
Northeast Coastal Indicators Workshop

Workshop Report-out and Senior
Management Panel Response

Welcome

■ Logistics

- ❑ Weather Report
 - ❑ Fun and interesting session
 - ❑ Special thanks to our panel members
 - ❑ Intent to adjourn by noon “unless”
 - ❑ Lunch on your own in the restaurant
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Purpose of Morning Session

- Share the results of the technical sessions with all participants and look for cross-cutting ideas
 - Field-test the results with one portion of our indicators audience
 - Develop strategies to move the workshop results forward
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Agenda – 8:00 a.m to 12:00 p.m.

- Six technical session reports (1 hour)
 - Panelist responses (1 hour)
 - Audience Question and Answer (30 minutes)
 - “Straw” Next Steps Proposal (5 minutes)
 - Panelist Recommendations on Implementation (40 minutes)
 - Audience Recommendations (30 minutes)
 - Wrap-up (15 minutes)
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Technical Session Reports

Indicator Topics

- Fisheries
- Contaminants
- Eutrophication
- Coastal Development
- Marine Aquatic Habitat
- Climate Change

Morning Reporters

- David Dow
 - Wendy Leo
 - Suzanne Bricker
 - Rick D'Amico
 - Ralph Cantral
 - Mark Parker
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Introductions

- Ellen Roy Herzfelder – Massachusetts
 - Byron James – New Brunswick
 - Priscilla Brooks – Conservation Law
 - Rick Spinrad – National Ocean Service
 - Betsy Wingfield – Connecticut
 - John Boreman – National Marine Fisheries
 - Faith Scattolon – Fisheries & Oceans
 - Katrina Kipp – Environmental Protection Agency
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Northeast Coastal Indicators Workshop

Breakout Session Results

January 8, 2004



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Breakout Session Results

- Fisheries
- Contaminants
- Eutrophication
- Aquatic Habitat
- Coastal Development
- Climate Change

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Breakout Session Results

■ Fisheries

- Contaminants
- Eutrophication
- Aquatic Habitat
- Coastal Development
- Climate Change

Fisheries

- Top Questions
 - **What is the health of the fisheries with regard to ecosystem integrity, including targeted and non-targeted species, habitat, and fisheries activities?**
 - 1) **What are the trends in characteristics and the status of exploited fisheries species?**
 - 2) **What are the effects of fishing on non-targeted species and their associated communities?**
 - 3) **What are the effects of fishing and non-fishing activities on marine habitat and fisheries productivity?**
 - 4) **What are the trends in the socioeconomic characteristics of fisheries?**

Fisheries

What is the trends in and the status of exploited fisheries stocks?

- Indicator(s):
 - Proportion of stocks at or above targeted abundance or biomass
 - Age/Size structure of species from surveys and/or landings
 - Spatial distribution of fisheries species
- Information Conveyed: **Status and trends for exploited fisheries stocks**
- Indicator Audience: **Fisheries managers, industry, public, other regulators, researchers**
- Spatial and Temporal Scales: **Range of species or stocks; Annual to every 3-5 years**

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Fisheries

What are the effects of fishing on non-targeted species and their associated communities?

- Indicator(s):
 - Characteristics of bycatch and discards
 - Population levels for selected species
 - Species Diversity
- Information Conveyed: **Impacts of fishing on non-targeted species and their associated communities**
- Indicator Audience: **Fisheries and environmental managers, industry, environmental interests, researchers, public**
- Spatial and Temporal Scales: **Regional based on populations or stock, biogeographic boundaries; Seasonal**

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Fisheries

What are the effects of fishing and non-fishing activities on marine habitat and fisheries productivity?

- Indicator(s):
 - Area closed to fishing, both pelagic and/or benthic
 - Benthic diversity
 - Spatial distribution of bottom fishing
- Information Conveyed: **Impacts of fishing and non-fishing activities on marine habitat and fisheries productivity**
- Indicator Audience: **Researchers, industry, public and environmental fisheries and habitat managers**
- Spatial and Temporal Scales: **Regionwide (based on biogeographic boundaries); 1 to 5 years depending on habitat to annually to continuous**

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Fisheries

What are the trends in the socioeconomic characteristics of fishing?

