



**Northeast Regional Planning Body**

**Meeting Materials**

**Mystic, Connecticut**

**June 3-4, 2015**

*This document is formatted for two-sided printing.*



# Northeast Regional Ocean Planning Materials

*Northeast Regional Planning Body Meeting | June 3-4, 2015*

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## Additional Materials

**NOTE:** Additional materials will be posted June 2 on the meeting website (<http://neoceanplanning.org/events/june-2015-rpb-meeting/>) after receiving further RPB member comment and reflecting public input from the Stakeholder Forum. These materials will include:

- Draft outline of the Northeast Ocean Plan (printed copies available at the meeting)
- Next steps for the synthesis and use of data and other information under existing authorities (printed copies available at the meeting)
- Summary of recent energy and maritime commerce engagement (available online)



# Meeting agenda



# Northeast Regional Planning Body Meeting

**Date** June 3-4, 2015  
**Location** Hilton Mystic, 20 Coogan Boulevard, Mystic, Connecticut

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## Meeting Agenda

### Meeting Objectives

- Discuss updates on Northeast Regional Planning Body (NE RPB) activities and progress since November 2014.
- Review and make decisions on next steps for the synthesis and use of data and other information under existing authorities.
- Review draft outline of the Northeast Ocean Plan and make decisions about next steps.
- Provide opportunities for public input about the topics being considered by the NE RPB.

### Wednesday, June 3, 2015

**9:00 am** Public registration

**9:30 am** Tribal blessing

*Lynn Malerba, Chief, Mohegan Tribe*

**9:40 am** Welcoming remarks

*Rob Klee, Commissioner, Connecticut Department of Energy and Environmental Protection*

**9:50 am** Introductions and agenda review

*Laura Cantral, Meridian Institute*

**10:00 am** Opening remarks, overview of NE RPB progress, and presentation of draft outline of the Northeast Ocean Plan

NE RPB Co-Leads will provide brief opening remarks, present important updates about progress since the last public NE RPB meeting, review the NE RPB timeline, and present a draft outline of the Northeast Ocean Plan.

- *Grover Fugate, Rhode Island Coastal Resource Management Council and NE RPB State Co-Lead*
- *Richard Getchell, All Nations Consulting; and Former Tribal Chief, Aroostook Band of Micmacs and NE RPB Tribal Co-Lead*
- *Betsy Nicholson, National Oceanic and Atmospheric Administration (NOAA) and NE RPB Federal Co-Lead*

**10:30 am      Update on recent activities and projects**

During this session project teams will provide updates on their work, followed by brief discussion and an opportunity for informal NE RPB and public engagement with the project teams:

- Commercial fishing  
*George LaPointe, George LaPointe Consulting*
- Marine life characterization  
*Pat Halpin, Nicholas School of the Environment & Duke Marine Lab, Duke University*
- Baseline assessment  
*Hauke Kite-Powell, Woods Hole Oceanographic Institution Marine Policy Center*

**11:45 am      Informal NE RPB and public discussion about projects**

Public and NE RPB will have an opportunity to discuss and ask questions of specific project teams during a world café style session.

**12:00 pm      Lunch**

Those interested in continuing discussion with project teams are welcome to do so during the lunch break.

**12:45 pm      Continued updates on recent activities and projects**

During this session project teams and work groups will provide brief updates on their work, followed by brief RPB discussion.

- Coastal Zone Management Act update  
*David Kaiser, National Oceanic and Atmospheric Administration*
- Regional restoration priorities  
*William Hubbard, U.S. Army Corps of Engineers*
- Sand and gravel  
*William Hubbard, U.S. Army Corps of Engineers and Bob LaBelle, Bureau of Ocean Energy Management*
- Aquaculture  
*John Weber, Northeast Regional Ocean Council (NROC)*
- Regulatory pre-application best practices  
*Deerin Babb-Brott, SeaPlan*

**2:15 pm      NE RPB discussion on next steps for data synthesis and agency use**

*Nick Napoli, NROC*

Following on project presentations, staff will provide examples of potential approaches to bringing together data products, regulatory practices, and the results of industry and public engagement for agency use. This will include a presentation of potential next steps and will be followed by NE RPB discussion.

**3:45 pm      Break**

- 4:00 pm      Public comment**  
Interested individuals will be provided the opportunity to offer formal public comment and encouraged to provide input on the topics currently being discussed by the NE RPB. Depending on how many individuals would like to comment, the time limit will be between 2-3 minutes. A sign-up list and guidelines will be available at the meeting registration table.
- 5:00 pm      Summary of day 1**  
*Laura Cantral, Meridian Institute*
- 5:30 pm      Adjourn**

### Thursday, June 4, 2015

- 8:30 am      Public registration**
- 9:00 am      Welcome back, review of day 1 outcomes, and review of day 2 agenda**  
*Laura Cantral, Meridian Institute*
- 9:30 am      Continued NE RPB discussion and decision on next steps for data synthesis and agency use**  
The NE RPB will make a decision to guide future activities on the next steps for data synthesis and agency use.
- 10:30 am     Review draft outline of Northeast Ocean Plan**  
*John Weber and Nick Napoli, NROC*  
During this session, the NE RPB will review the draft plan outline and make decisions about how to proceed. The objective of this session is to get additional RPB member input and direction on the draft plan outline and discuss process and timeline for specific sections of the Northeast Ocean Plan.
- 11:30 am     Public comment**  
Interested individuals will be provided the opportunity to offer formal public comment and encouraged to provide input on the topics currently being discussed by the NE RPB. Depending on how many individuals would like to comment, the time limit will be between 2-3 minutes. A sign-up list and guidelines will be available at the meeting registration table.
- 12:15 pm     Closing remarks**  
*NE RPB co-leads*
- 12:20 pm     Summary and next steps**  
*Laura Cantral, Meridian Institute*
- 12:30 pm     Adjourn**



# Document 2.1

## Membership roster



# Northeast Regional Planning Body Membership Roster

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## States

### Connecticut

- Brian Thompson, Director, Office of Long Island Sound Program, Department of Environmental Protection, [Brian.Thompson@ct.gov](mailto:Brian.Thompson@ct.gov)
- Susan Whalen, Deputy Commissioner, Department of Energy and Environmental Protection, [Susan.Whalen@ct.gov](mailto:Susan.Whalen@ct.gov)

### Maine

- Patrick Keliher, Commissioner, Department of Marine Resources, [Patrick.Keliher@maine.gov](mailto:Patrick.Keliher@maine.gov)
- Walt Whitcomb, Commissioner, Department of Agriculture, Conservation and Forestry, [walt.whitcomb@maine.gov](mailto:walt.whitcomb@maine.gov)

### Massachusetts

- Bruce Carlisle, Director, Executive Office of Energy and Environmental Affairs/Coastal Zone Management, [bruce.carlisle@state.ma.us](mailto:bruce.carlisle@state.ma.us)
- Kathryn Ford, Habitat Program Manager , Division of Marine Fisheries, [kathryn.ford@state.ma.us](mailto:kathryn.ford@state.ma.us)

### New Hampshire

- Thomas Burack, Commissioner, Department of Environmental Services, [thomas.burack@des.nh.gov](mailto:thomas.burack@des.nh.gov)
- Glenn Normandeau, Executive Director, Department of Fish and Game, [glenn.normandeau@wildlife.nh.gov](mailto:glenn.normandeau@wildlife.nh.gov)

### Rhode Island

- Grover Fugate (State Co-Lead), Executive Director, Coastal Resource Management Council, [gfugate@crmc.ri.gov](mailto:gfugate@crmc.ri.gov)
- Janet Coit, Director, Department of Environmental Management, [Janet.Coit@dem.ri.gov](mailto:Janet.Coit@dem.ri.gov)

### Vermont

- Joseph Roman, PhD, Research Professor, University of Vermont, [romanjoe@gmail.com](mailto:romanjoe@gmail.com)

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### Joint Chiefs of Staff

- Joe Atangan, Senior Scientist, U.S. Navy Fleet Forces Command, [joe.atangan@navy.mil](mailto:joe.atangan@navy.mil)

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### U.S. Department of Homeland Security

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### U.S. Department of the Interior

- Bob LaBelle, Senior Advisor to the Director, Bureau of Ocean Energy Management, [Robert.LaBelle@boem.gov](mailto:Robert.LaBelle@boem.gov)

### U.S. Department of Transportation

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## New England Fishery Management Council

- Douglas Grout, Chief of Marine Fisheries, New Hampshire Fish and Game, [Douglas.Grout@wildlife.nh.gov](mailto:Douglas.Grout@wildlife.nh.gov)
- 

## Tribes

### Aroostook Band of Micmacs/All Nations Consulting

- Richard Getchell (Tribal Co-Lead), Tribal Outreach Coordinator and Former Tribal Chief, [rgetchell@allnationsconsulting.us](mailto:rgetchell@allnationsconsulting.us)

### Houlton Band of Maliseet Indians

- Sharri Venno, Environmental Planner, [envplanner@maliseets.com](mailto:envplanner@maliseets.com)

### Mashantucket Pequot Tribal Nation

- To be determined

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### Mohegan Indian Tribe of Connecticut

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### Passamaquoddy Tribe - Indian Township Reservation

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### Passamaquoddy Tribe - Pleasant Point Reservation

- Vera Francis, Tribal Community Planner, [verafrancis13@gmail.com](mailto:verafrancis13@gmail.com)

### Penobscot Indian Nation

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### Narragansett Indian Tribe of Rhode Island

- Doug Harris, Deputy Tribal Historic Preservation Officer/Preservationist for Ceremonial Landscapes, [dhnithpo@gmail.com](mailto:dhnithpo@gmail.com)

### Wampanoag Tribe of Gay Head (Aquinnah)

- Elizabeth James-Perry, Tribal Cultural Resource Monitor, [elizabeth@wampanoagtribe.net](mailto:elizabeth@wampanoagtribe.net)

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# Document 2.2

## Participant list



## Regional Planning Body Meeting Participant List

June 3-4, 2015 • Hilton Mystic, Mystic, Connecticut

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Document 3.1A

Baseline assessment

project summary



## BASELINE ASSESSMENT PROJECT SUMMARY

New England's marine resources are an important source of economic and ecosystem value. Together with the region's coastal infrastructure and human use, these resources are inputs to industrial, recreational, and service sector activities that support jobs and income. They also are a source of ecosystem services that contribute to the well-being of residents and visitors.

### Project Goals

In support of the Northeast Regional Planning Body's (RPB) ocean planning effort, a baseline assessment will compile existing information and conduct new analysis to characterize the region's ecosystem, economy, and cultural resources. The assessment will provide guidance on how a regional ocean plan can address pressures on resources, resource use conflicts, and support sustainable economic activity in the Northeast. The team conducting this assessment includes researchers from the Woods Hole Marine Policy Center, University of Southern Maine, University of Massachusetts Boston, and the New England Aquarium.

The goals of the baseline assessment are to: 1) describe the connections between natural resources and economic value (broadly defined) in the region at present and in the future; and 2) provide tools and considerations to the RPB as it embarks on the development of a regional ocean plan. The intent of the project is to improve understanding of marine resources as inputs to economic activity and to the generation of ecosystem services while giving RPB members and others involved in ocean planning a tool that helps evaluate how a potential planning decision might affect future resource status and economic value generation. The assessment will also identify key gaps in data and information to consider in future planning.

### Project Tasks and Timeline

The assessment will include the following tasks:

1. Development and RPB review of an assessment outline: **Sept – Oct, 2014**  
(see following pages for detailed outline, which will be discussed at the Nov. RPB meeting)
2. Analysis of regional Marine Economy and Resources: **Nov – May, 2015**
  - a. Regional, state, coastal county level economic indicators
  - b. Summary of non-market valuation studies
  - c. Summary of status/trends of marine resources and infrastructure
  - d. Map resources to economic activity and production
3. Summary of potential future considerations specific to ocean uses: **Nov – June, 2015**
  - a. Economic trends and projections
  - b. Federal and state planning/strategic planning initiatives
  - c. Best management and construction practices (e.g. marine and coastal facilities and operations, ocean industry siting)
4. Production and review of draft and final baseline assessment: **May – Sept, 2015**

### For more information

Hauke Kite-Powell

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Katie Lund

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# Document 3.1B

## Baseline assessment table of contents



# **Baseline Assessment: Marine Resources, Infrastructure, and Economics of the Northeast Region of the United States**

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## **Table of Contents**

### **1. Introduction**

- 1.1. Purpose and scope of baseline assessment
- 1.2. Resources and economic value generation
- 1.3. The role of ocean planning in promoting sustainable economic activity
- 1.4. Geography of the Northeast Region

### **2. Resources and Infrastructure**

- 2.1. Marine and coastal natural resources
  - 2.1.1. *Ocean waters*
  - 2.1.2. *Seabed and habitat*
  - 2.1.3. *Beaches*
  - 2.1.4. *Wetlands*
  - 2.1.5. *Coastal conservation lands*
  - 2.1.6. *Marine protected areas*
  - 2.1.7. *Living resources*
- 2.2. Marine and coastal cultural resources
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  - 2.3.3. *Naval/military facilities*
  - 2.3.4. *Marinas*
  - 2.3.5. *Pipelines*
  - 2.3.6. *Cables*
  - 2.3.7. *Residential real estate*
  - 2.3.8. *Commercial real estate*
- 2.4. Human resources

### **3. Coastal and Marine Economy**

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Document 3.2A

Regional restoration and  
conservation priorities

Subcommittee members



## Restoration and Conservation Subcommittee Project Update

The following materials support the Restoration and Conservation Subcommittee's project update. A reminder that the subcommittee's work focuses on Objective 2 of the Framework for Ocean Planning in the Northeast: "Identify and Support Existing Non-regulatory Opportunities to Work Toward Conserving, Restoring, and Maintaining Healthy Ecosystems." Federal agency staff (led by the US Army Corps of Engineers) is leading subcommittee efforts and will provide an update at the RPB meeting on the following:

- *Subcommittee Members (3.2A)*  
The subcommittee is co-lead by EPA and US Army Corps of Engineers and meets quarterly to update members on projects and funding opportunities. Subcommittee members are endorsed by their respective RPB member.
- *Criteria for Priority Projects (3.2B)*  
The subcommittee suggests the RPB consider the following criteria to support restoration and conservation priority projects that relate closely to ocean planning goals and objectives.
- *Options for Inclusion in the Regional Ocean Plan (3.2C)*  
The subcommittee will present ways to include restoration and conservation priorities into a regional ocean plan. RPB members will consider and discuss these options during their June 3 meeting.

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Document 3.2B

Regional restoration and  
conservation priorities

Criteria for priority projects



## **Criteria for Northeast Ocean Planning Restoration and Conservation Priority Projects**

*"RPB supported": an RPB supported restoration and conservation project has a potential funding avenue and is a viable, prospective project to improve ocean condition (as indicated by meeting the criteria below). RPB support may improve the likelihood of receiving funding. However, actual verification of project feasibility is the responsibility of project implementing organizations.*

RPB supported projects must:

- Be nominated by a RPB member organization and have a public or NGO proponent identified – it is the responsibility of these organizations to ensure proposed priority projects meet criteria
- Improve ocean condition and/or coastal watersheds either directly or indirectly
- Demonstrate habitat units gained per dollar invested is anticipated to be positively significant
- Be adaptable in the face of climate change; climate change projections have demonstrably been considered in project planning phase
- Have a strong likelihood of achieving a sustained, restored condition post-construction
- Clearly identify and address uncertainties for major components of proposed projects (e.g. permitting issues, public controversy, real estate conveyances, flood plain impacts, owner endorsement, etc.)
- Incorporate adaptive management, i.e. process/funding in place, for monitoring the extent that project objectives/expected outcomes are being achieved and mechanisms available to adjust proposed practices/methodology that need to be altered to meet objectives/outcomes.
- Compliment adjacent habitat



Document 3.2C

Regional restoration and  
conservation priorities

Options for inclusion in  
regional ocean plan



## **Northeast Ocean Planning Restoration and Conservation Priorities: Options for Inclusion in Northeast Ocean Plan**

*"RPB supported": an RPB supported restoration and conservation project has a potential funding avenue and is a viable, prospective project to improve ocean condition. RPB support may improve the likelihood of receiving funding. However, actual verification of project feasibility is the responsibility of project implementing organizations.*

The following information will be presented for consideration at the June 3 RPB meeting. Members will be asked to consider these options for inclusion in a draft Northeast ocean plan:

- a. RPB will support a set of habitat and/or project **types** as restoration and conservation priorities for the region. Projects must meet RPB criteria to receive support.

Proposed priority project types:

- o Salt marsh/coastal wetland restoration
- o Coastal river and stream restoration
- o Water quality improvements
- o Diadromous fish passage restoration
- o Oyster reef restoration
- o Eelgrass restoration
- o Living shoreline installation
- o Ocean substrate enhancement
- o Marine debris removal
- o Conservation land acquisition

- b. RPB will support a set of priority ocean restoration and conservation projects for the region that meet RPB criteria **and** commit to maintaining an informational data layer on the ocean data portal describing these projects. RPB members and member organizations will make their best effort to ensure this list of supported projects are funded and completed. Option B will provide a **static** set of priority restoration projects to complete within the region.
- c. RPB will endorse NROC as the entity responsible for maintaining a “living” list of priority ocean restoration and conservation projects for the region that meet RPB criteria. RPB will commit to maintain and keep current an informational data layer on the ocean data portal describing these projects. RPB member organizations and NROC will coordinate to make their best effort to ensure this list of supported projects are funded and completed. Option C allows for the project list to remain **fluid** and stay updated as projects progress or are completed.

- d. RPB will support a set of priority ocean restoration and conservation projects for the region that meet RPB criteria. The RPB will endorse NROC as the entity responsible for maintaining a list of ocean restoration and conservation projects for the region that meet these criteria. NROC and RPB member organizations will make their best effort to ensure this list of supported projects are funded and completed ***within the term of the ocean plan***. RPB will consult the NROC-maintained list of regional projects when updating the set of priority projects for the region with each Northeast ocean plan update. Option D is a hybrid approach that combines a static set of priority restoration projects (to be completed within the term of the ocean plan), while a fluid list is maintained by NROC on the side for ocean plan updates.

# Document 3.3

## Draft outline of regulatory pre-application best practices



## DRAFT Outline of Pre-application Best Practices

Pre-application consultation is an informal information-gathering and consultation process between a project proponent and the regulatory (federal and state) agencies that occurs before formal regulatory action begins. The purpose of pre-application review is to help all parties understand the what, where, when, how, and why questions related to the proposed action. Additionally, pre-application consultations clarify applicable authorities and consequent required information, identify potentially significant impacts to jurisdictional resources and existing human activities, identify what data is available and what is missing and needed, identify potentially affected stakeholders to be consulted, and provide an opportunity to modify the proposed project in response to agency concerns.

Resource and regulatory agencies have expressed support for an enhanced and informed pre-application process constructed in part to take maximum advantage of the regional informational context that the Northeast regional ocean plan will provide.

The purpose of pre-application best practices is to help a project proponent bring a more informed proposal to the regulatory process, and to provide a level of consistency and predictability for proponents, stakeholders, and agencies. Best practices would not result in additional formal obligations for the proponent or an agency, and the lead agency could tailor such a template to its own practices.

### Outline for Pre-Application Best Practices

[Content will be revised as decisions are made about data, process, guidance, etc. over the course of developing the plan.]

1. **Introduction** – The purpose of the best practices are to provide guidance about how the Northeast Ocean Data Portal and information in the regional ocean plan can be used to enhance the effectiveness of preapplication consultation under existing authorities.\* Best practices can support the review of a range of types and scales of projects, at the agencies' discretion. Typically, preapplication consultations are conducted for larger projects that may affect important resources and/or existing human activities and require a robust Environmental Assessment or an Environmental Impact Statement under the National Environmental Policy Act (NEPA).

#### 1.1. Purpose and objectives:

- 1.1.1. A consistent but flexible framework that describes data and information sources and procedural best practices for agencies and project proponents
- 1.1.2. Support interagency and agency/proponent understanding of the proposed action, key issues, the type and level of detail of data and information that should be included for the review process, sources of data and information (data portal, stakeholders, other), data gaps, and key potentially affected stakeholders
- 1.1.3. Support informed stakeholder engagement

- 1.1.3.1. Describe stakeholder engagement opportunities/provisions in agency guidance materials (U.S. Army Corps of Engineers (USACE) permit application checklist, for example)
- 1.1.4. Support coordinated federal/state environmental and regulatory review, as appropriate
  - 1.1.4.1. Potentially use as basis for state/federal NEPA/state review protocol
- 1.2. General characterization of plan and regulatory context
- 1.3. Key substantive and procedural issues addressed by pre-application process

## **2. Best Practices**

- 2.1. Overview of the pre-application process – Describe the process and, where applicable, linkage to existing requirements (e.g., Rhode Island, Maine pre-application requirements). Cannot create new requirement for agency, proponent, or stakeholder participation, but agencies can agree to do so through commitments in the ocean plan, and can recommend in the plan and/or agency guidance that proponents participate and describe best practices for stakeholder participation.
- 2.2. Sources and best practices for use of spatial data and other information – Short-form overview of:
  - 2.2.1. Northeast Ocean Data Portal
  - 2.2.2. Regional ocean plan guidance
  - 2.2.3. Links to existing agency guidance for Essential Fish Habitat (EFH), Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA), National Historic Preservation Act (NHPA) consultations and potentially NEPA, Clean Water Act section 404 (CWA), etc. [Intent is not to develop a permitting guide, so need to consider informational balance/value – for discussion]
  - 2.2.4. Other
- 2.3. Procedural best practices – Include best practices related to: 1) notice and participation, including identification of potentially affected stakeholders and plan for engagement [See 2.6 below], 2) type and level of detail of information from the data portal that proponents should be prepared to address with agencies, 3) issues and direction that agencies should be prepared to address with proponents, and 4) expectations that the pre-application process support a general understanding among the agencies and the proponent about each agencies' key issues, the type and general level of detail of additional data and analysis likely to be needed for NEPA and regulatory review, and the review and permitting process and timeline.
  - 2.3.1. Lead federal agency
  - 2.3.2. Participating agencies
  - 2.3.3. Project proponents
- 2.4. Guidance on use of data would be developed by agencies with subject-matter jurisdiction over or special expertise in relevant authorities (EFH, ESA, MMPA, CWA, Rivers and Harbors Act, other) and describe data appropriate for different applications (e.g., initial siting decisions v. subsequent environmental and regulatory review). May include siting guidelines for specific activities such as aquaculture. Guidance may be incorporated in the pre-application materials, published as individual agency guidance and incorporated by reference, etc.

- 2.4.1. Important ecological areas and/or human use areas
  - 2.4.2. Marine mammals
  - 2.4.3. Sea turtles
  - 2.4.4. Birds
  - 2.4.5. Fish
  - 2.4.6. Submerged aquatic vegetation
  - 2.4.7. Restoration
  - 2.4.8. Commercial fishing
  - 2.4.9. Shipping
  - 2.4.10. Recreation
  - 2.4.11. Historic and cultural resources
  - 2.4.12. Energy and infrastructure
  - 2.4.13. Aquaculture
  - 2.4.14. Sand and gravel
  - 2.5. Linkage with state-mandated pre-application processes (e.g., Rhode Island Fisherman's Advisory Board, Maine Department of Environmental Protection rules)
  - 2.6. Stakeholder and public participation – Describe the range of means by which stakeholders may engage and/or be engaged in pre-application review. The means – and ability to do so, vary widely within the region, and the intent of these best practices is not to recommend a standardized regional approach. Rather, the intent is to describe the regionally common interest, and describe practices that can achieve them.
    - 2.6.1. Agency can recommend specific stakeholders with whom proponent should consult, based on Data Portal layers and professional knowledge
    - 2.6.2. Proponents can consult with stakeholders at any time, at their discretion
    - 2.6.3. State/federal programs that require stakeholder/public engagement in preapplication
    - 2.6.4. [See 1.1.4.1., above: consider a pilot approach to coordinating NEPA and state environmental review in Maine]
  - 2.7. Coordination with Tribes
    - 2.7.1. Current lead agency practice under NHPA
    - 2.7.2. Relevant elements of tribal government-to-government consultation best practices
- 3. Key Agencies and Stakeholders** – Detailed but non-exclusive list of references and contact information
- 3.1. Entities and brief description of interests [may be by project type] and kind of information that may be required and/or provided by each

\* For example, see existing U.S. Corps of Engineers authority to conduct pre-application meetings at 33 U.S.C. 401 et seq.; 33 U.S.C. 1344; 33 U.S.C. 1413. Section 325.1 - Applications for permits (b.): *The district engineer will establish local procedures and policies including appropriate publicity programs which will allow potential applicants to contact the district engineer or the regulatory staff element to request pre-application consultation. Upon receipt of such request, the district engineer will assure the conduct of an orderly process which may involve other staff elements and affected agencies (Federal, state, or local) and the public. This early process should be brief but thorough so that the potential applicant may begin to assess the viability of some of the more obvious potential alternatives in the application. The district engineer will endeavor, at this stage, to provide the potential applicant with all helpful information necessary in pursuing the application, including factors which the Corps must consider in its permit decision making process.*



Document 4.1

Workshop on ecosystem  
based management  
meeting summary



# Ocean Planning in the Northeast Workshop on Ecosystem Based Management (EBM)

April 8, 2015

Squamscott Room, Holloway Commons  
University of New Hampshire  
75 Main Street  
Durham, NH

## MEETING SUMMARY

Prepared by the:



May 2015

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## Executive Summary

On April 8 2015, approximately 80 participants from a variety of stakeholder groups attended a one-day workshop hosted by the Northeast Regional Planning Body (RPB) to discuss potential for incorporating Ecosystem Based Management (EBM) principles and practices into ocean planning in the Northeast US. The goals of the workshop included learning about EBM, developing a shared sense of EBM, identifying key questions, and exploring possible actions for moving forward on the topic.

An RPB representative began by providing background on EBM and summarizing key EBM principles from scientific literature: 1) humans are part of the ecosystem; 2) there is no singular path to EBM; and 3) there is a need for stakeholders to work together to develop EBM incrementally. The representative suggested that the RPB is focused on EBM at a regional scale and was interested in hearing tangible advice for the current ocean planning process.

A mix of small group and panel discussions followed this introduction. The panelists came from a variety of backgrounds, including agency, academia/research, tribal, and industry. They noted the following:

- EBM involves understanding interconnections and relationships among ecosystem components; a regional approach to EBM could seek to understand cumulative effects of ocean uses;
- A tribal perspective towards EBM involves thinking about future generations and recognizing that nature can heal itself if given the chance;
- Critical learning about EBM can come from working to restore individual species at a local level;
- EBM in the face of climate change requires an adaptable approach that recognizes uncertainty but does not let it become a barrier to effective action;
- To put EBM into practice within our existing regulatory framework, we need to change from thinking about managing human activities to managing interactions among those activities;
- For industry, it is important to demonstrate the practicality of EBM and ensure that it benefits user groups, is scientifically sound, and aligns with industry observations.

