Strategy for the conservation of migratory waterbirds in Arctic wetlands

Nenets Autonomous Okrug, Russian Federation, 2015-2025

ARCADIA

Wetlands INTERNATIONAL

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Cover image: Ruff by Merijn van Leeuwen

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Executive Summary

This document is a strategy aimed at conservation of waterbirds for the Nenets Autonomous Okrug in Northwest Russia, at the Arctic northern end of the East Atlantic Flyway. It was developed under the project "From the Arctic to Africa: Migratory birds connecting wetlands and people", funded by Arcadia. The *From the Arctic to Africa* project aimed to connect people along the East Atlantic Flyway, which covers the migratory route from West Africa to the Northwest Russian Arctic, in order to protect wetlands and waterbirds. The project focused on two globally important ecoregions for migratory waterbirds: the Senegal River Delta and the Arctic coastal tundra in Nenets AO. In particular, the coastal fringe of Nenets AO, from the Timan Range in the west to the Yugorsky Peninsula in the east, and to the border of the southern tundras.

As well as bringing people together across the flyway, the project particularly aimed to develop local conservation actions and monitoring. Over the last three years this conservation strategy for the Nenets AO has evolved as a "living document" and is intended to be an important reference for site managers and governments working on conservation planning in the Nenets AO.

It has been informed by the experience of engaging these key stakeholders in reducing the threats that cause wetland degradation and loss. Various stakeholders are relevant to and may affect the conservation and wise use of waterbirds and their habitats in the Nenets AO. This strategy groups these stakeholders under eight categories: federal and regional government bodies, local authorities, users of subsoil resources (oil and gas), research and education organisations, indigenous communities, reindeer herders and local communities, hunters, and conservation and social organisations.

The Nenets AO represents a globally important breeding and staging area for waterbirds, with around 200 bird species identified there. From these 200 bird species, 26 species of waterbirds were selected as conservation targets for this strategy (also referred to as qualifying waterbird species), including 13 waterbirds that have a decreasing population. Based on the qualifying waterbirds, four broad habitat complexes were also identified: arctic marine waters, coastal and estuarine habitat complex, tundra and peatland habitat complex and the Pechora River floodplain.

These waterbirds and their habitats are impacted by a range of threats, including the production and transportation of oil and gas, reindeer grazing, mass harvesting and collection of birds and their eggs, as well as the less studied threat from climate and sea-level change.

The vision for this strategy is that by 2030, viable ecosystems on the northern fringe of Nenets AO are protected to ensure and maintain a long-term favourable status of qualifying migratory waterbird species. In order to achieve this vision, the strategy builds on the stakeholders, qualifying waterbird and threat analyses to develop six intervention strategies, together with goals, objectives and actions for implementation, and a preliminary monitoring plan to assess and adapt the strategies on: wetland and waterbird monitoring and assessment, conservation education and awareness, responsible oil and gas industry, sustainable reindeer husbandry and sustainable waterbird harvesting.

Based on this conservation strategy an operational implementation plan and resource development strategy will be developed to carry out the specified actions. Adaptive management will be a guiding principle. Therefore a monitoring plan is included in order to systematically assess whether the stated goals are being achieved. The strategy will be reviewed between 2020 and 2025.

Introduction

Each year large numbers of waterbirds migrate along the East Atlantic Flyway. The East Atlantic Flyway is an important component of the African-Eurasian flyways, connecting the Arctic breeding areas in northern Eurasia to wintering areas in Western Europe, Western and Southern Africa. At each location along this flyway the birds fulfil a different part of their life cycle. Conservation of these migratory birds therefore will only be successful if critical areas along the flyway are conserved.

This document is a strategy aimed at conservation of waterbirds along the Arctic northern end of the flyway. The strategy focuses on the Nenets Autonomous Okrug (NAO) in Northwest Russia, at the Arctic northern end of the East Atlantic Flyway. It is a key region within the flyway, having global importance for the maintenance of the populations of numerous migratory waterbirds coming to the Arctic tundra and coasts of NAO to breed, stage, and moult.

This strategy was developed under the project *From the Arctic to Africa: Migratory birds connecting wetlands and people*, funded by Arcadia. One goal of this project was to develop long-term conservation and wise use strategies for two target ecoregions in Russia and Africa. This strategy also links to Wetlands International's Strategic Intent 2015-2025, in which halting and reversing loss of wetland habitats, sites and species is an important goal. Migratory species including waterbirds and their flyways are key targets in this Strategic Intent.

The Russian Federation is a Contracting Party to the Convention on Wetlands of International Importance, especially as Waterfowl Habitat (Ramsar, Iran, 1971), and is in the process of negotiating accession to the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA). In 2014 the Russian Public Chamber submitted a number of documents for accession to AEWA for discussion in the State Duma and the Government of the Russian Federation. Furthermore, the Nenets AO has been involved in various international conservation projects with regional cooperation, for example, through the Arctic Council. Conservation and management of waterbirds and their habitats is interdisciplinary and comprehensive. This strategy seeks to address this integrity to provide a basis for waterbird conservation and support the aforementioned conventions.

The strategy was developed between 2013 and 2015, using an integrated and participatory approach. Local, regional and international stakeholders were involved in the process to identify conservation targets, threats and realistic interventions and actions needed for conservation. The Open Standards for the Practice of Conservation (CMP, 2013) were used as a framework and guideline for developing the strategy. This document first describes the geographical scope and the conservation targets the strategy seeks to address. It then provides a situation analysis including the socio-economic context, stakeholder investigation, and threat analysis. Finally, it describes vision, goals, intervention strategies and a monitoring plan.

Contents

Outline of the area and conservation targets

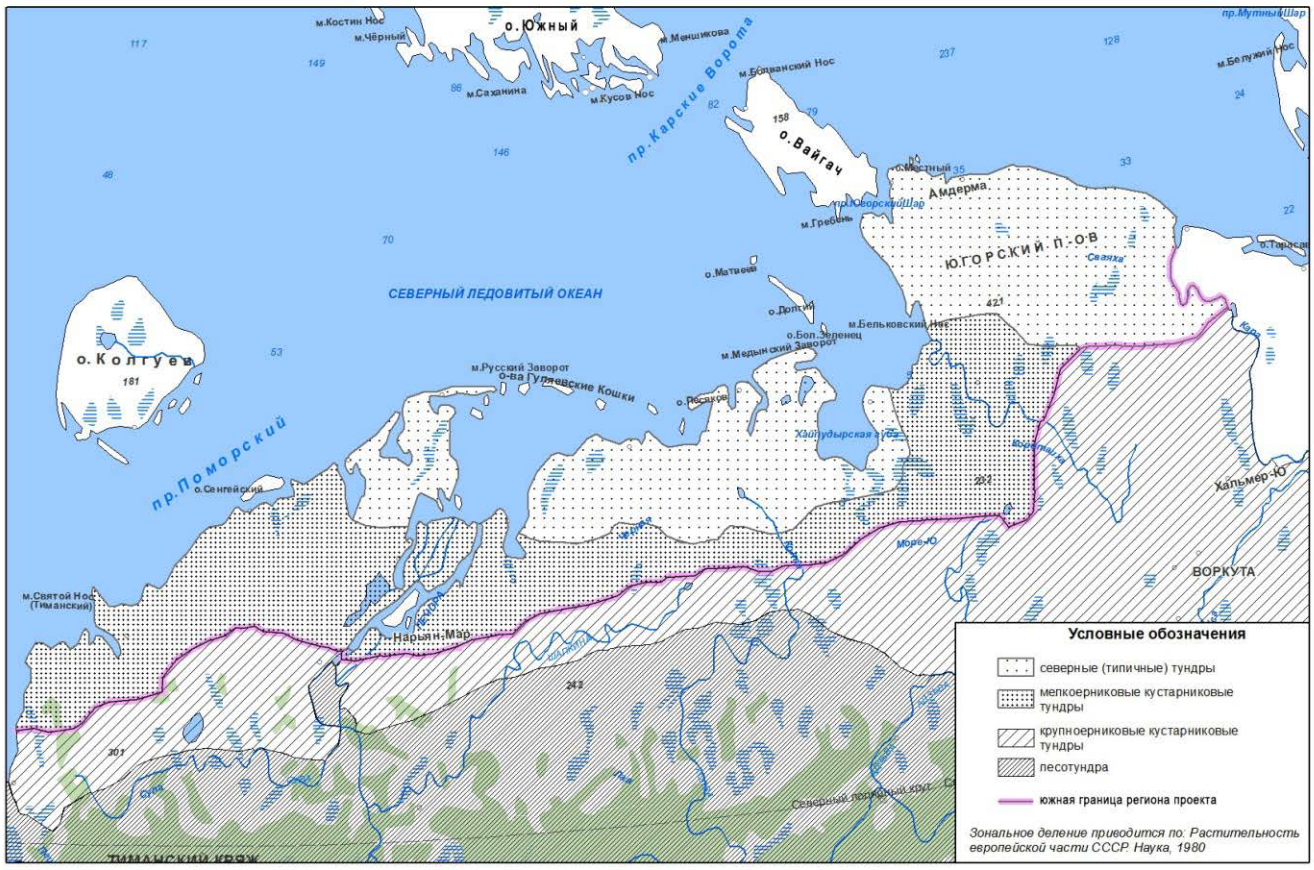
Geographical scope

The geographical scope is situated within the Nenets AO (NAO) in the northwest of the Russian Federation. The area of interest is limited to the coastal fringe of the Okrug, from the Timan Range in the west to the Yugorsky Peninsula in the east. In the south it extends to the border of the southern (shrub) tundras. As shown in Figure 1 the geographical scope encompasses both the terrestrial portion of the fringe as well as the coastal areas, including the different islands that are found across the coastline in the Barents Sea and Pechora Sea. Many waterbird species are fairly dispersed in the Arctic, especially during the breeding period, and their populations depend on very large areas. This means a landscape approach is needed to ensure the populations are sustained. The project area was thus delineated to encompass the main breeding, moulting and staging habitats of migratory waterbirds, linked with the main deltas and floodplains, lagoons, coastal shallow waters, and coastal tundras.

General description

The Nenets Autonomous Okrug (NAO) is one of the 85 constituent entities ("federal subjects" or "administrative regions") that exist within the Russian Federation. It is located in the north-western part of the country and extends as a fringe of approximately 200–300 km wide along the southern shores of the Barents Sea (Figure 3). With a total area of 176,700 km_2, it encompasses a series of arctic and subarctic ecosystems that mark the transition between the boreal and arctic regions (Lavrinenko, 2012) as well as the transition between the terrestrial, coastal and marine environments. Furthermore, it also includes the lower portion and delta of the Pechora River, one of the largest and least disturbed rivers in Europe (Lavrinenko et al., 2000). At present there are ten designated legally protected areas in Nenets AO (Table 1 and Figure 2).

Figure 1: Geographical scope of the waterbird and wetland conservation strategy within the Nenets Autonomous Okrug. The southern limit is indicated with a purple line (Source: Mineyev, 2003). Legend (from top to bottom): Northern tundra, Small Betula nana shrub tundra, Large B. nana shrub tundra, Forested tundra.



General description cont.

This area has a subarctic climate. Mean temperatures in December-January vary between –16 to –220°C (lowest temperature is –550°C) and 8 to 160°C in July. Annual precipitation is 250 to 500 millimetres. This area is dominated by zonal tundra ecosystems where different types of bog and fen peatlands, as well as other freshwater wetlands (lakes, pools) and shrub willow stands, are found alternating between the better drained areas of dwarf shrubs and lichens. However, the lower Pechora River also introduces an important a-zonal component which allows for the intrusion of more boreal species into the landscape (Van Eerden, 2000).

The region includes major moulting, breeding and staging sites for migratory water and sea birds that benefit from the mosaic structure and relative isolation of the local landscapes (Larsen et al., 2004). It is estimated that many bird species have a significant proportion of their population residing in Nenets AO during a part of their life cycle, for example Bewick's Swan, Brent and Barnacle geese. Several of these species are threatened and/or have decreasing population trends, for example Lesser White-fronted Goose, Greater Scaup, Long-tailed Duck and Ruff. There are eleven Important Bird Areas (IBAs) in NAO, five of which lie within the geographical scope (Figure 2). The Nenets coast also hosts important congregation sites for marine mammals such as Atlantic Walrus, Ring Seal and Beluga Whale.

With a total population of 42,000 inhabitants in an area of 180,000 km_2, the Nenets AO has a low level of human occupation (Rees et al., 2003). More than half of the inhabitants (28,500) reside in Naryan-Mar, a port in the Pechora River that serves as the administrative centre of NAO (Rees et al., 2003). Approximately 15% of the total population (6,400 people) are indigenous Nenets who have traditionally engaged in nomadic reindeer herding and other subsistence land uses across the seasonally changing tundra landscapes of the Okrug (Rees et al., 2003; Tuisku, 2002; Dallmann et al. 2010; NAO Administration, 2015).

Despite the low population densities, since the last decades of the twentieth century, the ecosystems in the area have been under increasing pressure. Most of the pressure is caused by several oil and gas companies that have been prospecting, extracting and transporting hydrocarbon resources in different parts of the Okrug (Tuisku, 2002; Van Eerden, 2000). Numerous oil spills and other degradations of the upper soil layer occur periodically in the tundra, inflicting damage on the Arctic natural environment (Dallmann et al. 2010). Part of the pressure also comes from changes in the reindeer herding pattern, which has shifted away from traditional practices and adopted a more commercial approach, with increasingly restricted nomadic movements (Rees et al, 2003). In addition to this, the present and predicted changes in the global climate are also expected to have a strong impact on the dynamics and structure of the areas' ecosystems which, given their arctic character, are extremely sensitive to changes in temperature and in the annual hydrologic and permafrost conditions (Meltofte et al, 2013). At present climate change has not yet led to observable changes in the region or thawing of permafrost, as is the case in Canada, Alaska and parts of Siberia.

Conservation targets

The overarching goal of this strategy is the long term conservation of populations of internationally important waterbird species in NAO. Internationally important waterbird species are defined as globally threatened species and/or species occurring in concentrations of more than 1% of the biogeographical population. Therefore these qualifying birds will be the main conservation targets for this strategy. To conserve these bird species it will also be necessary to ensure their breeding, moulting and foraging habitats remain of sufficient quality. Therefore their main habitats will also be conservation targets. The selection of species and habitats will be described below.

Bird species

In total, about 200 bird species are recorded in NAO, including 130 breeding species (Mineyev, Mineyev, 2009, 2012). Within the project area, five Important Bird Areas (IBAs) were identified (Birdlife International 2015; see Figure 2). In addition, seven wetlands sites were found to meet Ramsar criteria for Wetlands of International Importance, partly overlapping with IBAs. The migratory waterbird species for which the area is an important breeding, moulting or wintering site constitute the main focus of the conservation planning efforts. These can be either globally threatened species or species that regularly form globally significant congregations (regular occurrence of >1% of a geographically defined population) in the area.

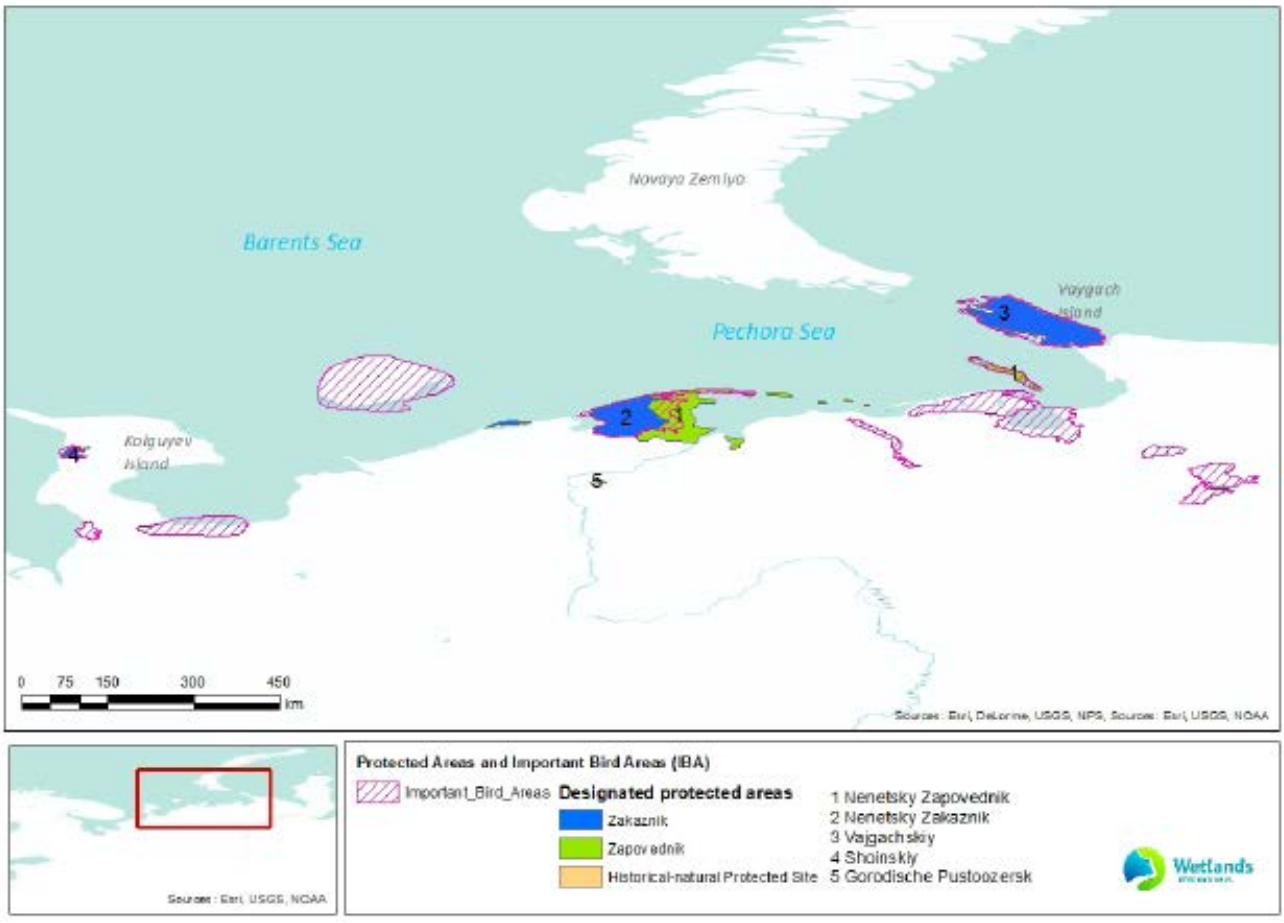
The Critical Site Network Tool (CSNT) developed by Wetlands International, BirdLife International and the World Conservation Monitoring Centre under the Wings Over Wetlands project , and the IUCN Red List of Threatened species were used for identification of the target species, in addition to locally available expert knowledge. With the CSNT it is possible to compile a list of all the Critical Sites and Important Bird Areas (IBAs) in the project area. The list of sites can then be used to derive a list with all the waterbird species in each of the sites. Next, BirdLife International's Global Species Programme database was consulted to identify the threatened waterbird species present (up-to-date IUCN categories are included). The population ranges of the species in this list can then be consulted in the CSNT by accessing the Species section, searching for the species and selecting the option to display population boundaries. These boundaries were used to identify the threatened populations within the geographical scope. Finally, the species lists from the CSNT and Birdlife databases were merged into a single list of qualifying waterbird species. The data on population sizes of waterbirds in the region contain many gaps and are not all up-to-date. To bridge this data gap additional potentially important or qualifying species were added to the basic bird species list based on expert judgement.

