Gulf of Maine
Council on the
Marine Environment

ACTION PLAN
2006-2011
"FIRST LOOK BRINGING-IT-TOGETHER DRAFT"

Please note that this is a first look at the Action Plan components on which you have been working—for the first time as one document. This is not meant to resemble the finished version of the GOMC Action Plan.

Please see last page for *Decision Matrix and Council Role* tool

Gulf of Maine Action Plan 2006-2011
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1. Executive Summary (content under development and not included in this document)
Statement of what the Plan is (e.g., for the GOMC – not a Plan for the region)
Approach used to assemble Plan (e.g., Summit, publications, outreach, logic model – outcomes) approach in other parts of the Plan
Expected results/outcomes for the five-year period
Commitment to Regional Agenda/Working Collaboratively
Summit Proclamation (statement of leadership)
Governors' and Premiers' resolution of commitment
Federal resolution of support

2. GOMC background / summary including (content under development and not included in this document)
- GOM map
- Approach used in developing the Plan
- Synopsis of seventeen years of transboundary cooperation and collaboration
- Council role as transboundary organization & fit with other regional entities
- Council activities (core and other programs and projects)
- Mission and guiding principles

Highlights from the 2001-2006 Action Plan[1]
Success stories, what people have said, "wall of accomplishments" insets

3. 2006-2011 Action Plan summary ("at a glance"-style, one-page summary) (higher level document)
- Leading issues requiring regional response (e.g., synthesis of publications)
- Goal 1 - Protect and restore habitat: coastal and marine habitats are in a healthy, productive, and resilient condition [briefly describe] **begins on page 3**
    - Adverse effect of invasive species on the coastal environment is minimized **Page 3**
    - Regionally significant coastal habitats (RSCH) are restored and support the desired functions and values of the restoration work **Page 4**
    - Land-based activities are not adversely affecting coastal habitats page 6
    - Regionally significant marine habitats are managed in a way that maintains ecological integrity **Page 8**

Goal 2 - Environmental and human health: Environmental conditions in the Gulf of Maine support ecosystem and human health [briefly describe] begins on page 11
- Goal 3 - Support Vibrant Communities: Gulf of Maine coastal communities are vibrant and have marine-dependent industries that are healthy and globally competitive **begins on page 13**
- Review Crosscutting efforts of the Council
- (Place 1-2 year activities on the web & 1-year operating plan)

Appendices (content under development and not included in this document)
- Gulf of Maine Council on the Marine Environment organizational structure and organization and jurisdictional contacts
- Glossary begins one page 17

[1] This information may be including in the plan using "nested" text boxes or sidebars with success stories in this section and throughout the plan in proximity to relevant goals.

Goal 1: Protect and restore habitat
Coastal and marine habitats are in a healthy, productive, and resilient condition

Long-term Outcome #1
Adverse effect of invasive species on the coastal environment is minimized.
Mid-term Outcomes (behavior change)
- Coastal policy makers enact effective regional policies and programs to minimize adverse effects.
- Regulators develop and implement legal instruments to minimize adverse impacts.
- Commercial and recreational users of the coastal environment adopt best practices (observe, report, etc.) to minimize adverse impacts of invasive species.

Short-term Outcomes (knowledge and skill change)
- Coastal policy makers, regulators, and resource users understand significance of threat.
- Policy makers and regulators know suite instruments/strategies available to minimize adverse impacts.

Outputs
- Report on vectors of invasive species
- Guide to best practices on mitigating risk of invasive species
- Rapid assessments

Activities
Gap analysis
- Conduct risk analysis and prioritize the vectors including effect of climate change
  Timeline: Year 1-2
  Responsible Entity: Climate Change Network
  Resources: $10,000
  Council Role: B-3
- Document the expansion and contraction of invasive species due to effects of climate change
  Timeline: Year 3-5
  Responsible Entity: Climate Change Network
  Resources: $10,000
  Council Role: B-3

Indicators, metrics, methods of reporting and evaluation for progress towards meeting goal
- Expand rapid assessment surveys on marine invasive species to other areas of the Gulf using a regional methodology
  Timeline: Year 1-5
  Responsible Entity: Northeast Aquatic Nuisance Species Panel
  Resources: $20,000
  Council Role: B-3
- Identify indicator species to allow monitoring of climate change
  Timeline: Year 2-3
  Responsible Entity: Climate Change Network
  Resources: $10,000
  Council Role: B-3

Policy, coordination, and synthesis
- Distribute and track the use of invasive species identification guides for recreational users
  Timeline: Year 2-3
  Responsible Entity: Northeast Aquatic Nuisance Species Panel
  Resources: $100,000 plus
  Council Role: B-3
- Disseminate targeted educational materials to vector groups (e.g., marinas, fishing, shipping)
  Timeline: Year 1-5
  Responsible Entity: Northeast Aquatic Nuisance Species Panel
  Resources: $10,000
  Council Role: B-3