Participants and panelists discussed real world examples where EBM has been implemented; concerns about balancing protection of the natural world with social and economic benefits, along with difficult-to-quantify ecosystem benefits and values; and the extent to which implementing EBM is possible within the existing regulatory framework.

During the final portion of the meeting, RPB staff presented on ongoing ocean planning work, including characterization of human uses, characterization of natural resources, and data integration and synthesis. During small group breakout sessions, participants discussed key questions and actions the RPB could explore to further incorporate EBM into regional ocean planning. Participants came up with a variety of ideas, many of which were related to data gathering, monitoring, scenario planning, an EBM pilot project, governance and agency coordination, and further consideration of the qualitative values people place on ecosystem components.

## I. Workshop Background, Workshop Goals, and Welcome

On April 8, 2015, the Northeast Regional Planning Body (RPB) hosted a one-day workshop to discuss ideas and options for incorporating Ecosystem Based Management (EBM) into ocean planning in the Northeast US. Approximately 80 participants from tribes, federal and state agencies, industry groups, academic institutions, nonprofit organizations, municipalities, and elsewhere attended the workshop.<sup>1</sup>

The specific goals of the workshop were to:

- Jointly learn more about and discuss the principles, definitions, and frameworks of EBM;
- Develop a shared sense of EBM as a lens to understand shorter and longer term ocean planning and management;
- Identify key learning and research questions of interest to NE stakeholders; and
- Explore possible actions for moving this topic forward in 2015 and beyond.

Staff from the Consensus Building Institute (CBI) facilitated the workshop and drafted this workshop summary (with drafting assistance from SeaPlan). Patrick Field from CBI was the lead facilitator.<sup>2</sup> Presentation slides and other materials from the workshop are available at the following URL:  
<http://neoceanplanning.org/events/>.

Mr. Field opened the meeting by welcoming participants. He explained that the decision to hold the workshop had emerged from the most recent RPB meeting on November 13<sup>th</sup> and 14<sup>th</sup>, 2014. There, participants expressed a strong interest in exploring both short-term and long-term opportunities to incorporate EBM into ocean planning in the northeast. Mr. Field reviewed the broad goals of the workshop (noted above) as developed by RPB members, the workshop ground rules, and the agenda.<sup>3</sup>

## II. Why Discuss Ecosystem Based Management?

Betsy Nicholson, RPB Co-Chair and Northeast Lead for the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center, provided a short history of EBM, New England, and the Northeast RPB. Ms. Nicholson explained that the RPB is in the middle of its ocean planning process with a goal to develop the plan by 2016. She suggested that the RPB's intent with respect to EBM is to build on the good work that has already been done on the issue by states and other actors and consider how to apply it on a regional scale.

Ms. Nicholson reviewed the broader goals of the RPB:

- Healthy ocean and coastal ecosystems;
- Effective decision-making; and

<sup>1</sup> See Appendix A for a full list of participants.

<sup>2</sup> Additional Consensus Building Institute staff: Ona Ferguson, Doug Thompson, Toby Berkman, and Griffin Smith. SeaPlan staff: Kate Longley-Wood.

<sup>3</sup> A copy of the workshop agenda is in Appendix A.

- Compatibility among past, current, and future ocean uses.

She suggested that the RPB could benefit from participants' focused feedback and advice on how it should consider EBM alongside other ongoing efforts, such as the marine life characterization project and consideration of composite ecological products or "hotspots" and the projects characterizing human uses. She noted that this advice and feedback would be useful to the RPB at its June 2015 meeting.

Next, Ms. Nicholson offered a slide presentation on the history, origins, and key elements of EBM.<sup>4</sup> She noted literature references that describe the concept of EBM and then reviewed a series of key EBM principles, including:

- Focusing on protecting and restoring marine ecosystems;
- Considering cumulative effects;
- Facilitating connectivity among and within marine ecosystems;
- Incorporating measures that acknowledge the inherent uncertainties in EBM;
- Creating complementary and coordinated policies at global, international, national, regional, and local scales;
- Maintaining historical levels of native biodiversity in ecosystems to provide resilience;
- Requiring evidence that an action will not cause undue harm to ecosystem functioning;
- Developing multiple indicators to measure the status of ecosystem functioning; and
- Involving all stakeholders through participatory governance.

She summarized key takeaways from these EBM principles: 1) humans are part of the ecosystem; 2) there is no singular path to EBM; and 3) there is a need for stakeholders to work together to develop EBM incrementally. She reminded the group that EBM occurs at multiple scales and that the RPB work is focused on the regional (New England-wide) scale. Finally, she concluded by encouraging participants to think about EBM across multiple timelines and to be sure to include tangible, practical advice for the short-term alongside any longer-term suggestions.

### III. What does Ecosystem Based Management Mean for Ocean Planning in the Northeast?

In the next session, participants were given an opportunity to discuss their perspective on the meaning of EBM for ocean planning in the northeast at their tables. A representative from each small table then reported briefly to the larger group on the substance of their conversation. The table representatives reported on the following topics of conversation:

- How, from a practical standpoint, can you apply EBM on a regional scale?
- How to focus on what is possible. This could involve:
  - 1) establishing a foundation of data on marine ecosystem and human uses, much of which is underway;

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<sup>4</sup> See the Appendix B for a copy of the presentation.

- 2) using that information to start to identifying important use areas and important ecological areas;
- 3) developing an approach for compatibility among uses as well as between uses and the marine environment that could be applied to decision-making; and
- 4) developing a system for monitoring the marine environment and adapting the ocean plan accordingly.
- The need to recognize the importance of the coastal zone and watersheds because of their critical role in the health of the ocean.
- How we determine the level of confidence we have in our ability to do EBM, and the need to test applications of EBM incrementally and transparently as knowledge and experience increase.

#### IV. EBM Principles, Concepts and Practice: Panelist Presentations

The next session involved presentations from two sets of three panelists. The six panelists provided various overviews on the concept and practice of EBM. The first panel consisted of Dr. Michael Fogarty, Northeast Fisheries Science Center; Chuckie Green, Mashpee Wampanoag Tribal Council; and Dr. Anamarija Frankic, University of Massachusetts-Boston. The second panel included Dr. Kathy Mills, Gulf of Maine Research Institute; Dr. Andrew Rosenberg, Union of Concerned Scientists; and Brent Greenfield, National Ocean Policy Coalition. Following each panel presentation, participants had an opportunity both to ask questions and to discuss at their tables.

##### A. Panel One

*Dr. Michael Fogarty (Northeast Fisheries Science Center)*

Dr. Fogarty's presentation provided background on EBM, its application to regional ocean planning, and use of EBM by the Northeast Fisheries Science Center (NEFSC).<sup>5</sup> Mr. Fogarty made the following points:

- Although there are a number of different definitions of EBM, the US Commission on Ocean Policy (USCOP) created a particularly useful definition in 2004. The USCOP definition suggests that EBM is concerned with relationships among ecosystem components, considers humans as an integral part of ecosystem, seeks to understand the role of environmental change resulting from climate and other factors, and involves a place-based orientation specific to a particular area or region.
- EBM also involves thinking about ecosystem services or the benefits humans derive from interactions with coasts and oceans such as fisheries, natural products, ecotourism, aquaculture, recreation, and energy. The idea is that there cannot be sustainable delivery of these services without ensuring the health and integrity of ecosystems.
- A focus on EBM includes emphasis on the interconnections and relationships among ecosystem components. One example is the relationships among cod, herring, plankton, right whales, and human fishing.

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<sup>5</sup> The slides accompanying Mr. Fogarty's presentation are available in Appendix B.

# OCEAN PLANNING IN THE NORTHEAST

- Regional ocean planning could incorporate EBM by looking at multiple ocean use patterns and considering potential cumulative effects of different activities. For example, combining maps of otter trawl efforts, proposed wind farm locations, and existing telecommunication cables might reveal cumulative effects.
- In practice, spatial management has been used to map the probability of whale ship strikes along the shipping lanes approaching Boston. This allowed regulators to make a small change in shipping routes to minimize the chances of ship strikes.
- The Integrated Ecosystem Assessment (IEA) process is a tool for making management decisions at an ecosystem level. It involves an iterative set of activities to develop and monitor ecosystem indicators, define EBM goals and targets, monitor ecosystem indicators, and evaluate and assess ecosystem outcomes.
- NEFSC has an array of modeling tools, including the ATLANTIS system.
- In the near future, people will be able to access information regarding the results of NEFSC work on this topic on the NEFSC webpage.

In response to a participant question, Mr. Fogarty addressed the issue of whether a sectoral approach to EBM, such as ecosystems-based fisheries management at NEFSC, needs to be distinguished from a more comprehensive, multi-sectoral EBM approach across sectors. Mr. Fogarty noted that the National Ocean Policy requires agencies to operate within existing management structures, even though theoretically it might be better to have a broad, multi-sectoral approach to EBM. NEFSC has a specific set of questions and objectives framed by the fisheries management council that are directed towards fisheries management.

*Mr. Chuckie Green (Mashpee Wampanoag Tribal Council)*

Mr. Green presented on EBM from a tribal perspective. Mr. Green noted that rather than looking at environmental issues from an individualistic perspective, the tribe tries to look at the broader perspective, recognize that every human action has an impact on the environment, and recognize that humans are brothers and sisters with all species. Protecting the environment means reflecting on the rapid pace of change and embracing the needs of future generations far into the future seven generations from now. It involves putting humans and the nature on the same footing and recognizes that nature can heal itself if given the chance. Mr. Green suggested that this long-term, holistic approach had led the Mashpee Wampanoag tribe to embrace a variety of successful environmental interventions, including:

- raising oysters as part of its wastewater treatment program to address high nitrogen levels.
- protecting the New England Cotton Tail rabbit, an endangered species that was used for many generations by the tribe, by restoring 37 acres of forest habitat as part of a project that created 1000 acres of contiguous habitat.
- After recognizing that phosphorous was causing fish kills every summer in one of the tribe's lakes, eliminating a phosphorous source at the bottom of the pond that was contributing 75% of the phosphorous.

- implementing a moratorium on fishing for herring.

In response to a question from another panelist, Mr. Green agreed that humans need to “listen more” to the ocean. He suggested that if we look deeply at the ocean, it will tell us what it needs to restore itself and recover.

*Dr. Anamarja Frankic (University of Massachusetts-Boston)*

Dr. Frankic’s presentation focused on her experience with EBM at both local and global levels and her experience with oyster reef restoration in Wellfleet as Director of the Green Harvest project at UMass-Boston.<sup>6</sup> Dr. Frankic suggested that identification of an individual species’ habitat and its place in the ecosystem leads to an understanding of how all components of the ecosystem are deeply connected. Dr. Frankic described her personal history with EBM, which included many years working on restoration and conservation projects at a global level with the World Bank and elsewhere, and then more local work on oyster restoration on Cape Cod. She made the following points:

- Having worked both at the local level and at the global level, she has come to realize that problems on the local, regional, and global levels are all connected. Globally, for example, maps of coral, mangrove, and sea grass distribution suggest that each of these systems interacts with the others.
- More locally in New England, key interactive systems include salt marshes, oyster reefs, and eelgrass banks.
- Some global challenges might seem impossible to address, but it is possible to overcome them on a local scale and learn about how the different systems interact. For example, while 90% of oyster reefs have been lost globally, it is possible to make restorative changes cove-by-cove and harbor-by-harbor in New England.
- EBM is not a modern concept and does not necessarily require deep scientific knowledge to implement. The traditional system of “ahupua’a” in Hawaii, for example, involved recognizing how watersheds are connected to coasts and oceans.
- A key challenge is learning more about the natural world at a time when the natural world is constantly disappearing. The concept of “biomimicry” can help with this challenge. It involves looking at the system and studying how nature would solve the problem.
- Sometimes the best learning can occur from simply working with nature to try to solve a practical problem, rather than by writing scientific papers. Sometimes policies and regulations can be an impediment rather than an aid.
- Dr. Frankic and her students restored 6 million oysters on two acres of land in Wellfleet over the course of three years. Dr. Frankic suggested that she learned more about the connections among oyster beds, shellfish and salt marshes by working on these two acres than she did by reading any scientific studies of the issue.
- Our advanced technology can tell us a lot about what is in the oceans now, but it will not tell us what used to be in the oceans before we destroyed so much of it. To really understand the

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<sup>6</sup> The slides accompanying Dr. Frankic’s presentation are available in Appendix B.

environmental possibilities of a given region, we need a different approach. For example, historical data and existing maps suggest that Wellfleet Harbor used to have 34 billion oysters. Now we harvest only 6 million oysters per year.

#### *Small table discussions*

Following the first set of panelist presentations, participants discussed the material at their tables. Representatives from each table then provided a summary to the larger group of the issues discussed. Table representatives reported the following key discussion items:

- Whether there is a role for marine protected areas or reference areas in EBM.
- Given that it is a lot easier to implement EBM through a local approach, whether EBM will fit with the ultimate goal of having a regional plan.
- Whether individual species efforts, such as those described in the presentations, constitute EBM or whether EBM is just an umbrella term to describe local efforts.
- Whether one approach to incorporating EBM into the regional plan could be to select a species that delivers multiple ecosystems services to multiple species including humans, such as river herring or oysters. The plan could start by focusing on just that one species to begin to help everyone understand EBM in a specific, particular context.
- How we turn the baseline data that we have now into a usable decision support mechanism that accounts for variability, given that it will be important to make sure the data is usable across different applications and regions.
- How the regional plan will map onto other management or agency plans, like that of the New England Fisheries Management Council, and how they will interrelate.
- How the landscape connectivity approach now under development through large landscape-scale collaboratives might work in an ocean-scape.
- Whether once you identify key areas to manage, it may be helpful to set up collaborative, multi-agency groups, given that having multiple agencies in a room may make it easier for communities to engage on management questions.

#### **B. Panel Two**

##### *Dr. Kathy Mills (Gulf of Maine Research Institute)*

Dr. Mills' presentation focused on climate change in the context of EBM. She emphasized that while climate change is often discussed as a problem to be addressed in the future, in reality there already is a changed ecosystem that has been shaped by past human uses, and the impacts of climate change (in the form of ocean warming and extreme events) overshadow our current management challenges. Climate change requires us to embrace a dynamic approach to EBM. We need to recognize the uncertainty inherent in our management decisions without letting this uncertainty become a roadblock to effective action. EBM also provides a new toolkit for thinking about not only responding to but also mitigating climate change by embracing new energy uses. Dr. Mills discussed the following points:

- The baseline ecological conditions of the present are unlikely to represent past conditions, and future conditions are unlikely to mirror the present.
- Even isolated climate change impacts can have long-lasting, ecosystem-wide ramifications, including impacts on species interactions, ecosystem services, and biodiversity. These far-reaching effects are particularly notable in fisheries.
- Current climate patterns present a short-term need to respond and adapt, and a long-term need for mitigation. This will likely require a new set of tools, including new energy sources.
- Management in the face of climate change needs to happen at a variety of scales. Factors that influence individual species might be different from those that impact systems as a whole.
- Planning should account for how different user groups need to use the ocean. Some industries, such as fishing, have a history of operating under changing ocean conditions, while newer uses such as aquaculture and energy rely on the ability to site and choose stable, long-term locations.
- Planning need not be paralyzed by the uncertainties related to climate change, as resources have always been managed in the face of uncertainty. Managers can focus on improving their capacity to track uncertainty, and incorporate adaptive management and scenario planning approaches that are robust in the face of uncertainty.
- The RPB can address some of the challenges associated with climate change by: 1) providing a structure for stakeholder engagement; 2) understanding future scenarios, especially when it comes to human use patterns; and 3) developing tools to evaluate outcomes associated with various decisions and scenarios, maintaining avenues for rapid, open-access to data, and developing new ways to work with data in real time.

*Dr. Andy Rosenberg (Union of Concerned Scientists)*

Dr. Rosenberg's presentation focused on practical avenues to put implement EBM. He emphasized that while the concept of interconnected and cumulative impacts of human activities on the ecosystem and ecosystem services is relatively simple, the challenge is changing the current system of management of human activities into one that manages interactions among those activities. Dr. Rosenberg made the following points:

- One of the most important areas of focus should be examining interactions between sectors of human activities at an ecosystem level by managing both the primary activities as well as their second order effects. Secondary areas of focus should include an examination of cumulative impacts and trade-offs.
- It is important to remember that human interactions are two-sided. For example, planners need to examine both how fisheries affect other activities as well as how they are affected by other activities. Managers should look for solutions that have benefits on both sides of those interactions.
- Integrated Ecosystem Assessments (IEAs) can be useful for modeling how various interactions across sectors play out across the ecosystem. They should be spatially explicit, but they need not be overly precise. Models only need to be able to predict whether it is reasonable to expect a benefit from a particular action.

- The planning effort should look for opportunities to re-engineer the regulatory process to increase efficiencies within the current framework using EBM tools. For example, an integrated ecological assessment could be used as a common basis for a lot of regulatory processes, eliminating the need to duplicate basic information for impact assessments across multiple projects.
- It is not necessary to address all possible interactions at once. The process should begin by trying to make progress by looking at one pairwise or tri-wise interaction within the current regulatory framework.

*Brent Greenfield (National Ocean Policy Coalition)*

Mr. Greenfield began his presentation by explaining the role of the National Ocean Policy Coalition in representing commercial and recreational interests over a variety of sectors including fishing, boating, ports, agriculture and homebuilders. The Coalition is trying to understand what particular goals and objectives these groups have when it comes to EBM. Mr. Greenfield presented some of the Coalition's initial ideas on the topic of EBM.

- It is important to make clear the need to move from traditional resource management to EBM by identifying the problems we are trying to solve and the deficiencies we are trying to address, especially over a regional scale. If consensus emerges, these goals and objectives can continue to define the EBM approach.
- From an industry perspective, it is important to demonstrate the practicality of an approach. Significant thought and time is needed to invest in data collection, monitoring, analysis, and quality control to demonstrate that the methodology is scientifically sound, and to make sure that the approach aligns with industry observations.
- There is a need to assess practical needs as part of this process. It is important to clarify where funding would come from and the associated impacts of that shift in funding on existing activities.
- There is a need to engage in transparent and candid public discussions in which user groups are actively engaged. User groups need to be able to see a net benefit from the process. This should be accomplished through a variety of outreach tools, including workshops, meetings, and webinars.

*Questions*

Following their individual presentations, members of the second panel addressed the following questions from participants.

- *What is the role of Marine Protected Areas (MPAs) in EBM?*

There was consensus among several panelists that MPAs fit well into the goal of place-based management and prioritization, but that current management areas don't always account for how their

boundaries may relate to one another. EBM provides an opportunity to look for efficiencies in creating MPAs that can be used to achieve multiple benefits across sectors.

Several panelists brought up the role of MPAs as an opportunity to collect data, monitor systems, and identify baseline conditions in comparison to other areas. One panelist urged the group to think of MPAs as reference areas that can be used to measure whether management decisions are having an impact. One cautioned that current protected areas may need to be reevaluated in the context of climate change (changing conditions may cause geospatial shifts). Another panelist emphasized that MPAs offer an opportunity not just to learn about impacts in specific areas but to look at the interconnectedness of these impacts.

Several panelists also touched on the issue of scale. Some emphasized the idea of looking at protected areas according to a hierarchy of spatial units, and looking to broad scale areas to achieve multiple benefits. Others thought that the size of the MPA was less of an issue as long as the appropriate data was being collected across a variety of ecosystems.

- *How should we think of about connectivity in terms of management?*

Several panelists agreed that there is an important distinction between ecosystem connectivity and connectivity among management actions. The latter focuses on determining how interactions occur across sectors of human effects on the ecosystem. While ecosystem connectivity cannot be ignored, there should be a greater focus on determining how human activities interact among and through connected ecosystems. Another panelist emphasized that connectivity is critical to ecosystem resilience. For example, dams have reduced ecosystem connectivity and, by extension, changed the flow of energy, reduced resources in coastal communities, and impacted fisheries. From this, we are learning that once connectivity is destroyed, it is difficult to restore.

One panelist stressed that connectivity is an especially important consideration in marine ecosystems, but we should extend our thinking on connectivity to consider how natural systems collaborate and communicate with one another by adapting and thriving in the face of change. EBM should learn from these concepts and incorporate them into management activities. For example, some cities mimic biological processes to manage waste so that it becomes an energy resource. In this case, the management action addresses human functions and services while also benefiting ecological processes.

- *How should we turn baseline data into a decision support tool that accounts for change over time and that is also adaptable?*

One panelist responded that how change is incorporated into management depends on being able to identify reference points. Finding a reference point will then depend on the length of the data series, the information content, and the magnitude of change; however, a reference point should be able to provide a metric as to how close a management action is to reaching its goal. Another important component of management involves identifying inflection points or thresholds at which changes or damages to a system become irreparable. In trying to define these points, managers should keep in

mind that most scientific measurements and observations have been collected after major changes have started to occur, so there isn't a long enough time series to know what the system "naturally" looks like.

Several panelists cautioned against information overload in EBM. One panelist suggested further development of map-based tools, but emphasized that in attempting to turn data into practical advice it is important not to be trapped by a need for excessive precision. Instead, tools should focus on predicting the likelihood of success of an action in a particular area. Another panelist focused on the need to clearly identify data needs for decision-making, and to isolate the critical data and/or contextual information that are directly relevant to the decision.

One panelist urged the group to look to traditional ecological knowledge as a way of understanding conditions that existed before the systematic collection of scientific data. For example, fishermen and tribes hold a wealth of inter-generational knowledge about historical conditions, and this information should be incorporated into decision-making tools to examine change.

#### *Close of Session Summary*

In closing the second panel session, Mr. Field urged workshop participants to begin thinking about practical options that the RPB could work on at its upcoming meeting in June. John Weber reminded participants that the RPB's actions must fall within the existing regulatory framework, so it is important to make sure that their advice fits within this framework.

## V. Interactive Discussion with Panelists

The next workshop session involved an interactive discussion among participants and all six panelists. Participants asked the following questions and panelists offered the following responses.

- *Where are there examples of EBM working in practice?*

Panelists offered the following examples of effective EBM worldwide:

- Australia's management of the Great Barrier Reef system.
- Elements of the Antarctic Treaty, particularly the treaty's effort to preserve the food web structure for mammals and birds appears to be relatively effective.
- The Convention for the Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention), which has been implemented to some good affect.
- Baltic Sea Convention – an agreement among EU and non-EU states in the Baltics.
- Some of the Elkhorn Slough (California) agreements.

A panelist suggested that one reason there may be only a small number of concrete examples of successful EBM in practice is because there are relatively few contexts in which there is a regulatory and management authority in place that allows for EBM, combined with a "customer" who will take the available information on EBM and translate it into action.

Another panelist question what is meant by EBM “working,” and suggested that this is not a binary (“yes it is” vs. “not it is not”) determination. There are examples where there have been significant accomplishments towards EBM, such as fisheries management in the U.S., even if a lot remains undone. This panelist also suggested that there is substantial regulatory authority to do EBM in the U.S. Just because this authority is organized by sector in the U.S. does not mean that nothing can be done.

- *How can we best incorporate social and economic considerations into EBM, so that it is not exclusively focused on the natural environment?*

One panelist suggested that EBM involves recognizing the economic value provided by natural systems. This panelist brought up the example of appropriations by the European Commission to the Horizon 2020 program, which support green infrastructure and biomimicry. The goal is to build harbors, marinas, cities, and ocean structures that will be sustainable for both human and ecological uses. Another participant suggested that advancing technologies are enhancing the ability to protect the health of the ocean without sacrificing economic goals.

Another participant stressed both the challenge and importance of accounting for social and environmental impacts across sectors. This panelist argued that the goal should be to take management actions that improve overall effectiveness, and to ensure that efforts within one sector do not undermine those in another. He suggested we need a governance system that has positive results across the economy, not just the specific sectors or businesses that may have the most resources or influence. Another panelist agreed that the goal should be to find “win-win actions,” such as oyster restoration, which protects coasts, increases water quality, and provides water quality benefits.

- *How do we ensure that non-monetizable values related to ocean health that the public cares about are incorporated into EBM, so that they don't get left behind?*

One of the panelists responded that it is essential to step beyond the mindset that ocean resources are only valuable if we can tie them to a dollar amount. By “going local” and showing practical, effective examples of EBM, we can show the real long-term value of ocean resources that go beyond the short-term dollar value. This panelist suggested that we are running out of ocean resources and it is critical to look at managing ecology beyond the dollar.

Another panelist suggested that the key is to distinguish between profit and economic value, as there are methods for monetizing values beyond the direct returns to businesses. We can get the sentiment from communities in the region on what they think is most important, and place real quantitative or qualitative value on this sentiment to ensure that the management structure does not just respond to business interests. For this to work, however, it is key to have a robust stakeholder engagement process.

Another participant noted that a well-articulated theory of decision-making takes values and preferences into account and does not need to monetize everything. We as a society already do this through the Endangered Species Act and the Marine Mammal Protection Act by placing a premium on protecting species survival irrespective of the monetary value attached to it.

- *How can we involve stakeholders in making decisions on the value of different ecosystem services after the ocean plan is published, given the restrictions in the existing permitting process? How do we make sure that EBM helps us to include stakeholders in making real choices rather than just handing them off to the agencies to make on our behalf?*

One participant suggested that for the time being we will need to work through existing channels, such as fisheries management councils and coastal zone management councils, although this approach has limitations in not taking a broad enough view. One panelist suggested legislation might ultimately be needed to be most effective. Other panelists suggested that the status quo could be improved by demonstrating that agencies can achieve better results by doing things a different way within their existing statutory authorities. Improved agency decision-making could achieve broader community goals while still meeting legislative mandates. This will require changing ingrained decision and agency cultural patterns, which is challenging but not impossible.

Another panelist noted that from an industry perspective, a lot depends on what exactly is meant by EBM, as well as the objectives, funding sources, and scale of the effort. This panelist suggested that industry believes we must remain cognizant that we are operating under existing statutes and mandates.

## VI. Review & Discussion of Current Northeast Planning Activities Related to EBM

In the next session on the agenda, ocean planning staff presented on ongoing northeast planning activities related to EBM.<sup>7</sup>

### *Characterization of human uses*

Nick Napoli began the presentation by reviewing RPB activities related to characterizing human uses and activities such as shipping, fishing, and recreation. He noted that the RPB has focused on data analysis and outreach to different industries to refine maps of human activities. Mr. Napoli showed some examples of maps with data resulting from these projects. Other projects are also gathering existing information related to how determinations of compatibility among uses are made, and exploring examples of other basic information that is being compiled (e.g., economic baseline data). He provided examples of model output attempting to assess the economic value generated by various human activities, and noted that other models look at the economic benefits people obtain from ecosystem services.

### *Characterization of natural resources*

Emily Shumchenia presented on RPB activities related to characterizing natural resources. Ms. Shumchenia noted that about a year ago the RPB started considering how to prepare datasets to

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<sup>7</sup> Slides from the presentation are available in Appendix B.

maximize their usefulness. The Marine Life Data and Analysis Team (MDAT) from Duke and NOAA (the Northeast Fisheries Science Center and National Center for Coastal Ocean Science) – who are producing habitat density models and other abundance products for marine mammals, turtles, birds, and fish – have considered EBM-related applications and perspectives when creating new products. For example, when determining the natural resource study area, it incorporated areas that are outside the formal ocean planning boundaries of the northeast region but that might still be ecologically important.

