REALIZING EBM THROUGH IEA AND REGIONAL COLLABORATION IN THE US

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FIS/MEQ WORKSHOP
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CONTEXT FOR NOAA ECOSYSTEM SCIENCE ENTERPRISE

- EXISTING MANDATES
- ECOSYSTEM GOAL TEAM
- NATIONAL LEVEL COMMISSIONS
- COUNCIL ON OCEAN POLICY [ETC.]
  - JSOST
  - SIMOR

NOAA SCIENCE ADVISORY BOARD
US COMMISSION ON OCEAN POLICY 2004

• DEVELOP AN ECOSYSTEM APPROACH TO MANAGEMENT OF THE US OCEANS

• BROADER APPROACH THAN FISHERIES MANAGEMENT NEEDED
INTRODUCTION

• NOAA RESEARCH REVIEW TEAM RECOMMENDED 2003

“..NOAA should establish an external Task Team to evaluate and strengthen the structure and function of ecosystem research in, and sponsored by, NMFS, NOS AND OAR”
EXTERNAL ECOSYSTEM TASK TEAM TERMS OF REFERENCE

TWO KEY QUESTIONS WERE POSED TO THE EETT BY NOAA

• Is the mix of science activities conducted by / sponsored by NOAA appropriate to its mission needs and regulatory requirements?

• How should NOAA organize its ecosystem research and science enterprise?
EETT APPROACH

1. COMMISSION WHITE PAPERS FROM NOAA AND INTERVIEW PERSONS INTERNAL AND EXTERNAL TO NOAA
2. INVENTORY NOAA’S ECOSYSTEM STRUCTURE
3. ATTEND MEETINGS/CONFERENCES
4. READ REPORTS/ LITERATURE
5. RECEIVE AND RESPOND TO PUBLIC COMMENTS
EETT RECOMMENDATION
- INTEGRATED ECOSYSTEM ASSESSMENTS
Regionally based Integrated Ecosystem Assessments (IEAs), conveying information on the status of ecosystem health and evaluating the impacts of current and proposed human activities should be the central products of NOAA ecosystem science.
At present the ecosystem science portfolio undertaken by NOAA is primarily developed by the individual LOs to address responsibilities under their assigned missions, with the Ecosystem Goal Team (EGT) intended to provide coordination across LOs.

Ford 2006
NOAA PARTNERS

• OTHER FEDERAL AGENCIES
• STATE AGENCIES
• TRIBES
• USER AND ENVIRONMENTAL NON-GOVERNMENTAL ORGANIZATIONS
• GENERAL PUBLIC
WHAT IS BEING DONE?
What is an IEA?

… A synthesis and quantitative analysis of information on relevant physical, chemical, ecological, and human processes in relation to specified ecosystem management objectives

NOAA, Boreman 2007
In other words:

An IEA contains the information necessary to understand the inter-relationship between resource management decisions and the changing state of an ecosystem

Modified from Boreman 2007
Steps in an IEA

1. Identify major factors affecting the ecosystem (human and natural), and the scale at which the ecosystem will be assessed
2006 NOAA WORKSHOP ON DEFINING REGIONAL ECOSYSTEMS

• SELECTED 8 REGIONAL ECOSYSTEMS ROUGHLY COMPARABLE TO REGIONAL FISHERY MANAGEMENT COUNCIL BOUNDARIES AND NOAA ADMINISTRATIVE BOUNDARIES

• FORMS BASIS FOR REGIONAL COLLABORATIONS

• REGIONAL APPROACHES MAY FURTHER DEFINE RELEVANT SUB-ECOSYSTEMS AND NESTED ECOSYSTEM SCALES

DeMaster and Sandifer 2006
What are the appropriate geographical scales for IEAs?

Assessing the Status of Ocean and Coastal Ecosystems of the United States

Hierarchical Structure of IEAs

- National
  - Regional
    - Large Marine Ecosystems
    - Sub-Regional Ecosystems (as appropriate)
  - Local
    - Place based (e.g., sanctuaries, NERRs)
    - Bays, Harbors, Estuaries

+ International collaborations
The Alaskan Ocean Ecosystem
Pollock trawl near Kodiak, Alaska. Photo: Mindy Jones, NMFS

Steller sea lion bull. Photo: NMFS


Common murres. USFWS


Photo by USACE, http://www.epa.gov/owow/oceans/ regulatory/dumpdredged/dredgemgmt.html

http://www.epa.gov/owow/oceans/cruise_ships/
Steps in an IEA

2. Organize existing [relevant] information and develop indicators of ecosystem status

[This recommendation implements on a national basis the NPFMC Ecosystem Considerations chapter of the SAFE annual document done since 1994].
Steps in an IEA

