



WORKSHOP REPORT – AMSA II(C)/AMSA II(D) BRIDGING WORKSHOP

Prepared by:

Magnus S. Eide (project manager, DNV) - with input from notes taken by Soffía Guðmundsdóttir (PAME secretariat) and Geir Høvik Hansen (Norwegian Maritime Directorate)

REVISION 2 - 2013-08-20





1. THE AMSA II (D) PROJECT

Following up on Recommendation II(D) of the 2009 Arctic Marine Shipping Assessment (AMSA) Report, the Arctic Council’s Working Group on the Protection of the Arctic Marine Environment (PAME) approved a project with the objective of exploring the need for, and as appropriate make recommendations regarding, internationally designated areas in the high seas area of the Arctic Ocean that warrant protection from the risks posed by international shipping activities. On behalf of PAME, the Norwegian Climate and Pollution Agency (Klif) has awarded DNV the contract to carry out this study. Figure 1 gives an overview of the analytical process which DNV follows to address the issue.

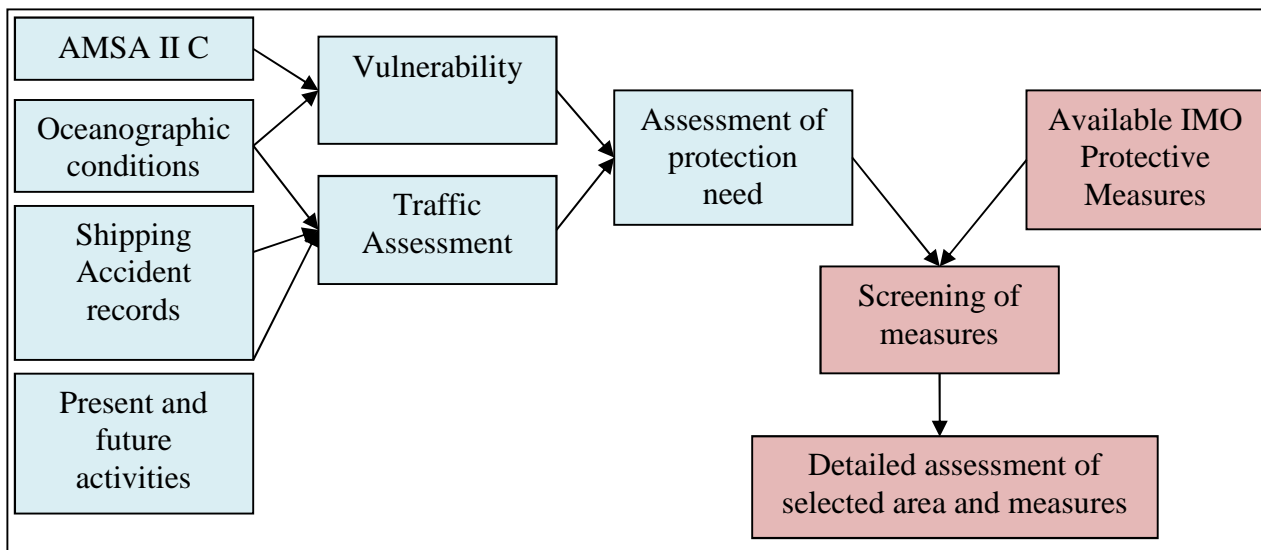


Figure 1: Overview of analytical process.

2. SCOPE OF WORKSHOP AND THIS REPORT

The aim of the AMSA II(C)/AMSA II(D) bridging workshop was to assist in the scoping of the AMSA II(D) project – Specially Designated Arctic Marine Areas. Based on the report from the AMSA II(C) project, and other relevant reports, the workshop focused on the sensitivity and ecological importance of the high seas areas of the Arctic Ocean, and on impacts from international shipping.

The workshop was carried out 12-13 June 2013 in Reykjavik, Iceland. The workshop agenda is included in Annex I and Annex II contains the List of Participants.

Figure 2 shows the area of heightened ecological significance in the Central Arctic Ocean LME (From AMSA II C report, their Figure 12), compared to the Arctic Ocean High Seas.

This report is not a record of the proceedings, but a summary of key discussion points with direct relevance for the direction of further work by DNV in the AMSA II(D) study. The report outlines the steps to be undertaken in the analysis to accommodate the input from the workshop, to the extent possible under constraints of the project resources and the description of work agreed upon in the Contract. The report focuses on the following key topics;

- Sensitivity assessment of the arctic high seas area (section 3)
- Shipping activity – current and future projections (section 4)
- Statistics on shipping accidents (section 5)
- IMO measures (section 6)

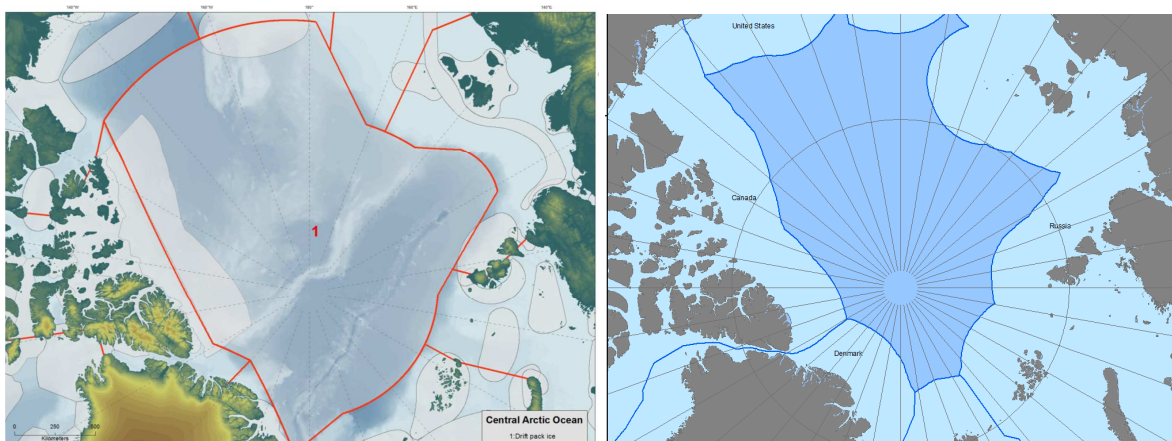


Figure 2: Left: The Central Arctic Ocean LME (From AMSA II C report, their Figure 12), compared to the Arctic Ocean High Seas (Right).



