Ramsar Information Sheet

Published on 6 April 2017
Update version, previously published on : 1 January 2008

Sweden

Tavvavuoma

Designation date	5 December 1974
Site number	33
Coordinates	68°30'41"N 20°44'24"E
Area	28 920,00 ha

Color codes

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

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

1 - Summary

Summary

The site is situated in a depression in one of the northernmost plateau regions of Norrbotten County. The site forms part of the catchment of the Lainio River, one of the two main tributaries of the Torne River. The site is unusual in Sweden in that Tavvavuoma's natural hydrological regime remains intact. Many other river valleys in this region of Sweden have been regulated for the generation of hydro-electricity.

Tavvavuoma is a legendary, vast and unexploited mire complex in the very north of Sweden. It is characterized for its rich and diversified nature. It is comprised of palsa mires, alpine rivers, freshwater lakes, pools and mountain birch woodland. The numerous lakes and streams attract fish and birds as well as fisherman and ornithologists.

Due to the cold climate in the region Tavvavuoma is also known as the most palsa-rich area in Sweden. Palsa mires are peat formations with a core of frozen peat or mineral soil all year round which rarely melt in the permafrost. You can find palsas in areas which have low precipitation and temperature, especially during the winter season. Some palsas at the site reach heights of up to 7 meters. However, because of the on-going climate change the condition of the palsas in Tavvavuoma are critical.

The palsa mires are characterized by a mosaic of microhabitats and these conditions provide opportunities for an unusually rich and varied plant- and wildlife. The vegetation here is strongly influenced by permafrost. The birdlife at the site is extremely rich for mires in this region, and as many as 78 bird species have been noted. At least 50% of these species breed within the site, and densities of breeding Anatidae and waders reach the regionally high numbers of 70 pairs per square kilometre.

Tavvavuoma contains mainly mire complexes and alpine heaths. In some parts of the area (especially in the central parts of the site), the subalpine birch forest Betula pubescens.ssp. Czerepanovii dominates. The arctic environment that can be seen here is also unique in the EU. The Ramsar site provides ecosystem services concerning recreation (e.g. hunting, fishing, bird-watching, canoeing and hiking) and ecological factors like biodiversity, sediment trapping, etc.

2 - Data & location

2.1 - Formal data

2.1.1 - Name and address of the compiler of this RIS

Compiler 1

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

From year	2008
To year	2015

2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)	Tavvavuoma
Unofficial name (optional)	Tavvavuoma (mire)

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

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

2.1.5 - Changes to the ecological character of the Site

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

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

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

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

The regional environmental monitoring program in Norrbotten County monitors palsa mires and during the last years (2008-2015) palsa mires have collapsed due to climate change.

The site border has been delineated better, now the border on the map and in the shape file is based upon the shape-file. The changes are so small that the consequences aren't investigated, but small areas of different habitats may have been excluded or included.

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

2.2 - Site location

2.2.1 - Defining the Site boundaries

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

Former maps: 0

2.2.2 - General location

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

b) What is the nearest town or population centre? Kiruna

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): 28920

Area, in hectares (ha) as calculated from GIS boundaries: 28902.39

2.2.5 - Biogeography

Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
Udvardy's Biogeographical Provinces	West Eurasian Taiga
Bailey's Ecoregions	130 Subarctic Division
WWF Terrestrial Ecoregions	Scandinavian-Russian taiga
Other scheme (provide name below)	Scandinavian montane birch forest and grasslands
Freshwater Ecoregions of the World (FEOW)	Ecoregion 406 Northern Baltic drainages
EU biogeographic regionalization	Alpine

Other biogeographic regionalisation scheme

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

Other reasons	Tavvavuoma contains a rare/unique example of a natural wetland type in the EU Alpine region in the sense of an unexploited mire complex with a high concentration of palsa mires.

☑ Criterion 2 : Rare species and threatened ecological communities

☑ Criterion 3 : Biological diversity

Justification	Tavvavuoma supports a rich avian fauna and as many as 78 bird species have been observed in the area. At least half of all these species breed within the site. Several of the species are typical for the northern part of the EU Alpine region. Tavvavuoma has a unique value as a biotope for especially wetland bird species. It is not foremost the number of species but the density of breeding birds that makes Tavvavuoma unique. According to bird surveys, the bird density is approximately 400 breeding bird couples/km2. This is considered a remarkably high density which applies to all bird groups and lacks comparison in other Swedish wetland areas. Most likely the explanation is the diversified and often mosaic environment. Especially important are the numerous pools of water in the palsa mires with varying sizes, origin and characteristics. The palsa mires are also dynamic and constantly changing characterized by great contrasts between dry and moist habitats. It is also likely that the large wetlands are influenced by nutritious water from the surroundings which should increase the abundance of food. The number of predators in Tavvavuoma is low and also contributes to the high bird densities.

