. High species diversity is a significant character of the river. Prominent species in the river are naturally reproducing salmon (*Salmo salar*), otter (*Lutra lutra*) and the freshwater pearl mussel (*Margaritifera margaritifera*). A hydrologic characteristic of the river is the high and regular seasonal fluctuations of the water-level, the snowmelting in the alpine region mostly creating the annual peak-flows. The inland delta in Ammarnäs is of significant importance for migrating and breeding water birds.

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
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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).

Criterion 1: The site is a representative example of a natural permanent river (M), including smaller parts that are permanent freshwater lakes (O) and a permanent inland delta (L). The river is large and has many tributaries. It is free-flowing with natural water fluctuations, without any hydropower dams. Such natural rivers are very rare in the EU boreal and alpine regions as well as in FEOW Ecoregion 406: Northern Baltic drainages.

In the upper parts of the river, the river forms a large lake, Storvindeln. This lake is unique in the alpine region in Sweden, being so large and still having natural water amplitudes with large differences between high and low water flows.

Criterion 2: The site supports red-listed species, such as Otter *Lutra lutra* (nationally VU) and freshwater pearl mussel *Margaritifera margaritifera* (nationally VU, European EN). There have been observations of Lesser white-fronted goose *Anser erythropus* (nationally CR, globally VU) at the inland delta at the site. Storvindeln (part of the river that forms a lake) is the only site in the world for the morphotype *Coregonus maraena morphotype storskallesik* (nationally CR).

Criterion 3: The site is very important for maintaining the biological diversity of free-flowing rivers in the region (EU boreal and the FEOW Ecoregion 406: Northern Baltic drainages), since almost all other large rivers are exploited for hydropower production. This creates good conditions for migrating aquatic species and species living in fast flowing waters. The natural water flow and the seasonal flooding's have a good effect on the flora along the river and the flora is very species-rich for northern boreal conditions. The water vegetation in the slow-running parts of the river is well developed.

Criterion 4: The site is of importance for maintaining populations of migrating aquatic species and for species in need of free-flowing waters with rapids. The site is also one of the fly ways for birds, from the shores of Baltic sea to the alpine region. The inland delta in Ammarnäs is of significant importance for migrating and breeding water birds.

Criterion 7: The site supports a significant proportion of the indigenous population of naturally breeding Baltic salmon *Salmo salar*. The site is the only site in the world for the morphotype *Coregonus maraena morphotype storskallesik*. The site is also of importance for maintaining populations of Brown trout *Salmo trutta* and European grayling *Thymallus thymallus*.

Criterion 8: The Vindelälven river is important as a migrating and spawning site for anadromous populations of Baltic salmon *Salmo salar* and Brown trout (*Salmo trutta*) migrating to spawning territories in the river Vindelälven. The site is also import for reproduction of European grayling *Thymallus thymallus*. There are also strong populations of freshwater pearl mussel *Margaritifera margaritifera*.

Criterion 9: The Vindelälven water system supports 100% of the morphotype *Coregonus maraena morphotype storskallesik* (Nathanson 2001). The site also has more than 1 % of the Baltic salmon *Salmo salar* population in the FEOW Ecoregion 406: Northern Baltic drainages (Naturvårdsverket 2013).

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:

- About 90 % of the site is located in the EU boreal region and 10 % in the EU alpine region.
- 100% of the site is situated in the FEOW Ecoregion 406: Northern Baltic drainages.

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.
- Abell, R. et al. 2008. Freshwater regions of the World. A new map of biogeographic Units for freshwater biodiversity Conservation. Bioscience 5: 403-414.

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 river is flowing through a very complex landscape and has a lot of tributaries. The river originates in the alpine mountain region run 450 km towards the outlet in River Umeälven. In the mountain area the bedrock consists of easily decomposing slate, whereas in the other parts of the river basin the bedrock is mainly hard sedimentary gneiss of greywacke or argillite type.

The river flows from the alpine mountainous areas through hilly landscapes dominated by moraine from earlier glaciations. In the upper parts the shores are mainly rocks or stones. In the middle parts the surroundings are mainly thick sandy or fine grained glaciofluvial or river sediments. Downstream from the highest coastline during last ice age, the river is deeply incised into the deposits.