3. SENSITIVITY ASSESSMENT

During the WS H.R. Skjoldal (Norwegian Institute of Marine Research) gave a thorough presentation of the AMSA II(C) report, with particular focus the Arctic High Seas.

The following Ecological components important for the designation of areas as of heightened importance were highlighted:

- 1) *Amphipods*: live in association with the ice, particularly in multiyear ice. Support directly or indirectly other species that live in ice-covered waters. The amphipods are sensitive to oil spill, although the wide geographical distribution of the population reduces the risk to the population from any single accidental spill, thus reducing the vulnerability.
- 2) *Polar bear*: there are 19 subpopulations, and the Arctic basin subpopulation is found in the High Seas area (although it is uncertain whether this is a distinct subpopulation or whether it consists of individuals from other populations moving into the High Seas area with the retreating ice). Currently found in very low densities, although the number of individuals could increase in summertime as the remaining ice cover shrinks.
- 3) *Polar cod/Arctic cod*: Stocks in the Canada Basin. Important spawning grounds are found under the ice of the High Seas, and could be sensitive to oil spill.
- 4) *Arctic gulls (collective term)*: Several gull species are living in the periphery of the Central Arctic Area, along the ice edge. It is noted that the Ross' Gull is particularly ice-associated (multi-year ice) and is threatened.
- 5) *Whales*: Three species of whale were discussed; bowhead, beluga and narwhale. Although the bowhead is no longer considered threatened by IUCN in general, some sub-populations (e.g. west of Svalbard are still endangered). It is noted that although bowhead, beluga, and narwhal all exist in the High Arctic, narwhals do not currently inhabit the high seas area of the CAO and belugas are found only rarely. However, given the rapid climatic changes in the area, various species of whale could perhaps become more frequent in the area in decades to come.

Irrespective of shipping activity, the arctic sea ice and the species depending upon it is under pressure due to on-going climate change. These non-shipping pressures need to be considered also when assessing the added impact from shipping. It is the total impact on the respective species which constitutes a need for protection.

The presentation brought forth a realization of the strong seasonal dependence in the vulnerability of the different zones within the Arctic High Seas. This seasonality should be seen in relation to the strong seasonal features of the shipping activity. Also, the area is highly non-homogeneous with respect to vulnerability. A matrix that links the seasonality of the AMSA II(C) findings with various risks associated with the seasonal shipping activity should be established.

It was agreed that because the II(D) study will consider the need for protection in light of future arctic shipping activity it should also, to the extent possible, consider the future ecological characteristic (as expected due to climate change), rather than the present conditions.



Two aspects of vulnerability of the central arctic were underlined:

- Prime importance is reducing the risk of oil spills through e.g.
 - minimizing the use of HFO
 - implementing measures that may help in reducing ship accidents, in particular collisions with ice as due to climate change results there will be more floating sea ice (e.g. via monitoring systems), but also forecasting and management of hazards presented by storms.
- Avoiding disturbances to wildlife, especially the strikes with whales, some of which are slow moving and have a slow rate of breeding. The issue is important, especially along the northern sea route (Russian side. Note that this is mainly outside the target are of the study, which is the High Seas). Here measures could be considered with respect to timing and speed of passage. Also cracking and breaking of ice could be harmful for pups of certain species of seals.

It was noted that there is a need to reduce the operational discharge of oil, due to very long residence times, especially in the gyre. However, in the environmental chapter of the Polar code operational discharges of oil will be prohibited.

It was also noted that avoiding accidents in the high seas could also reduce impacts on vulnerable areas within national jurisdiction, e.g. due to long lifetimes of oil spills and oil spreading widely by waves and currents.

The possibility of establishing seasonal protected areas was discussed, and the IMO representative confirmed that this is an option.

4. SHIPPING ACTIVITY – CURRENT AND FUTURE PROJECTIONS

Kjetil Martinsen (DNV) presented 2012 AIS ship movement data for the Arctic in general, and the High Seas in particular. A total of 18 ships were observed in 2012, mostly in the of category “other activities”. Thus, the traffic is presently considered to be minimal, even considering likely annual fluctuations. All activity observed in 2012 was confined to the summer months, highlighting the strong seasonality of the traffic.

The main concern in the High Seas of the Arctic Ocean is therefore not the threats from present shipping activity, but from the possible future increases in shipping.

It was noted by H. R. Skjoldal that it is highly unlikely that the High Seas area will experience increased activity from fishing, because of its ecological and oceanographic features. However, it cannot be completely discounted considering that the peak abundances of some species appear to be moving northeastwards of the Barents Sea, for example. It is also likely that activity related to oil and gas exploration and exploitation will not increase due to the oceanographic features of the High Seas. Increased destination shipping, relating also to oil and gas activity within the EEZs of the bordering nations, may nevertheless lead to spill over of traffic into the High Seas of the Arctic Ocean. However, the clearest indications point towards expected increases in transit (Europe-Asia) shipping. Figure 3



shows possible Arctic transit routes vs. the Suez Canal route which offers up to 40% reduced travel distance. Figure 4 shows moderately ice classed vessels may prefer the route across the Arctic High Seas by mid-century (Smith and Stevenson 2013). The main focus of the AMSA II (D) study will be on transit shipping.

