

# AOR

**REPORT FROM THE AOR EXPERT WORKSHOP  
IN SUPPORT OF THE AOR PHASE II REPORT  
HALIFAX, CANADA  
17-18 SEPTEMBER 2012**



## **Acknowledgements**

### **Lead countries**

Canada, Iceland, Norway, United States and the Russian Federation.

### **Acknowledgement of funding and support**

Acknowledgement is hereby recognized for both financial and in-kind support as provided by the lead countries and the Nordic Council of Ministers. Appreciation is conveyed to all PAME countries, other Arctic Council Working Groups, Permanent Participants of the Arctic Council and invited experts for their support and contributions to this workshop.



# Report from the AOR Expert Workshop in Support of the AOR Phase II Report

---

**Halifax, Canada - 17-18 September 2012**

# Table of Contents

<b>CONTEXT AND OBJECTIVES .....</b>	<b>1</b>
<b>THEMATIC SESSIONS AND DISCUSSIONS .....</b>	<b>2</b>
<i>SESSION I: LIVING MARINE RESOURCES.....</i>	<i>2</i>
Chapter Overview: Fisheries .....	2
Chapter Overview: Cetaceans .....	3
Chapter Overview: Seabirds and Seals .....	3
Moderator Comments.....	4
Summary of Plenary Discussions.....	4
<i>SESSION II: ARCTIC OFFSHORE OIL AND GAS.....</i>	<i>6</i>
Chapter Overview .....	6
Moderator Comments.....	6
Summary of Plenary Discussions.....	6
<i>SESSION III: ARCTIC MARINE POLLUTION .....</i>	<i>8</i>
Chapter Overview .....	8
Moderator Comments.....	9
Summary of Plenary Discussions.....	9
<i>SESSION IV: PEOPLE AND CULTURES .....</i>	<i>10</i>
Chapter Overview .....	10
Moderator Comments.....	10
Summary of Plenary Discussions.....	10
<i>SESSION V: ARCTIC MARINE OPERATIONS AND SHIPPING .....</i>	<i>11</i>
Chapter Overview .....	11
Moderator Comments.....	11
Summary of Plenary Discussions.....	11
<i>SESSION VI: ECOSYSTEM BASED MANAGEMENT (EBM).....</i>	<i>12</i>
Chapter Overview .....	12
Moderator Comments.....	12
Summary of Plenary Discussions.....	13
<i>SESSION VII: ARCTIC MARINE SCIENCE.....</i>	<i>13</i>
Chapter Overview .....	14
Moderator Comments.....	14
Summary of Discussions.....	14
<b>NEXT STEPS .....</b>	<b>15</b>
<b>ANNEX I – LIST OF PARTICIPANTS .....</b>	<b>16</b>
<b>ANNEX II – AOR WORKSHOP AGENDA .....</b>	<b>20</b>

## Context and Objectives

This workshop represents the 3<sup>rd</sup> Expert Workshop in support of the Arctic Ocean Review (AOR) project<sup>1</sup> which was hosted by the PAME Secretariat at the facilities of the Delta Hotel in Halifax, Canada from 17-18 September (back-to-back with the PAME II-2012 meeting 18-20 September) in support of the development of the AOR Phase II Final Report which will be submitted to the 2013 Arctic Council Ministerial for approval.

Building from the outcomes of AOR Phase I Report, previous AOR workshops and intercessional work during AOR Phase II, the main objective of this workshop was to contribute to the AOR Final Report by focusing on the following:

- ✓ Review the first consolidated draft and provide an opportunity for broad stakeholder input,
- ✓ Prioritize the long list of opportunities/recommendations that chapter authors identified: and,
- ✓ Identify any opportunities that may have been overlooked and take account of comments on the structure and flow of the Report.

The workshop was attended by around 60 participants, representing the Arctic Council member states, permanent participants, observers, AOR chapter authors, AOR lead authors, academia and other invited experts. The workshop was co-chaired by Ms. Renée Sauv /Canada and Ms. Elizabeth McLanahan/USA and moderated by three former PAME Chairs, Mr. John Karau, Mr. Tom Laughlin and Mr. Chris Cuddy.

This report summarizes each of the presentations made by the chapter authors, the moderators, and the subsequent discussions and does not necessarily reflect the views or a consensus of all participants. Each thematic session presentation represents the expert opinion of the respective chapter author and no attempt is made to resolve any contrasting opinions between presenters or participants, but rather to record the range of views discussed, including those that may be outside of the Terms of Reference for the AOR project, for possible further consideration by the Arctic Council, as relevant.

**The overall objective of the Arctic Ocean Review (AOR) is to provide guidance to Arctic Council Ministers on strengthening governance in the Arctic through a cooperative, coordinated, and integrated approach to the management of Arctic marine environment. The AOR will also play an important role in demonstrating Arctic States' stewardship efforts in the Arctic. The AOR will not initiate a new assessment, but produce a report on existing global and regional instruments (both binding and nonbinding) and arrangements relevant to the conservation and sustainable use of the Arctic marine environment.**

**The AOR Phase I Report (2009-2011) surveyed the existing relevant instruments and arrangements.**

**The AOR Phase II Report (2011-2013) represents the analytical phase of this project, and will identify opportunities to strengthen existing instruments and move toward the cooperative, integrated approach to management.**

---

<sup>1</sup> Previous AOR Workshop Summary reports i.e AOR Phase I Summary Workshop Report (Sep 2010) and AOR Phase II Summary Workshop Report (Sep 2011) can be accessed on the PAME homepage at [www.pame.is](http://www.pame.is) under the "AOR" icon.

## Thematic Sessions and Discussions

The workshop was organized into the following six thematic sessions as per the draft AOR Phase II Chapters<sup>2</sup>:

- Session I. Living Marine Resources
- Session II: Arctic Offshore Oil and Gas
- Session III: Arctic Marine Pollution
- Session IV: People and Cultures
- Session V: Arctic Marine Operations and Shipping
- Session VI: Ecosystem Based Management
- Session VII: Arctic Marine Science

Each thematic session started with summaries from respective chapter authors followed by targeted views/questions by the moderators, and concluded by plenary discussions by workshop participants with a focus on opportunities and recommendations to strengthen global and regional instruments and measures relevant to the conservation and sustainable use of the Arctic marine environment.