Ms. Shumchenia further noted that MDAT is guided by an expert work group with representatives from multiple stakeholder groups including academia, and its spatial models integrate animal observations with environmental and climatological features. The distribution and abundance models look at multiple temporal scales and include regional output from geographically wider datasets.

The RPB is also developing spatial products for other ecosystem components besides marine life, such as eelgrass, water quality, primary productivity, and restoration sites. The RPB is also compiling information depicting characteristics of ocean habitats such as sea floor geology and benthic and pelagic communities. These layers have been used in the past for ecosystem services analyses.

#### *Data Integration and Synthesis*

Mr. Napoli continued the presentation by discussing the RPB's approach to integrating and synthesizing data products. The goal is to bring the data together so it is usable under existing management and regulatory authorities. He noted that MDAT is planning on creating aggregated products on marine life such as abundance hotspots for certain bird species. However, the RPB has not decided how far it will be able to go in creating synthetic products, and it may be difficult to create a methodology to integrate highly variable data inputs on a regional scale.

The RPB has also been considering various potential approaches to considering use interactions and compatibility with correspondingly varying levels of complexity and utility. For example, a more straightforward approach could be to develop spatial data and related topic-specific information on future trends of a particular industry along with existing related guidelines and best practices. In other cases, the RPB could use spatial data to define and identify areas of interest based on consideration or particular interactions or use spatial data to define a geographic area. Multi-sector and resource matrices identifying levels of interaction or compatibility would be the most complex type of an approach.

Mr. Napoli explained that there have been several recent efforts in the region to address cumulative impacts. One such effort by NEFSC and the Natural Capital Project is looking at vulnerability or risk to marine life, building on species- and use-specific distribution, abundance, hotspot, and human use mapping. Over the long term, the project hopes to develop a framework for estimating impacts.

With respect to ecosystem services, the RPB has provided funding to the Woods Hole Oceanographic Institution (WHOI) to define ecosystem service categories and connect them to resource endpoints in the northeast. The WHOI team is developing a database of examples where ecosystem services have been assessed in specific projects.

With respect to considering climate change implications, the RPB is engaged in a variety of activities. For example, the Gulf of Maine Research Institute is developing a database on scientific literature regarding research on climate change impacts, the Nature Conservancy and NEFSC are looking at changes associated with shifting patterns of fish assemblages over time, while NEFSC and Rutgers are developing the OceanAdapt webtool. In addition, NROC and NERACOOS are working on a system to understand and monitor climate change indicators over time through a sentinel monitoring effort.

In conclusion, Mr. Napoli noted the following:

- The RPB purposefully started with projects focusing on individual components (natural resources and human uses) of the ecosystem because it wanted to conduct extensive outreach, increase its understanding of foundational data and information limitations, and incorporate a focus on the management utility of its products. This work had to occur prior to more sophisticated data integration and synthesis discussions.
- Key decisions remain about composite ecological and human use products and topics such as the development of indicators.
- The RPB needs to identify specific, practical short- and long-term opportunities to augment its work.

#### *Questions*

Staff responded to the following questions from participants.

- *The economic analysis includes detailed tables on economic revenue, but the public does not value that approach. Where do public values fit in this picture?*

Mr. Napoli responded that the RPB is looking for opportunities to look at value in a different way through the ecosystem services analysis being conducted by the WHOI team. The team is compiling examples of use alternative value models. We will hear more about this at the June RPB meeting.

- *How far will the RPB go towards scenario analysis as an aid for decision-making? Under this approach, the maps are dynamic and reflect actual outcomes that might result from a management action.*

Mr. Napoli responded that the RPB would welcome input on how to do scenario analysis more effectively. John Weber noted that the upcoming RPB discussions will include illustrations of different approaches incorporating data resulting from the previously described human use and natural resource characterization efforts.

## VII. Small Group Work: Furthering an EBM Approach

During the next session, participants broke into three subgroups to discuss a series of four questions:

- What elements of Northeast regional ocean planning are on track regarding EBM principles?
- What key elements or activities are potentially missing?

- What questions for further learning or research does this brief analysis surface for further consideration?
- Within existing RPB timelines and resources, what are the key EBM question/activities we can explore as a region short-term (12 to 18 months) and longer-term (many years to come)?

Mr. Field noted that the purpose of the group discussions was to get a variety of ideas on the table, not for group members to agree on the answers to all four questions. The responses from each subgroup are recounted below.

#### A. Group A

Participants noted the following elements of northeast regional ocean planning that are on track regarding EBM principles:

- *Data and information:*
  - The data development process of collecting baseline information is on track, and the RPB seems to be coming to terms with the idea that synthesis layers are needed in order to make sense of the hundreds of data layers that are being gathered.
  - Participants stressed that the key to durability is for these synthesis layers to serve existing authorities and improve agencies' permitting and management processes, with the goal of making people's jobs easier and decisions more effective.
- *Management:*
  - The RPB has done a good job bringing stakeholders together and building broad support for multi-sector decision-making. One participant pointed out that one of the major values of the process was empowering people to use data at a local level where some decision-making will take place.
- *Scale:*
  - The MDAT project has been able to identify trends and characteristics at regional scale, which is an important consideration for local level decisions when considering EBM principles.

Participants made the following comments on elements or activities that are potentially missing, grouped by theme:

- *Data and information:*
  - It would be helpful if there could be more clarity as to how EBM is being practiced effectively as part of the northeast ocean planning process. Once the plan is being implemented, it would be helpful to have a few general indicators to evaluate how well the plan is doing and whether initial assumptions are correct.
  - Identification of important Ecological Areas (IEAs) should be incorporated into the existing process. These areas are important to EBM and should be considered by the ocean planning process in the short term. There's uncertainty regarding the

- methodology for identifying such areas, but the RPB needs to take advantage of the existing momentum and expertise to try to advance some of these concepts.
- Identification of benthic habitat hotspots should be a short-term data priority, leading to a long-term goal of producing integrated maps and data products depicting ecosystem hotspots.
  - The characterization of pelagic fish habitats is also a key data gap that should be developed over the long-term, especially given the sensitivity of pelagic species to changes in habitat.
  - *Visioning:*
    - Stakeholder visioning is an important component of ecosystem based management. The RPB needs to develop guidelines for stakeholder visioning with respect to environmental, social, and economic issues. Stakeholders should also have an opportunity to express how they would like the management structure to look in the future.
    - The Tampa Bay Estuary program is a potential example. This program involved developing a stakeholder vision to restore an estuary to conditions that existed in a specific year. This type of exercise allows planners to identify a variety of future scenarios envisioned by different stakeholders. Other participants cautioned that the RPB should be careful not to look to past conditions to establish goals, because conditions inevitably change.
  - *Scale:*
    - It is unclear whether the scale of the planning effort is appropriate for EBM. Because the region contains so many drastically different ecosystems (e.g. Downeast Maine and Long Island Sound), using similar tools and analysis across the region may not be appropriate.
    - The process should be structured in such a way that it empowers decision-making in small communities. Maps on a regional scale may be too generalized and lacking in contextual information to serve that purpose. For example, human use mapping for fisheries leaves out a lot of detail from the perspective of a fisherman in Maine.

The group made these suggestions for key EBM questions and activities over the short- and long-term:

- *Indicators:*
  - Develop a list of indicators to measure plan success and evaluate assumptions.
- *Data and information:*
  - Develop contextual data or assessments with a retrospective look at how ecosystems have changed over the last 100 years as well as a dataset that looks toward the future; explore ways to add to or create additional data products that incorporate a historical perspective and/or traditional knowledge. These products could be qualitative and could be used at a community level to review assumptions, goals, and decision-making processes based on observed changes in the system. While it is important to focus on

- data needs from an agency perspective, the RPB should also identify datasets that communities need in order to interact with agency-level projects.
- Prioritize agency access to the best available data (i.e., that which incorporates EBM and climate change) to achieve agency buy-in. Identify situations where use of the Northeast ocean data portal would lead to faster or more effective decision making and clearly demonstrate that to the agency.
  - Identify current challenges with implementing EBM by prioritizing data gaps and other needed tools and information for the research community to address.
  - Develop interpretive data products such as IEAs and hotspot maps.
  - *Agency coordination and staying power:*
    - Develop an inter-agency Memorandum of Understanding to help ensure that the plan has long-term staying power.
    - Develop a list of common goals and priorities (e.g. priority species) across the mandates and interests of various agencies. Identify whether there are major agency priorities that aren't part of the existing planning structure and address those gaps.
    - Develop a map or other visual showing scale and connectivity between watersheds, coastal systems, and the open ocean on a local to regional scale. It could also incorporate a visual of responsible agencies at each of these scales. The goal would be to visualize a better way of allocating authority over activities and improve agency efficiency by depicting how their activities overlap.
  - *Data maintenance:*
    - Develop a long-term strategy for the data portal that includes a plan for financial sustainability and ongoing collection and maintenance of.
  - *Communication on data limitations:*
    - Identify a strategy for clearly communicating data limitations to make sure that agencies use data appropriately. The operational scale of the datasets should be specified, and data at dissimilar scales should not be combined.
  - *Pilot project:*
    - Create momentum for future projects by developing a pilot or example project at a specified scale to demonstrate early success with EBM. As part of the pilot, identify datasets that are relevant at that particular scale.

## B. Group B

Participants suggested the following elements of northeast ocean planning are on track:

- *Data products*
  - Broadly speaking, the creation of data portal and efforts to develop synthetic products on biological and use data will enhance understanding of how the environment works. The species and habitats data are creating a helpful foundation. Also helpful are efforts to identify data gaps, which characterization studies are starting to fill, as well as the sentinel monitoring program.
- *Human impacts*
  - Efforts to understand cumulative human impacts are positive and should be continued.
- *Planning goals*
  - The goal to maintain healthy oceans is another positive – it is an important signal for the direction of the group – as is the compatibility component.

The group identified a number of key elements that may be missing from the planning process, including the following:

- *Interconnectedness*
  - The RPB has started to address interconnectedness at the regional level, but it could do more. It should work to improve collaboration among state, federal, local, and tribal agencies so they can focus on a common goal instead of regulatory issues.
- *Climate change and restoration*
  - The RPB should clarify how restoration will fit in the larger plan.
  - The RPB should revisit climate change considerations and future trends in the areas such as ports, recreation, and aquaculture. We need more economic analysis of these issues and dynamic new thinking from other fields.
  - We need to take climate change seriously and avoid committing tracks of ocean over the long-term to activities that will not survive a changing climate. For example, aquaculture leases should be short-term in light of climate uncertainties.
- *Broad-based stakeholder engagement*
  - EBM suggests that everything is an ecosystem service, which means stakeholders from all backgrounds need to understand economic service concepts and its importance to the maintenance of a healthy ocean ecosystem.
- *Adding a social science perspective*
  - Ocean planning can lack a social science perspective. The plan should include the perspective and experience of people who work in traditional ocean related jobs.
- *Addressing uncertainty*
  - There should be more clarity on how to strike the right balance between precision and imprecision in decision-making. The plan should make it possible for people push new ideas in the face of uncertainty.
- *Including qualitative values and tradeoffs*
  - The RPB should work to better define what a successful outcome would look like and include goals in addition to monetary or economic value. It is key to quantify measures

- beyond economic value, because you inevitably will “get” what you measure.
- Valuing tradeoffs should incorporate values beyond dollars. One example where some of this may already occur might be Army Corps of Engineers public interest reviews, which consider multiple nonmonetary values covering issues like food production, societal integrity, etc.
- By using an integrative systems framework, we can think beyond tradeoffs and open up win-win opportunities; our thinking needs to recognize that the ocean could be abundant in multiple aspects (not just monetarily), and we need to consider how to ensure economic contributions and also protect ecosystems. At the same time, we need to be careful not to be too optimistic about win-win solutions; many assets like oyster reefs are still displacing something.
- *Make EBM more concrete and useful*
  - Operationalize the conceptual theories of EBM and make it useful and understandable to those making decisions. one approach might be through scenarios planning.  
Scenarios can be more concrete and involve real world examples.

Participants highlighted the following key EBM questions and activities to explore over the short- and long-term:

- *Gather traditional and qualitative knowledge*
  - The RPB should set up a clear mechanism for taking in traditional ecological knowledge, especially about historical conditions.
  - More contextual qualitative knowledge would also be useful and would fill the gaps in data sets.
- *Create an EBM/values working group*
  - The RPB should establish a values working group that would discuss tradeoffs and produce an explicit list of values as management objectives. At the last RPB meeting there was commitment consider how to integrate EBM into the whole ocean plan, but as of now there is only an RPB sub-group working on this and not a broader stakeholder group in some more sustained way than just today.
  - It might be helpful to think about modeling an ideal future, tease out the values of such a model, and tie these values back to the organic statutory authorizations of the relevant agencies. This effort could integrate historical/traditional knowledge and could also consider other frameworks to evaluate options without explicit tradeoffs.
  - The group should consider alternative, dynamic, crosscutting, and transformational approaches that stretch regulatory authority.
  - Whether or not there is a new working group, there need to be realistic expectations about what the RPB can accomplish between now and next July.
  - The group could look at public comments, results of industry and interest group outreach, and the ecosystem services work.
- *Develop data for use in regional scenario planning*

- Advance and synthesize the biological and habitat data as much as possible. The goal should be to go from static maps to dynamic visualizations.
- This could help us transition to full scenario analysis, and aid our understanding of what would happen regionally if certain actions were taken, for example like a salmon farm in Boston Harbor or an ocean wind build out.
- The goal is to understand regional implications of policy changes and actions, moving from project by project assessments to looking at how projects affect the whole region.
- For scenario planning, we should be careful to show only things that we can take actionable steps to change.
- For scenario planning, it is also important to provide concrete limits for what *won't* happen in the future.
- *Formalize public input*
  - Public workshops like this one are great but not sufficient. The RPB needs to formalize the public input process. People want to understand what these meetings are achieving and how their input is incorporated in a formal way.
- *Governance*
  - We need a better understanding of whether we are thinking about governance in the proper ways. The RPB should put a group together that will identify different governance models that exist, think through ocean management goals from a number of different perspectives (e.g., restoration, ecosystem, resilience), and consider how we can best mobilize agencies to achieve these various goals.

## C. Group C

Participants noted the following elements of northeast regional ocean planning that are potentially missing:

- *Shared definition of EBM*
  - Not all RPB members think about EBM in the way the panelists were describing it.
- *Clarity on metrics of quality*
  - Provide clarity on the metrics of “quality,” and other less tangible ecosystem benefits, so that decisions will not be guided by economic metrics alone. An example might be the oyster beds/reefs in Wellfleet — they provide food, water quality, de-nitrification, and storm protection. All of those things should be included in quality metrics.
- *Detail on cumulative impacts and uncertainty*
  - Enhance accurate characterizations of both cumulative impacts and uncertainty.
- *A future desired condition*
  - More thought could be given to articulating a future desired condition. A lot of the focus seems to be on how to make the next decision better than the last one, but this is not the same as articulating future desired conditions.
  - In defining the desired state, many policy questions need to be asked and answered and it's not clear when that will happen. For example, we need to consider whether we are

- in pursuit of freezing the footprint — the level of quality we have now — or whether we are trying to restore it.
- Part of this could include developing an ecological health index. We could define a target and measure our progress towards it, like a report card.
  - Based on the desired end state we should identify a smaller number of priority targets and focus our management and our data on those.
  - *Anecdotal data*
    - The RPB should accumulate, isolate, and document anecdotal information from fishermen. This is particularly important because many fishermen with historical knowledge are retiring.
    - The RPB could also make more use of new video capture technology for fishing.
  - *Composite maps*
    - Scientists should help layer data in a scientifically sound way to enable better understanding of what is ecosystem integrity, while making sure the individual maps are still available.
    - Any maps that are created as composites should have explanatory accompanying text.
  - *Alignment of existing authorities*
    - Align existing statutory authorities and to create more efficiency among them through consultative processes.
  - *Ensuring data relevance*
    - Ensure data has a straightforward nexus to tangible management questions. We need to be able to apply it to the particular issue we're trying to address.
  - *Monitoring*
    - Ongoing monitoring should include constant hypothesis creation and hypothesis testing. User groups should be part of the ongoing monitoring effort, specifically fishermen.
  - *Acoustic surveying*
    - The RPB should issue a statement on acoustic surveying for oil deposits and the resulting ecological harm. It's the elephant in the room — there is an industry push to get it done quickly.

In response to these suggestions, an RPB member summarized current RPB activities. He noted that the RPB is working on measures for valuing ecosystem services, and has identified monitoring and evaluation as one of the issues it needs to articulate. He also noted that while the RPB has not identified a desired “future state,” its goals suggest directions and trajectories for the ocean planning effort. He also suggested that the RPB has articulated a management focus, including offshore energy, offshore sediment resources, aquaculture, and carbon sequestration.

Participants suggested a number of short- and long-term actions, including the following:

- *Scenario planning pilot*
  - The RPB should conduct a well-defined scenario-planning pilot to demonstrate all the information that would be used to make a decision in an actual planning process. The

goal would be to design a useful decision-making exercise to prepare agencies for bolder work in the future.

- The pilot should be sufficiently constrained to a specific issue or area for a long-term scenario on a regional scale,
- Possible questions/scenarios for the pilot project include the following:
  - What would the ecosystem look like if we were producing a lot more biomass in the ocean? What would be the implications for the ecosystem?
  - What would it look like if we were doing a lot more energy extraction, like through wind power or wave?
  - What would it look like if we were to invest in trying to restore previous ecosystem conditions, for example through significant investments to reduce nutrient loading in coastal waters? A participant noted that this was actually done in Boston Harbor over the course of decades, where they transformed a very degraded ecosystem.
- *Focus monitoring efforts*
  - The RPB should identify what it wants to monitor, and choose indicators and metrics that will measure progress towards stated goals. The goal should be to select indicators that can show change against articulated desired conditions and goals. The details of this monitoring program should be reviewed publicly.
- *Clarify geographic scope*
  - The RPB should address questions of geographic scope. EBM doesn't respect artificial boundaries. For example, nitrogen from upland sources have real impacts on marine resource.
- *Emerging and new uses*
  - The RPB should analyze the compatibility of emerging and new uses. The priority should be on new uses since they are time sensitive. For example, the RPB could study the impact of sonar testing on fisheries, or the compatibility of oyster reefs and shellfish aquaculture
- *Presentation on monitoring programs*
  - In June, the RPB should be given a presentation on how ecosystem scenario modeling can capture complex data and show it in a dynamic way. There are two programs: MIMES (being developed by Les Kaufman) and Atlantis (being developed by Mike Fogarty and others).
- *Time to reflect*
  - The RPB should save time at the end of the process to reflect on how far it has gotten, the next six or so things it will do, and the next set of planning priorities. This will be important for continuing momentum.

## VIII. Wrap Up

During the final session on the agenda, Betsy Nicholson reflected on the workshop and participants' contributions. She expressed appreciation that stakeholders want to be engaged. She expressed a desire for the RPB commit to moving toward on EBM, while recognizing that progress will be incremental. Other RPB members also offered reflections on the workshop. One member noted that he found the workshop to be very useful and informative, and expressed hope that the region could carry forward insights from this process during the implementation phase of ocean planning, after the RPB falls away. Another member reflected that, to him, the workshop had underscored the importance of a central monitoring effort. Finally, an RPB member expressed appreciation for the design of the workshop, which allowed people to feel like they were heard, and thanked members of the panel for their insights and stamina. He noted that he was especially looking forward to seeing the integrated data products at next RPB meeting.

Ms. Nicholson closed the meeting by thanking participants, the panelists, CBI, and ocean planning staff.

## APPENDICES

- Appendix A1: Workshop Participants
- Appendix A2: Workshop Agenda
- Appendix B1: Opening Presentation on EBM, *NROC and RPB*
- Appendix B2: The ABCs of EBM, *Michael Fogarty, Northeast Fisheries Science Center*
- Appendix B3: Ecosystem Based Management from local to global, *Anamarja Frankic, UMass Boston*

## Appendix A1

### WORKSHOP PARTICIPANT LIST

Last Name	First Name	Organization
Asgeirsdottir	Aslaug	Bates College
Babb-Brott	Deerin	SeaPlan
Ball	Jackie	NERACOOS
Battista	Nick	Island Institute
Berkman	Tobias	Consensus Building Institute
Borggaard	Diane	NOAA Fisheries
Brooks	Priscilla	Conservation Law Foundation
Carlisle	Bruce	MA Office of Coastal Zone Management
Chapman	Erik	UNH Sea Grant
Chase	Alison	NRDC
Cicchetti	Giancarlo	U.S. EPA
Clark Uchenna	Rebecca	Island Institute
Colby-George	Judy	Spatial Alternatives
Coté	Melville	EPA
Cowie-Haskell	Ben	Stellwagen Bank National Marine Sanctuary
Crowe	Mike	The Fishermen's Voice
Curtice	Corrie	Marine Geospatial Ecology Lab, Duke University
Defrancesco	Andrea	Ironbound Island Seaweed
DesAutels	Michele	USCG
DeWitt	Ed	Association to Preserve Cape Cod
Dinoto	Dory	Consensus Building Institute
Farrell	Jill	Piscataqua Region Estuaries Partnership
Felt	Jennifer	Conservation Law Foundation
Ferguson	Ona	Consensus Building Institute
Field	Patrick	Consensus Building Institute

Fogarty	Michael	NOAA/NMFS
Ford	Kathryn	Mass. Division of Marine Fisheries
Frankic	Anamarija	University of Massachusetts-Boston
Gates	Melissa	Surfrider Foundation
Green	Chuckie	Mashpee Wampanoag Tribal Council
Greenfield	Brent	National Ocean Policy Coalition
Griffin	Robert	Natural Capital Project
Hawkins	Annie	Fisheries Survival Fund
Hubbard	Don	USCG
Kaufman	Les	Boston University
Kendall	Jim	New Bedford Seafood Consulting & Mass Fishermen's Partnership
Kennedy	Jen	Blue Ocean Society for Marine Conservation
Kite-Powell	Hauke	Woods Hole Oceanographic Institution
Kleisner	Kristin	NEFSC and The Nature Conservancy
LaBelle	Robert	BOEM DOI
Lapointe	George	George Lapointe Consulting
Leyden	Kathleen	Maine Coastal Program/NE Regional Planning Body
Longfellow	William	Sipayik Environmental Department
Longley-Wood	Kate	SeaPlan
Lund	Katie	NROC
Massaua	Meghan	Meridian Institute
McGee	Sally	The Nature Conservancy
McGuire	Christopher	The Nature Conservancy

Mendelson	Meredith	Maine Dept. of Marine Resources
Miller	Benjamin	Eastern Research Group, Inc.
Mills	Kathy	Gulf of Maine Research Institute
Moir	Rob	Ocean River Institute
Molton	Kyle	Penobscot East Resource Center
Moura	Stephanie	SeaPlan
Mulvaney	Kate	U.S. EPA Atlantic Ecology Division
Napoli	Nick	Northeast Regional Ocean Council
Nelson	Valerie	Water Alliance
Nelson	Richard	F/V Pescadero
Nestler	Eric	Normandeau Associates, Inc.
Nicholson	Betsy	NOAA Office for Coastal Management
Norton	Emily	Maine Coastal Program
Odell	Jay	The Nature Conservancy
Ozmon	Ivy	Maine Coastal Program
Pembroke	Ann	Normandeau Associates, Inc.
Randall	Noa	Ocean River Institute
Rosenberg	Andrew	Center for Science and Democracy, Union of Concerned Scientists
Shumchenia	Emily	NROC
Smith	Griffin	Consensus Building Institute
Stacey	Paul	Great Bay National Estuarine Research Reserve
Stowell	Colles	Cape Ann Fresh Catch, One Fish Foundation
Swasey	Jill	MRAG Americas
Thompson	Doug	Consensus Building Institute
Thompson	Brian	CTDEEP

Trice	Amy	Ocean Conservancy
Venno	Sharri	Houlton Band of Maliseet Indians
Weber	John	Northeast Regional Ocean Council
Williams	Lindsey	UNH Natural Resources Graduate Student
Williams	Christian	NH Coastal Program
Williamson	John	Sea Keeper Fisheries

## Appendix A2

**Ocean Planning in the Northeast**  
**Workshop on Ecosystem Based Management (EBM)**  
**April 8, 2015**  
**9:00 AM to 4:30 PM**

University of New Hampshire  
Squamscott Room, Holloway Commons, UNH  
75 Main Street  
Durham, NH 03824

### **Meeting Goals**

- Jointly learn more about and discuss the principles, definitions, and frameworks of EBM
- Develop a shared sense of EBM as a lens to understand shorter and longer term NE ocean planning and management
- Identify key learning and research questions of interest to NE stakeholders
- Explore possible actions for moving this topic forward in 2015 and beyond

### **Ground Rules**

- Remember this is the just the beginning of joint conversation on a complex, long-term concept
- Stay on track with the agenda
- Please allow others time and space to speak
- Be respectful of others

### **Agenda**

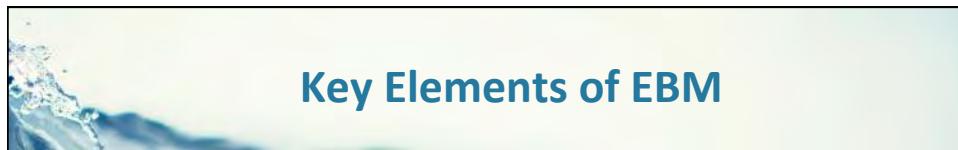
9:00	<b>Welcome:</b> <ul style="list-style-type: none"><li>• Greetings and introductions</li><li>• Review objectives, ground rules and agenda</li></ul>
9:10	<b>Why Discuss Ecosystem Based Management (EBM)?</b> <i>Presenter: Betsy Nicholson, RPB Co-Chair</i> <ul style="list-style-type: none"><li>• A short history of EBM, New England, and the NE Regional Planning Body (RPB)</li></ul>
9:25	<b>What's Ecosystem Based Management mean for Ocean Planning in the Northeast?</b> <ul style="list-style-type: none"><li>• Introductions at small tables</li><li>• Small tables discuss their ideas briefly</li><li>• Initial thoughts shared briefly with full group</li></ul>
9:45	<b>EBM: Principles, Concepts and Practice</b> <ul style="list-style-type: none"><li>• Panelists overview of the concept and practice of EBM<ul style="list-style-type: none"><li>○ Dr. Michael Fogarty, NE Fisheries Science Center</li><li>○ Chuckie Green, Mashpee Wampanoag Tribal Council</li><li>○ Dr. Anamarija Frankic, University of Massachusetts-Boston</li></ul></li></ul>
10:20	<b>Initial Small Group Discussion</b> <ul style="list-style-type: none"><li>• Introductions at small tables</li><li>• Small tables discuss the ideas presented so far</li></ul>

10:35	<b>Break</b>
10:50	<p><b>EBM: Principles, Concepts and Practice</b></p> <ul style="list-style-type: none"> <li>• Panelists overview of the concept and practice of EBM           <ul style="list-style-type: none"> <li>◦ Dr. Kathy Mills, Gulf of Maine Research Institute</li> <li>◦ Dr. Andrew Rosenberg, Union of Concerned Scientists</li> <li>◦ Brent Greenfield, National Ocean Policy Coalition</li> </ul> </li> </ul>
11:30	<p><b>What's Ecosystem Based Management mean for Ocean Planning in the Northeast?</b></p> <ul style="list-style-type: none"> <li>• What similarities do you see across approaches?</li> <li>• What differences?</li> <li>• Considerations for our Northeast region?</li> <li>• Prepare questions for panel dialogue after lunch</li> </ul>
12:15	<b>LUNCH</b>
1:15	<p><b>Interactive Discussion</b></p> <ul style="list-style-type: none"> <li>• Small tables ask questions of panelists convened again after lunch</li> <li>• Facilitator summarizes key points, principles, barriers, and opportunities from the discussion</li> </ul>
1:45	<p><b>Review &amp; Discussion of Current Northeast Ocean Planning Activities related to EBM</b></p> <p><i>Presenter: NROC staff</i></p> <ul style="list-style-type: none"> <li>• Brief presentation on key RPB activities related to, or as possible components, of EBM</li> <li>• Initial questions before moving to small group work</li> </ul>
2:15 (including a break)	<p><b>Small Group Work: Furthering an EBM Approach</b></p> <p>Three groups, facilitated, with note taking, and panelists scattered across the groups. Given the “lens” we crafted from our morning discussions:</p> <ul style="list-style-type: none"> <li>• What elements of Northeast regional ocean planning are on track regarding EBM principles?</li> <li>• What key elements or activities are potentially missing?</li> <li>• What questions for further learning or research does this brief analysis surface for further consideration?</li> <li>• Within existing RPB timelines and resources, what are the key EBM question/activities we can explore as a region short-term (12 to 18 months) and longer-term (many years to come)?</li> </ul>
3:45	<p><b>Wrap Up</b></p> <ul style="list-style-type: none"> <li>• Small Group Report outs</li> <li>• Discussion</li> <li>• RPB Co-Chairs summarize the day and identify next steps</li> <li>• Thanks and close</li> </ul>
4:30	<b>Adjourn</b>

## Appendix B1



A photograph of ocean waves crashing, serving as the background for the slide. Overlaid on the image is a white rectangular box containing the title "Ecosystem Based Management (EBM)" in large blue letters. Below the title is a bulleted list of references, all related to EBM. At the bottom of the slide is a dark blue horizontal bar featuring the "OCEAN PLANNING IN THE NORTHEAST" logo.

