



# Ramsar Information Sheet

Published on 10 May 2023

Update version, previously published on : 9 July 2018

## Norway

### Trondheimfjord wetland system



Designation date	6 August 2002
Site number	1198
Coordinates	63°42'32"N 11°08'46"E
Area	1 846,00 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 consists of different wetlands located in the Trondheim Fjord, Norway's third largest fjord. Wetland types include sheltered tidal mudflats, shallow marine waters, saltmarshes and the two largest river estuaries in the fjord, notably Gaulosen, one of very few unspoilt large-river estuaries in southern parts of Norway.

All subsites incorporated in this wetland network have a similar ecological structure with huge sheltered mudflats. Gaulosen, Rinnleiret, Ørin and Falstadbukta are additionally influenced by freshwater rivers, creating brackish environments. The similar ecological structures of the sites provide an ecological connection, where migrating birds use several sites throughout their period of stay. In this way, the different wetlands create a network utilized by birds inhabiting Trondheimsfjorden.

The Site is internationally important due to the birdlife it supports. The most important value of the Site is related to its function as staging and feeding area for waterfowl during spring and autumn migrations; thousands of geese, ducks and waders gather here before heading to their respective nesting areas or wintering grounds. The Eurasian oystercatcher is one of the first to arrive, followed by the Northern lapwing, the whooper swan, the common eider, the red-throated loon, the horned grebe, the great crested grebe and several others. The greylag goose and the pink-footed goose stage here in large aggregations on their way to their Svalbard breeding and moulting sites.

As a breeding location, the nutrient-rich freshwater areas and the numerous islets and skerries in the fjord are the most important areas, with species such as the horned grebe and the great crested grebe. The shallows also comprise important moulting areas for i.e. common eiders and mallards during summer months. The most numerous waders during autumn migrations are usually the Northern lapwing and the ruff. Trondheimsfjorden is also a very important wintering area for many ducks, divers and seabirds. However, during winter most bird species uses only a few selected sites, i.e. one can only find the oystercatcher in Rinnleiret and Ørin. As a result, the different sites are important for maintaining diversity for different wintering birds.

## 2 - Data & location

### 2.1 - Formal data

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

##### Responsible compiler

Institution/agency	Norwegian Environment Agency
Postal address	Post box 5672 Torgarden, N-7485 Trondheim, Norway

##### National Ramsar Administrative Authority

Postal address	Postboks 5672 Sluppen Trondheim Norway
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#### 2.1.2 - Period of collection of data and information used to compile the RIS

From year	1974
To year	2021

#### 2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)	Trondheimfjord wetland system
Unofficial name (optional)	Trondheimsfjorden våtmarkssystem

#### 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 type="radio"/> No <input checked="" type="radio"/>
(Update) B. Changes to Site area	No change to area
(Update) For secretariat only: This update is an extension	<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?	No
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## 2.2 - Site location

### 2.2.1 - Defining the Site boundaries

b) Digital map/image  
<15 file(s) uploaded>

Former maps	0
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##### Boundaries description

The boundaries for the Ramsar site are the same as the boundaries for the protected areas;

- Gaulosen Nature Reserve and Landscape Protection Area
- Eidsbotn Bird Sanctuary,
- Rinnleiret Nature Reserve,
- Vikanbukta Bird Sanctuary,
- Vinnan and Velvangen Bird Sanctuary,
- Falstadbukta Bird Sanctuary,
- Alnes Bird Sanctuary,
- Tynesfjæra Bird Sanctuary,
- Ørin Nature Reserve
- Bjørga Bird Sanctuary,
- Vikaleiret Bird Sanctuary and
- Lundleiret Bird Sanctuary.

There are some differences between the border of Rinnleiret nature reserve and the Ramsar site.

The boundary extension resulted from merging of:

- the Ørin nature reserve with the Kausmofjæra. The new larger reserve was named the Ørin nature reserve.
- the Gaulosen nature reserve with the neighboring Leinosen nature reserve. The new reserve was named Gaulosen.

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
EU biogeographic regionalization	2. Atlantic
Other scheme (provide name below)	1. Boreonemoral vegetation zone, weakly oceanic section (BnO1)
Other scheme (provide name below)	1. Southern boreal vegetation zone, weakly oceanic section (SbO1)

Other biogeographic regionalisation scheme

1. Zonal division showing the variation in vegetation from south to north and from the lowlands to the mountains, and sectional graduation showing the variation between the coast and inland (In: Moen, A. 1998. Nasjonalatlas for Norge; vegetasjon. Statens kartverk, Hønefoss).  
 2. Biogeographical regions of Europe, European Environment Agency, 2005

### 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

The sheltered areas along Trondheimsfjorden are representative tidal marine wetlands for the biogeographic region, with Gaulosen being one of very few unspoilt large-river estuaries in southern Norway. Rinnleiret is also a unique wetland type in the region as it is Norway's largest saline-influenced wet meadow, with more than 167 vascular plant species registered (a few species of which are rare/threatened). One can also find ecological communities that are threatened and of special interest, such as the sand-dune system (NRL: VU) and vegetational communities such as sea buckthorn and drift lines.

- Criterion 2 : Rare species and threatened ecological communities

Optional text box to provide further information

This wetland area hosts a great variety of birdlife with more than 215 species registered, a high number registered for a site so far North. Here, several rare/threatened species occur on a regular basis, including the greater scaup (NRL: EN), the sanderling (SRL: VU), the red knot (SRL: EN), the black-headed gull (NRL: CR), the long-tailed duck (IUCN: VU), the velvet scoter (NRL: VU), the Eurasian curlew (NRL: EN), the ruff (NRL: VU), the horned grebe (IUCN: VU, NRL: VU), the common tern (NRL: EN), the little grebe (NRL: EN) etc.

