

INTEGRATED ECOSYSTEM-BASED MANAGEMENT OF THE U.S. ARCTIC MARINE ENVIRONMENT

ASSESSING THE FEASIBILITY OF PROGRAM DEVELOPMENT AND IMPLEMENTATION



2008



INTEGRATED ECOSYSTEM-BASED MANAGEMENT OF THE U.S. ARCTIC MARINE ENVIRONMENT

November 2008

Acknowledgements

This publication is a project of the Environmental Law Institute (ELI). Funding was provided from the Oak Foundation. The authors of this report are Kathryn Mengerink, Stephanie Altman, and Kimberly Hunter. Jay Austin and Angela Crandall provided editorial support. ELI is responsible for the views and research contained in this report, including any omissions or inaccuracies that may appear. The information in this report was primarily obtained through research on state, federal, and local laws and institutions and from interviews with Alaska's ocean constituents conducted from March – July 2008. Comments and corrections are welcome and should be directed to Kathryn Mengerink.

We particularly thank Mark Spalding of The Ocean Foundation for providing initial direction and feedback on the draft. In addition, we gratefully acknowledge the many interviewees from federal, state and local government, environmental organizations, industry organizations, and Alaska Native organizations for making available their time and invaluable expertise during this project.

About ELI Publications

ELI publishes Research Reports that present the analysis and conclusions of the policy studies ELI undertakes to improve environmental law and policy. In addition, ELI publishes several periodicals—including the Environmental Law Reporter®, The Environmental Forum®, and the National Wetlands Newsletter—and books, which contribute to education of the profession and disseminate diverse points of view and opinions to stimulate a robust and creative exchange of ideas. Those publications, which express opinions of the authors and not necessarily those of the Institute, its Board of Directors, or funding organizations, exemplify ELI's commitment to dialogue with all sectors. ELI welcomes suggestions for article and book topics and encourages the submission of draft manuscripts and book proposals.

Copyright © 2008 Environmental Law Institute®, Washington, D.C. All rights reserved.

Cover Photos: The images of sea ice cover in the Beaufort Sea were captured by NASA's Terra satellite on July 25, 2005 and July 25, 2006. The aerial photo of the bowhead whales was taken by NOAA. Images were downloaded from the Marine Photobank, at <http://www.marinephotobank.org>.

An electronic retrievable copy (PDF file) of this report may be obtained for no cost from the Environmental Law Institute Website, www.eli.org; click on "ELI Publications," then search for this report. [Note: ELI Terms of Use will apply and are available on site.]

(Environmental Law Institute®, The Environmental Forum®, and ELR® – The Environmental Law Reporter® are registered trademarks of the Environmental Law Institute.)

TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
I. INTRODUCTION	1
A. The Assessment	1
B. Integrated Ecosystem-Based Management Concepts.....	3
C. The U.S. Arctic Marine Ecosystem	5
II. LEGAL AND INSTITUTIONAL MECHANISMS TO ACHIEVE EBM	7
A. Overarching Law and Policy Considerations	7
→ Federal and State Regulatory and Management Authority	7
→ Alaska Native Rights, Cultural Heritage, and Subsistence.....	9
→ Summary.....	10
B. Regional Ocean Governance Approaches.....	10
i. Approaches to Collaboration.....	11
→ Government-Led Programs	14
→ Alaska Native Approaches.....	19
→ International Approaches	20
→ Moving Forward with Regional Ocean Governance.....	21
ii. Examining Area-Based Designations.....	22
→ Obstacles to Area-Based Designations.....	23
→ Approaches to Area-Based Designations	25
→ Moving Forward with Area-Based Designations.....	34
C. Additional Considerations	37
i. Precautionary and Adaptive Management	37
→ Approaches to Precautionary Approach and Adaptive Management	38
→ Moving Forward with the Precautionary Approach and Adaptive Management	40
ii. Robust Ecosystem Science	40
→ Obstacles to Robust Ecosystem Science.....	40
→ Approaches to Robust Ecosystem Science	41
→ Moving Forward with Robust Ecosystem Science	43
iii. Public Support and Participation.....	44
→ Obstacles to Public Support and Participation.....	44
→ Approaches to Public Support and Participation	45
→ Moving Forward with Public Support and Participation	46
III. OCEAN CONSTITUENTS AND CAPACITY	49
A. Constituent Motivation	49
→ Overarching Considerations	49
→ Alaska Natives and Local Government	51
→ State and Federal Government	52
→ Private Sector	53
→ Environmental Organizations.....	58
→ Scientific Community	60
B. Capacity of the Constituency.....	61
IV. SUMMARY AND NEXT STEPS	63
→ Roadmap for Developing Marine EBM in the Chukchi and Beaufort Seas Region.....	68

EXECUTIVE SUMMARY

This report summarizes a preliminary assessment conducted in 2008 by the Environmental Law Institute (ELI). The assessment examined the feasibility of developing a marine ecosystem-based management (EBM) program in either the Bristol Bay region or Chukchi and Beaufort Seas region of the U.S. Arctic. Based on this assessment, ELI has created a road-map for developing a grassroots EBM program in the Chukchi and Beaufort Seas region.

ELI adopted the following criteria to assess the feasibility of developing and implementing a marine EBM program in the U.S. Arctic:

- (1) The existence of a **legal mandate** to develop and implement marine EBM.
- (2) **Legal and institutional mechanisms** for developing and implementing marine EBM even in the absence of a clear mandate, including: (a) regional governance, (b) area-based designations, and (c) other factors such as the adoption of the precautionary approach, adaptive management, robust science, and public participation.
- (3) **Constituent motivation** to pursue marine EBM or other approaches that would support marine EBM, including (a) overarching considerations as well as the specific motivations of: (b) Alaska Natives and local government, (c) state and federal government, (d) the private sector, (e) the environmental community, and (f) the scientific community.
- (4) **Capacity of the constituency** to undertake a marine EBM program, including both (a) financial capacity and (b) personnel.

In conducting this preliminary assessment, ELI reviewed local, state, and federal legal and regulatory language and management approaches that apply in the Bristol Bay and Chukchi and Beaufort Seas regions. We surveyed the biological, economic, and social variables in each region. Because of the short (six-month) time frame for the preliminary assessment, we relied upon more than fifty personal interviews to assess the motivation and capacity to undertake marine EBM development and implementation. These interviews helped guide ELI's legal research and were crucial to ELI's understanding of the constituency's capacity and motivation.

ELI then specifically applied these criteria in its analysis of Bristol Bay and the Chukchi and Beaufort Seas as potential pilot regions for marine EBM, with results summarized in Table 1. A more detailed analysis is found in the main body of the report and in Chapter IV, Summary and Next Steps. Chapter I provides a summary of the assessment methods, introduces EBM, and describes the ecosystems of Bristol Bay and the Chukchi Seas regions. Chapter II examines the legal and institutional frameworks available for EBM implementation. Chapter III examines constituent motivation and capacity, paying particular attention to the local level. Chapter IV provides a summary and road map to EBM in the Chukchi and Beaufort Seas region.

Table 1. Comparative Analysis of Marine EBM Potential in the U.S. Arctic—Bristol Bay (BB) and Chukchi and Beaufort Seas (CBS) Regions

(1) Legal Mandate
<i>No preference.</i> There is no existing mandate to implement EBM in either location.
(2) Legal and Institutional Mechanisms
<p>(a) Regional Governance</p> <p><i>Favors Chukchi and Beaufort Seas.</i> Both regions have the same federal and state mechanisms for EBM implementation. However, the following issues point toward using the CBS region:</p> <ul style="list-style-type: none"> • The region has become the area of focus for the Alaska Marine Ecosystem Forum • The North Slope Science Initiative attempts to coordinate research in the region and could support EBM efforts • The North Slope Borough (NSB), making up the greatest portion of the CBS coast, has an active Department of Wildlife Management and a Department of Planning that has taken a strong stance in protecting subsistence resources with its coastal district plan, and has expressed interest in EBM.
<p>(b) Area-Based Designations</p> <p><i>Slightly favors Bristol Bay.</i> Neither region has a comprehensive area-based designation approach in state or federal waters. Bristol Bay does have some federal and state conservation areas, including the Walrus Islands Sanctuary and sector-specific fishery conservation areas. In the CBS region, the North Pacific Fishery Management Council is expected to create a commercial fishing moratorium in all federal waters of the Chukchi and Beaufort Seas. The coastal Chukchi Sea region includes part of the Alaska Maritime Wildlife Refuge. Also, the NSB has attempted to designate state regions for subsistence hunting and fishing protections. Both Bristol Bay and the CBS region have designated oil and gas leasing and production sites.</p>
(3) Constituent Motivation
<p>(a) Overarching considerations.</p> <p><i>Favors Chukchi and Beaufort Seas.</i> Litigation is a central strategy for environmental conservation in both regions, with conflict over oil and gas and mining in Bristol Bay and offshore oil and gas in the CBS region. Bristol Bay may have a greater immediate need for an EBM approach, since both mining and oil and gas development is planned in an important commercial, recreation, and subsistence fishing area. Many interviewees remarked that a cooperative approach would be difficult in this region due to conflicts between fishing, oil and gas, and mining. Increasing international, federal, and state attention in the CBS region, plus local interest in maintenance of a subsistence lifestyle, support the possibility of developing a multi-stakeholder EBM approach in the CBS region.</p>
<p>(b) Alaska Natives and Local Government</p> <p><i>Favors Chukchi and Beaufort Seas.</i> While both regions have motivated constituents, ELI’s research indicates that the Alaska Natives in the CBS region have negotiated effectively with the oil and gas industry and have a strong voice in regional government. Also, the North Slope Borough is a strong and well-funded local government actively engaged in area-based planning, wildlife management, and maintenance of the subsistence lifestyle.</p>
<p>(c) State and Federal Government</p> <p><i>Slightly favors Chukchi and Beaufort Seas.</i> ELI’s research indicates that there is little support from state and federal agencies for developing robust regional ocean governance. However, state and federal agencies are increasingly focusing their efforts on CBS research and management, which may provide an opportunity to develop EBM in the region.</p>
<p>(d) Private Sector</p> <p><i>Favors Chukchi and Beaufort Seas.</i> ELI did not find private-sector support for EBM in either region. With the exception of oil and gas, there is little proposed commercial development in the CBS region at this time.</p>

Table 1. Comparative Analysis of Marine EBM Potential in the U.S. Arctic—Bristol Bay (BB) and Chukchi and Beaufort Seas (CBS) Regions	
Developing EBM now would allow the system to be established ahead of most development.	
(e) Environmental Organizations	<i>No preference.</i> Both regions already include environmental efforts that support marine EBM, and in both regions, EBM efforts may be stymied by litigation that may decrease opportunities for a collaborative stakeholder process.
(f) Scientific Community	<i>No preference.</i> ELI’s research indicates that Bristol Bay is a better-researched and understood ecosystem from a marine science perspective. However, increasingly the CBS region is an area of expanding research interests by private-sector, government, and academic scientists.
(4) Capacity of the Constituency	
(a) Financial	<i>Favors Chukchi and Beaufort Seas.</i> At the local scale, the CBS region has greater capacity to maintain an EBM program through time, largely because of the revenues it receives from the oil and gas industry. However, this industrial development also may cause greater ecosystem impacts.
(b) Personnel	<i>Favors Chukchi and Beaufort Seas.</i> The North Shore Borough, which makes up the largest portion of the CBS region, has greater institutional capacity for participating in a regional governance program. The CBS region also has strong Alaska Native leadership, with demonstrated effective negotiation with the oil and gas industry. On the other hand, since much of the Bristol Bay region lacks borough government altogether, it may have a greater need for regional governance.

As Table 1 demonstrates, there are advantages and disadvantages to developing a marine EBM program in either Bristol Bay or the Chukchi and Beaufort Seas regions. Weighing in favor of picking the Chukchi and Beaufort Seas region, ELI’s research demonstrates: (1) a strong local government and politically strong Alaska Native community—both of which have expressed interest in ecosystem-based management and protection of subsistence resources; (2) increased attention to the region by state and federal agencies, including the Alaska Marine Ecosystem Forum; (3) lack of most commercial development and a potential commercial fishing moratorium; and (4) increasing national and international interest in ensuring proper protection of the Arctic Ocean environment while allowing sustainable use. A final reason for picking the Chukchi and Beaufort Seas region is that many interviewees consider this region more representative of the Arctic than Bristol Bay, and that it therefore may be a better pilot site for demonstrating EBM effectiveness in the Arctic.

Although ELI concluded for these reasons that the Chukchi and Beaufort Seas offers the most promise for the development of a marine EBM program in the Arctic, we also found that no single institution is in place to undertake the science, regional governance, and planning necessary to assure effective implementation of marine EBM in either region. One approach to mitigate this issue would be to create a new legal mandate at the state or federal level. Another, more incremental, approach would be to use existing authority and programs to build an EBM program either as a government-led initiative or from the grassroots level.

ELI also found that a voluntary approach using existing programs and authorities or the creation of a new marine EBM mandate will likely require strong constituent support and political

leadership. Our analysis of the constituency’s motivation and capacity for marine EBM implementation demonstrates a pervasive lack of support for the development of such a program, especially from state and federal government agencies and the private sector. Therefore, we suggest that targeted education and outreach is a necessary first step toward building the requisite constituent support for marine EBM, regardless of region.

In both Arctic regions, the lack of support stems from the stove-piped nature of existing management, gaps in the scientific information needed to make management decisions, concerns about expanding bureaucracy and program cost, lack of desire to give up existing authority, and lack of knowledge of successful examples. Also, the existing legal structure that allows industry development provides little incentive for the private sector to meaningfully engage in an EBM program that may limit development opportunity in some areas. Even within the Alaska Native and environmental NGO sector, constituents described the need for additional information about what marine EBM can accomplish and how to do it. While these are all valid concerns, they are not insurmountable, and are commonly held concerns of ocean constituents in other U.S. regions as well. Based on this preliminary assessment, ELI proposes a roadmap for building support for, and ultimately developing, an effective marine EBM program focused on long-term sustainability and health of the Chukchi and Beaufort Seas (Table 2).

Table 2. Roadmap for Developing Marine EBM in the Chukchi and Beaufort Seas
(1) Conduct targeted outreach and education.
ELI recommends the development of a targeted outreach and education initiative to work with Alaska’s ocean constituents to understand the potential benefits and constraints of marine EBM.
(2) Use existing authority or develop new laws and institutions to create a marine EBM program.
This would include two ideal elements of a marine EBM program: (1) regional governance, and (2) a vision and plan for long-term ecosystem health and resilience. Alaska’s ocean constituency could develop marine EBM through a new law or soft-law agreement, a grassroots movement, or through existing programs.
(3) Synthesize existing data and collect additional information so that robust ecosystem science informs the collaborative governance process.
Ocean constituents and managers cite lack of data or lack of well-synthesized data as an impediment to marine EBM. Increased research and incorporation of traditional ecosystem knowledge into the management framework, combined with the use of the precautionary approach and adaptive management strategies, could help overcome ecosystem information hurdles.
(4) Ensure public participation in the planning and decision-making processes, and encourage involvement and support from the ocean constituency.
Ensuring a participatory process at the outset and throughout the development and implementation of the program, combined with targeted education and outreach, can help strengthen local capacity to engage in effective management of the CBS region and its resources.

I. INTRODUCTION

A. The Assessment

ELI’s preliminary assessment examined the feasibility of developing a marine ecosystem-based management program in the U.S. Arctic. ELI reviewed relevant state and federal laws and policies and conducted more than fifty interviews with Alaska’s ocean constituents, including representatives of federal and state government, commercial fisheries, the oil and gas industry, environmental organizations, and Alaska Native organizations (Table 1). The interviews were designed to elicit the obstacles to and opportunities for development of a pilot EBM program that could inform future efforts in the Arctic. More than half of the interviews were conducted in person. ELI met with some people in groups and spoke with others individually.

Table 1. Summary of Interviewee Affiliations¹

<p>State Government</p> <ul style="list-style-type: none">Alaska Department of Fish and GameAlaska Office of the GovernorAlaska Department of Environmental ConservationDepartment of Natural Resources, Office of Project Management and PermittingAlaska Coastal Management ProgramNorth Slope Borough <p>Federal Government</p> <ul style="list-style-type: none">U.S. Fish and Wildlife Service, Office of SubsistenceU.S. Fish and Wildlife Service, Anchorage Field OfficeNorth Pacific Fishery Management CouncilNational Oceanic and Atmospheric Administration (NOAA) Alaska Regional Office
<p>Alaska Native Organizations</p> <ul style="list-style-type: none">Alaska Eskimo Whaling CommissionAlaska Federation of NativesBristol Bay Native AssociationArctic Slope Regional Corporation, Energy ServicesBristol Bay Economic Development Corporation
<p>Environmental Organizations</p> <ul style="list-style-type: none">Alaska Marine Conservation CouncilGreenpeacePacific EnvironmentOceanaThe Ocean FoundationWorld Wildlife FundThe Nature ConservancyAlaska Conservation Solutions

¹ The views expressed by the people interviewed for this assessment do not necessarily represent the views of their respective organizations. Affiliations are listed here to demonstrate the interviewees’ diverse perspectives on the feasibility of developing marine EBM in the U.S. Arctic.

Earthjustice
Industry and Industry Organizations
Alaska Fisheries Development Foundation, Inc.
UIC Oilfield Services
Marine Conservation Alliance
United Fishermen of Alaska
Academia and Science
University of Alaska
University of Washington
University of Virginia
National Science Foundation
Alaska Ocean Observing System
North Pacific Research Board
U.S. Arctic Research Commission
NOAA, Alaska Fishery Science Center

ELI initially focused on two separate regions as potential sites for a marine EBM program: Bristol Bay, and the Chukchi Sea. While these two regions have remained a central focus of the assessment, literature reviews and interviews also indicated the need to consider additional areas in the U.S. Arctic. Three findings emerged:

- (1) Because of ecological as well as human-use factors, if a pilot program were launched in Bristol Bay, the program also could attempt to cover a broader region of the southeast Bering Sea;
- (2) The northeastern Bering Sea also is a potential EBM site, because it is an area of low use but increasing interest, and one with fisheries protections already in place; and
- (3) A pilot program north of the Bering Strait could include both the Chukchi Sea and the Beaufort Sea, since both sites are managed by the same institutions and are ecologically closely connected.

This assessment incorporates these findings by considering the whole Bering Sea, with special emphasis on the Bristol Bay region, as one potential program area; and the U.S. region north of the Bering Strait (the Chukchi and Beaufort Seas region) as the second potential program area. As between the two, we conclude that the Chukchi and Beaufort Seas region provides the best opportunity for marine EBM implementation in the U.S. Arctic.

The same federal and state laws apply in both regions. However, in some instances these laws are implemented in different ways. For example, the North Pacific Fishery Management Council has authority under the Magnuson-Stevens Fishery Conservation and Management Act to regulate federal fisheries in both regions. In the Bristol Bay region and broader Bering Sea, the Council uses its authority to manage some of the most productive fisheries in the world. In the Chukchi and Beaufort Seas, the Council is using the same authority to consider a complete moratorium on all commercial fisheries.

In this report, ELI examines the laws and policies that apply in both regions and highlights differences in implementation where appropriate. Also, because of the similarity in legal systems in both regions, constituent motivation and capacity became a primary factor in our choice of the Chukchi and Beaufort Seas region.

B. Integrated Ecosystem-Based Management Concepts

Ecosystem-based management (EBM) is “an integrated approach to management that considers the entire ecosystem including humans.”² For the marine environment, EBM is an approach embraced by many scientific and policy experts to ensure the long-term sustainability of ecosystems.³ EBM applies a scientific understanding of ecosystem processes and interactions to inform planning and management decisions. In place of management approaches that focus on a single species, sector, use, or concern, EBM looks at the cumulative impacts of all sectors on the ecosystem, with the aim of maintaining a healthy, productive, resilient ecosystem that can provide the ecosystem services upon which humans depend.⁴ EBM is precautionary, adaptive, and participatory, and considers both ecological and jurisdictional boundaries, as well as the different operational scales for ecosystems and managers.⁵

Ecosystem services are the various “benefits [that] people obtain from ecosystems.”⁶ Ocean services include the production of seafood, recreation opportunities, protection from erosion and storm damage, water purification, transportation, nutrient cycling, carbon capture, and aesthetic, spiritual and other non-material benefits. Ecosystem services are often undervalued and overlooked in policy decisions. By analyzing and understanding the key interactions that occur within an ecosystem and appreciating the dynamic nature of ecosystems, management decisions can maintain and strengthen key interactions, anticipate and adjust to dynamic changes, and ensure the continued resilience of the ecosystem and its services.⁷

While the scientific underpinnings of EBM are well-described in the academic literature, managers and policy makers are struggling to implement it. The most common approach to EBM implementation is through the development of a regional governance program that develops an overall vision and a plan to achieve that vision.⁸ Often these regional programs lead efforts to conduct ecosystem research that will inform management, provide advice for sector-based management, and engage in restoration activities.⁹

² K.L. Mcleod et al., *Scientific Consensus Statement on Ecosystem-Based Management*, (Communication Partnership for Science and the Sea) (2005) available at <http://www.marineebm.org/resources/Consensusstatement.pdf>.

³ U.S. COMMISSION ON OCEAN POLICY, *AN OCEAN BLUEPRINT FOR THE 21ST CENTURY* (2004); PEW OCEANS COMMISSION, *AMERICA’S LIVING OCEANS: CHARTING A COURSE FOR SEA CHANGE* (2003); JOINT OCEAN COMMISSION INITIATIVE AND MONTEREY BAY AQUARIUM, *AN AGENDA FOR ACTION: MOVING REGIONAL OCEAN GOVERNANCE FROM THEORY TO PRACTICE* (2007); THE OCEAN FOUNDATION, *OCEAN GOVERNANCE: A DISCUSSION OF RECENT INITIATIVES AND RECOMMENDATIONS FOR ALASKA*; and McLeod et al., *supra* note 2.

⁴ *Id.*

⁵ *Id.*

⁶ MILLENNIUM ECOSYSTEM ASSESSMENT, *ECOSYSTEMS AND HUMAN WELL-BEING: A FRAMEWORK FOR ASSESSMENT*, CH. 2, available at <http://www.millenniumassessment.org/documents/document.300.aspx.pdf>.

⁷ *Id.*

⁸ See, e.g., ELI, *ECOSYSTEM-BASED MANAGEMENT: LAWS AND INSTITUTIONS* (2007).

⁹ *Id.*

One promising way to implement EBM is through marine spatial management (MSM).¹⁰ an emerging practice in Europe, Australia, Canada, China, New Zealand,¹¹ and the U.S.¹² Ecosystem-based marine spatial management applies an ecosystem approach that “[specifies] appropriate human uses for particular geographic areas in ocean waters to reduce user conflicts and promote conservation.”¹³

MSM strives to reduce two types of conflict: (1) conflict between human use of the marine environment and ecosystem processes; and (2) conflict among all the potential human uses of the marine environment.¹⁴ Not only do different uses compete for available space, but often one use will preclude or negatively impact another. Conversely, some uses may be perfectly compatible with or enhance other management goals. Current federal and state management approaches too often focus on individual sectors and do not adequately considered potential conflicts between sectors.

Under MSM, decision-makers analyze marine regions from both spatial and temporal perspectives and allocate three-dimensional sections of the marine environment to specific uses.¹⁵ In this way ecological, social, and economic objectives are achieved through a participatory political process, resulting in a comprehensive plan for a marine region.¹⁶ Ocean zoning, one of the primary tools for marine spatial management, involves the adoption and implementation of regulatory measures to divide the marine environment into different zones according to a comprehensive regional management plan.¹⁷

As MSM is presently envisioned, public and stakeholder participation is incorporated at all steps of the process.¹⁸ The marine area is mapped, with all living and non-living resources taken into account. A zoning plan is based on scientific principles, which sets priorities for both the use and the conservation of the ocean’s resources. Rules, licenses and permits are used to regulate activities in space and over time, with monitoring and enforcement programs to ensure compliance. Clear goals and timelines are set to provide accountability to the management plan.¹⁹

Supporters of MSM cite its usefulness in reducing user conflict and creating regulatory certainty as two main reasons for adoption. Existing conflicts can be mediated and future conflicts can be identified early and resolved prior to any negative consequences occurring.²⁰ The goals of MSM

¹⁰ Marine spatial management includes concepts such as marine spatial planning, ocean zoning, place-based management, and area-based management.

¹¹ United Nations Educational, Scientific and Cultural Organization, Marine Spatial Management [hereinafter UNESCO, MSM], available at <http://www.unesco-ioc-marinesp.be/introduction> (last visited on June 23 2008).

¹² See, e.g., Mass. Stat. Oceans Act, tit. 114, (2008).

¹³ JOINT OCEAN COMMISSION INITIATIVE AND THE MONTEREY BAY AQUARIUM, *supra* note 3.

¹⁴ UNESCO, MSM, *supra* note 11.

¹⁵ *Id.*

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ JOINT OCEAN COMMISSION INITIATIVE AND THE MONTEREY BAY AQUARIUM, *supra* note 3.