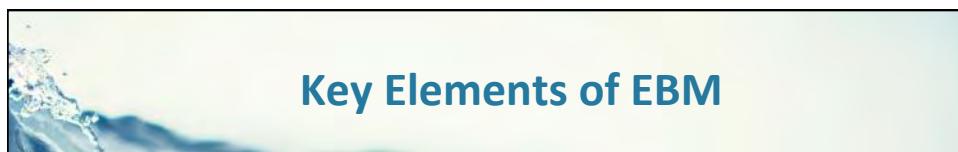


## Key Elements of EBM

- Make **protecting and restoring marine ecosystems** and all their services the primary focus, even above short-term economic or social goals for single services.
- Consider **cumulative effects** of different activities on the diversity and interactions of species.
- Facilitate **connectivity** among and within marine ecosystems by accounting for the import and export of larvae, nutrients, and food.
- Incorporate measures that acknowledge the inherent **uncertainties** in ecosystem-based management and account for dynamic changes in ecosystems, for example as a result of natural oscillations in ocean state or shifts in the frequency or intensity of storms. In general, levels of precaution should be proportional to the amount of information available such that the less that is known about a system, the more precautionary management decisions should be.



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## Key Elements of EBM

- Create complementary and coordinated policies at global, international, national, regional, and local **scales**, including between coasts and watersheds. Ecosystem processes operate over a range of spatial **scales**, and thus **appropriate scales for management will be goal-specific**.
- Maintain historical levels of native biodiversity in ecosystems to provide **resilience** to both natural and human-induced changes.
- Require evidence that an action will not cause undue harm to **ecosystem functioning** before allowing that action to proceed.
- Develop multiple **indicators** to measure the status of ecosystem functioning, service provision and effectiveness of management efforts.
- Involve all **stakeholders** through participatory governance that accounts for both local interests and those of the wider public.



OCEAN PLANNING  
IN THE NORTHEAST

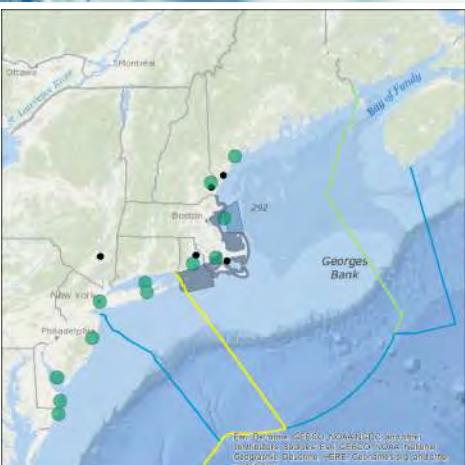
## Ecosystem Based Management (EBM)

**Key takeaways:**

- “EBM is an integrated, comprehensive approach to management that considers the entire ecosystem, including humans” (emphasis added; Source: Consensus Statement 2005)
- “Notably, there is no correct path to EBM” (Source: McLeod & Leslie 2009)
- “Working together, resource managers, ocean users, and other stakeholders can develop and apply ecosystem-based management incrementally, by learning and sharing effective practices as knowledge and experience increase.” (emphasis added; Source: NOP Implementation Plan 2013)

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## Management at multiple scales



**Estuary**

- NEP Comprehensive Conservation and Management Plans
- National Estuarine Research Reserves

**Marine Sanctuary**

- Stellwagen Bank NMS

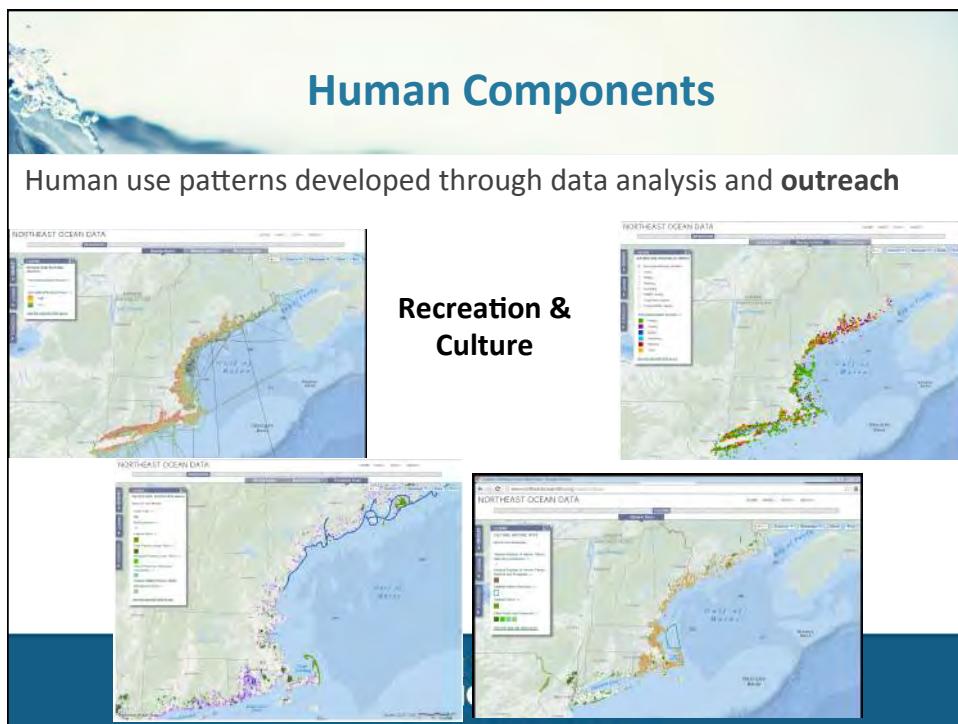
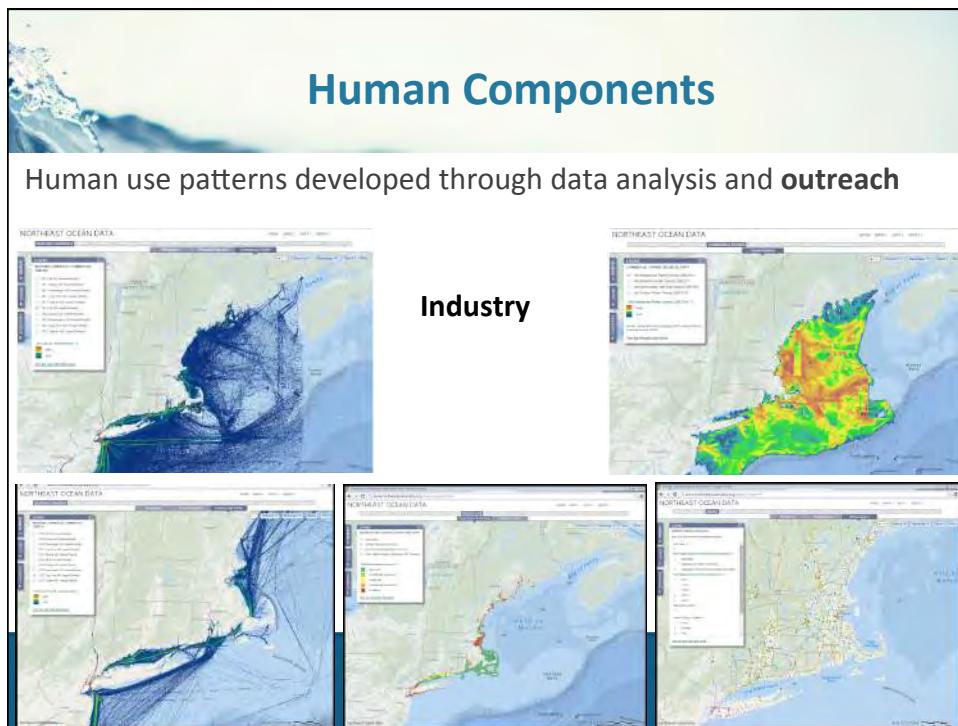
**State ocean management plans**

- MA Ocean Management Plan & RI SAMP

**Regional ocean plans**

- Northeast Marine Life Study Area
- Mid-Atlantic Marine Life Study Area

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## Human Components

Future trends, guidelines, best management practices & use interactions

**Figure 4: Vessel operation on the cable line**

**INTERACTIVE BOUNDARIES**

B = Shallow: the position in, or where an interactive boundary lies, either inside, definition, or approach, which will receive interactive feasibility, see chapter-driven strategy.

A = Turbine boundary to the shallowest route median or demarcation

B = Turbine boundary to nearest shipping route edge

C = Turbine boundary to nearest shipping route traffic level\*

D = Turbine boundary to furthest shipping route edge

E = Turbine boundary to furthest shipping route edge

(\* = at another % to be determined)

**OCEAN PLANNING  
IN THE NORTHEAST**

## Human Components

**Economics**

- Economic impact of ocean activities (below)
- Ecosystem services – benefits people obtain from ecosystems (more on this later)

**Employment: Total Ocean Economy**

**Data Summary:**  
Total Ocean Economy: 11,918  
Jobs: 11,918  
Employees: 3,364  
Total Employment: 12,282

**Northeast Region 2013: Marine Sector Output, Employment, and Multipliers**

SECTOR	TYPE	INPUT INDUSTRY SECTOR	OUTPUT	TYPE # JOBS	EMPLOYEE COUNT	TYPE # JOBS
Fishing	1 <sup>st</sup>	Commercial fishing	358	1.85	358	1.85
	2 <sup>nd</sup>	Animal food products, prepared meals and packing	2,102	1.72	1,650	2.08
Shipbuilding	1 <sup>st</sup>	Animal food products, except coffee and poultry and eggs	707	2.04	707	2.11
	2 <sup>nd</sup>	Ship building and repairing	4,596	1.73	16,113	2.38
Shipping	1 <sup>st</sup>	Food processing	700	2.00	1,750	2.00
	2 <sup>nd</sup>	Search, demolition, and navigation	3,114	1.85	4,666	2.08
Marine Water Quality	1 <sup>st</sup>	Instrument	2,335	1.54	3,114	1.50
	2 <sup>nd</sup>	Water, sewerage and other systems	443	1.58	1,650	2.05
Tourism	1 <sup>st</sup>	Full-service restaurants	10,417	1.85	10,417	1.08
	2 <sup>nd</sup>	Limited-service restaurants	7,450	1.05	22,177	1.27
Food Services	1 <sup>st</sup>	All other food and drinking places, hotels, restaurants, and cafeterias, including eating places	3,756	1.36	11,812	1.40
	2 <sup>nd</sup>	Other accommodation and restaurants, hotels, restaurants, and cafeterias	108	1.72	411	2.00
Retail Trade	1 <sup>st</sup>	Other accommodation and restaurants, hotels, restaurants, and cafeterias	108	1.68	175	1.27
	2 <sup>nd</sup>	Grocery, food, and other stores (except hotel)	1,638	1.88	1,638	1.65
Other amusement and recreation industries	1 <sup>st</sup>	Other amusement and recreation industries	1,795	1.82	26,513	1.27
	2 <sup>nd</sup>	Hotels	5,740	1.12	25,133	1.80
<b>Total</b>		<b>108,369</b>		<b>61,913</b>		
<b>TOTALS</b>		<b>108,369</b>		<b>61,913</b>		
<b>Total Output</b>		<b>8,832</b>		<b>151.1%</b>		

\* \$17.6 million (2013) | Thousands of employees

5

## Natural Resource Components

OCEAN PLANNING IN THE NORTHEAST

Draft summary of marine life data sources and approaches to define ecologically important areas and measure ocean health  
Developed in support of the Healthy Ocean and Coastal Ecosystem Goal for Ocean Planning in the Northeast  
June 2014

IN-DEPTH ANALYSIS OF:

- What data are out there?
- What are the **scale(s)** and scope of analysis?
- How is science being applied to solve management and planning issues?

OCEAN PLANNING IN THE NORTHEAST

## Natural Resource Components

OCEAN PLANNING IN THE NORTHEAST

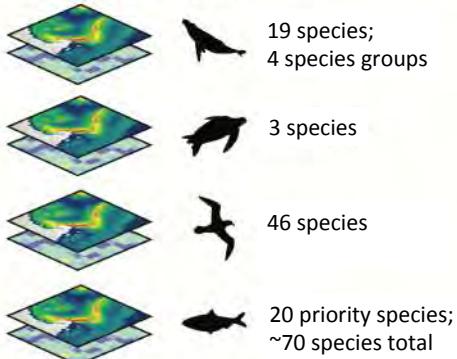
**MDAT: Distribution and abundance of Marine mammals, turtles, birds and fish**

- Study area is ecologically-focused, not entirely based on political boundaries
- Overlapping study area with Mid-Atlantic acknowledges connectivity

OCEAN PLANNING IN THE NORTHEAST

## Natural Resource Components

The Marine-Life Data & Analysis Team (MDAT) is producing habitat density models and other abundance products

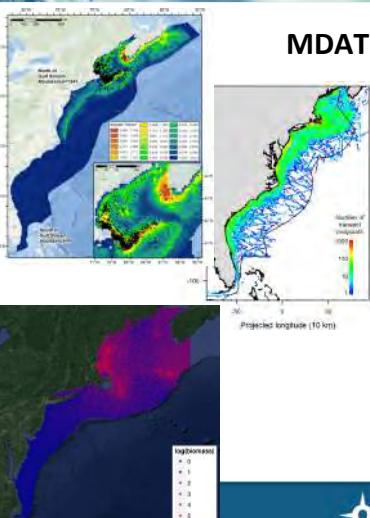


-  19 species;  
4 species groups
-  3 species
-  46 species
-  20 priority species;  
~70 species total

OCEAN PLANNING  
IN THE NORTHEAST

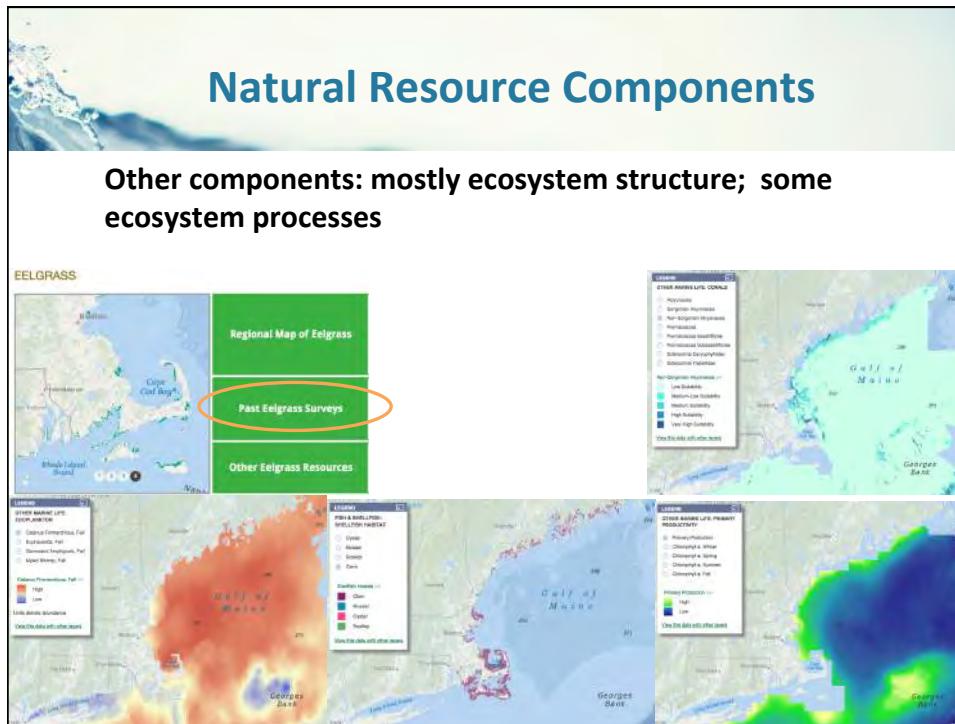
## Natural Resource Components

**MDAT: Marine mammals, turtles, birds and fish**



- Guided by **expert work groups** composed of academic, private and agency scientists, tribes, managers, regulators, etc.
- Spatial models integrate animal observations with environmental and climatological features
- Distribution and abundance (for each species):
  - Multiple temporal **scales**
  - Persistence
  - Probability of occurrence
  - **Uncertainty**

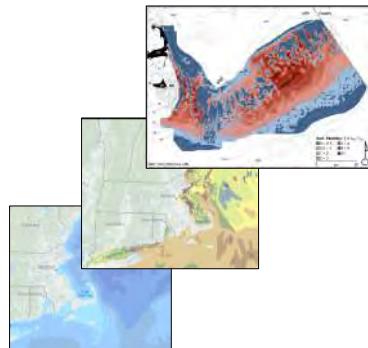
OCEAN PLANNING  
IN THE NORTHEAST



## Natural Resource Components

**"Habitat" – Seafloor geology; benthic & pelagic communities**

- Regional-scale data layers currently under development (built from efforts at multiple smaller scales)
- Offer the potential for proxies of **ecosystem processes, function and connectivity**
- Have been used as the base layer of:
  - Ecosystem services analyses
  - Spatial modeling of other marine life
  - Impact and cumulative impact analyses
- Guided by **expert work group**



**OCEAN PLANNING  
IN THE NORTHEAST**

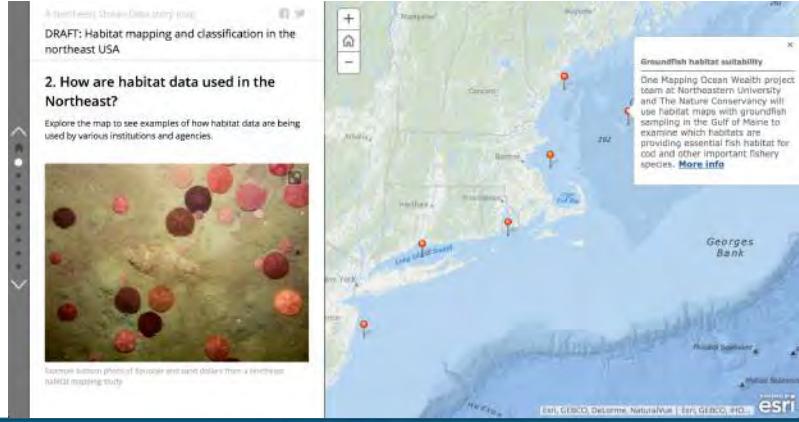
## Natural Resource Components

**Tools to learn what data we have, show what data we have, and determine what we need**

A screenshot of Ocean Data story map:  
DRAFT: Habitat mapping and classification in the northeast USA

2. How are habitat data used in the Northeast?

Explore the map to see examples of how habitat data are being used by various institutions and agencies.



**OCEAN PLANNING  
IN THE NORTHEAST**

## Integration & Synthesis

**For each marine mammals, turtles, birds and fish (via MDAT)**

**Synthetic map products: abundance hotspots**

Synthetic data products could include:

- functional groups
- total diversity
- total biomass
- species richness
- uncertainty
- Hot spots? (see example)

**OCEAN PLANNING IN THE NORTHEAST**

## Integration & Synthesis

**MDAT – Hotspots across taxa and other marine life (TBD)**

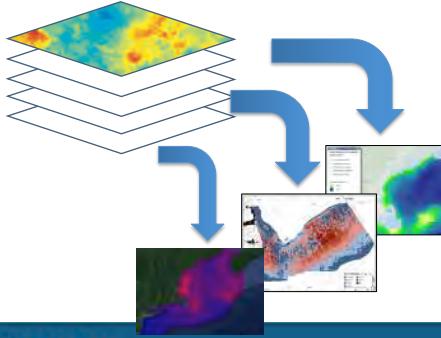
Mammals      Birds      Fish      +      Habitat      Primary and Secondary Productivity, Eelgrass, etc.

**OCEAN PLANNING IN THE NORTHEAST**

## Integration & Synthesis - Options

Potential for further synthesis (hotspots) across taxa and other marine life?

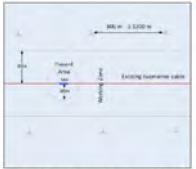
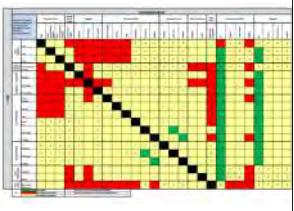
- Potential composite summary layer(s)
  - Can be separated into constituent parts
  - Can be queried/examined via data portal
  - Transparent weighting/additive scheme
- Challenges:
  - Variability of data inputs, especially as more species and habitats are considered
  - Incorporating ecosystem processes
  - Agreement on methodology
  - RI and MA plans were unable to use composite indices at that scale of decision making



**OCEAN PLANNING  
IN THE NORTHEAST**

## Integration & Synthesis – Options

Potential Compatibility Approaches (Specific approach TBD by the RPB)

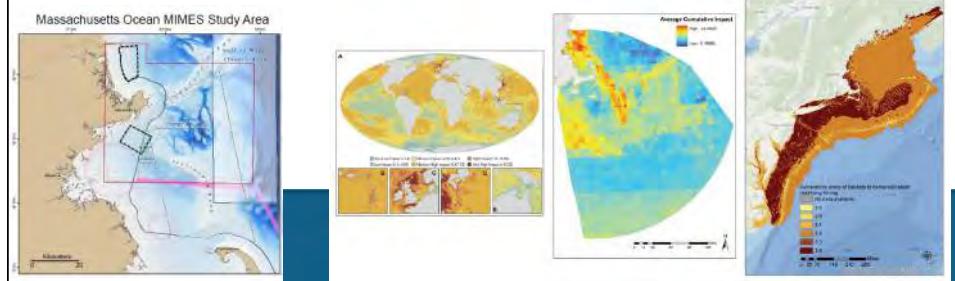
Increasing complexity, uncertainty, & data/research needs →		
Ocean planning data products used in relevant regulatory authorities and permitting activities	Spatial data + research about future trends, guidelines, interactions and best practices  	Use spatial data and guidelines to identify area(s) of interest based on existing regulatory authorities and agency responsibilities (generally or specific to different types of activities/resources)
		Multiple sector & resource matrix applied in a map  

**OCEAN PLANNING  
IN THE NORTHEAST**

## Integration & Synthesis

### Cumulative Impacts

- Several recent efforts in the region
- New effort by Northeast Fisheries Science Center & The Natural Capital Project
  - First Phase – potential to inform first marine plan: vulnerability or risk to marine life building on distribution, abundance, hot spot, and human use mapping
  - Longer term: Develop framework for estimating impacts



## Integration & Synthesis

### Ecosystem Services

- Millennium Ecosystem Assessment (early 2000s):
  - Supporting (primary production),
  - Provisioning (food and raw materials),
  - Regulating (carbon sequestration),
  - Cultural (ecotourism)
- WHOI – Porter Hoagland
  - Defining ecosystem service categories and connecting them to resource/infrastructure “endpoints” in the northeast

**OCEAN PLANNING  
IN THE NORTHEAST**

## Integration & Synthesis

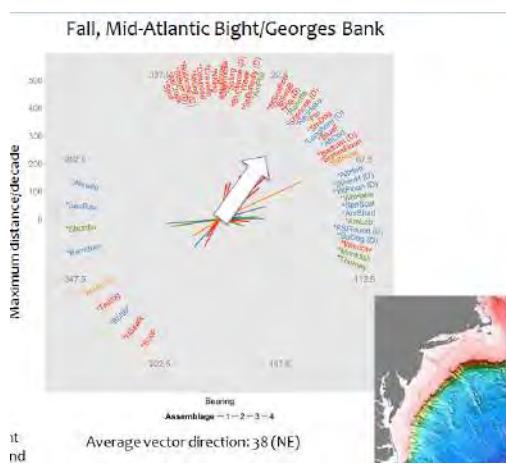
### Ecosystem Services

Types of Specific Ecosystem Service Values found in de Groot <i>et al.</i> (2012) General Categories		
<b>MARINE</b> Biodiversity protection Biological control <b>Carbon sequestration</b> Climate regulation <b>Food (fisheries)</b> Nutrient cycling <b>Raw materials [unsp.]</b> Tourism	<b>COASTAL</b> Biological Control Biodiversity Protection <b>Food</b> <b>Hazard Protection</b> Nursery Nutrient Cycling <b>Raw materials</b> Recreation Science/Research <b>Water</b>	<b>WETLANDS</b> Biodiversity protection <b>Carbon sequestration</b> Flood prevention <b>Food (fisheries)</b> <b>Food (plants/vegetables)</b> Fuel wood and charcoal Hunting/fishing Nursery Recreation (general) Waste treatment Water purification

- Developing a **database** comprising Northeast regional studies
- Identifying issues and gaps, some examples:
  - Possible double counting with provisioning services
  - Uncertainty of passive uses (existence value)
  - Variable methods for estimating values

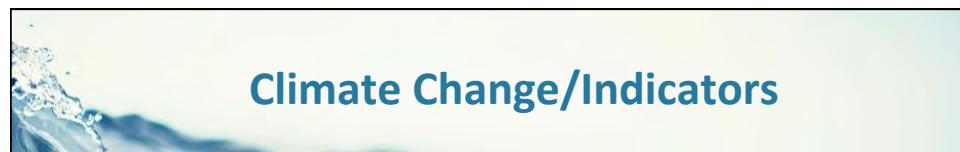
**OCEAN PLANNING IN THE NORTHEAST**

## Climate Change



- GMRI: Assessing utility of fisheries dependent data (VTR) to corroborate trends in fisheries independent data (trawl surveys)
- TNC/NEFSC: Goal of making relatively long-term projections of assemblage distributions based on climate scenarios
- NEFSC/Rutgers: Developing OceanAdapt webtool to explore changes in marine fish and invertebrate distributions

**OCEAN PLANNING IN THE NORTHEAST**

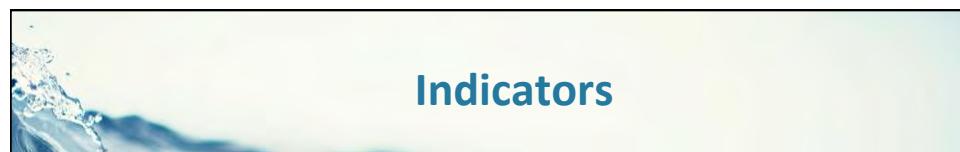


## Climate Change/Indicators

### Integrated Sentinel Monitoring for the Northeast Region

- NROC/NERACOOS led project. Co-Chairs: Mel Cote (EPA), Brian Thompson (CT), and Jeffrey Runge (UMaine)
- Vision: An adaptive sentinel monitoring program that informs researchers, managers and the public about ecosystem vulnerabilities and supports an integrated, ecosystem-based management framework that promotes human and ecosystem resiliency from climate change and related stressors.
- Goal: To implement an adaptive sentinel monitoring program in the Northeast coastal regional that integrates existing regional monitoring efforts, assets, and resources for the purpose of revealing the status and trends of key indicators at select sites and geographic subregions.