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

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
Carex aquatilis minor		☐	☑	☐		☐	Swedish Red List 2015, (DD).	See textbox below the table and text in section in 3.1.
Meesia longiseta	Meesia moss	☑	☑	☐		☐	Swedish Red List 2015, (NT). EC Habitats directive Annex II.	The species is rare in Europe and an unspoiled wetland like Tavvavuoma is crucial for its existence. See textbox below the table and text in section in 3.1.
Sphagnum angustifolium		☐	☑	☐		☐		See textbox below the table and text in section in 3.1.
Sphagnum capillifolium		☐	☑	☐		☐		See textbox below the table and text in section in 3.1.
Sphagnum centrale		☐	☑	☐		☐		See textbox below the table and text in section in 3.1.
Sphagnum flexuosum		☐	☑	☐		☐		See textbox below the table and text in section in 3.1.
Sphagnum fuscum		☐	☑	☐		☐		See textbox below the table and text in section in 3.1.
Sphagnum jensenii		☐	☑	☐		☐		See textbox below the table and text in section in 3.1.
Sphagnum majus		☐	☑	☐		☐		See textbox below the table and text in section in 3.1.
Sphagnum obtusum		☐	☑	☐		☐		See textbox below the table and text in section in 3.1.
Sphagnum riparium		☐	☑	☐		☐		See textbox below the table and text in section in 3.1.
Sphagnum squarrosum		☐	☑	☐		☐		See textbox below the table and text in section in 3.1.
Sphagnum subnitens		☐	☑	☐		☐		See textbox below the table and text in section in 3.1.
Sphagnum subsecundum		☐	☑	☐		☐		See textbox below the table and text in section in 3.1.
Sphagnum teres		☐	☑	☐		☐		See textbox below the table and text in section in 3.1.

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/.
Criteria 2 and 3: Observation of the species can be found in the Swedish database for observations http://www.artportalen.se/.

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

Phylum	Scientific name	Common name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7	8								
Birds																		
CHORDATA/ AVES	*Anas acuta*	Northern Pintail	☑	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015, (VU).	Breeding. See text box below the table and under 3.1.
CHORDATA/ AVES	*Anas crecca*	Eurasian Teal; Green-winged Teal	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		See text box below the table and under 3.1.
CHORDATA/ AVES	*Anser fabalis*	Bean Goose	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		See text box below the table and under 3.1.
CHORDATA/ AVES	*Anthus cervinus*	Red-throated Pipit	☑	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015, (VU).	Breeding. See text box below the table and under 3.1.
CHORDATA/ AVES	*Anthus pratensis*	Meadow Pipit	☐	☐	☐	☐	☑	☐	☐	☐				NT	☐	☐	Swedish Red List 2015 (NT).	See text box below the table and under 3.1.
CHORDATA/ AVES	*Aquila chrysaetos*	Golden Eagle	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015 (NT). EC Birds Directive, Annex I.	See text box below the table and under 3.1.
CHORDATA/ AVES	*Asio flammeus*	Short-eared Owl	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐	EC Birds Directive, Annex I.	See text box below the table and under 3.1.
CHORDATA/ AVES	*Aythya marila*	Greater Scaup	☑	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015, (VU).	Breeding. See text box below the table and under 3.1.
CHORDATA/ AVES	*Bubo scandiacus*	Snowy Owl	☑	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015, (CR).	Foraging years with lot of prey. See text box below the table and under 3.1.
CHORDATA/ AVES	*Buteo lagopus*	Roughleg; Rough-legged Buzzard; Rough-legged Hawk	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015 (NT).	See text box below the table and under 3.1.
CHORDATA/ AVES	*Calcarius lapponicus*	Lapland Longspur	☑	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015, (VU).	Breeding. See text box below the table and under 3.1.
CHORDATA/ AVES	*Circus cinereus*	Cinereous Harrier	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015 (NT).	See text box below the table and under 3.1.
CHORDATA/ AVES	*Cygnus cygnus*	Whooper Swan	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐	EC Birds Directive, Annex I.	See text box below the table and under 3.1.
CHORDATA/ AVES	*Emberiza schoeniclus*	Reed Bunting; Common Reed Bunting; Common Reed-Bunting	☑	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015, (VU).	Breeding. See text box below the table and under 3.1.
CHORDATA/ AVES	*Eremophila alpestris*	Horned Lark	☑	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015, (VU).	Breeding. See text box below the table and under 3.1.
CHORDATA/ AVES	*Falco columbarius*	Merlin	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐	EC Birds Directive, Annex I.	See text box below the table and under 3.1.
CHORDATA/ AVES	*Falco rusticolus*	Gyrfalcon	☑	☑	☐	☐	☑	☐	☐	☐				LC	☑	☐	Swedish Red List 2015, (VU). Listed in the EC Birds Directive, Annex I.	Foraging. See text box below the table and under 3.1.
CHORDATA/ AVES	*Gavia arctica*	Arctic Loon; Black-throated Loon	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐	EC Birds Directive, Annex I.	See text box below the table and under 3.1.
CHORDATA/ AVES	*Limicola falcinellus*	Broad-billed Sandpiper	☐	☐	☐	☐	☑	☐	☐	☐					☐	☐		See text box below the table and under 3.1.
CHORDATA/ AVES	*Limosa lapponica*	Bar-tailed Godwit	☑	☑	☐	☐	☑	☐	☐	☐				NT	☐	☐	Swedish Red List 2015, (VU). Listed in the EC Birds Directive, Annex I.	Breeding. See text box below the table and in section 3.1.