DNV will need to rely on previous studies in their assessment on future shipping scenario. M. Eide presented a summary of the identified studies of relevance to future activity. It was noted that quite a few studies make assessments on the ice cover, the navigation season and the accessibility for different ship types, without making explicit estimates for ship traffic volumes. Only a few studies explicitly assess the potential for future traffic volumes.

A key finding is that there is an extreme level of uncertainty surrounding future projected traffic levels. It was therefore discussed that the use of a scenario approach could be an appropriate way forward in the II(D) study.

It was noted that an element to be considered is possible capacity limitations in the Suez Canal, which, given expected increases in Asia-Europe trade volumes, could be a constraint which makes Arctic shipping more attractive. Political turbulence in the Middle-East area is also a factor that rapidly could influence this situation.

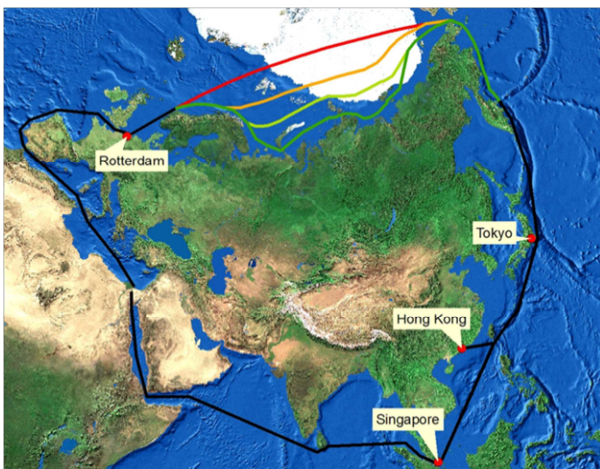


Figure 3: Possible Arctic transit routes vs. the Suez Canal route offers up to 40% reduced travel distance.

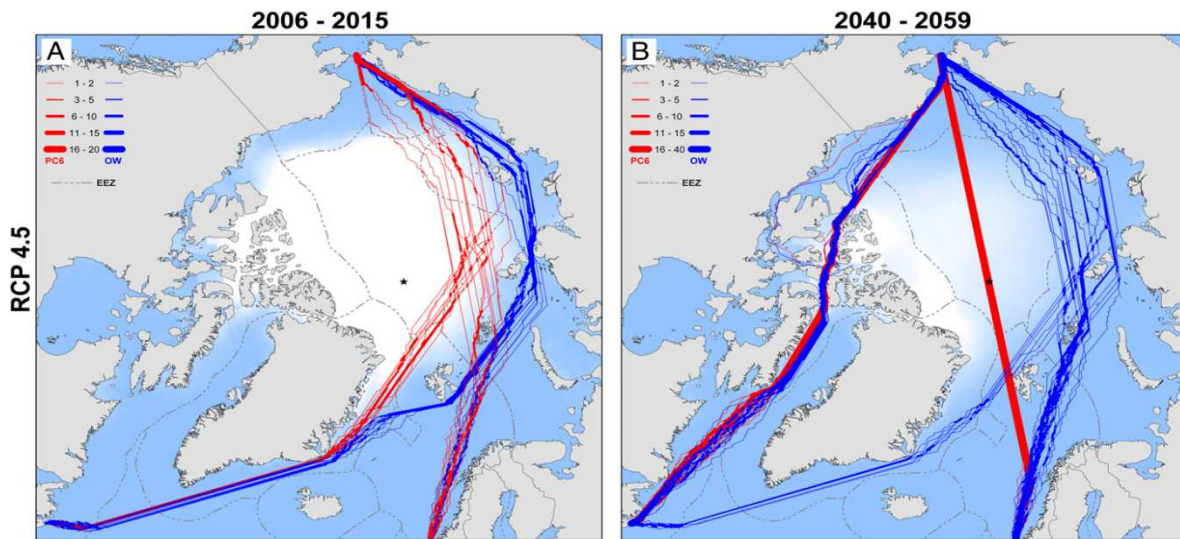


Figure 4: Ice extent projections are highly uncertain. Moderately ice classed vessels may prefer the route across the Arctic High Seas by mid-century. No projections on traffic volumes are offered (Smith and Stevenson (2013)).



5. ACCIDENT STATISTICS

M. Eide presented reported shipping accidents from a number of relevant sources and focused on accidents in the Arctic Ocean High Seas that caused, or threatened to cause, pollution or harm to living marine resources or the marine environment. It was noted that seasonality is important, but was not addressed in these statistics.

Generally very limited data on shipping accident statistics in the Arctic are available. For the High Seas areas, no accidents were found. It was argued that from a statistical point of view the accident numbers in the Arctic are too small to rely on for any meaningful findings. It was proposed to consider worldwide accident statistics, and to infer from these the risk level that can be expected with increased future activity.

It was also proposed to perform a qualitative analysis of a limited set of the Arctic accidents (outside the High Seas). Such an analysis could give insight into what types of accidents are most characteristic for the area. It was suggested that accident statistics from Antarctica could be used to draw lessons applicable to the Arctic. It was noted that a HAZID will be performed in the HFO Phase II project (lead by K. Martinsen, DNV), in preparation of the risk assessment to be performed in that project. The outcome of this HAZID will be available to the AMSA II (D) study.

It was put forward that the AMSA II (D) project should in principle identify all risks, not only oil spills as acknowledged as a stated goal of the project. However, not all risks can be assessed in detail or addressed when considering IMO measures. It was pointed out by the IMO representative that the protective measures to be applied should target specific issues. The project will survey all risks, and subsequently focus on the most relevant aspect.

It was noted that risk factors specific to the High Seas should be considered. For example, increased break-ups of ice due to the climate change results in more mobility of the sea ice, which, in turn, will increase risks such as collision with ships.

