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Ecosystems: Status of Implementation Draft Report

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THE ECOSYSTEM APPROACH TO MANAGEMENT OF ARCTIC
ECOSYSTEMS:

STATUS OF IMPLEMENTATION

INTERNATIONAL SCIENCE AND POLICY CONFERENCE FAIRBANKS,
ALASKA – USA

CO-CONVENED BY PAME, CAFF AND AMAP

Ecosystem Approach Expert Group
PAME Working Group, Arctic Council

PAME II

Portland, Maine, USA

September 8, 2016

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Foreword

The short amount of time between the conclusion of EAIC 2016 and PAME II precluded tabling a full meeting report. The briefing captures some of the highlights of the conference that may factor into PAME decisions on work plans and deliverables for the 2017 Ministerial, and it also may serve to brief the SAO meeting that follows PAME II. The briefing is designed to serve as the foundation of the full meeting report that is expected to be tabled for consideration at PAME I 2017. The outline of conference sessions, titles of talks and authors, and links to the presentations and abstracts are available on the [PAME web site](#).

Credits

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EAIC 2016 Organizing Committee

Elizabeth McInahan, Hein Rune Skjoldal, Larry Hinzman, Hjalti Hreinsson, Kári Fannar Lárusson, Jon Fuglesta, Jimmy Stotts, Catherine Coon, Phil Mundy, Joel Clement, Alf Haakon Hoel, Cassie Pinkel, Bethany Schroeder, Professor Gennady G. Matishov, Dr. Aleksander Bagin, Martin Sommerkorn, and Colleen Parker.

Acknowledgments

Thanks to Dr. Larry Hinzman, of the University of Alaska Fairbanks (UAF) and AMAP, for all of his support, including arranging the donation of the perfect meeting venue on the UAF campus. Many thanks to Cassie Pinkel of Dr. Hinzman's staff, who worked tirelessly and with great attention to detail to make the conference a success. The PAME Secretariat provided magnificently thorough and infinitely patient support throughout the process of planning and executing the conference. Our Expert Group colleague, Catherine Coon, stepped up to cover all aspects of planning, executing and conducting the meeting. Thanks to AMAP and CAFF for presentations and support. Last but not least thanks to the organizational sponsors, the Oak Foundation, US Bureau of Ocean and Energy Management, the University of Alaska Fairbanks and the US National Oceanic and Atmospheric Administration.

[Framework for EA implementation](#) The framework consists of six related essential elements: 1) Identify the geographic extent of the ecosystem; 2) Describe the biological and physical components and processes of the ecosystem, 3) Set ecological objectives that define sustainability of the ecosystem, 4) Assess the current state of the ecosystem, 5) Value the cultural, social and economic goods produced by the ecosystem, 6) Manage human activities to sustain the ecosystem.

What is the status of EA implementation? What are the roles of the Arctic Council in facilitating implementation of the EA framework and its elements? What are the next steps in implementing the elements?

Introduction

The Ecosystem Approach to Management (EA) is a widely adopted management principle requiring management of human activities to be integrated across sectors of enterprise. The ultimate purpose of EA is to achieve sustainable use of natural resources, while maintaining the integrity of the ecosystem. The EA approach has been acknowledged, defined and adopted by the Arctic states working under the Arctic Council. Working groups of the Arctic Council have been engaged for more than a decade in developing aspects of the scientific, policy and indigenous foundations of the knowledge that enable the implementation of the ecosystem approach.

The conference brought together experts and practitioners to examine the scientific, policy and indigenous understandings and experience of the ecosystem approach to management in the eighteen Large Marine Ecosystems of the Arctic and corresponding terrestrial areas.

Conference Overview

The Ecosystem Approach International Conference ([EAIC 2016](#)) is the first realization of the Arctic Council's recommendation for periodic review of the status of implementation of the ecosystem approach to management (ecosystem-based management) in the Arctic. On August 23 – 25, EAIC 2016 brought together sixty-eight people of diverse terrestrial and marine perspectives from backgrounds in natural resource management, shipping, oil and gas, policy making and governance, scientific discovery and indigenous knowledge and culture. The participants came from Arctic communities, government agencies, private enterprise, academic institutions, and non-governmental and intergovernmental organizations to give talks about their experiences and to share case studies related to implementing the ecosystem approach to management in the Arctic. At the end of the talks and discussions, a panel evaluated the status of implementation and suggested appropriate roles of the Arctic Council in enabling implementation. Evaluation and discussion of the status and roles point to next steps for consideration by working groups and Senior Arctic Officials. *See the outline of conference sessions, titles of talks and authors, and find links to the presentations and abstracts on the [PAME web site](#).*