3. Link the ecosystem status indicators to human and natural pressures that drive change.
IMPLEMENTING THE DPSIR APPROACH IN US CONTEXT

IEA Steps

#1 Identify major human and natural factors affecting Ecosystem. Define scale
#2 Organize relevant data. Select key Indicators of Ecosystem status
#3 Link ecosystem status indicators to drivers & pressures
#4 Evaluate ecological & economic impacts of management options
#5 Adaptive management

Management Evaluation

Driver

Pressure

Response

State

Impact

Ecosystem Indicators

Forecasts & Risk Assessments

Ecological Models

Boreman 2007
Steps in an IEA

4. Evaluate the social economic and ecological impacts of management options, consistent with statutory responsibilities

Modified from Boreman 2007
IMPLEMENTING SOCIAL/ECONOMIC CONSIDERATIONS

• REQUIRED IN ENVIRONMENTAL ASSESSMENT PROCESS [NEPA]
• COMMUNITY RIGHTS OF NATIVE PEOPLES
• ACHIEVING ECONOMIC OBJECTIVES
Steps in an IEA

5. Use the IEA as a science tool supporting an adaptive approach to ecosystem-based management, to achieve target levels for management goals without exceeding the threshold for undesirable ecosystem conditions.
US Pilot Studies

• Three regional ecosystems will be used to test drive IEAs:
  – California Current
  – Alaska
  – Northeast US

• Lessons learned will be applied to create a comprehensive set of IEAs for the nation
Critical Outcomes of IEAs

1. A more complete picture of threats and benefits posed by human activities

2. A forum for engaging all federal, tribal and state agencies in an integrated approach to ecosystem-based management

3. Routine and comprehensive IEAs done on a ~quadrennial basis; dynamic web-based IEA capability
WHAT CAPABILITIES ARE NEEDED?

Core capabilities are needed in three areas:

• Monitoring: The Region has the competence and capacity to collect reliable information using state-of-the-art tools.

• Analysis: The Region has the competence and capacity to apply, adapt, and interpret state-of-the-art analytical methods.

• Integration: The Region has the competence and capacity to analyze and interpret relationships among ecosystem components and between human activities and natural ecosystem components, and to develop and apply models of those relationships.
GUIDING CONSIDERATIONS

Transitioning from the current set of programs and mandates to an integrated ecosystem science enterprise should be guided by the following considerations:

➢ It is essential to account for environmental forcing in dynamics of ecosystem components and relationships;

➢ It is essential to understanding how humans take benefits from marine ecosystems and their components, and how those uses alter the ecosystems;

➢ It is essential to integrate ecosystem science information when applying it to policy and management, and to account for how different policies and human uses of the sea interact with each other.
Vision

The eventual production of routine IEAs will be a forward-looking leadership opportunity for NOAA in addressing ocean and coastal resource management issues.

IEAs are based on collaboration with regional partners at the federal, tribal, state and local levels.

Modified from Boreman 2007
THANK YOU FOR YOUR ATTENTION

QUESTIONS OR COMMENTS?
EXTRA SLIDES
IEAs RECOMMENDATIONS

• RECOMMENDATION 1. NOAA should develop an explicit description, of what it sees as adequately “ecosystem rich” assessments and advice for the current products of its ecosystem science enterprise.

• RECOMMENDATION 2. NOAA should prepare “ecosystem development plans” for its assessment and advisory activities within each Region. These plans would lay out the major incremental steps foreseen for increasing the ecosystem content of these activities, and the expected timelines, in a proactive but not proscriptive manner.

• RECOMMENDATION 3: When the regional “ecosystem development plans” are completed, they should be assembled into an overall vision of where NOAA ecosystem services and science are going nationally.
Regional Recommendations

RECOMMENDATION 4: NOAA’s Ecosystem Goal Team should lead and participate in the development of Integrated Ecosystem Assessments (IEAs) for all ecosystems in which NOAA has a statutory or trust responsibility.

RECOMMENDATION 5: NOAA leadership should commit to supplying ecosystem-science support on a regional basis.

RECOMMENDATION 6: NOAA should specify that the eight regional Ecosystems it has defined should be the starting points for coordinating regional ecosystem science and assessments.
ENSURING CORE CAPABILITIES

RECOMMENDATION 7: NOAA must formally structure those partnerships that are important to the science capability to perform integrated regional assessments, in order to ensure all partners are accountable for their contributions to the assessments, and that the integrity of the science content is assured.