6. IMO MEASURES

E. Kleverlaan (IMO Secretariat) gave a thorough introduction to the IMO, and the various IMO measures to protect marine environment from international shipping, focusing on special areas (SA) to the MARPOL Convention and particularly sensitive sea areas (PSSA). IMO Measures for Area-Based Protection as presented to the PAME II-2012 meeting, with respect to vulnerability and the range of measures that can be applied, are given in Annex III.

Sea areas can be defined as MARPOL "special areas, SA" on application. In SA's, for technical reasons relating to their oceanographical and ecological condition and to their sea traffic, the adoption of special mandatory methods for the prevention of sea pollution is required. These SA's can be applied under MARPOL Annex I, IV and V. Additionally, the Antarctica is a SA under Annex II. Under the Convention, these special areas are provided with a higher level of protection than other areas of the sea. Under Annex VI Regulations for the Prevention of Air Pollution from Ships establishes certain sulphur oxide (SOx) and nitrogen oxide Emission Control Areas (ECA) with more stringent controls on sulphur or



nitrogen emissions can be defined. The existing SA's or ECA's can be found on <http://www.imo.org/OurWork/Environment/PollutionPrevention/SpecialAreasUnderMARPOL/Pages/Default.aspx>.

It is important to take into account that to make the SA's effective there has to be adequate port reception facilities in the area. This could be a challenge in the Central Arctic, but could probably be solved by either exemption like in the Antarctica¹ or by regional arrangements like in the Caribbean area.

It was pointed out that a PSSA may be established in the High Seas area, but as of today there are no existing high seas PSSAs. For the existing PSSA areas see: <http://www.imo.org/OurWork/Environment/PollutionPrevention/PSSAs/Pages/Default.aspx>. In the high seas the flag states are responsible for enforcement and surveillance. Oslo and Paris Conventions for the protection of the marine environment of the North-East Atlantic (OSPAR) has approached IMO regarding the extension of PSSA into the high seas areas.

It is important to distinguish between designations of a PSSA from and the associative protective measures (APMP) which accompany the PSSA designation. PSSA designation is only delineating an area. The various APMPs could be applied without the PSSA designation; but on the contrary, however, the PSSA cannot be applied without any APM. Designation of PSSA raises the awareness of the vulnerable area in question

If we wish to pursue the PSSA track, issues that need to be addressed in the study include;

- What kinds of measures (APM) are needed for the area? It was pointed out that one is not limited to propose APMs which have been used elsewhere, but is free to establish a new kind of associated protective measure (with a legal basis in an IMO instrument). Seasonality can be incorporated.
- How to prove the need for a PSSA? Have to link a specific vulnerability and protection need to an APM.

It is important to demonstrate that the current IMO regulations are not sufficient to protect the area in question. The AMSA II (D) project puts forward three main issues which may be challenging for the IMO:

- seasonality²
- changing geographic boundaries (the ice edge)
- making regulations based on projected rather than current ship traffic³

¹ Paragraph 7 of MARPOL regulation I/38 contains additionally special rules for the Antarctic area as follows:

.1 all MARPOL Parties at whose ports ships depart or arrive from the Antarctic area undertake to ensure that as soon as practicable adequate facilities are provided for the reception of all sludge, dirty ballast, tank washing water and other oily residues and mixtures from all ships; and

.2 all MARPOL Parties shall ensure that their flag ships, before entering the Antarctic area, are fitted with a tank or tanks of sufficient capacity for the retention of all sludge, dirty ballast, tank washing water and other oily residues and mixtures while operating in the area and have concluded arrangements to discharge such oily residues at a reception facility after leaving the area.

² seasonal measures approved by IMO to protect marine life already exist, e.g., [the Great South Channel off the East Coast of the U.S.](#). The U.S. proposal for this seasonal ATBA can be found [here](#)



³ note [MEPC Resolution 67\(37\)](#) on the precautionary approach



ANNEX I – WORKSHOP AGENDA

WEDNESDAY JUNE 12

- 0900 - Background and setting – *G.H. Hansen*
- 0915 - Scope and approach to the AMSA II(D) study by DNV – *M. Eide*
- 1000 - Presentation of the AMSA II(C) study, with particular focus the Arctic High Seas – *H.R. Skjoldal*
- 1200 - Lunch
- 1300 - Current traffic and emissions in the Arctic, with emphasis on the Arctic High Seas (preliminary findings, including presentation of relevant parts of the HFO studies) – *K. Martinsen*
- 1400 - Accident Statistics (Preliminary findings) – *M. Eide*
- 1500 - Future Traffic projections (Preliminary findings) – *M. Eide*

THURSDAY JUNE 13

- 0900 - IMO measures applicable to the protection of the Arctic High Seas – *E. Kleverlaan*
- 1130 - Summary and the Way forward, including timeline for the AMSA II(D) study – *M. Eide*
- 1200 - End of Workshop