The result is a total list of 26 species of waterbirds that were selected as conservation targets. The qualifying, internationally important waterbird species and their qualifying criteria are listed in Table 4. Throughout this strategy, these 26 species are

Table 1: Designated protected areas in Nenets AO (Sources: IUCN and UNEP-WCMC 2015; NAO Administration, 2015)

Name	National category	IUCN category	Management level	Area (ha)
Nenetsky	Strict Nature Reserve (Zapovednik)	Ia	Federal	313,400
Nenetsky	Nature Reserve (Zakaznik)	IV	Federal	308,500
Vaygach	Nature Reserve (Zakaznik)	IV	Regional (NAO)	242,778
Shoinskiy	Nature Reserve (Zakaznik)	IV	Regional (NAO)	16,400
Nizhnepechorsky	Nature Reserve (Zakaznik)	IV	Regional (NAO)	88,073
More-Yu	Local Sanctuary (Zakaznik)	IV	Regional (NAO)	54,765
Gorodische Pustoozersk	Historical-natural Protected Site	V	Regional (NAO)	1,800
Pym-va-Shor	Natural Monument	V	Regional (NAO)	2,425
Canyon Bolshiye Vorota	Natural Monument	V	Regional (NAO)	212
Kamenny Gorod	Natural Monument	V	Regional (NAO)	4,858

Figure 2: Protected areas and Important Bird Areas (IBAs). Sources: IUCN and UNEP-WCMC 2015, BirdLife International 2015.



sometimes summarised as one target: "Qualifying waterbird species".

Habitats

Next, the habitats or habitat complexes that are important for the qualifying species in the area were identified. A literature-based approach was used for defining the habitat requirements as there are insufficient field observations from the area itself. Habitat requirements where compiled from Cramp & Simmons (1977), BirdLife (2013) and Tucker & Evans (1997). The habitat denominations and terminology in the literature differed considerably from source to source. In addition, both the generic and local habitat descriptions where too detailed and included many more habitat classes than the actual number of conservation targets that can be reasonably used within a project. Therefore four broadly defined habitat types or complexes were derived from the lists of habitats identified for each species. The relationship between the more detailed classification systems and the habitat units adopted for the project is shown in Table 2. The four main waterbird habitat complexes for NAO are defined as follows:

1. **Arctic marine waters:** This system comprises the waters of the southern Barents sea, or Pechora sea, and is limited to only the shallow waters (<20 metres deep), as defined by Tucker & Evans (1997).
2. **Coastal and estuarine habitat complex:** This complex extends along the mainland north coast and around the shorelines of Vaygach and Kolguyev islands. It encompasses flats and marshes that alternate with tundra areas in some places (Lavrinenko, 2012). As such, the complex includes areas with rocky coasts (formed by the accumulation of boulders), coastal cliffs (located mostly on the islands), coastal lagoons, estuarine areas, beaches, mud and sand flats and intertidal salt marshes.
3. **Tundra and peatland habitat complex:** Within NAO three main types of arctic tundra zonal vegetation systems can be found: (1) the more southern bush or shrub tundra, with a ground cover of mosses and lichens and a sparse cover of low vegetation formed by sedges, grasses, herbs, and shrubs; (2) the typical tundra, dominated by a continuous moss cover and with the presence of sedges, other vascular plants and dwarf shrubs; and (3) the northern arctic tundra, formed by barren, unvegetated patches and a sparse vegetation cover (Tucker & Evans, 1997). However, within the northern coastal fringe the most widespread formation is the typical tundra zone formed by a mosaic of peatlands, wetlands, shrubs and barren areas. Within this mosaic, lakes, pools and small streams abound, different peatland types (polygon mires, palsa mires, string fens, and kettle hole peatlands) occupy the lowlands and the flat undrained areas, while dwarf willow shrubs occur along areas with flowing underground waters and the better drained, sloping areas are covered by low shrubs and lichens.
4. **Pechora River flood plain:** The margins of the Pechora River and its delta constitute an a-zonal riverine system with a vegetation composition that includes meadows, shrubs, and (in the higher banks) some trees (Lavrinenko et al., 2000). As such, this area offers an alternative set of habitats for the species that require more wooded and shrubby surroundings.

Detailed and comprehensive up-to-date maps of the various habitats or ecosystems could not be obtained. However, Figure 3 and Figure 4 provide an impression of physio-geographical landscape types and aggregated (main) vegetation classes in NAO. The corresponding habitats for each qualifying waterbird species are shown in Table 4.

Key ecological attributes and indicators

For each target, Key Ecological Attributes (KEA) and their indicators were defined. KEAs are aspects of a target's biology or ecology that if present, define a healthy target and if missing or altered, would lead to the outright loss or extreme degradation of that target over time (CMP 2013). Table 3 provides an overview of the KEAs and their indicators. The indicators are defined preliminarily, as at present there is a lack of sufficient field data to specify them. The indicators need to be made more specific once the monitoring plan for the region has been set up.

Table 2: Correspondence between habitat classes adopted for NAO and generic habitat denominations and available habitats.

Habitat classes	Heading
Arctic marine waters	Shallow Arctic waters (<20m deep)
Coastal and estuarine habitat complex	Rocky coasts Cliffs Coastal lagoons Intertidal salt marshes Estuaries
Pechora River floodplain	Marshes Shrub tundra Woody tundra
Tundra and peatland habitat complex	Tundra pools Tundra streams Tundra lakes Low tundra, Peat hummocks, Arctic open wet tundra

Figure 3: Physio-geographical landscape types in NAO. 1 Alluvial, 2 Deltas, 3 Peatlands, 4 Marine, 5 Marine weathering, 6 Glacial-marine, 7 Glacial, 8 Glacial and fluvioglacial, 9 Fluvioglacial, 10 Ice weathering, 11 Glacial and fluvioglacial weathering, 12 Mixed origin weathering, 13 Weathered base rock, 14 Rocky substrates, 15 Rocky substrates (block-folded), 16 NAO border. Source: Lavrinenko (2010).

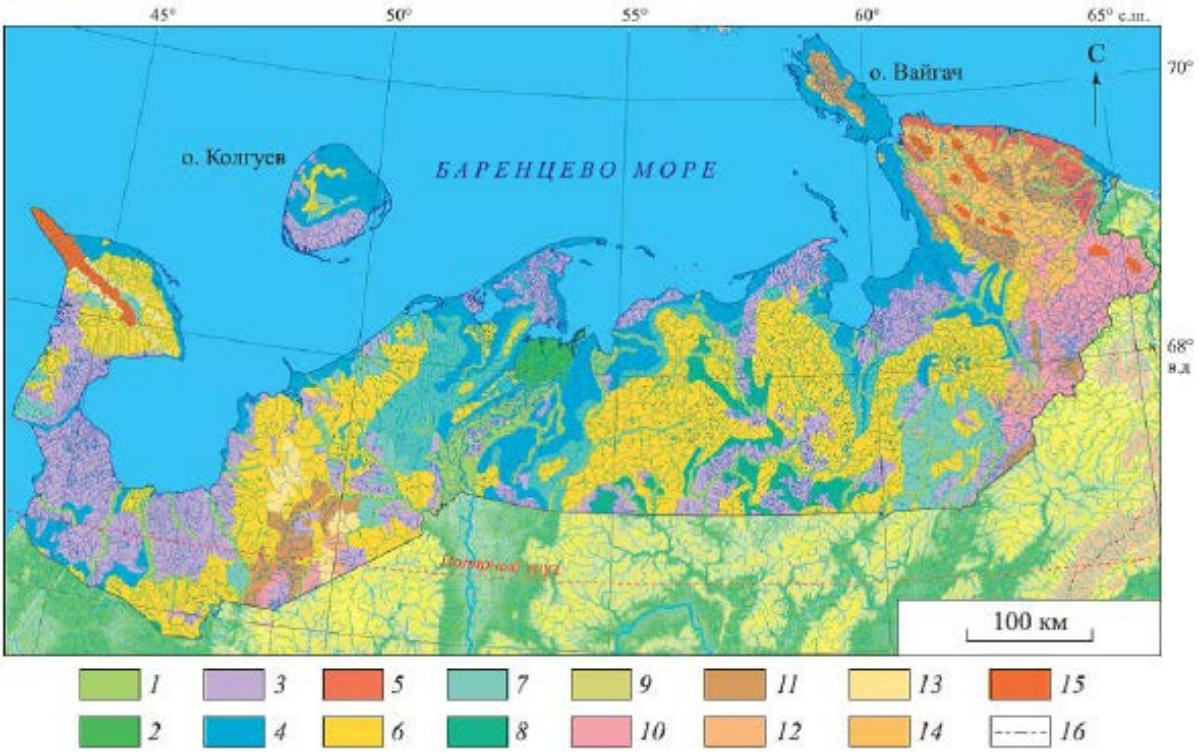


Figure 4: Aggregated vegetation map based on the European vegetation map (Bohn et al. 2000/2003).

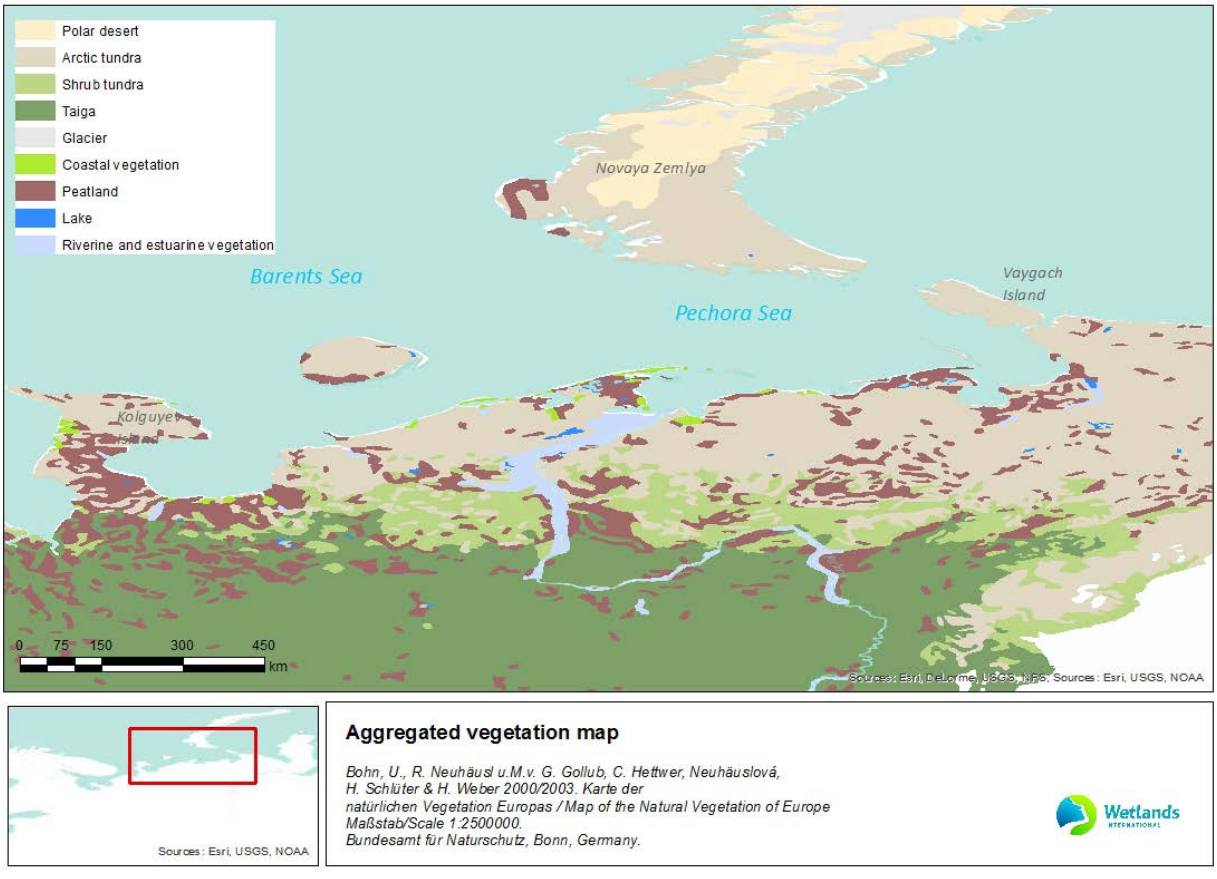


Table 3: Key Ecological Attributes and indicators for the conservation targets. The 26 bird species are grouped.

Target	Key Ecological Attributes (KEA)	Indicators	Comments
Qualifying waterbird species (26 species)	Population size and extent	Number of breeding, staging or moulting birds Distribution over sites Annual bird reproduction (some species)	Indicators need to be made species specific in relation to effort and timing needed for counting birds
Arctic marine waters	Habitat quality	Water quality	In order to detect pollution
Coastal and estuarine habitat complex	Habitat area and quality	Water quality Habitat quality Extent of representative vegetation types important for waterbirds	Detect pollution, overgrazing, and effects from climate change
Pechora River floodplain	Habitat area and quality	Water quality Habitat quality Extent of representative vegetation types important for waterbirds	Detect pollution, overgrazing, and effects from climate change
Tundra and peatland habitat complex	Habitat area and quality	Habitat quality Extent of representative vegetation types important for waterbirds	Detect pollution, overgrazing, and effects from climate change

Table 4: Qualifying waterbird species (conservation targets) of Nenets AO, the qualification criteria and habitat use per species. IUCN red list status: VU = Vulnerable, EN = Endangered, NT = Near Threatened, LC = Least Concern. Habitat use: F = Feeding, B = Breeding, M = Moulting, C = Pre-Migratory Congregations, X = General Use, [] = Occasionally Present.

Species		Qualification criteria:			Habitat use:		
	IUCN red list status	Overall population trend[1]	>1% population in Nenets AO (estimate[2])	Marine waters	Coastal & estuarine habitat complex	Tundra & peatland habitat complex	Pechora River floodplain
Arctic Loon (*Gavia arctica*)	(LC)	**Decreasing**	A4i: Pechora Delta 1996	C		B	B
Bewick's Swan (*Cygnus columbianus*)	(LC)	**Decreasing**	A4i: Kanin 1989, Pechora Delta 1996		C, B, M	B	[B]
Whooper Swan (*Cygnus cygnus*)	(LC)	Increasing			C	B, M	B
Greater White-fronted Goose (*Anser albifrons*)	(LC)	Increasing	A4i: Khaypudyrskaya Bay 1992, Kolguev Island 2006-2008		C, M	B, M	B
Lesser White-fronted Goose (*Anser erythropus*)	**VU**	**Decreasing**	A4i: Torna-Shoina 1995			B	B
Bean Goose (*Anser fabalis rossicus*)	**(LC)**	Stable	A4i: Khaypudyrskaya Bay 1992, Pechora Delta 1996		C, B, M	B	
Brent Goose (*Branta bernicla*)	**(LC)**	**Decreasing**	A4i: Torna-Shoina 1995	C	C, B		
Barnacle Goose (*Branta leucopsis*)	**(LC)**	Increasing	A4i: Torna-Shoina 1995, Kolguev Island 2006-2008		C, B	B	
Northern Pintail (*Anas acuta*)	**(LC)**	Unknown	A4i: Pechora Delta 1996			B, M	B, M
Greater Scaup (*Aythya marila*)	(LC)	**Decreasing**	A4i: Pechora Delta 1996, Torna-Shoina 1995	X		B	B
Common Goldeneye (*Bucephala clangula*)	(LC)	Stable		X	M	M	X
Long-tailed Duck (*Clangula hyemalis*)	**VU**	**Decreasing**	A4i: Chernaya river 2006	F, M	B, M	B	[B]
Velvet Scoter (*Melanitta fusca*)	**EN**	**Decreasing**		C, F	B	B, M	B, M
Black Scoter (*Melanitta nigra*)	**NT**	**Decreasing**		F	M	B	

Species		Qualification criteria:			Habitat use:		
	IUCN red list status	Overall population trend[1]	>1% population in Nenets AO (estimate[2])	Marine waters	Coastal & estuarine habitat complex	Tundra & peatland habitat complex	Pechora River floodplain
Common Merganser/ Goosander (*Mergus merganser*)	(LC)	Increasing		M	M	B	B
Red-breasted Merganser (*Mergus serrator*)	(LC)	Stable		M	M	B	B
Common Eider (*Somateria mollissima*)	(LC)	Stable	A4i: Khaypudyrskaya Bay 1992	F, M	B, M	B	
King Eider (*Somateria spectabilis*)	(LC)	Stable	A4i: Khaypudyrskaya Bay 1992, Pechora Delta 1996	F, M	B	B	
Ruddy Turnstone (*Arenaria interpres*)	(LC)	**Decreasing**			B	B	
Dunlin (*Calidris alpina*)	(LC)	Stable			B	B	B
Little Stint (*Calidris minuta*)	(LC)	Stable	A4i: Torna-Shoina 1995		B	B	B
Great Snipe (*Gallinago media*)	**NT**	**Decreasing**				B	B
Red-necked Phalarope (*Phalaropus lobatus*)	**(LC)**	**Decreasing**			C	B	B
Ruff (*Philomachus pugnax*)	(LC)	**Decreasing**			C, B, F	B, F	B, F
Grey Plover (*Pluvialis squatarola*)	(LC)	**Decreasing**				B	B
Glaucous Gull (*Larus hyperboreus*)	(LC)	Stable		F	B	B	

[1]Source: BirdLife International website www.birdlife.org, and references therein.