¹⁹ *Id.* at 23 UNESCO, MSM, *supra* note 11

²⁰ *Id.* UNESCO, MSM, *supra* note 11.

are to allow economic interests to engage in development activities without conflict with other users and enable a more effective and efficient use of marine resources.²¹

ELI's analysis of foundational EBM literature revealed common governance principles as important components of an integrated ecosystem-based ocean governance framework. We applied the following principles for implementing marine EBM in the U.S. Arctic:

- (1) **Regional ocean governance that includes:**
 - a. **A regional governance body** made up of core local, state, and federal decision-makers that have the legal and regulatory mandate or opportunity to develop and implement an ecosystem plan; and
 - b. **A vision and plan** for marine ecosystem health with
 - designation of conservation areas, subsistence use areas, as well as regions for existing and emerging industrial ocean uses
 - concrete implementation mechanisms
- (2) Robust **ecosystem science** to inform decision-making, including monitoring and indicators of ecosystem health and performance
- (3) Management that is **precautionary and adaptive**
- (4) A suite of approaches to ensure strong **public participation** throughout program development and implementation.

Also, implicit in this approach is the need for **laws, regulations, policies, and institutions** that support or enable the creation of robust integrated ocean management programs.

C. The U.S. Arctic Marine Ecosystem

Successful marine EBM should effectively address both natural processes and human uses of the marine environment as a way of ensuring long-term sustainability and health of the ecosystem. This section briefly describes the Arctic ecosystem and discusses the existing and planned future uses of the U.S. Arctic marine environment, which include subsistence hunting and fishing, commercial fishing, shipping, oil and gas development, and mining. For the purpose of this report, in order to account for the unique biological and physical characteristics of the Arctic region, we define the “U.S. Arctic” to include the U.S. waters of the Bering Sea, the Chukchi Sea, and the Beaufort Sea.²²

The U.S. portion of the Bering Sea is largely a shallow basin—400,000 square miles of it is less than 100 meters deep along the gently sloping continental shelf.²³ The shallowness of the Bering Sea is one of its defining features and results in a productive marine environment. Sea Another

²¹ *Id.* UNESCO, MSM, *supra* note 11.

²² See Appendix A for the rationale for this decision and additional ecosystem information.

²³ TERRY JOHNSON, THE BERING SEA AND ALEUTIAN ISLANDS: REGION OF WONDERS 25 (2003).

critical feature of the Bering Sea ecosystem is sea ice, with sea-ice dependent species such as walrus and polar bears migrating with the seasonally expanding and contracting ice.²⁴ As a result of global warming, sea ice is retreating, and these changes have immense ramifications for the future of individual species as well as the overall structure of the ecosystem.²⁵

The Bering Sea is home to at least 25 species of marine mammals, 50 species of seabird, 450 species of fish, mollusk, and crustaceans,²⁶ and 266 species of phytoplankton that form the base of the food chain.²⁷ Areas rich in productivity include the “Green Belt” that extends from north of Unalaska along the continental shelf break northwest to Cape Navarin in Russia and into the Chukchi Sea.²⁸ Another highly productive area occurs around the Pribilof Islands.²⁹

Bristol Bay forms the southeast corner of the Bering Sea, where the Alaskan Peninsula meets Alaska’s West Coast. It is approximately 58,000 square miles in area.³⁰ The Bay is estuarine, with several major watersheds emptying into the Bay.³¹ Bristol Bay provides habitat for a great number of species, including spawning herring and calving beluga whales.³² The watersheds draining into the Bay host some of the richest salmon runs in the world. Walrus and sea lions haul out on remote shores and seabirds colonize the rocky islands and sea cliffs.

The Chukchi Sea is situated off Alaska’s Northwest coast and Russia’s East Siberian coast.³³ Like the Bering Sea, the region is driven by extreme climatic conditions and the annual formation and retreat of sea ice.³⁴ The Beaufort Sea is east of the Chukchi Sea and is a water body shared between the U.S. and Canada.³⁵ Large-scale Arctic circulation influences offshore currents in both the Chukchi and Beaufort Seas. Near-shore currents are determined by alongshore winds with two distinct seasons, an open-water period with high-energy currents and an ice-covered period with low-energy currents.³⁶ The Chukchi Sea is a shallow sea with the continental shelf extending beyond U.S. waters.³⁷ In contrast, the Beaufort Sea has a smaller continental shelf that extends approximately 100 kilometers from shore—much of it less than 100 meters in depth.³⁸

²⁴ *Id.* at 40.

²⁵ *See, e.g.*, Supplement: Arctic Marine Mammals and Climate Change, 18 ECOLOGICAL APPLICATIONS S1 (2008).

²⁶ Commission on Geosciences, Environment and Resources, THE BERING SEA ECOSYSTEM 7 (1996).

²⁷ JOHNSON, *supra* note 23 at 45 (2003).

²⁸ *Id.* at 48.

²⁹ *Id.*

³⁰ Bristol Bay Borough, Alaska Coastal Management Plan (2006), *available at* <http://www.theborough.com/bbbacmp.pdf> (last visited Sept. 18, 2008).

³¹ *Id.*

³² Bristol Bay Coastal Resource Service Area, Coastal Management Plan Public Review Draft 46-50 (2005), *available at* <http://www.alaskacoast.state.ak.us/District/Plans/Bristol%20Bay/completeDraftPlan.pdf>.

³³ Large Marine Ecosystems of the World, Chukchi Sea, <http://www.edc.uri.edu/lme/Text/chukchi-sea.htm> (last visited June 16, 2008).

³⁴ *Id.*

³⁵ Large Marine Ecosystems of the World, Beaufort Sea, <http://na.nefsc.noaa.gov/lme/text/lme55.htm> (last visited June 16, 2008).

³⁶ Circulation and Outflows of the Chukchi Sea, University of Washington http://psc.apl.washington.edu/HLD/Chukchi/Chukchi.html#CHUKCHI_SEA_BASICS (last visited June 16, 2008).

³⁷ JOHNSON, *supra* note 23 at 27.

³⁸ MBC Applied Environmental Sciences, Physical Oceanography of the Beaufort Sea—Workshop Proceedings 2 (2003), <http://www.mms.gov/alaska/reports/2003rpts/2003-045.pdf>.

II. LEGAL AND INSTITUTIONAL MECHANISMS TO ACHIEVE EBM

A. Overarching Law and Policy Considerations

The ocean and coastal environment in the U.S. Arctic is managed under state, federal, and international law. This section briefly considers the overarching laws, regulations, and institutions governing use and protection of natural resources, the environment, and Alaska Native rights and traditions, as a necessary first step toward understanding the potential constraints to and opportunities for marine EBM implementation.

→ Federal and State Regulatory and Management Authority

The federal government plays a dominant role in management of the activities and ecosystems that make up the U.S. Arctic. All waters from three miles to two hundred miles offshore are designated as federal waters, and approximately sixty percent of Alaska's terrestrial environment is federal land. The federal government also has broad authority to regulate interstate commerce,³⁹ and uses this authority to regulate activities such as oil and gas development, alternative energy development, and fisheries, as well as to provide protections for species and habitats. State and local government officials and stakeholders also play important roles in federal management through various participatory processes.

Several federal statutes are of primary importance to the marine environment in the U.S. Arctic.⁴⁰ The National Environmental Policy Act provides a basis for analyzing the potential impacts of major federal agency actions, including actions that affect the marine environment. Several sector-specific laws that also affect management of ocean and coastal activities include:

- Regulatory laws, such as the Federal Water Pollution Control Act (Clean Water Act), the Clean Air Act, and the Federal Power Act;

³⁹ U.S. Constitution, Art. 1, Sec. 8, Clause 3.

⁴⁰ The U.S. Commission on Ocean Policy identifies and describes a large number of laws that relate to management of the U.S. marine environment. *See* U.S. Commission on Ocean Policy, Appendix 6 to the Final Report: Review of U.S. Ocean and Coastal Law: The Evolution of Ocean Governance over Three Decades (2004) available at http://oceancommission.gov/documents/full_color_rpt/append_6.pdf.

- Leasing and use laws, such as the Magnuson-Stevens Fishery Conservation and Management Act, the Outer Continental Shelf Lands Act, and the Surface Mining Control and Reclamation Act;
- Species and habitat protection laws, including the Endangered Species Act and the Marine Mammal Protection Act;
- Laws related to Alaska Natives and subsistence use, such as the Alaska Native Claims Settlement Act and the Alaska National Interest Lands Conservation Act; and
- Multiple-use management laws, including the National Marine Sanctuaries Act and the Federal Land Policy and Management Act.

Key federal agencies tasked with implementing these laws include the National Oceanic and Atmospheric Administration (NOAA) and its sub-agencies, the National Marine Fisheries Service (NMFS) and National Ocean Service (NOS), as well as the North Pacific Regional Fishery Management Council (Council); the Environmental Protection Agency (EPA); the Department of Interior and its sub-agencies, the Minerals Management Service (MMS), the Fish and Wildlife Service (FWS) which includes the Office of Subsistence Management, and the Bureau of Land Management (BLM).

While not addressed in detail in this preliminary report, each one of these laws must be considered when determining if and how federal agencies will participate in collaborative management processes. This report does identify specific provisions and approaches within the federal legal framework that could support an integrated EBM program in the U.S. Arctic. In addition to legal mandates that may enable federal agencies to participate in marine EBM, the agency culture and individual agency officials play an important role in determining whether and how an agency may participate in a marine EBM program. In other words, even though a law may enable agency participation, agency decision-makers may choose not to do so.

The State of Alaska has a complementary legal framework. The state's territorial seas extend from the shoreline to three miles out from shore. State agencies, operating under state and federal law, regulate many ocean industries, including cruise ship discharges,⁴¹ mining of submerged lands,⁴² land use and coastal zone management,⁴³ regulation of subsistence harvest on state lands,⁴⁴ regulation of commercial fisheries, including salmon fisheries, in state waters,⁴⁵ and conservation, protection, restoration, and propagation of endangered species.⁴⁶ State agencies that relate to ocean conservation and management of resources include the Department of Environmental Conservation, the Department of Fish and Game, and the Department of Natural Resources, which includes the Division of Coastal and Ocean Management, the Division of

⁴¹ Water, Air, Energy, and Environmental Conservation Act Alaska Stat. 46.03.460 - AS 46.03.490.

⁴² Natural Resources Act Alaska Stat. 11 AAC 86.500 (eff. 9/5/74) *available at* <http://touchngo.com/lglcntr/akstats/Statutes.htm>.

⁴³ Development of District Coastal Management Plans Alaska Stat. § 46.40.030-210 (2008) *available at* <http://touchngo.com/lglcntr/akstats/Statutes.htm>.

⁴⁴ Subsistence Use and Allocation of Fish and Game Alaska Stat. § 16.05.258 (2008) *available at* <http://touchngo.com/lglcntr/akstats/Statutes.htm>.

⁴⁵ Fish and Game Alaska Admin Code tit. 5 § 03.001-35.590 (2008) *available at* <http://touchngo.com/lglcntr/akstats/aac.htm>.

⁴⁶ Declaration of Purpose AS § 16.20.180 *available at* <http://touchngo.com/lglcntr/akstats/Statutes.htm>.

Mining, Land and Water, the Division of Oil and Gas, and the Division of Project Management and Permitting.⁴⁷

→ Alaska Native Rights, Cultural Heritage, and Subsistence

The laws, policies, and institutions that relate to Alaska Native heritage and subsistence hunting and fishing is given special consideration in this assessment. Under the Alaska State Constitution, the people of the state “disclaim all right or title in or to any property, including fishing rights, the right or title to which may be held by or for any Indian, Eskimo, or Aleut, or community thereof, as that right or title is defined in the act of admission.”⁴⁸ When Alaska was admitted as a state in 1959, the Alaska Statehood Act forbade the State from taking lands held by Alaskan Natives under aboriginal title.⁴⁹

As conflict arose over land title and native claims, Congress passed the Alaska Native Claims Settlement Act of 1971 (ANCSA).⁵⁰ ANCSA created the current land tenure framework for Alaska Natives.⁵¹ Specifically, the Act created thirteen for-profit regional native corporations and 200 smaller village corporations.⁵² The Act extinguished existing land claims and hunting and fishing rights in Alaska. In return, village corporations could claim a prescribed amount of land in the area where their township was situated, proportional to the size of the village.⁵³ An additional 44 million acres was conveyed to regional corporations.⁵⁴

The territorial scope of extinguished Alaska Native claims and rights is limited by the phrase “in Alaska.”⁵⁵ Specifically, ANCSA provides that “[a]ll aboriginal titles, if any, and claims of aboriginal title *in Alaska* based on use and occupancy, *including* submerged land underneath all water areas, both inland and offshore, and *including* any aboriginal hunting or fishing rights that may exist, are hereby extinguished.”⁵⁶ However, as the courts have noted, ANCSA applies to state lands and state waters out to three miles, so Alaska Natives may retain aboriginal hunting and fishing rights in federal waters and claims to the submerged lands on the outer continental shelf.⁵⁷ Because ANCSA appears to apply only to state waters, one could advance place-based protection of Alaska Native cultural heritage in federal waters under a theory of retained aboriginal title.

⁴⁷ State of Alaska, Departments, at <http://www.state.ak.us/local/akdir1.shtml#doc>.

⁴⁸ AK Const. Art. 12, § 12 *available at* <http://ltgov.state.ak.us/constitution.php?section=12>.

⁴⁹ Alaska Statehood Act, 48 U.S.C.A Ch. 2 § 4 (1958).

⁵⁰ JAMES D. LINXWILER, ALASKA NATIVE CLAIMS SETTLEMENT ACT AT 35: DELIVERING ON THE PROMISE, PAPER 12 53RD ANNUAL ROCKY MOUNTAIN MINERAL LAW INSTITUTE (2007), <http://www.lbbllawyers.com/ANCSA%20at%2035%20Delivering%20on%20the%20Promise%20Proof%2010-25-07.pdf>.

⁵¹ 43 U.S.C.A. § 1621 (c).

⁵² 43 U.S.C.A. § 1606.

⁵³ 43 U.S.C.A. § 1607.

⁵⁴ 43 U.S.C.A. § 1611 (b).

⁵⁵ Public Lands Act 43 U.S.C. § 1603(b).

⁵⁶ Emphasis added. Public Lands Act 43 U.S.C. § 1603(b).

⁵⁷ Amoco Production Co. v. Gambell, 480 U.S. 531, 533 (9th Cir. 1987).

Additional protections for Alaska Native subsistence rights and traditions are found in other federal laws, including the Alaska National Interest Lands Conservation Act (ANILCA),⁵⁸ the Endangered Species Act,⁵⁹ and the Marine Mammal Protection Act,⁶⁰ as well as under state law.⁶¹

→ Summary

The federal and state laws that regulate industries, protect ecosystems, and delineate Alaska Native and subsistence rights form the legal framework within which an Arctic marine EBM system would operate. In the absence of a new law that overrides this framework, those who develop a marine EBM program will need to consider this legal framework to understand how institutions can legally fulfill the vision and goals established by the marine EBM program.

B. Regional Ocean Governance Approaches

Greater integration in ocean governance can help address fragmented management and conflict among ocean users. Examples of such fragmentation can be seen both within a single sector and across sectors. For example, harvest of different species for commercial use and consumption is managed by several agencies in federal and state government. NPFMC manages commercial pollock, halibut, groundfish, and crab species, while the state manages the commercial salmon fishery. The USFWS manages subsistence harvest on federal lands and the navigable waters within those lands, while the state manages subsistence harvest on state lands. NOAA manages the subsistence harvest of whales and other marine mammals.

Cross-sectoral management is even more fragmented. For example, at the federal level NOAA and NPFMC manage fisheries; the Coast Guard is the main federal agency managing marine transportation; and MMS manages oil and gas development on the Outer Continental Shelf. Agencies have authority to regulate within their sectors, but typically have only commenting authority for projects beyond their regulatory scope. For example, the NPFMC has the authority to comment on non-fishing activities that could affect essential fish habitat.

In addition to fragmented management, there is conflict among ocean users. In Bristol Bay, commercial, recreational, and subsistence fishers have long exploited the fisheries resources in the region. Now oil and gas developers and a mining company are planning to extract resources in the region, and members of the Alaska Native community, the fishing community and environmentalists, among others, have concerns about how these new activities will impact the fishery and other subsistence resources and conservation. In the Chukchi and Beaufort Seas, offshore oil and gas development can interfere with subsistence harvest of marine mammals. While many local residents support onshore oil and gas development, many have expressed

⁵⁸ Conservation Act 16 U.S.C. § 3114.

⁵⁹ Conservation Act 16 U.S.C. § 1539.

⁶⁰ Conservation Act 16 U.S.C. §1371.

⁶¹ For additional information, *see* Appendix C: Laws Protecting Alaska Native Rights.

concern about expanding offshore oil and gas development and the ability to maintain a subsistence lifestyle.

i. Approaches to Collaboration

One way to address these governance challenges and user conflicts is to develop an integrated marine EBM program. The following section describes one aspect of marine EBM—regional ocean governance. It examines existing approaches to Arctic governance collaboration that have some elements of EBM (Table 3).

Intergovernmental collaboration can and does take a variety of forms. It can be top-down—led by international, federal, or state government—or bottom-up and led by local government or NGOs. It can be arranged under treaty, law, or by soft-law agreements such as memoranda of understanding. In practice, regional collaboration typically takes the form of an advisory body and may include sub-committees or working groups that delve deeper into specific issues. Advisory bodies and committees may include government officials only or include stakeholders as well.

The following section describes some of the existing intergovernmental collaborative processes in the U.S. Arctic and the existing work to undertake integrated ocean management. It also analyzes these collaborations and identifies opportunities to move toward more robust integrated ocean management and potential obstacles to these approaches. Table 2 summarizes the institutions ELI identified as being the most promising existing institutions that could form the basis of a collaborative marine EBM program. Following the table is a more detailed description and analysis of each program.

Table 3. U.S. Arctic Government and NGO Institutions with Marine EBM Components

	Regional Governance Body		Vision and Plan			Ecosystem Science?	Participation
	Legal Mandate?	Function	Vision and Plan?	Area Designation?	Regulatory Mechanisms?		
GOVERNMENT APPROACHES							
Ocean Policy Coordinator and Cabinet	No. Administrative order.	Advise about and coordination ocean policy.	No.	No	No	No	Cabinet is multi-state agency.
Alaska Coastal Mgmt Program	Yes. Both the state and the coastal districts can create enforceable policies.	Coordinate and plan in the coastal zone.	District plans summarize region and enforceable policies. Not necessarily an ecosystem vision and plan.	Yes. Coastal districts can designate areas for coastal management.	Yes. State program and coastal district express enforceable policies.	No	State and borough/local government with federal consistency & NOAA oversight.
Alaska Marine Ecosystem Forum	No. Established by MOU.	Information sharing about marine ecosystem research and management.	The founding MOU expresses a vision of sustainable ecosystems.	No.	No.	Yes—express shared scientific approach	Multiple federal and state agencies.
North Pacific Fishery Mgmt Council	Yes—fisheries management including ecosystem consideration.	Management and regulation of federal commercial fisheries.	MSA vision and management plans and ecosystem plans	Yes. However, designations are single-sector in focus and application.	Yes for management plans. However, fishery ecosystem plan is not a legally enforceable document.	Yes—efforts include Aleutian Islands Fishery Ecosystem Plan	Relates to single federal agency with federal and state agencies participating on the Council along with other stakeholders.
Federal Subsistence Board and Councils	Yes. Established by federal regulation to help implement federal law.	Link local resource users to Federal Subsistence Board to manage	Submit annual report on subsistence strategy. Not necessarily ecosystem plan.	No.	No. However the Boards inform the regulation of subsistence harvest and fish and wildlife conservation needs.	No.	Relates to several federal agency charged with subsistence management. Members include those representing regional subsistence interests and

	Regional Governance Body		Vision and Plan			Ecosystem Science?	Participation
	Legal Mandate?	Function	Vision and Plan?	Area Designation?	Regulatory Mechanisms?		
		subsistence harvest on federal lands and freshwater.					those representing regional commercial and sports interest.
ALASKA NATIVE APPROACHES							
Alaska Eskimo Whaling Comm'n	No. Association of whaling captains and crew.	Manage bowhead whale hunt cooperatively with the federal government.	No.	Flexible area designations based on whale migration—e.g., Conflict Avoidance Agreements.	Yes.	Much information based on traditional ecosystem knowledge.	NGO with whaling captains and crew as members who participate in co-management of subsistence resources.
Alaska Inter-Tribal Council	No. Tribal NGO.	Advocate in support of tribal governments.	No.	Resolution focused on EBM and cultural heritage designation.	No	No	Non-governmental with Alaska tribes as members.
INTERNATIONAL APPROACHES							
Arctic Council	No. Voluntary agreement.	Coordinate circumpolar cooperation.	Work Plans, with one suggesting EBM pilot studies	No.	No.	Six science working groups focus on different aspects of Arctic science.	Eight Arctic countries are member states and indigenous organizations may participate.
Inuit Circumpolar Council	No. International non-governmental organization.	Strengthen unity among Inuit people.	Yes. Created Principles and Elements for A Comprehensive Arctic Policy	No.	No.	No.	Non-governmental represents Inuit people living in Alaska, Canada, Greenland, and Chukotka, Russia.

→ Government-Led Programs

State Law

State law calls for agency coordination, cooperation and planning. Specifically, it states that “[i]t is the policy of the state to improve and coordinate the environmental plans, functions, powers, and programs of the state, in cooperation with the federal government, regions, local governments, other public and private organizations, and concerned individuals, and to develop and manage the basic resources of water, land, and air to the end that the state may fulfill its responsibility as trustee of the environment for the present and future generations.”⁶² This strong policy statement is consistent with the goals of integrated ocean management, and provides a legal policy rationale for the development of a state-supported integrated ocean management program.

Ocean Policy Coordinator and Ocean Policy Cabinet

Governor Murkowski established Administrative Order 223 in 2004, creating an Ocean Policy Coordinator and an Ocean Policy Cabinet. The Coordinator position, housed in the Department of Fish and Game, was created to “coordinate and communicate information related to ocean research and management with federal and local governmental entities and nongovernmental organizations in Alaska.”⁶³ The Coordinator was intended to coordinate directly with the Cabinet, which is composed of Commissioners of the Departments of Fish and Game, Environmental Conservation, Natural Resources, and Commerce, Community, and Economic Development; the Fisheries Policy Advisor; and the Director of State and Federal Relations. The Coordinator was expected to act as a liaison with the public, communicating the State’s ocean policy to all interested Alaskan stakeholders.⁶⁴ The Cabinet, led by the Coordinator, took part in a range of activities, including partnering with NOAA’s Alaska Sea Grant for an assessment of the Aleutian Islands ecosystem and improving communication between State Agencies and with the Alaskan people.⁶⁵ The Cabinet was central to the creation of the Aleutian Islands Ecosystem Forum,⁶⁶ which later became the Alaska Marine Ecosystem Forum.

Based on interviews and research of current state policies and programs, it is apparent that the Coordinator and Cabinet positions are not priorities for the current state government administration.⁶⁷ The Ocean Policy Coordinator position is currently unfilled.

Alaska Coastal Management Program

The Alaska Coastal Management Program in the Department of Natural Resources is a networked program that helps coordinate state agencies’ authorizations and permitting processes

⁶² Declaration of Policy AS 46 03.010. *available at* <http://touchngo.com/lglcntr/akstats/Statutes/Title46/Chapter03/Section010.htm>.

⁶³ Admin. Order 223, (AK 2003).

⁶⁴ Admin. Order 223, (AK 2003).

⁶⁵ KASSAKIAN, *supra* note 240.

⁶⁶ ALEUTIAN ISLANDS ECOSYSTEM FORUM, MEETING SUMMARY (2005), http://www.fakr.noaa.gov/npfmc/current_issues/ecosystem/AIEF1105summary.pdf.

⁶⁷ See The Ocean Foundation, *supra* note 3 at 21-22.

in the coastal zone.⁶⁸ The objectives of the Program include the “orderly, balanced utilization and protection of the resources of the coastal area consistent with sound conservation and sustained yield principles” and a “full and fair evaluation of all demands on the land and water in the coastal area.”⁶⁹ Based on statewide standards and district plan criteria, coastal resource districts develop coastal management plans.⁷⁰ The district plans include the district boundaries, a list of uses, a statement of policies that apply to the uses, a description of acceptable and unacceptable uses, and designation of areas that “merit special attention.”⁷¹ The districts have the authority to develop enforceable policies as long as they do not address matters regulated or authorized by state or federal law, unless they address a “matter of local concern.”⁷² Matters of local concern include a use or resource that is “(i) demonstrated as sensitive to development; (ii) not adequately addressed by state or federal law; and (iii) of unique concern to the coastal resource district as demonstrated by local usage or scientific evidence.”⁷³

In the Bering Sea, the following coastal districts have draft plans or approved district plans: Aleutians East Borough, Aleutians West CRSA, City of Bethel, Bristol Bay Borough, Bristol Bay CRSA, Ceñaliulriit CRSA, Lake and Peninsula Borough, and City of Nome. Districts with plans in the Chukchi and Beaufort Seas include the Bering Straits CRSA (includes part of the Bering Sea), Northwest Arctic Borough, and the North Slope Borough.

Amendments to Alaska’s coastal management laws in 2004 changed what coastal districts could include in their enforceable policies. Table 4 provides an example of the criteria that the agency now considers when evaluating whether or not to approve enforceable district policies.