Status of Implementation

The Ecosystem Approach is clearly accepted at the highest policy levels on the national and international levels by the states who are active in the Arctic, both inside and outside the Arctic Council. Even so, the status of Arctic EA implementation is still incomplete. Bright spots are evident in the contributions of Arctic Council working groups to the essential step of laying the foundation of

information for EA implementation. The definitions of the geographic scope, physical properties and biological content of Arctic ecosystems, both terrestrial and marine, are presently well in hand. The internationally coordinated and sustained monitoring and integrated ecosystem assessments necessary to keep the information current and relevant to management remain largely incomplete, but the problems are identified, and slow progress is being made. The EA implementation picture becomes somewhat darker when viewing the step of established coherent sets of ecological objectives. High level ecological objectives appear to be similar among Arctic states; however, when translated downward into regulatory actions for specific industry sectors the degree of similarity among ecological objectives is less than clear. Implementation of EA in the Arctic falters for lack of a widespread common appreciation of the magnitudes of the values of goods and services at risk of being lost. The status of the final step of implementation, management and regulatory actions consistent with the sustainability of ecosystem services, is the sum of the limitations imposed by the deficiencies in monitoring and assessment, uncertainties in sector specific ecological objectives, and lack of valuations for ecosystem goods and services.

Roles of the Arctic Council

Possible roles of the Arctic Council in implementing Arctic EA may be drawn from recommendations made by participants in EAIC 2016 on each of the elements of the implementation framework. The proposed roles by element are presented in reverse order to emphasize the end point and ultimate purpose of EA, the sustainable management of Arctic resources.

- **Framework element 6, Manage the Ecosystem:** Develop guidelines¹ implementable by Arctic states for achieving and measuring the attainment of sustainable management (EA) within and across sectors. Develop codes of practice and guidelines based on requirements for implementing EA within the MPA that may be established legally by Arctic states. Communicate codes of practice and guidelines to industry and public sectors. Compare the transboundary regulatory experiences of the US and Canada in the Beaufort Sea, those of Norway and Russia in the Barents Sea, and any other relevant cases.
- **Framework element 5, Value the Ecosystem:** Facilitate the development of guidelines to enable Arctic States to conduct comparable valuations of the cultural, social, and economic goods produced by Arctic ecosystems. Develop standards and guidelines for cost benefit analysis that allow comparison of economic values of goods and services to be derived from development to those values for ecosystem goods and services supporting cultural and spiritual practices, food security, human health, food web functions, among others.
- **Framework element 4, Assess the Ecosystem:** Foster and sustain working groups on integrated ecosystem assessment for transboundary and extraterritorial Arctic LMEs using as a model the approach of the Council's Joint EA EG in establishing the ICES working group on integrated ecosystem assessment of the central Arctic Ocean (WGICA). Promote the work of international Arctic monitoring programs, such as the Distributed Biological Observatory (DBO) sponsored by the Pacific Arctic Group and the Sustained Arctic Observing Network (SAON) hosted by AMAP. Foster and promote integration, cooperation and communication among the eight different monitoring programs now operating within the Arctic Council

¹ The Arctic Council issued the Iqaluit Declaration at the conclusion of the Canadian Chairmanship in 2015. The Declaration called for "... and request the development of practical guidelines for an ecosystem-based approach to the work of the Arctic Council be completed as soon as possible," To this end among others, PAME, AMAP, and CAFF convened EAIC 2016.

community. Develop connections between monitoring results and regulatory actions, i.e. show how the monitoring via IEA contributes to executing sustainable management.