### ***Session I. Living Marine Resources***

---

This session focused on the trends related to the living marine resources, the main environmental pressures, relationship to humans, and potential options and opportunities to strengthen the management of fishing resources. This session was divided into the following presentations:

- ✓ Fisheries Resources – Ted McDorman
- ✓ Cetaceans – Ted McDorman (on behalf of Allison Reed)
- ✓ Seabirds/Seals/Polar Bears – Tony Gaston

Session I Moderators: Tom Laughlin and John Karau

#### **Chapter Overview: Fisheries**

*Presentation by: Ted L. McDorman, Professor, Faculty of Law, University of Victoria, Victoria, B.C.*

There is little known about the existence of fish stocks or the potential for the existence of fisheries resources in large parts of the central Arctic Ocean and at present, there is no significant commercial fishing taking place within the central Arctic Ocean.

---

<sup>2</sup> The first (1.0) Consolidated Draft AOR Phase II Report (version 31<sup>st</sup> of Aug 2012) is the version is attached. This draft includes possible opportunities for strengthening existing instruments and provides initial directions for states to consider as they develop recommendations. This draft represents the first consolidated submission from the AOR chapter, contributing and lead authors and has neither gone through an intergovernmental review process by the Arctic Council member states nor does it necessarily represent the views of the co-lead countries (Canada, Iceland, Norway, Russia and USA).

With respect to fisheries in the central Arctic Ocean and other Arctic marine areas, the challenge is several fold. There is a need to emphasize that there is a lack of sufficient scientific information to support the notion of marine living resources and the lack of scientific assessments concerning the effects of fishing in an Arctic ecosystem which is often characterized by low productivity. While opportunities may exist for access to Arctic fisheries, the safety of fishing vessels and the possibility of marine environmental pollution in uncertain and changing ice conditions is of concern.

Arctic fisheries resources and their management by Arctic states currently face a few challenges. Primarily, the question of when, if ever, there might there be an abundance of fishery resources in the central Arctic Ocean. The existing degree of scientific knowledge cannot explicitly answer this question for policy makers. Should there be an abundance of fisheries resources, what is the best approach to ensure that future possible commercial fishing activity is undertaken in manner that is consistent with the international legal regime of the law of the sea, the interests of conservation, environmental protection, economic development and global food needs?

The Arctic Council is not the appropriate body to govern a fisheries resource as it has no legislative or legal authority to regulate or direct its participating Arctic states to undertake particular actions or to adopt particular policies respecting fisheries.

### **Chapter Overview: Cetaceans**

*Presentation by: Ted L. McDorman (on behalf of Alison Reed)*

In terms of whaling resources, Arctic whale populations considered “Threatened” were primarily depleted by historic whaling practices. Recognizing the state of global whale populations, in 1982 the International Whaling Commission (IWC) instituted a “pause” in commercial whaling that still exists. This “pause” allows for whaling quotas for aboriginal subsistence and also member nations may issue “Scientific Permits” to their citizens. The IWC is also one of the few international bodies to address subsistence interests, and has done so since 1948. Within the Arctic Council member states, Norway and Iceland established their own catch limits and Russia as a member of the IWC does not object to whaling. There could be increased collaboration within the IWC among Arctic states.

With respect to other international arrangements, the Convention on International Trade on Endangered Species of Flora and Fauna (CITES) deals only with international trade, and its 1979 resolution calls for CITES members to honor IWC restrictions. For the United Nations Convention on the Law of the Sea (UNCLOS), there is little mention of whaling, but there is a noted obligation for states to engage in management activities and collaborate with other states. Another example of existing international arrangements is the Memorandum of Understanding between Canada and Denmark regarding the management of Narwhal.

The Arctic Council could be more proactive in addressing the conservation threats of climate change, oil and gas, shipping and pollution. A proactive approach could be to develop a ship strike database for whales, and the Arctic Council could benefit from mapping the density of species populations and distribution.

### **Chapter Overview: Seabirds and Seals**

*Presentation by: Tony Gaston*

Seabirds and seals are most diverse in polar and sub-polar regions with many unique Arctic species of which many have adapted to the sea ice environment (i.e. ice-dependant species)

These ice dependant species may be affected by the decline in Arctic sea ice.

Birdlife international has identified several major seabird colonies/concentrations (“hotspots”) throughout the gateways to the Arctic Ocean. (Bering Strait, Lancaster Sound). These regions are being identified through the advancements in technology and have provided a greater understanding of Arctic biology and population aggregations. Seabirds concentrate in certain marine areas on migration and during winter which is the season where they highly vulnerable to oil pollution.

The threats to seabirds and seals are generally as a result of disturbances (breeding, oiling, and food supplies), climate change, and disruptions to its food supplies and the marine food web. Mitigation of these threats to could be administered through the continued regulation of subsistence and commercial harvests, protection of whelping (for seals)/breeding (for seabirds) sites from all disturbance/pollution and mitigation measures for disturbance at sea.

### **Moderator Comments**

The Arctic Council, as it is currently constructed, is unsuitable for managing a Regional Fisheries Management Organization (RFMO) but could consider making certain recommendations to the relevant RFMOs. Consideration should be made for the grouping of arrangements, and states could package a suite of institutional mechanisms. There is also a need to identify and conserve areas concerns through national laws, international conventions, the International Maritime Organization (IMO), World Heritage sites, and the Convention on Biological Diversity.

Arctic states need to proactively approach fisheries issues because it is easier to stop people from initiating activity than it is to remove or halt activities already implemented.

Consideration should be made by all Arctic states towards a precautionary approach to fisheries management and applying mechanisms such as a moratorium. A collective cooperative statement could be developed by the Arctic Council for the 2015 Ministerial meeting to demonstrate that the Arctic states know the issues, implement actions, and are unified in their approach to resource management.

### **Summary of Plenary Discussions**

#### **Seabirds**

- ✓ The section on seabirds should consider including various species of ducks and eiders, as vast populations of these seabirds have been identified in the Bering Sea.

#### **Conservation and Protection**

- ✓ Some participants felt that a further discussion on recommendations regarding the conservation and protection of species through all available methods is needed. This could mean that Arctic states engage in bilateral, multilateral, domestic, and more coordinated approaches to conserving and protecting ecologically significant areas.
- ✓ There is a need to identify adaptation strategies for the Arctic region and its inhabitants, with a focus on what to conserve and what is conservable. These adaptation strategies could also be developed with the intent of incorporating them into management strategies.
- ✓ There is a need to capture Bio-prospecting and its effect on the Arctic.



- ✓ Regarding the cetaceans section, participants noted that there authors should consider assessing potential conservation synergies between the International Whaling Commission (IWC) and the International Maritime Organization (IMO).
- ✓ Involvement of Arctic indigenous peoples and residents is crucial, especially in the case of marine mammals. It is very important for Arctic states to include indigenous peoples in the development the cooperation and co-management strategies for these resources.