ANNEX II – LIST OF PARTICIPANTS

AMSA II(C)/AMSA II(D)-PSSA Bridging Workshop - Reykjavik, Iceland - June 12-13, 2013				
Last name	First name	Country	Organization	Email
Bjarnadottir	<i>Sesselja</i>	Iceland	Ministry for the Environment and Natural Resources	Sesselja.Bjarnadottir@umh.stjr.is
Eide	<i>Magnus S.</i>	Norway	Environment and Energy Efficiency	Magnus.Strandmyr.Eide@dnv.com
Elisenberg	<i>Anja</i>	Norway	Ministry of Environment	anja.elisenberg@md.dep.no
Fuglestad	<i>Jon L</i>	Norway	AMAP	jon.fuglestad@amap.no
Hansen	<i>Geir Hovik</i>	Norway	Norwegian Maritime Directorate	geir.hovikhansen@sjofartsdir.no
Gamble	<i>James</i>	USA	Aleut International Association (AIA)	aia@alaska.net
Gudmundsdottir	<i>Soffia</i>	Iceland	PAME International Secretariat	soffia@pame.is
Kleverlaan	<i>Edward</i>	UK		
Kroglund	<i>Marianne</i>	Norway	Climate and Pollution Agency	Marianne.Kroglund@klif.no
Langemyr	<i>Trond</i>	Norway	Norwegian Coastal Administration	trond.langemyr@kystverket.no
Larusson	<i>Kari</i>	Iceland	CAFF/Circumpolar Biodiversity Monitoring Program	kari@caff.is
Laughlin	<i>Tom</i>	USA	Expert	tomlaughlin3@verizon.net
Makinene	<i>Anita</i>	Finland	Finnish Transport Safety Agency	anita.makinen@trafi.fi
Martinsen	<i>Kjetil</i>	Norway	Environment and Energy Efficiency	Kjetil.Martinsen@dnv.com
Matishov	<i>Gennady</i>	Russia	SSC Russina Academy of Sciences	icd@ssc-ras.ru
McCammon	<i>Molly</i>	USA	Alaska Ocean Observing System	mccammon@aoos.org
McConnell	<i>Martha</i>		IUCN	martha.mccconnell@iucn.org
McLanahan	<i>Elizabeth</i>	USA	NOAA Office of International Affairs	elizabeth.McLanahan@noaa.gov
Mikhalyuk	<i>Roman</i>	Russia	SSC Russiana Academy of Sciences	roman151075@mail.ru
Mundy	<i>Phil</i>	USA	NOAA Auke Bay Laboratories	phhil.mundy@noaa.gov
Ofedal	<i>Sveinung</i>	Norway	Norwegian Ministry of the Environment	Sveinung.Ofedal@md.dep.no
Olafsson	<i>Hugi</i>	Iceland	Ministry for the Environment and Natural Resources	hugi.olafsson@umh.stjr.is
Palsdottir	<i>Olga</i>	Iceland	PAME International Secretariat	olga@caff.is
Prozorkevich	<i>Dmitry</i>	Russia	PINRO	dvp95@mail.ru
Quillfeldt	<i>Cecilie</i>	Norway	Norwegian Polar Institute	quillfeldt@npolar.no
Reppe	<i>Bjorn</i>	Norway	Norwegian Maritime Authority	Bjorn.Reppe@sjofartsdir.no
Sauve	<i>Renee</i>	Canada	Fisheries and Oceans Canada	Renee.Sauve@dfo-mpo.gc.ca
Skjoldal	<i>Hein Rune</i>	Norway	Norwegian Maritime Institute	hein.rune.skjoldal@imr.no
Sommerkorn	<i>Martin</i>	Norway	WWF	msommerkorn@wwf.no
Speer	<i>Lisa</i>	USA	Circumpolar Conservation Union - CCU	lspeer@nrdc.org
Stotis	<i>James</i>	USA	ICC Alaska	jimmy@iccalaska.org
White	<i>Andrea</i>	Canada	Environment and Biodiversity Branch	Andrea.White@dfo-mpo.gc.ca



Annex III IMO Measures for Area-Based Protection (PAME II-2012)

(From PAME II-2012 meeting - IMO measures by USA Norway, Finland, Canada, Russia, Denmark & Sweden)

Background

AMSA Recommendation II(D) provides that:

Arctic states should, taking into account the special characteristics of the Arctic marine environment, explore the need for internationally designated areas for the purpose of environmental protection in the regions of the Arctic Ocean. This could be done through the use of appropriate tools, such as ‘Special Areas’ or Particularly Sensitive Sea Areas (PSSA) designation through the International Maritime Organization (IMO) and consistent with the existing international legal framework for the Arctic.

While PAME Member Governments are awaiting finalization of the AMSA Recommendation II(C) report on areas of heightened ecological and cultural significance before more actively exploring the need for internationally designated areas for the purpose of environmental protection in regions of the Arctic Ocean through AMSA Recommendation II(D), the United States, Norway, Finland, Canada, the Russian Federation, Denmark and Sweden would like to provide information regarding measures available through the International Maritime Organization (IMO) to better inform PAME’s future consideration of projects to implement AMSA Recommendation II (D).⁴

International Maritime Organization (IMO) Shipping Measures

The IMO is the United Nations’ specialized agency responsible for the safety and security of shipping and the prevention of pollution from ships. Through a comprehensive body of international conventions, the IMO has developed numerous measures—both recommendatory and mandatory—that can be used to help protect the Arctic marine environment from negative effects caused by international shipping activities. These include, among others, the following:

I. Particularly Sensitive Sea Areas

A Particularly Sensitive Sea Area (PSSA) is an area of the marine environment that merits

special protection through action by the IMO because of its significance for recognized ecological, socio-economic, or scientific attributes where such attributes may be vulnerable to damage by international shipping activities. To date, the IMO has designated 13 PSSAs worldwide.⁵ In 2005, the IMO Assembly

⁴ This paper and the information it contains is without prejudice to the position that a PAME member government may take regarding any future proposal for IMO measures in the Arctic region or elsewhere.