- Criterion 3 : Biological diversity

Justification

More than 215 different bird species are registered and more than 167 vascular plant species registered (a few species of which are rare/threatened)

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

Optional text box to provide further information

The most important value of this wetland network is mainly related to its function as staging and feeding area for waterfowl during spring and autumn migrations; thousands of geese, ducks and waders gather here before heading to their respective nesting areas or wintering grounds. As a breeding location, the nutrient-rich freshwater areas and the numerous islets and skerries in the fjord represent the most important locations. The shallows also comprise moulting areas during summer months. Trondheimsfjorden is also an important wintering area for many ducks, divers and seabirds. The local fjord population of herring is of special importance, e.g. for migrating and locally breeding diving ducks when these feed on deposited roe along the shoreline during spring. The area is also a living/spawning/feeding area for several fish species and crustaceans, providing good feeding opportunities for fish-eating birds.

- Criterion 5 : >20,000 waterbirds

Overall waterbird numbers >20000

Start year 2005

End year 2014

Source of data: Heggøy and Øien 2014

Approximately 75 000 (2005-2014) pink-footed geese regularly utilize these wetlands and the nearby agricultured areas in the Northern part of Trondheimsfjorden during migrations, most of them use the Ramsar site. In several of the sub-sites, the maximum numbers of geese counted at one point in time is 3 000-10 000 individuals, but the turnover rates indicate that a lot more geese are using the sites, and surely more than the criterion of 20 000 birds altogether.

Optional text box to provide further information

The wetland is also an important staging and feeding area for greylag goose, with an estimated 8 000 individuals visiting the Site.

Common eider also occurs in high numbers, especially in the area Vinnan and Velvangen during spring, but several of the other sub-sites also have high numbers. It is estimated that 2 000 - 5 000 individuals overwinter in this wetland area in addition to 2 000-2 500 individuals can be found at both Gaulosen and Ørin each during migration season.

The overall waterbird numbers are based on numbers from these three species alone, not including several other species that visit the site, many in the range of thousands of individuals.

Criterion 6 : >1% waterbird population

It is estimated that approximately 90% (75 000 ind., 2005-2014) of the pink-footed goose population visit this wetland area during their migration between breeding/moulting locations (Spitsbergen) and wintering sites (Denmark, Belgium and the Netherlands).

Optional text box to provide further information

An average of 8 000 individuals of greylag goose also stage and feed in this wetland area during their autumn migration, regularly hosting approximately 8% of the estimated population numbers.

Common eiders are also represented in this wetland area with more than 1% of the estimated population, with 2000-2500 individuals at Gaulosen and Ørin each during spring and autumn migration. In addition to this, it is estimated that 2000-5000 (2004-2013) individuals also overwinter in this wetland area.

The site supports a population of app. 700 individuals of horned grebe, which is about 12,5% of the biogeographic population.

Criterion 8 : Fish spawning grounds, etc.

Justification

Ørin, Gaulosen and Vinnan and Velvangen are spawning areas for the local fjord population of herring. Salmon and sea trout use some of the sites as a migrating path. Sea trout also uses some of the sites as a feeding area. In Gaulosen more than 14 species of fish are registered, and the area is an important nursery location for flatfish and gobies. The area is also a living/spawning/feeding area for several fish species and crustaceans.

### 3.2 - Plant species whose presence relates to the international importance of the site

Phylum	Scientific name	Criterion 2	Criterion 3	Criterion 4	IUCN Red List	CITES Appendix I	Other status	Justification
<b>Plantae</b>								
TRACHEOPHYTA / MAGNOLIOPSIDA	<i>Amelanchier canadensis</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		Regionally rare species.
TRACHEOPHYTA / LILIOPSIDA	<i>Dactylorhiza incarnata</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		Regionally rare species.
TRACHEOPHYTA / LILIOPSIDA	<i>Eleocharis parvula</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	National Red List: Considered as VU	
TRACHEOPHYTA / MAGNOLIOPSIDA	<i>Rhamnus cathartica</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LC	<input type="checkbox"/>		Regionally rare species.
TRACHEOPHYTA / MAGNOLIOPSIDA	<i>Salix triandra</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	National Red List: Considered as NT	The site has value for this species
TRACHEOPHYTA / LILIOPSIDA	<i>Stuckenia pectinata</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LC	<input type="checkbox"/>		Regionally rare species.
TRACHEOPHYTA / LILIOPSIDA	<i>Zannichellia palustris</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	LC	<input type="checkbox"/>	National Red List: Considered as VU	This is a rare species that grow along the Norwegian coast.

Species listed under which are not yet included in the Catalogue of Life:  
 Phellinus hippophaeicola (Fungi) - Criterion 2 - National Red List: Considered as VU.

Capitalized letters shows the species' status on the National Red List 2021.