RECOMMENDATION 8: The Ecosystem Goal Team should lead all Line Offices and Goal Teams in developing a national plan for an expanded regional ecosystem monitoring capability.
ENSURING CORE CAPABILITIES

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• RECOMMENDATION 9: The NOAA social science plan should specify more comprehensively what social science monitoring data are required for managing human activities that affect or depend on the use of marine ecosystems, and develop a strategy to ensure such data are available.

• RECOMMENDATION 10: NOAA should develop a national plan to archive, organize, and distribute all the types of data needed to track, forecast and understand change in regional ecosystems.

• RECOMMENDATION 11: The capabilities to analyze status and trends in populations, habitats, and human activities need to be sustained and expanded at the regional scale.
ENSURING CORE CAPABILITIES

3

- RECOMMENDATION 12: NOAA should expand capacity in forecasting trajectories of ecosystem components under different hypotheses for environmental and anthropogenic forcing and link these forecasts to potential consequences for resource users, coastal residents, and management options.
DEVELOPING OTHER CAPACITIES

RECOMMENDATION 13 NOAA and its partners in the ecosystem science enterprise should develop or designate Centers of Specialized Expertise, e.g.:

• to build new tools for modeling and forecasting, and new observation instruments
• to develop social science capacity for linking with ecosystems governance,
• to develop an understanding of society and its response to changing ecosystem components,
• to identify changes in ecosystem structure and function,
• to quantify effects of human activities on the ecosystem.

RECOMMENDATION 14. NOAA should consider whether consolidation of efforts should occur and should develop plans for efficient regional and inter-regional coordination in the following areas:

• technical analyses on contaminants and toxicology,
• biodiversity and taxonomy,
• data archiving and integration.
HOW TO MAKE THE TRANSITION

RECOMMENDATION 15. NOAA should develop a series of Regional Ecosystem Science Boards consistent with the eight national regional ecosystems identified by the EGT plus the Antarctic. Each of these regional boards should be chaired by an SES-level manager, and include formal representation by all Line Offices providing ecosystem sciences in that regional ecosystem. Duties of these Regional Ecosystem Science Boards should include planning, coordinating and executing comprehensive plans of marine ecosystem science, and oversight for the production of integrated ecosystem assessments.
TIMELINE – FAST TRACK

• Start – after NOAA SAB approves report and submits to NOAA Administrator
• Preparatory Phase. Months 0-6. NOAA Administrator considers recommendations and modifies them if necessary. Appointment of SES RESB leads and initial members. NOAA EGT in consultation with RESBs takes leadership, outlines charter development (See VI B), and develops IEA guidelines. Preliminary meetings of RESBs. Notice to constituencies [internal and external] about possible changes in NOAA services.
• Launch Phase. Months 7-12. Planning research coordination and IEA scoping, e.g., identifying data and other region-specific information available to respond to EGT guidelines. With initial plans, priority data and information would be categorized to focus on 1) what NOAA can do well; 2) what NOAA can do relatively credibly and 3) what cannot be done or known now. This would involve NOAA constituencies.
• Initial Work Phase. Months 13-18. Get the data and information into comprehensive archives check for consistency [etc.]. NOAA constituencies would be kept informed.
• Integrated Analysis and Reporting Phase. Months 19-24. Perform first integrated assessments and report on them. Communicate with constituencies and obtain feedback from them.
PPBES ROLE

RECOMMENDATION 16: The PPBES process, supported by the EGT, should identify and adopt timelines for both annual and multi-year planning, considering particularly the sequencing of timeframes for planning and coordinating of scientific research across LOs within Regions.

RECOMMENDATION 17: NOAA should fund the preparation of the IEAs and other key ecosystem science products through a process that is competitive among teams of LOs and partners.
OVERALL CONCLUSION AND RECOMMENDATION

The EETT concluded that NOAA must make integrated assessment the normal mode of business for assessing the status of marine ecosystems and the components, and for evaluating options for human uses of ecosystems. The Integrated Ecosystem Assessments require structured, accountable collaboration among multiple LOs, with science partners and with clients of ecosystem products and services. Some parts of this transition in science and management are underway; some will require changes of emphasis; some even changes in direction. All require greater resources because of the greater demands for science support for ecosystem-based approaches to managing multiple activities.
# EETT/IETT

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<th><strong>NOAA SAB- eETT Members</strong></th>
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<tr>
<td>Dave Fluharty - chair</td>
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<td>Peter Ortner – vice chair</td>
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