## Indicators

### Other Options for Indicators (Discussed at last RPB Meeting)

## MEASURING OCEAN HEALTH



**60** This score given to our oceans—out of 100—by the ocean health index

OCEAN HEALTH INDEX

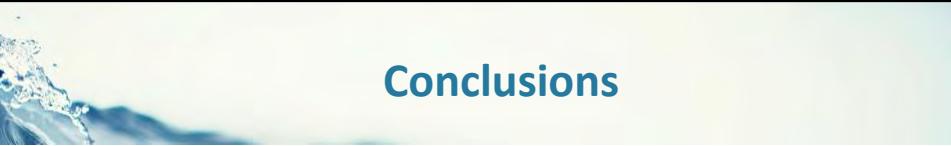
	2003	2007	2011
<b>POLLUTION</b>	69	66	53
Human	59	57	57
Natural	59	47	53
<b>WATERSHED HEALTH</b>	76	76	79
Human	68	67	71
Natural	65	60	40
<b>LIVING RESOURCES</b>	81	25	23
Fish Stocks	12	10	3
Blue Marine	5	1	1
<b>OVERALL SCORE</b>	48	45	45

The Buzzards Bay Coalition

EPA National Coastal Condition

Map of the Eastern US coastline showing coastal condition scores by state.

Partnerships for the Future: A National Strategy for the East Coast of North America



## Conclusions

- We spent a lot of time on detailed components due to need for:
  - extensive outreach,
  - increased understanding of data/info limitations,
  - increased management utility, and
  - to support a more robust integration & synthesis (and draft plan)
- Decisions remain about composite ecological products (hot spots), compatibility, and indicators
- We need to identify specific, practical short & long term opportunities to augment

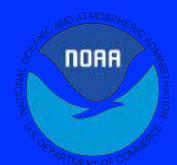


## Appendix B2

# The ABCs of EBM

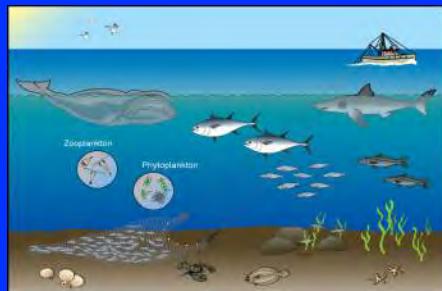
Michael J. Fogarty  
Ecosystem Assessment Program  
Northeast Fisheries Science Center  
Woods Hole, MA

Northeast Regional Planning Body  
Portsmouth, NH  
April 8, 2015

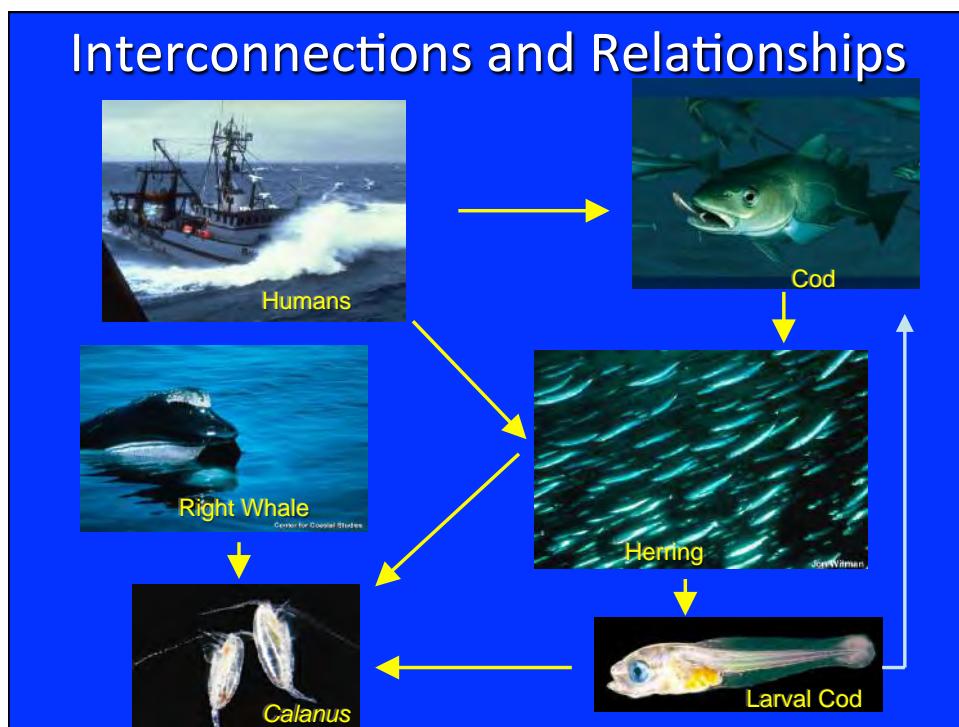


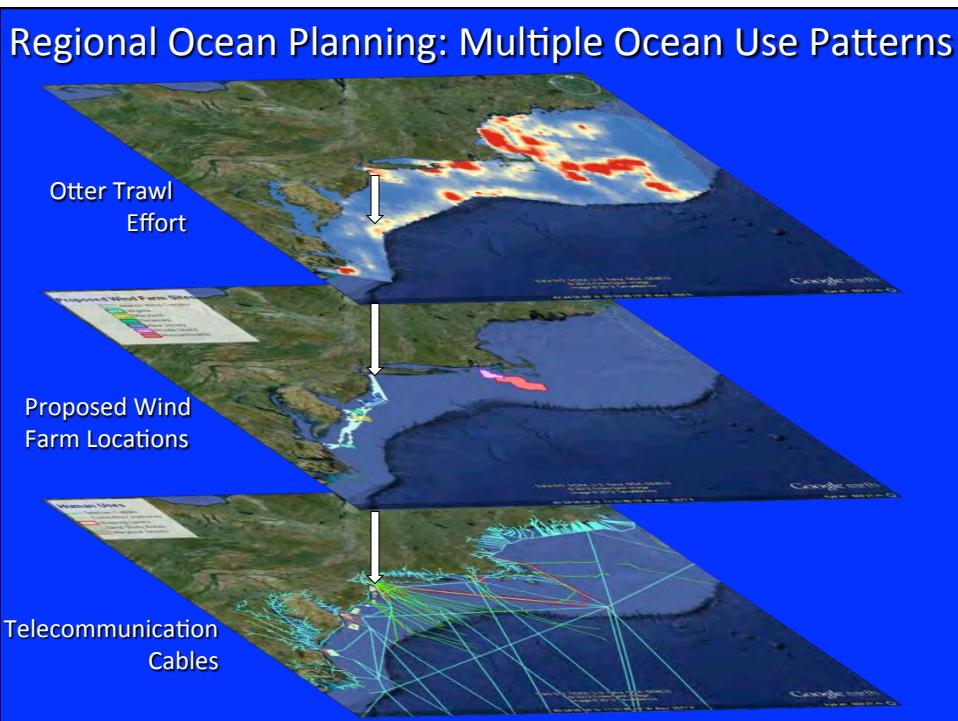
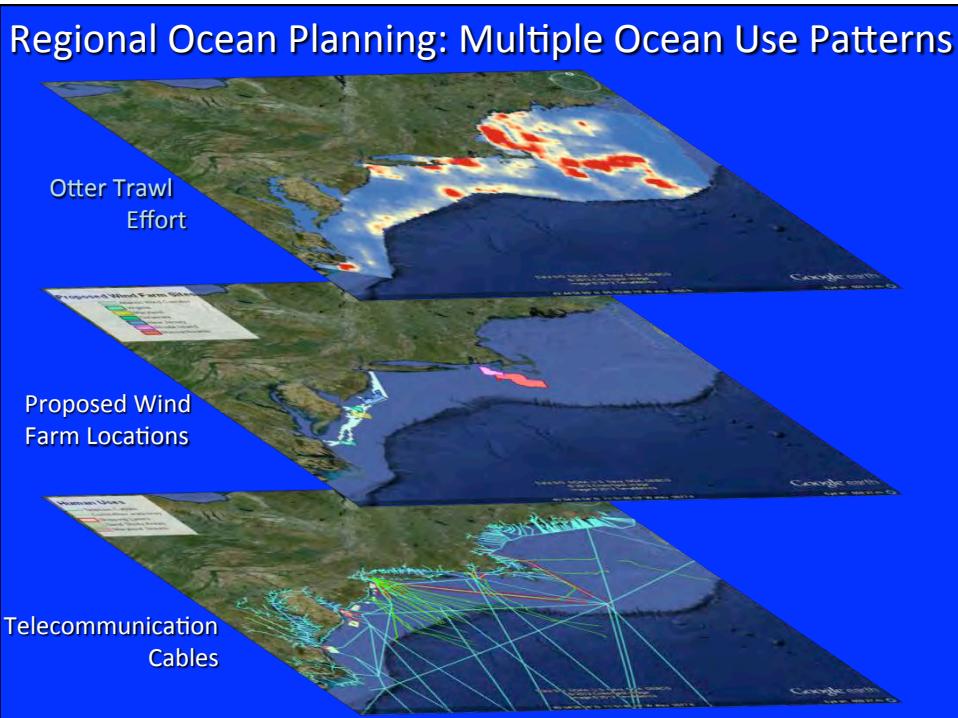
## Ecosystem-Based Management

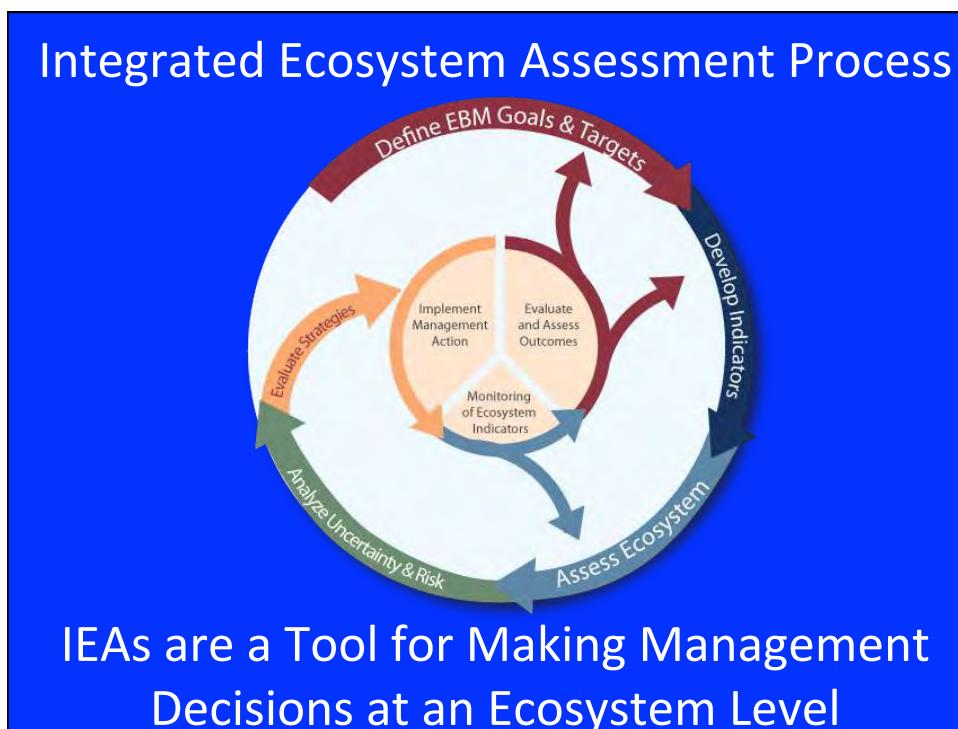
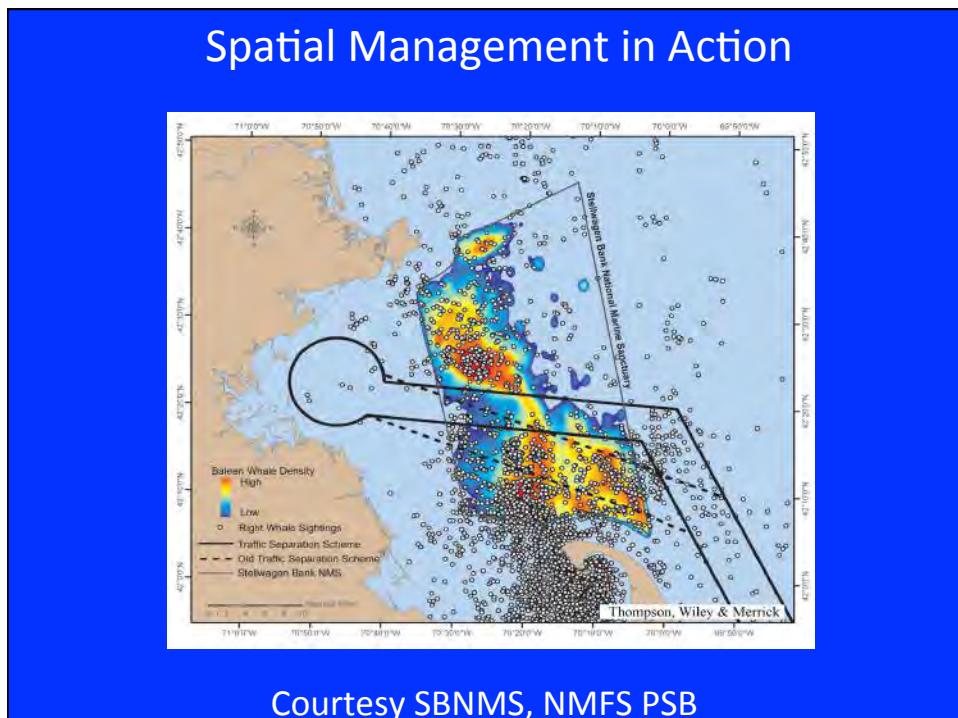
“U.S. ocean and coastal resources should be managed to reflect the *relationships* among all ecosystem components,

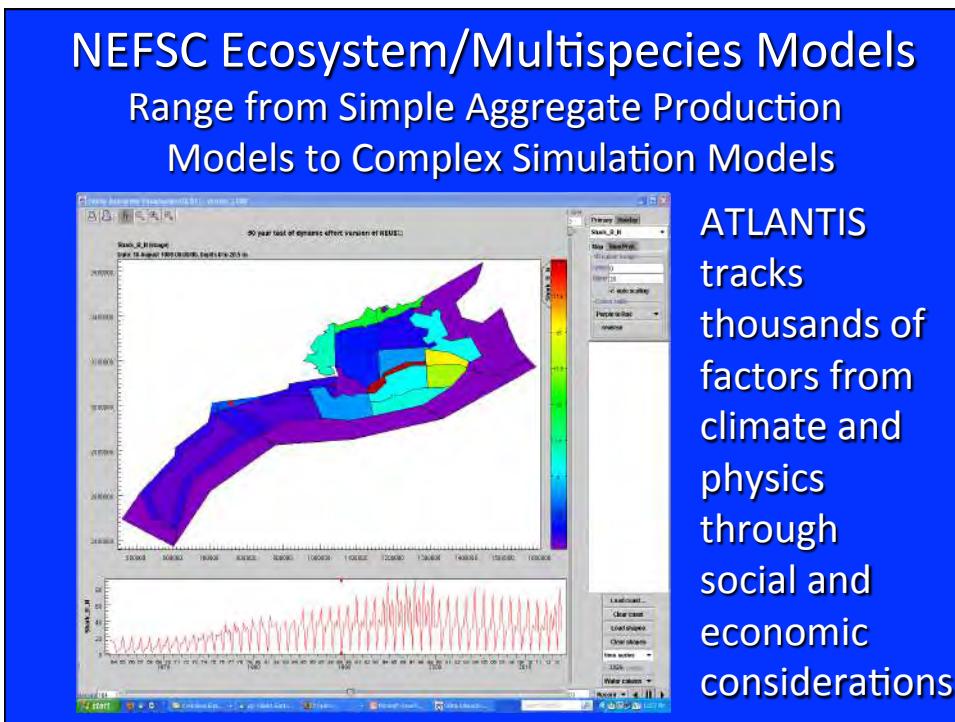


including *human* and nonhuman species and the *environments* in which they live. Applying this principle will require defining relevant *geographic management areas* based on ecosystem, rather than political, boundaries (USCOP 2004)”









Northeast Fisheries Science Center  
**Ecosystem Considerations**

NOAA FISHERIES

**Ecology of the Ecosystem**  
Background information on the structure and function of the Northeast Shelf Ecosystem

**Climate Change**  
Impact of Climate Change on the Ecosystem and Fisheries Species

**Ecosystem Status**  
Assessment of Ecosystem Condition and Socioeconomic Impacts

**Current Conditions**  
Semiannual Review of the Physical and Biological Status of Ecosystem

**Spatial Analyses**  
Species Distribution Patterns and Related Consideration

There is now broad agreement that we need to adopt a more holistic approach to marine resource management at both the national and international levels. To accomplish this goal, the foundation of marine Ecosystem-based Management is now being developed and refined. Virtually all specifications of marine EBM share at least three common elements: (1) a commitment to establishing spatial management units based on ecological rather than political boundaries, (2) consideration of the relationships among ecosystem components, the physical environment, and human communities, and (3) the recognition that humans are an integral part of the ecosystem. We need to account for the important goods and services derived from marine ecosystems and the diverse and cumulative impacts of human activities in these systems (Figure 1) to forge a sustainable future.

The importance of implementing marine Ecosystem-based Management in the United States has recently been highlighted with the adoption of a new National Ocean Policy, established under

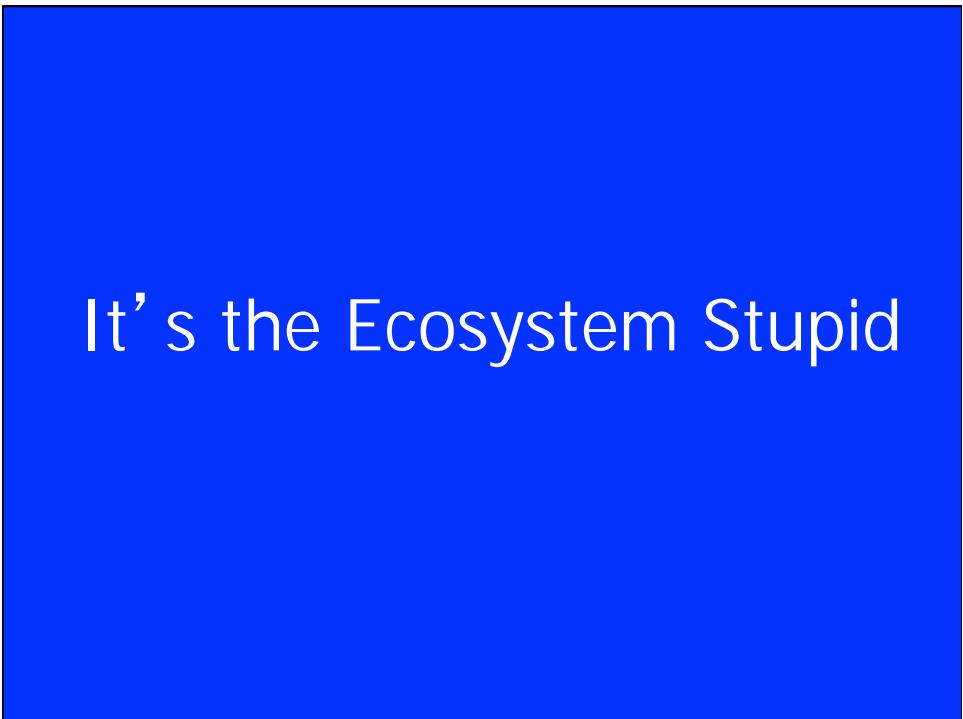


Print

Figure 1. Examples of some important ecosystem services (blue icons), stressors (red), adverse effects (yellow), and issues of special concern (green) that will be considered in Ecosystem-Based Management on the Northeast U.S. Continental Shelf (adapted from image by Barbara Ambrose, National Coastal Data Development Center).



It's the Economy  
Stupid

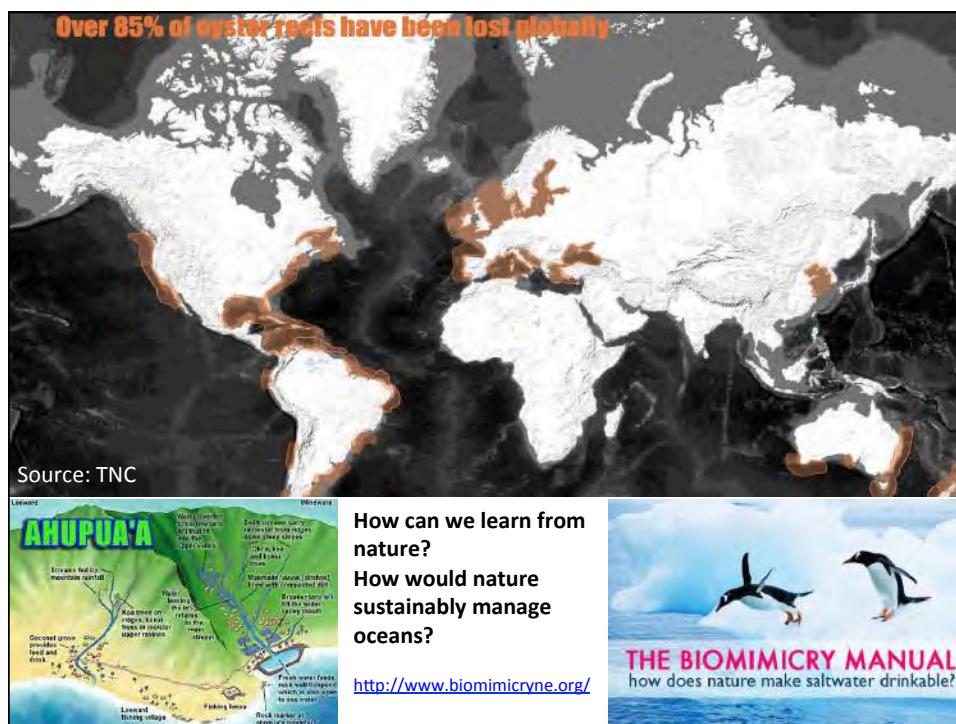
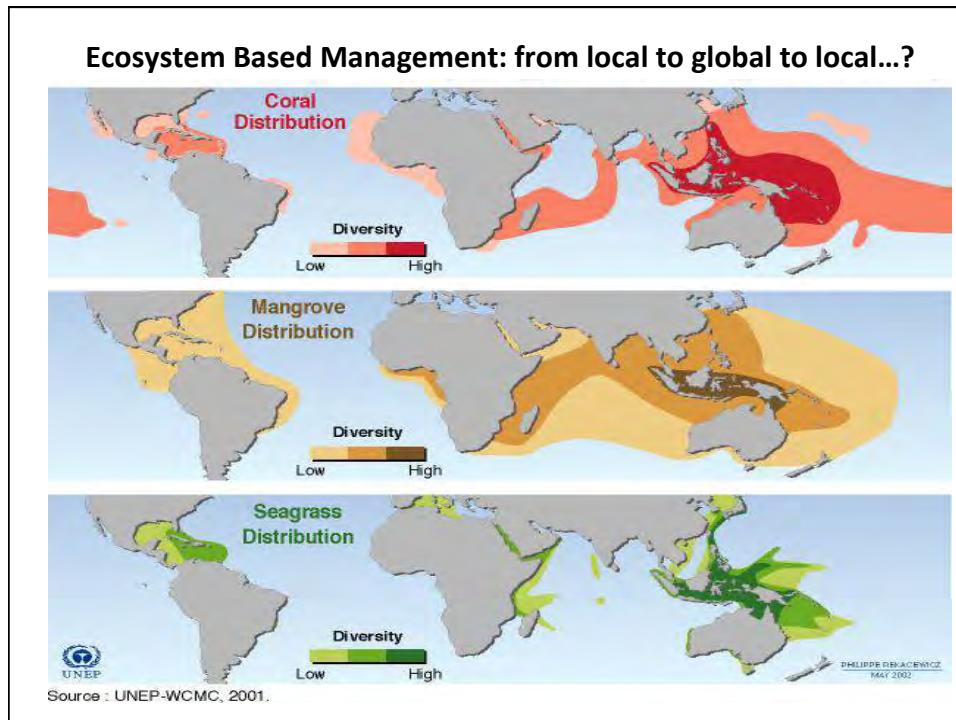