[2]Estimate based on data on Important Bird Areas (IBA) situated within Nenets AO (BirdLife International website www.birdlife.org). IBA criterion A4. Congregations; Criteria: i) Site known or thought to hold, on a regular basis, >1% of a biogeographic population of a congregating waterbird species or ii) Site known or thought to hold, on a regular basis, >1% of the global population of a congregating seabird or terrestrial species.

Socio-economic context and stakeholder analysis

Economic context

Oil and gas resources are a main driver for socio-economic development of the Nenets AO. Oil industry products constitute more than 90% of the total industrial production and the total revenue of the region. By 1 January 2009, 83 oil and gas fields were being explored in NAO, including 21 fields under actual exploitation. Some 60% of explored oil leases have already been distributed while 24% of oil and 19% of gas resources have still not been allocated. Over the coming years there are plans to extract 25 million tons of oil in the region, including 5 million tons at the coast. At present (2015) it is unknown how the globally low oil price and the difficulties and relatively high costs around developing oil and gas in the Arctic will or are already altering the economic situation.

Traditional livelihoods consisted of reindeer husbandry, hunting, fishing and gathering. Although they still persist, particularly among the indigenous communities, they are no longer the main economic drivers of the area. In recent years tourism, including touristic hunting, is increasingly present as a result of the larger economic and political developments. Another development is small businesses, dealing with all types of activities: tourism, hunting, land reclamation, utility shops, and consultancy for government, land users and (oil and gas) companies.

Stakeholder analysis

Various stakeholders, including organisations, businesses, state bodies and individuals, are relevant to and may affect the conservation and wise use of waterbirds and their habitats. The From the Artic to Africa project identified the main stakeholders and their interests through surveys, literature, interviews and participatory workshops. The complete stakeholder list and their interests and relationships are provided in Table 5. The stakeholders can be grouped under the eight categories outlined below:

Federal and regional government bodies responsible for the protection of the environment and natural resource uses

- Department of Natural Resources, Environment and Agricultural Production subordinated to the NAO Administration
- NAO Department of the Federal Supervision Service for Nature Management
- NAO State Institution "Center for Nature Management and Environment Protection" subordinated to the NAO Department of Natural Resources, Environment and Agricultural Production
- Nenetsky Strict Nature Reserve (Zapovednik) subordinated to the Ministry of Natural Resources and Environment of the Russian Federation

These bodies and organisations are responsible for environmental protection and control over the use of natural resources in NAO, the management of protected nature areas (PAs), wise use of hunting bird resources and conservation of endangered species. The NAO Department of Natural Resources, Environment and Agricultural Production is a regional executive that carries out the statutory regulation and implementation of national environmental policy. This includes: study, use, renewal and conservation of natural resources (subsoil, lands, waters, forests, wildlife and their habitats), environmental impact assessments, management of regional protected nature areas, hunting, environmental monitoring and pollution control, and agriculture, animal husbandry and fisheries. The Nenetsky Strict Nature Reserve (Zapovednik), where no economic activity is allowed, plays a special role in bird conservation and study. The Reserve is also responsible for the management of neighbouring Nenetsky Federal Reserve (Zakaznik). Within the project area, the birds and their habitats are also protected by two local PAs (Zakazniks): "Vaygach" and "Nizhnepechorsky". The number of local PAs on the coastal fringe of NAO is expected to increase over the coming years. Most of the organisations mentioned above have shown interest in collaborating on this strategy, as it aims at promoting natural resources protection and building the capacity of state agencies.

Local authorities

- Zapolyarny district (the only municipality in NAO), Naryan-Mar
- Village administrations

Local authorities are interested in the conservation of tundra ecosystems and waterbirds, because these habitats provide a basis for favourable living conditions of local people. The only municipality, Zapolyarny district, has a local development plan and also has the final signatory rights on land use decisions.

Users of subsoil resources (mostly oil and gas)

- Oil and gas companies (in total nearly 20)
- Transport companies

Due to their activities oil and gas companies pose threats for birds and their habitats. However, they have to observe strict

environmental regulations established by the authorities. For example, license agreements oblige license holders of leases to ensure soil recultivation (restoration) in the areas damaged due to natural resource development. However, the environmental protection requirements are not being observed by all license holders, and laws are not always enforced sufficiently. Part of the reason is a lack of understanding and awareness of ecosystem thinking, as became apparent during joint work between Wetlands International and several national and international oil and gas companies. This work partially resulted in better understanding of ecosystem approaches and ways to improve the implementation of mitigation measures. Environment departments of companies may be interested in similar joint working, since they need certification and confirmation of their environmental safety from environmental organisations, at least as far as their activities concern protected areas.

Research and education organisations

- Nenetsky Strict Nature Reserve (Zapovednik)
- Arctic University, Arkhangelsk
- Institute of Ecology of the North, Russian Academy of Sciences, Arkhangelsk
- Institute of Biology of Komi Sci. Center, Russian Academy of Sciences, Syktyvkar
- Nenets Museum of Nature and History, Naryan-Mar
- Museum and Nature Reserve "Pustozersk", Naryan-Mar
- Nenets College, Naryan-Mar
- Agricultural station, Naryan-Mar

Russian and international expeditions with participation of specialists in zoology, geography, botany and other environmental sciences often work in the region. They study the distribution and biology of geese and waders, plant communities, soils and other aspects that are relevant to conservation and use of tundra ecosystems and birds. Available up-to-date materials can be used to establish the monitoring of breeding waterbirds in protected areas, as well as in some unprotected coastal sites. The main awareness-raising organisations in NAO (the Museum of Nature and History and Pustozersk Museum) carry out activities aimed at increasing the public's awareness of the natural environment and the importance of protecting birds and their habitats. The From the Arctic to Africa project closely cooperated with these organisations, as well as with particular experts to address the issues of strategic planning and implement conservation measures.

Indigenous communities

- Association of Nenets People "Yasavey"
- Various villages and communities

There are approximately 8,300 Nenets and 3,000 Izhma Komi indigenous people living in the Nenets Autonomous Okrug. Many of them depend directly or indirectly on reindeer husbandry, fishing and hunting for their livelihood. Large tracts of land have been degraded by oil prospecting and production or have become difficult to access across oil pipelines. Reindeer husbandry is the most prominent traditional occupation (see below). Fishing provides a subsidiary occupation for reindeer herders, as well as other traditional subsistence activities like hunting and gathering. Life expectancy is extremely low (40-45 years) because of poor access to medical care and alcohol abuse. Three federal laws are completely devoted to the rights of indigenous peoples (Dallmann et al. 2010). The organisation for Nenets people "Yasavey" advocates, among other things, for the protection of reindeer pastures against the expanding industrial development in the tundra.

MODIL-NAO project main conclusions

The MODIL-NAO project, a collaboration between the Norwegian Polar Institute and "Yasavey", carried out a survey on monitoring of the development of traditional indigenous land use areas in NAO. The main conclusions were (Dallmann, 2010):

1. Difficulties that affect reindeer herding units, apart from deterioration and reduction of the pasture areas, include such social factors like poor management, the loss of prestige in reindeer husbandry as a livelihood, loss of traditional knowledge, a significant change of values in the Nenets society, social apathy, unemployment, and, in connection with the latter, the abuse of alcohol.
2. There are frequent complaints by local populations regarding oil companies and their responsibility towards pollution of pastures, illegal waste disposal, pollution of water resources, decrease of fish stocks, poaching by oil workers and others, and attacks by stray dogs on domestic reindeer.
3. In areas where future oil development is expected, people are afraid of its negative influence on traditional land use. In areas where oil development has been a reality for some time, people noticed this negative influence but simultaneously saw an improvement of the economic situation due to investments by oil companies into the system of social security.
4. Traditional land users have little to no influence over the most of the development of oil and gas installations, apart from providing minor technical recommendations.
5. The high consumption of traditional food among traditional land users indicates a high degree of indigenous people's vulnerability in the event of reduced or eliminated traditional sources of subsistence. The permanent replacement of traditional food by market food will seriously affect the health and the general wellbeing of the indigenous population.
6. Environmental regulations are not satisfactory, as there are no effective mechanisms of control. A severe deficiency is the lack of control over the use and misuse of the environment; companies unlawfully use tracked vehicles on summer pastures, pollute lakes and rivers, etc.
7. Only a few companies fulfil their legal obligations towards indigenous peoples; in recent years' the trend shows that such liabilities are no longer included in the license agreements.

Reindeer herders and local communities

- NAO Department of Natural Resources, Environment and Agricultural Production
- Indigenous communities in Traditional Land Use Areas
- Local communities in Traditional Land Use Areas
- Agricultural cooperatives, reindeer enterprises from NAO and the Komi Republic
- Individual farms

Reindeer husbandry is a traditional activity in NAO. Domestic reindeer stock that use the coastal tundras in NAO belong to agricultural cooperatives, reindeer enterprises, local and tribal communities, and farms. In addition to Nenets herds, large number of reindeer from the Komi Republic are being grazed on the coastal tundras in summer. NAO Department of Natural Resources, Environment and Agricultural Production is the main body regulating reindeer grazing. Reindeer herders and responsible agencies are interested in maintaining healthy tundra ecosystems through the limitation of industrial impacts and effective rehabilitation. Reindeer herders are often opposed to oil and gas development on tundras, because this activity destroys or deteriorates pastures and disturbs the reindeer routes, thus threatening traditional local livelihoods. In this regard their interest is the same as the conservation organisations. In terms of possible cooperation, local people can collect information on the status of tundra ecosystems, waterbird numbers and hunting pressures. It is also possible for local communities and conservation organisations to cooperate on waterbird conservation in general.

Hunters

- Travel and hunting agencies that use coastal sites for tourism and hunting tours
- Individual sport hunters

In NAO nearly all designated hunting areas are open access (have no owners). Some private companies organise spring goose hunting on the Barents Sea coast. Such tours are mostly purchased by hunters from outside of NAO. There is no strict control for such activity, and it is up to companies and hunters themselves to observe the hunting regulations. It is possible to establish contact with some of the hunting agencies, for example, to obtain hunting bag data or to use their camps in the course of carrying out field research.

Conservation and social organisations

- Wetlands International
- WWF Russia
- Regional youth movement "GreenHome"
- Fund for Support of Conservation of the Pechora Sea Basin

Non-governmental conservation and social organisations are not numerous in NAO. Among the international organisations, apart from Wetlands International, WWF should be mentioned. In cooperation with governmental bodies, the WWF Russia's Barents Sea office is involved in the protected areas network expansion and monitoring of endangered mammal species.

Table 5: Overview of stakeholders relevant for the conservation strategy, as assessed during the "From the Arctic to Africa" project

No.	Name of stakeholder	Impact on waterbirds and their habitat/ involvement in waterbird conservation	Role in the current project and strategy implementation	Project's impact upon stakeholder	Stakeholder's importance
1	NAO Department of Natural Resources, Environment and Agricultural Production: Division of Environmental Protection	Co-ordination and regulation of activities related to conservation and management of natural resource uses, regionally-protected natural areas, biodiversity conservation, Environmental Impact Assessments (EIA) and other environment-related issues at the NAO level	Providing support, information and advice to the preparation of the strategy, encouraging participation of subordinated and other local structures in project activities, giving its endorsement to the strategy implementation in NAO	Informational and methodological support, help in the implementation of the regional programme for the development of protected nature areas (the Khaipudyrsky Nature Reserve)	High
2	NAO Department of Natural Resources, Environment and Agricultural Production: Wildlife Division	Regulation of waterbird use – issuing permits, hunting control	Evaluation of hunting pressures for bird populations, information and advice to the preparation of recommendations for sustainable hunting, a stakeholder in the results	Capacity building, informing	High
3	NAO Department of Natural Resources, Environment and Agricultural Production: NAO State Institution "Center for Nature Management and Environment Protection"	Practical management of regionally-protected natural areas	Promoting field research and monitoring, awareness raising	Improvement of conservation, expanding PAs	High
4	Nenetsky Strict Nature Reserve (Zapovednik)	Site protection, research and monitoring of natural ecosystems, environmental education and awareness raising	Field research, educational/ awareness-raising activities, major role in preparation of documentation for the designation of new nationally and internationally protected areas (a marine buffer zone and a Ramsar site respectively)	Increase in area and advance in conservation status of the Nature Reserve. Increase of professional skills and capacity for research and conservation	High
5	Extracting companies	Destruction, fragmentation of habitats, disturbance	Non-identified	Increased ecological responsibility	Medium
6	Administration of Zapolyarny district of NAO	Non-identified	Assistance in awareness raising	Non-identified	Medium
7	Village administrations	Non-identified	Assistance in awareness raising	Non-identified	Medium
8	Arctic University, Arkhangelsk	Investigation of ecosystems, education	Assistance in eco-education	Non-identified	Low
9	Institute of Ecology of the North, RAS, Arkhangelsk	Waterbird studies, development of conservation measures	Expert support	Informing	Medium

No.	Name of stakeholder	Impact on waterbirds and their habitat/ involvement in waterbird conservation	Role in the current project and strategy implementation	Project's impact upon stakeholder	Stakeholder's importance
10	Institute of Biology of Komi Sci. Center, RAS, Syktyvkar	Waterbird studies, development of conservation measures	Expert support	Increased capacity for research	High
11	Nenets Museum of Nature and History, Naryan-Mar	Awareness raising	Implementation of awareness-raising/ education programme	Capacity building, field research	High
12	Museum and Nature Reserve "Pustozersk", Naryan-Mar	Site protection, awareness raising	Awareness raising activities with use of museum's exhibitions	Capacity building	High
13	Local (Indigenous) communities in Traditional Land Use Areas	Protection of tundra for traditional use. Local over-grazing, disturbance for breeding birds. Can damage the colonies (collection of eggs, chicks)	Can collect information on time of bird arrival, breeding, status of sites and hunting impact	Increase awareness of the importance ecosystem protection, maintaining their traditional way of life	Medium
14	Agricultural cooperatives, Reindeer enterprises of NAO and the Komi Republic	Protection of tundra for reindeer breeding. Local disturbance for birds, negative effect for tundra from over-grazing.	Non-identified	Increase of ecological responsibility	Medium
15	Travel (hunting) agencies	Interested in bird and sites protection. Can damage populations because of mass and poorly regulated harvesting.	Collection of data on status of habitats, hunting bag, assistance in field surveys	Increase of ecological responsibility	Medium
16	Wetlands International	Development and implementation of projects on wetlands and waterbird conservation, maintaining expert networks	Coordination of project activities, development of follow-up projects, fundraising for the strategy implementation	Capacity building, regional involvement	High
17	WWF Russia	Development and implementation of projects on the improvement of the regions' protected areas network and conservation of endangered species	Partnership in the development and implementation of the intervention strategy on protected areas	Increase of information base	Medium
18	Association of Nenets People "Yasavey"	Developing and maintaining sustainable reindeer husbandry, addressing the challenges of poaching, loss of pastures, and non-sustainable use of waterbirds	Can help with participatory monitoring	Information and methodologies	Medium
19	Regional Youth Movement "GreenHome"	Awareness raising	Design and carrying out the conservation activities	Capacity building	High
20	Fund for Support of Conservation of the Pechora Sea Basin	Assistance in field surveys, improvement of hunting controls	Design and carrying out the conservation activities	Capacity building	Medium

Status and threat analysis of conservation targets

Current and desired status of the conservation targets

The information on exact waterbird population numbers, trends, their distribution and habitat quality is limited and scattered. Estimating the current status of the conservation targets therefore had to rely on local data that is available, expert judgement and, largely, on the global trends of the waterbird species. The current status of the habitats is based on expert judgement, taking into account past and current developments, fragmentation and pollution, and the threat analysis detailed in this section. The desired status is based on what may be realistically achieved within the next 20 years, taking into account economic developments, the relatively good status of the region and possible consequences from climate change. The minimum for all targets is that they should remain in a favourable condition, and that further declines should be halted.