Table 4. Criteria to Consider for Enforceable District Policies⁷⁴

Criteria
<ul style="list-style-type: none"> • Does the policy address, or flow from, a use or activity identified in 11 AAC 112.200-112.240, 112.260-280, or 114.250 (b)-(i)? • Is this a matter that the Department of Environmental Conservation has the authority to regulate? • Does the policy adopt, duplicate, repeat, restate, paraphrase or incorporate by reference a state standard or other state or federal law per 11 AAC 114.270(c)? • Is the policy clear and concise as to the activities and persons affected by the policies and the requirements of the policies? • Does the policy use precise, prescriptive and enforceable language? • Does the policy not arbitrarily or unreasonably restrict or exclude uses of state concern?

⁶⁸ Objectives AS § 46.40.020. *available at* <http://touchngo.com/Iglcntr/akstats/Statutes/Title46/Chapter40/Section020.htm>. A discussion of the coastal zone designation can be found in the subsequent section.

⁶⁹ Objectives AS § 46.40.020. *available at* <http://touchngo.com/Iglcntr/akstats/Statutes/Title46/Chapter40/Section020.htm>.

⁷⁰ Development of District Coastal Management Plans AS § 46.40.030(a) *available at* <http://touchngo.com/Iglcntr/akstats/Statutes/Title46/Chapter40/Section030.htm>.

⁷¹ Development of District Coastal Management Plans AS § 46.40.030(a) *available at* <http://touchngo.com/Iglcntr/akstats/Statutes/Title46/Chapter40/Section030.htm>.

⁷² Requirements for Department Review and Approval AS § 46.40.070(a). *available at* <http://touchngo.com/Iglcntr/akstats/Statutes/Title46/Chapter40/Section070.htm>.

⁷³ Requirements for Department Review and Approval AS § 46.40.070(a) *available at* <http://touchngo.com/Iglcntr/akstats/Statutes/Title46/Chapter40/Section070.htm>.

⁷⁴ From OFFICE OF PROJECT MANAGEMENT AND PERMITTING, NORTH SLOPE BOROUGH DISTRICT ENFORCEABLE POLICY TABLE (2007), http://alaskacoast.state.ak.us/District/Final_Tables/NorthSlope/NSBFinalDEPTable.pdf.

Criteria

- Does the policy address a matter regulated by state or federal law? If Yes, does the district demonstrate that the matter is of local concern as defined in AS 46.40.070(a)(2)(C)?
- Are the criteria to establish that the policy addresses a matter of local concern (above) documented?
 - Within a defined portion of the district's coastal zone [11 AAC 114.270(h)(1)(A)].
 - Demonstrated as sensitive to development in the Resource Analysis [11 AAC 114.270(h)(1)(B)].
 - Not adequately addressed by state or federal law [11 AAC 114.270(h)(1)(C)].
 - Of unique concern to the district as demonstrated by local usage or scientific evidence [11 AAC 114.270(h)(1)(D)].
- Is the policy for an area designated by a district under 11 AAC 114.250(b)-(i), for a special area management plan developed under 11 AAC 114.400, or for an area which merits special attention inside a district developed under 11 AAC 114.420?
 - If yes, is the description or map of the designated area referenced in the enforceable policy?
 - If yes, is the area described or mapped at a scale sufficient to determine whether a use or activity is located within the area?

Using these criteria, in 2007 the Office of Project Management and Permitting (OPMP) recommended fully rejecting 25 and partially rejecting 6 of 31 policies proposed by the North Slope Borough. It made no recommendations to fully approve any proposed enforceable policies. Many of the proposed enforceable policies relate to subsistence harvest and protection of natural resources. Similarly, the OPMP rejected many of the proposed subsistence area designations in the Northwest Arctic Borough.⁷⁵ In other regions, including the Bristol Bay Borough, the enforceable policies have been fully approved.

Efforts are underway now to amend the coastal management law, with many local districts pushing to expand local authority to develop and implement district enforceable policies.⁷⁶

Alaska Marine Ecosystem Forum

The North Pacific Council, NMFS, and Alaska's Ocean Policy Cabinet initiated the Alaska Marine Ecosystem Forum (AMEF) in 2005.⁷⁷ According to the Memorandum of Understanding (MOU) establishing AMEF, it "promotes the collective aim of Federal and State agencies and the North Pacific Fishery Management Council to achieve sustainable management and use of Alaska's marine ecosystems in the most effective and efficient manner, consistent with the missions of those agencies."⁷⁸ AMEF planned to focus on the Aleutian Islands as a pilot study and to enhance coordination and collaboration among federal, state, and local agencies for the

⁷⁵ Department of Natural Resources, Office of Project Management and Permitting, Final Recommendation on the Final Plan Amendment (FPA) of the Northwest Arctic Borough Coastal District Coastal Management Plan (Oct 26, 2006), available at http://alaskacoast.state.ak.us/District/Final_Tables/NorthwestArctic/NWABFinalFindings.pdf.

⁷⁶ See, e.g., Alaska Coastal Management Program, *ACMP Re-evaluation Stakeholders Workshops Materials*, at <http://www.alaskacoast.state.ak.us/Enews/Re-eval2008/index.html>.

⁷⁷ ALEUTIAN ISLANDS ECOSYSTEM FORUM, *supra* note 66

⁷⁸ Alaska Marine Ecosystem Forum- Memorandum of Understanding .(NPFMC, National Marine Fisheries, FWS, MMS, BLM, FS, EPA, NPS, US Army Corps of Engineers and 17th Coast Guard), and State Agencies (Ocean Policy Cabinet, Department of Fish and Game, Department of Environmental Conservation, Department of Natural Resources and Department of Commerce, Communities, and Economic Development).

sustainable management of this marine ecosystem. In April 2006, AMEF broadened their focus to include the entire Alaskan marine ecosystem.⁷⁹

At the initial meeting, participants decided that AMEF would serve as a forum for information sharing, and would in no way be a decision-making body.⁸⁰ The MOU stresses that the AMEF has no enforceable legal obligations, and is not to be or become a group that provides consensus advice or recommendations.⁸¹ The goal is to create a venue where participants can share information and become aware of salient regional issues, user conflicts, and ecosystem developments.⁸² AMEF aims to increase efficiency through the sharing of information and data and the removing of duplicative effort.⁸³ The sharing of information is also aimed to lead to possible partnership opportunities, and to steer activities to be complementary wherever possible.⁸⁴ Members are limited to those federal and state entities that had jurisdiction over activities within the marine ecosystem.⁸⁵

Since signing the MOU in September 2006, AMEF has held two meetings. In July 2007, the AMEF discussed the possibility of broadening its focus to the Arctic due to climate-change concerns and because state agencies were expanding efforts to develop a plan to address with climate-change impacts. In January 2008, after presentations related to the Arctic, it was decided not to formally shift focus but to have an Arctic ‘theme’ at the next meeting scheduled for July 2008.⁸⁶

North Pacific Fishery Management Council

The North Pacific Fishery Management Council manages federal fisheries in the U.S. Arctic. NPFMC includes ecosystem policies and objectives in each fishery management plan and has developed the Aleutian Islands Fishery Ecosystem Plan. However, unlike fishery management plans, the Ecosystem Plan is not a regulatory document. NPFMC is developing an Arctic Fishery Management Plan that takes the precautionary approach, calling for a moratorium on commercial fishing until adequate information is known about the ecosystem. It has created an Ecosystem Committee that reaches beyond fisheries, and has helped establish the Alaska Marine Ecosystem Forum.

Some interviewees commented that the Council is a collaborative approach that works. Many people both in Alaska and beyond view the Council to be the most effective of the eight U.S. fishery councils at achieving sustainable fisheries.⁸⁷ One interviewee commented that because the Council is highly regarded, it is difficult to gain traction with arguments that the Council needs to improve its approach in some circumstances.

⁷⁹ ALEUTIAN ISLANDS ECOSYSTEM FORUM, MEETING SUMMARY (2006),

http://www.fakr.noaa.gov/npfmc/current_issues/ecosystem/406ECOsummary.pdf.

⁸⁰ Alaska Marine Ecosystem Forum- Memorandum of Understanding, *supra* note 78.

⁸¹ *Id.*

⁸² *Id.*

⁸³ *Id.*

⁸⁴ *Id.*

⁸⁵ *Id.*

⁸⁶ Date of next meeting and topic based on discussions with AMEF participants (interviews on file with author).

⁸⁷ See, e.g., JOSH EAGLE, SARAH NEWKIRK, & BARTON H. THOMPSON, JR., TAKING STOCK OF THE REGIONAL FISHERY MANAGEMENT COUNCILS (2003).

The Council is a critical institution for development of EBM in the U.S. Arctic—especially Bristol Bay, where fisheries currently exist—because of the important impact that fisheries have on marine ecosystems, its science-based management of the resources, and its leadership role in taking the necessary incremental steps toward ecosystem-based management. If a marine EBM program develops in the federal waters of the U.S. Arctic, the Council will likely play a lead role.

Federal Subsistence Regional Advisory Councils

Established by the Secretaries of the Interior and Agriculture to help implement ANILCA, the Federal Subsistence Board oversees the Federal Subsistence Management Program.⁸⁸ It includes regional directors of six federal agencies or sub-agencies. Ten Federal Subsistence Regional Advisory Councils—including Bristol Bay, the North Slope, and Northwest Alaska regions—⁸⁹ help link local resource users to the Federal Subsistence Board. The Regional Advisory Council encourages local participation; advises the Federal Subsistence Board on local and customary subsistence uses in an area; and suggests subsistence management plans that will ensure that subsistence users receive priority over other users.⁹⁰ Within each subsistence resource region, regulations are set pertaining to harvest seasons, harvest limits and license and permit requirements.⁹¹ Regulations for the taking of fish require permits for the use of any method other than a rod and reel, permits for all salmon fishing, and annual harvest limits.⁹² Trade of fish among Alaska Natives is limited to a prescribed dollar amount and must be recorded. Sale to commercial fisheries is strictly prohibited.⁹³

Additional Governmental Considerations

In addition to resource managers and oversight bodies, federal and state regulatory agencies have an important role to play in marine EBM if it is to be successful. Ultimately, regulatory agencies have the authority to permit or prohibit activities that may negatively impact the marine environment and cultural resources. Without their support and involvement, a marine EBM program is not likely to succeed. Regulatory agencies of particular interest to this analysis include:

- Water and air-quality agencies, including the U.S. Environmental Protection Agency and the Alaska Department of Environmental Conservation;
- Planning agencies, including the national Coastal Zone Management Program and Alaska's Coastal Management Program;
- U.S. Coast Guard, for managing shipping and enforcing activities on the water; and
- Agencies regulating extraction of oil, gas and minerals, including Minerals Management Service and the Alaska Department of Natural Resource's Division of Oil and Gas and the Division of Mining, Land and Water.

⁸⁸ Federal Subsistence Management Program, About, <http://alaska.fws.gov/asm/about.cfml>.

⁸⁹ Subsistence Resource Regions 36 C.F.R § 242.22 (Dec 2005) *available at* <http://vlex.com/vid/19770288>.

⁹⁰ Regional Advisory Councils 36 C.F.R § 242.11 (Dec 2005) *available at* <http://vlex.com/vid/19770256>.

⁹¹ Parks, Forests, and Public Property Act 36 C.F.R § 242.25 *available at* <http://vlex.com/source/1085/toc/02?page=13>.

⁹² Subsistence taking of fish 36 C.F.R § 242.27 (Dec 2005) *available at* <http://vlex.com/vid/19770307>.

⁹³ *Id.*

All of these agencies are involved with management of resources to protect the environment and cultural heritage and engage in planning efforts to prioritize agency actions.

→ **Alaska Native Approaches**

Several organizations and advisory bodies work to assist and protect the interests of Alaska Natives and other rural residents. These organizations could be included in a state or federally-led integrated EBM program. Also, some of the programs described here could form the basis of a grassroots marine EBM program.

Alaska Eskimo Whaling Commission

The Alaska Eskimo Whaling Commission (AEWC) is an association of Alaskan Eskimo whalers responsible for managing the bowhead whale subsistence hunt under the quota system set up by the International Whaling Commission. Since 1981, AEWC has managed the hunting of bowhead whales through a cooperative agreement with NOAA.⁹⁴ The cooperative agreement, among other things, provides AWEC with an exclusive enforcement mechanism for any violation of the subsistence whaling management plan by any member of AWEC. The cooperative agreement also mandates that all federal government agencies and departments consult with AWEC in the event that a proposed federal project may affect the bowhead whale population. Similarly, the federal government must, prior to issuing permits to the oil and gas industry, show evidence that cooperative planning of mitigation measures have been undertaken and that there will be no unmitigated impact by oil and gas activities in Arctic waters on Native subsistence activities involving marine mammals.

To facilitate the protection of subsistence bowhead whale hunting, AWEC developed the open season Conflict Avoidance Agreements (CAA) in the mid-1980s. Under the CAAs, subsistence whaling captains and Arctic offshore oil and gas operators identify measures for the operator to undertake in order to mitigate potential impacts of oil and gas activities on the Alaska Native subsistence hunting and harvesting of bowhead whales. While not directly enforceable by federal law, NMFS relies on the Conflict Avoidance Agreement to make the finding under National Marine Mammal Protection Act that an activity “will not have an unmitigable adverse impact on the availability of such species or stock for taking of subsistence use...”⁹⁵ In addition, the North Slope Borough may, under its authorities, require the company to enter into a Conflict Avoidance Agreement with the AEWC prior to applying for a rezoning or development permit for the siting of permanent facilities in state waters.⁹⁶

Alaska Inter-Tribal Council

The Alaska Inter-Tribal Council (AITC) is a tribally-governed non-profit organization that works throughout the state advocating in support of tribal governments.⁹⁷ In 2006, the AITC adopted a

⁹⁴ Ahmaogak, Maggie, Alaska Eskimo Whaling Commission – Overview and current concerns, http://www.uark.edu/misc/jcdixon/Historic_Whaling/AEWC/aewc_maggie%20presentation.htm.

⁹⁵ Conservation 16 U.S.C. §1371 (a)(5)(D) available at <http://www.access.gpo.gov/uscode/title16/title16.html>.

⁹⁶ BEAUFORT SEA AREA WIDE COMPETITIVE OIL AND GAS LEASE SALE (2006), http://www.dog.dnr.state.ak.us/oil/products/publications/beaufortsea/bsaw2006/bs_2006mits.pdf.

⁹⁷ Alaska Inter-Tribal Council Vision STATEMENT (1998), <http://aitc.org/node/20>.

resolution entitled “Ecosystem Base [sic] Management of the Gulf and Alaska and the Bering Sea.”⁹⁸ The resolution was adopted in reaction to the various impacts that human activities, primarily fishing, were having on the marine environment, and the effects of these impacts on native communities dependent on the marine ecosystem.⁹⁹ The resolution calls on the NPFMC to protect the livelihoods of the Gulf of Alaska and Bering Sea villages that are dependant upon the marine ecosystem, through precautionary catch limits and area and time closures of fisheries.¹⁰⁰ The resolution further calls for the establishment of native marine cultural heritage zones to protect sensitive habitats and communities, by banning trawling within twenty miles of the Alaska coast and draft ecosystem management plans for the Aleutian Islands and the Bering Sea.¹⁰¹ Greenpeace is supporting this effort through outreach, education, and advocacy.¹⁰²

→ International Approaches

The Arctic is an international environment that will require international cooperation to ensure the proper management of its diverse resources. This section briefly describes key international efforts that could form the basis of a multilateral marine EBM program.

The **Arctic Council** is an intergovernmental council established in 1996 to coordinate circumpolar cooperation. The Council comprises eight Arctic countries: Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden, and the United States. In addition to Member States, indigenous organizations may become Permanent Participants of the Arctic Council. The category of Permanent Participation was created to provide for “active participation and full consultation with the Arctic indigenous representatives.”¹⁰³ Permanent Participants, along with the officials representing the Arctic countries, meet twice a year to oversee the Council’s work. The Arctic Council Indigenous Peoples’ Secretariat provides support for Permanent Participants in the form of organization and administration.

The Council conducts research designed to enhance Arctic protections and oversees activities in the Arctic. The Arctic Council can create policies but cannot create binding law. The scientific work of the Arctic Council is carried out by six expert working groups focused on such issues as monitoring, assessing and preventing pollution in the Arctic, climate change, biodiversity conservation and sustainable use, emergency preparedness and prevention in addition to the living conditions of the Arctic residents.

The Council’s Protection of the Arctic Environment Working Group’s 2006-2008 Work Plan identifies the following three objectives, followed by a set of specific actions that outline the overall direction of the program: 1) improve knowledge and respond to emerging knowledge of the Arctic Marine Environment; 2) determine the adequacy of applicable international/regional commitments and promote their implementation and compliance; and 3) facilitate partnerships,

⁹⁸ ALASKA INTER TRIBAL COUNCIL – RESOLUTION #2006-05, <http://www.greenpeace.org/raw/content/usa/press-center/reports4/alaska-inter-tribal-council-r.pdf>.

⁹⁹ *Id.*

¹⁰⁰ *Id.*

¹⁰¹ *Id.*

¹⁰² Personal comm. (on file with authors).

¹⁰³ THE DECLARATION ON THE ESTABLISHMENT OF THE ARCTIC COUNCIL (1996), <http://arctic-council.org/filearchive/Declaration%20on%20the%20Establishment%20of%20the%20Arctic%20Council-1..pdf>

program and technical cooperation and support communication, reporting and outreach both within and outside the Arctic Council. Notably, the Plan states that “EBM is the best approach to managing the marine environment . . .” The Plan encourages countries to initiate pilot EBM projects in order to demonstrate the application of an ecosystem-based approach to management.¹⁰⁴

Inuit Circumpolar Council

The Inuit Circumpolar Council (ICC) is an international organization that represents approximately 160,000 Inuit people living in the Arctic regions of Alaska, Canada, Greenland, and Chukotka, Russia.¹⁰⁵ The principal goals of the ICC are to strengthen unity among the Inuit of the circumpolar region and develop long-term policies which safeguard the Arctic environment. The ICC General Assembly brings together members from across the Arctic every four years to discuss activities of the ICC and strengthen the cultural bonds between the member peoples. In 1992, the ICC developed the ICC’s Principles and Elements for a Comprehensive Arctic Policy.¹⁰⁶ In addition to providing guidance to the ICC, the Arctic Policy is meant to guide international governments and circumpolar indigenous peoples in policy decisions that affect the Arctic. The ICC has an Alaska regional office that includes Inuit from the Chukchi and Beaufort Sea Region. As an organization that fosters the Inuit’s right to self-government, it may be an appropriate organization to pursue a grassroots co-management approach to marine EBM.

→ Moving Forward with Regional Ocean Governance

The following are potential approaches that could be expanded to serve as the coordinating framework for EBM in the U.S. Arctic under existing laws and institutions, even without creating new authorizing legislation or new institutional structures.¹⁰⁷

Use the Coordinator and Cabinet to lead marine EBM development.

With a revitalization of the Ocean Policy Coordinator position and encouragement of the Ocean Policy Cabinet, the Coordinator and Cabinet could form the basis of a state-led integrated ocean management program, especially working to ensure coordination among state agencies in the U.S. Arctic. The Coordinator and Cabinet could focus on either Bristol Bay or the Chukchi Sea. This would be similar to the approach taken by other states to set up ocean councils as information, advisory, and coordination bodies.¹⁰⁸

¹⁰⁴ ARCTIC COUNCIL ARCTIC MARINE STRATEGIC PLAN (2004), http://arcticportal.org/uploads/vx/IW/vxIWcyCi_7UnSBwZDbPVug/AMSP-Nov-2004.pdf.

¹⁰⁵ Inuit Circumpolar Council, *available at* <http://www.inuit.org/index.asp?lang=eng&num=2> (last visited on July 6, 2008).

¹⁰⁶ Inuit Circumpolar Council, ICC Executive Council Resolution 2003-01, <http://www.inuit.org/index.asp?lang=eng&num=244> (last visited on Sept. 22, 2008).

¹⁰⁷ For another analysis of state-based approaches for Alaska ocean governance, *see* THE OCEAN FOUNDATION, *supra* note 3.

¹⁰⁸ *See*, for example, the California Ocean Protection Council, New York Ocean and Great Lakes Ecosystem Conservation Act (§14-0101 et seq.), and the New Jersey Coastal and Ocean Protection Council.

Use the Coastal Management Program as the basis for state-led marine EBM.¹⁰⁹

Despite recent revisions restricting local control, the Coastal Management Program could form the basis for a state-led integrated ocean management in state waters through the development and implementation of district management plans. District management plans that create enforceable policies in support of a marine EBM program would need to be carefully constructed to meet the requirements under state statute. In the Chukchi Sea this would include the coastal districts of the North Slope Borough, the Northwest Arctic Borough, and the Bering Strait CRSA. In Bristol Bay, it would include the Bristol Bay CRSA and potentially other districts depending on how the boundaries are created.

Work with the AEWG to develop a grassroots marine EBM program.

The AEWG could serve as a lead organization in the development of marine EBM in the Chukchi and Beaufort Seas region of the U.S. Arctic. The AEWG has demonstrated its capacity to negotiate collaboratively with commercial interests and the federal government in the development of the Conflict Avoidance Agreements (CAAs), which allow subsistence communities in the Arctic to reduce conflict and simultaneously take into account the impacts that oil and gas operations have on marine mammals and subsistence use. Such agreements, in conjunction with the capacity and strong organization of the AEWG, could provide the groundwork for developing an integrated EBM program in the U.S. Arctic.

Designate the region as a national marine sanctuary.

Described in additional detail in the following section, the National Marine Sanctuary Program could provide the basis for pursuing Marine EBM, with the development of a new sanctuary in either the Bristol Bay region or the Chukchi and Beaufort Seas region.

Other considerations.

Other new programs could be developed under federal or state law or emerge from grassroots efforts. Federal legislation that has been introduced in the House of Representatives and the Senate would create regional ocean advisory councils, including one designated in Alaska.¹¹⁰ The Alaska legislature also could develop a state program similar to that under development in Massachusetts, California, and other coastal states. One person interviewed suggested the development of a grassroots program that would parallel and inform the Alaska Marine Ecosystem Forum as a way to help drive conservation-oriented ocean policy decisions. This would be similar to parallel institutions in the Chesapeake Bay, which has both a government-led Chesapeake Bay Program and a non-governmental Chesapeake Bay Foundation. Such a non-governmental approach may be best if both the state and federal government fail to lead or take part in a marine EBM effort.

ii. Examining Area-Based Designations

Many scholars and practitioners are increasingly looking at planning and designating areas for different ocean uses as a way to implement marine EBM. In the U.S. Arctic, area-based

¹⁰⁹ *But see* THE OCEAN FOUNDATION, *supra* note 3 for additional discussion of the constraints of this program.

¹¹⁰ The Oceans Conservation, Education, and National Strategy for the 21st Century Act, House Bill 21 (often called OCEANS 21).

designations could be used to establish areas for conservation, subsistence use and cultural heritage, and industry use. The U.S. Arctic ocean and coastal environment already has many area-based designations for a variety of purposes, including conservation, oil and gas development, and subsistence use. However, the region lacks an integrated approach for designating and managing specific areas that apply to all users. This section describes obstacles and opportunities to advance area-based designations as a way to implement marine EBM.

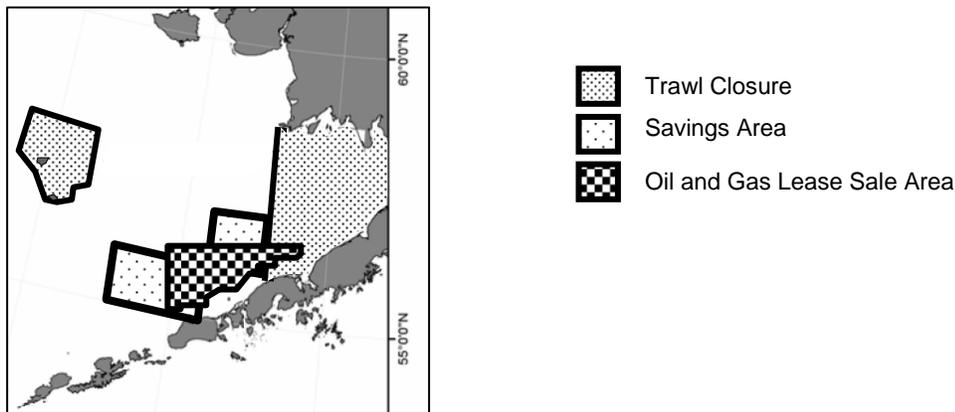
→ **Obstacles to Area-Based Designations**

In addition to the overarching integration challenges described previously, there are specific obstacles to designating ocean areas for preservation or particular uses. Some challenges to area-based designations relate to the state of Arctic science and biological and physical parameters. Several interviewees commented on the lack of scientific information available to designate specific sites. In the Chukchi Sea, for example, there is insufficient data about basic wildlife distribution, let alone more complex life-history information. Also, scientists do not fully understand the biological ramifications of climate change—information needed to make predictions about future biodiversity and ecosystem health.

Another concern about area-based designations is whether this approach can provide adequate protection in such a fluid and dynamic environment. Many species considered priorities for protection are highly migratory, raising concerns about the value of area designations. Human activities beyond U.S. waters play an important role in sustainability of resources, including atmospheric pollutants, marine debris, and discharge from vessels, and area-based designations may not address these issues. Finally, the marine environment is closely tied to the terrestrial environment. Marine mammals and seabirds use both the marine and terrestrial environment. Subsistence hunters take terrestrial and marine species according to availability. If, for example, caribou populations decline, rural residents may focus more on marine resources for subsistence. Also, offshore resource extraction requires land-based support structures. Area-based designations focused on the marine environment may not adequately address these important linkages.