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

Phylum	Scientific 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								
<b>Others</b>																	
ARTHROPODA / ARACHNIDA	<i>Arctosa cinerea</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	National Red List: Considered as EN	Criterion 4: The site has value for this red listed species.
ARTHROPODA / INSECTA	<i>Gelechia hippophaella</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	National Red List: Considered as EN	This is a rare butterfly species.
CHORDATA / MAMMALIA	<i>Lutra lutra</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Ann. II Berne Convention	Criterion 2: The site has value for this red listed species.
CHORDATA / MAMMALIA	<i>Phocoena phocoena</i>	<input checked="" type="checkbox"/>	<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"/>	Ann. II Berne Convention	Criterion 4: The site has value for this species and can regularly be encountered.
<b>Fish, Mollusc and Crustacea</b>																	
CHORDATA / ACTINOPTERYGII	<i>Clupea harengus</i>	<input type="checkbox"/>	<input 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"/>		Criterion 8: The local fjord population of Herring is of special importance, e.g. for migrating and locally breeding diving ducks when these feed on deposited rowan along the shoreline in spring. Ørin, Gaulosen and Vinnan and Velvängen are spawning area for the local fjord population of this species.
CHORDATA / ACTINOPTERYGII	<i>Salmo salar</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		Criterion 8: this species uses some of the site as a migrating path.
CHORDATA / ACTINOPTERYGII	<i>Salmo trutta</i>	<input type="checkbox"/>	<input 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"/>		Criterion 8: this species uses some of the site as a migrating path and as feeding area. (anadromous brown trout)
<b>Birds</b>																	

Phylum	Scientific 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	<i>Actitis hypoleucos</i>	<input type="checkbox"/>	<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"/>		Criterion 4: This species breed in this wetland area, i.e. Gaulosen.
CHORDATA/AVES	<i>Alauda arvensis</i>	<input type="checkbox"/>	<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"/>		Criterion 4: This species breed within this wetland area.
CHORDATA/AVES	<i>Anas crecca</i>	<input type="checkbox"/>	<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"/>		Criterion 4: This species utilizes this wetland during migration. Several hundreds of individuals can be observed at several locations during the autumn migration. Up to 500 ind. observed at lundleiret
CHORDATA/AVES	<i>Anas penelope</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		Criterion 4: This species utilizes this wetland during migration. Several hundreds of individuals can be observed at several locations during the autumn migration.
CHORDATA/AVES	<i>Anas platyrhynchos</i>	<input type="checkbox"/>	<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"/>		Criterion 4: Several hundreds of individuals can be observed at several locations during autumn migration. This wetland also function as an overwintering site for this species. Anes also function as a moulting location. 800 ind. (Lundleiret).
CHORDATA/AVES	<i>Anser anser</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	8000	2009-2013	1.08	LC	<input type="checkbox"/>	<input type="checkbox"/>		7000-9300 ind. (2009-2013) Criteria 4: This wetland area is an important staging and feeding location for this species during spring an autumn migration.
CHORDATA/AVES	<i>Anser brachyrhynchus</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	75000	2005-2014	13.8	LC	<input type="checkbox"/>	<input type="checkbox"/>		Criteria 4: This site is the most important staging and feeding location for this species on its route between the breeding/moulting areas in Spitsbergen and wintering sites in Denmark, Belgium and the Netherlands. Criterion 6: See further explanation
CHORDATA/AVES	<i>Anser fabalis</i>	<input checked="" type="checkbox"/>	<input 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"/>	National Red List: Considered as EN	
CHORDATA/AVES	<i>Aythya marila</i>	<input checked="" type="checkbox"/>	<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"/>	National Red List: Considered as EN	Criterion 4: Ice-free parts of Falstadbukta is an important overwintering location for this species.
CHORDATA/AVES	<i>Bucephala clangula</i>	<input type="checkbox"/>	<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"/>		Criterion 4: This site function as an overwintering location for this species. 200 ind. observed (Lundleiret). Eidsbotn comprise an important moulting location during summer months.
CHORDATA/AVES	<i>Calidris alba</i>	<input checked="" type="checkbox"/>	<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"/>	Svalbard Red List: Considered as VU	Criterion 4: This species can be observed during autumn migration, i.e. in Gaulosen, Rinnleiret.
CHORDATA/AVES	<i>Calidris alpina</i>	<input checked="" type="checkbox"/>	<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"/>	Ann. II Berne Convention	Criterion 4: This species utilizes this wetland as a staging area during migration. Up tp 1000+ ind. have been observed
CHORDATA/AVES	<i>Calidris canutus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT	<input type="checkbox"/>	<input type="checkbox"/>	Svalbard Red List: Considered as EN,	Criterion 4: This species can be observed during autumn migration, i.e. in Gaulosen, Rinnleiret.
CHORDATA/AVES	<i>Calidris ferruginea</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT	<input type="checkbox"/>	<input type="checkbox"/>	Ann. II Berne Convention	Criterion 4: This species can be observed during autumn migration, i.e. in Gaulosen, Rinnleiret.
CHORDATA/AVES	<i>Calidris maritima</i>	<input checked="" type="checkbox"/>	<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"/>	Ann. II Berne Convention	Criterion 4: A small population of this species overwinter in this wetland area, i.e. in Vinnan and Velvangen.
CHORDATA/AVES	<i>Calidris minuta</i>	<input checked="" type="checkbox"/>	<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"/>	Ann. II Berne Convention	Criterion 4: This species can be observed during autumn migration, i.e. in Gaulosen, Rinnleiret.