### **Fisheries Resources**

- ✓ The lack of knowledge on fish populations in the Central Arctic Ocean was raised and remark was made that this information gap does not imply that fish stocks do not exist in the Arctic. The limited knowledge of Arctic fisheries resources illustrates the need for Arctic states to engage in Arctic fisheries research in light of changing Arctic Ocean accessibility.
- ✓ The Arctic Ocean is an ecosystem of low productivity, where brackish layers within the Arctic Ocean causes stratification and prevents ecosystem development found in other regions of the globe. There are a number of ecological factors which cause unsuitable conditions for major fisheries in the Central Arctic Ocean.
- ✓ There needs to be a considerable investment in scientific research on fish stocks, as they play an important role in understanding how the Arctic marine ecosystem functions.
- ✓ Understanding the sensitivity of Arctic marine ecosystems to change, Arctic states could consider strengthening the coordination and monitoring the state of fisheries resources.
- ✓ There is a clear opportunity for treaty based body that could conduct research on ongoing basis, enable information sharing, and potentially recommend a moratorium on Central Arctic Ocean fisheries.

### **Arctic Council**

- ✓ In terms of recommendations for Arctic Council Ministers, there are some clear linkages between the recommendations within living marine resources chapter and the Arctic Biodiversity Assessment led by the Conservation of Arctic Flora and Fauna (CAFF) working group.
- ✓ When assessing the recommendations for Arctic Council Ministers, it is important to clearly identify specific priorities for the next 2 to 3 years, instead of producing an unmanageable list of priorities.
- ✓ The Arctic states could consider establishing a committee/task force with the aim of developing a shared understanding and state of fisheries research in the Arctic.

## ***Session II: Arctic Offshore Oil and Gas***

---

This session discussed existing and emerging issues of Arctic offshore oil and gas activities, the principals which should apply to these activities, the role of the Arctic Council, and potential for strengthening future agreements and measures.

Session II moderator: Chris Cuddy

### **Chapter Overview**

*Presentation by: Betsy Baker, Associate Professor and Senior Fellow for Oceans and Energy, Institute for Energy and the Environment, Vermont Law School*

Oil and gas activities are a dominant concern in many parts of Arctic and in particular, the consequences of these activities on the Arctic marine environment and Arctic inhabitants. Should the Arctic Council look to address the risks and associated responses for oil and gas activities, there could be some overlap with similar responses to shipping sector activity. In terms of geographic jurisdiction, the regulation of oil and gas activities is managed at the State level. For oil and gas activity in the Central Arctic Ocean, the Arctic Council could serve as a node for treaty interaction.

To address the risks and associated responses for oil and gas activities, the following principals should still apply:

- ✓ Precautionary approach
- ✓ Polluter pays
- ✓ Continuous improvement
- ✓ Sustainable development (numerous concepts)

### **Moderator Comments**

Many of the risks associated with oil and gas activities in the Arctic will occur in the offshore areas and may have circumpolar consequences. Oil and gas activity is increasing in some areas of the Arctic and so is the awareness of the risk of expanding exploration and extraction activities. It is important for the AOR to clearly identify the drivers for action by the Arctic states. Within international mechanisms, UNCLOS could act as a political driver by providing the opportunity to leverage activities by furthering action at a regional level. The regional effort to determine the limits of the “extended” continental shelf is a good example of an opportunity to leverage UNCLOS. Further reduction of the risks from offshore oil and gas activities could be attained through enhancing the ability of Arctic states and industry to share information.

### **Summary of Plenary Discussions**

#### **Research**

- ✓ There are many cooperative research activities across industry, which is inclined to work jointly in this region. This could be leveraged by encouraging Arctic state and Industry cooperative information sharing and Arctic research investments.
- ✓ Several participants questioned the extent of reporting requirements from State to State, and whether the Arctic Council should begin a process to identify where Arctic states need to improve reporting requirements by working with policy developers and regulators.

## **Arctic Council**

- ✓ The outcomes from the Marine Oil Spill Preparedness and Response Task Force should be addressed by the Arctic Council, including compensation and liability.
- ✓ The Arctic Council could explore what advantages can be made by coordinating with The Convention for the Protection of the marine Environment of the North-East Atlantic (OSPAR).
- ✓ There is a need for improving institutional cooperation among Arctic Council working groups and task forces.
- ✓ A matrix should be developed in an effort to verify the extent of Arctic Offshore Oil and Gas Guidelines compliance by Arctic states.
- ✓ Arctic Council could consider beginning the process (e.g. by a task force) to develop standards or the harmonization of standards for oil and gas operations.
- ✓ There is a potential for harmonization between jurisdictions with no major gaps in regulation. International standards, whether voluntary or eventually mandatory, collaboratively decide on their extent in the Arctic through technological best practices and in regulatory regimes. Arctic states need to ensure that infrastructure is in place to account for the growth within the offshore oil and gas sector, possibly through institutional application of ecosystem based management.
- ✓ The objective of the Barents 2020 project was mentioned which recommends standards for oil and gas activities in the Barents Sea to ensure that the safety level is at least as good as in the North Sea. Industry was a major driver of this project, especially in the Russian Federation and Norway. How can the Arctic Council promote a rollout of the Barents 2020 results in other Arctic states?

## **Drivers**

- ✓ Each Arctic state belongs to a number of international agreements that call on them to enhance cooperation in oil and gas operations.
- ✓ The Deepwater Horizon Oil Spill Commission has three recommendations of relevance to the Arctic:
  - 1 There is a need for more research into Arctic ecosystems so that decision makers have better information and science investment.
  - 2 Better oil spill prevention, response and containment.
  - 3 Need for international standards for Oil and Gas activities in the Arctic.

## **General comments**

- ✓ Oil and gas is the largest activity for many people inhabiting the north, and is a very important topic for the economies of northern communities.
- ✓ Oil and gas operations in the Arctic are conditional upon shipping activity, which can be managed through enhancements in monitoring and surveillance. At present, there are thousands of transits by oil and gas shipping operations, all of which are monitored and share data on ships and Mobile Offshore Drilling Units (MODUs). This chapter should look for linkages with the chapter on Arctic Marine Operations and Shipping.
- ✓ Technological advances are unbalanced between Arctic states, which indicate a need to improve information sharing, development of common objectives to reducing risks,

and adapting the culture of oil and gas operations to account for health and safety concerns. Session III: Arctic Marine Pollution

This session addressed issues concerning “legacy” and unlisted chemicals of high concern for the Arctic, the existing international arrangements, the consequences of pollutants on Arctic inhabitants, and approaches for the Arctic Council to consider.

Session III moderator: John Karau.