Area designations in Bristol Bay highlight the overlapping and potentially conflicting management. To protect important fishery resources, the NPFMC has closed most of Bristol Bay to trawl fishing. Other industries, however, are vying to use these regions for activities that may undermine fishery conservation efforts. Figure 1 shows the fishery conservation areas superimposed with the federal oil and gas lease sale area.

Figure 1. Bristol Bay Fishery Conservation and Proposed Oil and Gas Lease¹¹¹



In addition to the Lease Sale Area shown in Figure 1, Alaska is leasing state waters for oil and gas development in and near Bristol Bay. While not physically overlapping with Bristol Bay, the proposed Pebble Mine would encompass a large area upstream of Bristol Bay that is a critical spawning habitat for salmon. An oil spill or hazardous discharges from a mining operation could damage these important fishery resources—resources that have been protected by the NPFMC in order to ensure their long-term sustainability. There is also concern that even without pollution, consumers will choose other products because of fears of pollutants in fish.¹¹²

These potentially conflicting ocean and coastal uses, and the regulatory framework under which they are managed, demonstrate the piecemeal approach to ocean and coastal management near Bristol Bay that integrated EBM would address and seek to resolve. While the Chukchi Sea does not face the same level of conflict at this time, increased industrial development in the Arctic could lead to similar challenges. One interviewee commented that, at this point, there are no issues in the Chukchi Sea that force the need to make tradeoffs.

Existing authority may limit the ability of agencies to participate in cooperative area-based designations. In the absence of a legal mandate, even those that could participate may choose not to do so. Agencies have strong authority to designate areas for development. For example, MMS is focused on development of the outer continental shelf in the U.S. Arctic. NPFMC is tasked with managing fisheries for use in addition to conservation. Without changes to the law, it may be difficult to develop coordinated area-based designations that apply broadly to all users.

Despite these concerns and limitations, there are several area-based designations already in place that delineate jurisdictional authority, identify areas open to industrial development, and indicate areas that support environmental and cultural heritage protection. The next section describes these designations.

¹¹¹ This map is based on the maps produced in the NPFMC FMP and the MMS 5-year plan.

¹¹² Personal communication with commercial fisher interviewee (Jun 12, 2008) (on file with author).

→ Approaches to Area-Based Designations

At the broadest scale, the United Nations Convention on the Law of the Sea (UNCLOS) provides a framework for jurisdictional control at the international level.¹¹³ In accordance with UNCLOS and customary international law, the U.S. has a 12-nautical mile territorial sea extending from the baseline of the state, a 12-nautical mile contiguous zone from the boundary of the territorial sea out to 24 nautical miles, and an exclusive economic zone (EEZ) extending from the boundary of the territorial sea to 200-nautical miles offshore.¹¹⁴ Within the territorial sea and the EEZ, the U.S. has the right to explore, exploit, conserve, and manage the natural resources of the water column, seabed, and subsoil.¹¹⁵

UNCLOS also sets out a jurisdictional framework for the continental shelf. Countries can claim a 200-mile continental shelf for exclusive access to the surface and subsurface resources. UNCLOS also provides a mechanism to extend continental shelf claims to 350 nautical miles if the shelf naturally extends that far.¹¹⁶ Under this framework, the Bering Sea is divided between the U.S. and Russia with a high seas “donut hole” that is under international jurisdiction. The Chukchi and Beaufort Seas are part of the Arctic Ocean. Six countries (Norway, Denmark, Iceland, Canada, Russia, and the U.S) claim jurisdiction over some part of the Arctic Ocean, and the Arctic Ocean also includes international waters.¹¹⁷

In U.S. waters, the ocean is divided into state and federal waters. Alaska’s territorial sea extends to three miles offshore and includes submerged lands,¹¹⁸ and federal waters extend from three miles to two hundred miles. The federal government may also have a claim to the continental shelf extending beyond the two-hundred mile mark under international law.¹¹⁹ While these boundaries lay the foundation for federal and state management, the federal government has some regulatory authority in state waters, and state laws and policies can affect the activities in federal waters. For example, the Federal Energy Regulatory Commission has claimed authority to regulate hydrokinetic energy development such as wave or tidal power up to twelve miles offshore under the Federal Power Act.¹²⁰ Additionally, under the Coastal Zone Management Act, federal activities (even in federal waters) must be consistent with the enforceable coastal zone policies of the State of Alaska, including enforceable policies of the coastal districts.¹²¹

¹¹³ United Nations Convention on the Law of the Sea, [hereinafter UNCLOS], U.N. Doc. (Dec. 10, 1982 [in force 1996]), http://www.un.org/Depts/los/convention_agreements/texts/unclos/unclos_e.pdf (While the U.S. is not party to the treaty having signed but not ratified it, the U.S. does accept the boundaries as customary international law). See, e.g., President Ronald Reagan, Statement on United States Oceans Policy (Mar. 10, 1983).

¹¹⁴ UNCLOS, Part II, V.

¹¹⁵ UNCLOS, Art 56.

¹¹⁶ UNCLOS, Arts. 76-77.

¹¹⁷ There is not an agreed-upon definition of the Arctic. Some define it as the area encompassing the July 10 degree Celsius isotherm. This region includes the Bering Sea and extends into Hudson Bay and the Labrador Sea. For others, it is the Arctic Circle, which is latitude 66° 33' N. In the U.S. this occurs at the Bering Straights. For a description of Arctic boundaries, see UNEP & GRID Arenal, *Vital Arctic Graphics*, <http://maps.grida.no/go/collection/vital-arctic-graphics>.

¹¹⁸ Submerged Lands Act, 43 U.S.C. §§ 1301 et seq. (1953).

¹¹⁹ UNCLOS, Arts. 76-77.

¹²⁰ For more information, see the Federal Energy Regulatory Commission, Industries, <http://www.ferc.gov/industries/hydropower/indus-act/hydrokinetics.asp>.

¹²¹ Coastal Zone Management Act of 1972, 16 U.S.C. § 307.

Several areas of Bristol Bay and the Chukchi Sea have specific legal designations (Table 5).

Table 5. Area Designations in the Chukchi Sea and Bristol Bay

Potential Approaches to Designate Areas for Conservation		
Federal approaches for designating coastal and watershed environment (terrestrial and freshwater) National Wildlife Refuges (terrestrial and freshwater) National Parks and Preserves (marine, terrestrial and freshwater) Critical Habitat under ESA (terrestrial and freshwater)		
Federal approaches for marine environment National Marine Sanctuaries National Parks and Preserves Critical Habitat under ESA		
State approaches for designating coastal and watershed environment (terrestrial and freshwater) State Parks State refuges, critical habitat areas, and sanctuaries		
State approaches for marine environment Marine Parks State refuges, critical habitat areas, and sanctuaries		
Existing Area Designations in Bristol Bay and the Chukchi Sea		
	Bristol Bay	Chukchi Sea
National Wildlife Refuges (USFWS)	Becharof National Wildlife Refuge (terrestrial), Togiak National Wildlife Refuge (terrestrial)	Alaska National Maritime Refuge (terrestrial) including 500 miles of coast
National Parks and Preserves (NPS)	Lake Clark National Park and Preserve (terrestrial), Katmai National Park and Preserve (terrestrial)	Bering Land Bridge National Preserve (terrestrial), Noatak National Preserve (terrestrial)
Critical habitat under ESA	Steller's eider (terrestrial), spectacled eider (terrestrial and offshore—outside of Bristol Bay)	Spectacled eider critical habitat (offshore)
National Marine Sanctuaries	None	None
State Parks	Wood-Tikchik State Park (terrestrial)	None
State refuges, critical habitat areas, and sanctuaries	Walrus Islands State Game Sanctuaries, five critical habitat areas including Egegik, Pilot Point, Cinder River, Port Heiden, and Port Moller	None
Marine Parks	None	None

This section describes area designations for conservation and Alaska Native heritage under the Magnuson-Stevens Fishery Conservation and Management Act, Alaska's coastal management law and access to development in state waters, leases and potential leases under the Outer Continental Shelf Lands Act, leases, reserves and marine parks under Alaska state law, and shipping lanes.

ENVIRONMENTAL AND ALASKA NATIVE CULTURAL PROTECTION

Federal and state laws and regulations may lead to place-based protection of marine and coastal habitats for environmental preservation or maintenance of Alaska Native cultural heritage and subsistence. Place-based protection can range from restricting some specific uses to restricting or prohibiting all use and access. The following section describes some of the key laws and policies that enable place-based protection and how these laws are used to designate specific areas in the ocean and coastal environment of the U.S. Arctic.

Federal Designations

Marine Protected Areas

As defined by Executive Order 13158, a marine protected area is "any area of the marine environment that has been reserved by Federal, State, tribal, territorial, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein."¹²² The Executive Order calls upon federal agencies to use their authority to develop and implement a network of marine protected areas.¹²³ To date, this Executive Order has not resulted in the creation of a new MPA network. Federal efforts have instead focused on mapping existing area-based designations and protections.¹²⁴ There are few federally designated marine environments in the U.S. for conservation and preservation purposes that apply broadly to all sectors. The National Wildlife Refuge System designations protect coastal environments and critical habitat designations under the ESA lead to heightened scrutiny of activities proposed in those regions.

Wildlife Refuges

Managed by the U.S. Fish and Wildlife Service, the National Wildlife Refuge System is the only network of federal lands in the United States devoted primarily to wildlife.¹²⁵ Alaska contains 85% of the acreage of the National Wildlife Refuge System, including the Arctic National Wildlife Refuge, Yukon Delta National Wildlife, and the Alaska Maritime National Wildlife Refuge.¹²⁶ The majority of current refuge area was designated under the Alaska National Interest Lands Conservation Act.¹²⁷

The Alaska Maritime Wildlife Refuge System covers an area of 4.9 million acres of land encompassing 24,000 islands that are spread out along the 47,300 miles of Alaska coastline from the Chukchi Sea to the Gulf of Alaska.¹²⁸ In the Chukchi Sea, the Maritime Refuge encompasses

¹²² Executive Order 13158, Marine Protected Areas §§ 3, 4 (May 26, 2000), *available at* <http://mpa.gov/pdf/eo/execordermpa.pdf>.

¹²³ *Id.*

¹²⁴ *Id.*

¹²⁵ Richard J. Fink, *The National Wildlife Refuges: Theory, Practice, and Prospect*, 18 HARV. ENVTL. L. REV. 1,5 (1994).

¹²⁶ Robert L. Fischman, *The Significance of National Wildlife Refuges in the Development of U.S. Conservation Policy*, 21 J. LAND USE & ENVTL. L. 1, 4 (2005).

¹²⁷ Alaska National Interest Lands Conservation Act, H.R. 39, 96th Cong. (1980).

¹²⁸ U.S. Fish and Wildlife Service, Alaska Maritime National Wildlife Refuge, Fact Sheet (2003) *available at* http://alaska.fws.gov/nwr/akmar/pdf/v_AkMaritime.pdf.

areas of the mainland, spits and scattered islands stretching from the Bering Strait to Barrow.¹²⁹ In the Bering Sea, the Maritime Refuge extends southward from Norton Sound, 600 miles along the Seward Peninsula to the Aleutian Islands.¹³⁰ The Maritime Refuge is limited to land areas but provides important habitat for marine species, including sea birds and marine mammals.¹³¹ The management purpose is to maintain, enhance, and restore nature; however other activities which can co-exist with the management purpose are permitted.¹³²

Endangered Species Act

The federal Endangered Species Act (ESA) requires the Secretaries of Interior and Commerce to identify endangered and threatened species and the habitats upon which they depend. Alaska endangered species include eleven marine and terrestrial species: the Steller sea lion, bowhead, fin, sperm, and sei whale, and leatherback sea turtle. The polar bear and several other species are listed as threatened. Species under consideration for protection include the black-footed albatross, the Cook Inlet beluga whale, the northern right whale, the Pacific walrus, and the ribbon seal.¹³³

Species that are placed on the endangered species list may have critical habitat designated, which is an area that contains “physical or biological features essential to the conservation of the species which may require special management considerations or protection.”¹³⁴ This designation is separate from the endangered species determination and employs a cost-benefit approach. The designation must consider economic impacts, impacts on national security, and any other relevant impacts.¹³⁵ Many species have no critical habitat designations. In Alaska, the Secretary has determined that many endangered whale species are imperiled due to over-hunting and therefore the ‘take’ prohibition is sufficient for their conservation. A petition for critical habitat designation for the bowhead whale in the Beaufort and Chukchi seas was denied in 2002.¹³⁶ Only four critical habitat designations exist in Alaska, including Steller eider habitat in Bristol Bay and spectacled eider habitat in Bristol Bay and the Chukchi Sea.¹³⁷

Many federal laws that protect specific species and habitats also protect subsistence hunting and fishing rights.¹³⁸ Therefore, place-based protection laws focused on species and habitat protection may also have the flexibility to support cultural heritage and subsistence practices.

¹²⁹ U.S. Fish and Wildlife Service, Alaska Maritime National Wildlife Refuge Website, Chukchi Sea Unit <http://alaska.fws.gov/nwr/akmar/units/ChukchiMAIN.htm> (last visited July 18, 2008).

¹³⁰ U.S. Fish and Wildlife Service, Alaska Maritime National Wildlife Refuge Website, Bering Sea Unit <http://alaska.fws.gov/nwr/akmar/units/BeringMAIN.htm> (last visited July 18, 2008).

¹³¹ *Id.*

¹³² Fish and Game Act, 16 U.S.C. § 668dd (4) (2008).

¹³³ See Alaska Department of Fish and Game, Endangered Species in Alaska, http://www.adfg.state.ak.us/special/esa/esa_home.php#endangered_list.

¹³⁴ 16 U.S.C.A. § 1532 (5)(A)(i).

¹³⁵ 16 U.S.C.A. § 1533(b)(2).

¹³⁶ Final Determination on a Petition to Designate Critical Habitat for the Bering Sea Stock of Bowhead Whales, 67 Fed. Reg. 169 (2002).

¹³⁷ Designation of Critical Habitat for the North Pacific Right Whale, 73 Fed. Reg. 68 (2008).

¹³⁸ See Appendix C.

State Designations

Alaska Constitution

The Alaska Constitution recognizes the importance of conservation and allows the legislature to designate “special purpose sites,” including “areas of natural beauty or of historic, cultural, recreational, or scientific value” The legislature has the right to reserve these sites from the public domain to manage and preserve them.¹³⁹ The ability of the state legislature to designate special purpose sites, along with its role in allowing development of natural resources, could provide the legislature with a state constitutional basis for developing marine EBM and use area-based designations to implement it.

Marine Parks

The Alaska Department of Natural Resources (DNR) is responsible for the management of the marine parks system. In Alaska, the primary purposes of marine parks are to maintain natural, cultural, and scenic values; maintain fish and wildlife resources and lawful existing uses of marine and coastal resources; and to promote and support recreation and tourism in the state.¹⁴⁰ In practice, recreation is a major focus for marine parks.

In the creation of a management plan for each parcel, the Commissioner for Natural Resources must consult a diverse set of stakeholders, including the Department of Fish and Game, local municipalities and private landowners, the U.S. Forest Service, and organizations concerned with conservation, recreation, and tourism.¹⁴¹ The Commissioner must consult with proximately located Alaska Natives to ensure the protection of cultural and historical values. There is no law to preclude mineral claims.¹⁴² Fishing is allowed as are recreational uses including fishing; hunting and trapping; aircraft operation; and motorized operation of boats.¹⁴³

Thirty-three sites in Alaska are designated as Marine Parks, none of which are in Bristol Bay or the Chukchi Sea. In addition to marine parks, the state of Alaska has many state parks that protect coastal terrestrial habitat. In the Bristol Bay region, the Wood-Tikchik State Park is the largest state park in the U.S., part of the Nushagak watershed, and includes major spawning habitat for salmon.

State Critical Habitat

Under state law, sixteen areas are designated as critical habitat, which are managed by the Alaska Department of Fish and Game. The purposes of critical habitat areas are to protect habitat essential to fish and wildlife populations and eliminate incompatible activities.¹⁴⁴ In Bristol Bay, Port Moller, Port Heiden, Cinder River, and Egegik are designated as critical habitat areas and encompass both marine and terrestrial environments.¹⁴⁵ There are a total of 16 critical habitat areas.

¹³⁹ ALASKA CONST. art. VIII, § 7.

¹⁴⁰ Declaration of Purpose, AS 41.21.300 (a).

¹⁴¹ Declaration of Purpose, AS § 41.21.302 (c).

¹⁴² Declaration of Purpose, AS § 41.21.302 (g).

¹⁴³ 11 AK ADC 20.750, 20.755, 20.760.

¹⁴⁴ Purpose, AS § 16.20.500.

¹⁴⁵ Purpose, AS § 16.20.550.

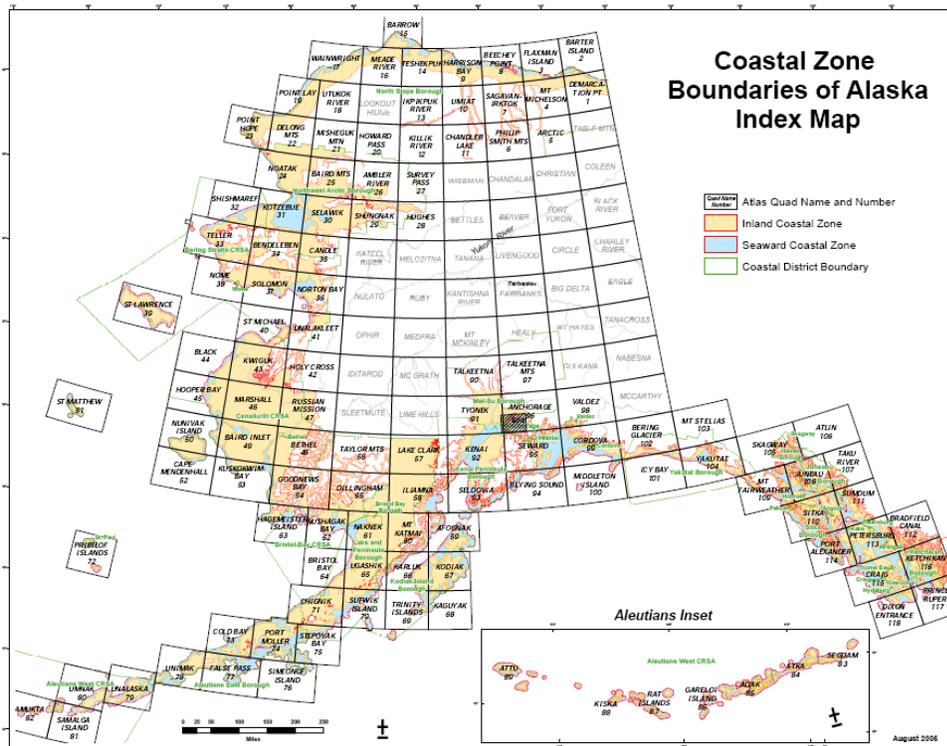
State Refuges and Sanctuaries

There are also state refuges and sanctuaries, including Walrus Islands State Game Sanctuary, a major walrus haul-out and refuge for nesting seabirds. Refuges and sanctuaries have heightened regulations. Prohibited activities vary among locations, but can include on-bottom aquatic farming and personal watercraft use.¹⁴⁶ Special permits are required for some activities including construction, habitat alteration, detonating explosives, excavation, extraction of natural resources, water diversion or withdrawal, off-road use, waste disposal, grazing, and other activities that may impair the environment.¹⁴⁷ To obtain a special permit, the applicant must be consistent with the protection of fish and wildlife and their use, protection of fish and wildlife habitat, and the purpose for which the special area was established. Any negative effects on fish and wildlife must be mitigated.¹⁴⁸

Alaska Coastal Management Program

The Alaska Coastal Management Program, described in the previous section, enables districts to designate the coastal zone (Figure 2).¹⁴⁹

Figure 2. Alaska Coastal Management Program Coastal Zone Boundaries¹⁵⁰



¹⁴⁶ On-bottom aquatic farming prohibited, 5 AAC 95.300, 95.310.

¹⁴⁷ Activities requiring a special area permit, 5 AAC 95.420.

¹⁴⁸ Conditioning, approval, or denial of special area permits, 5 AAC 95.430.

¹⁴⁹ Alaska Department of Natural Resources, *The Alaska Coastal Management Program (as amended)* A-8 (June 2, 2005), available at, http://www.alaskacoast.state.ak.us/Clawhome/handbook/pdf/ACMP_as_amended.pdf.

¹⁵⁰ Source: Alaska Coastal Management Program, Coastal Zone Boundaries of Alaska Index Map, <http://www.alaskacoast.state.ak.us/GIS/IndexMap.pdf>.

The terrestrial boundary of the zone is based on geophysical properties, including saltwater intrusion and biological linkages between marine habitats and the terrestrial and freshwater environment.¹⁵¹ The coastal zones are divided into two sub-regions: (1) zone of direct interaction where physical and biological processes are directly connected to the ocean; and (2) the zone of direct influence which is affected by the close proximity to the ocean. A third zone—the zone of indirect influence—is noted but not part of the legally-defined coastal zone.¹⁵² In short, the coastal zone is not a set distance inland but varies based on environment, and in some cases can extend more than 200 miles inland (Figure 2).¹⁵³

As shown in Figure 2, the state is divided into thirty-five resource districts, including boroughs, cities, and coastal resource service areas (unorganized areas of the state).¹⁵⁴ Thirty-three of have approved coastal management plans.¹⁵⁵ In addition to designating the coastal zone as an area that is managed in a more coordinated fashion, coastal districts can designate areas within the coastal zone for particular uses. This may include, for example, designation of coastal hazard areas, tourism, subsistence use, and industrial use.

AREA DESIGNATIONS FOR COMMERCIAL USE

Federal Designations

Fisheries Management

The NPFMC manages fisheries under the Magnuson-Stevens Fishery Conservation and Management Act.¹⁵⁶ According to this law, the NPFMC develops fishery management plans that can include fishery management area designations that are often gear-related and can be permanently or seasonally closed.¹⁵⁷ The Fishery Council has a variety of area closures in the Bering Sea that are important to consider within the broader framework area designations under marine EBM (Figure 3).

¹⁵¹ *Id.* at A-9.

¹⁵² *Id.* at A-10.

¹⁵³ Detailed maps of the coastal zone can be found at the Coastal Management Program website. Alaska Coastal Management Program, Coastal Boundary Atlas Maps, <http://www.alaskacoast.state.ak.us/GIS/boundary.htm>.

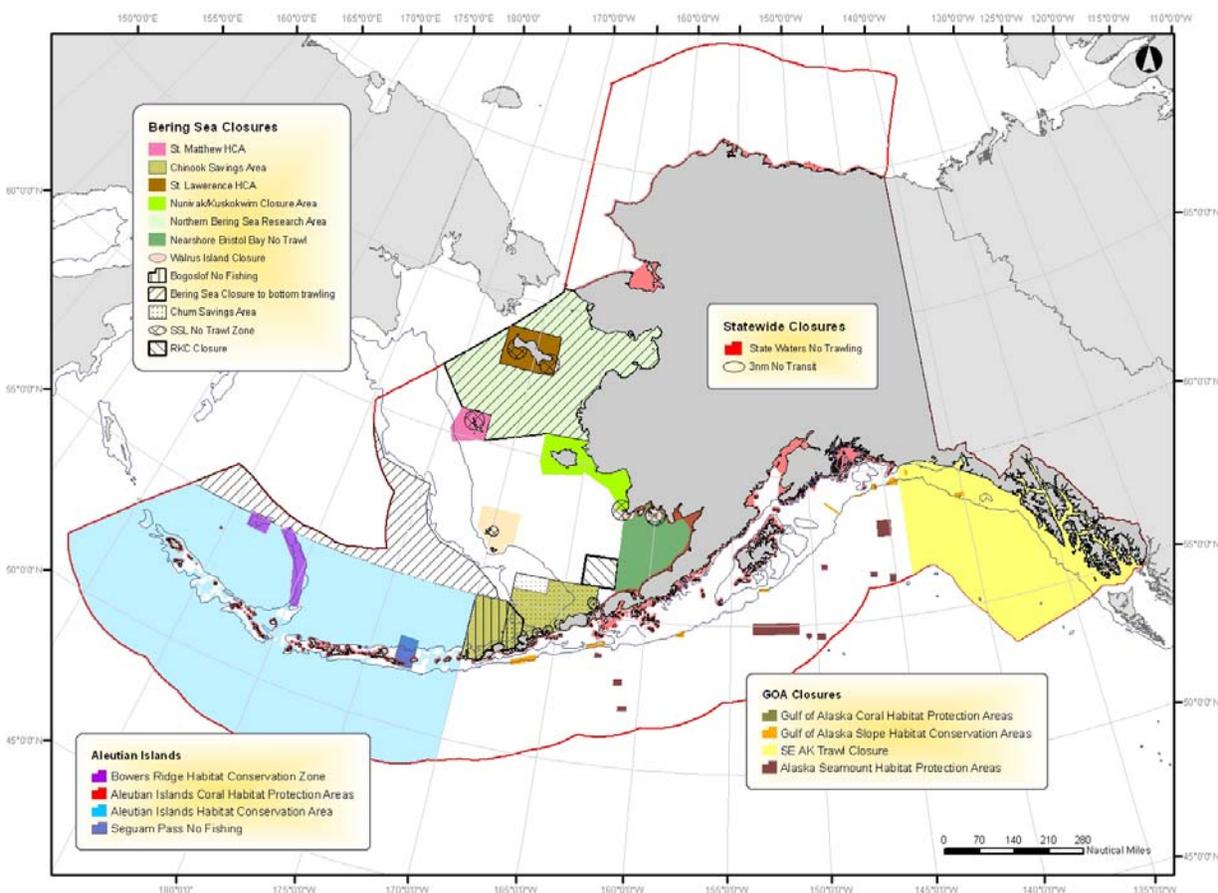
¹⁵⁴ Over half of the State of Alaska is not organized as a borough. This includes large portions of Western Alaska and the Western Aleutian Islands.