Phylum	Scientific 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	<i>Calidris temminckii</i>	<input checked="" type="checkbox"/>	<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"/>	Ann. II Berne Convention	Criterion 4: This species stage (mainly) in Ørin during migrations, but also in Rinnleiret. A few ind. breed in this wetland area, i.e. Gaulosen.
CHORDATA/AVES	<i>Charadrius hiaticula</i>	<input checked="" type="checkbox"/>	<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"/>	Ann. II Berne Convention	Criterion 4: This species stage here during migration. Some also breed in Gaulosen.
CHORDATA/AVES	<i>Chroicocephalus ridibundus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	National Red List: Considered as CR	Criterion 4: This species breed at Alnes.
CHORDATA/AVES	<i>Clangula hyemalis</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input type="checkbox"/>		Criterion 4: This species utilizes this wetland during migration, i.e. Vinnan and Velvängen. The area also function as an overwintering site.
CHORDATA/AVES	<i>Cygnus cygnus</i>	<input type="checkbox"/>	<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"/>		Criterion 4: Several hundreds of individuals gather in this wetland as soon as ice-bound lakes thaw. The ice-free part of the water in Falstadbukta also function as a wintering area for this species. Gaulosen also function as a wintering location.
CHORDATA/AVES	<i>Gallinago gallinago</i>	<input type="checkbox"/>	<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"/>		Criterion 4: This species can be observed during autumn migration, i.e. in Rinnleiret.
CHORDATA/AVES	<i>Gavia stellata</i>	<input type="checkbox"/>	<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"/>		Criterion 4: Smaller aggregations of this species gather in this wetland during migrations. This wetland also function as an overwintering location for this species. Concentrations of 20-40 birds on most of the sub-sites.
CHORDATA/AVES	<i>Haematopus ostralegus</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT	<input type="checkbox"/>	<input type="checkbox"/>		Criterion 4: Thousands of ind. stage here during spring migration. Rinnleiret/Ørin - largest population of wintering oystercatchers in Norway (100-200 ind). This species does usually not overwinter in Norway.
CHORDATA/AVES	<i>Haliaeetus albicilla</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Criterion 4: This species is frequently encountered during winter months.
CHORDATA/AVES	<i>Larus canus</i>	<input checked="" type="checkbox"/>	<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"/>	National Red List: Considered as VU	Criterion 4: This site function as an overwintering location for this species.
CHORDATA/AVES	<i>Limicola falcinellus</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		Criterion 4: The site is a staging area in spring for 10-20 individuals.
CHORDATA/AVES	<i>Limosa lapponica</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT	<input type="checkbox"/>	<input type="checkbox"/>		Criterion 4: This species stage here during migration, i.e. in Ørin, Vikaleiret. Large numbers can also be observed in Falstadbukta.
CHORDATA/AVES	<i>Limosa limosa</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT	<input type="checkbox"/>	<input type="checkbox"/>	National Red List: Considered as CR	
CHORDATA/AVES	<i>Melanitta fusca</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU	<input type="checkbox"/>	<input type="checkbox"/>	National Red List: Considered as VU	Criterion 4: This species stage in this wetland area during migration, i.e. in Vinnan and Velvängen 700 ind. (Ørin), 350 ind. (Lundleiret) .
CHORDATA/AVES	<i>Melanitta nigra</i>	<input checked="" type="checkbox"/>	<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"/>	National Red List: Considered as VU	A maximum 1200 ind. observed in Ørin. Criterion 4: This species utilizes this wetland during migration. A maximum 1200 ind. observed in Ørin.
CHORDATA/AVES	<i>Mergus merganser</i>	<input type="checkbox"/>	<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"/>		Criterion 4: This site is of vital importance for this species.

Phylum	Scientific 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	<i>Mergus serrator</i>	<input type="checkbox"/>	<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"/>		Criterion 4: This wetland function as an overwintering location for this species.
CHORDATA/AVES	<i>Numenius arquata</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT	<input type="checkbox"/>	<input type="checkbox"/>	National Red List: Considered as VU	Criterion 4: This species stage here during migrations, i.e. in Ørin, Lundleiet, Rinnleiret. Large numbers can also be found in Falstadbukta.
CHORDATA/AVES	<i>Numenius phaeopus</i>	<input type="checkbox"/>	<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"/>		Criterion 4: This species can be observed during autumn migration, i.e. in Rinnleiret.
CHORDATA/AVES	<i>Philomachus pugnax</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	National Red List: Considered as VU	Criterion 4: This is one of the more numerous species encountered during autumn migrations, at times reaching 1000+ ind. Can be found in i.e. Ørin and Rinnleiret.
CHORDATA/AVES	<i>Pluvialis apricaria</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		Criterion 4: This species utilizes this wetland during migration.
CHORDATA/AVES	<i>Pluvialis squatarola</i>	<input type="checkbox"/>	<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"/>		Criterion 4: This species can be observed during autumn migration, i.e. in Gaulosen, Rinnleiret.
CHORDATA/AVES	<i>Podiceps auritus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	700		14	VU	<input type="checkbox"/>	<input type="checkbox"/>	National Red List: Considered as VU, Ann. II Berne Convention, Emerald Network	300-400 breeding pairs. Criterion 4: This species utilize this wetland area during migrations, some also breed here or overwinter at this location.
CHORDATA/AVES	<i>Podiceps cristatus</i>	<input type="checkbox"/>	<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"/>		Criterion 4: Smaller aggregations of this species gather in this wetland during migrations.
CHORDATA/AVES	<i>Somateria mollissima</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	5000	2004-2013	12.5	NT	<input type="checkbox"/>	<input type="checkbox"/>	National Red List: Considered as VU	Criterion 4: This species stage here. The area also function as a moulting and overwintering location. Criterion 6: 2000-2500 individuals at Gaulosen and Ørin during both spring and autumn migration. 2000-5000 (2004-2013) overwinter here.
CHORDATA/AVES	<i>Sterna hirundo</i>	<input checked="" type="checkbox"/>	<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"/>	National Red List: Considered as EN, Ann. II Berne Convention	Criterion 4: This species breeds within this wetland area, i.e. in Gaulosen.
CHORDATA/AVES	<i>Tachybaptus ruficollis</i>	<input checked="" type="checkbox"/>	<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"/>	National Red List: Considered as EN	Criterion 4: This species overwinter in Levangersundet.
CHORDATA/AVES	<i>Tadorna tadorna</i>	<input type="checkbox"/>	<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"/>		Criterion 4: This species is an annual breeder at Falstadbukta.
CHORDATA/AVES	<i>Tringa erythropus</i>	<input type="checkbox"/>	<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"/>		Criterion 4: This species can be observed during autumn migration, i.e. in Gaulosen, Rinnleiret.
CHORDATA/AVES	<i>Tringa nebularia</i>	<input type="checkbox"/>	<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"/>		Criterion 4: This species stage in this wetland during migration, i.e. in Rinnleiret and Ørin.
CHORDATA/AVES	<i>Tringa ochropus</i>	<input checked="" type="checkbox"/>	<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"/>	Ann. II Berne Convention	Criterion 4: This species can be observed during autumn migration, i.e. in Rinnleiret.
CHORDATA/AVES	<i>Tringa totanus</i>	<input type="checkbox"/>	<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"/>		Criterion 4: This species stage here during migration, i.e. in Rinnleiret. Some also breed here, i.e. Gaulosen.
CHORDATA/AVES	<i>Vanellus vanellus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT	<input type="checkbox"/>	<input type="checkbox"/>	National Red List: Considered as CR	Criterion 4: This species uses this wetland during spring migration. This is also one of the more numerous species encountered during autumn migrations, at times reaching 1000+ ind. Some breed in Gaulosen.