- **Framework element 3, Define Ecological Objectives:** Develop guidelines that are implementable by Arctic states for setting ecological objectives. Foster communication among Arctic states regarding standards of comparison (ecological objectives) for ecosystem status among LMEs, especially those transboundary and extraterritorial LMEs. Develop guidelines that are implementable by Arctic states for mapping management actions to the state of ecosystem variables or indicators. Develop core goals and objectives for EA that are cross-linked among the work groups of the AC. Develop measurements of the core goals and objectives that can be used as benchmarks for EA implementation.
- **Framework element 2, Describe the Ecosystem:** Contribute to the development of global Arctic information sharing systems so that the status of foundational knowledge may be compared across Arctic LMEs and so that assessments and monitoring may be improved (i.e. SAON) to support the information system accordingly. Work with observer nations in working groups (PAME, AMAP, CAFF) to see that national Arctic observations are made available to the scientific community working in the Arctic.
- **Framework element 1, Define the Geographic Extent of the Ecosystem:** Promote adoption of LME as management units. Foster identification of EBSA, and MPA – those provide the frame work for advancing marine planning. Moving from the one-by-one approach to an ecological approach, the ecosystem approach, MPA networks and MSP all occurs through EA lens.

Conference Outline and Summaries

Session I Aug 23: The Vision and Role of the Arctic Council

Session Chair: Hein Rune Skjoldal

1. Ecosystem Based Management in the Arctic Council; Status and Prospects (Alf Håkon Hoel presented by Hein Rune Skjoldal); 2. Achievements of the Arctic Council Implementing the Ecosystem Approach to Management (Hein Rune Skjoldal); 3. Challenges and tasks on the road to implementing the ecosystem approach to management in the Arctic (Phillip Mundy)

Summary: EAIC 2016 opened with the historical and geopolitical contexts of the Ecosystem Approach to Management (EA) or synonymously, Ecosystem-based Management (EBM), as a globally accepted approach for sustainably managing the extraction of renewable and non-renewable natural resources (Session I). The work of the Arctic Council from its inception in 1996 has been to develop and refine concepts and practices for the EA implementation, based on the principle that an ecosystem approach is required to conserve and manage Arctic marine biological diversity. Challenges in implementing Arctic EA all fall into the category of *building communications, common understandings and agreements* from the ground up among individuals, organizations, institutions, indigenous peoples and nations (Session I).

Session II Aug 23: Status and Experiences from National Implementation

Session Chair: Jim Kendall

1. Integrated Arctic Management and the US Strategy (Jim Kendall) 2. The Norwegian ecosystem approach management plan for the Barents Sea; strengths, flaws and further developments (Gro van

der Meeren) 3. Inuvialuit Environmental and Wildlife Co-Management in Canada's Western Arctic (Patrick Gruben) 4. Implementing EA Iceland Shelf and Sea LME (Ólafur Ástþórsson) 5. Oceans Management in Canada (Martine Giangioppi)

Summary: Pending.

[Session III Aug 23: Making EA operational - developing the knowledge base and enabling activities](#)

Session Chair: Jason Link

1. Ecosystem Approach to Management and Integrated Ecosystem Assessment (Jason Link) 2. Making the Ecosystem Approach operational across the Atlantic (Mark Dickey-Collas) 3. Highlighting the work of the OSPAR Convention (Charlotte B. Mogensen) 4. Work in two ICES Working Groups for Integrated Ecosystem Assessment – WGIBAR for the Barents Sea and WGINOR for the Norwegian Sea Large Marine Ecosystems (Hein Rune Skjoldal) 5. Ecosystem-based management in Norway: Pioneering implementation of regional-scale marine spatial planning (Erik Olsen) 6. Food security as an organizing principle for implementing the ecosystem approach to management in the Arctic; an indigenous perspective (Carolina Behe).

Summary: Pending.

[Session III Aug 24: Making EA operational - developing the knowledge base and enabling activities](#)

Session chair: Jackie Grebmeier

1. The Distributed Biological Observatory: A Marine Change Detection Array in the Pacific Arctic (Jackie Grebmeier) 2. The Arctic Marine Pulses Model: Linking Contiguous Ecological Domains in the Pacific Arctic (Jackie Grebmeier) 3. Harnessing the Global Observing and Data System to Support Ecosystem-based Fisheries Management in the Arctic: Current Status and Future Directions (Peter Pulsifer) 4. Evaluation of methods for assessing cumulative effects on marine ecosystems (Per Arneberg) 5. Integrated Landscape Assessment: North Slope Rapid Ecoregional Assessment (Jamie Trammell) 6. Effects of Multiple Stressors on the Benthic Ecosystem in the Barents Sea (Lis Jorgensen) 7. Spatial distribution of chlorophyll a and its impact factors analysis in the Arctic Ocean during the summer of 2014 (Zhibo Lu)

Summary: Pending.