⁵ The 13 PSSA designations include: Great Barrier Reef, Sabana-Camaguey Archipelago, Malpelo Islands, the sea area around the Florida Keys, Wadden Sea, Paracas National Reserve, Western European Waters, Torres Strait, Canary Islands, Galapagos Archipelago, Baltic Sea area, Papahānaumokuākea Marine National Monument, and the Strait of Bonifacio. *See Particularly Sensitive Sea Areas*, IMO, <http://www.imo.org/OurWork/Environment/>



adopted the *Revised Guidelines for the Identification and Designation of PSSAs (Revised PSSA Guidelines)*.⁶ The *Revised PSSA Guidelines* provide guidance to IMO Member Governments in the development, drafting, and submission of PSSA proposals, and provide the IMO with the assessment criteria for such proposals.⁷

A. Identifying a potential PSSA

The *Revised PSSA Guidelines* set forth detailed requirements that must be included in an application for PSSA designation. To be identified as a PSSA, three elements must be present: (1) the area must have certain attributes as identified by the *Revised PSSA Guidelines*; (2) the area must be vulnerable to damage by international shipping activities; and (3) there must be an associated protective measure with an identified legal basis that can be adopted by the IMO to prevent, reduce, or eliminate the identified vulnerability of the area.⁸

To satisfy the first required element above, the area must meet at least one of the following criteria: (1) ecological criteria such as uniqueness or rarity of an ecosystem, diversity of an ecosystem, or an ecosystem's vulnerability to degradation by natural events or human activity; (2) social, cultural and economic criteria such as the significance of the area for recreation and/or tourism; and (3) scientific and educational criteria such as the provision of baseline criteria for biota.

B. Process for the designation of PSSAs

An IMO Member Government may submit a PSSA application to the IMO's Marine Environment Protection Committee (MEPC), which meets approximately every eight months.⁹ It is important to note that a PSSA designation is not a stand-alone measure—it can only be achieved in connection with one or more associated protective measures (APM) that are to be, or have been, approved by the IMO. APMs are indispensable to a PSSA in that they “define the means by and the extent to which a PSSA is protected against environmental threats posed by international shipping.”¹⁰ Thus, any PSSA application must contain a proposal(s) for at least one APM that the IMO Member Government intends to submit to the appropriate IMO body. If APMs are already located within the area proposed for designation as a PSSA,¹¹ then the PSSA application must identify the threat of or actual damage being caused and show

Pollution Prevention/PSSAs/Pages/Default.aspx (last visited June 12, 2012).

⁶ See *Revised Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas*, adopted Dec. 1, 2005, IMO Resolution A.982(24) [hereinafter *Revised PSSA Guidelines*].

⁷ See also *Guidance Document for Submission of PSSA Proposals to IMO*, MEPC.1/Circ.510 (May 10, 2006) [hereinafter *PSSA Proposal Guidance Document*] (providing guidance to assist IMO Member Governments in meeting the requirements of the revised 2005 PSSA Guidelines, resolution A.982(24)).

⁸ See *id.* at 1.2.

⁹ Nothing would appear to preclude any IMO Member Government, regardless of whether they border the area of the High Seas included in the PSSA proposal, from submitting a PSSA proposal to MEPC. However, such a proposal is more likely to be favorably received if bordering States are co-sponsors.

¹⁰ Markus J. Kachel, *Particularly Sensitive Sea Areas: The IMO's Role in Protecting Vulnerable Marine Areas*, 13 HAMBURG STUDIES ON MARITIME AFFAIRS, 2008, at 1, 184-85.

¹¹ Protective measures may be established to protect an area in the absence of, or prior to, PSSA designation. See *Revised PSSA Guidelines*, *supra* note 3, at 7.2; see also *infra* at Section II, Other IMO Tools.



how the area is already being protected from such identified vulnerability by the existing APM. The MEPC will not make a final decision on PSSA designation until the accompanying APM(s) is considered and adopted by the Maritime Safety Committee (MSC). Once MSC adopts the APMs, MEPC will formally designate the area an official PSSA through a formal resolution.

II. Other IMO Measures (or Associated Protective Measures)

The IMO has developed an array of measures in addition to PSSAs that may be used to establish protections for the marine environment from international shipping activities. When IMO Member Governments pursue such measures in conjunction with a PSSA application, they are referred to as ‘associated protective measures.’ However, Member Governments may, alternatively, pursue such IMO measures independently—without a PSSA application—and, when doing so, must present such measure(s) to the appropriate IMO bodies for approval and/or amendment. Available measures fall into two general categories: (A) Navigational Aids (ships’ routeing systems and ship reporting systems); and (B) Discharge Restrictions (special areas and emission control areas). The following sections describe each of these categories.

A. Navigational Aids

i. Ships’ Routeing Systems

Regulation 10 of Chapter V of the *International Convention for the Safety of Life at Sea (SOLAS)*, as amended, provides for the establishment of ships’ routeing systems and recognizes the IMO as the only international body with the authority to develop guidelines, criteria, and regulations at the international level for ships routeing systems.¹² Ships’ routeing systems are systems of predetermined routes and corollary measures that are “recommended for use by, and may be made mandatory for, all ships, certain categories of ships or ships carrying certain cargoes when adopted and implemented in accordance with the guidelines and criteria developed by the [IMO]” and are designed to “contribute to the safety of life at sea, safety and efficiency of navigation, and/or protection of the marine environment.”¹³ The *General Provisions on Ships’ Routeing*¹⁴ recognize the following measures as ships’ routeing systems:

1. Area To Be Avoided

¹² See *International Convention for the Safety of Life at Sea*, Nov. 1, 1974, 1184 U.N.T.S. 2, ch. V, reg. 10. [hereinafter SOLAS].

¹³ *Id.* ch. V, reg. 10, para. 1.

¹⁴ *General Provisions on Ships’ Routeing*, adopted Nov. 20, 1985, IMO Resolution A.572(14), as amended [hereinafter *Ships’ Routeing*].



An Area to be Avoided (ATBA) is an area within defined limits that should be avoided by all ships or certain classes of ships, in which navigation is particularly hazardous or in which it is exceptionally important to avoid casualties.¹⁵ In general, ATBAs should be established only in places where:

- inadequate survey or insufficient provision of aids to navigation may lead to danger of stranding;
- where local knowledge is considered essential for safe passage;
- where there is the possibility that unacceptable damage to the environment could result from a casualty; or
- where there might be hazard to a vital aid to navigation.