The current and desired future statuses (in 20 years) for the conservation targets are provided in Table 6. Status is expressed using four broad categories: Poor, Fair, Good, and Very good. Given the situation regarding information on waterbirds, it is apparent that the region is urgently in need of a well organised monitoring programme that at least gathers basic population data for the qualifying species and their habitats. Therefore a special intervention strategy on monitoring was designed (see section 6).

Table 6: Current and desired status of the conservation targets. The qualifying bird species were grouped by their global status and trend.

Target	Heading	Global (flyway) status and trend	Indicator	Current	Desired
Qualifying waterbird species:	Lesser White-fronted Goose, Long-tailed Duck, Velvet Scoter, Black Scoter, Great Snipe	Threatened IUCN category and globally decreasing	Population size and extent	Fair	Good
	Arctic Loon, Bewick's Swan, Brent Goose, Greater Scaup, Ruddy Turnstone, Red-necked Phalarope, Ruff, Grey Plover	Globally decreasing	Population size and extent	Good	Very good
	Whooper Swan, Bean Goose, Greater White-fronted Goose, Barnacle Goose, Common Goldeneye, Common Merganser/ Goosander, Red-breasted Merganser, Common Eider, King Eider, Dunlin, Little Stint, Glaucous Gull	Increasing or stable	Population size and extent	Very good	Very good
	Northern Pintail	Unknown	Population size and extent	Fair	Good
Habitat:	Arctic marine waters	Largely untouched	Habitat quality	Good	Very good
	Coastal and estuarine habitat complex	Largely untouched, but some fragmentation and pollution from oil and gas developments.	Habitat area and quality	Good	Very good
	Pechora River floodplain	Partially untouched, but infrastructural projects, oil and gas developments and pollution from further upstream.	Habitat area and quality	Fair	Good
	Tundra and peatland habitat complex	Largely untouched, but some fragmentation and pollution from oil and gas developments.	Habitat area and quality	Good	Good

Threat analysis

Current and future human activities bring a range of threats to the biological diversity of the coastal fringes in NAO, and particularly to the qualifying waterbird species and their habitats. While so far they have remained relatively intact, the tundra complexes, coasts and shallow waters are nevertheless threatened due to the past and present development of the oil and gas industry, people visiting formerly inaccessible places and unsustainable use of wildlife resources (Mineyev 2003, other sources). Based on two workshops with stakeholders in Naryan-Mar in 2013, seven direct threats to waterbirds and their habitats were identified (meeting reports in Annex 2), as follows:

1. Development of industrial infrastructure
2. Oil and industrial pollution
3. Transport and navigation pollution
4. Intensification of reindeer grazing
5. Mass harvesting of birds
6. Mass collection of eggs
7. Climate and sea-level change

The direct threats were ranked according to their impact on each of the conservation targets (Table 7). It represents an absolute threat ranking based on expert opinion for each target, projected from 2013 to 2023. Three criteria were used in combination to characterise each threat-target pair:

1. Scope: what % of each target is affected;
2. Severity: where does the threat occur, how much does or will the target be affected;
3. Irreversibility: how reversible are the impacts themselves.

Most of the threats are ranked as 'Low', and only the threat 'Development of industrial infrastructure' is evaluated as 'Medium'. Table 7 shows that coastal and estuarine habitats, tundra and peatland habitats, and the Pechora River floodplain will be more significantly affected by human activity than other biodiversity targets. Meanwhile, the relatively low anthropogenic pressure within the geographical scope of this strategy is still poorly studied, which may have led to underestimating threats. The overall threat rating for the project area is 'Medium'. This means that, in general:

- The threats are likely to be restricted in their scope, affecting the targets across some (11-30%) of its occurrence or population;
- That within the scope the threats are likely to moderately degrade or reduce the targets or reduce their populations by 11-30% within ten years or three generations;
- That the effects of the direct threats can be reversed and the targets restored with a reasonable commitment of resources and/or within 6-20 years (CMP 2013).
- The overall threat rating is produced from an algorithm combining all direct threats on all of the targets. Even though individual threats might not be ranked as 'high' or 'very high', together all threats make the case for conservation action, especially for a region which is still largely intact. In the following sections a brief description of each threat is provided.

Development of industrial infrastructure

Development of industrial infrastructure mainly includes developments related to and as a consequence of oil and gas production (pipelines, harbour, supporting facilities and industries attracted by oil and gas production) and transportation (shipping). The following aspects are important:

- Construction and use of industrial facilities associated with oil and gas extraction and transportation was evaluated as the most serious threat ('Medium') for waterbirds and their habitats on the coastal fringe of Nenets AO. According to economic plans for the coming years, the oil extraction in the whole region will reach 25 million tons, including 5 million tons on the coast. In connection with this increase in oil extraction, new facilities are being prepared for use, together with old facilities these include drilling sites and constructions, sea platforms, land and marine terminals and depots, pipelines and other industrial facilities. This activity causes significant, although not yet well studied negative impact on waterbird habitats, as well as on waterbirds themselves. It is anticipated that this impact will increase as the development of new oil fields and the construction of new facilities leads to direct habitat loss.
- Breeding and moulting birds may also be negatively affected by disturbances resulting from industrial development, which can increase predation and/or keep birds from using suitable habitats.
- Increasing death rate of birds due to collisions with powerlines and other industrial constructions (migration barriers).

Negative influences are confined to the operated and prospected hydrocarbon fields, as well as to the oil and gas transportation routes. Important hydrocarbon deposits are concentrated in the so-called Timan-Pechora basin, where a number of large deposits have been explored, particularly in the Bolshezemelskaya tundra, the lower reaches and mouth of Pechora River, the west of Pechora Bay, on Kolguyev Island and in some marine areas (figure 3).

Within the project area, the main oil and gas development sites are the surroundings of Varandey, east of Khaipudyr Bay, Yuzhny Khylychiu, and the lower reaches and mouth of the Pechora River. Numerous oil tanks and terminals have been constructed. For example, Varandey is now the principal oil terminal in NAO, through which the oil is transported by sea. A pipeline connects the terminal with neighboring oil fields, as well as with oil fields to the east of Khaipudyr Bay, with Kharyaga fields (south of NAO) and with South Chylychyu oil field in the west. In the vicinity of Varandey there are off-shore terminals for oil transfer and the oil drilling platform "Prirazlomnaya". The network of pipelines is growing, and new pipelines are planned in the near future. For example, there is a project to link the pipeline systems around Kharyaga (to the south of the project area) with the new pipeline in the South Khylychyu field (in the north of the project area). It is likely that a new tanker terminal will be built in the west, in the area of Indiga, and this increase in transportation along the Arctic coast will increase, in turn, the influence on the migratory waterbirds and their habitats.

This threat was evaluated as 'Medium' for coastal and estuarine habitats, tundra and peatland complexes and for Pechora floodplain habitats, while it was evaluated as 'Low' for (shallow) Arctic marine waters of the southern Barents Sea (because of off-shore facilities) and for waterbird species themselves. In total, the threat 'Development of industrial infrastructure' relates to more than 20 qualifying waterbird species, because it can cause the deterioration and destruction of their breeding, moulting and staging sites (see Table 8).

Oil and industrial pollution

This threat is confined to the areas of hydrocarbon extraction and to the routes of oil and gas transfer (e.g. pipelines) and appears as oil spills and discharges. Experts identified the following areas that are threatened by oil pollution: the Varandey area (mostly along a narrow shoreline), Balvanskaya Bay (along 30 km of shoreline), the north-western part of Khaipudyr Bay (along 8-10 km of shoreline), Gorelka spit, and the mouth of Dresvyanka River. In the Pechora floodplain locations threatened by pollution are mostly areas in the vicinity of the Vasilkovsky field. This threat also relates to the abandoned oil facilities (mostly drilling sites), where high pollution levels can persist for a long time, thus continuing to deteriorate the habitats of birds. However, the current area of pollution is still low relative to the whole project area, and the threat rating is 'Low' for most targets, except the Pechora River floodplain, for which it is assessed as 'Medium'. The pollution in the lower Pechora is caused not only by local industry, but also discharges from the oil and industrial areas of the Komi Republic located upstream.

For seaducks wintering in Arctic waters, often concentrated in small areas at high density, spills from oil exploration and increased shipping in Arctic waters constitute a serious threat, especially if offshore oil exploitation increases as currently expected (AMAP 2007). Oil exploitation at sea and increased transport of oil through Arctic waters, with its associated risk of oil spills, is especially hazardous for a large proportion of the great numbers of marine and coastal birds of the Arctic (ABA 2013).

Transport and navigation pollution

The negative influence from inland and marine transport mostly occurs as fuel and lubricant spills. This threat is also linked with oil development and intensification of transport and navigation. Fuel and lubricant spills deteriorate coastal complexes, tundra and peatland complexes, marine waters and the Pechora floodplain. In addition to pollution, transport also applies mechanical impact upon tundra and coastal complexes and thus causes their erosion and degradation. Across the whole region, this threat is evaluated as 'Low' so far. It is mostly found in the Varandey area, Balvansky Bay, Gorelka spit, Dresvyanka mouth, and near the settlements on the Pechora floodplain. This threat affects most of the qualifying species.

Intensification of reindeer grazing

An increase in the number of domestic reindeer grazing on the coastal tundras of Nenets AO may have a negative impact on both the bird habitats and the birds themselves. As of 1 January

Table 7: Evaluation of threats for biodiversity targets in Nenets AO documented

Threat/Target:	Coastal and estuarine habitat complex	Tundra and peatland habitat complex	Pechora River floodplain	Arctic marine waters	Qualifying waterbird species	Summary threat rank
Development of industrial infrastructure	Medium	Medium	Medium	Low	Low	Medium
Oil and industrial pollution	Low	Low	Medium	Low	Low	Low
Transport and navigation pollution	Low	Low	Low	Low	Not specified	Low
Intensification of raindeer grazing	Low	Low	Low		Low	Low
Mass harvesting of birds					Low	Low
Mass collection of eggs					Low	Low
Climate and sea-level change	Low				Not specified	Low
Summary target rankings	Low	Low	Medium	Low	Low	Overall ranking: **Medium**

Figure 5: Overview map of oil and gas fields in Nenets

Figure 6: Routes of movements of reindeer herder groups in Nenets AO

2010, the total number of reindeer grazing in Nenets AO was 162,600, of which 32,900 were privately owned. Intensive site-restricted reindeer husbandry and movement of large number of reindeer through narrow routes leads to degradation of tundra vegetation and erosion of soil. As well as stepping on the nests, the reindeer readily eat the birds' eggs and even birds if they can catch them. Bean Geese in particular can suffer due to mass reindeer movements. Bean Geese are one of the first geese to arrive at their breeding grounds. They make their nests mostly on flat peatlands with a knobbly microstructure, where snow cover disappears earlier than in other tundra habitats. Because the snow melts earlier the flat-knobbly peatlands are also the main grazing areas for reindeer in early spring. Thus, intensive reindeer grazing can seriously damage the Been Geese breeding areas. Herding dogs also threaten breeding birds. The root cause of this threat is a lack of good planning and shrinking of pastures due to industrial transformation (nearly 20% of pastures were lost between 1984 and 2002). This threat is located on Kolguyev Island, Vaygach Island and some other sites, and has an impact predominantly on swans, geese, waders and some duck species.

Massive harvesting of birds

Hunting activity, both sport and subsistence, is not well managed in the Nenets AO. The threat of poorly controlled, intensive shooting is mostly relevant to the swan and goose species. This can be found around the hunting lodges and reindeer herding sites. Spring waterfowl hunting in Nenets AO is annually opened for 10 days in late May-early June. The local hunting department issues approximately 1,500 hunting permits for goose and duck (drake) shooting during the spring hunting season. The bag limit is 20 geese and 20 ducks per permit, which potentially totals 30,000 geese and 30,000 ducks per season. However, the bag limits are poorly controlled, because the area is not easily accessible for state inspectors (some hunters go to the tundra using helicopters and snowmobiles). Poaching and illegal hunting include: shooting swans, endangered Lesser White-fronted Geese and duck females; exceeding bag limits; hunting outside of the permitted season and without a permit; and harvesting moulting birds. Reliable estimates of the scale of illegal hunting in Nenets AO are not available. Sometimes, for example during the spring hunting season, the scale of illegal hunting can seem massive, with unlimited shooting of geese and poaching of swans. However, the rating of this threat is 'Low', meaning that within the project area it is likely to be very narrow in its scope, affecting not more than 10% of populations of qualifying waterbird species.

Subsistence hunting of geese also has a clear impact on their populations. For example, on Kolguyev Island, the spring hunting season for local people significantly exceeds the 10 day period. Increased hunting activity coincides with the peak of geese migration, between 15 May and 5 June. The main hunting area is located within 25 km around Bugrino village. In total about 8,000 geese are harvested on the island every spring. Autumn hunting extends from mid-October until the birds leave. Autumn bag is about 1,500 geese, of which the Barnacle Goose makes up nearly 50%. The overharvesting of Arctic birds is a problem mainly in inhabited regions, principally in the sub-Arctic or the fringes of the Arctic.

Massive collection of eggs

The collection of large numbers of waterbird eggs occurs around the settlements and herding sites. Some information is available from Kolguyev Island. All islanders, including women and children, are involved in collecting swan, goose, gull and grouse eggs for subsistence needs. Special trips are organised using cross-country vehicles and boats. According to expert evaluation, the local people on Kolguyev Island annually collect around 5,000 eggs, of which 44% are Barnacle Goose eggs, 25% are gull (Lesser Black-backed and Glaucous gulls) eggs, 25% are White-fronted Goose eggs and 5% are Bean Goose eggs. Birds can restore the clutches and continue incubation after some, but not all eggs are taken. After repeated disturbances birds may abandon their nests.

According to expert evaluation, egg collection is likely not restricting the number of geese and gulls on the island, because this activity covers a relatively small areas – not more than 5% of White-fronted and Bean Geese breeding areas and 20% of gull and Barnacle Geese breeding areas. Compared with staging and wintering grounds, the Arctic breeding grounds are still relatively undisturbed.

Climate and sea-level change

There is a potential threat for waterbirds and their habitats resulting from climate change. The negative impact of climate change on birds and their habitats is not well studied. Some important breeding, moulting and staging areas, currently located in the intertidal zone may be permanently flooded due to sea level rise and will then no longer be highly productive habitats. These changes may deteriorate the breeding and staging conditions for some species of geese, swans, ducks and waders. However, the rating of this potential threat is 'Low'.

Identifying threats and conceptual model

Various literature and data sources and local workshops were used to identify economic and other activities that are (potential) threats for the conservation targets. The MODIL-NAO project (carried out by the Norwegian Polar Institute) mapped and described current and future economic developments in NAO. One such (Google) map is shown in Figure 7. The other data used are distribution maps for qualifying waterbird species, which were based on the following sources (in Russian): Yu. Mineyev 2003, O. Mineyev 2005, O. Mineyev & Yu. Mineyev 2009, 2012.

The threats and their locations are connected to the target waterbird species, as far as possible. This is summarised in Table 8. The threats caused by oil and gas development are found mostly (for the majority of qualifying waterbird species) in the area from Varandey district to Khaipudyr Bay, and the lower Pechora River. They are also present in the eastern part of Kolguyev Island, in Pechora Bay and the Pechora Delta, around Khylychyu and at some other sites, but to a lesser degree. The threats have a negative impact on the birds and their habitats during the breeding, moulting and migration seasons.

Exact quantification of the known threats or even additional threats is not clear for many qualifying waterbird species. This is caused by a lack of monitoring data for the waterbird species, but also due to lack of information on the magnitude of some of the threats. For instance, the negative impact from excessive and illegal goose and swan harvesting (hunting and/or egg collecting) can supposedly be tracked on Kolguyev Island and at a few coastal sites, but the exact location and harvesting data are not available. It appears that massive egg collection occurs on Kolguyev Island, and on Vaygach Island as well. Intensification of reindeer breeding may threaten waterbird populations and their habitats along the routes of reindeer movements, and also on Kolguyev Island. At the same time, lack of grazing at other locations may make some of the habitats less suitable, particularly for grazing birds.

The socio-economic context and various threats in relation to the conservation targets as described in the analysis above are summarised in a conceptual model. This conceptual model, visually depicted in Figure 8, shows the interrelatedness between various threats and factors in a logical order. The conceptual model also depicts the intervention strategies that will be introduced in the next section.

Figure 7: Current and future economic developments. Source: B. Kuipers (Norwegian Polar Institute) under the MODIL-NAO project (Dallmann 2010).

