

**Template for Submission of Scientific Information
to Describe Areas Meeting Scientific Criteria for
Ecologically or Biologically Significant Marine Areas**

Title/Name of the area: South-East Barents Sea (the Pechora Sea)

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Abstract *(in less than 150 words)*

South-east fringe of the Barents Sea, called the Pechora Sea, has specific oceanology factors like structure and functioning of pelagic and benthic communities, presence of the federal and regional red listed species or of high ecosystem significance. Among marine mammals these are Atlantic walrus, beluga whale, ringed seal, bearded seal, and polar bear. At the same time the largest Barents offshore hydrocarbon deposits are known to be in the Pechora Sea. Its exploration is of high potential threat to communities and living organisms. This means we need to obtain new data on biota and develop a set of measures to mitigate anthropogenic impact on ecosystems.

Introduction

(To include: feature type(s) presented, geographic description, depth range, oceanography, general information data reported, availability of models)

The IUCN/NRDC Workshop to Identify Areas of Ecological and Biological Significance or Vulnerability in the Arctic Marine Environment (Speer and Laughlin, 2010) identified a super-EBSA named “Pechora Sea/Kara gate” as meeting nearly all CBD criteria. It is noted that, “The Pechora Sea/Kara Gate area supports diverse and abundant benthic communities, a high diversity and abundance of white fishes, a large breeding stock of Atlantic salmon, as well as Arctic char, navaga, and local relict races of Pacific herring (*Chesha-Pechora herring* *Clupea pallasi suworovi*), and is an important spawning ground for polar cod (*Boreogadus saida*). The region contains important areas for wildfowl, both locally breeding (it supports the largest breeding population of Barnacle goose), and migrating from West and Central Siberia. It provides the principal molting and staging grounds for the Atlantic Flyway population of King eider, as well as important staging and migrating areas for Steller’s eider, Long-tailed duck, Scoters, and Brant geese. The Pechora Sea region has important post-breeding feeding/staging areas for Thick-billed murres and Kittiwakes and supports the southern herd of Atlantic walrus. Numerous migration routes cross in the Pechora Sea and the straits adjoining Vaigach Island, which work as a southern gate from the Atlantic to the Siberian Arctic seas. It supports migrating belugawhales, Atlantic walrus, polar cod and some whitefishes, and is a bottleneck for water birds breeding in West and Central Siberia and wintering in the East Atlantic.” (Speers and Laughlin, 2011).

The report on identifying Arctic marine areas of heightened ecological significance (AMSA IIb) also revealed the Pechora Sea as areas of heightened ecological significance which meet the IMO ecological criteria for PSSAs (Skjoldal et al., 2012). As the mentioned above super-EBSA is quite a big and non-uniform area that includes different sub-areas which meet EBSA criteria in different ways, here we give descriptions and updated information for the part of the area located off Russian islands including areas corresponding to several “elementary” EBSAs mapped and listed in Annexes 1 and 2 to the IUCN/NRDC Workshop report.

Location

(Indicate the geographic location of the area/feature. This should include a location map. It should state if the area is within or outside national jurisdiction, or straddling both.)

This area covers EBSAs 21, 22, 23, 24 illustrated in Annex 1.1 in Speers and Laughlin (2010) but is broader and more resembles corresponding part of the super-EBSA 10 (page 12)

Feature description of the proposed area

(This should include information about the characteristics of the feature to be proposed, e.g. in terms of physical description (water column feature, benthic feature, or both), biological communities, role in ecosystem function, and then refer to the data/information that is available to support the proposal and whether models are available in the absence of data. This needs to be supported where possible with maps, models, reference to analysis, or the level of research in the area)

The area under consideration includes south-east part of the Barents Sea, as well as the White Sea neck and hole, and adjacent part of the Kara Sea. The Pechora Sea is identified as a special area within south-east part of the sea between Kolguev and Vaigach.

Pechora Sea is filled with most of the Barents coast river stream flow. This together with some other climate-geographical factors makes the sea a very special reservoir with specific phyto-cenology image, benthic communities, sea birds and marine mammals. Sustainable hydrologic conditions favor benthos development. High gregarizations of large bivalved mollusks that serve forage for walrus are met in some areas.

Polar cod (*Boreogadus saida*) is widely distributed in the cold water masses of the northern and eastern Barents Sea and Kara Sea. The main polar cod stock has its spawning area in the Pechora Sea where the fish aggregate to spawn under the ice in winter (mainly in January–February). Herring of the Chesh-Pechora stock spawn demersal eggs in shallow waters in Cheskaya Bay.