[Session IV Aug 24: Case studies - steps toward implementation](#)

Session chair: Martin Robards

1. Adaptive co-management of beluga in the Inuvialuit Settlement Region (John Noksana Jr) 2. Bottom-up approaches to managing conflict in Arctic Marine Ecosystems – the Open Water Season Conflict Avoidance Agreement and the Arctic Waterways Safety Plan (Martin Robards) 3. Conservation Approaches and Indigenous Participation: Streamlining Co-management of Living Marine Resources (Nicole Kanayurak) 4. Insights into a Changing Arctic: Long-term beluga monitoring in the Inuvialuit Settlement Region (Shannon MacPhee) 5. The cultural aspect of forced migration secondary to Sea Level Rise (Lesley Laukea) 6. Cross-scale co-management successes: A case study of government-to-government and Native-to- Native governance in the Bering Strait

Region (Kelsey Aho) 7. Ecosystem Based Management in the Arctic: From definition to action (Lis Jorgensen)

Summary: Pending.

Session V Aug 25: Pan-Arctic Marine Science and Policy

Session chair: Kaja Brix

1. Dynamic Interplay: A new model of governance for the Arctic (Kaja Brix) 2. AMSA's Application to the Ecosystem Approach to Management in the Arctic (Lawson Brigham) 3. The Circumpolar Biodiversity Monitoring Program (CBMP) (Becci Anderson) 4. Highlighting steps towards Implementing Ecosystem Approach for Arctic Contaminants (Jon Fuglestad)

Summary: Pending.

Session VI Aug 25: Status of Implementing the Ecosystem Approach to Management in the Arctic

Session Chair: Catherine Coon, Panel Members: Hermanni Kaartokallio, Erik Olsen, Darren Williams, Mark Dickey-Collas, Dennis Thurston, Lawson Brigham, Gunn-Britt Retter, Jackie Grebmeier; Rapporteur: Phil Mundy

Note: The panelists have not yet completed their reviews of the content below. It is considered preliminary. The recommendation on “Next step” has been left open pending completion of review by the panelists and conference attendees. The “Possible roles” sections are based on interventions by the panelists and members of the audience and are intended as a basis for discussion within the EA-EG on recommendations and future work plan items.

Preliminary Summary: The panel discussions on the status of implementation of EA in the Arctic and the corresponding roles of the Arctic Council (AC) in furthering implementation have been captured below. It needs to be stressed that it is the Arctic states along with Indigenous Peoples and the society at large that have the responsibility for implementing the EA. The AC has only indirect and supportive roles in this respect. The status of EA implementation and potential AC roles will be used to recommend a next step for the Arctic Council to consider initiating in 2017.

The content of contributions by the panelists and members of the audience is organized according to the elements of the [framework for EA implementation](#) developed by the Joint AMAP/CAFF/PAME EA Expert Group (Joint EA EG). The framework consists of six related elements: 1) Identify the geographic extent of the ecosystem; 2) Describe the biological and physical components and processes (including human use) of the ecosystem, 3) Set ecological objectives that define sustainability of the ecosystem, 4) Assess the current state of the ecosystem, 5) Value the cultural, social and economic goods and services produced by the ecosystem, 6) Manage human activities to sustain the ecosystem. Numbers within parentheses in the text refer to the number of the framework element to allow the relations among elements to be understood. The order of presentation of the elements has been inverted to stress that the driving force behind the implementation of the ecosystem approach in the Arctic is managing human activities in ways that sustain the provision of highly valuable goods and services in the face of climate change.

The EA framework is meant to be applied for implementing EA at the scale of geographically defined ecosystems based on ecological criteria (cfr Kiruna EBM recommendation 3.3). The first element is therefore also the first step: define the ecosystem for which EA will be implemented. For the marine and coastal environment we have identified 18 Arctic Large Marine Ecosystems (LMEs) which are to be used for management purposes including the supporting scientific elements e.g. Integrated Ecosystem Assessment (IEA).

The Iqaluit request for the development of practical guidelines for applying the EA applies at the EA framework level and not to any of its elements in particular. A main outcome of the panel discussion was a suggestion to develop EA guidelines based on the EA framework that has been developed by the Joint AMAP/CAFF/PAME EA-EG. More on the issue of EA guidelines is included under element (6) below.