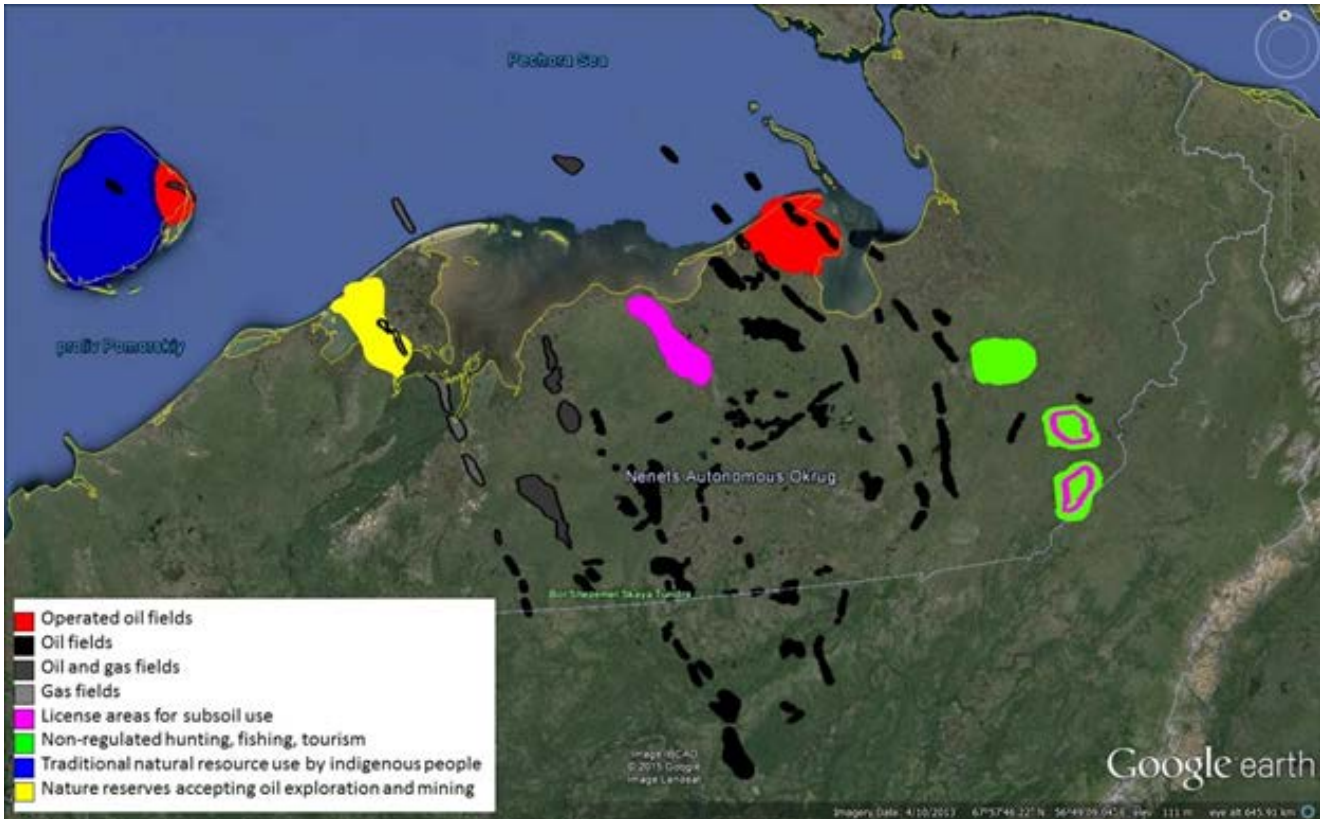


Figure 8: Conceptual model of context and threats for the conservation targets on the coastal fringe of Nenets AO. A conceptual model diagram is a visual method of representing a set of causal relationships between factors that are believed to impact one or more biodiversity target. The model links the biodiversity targets (green ovals) to the direct threats impacting them (pink boxes), and the factors (indirect threats and opportunities - orange boxes) influencing the direct threats.

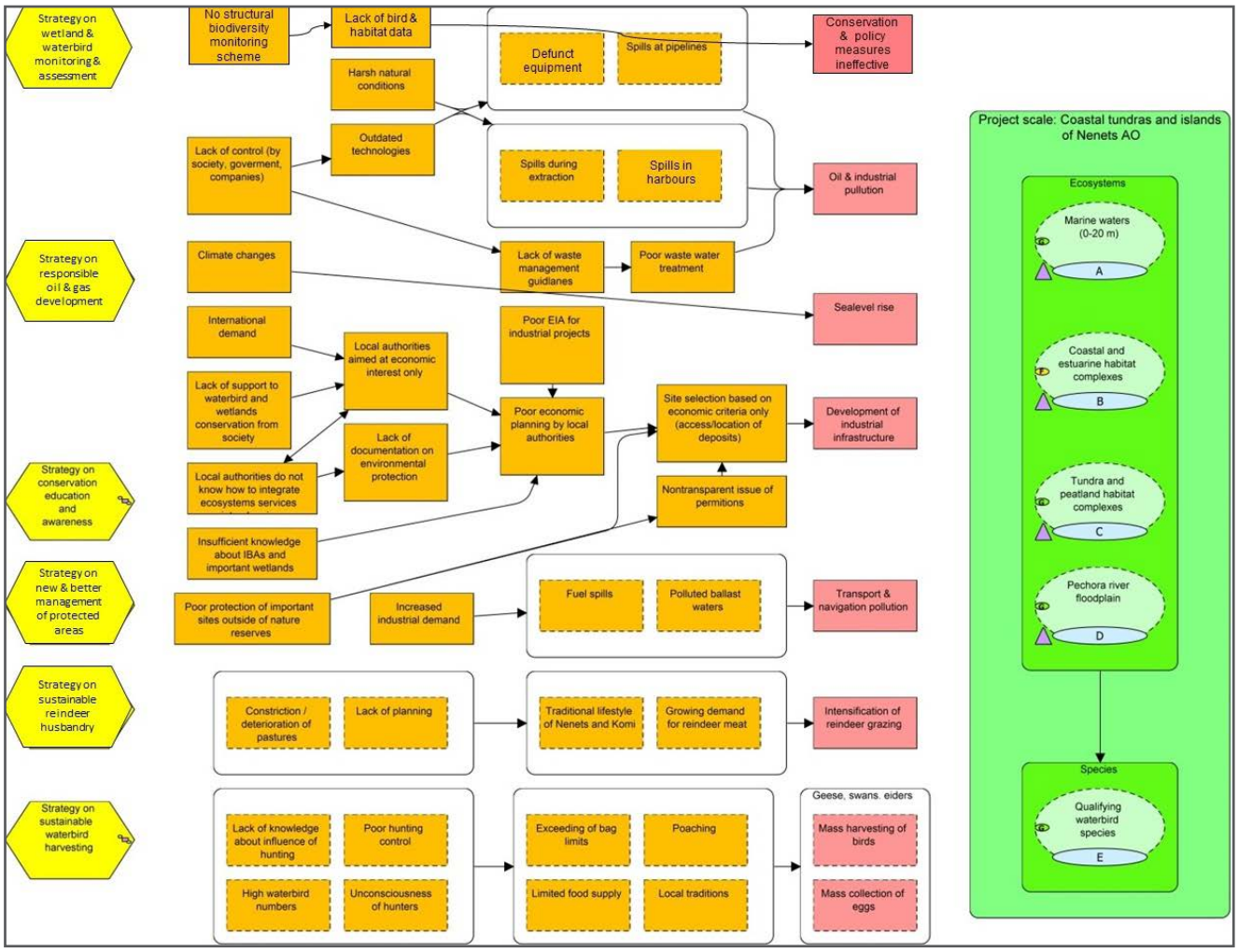


Table 8: Possible identification of threats to qualifying species and their habitats on the coastal tundras of Nenets AO (in brackets – stage of life cycle under threat)

	Direct threats for habitats and species						
Species	**Development of industrial infrastructure**	**Oil and industrial pollution**	**Transport and navigation pollution**	**Intensification of reindeer grazing**	**Mass harvesting of birds**	**Mass collection of eggs**	**Climate and sea/ level change**
Arctic Loon	Varandey, Khaipudyr Bay (breeding), Pechora Delta (moulting)	Varandey, Khaipudyr Bay (breeding), Pechora Delta (moulting)	Varandey, Khaipudyr Bay (breeding), Pechora Delta (moulting)				
Barnacle Goose	Varandey, East Kolguyev (breeding)	Varandey, East Kolguyev (breeding)	Varandey, East Kolguyev (breeding)	Kolguyev Is. (breeding)	Hunting lodges on the coast, vicinity of settlements (staging, breeding)	Vaygach and Kolguyev islands, within 5 kilometers around settlements (breeding)	Coasts (breeding)
Brent Goose	W Khaipudyr Bay, Perevozny Bay, E Pakhanchesky Bay (staging)	W Khaipudyr Bay, Perevozny Bay, E Pakhanchesky Bay (staging)	W Khaipudyr Bay, Perevozny Bay, E Pakhanchesky Bay (staging)				Coasts (staging)
White-fronted Goose	Varandey, Khaipudyr Bay, tundras westward of Khaipudyr Bay (breeding), Khaipudyr Bay, Khylychyu (moulting), S Khaipudyr Bay, Pakhanchesky Bay (staging)	Varandey, Khaipudyr Bay, tundras westward of Khaipudyr Bay (breeding), Khaipudyr Bay, Khylychyu (moulting), S Khaipudyr Bay, Pakhanchesky Bay (staging)	Varandey, Khaipudyr Bay, tundras westward of Khaipudyr Bay (breeding), Khaipudyr Bay, Khylychyu (moulting), S Khaipudyr Bay, Pakhanchesky Bay (staging)	Kolguyev Is. (breeding)	Hunting lodges on the coast, vicinity of settlements on Kolguyev Is. (staging, breeding)	Vaygach and Kolguyev islands, within 5 kilometers around settlements (breeding)	Coasts (staging)
Lesser White-fronted Goose	To the south of Khaipudyr Bay (summer records)	To the south of Khaipudyr Bay (summer records)	To the south of Khaipudyr Bay (summer records)		Hunting lodges on the coast (unspecified locations)		
Bean Goose	Varandey, Khaipudyr Bay, southward of Khaipudyr Bay, Lower Pechora, South Khylychyu (breeding), south of Khaipudyr Bay, Low Pechora (staging), west Khaipudyr Bay, southward of Khaipudyr Bay, Chernaya River basin (moulting)	Varandey, Khaipudyr Bay, southward of Khaipudyr Bay, Lower Pechora, South Khylychyu (breeding), south of Khaipudyr Bay, Low Pechora (staging), west Khaipudyr Bay, southward of Khaipudyr Bay, Chernaya River basin (moulting)	Varandey, Khaipudyr Bay, southward of Khaipudyr Bay, Lower Pechora, South Khylychyu (breeding), south of Khaipudyr Bay, Low Pechora (staging), west Khaipudyr Bay, southward of Khaipudyr Bay, Chernaya River basin (moulting)	Kolguyev Is. (breeding)	Hunting lodges on the coast, vicinity of settlements on Kolguyev Is. (staging, breeding)	Vaygach and Kolguyev islands, within 5 kilometers around settlements (breeding)	
Whooper Swan	Lower Pechora, Pechora Bay (breeding, staging)	Lower Pechora, Pechora Bay (breeding, staging)	Lower Pechora, Pechora Bay (breeding, staging)				

Species	Direct threats for habitats and species						
	Development of industrial infrastructure	Oil and industrial pollution	Transport and navigation pollution	Intensification of reindeer grazing	Mass harvesting of birds	Mass collection of eggs	Climate and sea/ level change
Bewick's Swan	Varandey, east of Khaipudyr Bay (breeding), Varandey, Khaipudyr Bay, lower Pechora, Pechora Bay (moulting, autumn concentrations)	Varandey, east of Khaipudyr Bay (breeding), Varandey, Khaipudyr Bay, lower Pechora, Pechora Bay (moulting, autumn concentrations)	Varandey, east of Khaipudyr Bay (breeding), Varandey, Khaipudyr Bay, lower Pechora, Pechora Bay (moulting, autumn concentrations)	Kolguyev Is. (breeding)	Hunting lodges on the coast, vicinity of settlements on Kolguyev Is. (staging, breeding)	Vaygach and Kolguyev islands, within 5 kilometers around settlements (breeding)	Coasts (breeding, staging)
Pintail	Khaipudyr Bay, lower Pechora, Pechora Bay (breeding, moulting, staging)	Khaipudyr Bay, lower Pechora, Pechora Bay (breeding, moulting, staging)	Khaipudyr Bay, lower Pechora, Pechora Bay (breeding, moulting, staging)				
Greater Scaup	Lower Pechora, River Chernaya basin (breeding), Varandey, Khaipudyr Bay, Pechora Bay (moulting, staging)	Lower Pechora, River Chernaya basin (breeding), Varandey, Khaipudyr Bay, Pechora Bay (moulting, staging)	Lower Pechora, River Chernaya basin (breeding), Varandey, Khaipudyr Bay, Pechora Bay (moulting, staging)				
Long-tailed Duck	Westward of Pechora Bay, interfluve of Chernaya-Shapkina (breeding), Khaipudyr Bay (breeding, staging), E Kolguyev, interfluve of Chernaya-Shapkina-Kolva (moulting)	Westward of Pechora Bay, interfluve of Chernaya-Shapkina (breeding), Khaipudyr Bay (breeding, staging), E Kolguyev, interfluve of Chernaya-Shapkina-Kolva (moulting)	Westward of Pechora Bay, interfluve of Chernaya-Shapkina (breeding), Khaipudyr Bay (breeding, staging), E Kolguyev, interfluve of Chernaya-Shapkina-Kolva (moulting)				
Goldeneye	Lower Pechora, Pechora Bay (breeding, moulting, staging)	Lower Pechora, Pechora Bay (breeding, moulting, staging)	Lower Pechora, Pechora Bay (breeding, moulting, staging)				
Common Eider	Khaipudyr Bay, E Kolguyev (breeding, moulting)	Khaipudyr Bay, E Kolguyev (breeding, moulting)	Khaipudyr Bay, E Kolguyev (breeding, moulting)	Kolguyev Is. (breeding)		Vaygach and Kolguyev islands, within 5 kilometers around settlements (breeding)	Coasts (breeding, staging)
King Eider	Khaipudyr Bay-Varandey (breeding), Khaipudyr Bay, E Kolguyev (moulting)	Khaipudyr Bay-Varandey (breeding), Khaipudyr Bay, E Kolguyev (moulting)	Khaipudyr Bay-Varandey (breeding), Khaipudyr Bay, E Kolguyev (moulting)	Kolguyev Is. (breeding)		Vaygach and Kolguyev islands, within 5 kilometers around settlements (breeding)	Coasts (breeding, staging)

Species	Direct threats for habitats and species						
	Development of industrial infrastructure	Oil and industrial pollution	Transport and navigation pollution	Intensification of reindeer grazing	Mass harvesting of birds	Mass collection of eggs	Climate and sea/ level change
Black Scoter	Chernaya-Kolva (breeding). S Khaipudyr Bay, lower Pechora (moulting, staging)	Chernaya-Kolva (breeding). S Khaipudyr Bay, lower Pechora (moulting, staging)	Chernaya-Kolva (breeding). S Khaipudyr Bay, lower Pechora (moulting, staging)				
Velvet Scoter	Lower part and delta of Pechora (breeding) Khaipudyr bay, Pechora delta, Pechora Bay (moulting, staging)	Lower part and delta of Pechora (breeding) Khaipudyr bay, Pechora delta, Pechora Bay (moulting, staging)	Lower part and delta of Pechora (breeding) Khaipudyr bay, Pechora delta, Pechora Bay (moulting, staging)				
Red-breasted Merganser	E Khaipudyr Bay, lower Pechora (breeding), Pechora Sea and Bay (moulting, staging)	E Khaipudyr Bay, lower Pechora (breeding), Pechora Sea and Bay (moulting, staging)	E Khaipudyr Bay, lower Pechora (breeding), Pechora Sea and Bay (moulting, staging)				
Common Merganser	Khaipudyr Bay, Pechora Bay (staging, moulting)	Khaipudyr Bay, Pechora Bay (staging, moulting)	Khaipudyr Bay, Pechora Bay (staging, moulting)				
Grey Plover	Kolguyev, southward of Khaipudyr Bay (breeding)	Kolguyev, southward of Khaipudyr Bay (breeding)	Kolguyev, southward of Khaipudyr Bay (breeding)	Kolguyev Is. (breeding)			Coasts (staging)
Ruddy Turnstone	E Kolguyev (breeding)	E Kolguyev (breeding)	E Kolguyev (breeding)	Kolguyev Is. (breeding)			Coasts (breeding, staging)
Red-necked Phalarope	Southward of Khaipudyr Bay (breeding).	Southward of Khaipudyr Bay (breeding).	Southward of Khaipudyr Bay (breeding).				Coasts (staging)
Ruff	Southward of Khaipudyr Bay, E Kolguyev (breeding), Southward of Khaipudyr Bay, Varandey (staging)	Southward of Khaipudyr Bay, E Kolguyev (breeding), Southward of Khaipudyr Bay, Varandey (staging)	Southward of Khaipudyr Bay, E Kolguyev (breeding), Southward of Khaipudyr Bay, Varandey (staging)	South Kolguyev Is. (breeding)			Coasts (staging)
Little Stint	Kolguyev Is. (breeding), Varandey (staging)	Kolguyev Is. (breeding), Varandey (staging)	Kolguyev Is. (breeding), Varandey (staging)	Kolguyev Is. (breeding)			Coasts (staging)
Dunlin	Kolguyev Is. (breeding), S Khaipudyr Bay (breeding, staging)	Kolguyev Is. (breeding), S Khaipudyr Bay (breeding, staging)	Kolguyev Is. (breeding), S Khaipudyr Bay (breeding, staging)	Kolguyev Is. (breeding)			Coasts (breeding, staging)
Great Snipe	S Khaipudyr Bay, lower Pechora (breeding)	S Khaipudyr Bay, lower Pechora (breeding)	S Khaipudyr Bay, lower Pechora (breeding)				
Glaucous Gull	S Khaipudyr Bay (breeding)	S Khaipudyr Bay (breeding)	S Khaipudyr Bay (breeding)				Coasts (breeding, staging)

Vision and Strategy

Vision

By 2030, viable ecosystems on the northern fringe of Nenets AO are protected to ensure and maintain a long-term favourable status of qualifying migratory waterbird species.