The river is characteristic of free-flowing rivers in the region, with a large and regular seasonal fluctuation in discharge and water-level, fed by the snow-melt in the mountain region. The river is surrounded by alpine mountains in the western parts and mainly coniferous forest and mires in the middle and eastern parts.

17. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).

The catchment area is 12 625 km² and consists of mountains, forests and mires, whereas farmland and resident land is less common. It stretches from the border between Sweden and Norway in the Scandinavian mountain range, to the outlet in the river Umeälven 30 km from the coast.

The bedrock of the catchment can be divided into two main parts. The western, upstream part consists of bedrocks of the Scandinavian mountain range, formed some 300 million years ago. Schists and amphibolites dominate, with sparagmites and quartzites on the westernmost limits (Kulling 1953). The highest mountain in the catchment (Norra Storfjället) reaches 1 767 m above sea level. The eastern part of the catchment lies on old, pre-Cambrian bedrocks of the Baltic shield (Hjelmqvist 1953). The bedrock is dominated by granites and gneisses. The geomorphology of the catchment is shaped by the repeated glaciations during the Quaternary period (Anonymous 1984, Rudberg 1970).

The soils of the upper parts of the catchment consist of glacial tills and glaciofluvial sediments (Anonymous 1984, Rudberg 1970). Numerous thresholds in the geomorphologically young landscape have led to the formation of large lakes, the largest one being the lake Storvindeln 342 m above sea level. The river crosses the former highest coastline attained following the last ice age (Fredén 1998). Since then, crustal rebound has caused the land to rise about 240 m, and the coastline to recede about 170 km (Fredén 1998). After crossing the former highest coastline, the river start to cut into lacustrine and marine sediments deposited in the river valley.

Where river Vindelälven joins river Umeälven the mean annual discharge is 190 m³/s. The mean annual precipitation is largest in the mountain range in the westernmost parts of the catchment, reaching 1,300 mm/year (Raab and Vedin 1995). To the west of the mountain range, precipitation falls to about 700 mm/year, and is lowest around the lake Storvindeln (about 600 mm/year). Most of the precipitation falls as snow. The mean depth of the deepest snow cover per winter season is >130 cm furthest to the west, about 80 cm in the inland, and about 70 cm closest to the coast (Raab and Vedin 1995). Patterns in runoff mirrors those of precipitation: The highest values, about 800 mm/year, are reached in the westernmost parts of the catchment, but decreases to around 300-400 mm/year in the inland region (Raab and Vedin 1995).

18. Hydrological values:

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

The hydrology of the river is largely natural and unaffected by diversions and dams in the main channel. Smaller non-regulating dams occur in some of the tributaries. These undisturbed conditions are close to unique within the EU boreal region for such a large river system. The natural water flow floods the surrounding land and the flora is very rich in species for the northern part of the boreal region.

Discharge varies between 16 and 1787 m³/s (mean annual minimum and maximum flows during 1911–2000). The hydrologic regime is characterized by a spring flood peak due to snow melt in May or June followed by progressively lower water levels during summer and winter. In some years, summer and autumn rains and reduced evapotranspiration towards the end of the growing season result in additional flood events.

There are not any investigations about in what way the river and the tributaries contribute to hydrological ecosystem services. The site will probably contribute to sedimentation in slow-flowing parts and water purification. The free-flowing water and the flooding also contribute to natural erosion and around the lower part of the river there are very well developed gullies and terraces.

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 • O • P • Q • R • Sp • Ss • Tp • Ts • U • Va •
Vt • W • Xf • Xp • Y • Zg • Zk(b)

Human-made: 1 • 2 • 3 • 4 • 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.

M, O, Ts, L

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.

Vindelälven is a natural river with no hydroelectric dams and a great number of impressive, untamed rapids. The main channel is classified as Fennoscandian natural rivers (3210). The site also includes large freshwater lakes, an inland freshwater delta and seasonally flooded riparian meadows.

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 riparian flora is species-rich and varied, especially along the rapids, counting more than 400 species in total. The floodplains along the river have been used for haymaking and as pastures for centuries. This practice has created characteristic and species-rich riparian meadow vegetation. The aquatic vegetation is well-developed and species-rich in shallow slow-flowing stretches. The site supports several species which are nationally red-listed, such as *Persicaria foliosa* (NT) which is resident in the lower reaches of the river.