Phylum	Scientific name	Common name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7	8								
CHORDATA/ AVES	*Luscinia svecica*	Bluethroat	☐	☐	☐	☐	☑	☐	☐	☐					☐	☐	EC Birds Directive, Annex I.	See text box below the table and under 3.1.
CHORDATA/ AVES	*Melanitta fusca*	Velvet Scoter; White-winged Scoter	☑	☐	☐	☐	☑	☐	☐	☐				VU	☐	☐	Swedish Red List 2015 (NT).	See text box below the table and under 3.1.
CHORDATA/ AVES	*Numenius phaeopus*	Whimbrel	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐	EC Birds Directive, Annex I.	See text box below the table and under 3.1.
CHORDATA/ AVES	*Phalaropus lobatus*	Red-necked Phalarope	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐	EC Birds Directive, Annex I.	See text box below the table and under 3.1.
CHORDATA/ AVES	*Philomachus pugnax*	Ruff	☑	☑	☐	☐	☑	☐	☐	☐					☐	☐	Swedish Red List 2015, (VU). Listed in the EC Birds Directive, Annex I	Breeding. See text box below the table and in section 3.1.
CHORDATA/ AVES	*Phylloscopus borealis*	Arctic Warbler	☑	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015, (EN).	See text box below the table and under 3.1.
CHORDATA/ AVES	*Pluvialis apricaria*	European Golden Plover; European Golden-Plover	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐	EC Birds Directive, Annex I.	See text box below the table and under 3.1.
CHORDATA/ AVES	*Stercorarius longicaudus*	Long-tailed Jaeger	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		See text box below the table and under 3.1.
CHORDATA/ AVES	*Sterna paradisaea*	Arctic Tern	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐	EC Birds Directive, Annex I.	See text box below the table and under 3.1.
CHORDATA/ AVES	*Surnia ulula*	Northern Hawk Owl; Northern Hawk-Owl	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐	EC Birds Directive, Annex I.	See text box below the table and under 3.1.
CHORDATA/ AVES	*Tringa erythropus*	Spotted Redshank	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		See text box below the table and under 3.1.
CHORDATA/ AVES	*Tringa glareola*	Wood Sandpiper	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐	EC Birds Directive, Annex I.	See text box below the table and under 3.1.
Fish, Mollusc and Crustacea																		
CHORDATA/ ACTINOPTERYGII	*Lota lota*	Thin-tailed burbot; Thin-tailed burbot	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015 (NT).	See text box below the table and under 3.1.
CHORDATA/ ACTINOPTERYGII	*Thymallus thymallus*	European grayling; European grayling; European grayling	☐	☐	☐	☐	☑	☐	☐	☐				LC	☐	☐		See text box below the table and under 3.1.
Others																		
ARTHROPODA/ INSECTA	*Chionodes violacea*		☑	☐	☐	☐	☑	☐	☐	☐					☐	☐	Swedish Red List 2015, (EN).	Collected. See text box below the table and under 3.1.
ARTHROPODA/ INSECTA	*Colias hecla*	Northern Clouded Yellow; Greenland Sulphur; Hecla Orange	☐	☐	☐	☐	☑	☐	☐	☐					☐	☐	Swedish Red List 2015 (NT).	See text box below the table and under 3.1.
CHORDATA/ MAMMALIA	*Gulo gulo*	Wolverine	☑	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015, (VU).	The site offers habitats for foraging. See text box below the table and under 3.1.
CHORDATA/ MAMMALIA	*Vulpes lagopus*	Arctic Fox	☑	☑	☐	☐	☑	☐	☐	☐				LC	☐	☐	Swedish Red List 2015 (EN).	The site offers habitats for foraging. See text box below the table and under 3.1.

