



# Ramsar Information Sheet

Published on 9 January 2017

Update version, previously published on : 1 January 1991

## Sweden Tärnasjön



Designation date	5 December 1974
Site number	29
Coordinates	65°56'12"N 15°32'56"E
Area	23 236,00 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 Tärnasjön consists of a flat, alpine valley floor and the lower not so steep parts of surrounding mountain slopes. The site is surrounded by alpine mountains in the north, northeast and west. The northern and southern parts of the site consist of large mire complexes, including the southernmost palsa mires in Sweden. In the central part of the site is situated the large and partly shallow lake Tärnasjön. The southern part of the lake is characterized by an extensive archipelago. The lake is botanically important for its well-developed macrophyte vegetation including an extensive cover of charophytes and *Potamogeton rutilus* (endangered). The wetland is surrounded by alpine mountains and subalpine birch forest. The southeast of the site is a sub-alpine area, with a mixture of forests and wetlands rich in wildlife. The lake Tärnasjön and the surrounding mire complexes are important for breeding birds, especially alpine waders and ducks.

## 2 - Data & location

### 2.1 - Formal data

#### 2.1.1 - Name and address of the compiler of this RIS

##### Compiler 1

Name	Henrik Sporrang (AA Jenny Lonnstad)
Institution/agency	Länsstyrelsen i Västerbottens län (AA Naturvårdsverket)
Postal address	SE-901 86 UMEÅ, SWEDEN (AA Naturvårdsverket, SE-106 48 STOCKHOLM, SWEDEN) (AA registrar@naturvardsverket.se) (AA Phone +46 10 698 10 00) (AA Fax +46 10 698 16 00)
E-mail	henrik.sporrang@lansstyrelsen.se
Phone	+46 10 225 40 00
Fax	+46 10 225 41 10

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

From year	2007
To year	2015

#### 2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)	Tärnasjön
Unofficial name (optional)	Tärnasjön (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 type="checkbox"/>
(Update) The boundary has been extended	<input checked="" type="checkbox"/>
(Update) The boundary has been restricted	<input type="checkbox"/>
(Update) B. Changes to Site area	the area has increased
(Update) The Site area has been calculated more accurately	<input checked="" type="checkbox"/>
(Update) The Site has been delineated more accurately	<input 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 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 (likely)
(Update) Are the changes	Positive <input type="radio"/> Negative <input type="radio"/> Positive & Negative <input checked="" type="radio"/>
(Update) Positive %	50
(Update) Negative %	1
(Update) No information available	<input type="checkbox"/>
(Update) Changes resulting from causes operating within the existing boundaries?	<input type="checkbox"/>
(Update) Changes resulting from causes operating beyond the site's boundaries?	<input checked="" type="checkbox"/>
(Update) Changes consequent upon site boundary reduction alone (e.g., the exclusion of some wetland types formerly included within the site)?	<input type="checkbox"/>
(Update) Changes consequent upon site boundary increase alone (e.g., the inclusion of different wetland types in the site)?	<input checked="" type="checkbox"/>

(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.

The Ramsar site was extended in 2013 and now covers the whole MSP-site "Tärnasjön och Ånkardalen" as well as other wetland areas.

Recent studies have shown that the palsa mire in Laivadalen is strongly degenerated, as a result from warmer climate during recent years. The melting of the ice cores and decomposition processes has been quite quick in parts of the palsa mire and a number of palsas are completely gone and others have collapsed. The conservation status for the palsa mires is bad.

(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 site includes the area with a high proportion of wetlands (central lake/water courses with surrounding flat areas and the lower and not so steep parts of nearby mountain slopes). The boundary is based upon an estimation of where the proportion of wetlands is high or not. Approximately 50% of the boundary of the Ramsar site corresponds with the border for the MSP-site (MSP=the Mire Protection Plan) "Tärnasjön och Ånkardalen (AC1)", especially in the southern part of the Ramsar site.

### 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
Udvardy's Biogeographical Provinces	The Palearctic Realm: 3 West Eurasian Taiga
Bailey's Ecoregions	M240 Marine Regime mountains
WWF Terrestrial Ecoregions	Scandinavian montane birch forest and grasslands
EU biogeographic regionalization	Alpine

#### Other biogeographic regionalisation scheme

NMR. Nordiska Ministerrådet 1977. Naturgeografisk regionindelning av Norden. NU B 1977:34: NMR 36a, Rundade lågfjäll (Rounded low Alpine Mountains).