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 supports several species which are nationally red-listed and/or included in Annex 1 of the EU Bird Directive and Annex II of the Habitat Directive (marked with *), such as: Lesser white-fronted goose *Anser erythropus** CR, Whooper swan *Cygnus cygnus**, Otter *Lutra lutra** VU, Salmon *Salmo salar**, Bullhead *Cottus gobio**, Northern whitefish *Coregonus peled* DD, *Dytiscus latissimus**, Freshwater pearl mussel *Margaritifera margaritifera** VU, *Semblis phalaenoides* NT, *Paraleptophlebia wernerii* NT, *Nemoura arctica* NT and *Valvata sibirica* NT. Another interesting species is *Heptagenia orbiticola*.

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 surrounding river Vindelälven has been used by man for hundreds of years for fishing, hunting, farming and logging. There are several small towns and villages along the river.

The river included its surroundings are of national cultural interest, due to traditional building and land use within a large Fennoscandian river valley. There are several bridges, roads and houses by the river.

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:

The river with surroundings is classified as an area of national cultural interest, due to traditional buildings and land use within a large Fennoscandian river valley.

- 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:

24. Land tenure/ownership:

a) within the Ramsar site:

The site is partly privately owned, and partly state-owned.

b) in the surrounding area:

Privately and state-owned land.

25. Current land (including water) use:

a) within the Ramsar site:

Forestry, farming, recreation, fishing, hunting, and nature conservation.

b) in the surroundings/catchment:

The surrounding areas are mainly used for forestry and, to a less extent farming.

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:

A large hydropower dam immediately downstream the Vindelälven river outlet to Umeälven is a barrier for migrating fish and affects other ecological functions of the river. Most rapids in the river have been affected by modifications to facilitate log driving, such as boulder extraction and channel straightening. Most of these modifications, however, have been or are currently being restored.

b) in the surrounding area:

No significant threats are identified, but with what care the land use take place in the surrounding landscape might have influence on the water quality in the river.

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.

The site is of national importance for nature conservation. The site is covered by the special provisions in the Swedish Environmental Code, where exploitation for hydro-electricity purposes is prohibited (Chapter 4, § 6).

There are a number of nature reserves covering parts of the river. The sources are protected within one of the largest nature reserves in Sweden, Vindelälven (33 142 ha).

The entire site is included in about 30 different Natura 2000 sites. Most of them cover both the water area (that is part of the Ramsar site) and adjacent land area (which is not). One of the Natura 2000 sites SE0810435 Vindelälven covers all parts of the water area of the river system that aren't included in any of the sites with both water and land.

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?:

Management plans are approved and implemented for the Natura 2000 sites.

d) Describe any other current management practices:

Efforts have been made, and might further be made, to restore open wetland and meadow landscapes along the river shores, mainly by cutting down shrubs and resuming cattle grazing. There have also been measures to restore parts of the river that was affected by cleansing for log driving.

The Environmental Code includes fundamental provisions for the management of land and water areas. One of the provisions is about how areas of national interest due to their natural value should be taken care of when there are development plan and applications for permits etc under a large number of Acts are considered.

Large parts of this Ramsar site have the status of being of national interest.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

Further action will be taken to preserve more land and water areas adjacent to the river as nature reserves. There is a proposal to forbid drainage at the site.

29. Current scientific research and facilities:

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Smaller research projects are conducted. Birds are surveyed yearly. There is a field research station in Ammarnäs, which has been running since the 1960's.

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.

The river is easily reached by car. In Vindeln there is a Visitor Center with a permanent nature exhibition and sometimes also guides. You can visit the Ramsar site by foot during summer or by skiing during winter. There are open cottages for fishermen next to the river. Winter trails (for skiing or sledge dogs) exist along large part of the river. General information, folders and maps are available on the internet and at the Visitor Center.

31. Current recreation and tourism:

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

There are a lot of visitors in the area, mainly in summer time (trekking, fishing, tourism).

32. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept of Agriculture/Dept. of Environment, etc.

County Administrative Board of Västerbotten, S-901 86 Umeå, Sweden

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 Västerbotten, S-901 86 Umeå, Sweden

Tel. +46 90 10 70 00. E-mail: vasterbotten@lansstyrelsen.se (to the registry).