1) Percentage of the total biogeographic population at the site

Species listed under which are not yet included in the Catalogue of Life:

*Bledius tricornis* - Criterion 2 - National Red List: Considered as VU.

Capitalized letters shows the species' status on the National Red List 2021.

Further explanation - Criterion 8: In Gaulosen more than 14 species of fish are registered, and the area is an important nursery location for flatfish and gobies. The area is also a living/spawning/feeding area for several fish species and crustaceans, providing good feeding opportunities for fish-eating birds.

Justification for *Anser brachyrhynchus*, Criterion 5: Approximately 75 000 (2005-2014) pink-footed geese regularly utilize these wetlands and the nearby agricultural areas in the Northern part of Trondheimsfjorden during migrations, most of them use the Ramsar site (Heggøy and Øien 2014). Turnover of individuals can be observed as many birds carry marked neckbands. In several of the sub-sites the maximum numbers of geese counted at one point in time is 3 000-10 000 individuals, but the turnover-rates indicates that a lot more geese is using the sites, and surely more than the criterion of 20 000 birds altogether.

Justification for *Anser brachyrhynchus*, Criterion 6: Nearly the entire Svalbard population (~90%) of pink-footed goose (70 000 - 80 000) uses this wetland as a staging area during both spring and autumn migration. The estimated numbers of pink-footed geese suggest a population of almost 120% for the biogeographic region based on numbers from Wetland International. However, the Norwegian Institute of Nature Research (NINA) recently published a report "Pink-footed goose population status update 2016-2017", produced by the AEWA European Goose Management Platform Data Centre suggesting that the population estimate is now 88 000 individuals, and not 63 000 as stated by Wetland International. Based on these numbers, it appears that approx. 90% of the population still visit this Ramsar area. Biogeographic Region: Svalbard/North-Western Europe.

Justification for *Somateria mollissima*, Criterion 6: This species also occurs in high numbers, especially in the area Vinnan and Velvängen during spring. For this area there are several counts of Common Eider that exceed the 1% level (4250 ind), with a maximum of 5000 individuals, but also several of the other areas have high numbers. The total wintering population of common eiders is considered to be between 15 000 - 20 000 individuals, however, this also includes areas outside the Ramsar site. Biogeographic Region: Norway & Russia.

### 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
Semi-natural tidal and salt meadow	<input checked="" type="checkbox"/>		National Red List: Considered as VU
Active delta	<input checked="" type="checkbox"/>		National Red List: Considered as VU
Semi-natural grassland	<input checked="" type="checkbox"/>		National Red List: Considered as VU
Alluvial forest	<input checked="" type="checkbox"/>		National Red List: Considered as VU

Optional text box to provide further information

Sea buckthorn communities: The largest occurrences of sea buckthorn in Norway is found along the coast of Trøndelag and the estuaries of Trondheimsfjorden. Along the fjord one can find the largest occurrences at Verdalsøra in the outlet of Stjørdalselva and in Gaulosen. Large aggregations of passerines can be found at the tidal meadows and in the sea buckthorn populations, particularly during autumn migrations. The birds feed on the berries produced by the sea buckthorn.

Eelgrass meadows: Important for foraging waterfowl. Can be found inside the brackish lagoon of Eidsbotn.

Drift lines: Drift lines with kelp and herring roe comprise important foraging opportunities for waterfowl, especially waders, but also gulls. Drift lines can be found in Vinnan and Velvangen.

Capitalized letters show the habitats' status on the National Red List for Ecosystems and Habitat types 2018.