DMEER 2002 (EEA): Scandinavian montane birch forest and grasslands.

### 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

Other ecosystem services provided

Other reasons

- Criterion 2 : Rare species and threatened ecological communities

- Criterion 3 : Biological diversity

Justification

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

- 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>Gymnadenia conopsea</i>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	NT	<input type="checkbox"/>	Endemic for Sweden	<a href="http://artfakta.artdatabanken.se/taxon/743">http://artfakta.artdatabanken.se/taxon/743</a>
<i>Potamogeton rutilus</i>	null	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	EN 2015 Swedish Red-list	<a href="http://artfakta.artdatabanken.se/taxon/1283">http://artfakta.artdatabanken.se/taxon/1283</a>

Criteria 2 other species: *Taraxacum crocodon* is an endemic species for Fennoscandia that is listed as VU in the Swedish red-list for 2015.

Criteria 2 all species: <http://artfakta.artdatabanken.se/taxon/1545>.

Info Criteria 3: The site supports the world population for the species *Gymnadenia conopsea*. Ånkardalen in the south of the Ramsar site is one of a 4-5 localities for the plant.

#### 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 <sup>1)</sup>	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7	8								
<b>Birds</b>																		
CHORDATA / AVES	 <i>Anas acuta</i>	Northern Pintail	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					LC 	<input type="checkbox"/>	<input type="checkbox"/>	Swedish Red List 2015, VU.	See text box below the table.
CHORDATA / AVES	 <i>Anser erythropus</i>	Lesser White-fronted Goose	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	10	2010	8	VU 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Swedish Red List 2015, CR. European Red List for Birds 2015, EN.	See text box below the table.	
CHORDATA / AVES	 <i>Asio flammeus</i>	Short-eared Owl	<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"/>	EC Birds Directive Annex I.	See text box below the table.	
CHORDATA / AVES	 <i>Bubo scandiacus</i>	Snowy Owl	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Swedish Red List 2015, CR.	Occasional. See text box below the table.	
CHORDATA / AVES	 <i>Circus cyaneus</i>	Northern Harrier	<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. European Red List for Birds 2015, NT. EC Birds Directive Annex I.	See text box below the table.	
CHORDATA / AVES	 <i>Clangula hyemalis</i>	Long-tailed Duck; Oldsquaw	<input checked="" type="checkbox"/>	<input 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"/>	European Red list for Birds 2015, VU.	See text box below the table.	
CHORDATA / AVES	 <i>Gallinago media</i>	Great Snipe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT 	<input type="checkbox"/>	<input type="checkbox"/>		See text box below the table.	
CHORDATA / AVES	 <i>Gavia arctica</i>	Arctic Loon; Black-throated Loon	<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"/>	EC Birds Directive Annex I.	See text box below the table.	
CHORDATA / AVES	 <i>Haliaeetus albicilla</i>	White-tailed Eagle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Swedish Red List, 2015, NT. EC Birds Directive Annex I.	See text box below the table.	
CHORDATA / AVES	 <i>Limosa lapponica</i>	Bar-tailed Godwit	<input checked="" 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, VU.	See text box below the table.	
CHORDATA / AVES	 <i>Luscinia svecica</i>	Bluethroat	<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"/>	EC Birds Directive Annex I.	See text box below the table.	
CHORDATA / AVES	 <i>Pandion haliaetus</i>	Osprey; Western Osprey	<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"/>	EC Birds Directive Annex I.	See text box below the table.	
CHORDATA / AVES	 <i>Phalaropus lobatus</i>	Red-necked Phalarope	<input checked="" 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, VU.	See text box below the table.	
CHORDATA / AVES	 <i>Philomachus pugnax</i>	Ruff	<input checked="" 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, VU.	See text box below the table.	
CHORDATA / AVES	 <i>Sumia ulula</i>	Northern Hawk Owl; Northern Hawk-Owl	<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"/>	EC Birds Directive Annex I.	See text box below the table.	

1) Percentage of the total biogeographic population at the site

For all the species information about observations can be found at <http://artportalen.se/>

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

Criterion 3: See text under 3.1.

Criterion 4: The site is of importance as a potential breeding site for *Anser erythropus*. There are suitable breeding habitats at the site and the species occur in the area. Breeding sites exist not too far away from the Ramsar site.