- Indicator(s):
 - Days at sea
 - Fleet composition
 - Commercial and recreational fishing economic value
 - Angler satisfaction
 - Overcapitalized fleets
 - Natural capital value
 - Market value for consumers
- Information Conveyed: **Are society's socioeconomic goals for fisheries being achieved?**
- Indicator Audience: **Researchers, community planners, fisheries managers, industry, public**

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Fisheries

- Key Partners Needed
 - US and Canadian Federal agencies
 - State and provincial agencies
 - NGOs
 - Academic Community (Depending upon the issue)
- Implementation Approaches
 - Survey existing data sources
 - Standardize methodologies
 - Coordinate among groups

Breakout Session Results

- Fisheries
- **Contaminants**
- Eutrophication
- Aquatic Habitat
- Coastal Development
- Climate Change

Contaminants

- Top Questions

- 1) How are contaminants in the region changing?
- 2) How is the input of contaminants changing over time and space?
- 3) Are management actions changing the extent and severity of human health effects?
- 4) How well are contaminant management actions protecting ecosystem integrity?

Contaminants

How are contaminants in the region changing?

- Indicator(s):
 - Area of sediments that have contaminant levels above sediment quality guidelines
 - Level of contaminants in representative non-migratory organisms
 - Area of shellfish bed closure by state by year
 - Days of beach closure due to bacterial contamination by state by year
- Information Conveyed: **Where are contaminants; Where contaminants are going; Effectiveness of regulatory actions**
- Indicator Audience: **Public, regulators, legislators, educators**
- Spatial and Temporal Scales: **Specific water body scales; Event to Annual to Decadal**

Contaminants

How is the input of contaminants changing over time and space?

- Indicator(s):
 - Annual chemical load to water bodies by state
 - Number of bacterial source investigations and sources eliminated by year by state
- Information Conveyed: **Improvements due to regulatory actions vs. stresses from population growth and development**
- Indicator Audience: **Managers and regulators; public**
- Spatial and Temporal Scales: **Water bodies Region wide; Annual to source specific**

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Contaminants

Are management actions changing the extent and severity of human health effects?

- Indicator(s):
 - Incidences of human disease caused by consumption of fish and shellfish and recreational contact
 - Level of contaminants in representative fish/shellfish and at-risk humans
 - Annual number of beach and shellfish closures (reopenings)
- Information Conveyed: **Effectiveness of regulatory actions**
- Indicator Audience: **Public, regulators, legislators, educators**
- Spatial and Temporal Scales: **Water bodies Region wide; Annual to source specific**

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Contaminants

How well are contaminant management actions protecting ecosystem integrity?

- Indicator(s):
 - Sediment quality measure by triad approach
 - Incidence of disease
 - Reproductive success
 - Quality of habitats as affected by contaminants
- Information Conveyed: **Effectiveness of management actions**
- Indicator Audience: **Regulators, public, legislators**
- Spatial and Temporal Scales: **Water bodies region wide; Annual to decadal scales**

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Contaminants

- Key Partners Needed
 - State, local, regional, federal authorities
 - Scientific community
- Ways to Engage End Users – **Series of state of the environment reports**
- Implementation Approaches
 - Fund coordinating structure to support networking
 - Regular workshops and associated reports
 - Ensure sufficient early warning capacity in the indicators

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Breakout Session Results

- Fisheries
- Contaminants
- **Eutrophication**
- Aquatic Habitat
- Coastal Development
- Climate Change

Eutrophication

- Top Questions
 - 1) What is the extent, severity, and trends of eutrophication impacts?
 - 2) What are the sources of nutrients, can they be controlled, how are they changing?
 - 3) What is the state of management measures and how can they be optimized?
 - 4) What are the appropriate indicators, thresholds, and scales?
 - 5) What are the most important data gaps and research/monitoring needs? How can they be translated to regional/national strategy?