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

### 4.1 - Ecological character

Situated in the boreal vegetation zone, and characterized by clay, silt or gravel shores with tidal zones, partly covered with kelp beds. Four of the sub-sites are (parts of) large river estuaries with extensive tidal mud- and sandflats. At one locality, inside the brackish lagoon of Eidsbotn, large seagrass *Zostera* beds exist. The shorelines are at places dominated by wet saline-influenced vegetation, e.g. *Carex palacea* and *Carex (palacea) x vacillans*, and swamps with *Carex mackenziei*. One site is a mainly saline-influenced wet meadow (Rinnleiret). Bushes of *Hippophae rhamnoides* are typical for several of the localities. Together, all of the sub-sites of this Ramsar Site host a shoreline of more than 26km in length.

The main functions of the Gaulosen, Vikaleiret and Lundleiret are as staging and feeding areas during migration season. Eidsbotn is important during migration, while ice-free areas comprise important locations during winter season and moulting areas during summer months. Rinnleiret is important during migration and winter season, but its main function is as a breeding location. Ørin is among the most highly valued staging areas found in Norway, and is also utilized as breeding, moulting and wintering location. Falstadbukta mainly functions as an overwintering site.

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

Marine or coastal wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
A: Permanent shallow marine waters		1		
B: Marine subtidal aquatic beds (Underwater vegetation)		4		
D: Rocky marine shores				
E: Sand, shingle or pebble shores				
F: Estuarine waters		2		
G: Intertidal mud, sand or salt flats		3		Unique
H: Intertidal marshes		0		Representative
J: Coastal brackish / saline lagoons				

### 4.3 - Biological components

#### 4.3.1 - Plant species

Other noteworthy plant species

Phylum	Scientific name	Position in range / endemism / other
TRACHEOPHYTA/LILIOPSIDA	<i>Carex mackenziei</i>	
TRACHEOPHYTA/LILIOPSIDA	<i>Carex paleacea</i>	
TRACHEOPHYTA/LILIOPSIDA	<i>Carex vacillans</i>	
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Hippophae rhamnoides</i>	
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Lonicera xylosteum</i>	Regionally rare species.
TRACHEOPHYTA/LILIOPSIDA	<i>Zostera marina</i>	

Invasive alien plant species

Phylum	Scientific name	Impacts	Changes at RIS update
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Barbarea vulgaris</i>	Potential	No change
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Impatiens glandulifera</i>	Actual (minor impacts)	No change
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Ribes alpinum</i>	Actual (minor impacts)	No change
TRACHEOPHYTA/MAGNOLIOPSIDA	<i>Rosa rugosa</i>	Actual (minor impacts)	No change

#### 4.3.2 - Animal species

Other noteworthy animal species

Phylum	Scientific name	Pop. size	Period of pop. est.	% occurrence	Position in range /endemism/other
ARTHROPODA/INSECTA	<i>Acleris schalleriana</i>				This is a rare butterfly species. National Red List: Considered as NT
CHORDATA/AVES	<i>Charadrius dubius</i>				National Red List: Considered as VU
ARTHROPODA/INSECTA	<i>Dyschirius angustatus</i>				
CHORDATA/AVES	<i>Emberiza citrinella</i>				National Red List: Considered as VU
ARTHROPODA/INSECTA	<i>Nysson spinosus</i>				
ARTHROPODA/INSECTA	<i>Osmia inermis</i>				
ARTHROPODA/INSECTA	<i>Rhantus notaticollis</i>				
CHORDATA/AVES	<i>Riparia riparia</i>				National Red List: Considered as VU
ARTHROPODA/INSECTA	<i>Tetrops praeustus</i>				

Invasive alien animal species

Phylum	Scientific name	Impacts	Changes at RIS update
CHORDATA/MAMMALIA	<i>Neovison vison</i>	Potential	No change

Optional text box to provide further information

Species listed under which are not yet included in the Catalogue of Life:

- Dryops nitidulus - National Red List: Considered as VU
- Augyles intermedius - National Red List: Considered as NT
- Anthobium fusculum - National Red List: Considered as NT

A total of 34 species of Aculeata ("stinging wasps") are registered.

## 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 wetland system along Trondheimsfjorden lays in an area with relatively warm and humid summers (700-1000 mm annual precipitation), and relatively mild winters. The area receives precipitation 200-220 days a year. The climate in the catchment areas becomes wetter and colder as the distance from the fjord increases. Average temperatures during growth season is 12°C (the vegetational growth period is approx. 160 days long), with a yearly middle temperature of 5,1°C.

### 4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres)

a) Maximum elevation above sea level (in metres)

- Entire river basin
- Upper part of river basin
- Middle part of river basin
- Lower part of river basin
- More than one river basin
- Not in river basin
- Coastal

Please name the river basin or basins. If the site lies in a sub-basin, please also name the larger river basin. For a coastal/marine site, please name the sea or ocean.

The Norwegian Sea, Gaula and Verdalselva rivers.

#### 4.4.3 - Soil

Mineral

(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)

Along the rivers there are deep layers of fluvial deposits, while moraine dominates as soil type in the valley slopes and mountain areas. Especially in the areas closest to the fjord, the bedrock consists mostly of nutrient-rich slates and greenstones from the Cambrosilurian period.

#### 4.4.4 - Water regime

Water permanence

Presence?	Changes at RIS update
Usually permanent water present	

Source of water that maintains character of the site

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

Gaula and Verdalselva are large rivers, draining water from huge areas (several 1000 km<sup>2</sup>).  
Large areas of shallow water, less than 3 meters depth. The variation between high and low tides measured at Trondheim averages annually 162 cm.