Criterion 6: The used population for the estimation is the Fennoscandia/Eastern Mediterranean 60-80 + 50-70 for the Swedish part of that population (that Wetlands International excludes from their accounting). Altogether approximately 130 individuals in total. Regular but few observations of the species at the site. Source: Niklas Liljebäck (the project for Lesser White-fronted Goose in Sweden) and David Schönberg Alm (the Swedish EPA).

### 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
Alpine lake	<input type="checkbox"/>	Lake in the alpine region	Alpine lake with unusual rich flora and fauna.

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

### 4.1 - Ecological character

Main habitat of the site is open fresh water areas and different kinds of mires. The lakeshore is composed of moraine deposits with a rich flora. North-west of the delta there are botanically important mires. The mires are surrounded by alpine heaths and forests of *Betula pubescens*. The site contains the following Natura 2000 wetland habitats: Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto-Nanojunceteas* (3130), Aapa mires (7310), Nordic boreal alluvial meadows (6450), Palsa mires (7320), Alkaline fens (7230), Natural dystrophic lakes and ponds (3160), Alpine rivers and the herbaceous vegetation along their banks (3220), Sub-Arctic *Salix* spp. scrub (4080) and Nordic subalpine/subarctic forests with *Betula pubescens* ssp. *czerepanovii* (9040).

### 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 >> L: Permanent inland deltas		3		Representative
Fresh water > Flowing water >> M: Permanent rivers/ streams/ creeks		4		Representative
Fresh water > Lakes and pools >> O: Permanent freshwater lakes		2	2000	Representative
Fresh water > Marshes on inorganic soils >> Tp: Permanent freshwater marshes/ pools		4		Representative
Fresh water > Marshes on peat soils >> U: Permanent Non-forested peatlands		1		Representative
Fresh water > Marshes on inorganic or peat soils >> Va: Montane wetlands		4		Representative
Fresh water > Marshes on inorganic soils >> W: Shrub-dominated wetlands		3		Representative
Fresh water > Marshes on inorganic soils >> Xf: Freshwater, tree-dominated wetlands		3		Representative
Fresh water > Marshes on peat soils >> Xp: Permanent Forested peatlands		4		Representative

#### Other non-wetland habitat

Other non-wetland habitats within the site	Area (ha) if known
Subalpine birch forest	
Subalpine dry heath	

### 4.3 - Biological components

#### 4.3.1 - Plant species

<no data available>

#### 4.3.2 - Animal species

##### Other noteworthy animal species

Phylum	Scientific name	Common name	Pop. size	Period of pop. est.	%occurrence	Position in range /endemism/other
CHORDATA/AVES	<i>Calidris temminckii</i>	Temminck's Stint				
CHORDATA/AVES	<i>Cygnus cygnus</i>	Whooper Swan				
CHORDATA/AVES	<i>Gavia stellata</i>	Red-throated Diver; Red-throated Loon				NT 2015 Swedish Red-list
CHORDATA/AVES	<i>Limicola falcinellus</i>	Broad-billed Sandpiper				

### 4.4 - Physical components

#### 4.4.1 - Climate



Climatic region	Subregion
D: Moist Mid-Latitude climate with cold winters	Dfc: Subarctic (Severe winter, no dry season, cool summer)

The palsa mires in Laivadalen is strongly degenerated, as a result from warmer climate during recent years. The melting of the ice cores and decomposition processes has been quite quick in parts of the palsa mire and a number of palsas are completely gone and others have collapsed. The conservation status for the palsa mires is bad.

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.

Most of the site is part of the Tärnaån catchment area. The south-west of the site is part of the Bielloujuhka-Änggájuhka catchment area. Both these catchment areas are sub-basins in the upper parts of Umeälvens catchment area.

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

Please provide further information on the soil (optional)

See annexed file on bedrock, soils and geomorphology under additional material.

4.4.4 - Water regime

Water permanence

Presence?	Changes at RIS update
Usually seasonal, ephemeral or intermittent water present	
Usually permanent water present	

Source of water that maintains character of the site

Presence?	Predominant water source	Changes at RIS update
Water inputs from rainfall	<input type="checkbox"/>	No change
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 fluctuating (including tidal)	No change

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

Complex hydrology, water levels can be high after large amount of rain and/or fast melting of large quantities of snow.

(EOD) Connectivity of surface waters and of groundwater	<input type="text" value="Unknown"/>
(EOD) Stratification and mixing regime	<input type="text" value="Unknown"/>

4.4.5 - Sediment regime

Sediment regime unknown

RIS for Site no. 29, Tärnasjön, Sweden

Please provide further information on sediment (optional):

Small erosion, transportation and deposition occur within the site. These are normal processes in an alpine area where wind, frost etc are active and with lakes where sediment can deposit.