Goals

Five conservation goals are defined for this strategy:
Goal 1: "By 2025, coastal staging and moulting areas are undisturbed and safe and the decline in qualifying migratory waterbird species has been halted and reversed."
Goal 2: "By 2020, further degradation of shallow coastal habitats is halted and by 2025, for at least 50% of previously degraded coastal habitats, restoration has started, to support and prevent declines of qualifying migratory waterbird species."
Goal 3: "By 2020 further degradation of northern tundra complexes is halted and by 2025 there is sufficient good quality tundra habitat that is able to support and prevent declines of qualifying migratory waterbird populations."
Goal 4: "By 2020, further degradation of the floodplain of the lower Pechora complexes is halted and by 2025 restoration has made progress so that at least 80% of the floodplain area meets the high ecological standards to support qualifying migratory waterbird species."
Goal 5: "By 2020/25, the decline of qualifying migratory waterbird species caused by unsustainable harvesting in Nenets AO has been halted."

Intervention Strategies

Science
1. **Strategy on wetland and waterbird monitoring and assessment**

Policy
2. **Strategy on conservation education and awareness**
3. **Strategy on new and better managed protected areas**
4. **Strategy on responsible oil and gas industry**

Practice
5. **Strategy on sustainable reindeer husbandry**
6. **Strategy on sustainable waterbird harvesting**

Six specific intervention strategies were selected to achieve long-term conservation of waterbirds, and the ecosystems they depend on, on the coastal fringe of Nenets AO. These strategies are based on the situation analysis (sections 4 and 5), focusing on the most urgent threats and taking into account realistic options and existing opportunities for success. The intervention strategies were developed together with various stakeholders, who are also needed for successful implementation. The strategies are grouped according to Wetlands International's general approach, which targets science, policy and practice (see Goals box above). The intervention strategies are described in further detail in the following sections. Included are goals, threats the strategies are targeting, objectives and proposed implementation actions. For the strategy as a whole, the following general implementation actions are needed:

1. Develop an operational implementation plan;
2. Develop a resource development strategy and carry out fundraising activities;
3. Define roles and responsibilities for Wetlands International and various partners and stakeholders identified in this strategy;
4. Build partnerships and connect to stakeholders;
5. Recruit local and national human resources and build capacity for implementing the strategy;
6. Connect to existing projects and programmes;
7. Extend, initiate and institutionalise partnerships.

Before launching the *From the Arctic to Africa* project, Wetlands International already had some experience of cooperating with administrative institutions and companies in NAO, for example the Nenets State Nature Reserve, the Nenets Museum of Nature and History and various oil companies. During the project implementation the number of potential partners and implementers expanded and now includes various consultants working in the region, museums and a few non-governmental organisations. Therefore there is a good basis for implementing the conservation strategy.

During the From the Arctic to Africa project the following three intervention strategies were implemented and progress made:

2. Strategy on conservation education and awareness
3. Strategy on new and better managed protected areas
6. Strategy on sustainable waterbird harvesting

Strategy on wetland and waterbird monitoring and assessment

Goal: Improve the baseline knowledge of critical water bird species and their habitats and ensure future knowledge on status and trends.

This strategy helps to fill an important information gap on migratory waterbird populations at the northern end of the East Atlantic Flyway. Furthermore, this strategy supports the other five strategies by gathering and mobilising necessary biodiversity data required to successfully implement, monitor and adapt these strategies.

The first part of Intervention Strategy 1 focuses on improving the baseline assessment regarding the status of waterbirds and their habitats in Nenets AO. At present, data on bird populations are incomplete, and there is a lack of up-to-date habitat data. Monitoring needs will be assessed to develop a monitoring scheme that provides adequate data to support the overall goal of maintaining favourable status of migratory waterbird species in the long-term. Furthermore, waterbird population size data will be updated to create a better baseline, for example through aerial counts in the relevant areas during summer (moulting season) in combination with on-the-ground counts. Another option could be to repeat elements of the baseline study carried out by van Eerden et al. in the 1990s, but in a larger area than the Pechora Delta.

The second part of the strategy will develop and help implement a monitoring scheme for the Nenets AO, focusing on migratory waterbirds and their (wetland) habitats. A number of assessments and expeditions have been carried out, but a standard, implemented and regularly updated biodiversity monitoring scheme is lacking. The strategy will work towards a participatory monitoring plan, involving local stakeholders: staff of the nature reserves and their authorities, the Nenets museum, various experts, local communities, and hunters. It will build on existing monitoring and data collection activities, such as Russian and international expeditions regularly working in the region, existing infrastructure, and international programmes, such as the International Waterbird Census and the International Breeding Conditions Survey on Arctic Birds.

Elements that may be included:

- The monitoring scheme will have a nested approach with localised annual population baseline counting and more intensive inventories of birds and habitats once every 5-10 years focusing on a larger part of or the entire Nenets AO.
- As a minimum, populations of critical waterbird species will be regularly counted, for example, through aerial counts in summer (moulting season) in combination with on-the-ground counts. For wader species transect or other specific simple methodologies may need to be applied.
- Relevant habitats and vegetation changes need to be monitored, but likely not annually. Samples may be investigated annually.
- Hunting pressure and reindeer herding intensity.
- Use of remote sensing techniques.

Objectives

1.1. By 2018, a biodiversity monitoring needs assessment for Nenets AO has been developed.
1.2. By 2018, the baseline assessment has been carried out for key waterbird species in nature reserves and nominated protected areas.
1.3. By 2019, a participatory biodiversity monitoring plan has been developed for Nenets AO.
1.4. By 2025, the monitoring plan has been implemented and the monitoring infrastructure established.

Proposed actions for implementation

- Carry out baseline monitoring in the first year.
- Develop a monitoring plan involving all relevant institutions and stakeholders.
- Implement the monitoring scheme through relevant institutions.
- Capacity building to ensure good quality monitoring and assessment of monitoring data.

Strategy on conservation education and awareness

Goals:

- Improving awareness of local people and institutions to increase their support for and participation in conservation.
- Awareness raising and increasing knowledge of authorities about waterbirds and ecosystem services and encourage them to take into account not only economic interests, but also conservation issues. Thus, the overall ecological planning in the region will be improved.

Public support and participation is essential to ensure the conservation of migratory waterbirds and their habitats in the project area. To increase the appreciation of waterbirds and their habitats and raise conservation awareness among the local people and officials, it is important to develop and implement capacity building and awareness programmes. The 'Strategy on conservation education and awareness' is one of the three identified strategies that aim to mitigate the threat 'Development of industrial infrastructure'. Specifically it will address the following issues in the Nenets AO:

- Weak support for waterbird and wetlands conservation from civil society.
- Lack of knowledge among local authorities about integration of ecosystems services into planning.
- Low awareness about IBAs and other important habitats.
- Poor protection of important sites outside of nature reserves.

This Intervention Strategy focuses on improving the awareness of local communities to increase their support for and participation in conservation. It will also raise awareness and increase the understanding of authorities regarding waterbirds and ecosystems services and encourage them to take into account not only economic interests, but also conservation issues. Thus, the overall ecological planning in the region will be improved. Intervention Strategy 1 will ensure that spatial planning for industrial and oil and gas developments take into account the ecological importance of a site. It will also contribute to the implementation of the 'Strategy on new and better managed protected areas'.

Objectives

2.1. By 2017, eco-education and awareness-raising activities involve at least 25 cultural and educational organisations: schools, museums, ethnic and cultural centres.
2.2. By 2017, responsible authorities are aware of the value of birds and their important breeding, staging and moulting sites on coastal tundras.
2.3. By 2017, local authorities are aware of ecosystem services and their integration into (spatial) planning.
2.4. By 2017, responsible authorities promote extending the protected areas network at any level (local, regional or federal).

Proposed actions for implementation

- Carry out awareness-raising activities to communicate the values of wetlands and waterbirds to people.
- Provide up-to-date information on the status of wetlands in NAO and their biodiversity, land use and conservation issues

Figure 9: Results chain for the Intervention Strategy on wetland and waterbird monitoring and assessment

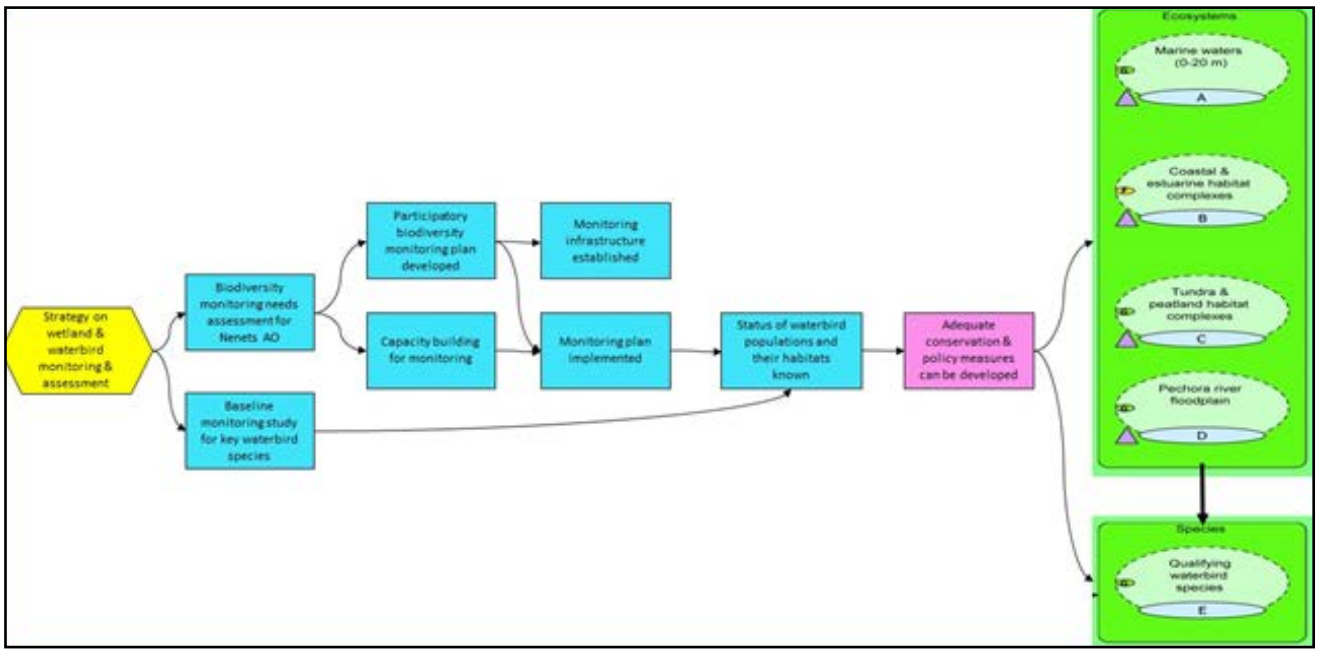
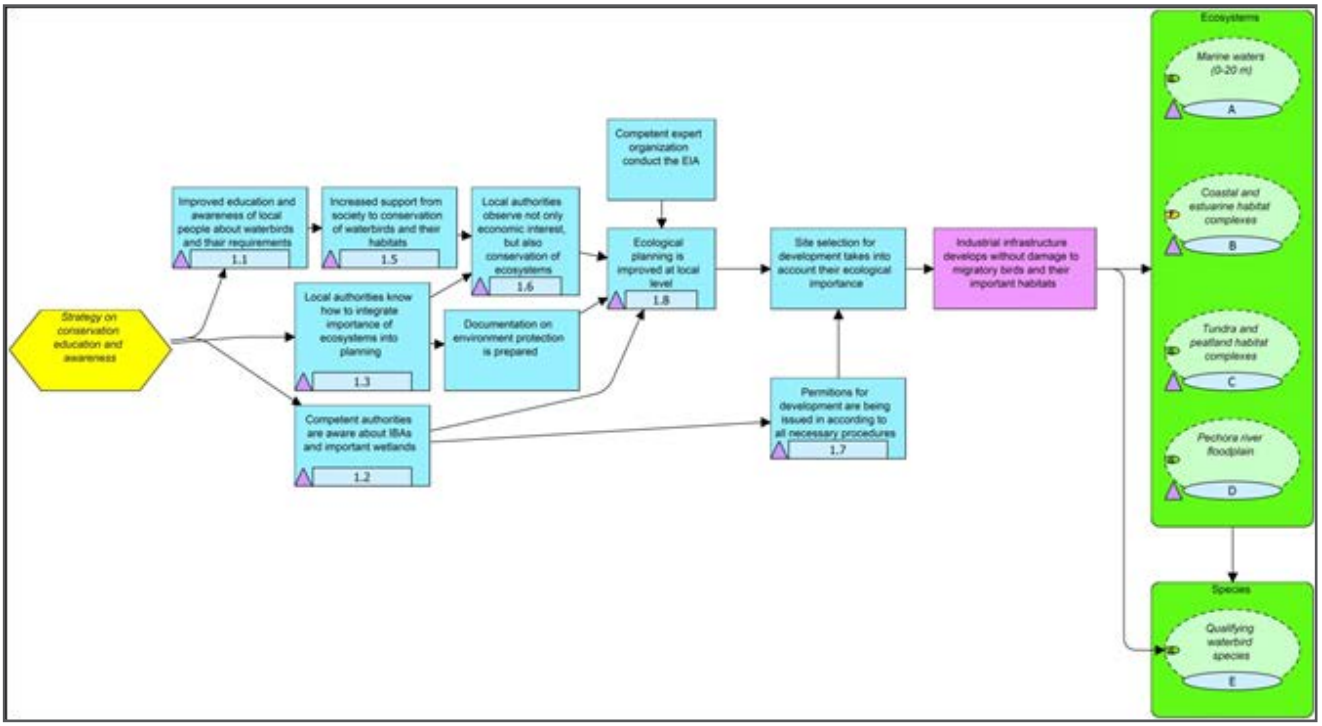


Figure 10: Results chain for the Intervention Strategy on conservation education and awareness



to the public using a range of communication channels.

– Hold events to celebrate World Wetlands Day, World Migratory Bird Day and other international, national and local dates designated for creating awareness of wetland and waterbird-related issues.
– Prepare information materials, presentations, reviews and expert opinion reports on the status of wetlands and waterbirds, forecasts of changes in their ecological character, and recommendations for their conservation for local authorities and management bodies.
– Conduct excursions, hikes and tours to wetlands, in particular along the walking trails constructed in the protected nature areas.
– Disseminate information on best practice and innovative techniques for wetland restoration and wise use.
– Advocate for wetland wise use among related businesses, promoting the importance of an environmentally-friendly image for the company.
– Raise awareness among consumers about the negative impact of goods produced using environmentally unfriendly technologies or procured through illegal hunting or fishing.

• Establish a wetland education centre in Naryan-Mar city as a coordination structure communicating messages about wetland ecosystem services, biodiversity and socio-economic values to people.

– Develop a wetland exhibition equipped with up-to-date, interactive elements.
– Develop the capacity for to collect and share information on waterbirds, including procurement of field equipment, computers and software.
– Develop a website for the wetland centre.
– Provide training to the wetland centre staff to study methodological and reference materials, and new forms and techniques of working with the public to support wetland and waterbird conservation.
– Establish long-term working relationships with local authorities and management bodies with a view to providing support to decision-making processes related to the use of wetlands and their resources, and to planning joint conservation actions.

• Carry out education and training activities.

– In cooperation with schools and other education institutions, conduct classroom and field studies for students in the wetland centre.
– Develop and implement the wetland centre's education programmes, including study groups, lectures, learning games, and contests for student projects on wetlands and waterbirds.
– Develop and hold wetland training courses for school teachers.
– Develop and hold training workshops on wetland wise use for the staff of government bodies involved in wetland and waterbird resource management.
– Develop and implement, in cooperation with partners, educational/training programmes focused on building the capacity and awareness raising of stakeholders (wetland managers, engineers and land users) on wetland conservation, restoration and wise use issues, including innovative technologies for the sustainable closure of peat mining sites.

• Develop ecological tourism in wetlands where appropriate.

– Launch a regional eco-tourism development programme

based on the capacity of the PAs and the wetland centre. The types of wetland ecotourism to prioritise include: birdwatching, photography tours, educational excursions, event tourism, and volunteer-led tours.

- Conduct workshops, training courses, master classes and study tours for local people to encourage their participation in ecotourism activities.
- Hold training workshops for the staff of protected areas and tourist agencies to provide competent ecotourism services in wetlands.
- Provide tourism proposals with resources required, including the development of infrastructure elements, such as equipped paths, birdwatching towers and information stands.