#### 4.4.5 - Sediment regime

Significant accretion or deposition of sediments occurs on the site

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

Significant transportation of sediments occurs on or through the site

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

Sediment regime unknown

Please provide further information on sediment (optional):

At two of the sites the transport and sedimentation of clay, silt and sand by large rivers (Gaula and Verdalselva) have formed estuaries and brackish conditions with high biological production.

#### 4.4.6 - Water pH

Unknown

#### 4.4.7 - Water salinity

Mixohaline (brackish)/Mixosaline (0.5-30 g/l)

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

Euhaline/Eusaline (30-40 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

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:

Mostly agriculture: the water in the big rivers is used for irrigation. At some places industry etc. is situated close to the protected areas.

## 4.5 - Ecosystem services

### 4.5.1 - Ecosystem services/benefits

#### Provisioning Services

Ecosystem service	Examples	Importance/Extent/Significance
Fresh water	Drinking water for humans and/or livestock	Medium

#### Regulating Services

Ecosystem service	Examples	Importance/Extent/Significance
Erosion protection	Soil, sediment and nutrient retention	Medium
Hazard reduction	Coastal shoreline and river bank stabilization and storm protection	Medium
Hazard reduction	Flood control, flood storage	Medium

#### Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Recreation and tourism	Nature observation and nature-based tourism	Medium
Recreation and tourism	Picnics, outings, touring	Medium
Recreation and tourism	Recreational hunting and fishing	Medium
Scientific and educational	Major scientific study site	Medium
Scientific and educational	Important knowledge systems, importance for research (scientific reference area or site)	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	High
Nutrient cycling	Carbon storage/sequestration	Low

Other ecosystem service(s) not included above:

Within the Ramsar Site:

Gaula and Verdalselva have originally an enormous flood control capacity, but due to degradation of surrounding wetlands in the catchment area, the annual spring flooding in recent years has taken larger proportions than usual.

Both rivers also transport huge amounts of sediments, mostly deposited at the estuaries and there contributing to a high production of biological material.

The shorelines are stabilized by bushes like e.g. Hippophae rhamnoides.

The wet meadows at Gaulosen are grazed by cattle.

The sites are used for recreation and fishing (Gaula). Both Gaulosen and Rinnleiret are used for bathing and sunbathing. Gaulosen also comprises hunting grounds for moose. The sites are used quite often by tourists and residents for walking and bird-watching. There is also an ongoing project with developing tourism based on the bird-watching. In Falstadbukta there is located a bird tower.

The Nord-Trøndelag University College (HINT) arrange excursions to Tynesfjæra.

In the surrounding area:

Just outside the Southern border of Gaulosen, one can find a popular camping site (Øysand Camping).

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	<input type="checkbox"/>	<input checked="" type="checkbox"/>

##### Private ownership

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

#### 5.1.2 - Management authority

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

The County Governor of Trøndelag

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

County Governor of Trøndelag

Postal address:

Statsforvalteren i Trøndelag  
Pb. 2600  
N-7734 STEINKJER

E-mail address:

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## 5.2 - Ecological character threats and responses (Management)

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

#### Agriculture and aquaculture

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Livestock farming and ranching		Medium impact	<input checked="" type="checkbox"/>	No change	<input 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 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		Medium impact	<input type="checkbox"/>	No change	<input checked="" type="checkbox"/>	No change
(Para)military activities	Medium impact	Low impact	<input type="checkbox"/>	No change	<input checked="" type="checkbox"/>	No change

#### Natural system modifications

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

#### Invasive and other problematic species and genes

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

#### Pollution

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

Please describe any other threats (optional):

**Within the Ramsar site:**

The protected area of Gaulosen are popular recreational areas, activities in relation to this (prior to the area being protected) have left their mark, and can be looked at as wear and tear of the area. Illegal motor boat traffic could result in unnecessary disturbance of birdlife.

Alien species such as the *Rosa rugosa* are found within the borders of the protected area. The removal of some alien species was initiated in 2013.

Some parts of the wetland area are characterized by overgrowing after cessation of grazing fauna, cessation of military activities (Rinnleiret) and natural isostatic uplift.

**In the surrounding area:**

On a general basis, this Ramsar Site is an important area for birdlife despite being located in a region with high population density and high human activity, and the resulting pressure of infrastructure and development that follows a high population density.

## 5.2.2 - Legal conservation status

## Regional (international) legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Other international designation	Gaulosen - European network of biogenetic reserves		partly

## National legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Bird Sanctuary 1	Eidsbotn		whole
Bird Sanctuary 10	Lundleiret		whole
Bird Sanctuary 2	Vikanbukta		whole
Bird Sanctuary 3	Vinnan and Velvangen		whole
Bird Sanctuary 4	Falstadbukta		whole
Bird Sanctuary 5	Alnes		whole
Bird Sanctuary 6	Tynesfjæra		whole
Bird Sanctuary 8	Bjørga		whole
Bird Sanctuary 9	Vikaleiret		whole
Landscape protection area	Gaulosen		whole
Nature Reserve 1	Gaulosen		whole
Nature Reserve 2	Rinnleiret		partly
Nature Reserve 3	Ørin		whole

## Non-statutory designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Important Bird Area	Gaulosen (NO037) ; Levanger, Verdal, Inderøy and Steinkjer (NO034)		partly

## 5.2.3 - IUCN protected areas categories (2008)

- Ia Strict Nature Reserve
- Ib Wilderness Area: protected area managed mainly for wilderness protection
- II National Park: protected area managed mainly for ecosystem protection and recreation
- III Natural Monument: protected area managed mainly for conservation of specific natural features
- IV Habitat/Species Management Area: protected area managed mainly for conservation through management intervention

V Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation

VI Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems

#### 5.2.4 - Key conservation measures

##### Legal protection

Measures	Status
Legal protection	Proposed

##### Habitat

Measures	Status
Land conversion controls	Proposed

##### Species

Measures	Status
Control of invasive alien plants	Partially implemented

##### Human Activities

Measures	Status
Regulation/management of recreational activities	Implemented

##### Other:

An extension and revision of the nature protected areas in Gaulosen is soon to be implemented.