(ECD) Water turbidity and colour	Unknown
(ECD) Light - reaching wetland	Unknown
(ECD) Water temperature	Unknown

4.4.6 - Water pH

Circumneutral (pH: 5.5-7.4)

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

Please provide further information on pH (optional):

Unknown

4.4.7 - Water salinity

Fresh (<0.5 g/l)

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

Please provide further information on salinity (optional):

Unknown

(ECD) Dissolved gases in water	Unknown
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4.4.8 - Dissolved or suspended nutrients in water

Mesotrophic

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

Dystrophic

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

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

Unknown

(ECD) Dissolved organic carbon	Unknown
(ECD) Redox potential of water and sediments	Unknown
(ECD) Water conductivity	Unknown

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

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

The Ramsar site with its lakes and mires is situated in a broad valley with surroundings of alpine mountains, alpine dry heath and subalpine birch forest.

4.5 - Ecosystem services

4.5.1 - Ecosystem services/benefits

Provisioning Services

Ecosystem service	Examples	Importance/Extent/Significance
Food for humans	Sustenance for humans (e.g., fish, molluscs, grains)	Medium
Fresh water	Drinking water for humans and/or livestock	Low

Cultural Services

RIS for Site no. 29, Tärnasjön, Sweden

Ecosystem service	Examples	Importance/Extent/Significance
Recreation and tourism	Picnics, outings, touring	Medium
Recreation and tourism	Nature observation and nature-based tourism	Medium
Spiritual and inspirational	Aesthetic and sense of place values	Medium

Supporting Services

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

Other ecosystem service(s) not included above:

Important area for native sami people for fishing and reindeer herding.

Within the site: 100s

Outside the site: 100s

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

Description if applicable

Reindeer herding by the native Sami people.

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

4.6 - Ecological processes

(ECD) Primary production	Unknown
(ECD) Nutrient cycling	Unknown
(ECD) Carbon cycling	Unknown
(ECD) Animal reproductive productivity	Unknown
(ECD) Vegetational productivity, pollination, regeneration processes, succession, role of fire, etc.	Unknown
(ECD) Notable species interactions, including grazing, predation, competition, diseases and pathogens	Unknown
(ECD) Notable aspects concerning animal and plant dispersal	Unknown
(ECD) Notable aspects concerning migration	Unknown
(ECD) Pressures and trends concerning any of the above, and/or concerning ecosystem integrity	Unknown

## 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"/>

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

No complementary information needed.

#### 5.1.2 - Management authority

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

Länsstyrelsen Västerbotten  
S - 901 86 UMEÅ, SWEDEN

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

Head of Unit, Björn Jonsson

Postal address:

Länsstyrelsen Västerbotten  
901 86 UMEÅ, SWEDEN

E-mail address:

bjorn.jonsson@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
Tourism and recreation areas	Low impact	Low impact	<input checked="" type="checkbox"/>	No change	<input checked="" type="checkbox"/>	No change

Biological resource use

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Hunting and collecting terrestrial animals	Low impact	Low impact	<input checked="" type="checkbox"/>	No change	<input checked="" type="checkbox"/>	No change
Fishing and harvesting aquatic resources	Low impact	Low impact	<input checked="" type="checkbox"/>	No change	<input checked="" type="checkbox"/>	No change

Human intrusions and disturbance

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

Climate change and severe weather

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Habitat shifting and alteration	High impact	High impact	<input checked="" type="checkbox"/>	No change	<input checked="" type="checkbox"/>	No change

Please describe any other threats (optional):

It's the palsa mires that are threatened by the climate change, except for the palsa mires that have been added.