Eutrophication

What is the extent, severity, and trends of eutrophication impacts?

- Indicator(s):
 - Dissolved oxygen
 - Chlorophyll a
 - Submerged aquatic vegetation
 - Water clarity
- Information Conveyed: **Areal extent, locality, severity, type of impact, and trends**
- Indicator Audience: **Resource managers and scientists, policy makers, legislators, citizens**
- Spatial and Temporal Scales: **Estuary-wide; Seasonal to annual**

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Eutrophication

What are the sources of nutrients, can they be controlled, how are they changing?

- Indicator(s):
 - Measured and modeled loads
 - Land use/cover (load proxy)
 - Population (load proxy)
- Information Conveyed: **Identification of sources, loads (amount of allocation), changes over time**
- Indicator Audience: **Regulators, nutrient managers, scientists, citizens, politicians**
- Spatial and Temporal Scales: **Regional; Seasonal to annual to decadal**

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Eutrophication

What is the state of management measures and how can they be optimized?

- Indicator(s):
 - Dissolved oxygen
 - Chlorophyll a
 - Submerged aquatic vegetation
 - Water clarity
 - Measured and modeled loads
 - Land use/cover (load proxy)
 - Population (load proxy)
- Information Conveyed: Success of management measures
- Indicator Audience: Funding agencies, managers, regulators, engineers, politicians

Eutrophication

- Key Partners Needed
- Ways to Engage End Users
- Implementation Approaches

Breakout Session Results

- Fisheries
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- Eutrophication
- **Aquatic Habitat**
- Coastal Development
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Aquatic Habitat

- Top Questions
 - How is the extent, distribution, or use of coastal habitats changing over time?
 - How is the ecological condition of coastal habitats changing over time?
 - What are the causes of coastal habitat change over time?

Coastal Habitat = watersheds+ estuaries+ near and offshore

Aquatic Habitat

How is the extent, distribution, or use of coastal habitats changing over time?

Indicator(s):

- **Extent per habitat type over time**
 - Large scale mapping, small scale ground surveys
- **Distribution per habitat type**
- **Inventory of human use**
 - Area, percent of public vs. private
 - Area, percent designated for permanent habitat protection

Aquatic Habitat

How is the ecological condition of coastal habitats changing over time?

■ **Indicator(s):**

- **Community Structure**
 - Measure of change of relative abundance of species within habitat
- **Trophic Structure**
- **Species of Concern**

Aquatic Habitat

What are the causes of coastal habitat change over time?

- Indicator(s) of most important potential causes of habitat loss and degradation (physical and hydrologic alteration, nutrient loading, resource extraction, contaminants, climate change, sediment input)
 - **Extent and percent habitat area altered by tidal restrictions**
 - **Boat registrations**
 - **Seagrass Nutrient Pollution Index**
 - **Indicators relating to other causes assumed covered by other groups**

Aquatic Habitat

- **Spatial & Temporal Scale**
 - **All indicators are aggregated per habitat type**
 - **Some are measured at large scale (e.g. mapping) on frequency of ~5-year intervals**
 - **Some are measured at small scale, within habitats, at seasonal or annual frequency**

Aquatic Habitat

- Audience
 - **Primary Users/Needs:** Federal, state, local, and provincial regulators and managers, non-profit groups, decision-makers
 - **Secondary Users:** non-profit organizations, educators, advocacy groups, academic education, industry, public, agencies

Aquatic Habitat

- Key Partners
 - all government agencies,
 - academic institutions,
 - private research institutions,
 - NGO's,
 - resource users,
 - consultants,
 - volunteer monitoring groups/community groups

Aquatic Habitat

- Ways to engage end users
 - Reporting
 - Web sites
 - Engaging community groups in design and data collection
 - Media
 - Cooperative Extension
 - Small grants and technical guidance.
 - Public meetings