## Chapter Overview

*Presentation by: David VanderZwaag, Professor of Law, Marine & Environmental Law Institute, Dalhousie University*

The effects of global pollution are magnified in the Arctic such that its ecosystems and people are often the first to feel adverse impacts – often compared with the “canary in the coal mine”. Priority pollution issues over the past 20 years include: Persistent Organic Pollutants (POPs), radionuclides, mercury and other heavy metals, acidifying substances, petroleum hydrocarbons, greenhouse gases and other climate forcing substances such as black carbon and aerosols.

Many of the problems of pollution in the Arctic are related to “legacy” pollutants. If the Arctic Council elects to take a leading role in addressing these “legacy” pollutants, priority should be focused on the issues surrounding Persistent Organic Pollutants (POPs). Current legal regimes for POPs consist of a fragmented system which targets specific chemicals, and not the introduction of chemicals and its influence on the environment. For instance, the effects of legacy POPs on apex predators has yet to be determined. Other gaps in legal regimes include the lack of adequate legal measures on greenhouse gases and the need for states to ratify the Stockholm convention. As a priority, Arctic states could encourage proactive approaches to toxic chemicals management in addition to precautionary approaches. Arctic states could also look to expedite risk assessment and listing consideration for chemicals of high concern for the Arctic. Since many of the sources of Arctic pollutants are from outside the region, Arctic states could make an international call for a new global chemicals convention with strong precautionary provisions, such as:

- ✓ Reverse listing approach for new chemicals through a global safe list.
- ✓ Require registering of exiting chemicals on global registry.
- ✓ Mandatory submission of chemical data prior to market access.

Other options for the Arctic Council to deal with Arctic pollution issues could be to strengthen the Council’s Regional Programme of Action for the Protection of the Arctic Marine Environment from Land-based Activities (Arctic RPA) by broadening its objectives and establishing support instruments. Arctic states may also elect to domestically implement the European Union’s “REACH”<sup>3</sup> regulation for improved and early identification of the intrinsic properties of chemical substances. Consideration could also be made to establish a task force or an expert group to address toxic chemicals of concern in the Arctic marine environment.

---

<sup>3</sup> REACH is the Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals. It entered into force on 1st June 2007. It streamlines and improves the former legislative framework on chemicals of the European Union (EU).

## **Moderator Comments**

This chapter seems to indicate a need to address international instruments in an more integrated manner, rather than just through sectoral lenses. One of the more practical opportunities for Arctic states would be to look at integrating chemical information within legal regimes or by piggy backing on existing initiatives. The Arctic Council could consider taking a leadership role in addressing how this might be achieved, and if this has been successful in the past.

## **Summary of Plenary Discussions**

### **International arrangements**

- ✓ In the case of POPs, consideration could be made to establishing a task force to look at the European Union's "REACH" models for implementation throughout the Arctic states.
- ✓ Arctic states should pursue the ratification of the Stockholm Convention on POPs, upcoming Mercury Agreement, in addition to addressing the issue of short lived climate forcers (SLCF) and black carbon.
- ✓ An emphasis on a SLCF Agreement is needed, with the Arctic Council potentially playing a leading role.
- ✓ Arctic states could also be encouraged to join the Climate and Clean Air Coalition.

### **Human Dimension**

- ✓ Participants reiterated the idea throughout the discussion that pollution in the Arctic is not a case of history, but present in the Arctic. As such, the Arctic Council should look to emphasize and apply ethical, human rights considerations to pollution management.
- ✓ Mercury pollution continues to be a major factor in the health of Arctic inhabitants, and needs to be expressed in terms of the implications on humans.

### **Arctic Council**

- ✓ The issue of Arctic pollution is complex, but the Arctic Council should consider the designation of one assessment and monitoring program. This will focus the efforts of a limited capacity of subject matter experts towards common objectives.
- ✓ An expert group could be established with the mandate of identifying toxic chemicals of relevance to the Arctic marine environment, including the reduction and containment of chemical releases from activities.
- ✓ The implication of chemical pollutants on the marine environment needs to be highlighted with respect to key drivers and explicit description of triggers for new actions.
- ✓ Improvements are needed regarding the coordination and monitoring of pollutants; and the dissemination or accessibility of pollution related data.
- ✓ Arctic Council Ministers may have some challenges to link the AOR recommendations to the Arctic Monitoring and Assessment Program (AMAP) objectives.
- ✓ There should be a transition from science based decision making processes to ethics-based decision making.

## ***Session IV: People and Cultures***

---

This session discussed ways on how the Arctic Council can improve the depth of Traditional Ecological Knowledge (TEK) available for domestic and international initiatives, were existing initiatives could benefit from enhanced participation of Permanent Participants and the need for a methodology to access and acquire TEK.

Session IV moderator: Tom Laughlin

### **Chapter Overview**

*Presentation by: Bernie Funston (on behalf of Henry Huntington), President, Northern Canada Consulting*

The Arctic Council has historically directed its attention to Arctic meta-issues (shipping, oil and gas) which sometimes has overwhelmed the much need focus towards the human dimension. As the Council transitions towards policy development initiatives, the assessments conducted since its establishment should be complemented with research on the drivers affecting the human environment. This would entail incorporating an initiative relevance to communities, describing the role of indigenous peoples, and the factors affecting northern communities.

### **Moderator Comments**

In order to appropriately convey the influence that Arctic activities have on Arctic communities, the Arctic Council should expand and clarify its terminology to describe traditional ecological knowledge and aspects of the human dimension. The Arctic Council could also encourage the inclusion of TEK and indigenous marine use in domestic programs and government actions. Improvements to communication materials and databases could act as a driver for these actions and potentially enable the integration of human dimension and ecosystem based management into planning activities. With respect to the AOR Report, the human dimension should be mentioned within every chapter as it relates to the thematic content.

### **Summary of Plenary Discussions**

- ✓ Arctic states need to establish a mechanism for recognizing and applying traditional knowledge within initiatives regionally and domestically. This mechanism should include a methodology to acquire and catalogue TEK as it relates to all activities in the Arctic Council.
- ✓ Modern surveys of indigenous marine use needs to be completed, as per the Arctic Marine Shipping Assessment recommendations.
- ✓ There are opportunities to highlight where bilateral agreements and land claim agreements can make improvements in applying the human dimension to Arctic Council and national initiatives.
- ✓ Effort could be made to document the timing and extent of current uses of the Arctic marine environment by local users, and apply this knowledge into national government decision making processes.
- ✓ The mapping systems used to report on the outcomes of AMSA IIA (Arctic Indigenous Marine Use Survey) and AMSA IIC (Areas of Heightened Cultural Significance) need to ensure accessibility and interoperability of the datasets.
- ✓ Human Dimension should be mentioned in all aspects of the AOR Report.