The Pechora Sea basin has the only European north stock of Arctic cisco (*Coregonus autumnalis*), an anadromous species of white fish having spawning area in Pechora river. The largest European north stock of Atlantic Salmon (Pechora Salmon) inhabits the area. The spawners take anadromous migration from the feeding areas in the sea to the natural river areas of reproduction.

There are four KOA identified in the Pechora Sea. But there is no reliable data on the number of birds in the Pechora Sea, neither in foreign nor in the Russian literature.

The shallow waters from Cheskaya Bay east of the Kanin Peninsula and along the southern shore of the Pechora Sea have fast ice in winter and are an important breeding area for ringed seals from the eastern Barents Sea as well as from the western Kara Sea. The pack ice in the southeastern Barents Sea is presumably important for young ringed seals that aggregate to feed on the polar cod that spawn under the ice in this area. The main wintering areas for walrus of the ‘Kara Sea-southern

Barents Sea-Novaya Zemlya’ stock and for beluga of the large Karskaya stock are in the pack ice in the Pechora Sea region. Some walrus remain in this area during summer with main haul-outs on Vaigach and Dolgy islands and adjacent small islands. The shallow waters along these coasts are also molting and staging areas for seabirds including king eider and scoters (*Melanitta* spp.), and staging area for thick-billed murre for birds from a wider breeding area

further east and north. Rich benthos communities support the abundant seaducks and walrus in these waters. Pechora Bay is an important feeding area for several species of coregonid whitefish, and the coastal waters including Pechora Bay are important for large migratory populations of wild Atlantic salmon (*Salmo salar*).

Feature condition and future outlook of the proposed area

(Description of the current condition of the area – is this static, declining, improving, what are the particular vulnerabilities? Any planned research/programmes/investigations?)

This is dynamic area with evidence of current changes under conditions of global climate change. The most prominent changing feature is ice conditions and distribution, with summer ice edge shifted north for a great extent over the past decade. This affected distribution patterns and foraging condition of many ice-associated species, first of all polar bears and Atlantic walrus. Further investigations are required.

The Pechora Sea is the walrus key habitat. Developing oil and gas industry in the Pechora Sea, transport and reloading present potential threat to walrus as direct (noise, disturbance) and indirect (forage reserve loss and oil pollution of the coast due to oil spills).

There are two sea ports in the Pechora Sea: Varandey and Naryan-Mar. the main cargo traffic goes through Varandey, an oil terminal. Also oil is reloaded at Kolguev island terminal during summer navigation. The main cargo traffic and shipping are connected with exporting oil from Varnadey. Prirazlomnaya oil platform is in place. As a result a visible anthropogenic impact on the south-east Barents already grows. Disturbance and anthropogenic pollution of water and beaches are the main disturbing factors. At that the Pechora Sea is a habitat of rare and endangered species of fauna. Majority of the Pechora Sea marine mammals are red listed in Russia having different conservation status. Atlantic walrus is under main concern as one of the most vulnerable species in the area.

The EBSA is partly covered by federal specially protected areas (Nenetsky reserve), so monitoring and basic research are ongoing and planned for the future. Also last several years there were held researches arranged by WWF and Marine mammal council on Atlantic walrus and planned for benthic society’s research.

High seasonal variability of pelagic environment is characteristic for the Pechora Sea and as a result affects seasonal development of the primary production. The variability can be strengthened under human impact and make ecosystems unsustainable and potentially dangerous for regional biota.

Assessment of the area against CBD EBSA Criteria

(Discuss the area in relation to each of the CBD criteria and relate the best available science. Note that a proposed area for EBSA description may qualify on the basis of one or more of the criteria, and that the polygons of the EBSA need not be defined with exact precision. And modeling may be used to estimate the presence of EBSA attributes. Please note where there are significant information gaps)