Strategy on new and better managed protected areas

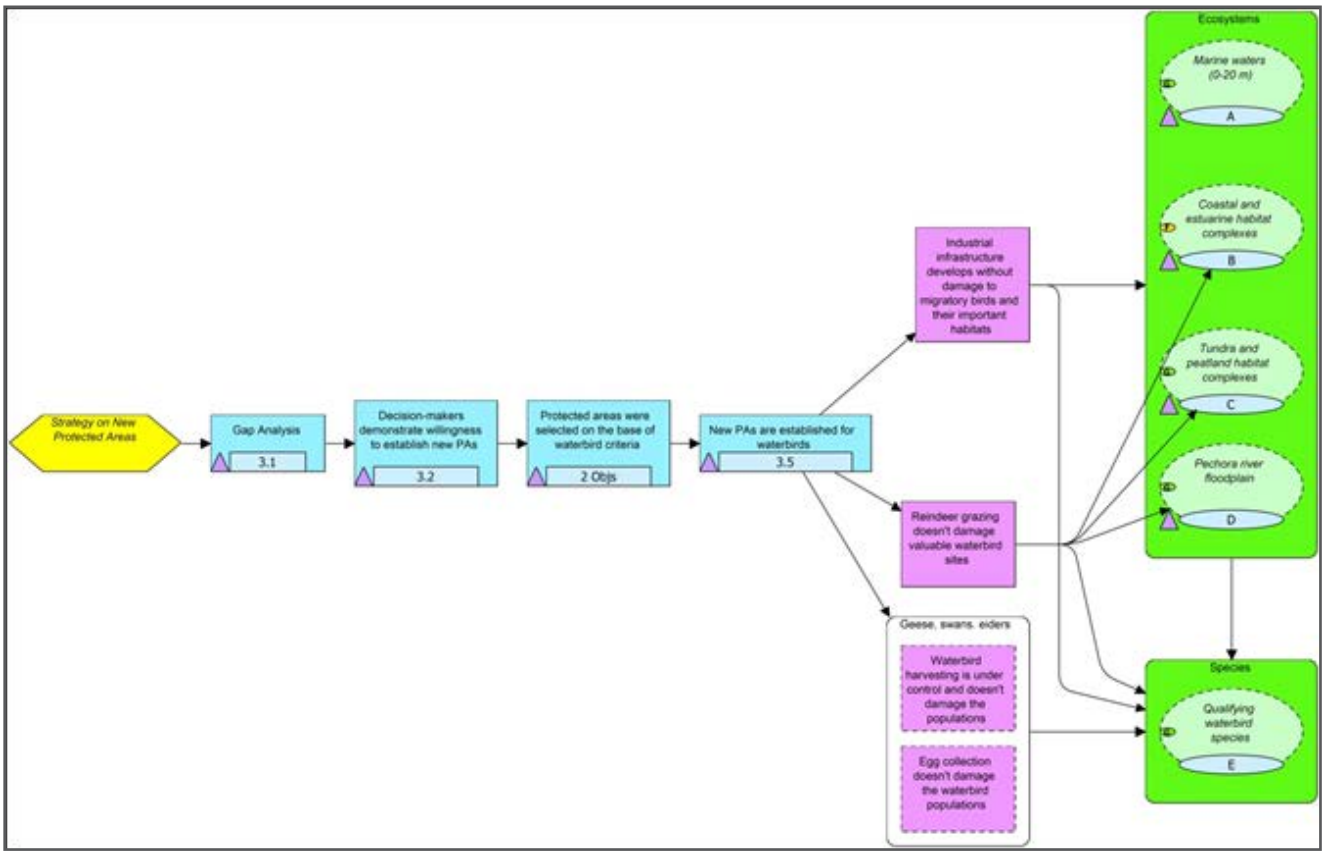
Goal: Management of existing protected areas is improved and new protected areas for waterbirds are established.

As stated by the Convention on Biological Diversity (2010), protected areas are valuable, as "they maintain key habitats, provide refugia, allow for species migration and movement, and ensure the maintenance of natural processes across the landscape".

Currently the protected areas (PA) network within the geographical scope of NAO includes one Federal Strict Nature Reserve (Zapovednik) "Nenetsky", one Federal Nature Reserve (Zakaznik) also called "Nenetsky" and three local sanctuaries. The total area of relevant protected areas is more than 700,000 hectares. In general, the PA network in NAO is not very representative of the landscape and ecosystem diversity of the region. The landscapes of Novaya Zemlya, Yugor Peninsular and the north part of the Bolshezemelskaya tundra are particularly in need of formal protection (Stishov 2013). Formal protection is also needed for the habitats for qualifying waterbird and the target ecosystems on the coastal tundras, which are currently underrepresented in existing protected areas.

This Intervention Strategy will lead to the establishment of new protected areas at national and local levels on the coastal tundras of NAO. To ensure that areas of high value for waterbirds are selected, a gap analysis will be conducted. It is also important that decision makers are willing to establish new PAs. Within the implementation of the 'Strategy on conservation education and awareness', the 'Strategy on new and better managed protected areas' will focus in increasing the knowledge of decision makers on the benefits of extending the PAs network, the need for policy and regulations, and the need for effective management, in order to facilitate decision making. The proper integration of local and regional protected areas and areas where natural resources (reindeer grazing, hunting, etc.) are sustainably managed into national and local level land-use planning will be of vital importance for the long-term sustainability of the protected areas.
Besides involvement from decision-makers, it is important for the functioning of PAs that the local public also actively participates. This strategy, together with the 'Strategy on conservation education and awareness', focuses on actions to

Figure 11: Results chain for the Intervention Strategy on new and better managed protected areas



make local communities in and around protected areas aware of their ecological and legal rights. The assumption is that with increased awareness and encouragement, the communities will also feel increased ownership and will actively participate in conservation activities in the PAs, such as planning, management and enforcement. Communities will then implement sustainable management principles for their own natural resources. Together with the other intervention strategies this strategy will contribute to reducing several direct threats:

- Development of industrial infrastructure
- Intensification of reindeer grazing
- Mass harvesting of birds
- Mass collection of eggs

Objectives

3.1. By 2016, the Nenets protected areas (PA) network is reviewed in relation to qualifying species and their habitats.
3.2. By 2016, the extending of PAs for waterbirds is officially promoted by authorities.
3.3. By 2017, the IBAs and other Critical Sites on coastal tundras are reviewed and proposed for the new PAs list.
3.4. By 2017, a list of new priority PAs is compiled for qualifying waterbirds.
3.5. By 2018, the NAO Administration endorses a list of new PAs for qualifying waterbirds in consultation with local communities.

Proposed actions for implementation

- Gap and needs assessment of protected areas for migratory waterbirds and their habitats.
- Awareness-raising and capacity building of decision makers and local communities.
- Joint decision and nomination process for new protected areas.
- Capacity building and awareness raising on management of new and existing protected areas.

Strategy on responsible oil and gas industry

Goal: Reduce and prevent negative impacts from oil and gas developments on populations of qualifying waterbird species.

This strategy works to prevent and reduce negative impacts from oil and gas activities by influencing and working with oil and gas companies and the Nenets AO government. Oil and gas exploration and production activities in the Arctic pose significant risks to the environment, ecosystem services and livelihoods, both offshore and onshore. In the Arctic, including Nenets AO, the nature and scale of these risks has not been adequately assessed so far. Risks for waterbirds and their habitats during breeding, moulting and migration seasons are most prominent in the area from Varandey district to Khaipudyr Bay, the lower Pechora River, parts of Kolguyev Island, and in Pechora Bay and the Pechora Delta.

Wetlands International has worked with locally operating companies to raise awareness, stimulate improved spatial planning and develop tools to better identify and locate sensitive, critical and valuable habitats and species. This strategy will build on these experiences and connections.

Objectives

4.1. By 2020, oil and gas companies have minimally adopted International Finance Corporation (IFC) and IPIECA (global oil and gas industry association for environmental and social issues) standards.
4.2. By 2025, oil and gas companies are properly applying the mitigation hierarchy to prevent damage to critically important waterbird populations.
4.3. By 2025, the most sensitive and critical areas have been identified.

Proposed actions for implementation

- Make contact with oil and gas companies working in the area and raise awareness of the need to implement high environmental standards, among others as required and recommended by the International Finance Corporation (IFC) and IPIECA.
- Use the experience and extend the work with Russian companies to implement the mitigation hierarchy for avoidance, mitigation, compensation and restoration.
- Use the methodologies for identification of critical and sensitive areas developed in previous projects with Shell to implement conclusions from a study on how the needs of on-shore oil and gas developments in the Arctic might be balanced with wetland conservation.
- Field-test and implement the methodologies developed with Shell to identify critical habitats according to IFC standards and to identify sensitivity of coastal wetlands in relation to oil spill risks.
- Work with the NAO and federal administrations to improve spatial planning and enforce environmental impact assessments (linked to Intervention Strategy 2).
- Assist in designing and implementing ecosystem restoration plans, that are based on Wetlands International's experience with the ecosystem approach for clean-up of older pollution.

Strategy on sustainable reindeer husbandry

Goal: Reduction and prevention of negative effects from changes in reindeer grazing and disturbance pressures on the most critical and vulnerable bird populations.

This strategy works towards a dialogue between stakeholders and better management and planning of reindeer grazing. It will connect to the monitoring and oil and gas strategies (Intervention Strategies 1 and 4), and will also consult solutions from other parts of the world with (semi-)nomadic grazing herds and animal husbandry.

Reindeer husbandry is a traditional activity in NAO. In addition to Nenets herds, large numbers of reindeer from the Komi Republic are grazed on the coastal tundras during summer. Intensive site-restricted reindeer husbandry and movement of large numbers

Figure 12: Results chain for the Intervention Strategy on responsible oil and gas

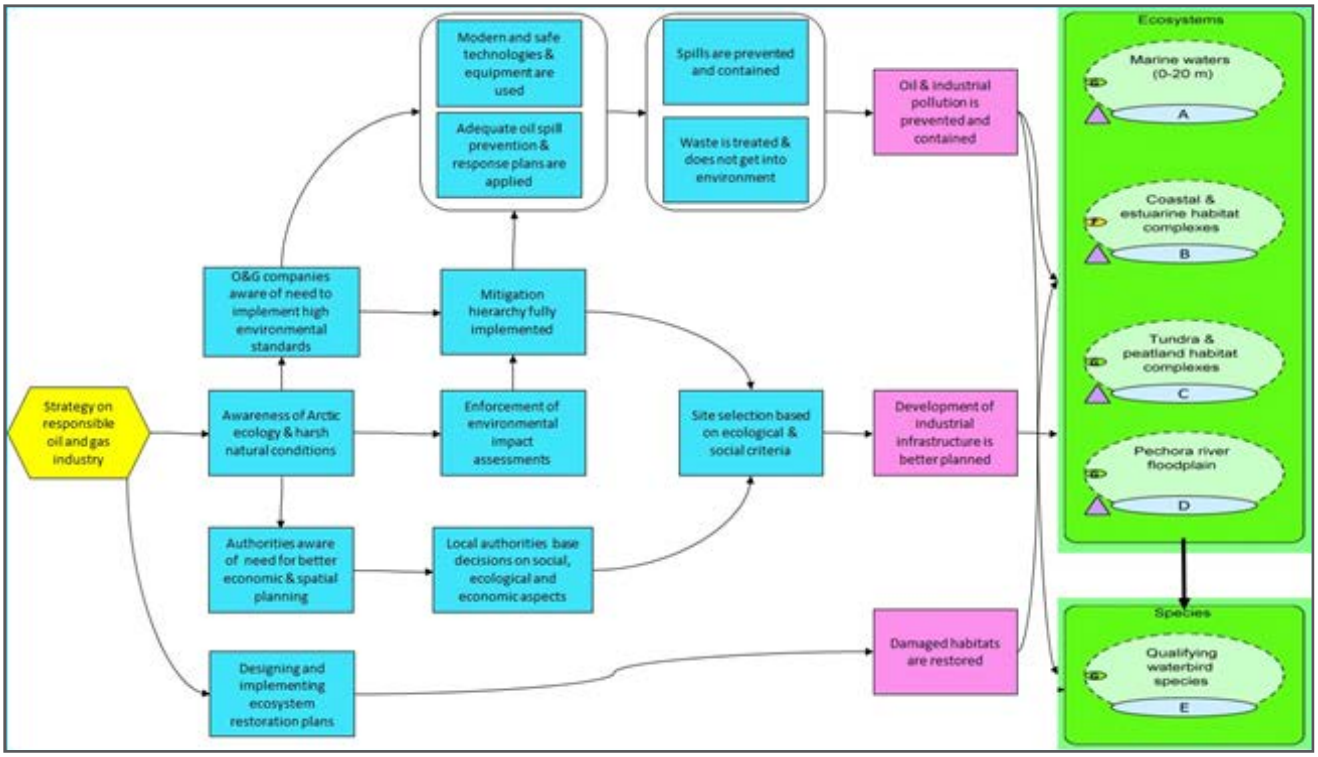
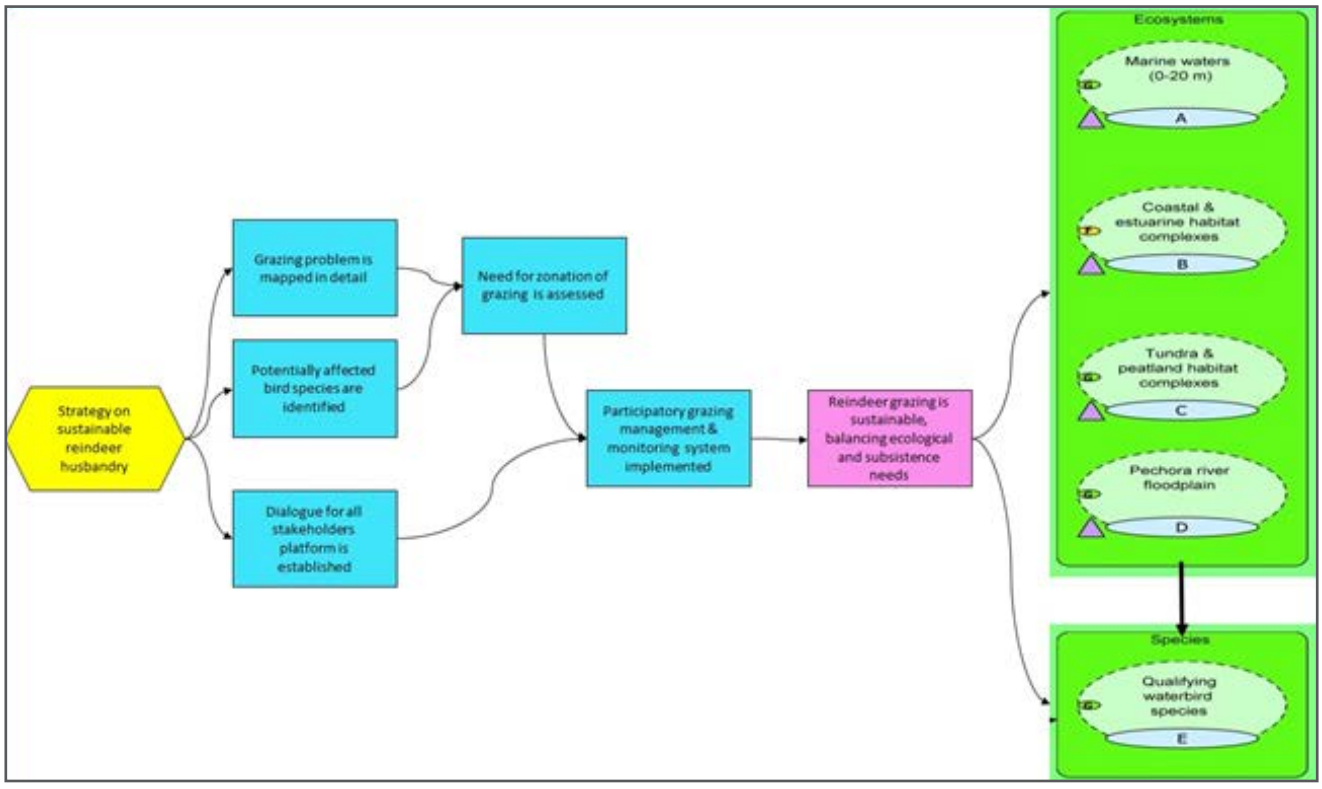


Figure 13: Results chain for the Intervention Strategy on sustainable reindeer husbandry



of reindeer through narrow routes leads to the degradation of tundra vegetation and soil erosion. It causes habitat disturbance and degradation for swans, geese, waders and some duck species, but it is especially an issue for Bean Geese. On the other hand, areas that are no longer grazed are overgrown and may no longer be suitable habitats for birds to forage. The main causes of these changes are a lack of good planning and shrinking of pastures due to industrial transformation and oil and gas developments.

The implementation of this strategy will first focus on further specifying the problem: Does the change in grazing affect critical bird populations, particularly Bean Geese? Is this caused by over- or undergrazing, or both? Subsequently it will assess effects on qualifying waterbirds and habitats. A dialogue between reindeer herders and other stakeholders will result in better planning of reindeer grazing and husbandry, and thus prevent negative effects on the conservation targets.

Objectives

5.1. By 2019, the grazing problem is mapped in detail and potentially affected bird species are identified.
5.2. By 2020, a dialogue platform is established for Nenets herders, government, Komi herders, and oil and gas companies.
5.3. By 2020, herders take part in the participatory monitoring plan (Intervention Strategy 1).
5.4. By 2025, a participatory grazing management planning system has been developed and implemented.

Proposed actions for implementation

- Carry out a problem assessment.
- Assess bird concentrations and investigate the need for zonation of grazing to either decrease or increase grazing.
- Bring Nenets and Komi reindeer herders, the Nenets government and oil and gas companies together to engage in a dialogue.
- Help develop better planning of reindeer grazing and herding, for example through zonation, timing or working with different land owners and users.

Strategy on sustainable waterbird harvesting

Goals:
- Waterbird harvesting (hunting) is under control and does not damage the waterbird populations.
- Egg collection does not damage the waterbird populations.

Migratory waterbirds in NAO are harvested for sport or for their high subsistence value. Harvesting is done by hunting and collecting eggs. Whilst hunting activities throughout Russia are formally well regulated by legislation, there are problems with hunting controls and illegal waterbird harvesting. Particularly in remote Arctic areas law enforcement is not easy. This strategy aims at improving hunting control by assisting the responsible state agencies, involvement of local communities and raising awareness.

This strategy aims to reduce two similar threats – massive harvesting of birds and massive collection of eggs. Poaching, weak enforcement of the regulations and, to some extent, local traditions and limited food availability are found to be the main driving factors. These factors, in turn, can be caused by poor hunting control, scarce hunting statistics and low awareness among hunters. This strategy focuses on improving hunting management by preventing poaching and better collection of hunting bag data. Local communities are expected to participate in the field observations and data collection. Additionally, this strategy will inform hunters about the need to observe hunting regulations. Altogether, this will contribute to the improvement of waterbird harvesting practice, making hunting and egg collection more sustainable.