- ✓ Many of the pressures or drivers that are a result of sectoral activity or larger change processes, point to the need for better integrated management and response to multi-connected layers of drivers. This also points to the need for an ecosystem based management approach that includes the Human Dimension.

## ***Session V: Arctic Marine Operations and Shipping***

---

The session discussed the challenges to shipping operations in the Arctic and the policy and operational changes made by Arctic states since the release of the Arctic Marine Shipping Assessment (AMSA 2009)

Session V moderator: Chris Cuddy

### **Chapter Overview**

*Presentation by: Dr. Lawson W. Brigham*

In the follow up to the AMSA recommendations, there are a number of recommendations which have seen significant progress and others which require more attention by Arctic states. Some of the opportunities listed in the shipping chapter of the AOR Report could address needed follow up to AMSA recommendations such as the indigenous marine use survey and data sharing agreements.

As evidenced by the recent vessel groundings in the Canadian Arctic and the Costa Concordia accident, Arctic states should encourage the enhancement of guidelines, standards, and Arctic Hydrographic Charts for passenger ship safety. In addition, Arctic states should continue to encourage the International Maritime Organization's (IMO) development of the mandatory "Polar Code", either through state interventions in the IMO or the Arctic Council acting in solidarity. The increasing accessibility and navigability of the Arctic Ocean presents an opportunity for states to invest in an Arctic shipping infrastructure that can accommodate potential increases in shipping activity and tourism.

Should the Arctic Council focus its attention on protected areas, it should investigate the development of Particularly Sensitive Areas (PSSAs) and other mechanisms to support the protection of areas of ecological and cultural significance in the Arctic.

### **Moderator Comments**

As a follow up to the AMSA report, the shipping chapter of the AOR Report should include a table illustrating progress in following up to AMSA recommendations. This chapter should not be intended as a new agenda for shipping and the AMSA follow up, but instead direct the attention of the Arctic Council towards incomplete or outstanding items.

### **Summary of Plenary Discussions**

#### **International Maritime Organization (IMO)**

- ✓ Arctic Council Ministers and Senior Arctic Officials could provide a report to the IMO on the status of AMSA activities, instead of through individual state delegations.
- ✓ The IMO Polar Code needs encouragement by the Arctic Council, possibly through a Ministerial declaration or alternative consensus driven approach.

#### **General Comments**

- ✓ The AOR Report could mention the recent Russian legislation to regulate the Northern Sea Route.

- ✓ The Arctic Council could advocate for Emissions Control Areas in the Arctic; develop a special annex under MARPOL for sewage and garbage; and, look to coordinate shipping conventions for the Arctic.
- ✓ The Arctic Council needs to address the issue of how Arctic states will cope with an expanding Arctic Cruise Ship industry and the potential impacts of cruise ship eco-tourism on northern communities.
- ✓ There should not be too many new recommendations on shipping, in order to avoid undermining the follow up to AMSA recommendations. The AOR report should instead address those issues not under the IMO domain and which could be accomplished by the Arctic states.
- ✓ The shipping chapter should avoid the political complications associated with monitoring and surveillance and instead stress the need for enhanced coordination.

### ***Session VI: Ecosystem Based Management (EBM)***

---

This session discussed of the state of Ecosystem Based Management (EBM) in the Arctic Council with a brief explanation of the history of EBM followed by highlights of suggested actions for the Arctic Council to consider.

Session VI moderator: John Karau

#### **Chapter Overview**

*Presentation by: Tom Laughlin (PAME Chair from 2000-2002)*

The Arctic Council has a long history and support for EBM, including applications at the national level and through a comprehensive international framework. In order to maintain consistency with the work undertaken by other initiatives in the Arctic Council, the AOR should adopt the definition and set of principals outlined by the EBM Task Force (established in 2011) and implement the Large Marine Ecosystems (LME) map for reporting purposes. The LME map could assist the Arctic Council in organizing data and information from marine assessments. Following the outcomes of the AMSA Recommendation II(C) project - *Identification of areas of heightened ecological and cultural significance*, the Arctic Council could conduct additional workshops on the identification and management of vulnerable and valuable Arctic areas.

#### **Suggested Actions**

- ✓ Produce a set of ecological objectives for Arctic LMEs
- ✓ Conservation and use standards
- ✓ Establish best practices for assessments
- ✓ Determine methodologies for ecological indicators
- ✓ Protect scientific integrity across working groups
- ✓ Establish cross working group and expert group scientific initiatives
- ✓ Periodically track the progress and status of EBM policies.

#### **Moderator Comments**

The contents of this chapter and its recommendations are well connected with the Arctic Marine Science chapter. To ensure a reporting mechanism exists for EBM initiatives,



applying the Large Marine Ecosystem boundaries would be an appropriate approach for the Arctic Council. With respect to the AOR report, EBM is a suitable organizing principal and should be reflected throughout the text.

## **Summary of Plenary Discussions**

### **Arctic Council**

- ✓ Arctic Council should apply the outcomes of the EBM Task Force, with respect to the consistent use of appropriate terminology.
- ✓ Illustrate within the document how EBM is applied in the Arctic Council, by identifying what existing instruments and measures can be practically applied to the implementation of EBM in the Arctic Council.
- ✓ Role of the division of LMEs should be clarified and recommended its use as a reporting system.
- ✓ The report needs to put a stronger emphasis on the need for an integrated assessment work of PAME and others as relevant.

### **Human Dimension**

- ✓ EBM could be strengthened through the use and access of traditional ecological knowledge.
- ✓ Several participants noted that the need for more emphasis on the human dimension in policy development processes, including an acknowledgement of the rights of stakeholders and aboriginals.
- ✓ The Arctic Council should ensure that the human dimension is addressed by the EBM Task Force in its description of EBM and how Arctic states could apply EBM within their domestic programs.

### **General Comments**

- ✓ A workshop should be convened in order to establish an appropriate definition and management of valuable areas.
- ✓ The need for a more coherent set of metadata for biologically sensitive areas was emphasized.
- ✓ A synthesis of data standards and interoperability should be coordinated on an Arctic region level.
- ✓ Role of 'Ecosystem Approach' in the Convention on Biological Diversity (CBD) should be highlighted in the document more often, and examples used from the Malawi Declaration, COP decision V/6, with principals and practical points regarding the implementation being noted.

## ***Session VII: Arctic Marine Science***

---

This session discussed the relationship between Arctic marine science and the transition of the Arctic Council towards a coordinated policy agenda. The session highlighted the difficulty in coordinating Arctic research among the multitude of research bodies in order to provide the knowledge necessary to develop an appropriate policy framework for the region.