¹⁵⁵ Alaska Department of Natural Resources, *The Alaska Coastal Management Program*, *supra* note 149 at A-17.

¹⁵⁶ Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. §§1801 et seq. (2007)

¹⁵⁷ *See, e.g.*, North Pacific Fishery Management Council [hereinafter NPFMC], Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area [hereinafter FMP] (April 2008).

Figure 3. Map of the Fishery Closures in Alaska's Waters¹⁵⁸



The NPFMC closed the federal portion of Bristol Bay to trawl fishing, with the exception of a subarea that is open in the spring. NPFMC closed a large part of the Northern Bering Sea to bottom trawling and designated it as a research area. It closed the Pribilof Islands to trawl gear year-round. Bottom gear is prohibited in some areas near the Aleutian Islands. NPFMC closes several areas in the Bering Sea when certain bycatch limits are reached, including the chum salmon savings area and red king crab savings area near Bristol Bay.¹⁵⁹ The NPFMC is developing an Arctic fishery management plan that would prohibit fisheries in federal waters north of the Bering Straits for an indefinite period.¹⁶⁰ It is important to note that the NPFMC closures are for commercial fisheries only. Other federal agencies must only consult on activities that may affect essential fish habitat designations before acting. Therefore, other federal agencies can permit non-fishing activities in and near areas closed by the NPFMC. For example, shipping and oil and gas operations are not precluded from areas closed to commercial fishing.

¹⁵⁸ NOAA Fisheries, Alaska Region (on file with authors).

¹⁵⁹ See, e.g., NPFMC FMP, *supra* note 157 at 35.

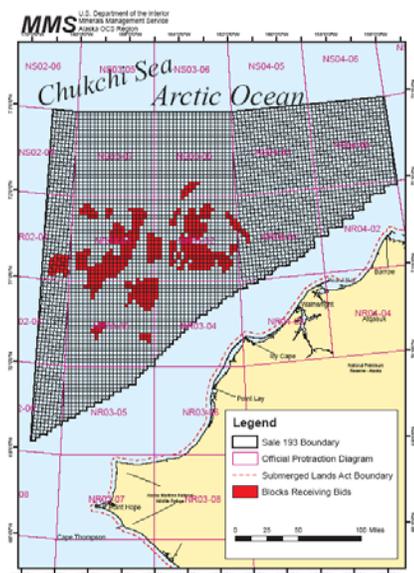
¹⁶⁰ NPFMC, *Current Issues: Arctic Fisheries Management*, http://www.fakr.noaa.gov/npfmc/current_issues/Arctic/arctic.htm.

Oil and Gas Leases

MMS manages the nation's oil, natural gas, and other mineral resources on the outer continental shelf (OCS) according to the Outer Continental Shelf Lands Act (OCSLA). Every five years, MMS identifies specific areas for oil and gas lease sales. From 1989 to 2007, the North Aleutian Basin/Bristol Bay was protected from new oil and gas lease sales. On January 9, 2007, President Bush lifted the executive withdrawal of the North Aleutian Island planning area, allowing MMS to list Bristol Bay in its five-year oil and gas leasing plan for 2007-2012. Specifically, the five-year plan calls for Lease Sale 214, which includes federal offshore waters in Bristol Bay and the eastern Bering Sea.¹⁶¹

Similar to Bristol Bay, the Chukchi Sea has been closed to oil and gas leasing since 1991 until recently. MMS's 2007-2012 five-year plan offers three lease sales covering forty million acres in the Chukchi Sea (Figure 4). The net economic benefits are estimated to total \$6.37 billion. In February 2008, MMS held a lease sale for the Chukchi Sea Planning Area, a 29-million-acre area located twenty-five to fifty miles offshore in water depths ranging from 95 to 9,800 feet. MMS received 667 bids for the sale, totaling almost \$ 3.5 billion—a record for the area.¹⁶² The next lease sales are planned for 2010 and 2012.¹⁶³

Figure 4. Chukchi Sea Lease Blocks Receiving Bids



¹⁶¹ United States Department of the Interior, Minerals Management Service, *Proposed final program, Outer Continental Shelf, Oil and Gas Leasing Program 2007-2012*, available at <http://www.mms.gov/5-Year/PDFs/MMSProposedFinalProgram2007-2012.pdf>.

¹⁶² *Shell is High Bidder to Drill for Oil and Gas Off Alaska*, N.Y. Times, Feb 7, 2008, available at http://www.nytimes.com/2008/02/07/business/07oil.html?_r=1&adxnnl=1&oref=slogin&adxnnlx=1213110705-2JT3lcjQIs+InbyDCWc9Q.

¹⁶³ United States Department of the Interior, Offshore Minerals Management Offshore Leasing Program, *Current 5-Year Program (2007-2012)*, <http://www.mms.gov/ld/AKsales.htm>.

→ Moving Forward with Area-Based Designations

As the previous section demonstrates, there are many designated sites in the U.S. Arctic marine and terrestrial environments for purposes that include protection of the environment, maintenance of subsistence harvest, and industrial use. These designations could serve as a starting point for development of marine spatial management and marine EBM.

What is lacking is coordinated planning and designation across sectors and institutions. This preliminary assessment shows that federal and state agencies possess the authority to designate areas for environmental protection, subsistence use, and industrial use. Such agencies could use this authority to create a marine EBM program that includes area-based designations. However, such a program is unlikely to occur in the absence of a legal mandate or strong individual leadership from government administrations and institutions. In this section, ELI identifies ways to expand existing approaches and suggests additional legal and soft-law avenues for the development of a more coordinated and comprehensive area-based designations as a way to implement marine EBM.

Federal Approaches

Designate a national marine sanctuary.

One of the existing mechanisms to conduct coordinated ocean management in federal waters is the designation of a national marine sanctuary under the National Marine Sanctuaries Act (NMSA).¹⁶⁴ Since the law's enactment, thirteen sanctuaries have been established in the U.S.¹⁶⁵ The NMSA allows the Secretary of Commerce (Secretary) to designate "any discrete area of the marine environment" as a sanctuary if the Secretary makes the following determinations.¹⁶⁶

First, the area must be of special national significance due to its resource or human use values.¹⁶⁷ Second, the area must be in need of protection, and the designation of a sanctuary must facilitate that protection.¹⁶⁸ Third, the area must be of a size and nature that permits comprehensive management and conservation.¹⁶⁹ Finally, the Secretary must determine that the existing state and federal authorities are either inadequate or that they should be supplemented to ensure "coordinated and comprehensive conservation and management of the area."¹⁷⁰ Prior to the designation of a new sanctuary, the Secretary must show that the addition will not negatively impact the sanctuary system, and that sufficient resources are available to fund each existing sanctuary.¹⁷¹

¹⁶⁴ 16 U.S.C.A 1431.

¹⁶⁵ NOAA National Marine Sanctuaries Website, <http://sanctuaries.noaa.gov/> (last visited on July 7, 2008).

¹⁶⁶ 16 U.S.C.A 1433 (a).

¹⁶⁷ 16 U.S.C.A 1433 (a)(2).

¹⁶⁸ 16 U.S.C.A 1433 (a)(4).

¹⁶⁹ 16 U.S.C.A 1433 (a)(5).

¹⁷⁰ 16 U.S.C.A 1433 (a)(3).

¹⁷¹ 16 U.S.C.A 1434 (f) (This requirement is seen as placing a moratorium on the creation of new NMS, because of the existing limited funding. However, efforts are underway to change this requirement, and NMS have in the past been created by new legislation).

While the purposes and policies of the NMSA focus primarily on ecological conservation, the factors required to make a determination about a new sanctuary designation are based on a multi-use approach that recognizes all existing uses of the area. This approach considers not only ecological and historical resources, but also human uses and socioeconomic concerns.¹⁷²

Relevant factors used for a sanctuary determination include ecosystem structure, threatened and endangered species, critical habitat, cultural significance, commercial, recreational, and subsistence uses.¹⁷³ The Secretary must also consider the negative impacts of the designation, including restrictions on income-generating activities.¹⁷⁴

In practice, the different sanctuaries offer a range of examples for how to manage a multi-use environment. The Florida Keys National Marine Sanctuary, for example,¹⁷⁵ developed a comprehensive management plan in consultation with a variety of stakeholders, with more than 100 public meetings and 6,400 submitted comments responding to a draft management plan and environmental impact statement.¹⁷⁶ It took seven years to reach consensus on the finalized management plan.¹⁷⁷ The resulting management plan includes sanctuary-wide prohibitions, and a variety of special area designations that prohibit and permit a range of activities in specific locations within the sanctuary.

The management plan also includes permitting and enforcement procedures. Prohibitions include mineral and hydrocarbon exploration and development, removal of or injury to live rocks and coral, and taking of any protected wildlife.¹⁷⁸ The harvest of any marine life must take place in accordance with the Florida Administrative Code.¹⁷⁹ Special restrictions relate to the alteration of the sea bed, which is only permissible as the incidental result of certain activities, including traditional fishing and local harbor and marina maintenance operations.¹⁸⁰ The discharge of materials both inside the sanctuary and in any location that will enter the sanctuary is also subject to strict regulations.¹⁸¹

Use the Endangered Species Act Listing and Critical Habitat Designations.

Another potential approach under federal law to encourage marine EBM and area-based designations is the development of habitat conservation plans and critical habitat designations for federally listed endangered and threatened species in the U.S. Arctic. As previously described, Alaska is home to eleven species listed as endangered and five listed as threatened under the federal Endangered Species Act.¹⁸²

¹⁷² 16 U.S.C.A 1433 (b).

¹⁷³ 16 U.S.C.A 1433 (b).

¹⁷⁴ 16 U.S.C.A 1433 (b).

¹⁷⁵ Although National Marine Sanctuaries are typically established through the NMSA, the FKNMS was established through an Act of Congress, the Florida Keys National Marine Sanctuary which designated the area as a Sanctuary to be managed under the NMSANOAA, Florida Keys National Marine Sanctuary Revised Management Plan, 14 (2007), available at http://floridakeys.noaa.gov/pdfs/2007_man_plan.pdf.

¹⁷⁶ Jeff Brax, *Zoning the Oceans: Using the National Marine Sanctuaries Act and the Antiquities Act to Establish Marine Protected Areas and Marine Reserves in America*, 29 ECOL. L. Q. 106 (2002).

¹⁷⁷ *Id.*

¹⁷⁸ 15 C.F.R. § 922.163 (a).

¹⁷⁹ 15 C.F.R. § 922.163 (a) (12).

¹⁸⁰ 15 C.F.R. § 922.163 (a) (3).

¹⁸¹ 15 C.F.R. § 922.163 (a) (4).

¹⁸² 50 C.F.R. § 17.11.

It is unlawful to ‘take’ any listed species.¹⁸³ ‘Take’ is broadly defined to include all methods of hunting, killing, capturing and harming wildlife. Taking can therefore include habitat degradation and modification if such an act kills or injures wildlife by significantly impairing essential behavioral patterns.¹⁸⁴ An exemption program exists for projects that result in the “incidental” take of listed species. Non-federal entities engaging in legal activities that result in the incidental, non-purposeful, taking of species can apply for an incidental take permit.¹⁸⁵ To apply for the permit the applicant must create a habitat conservation plan (HCP) that ensures that all projected impacts on listed species will be minimized and mitigated.¹⁸⁶ The permits work under a ‘no surprises’ policy which assures permit recipients that if unforeseen circumstances arise, they will not be required to commit any extra land, resources, or financial compensation other than what was agreed to under the HCP.¹⁸⁷

HCPs can be large-scale efforts, involving whole communities in landscape-level strategies to preserve listed species.¹⁸⁸ In the past, the HCP process has brought together diverse stakeholders.¹⁸⁹ Development of HCPs in Alaska could allow fisheries and other ocean industries to develop, while working constructively with conservation groups and subsistence users to mitigate the effects of industry, set aside critical habitat, and implement a range of conservation measures. The need to develop conservation plans for species threatened by climate change and expanding human uses could provide the legal impetus for developing a marine EBM programs with specific area-based designations.

Link new program to existing designations.

It is important for a marine EBM program to consider the linkages between the terrestrial and marine environments in order to facilitate ocean industrial use, subsistence harvest, and acknowledge the biological and physical connections. To do this, a marine EBM program could take advantage of existing habitat and area-based designations on land and/or in the ocean and strive to build linkages across environments. For example, the Alaska Maritime Wildlife Refuge System could be a starting point for broader at-sea protections, recognizing that the nearshore terrestrial habitat is already designated for environmental protection and subsistence use.

State Approaches

Use the Coastal Program as the EBM framework.

One opportunity for marine EBM in state waters is under the authority of the Coastal Program and Coastal Districts. Under state statute, Coastal Districts are required to develop a coastal plan through a participatory process. When creating the plan, the Districts are called upon to consider and may designate areas for recreational use, tourism, energy facilities, commercial fishing and

¹⁸³ 16 U.S.C.A. § 1538 (a)(1)(b).

¹⁸⁴ 16 U.S.C.A. § 1532 (19).

¹⁸⁵ 16 U.S.C.A. § 1539 (a)(1)(B).

¹⁸⁶ 16 U.S.C.A. § 1539 (a)(2)(A).

¹⁸⁷ USFWS, Endangered Species Program, *No Surprises*, <http://www.fws.gov/Endangered/hcp/NOSURPR.HTM> (last visited on July 11, 2008).

¹⁸⁸ USFWS, *Habitat Conservation Plans Handbook*, 2 (2005), available at <http://www.fws.gov/Endangered/pdfs/HCP/HCPBK2.PDF>.

¹⁸⁹ *Id.* at 3.

seafood processing, subsistence use, important habitats, important study sites, and historical areas.¹⁹⁰ These designations do not exclude activities. However, they do set up specific requirements for review of proposed activities. For example, in areas designated as natural hazard areas, there may be heightened regulatory requirements to ensure that the development can withstand impacts from the hazard.¹⁹¹

Designate marine parks.

No state-designated marine parks exist in Bristol Bay, Chukchi Sea, or Beaufort Sea. The system behind the creation of Marine Parks could provide a spatial framework on which to base integrated ocean management in Alaska's state waters. Such ocean management of state waters could be combined with state-based designations of critical habitat for fish and wildlife or other state designations for wildlife refuges and sanctuaries.

C. Additional Considerations

i. Precautionary and Adaptive Management

To date, the Chukchi Sea Region especially has been untouched by development. There is relatively poor scientific knowledge of the life cycle, distribution, and abundance of marine life in the marine ecosystems north of the Bering Strait.¹⁹² Given this dearth of scientific knowledge, and the relatively unknown ecological ramifications of climate change, a key element of an integrated ocean management program in the U.S. Arctic must include explicit consideration of adaptive management and a precautionary approach.

According to the U.S. Commission on Ocean Policy, the precautionary approach, is a means of balancing uncertainty and possible irreversible damage to the environment.¹⁹³ In the face of uncertainty, the precautionary approach recognizes the potential detriment of acting in the face of uncertainty, and applies judicious management practices based on the best available science. Acting in concert with the precautionary approach, adaptive management relies on a plan by which managers can make and periodically modify decisions based on what is known and what is learned about the marine system.¹⁹⁴

In many respects, managers, scientists, and users are reluctant to use the term “precautionary approach” when making management recommendations or adopting policy statements and guidelines. Some accuse the principle of being “anti-science” in that the burden is placed on the

¹⁹⁰ District Coastal Management Plan Requirements, 11 AAC 114.250.

¹⁹¹ 11 AAC 114.250, 114.270, 112.210.

¹⁹² Bill Wilson, North Pacific Fishery Management Council, Fishery Management Options for the Alaskan EEZ in the Chukchi and Beaufort Seas of the Arctic Ocean (Apr. 2007) (Revised Discussion Paper), available at http://www.fakr.noaa.gov/npfmc/current_issues/Arctic/arctic.htm.

¹⁹³ U.S. COMMISSION ON OCEAN POLICY, http://oceancommission.gov/documents/prepub_report/chapter3.pdf.

¹⁹⁴ Ann M. Parma, *What Can Adaptive Management Do for Our Fish, Forests, Food, and Biodiversity*, INTEGRATIVE BIOLOGY, 1998, at 16.

proponent of an action to demonstrate its safety.¹⁹⁵ Others argue the approach calls for an unachievable standard of “zero risk.”¹⁹⁶

→ Approaches to Precautionary Approach and Adaptive Management

Despite some reluctance to adopt the precautionary approach, marine management bodies in the Arctic have been prompted to develop management strategies that include precautionary measures as well as adaptive management principles—each of which could be incorporated into a marine EBM program. This section provides examples of how the precautionary approach and adaptive management strategies have been used by agencies and other institutions working in the Arctic.

North Pacific Fishery Management Council and Precaution

The NPFMC is developing an Arctic Fishery Management Plan that—as a precautionary measure—will close the entire management area north of the Bering Strait to commercial fishing.¹⁹⁷ This action is due to the current lack of knowledge concerning discrete populations of arctic fishes; the effect that fishing vessels will have on bowhead whales, seals, and other marine mammals; the effect commercial fishing will have on polar bears; and the effects climate change will have on seasonal ecological processes.¹⁹⁸ Inadequate scientific knowledge of the size of fish populations and their interrelationships with the marine environment, coupled with the current and potential impacts climate change will have on the region, provide compelling reasons to close the fisheries until adequate science is acquired to make effective management decisions.¹⁹⁹ One environmental interviewee questioned, however, what amount or type of information will be enough to signal the green light for future development. This is likely a question that scientists as well as decision-makers must answer—and one that could be addressed by those developing a marine EBM vision and plan.

Similarly, the NPFMC took a precautionary approach in setting catch limits for groundfish in the Bering Sea. While scientifically acceptable catch limits range from 2.5-4 million metric tons, NPFMC has set the limit at 2 million metric tons to prevent overfishing and species decline.²⁰⁰

Arctic Council and Precaution

At the international level, the Arctic Council has adopted precautionary management procedures into their management plans. The Arctic Council’s Action Plan to Eliminate Pollution (ACAP) in the Arctic requests that its members, in implementing the ACAP, fully adopt the precautionary

¹⁹⁵ Peter Saunders, *Use and Abuse of the Precautionary Principle*. Mathematics Department at King’s College, London, 2000, <http://www.i-sis.org.uk/prec.php>.

¹⁹⁶ Nancy Myers, *Debating the Precautionary Principle*, Science and Environmental Health Network, Windsor, ND, 2000, <http://www.sehn.org/ppdebate.html>.

¹⁹⁷ North Pacific Fishery Management Council, Council Motion, June 2008, <http://www.fakr.noaa.gov/npfmc/council.htm>. (The NPFMC made a motion in June 2008 to develop an Arctic Fishery Management Plan that closes all fisheries north of the Bering Strait to commercial fishing).

¹⁹⁸ Wilson, *supra* note 192 at 10

¹⁹⁹ *Id.*

²⁰⁰ STEPHANIE MADSEN, NORTH PACIFIC FISHERY MANAGEMENT COUNCIL (2006), http://www.accessmylibrary.com/coms2/summary_0286-29032251_ITM.

approach when making decisions affecting the Arctic coastal and marine environment.²⁰¹ According to the Council, identification and assessment of threats should be ongoing.

NPFMC and Adaptation

As part of its policy, the NPFMC takes affirmative measures to adopt and implement an adaptive management approach to their fishery management plans. For example, the Council makes periodic evaluations of the effectiveness of rationalization programs and the allocation of access rights based on performance.²⁰² Each year, the Council must review the FMP policy statement and consider new issues that have arisen. Also, the Council conducts a complete review and revision of essential fish habitat components of each FMP once every five years and amends these components as appropriate.²⁰³

Other Agencies and Adaptation

Many agencies have demonstrated some adaptive management by taking steps such as reviewing plans on a regular basis and reviewing program performance. As indicated briefly here, the fisheries sector is especially adaptive to changing information. Other industries, however, have been less flexible.

In part because of the fixed nature of the activities, and also due to the large investment needed to develop onshore and offshore resources, the oil and gas industry and the agencies that manage the industry are often less receptive to ideas about adaptive management. Lease terms are set at 5-10 years on state lands and waters²⁰⁴ and 10 years for federal offshore waters. The agencies regulating the oil and gas industry appear to take a less adaptive approach as well.

For example, the state of Alaska took steps in the late 1990s to facilitate more frequent sales with fewer repeated reviews. In 1998, the state moved from a process of area lease nomination and public review of each area, to an annual area-wide sale where all available state acreage within the Alaska Peninsula, the North Slope Foothills, Cook Inlet, the North Slope, and the state waters of the Beaufort Sea are up for lease each year.²⁰⁵ Because the same area is leased each year, there is no public review prior to issuing the lease-sale schedule.²⁰⁶ However, there is a mechanism to evaluate “substantial new information.”²⁰⁷ Under state law, DNR must conduct a “best interest” finding before conducting lease sales in an area. In 1996, the legislature amended the law to allow the best interest finding to remain valid for ten years rather than the previous limitation of five years. This approach reduces potentially cumbersome regulatory processes; however, at the same time, it may lead to a program that is less able to adapt in response to new information.

²⁰¹ ARCTIC COUNCIL ACTION PLAN TO ELIMINATE POLLUTION OF THE ARCTIC (ACAP), [http://arctic-council.npolar.no/Meetings/SAO/2000%20Fa/Arctic%20Council%20A0_%20A0Arctic%20Council%20Action%20Plan%20\(ACAP\)%20update.htm](http://arctic-council.npolar.no/Meetings/SAO/2000%20Fa/Arctic%20Council%20A0_%20A0Arctic%20Council%20Action%20Plan%20(ACAP)%20update.htm).

²⁰² NPFMC, FISHERY MANAGEMENT PLAN FOR GROUND FISH OF THE BERING SEA AND ALEUTIAN ISLANDS MANAGEMENT AREA 24 (2008), <http://www.fakr.noaa.gov/npfmc/fmp/bsai/BSAI.pdf>.

²⁰³ *Id.*

²⁰⁴ *Division of Oil and Gas, Alaska Department of Natural Resources, Five-Year Oil and Gas Leasing Program: With Reports on Exploration Licensing and Exploration Incentive and Tax Credit Programs 8 (2008).*

²⁰⁵ *Id.* at 2.

²⁰⁶ *Id.*

²⁰⁷ *Id.*

→ Moving Forward with the Precautionary Approach and Adaptive Management

An integrated ecosystem-based management program in the U.S. Arctic could adopt the precautionary approach and be adaptive. If a new program were to be developed, it could include explicit precautionary management goals and developing guidelines for what constitutes enough information to take action. As part of the regional governance framework, the oversight body could consider creating higher regulatory hurdles for activities that are more permanent and less adaptive to changing conditions. An adaptive management approach would include appropriate monitoring, evaluation of performance based on ecosystem health, and alteration of management decisions based on performance.

ii. Robust Ecosystem Science

→ Obstacles to Robust Ecosystem Science

Through research and interviews, ELI learned about several challenges to obtaining and using robust ecosystem science to inform marine EBM development.²⁰⁸ First, several people interviewed complained of a dearth of data to inform EBM decisions, especially in the Chukchi and Beaufort Seas regions. Statewide, some types of data are not consistently collected. For example, there is little water quality monitoring of the marine environment, and water quality data typically includes snapshots based on funding spurts and amenable conditions. One person interviewed noted that agency-led research still focuses heavily on collecting species-specific information rather than ecosystem-based information. Thus, even with the existing data, it is difficult to predict how ecosystems and species will respond to changes in climate and associated impacts.

Second, scientists, managers, and stakeholders lack mechanisms to share information consistently across sectors or scientific institutions. Some interviewees cited the development of an information sharing forum as a primary need. A forum could not only act as a clearinghouse for data storage, but also could indicate the quality of data submitted.

Third, challenges arise between the scientific and Alaska Native communities. The interviewees' statements support the academic literature in calling for greater inclusion of traditional ecosystem knowledge into scientific analysis.²⁰⁹ One interviewee remarked that the decision to list the polar bear under the ESA was based on scientific modeling and failed to consider relevant traditional knowledge. In a similar vein, a number of interviewees remarked that scientists should work more with rural communities when conducting research. This could include the

²⁰⁸ Interviews were conducted from April – June 2008 (on file with authors).

²⁰⁹ See e.g., *Traditional Environmental Knowledge in Federal Natural Resources Management Agencies*, 27 PRACTICING ANTHROPOLOGY 1 (Jennifer Sepez & Heather Lazrus eds., 2005) (including several articles related to traditional ecosystem knowledge).

creation of a scientific liaison who could help bridge communication between rural residents and visiting scientists.