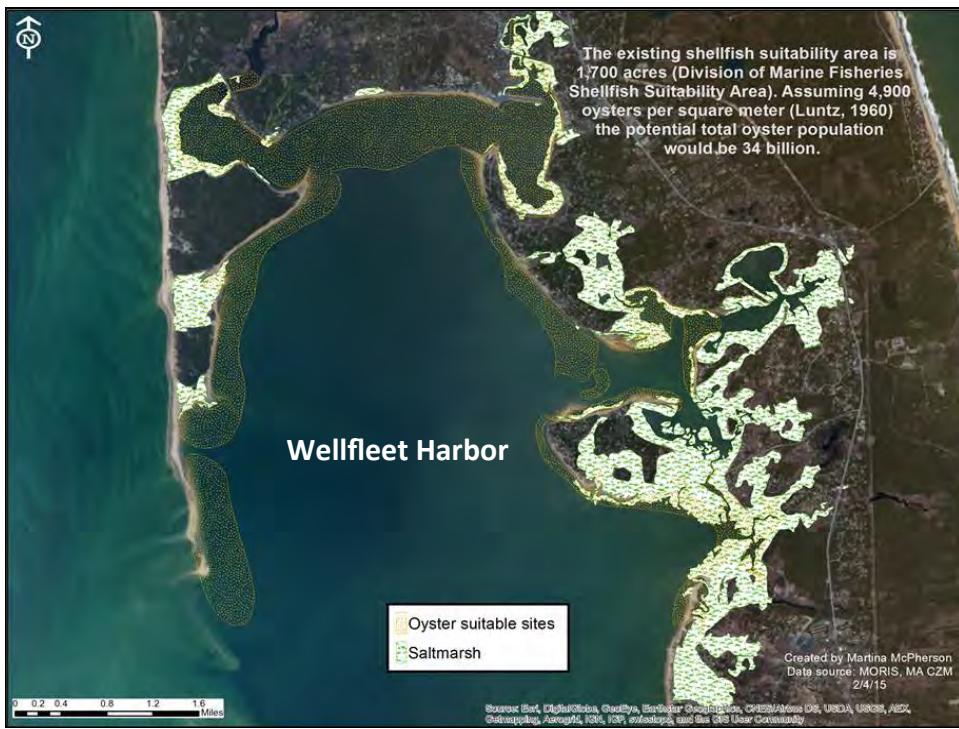
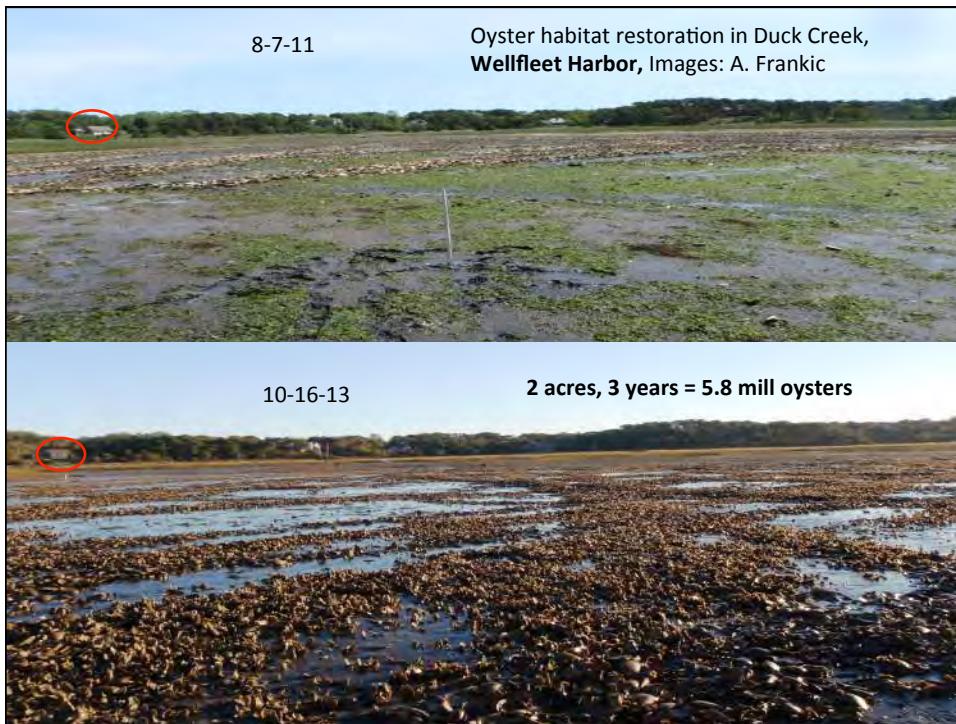
It's the Ecosystem Stupid



#EcoStupid

## Appendix B3







# Document 4.2

## Stakeholder forum summary



# Northeast Regional Planning Body

## Spring 2015 Stakeholder Forum

May 12, 2015  
Salem Waterfront Hotel, Salem, Massachusetts

### MEETING SUMMARY

Prepared by the:



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IV. PRESENTATION AND DISCUSSION OF POTENTIAL HUMAN USE DATA ANALYSES AND THEIR USE BY AGENCIES UNDER EXISTING AUTHORITIES .....	12
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## Executive Summary

On April 12, 2015, approximately 55 participants from a variety of stakeholder groups attended a one-day Stakeholder Forum hosted by the Northeast Regional Planning Body (RPB) on ocean planning in the northeast. The goal of the Forum was to engage RPB members and stakeholders in dialogue about key upcoming RPB decisions, with a focus on the potential synthesis and use of data under existing authorities, prior to the June 3-4, 2015 RPB meeting.

The federal co-lead for the RPB, Betsy Nicholson of NOAA, began by providing an update on the RPB's work and its stakeholder outreach efforts since its previous meeting in November 2014. She noted that the RPB has developed a substantial amount of data characterizing marine life and habitat, and describing human uses. She suggested that the RPB is currently focused on how these data products will be used by federal agencies, and how implementation of the ocean plan will play out in practice to support effective agency decision-making. An important goal of this meeting was to obtain stakeholder feedback on these issues.

Ocean planning staff next provided additional background on ongoing regional planning work on various topics, including fishing, marine transportation, recreation, and marine life. The RPB has compiled substantial data relevant to each of these themes, although important gaps and uncertainties remain.

Ocean planning staff then presented some of the questions that the RPB is focused on related to compiling and synthesizing data about marine life and human uses. The RPB is examining data products related to single species and single uses (e.g., distribution and abundance annually or seasonally) and is considering how such products could be used to support agency decision-making within existing authorities. For the draft plan, agencies will need to develop guidance to accompany the data products. Additionally, with respect to both marine life and human use data, the RPB could aggregate baseline data to create more synthesized products combining multiple species and human uses. There are important considerations regarding the ultimate utility of such synthetic products; for example, the more the RPB aggregates its data products, the more uncertainty is introduced. The RPB is consulting with agencies and industry representatives to determine the usefulness of these kinds of products, and the need for agency guidance on their potential content and use.

Participants also talked in small groups and offered feedback on the RPB's work. Participants stressed the importance of using the data products to support not just effective agency decision-making, but also the other two ocean planning goals: healthy ocean and coastal ecosystems, and compatibility among past, current, and future ocean uses. Some stakeholders suggested that the RPB should aim to use data products to support an ecosystems based management (EBM) approach, and that the RPB should consider human and cultural values rather than economic value as the primary driver of any tradeoff analysis. Other participants expressed optimism that the data will support early consultation among stakeholders, applicants, and agencies, and result in better siting decisions and better projects. RPB members closed the meeting with an expression of appreciation for the discussion, and a reminder to attend the June 3-4 RPB meeting where these topics and next steps will be discussed and decided upon.

## I. Welcome, Agenda Review & Objectives

On May 12, 2015, the Northeast Regional Planning Body (RPB) hosted a one-day Stakeholder Forum on ocean planning in the northeast. Approximately 55 participants from federal and state agencies, industry groups, fisheries, academic institutions, nonprofit organizations, and elsewhere attended the workshop.<sup>1</sup> The objective of the Forum was to engage RPB members and stakeholders in dialogue about key upcoming RPB decisions in advance of the June 3-4 RPB meeting, with a focus on the potential synthesis and use of data under existing authorities.

Staff from the Consensus Building Institute (CBI) facilitated the workshop and drafted this workshop summary. Ona Ferguson from CBI was the lead facilitator.<sup>2</sup> Presentation slides and other materials from the workshop are available at the following URL: <http://neoceanplanning.org/events/spring-2015-stakeholder-forum/>.

Betsy Nicholson, the RPB federal co-lead, welcomed participants and recognized the members of the RPB in attendance. She emphasized that RPB members were there to listen and learn from participants in advance of the upcoming June 3-4 RPB meeting in Mystic, Connecticut.

Ms. Nicholson provided an update on the RPB's recent and ongoing work. Currently, the RPB is midstream in its public process to develop an ocean plan for New England waters. The ocean planning process began in late 2012 and will end in June 2016. In accordance with the President's National Ocean Policy, the RPB has been working with the public to pursue its three planning goals:

- Healthy ocean and coastal ecosystems;
- Effective decision-making; and
- Compatibility among past, current, and future ocean uses.

Ms. Nicholson said the day's presentations represented the culmination of work to date to characterize marine life, habitat and human use data, compiled to better understanding the context of management decisions. The goal is to use this information to help agencies make better decisions, and to start to anticipate how the ecosystem might change in the future.

In developing the data, the RPB has engaged with a wide variety of stakeholders including scientists, industry, government, and nonprofit representatives, and members of the interested and concerned public. In addition to hosting stakeholder forums and its own formal meetings, the RPB has held informal meetings around the region, conducted webinars, and kept its website up-to-date with ongoing activities. Last month, it held a workshop on Ecosystem Based Management (EBM), in which participants discussed how to apply EBM principles to this ocean planning effort.

Currently, the RPB is focused on how its characterization work and data products will be used by federal agencies, and how implementation of the ocean plan will play out in practice. It is particularly interested in stakeholder feedback on these two issues. Following the RPB meeting in June, there will

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<sup>1</sup> See Appendix A for a full list of participants.

<sup>2</sup> Additional Consensus Building Institute staff: Patrick Field, Toby Berkman, Eric Roberts and Dory Dinoto.

be another stakeholder forum and RPB meeting in the fall. In early 2016, the RPB will meet to approve a Draft Plan for public review. By mid-2016, it plans to approve a Final Plan for submission to the National Ocean Council.

## II. Update on Recent Regional Planning Body Work

John Weber, ocean planning staff, summarized the progress on ocean planning projects since the last RPB meeting, including updates on data development and stakeholder outreach efforts over the last several months. See Appendix B for the slide presentation accompanying his remarks.

Mr. Weber noted that the RPB has been working on a variety of projects, including:

- characterizing species and habitats through the Marine Life Data and Analysis Team (MDAT);
- human use (shipping, fishing, recreation) characterization projects;
- addressing opportunities to advance EBM through the recent EBM workshop;
- considering future trends and emerging issues under the compatibility goal; and
- obtaining and incorporating feedback from various stakeholder groups, industry representatives, marine life work groups (involving 80 scientists), and the EBM workshop.

Since the November 2014 RPB meeting, the RPB has been thinking about how to integrate these various efforts into the draft ocean plan: i.e., how to combine the MDAT and human use products from these various projects to achieve the goal of effective agency decision-making. Mr. Weber emphasized that in order to address this question with an appropriate level of detail, stakeholders need to understand the details of the RPB's work to date and the information it has produced. For this reason, his presentation focused on describing the data, identifying important caveats and limitations of the data, and reporting on industry and agency feedback the RPB has received.

### *Fishing*

Mr. Weber began by discussing the data collected on fishing. Efforts have included working with data from the vessel monitoring system (VMS), a location tracker used in federal fisheries management, which reports the location of fishing vessels. One challenge is that this data does not show what each vessel is doing — i.e., whether it is fishing, in transit, sorting catch, or doing something else. The RPB has been working with industry to try to use vessel speed as a proxy to determine vessel activities, and to use this information to determine fishing vs. transit areas. As a demonstration, Mr. Weber showed a map derived from scallop VMS data, which showed fishing and transit areas. The RPB has also been working to incorporate VMS data from recent years, up to 2014. This data is important because there have been significant changes in fisheries management since 2010.

VMS data is available only for certain fisheries, and the RPB has been trying to fill in those data gaps. For example, there is a pilot project to work with charter captains to identify additional recreational fishing and transit areas. Other limitations of the VMS data are that it only goes back to 2007, there is a loss of detail because the regional view is broad and may obscure locally important fisheries, fisheries

management affects the spatial patterns observed, and there is an absence of data on lobster. Given all of these limitations and uncertainties related to fisheries management, climate change, price, and fuel costs, it is not possible to predict the future for fisheries. However, the RPB has received feedback that the maps are useful in describing what is happening in certain fisheries, and would have been useful to agencies in the past.

#### *Marine Transportation*

The RPB has been creating maps of marine transportation using Automatic Identification System (AIS) data. AIS data consists of locational tracking information developed for navigational safety reasons. The RPB has been using the data to better understand spatial patterns of commercial vessel traffic, looking at ways of differentiating types of vessels, and using additional information and stakeholder feedback to identify important marine transportation, safety and operational areas such as pilot boarding areas. Discussions with industry stakeholders have also focused on potential future trends. There will be a summary report on these issues that should be ready for review prior to the June RPB meeting.

Like the VMS data, the AIS data has limitations. First, not all vessels have to report into the system. In addition, the industry has suggested that it would be helpful to look at trends over time, because there has been meaningful growth in the years since the recession. Although it is impossible to predict the future, the industry representatives have suggested that in general, existing routes will continue, albeit with fluctuations in volume. They have also noted that there are good reasons for their routes related to operational considerations, fuel costs, and other issues.

#### *Recreation*

A variety of different methods are being used to characterize recreational uses such as commercial whale watches, SCUBA diving, sailing regattas, sport fish tournaments, and board and paddle events. The RPB is using participatory mapping methods to compile some of this data (specifically whale-watching), and using on-line surveys for other components. Mr. Weber emphasized that this project is still in process. While the RPB is interested in how it might combine these different data on different activities, the data aggregation capabilities will depend on the project outcomes.

#### *Marine Life*

The MDAT team from Duke, NOAA and the New England Fisheries Science Center has been working to create distribution and abundance information across annual (and in some cases seasonal and monthly) temporal scales for various species of marine mammals, turtles, birds and fish. The team has already created a hugely rich foundation of information with more than 1000 basic maps in preparation. The team applies spatial models to integrate sightings data with habitat characteristics, during which representing uncertainty becomes a challenge.

Federal agencies such as BOEM and NOAA have funded some of this kind of work. Important data synthesis challenges include the fact that the variability of data inputs increases with the number of

species and habitats. The RPB needs to consider how it can reach agreement on synthesis methodology, and whether it should incorporate habitats, which ones, and how.

Mr. Weber concluded by noting that the RPB has begun discussions on how the various data products can and should be used within existing regulatory frameworks. Additionally, other topics of focus include developing best practices for the use of data and agency coordination during the pre-application phase, determining opportunities for increased federal/state coordination under the Coastal Zone Management Act (CZMA), and conducting a baseline assessment. The June RPB meeting will include an opportunity to receive updates on these projects.

#### *Discussion*

Participants made the following comments and asked the following questions. Answers from ocean planning staff are in italics:

- How are you going to incorporate the conversations you've had with stakeholders into the writing of the plan? *Summary documents of stakeholder engagement efforts capture a lot of the information and will be provided to the RPB.*
- While the MDAT products and human use characterization products will help achieve the effective decision-making goal, we should also be thinking about how they will help achieve the healthy ecosystems and compatibility of uses goals. *Determining how the data products can support effective decision-making will help us achieve the other two goals.*
- Has there been any consideration of NOAA critical habitats, and critical habitat expansion? *Yes, and that's a great reminder that other activities underway need to be considered in this.*
- Are RPB members in June going to make a decision on whether and how hotspots will be identified? *Yes, that issue will be discussed.*
- Have you considered using Vessel Trip Recording (VTR) data to address the gaps in VMS data? *Yes, we've been talking about whether we can use other data like VTR, and have gotten mixed responses, in part because of the reporting of the VTR data. Work is ongoing on that dataset.*
- Given the momentum around doing something serious on EBM and the proposal from the EBM Workshop to convene a group, when are you going to reach out to stakeholders who are participating and who have something to contribute? *The outcomes of the EBM workshop will be part of the conversation today and into June. We welcome comments on the process.*

### **III. Presentation and Discussion of Potential Marine Life Data Analyses and their Use by Agencies under Existing Authorities**

Nick Napoli, ocean planning staff, presented on potential marine life data analyses and how they could be used as part of a draft plan under existing regulatory authorities. Slides from the presentation are available in Appendix C of this report. Now that the RPB is close to completing baseline data and information, as described previously, Mr. Napoli suggested that it is time to start thinking about how to integrate this data and information. He noted that his presentation would provide examples of draft

data products, how they could be used in agency decision-making, and how they could be synthesized into additional products useful at various stages of the regulatory process. Much of this information has been presented and discussed previously at occasions such as the EBM workshop held in April.

Mr. Napoli began by describing how agency decision-making occurs, using the example of North Atlantic right whales under the Endangered Species Act (ESA). Depending on how the National Marine Fisheries Service (NMFS) determines the potential effects of a project on the species and/or its habitat during formal project review, NMFS may require no consultation, informal consultation, or formal consultation pursuant to the ESA. To help with siting and planning issues during a project pre-application and screening phase, the agency could use a map from the ocean plan showing the location of areas designated as critical habitat for the Right Whale. NMFS might also consult a distribution and abundance map showing Right Whale predicted density. This latter type of map could also inform agency decision-making during the consultation phase, and could be especially useful for species without designated critical habitats.

Ocean planning staff and NMFS have discussed this approach, and whether additional aggregated data products could help determine if a potential site is in an area of importance for particular marine mammal and/or fish species. The relevant statutes and corresponding lead agencies will vary by species (e.g., birds typically will be a US Fish and Wildlife Service concern), but in all cases the RPB's goal is to find a way to make data and related products useful to the agencies. The conversations involve considering both individual species-related products (e.g., distribution and abundance for a particular species at specific times of the year), as well as products aggregating multiple species and/or data layers.

Mr. Napoli walked the group through a number of specific examples of the use of existing and synthetic products, beginning with individual species-focused products and then moving towards increasingly complex and aggregated products. As an example of a species-specific map, Mr. Napoli showed a map of North Atlantic right whale predicted density in April. This map, as with other species-specific maps, is relevant in circumstances where individual species are regulated under one to a few authorities. The RPB is considering options for how to present this data effectively, for example through animations showing how species density moves over the course of a year and how it has changed over time (annually). The RPB is also developing maps of uncertainty and additional information about projected changes due to climate. Agencies would be responsible for developing guidance on how such species-specific maps would be used.

As an example of a map at a next level of data aggregation, Mr. Napoli showed a map of the predicted annual average abundance of the nearshore avian group. The RPB is grappling with the question of whether, by aggregating data on several bird species, such a product facilitates decision-making by depicting multiple species that tend to move together. Such maps typically would depict species groups that are regulated by one or a few authorities, in this case the US Fish and Wildlife Service; these agencies would be responsible for developing guidance on how such species-specific maps would be used.

Mr. Napoli next presented examples of “core areas” for individual species or species groupings using maps of proposed right whale critical habitat, and the area designated for preservation of the sea duck by the Rhode Island SAMP. Such areas are generally regulated under one to a few authorities. Creating the maps involves getting into data synthesis and methodological development, for example by extracting hot spot data for a given species over the course of a year. The RPB has not yet begun creating synthetic maps at this level, but the MDAT team is under contract to begin work on them.

A next stage in the progression towards greater aggregation would involve overlaying many or all species within a taxonomic group that are all generally regulated under one to a few authorities. Rudimentary examples of such taxa “hot spots” could involve overlaying the already designated essential fish habitats for all highly migratory fish species, or looking at the total biomass from the NMFS trawl over the course of a few years and seeing where this biomass is largest. For fish alone, developing these maps would involve extracting taxa level hotspots for 70 species and would be a very intensive effort. If such maps are developed, it would also be important to include, if possible, information about the components used to develop the hot spots and measures of uncertainty. Work groups would need to help develop the methodology.

Products involving species from multiple taxa (fish, birds, and marine mammals) such as multi-taxa hot spots would involve even more uncertainty both with respect to the science and with respect to how they would be used. Creating them would involve overlaying multiple taxa that are generally regulated under multiple authorities. Broadly speaking, such products could show areas with greater regulatory interest due to factors like total biomass or species richness. If the maps are developed, they should be as open and query-able as possible. For example, they could be designed so that each pixel could be queried to identify the species present and the relevant authorities. However, it would be critical to be clear on the level of uncertainty in these maps — combining species maps, each with its own uncertainty would result in lots of additional uncertainty.

To create such products, it would likely be necessary to convene a new work group including individuals with various areas of expertise from throughout the region. The group would need to consider all the data coming from various sources and maybe additional habitat considerations. It would also be vital to involve the regulatory agencies in assessing the utility of such maps. Scientists would advise on appropriate methodologies, while regulators need to advise on what’s important to them and how they would use it, and to write up guidance.

In addition to the above data products, Mr. Napoli noted that the RPB needs to consider ecosystem-based management issues, many of which may need to take place over the medium- to long-term. These include additional inputs like ecosystem processes, benthic and pelagic habitats, and ecosystem service production and value. They also include models and indicators of vulnerability, impacts, specific ocean health goals and values, and scenarios.

#### *Clarifying questions*

Participants asked the following clarifying questions. Responses by ocean planning staff are in italics:

- Obviously some areas of the ocean are richer than others, but what's happening between these areas is also important, and I am concerned that the concept of hotspots could be used to open up other areas to damage from industrial extraction. Where does the concept of connectivity fit into this work? Where is the framework for the RPB to remember that this is a big ecosystem?  
*The purpose of this work is to identify the best available scientific information and develop products for agencies' use. The MDAT models include literally pages of habitat factors, many of which address physical, biological, and oceanographic processes that relate to connectivity. Connectivity is represented by the list of habitat considerations that are included in the MDAT work. At the June RPB meeting, the scientists working on this will provide more detail, since their work includes but we are looking at issues like forage, productivity, and other components of habitat.*
- Are there maps specifying Massachusetts wind lease areas? Yes. *The 1000+ maps we referenced are just maps of marine species. There are also maps of the lease areas and other human uses.*
- Species may come and go from particular areas, but habitat characteristics remain. Do we have maps with habitat information such as bottom types, depth, and temperature or does every map have to relate to a specific species but not habitat? *Ocean planning staff is looking at multiple habitat classification methodologies, and compiling measures of depth, temperature, sea floor, sediment, bottom type, and other information. The level of resolution for this information varies geographically. For example, there is a map specifically intended to show what is known about sea floor across the region that is in development.*
- Do you know what the agency guidance will look like? Will it involve public comments and outreach to stakeholders? *That subject will be discussed at the June RPB meeting. Presumably, guidance from agencies would be part of the draft plan and would be available for comment then.*
- How would maps of taxa hot spots, like the examples you showed, lead to different kinds of agency decisions? *Individual agencies will describe how they would use this information in their guidance.*

### Small Table Discussions

Participants broke into small groups at their tables to reflect on the issues raised by ocean planning staff. They were asked to address three questions:

1. How can you imagine these data being used?
2. What else do we need to know?
3. What would you like the RPB to take into consideration when they discuss this topic next month?

Below are participants' comments, compiled, summarized and loosely organized by theme. Participants were not asked to reach agreement, so some comments contradict others.

#### *Use of data*

- Data will be used by agencies when reviewing permits, by industry and project proponents applying for permits, and by other stakeholders who want to weigh in on that process. The RPB should consider whether it needs an education program to spread use of the data more broadly within agencies and industries.
- For permit applicants, depending on the map resolution, the data could be useful for their own preliminary/initial assessment, helping them answer agency questions.
- The coarseness of the data will drive what it is used for. If it is coarse, regional level data, it is unclear whether it will be appropriate for helping with site-specific decisions.
- We need to be careful in using hot spots for decision-making. Even areas outside a hot spot may still have resources worth caring for.
- Data should be used to help the RPB make good decisions to advance ambitious goals about ocean health. They should be in service of something that matters. They should support effective decisions, rather than being an end in themselves.
- Because the volume of data is so large, it is more important to organize the data than to define how it can be used. There should be a query mechanism that presents only the most important information after a user identifies his or her subject of interest or problem.
- It is important that this data be used beyond just the NEPA process, and that it potentially be able to support an agency in blocking or re-siting a project if it crosses a threshold. Certain areas should be off-limits altogether.
- To encourage real, long-term change, the agency technical staff that support the use of the data should explain its value within their agencies (and up the ranks).
- It would be great if the data helped keep wind energy development out of critical habitats.
- Stakeholders need information on how the data will be used in the decision-making process in order to provide informed feedback on what type of data is appropriate.
- Datasets do not need to be used in decision-making for them to be useful; some of them may be used to exclude areas from consideration for particular uses.

#### *What's missing?*

- There should be data sets and layers that show planned or proposed ocean use/development projects, e.g. wind farms, mussel farms, hydrokinetic projects, etc. These could be organized by sector and by location.
- There should be data on ecological and socioeconomic rarity, to make sure the plan does not completely miss something small but significant. For example, there might be areas or habitats that a single species depends on that do not exist in other places, or a particular fishery that is small but highly significant to a certain sector.
- It could be helpful for project siting to understand “cold spots,” i.e. areas with little existing use activity and ecological significance that people are less likely to care about and seek to defend.
- The lobster fishery lacks data. The RPB could try to map areas used by individual fishers, even though it is difficult to get lobstermen to put more technology (like iPhones) on their boats.

- It would be useful to have a feedback mechanism to enable data developed through the course of a specific development proposal to be fed back into the data portal.
- It would be useful to hear whether and how the integrated products have the potential to help us learn something new, different, or substantial from a technical or scientific standpoint.
- The RPB needs to fill gaps in the fishing/VMS data, and keep in mind that fishermen are not honest about locations reported through vessel trip reports.
- Data could be drawn from the MA Office on Coastal Zone Management on species sensitivity and vulnerability, climate change, what might be driving species movements, and the potential invasive species program.
- Open access to data levels the playing field with stakeholders and helps resolve conflicts early.

#### *Agency guidance*

- We want 1) a high quality plan, and 2) to make sure the plan doesn't get put on the shelf, but is used regularly as a part of agency decision-making. Agency-produced guidance documents about how to use the data could make the final ocean plan have real effect.
- It will be very important to stay within controlling legislation and clarify the intended application of certain maps. For example, if the data is used in the ocean plan and identifies that an area is important, but that area is not a critical habitat or an essential fish habitat, what impact would that have? Similarly, how will it work when there are integrated maps across jurisdictional authorities?
- It is important for agencies to provide both outward-facing and inward-facing guidance. Inward-facing guidance should be targeted at agencies themselves, and how they can and will use the data. Outward-facing guidance should explain the data to stakeholders to increase their understanding of how to apply it. Guidance should provide background information on what the maps are and how they were made.
- Agency guidance should address which are the priority maps.
- One challenge is that federal agencies want consistent management approaches used throughout the agency, but the creation of regional ocean plans specific to the unique characteristics of each region does not lead to consistency.
- Data is not useful once outdated. Agencies will need to seek agreement on how frequently to update data, how to make it accessible through a data portal, and how to integrate data management into agency budgets.
- It is not clear whether agencies will use the data consistently and have common decision trees. For example, will BOEM's ecological thresholds be the same as the Army Corps'? Will the lead agency use the same threshold as is advised by consulting agencies? These will be important issues to address in agency guidance.