Session VII moderator: Chris Cuddy

## Chapter Overview

*Presentation by: Bernie Funston, President, Northern Canada Consulting*

The Arctic Council first established itself by undertaking various science assessments to respond to specific knowledge gaps, and is now applying this scientific information towards the implications and issues surrounding a coordinated policy agenda. It is important that the AOR Report appropriately illustrates the linkages between science and policy. By explaining the relationship between science and existing instruments, the AOR Report could also illustrate the process to conducting Arctic science. An explanation of this relationship also illustrates how natural and social emerging sciences influence how existing instruments are applied, where opportunities exist, and how it could lead to the creation of amendments or possibly new instruments. Another opportunity to enable linkages between science and policy is by capturing social sciences along with marine science, thereby enhancing the potential for management functions to operate more conclusively.

One of the difficulties in addressing Arctic marine science is the multitude of research bodies that do not have a coordinated research objective and agenda for science research. The Arctic Council should focus its attention towards how to improve the coordination and cooperation of scientific activity and address the imminent issues in the Arctic region. One solution to this issue is by establishing a coordinated scientific body to help align the Arctic states, gateway nations, non-Arctic nations and associated scientific bodies.

Opportunities for the Arctic Council:

- ✓ Improved access to data sources.
- ✓ Scenario building capacity to integrate the natural and social sciences.
- ✓ Network mapping for the scientific community.
- ✓ Stronger linkages with “gateway” sub-Arctic science bodies.

## Moderator Comments

As the Arctic Council and its policy agenda evolves, there is a need to clarify what the research agenda is for Arctic regions. Since the establishment of the Arctic Council, the International Arctic Science Committee (IASC) and several other key scientific bodies have conducted research in the Arctic region. A catalogue of the various scientific organizations should be made to optimize their capacity for scientific, management, and geopolitical reasons. As this chapter intends to address the knowledge gaps as they relate to the Arctic Ocean, it should also relate to the knowledge requirements addressed in other chapters of the report, identify where the Arctic Council can respond to knowledge gaps, and put forward issues that the Arctic Council Ministers need to know. Overall, Arctic science needs to be well positioned to deal with uncertainties and possibilities by establishing ecosystem based management objectives that include social sciences.

## Summary of Discussions

- ✓ Marine ecosystems are highly dynamic and challenging to address how their changes are being driven by nature or through human impacts. The key role of science is to compile existing data and knowledge through an integrated assessment process for management.
- ✓ The need for linking research agendas to the policy development processes was noted.

- ✓ There is a need for identifying the various organizations involved in scientific research and help produce a guide for networking among Arctic scientific colleagues.
- ✓ The Arctic Council should encourage the concept of a “Shared Platform”, whereby data systems, research agenda’s and integration of social sciences can be integrated. However a “Shared Platform” could be beyond the capacity of the Arctic Council, and instead could be addressed through a Task Force.
- ✓ The Arctic Council could benefit from a priority list of research questions that also promote coordination between regional organizations.
- ✓ A key opportunity for recommendations could be to address the challenges that exist with regards to the accessibility of data between Arctic states, including data derived from industry.
- ✓ A concerted effort should be made to improve the scientific capacity of Arctic research.

## Next steps

The outcomes of this workshop provided information necessary for Chapter Authors to revise their relevant section for the next draft of the AOR Report which will be circulated to PAME Heads of Delegations and Permanent Participants for the negotiation process needed to finalize the AOR Report for submission to the Arctic Council Ministers in May 2013. Below is a tentative timeline and milestones to finalize the AOR Report:

- ✓ October 5 - Chapter Authors are to update their respective chapter for Lead Authors
- ✓ October 15 - Lead Authors (Baker/Funston) are to submit a revised AOR Report with recommendations to the PAME Secretariat.
- ✓ October 17 - Document Draft Submission date for the November SAOs meeting and PAME Heads of Delegation
- ✓ November to January - PAME Heads of Delegation engage in weekly negotiation teleconferences
- ✓ December 4-5 - AOR Country Co-Leads Meeting in Washington, DC
- ✓ January 15 - Final submission date for PAME I-2013 in Rovaniemi, Finland
- ✓ February 12-14 – PAME endorsement of the AOR Report and recommendations
- ✓ March 19, 2013 – Senior Arctic Officials Meeting
- ✓ May 15, 2013 – Arctic Council Ministerial Meeting in Kiruna, Sweden

## ANNEX I – List of Participants

Name	Contact Information
<b>Invited Speakers/Chapter Authors:</b>	
<b>Ted McDorman</b>	Faculty of Law University of Victoria Victoria, British Columbia, Canada Email: <a href="mailto:tlmcdorm@uvic.ca">tlmcdorm@uvic.ca</a>
<b>Tony Gaston</b>	Wildlife Research Division Environment Canada Email: <a href="mailto:Tony.Gaston@ec.gc.ca">Tony.Gaston@ec.gc.ca</a>
<b>Prof. David L. VanderZwaag</b>	Professor of Law Marine & Environmental Law Institute Dalhousie University Halifax, Canada Email: <a href="mailto:David.vanderzwaag@dal.ca">David.vanderzwaag@dal.ca</a>
<b>Lawson W. Brigham</b>	Email: <a href="mailto:lwb48@aol.com">lwb48@aol.com</a>
<b>Invited Speakers/Lead Authors:</b>	
<b>Prof. Betsy Baker</b>	Associate Professor and Senior Fellow for Oceans and Energy, Institute for Energy and the Environment Vermont Law School Email: <a href="mailto:bbaker@vermontlaw.edu">bbaker@vermontlaw.edu</a>
<b>Bernie Funston</b>	President Northern Canada Consulting Ottawa, Ontario, Canada Email: <a href="mailto:bfunston.ncc@rogers.com">bfunston.ncc@rogers.com</a>
<b>Moderators:</b>	
<b>John Karau</b>	PAME Chair from 1998-2000 Email: <a href="mailto:jhkarau@gmail.com">jhkarau@gmail.com</a>
<b>Thomas Laughlin</b>	PAME Chair from 2000-2002 Email: <a href="mailto:Thomas.LAUGHLIN@iucn.org">Thomas.LAUGHLIN@iucn.org</a>
<b>Chris Cuddy</b>	PAME Chair from 2006-2009 Email: <a href="mailto:chriscuddy1950@gmail.com">chriscuddy1950@gmail.com</a>
<b>Invited Participants:</b>	
<b>Drummond Fraser</b>	Standards and Regulations Officer Transport Canada Office of Boating Safety Email: <a href="mailto:drummond.fraser@tc.gc.ca">drummond.fraser@tc.gc.ca</a>
<b>Maureen Copley</b>	Senior Advisor, Offshore Waters Land and Water Management Directorate Northern Affairs Organization Indian and Northern Affairs Canada Email: <a href="mailto:Copleym@ainc-inac.gc.ca">Copleym@ainc-inac.gc.ca</a>
<b>Gregory J. Robertson</b>	Research Scientist Wildlife Research Division Environment Canada Email: <a href="mailto:greg.robertson@ec.gc.ca">greg.robertson@ec.gc.ca</a>
<b>Rebecca Plumadore</b>	Environment Canada Multilateral Affairs Email: <a href="mailto:Rebecca.plumadore@ec.gc.ca">Rebecca.plumadore@ec.gc.ca</a>