Objectives

5.1. By 2018, there are reliable data on waterbird harvesting (connected to Intervention Strategy 1).
5.2. By 2018, the populations of qualifying waterbirds are growing or stable.
5.3. By 2018, the waterbird hunting rules are strictly observed.
5.4. By 2020, up to 90% of hunters agree to observe hunting rules.

Proposed actions for implementation

- Inform hunters about the need to observe hunting regulations.
- Better collection of hunting bag data.
- Local communities participating in the field observations and data collection.
- Prevent poaching by working with the administration and local communities.

Monitoring and evaluation

To measure whether a strategy is successful and to be able to adapt the strategy it is essential to measure progress towards achieving the objectives. Therefore a preliminary monitoring plan was developed to provide simple and measureable indicators for each objective from the six intervention strategies. The monitoring plan is presented in Table 9b. A more detailed monitoring plan may be designed at the start of the implementation of this regional conservation strategy.
In addition, the biodiversity and waterbird monitoring plan from Intervention Strategy 1 will deliver the information needed to assess the success of this strategy. These data will be used to monitor indicators for the Key Ecological Attributes (repeated below in Table 9a). The monitoring plan from Table 9b is intended for monitoring the implementation of the this regional conservation strategy and adapt it where needed.
The biodiversity and waterbird monitoring plan is of a basic structural nature that allows for the assessment of the status of waterbirds, which is also needed for various purposes other than the implementation of this strategy (e.g. contributing to global waterbird monitoring, reporting of management authorities to various international conventions, policy development or spatial planning).

Table 9a: Key Ecological Attributes and indicators for the conservation targets. The 26 bird species are grouped.

Target	Key Ecological Attributes (KEA)	Indicators
Qualifying waterbird species (26 species)	Population size and extent	Number of breeding, staging or moulting birds Distribution over sites Annual bird reproduction (some species)
Arctic marine waters	Habitat quality	Water quality Abandonment of fishes and invertebrates important for sea birds
Coastal and estuarine habitat complex	Habitat area and quality	Water quality Habitat quality Extent of representative vegetation types important for waterbirds
Pechora River floodplain	Habitat area and quality	Water quality Habitat quality Extent of representative vegetation types important for waterbirds
Tundra and peatland habitat complex	Habitat area and quality	Habitat quality Extent of representative vegetation types important for waterbirds

Figure 14: Results chain for the Intervention Strategy on sustainable waterbird harvesting

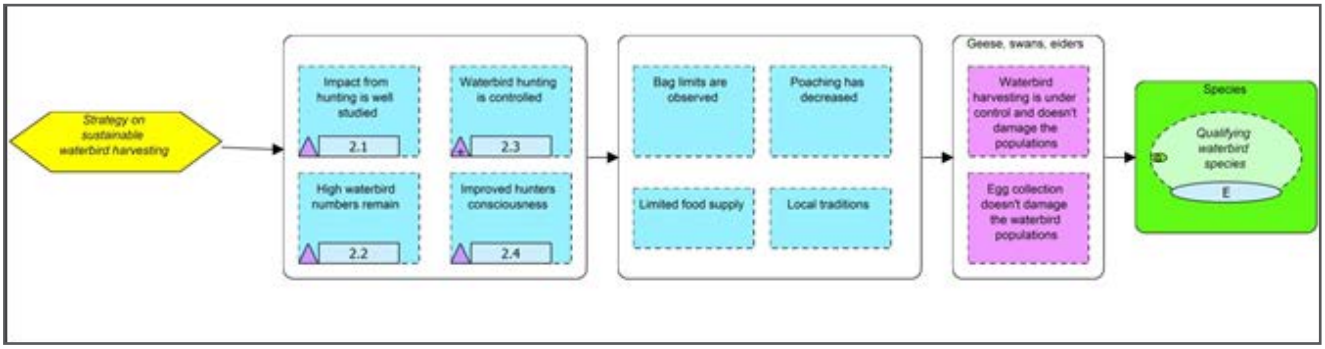


Table 9b: Preliminary Monitoring Plan for the Strategy for the conservation of migratory waterbirds in the Arctic wetlands of Nenets Autonomous Okrug, Russian Federation, 2015-2025

Strategy and objectives	Indicator	Baseline Value (2013)	Expected Value	Methods or Source of Verification
1. Wetland and waterbird monitoring and assessment				
Obj. 1.1. By 2018, a biodiversity monitoring needs assessment for Nenets AO has been developed.	Gap analysis and definition of indicators	Unknown	26 waterbird and 4 habitat KEAs	Needs assessment
Obj. 1.2. By 2018, the baseline assessment has been carried out for key waterbird species in nature reserves and nominated protected areas.	Report and waterbird census data	Various fragmented reports	Population numbers of all relevant species known for all selected sites	Field monitoring (bird counts) and data assessment
Obj. 1.3. By 2019, a participatory biodiversity monitoring plan has been developed for Nenets AO	Monitoring plan	Absent	Monitoring plan	Planning document
Obj. 1.4. By 2025, the monitoring plan has been implemented and the monitoring infrastructure established.	Official document, or institutional implementation	Absent	Annual census and official implementation document	Annual field surveys
2. Conservation education and awareness				
Obj. 2.1. By 2017, conservation educational and awareness activities involve at least 25 organisations of culture and education - schools, museums, ethnic and cultural centres.	# of educational organisations involved	2	25	Collection information from Education Dept. of NAO
Obj. 2.2. By 2017, responsible authorities are aware about values of birds and their important sites on coastal tundras.	# of officials informed	Not Known	30	Questionnaire survey
Obj. 2.3. By 2017, local authorities are aware about ecosystem services and their integration into planning.	# of documents with notes about ecosystem services	Not Known		Questionnaire survey
Obj. 2.4. By 2017, responsible authorities promote extending of PAs network at any level.	# of officials informed	Not Known	30	Questionnaire survey
Obj. 2.5. By 2018, more than 50% of NAO adult human population advocate for the birds and habitats protection under industrial development.	# of people to support conservation	Not Known	At least half of people surveyed	Questionnaire survey
Obj. 2.6. By 2018, development project documentation become available for comprehensive expertise and decision making.	# of official documents that mention the values of waterbird habitats	Not Known		Reports from conservation NGOs
Obj. 2.7. By 2018, ecosystems protection will be a priority agenda for the NAO Administration.	# of official documents with notes about ecosystem protection	Not Known		Reports from conservation organisations
Obj. 2.8. By 2018, the planning in Nenets AO takes into account the ecosystem values and services.	Area of coastal habitats protected due to their ecosystem services	Not Known		

Strategy and objectives	Indicator	Baseline Value (2013)	Expected Value	Methods or Source of Verification
3. New and better managed protected areas				
Obj. 3.1. By 2016 Nenets PA network is reviewed in relation to qualifying species and their habitats.	Area (Hectares) under review	Not Known		Technical report
Obj. 3.2. By 2016 the extending of PAs for waterbirds is officially promoted.	Official publications	Not Known		Official publications by the NAO Administration Workshop report
Obj. 3.3. By 2017 the IBAs and other Critical Sites on coastal tundras are reviewed and proposed to the new PAs list.	Area (Hectares) of proposed PAs	Not Known		Technical report
Obj. 3.4. By 2017 a List of new priority PAs is compiled for qualifying waterbirds.	Area (Hectares) of proposed PAs	Not Known		Technical report
Obj. 3.5. By 2018 the NAO Administration endorsed a List of new PAs for qualifying waterbirds in consultation with local communities.	Area (Hectares) of new PAs on coastal tundras	Not Known		Official reports Presentations at formal meetings
4. Responsible oil and gas industry				
Obj. 4.1. By 2020, O&G companies are addressed and have minimally adopted IFC and IPIECA standards.	Number of oil and gas companies active in Nenets AO	At least 2	80-100% of companies	Questionnaire among oil and gas companies and stakeholders (and investigation by IPIECA)
Obj. 4.2. By 2025, O&G companies are properly applying the mitigation hierarchy to prevent damage to critically important waterbird populations.	Number of oil and gas projects with proper Environmental Impact Assessments (EIA)	Unknown	80-90% of projects	Reports from IPIECA/NGOs Questionnaire survey
Obj. 4.3. By 2025, the most sensitive and critical areas have been identified.	% of tundra and coastal surface area assessed	0%	100% of coastal and tundra area in NAO	Sensitivity assessment based on field data and remote sensing
5. Sustainable reindeer husbandry				
Obj. 5.1 By 2019, grazing problem is mapped in detail and potentially affected bird species are identified.	ha and % of former and current grazing area	0 ha/%	100%	Questionnaire Remote sensing Field report
Obj. 5.2 By 2020, a dialogue platform is established for Nenets herders, government, Komi herders, and O&G companies.	Number/% of herders and herding companies/ corporations, Number of meetings	None	90%	Meeting notes
Obj. 5.3 By 2020, herders take part in the participatory monitoring plan (Intervention Strategy 1).	% of herders, all involved administrations and oil and gas companies	Unknown	90% of herders support plan, administration and oil and gas companies	Questionnaire survey

Strategy and objectives	Indicator	Baseline Value (2013)	Expected Value	Methods or Source of Verification
Obj. 5.4 By 2025, a participatory grazing management planning system has been developed and implemented.	Official document	Unknown	Signature, Adoption document	Annual plan
6. Sustainable waterbird harvesting				
Obj. 6.1. By 2017, comprehensive waterbird harvesting data is available for Nenets AO.	Data on waterbird harvesting	Are available for species groups	Are available for main species	Bag statistics Expert evaluation Research
Obj. 6.2. By 2018, the populations of main quarry waterbirds are growing or stable.	Population trends	Not Known		Waterbird population estimates Field survey, counts Reports from local observers
Obj. 6.3. By 2018, the waterbird hunting rules are strictly observed.	a) # of excess bag, outside season cases b) # of illegal hunting cases	Not Known		Collection of official reports Reports from local observers
Obj. 6.4. By 2018, up to 90% of hunters are agree to observe hunting rules.	# of hunters	Not Known	90% of waterbird hunters support regulations	Questionnaire survey

Annex 1: Literature sources

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Annex 2: Participatory Planning Workshop 2013 Report and Agenda

'From the Arctic to Africa: migratory birds connecting wetlands and people'
Wetlands International's project

WETLANDS INTERNATIONAL

To the strategy on migratory waterbird conservation in the Nenets autonomous okrug

Participatory planning workshop
December 18-19, 2013. Naryan-Mar, Russia

The workshop 'To the strategy on migratory waterbird conservation in the Nenets AO' took place from 18-19 December 2013. It was jointly organized by the Wetlands International Russia and Nenets State Nature Reserve and held in the conference room of the Nenets State Museum of Nature & History in the town of Naryan Mar, Nenets Autonomus Area (*Okrug*).

In total 18 participants attended the workshop representing local administration and governmental agencies, academic institutions, Nature Reserve, museums, and Russian office of Wetlands International. Apart from resident participants, there were experts from Moscow, Syktyvkar and Arkhangelsk. The program and list of participants are enclosed to this report.

The workshop agenda included presentations, brainstorms and discussions. Alexander Solokha, a consultant for Wetlands International, conducted the workshop with assistance from some experts. Workshop materials were available in Russian to be clear for all participants.

The workshop started from brief welcome by Stanislav Zolotoy, Director of Nenets Nature Reserve. Morning session on 18 December included two introduction presentations about the 'Arctic to Africa' project, the methodology and definitions of strategic planning. Project scope, conservation targets, direct threats and factors, opportunities – were considered and clarified for the participants in order they were prepared for further work. Then the Arctic leading experts O. Mineev, S. Kochanov and V. Anufriev reported about waterbird distribution and numbers in Nenets AO, their important sites and about threats to waterbirds and their habitats. The morning session was finalized by general discussion which helped to collect remarks and additions from the participants regarding the concerned issues.

After lunch A. Solokha gave introduction lecture about conceptual model, its structure and components. He presented the draft conceptual model which was constructed with using the Miradi software. Subsequent brainstorm was organized to review conceptual model, including identification and clarification of direct threats and contributing factors, and rating of the threats. Participants proposed some changes that helped to improve initial conceptual model, particularly the direct threat identification and rating component. Through the conceptual model, four possible conservation strategies were identified, as follows:

- Strategy on responsible oil & gas development
- **Strategy on conservation education and awareness**
- Strategy on sustainable reindeer breeding, and
- **Strategy on sustainable waterbird harvesting.**

Resulted from brief discussion, the participants agreed that two of these strategies could be selected for further development and priority implementation during Arcadia project. They are in bold above.

By the end of 1st day Olga Anisimova presented the overview of stakeholder analysis for the Nenets AO. The participants discussed this issue and proposed some additions to the list of stakeholders and partners, as well as to the classification of the stakeholders.

Next day, 19th December, the workshop mostly dealt with development of the two priority conservation strategies. At morning session A. Solokha with support from S. Kochanov organized brainstorm to build result chains for selected strategies using Miradi. The result chain diagrams illustrate what has to happen to reduce the threats for migratory waterbirds and their habitats. Result chains for two strategies were discussed and drafted, including a range of objectives that were defined for several intermediate results. Then we organize the brainstorm to discuss possible partnership and collaboration. This discussion was closely linked with next agenda item covering the planning of immediate actions for conservation of waterbirds and their habitats. Workshop participants suggested and discussed a number of activities which Wetlands International can implement in partnership with Nenets NR, schools and museums, authorities and NGOs. These activities scheduled for the 2014 and 2015 years, were as follows for

1) Strategy on conservation education and awareness:

- Producing of awareness materials (posters, brochures, leaflets etc.) for various target groups (youth, hunters etc.)
- Design, presentation of lectures for educational organizations
- Organization of mobile photo exposition
- Publications in local newspapers
- TV and Radio broadcasts
- Organization of conservation celebrations (Migratory Bird Day - 10-11 May, Intl Bird Day - 1 April, World wetland Day - 2 Febr.)
- Preparation of video program for distribution through Internet, sending of CD etc.
- Preparation of guidelines for involvement of students into bird study and protection
- Assisting in construction of infrastructure for birdwatching (in partnership)
- Participation in model research and education project 'North Timan' (in partnership)
- Participation, presentations at local conservation meetings

2) Strategy on sustainable waterbird harvesting:

- Counting of hunters based on expert data
- Analysis of issued and returned permits on hunting resources use
- Analysis of hunting bag and structure through methods of questionnaire, photo registration etc.
- Establishing of observers network from local people for waterbird hunters registration
- Consult with 'Yasavey' for selection of observers and for other observations and monitoring
- Develop guidelines and questionnaire on observation and monitoring
- Producing awareness materials (posters, leaflets, brochures) for hunters

Contact persons were identified and Wetlands International should still consider allocation of project budget for these activities based on proposals to come. The workshop was very successful event in terms of understanding problems and development of the strategy on waterbird conservation and sustainable use in Nenets AO.

List of attachments:

1. List of participants
2. Workshop agenda
3. Miradi Conceptual Model
4. Presentations (in Russian)

'From the Arctic to Africa: migratory birds connecting wetlands and people'
Wetlands International's project

WETLANDS INTERNATIONAL

To the strategy on migratory waterbird conservation in the Nenets autonomous okrug

Participatory planning workshop.
December 18-19, 2013. Naryan-Mar, Russia

PROGRAMME

Time	Presenters/Facilitators	Title of presentation/discussion
Day first. December 18, 2013		
9.00- 9.30		Registration.
9.30-9.45	Zolotoy, A.	Welcome speech from Nenets NR
9.45-10.00	Solokha, A.	Presentation of workshop agenda.
10.00-10.30	Solokha, A.	Aims, objectives and methodology of the project.
10.30-11.00	Solokha, A.	Situation analysis: main points and terminology.
11.00-11.30	Mineev, O., Kochanov, S.,	Qualifying waterbird species: distribution, numbers and important sites.
11.30-12.00		*Coffee-break.*
12.00-12.30	Anufriev, V., Kochanov, S.	Threats to waterbird populations and habitats.
12.30-13.00	Solokha, A., Kochanov, S., Anufriev, V.	Discussion, proposals.
13.00-14.00		*Lunch.*
14.00-14.30	Solokha, A.	Conceptual model: direct threats and their rating, factors and possible conservation strategies.
14.30-15.00	Solokha, A.	Discussion, proposals.
15.30-16.00		*Coffee-break.*
16.00-16.30	Anisimova, O.	Stakeholders analysis.
16.30-17.00	Anisimova, O.	Discussion, proposals.
17.00		Summarizing of 1-st day.
Day second. December 19, 2013		
9.30-10.00	Solokha, A.	Recalling the 1-st day.
10.00-11.30	Solokha, A., Kochanov, S.	Development of long-term strategies for conservation of waterbirds and their habitats.
11.30-12.00		*Coffee-break.*
12.00-13.00	Solokha, A., Kochanov, S.	Development of long-term strategies for conservation of waterbirds and their habitats (cont.).
13.00-14.00		*Lunch.*
14.00-15.00	Solokha, A., Anisimova, O.	Partnership and collaboration for implementation of the strategies.
15.00-15.30	Solokha, A.	Discussion, proposals on strategy.
15.30-16.00		*Coffee-break.*
16.00-17.00	Anisimova, O., Kamennova, I., Solokha, A.	Short- term actions for conservation of waterbirds and their habitats (planning)
17.00-17.30	Solokha, A.	Summarizing of workshop outcomes.
19.00		*Dinner.*

For further information please visit our website or contact our offices

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