- Conduct series of workshops to introduce educational materials on invasive species threat, the importance of prevention in minimizing impacts & effects of climate change
  Timeline: Year 3-5
  Responsible Entity: Climate Change Network
  Resources: $30,000
  Council Role: A-2

Accelerate regional cooperation on invasive minimization and prevention efforts

Timeline: Year 1-5
Responsible Entity: Northeast Aquatic Nuisance Species Panel
Resources: $75,000
Council Role: A-3

Resources

- Council funds and member expertise
- Expertise from GOMC partners (e.g., RARGOM, EAC, NEANS Panel, Maine Marine Invasive Species Working Group)
- ESIP Indicators Group

Long-term Outcome #2

Regionally significant coastal habitats (RSCH) are restored and support the desired functions and values of the restoration work.

Mid-term Outcomes (behavior change)

- Partners leverage and invest funds in restoration of identified RSCH.
- Non-governmental organizations provide an increased % of restoration funds.
- Restoration is occurring on public and private lands at an increased rate.
- Practitioners are implementing regional restoration and monitoring standards.
- Government agencies (e.g., States, provinces & federal) incorporate RSCH priorities into restoration plans.
- Community involvement in RSCH restoration is increased.
- The technical and financial capacity to undertake restoration of RSCH is increased.

Short-term Outcomes (knowledge and skill change)

- Increase knowledge and appreciation for the need of restoration of RSCH (communities, lawmakers, NGO's).
- Private landowners are supportive of habitat restoration.
- NGOs are engaged in habitat restoration activities.
- Practitioners are knowledgeable about monitoring standards for the removal of barriers on rivers
- Landowners are aware of climate change impacts on coastal habitat and adaptation measures they can take when restoring their own land

Outputs

- Published standards for barrier removal monitoring
- Restoration plans for priority projects
- Web-based information available on restoration of RSCH.
- New working relationships between NGO's and community-based restoration activities.
- Analysis of voluntary landowner program options.
- Analysis of possible ways to use social marketing strategy to accelerate restoration.

Activities

<u>Gap Analysis</u>

- Maintain and improve Habitat Restoration Web Portal updating and upgrading what is currently on the portal.
  Timeline: Year 1-2
  Responsible Entity: Restoration Subcommittee
  Resources:
  Council Role: A-1
- Investigate options for voluntary private landowner restoration program that provides technical assistance
  Timeline: Year 1-2

Responsible Entity: Restoration Subcommittee
Resources:
Council Role: A-1

- Research/compile information on coastal habitats and watersheds at risk due to climate change
  Timeline: Year 1-2
  Responsible Entity: Climate Change Network
  Resources: $15,000
  Council Role: A-1

Indicators, metrics, methods of reporting and evaluation for progress towards meeting goal

- Develop a prototype web- and spatially-enabled data management system for input, synthesis, and reporting of regional habitat monitoring data.
  Timeline: Year 1-5
  Responsible Entity: Habitat Monitoring Subcommittee
  Resources: $10,000/year
  Council Role: A-1
- Identify and track indicators of climate change in coastal regions of the GOM (e.g. sea level rise)
  Timeline: Year 2-5
  Responsible Entity: Climate Change Network
  Resources: $30,000
  Council Role: A-3

Policy, coordination, and synthesis

- Convene workshop to bring together practitioners to develop barrier removal monitoring standards.
  Timeline: Year 1-2
  Responsible Entity: Restoration Subcommittee
  Resources:
  Council Role: A-1
- Synthesize results of barrier removal monitoring workshop.
  Timeline: Year 1-2
  Responsible Entity: Restoration Subcommittee
  Resources:
  Council Role: A-1
- Disseminate barrier removal monitoring results.
  Timeline: Year 1-2
  Responsible Entity: Restoration Subcommittee
  Resources:
  Council Role: A-1
- Continue to run competitive habitat restoration grant program.
  Timeline: Year 1-5
  Responsible Entity: Restoration Subcommittee
  Resources:
  Council Role: A-1
- Post Salt marsh & American Eels fact sheets on the web and publicize their availability.
  Timeline: Year 1-2
  Responsible Entity: Restoration Subcommittee & Outreach
  Resources:
  Council Role: A-1
- Convene follow-up meeting with foundations for funding support for habitat restoration in the Gulf.
  Timeline: Year 1-2
  Responsible Entity: Restoration Subcommittee
  Resources:
  Council Role: A-1
- Investigate development and implementation of a social marketing campaign on the benefits of habitat restoration.
  Timeline: Year 1-5
  Responsible Entity: Outreach
  Resources:

Council Role: A-1

- Prepare regional criteria to identify coastal habitats at risk from sea level rise and other climate change impacts and integrate into restoration decision-making.
  Timeline: Year 1-2
  Responsible Entity: Climate Change Network
  Resources: $30,000
  Council Role: A-1
- Develop fact sheet on the ecological and economic importance of seagrass habitats and the value of long-term change analysis for evaluating restoration success and overall habitat integrity
  Timeline: Year 1
  Responsible Entity: Habitat Monitoring Subcommittee
  Resources: $7,000
  Council Role: A-1

