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

Title/Name of the area: Kandalaksha Bay of the White Sea

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Abstract (*in less than 150 words)*

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, 2011) identified a super-EBSA named "White Sea/ Barents Sea Coast" as meeting nearly all CBD criteria. "This region is characterized by highly productive coastal waters influenced by a coastal branch of warm current originating from the North-Atlantic current. The area supports diverse and productive benthic communities including kelp, provides important nursery habitat for several species of pelagic fishes, and supports Atlantic salmon as well as seabird colonies with diverse species composition. The area is important for breeding Common eiders, and provides staging, molting and wintering grounds for three eider species including Steller's eider, which is considered globally vulnerable by IUCN. The White Sea/Barents Sea coast also supports local populations of White Sea beluga whales and provides pupping and molting areas for the entire East Ice harp seal population" (Speer and Laughlin, 2011). The report on identifying Arctic marine areas of heightened ecological significance (AMSA) also revealed the White Sea as an important area (Skjoldal et al., 2012). As the White Sea and the Barents Sea coast is a really big and complex area that includes parts which meet EBSA criteria in different ways we provide here a separate description and recent information for the included areas which correspond to "elementary" EBSA mapped and listed in Annexes 1 and 2 to the IUCN/NRDC Workshop report. One of such areas is Kanfalaksha Bay, the deepest bay of the White Sea and the Ramsar wetland site.

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 cover "elementary" EBSA 14 identified in the IUCN/NRDC Workshop report (Speer and Laughlin, 2011: Annex 1.1) that is practically identical to the area of significance 4 within the Barents Sea LME (Skjoldal et al., 201: fig. 5). A conventional maritime boundary of the area goes along the line connecting Cape Sharapov on the Karelian Coast of the White Sea and Cape Turiy on the Terskiy Coast . This is the are that completely lies within the national jurisdiction of the Russian Federation (internal marine waters) but including important international sea routes (Murmansk – Kandalaksha).

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 Kandalaksha Bay is the deepest of the bays and basins that built up the White Sea and is naturally divided into the inner shallow part and the outer deep parts. It is bordered y rocky shores of fjord-like (so called fiards that are analogous to typical fjords but usually do not have such steep rocky shores). Some of these fjords-like inlets (inlet, cove, fjord =“guba” in Russian) have internal depression and outer sills, so that they have limited water exchange and enclaves of cold water with Arctic species in the deep parts. Owing to isostatic rise of the Fennoscandian shield many such inlets are gradually loosing the connection to the sea that makes them participants of exiting natural experiment and provide extensive material for evolution of sedimentological, oceanographical, chemical, microbiological processes and changes of macrobiotic communities over time (Krasnova, 2013a,b). The deep (to 330 m) Kandalaksha bay in general with adjacent deep central part of the White Sea may be considered as a giant fjord separated from the outer part of the sea by the Gorlo Strait which depth generally does not exceed 50 m. Owing to the winter convection in the Gorlo, the deep depression is filled and ventilated with cold water that retains negative temperature year round. The upper layer warms up in summer so that the water column in contrast to the northern part of the White Sea and the Onega Bay is always markedly stratified: owing to temperature and salinity in summer and mostly salinity in other seasons (Babkov, 1998; Filatov et al., 2005). Deep areas filled with cold water provide habitats for pelagic and benthic biota of Arctic origin, while upper layers and shallow areas host typical boreal fauna and macrophyte flora (i.e. kelp and seagrass) (Derjugin, 1928; Berger, Naumov, 2001; Naumov, 2001). Numerous islands in the inner part of the Bay and along Karelian coast build up a variety of coastal waters habitats and nesting grounds for eiders and other aquatic birds (Bianki, 1991; Krasnov, 2011a). Seasonally the Kandalksha Bay is covered with sea ice; the outer part is used by harp seals as a breeding area (although the main aggrehations of seals are usually gathering in the central part of the White Sea and in the Gorlo Strait). The coastal zone and the shoreline of the Bay provide conditions for forming particular types of the fast ice used by ringed seals for wintering and breeding (Lukin et al., 2006). The Kandalaksha Bay is most studied area of the White Sea because it has a long history of operations of scientific stations. Currently the main platforms of research are three research stations (Moscow and St. Petersburg universities and the Zoological Institute of Russian Academy of Sciences) and the Kandalksha State nature reserve.

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?)

The ecosystems of the area passed through some changes, in particular catastrophic decline of seagrass population in early 1960s. Since that time there are several indications of seagrass recovery (Bukina et al., 2010). In other aspects the processes in the area appear to be stable but they may be affected currently observed changes in sea ice regime. Potential threats include ship based pollution, non-wise location of cage aquaculture and unregulated tourism.