<b>Rodney Neufeld</b>	Deputy Director Foreign Affairs and International Trade Canada Circumpolar Affairs Email: <a href="mailto:Rodney.Neufeld@international.gc.ca">Rodney.Neufeld@international.gc.ca</a>
<b>Trish Hayes</b>	Senior Science Advisor International Biodiversity Policy Canadian Wildlife Service, Environment Canada Vancouver, BC, Canada Email: <a href="mailto:trish.hayes@ec.gc.ca">trish.hayes@ec.gc.ca</a>
<b>Robert Kadas</b>	Foreign Policy Advisor Foreign Affairs and International Trade Canada Circumpolar Affairs Ottawa, Ontario Email: <a href="mailto:Robert.Kadas@international.gc.ca">Robert.Kadas@international.gc.ca</a>
<b>Talea Weissang</b>	Department of Environment Ministry of Domestic Affairs, Nature and Environment, Greenland Email: <a href="mailto:tawe@nanoq.gl">tawe@nanoq.gl</a>
<b>Esben Tind</b>	Danish Nature Agency Copenhagen, Denmark Email: <a href="mailto:estin@nst.dk">estin@nst.dk</a>
<b>Dag Oluf Nessa</b>	General Advisor Bureau of Minerals and Petroleum, Greenland. Email: <a href="mailto:daon@nanoq.gl">daon@nanoq.gl</a>
<b>Kristiina Isokallio</b>	Counsellor Ministry of the Environment Helsinki, Finland Email <a href="mailto:kristiina.isokallio@ymparisto.fi">kristiina.isokallio@ymparisto.fi</a>
<b>Barbro Thomsen</b>	Senior Advisor Climate and Pollution Agency (Klif) Oslo, Norway Email: <a href="mailto:barbro.thomsen@klif.no">barbro.thomsen@klif.no</a>
<b>Inger Holten</b>	Senior Adviser Ministry of Foreign Affairs Oslo, Norway Email: <a href="mailto:inger.holten@mfa.no">inger.holten@mfa.no</a>
<b>Hein-Rune Skjoldal</b>	Institute of Marine Research Norway Email: <a href="mailto:hein.rune.skjoldal@imr.no">hein.rune.skjoldal@imr.no</a>
<b>Siv Christin Gaalaas</b>	Director- International Maritime regulations and Polar Affairs Ministry of Trade and Industry <a href="mailto:scg@nhd.dep.no">Email: scg@nhd.dep.no</a>
<b>Tretiakova Natalia</b>	Head of Division of the Department of International Cooperation Ministry of Natural Resources and the Environment of the Russian Federation Email: <a href="mailto:nataliat@mnr.gov.ru">nataliat@mnr.gov.ru</a>
<b>Dr. Natalia Kutaeva</b>	Head of Maritime Environment Protection Division State Marine Pollution Control, Salvage & Rescue Administration of the Russian Federation Email: <a href="mailto:Kutaevang@mintrans.ru">Kutaevang@mintrans.ru</a>
<b>Bertil Håkansson</b>	Head of unit, Marine management Swedish Agency for Marine and Water Management Gothenburg, Sweden Email: <a href="mailto:bertil.hakansson@havochvatten.se">bertil.hakansson@havochvatten.se</a>
<b>Peter H. Oppenheimer</b>	Senior Counselor for International Law Office of General Counsel National Oceanic and Atmospheric Administration U.S. Department of Commerce Washington, D.C. USA Email: <a href="mailto:Peter.Oppenheimer@noaa.gov">Peter.Oppenheimer@noaa.gov</a>

<b>Dennis Thurston</b>	Bureau of Ocean Energy Management U.S. Department of the Interior Anchorage, Alaska, USA Email: <a href="mailto:Dennis.Thurston@boem.gov">Dennis.Thurston@boem.gov</a>
<b>Phil Mundy</b>	Director NOAA Auke Bay Laboratories Alaska Fisheries Science Center National Marine Fisheries Service Email: <a href="mailto:phil.mundy@noaa.gov">phil.mundy@noaa.gov</a>
<b>Capt. David A Condino</b>	HQ US Coast Guard Master Mariner Gloucester MA-Silver Spring MD Email: <a href="mailto:David.A.Condino@uscg.mil">David.A.Condino@uscg.mil</a>
<b>Susan L. Dwarnick</b>	Chief Offshore Safety Improvement Branch Office of Offshore Regulatory Programs Bureau of Safety and Environmental Enforcement USA Email: <a href="mailto:Susan.Dwarnick@bsee.gov">Susan.Dwarnick@bsee.gov</a>
<b>Mark Fesmire</b>	Regional Director Bureau of Safety and Environmental Enforcement, Alaska Region USA Email: <a href="mailto:mark.fesmire@bsee.gov">mark.fesmire@bsee.gov</a>
<b>Duane Smith</b>	ICC Canada 75 Albert Street, Suite 1001 Ottawa, Ontario K1P 5E7 Email: <a href="mailto:inuvialuk@northwestel.net">inuvialuk@northwestel.net</a>
<b>James Stotts</b>	ICC Alaska 429 L. Street Anchorage, Alaska 99501 Email: <a href="mailto:jimmy@iccalaska.org">jimmy@iccalaska.org</a>
<b>Anatoliy Mikailov</b>	Advisor to RAIPON President Russian Association of Indigenous Peoples of the North (RAIPON) Email: <a href="mailto:anmikhalov@yandex.ru">anmikhalov@yandex.ru</a>
<b>John Campbell</b>	OGP, Technical Director International Association of Oil and Gas Producers 209-215 Blackfriars Road London SE1 8NL UK Email: <a href="mailto:John.Campbell@ogp.org.uk">John.Campbell@ogp.org.uk</a>
<b>Andrew Dumbrille</b>	Manager, Oceans and Arctic WWF Canada Email: <a href="mailto:adumbrille@wwfcanada.org">adumbrille@wwfcanada.org</a>
<b>Lisa Speer</b>	Director International Oceans Programs Northern Resources Defense Council (NRDC) Email: <a href="mailto:lspeer@nrdc.org">lspeer@nrdc.org</a>
<b>Brooks B. Yeager</b>	Executive Vice President for Policy Clean Air—Cool Planet Email: <a href="mailto:byeager@cleanair-coolplanet.org">byeager@cleanair-coolplanet.org</a>
<b>Vawter Parker</b>	Strategic Advisor Earthjustice/CCU  Email: <a href="mailto:bparker@earthjustice.org">bparker@earthjustice.org</a>
<b>Commissioner Fran Ulmer</b>	Chair U.S Arctic Research Commission Email: <a href="mailto:fran.ulmer@arctic.gov">fran.ulmer@arctic.gov</a>
<b>Erik J Molenaar</b>	Netherlands Institute for the Law of the Sea (NILOS) Utrecht University & Adjunct Professor, University of Tromsø Email: <a href="mailto:e.j.molenaar@uu.nl">e.j.molenaar@uu.nl</a>