#### *EBM*

- The ecosystem needs to be the overarching theme of the plan, and an EBM approach should have been used from the start. The goal should have been to look at the underlying ecosystem-

based reasons for species distribution and abundance, instead of mapping individual species. This approach is more time-consuming and difficult at the outset, but would be more flexible down the road.

- The MDAT team is doing great work, and it is important for them to keep working and get at these challenging issues. Perhaps they can arrive at an EBM-like approach by creating more synthetic products and aggregating data across species.
- It is more important to understand the criteria that cause hotspots than to know exactly where those hotspots are.
- There's value in identifying the individual layers in the MDAT data. The breakdown helps the user parse out what's happening when things change.
- A principle of the plan needs to be *adaptive EBM* – i.e. recognition that things will change, and what we see today will not be the situation forever. The plan needs to be flexible.

#### *Uncertainty*

- While we're waiting for more information, we still need to be making decisions. The plan should include guidance on how the RPB will deal with this uncertainty, for example through a precautionary approach.

#### *Managing expectations*

- We need to be realistic about what the plan can accomplish. The more information we have, the more transparent the process, and the more people are involved in decision-making, the more accepting everyone will be. But there will always be disagreements about data interpretation. Stakeholders and various agencies each have different priorities and concerns.

#### *Advice to the RPB*

- In the next year, some participants suggested the RPB should focus on incorporating EBM principles into the ocean plan, while others suggested that full-blown EBM will take longer to develop and the RPB should set realistic goals for this iteration of the ocean plan.
- The ocean plan should lay out a collaborative research agenda on ocean health for future years.
- The RPB should form a science/technical working group immediately to complete data synthesis regarding multiple taxa hotspots, per Mr. Napoli's slide.
- In June, the RPB needs to look at how far the plan can go, how prescriptive it can be for the future, and next steps.
- The RPB should consider how it can be a model for other regions of the country.
- It is important to build in quality control checks on the data.
- The RPB should lay out how baseline data will be updated and accessible, and which data it will prioritize for maintenance.
- The RPB should consider how to make the system as interactive as possible, so users can engage in quality assurance and control themselves. It could implement a system to crowd-source data, through a kind of user/citizen-based science. The RPB should work to ensure not only that

agencies use the data, but that they use it consistently within and across agencies. For example, how will the Coast Guard in District 1 require district sectors to look at the same data in the same way, given that each Captain of the Port has his or her own authority? The RPB should develop a standardized approach to how agencies will use this data that everyone understands, so things are less ad hoc, unpredictable and uncertain.

- The RPB should make sure there is a mechanism in the plan that connects datasets to particular issues, e.g., statements like “This dataset was developed to be used in this particular way....”
- The RPB should give the final ocean plan the teeth it needs so that agencies will be required to use it. It should consider agency accountability measures such as the use of executive orders, adoption of the final plan under state ocean special area management plans (SAMPs), Memorandums of Understanding (MOUs) between agencies, or programmatic Environmental Impact Statements (EIS). Public and industry groups can also direct government agencies to the final ocean plan to help ensure that it is used.

#### IV. Presentation and Discussion of Potential Human Use Data Analyses and their Use by Agencies under Existing Authorities

Mr. Napoli next presented examples of potential human use data analyses and how they might be used under existing regulatory authorities. See Appendix C for slides from the presentation. Mr. Napoli began by explaining the process by which marine transportation and safety issues are evaluated under agency authority. Under the Ports and Waterways Safety Act (PWSA), the Coast Guard is the coordinating agency called on to address potential impacts on human safety from proposed developments in marine waters. After a proposed project comes in, the Coast Guard considers transportation and other human safety issues and decides if the situation merits a navigational risk assessment.

As during the earlier discussion on marine life data products, Mr. Napoli started with examples of individual use maps, and then progressed towards presenting maps with ever-greater levels of data aggregation. First, he presented two simple individual use maps: a map of 2012 traffic for a specific type of towing vessel, and a map of 2006 to 2010 scallop boat traffic. For these maps, he noted that it may be possible to add information like economic analyses, future trends (identified through conversations with fishing and shipping industry representatives), guidelines, and best practices.

Examples of maps at the next level of aggregation are a map of 2012 traffic for *all* tug/tow vessels, showing the core routes for that industry, and a map of 2006 to 2010 traffic for *all* VMS fisheries, showing the areas of highest fishing traffic. In producing such maps, the key question is how data is analyzed to identify core areas.

A next level of aggregation would be to produce a map of core routes combining data from four different shipping industries — tug tow, passenger, cargo and tanker. The maps could highlight certain areas as important for these navigational interests as a whole.

A final level of aggregation would be to create maps combining the results of aggregation exercises for shipping, fishing and recreation into a single map. The question for the RPB is whether there's a point at which merging of human use data is no longer appropriate or helpful. In addition, it is not clear how to create a composite recreational map, given the diversity of types of recreational data (e.g. points, routes, and polygons).

There are also other human uses to consider, including energy infrastructure, aquaculture, telecommunications, and dredge and disposal sites. It may be possible to conduct a cumulative use analysis for the region, and combine that with an analysis of cumulative impact and ecological data to identify vulnerable areas.

#### *Clarifying questions and comments*

Participants asked the following clarifying questions and made the following comments. Answers from ocean planning staff or RPB members are in italics.

- There is often a connection between an area on the ocean and an area on land, like a community, city or island. For example, a specific fishing area or tug-boat route might represent a major portion of the economic activity for a community of fifty people in a small community. Are you compiling this kind of economic data? *You'll see examples of the economic data we are developing at the June RPB meeting. There may be ways for us to incorporate this data to help people better understand the economics associated with particular activities.*
- During the EBM workshop, there were a number concerns expressed about the RPB using straight monetary values to measure the value of activities; there are other methods that can be used to measure human values that should be incorporated. Even ecosystem services valuations might be inappropriate for ocean health if the RPB uses a straight monetary analysis.
- For the maps of fishing activities, there are closed areas where people cannot fish. There would be activity in these areas if fishing were permitted. How is the RPB addressing this? *We are getting maps of all the fishing management areas and will include them to show that management decisions influence how the maps look (and where particular activities occur).*
- How will these maps trigger or influence conversations around operations or siting decisions? *The use of the maps will be triggered by a specific proposal. Aggregate data will help various stakeholders understand each other's concerns at the beginning of the permitting process.*
- When will the first draft of the baseline assessment be available? *We are expecting a draft in September, and we will share preliminary pieces on economics results at the June RPB meeting.*

#### **Small Table Discussions**

Participants once again broke into small groups at their tables to reflect on the issues raised by ocean planning staff. They were asked to address the same three questions as before:

1. How can you imagine these data being used?
2. What else do we need to know?

3. What would you like the RPB to take into consideration when they discuss this topic next month?

Participants made the following comments, which have again been compiled, summarized and loosely organized by theme. Again, participants were not asked to reach agreement, so some comments contradict others.

#### *Use of data*

- It is unclear to stakeholders how much of the human use data will be used to support specific decisions.
- We would like to see the data used to prevent non-living marine resource extraction.
- The data could be used by coastal communities when applying for grants or evaluating projects — communities will benefit from access to information about trends, and broader contextual information about how ocean uses are changing.
- Agencies hope that developers use all the data to look at potential impacts first, before proposing projects. The goal is that people will propose fewer, higher-quality projects, and therefore more projects will be likely to succeed.
- The data will ideally allow developers and other applicants to have conversations early with potentially impacted sectors and communities, and to engage in discussions about how to reduce potential impacts. It could be used as a way to suggest, essentially, “If you want to do something in this area, here are the groups you need to talk to.”
- Human use data and analyses must be viewed in conjunction with ecological data (physical, biological, and chemical) and analyses to support informed decisions that lead to healthy ocean and coastal ecosystems.
- Agencies play many other roles besides just their permitting role, like funding science agendas. Agencies could spend money to study and advance the human values we have been talking about.
- There should be plans to continue to improve the human use data and address evolving uses.
- The data should be used to help agencies shift from the current process for reacting to project applications to becoming more proactive in recognizing the existing context and determining the best locations for specific uses before applications are received.
- This data would be useful. Agencies must use the best available data, which would force them to consider it.
- It will be interesting to see what mechanisms agencies will use to integrate these maps into how they do “business a usual.” It would be useful to hear more concrete thinking and guidance on how the availability of data may change their decision-making.

#### *What's missing?*

- It is critical to attach uses to people and places, especially in shore-side communities. The RPB should consider having data layers of stakeholder groups impacted by activities in certain

geographic areas, so that when a proposal is developed it will trigger a recommendation to talk with those stakeholders.

- There should be some best practices guidance for industries engaging in conversations over data with communities/sectors about new uses.
- The plan should recognize there might be cascading effects resulting from changes in human use and how they affect the environment.
- There should be clarity on which existing uses might be protected or prioritized based on existing legal frameworks.

#### *Economics and tradeoff analysis*

- A lot of the examples in the presentation represented low-hanging fruit. Many decisions will involve costs and benefits to certain stakeholders and tradeoffs, and the tradeoff analysis is important.
- I am concerned that tradeoff analysis will involve looking at available profits from different economic uses of the ocean, picking the highest-profit one, and paying mitigation to the rest.
- We lack information on the human aspects of tradeoffs. We don't know what creates value and a sense of worth for the everyday taxpayer and their communities.
- The RPB should consider criteria and common metrics to measure value across human uses.
- We should be talking about and prioritizing ocean health first and human use second.

#### *Public voice*

- The public values a healthy ocean and preservation of cultures like farming and fishing. If you look at decisions about ocean uses through a purely economic lens, oil, gas and minerals extractions overwhelm these values. The ocean planning process should delve deeply into the value the public places on ocean health and culture.
- As more data feeds into the planning process, it will help industry realize that particular areas are important to particular communities for particular reasons. If they realize they will be up against a battle with the public in a particular area, they might choose to move a proposed project elsewhere. The public comment process gives stakeholders a voice, and use of this information early in the process will help avoid conflict down the road.

#### *Advice to the RPB*

- The RPB should consider how best to combine human use data and analyses with ecological data and analyses to achieve the overarching goal of Healthy Oceans and Coastal Ecosystems.
- The RPB should think about methods or actions that would encourage agencies to consider impacts that lie outside of their typical jurisdiction. For example, the plan could mandate early conversations/coordination between agencies. This is a practice that the Army Corps of Engineers sometimes employs through Memoranda of Understanding (MOUs) with other agencies.

- The RPB should explore possible futures from the perspective of different sectors and how they see themselves in five to ten years.
- The RPB should develop a climate or sea level rise map.
- The RPB should consider creating a map that shows which areas are of special importance to small numbers of species or people (e.g., a small community).
- The RPB should synthesize emerging uses and trends into an imagined composite look to the future.
- The RPB should continue to think about accountability and enforcement post-ocean plan. How will the agencies commit to follow through on the ocean plan?
- The RPB should consider that for new or upcoming uses, there is more opportunity for the ocean plan and data to influence things (as compared to with existing established uses).
- It is key to find ways to organize and display data to facilitate ease of use, and to institute processes to maintain data products in the future.
- The RPB should include monitoring and evaluation components in the ocean plan so that management can be adapted to changing contexts.
- The RPB should consider how it can create an ocean plan that will set a long-term trajectory for better collaboration throughout the marine ecosystem, recognizing that not everything can be achieved in the short-term.
- The RPB should consider how to keep the data portal alive and current. Data change and shift over time, so the RPB should be cautious of using products that lose their relevance very quickly temporally. Users need to know that the data we're currently using is the best available.
- The more transparent the data, the easier it will be to keep it updated. If the data is transparent, then improvements to data layers can be made when we collect new data.
- Ideally, the RPB should try to serve a coordinating function across agencies so that people have "one stop shopping."
- The RPB should clarify how the fine scale datasets/maps and larger scale datasets/maps fit in the decision-making process.

## V. Next Steps and Wrap Up

After returning to the large group and hearing reports on each small table discussion, participants offered these reflections, comments, and questions. As above, staff and RPB responses are in italics:

- After today's meeting, I recognize that a lot of important things will not be part of this ocean plan. We should start developing a vision for after the plan is submitted, and think about the policy questions that need attention moving forward.
- There should be a chapter of the ocean plan that is aspirational, and that lays out the many stakeholder comments on the need for EBM, the goal of ocean health, and human values, and the range of the ways agencies spend money and fund research.
- The ocean plan should be something concrete that everyone can work with, with the data a secondary consideration. It needs to present things in a simple way so that we can understand

it. The RPB should pick a number of maps that are needed to make it a workable system, and stick to that.

- I would encourage the RPB to vet the ocean plan robustly throughout coastal communities before it is finalized. It is important not just to hit one meeting per state. The public review of the draft plan needs to be a robust process.
- I am afraid that we will have collected all of this data, but once the plan is published we will just go back to the same old permitting process.
- If the plan is more than five pages the public will have a hard time digesting it. It needs to be very simple to make it accessible.
- When the draft plan comes out, it will be important to go out and talk to people in the fishing community. How many pages will the plan be? *The idea isn't to create a tome, but to make it practical and usable, perhaps through a collection of narrative and commitments and products. The goal is to be able to navigate through it from your interests or perspective to find what's useful.*
- The concepts of EBM, connectivity and dynamism that certain stakeholders are advocating require a high level of intellectual rigor. These stakeholders are trying to drive the RPB to a level of rigor beyond what exists in the RPB's ongoing technical analysis and data collection efforts. I recommend that the RPB recognize the sophistication and value of these stakeholder contributions.
- At the next RPB meeting, it will be critical to identify how all of this data is going to advance the restoration and health of our ocean ecosystem. Having data to make permitting decisions is only one part of the equation. We urge members of RPB to ask about and push for the development of a roadmap to a healthy ocean ecosystem.
- It would be extremely helpful for the RPB to share some background documents in advance of the next RPB meeting to make us more informed and capable of providing useful input. What can we expect in advance of the RPB meeting? Will we know what questions will be asked of the RPB and what kinds of decisions will be made? *The purpose of these forums is to preview the RPB meetings. The June RPB meeting will continue the thread of what we have discussed today. We will have further conversations about the outline of the plan that was presented at the RPB meeting last November, and the schedule of work to get from where we are now to where we need to be. The scheduling discussion will include public engagement moving forward. We will present more on habitat modeling, and will make available additional documents well in advance of the meeting, like the summary report to engage ports and shipping.*
- What decisions have been made around data products? *The presentations today reflected the current status of our decision-making. We hope to have more specific examples at the June meeting of the kinds of synthetic maps we want to pursue to get a work plan.*

Betsy Nicholson offered final words of thanks to participants for their contributions, and to those who organized the Forum. She reflected on her sense that participants have a greater understanding of the issues the RPB is grappling with and the effort involved. She noted that the RPB will be asking stakeholders to continue joining them moving forward, and confirmed that the RPB wants to be



## OCEAN PLANNING IN THE NORTHEAST

accountable to stakeholders and commit to using the information and ideas it is hearing. The goal is to be both realistic and bold. In June, part of the conversation will be about what we are going to try to do next to ensure ocean planning is not a “one and done.”

Other RPB members closed the meeting by offering additional words of appreciation for the spirited discussion and for the encouragement to strive boldly.

## APPENDICES

- Appendix A: Forum Participants
- Appendix B: Opening Presentation
- Appendix C: Presentation on Data Synthesis and Agency Use

### Appendix A: Forum Participants

Category	First Name	Last Name	Organization
<b>Public Participant</b>	Aslaug	Asgeirsdottir	Bates College
<b>Public Participant</b>	Nick	Battista	Island Institute
<b>Public Participant</b>	Priscilla	Brooks	Conservation Law Foundation
<b>Public Participant</b>	Beth	Casoni	Massachusetts Lobstermen's Assoc
<b>Public Participant</b>	Mike	Crowe	The Fishermen's Voice
<b>Public Participant</b>	Jim	D'Urso	North Shore Frogmen
<b>Public Participant</b>	Dennis	Esposito	Marine Affairs Institute and RI Sea Grant Legal Program, RWU School of Law
<b>Public Participant</b>	Jennifer	Felt	Conservation Law Foundation
<b>Public Participant</b>	Melissa	Gates	Surfrider Foundation
<b>Public Participant</b>	Brent	Greenfield	National Ocean Policy Coalition
<b>Public Participant</b>	Michela	Grunebaum	Ocean River Institute
<b>Public Participant</b>	Marissa	Hammond	Penobscot East Resource Center
<b>Public Participant</b>	Kate	Hanrahan	SeaPlan
<b>Public Participant</b>	Annie	Hawkins	Fisheries Survival Fund
<b>Public Participant</b>	Christine	Hopper	Ocean Conservancy
<b>Public Participant</b>	Jen	Kennedy	Blue Ocean Society for Marine Conservation
<b>Public Participant</b>	Kate	Killerlain Morrison	Mid-Atlantic Regional Council on the Ocean
<b>Public Participant</b>	Ted	Maney	Salem State University, Cat Cove Marine Lab, Northeast MA Aquaculture Center (NEMAC), REEF Educational Foundation, Bay State Council of Divers
<b>Public Participant</b>	James	Monroe	Blue Water Dynamos
<b>Public Participant</b>	Thomas	Mortillaro	
<b>Public Participant</b>	Stephanie	Moura	SeaPlan
<b>Public Participant</b>	Valerie	Nelson	Water Alliance
<b>Public Participant</b>	Richard	Nelson	F/V Pescadero
<b>Public Participant</b>	Patti	Page	Mortillaro's Lobster Inc.

# OCEAN PLANNING IN THE NORTHEAST

<b>Public Participant</b>	Noa	Randall	Ocean River Institute
<b>Public Participant</b>	John	Ryan-Henry	SeaPlan
<b>Public Participant</b>	Amy	Trice	Ocean Conservancy
<b>Public Participant</b>	Marcia	Wilkins	NEOAN
<b>Public Participant</b>	John	Williamson	Ocean Conservancy
<b>Public Participant</b>	Peter	Zaykoski	SeaPlan
<b>RPB-Federal</b>	Mel	Coté	EPA
<b>RPB-Federal</b>	Michele	DesAutels	USCG
<b>RPB-Federal</b>	Daniel	Hubbard	USCG
<b>RPB-Federal</b>	Deborah	Johnson-Hawks	USDA Natural Resources Conservation Service
<b>RPB-Federal</b>	Robert	LaBelle	Bureau of Offshore Energy Management
<b>RPB-Federal</b>	Regina	Lyons	U.S. EPA
<b>RPB-Federal</b>	Ivy	Mlsna	U.S. EPA
<b>RPB-Federal</b>	Betsy	Nicholson	NOAA
<b>RPB-Federal</b>	Chris	Tompsett	U.S. Navy/DoD
<b>RPB-State</b>	Kathryn	Ford	MA DMF
<b>RPB-State</b>	Meredith	Mendelson	Maine Department of Marine Resources
<b>RPB-State</b>	Emily	Norton	Maine Coastal Program
<b>RPB-State</b>	Christian	Williams	New Hampshire Coastal Program
<b>Support Staff</b>	Deerin	Babb-Brott	SeaPlan
<b>Support Staff</b>	Tobias	Berkman	Consensus Building Institute
<b>Support Staff</b>	Laura	Cantral	Meridian Institute
<b>Support Staff</b>	Dory	Dinoto	Consensus Building Institute
<b>Support Staff</b>	Ona	Ferguson	Consensus Building Institute
<b>Support Staff</b>	Patrick	Field	Consensus Building Institute
<b>Support Staff</b>	Katie	Lund	Northeast Regional Ocean Council
<b>Support Staff</b>	Benjamin	Miller	ERG
<b>Support Staff</b>	Nick	Napoli	Northeast Regional Ocean Council
<b>Support Staff</b>	Eric	Roberts	Consensus Building Institute
<b>Support Staff</b>	Emily	Shumchenia	Northeast Regional Ocean Council, E&C Enviroscape
<b>Support Staff</b>	John	Weber	Northeast Regional Ocean Council

## Appendix B: Opening Presentation



The background of this slide features a photograph of ocean waves crashing. In the center, there is a white rectangular box. Inside the box, the words "Recent/Upcoming Schedule" are written in a large, bold, blue font. Below that, a bulleted list details the timeline of events:

- End of 2014- June 2015:
  - Outreach to shipping, fishing, recreation, energy, cable, & aquaculture industries: data products, future trends, other compatibility-related issues
  - Develop marine life data with expert work groups
  - Continued discussions with federal regulatory/management agencies
- April 8: Ecosystem Based Management Workshop
- May 12: Stakeholder Forum
- June 3-4: RPB Meeting
- Fall 2015: Stakeholder Forum and RPB Meeting
- Early 2016: RPB Meeting to approve Draft Plan for public review
- Mid 2016: RPB Meeting to approve Final Plan for submission to NOC

At the bottom of the slide, the "OCEAN PLANNING IN THE NORTHEAST" logo is displayed.

## RPB focus

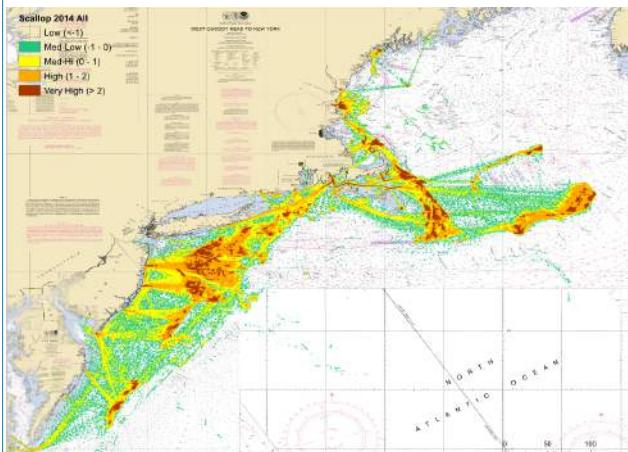
Integrating projects to frame draft plan...

- MDAT and human use characterization projects
- specific opportunities to advance EBM (workshop discussion)
- Future trends/emerging issues (compatibility discussions)
- Incorporate input from:
  - Topical engagement (shipping, fishing, recreation, etc.)
  - Marine life work groups
  - EBM workshop

Question: How will agencies use products from MDAT and human use characterization projects to achieve goal of effective decision-making?

...requires understanding of work to date

## Fishing

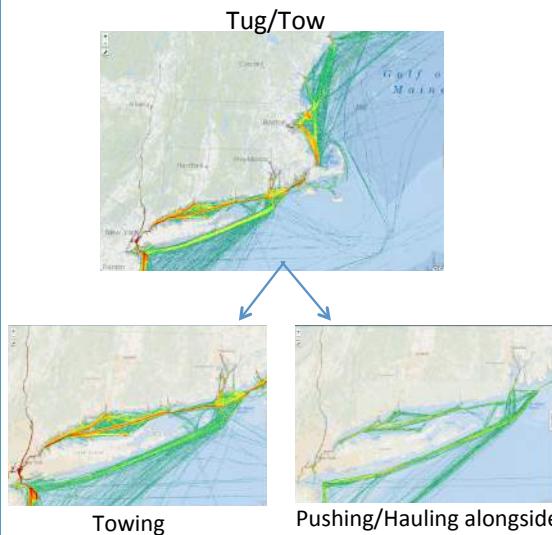


- Reviewing vessel monitoring system data with the industry, including separating fishing and transit areas
- Developing a pilot project to work with charter captains to identify recreational fishing and transit areas
- Determining methods to fill gaps for other fisheries, particularly lobster

## Fishing

- VMS-derived maps have limitations:
  - Not all fisheries (VMS for groundfish, scallops, certain vessels targeting monkfish, ocean clam; limited utility with herring)
  - Back to ~2007, not previously
  - Regional view may mask important local areas
  - Need to consider how fishery management affects spatial patterns
- (Nearly) impossible to predict future: management? Climate? Price? Fuel costs? Etc.
- ....But are useful to understand general patterns

## Marine Transportation



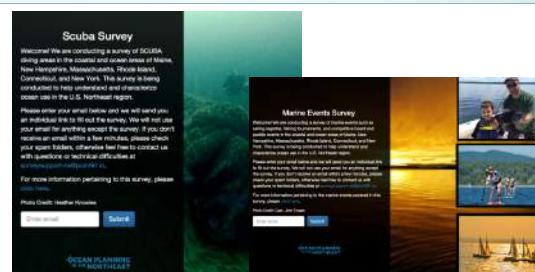
- Reviewing vessel traffic data (from AIS) with the industry to understand shipping activity and identify additional analyses
- Identifying other important marine transportation, safety and operational areas
  - Understanding potential future trends
  - Summary report being finalized

## Marine Transportation

- AIS-derived maps have limitations:
  - Not all vessels required to carry AIS
  - Industry feeling that would be useful to look at multiple years-trends, growth, etc.
  - Recent trends may enhance/increase existing routes (e.g., cruise ships, cargo) or result in “new” routes (tug/tow transit to Atlantic Canada)
  - (Nearly) impossible to predict future, with exception of: cruise ships (itineraries usually out a year-18 months) and general feeling that there will be growth in certain tug/tow operations.
  - In general, existing routes will continue, with some fluctuation in traffic volume.
- ...useful recognizing data limitations

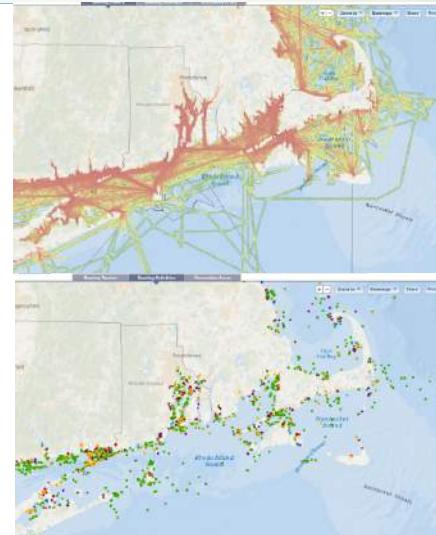
## Recreation

- Commercial whale watch, SCUBA diving, sailing regattas, sport fish tournaments, board and paddle events
- Using various participatory mapping methods regionally, including online surveys and in-person workshops
- In process; data aggregation capabilities will be dependent on results



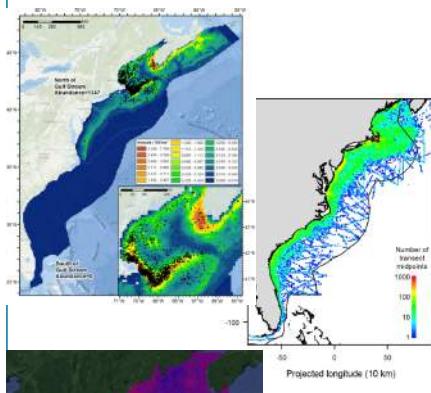
## Recreation

- Much still in progress, results will have QA/QC
- Combine data for different activities?
- Combine routes, points, and polygons?



