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

Title/Name of the area: Wrangel and Gerald Shallows and Ratmanov Gyre

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Abstract (*in less than 150 words)* Wrangel – Gerald and Ratmanov Gyre EBSA in the Chukchi Sea data presented here are based on synthesizing , extending and updating the assessment done by the WWF Barents Ecoregion Biodiversity Assessment (Larsen et al., 2003), IUCN/NRDC and AMSA workshop reports (Speer and Laughlin, 2011; Skjoldal et al., 2012). This EBSA is characterizied by medium uniqueness, high level of importance for life history stages of key or iconic species, high level of importance for endangered or threatened species, high level of biological productivity, medum level of diversity, high vulnerability and high level of naturalness.

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 "Chukchi and Beafort Sea Coast" as meeting nearly all CBD criteria. " The lead system at the transition between landfast and drifting ice was described by workshop participants as "a wonder of nature," providing a spring migratory pathway for hundreds of bowhead whales daily, as well as beluga whales, polar bears, Pacific walrus and gray whales during summer and autumn. The Chukchi Sea has massive phytoplankton blooms, which along with annual sea ice algae production, cannot be fully exploited by the zooplankton communities. Hence, much of this high production is exported unmodified to the benthos, resulting in an impressively high biomass of benthic infauna and epifauna. Capelin occurs in summer along the sandy seaward beaches of barrier islands in the area of Point Lay and also near Point Barrow. Coastal waters provide whitefish nursery areas and migration corridors for juvenile and adult humpback whales and broad whitefish, least and Bering ciscoes and Dolly Varden Char. Gray whales of the large migratory eastern population (about 20-25,000 animals) have important benthic feeding grounds in coastal areas in the eastern Chukchi Sea, primarily near Point Hope and along the coast between Icy Cape and Point Barrow.
" (Speer and Laughlin, 2011: A). The report on identifying Arctic marine areas of heightened ecological significance (AMSA) revealed the waters off Wrangel Island and the central shelf of the Chukchi Sea as important areas as well (Skjoldal et al., 2012: Figures 9 A and B, Table 14, areas 5 and 6). We propose to consider it as a single EBSA "Wrangel and Gerald Shallows and Ratmanov Gyre that is relatively well covered by historical Russian data and the information from the recent RUSALKA Project.

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.)

The area extends from the waters around Wrangel Islands, along the midline of De Long Strait to 180 W, then along 30 m isobaths to to Gerald Island, including part of Gerald Trench, and to the latitude

somewhat east of Cape Serdtse-Kamen' at 173 W. The northern boundary is conventionally going along 100 m isobaths. This area lies within EEZ and territorial sea of Russia.

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)

Important characteristics of the area is a large stable gyre in the eastern part first discovered by Ratmanov in 1937. This gyre stabilizes the conditions, provides significant supply of nutrients and high primary production that fluxes to the bottom and is the basis for stable and persisting benthic communities (Sirenko et al., 2009a).
The area is ice-covered for most part of the year but recently the duration of ice-free season is increasing. Around Wtangel Island the landfast ice and polynyas are formed. The formation of polynyas off Wrangel Island is a result of the interaction between the Arctic and the Siberian Anticyclones. The different and changing year to year interactions of the processes originating in these centres of atmospheric activity explains the inter-annual variability of polynyas in the East Siberian and the Chukchi seas. During warm years the Arctic Anticyclone weakens and shifts to the Canadian sector of the Arctic; this results in the dominance of a system favouring polynya development in the Chukchi Sea. (Gavrilo and Popov, 2011).

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 condition s in the area appear to be dynamic, and ecological processes are very sensitive to climate changes, in particular variability in sea ice.

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 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.			X	
Explanation for ranking There are no proven endemic species in the area, however several species have been described from the Chukchi Sea and so far known only for this region (Sirenko, 2009). Benthic communities in the southeastern part of the area within Ratmanov Gyre are very distinct owing to its unusually high biomass for the Arctic (Sirenko and Gagaev, 2007; Sirenko et al., 2009 a, b).					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				X