1) Percentage of the total biogeographic population at the site

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/.
Criteria 2, 3 and 4: Observation of the species can be found in the Swedish database for observations http://www.artportalen.se/.

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
EU7310 - Aapa mires	☐	Mire complexes in the boreal zone characterised by minerotrophic fen vegetation in the central parts of the complexes. String fens and mixed mires are often parts of the mire complex.	Habitat in the EU Habitats Directive, Annex I.
EU6450 - Northern boreal alluvial meadows	☑	Along large rivers with placid river sections which are frozen every winter, the type is affected by flooding in spring. The traditional management as hay meadows has usually ceased. Type includes areas that are not severely overgrown with wooded plants.	Habitat in the EU Habitats Directive, Annex I. The habitat type has an unfavourable conservation status in Sweden 2013.
EU7320 - Palsa mires	☑	The mires are mainly minerotrophic, excluding the palsas, which are peat mounds with sporadic permafrost. The palsas are usually 2-4 metres high, but up to 7 metres high palsas exists.	Habitat in the EU Habitats Directive, Annex I. The habitat type has an unfavourable conservation status in Sweden 2013.

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

4.1 - Ecological character

Tavvavuoma contains mainly mire complexes and alpine heaths. It is unique in the alpine region because of the high concentration of palsa mires. In some parts of the area (especially in the central parts of the site), the subalpine birch forest Betula pubescens.ssp. czerepanovii dominates. The birdlife at the site is extremely rich. The arctic environment that can be seen here is also unique in the EU. The Ramsar site provides ecosystem services concerning recreation (e.g. hunting, fishing, bird-watching, canoeing and hiking) and ecological factors like biodiversity, sediment trapping, etc.

The ecological character of the site is mainly the same but is slowly changing due to climate change. Compared to the 1960s the degradation of the palsas are still on-going but in a varying pace. Since the 1960s there has been an addition in number of forms of degradation which play a vital part. The morphology of the palsas is presently even more characterized by degradation than in the 1960s which speed up the overall rate of degradation.

When the palsa mires were visited between 1964-1981 embryonic palsas where observed in several locations. More recent field studies in Tavvavuoma showed that no new embryonic palsas were discovered and the earlier observed have stopped growing or melted and collapsed. The condition of the palsa mires at the site is unfavourable. However, the water pools in Tavvavuoma originate from melted palsas. If the intensity of the palsa degradation increases there will be more lakes and water pools which may have a positive effect on the birdlife. The value of Tavvavuoma as a biotope harbouring a rich birdlife will therefore increase due to warmer climate. This will only be the case during a transition period. In time, as the palsas have been degraded the value will decrease as the water pools and lakes will be overgrown by mire vegetation and disappear.

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

Inland wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
Fresh water > Flowing water >> M: Permanent rivers/ streams/ creeks		3	600	Representative
Fresh water > Lakes and pools >> O: Permanent freshwater lakes		2	650	Representative
Fresh water > Lakes and pools >> Tp: Permanent freshwater marshes/ pools		0		Representative
Fresh water > Marshes on peat soils >> U: Permanent Non-forested peatlands		1	6000	Rare
Fresh water > Marshes on inorganic or peat soils >> Va: Montane wetlands		4		Representative
Fresh water > Marshes on inorganic soils >> W: Shrub-dominated wetlands		0		Representative
Fresh water > Flowing water >> Y: Permanent Freshwater springs; oases		0		Representative

Other non-wetland habitat

Other non-wetland habitats within the site	Area (ha) if known
Dry sand heaths (EU 2320)	173
Siliceous alpine and boreal grasslands (EU6150)	711
Nordic subalpine/subarctic forests with Betula (EU 9040)	2756

4.3 - Biological components

4.3.1 - Plant species

<no data available>

4.3.2 - Animal species

<no data available>

4.4 - Physical components

4.4.1 - Climate

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

The average annual precipitation has increased since 1961. The average temperature has increased the last decades in Tavvavuoma, especially during winter time.