#### 5.2.2 - Legal conservation status

Regional (international) legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
EU Natura 2000	Vindelfjällen	<a href="http://www.lansstyrelsen.se/vast-erbotten/Sv/djur-och-natur/skydd-ad-natur/naturreservat/sorsele-kommun/vindelfjallen/Pages/default.aspx">http://www.lansstyrelsen.se/vast-erbotten/Sv/djur-och-natur/skydd-ad-natur/naturreservat/sorsele-kommun/vindelfjallen/Pages/default.aspx</a>	whole

National legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
nature reserve	Vindelfjällen	<a href="http://www.lansstyrelsen.se/vasterbotten/Sv/djur-och-natur/skyddad-natur/naturresevat/sorsele-kommun/vindelfjallen/Pages/default.aspx">http://www.lansstyrelsen.se/vasterbotten/Sv/djur-och-natur/skyddad-natur/naturresevat/sorsele-kommun/vindelfjallen/Pages/default.aspx</a>	whole

## Non-statutory designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Important Bird Area	Vindelfjällen mountains (including Lake Tärnasjön)	<a href="http://www.birdlife.org/datazone/sitefactsheet.php?id=874">http://www.birdlife.org/datazone/sitefactsheet.php?id=874</a>	whole

## 5.2.3 - IUCN protected areas categories (2008)

- Ia Strict Nature Reserve
- Ib Wilderness Area: protected area managed mainly for wilderness protection
- II National Park: protected area managed mainly for ecosystem protection and recreation
- III Natural Monument: protected area managed mainly for conservation of specific natural features
- IV Habitat/Species Management Area: protected area managed mainly for conservation through management intervention
- V Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation
- VI Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems

## 5.2.4 - Key conservation measures

## Legal protection

Measures	Status
Legal protection	Implemented

## Species

Measures	Status
Reintroductions	Partially implemented

## Human Activities

Measures	Status
Communication, education, and participation and awareness activities	Partially 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:

There is no facility associated with the Ramsar site per se. But there is a "Naturum" (certified Nature centre) in Ammarnäs connected to the alpine nature reserve Vindelfjällen that the Ramsar site is a part of. The exhibition includes information about the lake and surrounding nature.

There are also a number of bridges between the small islands in the lake so it's possible to cross the long narrow lake instead of having to walk around it.

URL of site-related webpage (if relevant): <http://www.lansstyrelsen.se/vasterbotten/Sv/djur-och-natur/skyddad-natur/naturresevat/sorsele-kommun/vindelfjallen/Pages/default.aspx>

## 5.2.6 - Planning for restoration

Is there a site-specific restoration plan? No need identified

## 5.2.7 - Monitoring implemented or proposed

Monitoring	Status
Birds	Implemented
Plant species	Proposed
Water quality	Implemented
Animal species (please specify)	Implemented

There have been investigations done of the palsa mires, (comparing the present situation with an old scientific research) while developing a national program and monitoring methods for the monitoring of palsa mires.

The site includes monitoring areas for a number of national monitoring programmes (for example birds and fresh water). There will be regularly investigations about the populations of water fowl and the population for *Potamogeton rutilus* within the work with assessment of the status of the Natura 2000 site. There is a royal fishing hut in the area; they have recorded all fish that have been caught since the 1930ties.

## 6 - Additional material

### 6.1 - Additional reports and documents

#### 6.1.1 - Bibliographical references

Delin, H., Myhrberg, H. & Svensson, S. 1957. Tärnasjön, Ahasjön och Laisan – tre fågelsjöar i Västerbottensfjällen. Sveriges Natur Årsbok. Stockholm.

Gärdenfors, U. (ed.) 2015. Rödlistade arter i Sverige 2015 - The 2015 Red List of Swedish Species. Artdatabanken, SLU, Uppsala.

Kulling, O. 1953. Fjällkedjans berggrund. (Bedrock of the Caledonian Mountain Range). Atlas över Sverige, kartblad 7-8 Stockholm.

Länsstyrelsen i Västerbotten. 1999. Inventering av Tärnasjöområdet våtmarksfåglar 1996. Länsstyrelsen i Västerbotten, meddelande 3: 1999.

Naturvårdsverket. 1994. Myrskyddsplan för Sverige. Stockholm.

Rune, O. Floran inom Vindelfjällens naturreservat. Länsstyrelsen i Västerbottens län. Meddelande 3:1981.

Sjörs, H. et al. 1963. Botaniska undersökningar i Tärnasjöområdet.

#### 6.1.2 - Additional reports and documents

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

<no file available>

ii. a detailed Ecological Character Description (ECD) (in a national format)

<1 file(s) uploaded>

iii. a description of the site in a national or regional wetland inventory

<no file available>

iv. relevant Article 3.2 reports

<no file available>

v. site management plan

<no file available>

vi. other published literature

<1 file(s) uploaded>

#### 6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:



Lake Tärnasjön at the water surface ( *Katrine Nygren, 1993* )

#### 6.1.4 - Designation letter and related data

Designation letter

<1 file(s) uploaded>

Date of Designation