Fourth, some interviewees voiced concerns about data reliability when research is driven by industry interests. In the Bering Sea, a great deal of ecosystem information stems from the need to manage commercial fisheries. In the Chukchi and Beaufort Seas, the Minerals Management Service and oil and gas companies are major sources of scientific data and information.

Finally, a number of people interviewed noted that—as with management—scientific research needs to be conducted according to a research plan or agenda. A common ecosystem plan could be one way to help share and organize cross-sectoral research, and, if developed with Alaska Natives and other rural residents, could help bridge the gap between the scientific and local communities.

→ Approaches to Robust Ecosystem Science

Despite the pitfalls to robust ecosystem science, there are many research efforts that are bolstering knowledge of the U.S. Arctic environment. Hot spots for scientific research include the Pribilof Islands and St. Lawrence Island in the Bering Sea, Little Diomed Islands in the Bering Strait, and the area near Barrow on the North Slope. Several federal and state agencies conduct marine research along with academic institutions and industries. Table 6 summarizes the research programs described in this section.

Table 6. Research Programs and Sources of Data in the U.S. Arctic

Data Collection and Analysis
Minerals Management Service North Pacific Fishery Management Council National Science Foundation North Pacific Research Board Alaska Ocean Observing System Academic institutions, including the University of Alaska and the national Snow and Ice Data Center at the University of Colorado, Boulder
Science, Community, and Collaboration
North Slope Science Initiative Alaska Native Science Commission

Minerals Management Service (MMS) in the Chukchi Sea and Beaufort Sea collects environmental information in order to understand the potential impacts of oil and gas development on the outer continental shelf. MMS has posted its environmental assessments and other studies for the Alaska Region, dating back to the late 1970s, on its website.²¹⁰ These publications include, for example, results of aerial surveys of whales in the Beaufort Sea, studies on the ecology of sea birds, studies on noise and disturbance of marine mammals, and research of subsistence harvest that includes demography, land use, and harvested resources.

²¹⁰ Minerals Management Service, Alaska OCS Region, Scientific and Technical Publications for the 1970s, <http://www.mms.gov/alaska/reports/1970rpts/akpubs70s.HTM>.

The sub-agencies and research centers of the National Oceanic and Atmospheric Administration (NOAA) conduct a wide variety of research to support fisheries management, ocean science, and climate research. The National Pacific Fishery Management Council (NPFMC) led the development of the Aleutian Islands Fishery Ecosystem Plan. The North Pacific Fishery Management Council is developing an Arctic Fishery Management Plan that will presumably help define a future research agenda.

In addition to conducting agency-related research, several governmental bodies provide funding to various academic and non-academic scientists to conduct research on the marine fisheries and ecosystems of the U.S. Arctic. The National Science Foundation's Office of Polar Programs has an Arctic Sciences division that funds natural sciences and social sciences research in the Arctic.²¹¹ Some specific research relating to ecosystem-based management in the U.S. Arctic includes NSF's work to integrate research and ecosystem-based management initiatives.²¹²

The North Pacific Research Board, established by Congress in 1998, obtains 20% of the interest generated from an approximately \$800 million dollar Environmental Improvement and Restoration Fund.²¹³ According to the law establishing the Fund, the NPRB is to "place a priority on cooperative research efforts designed to address pressing fishery management and marine ecosystem information needs" in the North Pacific Ocean, the Bering Sea, and the Arctic Ocean.²¹⁴

Another regional effort that sees its role as providing ecosystem data to a wide variety of clients is the Alaska Ocean Observing System (AOOS). The mission of AOOS is "to improve our ability to rapidly detect changes in marine ecosystems and living resources, and predict future changes and their consequences for the public good."²¹⁵ Collected and mapped data includes, for example, chlorophyll-A measurements, bathymetry, air and ocean temperature, and biodiversity information with data points going back to the early 1900s.²¹⁶

Academic researchers from University of Alaska and academic research institutions in areas beyond Alaska conduct a wide variety of Arctic physical, chemical, and biological research that supports a holistic understanding of the ecosystem. For example, the National Snow and Ice Data Center at the University of Colorado, Boulder provides daily sea ice data and analysis.

In addition to the scientific institutions that support and conduct research, some institutions focus on the intersection between science and the community. In 2003, the North Slope Science Initiative (NSSI) was developed as an inter-agency collaboration to "address the research,

²¹¹ National Science Foundation, Office of Polar Programs, *Arctic Sciences*, <http://www.nsf.gov/div/index.jsp?div=ARC>.

²¹² Personal comm. (on file with authors).

²¹³ The Fund was created from the funds awarded to the U.S. by the Supreme Court in *U.S. v Alaska*, 117 S. Ct. 1888 (1998) (in this case, Alaska challenged the U.S. assertion that submerged areas leased for oil and gas development by the U.S. were in fact in federal waters).

²¹⁴ North Pacific Research Board Enabling Legislation, § 401(e), http://doc.nprb.org/web/nprb/nprb%20background%20docs/Enabling_Legislation.pdf.

²¹⁵ Alaska Ocean Observing System, *Mission, Goals, Users, Partners, and Process*, <http://www.aos.org/about/mission.htm>.

²¹⁶ See AOOS, Dta Catalog Explorer, <http://ak.aos.org/op/data.php?region=CHUK>.

inventory, and monitoring needs as they relate to development activities on the North Slope.”²¹⁷ NSSI, through a scientific strategy and implementation plan, prioritizes pressing natural resources and ecosystem information needs.²¹⁸ The NSSI Oversight Group consists of federal, state, and borough managers including the U.S. Fish and Wildlife Service, MMS, AKDFG, Alaska Department of Natural Resources, and the North Slope Borough. The Arctic Slope Regional Corporation is also a member of the Oversight Group. The Group focuses its efforts on facilitating and developing better methods to support inventory, monitoring and research activities in the North Slope. The Science Technology Advisory Panel is composed of up to 15 scientists and technical experts and provides the Oversight Group with technical advice.²¹⁹

The Alaska Native Science Commission serves as a link between the scientific community and the Alaska Native community. The Commission assists scientists with information, referral and networking services with Alaskan Native communities, and helps communities find research partners.²²⁰

→ Moving Forward with Robust Ecosystem Science

ELI identified the following opportunities for enhancing the robust science needed to inform integrated EBM in the Arctic:

- **Conduct consistent long-term research and monitoring** to understand ecosystem function and change based on an Arctic ecosystem science plan.
 - Work with the Alaska Ocean Observing System to develop the monitoring tools and analyses necessary to support ecosystem science.
 - Encourage the North Pacific Research Board to develop a plan for funding and, based on that plan, fund research to support a better understanding of Arctic ecosystems.
 - Encourage the North Pacific Fishery Management Council to undertake an Arctic Fishery Ecosystem Plan for the Chukchi and Beaufort Seas similar to that created for the Aleutian Islands.
- **Develop integrated research and data collection across agencies and sectors.**
 - Work with the North Slope Science Initiative to enhance the quality and quantity of scientific information available for the marine environment and assist with the coordination of research efforts in the North Slope.

²¹⁷ North Slope Science Initiative, *Introduction*, http://quickplace.altarum.org/QuickPlace/northslope/PageLibrary85256E23007B9E1F.nsf/h_Toc/279C6CE8BE52314885256E23007C35D6/?OpenDocument.

²¹⁸ North Slope Science Initiative, *NSSI Overview*, http://quickplace.altarum.org/QuickPlace/northslope/PageLibrary85256E23007B9E1F.nsf/h_Toc/279C6CE8BE52314885256E23007C35D6/?OpenDocument.

²¹⁹ *Id.*

²²⁰ Alaska Native Science Commission, <http://www.nativescience.org/> (last visited July 15, 2008).

- **Work with the Alaska Native and rural communities** to build common understanding of resources.
 - Work with the Alaska Native Science Commission to coordinate research and work with Alaska Natives in rural Arctic environments.

iii. Public Support and Participation

Stakeholder engagement and community participation is one of the defining features of marine EBM, because management of the marine environment has significant impacts on people's lives, their economic well-being, and on the health of the ecosystem. A participatory process also may help build support among diverse constituents. An effective marine EBM program in the U.S. Arctic will be one that engages the full spectrum of stakeholders, including federal, state and local government, non-governmental organizations, Alaskan Native organizations, and members of the private sector and the community.

Taking into account stakeholders' right to access information and meaningfully participate in decision-making, it is important to consider the chief challenges Alaskans face in participating in marine management and discuss potential opportunities to overcome such challenges. As previous sections have indicated, not all stakeholders and officials in government support the notion that integrated EBM can help achieve healthier and more sustainable oceans. Therefore, this section also considers the obstacles to public support and the steps needed to develop the needed support to develop an integrated EBM program in the U.S. Arctic.

→ Obstacles to Public Support and Participation

ELI identified several challenges to meaningful stakeholder engagement. First, stakeholders require access to timely and accurate information. This includes information about the project, the potential impacts of a decision to implement integrated ocean management in the Arctic, and the decision-making and stakeholder engagement processes themselves. In both Bristol Bay and the Chukchi Sea regions, however, many stakeholders are located in remote areas where access to the internet and other sources of information is often intermittent and slow. Moreover, while access to the internet has increased over the past decade, it can still be overwhelming to members of the public to find timely and accurate information they need to understand the management issues that affect them. Additionally, rural Alaskans have limited access to fax machines, phones, and computers, making communication difficult.

Several people interviewed note that capacity to participate in management decisions in the U.S. Arctic is low due to the relatively few people engaged in the large number of relevant issues. In the last decade, there has been a significant influx of environmental and scientifically related projects in the Arctic region. Given that villages in the Arctic are remote and sparsely populated, the relatively small number of individuals already engaged in management opportunities tend to

be over-committed. For example, the Coastal Management Program in the Northwest Arctic Borough employs only one coastal area specialist to address all marine issues.²²¹

Marine initiatives in the U.S. Arctic face unique challenges in engaging the public due to long distances between population centers, the lack of infrastructure, and the extreme weather conditions. In the Bristol Bay and the Chukchi Sea region, many villages are not connected to each other and none are connected to urban centers by roads, making face-to-face meetings with the rural population challenging. According to a number of interviewees, government meetings, conferences, and other events primarily take place in Anchorage and Juneau making it difficult for residents living in remote areas to participate.

The challenge of engaging all stakeholders in areas suitable to all participants is made even more difficult by the nature of the private sector and the NGO community operating in the U.S. Arctic. Many commercial fishing vessels that operate in the Bering Sea and their parent companies are based in Oregon or Washington. Oil and gas industries may have offices in Alaska but are headquartered in other states. Also, several national NGOs based outside of the U.S. Arctic are expanding their work to this region.

→ **Approaches to Public Support and Participation**

Most programs described in this report have some existing mechanism for public participation, often required as a legal mandate. For example, as required by the Magnuson-Stevens Fishery Conservation and Management Act, the NPFMC conducts public hearings to allow the public to comment on fishery management plans, amendments to such plans, and their implementing regulations.²²² When resource agencies and members of the public propose an amendment to existing fishery regulations or to a fishery management plan, the Council presents the proposal to the public and allows them to review proposed alternatives during a 60-day public comment period.²²³ Within 45 days of the close of the comment period, the Secretary, in consultation with the NPFMC, must analyze the comments and publish the final regulations. The public must also be provided opportunity to comment on the administration of the Plans.²²⁴

Agencies also provide public notice and comment periods when conducting environmental assessments or environmental impact statements for proposed activities under the National Environmental Policy Act (NEPA). NEPA requires all federal government agencies to conduct an environmental assessment (EA) to determine whether their actions will have significant environmental effects and to consider the related social and economic effects of their proposed actions.²²⁵ The agency is given discretion to involve the public at the EA stage to the “extent practicable.” If a finding of no significant impact (FONSI) is made, the agency must publish the FONSI in the Federal Register and allow thirty days for public review.

²²¹ Personal communication, on file with the authors.

²²² MSA, § 313 (2007).

²²³ MSA, §313 (2007).

²²⁴ 16 U.S.C 1854.

²²⁵ COUNCIL ON ENV'T QUALITY, A CITIZEN'S GUIDE TO THE NEPA: MAKING YOUR VOICE HEARD (Dec. 2007), [http://www.nefmc.org/press/NEPA_Citizen's%20Guide%20Dec%202007%20\(2\).pdf](http://www.nefmc.org/press/NEPA_Citizen's%20Guide%20Dec%202007%20(2).pdf).

If, on the other hand, the project's impact is found to be significant, a full environmental impact statement (EIS) is prepared and a Notice of Intent (NOI) must be published in the Federal Register. At this stage, agencies are required to identify the affected public and engage its participation. Again, however, the level and extent to which the agency engages the public's participation is left to agency discretion. Once the agency has completed a draft EIS, the public is provided 45 days to comment. During this time, the agency must also conduct public hearings. At the end of the 45 days, the agency must compile the received comments, conduct further research as necessary, and prepare a final EIS. The final EIS must respond to comments the agency has received and address how the comments were incorporated into the final EIS.

Other advisory bodies and non-governmental organizations allow some stakeholder participation. For example, the Alaska Marine Ecosystem Forum allows stakeholders to attend meetings, but the Forum does not provide significant notice of meetings and does not allow stakeholders to make official comments at the meetings. At the international level, the Arctic Council allows indigenous organizations to participate as Permanent Participants. The Council is the first intergovernmental forum to give Indigenous Peoples' Organizations such a status. The category of Permanent Participation was created to provide for "active participation and full consultation with the Arctic indigenous representatives."²²⁶ Permanent participants are provided a seat at the table with member States to oversee the Council's work.

→ **Moving Forward with Public Support and Participation**

ELI has identified several ways to enhance public participation mechanisms if a marine EBM program is developed and implemented.

Provide information in hard-copy format.

To overcome the difficulties of providing electronic information to remote stakeholders, a marine EBM program could make concerted and creative efforts to provide information in hard-copy format. Several ecosystem-based projects disseminate newsletters and other key documents as a mechanism to provide timely and accurate information to stakeholders. Interviewees—particularly those in rural areas—requested that they receive key documents in the mail with instructions on how to access the information online. Newsletters could be mailed directly to participants or provided at key meetings.

To ensure continued participation, printed materials should be used as an outreach tool to keep citizens engaged between meetings. A newsletter could be developed that incorporates proposed ideas, includes an educational piece, provides timelines for actions related to the project, poses questions for comment, and provides contact information. In addition, a hard copy of meeting notes could be provided to stakeholders. Information sharing among relevant governmental and non-governmental institutions is also important, and can facilitate better coordination of current activities and assist with timely dissemination of materials.

²²⁶ The Declaration on the Establishment of the Arctic Council, *available at*

Consider stakeholders' time constraints.

Especially in rural communities, a small number of individuals actively engage in participatory governance. Therefore, when developing and implementing a marine EBM program, organizers could take steps to accommodate the considerable time commitments of potential stakeholders. Interviewees consistently suggested that organizers plan marine EBM meetings in conjunction with local planning commission meetings to avoid unnecessary travel and cut down on the number of meetings stakeholders have to attend. It was also suggested that meetings be scheduled during months when subsistence Alaskans are not hunting.

Take steps to facilitate rural resident participation.

Given the wide geographic range of U.S. Arctic inhabitants and the challenges associated with meeting in urban centers, a number of interviewees suggested that meetings and other events be held in villages in the program region. If a marine EBM program were developed for the Chukchi Sea, for example, meetings could be held in Barrow or Kotzebue. In addition to allowing greater participation by local residents, it may help non-resident governments and industries understand regional issues and concerns. Two interviewees highlighted funding as a significant impediment to attending and participating in meetings and project planning. Funds for a marine EBM program could be allocated to assist with travel costs for specific individuals who demonstrate a need.

Engage stakeholders early.

Early involvement of stakeholders can encourage dialogue, foster support, and instill stakeholders with a sense of ownership in the program. Active engagement of stakeholders from the beginning can provide decision-makers a clear view of the human and physical environment and enable them to judge how an integrated ocean management initiative can be most effectively planned and implemented.

There are a number of approaches and opportunities to ensure public engagement at the early stages of development. Interviewees suggested that those planning marine EBM set up meetings with local representatives and government leaders to introduce the project and seek support before the process begins. Due to the sectoral nature of ocean management, interviewees stressed the importance of assuring representation of all stakeholder groups, including participants from the oil and gas sector, NGOs, state and federal agencies, local community leaders, Alaska Natives, and others. Where possible, presentations can be made at local planning commission meetings or at individual towns and villages to enable interactive dialogue between stakeholders and the integrated EBM staff or oversight committee. Once initial meetings are held, follow-up is crucial to foster coordination and synergy among the stakeholder groups.

Educate and build capacity.

EBM experts recognize that an integrated approach to ocean management requires education and capacity building.²²⁷ The long-term effectiveness of management measures depends upon Arctic residents' and other stakeholders' understanding of issues affecting the Arctic and their support

²²⁷ Robert Pomeroy & Fanny Douvère, *The Engagement of Stakeholders in the Marine Spatial Management Process*, MARINE POLICY (forthcoming).

for actions being taken. Capacity-building efforts will help to empower people with knowledge and skills so that they can actively participate in an integrated EBM process.²²⁸

As an initial matter, project coordinators could conduct formal and informal public education and capacity-building efforts that are tailored to stakeholders' level of expertise and background. Interviewees stressed the importance of using local traditions, knowledge systems, institutions, and environmental conditions to inform the development of training and educational tools. The task of educating the public on integrated ocean management can be simplified if efforts are made to reinforce and encourage the further development of local practices and traditions that are already consistent with integrated ocean management.

²²⁸ *Id.*

III. OCEAN CONSTITUENTS AND CAPACITY

A. Constituent Motivation

ELI's interviews, along with written laws and policy statements, were used to evaluate constituent motivation. In many circumstances, constituent motivation is the same in both regions. This section describes constituent views about marine EBM and area-based designations generally, and also provides specific information about Bristol Bay and the Chukchi and Beaufort Seas region.

→ Overarching Considerations

Litigation has been a central strategy for environmental conservation in both regions, with conflict over oil and gas and mining in Bristol Bay and offshore oil and gas in the CBS region. Bristol Bay may have a greater immediate need for an EBM approach, since both mining and oil and gas development is planned in an important commercial, recreation, and subsistence fishing area. However, increasing international, federal, and state attention in the CBS region, along with local interest in maintenance of a subsistence lifestyle, all support development of marine EBM in the CBS region.

Along with the relatively small rural populations that subsist on U.S. Arctic marine resources today, there is a growing list of intense human activities such as industrial fishing, oil and gas development, and commercial shipping that could threaten the health of the ecosystem and the subsistence way of life if not properly managed. Already, climate change is fundamentally altering the system. Alaska Native and rural communities feel and will continue to feel the effects of climate change, as retreating sea ice and sea level rise impact coastal communities. Conflict is developing among local communities, environmentalists, industries, and other stakeholders in the wake of new uses and management changes. The current battle over oil and gas development in the Chukchi Sea—with concurrent concerns about the long-term viability of polar bears—exemplifies the polarization of ocean constituents.

We found four central social and economic realities that are critical to effective implementation of marine EBM in the U.S. Arctic marine environment:

- The cash economy of the U.S. Arctic derives mainly from extraction of natural resources, including oil and gas and fish, and many ocean constituents and decision-makers support these extractive industries;

- The Arctic is home to rural residents who are dependent upon subsistence harvest for food and other goods;
- Alaska Natives make up a majority of the population in the Arctic, and Alaska Native rights and traditions are intimately tied to the marine environment; and
- The Arctic is viewed as a national and international treasure, and many local, national, and international environmental advocates have substantial programs and efforts to protect and conserve Arctic species and ecosystems.

Given these realities, a successful marine EBM program in the U.S. Arctic will be one that balances conservation objectives with subsistence harvest, Alaska Native traditions and culture, and industrial development of resources. A successful marine EBM approach will need to foster collaboration among people that are already or are becoming polarized.

Alaska has an extraction-based economy that is protected under the Alaska Constitution. One state agency interviewee remarked that in many respects, Alaska is a “single-industry state,” referring to oil and gas. In fact, eighty percent of the state’s income is generated by the oil and gas industry.²²⁹ In light of this, it may come as no surprise that the State of Alaska is challenging the recent decision to list the polar bear under the Endangered Species Act, in part because of concerns about how this will impact oil and gas development in the Chukchi and Beaufort Seas.²³⁰

Article 8 of the Alaska Constitution establishes the State’s natural resources policy, and has specific provisions related to sustainable use of renewable resources, mineral rights and leases, water rights, fishery rights, and protection of specific sites.²³¹ In particular, the Constitution states that “[i]t is the policy of the State to encourage the settlement of its land and the development of its resources by making them available for maximum use consistent with the public interest.”²³² However, in addition to qualifying “use” as being “consistent with the public interest,” the Constitution also allows the legislature to reserve special purpose sites from the public domain, including “areas of natural beauty or of historic, cultural, recreational, or scientific value.”²³³

The overall objective of balancing extraction-based use with conservation is embedded in particular state statutes. Under Alaska law, it is state policy “to conserve, improve, and protect [Alaska’s] natural resources and environment and control water, land, and air pollution, in order to enhance the health, safety, and welfare of the people of the state and their overall economic and social well-being.”²³⁴

²²⁹ DIVISION OF OIL AND GAS, ALASKA DEPARTMENT OF NATURAL RESOURCES, FIVE-YEAR OIL AND GAS LEASING PROGRAM: WITH REPORTS ON EXPLORATION LICENSING AND EXPLORATION INCENTIVE AND TAX CREDIT PROGRAMS 8 (2008), http://www.dog.dnr.state.ak.us/oil/products/publications/otherreports/5_year_reports/5year08/Oil%20&%20Gas%202008_low%20res%201.pdf.

²³⁰ Anon., *Endangered Species: Alaska Sues to Reverse Polar Bear Status*, GREENWIRE, Aug. 5, 2008.

²³¹ Alaska Const. Art. 8 §§1-18, available at <http://ltgov.state.ak.us/constitution.php?section=8>.

²³² Alaska Const. Art. 8, § 1. available at <http://ltgov.state.ak.us/constitution.php?section=8>.

²³³ Alaska Const. Art. 8 § 7. available at <http://ltgov.state.ak.us/constitution.php?section=8>.

²³⁴ Declaration of Policy AS 46 03.010 available at <http://touchngo.com/lglcntr/akstats/Statutes.htm>.

→ Alaska Natives and Local Government

Summary

While both regions have motivated constituents, ELI's research indicates that the Alaska Natives in the Chukchi and Beaufort Seas region possess the political strength needed to lead cooperative ocean governance. This is best demonstrated by AEW's success in effectively negotiating with the oil and gas industry to create Conflict Avoidance Agreements. Also, the North Slope Borough is a strong and well-funded local government that is actively engaged in area-based planning, wildlife management, and maintenance of the subsistence lifestyle. However, several interviewees expressed the need to better understand EBM principles and how it works in practice before deciding to develop a regional program.

About the Alaska Natives and Local Government Constituency

Alaska Natives have made their home in the U.S. Arctic for more than 10,000 years, depending on marine resources for food and other goods and services. A great majority of the Arctic residents today are Alaska Natives whose cultural heritage and traditions link closely with their subsistence lifestyle. This assessment recognizes the primary importance of maintaining Arctic resources for the survival and well-being of Arctic residents. Subsistence harvest and Alaska Native traditions and culture are managed and protected under several federal laws, including the Alaska Native Claims Settlement Act, the Alaska National Interest Lands Conservation Act, and harvest rights under the Endangered Species Act and the Marine Mammal Protection Act.

Alaska Natives and other residents of the U.S. Arctic depend upon hunting and fishing for food and other goods. Alaska Natives have hunted marine mammals in the U.S. Arctic for thousands of years, using whales for blubber, meat and oil, as well as sea lions, porpoises, seals, and sea otters.²³⁵ Subsistence fisheries resources include cod, halibut, rockfish, salmon, and shellfish.²³⁶ Today about 22,000 tons of wild food is harvested for subsistence use each year—an average of 375 pounds per person.²³⁷ Much of the subsistence economy relies on year-round hunting and gathering of available marine resources. Residents process food and hides for use and consumption. They barter goods and foods alongside other crafts such as baskets and boats. This subsistence lifestyle is essential to the socioeconomic well-being of the region, and provides modern Alaska Natives with a way to maintain their cultural heritage.²³⁸

Constituent Considerations Related to Marine EBM

Collaboration is challenging, because the U.S. Arctic is a large, remote, and extreme environment with small villages separated by vast distances. This is true of both the Bristol Bay and Chukchi and Beaufort Seas regions. Rural residents rely on boats and airplanes for transportation to urban centers, making travel costly. While low population density has the

²³⁵ David J. Bloch., *Colonizing the Last Frontier*, 29 AM. INDIAN L. REV. 1, (2004).

²³⁶ *Id.* at 8; Kawerak Inc. *Regional Information*, <http://www.kawerak.org/regionInfo/socioeco.html#subs> (last visited on June 16, 2008).

²³⁷ USFWS Alaska Subsistence Fisheries Management, <http://www.fws.gov/fisheries/FWMA/asfm.htm> (last visited on June 16, 2008).

²³⁸ Kawerak Inc., *supra* note 16; Thomas R. Berger, VILLAGE JOURNEY 51 (1989); Alaska Stat. § 16.40.210 (2008); Bloch, *supra* note 235 at 8.

advantage of maintaining ecosystems in relatively pristine conditions, it also means that many community leaders are spread thin. Often community leaders wear more than one hat, which can be confusing and challenging when trying to implement collaborative approaches.