Explanation for ranking In winter, the polynyas adjacent to Wrangel Island form the area of high concentration of ringed (*Phoca hispida*) and bearded (*Erignathus barbatus*) seals and their predators: the polar bears (*Ursus maritimus*) (Belikov et al., 1998). The area serves as a feeding area for seabirds, walruses and cetaceans. Of particular importance for walruses feeding could be rich benthic communities located within the Ratmanov Gyre off Serdtse-Kamen' Cape (Sirenko et al., 2009a).					
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
Explanation for ranking Gray whales (*Eschrichtius robustus*) of the Californian-Chukchi population and bowhead (*Balaena mysticetus*) migrate from their wintering grounds and move to the Chukchi Sea in June. In summer and autumn bowhead whales forage and travel up to Wrangel Island and and go further east (Bogoslovskaya et al., 1982; Belikov et al., 2002; Gavrilo, Popov, 2011).					
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 events) or with slow recovery.				X
Explanation for ranking Sea ice habitats are particularly sensistive to climate changes; polar bears are particularly suffering from decaying sea ice.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				X
Explanation for ranking Chukchi Sea show increased pelagic primary production and the crabon flux to the bottom in comparison to the seas of Siberian shelf and there is a trend to its increase (Vetrov and Romakevich, 2011). The area near Wrange Island and the one within Ratmnaov Gyre is of particular importance. Most of pelagic production contribute to the benthic flux and is utilized for building up an unsusually high benthic biomass, in particular in the communities dominated by Macoma clacarea (Sirenko and Gagaev, 2007; Sirenko et al., 2009).					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				X
Explanation for ranking The Chukchi Sea has considerably higer richeness of marine species than the seas of Siberian shelf (Sirenko, 2009, Spiridonov, 2011; Spiridonov et al., 2011) and the present area holds most of species known for the area. The area holds the broadest range of benthic community types known for the Chukchi Sea (Sirenko et al., 2009a,b).					
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
Explanation for ranking This is largely untouched area.					

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**
Add relevant criteria					

Explanation for ranking

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.)

Belikov S., Boltunov A., Belikova T., Belevich T.,Gorbunov Yu. 1998. Marine mammals. The distribution of marine mammals in the Northern Sea Route area. INSROP Working Paper No 118–1998.Oslo: The Fridtjof Nansen Institute. — 49 p.
Belikov S.Ye., Boltunov A.N., Gorbunov Yu.A. 2002. Seasonal distribution and migrations of whales of the Russian Arctic based on results of long_term observations by aerial ice reconnaissance and drifting stations "North Pole". In: A.A. Aristov, V.M. Belkovich, V.A. Zemsky, V.A. Vladimirov and I.V.Smelova (eds). Marine mammals (Results of researches conducted in 1995–1998). Moscow: Marine Mammals Council. — Pp. 21–50. (In Russian).
Bogoslovskaya L., Votrogov L., Krupnik I. 1982.The bowhead whale off Chukotka: migrations and aboriginal whaling. Reports of the International Whaling Commission, 32: 391–399.
Gavrilo M.V., Popov A.V. 2011. Sea ice biotopes and biodiversity hotspots in the East Siberian Sea and the waters of Chukotka. In: V.A. Spiridonov., M.V. Gavrilo, N.G. Nikolaeva, E.D. Krasnova (eds) 2011. Atlas of the Marine and Coastal Biodiversity of the Russian Arctic. Moscow, WWF Russia, pp. 38–39.
Golikov A.N., Sirenko B.I., Petryashov V.V., Gagaev S.Yu. 2009. Distribution of bottom communities in the Chukchi Sea from results of diving investigations. In: B.I. Sirenko (ed) Ecosystems and biological resources of the Chukchi Sea and adjacent areas. Explorations of the Fauna of the Sea, St. Petersburg, Zoological Institute of RAS, 64 (72),pp. 56–62 (in Russian).
Sirenko B.I. 2009a. The present state of investigations of the Chukchi Sea fauna. In: B.I. Sirenko (ed) Ecosystems and biological resources of the Chukchi Sea and adjacent areas. Explorations of the Fauna of the Sea, St. Petersburg, Zoological Institute of RAS, 64 (72), pp. 5–27 (jn Russian).
Sirenko B.I., Bluhm B., Iken K. Crain K., Gladish V. 2009b. ROV investigations on the composition and quantitative distribution of epifauna in the Chukchi Sea. In: B.I. Sirenko (ed) Ecosystems and biological resources of the Chukchi Sea and adjacent areas. Explorations of the Fauna of the Sea, St. Petersburg, Zoological Institute of RAS, 64 (72), pp. 20 –212.
Spiridonov V.A. 2011. Biogeographical regionalization. Species diversity in the Russian Arctic seas: pelagic and sea ice biota, micro- and meiofauna. Macrobenthos: species diversity and group domination in the communities. In: V.A. Spiridonov., M.V. Gavrilo, N.G. Nikolaeva, E.D. Krasnova (eds) 2011. Atlas of the Marine and Coastal Biodiversity of the Russian Arctic. Moscow, WWF Russia, pp. 16-21.
Vetrov A.A., Romankevich E.V. 2011. Primary production and fluxes of organic carbon to the seabed in the russian Arctic seas as a response to the recent warming. Oceanology, 51(2): 266–277.

Maps and Figures

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