2. No-Anchoring Area

A No-Anchoring Area is an area “within defined limits where anchoring is hazardous or could result in unacceptable damage to the marine environment. Anchoring in a no-anchoring area should be avoided by all ships or certain classes of ships, except in cases of immediate danger to the ship or the persons onboard.”¹⁶

3. Traffic Separation Scheme

A Traffic Separation Scheme separates opposing streams of vessel traffic, and segregates inshore traffic, by appropriate means—for example, separations lines or zones—and by the establishment of traffic lanes.¹⁷ Additional lanes may be provided within a traffic separation scheme for ships carrying hazardous liquid substances in bulk, as specified by the *International Convention for the Prevention of Marine Pollution from Ships* (“MARPOL”).¹⁸

4. Recommended Track

A Recommended Track is a “route that has been specially examined to ensure so far as possible that it is free of dangers and along which ships are advised to navigate.”¹⁹

5. Two-Way Route

A Two-Way Route is a “route within defined limits inside which two-way traffic is established, aimed at providing safe passage of ships through waters where navigation is difficult or dangerous.”²⁰

¹⁵ *Id.* at 2.1.13.

¹⁶ *See id.* at 2.1.14; *see also id.* at 5.6 (providing guidance on the planning of No-Anchoring Areas).

¹⁷ *See id.* at 2.1.3, 6.8-6.11.

¹⁸ *International Convention for the Prevention of Marine Pollution from Ships*, Nov. 2, 1973, 1340 U.N.T.S. 184, *as modified by Protocol*, Feb. 17, 1978, 1340 U.N.T.S. 61 [hereinafter MARPOL 73/78].

¹⁹ *Ships' Routing*, *supra* note 11, at 2.1.10.



6. Inshore Traffic Zone

An Inshore Traffic Zone is a “routeing measure comprising a designated area between the landward boundary of a traffic separation scheme and the adjacent coast, to be used in accordance with the provisions of Rule 10(d), as amended, of the *International Regulations for Preventing Collisions at Sea, 1972* [COLREGS].”²¹

7. Roundabout

A Roundabout is a “routeing measure comprising a separation point or circular separation zone and a circular traffic lane within defined limits. Traffic within the roundabout is separated by moving in a counterclockwise direction around the separation point or zone.”²²

8. Precautionary Area

A Precautionary Area is a “routeing measure comprising an area within defined limits where ships must navigate with particular caution and within which the direction of traffic flow may be recommended.”²³

9. Deep-Water Route

A Deep-Water Route is a “route within defined limits which has been accurately surveyed for clearance of sea bottom and submerged obstacles as indicated on the chart.”²⁴

ii. Ship Reporting Systems

Ship reporting systems (SRSs) are designed to provide coastal States with notice of the presence of all or specified categories of ships within a specific zone of adjacent waters.²⁵ In general, SRSs increase knowledge of ship movements and can facilitate a timely response to any developing maritime emergency. A SRS will provide for covered ships to report the vessel name, radio call sign, position, course, and speed to a shore-based authority and such authority should have the capability of interaction with such vessels. Regulation 11 of SOLAS, as amended, provides for the establishment of ship reporting systems and recognizes the IMO as the only international body for developing guidelines, criteria, and regulations on an international level for SRSs.²⁶ The IMO *SRS Guidelines* set forth guidelines

²⁰ *Id.* at 2.1.8.

²¹ *Id.* at 2.1.7 (emphasis added).

²² *Id.* at 2.1.6.

²³ *Id.* at 2.1.12.

²⁴ *Id.* at 2.1.11.

²⁵ JULIAN ROBERTS, MARINE ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION: THE APPLICATION AND FUTURE DEVELOPMENT OF THE IMO’S PARTICULARLY SENSITIVE SEA AREA CONCEPT 129 (2007).

²⁶ See SOLAS, *supra* note 8, ch. V, reg. 11.



for voluntary systems as well as the criteria for the development of mandatory systems²⁷ for “all ships, certain categories of ships or ships carrying certain cargoes.”²⁸

B. Discharge Restrictions

i. Special Areas

The International Convention for the Prevention of Pollution from Ships (“MARPOL”) provides for the designation of particular areas of the ocean as “special areas.” Although MARPOL has six annexes that address marine pollution from the discharge or emission of harmful substances, special area designation is only available under Annex I (oil), Annex II (noxious liquid substances in bulk), Annex IV (sewage), and Annex V (garbage).²⁹ A special area is defined as “a sea area where for recognised technical reasons in relation to its oceanographical and ecological conditions and to the particular character of its traffic, the adoption of special mandatory methods for the prevention of sea pollution by oil, noxious liquid substances, sewage, or garbage, as applicable, is required.”³⁰

In 2002, the IMO Assembly adopted the *Guidelines for the Designation of Special Areas under MARPOL 73/78 (Special Area Guidelines)*,³¹ which provide guidance to MARPOL Contracting Parties in the formulation and submission of applications for the designation of Special Areas. To obtain special area designation, a proposing government must show that the area requires a higher level of protection from ship-generated pollution than other areas, and that basic MARPOL requirements do not provide adequate protection for the identified area. A special area may encompass or straddle the maritime zones of two or more States, or even an entire enclosed or semi-enclosed marine area.