4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres): 541

a) Maximum elevation above sea level (in metres): 900

- 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.

Tavvavuoma lies within the upper parts of Torne river basin, which has its outlet in the Bothnian bay. River Lainio is a large tributary to river Torne with smaller tributaries like Tavvaätno, Tavvajåkkå and Jeutojåkkå which runs through the Tavvavuoma site.

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)

The bedrock is mainly acid and the area consists mainly of sand, peat and moraine. Geomorphological formations like glaciofluvial residuals and ridges are common. The soils in Tavvavuoma are dominated by sandy glaciofluvial deposits and fine grained sediments from ice dammed lakes which to a significant extent have a top layer consisting of peat. There are also fine grained, glaciogenic soils - mainly ice lakes sediments which are common on lower altitudes in Tavvavuoma. Peatlands make up the mire complex on lower altitudes in Tavvavuoma, especially in the presence of the earlier mentioned fine grained ice lakes sediments, but also sparsely on higher levels.

Periglacial landforms are common here. They are formed during processes where ground freezes and thaws alternately which makes the soil naturally sorted and different sizes of stone particles move in varies directions, creating pattern ground in some places where there are mineral soils.

4.4.4 - Water regime

Water permanence

Presence?	Changes at RIS update
Usually permanent water present	increase

Source of water that maintains character of the site

Presence?	Predominant water source	Changes at RIS update
Water inputs from surface water	☐	unknown
Water inputs from rainfall	☑	unknown

Water destination

Presence?	Changes at RIS update
To downstream catchment	unknown

Stability of water regime

Presence?	Changes at RIS update
Water levels fluctuating (including tidal)	unknown

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

The water regime depends largely on fluctuations in precipitation.

4.4.5 - Sediment regime

Significant erosion of sediments occurs on the site ☐

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

Significant accretion or deposition of sediments occurs on the site ☐

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

Significant transportation of sediments occurs on or through the site ☐

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

Sediment regime is highly variable, either seasonally or inter-annually ☐

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

Sediment regime unknown ☑

4.4.6 - Water pH

Circumneutral (pH: 5.5-7.4) ☑

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

Unknown ☐

Please provide further information on pH (optional):

pH: 2013: 6,77; 2014: 6,64
URL: http://miljodata.slu.se/mvm/Default.aspx

4.4.7 - Water salinity

Fresh (<0.5 g/l) ☑

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

Unknown ☐

4.4.8 - Dissolved or suspended nutrients in water

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 site itself: i) broadly similar ◉ ii) significantly different ○

4.5 - Ecosystem services

4.5.1 - Ecosystem services/benefits

Provisioning Services

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

Regulating Services

Ecosystem service	Examples	Importance/Extent/Significance
Erosion protection	Soil, sediment and nutrient retention	Low
Hazard reduction	Flood control, flood storage	Medium

Cultural Services

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

Supporting Services

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

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 ☐

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 ☐

<no data available>

4.6 - Ecological processes

<no data available>

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

5.1 - Land tenure and responsibilities (Managers)

5.1.1 - Land tenure/ownership

Public ownership

Category	Within the Ramsar Site	In the surrounding area
National/Federal government	☑	☑

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

Within Tavvavuoma the sámi villages Saarivuoma and Lainiovuoma share the rights to utilize the reindeer grazing land. Saarivuoma also has a reindeer fence in north-south going direction which is a fence that marks the border of the two sámi villages (Saarivuoma and Lainiovuoma).

A part of the Ramsar site also constitutes a core area of national interest for reindeer husbandry.

5.1.2 - Management authority

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

Provide the name and title of the person or people with responsibility for the wetland: Naturskyddsenheten, fältenheten - County Adminstrative Board of Norrbotten

Postal address: Stationsgatan 5, 971 86 LULEÅ

E-mail address: norrbotten@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	☑	unknown	☑	unknown

Energy production and mining

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Mining and quarrying		High impact	☑	No change	☑	No change

Biological resource use

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Hunting and collecting terrestrial animals	Medium impact	Medium impact	☑	unknown	☑	unknown
Fishing and harvesting aquatic resources	Low impact	Low impact	☑	No change	☑	No change

Natural system modifications

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Dams and water management/use		High impact	☑	No change	☑	No change

Climate change and severe weather

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Unspecified	Low impact	High impact	☑	increase	☑	increase

Please describe any other threats (optional):

In the section Climate change and severe weather: Unspecified represents the increase in average annual temperature and precipitation which can have severe effects on the palsas at the site.