## Marine Life

### Marine mammals (19), turtles (3), birds (46) and fish (~70)

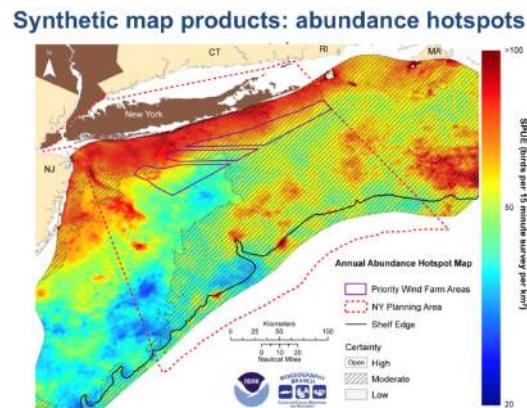


- Duke/NOAA Team guided by expert work groups composed of academic, private and agency scientists, tribes, managers, & regulators
- Spatial models integrate animal observations with environmental and climatological features
- Distribution and abundance (for each species):
  - Multiple temporal scales
  - Persistence
  - Probability of occurrence
  - Uncertainty

## Marine Life

### Data Synthesis:

- Synthetic data products for each taxa could include:
  - functional groups
  - total diversity
  - total biomass
  - species richness
  - uncertainty
  - Hot spots? (see example)
- Additional synthesis across taxa and including additional ecosystem processes/components TBD



## Marine Life

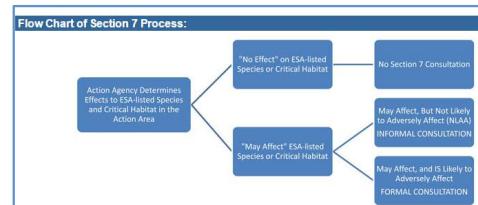
### Data synthesis challenges include:

- Variability of data inputs increases with the number of species and habitats
- Agreement on synthesis methodology?
- Incorporating ecosystem processes? Which? How?
- RI and MA plans were unable to use composite indices at that scale of decision making

## Existing Regulatory Framework

### Working with federal agencies to:

- Understand the use of data/info in existing decision making (permitting/leasing)
- Develop best practices for use of data and agency coordination during Pre-Application phase
- Determine opportunities for increased federal/state coordination under CZMA



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Thank you

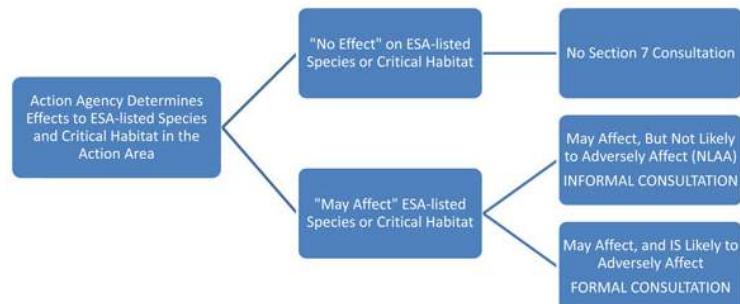
[www.neoceanplanning.org](http://www.neoceanplanning.org)  
[www.northeastoceandata.org](http://www.northeastoceandata.org)

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## Appendix C: Presentation on Data Synthesis and Agency Use

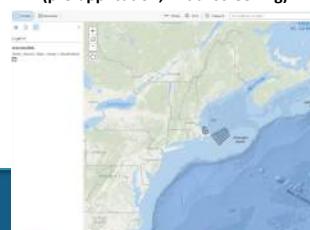


### Flow Chart of Section 7 Process:



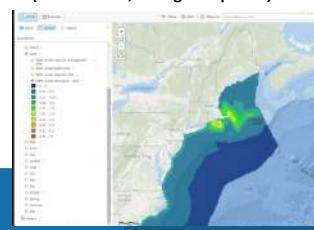
Source: NOAA Fisheries, Greater Atlantic Region, Protected Resources  
<http://www.greateratlantic.fisheries.noaa.gov/protected/section7/guidance/consultation/index.html>

**Siting & Planning**  
(pre-application, initial screening)



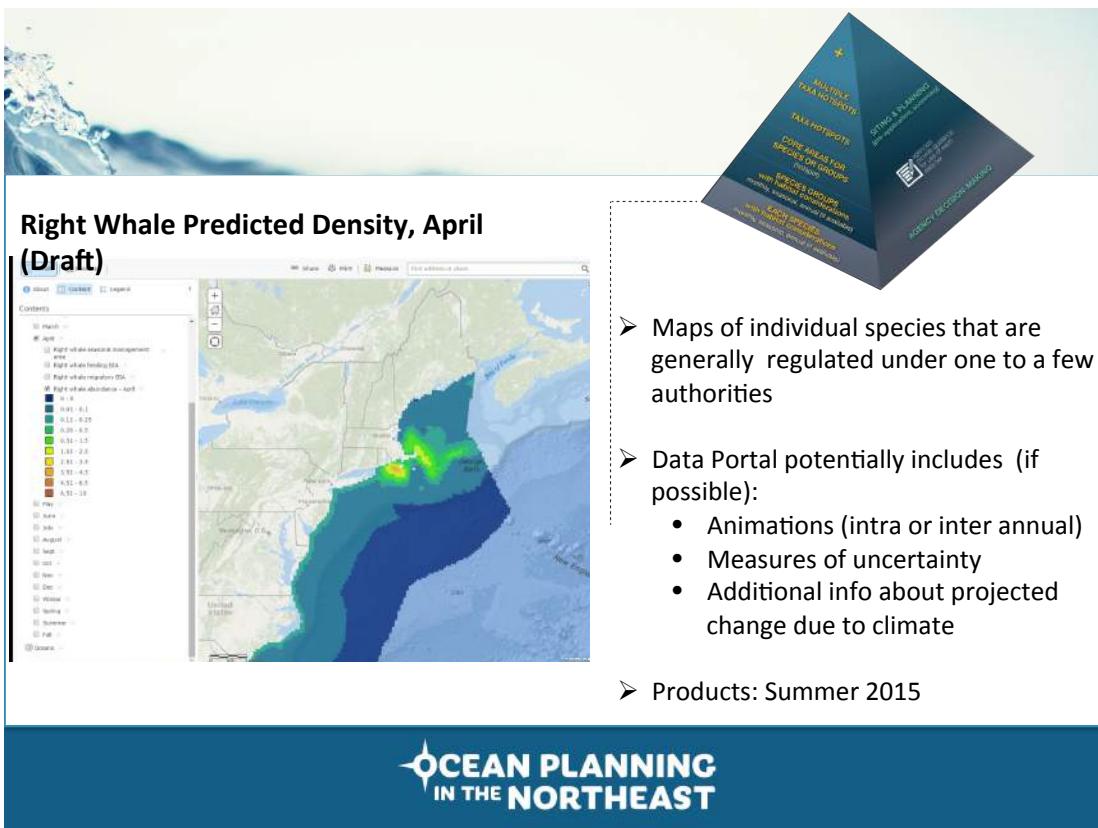
Right Whale Critical Habitat

**Agency Decision Making**  
(consultation, biological opinion)

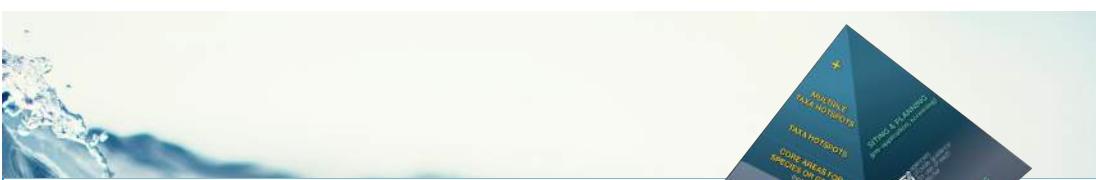


Right Whale Predicted Density (April)

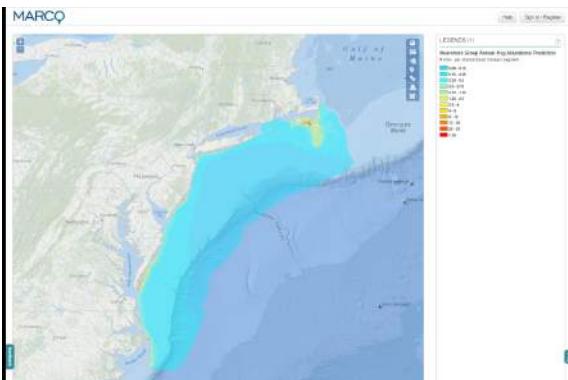
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# OCEAN PLANNING IN THE NORTHEAST



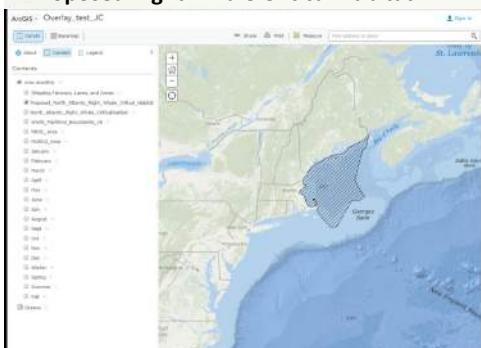
## Nearshore Avian Group – Predicted Annual Average Abundance



- Maps of species groups that are generally regulated under one to a few authorities
- Data Portal potentially includes (if possible):
  - Animations (intra or inter annual)
  - Measures of uncertainty
  - Additional info about projected change due to climate
- Products: Summer 2015

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### Proposed Right Whale Critical Habitat\*



- Maps of core areas for individual species or species groupings that are generally regulated under one to a few authorities

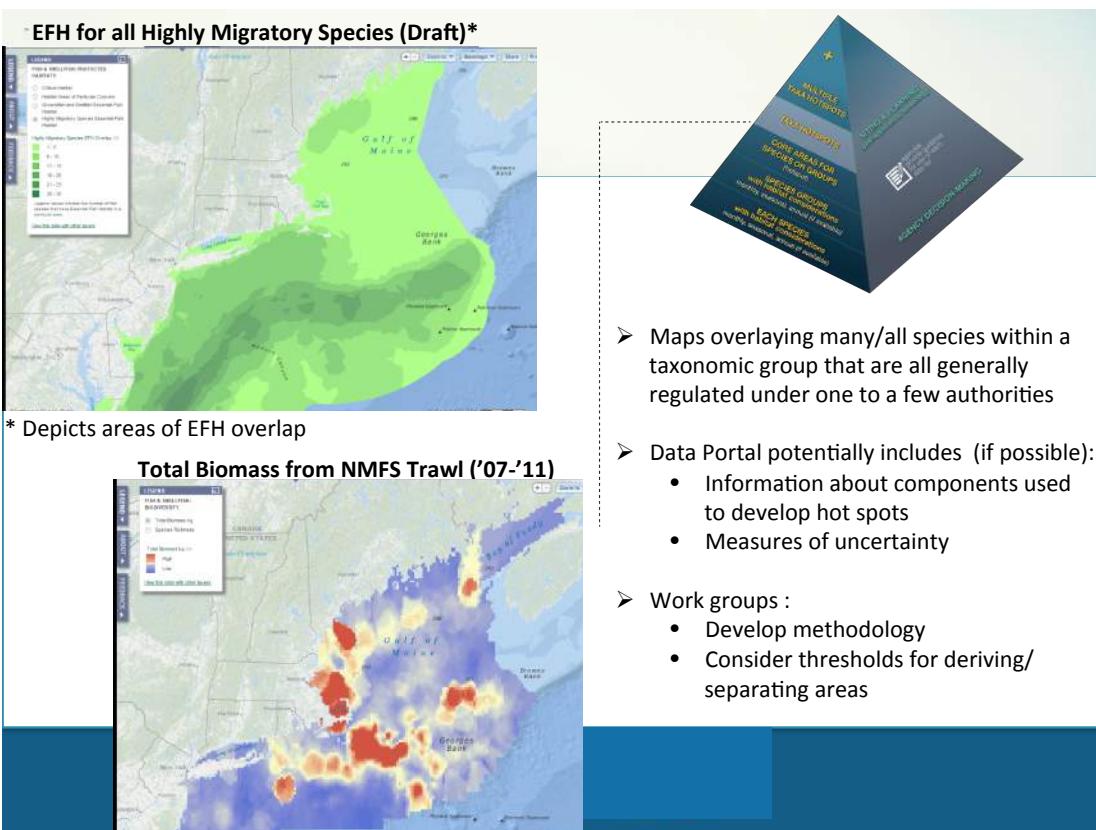
### RI SAMP Sea Duck Area Designated for Preservation\*



- Data Portal potentially includes (if possible):
  - Information about components used to develop areas
  - Measures of uncertainty
- Work groups :
  - Identify data inputs and methods
  - Consider thresholds for deriving/ separating areas

\* Examples used to convey concept of deriving a core area; actual analysis using MDAT products and possibly incorporating additional habitat characteristics would need to be conducted.

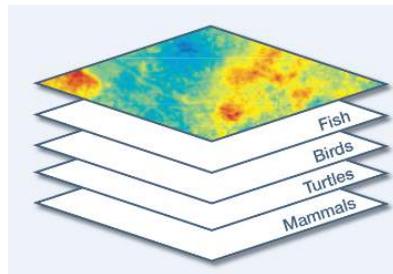
# OCEAN PLANNING IN THE NORTHEAST



- Maps overlaying many/all species within a taxonomic group that are all generally regulated under one to a few authorities
- Data Portal potentially includes (if possible):
  - Information about components used to develop hot spots
  - Measures of uncertainty
- Work groups :
  - Develop methodology
  - Consider thresholds for deriving/separating areas



## Concept for multiple taxa hot spots\*



- Maps overlaying multiple taxa that are generally regulated under multiple authorities
- Data Portal potentially includes (if possible):
  - Each pixel can be queried to identify species and related authorities
  - User can drill down into constituent layers
- Work groups :
  - Develop methodology
  - Consider thresholds

\* Could include density hot spots, biomass, species richness, and/or other products. Inputs could include additional habitat and ecological process considerations.

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**Additional EBM considerations (some longer-term?)**

The slide features a pyramid diagram on the right with text including "MULTIFACETED TAXA HOTSPOTS", "TAXA HOTSPOTS", "COST-EFFECTIVE SPACES FOR CONSERVATION", "SPECIES GROUPS WITH HIGH BIODIVERSITY AND HIGH RISK OF DECLINE", "SPECIES GROUPS WITH HIGH BIODIVERSITY AND HIGH RISK OF DECLINE", and "AGENCY COORDINATION". A dashed line connects this diagram to a stack of layers diagram on the left, which shows various marine life layers: Fish, Birds, Turtles, Mammals, and several layers labeled with question marks.

- Data Inputs:
  - Ecosystem process (forage fish, productivity, etc.)
  - Benthic & pelagic habitat (habitat classification, oceanographic hindcast)
  - Ecosystem service production & value
- Models & Indicators:
  - Vulnerability; impacts
  - Indicators based on specific ocean health goals & values
  - Scenarios

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## Marine Transportation and Safety

The PORTS AND WATERWAYS SAFETY ACT (PWSA) requires the Coast Guard to conduct studies to provide safe access routes for vessels traffic in the waters under U.S. jurisdiction. In doing so, the Coast Guard considers all waterway uses to reconcile the need for safe access routes.

**PORTS AND WATERWAYS SAFETY ASSESSMENT**  
Large scale risk assessment for a port, port approaches, or region of significance

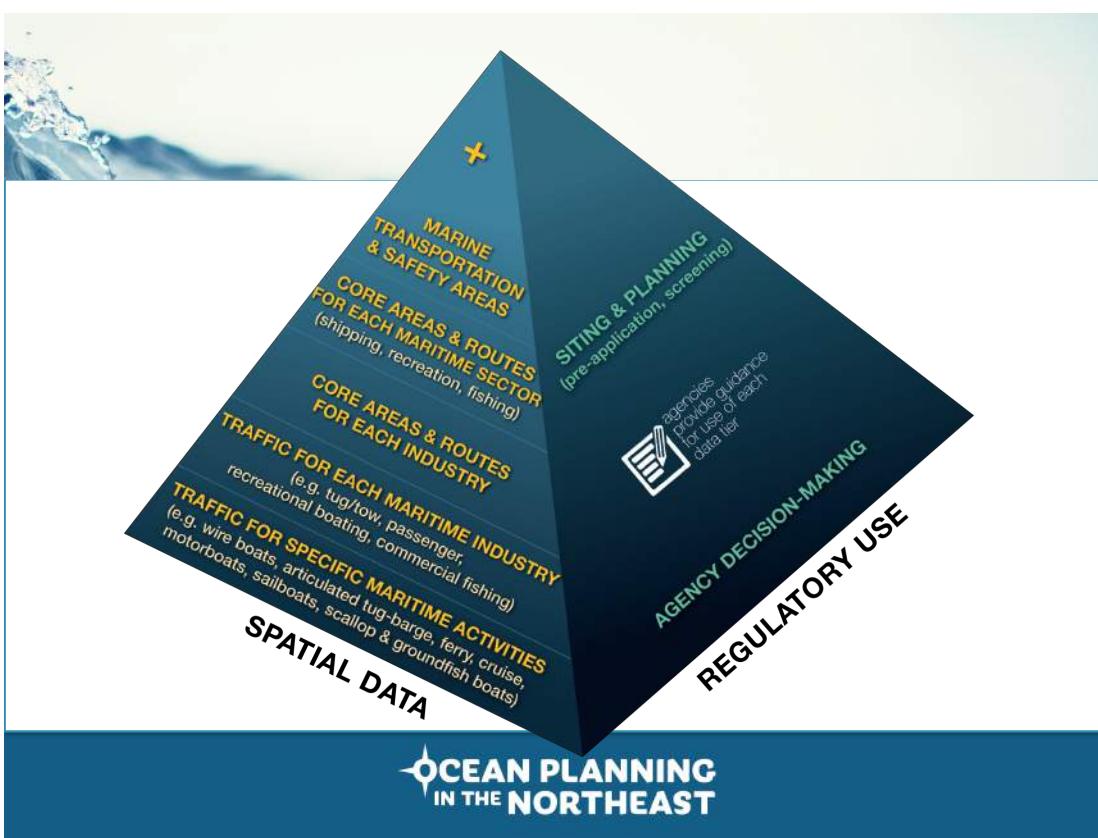
**WATERWAYS ANALYSIS MANAGEMENT SYSTEM**  
Assess navigational safety for specific federally designated waterways on approximate 5-year rotation

**NAVIGATIONAL RISK ASSESSMENT**  
Assess navigational impacts of a specific project

Increasing context-specific detail

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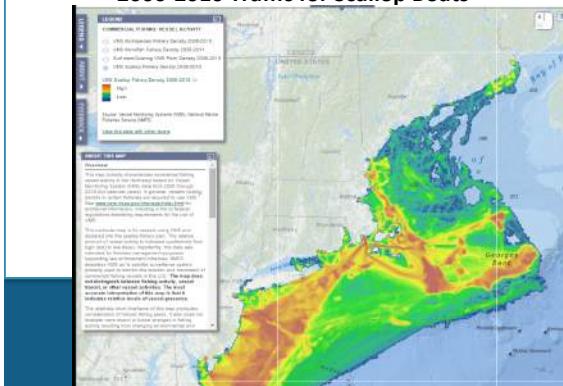
# OCEAN PLANNING IN THE NORTHEAST



**2012 Traffic for Towing Vessels (> 200m line)**  
**DRAFT**

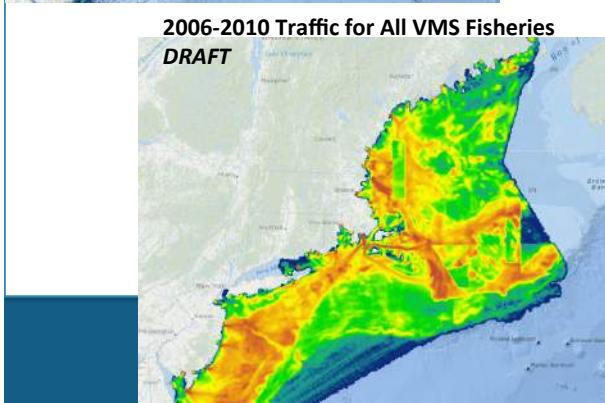


**2006-2010 Traffic for Scallop Boats**

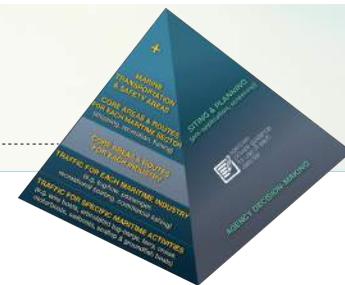
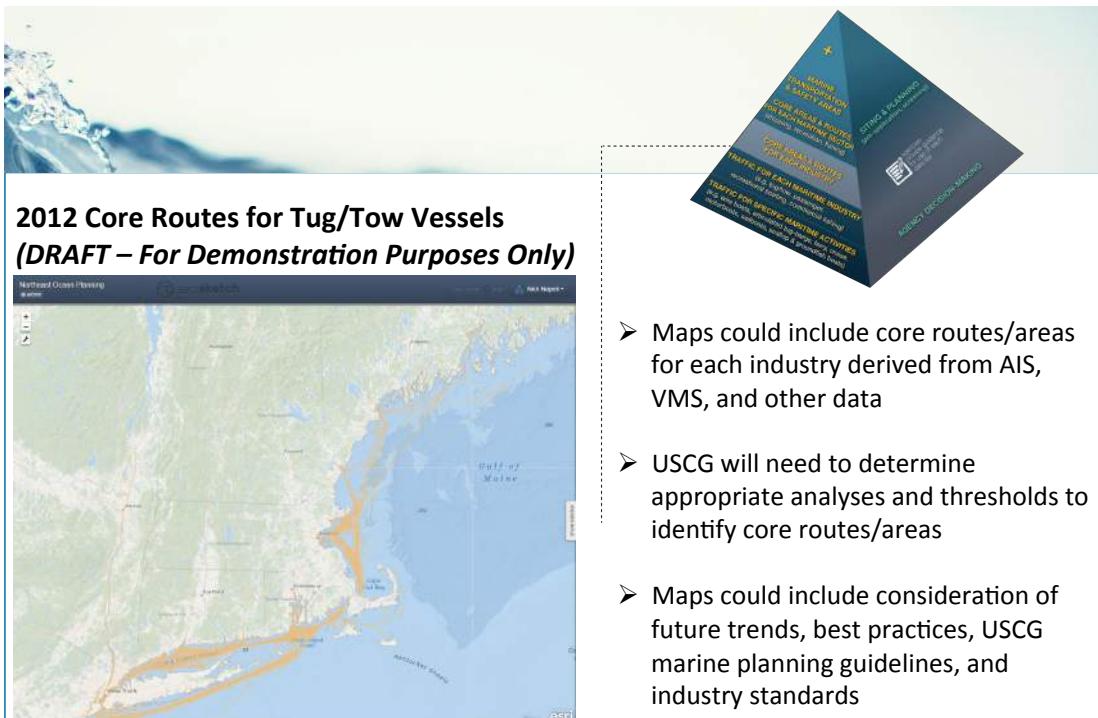


- Maps of traffic for specific activities or vessel types
- Additional information could include economic analyses, future trends, guidelines, & best practices
- *Maps will not replace need for more detailed and specific siting level data on a project basis*

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- Aggregated traffic maps for specific maritime industries
- Additional information could include economic analyses, future trends, guidelines, & best practices



- Maps could include core routes/areas for each industry derived from AIS, VMS, and other data
- USCG will need to determine appropriate analyses and thresholds to identify core routes/areas
- Maps could include consideration of future trends, best practices, USCG marine planning guidelines, and industry standards

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# OCEAN PLANNING IN THE NORTHEAST

**2012 Core Shipping Areas and Routes  
(DRAFT – For Demonstration Purposes Only)**

MAPS & DATA  
MARINE TRANSPORTATION & SAFETY AREAS  
CORE AREA & ROUTES FOR EACH MARITIME INDUSTRY  
TRAFFIC FOR EACH MARITIME ACTIVITY  
ESRI  
AGENCY PLANNING  
TRAFFIC FOR EACH MARITIME INDUSTRY  
USCG MARINE PLANNING GUIDELINES  
INDUSTRY STANDARDS  
AGENCY DECISION MAKING

- Maps could include core routes and operational areas for each maritime sector (shipping, fishing, recreation) aggregated from each industry/activity within the sector
- Maps could include consideration of future trends, best practices, USCG marine planning guidelines, and industry standards

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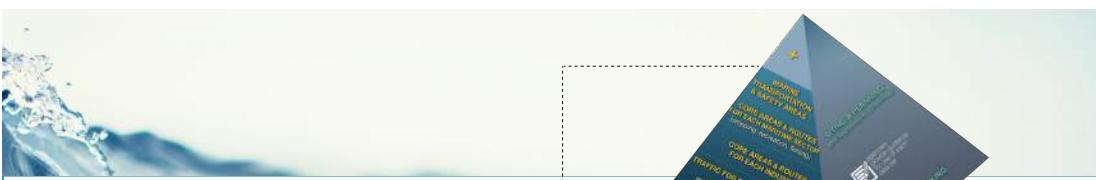
**Marine Transportation & Safety Areas**

MAPS & DATA  
MARINE TRANSPORTATION & SAFETY AREAS  
CORE AREA & ROUTES FOR EACH MARITIME INDUSTRY  
TRAFFIC FOR EACH MARITIME ACTIVITY  
ESRI  
AGENCY PLANNING  
TRAFFIC FOR EACH MARITIME INDUSTRY  
USCG MARINE PLANNING GUIDELINES  
INDUSTRY STANDARDS  
AGENCY DECISION MAKING

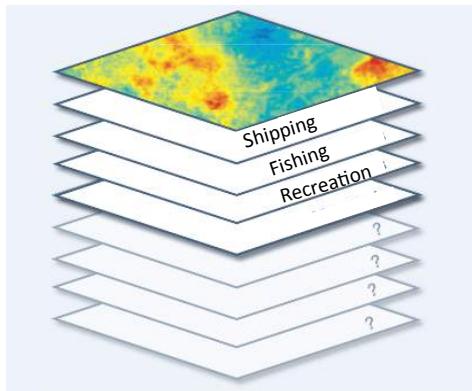
- Consider merging shipping, fishing, and recreation areas to generally identify areas important for marine transportation and safety
- Note that maps and data from different shipping, fishing and recreational activities *vary significantly*
- Will need to consider future trends for each activity

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## Additional human use and other (some long term) considerations



- Potential to consider other human uses (near term)
  - Energy infrastructure & planning areas
  - Aquaculture
  - Telecommunications cables
  - Dredging and disposal sites
- Potential for cumulative use analysis
- Potential to consider cumulative impacts and ecosystem service production and values (in addition to input/output economic generation)

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