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 locations) or			X	

<table>
<tr><td></td><td>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.</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Explanation for ranking
Although the area hauses no unique habitats nor endemic species, some rare and distinct habitats are present, namely semi-isolated inlets containing enclaves of the cold water biota of the Arctic origin, including the largest basin of this kind, Babye More (Gurvich, 1936). The very coexistence of the Arctic and boreal organisms, mosaic intergradations of respective benthic communities or temporal succession of the cold water and temperate water assemblages in the plankton is a distinctive feature. Furthermore peculiar meiofauna (nematodes) was described in the Kandalaksha Bay sea ice that is different from sea ice nematodes of the High Arctic (Tschesunov, 2006). A residual population of harp seal is maintained near the town of Kandalaksha where this species in summer maintains unusual shore hauling-out (Krasnov, 2011b). The last but not the least, the area of the Northern Archipelago in the inner bay belonging to the Kandalaksha State Natural Reserve and he area adjacent to the White Sea Biological Station of Moscow University have the most complete and detailed marine species inventories for the Russian seas (). These facts make possible to qualify the level of uniqueness as “medium”.</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that are required for a population to survive and thrive.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking
The Kandalaksha Bay is most important part in the White Sea for maintaining population of the White Sea cod (Gadus morhua marisalbi); it also hauses important spawning gounds of the White Sea herring (Clupea pallasii marisalbi) (Ivanchenko and Lajus, 199; Berger, 20011). Varzuga River on Terskiy Coast still maintains abundant stock of Atlantic salmon (Berger, 2001; Studenov, 2011). The islands of the Bay (in particularly those within the Kandalaksha State Nature Reserve) are important nesting and moulting area for the White Sea population of common eider, herring gull and several other aquatic birds (Bianki, 1991; Krasnov, 2011a) and are of comparable importance to the islands of the Onega Bay. Similarly to the Onega Bay the coastal zone of Kandalaksha Bay is an important migration corridor and staging area for the migrating aquatic birds between Kola Peninsula and Bothnia Bay of the Baltic (Bianki, 1991). The Kandalaksha Bay is also most important wintering and breeding ground for Ringed seal in the White Sea (Lukin et al., 2006).</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking
The area has importance for maintaining populations of endangered shore birds of prey, such as sea eagles White-tailed Eagle (Haliaeetus albicilla) and Osprey (Pandion haliaetus). Recently it is becoming regularly visited by wandering specimens of Atlantic walrus (Odobenus rosmarus rosmarus).</td></tr>
<tr><td>Vulnerability, fragility, sensitivity, or slow recovery</td><td>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 events) or with slow recovery.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking</td></tr>
<tr><td>Biological productivity</td><td>Area containing species, populations or communities with comparatively higher natural biological productivity.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking
Primary production in the water column are at medium level (Rat’kova, Savinov, 2001); however proximity of deep areas facilitates maintance of abundant stock of zooplankton consisting of Arctic species, i.e. Calanus glacialis. Sea ice algae are particularly abundant and build up high production with increasing daylight in late winter - spring; this production is likely consumed in the coastal ecosystem in spring (Sazhin et al., 2009, 2011); it is not yet known the situation in other parts of the White Sea is much different. Macrophyte standing stock, benthic biomass and production is estimated to be significant but at lower level than in the Onega Bay (Naumov, 2011; Shoshina, 2011).</td></tr>
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<tr><td>Biological diversity</td><td>Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.</td><td></td><td></td><td></td><td>X</td></tr>
<tr><td colspan="6">Explanation for ranking
Owing to the presence of both boreal and Arctic assemblages in plankton and benthos the overall species richeness in both sea ice flora, plankton, benthos and ichyofauna is high compared to other parts of the White Sea with the exception of the Onega Bay(Berger, Kosobokova, 2001; Naumov, 2001; Berger, 2001; Ilyash, Zhitina, 2009). The Kandalaksha Bay is the basin with most studied (in comparison to other Arcic seas) meiofauna which is particularly rich (). In the coastal zone there is a variety of inlets, lagoons and lakes in process of separation which provide extensive material for evolution of sedimentological, oceanographical, chemical, microbiological processes and changes of communities over time (Krasnova, 2013a,b). Owing to a significant depth range and complex bottom topography, benthic communities form mosaics of different types, including seagrass meadows, kelp communities, rocky bottom epifaunal communities and a variety of soft to mixed bottom communities (Naumov, 2001, 2011) including the rich ones dominated by guahog, that persist on the same places for decades (Chikina et al., 2014).</td></tr>
<tr><td>Naturalness</td><td>Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.</td><td></td><td></td><td>X</td><td></td></tr>
<tr><td colspan="6">Explanation for ranking
The White Sea, and the Knadalaksha Bay in particular was used by traditional and artisan fisher and hunters for millennia, so that a characteristic maritime cultural landscape has been formed; however in many places it is in the process of degradation (Spiridonov et al., 2010) . With regard to land based pollution and other kind of contamination the Onega Bay may be regarded as being exposed to lower anthropogenic impacts than many other Northeast Atlantic seas, as the industrial activity in the area has never been particularly high and has decreased recently (Terzhevik et al. 2005; Moiseenko, 2010). Shipping is maintained through Vitino and Kandalksha seaports, that provides some disturbance and include a potential threat of accidental spills, other pollution and introduction of alien species with ballast waters. However, there have been practically no cases of contemporary introductions. The area also experienced no impact of active fishing gears and showed relative stability of dominant species in benthic communities over decades (Chikina et al.., 2014). Currently the greatest actual threat is unregulated tourism (often associated with illegal hunting and the use of boats with powerful engines) (own data) followed by placing cage and mussel aquaculture in sensitive sites (Khalaman and Sukhotin, 2011).</td></tr>
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Sharing experiences and information applying other criteria (Optional)

<table>
<tr><td rowspan="2">Other Criteria</td><td rowspan="2">Description</td><td colspan="4">Ranking of criterion relevance
(please mark one column with an X)</td></tr>
<tr><td>Don’t Know</td><td>Low</td><td>Medium</td><td>High</td></tr>
<tr><td>Add relevant criteria</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="6">Explanation for ranking</td></tr>
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(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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