34. Bibliographical references:

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

- Anonymous. 1984. Naturgeografisk regionindelning av Norden. Nordiska Ministerrådet, Helsinki, Finland.
- Bergqvist, E. 1986. Svenska nip- och ravinlandskap. Processer och former, översikt och förslag till naturreservat. Naturvårdsverket Rapport 3156.
- Erixon, G. 1980. Naturinventering av Vindelälven inom Sorsele kommun. Länsstyrelsen i Västerbottens län, meddelande 14:1980.
- Erixon, G. 1981. Naturinventering av Vindelälven inom Lycksele och Vindelns kommuner. Länsstyrelsen i Västerbottens län, meddelande 9:1981.
- Erixon, G. 1982. Naturinventering av Vindelälven inom Umeå och Vännäs kommuner. Länsstyrelsen i Västerbottens län, meddelande 2:1982.
- Fredén, C. 1998. National Atlas of Sweden: Geology
- Gärdefors, U. (ed.) 2010. Rödlstade arter i Sverige 2010 - The 2010 Red List of Swedish Species. Artdatabanken, SLU, Uppsala.
- Havs- och vattenmyndigheten 2012. Fiskbestånd och miljö i hav och vatten. Resurs- och miljööversikt 2012.
- ICES. 2012. Report of the Baltic Salmon and Trout Assessment Working Group (WGBAST), 15–23 March 2012, Uppsala, Sweden. ICES CM 2012/ACOM:08. 353 pp.
- IUCN 2012. IUCN Red List of Threatened Species. Version 2012.2.
- Jansson, E. 1985. Mindre vattendrag i Västerbottens län – en sammanställning av naturvärden. Länsstyrelsen i Västerbottens län, meddelande 2:1985.
- Jonsson, H. 1984. Övre Giertsbäcksdalen. Vegetationsinriktad naturinventering. Biologisk grundutbildning, Umeå universitet. Rapportserie 1989:4.
- Kulling, O. 1953. Fjällkedjans berggrund. (Bedrock of the Caledonian Mountain Range). Atlas över Sverige, kartblad 7-8.
- Lundqvist, J. 1974. Översikt över vegetationsförhållandena inom Vindelälvsystemet.
- Lundqvist, J. 1980. Botaniskt värdefulla naturområden i Vindelälvsdalen. Länsstyrelsen i Västerbottens län, meddelande 14:1980.
- Länsstyrelsen i Västerbottens län 2001. Riksintressen för naturvård Västerbottens län. Meddelande 4 2001.
- Länsstyrelsen i Västerbottens län 2008. Bevarandeplan Vindelfjällen SE0810080.
- Länsstyrelsen i Västerbottens län, 2005. Bevarandeplan Vindelälven SE0810435.
- Naturvårdsverket, 2013. Compilation of not yet reported results about salmon for the article 17 report under the Habitats directive to be delivered by Sweden and Finland compared with data about salmon in Vindelälven from Havs- och vattenmyndigheten 2013. Excel-table in file NV-01787-11.
- Nathanson, J. E. 2001. Rev. Nathanson, J. E. 2005, Rev. Svensson, M. 2006. Artfaktablad för *Coregonus maraena* morphotype storskallesik – storskallesik. Artdatabanken, SLU 2010-01-19.
- Nilsson, A. 1985. Vindelälvens vattenskalbaggar – utbredning och habitatval. Entomologisk Tidskrift 107:31-42.
- Nilsson, C. 1979. Piteälven, Laisälven och Vindelälven. Växt- och djurliv samt biologiska effekter av vattenöverledning. Wahlenbergia 6.

- Raab, B. & Vedin, H. 1995. National Atlas of Sweden: Climate, Lakes and Rivers.
- Rudberg, S. 1970. Geomorphology. Maps 5-6 in M. Lundqvist, editor. National Atlas of Sweden. Generalstabens Litografiska Anstalts Förlag, Stockholm, Sweden.
- Rudberg, S. & Sundborg, A. 1975. Vattendragen i norra Norrland. Geovetenskapliga naturvärden. UNGI. Uppsala.
- Sundborg, A., Elfström, A. & Rudberg, S. 1980. Piteälven, Laisälven och Vindelälven. Naturförhållanden och miljöeffekter vid vattenöverledning. Uppsala univ, Naturgeogr. Inst. Rapport 51.

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