6) Manage Human Activities to Sustain the Ecosystem

Status: Management of human activities on the scale of the ecosystem to sustain the flow of ecosystem goods and services is not presently occurring on a pan-Arctic scale, nor is it occurring across activity sectors within most of the Large Marine Ecosystems. The representatives of the Arctic states would benefit from practical guidelines for an ecosystem-based approach to their work in the Arctic Council that contribute to Arctic regulatory actions by member states that sustain the provision of ecosystem goods and services. Such guidelines are particularly important in locations where regulations are targeting activities that transcend national boundaries. These locations are found where Large Marine Ecosystems and their terrestrial equivalents straddle international boundaries, and in the extraterritorial waters of the Arctic. Education of the public on the reasons for regulations is essential to build the political support to sustaining the flow of Arctic goods and services. Management actions in principle respond to performance relative to ecological objectives (3) as evaluated by IEA (4). It is important to consider and develop the means to translate assessment information (4) to managers. It is equally important to consider how to assess the confidence in information regarding EA. How you increase knowledge can be as important as what you discover, meaning that data discovery needs to occur in ways that help society accept this information. The process of developing guidelines can be as important as the guidelines themselves; AC can inspire all nations to consider and respect indigenous peoples' knowledge during guideline development. Ways of building the confidence of the public in the EA information include co-creation of knowledge by stakeholders. Mechanisms of EA implementation across industry sectors should not replace existing strategies that have proven effective, such as conventional sector based management approaches that bring the sector managers together. Management measures need to be translated into policy instruments, laws, economic stimulus, and there should be multiple instruments in packages.

Possible roles: Develop guidelines implementable by Arctic states for achieving and measuring the attainment of sustainable management (EA) within and across sectors. Develop codes of practice and guidelines based on requirements for implementing EA within the MPA that may be established legally by Arctic states. Communicate codes of practice and guidelines to industry and public sectors. Compare the transboundary regulatory experiences of the US and Canada in the Beaufort Sea, those of Norway and Russia in the Barents Sea, and any other relevant cases.

Next step: (recommendation pending review by panelists and conference attendees)

5) Value the Cultural, Social and Economic Goods Produced by the Ecosystem

Status: Valuations of the cultural, social, and economic goods produced by Arctic ecosystems is a complex issue where limited work has been done so far. The public needs more complete and timely information about the values of goods and services provided by Arctic ecosystems that are at risk of being diminished or lost during the course of human activities and climate change. Understanding the extent and magnitude of the goods and services that are at risk of being diminished or lost provides managers and the public with context for regulating human activities.

Roles: Facilitate the development of guidelines to enable Arctic States to conduct comparable valuations of the cultural, social, and economic goods produced by Arctic ecosystems. Develop standards and guidelines for cost benefit analysis that allow comparison of economic values of goods and services to be derived from development to those values for ecosystem goods and services supporting cultural and spiritual practices, food security, human health, food web functions, among others.

Next step:

4) Assess the Current State of the Ecosystem

Status: A common understanding of integrated ecosystem assessment (IEA) in relation to implementing the ecosystem approach remains to be established among the Arctic states. There is currently much ongoing work on developing IEA for specific LMEs, for instance working groups established by ICES for the Barents Sea LME (WGIBAR), the Norwegian Sea LME (WGINOR), and the central Arctic Ocean (Joint ICES/PAME WGICA), and work in NOAA of the USA for the East Bering Sea LME and other sea areas. It remains important to continue to share information and experiences from method development and conduct of EIAs. Arctic states and cooperating entities who gather information should develop and adopt common approaches to IEA such as monitoring and analyzing groups of species and environmental drivers of populations in each LME. Common approaches to observation and analysis allow scientists and Arctic communities to present a comprehensive picture of the status of the LME to managers and arctic states. Much better coordination of monitoring systems is required, even those within the Arctic Council working groups as evidenced by several that were mentioned in the conference; one of reasons to develop a SAON was to achieve this coordination of monitoring that would be essential to EBM. All the diverse data that is collected for integrated assessments (such as the traffic data for AMSA) should be drawn from the 'official data' of the Arctic states; each Arctic state can collect data as they wish using government exerts and/or contract personnel, but the data submission should be executed by the Arctic state.