CBD EBSA Criteria (Annex I to decision IX/20)	Description (Annex I to decision IX/20)	Ranking of criterion relevance (please mark one column with an X)			
		No information	Low	Medium	High
Uniqueness or rarity	Area contains either (i) unique (“the only one of its kind”), rare (occurs only in few			X	

	locations) or endemic species, populations or communities, and/or (ii) unique, rare or distinct, habitats or ecosystems; and/or (iii) unique or unusual geomorphological or oceanographic features.				
<i>Explanation for ranking</i>					
<p>The Pechora Sea is a unique biotope because of the bottom configuration, climate, and hydrological regime. The depth of the largest part of the sea doesn't exceed 50 meters (south and south-east parts), then it smoothly goes deeper to the north and only by the south coast of Novaya Zemlya it reaches 200 meters and deeper. The shallow water provides good water mixing and its homogeneity during the year and enrichment with oxygen and biogenic elements.</p> <p>The area of interest has also biotic peculiarities. They have an indicative structure of plankton and benthic communities appeared in different concentrations and biomass as well as their distribution. Here is the one of the main marine mammal wintering and sea bird feeding areas.</p>					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.			X	
<i>Explanation for ranking</i>					
<p>Area of high summer abundances of Barents-Kara Sea population of Red listed polar bear and Red listed Atlantic walrus. The Pechora Sea is one of the most important wintering areas and summer feeding for Atlantic walrus. But the data on seasonal distribution, migration, and preferred habitats is absent or fragmented. This impedes identification of EBSA. Lately the research has started in the area with the main task to protect population.</p> <p>The Pechora Sea basin has the only European north stock of Arctic cisco (<i>Coregonus autumnalis</i>), an anadromous species of white fish having spawning area in Pechora river. The largest European north stock of Atlantic Salmon (Pechora Salmon) inhabits the area. The spawners take anadromous migration from the feeding areas in the sea to the natural river areas of reproduction.</p>					
Importance for threatened, endangered or declining species and/or habitats	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.				X
<i>Explanation for ranking</i>					
<p>Core area for survival and recovery of endangered Atlantic walrus. Atlantic walrus, polar bear, and some of the sea birds of the Pechora Sea are enlisted in the regional and federal Red Data Book of Russia. The essential areas for Atlantic walrus are beech hall-out and not yet found breeding grounds. Polar bear dens are also unknown.</p>					
Vulnerability, fragility, sensitivity, or slow recovery	Areas that contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural			X	

	events) or with slow recovery.				
<p><i>Explanation for ranking</i> Significant portions of ice-associated species of mammals and seabirds, ice habitats (flaw polynyas, ice edge) sensitive to global warming. There are also many vulnerable species to oil and gas impacts. Combination of low relative water transparency, photosynthesis layer thickness, and primary production in the coastal areas of Pechora Sea brings down the ecosystem resilience to anthropogenic impact leading to reduction of the sun radiation in the water column and rise of the water turbidity (works with ground, oil slicks and the like). Acute reduction of photosynthesis thickness with the described impact can lead to dramatic drop of the primary production, predominance of the destructive processes, and suffocation. Hydrocarbon production development redoubles the processes and potentially threatens the ecosystem and marine organisms. The task is to identify and map the most vulnerable areas.</p>					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.			X	
<p><i>Explanation for ranking</i> Long ice season and slow clearing in spring, constant flow of biogenic rich fresh water in summer, small depth providing good water mixing are the factors to stipulate special behavior of succession cycle. Development of microalgae starts far before the area clears from ice, the spring blossom smoothly turns to summer stage without acute falls and rises keeping high level of quantity coefficients. All this together with relative isolation of the water reservoir provides higher production level of the Pechora Sea then the Barents Sea in general. The research results prove high diversity and richness of the bottom population in several areas of the Pechora Sea. The research needs to go on to identify all the areas of this kind.</p>					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.	X			
<p><i>Explanation for ranking</i></p>					
Naturalness	Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.				X
<p><i>Explanation for ranking</i> The Pechora Sea is still relatively intact judging by the water analysis showing low harmful chemical matter. Now most of the Pechora Sea areas have lower pollution level. The most polluted is Pechora bay. But after the Prirazlomnaya oil platform was placed and the ship traffic raised the environment of the Pechora Sea would be threatened with oil pollution.</p>					

Sharing experiences and information applying other criteria (Optional)

Other Criteria	Description	Ranking of criterion relevance (please mark one column with an X)			
		Don't Know	Low	Medium	High
<i>Add relevant criteria</i>					

References

(e.g. relevant documents and publications, including URL where available; relevant data sets, including where these are located; information pertaining to relevant audio/visual material, video, models, etc.)

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Maps and Figures

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Red dots are coastal haul-outs of Atlantic walrus: the others dots are walrus on ice