Aquatic Habitat

- Implementation approaches
 - Fund coordination body for
 - Collaboration
 - Collation = data mining, data collection
 - Data management
 - Synthesis
 - Reporting
 - Initial coordination body = Coordinator, Data manager, GIS Specialist

Breakout Session Results

- Fisheries
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- **Coastal Development**
- Climate Change

Coastal Development

- Top Questions
 - 1) **What is the type, pattern, and rate of land use change?**
 - 2) **How are these changes impacting the integrity of coastal ecosystems?**
 - 3) **How is the region responding to changes in coastal ecosystems?**

Coastal Development

What is the type, pattern, and rate of land use change?

- Indicator(s):
 - Percent change in land cover to more intensive uses
 - Demographic changes (population, etc.)
 - Types of land uses and change
- Information Conveyed: **Status and trends in coastal land cover, land use, and demographics**
- Indicator Audience: **Government managers, regulators, program managers, policy staff, analysts/technical staff**

Coastal Development

How are these changes impacting the integrity of coastal ecosystems?

- Indicator(s):
 - Integrity of coastal ecosystems for:
 - Threatened and endangered coastal species
 - Migratory species
 - Invasive species
- Information Conveyed: **Status and trends in the integrity of coastal ecosystems impacted by coastal development**
- Indicator Audience: **Government managers, regulators, program managers, policy staff, analysts/technical staff**

Coastal Development

How is the region responding to changes in coastal ecosystems?

- Indicator(s):
 - Land conservation
 - Habitat Restoration
 - Land Management (planning, regulatory, etc)
- Information Conveyed: **Management responses to changes in coastal ecosystems**
- Indicator Audience: **Government managers, regulators, program managers, policy staff, analysts/technical staff**

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Coastal Development

- Key Partners Needed:
 - NOAA (CZM, CSC)
 - EPA (NEP)
 - Environment Canada (e-man and indicators)
 - DFO (habitat and indicators)
 - Ocean Observing Programs (e.g., GoMOOS)
 - State/Provincial Governments (GIS offices)
 - Gulf of Maine Council

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Breakout Session Results

- Fisheries
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- **Climate Change**

Climate Change

- Top Questions
 - 1) What are the causes?
 - 2) What are the impacts of climate changes to: weather, atmospheric & ocean circulation, ecosystems, and society. How vulnerable are we?
 - 3) What are the societal responses?

Climate Change

What are the impacts of climate changes to: weather, atmospheric & ocean circulation, ecosystems, and society.

- Indicator(s):
 - Precipitation trends
 - Storm frequency and intensity
 - Water temperature surface bottom
 - Relative sea level rise
- Information Conveyed: **Provide information on the impacts of global climate change on the meteorological and physical characteristics of the northwest Atlantic region**
- Indicator Audience: **Coastal environmental managers, scientists**
- Spatial and Temporal Scales: **Regional; Annual to Decadal**

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Climate Change

What are the impacts of climate change on biotic ecosystems?

- Indicator(s):
 - Warm vs. cold water finfish species diversity
 - Planktonic diversity
 - Wetlands extent, distribution and composition
 - Marine diseases indices (i.e., MSX, dermo, shell disease)
- Information Conveyed: **Provide information on the impacts of climate change to biotic ecosystems**
- Indicator Audience: **Fisheries managers, health officials, coastal managers, scientists**
- Spatial and Temporal Scales: **Regional; Annual**

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Climate Change

- Key Partners Needed
 - NOAA – NOS & NMFS, USGS, EPA, USF&WS, States, NGOs, Environment Canada, OURANOS, DFO
- Ways to Engage End Users
 - Agreements (Climate Change Action Plan, NEG-ECP Agreements)
 - Predictive Modeling (Canadian, US, and other Climate Change Model, Downscaling, etc.
 - Global and Regional Models
 - Education – Outreach
 - American Association of Land Planners, etc,
 - Science Museum

Battelle– Boston Aquarium