#### 5.2.5 - Management planning

Is there a site-specific management plan for the site? Yes

Has a management effectiveness assessment been undertaken for the site? Yes  No

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning processes with another Contracting Party? Yes  No

Please indicate if a Ramsar centre, other educational or visitor facility, or an educational or visitor programme is associated with the site:

An information booklet is produced by the management authorities, comprising Ramsar sites in Trøndelag. A number of different leaflets exist, as does posters on the sites. At Rinnleiret and Ørin there is in addition an ongoing cooperation program between the management authority and the local primary school concerning litter collection in the area.

#### 5.2.6 - Planning for restoration

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

##### Further information

There is no need for restoration of the Ramsar site, but there are plans to prevent overgrowing (certain sub-sites had management of overgrowing initiated in 2013).

#### 5.2.7 - Monitoring implemented or proposed

Monitoring	Status
Animal species (please specify)	Implemented
Plant community	Implemented
Birds	Implemented

Trondheimsfjorden (including all sub-sites) is one of 10 areas in the national monitoring programme for wintering seabirds and waterfowl. In addition a voluntary NGO-based monitoring is ongoing concerning bird watching counts and ringing activities. The breeding population of the common eider in the inner part of Trondheimsfjorden is included in the national monitoring program for seabirds (SEAPOPOP), involving three sub-sites.

At Rinnleiret other research institutions such as The Norwegian University for Science and Technology (NTNU), Nord-Trøndelag University College (HINT), and Bioforsk also undertake activities within the areas of botanical studies, management practices potentially supporting biodiversity etc.

## 6 - Additional material

### 6.1 - Additional reports and documents

#### 6.1.1 - Bibliographical references

Verneområdene i Gaulosen, Forvaltningsplan 2009-2019, Trondheim og Melhus kommuner. Rapport Nr. 1 – 2009. Fylkesmannen i Sør-Trøndelag. ISBN 82-7540-167-4.

Järnegren J, Forsgren E, Sneli J-A 2014. Marin fauna i Gaulosen – Trondheimsfjorden. Et foreslått marint verneområde - NINA Rapport 1097. 40 s

UTREDNING Ornitologisk rapport for Eidsbotn og Levangersundet, med bestandsendringer fra 1996 til 2015 Magne Husby Tore Reinsborg Utredning nr 179 ISBN 978-82-7456-746-7 ISSN 1504-6354

Norsk ornitologisk forening - <http://www.birdlife.no/>

Bele, B., P.G. Thingstad, & A. Norderhaug. 2005. Registrering av biologiske verdier på Rinnleiret og utkast til skjøtelsesplan for Rinnleiret naturreservat. 2 Levanger og Verdal kommuner, Nord-Trøndelag. Grønn kunnskap e 9(120):1-27 + vedlegg.

Bele, B., Norderhaug, A., Thingstad, P. G., Ødegaard, F., & Falkdalen, U. (2011). Skjøtelsesplan og bevaringsmål for Ørin naturreservat, Verdal kommune, Nord-Trøndelag. Bioforsk Rapport.

See additional document

#### 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

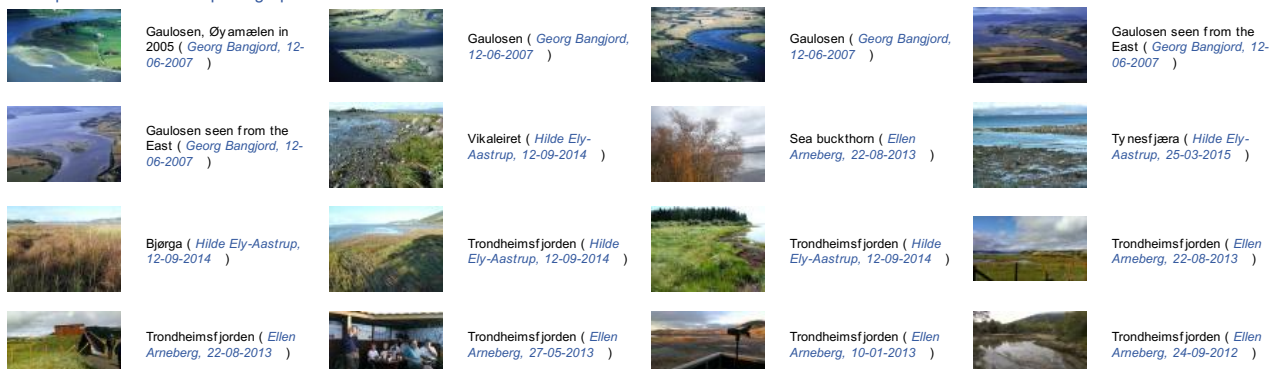
<1 file(s) uploaded>

vi. other published literature

<19 file(s) uploaded>

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

Please provide at least one photograph of the site:



#### 6.1.4 - Designation letter and related data

Designation letter

<1 file(s) uploaded>

Date of Designation