<b>AOR Leads:</b>	
<b>Renée Sauvé</b>	Director Global Fisheries and Marine Governance Bureau International Affairs Directorate Fisheries and Oceans Canada Email: <a href="mailto:Renee.Sauve@dfo-mpo.gc.ca">Renee.Sauve@dfo-mpo.gc.ca</a>
<b>Robin Kipping</b>	Policy Analyst International Affairs Directorate Fisheries and Oceans Canada Email: <a href="mailto:Robin.Kipping@dfo-mpo.gc.ca">Robin.Kipping@dfo-mpo.gc.ca</a>
<b>Sesselja Bjarnadottir</b>	Office of Policy and International Affairs Ministry for the Environment Iceland Email: <a href="mailto:Sesselja.Bjarnadottir@umh.stjr.is">Sesselja.Bjarnadottir@umh.stjr.is</a>
<b>Anja Elisenberg</b>	Advisor Ministry of Environment, Norway Email: <a href="mailto:anja.elisenberg@md.dep.no">anja.elisenberg@md.dep.no</a>
<b>Elizabeth S. McLanahan</b>	Deputy Director NOAA Office of International Affairs Washington, DC USA Email: <a href="mailto:Elizabeth.McLanahan@noaa.gov">Elizabeth.McLanahan@noaa.gov</a>
<b>PAME Secretariat:</b>	
<b>Magnús Jóhannesson</b>	PAME Chair Secretary General Ministry for the Environment Reykjavik, Iceland Email: <a href="mailto:magnus.johannesson@umh.stjr.is">magnus.johannesson@umh.stjr.is</a>
<b>Soffia Gudmundsdottir</b>	Executive Secretary PAME International Secretariat Akureyri, Iceland Email: <a href="mailto:pame@pame.is">pame@pame.is</a>
<b>Olga Pálsdóttir</b>	Administration PAME International Secretariat Email: <a href="mailto:olga@caff.is">olga@caff.is</a>

## ANNEX II – AOR Workshop Agenda

Workshop Chairs: Renée Sauvé/Canada and Elizabeth McLanahan/US

Moderators:

- ✓ John Karau (*PAME Chair from 1996-2000*)
- ✓ Tom Laughlin (*PAME Chair from 2000-2002*)
- ✓ Chris Cuddy (*PAME Chair from 2006-2009*)

### Monday 17<sup>th</sup> of September

**08:30-09:00**

**Registration and Refreshments**

**09:00-09:15**

**Opening of the Workshop**

Introduction (Lead Authors, Chapter Authors, participants) - Workshop Chairs  
Objectives and format of the Workshop - Workshop Chairs  
Presentation of the Draft AOR Report – Lead Authors

**09:15-10:45**

**Session I. Living Marine Resources**

Chapter Overview/Conclusions: Fisheries Resources (10 min) – Ted McDorman  
Chapter Overview/Conclusions: Cetaceans (10 min) – Allison Reed  
Chapter Overview/Conclusions: Seabirds, Seals, Polar Bears (10 min) – Tony Gaston  
Critical Analysis (10 min) – Moderator  
Moderated Discussion (50 min)

**10:45-11:00 - Coffee Break**

**11:00-12:00**

**Session II: Offshore Oil and Gas**

Chapter Overview/Conclusions: (10 min) – Betsy Baker  
Critical Analysis (5 min) – Moderator  
Moderated Discussion (30 min)

**12:00-13:00 – Lunch Break**



**13:00-14:00**

**Session III: Pollution**

Chapter Overview/Conclusions: (10 min) – David Vanderzwaag  
Critical Analysis (5 min) – Moderator  
Moderated Discussion (30 min)

**14:00-15:00**

**Session IV: Society, Culture and People**

Chapter Overview/Conclusions: (10 min) – Betsy Baker/Bernie Funston  
Critical Analysis (5 min) – Moderator  
Moderated Discussion (30 min)

**15:00-15:15 Coffee Break**

**15:15-16:00**

**Session V: Shipping**

- Chapter Overview/Conclusions: (10 min) - Lawson Brigham
- Critical Analysis (5 min) – Moderator
- Moderated Discussion (30 min)

**16:00-16:15**

**DAY 1: Closing Remarks – Workshop Chairs**

## Tuesday 18<sup>th</sup> of September

### **09:00-10:00**

#### **Session VI: Ecosystem Based Management**

Chapter Overview/Conclusions: (10 min) – Tom Laughlin

Critical Analysis (5 min) – Moderator TBC

Moderated Discussion (30 min)

### **10:00-10:45**

#### **Session VII: Arctic Science**

➤ Chapter Overview/Conclusions: (10 min) – Bernie Funston

➤ Critical Analysis (5 min) – Moderator

➤ Moderated Discussion (30 min)

### **10:45-11:20 Coffee Break**

### **11:20-12:00**

#### **Session VI: Conclusions – Workshop Summary**

➤ Summary from Sessions I-V (15 min) – Workshop Chairs

➤ Discussions (15 min)

➤ Wrap-up and Next steps – Workshop Chairs/AOR co-Leads

**Close of Workshop at 12:00**



# PAME

Protection of the Arctic Marine Environment

Borgir, Nordurslod / 600 Akureyri / ICELAND

Tel: +354 461 1355 / Fax: +354 462 3390

Email: [pame@pame.is](mailto:pame@pame.is) / Homepage: [www.pame.is](http://www.pame.is)