Designation of special areas is to be made on the basis of three criteria: (1) oceanographic conditions; (2) ecological conditions; and (3) vessel traffic characteristics. The first criterion, oceanographic conditions, determines whether the conditions of the area may cause harmful substances to be concentrated or retained in the waters and/or sediments of the area—including circulation patterns or stratifications (salinity or temperature), low flushing rates leading to long residence time, extreme ice state, or adverse wind conditions. The second criterion considers whether ecological conditions indicate the need to protect the area from harmful substances in order to preserve certain area resources—including endangered marine species, areas of high natural productivity, migratory routes for sea birds,

²⁷ See *Guidelines and Criteria for Ship Reporting Systems*, adopted Dec. 9 1994, IMO Resolution MSC.43(64) [hereinafter *SRS Guidelines*].

²⁸ SOLAS, *supra* note 9, ch. V, reg. 11, para. 1.

²⁹ See Report of the Marine Environment Protection Committee on its Sixty-Third Session, approved Mar. 14, 2012, IMO MEPC 63/23/Add.1, annex 27 [hereinafter *2013 Special Area Guidelines*].

³⁰ *Id.* at 2.1.

³¹ See *Guidelines for the Designation of Special Areas Under MARPOL 73/78 and Guidelines for the Identification and Designation of Particularly Sensitive Sea Areas*, adopted Jan. 15 2002, IMO Resolution A.927(22), annex I [hereinafter *Special Area Guidelines*]. MEPC 63 approved revised Guidelines for Special Areas in 2012. See *2013 Special Area Guidelines*, *supra* note 26.



and critical habitats for fish stocks. The last of the three criteria, vessel traffic characteristics, asks whether the vessel traffic of the area is such that MARPOL requirements for areas other than special areas would be insufficient to control the discharge of harmful substances by ships given the oceanographic and ecological conditions of the area. Information on the availability of adequate reception facilities in the proposed Special Area is also taken into consideration in the review of a Special Area proposal as adequate port waste reception facilities are one of the necessary preconditions for bringing into effect Special Areas adopted by the IMO.

Unlike PSSA designation, Special Area designation is effected through an amendment to the respective MARPOL Annex. A MARPOL Contracting Party(ies) may submit to MEPC, for its consideration, a proposal to designate a given sea area as a Special Area.³² The Special Area proposal should contain a draft amendment to MARPOL 73/78 as the formal basis for designation, and a background document setting forth all the relevant information to demonstrate that the area fulfills the criteria put forth in the *Special Area Guidelines*. “The formal amendment procedure applicable to proposals for the designation of Special Areas is set out in article 16 of MARPOL 73/78.”³³

ii. Emission Control Areas

MARPOL Annex VI provides for the designation of Emission Control Areas (ECA): areas where the adoption of special mandatory measures for emissions from ships is required to prevent, reduce, and control air pollution from nitrogen oxides (NO_x), or sulphur oxides (SO_x) and particulate matter, or all three types of emissions.³⁴ ECAs are designed to prevent, reduce, and control air pollution from ship emissions as well as adverse impacts on land and sea areas, as well as human health, caused by such emissions. MARPOL Annex VI imposes a global, and gradually declining, cap on sulphur content in fuel used onboard any ship³⁵ as well as a significantly lower cap for ships operating within a designated ECA.³⁶ An alternative to the low-sulphur fuel requirement is the use of an exhaust gas cleaning system or other technological methods that equivalently limit SO_x emissions within an ECA. Annex VI similarly imposes caps on nitrogen emissions and particulate matter, with more stringent standards in designated ECAs, and prohibits any deliberate emission of ozone-depleting substances

Appendix III to MARPOL Annex VI provides a list of criteria that must be fulfilled in order to obtain ECA designation. Criteria include such things as information pertinent to the meteorological conditions of the area, the nature of the ship traffic, and assessment of the types of pollutants from ships operating in the area.

³² *Id.* at 3.1.

³³ *Id.* at 3.4; *see also* MARPOL 73/78, *supra* note 14, art. 16.

³⁴ *See* MARPOL 73/78, *supra* note 14, annex VI, reg. 2, para. 8.

³⁵ The global cap on sulphur content in onboard fuel was originally set at 4.5%, was reduced to 3.5%, effective January 1, 2012, and is set to be reduced to 0.5% in 2020. *See id.* annex VI, reg. 14.

³⁶ The current global cap on sulphur content in onboard fuel for vessels operating within an ECA is set at 1.0% and is set to be lowered to 0.1% in January of 2015. *See id.*



Similar to a Special Area designation, the designation of an ECA is effected through an amendment to MARPOL Annex VI. A Contracting Party(ies) to Annex VI may submit an ECA designation proposal to the IMO for its consideration.³⁷ “The formal amendment procedure applicable to proposals for the designation of ECAs is set out in article 16 of MARPOL 73/78.”³⁸ To date, the IMO has agreed to four proposals submitted pursuant to this provision, establishing two Sulfur Emission Control Areas in the Baltic Sea and the North Sea and English Channel, and two Emission Control Areas in North America and the U.S. Caribbean waters around Puerto Rico and the U.S. Virgin Islands.^{39,40}

Summary

As noted, AMSA Recommendation II(D) calls on PAME Member Governments to explore internationally designated areas through the IMO in order to protect the environment from shipping in the Arctic Ocean. This paper serves to provide background information on the measures available at the IMO to better inform PAME’s future discussions and recommendations regarding the need for enhanced protection for one or more areas of the high seas within the Arctic marine environment consistent with international law.

- o0o -

³⁷ MARPOL 73/78, *supra* note 14, annex VI, app. III, para. 2.2.

³⁸ *Id.* para. 4.3.

³⁹ *North American emission control area comes into effect on 1 August 2012*, <http://www.imo.org/MediaCentre/PressBriefings/Pages/28-eca.aspx>.

⁴⁰ Further information is available from the U.S. Environmental Protection Agency’s website for Ocean Vessels and Large Ships: <http://www.epa.gov/otaq/oceanvessels.htm#north-american> and <http://www.epa.gov/otaq/regs/nonroad/marine/ci/420f11024.pdf>.