Adding to this challenge is the complexity of local government and community. In rural Alaska, local government includes villages, tribes, and borough government. Regional and village native corporations have incredible power and influence in Alaska. At the local level, there is no continuous mosaic of organized government—large portions of the state do not have borough government, leaving the state as the only government in these areas. Unorganized areas without borough government include the Bering Strait Region of the Chukchi Sea, and most of the Bering Sea region, including the Western Aleutian Islands, the northern portion of Bristol Bay and the entire west coast of Alaska.

Stakeholders possess different levels of knowledge about marine EBM principles and concepts. Several people interviewed expressed the need for practical information about marine EBM and how it could be implemented in the Arctic. Several interviewees were particularly interested to learn about examples of successful marine EBM programs in other Arctic regions.

→ **State and Federal Government**

Summary

ELI's research indicates that there is little support for developing robust regional ocean governance by state and federal agencies. However, some interviewees highlighted the importance of developing an integrated governance system in the Arctic to achieve better coordination among state and federal government agencies. State and federal agencies are increasingly focusing their work on Chukchi and Beaufort Seas research and management, which may provide an opportunity to work with state and federal agencies in development of marine EBM in the region.

About the State and Federal Government Constituency

Because the previous sections described the role of federal and state government in much greater detail, a description of the state and federal government roles is omitted here.

Constituent Considerations Related to Marine EBM

This preliminary assessment indicated that several obstacles contribute to lack of coordination among agencies. Agency mandates or policies may limit collaborative approaches. A locally based marine EBM program may not find support—there has been a recent shift away from strong local government control, as demonstrated by amendments to state statute authorizing the Coastal Management Program. Coordination is also difficult due to a lack of time and funding to develop and implement innovative governance approaches. Appropriations may be earmarked for specific agency actions, making it difficult for agencies to engage in new cooperative management approaches. With small population density, the overhead cost of regional management could be high.

Achieving integrated ocean governance will require state and federal agencies to work together toward common goals, which may be difficult to achieve without legislative changes or strong

leadership. There is concern that integrated management approaches will create another bureaucratic layer without achieving healthier ecosystems. For example, the eight regional fishery councils, including NPFMC, wrote a letter commenting on proposed federal legislation (known commonly as HR21) that would create ecosystem-based management councils around the U.S. to help manage the marine environment. In the letter, the fisheries councils state that “[w]hile this legislation appears well-intended, and contains some potentially positive provisions..., we cannot support HR21 in its current form. In general the proposed bill would create several additional layers of bureaucracies and possibly conflicting authorities, which in fact could lead to decreased efficiencies in ocean governance, deterioration of current initiatives toward ecosystem-based management, and exacerbation of litigation-based resource management.”²³⁹

ELI’s interviews confirmed previous analyses²⁴⁰ that found that state and federal agencies in Alaska lack enthusiasm for an EBM approach. Some federal and state agency representatives believe that they are taking positive steps in the direction of ecosystem-based management and that additional efforts are not needed at this time. For example, in their letter to Congressman Young, the Councils including NPFMC state that “[w]hile we do not directly manage all aspects of the marine environment, the regional Councils ... currently engage in managing not only fisheries, but fishery interactions with habitat, marine mammals and seabirds, coastal communities and associated development, and numerous other aspects of the marine environment that collectively equate to an ecosystem-based management approach.”²⁴¹

ELI did interview several people at state and federal agencies who stated that they are receptive to EBM development; however many of them also remain skeptical about the possibility of achieving marine EBM based on the regional political and social climate.

→ Private Sector

Summary

ELI did not find support for EBM by the private sector in either region. With the exception of oil and gas and the Red Dog Mine located approximately 40 miles inland from the Chukchi Sea, there is little existing or proposed commercial development in the CBS region at this time. Developing EBM now would allow the system to be established ahead of most industries.

About the Private Sector Constituency

This assessment focused on five human uses in the U.S. Arctic: (1) subsistence harvest; (2) oil and gas development and production; (3) commercial shipping; (4) commercial fishing; and (5) mining. These uses are at the forefront for decision-makers tasked with managing the remote U.S. Arctic environments. Table 7 provides additional detail about region-specific human uses in the U.S. Arctic.

²³⁹ Letter to Congressman Don Young, signed by the chairs of the eight regional fisheries management councils (Sept 18, 2007) (on file with authors).

²⁴⁰ JENNIFER M. KASSAKIAN, ECOSYSTEM-BASED MANAGEMENT IN ALASKAN MARINE WATERS: INSTITUTIONAL BARRIERS AND BRIDGES TO IMPLEMENTATION (2006) (M.A. thesis, University of Washington) (on file with author).

²⁴¹ *Id* at 239.

Table 7 Human Uses and Impacts in the U.S. Arctic

	Bristol Bay/Bering Sea	Chukchi Sea/Beaufort Sea
Primary Marine-Related or Watershed Industries and Uses	<ul style="list-style-type: none"> • Commercial fisheries including pollock and salmon • Great Circle Shipping Route near the Aleutian Islands • Subsistence fishing and marine mammal harvest 	<ul style="list-style-type: none"> • Oil and gas development and production in Beaufort Sea in federal and state waters • Red Dog Mine in watershed emptying into Chukchi Sea • Subsistence fishing and marine mammal harvest including bowhead whale harvest
Anticipated Future Uses	<ul style="list-style-type: none"> • Oil and gas development and production in and near Bristol Bay in federal and state waters • Pebble Mine operations near the coast and watersheds that empty into Bristol Bay 	<ul style="list-style-type: none"> • Shipping through Northwest Passage and increased shipping due to oil and gas production • Oil and gas development and production in the Chukchi Sea • Commercial fisheries
Current Human Impacts on Ecosystem	<ul style="list-style-type: none"> • Impacts from industrial-scale fishing (several regions, including Bristol Bay, are closed to certain fishing practices such as trawling). • 2004 oil spill 100 miles northwest of Unalaska Island with break up of the freight ship, the <i>Selendang Ayu</i> • Climate change leading to sea ice retreat and changes in ecosystem. 	<ul style="list-style-type: none"> • Ecosystem largely intact with relatively little industrial-scale human impact in the Chukchi Sea. • Impacts associated with oil and gas development in the Beaufort Sea, including noise from seismic surveys, exploration drilling, and production. • Climate change leading to sea ice retreat and changes in ecosystems.

Expanding commercial uses in the U.S. Arctic include oil and gas production and development, commercial shipping, and commercial fishing. Oil and gas companies hold leases for development and production in state and federal waters of the Beaufort Sea, federal waters of the Chukchi Sea, and state waters in the Bering Sea including Bristol Bay, with additional leases planned in federal and state waters. The Minerals Management Service in the U.S. Department of Interior leases the outer continental shelf to oil and gas companies, and the Division of Oil and Gas in the Alaska Department of Natural Resources leases state submerged lands.

Although largely limited to the southern portion of the Bering Sea at this time, shipping is another industrial activity that takes place in the U.S. Arctic. Ships move across the North Pacific Great Circle Shipping Route near the Aleutian Islands, carrying goods between East Asia and the Canadian-American Pacific Northwest. Commercial shipping is an international endeavor and is managed according to the treaties created by the International Maritime Organization. The U.S. manages intentional and accidental discharges under the Clean Water Act, the Oil Pollution Act, and the Comprehensive Environmental Recovery, Compliance and Liability Act. The U.S. Coast Guard and the Environmental Protection Agency are two lead federal agencies tasked with enforcing and regulating this sector.

The Bering Sea is home to some of the most successful commercial fisheries in the world. However, they have yet to extend as far north as the Chukchi and Beaufort Seas. The North

Pacific Fishery Management Council under the Magnuson-Stevens Fishery Conservation and Management Act is the lead management body in federal waters. In addition to closing several areas to fishing in the Bering Sea, the Council is developing an Arctic fishery management plan that will create a moratorium on commercial fisheries in the Chukchi and Beaufort Seas.

Bering Sea

The U.S. Bering Sea is home to Aleut, Iñupiat, and Yupik people. In 2005, 65,000 Alaska Natives lived along the Eastern Bering Sea, depending on its resources for subsistence.²⁴²

Commercial fishermen from Alaska and the Pacific Northwest ply the Bering Sea for fish and invertebrates.²⁴³ The Bering Sea produces an annual harvest of 1-2 million metric tons of fish.²⁴⁴ Species of importance include pollock, salmon, halibut, herring, capelin, Pacific cod, skate, flounder, Greenland turbot, sole, dab, plaice, and crab.²⁴⁵ The Bering Sea pollock fishery alone has an annual harvest of one million metric tons.²⁴⁶ King and tanner crab fisheries in the Bering Sea are among the most important crab fisheries in the world.²⁴⁷

In and near Bristol Bay, regulators and developers are planning for the expansion of large-scale extractive industries including oil and gas and mining operations. In 2007, President George W. Bush released an area of the Bering Sea from the Presidential moratorium on oil and gas activities. The Minerals Management Service (MMS) in the Department of the Interior has approved leases in the North Aleutian basin scheduled for 2011.²⁴⁸ The state of Alaska has leased state waters for oil and gas development, raising an estimated \$1.3 million with the lease sale of 37 tracts to Shell Oil and Hewitt Minerals.²⁴⁹ Net benefits from anticipated oil and gas production are estimated to be \$7.7 billion.²⁵⁰ In addition to oil and gas, mining companies are planning to mine coastal lands in the Bering Sea region—two large projects are the Rock Creek development²⁵¹ and the Pebble Mine development.²⁵²

With retreating sea ice, shipping and other marine vessel operations could increase in the Bering Sea. A small number of cruise ships adventure into the Bering Sea and travel as far north as

²⁴² Large Marine Ecosystems of the World, *Eastern Bering Sea*, <http://na.nefsc.noaa.gov/lme/text/lme1.htm> (last visited on June 16, 2008).

²⁴³ The states of Washington and Oregon are home to many of the ancillary industries supporting fishing and fish processing, such as insurance, ship building and repair, and equipment manufacture. The remote location of Alaska combined with a lack of infrastructure provides a competitive advantage for industries based in the Pacific Northwest states. David Fluharty, *Magnuson Fishery Management and Conservation Act Reauthorization and Fishery Management Needs in the North Pacific Region*, 9 TUL. ENVTL. L.J. 301, 304 (1996).

²⁴⁴ Commission on Geosciences, Environment and Resources, *supra* note 5 at 156.

²⁴⁵ Kawareck Inc., *supra* note 16.

²⁴⁶ Large Marine Ecosystems of the World, *supra* note 23.

²⁴⁷ Commission on Geosciences, Environment and Resources, *supra* note 5 at 162.

²⁴⁸ United States Department of the Interior, Minerals Management Service, *supra* note 249.

²⁴⁹ State of Alaska Department of Natural Resources, Division of Oil and Gas. *Competitive Oil and Gas Lease Sale, Alaska Peninsula Area-wide (2005)*, available at http://www.dog.dnr.state.ak.us/oil/products/publications/akpeninsula/2005/akpen_2005_all_bids.pdf.

²⁵⁰ *Id.*

²⁵¹ Alaska Division of Mining, Land and Water, *Rock Creek Project*, <http://www.dnr.state.ak.us/mlw/mining/largemine/rockcreek/index.htm> (last visited on June 25, 2008).

²⁵² Alaska Division of Mining, Land and Water, *Pebble Project*, <http://www.dnr.state.ak.us/mlw/mining/largemine/pebble/index.htm> (last visited on June 25, 2008).

Nome, Alaska.²⁵³ Because of dangerous conditions and a lack of infrastructure, however, the Bering Sea is not a frequent destination for cruise ship travelers.²⁵⁴ The Bering Sea also provides adventure-seekers with sport fishing, wildlife viewing, and hunting opportunities, predominately in the Aleutian Islands and Bristol Bay areas. The development of tourism is currently focused on ‘niche visitors,’ specifically eco-tourism and cultural heritage markets.²⁵⁵

Bristol Bay Considerations

Human activities in Bristol Bay include subsistence harvest, commercial fishing, and tourism. The Bristol Bay Native Corporation consists of approximately 6,600 Alaska Native shareholders, owning and inhabiting a three-million-acre region.²⁵⁶ For some Bristol Bay inhabitants, hunting and fishing supplement other food sources, while for others subsistence hunting and fishing provides the mainstay of their diet and economic well-being.²⁵⁷ Species harvested in Bristol Bay for subsistence include salmon, trout, Steller sea lions, harbor seals, sea otters, beluga whales, and sea birds.²⁵⁸

Commercial fishing forms a major part of Bristol Bay’s economy.²⁵⁹ The region is home to the worlds’ largest salmon and herring fisheries.²⁶⁰ Salmon travel from Bristol Bay upriver to the largest salmon spawning area in Alaska.²⁶¹ Sockeye salmon is the main species harvested for commercial purposes.²⁶² The commercial salmon fishery has averaged over \$118 million per year over the last twenty years, though this figure has declined in recent years due to smaller runs and lower prices.²⁶³ Bristol Bay is also a popular destination for sport fishing. While there is interest in developing additional tourist activities in the region, the current infrastructure is a limiting factor.²⁶⁴

²⁵³ See, e.g., Alaska Cruises and Cruise Tours, <http://www.alaskacruiseagents.com/default.asp?pid=13180&sid=10094>.

²⁵⁴ Personal comm. (on file with authors).

²⁵⁵ Southwest Alaska Municipal Conference and Alaska Department of Commerce and Economic Development, *Rural Alaska Tourism Infrastructure Needs Assessment, Aleutian and Pribilof Islands*, 4, available at http://www.dced.state.ak.us/oed/toubus/pub/8b_aleutian_section.pdf.

²⁵⁶ Department of Commerce, Community and Economic Activity, *Bristol Bay Native Corporation Profile*, http://www.dced.state.ak.us/dca/AEIS/Statewide_NativeCorps/NativeCorp_BristolBay.htm (last visited on June 30, 2008).

²⁵⁷ Bristol Bay, Alaska Coastal Management Plan, *supra* note 257.

²⁵⁸ STEPHEN R. BEHNKE, ALASKA DEPARTMENT OF FISH AND GAME BRISTOL BAY SUBSISTENCE FISHERIES 1980 STATUS REPORT(1980), <http://www.subsistence.adfg.state.ak.us/TechPap/tp041.pdf>; Alaska Department of Fish and Game, Division of Subsistence, *Overview of Information about Subsistence Uses of Marine Mammals in Aleutian/Pribilof Islands Communities* (1997), <http://www.subsistence.adfg.state.ak.us/download/mmap.pdf>.

²⁵⁹ Bristol Bay, Alaska Coastal Management Plan, *supra* note 257.

²⁶⁰ Doug Woodby et al., Commercial Fisheries of Alaska, ALASKA DEPARTMENT OF FISH AND GAME, 9 (2005); Save Bristol Bay, *What’s at Stake?*, <http://www.savebristolbay.org/site/c.gqLTI4OzGIF/b.4195341/> (last visited on June 30, 2008).

²⁶¹ Bristol Bay Borough, *Alaska Coastal Management Plan* (2006), available at <http://www.theborough.com/bbbacmp.pdf>.

²⁶² Tim Sands, Alaska Department of Fish and Game, *Overview of the Bristol Bay Salmon Fishery 2004-2006, a Report to the Alaska Board of Fisheries* (2006), available at <http://www.sf.adfg.state.ak.us/FedAidpdfs/sp06-28.pdf>.

²⁶³ *Id.*

²⁶⁴ Southwest Alaska Municipal Conference and Alaska Department of Commerce and Economic Development, *supra* note 255.

Bristol Bay is front and center in a dispute over conflicting human uses, with commercial and recreation fishers and preservation advocates concerned about the potential long-term damage that may come with the development of offshore oil and gas and onshore large-scale mining. If developed, oil and gas production in Bristol Bay could exceed 350 million barrels of oil and 7.5 trillion square feet of gas.²⁶⁵ The federal Lease Sale 214 Area, an area including part of Bristol Bay, has been approved for sale in 2011,²⁶⁶ and state waters have already been leased for oil and gas development. Rich mineral reserves surround Bristol Bay including the gold, molybdenum and copper reserves that form the basis of the Pebble Mine project, which could affect the region's famous salmon runs.

Chukchi and Beaufort Seas

The shores of the Chukchi and Beaufort Seas are home to the Iñupiat people. The Iñupiat continue their traditional hunt of the bowhead whale, in compliance with quotas imposed by the International Whaling Commission.²⁶⁷ The culture and social structure of native communities are built around the annual whale harvest, and whales make up an important nutritional component of the native diet.²⁶⁸ In addition to marine mammals, the Iñupiat harvest migratory birds including black brant and eider duck as well as many terrestrial species.²⁶⁹ Subsistence use patterns depend on the availability of different species and changes throughout time.²⁷⁰

Because the Chukchi and Beaufort Seas are remote and extreme environments, population and ocean industries remain low. However, with growing human demand and retreating sea ice, industries including oil and gas, shipping, commercial fishing will likely expand in these areas. Plentiful petroleum reserves in the Chukchi and Beaufort Seas have made them prime areas for oil and gas exploration. Prudhoe Bay in the Beaufort Sea, which measures 15 by 40 miles,²⁷¹ is already the largest oilfield in North America. An estimated 13 billion barrels of oil are suitable for removal from the Bay. Prudhoe Bay is leased primarily to BP, Exploration, Conoco Phillips and Exxon Mobil and forms the start of the TransAlaska Oil Pipeline.²⁷²

The Department of the Interior's proposed program for 2007-2012 includes lease sales in the Beaufort Sea in 2009 and 2011, and lease sales in the Chukchi Sea for 2007, 2010 and 2012. Estimated net benefits will total \$6.58 billion in the Beaufort Sea and \$6.37 billion in the

²⁶⁵ DAVID HITE, BRISTOL BAY NATIVE CORPORATION, HYDROCARBON POTENTIAL OF THE ALASKAN PENINSULA AND BRISTOL BAY BASIN, SOUTHERN ALASKA- EMPHASIS ON BRISTOL BAY NATIVE CORPORATION LANDS (2000), http://www.bbnc.net/uploads/File/pdf/O&G_Prospect.pdf.

²⁶⁶ United States Department of the Interior, Minerals Management Service, *Proposed final program, outer continental shelf, Oil and Gas leasing program 2007-2012*, *supra* note 161.

²⁶⁷ Michael L. Chiropoulos, *Inupiat subsistence and the bowhead whale: Can Indigenous Hunting Cultures Coexist with Endangered Animal Species?*, 5 COLO. J. INT'L ENVTL. L. & POL'Y 213 (1994).

²⁶⁸ Maggie Ahmaogak, presentation to the OCS policy committee (2003) (on file with author); Elizabeth M. Bakalar, *Subsistence Whaling in the Native Village of Barrow: Bringing Autonomy to Native Alaskans Outside the International Whaling Commission*, 30 BROOK. J. INT'L L. 601, 609 (2005).

²⁶⁹ *The Subsistence Harvest of Black Brant, Emperor Geese and Eider Ducks in Alaska*. USFWS Technical paper no. 234, available at <http://www.subsistence.adfg.state.ak.us/TechPap/tp234.pdf> (last accessed June 12, 2008).

²⁷⁰ NORTH SLOPE BOROUGH COASTAL MANAGEMENT PLAN (2005), <http://www.north-slope.org/NSB/acmp/NSB%20Coastal%20Management%20Plan.htm>.

²⁷¹ ALASKA DEPARTMENT OF CONSERVATION, PRUDHOE BAY FACT SHEET, http://www.dec.state.ak.us/spar/perp/response/sum_fy06/060302301/factsheets/060302301_factsheet_PB.pdf.

²⁷² *Id.*

Chukchi Sea. The first lease sales in the Chukchi Sea took place under strong protest in February 2008. Shell and Conoco Phillips submitted high bids that totaled \$2.7 billion.²⁷³ Already, environmental organizations and others have filed several lawsuits related to the lease sale and the listing of the polar bear as threatened under Endangered Species Act—two issues that are closely intertwined in the eyes of many.

Commercial shipping vessels and other vessels will likely become more commonplace with the sea ice retreat and potential expansion of industry activities. Red Dog mine is located 46 miles inland from the Chukchi Sea in the mountains of the Western Brooks range.²⁷⁴ Red Dog is the world's largest zinc mine, and is a significant producer of lead.²⁷⁵ It employs 450 people and creates an additional 150 jobs for Northwest Alaska.²⁷⁶ Infrastructure support for the mine includes a 52-mile road to a small port to allow shipment of ore overseas during the ice-free shipping season.²⁷⁷ Extensive coal deposits in the North Slope Borough contain an estimated one-ninth of the world's coal reserves, and could become an extraction target if changing environmental and social conditions make it economically feasible.²⁷⁸ The distance from world markets and consequently, the cost, have thus far been an obstacle to development of these deposits.²⁷⁹

Constituent Considerations Related to Marine EBM

While recognizing the inadequacies of the current system, several interviewees expressed concerns about coordinated area-based designations. Several people in the fisheries sector noted that NPFMC has done enough to advance marine spatial management objectives, and that an additional approach is not needed. Some people noted that there are few, if any, incentives for area-based designation are seen by industry; thus, there is an apparent need to develop incentives and strong rationale for the private sector to willingly participate in an integrated EBM approach. There are concerns among the subsistence community that area designations will limit their rights, because previous area-based designations have already impacted subsistence rights.

→ Environmental Organizations

Summary

Both regions include environmental initiatives that support marine EBM, and in both regions, EBM efforts may be stymied by litigation that may decrease opportunities for a collaborative stakeholder process.

²⁷³ *Shell is High Bidder to Drill for Oil and Gas Off Alaska*, *supra* note 162

²⁷⁴ Alaska Division of Mining, Land and Water, *Red Dog Mine*, <http://www.dnr.state.ak.us/mlw/mining/largemine/reddog/index.htm> (last visited on June 25, 2008).

²⁷⁵ Alaska Division of Spill Prevention and Responses, Contaminated Sites Program, *Red Dog Mine*, <http://www.dec.state.ak.us/spar/csp/sites/reddog.htm> (last visited June 25, 2008).

²⁷⁶ *Id.*

²⁷⁷ AIDEA, *Virtual Tour of the Red Dog Mine*, <http://www.aidea.org/virtualtourrd.html>.

²⁷⁸ *North Slope Borough Coastal Management*, *supra* note 270 at 149.

²⁷⁹ *Id.*

About the Environmental Organizations Constituency

Several environmental organizations have programs or projects that focus on the U.S. Arctic. Table 8 summarizes key organizations and their Arctic activities in both Bristol Bay and the Chukchi and Beaufort Seas.

Table 8. Environmental Organizations in the U.S. Arctic²⁸⁰

	Bristol Bay	Chukchi and Beaufort Seas
Alaska Conservation Solutions	General focus on climate change in Alaska.	General focus on climate change in Alaska. Specific project in Shishmaref.
Alaska Marine Conservation Council	Focus on sustainable fisheries and conservation. Addressing climate change through education and research. Campaign to prevent offshore drilling in Bristol Bay.	Not listed as a focus area for the AMCC.
Audubon Society	None identified.	Filed lawsuit with other NGOs related to Chukchi oil and gas lease and advocating for protection of the Chukchi and Beaufort Seas until the environment is better understood.
Center for Biological Diversity	None identified.	Petitions and litigation related to listing species as threatened and endangered under the Endangered Species Act based on climate-change impacts.
Earthjustice	None identified.	Litigation focused on oil and gas development, including air quality and seismic surveys in the Beaufort Seas region and the Chukchi oil and gas lease; and litigation related to polar bears and walrus.
Greenpeace	Efforts to protect marine cultural heritage zones in the Bering Sea and Gulf of Alaska regions.	None identified.
Oceana	Work in the Bering Sea to protect areas from bottom trawling.	Advocating for commercial fishing moratorium. Campaign to protect the Arctic through research, education, and co-management.
Pacific Environment	Working to protect right whale habitat, prevent offshore drilling, and work with the community to prevent pollution from mining and oil and gas.	Involved in Chukchi Sea oil and gas lawsuit and works with Arctic communities to support conservation.
The Nature Conservancy	Developed Bering Sea eco-regional assessment and is working in the Nushagak River Watershed to protect salmon and other resources.	Developing eco-regional assessment in the Chukchi Sea region as first step in conservation planning.
The Ocean Foundation	Analyzing governance solutions to support marine conservation, including ecosystem-based management.	Analyzing governance solutions to support marine conservation, including ecosystem-based management.

²⁸⁰ Information from environmental organizations' websites.

World Wildlife Fund	Focused on preventing oil and gas development and promoting sustainable livelihoods.	Large Arctic program based in Norway and focused on international Arctic issues. Involved in Chukchi Sea oil and gas lawsuit.
----------------------------	--	---

Constituent Considerations Related to Marine EBM

Environmental organizations are involved with management of the marine ecosystem in both regions. Interviewees have commented that in both regions, some organizations have taken an adversarial approach, which may make it difficult to advance collaborative governance approaches at this time. However, several organizations have strived to work with Alaska Native communities and have focused on collaborative management approaches.

→ Scientific Community

Summary

ELI’s research indicates that Bristol Bay is a better researched and understood ecosystem from a marine science perspective. However, increasingly the CBS region is an area of expanding research interests by private sector, government, and academic scientists. In both regions, many interviewees expressed the need for more research and better coordinated data gathering and storing in order to make marine EBM decisions.