Additional information on Biological resource use (fishing): In general the fishery in Tavvavuoma is not of greater value since the area mainly consists of great mire complex where the fish fauna is ordinary and not of interest to anglers. It is therefore not likely that the fishery has increased but remains on a small scale level. However, there are rivers like Tavvaätno and Lainio river where the fishery is of higher value. In Tavvaätno the fishery takes place on fishing quotas and the number of fishing permits are limited which makes it more likely that the fishery remains unchanged over time.

In river Lainio on the other hand, there are no limitations to the number of fishing permits that can be granted and since the salmon stocks has had a positive development here, there is probably an obvious increase compared to 15 years ago. Studies in river Lainio measured the last three years shows no change in fishing pressure.

Regarding energy production and mining: There are granted exploration permits in approximately 30 km from the outer borders of Tavvavuoma. Future exploration permits may lead to granted mining concession which will have a high impact on the Ramsar site.

Regarding collecting of terrestrial animals: There are known cases of plundering of eggs of rare bird species like Limosa lapponica in Tavvovuoma and most certain other taiga species like Calcarius lapponicus, Emberiza rustsica, owls etc are likely to be targets for this kind of activities. Authorities like the Police and County Administrative Board cooperate to prevent this kind of exploitation.

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	See national legislation below.		

National legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
EU Natura 2000 SPA and SAC	Tavvavuoma	http://www.lansstyrelsen.se/norrbotten/SiteCollectionDocuments/Sv/djur-och-natur/skyddad-natur/Natura%202000/Kiruna,%20bevarandeplaner/Tavvavuoma_BP_2007.pdf	partly
site of national importance for nature conservation	Tsåktsoplatån-Taavavuoma	http://nvpub.vic-metria.nu/handlingar/rest/dokument/204199	partly

Non-statutory designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Important Bird Area	Taavavuoma	http://datazone.birdlife.org/site/factsheet/taavavuoma-ib a-sweden	

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 ☐

<no data available>

5.2.4 - Key conservation measures

Legal protection

Measures	Status
Legal protection	Proposed

Species

Measures	Status
Threatened/rare species management programmes	Implemented

Human Activities

Measures	Status
Research	Implemented

Other:

Legal protection: There is a proposition that Tavvavuoma should become a National Park. The proposition has, however, met great resistance from the locals.

Species: management program - Arctic fox

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 ◉

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
Water quality	Implemented
Animal species (please specify)	Implemented
Soil quality	Implemented

Soil quality refers to the monitoring of palsa mires (Miljöövervakning av Palsmyrar) conducted by The Administration Board in Norrbotten.
URL to the report describing the bench-mark before the monitoring program started.
http://www.lansstyrelsen.se/norrbotten/SiteCollectionDocuments/Sv/publikationer/miljo%20och%20klimat/Tillst%C3%A5ndet%20i%20milj%C3%B6n/20_2015_Tavvavuoma%20-%20Inledande%20dokumentation.pdf

Animal species refers to the Arctic Fox.

6 - Additional material

6.1 - Additional reports and documents

6.1.1 - Bibliographical references

Wramner P., Wester K., Backe, S., Gunnarsson U., Hahn N. and Alsam S. 2015. Tavvavuoma - Inledande dokumentation inom övervakningsprogram för Sveriges palsmyrar. Länsstyrelsens rapportserie nr 20/2015.

VISS-database. http://www.viss.lansstyrelsen.se/

Gärdefors, U. 2015. Rödlistade arter i Sverige 2015 - The 2015 Red List of Swedish Species. Artdatabanken, SLU, Uppsala.

6.1.2 - Additional reports and documents

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

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

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

iv. relevant Article 3.2 reports
<no file available>

v. site management plan
<no file available>

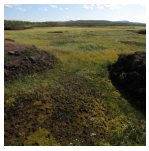
vi. other published literature
<no file available>

<no data available>

6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:

View over palsa mires in Tavvavuoma, 1969. (*Per Wramner, 1969*)



Same view but the photo has been taken 42 years later and the palsas which you can see on the photo from 1969 are now gone. (*Susanne Backe, 2011*)

Tavvavuoma has the largest concentration of palsas in Sweden and also the highest. (*Susanne Backe, 2010*)

6.1.4 - Designation letter and related data

Designation letter
<1 file(s) uploaded>

Date of Designation: 1974-12-05