Possible roles: Foster and sustain working groups on integrated ecosystem assessment for transboundary and extraterritorial Arctic LMEs using as a model the approach of the Council's Joint EA EG in establishing the ICES working group on integrated ecosystem assessment of the central Arctic Ocean (WGICA). Foster communication among Arctic states regarding comparison for ecosystem status among LMEs, especially those transboundary and extraterritorial LMEs. Promote the work of international Arctic monitoring programs, such as the Distributed Biological Observatory (DBO) sponsored by the Pacific Arctic Group and the Sustained Arctic Observing Network (SAON) hosted by AMAP. Foster and promote integration, cooperation and communication among the eight different monitoring programs now operating within the Arctic Council community. Develop connections between monitoring results and regulatory actions, i.e. show how the monitoring via IEA contributes to executing sustainable management.

Next step:

3) Set Ecological Objectives that Define Sustainability of the Ecosystem

Status: Common definitions of ecological objectives that define status of attainment of sustainability within an ecosystem approach remain to be established among the Arctic states.

Perhaps the most important measure to insure success of EA is to set up objectives early on in the regulatory process, so that all sectors and stakeholders have the same expectations. It is also essential for successful EA implementation for sectors and departments of governments to be working from common ecosystem objectives. Even in difficult regulatory environments, having at least a few objectives in common among the parties can allow communications to be established. Focus IEA on objectives so that we have the information to answer the questions. Systems of ecological objectives that could guide development of ecological objectives for the Arctic are available from the European Union, the Baltic Sea (HELCOM) and the North Atlantic (OSPAR). Such systems of ecological objectives serve as examples of approaches endorsed by some of the Arctic states. Ecological objectives have a direct link to integrated ecosystem assessment, as the objectives define the elements of assessment that serve as measurable variables or indicators of ecosystem status. Monitoring programs based on variables or indicators resulting from, or defined by, the ecological objectives advise and support management actions (6). Management actions need to be adaptive and respond to ongoing changes in the ecosystem revealed through IEA (4).

Possible roles: Develop guidelines that are implementable by Arctic states for setting ecological objectives. Develop guidelines that are implementable by Arctic states for mapping management actions to the state of ecosystem variables or indicators. Develop core goals and objectives for EA that are cross-linked among the work groups of the AC. Develop measurements of the core goals and objectives that can be used as benchmarks for EA implementation.

Next step:

2) Describe the Biological and Physical Components and Processes of the Ecosystem

Status: The foundational knowledge necessary to move forward with the integrated ecosystem assessment and monitoring (4) is in hand. Although the extent to which it is complete varies by Large Marine Ecosystem, the overall knowledge of the community structures of plants and animals, the extent and integrity of essential habitats, climatology, basic physiography, hydrography and environmental chemistry, and the relationships of Arctic people to all of the foregoing, is extensive and growing. Much of the data collected in the Pacific Arctic is collected by Arctic Council observer countries, for example Japan. The challenge for the AC and others is how to make the data accessible. Observers could help get the data placed into designated repositories. Observer nations have a large role to play in solving scientific information needs.

Roles: Contribute to the development of global Arctic information sharing systems so that the status of foundational knowledge may be compared across Arctic LMEs and so that assessments and monitoring (4) may be improved (i.e. SAON) to support the information system accordingly. Work

with observer nations in working groups (PAME, AMAP, CAFF) to see that national Arctic observations are made available to the scientific community working in the Arctic.

Next step:

1) Identify the Geographic Extent of the Ecosystem

The geographic extents of the major Arctic ecosystems have been defined. Formal identification of Arctic Large Marine Ecosystems, LME, meets one of the needs for common definitions and similar approaches among Arctic states in implementing EA. The adoption by the AC of the definitions of the Arctic LMEs (Kiruna 2013), provided a good basis for EA implementation by Arctic states. The extent to which the Arctic states have adopted the LME as management units remains unclear, however the application of LMEs within the AC is apparent (e.g. in AMAP OGA, PAME AMSA, and the AMAP/CAFF/SDWG AMSA IIC report). While the LME defines the largest physically and biologically coherent geographic units that are the appropriate scale for implementing the EA, smaller spatial scales are important, such as those appropriate to Ecologically and Biologically Significant Areas (EBSA), Marine Protected Areas (MPA), and other biophysically defined geographic areas that form the elements of frameworks for advancing marine spatial planning (MSP).

Roles: Promote adoption of LME as management units. Foster identification of EBSA, and MPA – those provide the frame work for advancing marine planning. Moving from the one-by-one approach to an ecological approach, the ecosystem approach, MPA networks and MSP all occurs through EA lens.

Next step:

Agenda 2.2: EA International Conference for information
SAO meeting 4-6 Oct. 2016
Portland, Maine

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