About the Scientific Community Constituency

Broadly, many marine ecologists have expressed the need for marine EBM, as demonstrated by the 2005 *Scientific Consensus Statement on Ecosystem Based Management*.²⁸¹ Within Alaska, several scientists are working to support EBM. The Alaska scientific community includes industry scientists, agency scientists, academic scientists and scientists working in the non-governmental sector. Several scientific organizations seem ideal for supporting marine EBM efforts, including the North Slope Science Initiative in the Chukchi and Beaufort Seas region and the Alaska Integrated Ocean Observing System working throughout Alaska.

Constituent Considerations Related to Marine EBM

Several interviewees expressed several concerns about EBM implementation including how to obtain the science necessary to support EBM decisions. Interviewees and literature indicates that the dynamic changes underway due to climate change make prediction about future habitats and resources difficult at best. This issue was especially troublesome for interviewees when considering area-based designations. In addition to specific EBM concerns, several interviewees noted the need to acquire and use traditional ecosystem knowledge in decision-making. Also, a few non-science interviewees expressed concern that the scientific research in the Chukchi Sea region especially was being conducted in support of oil and gas development, and that this could lead to biased results.

²⁸¹ McLeod et al., *supra* note 2.

B. Capacity of the Constituency

This section considers the financial and personnel capacity of the local government and local residents, including especially Alaska Natives who play important roles in utilizing and governing resources in the regions. Table 9 summarizes the results.

Table 9. Capacity of Local Government and Communities	
(1) Region and local government	
<p>Bristol Bay (marine environment is ~45,000 sq miles)</p> <p><u>Bristol Bay Borough</u> is 900 square miles in total area and includes approximately 400 square miles of fresh and salt-water.²⁸² The Borough employs approximately 38 people.²⁸³ In all, federal state and local government employs approximately 215 people.²⁸⁴</p> <p><u>Lake and Peninsula Borough</u> is ~31,000 square miles, much of which extends inland. It includes the state waters of the southern portion of Bristol Bay along the Alaskan Peninsula.²⁸⁵ The Borough government includes a seven-member Assembly and a staff of six full-time employees. Its operating budget is ~\$2.5 million annually.</p> <p><u>Dillingham Census Area</u>: is approximately 21,000 square miles including land and water with a 9,500 square mile coastal area.²⁸⁶ It comprises a major portion of the northern Bristol Bay and is designated as the Coastal Resources Service Area for the purpose of implementing coastal zone management. It is an unorganized area with no borough government.</p>	<p>Chukchi and Beaufort Seas (marine environment is ~400,000 sq miles)</p> <p><u>North Slope Borough</u> is 89,000 square miles in total area with over 8,000 miles of coastline.</p> <p><u>Northwest Arctic Borough</u>: 39,000 square miles in total area.²⁸⁷ The Borough includes a mayor, 11 assembly members, and a staff of approximately 20.</p> <p><u>Bering Strait Region</u>: Most of the region is adjacent to the Bering Sea with a smaller segment adjacent to the Chukchi Sea. It includes more than 20,000 square miles of coastal area. It has no local government and is designated as a Coastal Resources Service Area for the purpose of the Alaska Coastal Management Program.</p>
(3) Population	
<p>Bristol Bay</p> <p><u>Bristol Bay Borough</u>: ~1,250 permanent residents with 8,000 residents during the salmon season.²⁸⁸</p> <p><u>Lake and Peninsula Borough</u>: ~1,800 permanent residents.</p> <p><u>Dillingham Census Area</u>: ~4,900 residents, of which 70% are Alaska Native.</p>	<p>Chukchi and Beaufort Seas</p> <p><u>North Slope Borough</u>: ~7,000 residents, of which 68% are Alaska Native.</p> <p><u>Northwest Arctic Borough</u>: ~7,300 residents, more than 85% of which are Inupiaq Eskimo.²⁸⁹</p> <p><u>Bering Strait Region</u>: ~5,500 residents, including both Inupiaq and Yup'ik Eskimos. Shishmaref is the only</p>

²⁸² Bristol Bay Borough, Alaska Coastal Management Program (2006), <http://www.theborough.com/bbbacmp.pdf>.

²⁸³ *Id.* at 53

²⁸⁴ *Id.*

²⁸⁵ Lake and Peninsula Borough, About the Lake and Peninsula Borough <http://www.lakeandpen.com>.

²⁸⁶ Alaska Coastal Management Program, Bristol Bay CRSA, at <http://alaskacoast.state.ak.us/District/swf/swBristolBay.htm>.

²⁸⁷ Northwest Arctic Borough, Comprehensive Economic Development Strategy (2004), at <http://www.nwabor.org/edc/EDC%20CompPlan.htm>.

Table 9. Capacity of Local Government and Communities	
	village north of the Bering Strait in this region.
(4) Economy	
Bristol Bay	Chukchi and Beaufort Seas
<p><u>Bristol Bay Borough</u>: Commercial fishing and fish processing support the Borough economy—an approximately \$121 million business annually.²⁹⁰ However, processors employ few local residents. The local government collects a 3% raw fish tax that averages \$300,000-\$1 million to the Borough annually.²⁹¹</p> <p><u>Lake and Peninsula Borough</u>: Commercial fishing is the main economic sector and tourism also supports the local economy. Local government is supported by three types of taxes: 2% raw fish sales tax, a 6% hotel tax, and a severance tax on harvested natural resources.²⁹²</p> <p><u>Dillingham Census Area</u>: The local economy is based on subsistence resources and commercial fishing.²⁹³ The population is approximately 4,800.</p>	<p><u>North Slope Borough</u>: The major revenue source is the property tax assessed to oil and gas developers (~\$200 million annually).²⁹⁴ The projected Borough budget is more than \$319 million in 2008-2009. It supports more than 700 FTE positions. The Department of Wildlife employs approximately 20 people and has an annual budget of \$2.5-3.5 million.</p> <p><u>Northwest Arctic Borough</u>: Red Dog Mine accounts for one quarter of the regional wages.²⁹⁵ Overall employment is low in the region with overall unemployment rate estimated at 49%.²⁹⁶</p> <p><u>Bering Strait Region</u>: Commercial fishing and native crafts provide income in the region.²⁹⁷ There is no year-round industry, so unemployment is high.²⁹⁸</p>

At the local scale, the CBS region has greater financial and personnel capacity to maintain an EBM program through time, largely because of the revenues it receives from the oil and gas industry. However, with this development may come greater impacts. The CBS region also has strong Alaska Native leadership with demonstrated effective negotiation with the oil and gas industry. However, since Bristol Bay lacks borough government altogether, it may have a greater need for regional governance.

²⁸⁸ Bristol Bay Borough at 34, 50 [282]

²⁸⁹ Northwest Arctic Borough, *supra* note 287.

²⁹⁰ Bristol Bay Borough at 51-52 [282]

²⁹¹ *Id.* at 51-52 [282]

²⁹² Lake and Peninsula Borough, About the Lake and Peninsula Borough, at <http://www.lakeandpen.com>.

²⁹³ Alaska Coastal Management Program, Bristol Bay CRSA, at <http://alaskacoast.state.ak.us/District/swf/swBristolBay.htm>

²⁹⁴ North Slope Borough, *North Slope Borough Approved Budget: Fiscal Year 2008-2009*, at <http://www.co.north-slope.ak.us/information/budget/fy09/index.php>

²⁹⁵ Northwest Arctic Borough, *supra* note 287.

²⁹⁶ Northwest Arctic Borough, Employment Access Survey, at <http://www.nwabor.org/edc/index.htm>.

²⁹⁷ Bering Straits Coastal Resources Service Area, Coastal Management Plan Final Draft Plan Amendment (2006), available at http://alaskacoast.state.ak.us/District/FinalFinalPlans/BeringStraits/BS_Plan.pdf.

²⁹⁸ Alaska Department of Commerce, Community and Economic Development, Bering Strait Comprehensive Economic Development Strategy (CEDS) FY05 Annual Report 5 (2005), available at http://www.commerce.state.ak.us/oed/oedp/pubs/CEDS_Annual_Report_0405.pdf

IV. SUMMARY AND NEXT STEPS

In carrying out the preliminary assessment, ELI analyzed opportunities for and obstacles to marine EBM in Bristol Bay and the Chukchi and Beaufort Seas, based on what we have identified as the four critical elements of a successful marine EBM program:

- (1) **Regional ocean governance that includes:**
 - a. **A regional governance body** made up of core local, state, and federal decision-makers that have the legal and regulatory mandate or opportunity to develop and implement an ecosystem plan; and
 - b. **A vision and plan** for marine ecosystem health with
 - designation of conservation areas, subsistence use areas, as well as regions for existing and emerging industrial ocean uses
 - concrete implementation mechanisms
- (2) Robust **ecosystem science** to inform decision-making, including monitoring and indicators of ecosystem health and performance
- (3) Management that is **precautionary and adaptive**
- (4) A suite of approaches to ensure strong **public participation** throughout program development and implementation.

Also, implicit in this approach is the need for **laws, regulations, policies, and institutions** that support or enable the creation of robust integrated ocean management programs.

Potential approaches identified in Chapter III of this assessment include the following:

Regional Ocean Governance Approaches

- Use the Alaska Ocean Coordinator and Cabinet to lead marine EBM development.
- Use the Coastal Management Program as the basis for state-led marine EBM.
- Work with the AEWC to develop a grassroots marine EBM program.
- Designate the region as a national marine sanctuary.

Area Designation Approaches

Federal Approaches

- Designate a national marine sanctuary.
- Use the Endangered Species Act Listing and Critical Habitat Designations.
- Link a new program to existing designations.

State Approaches

- Use the Coastal Management Program as the EBM framework.
- Designate marine parks.

Additional Considerations

Precautionary Approach and Adaptive Management

- Integrate the precautionary principle and adaptive management into existing and future planning efforts affecting the coastal and marine environment

Robust Ecosystem Science

- Conduct consistent long-term research and monitoring.
- Develop integrated research and data collection across agencies and sectors.
- Work with the Alaska Native and rural communities.

Public Participation

- Provide information in hard-copy format.
- Consider stakeholders’ time constraints.
- Take steps to facilitate rural resident participation.
- Engage stakeholders early.
- Educate and build capacity.

In addition to considering the EBM governance elements, ELI examined **ocean constituent motivation and capacity** to undertake and implement an EBM program in either Bristol Bay or the Chukchi and Beaufort Seas region. Table 10 summarizes the results of this analysis. In concluding that the Chukchi Sea and Beaufort Sea is the more promising region in which to successfully launch a marine EBM program, ELI considered a multitude of factors, including: the existence of legal mandate to require marine EBM and other legal and institutional authorities, constituent motivation and capacity, as well as other relevant factors.

Table 10. Summary of Analysis of Bristol Bay and the Chukchi/Beaufort Seas Regions

BRISTOL BAY (BB)	CHUKCHI AND BEAUFORT SEAS (CBS)
(1) Legal Mandate to Implement Marine EBM	
<i>No preference.</i>	
No mandate to implement EBM.	No mandate to implement EBM.
(2) Legal and Institutional Mechanisms	
(a) Regional Governance	
<i>Favors Chukchi and Beaufort Seas.</i> Both regions have the same federal and state mechanisms for implementation. However, because the North Slope Borough, making up the greatest portion of the CBS coast, has an active Department of Wildlife Management and a Department of Planning that has taken a strong stance in protecting subsistence resources with its coastal district plan, the analysis of regional governance tips in favor of the CBS region.	
• Federal, state, and local mechanisms could	• Federal, state, and local mechanisms could

BRISTOL BAY (BB)	CHUKCHI AND BEAUFORT SEAS (CBS)
<p>support EBM, including NOAA Integrated Ecosystem Assessments, National Marine Sanctuaries Program, Alaska Marine Ecosystem Forum, Alaska Coastal Management Program and sector-specific laws and institutions.</p> <ul style="list-style-type: none"> • Bristol Bay Borough is the first established Borough; however, it makes up only a small portion of Bristol Bay. • The northern part of the Bristol Bay region is an unorganized area (no borough government). However, it does have a coastal district plan as a Coastal Resources Service Area. 	<p>support EBM, including NOAA Integrated Ecosystem Assessments, National Marine Sanctuaries Program, Alaska Marine Ecosystem Forum, Alaska Coastal Management Program and sector-specific laws and institutions.</p> <ul style="list-style-type: none"> • The North Slope Borough (NSB) has a robust local government, with a Department of Wildlife focused on subsistence resource management. It has taken a strong stance on protecting subsistence rights. • The region also includes the Northwest Arctic Borough and the unorganized Bering Strait region.
<p>(b) Area-Based Designations <i>Slight preference for Bristol Bay.</i> Neither region has a comprehensive area-based designation approach in state or federal waters. However, Bristol Bay does have more robust conservation areas and sector-specific fishery conservation areas.</p>	
<p>Yes—mainly agency or sector-specific. Designations relate to:</p> <ul style="list-style-type: none"> • Commercial fisheries • Oil and gas development • Conservation areas, including the Walrus Island refuge. • Existing fishery resource protection in place. <p>It is already a multiple-use environment with potentially conflicting use designations.</p>	<p>Yes—mainly agency or sector-specific. Designations relate to:</p> <ul style="list-style-type: none"> • Commercial fisheries • Oil and gas development. • Land-based protected areas, including the Alaska Maritime Wildlife Refuge along part of the coast of the Chukchi Sea. <p>The NSB has attempted broader subsistence designations in its coastal plan. Plans to take the precautionary approach to fisheries management, including a moratorium on commercial fishing.</p>
<p>(3) Constituent Motivation</p>	
<p>(a) Overarching considerations.</p>	
<ul style="list-style-type: none"> • Current conflict over oil and gas development, especially mining, is polarizing community. • Litigation may maintain adversarial relationships. • Existing need for mechanisms to reduce user conflict. • Important habitat for salmon, beluga whales and other species. • Relative proximity to Anchorage may facilitate meetings. One interviewee commented that Alaskans overall feel a deeper connection to Bristol Bay than the Chukchi Sea region. 	<ul style="list-style-type: none"> • Relatively pristine environment and important migratory route for bowhead whale and important subsistence species. • Increasing national and international interest in both protecting and exploiting the resources of the region. • Litigation may maintain adversarial relationships.
<p>(b) Alaska Natives and Local Residents <i>Favors Chukchi and Beaufort Seas.</i> While both regions have motivated constituents, ELI’s research indicates that the Alaska Natives in the CBS region have effectively negotiated with the oil and gas industry and have a strong voice in regional government.</p>	
<ul style="list-style-type: none"> • Some support for marine EBM. • Grassroots action includes development of the Nushagak River Watershed Traditional Use Area Conservation Plan. 	<ul style="list-style-type: none"> • Some support for marine EBM. • Grassroots action includes conflict avoidance agreements between Alaska Native whalers and oil and gas companies

BRISTOL BAY (BB)	CHUKCHI AND BEAUFORT SEAS (CBS)
	<p>and species-specific organizations to protect and manage subsistence hunting and fishing, including the Alaska Eskimo Whaling Commission.</p> <ul style="list-style-type: none"> The recently re-elected North Slope mayor, Edward Itta, publicly opposes offshore drilling.
<p>(c) State and Federal Government <i>Slightly favors Chukchi and Beaufort Seas region.</i> ELI's research indicates that there is little support for developing robust regional ocean governance by state and federal agencies. However, state and federal agencies are increasingly focusing their work on CBS management, which may provide an opportunity to develop EBM in the region.</p>	
<ul style="list-style-type: none"> Little support for comprehensive marine EBM, but ongoing efforts to take ecosystem approach by some agencies 	<ul style="list-style-type: none"> Little support for comprehensive marine EBM, but ongoing efforts to take ecosystem approach by some agencies. Increasing focus on CBS region by state and federal agencies, as demonstrated with the shift in focus to the Arctic Ocean by the Alaska Marine Ecosystem Forum.
<p>(d) Private Sector <i>Favors Chukchi and Beaufort Seas region.</i> ELI did not find support for EBM by the private sector in either region. With the exception of oil and gas, there is little proposed commercial development in the CBS region at this time. Developing EBM now would allow the system to be established ahead of most development.</p>	
<ul style="list-style-type: none"> No evidence of support for marine EBM. Local economy depends on commercial fisheries. Possible expansion of mining and oil and gas development. Village and regional Alaska Native Corporations play a leading role in commercial development. 	<ul style="list-style-type: none"> No evidence of support for marine EBM. In addition to a subsistence-based economy, major revenues come from land and near-shore oil and gas leases in the Beaufort Sea region. Possible expansion of oil and gas, no mining developments, and commercial fishing moratorium proposed. Village and regional Alaska Native Corporations play a leading role in commercial development. Few industrial activities. Lack of existing industry viewed by some as negating need for marine EBM.
<p>(e) Environmental Organizations <i>No preference.</i> Both regions include environmental efforts that support marine EBM, and in both regions, EBM efforts may be stymied by litigation that may decrease opportunities for a collaborative stakeholder process.</p>	
<ul style="list-style-type: none"> Support for marine EBM in Bering Sea, including past eco-regional assessments of the Bering Sea by The Nature Conservancy and a comprehensive analysis by the Alaska Division of Governmental Coordination. However, current efforts in Bristol Bay largely focus on preventing oil and gas and mining developments. 	<ul style="list-style-type: none"> Support for marine EBM, including Nature Conservancy efforts to conduct eco-regional assessments for conservation planning. Many organizations focused on litigating the ESA listing decision and oil and gas leases.
<p>(f) Scientific Community <i>No preference.</i></p>	

BRISTOL BAY (BB)	CHUKCHI AND BEAUFORT SEAS (CBS)
Some support for marine EBM, especially as it relates to fisheries management.	Some support for marine EBM and some efforts to coordinate scientific activities by the North Slope Science Initiative and other organizations.
(4) Capacity	
(a) Financial	
<i>Favors Chukchi and Beaufort Seas region.</i> The CBS region has greater capacity to maintain an EBM program over time, largely because of the revenues it receives from the oil and gas industry. (However, with this development may come greater impacts.)	
<ul style="list-style-type: none"> • Industry mainly relates to commercial and recreational fishing, and especially salmon fishing. • The potential to increase jobs and improve the local economy has led some in the community to support potential offshore drilling and onshore mining. 	<ul style="list-style-type: none"> • Strong economy with land-based and Beaufort Sea oil and gas development. • Many people in the community have expressed support for land-based oil and gas development but oppose offshore drilling.
(b) Personnel	
<i>Favors Chukchi and Beaufort Seas region.</i> The NSB has greater institutional capacity to participate in a regional governance program. However, since Bristol Bay lacks borough government in most of the region, it may have a greater need for regional governance.	
<ul style="list-style-type: none"> • Partial borough government and small population. 	<ul style="list-style-type: none"> • More extensive borough government. • Small population with community leaders stretched thin • The NSB has a strong infrastructure that includes a Department of Wildlife and a Department of Planning. • Strong Alaska Native leadership.
(c) Scientific Capacity	
<i>Favors Bristol Bay.</i> The marine scientific capacity is greater in the Bristol Bay region, with much of the research focused on fisheries. However, scientific efforts are increasing in the CBS region	
<ul style="list-style-type: none"> • Existing knowledge about fisheries is robust. 	<ul style="list-style-type: none"> • Limited scientific knowledge and lack of coordination. • Increasing scientific and management efforts in the region.

ELI concluded that two overarching requirements need be satisfied to achieve successful marine EBM in the Chukchi Sea and Beaufort Sea region:

1. Stakeholder and government agency support for a marine EBM program, either to create the momentum needed to pass new legislation or to use the existing legal framework to implement marine EBM.
2. Either a new legal mandate that requires marine EBM, or strong leadership to take advantage of existing legal authority to develop a program with discretionary authority and voluntary initiatives.

Many people interviewed commented on the need for additional targeted outreach and education about marine EBM, including applicable successful examples, as a way to build needed program support. Because of time and financial constraints, interviewees suggested communication onsite

in rural villages and presentations and workshops at already planned meetings, rather than new workshops or meetings.

As this preliminary assessment demonstrates, federal and state agencies already have the legal tools needed for creation of a marine EBM program. However, absent a legal mandate, it may take strong leadership to take advantage of these tools to develop and implement marine EBM in the Chukchi Sea and Beaufort Sea region. Rather than cobble together a program under existing laws, the state could develop a new law similar to the laws passed in other states. For example, Massachusetts recently passed the Massachusetts Ocean Act, which requires development of an area-based management plan, with corresponding mandates for regulatory agencies to comply with the plan.

Without a new marine EBM law, state and federal agencies could move forward using existing legal and institutional approaches, including the approaches laid out in the following roadmap.

→ **Roadmap for Developing Marine EBM in the Chukchi and Beaufort Seas Region**

Based on this preliminary assessment, ELI proposes a roadmap for building support for, and ultimately developing, an effective marine EBM program focused on long-term sustainability and health of the Chukchi and Beaufort Seas. We suggest that concerned stakeholders undertake to:

(1) Conduct targeted outreach and education.

Alaska's marine constituency, and especially the relevant federal and state agencies and local governments, must be willing to take the steps necessary to develop a marine program. ELI recommends the development of a targeted outreach and education initiative to teach Alaska's ocean constituents about the benefits of marine EBM and implementation successes. This could occur through a variety of mechanisms including:

- Presentations and working groups at planned meetings and conferences, including participation of EBM experts from other regions to share personal successes and challenges;
- Development of specific educational materials for managers, stakeholders, and the public; and
- Meeting with agency staff and community leaders in the Chukchi and Beaufort Seas region to learn and share information.

(2) Use existing authority or develop new laws and institutions to create a marine EBM program.

As previously described, two ideal elements of a marine EBM program include (1) regional governance and (2) a vision and plan. A program in the Chukchi and Beaufort Seas region could include:

- Creation of a regional governance structure with the appropriate decision-makers at state and federal agencies and local governments whose authority relates to ocean and coastal management and regulation. Key stakeholders, such as the Alaska Native community, the chief private sectors, and the environmental community could be equal participants in this collaborative process. A regional governance body would likely include a high-level council or committee with sub-committees and working groups focused on particular tasks. It could include a Secretariat or office to facilitate the work of the governance body. In the absence of governmental support, grassroots-led efforts could undertake marine EBM and build momentum for a politically supported program.
- Development of a vision for ocean health and human use and a plan to maintain or achieve that vision. With a collaborative governance body in place, defining a vision for ocean sustainability and developing concrete plans to achieve that vision become the next steps. Ideally, this would include comprehensive marine spatial planning and the incorporation of existing area-based elements. In developing this vision and plan, the collaborative governance body should incorporate the precautionary principle and adaptive management strategies in order to account for the lack of environmental information and changing conditions.

Alaska's ocean constituency could develop marine EBM through a new law or soft-law agreement, a grassroots movement, or through existing programs. Existing programs that could take on an integrated EBM program for the marine environment in the Chukchi and Beaufort Seas region include:

- Development of EBM management through coastal district plans, including the North Slope District, the Northwest Arctic District, and the Bering Strait CRSA;
- Use of the Alaska Ocean Cabinet and Ocean Policy Coordinator to lead the development of a vision and plan for the Chukchi and Beaufort Seas region;
- Expansion of the Alaska Marine Ecosystem Forum to take an advisory role with stakeholder participation, and focusing on the management of the Chukchi and Beaufort Seas region;
- Grassroots development of marine EBM in partnership with Native Alaska organizations, including the Alaska Eskimo Whaling Commission; and
- Particular non-governmental efforts, including efforts by The Nature Conservancy to develop an ecoregional map and conservation plan that could serve as the basis for a grassroots marine EBM program.

New approaches might include the creation of an Arctic National Marine Sanctuary or use of requirements to develop habitat conservation plans for species listed as endangered or threatened under the Endangered Species Act as a basis for collaborative governance.

(3) Synthesize existing data and collect additional information so that robust ecosystem science informs the collaborative governance process.

Ocean constituents and managers cite lack of data or lack of well-synthesized data as an impediment to marine EBM. Precautionary approach and adaptive management strategies could help overcome these hurdles, and additional ecosystem research could target needs identified in an ecosystem plan. The following institutions are excellent candidates to participate in the process of facilitating data collection and developing a common database, synthesizing information, analysis, and developing linkages between scientists and rural residents in the Chukchi and Beaufort Seas region: Alaska Ocean Observing System, North Pacific Research Board, NOAA's Alaska Regional Office and Science Center, the North Pacific Fishery Management Council, North Slope Science Initiative, and the Alaska Native Science Commission. In addition to these institutions, NOAA's National Ocean Service is planning an integrated ecosystem assessment for Alaska that could be a central resource for the development of a marine EBM program.

(4) Ensure public participation in the planning and decision-making processes and encourage involvement and support from the ocean constituency.

Combined with targeted education and outreach, ensuring a participatory process throughout the development and implementation of the program can help build support for marine EBM. It may also help to ensure balanced decision-making in light of the many different needs of ocean constituents in the Chukchi and Beaufort Seas region. Particular challenges to public participation in the Chukchi Sea region include its remote population spread over large distances, difficulties with internet services, and community leaders that may be overburdened by additional roles in marine EBM. To address these challenges a marine EBM program could host some meetings in remote villages to expand public participation, develop and distribute printed meeting notices and reports, provide funding to support travel of remote residents and to support one or more people to serve as a link between the community and the EBM program.



ENVIRONMENTAL
LAW • INSTITUTE®