Resources

- Council and external funds, GIS expertise, staff, Habitat Restoration sub-committee, ESIP, GOMMI, GOMOOS, Gulfwatch, Climate change research bodies (e.g. Environment Canada)

Long-term Outcome #3: Land-based activities are not adversely affecting coastal habitats

Mid-term Outcomes (behavior change)

- Lawmakers enact, implement, and evaluate effective legislation to prevent land-based activities from adversely affecting the coastal environment.
- Municipal governments are continuously improving local planning tools and infrastructure that minimizes adverse impacts on the coastal environment.
- Watershed residents and businesses seek to minimize the effect of their land use decisions on the marine environment

Short-term Outcomes (knowledge and skill change)

- Lawmakers, coastal businesses, and landowners are knowledgeable and ready to take action to minimize adverse effects of land-based activities on the coastal environment.
- Cumulative impacts are understood and factored into upland, coastal, and marine planning and management processes.
- Land based activities incorporate green house gas reduction strategies when practical
- Landowners understand difference between adaptation and mal-adaptation

Outputs

- Jurisdictional reports on priority activities that have adverse impact on coastal environment.
- Social marketing campaign materials
- Best management practices (e.g., coastal erosion structures, on-site sewage maintenance, setbacks/riparian buffer, stormwater runoff, nutrient loading)
- Indicators to evaluate results of programs, legislation, planning tools and infrastructure in improving ecosystem health.
- Informative materials about management options targeted to the appropriate entity
- Guide to effective climate change activities for private sector

Activities:

<u>Gap analysis: what is being done already/what needs to be done by jurisdiction to address land-based activities</u>

- Conduct expert survey of jurisdictions to determine the types of land-based activities that are having most detrimental effect on coastal environment (e.g., onsite sewage disposal, effluent from fish plants and municipal systems, storm water run off, inappropriate erosion control structures, development impacting the coast by proximity or infilling)
  Timeline: Year 3-5
  Responsible Entity: Contaminants Monitoring Subcommittee
  Resources: $20,000
  Council Role: B-1
- Analyze the land management tools/instruments/regulation that are being used in each jurisdiction.
  Timeline: Year 3-5
  Responsible Entity: Contaminants Monitoring Subcommittee

Resources: $25,000
Council Role: B-2
Identify and assess the long-term economic, social, and ecological implications of projected coastal development patterns in the region.
Timeline: Year 1-2
Responsible Entity:
Resources: $25,000
Council Role: B-2

- Review existing storm water/land-based pollution programs, assess their effectiveness, and propose improvements in each jurisdiction
  Timeline: Year 3-5
  Responsible Entity: Contaminants Monitoring Subcommittee
  Resources: $75,000
  Council Role: B-2
- Compile and disseminate relevant Green House Gas reduction and mitigation strategies
  Timeline: Year 3-5
  Responsible Entity: Climate Change Network
  Resources: $10,000
  Council Role: B-3
- Enhance climate change knowledge-base (e.g., compile programs, best practices, etc.)
  Timeline: Year 1-2
  Responsible Entity: Climate Change Network
  Resources: $30,000
  Council Role: A-1

<u>Indicators, metrics, methods of reporting and evaluation for progress towards meeting goal</u>

- Work with partners to develop coastal development and eutrophication indicators to assess impacts of land-based activities and produce State of the Gulf reports
  Timeline: Year 1-2
  Responsible Entity: Ecosystem Indicator Partnership
  Resources: $40,000
  Council Role: A-1
- Assess literature and summarize critical thresholds where ecosystem health is affected by land-based sources of pollution
  Timeline: Year 3-5
  Responsible Entity: Contaminants Monitoring & Sewage Subcommittees
  Resources: $20,000
  Council Role: B-2

<u>Policy, coordination & synthesis</u>

- Initiate discussion on the adequacy of jurisdictional effluent discharge standards (wastewater and fish plant effluent etc.) into the marine environment
  Timeline: Year 3-5
  Responsible Entity: Sewage Subcommittee
  Resources: $10,000
  Council Role: B-2
- Develop & implement social marketing campaign to address land-based activities that have adverse affect on the coastal/marine ecosystem
  Timeline: Year 3-5
  Responsible Entity: Outreach and Contaminants Monitoring Subcommittee
  Resources: $25,000
  Council Role: B-2
- Organize a distribution and engagement strategy for best management practices (e.g., coastal erosion structures and on-site sewage maintenance, etc.)
  Timeline: Year 3-5
  Responsible Entity: Outreach and Contaminants Monitoring Subcommittee
  Resources: $20,000
  Council Role: B-2

- Investigate and propose regional climate change adaptation strategies
  Timeline: Year 1-2
  Responsible Entity: Climate Change Network
  Resources: $10,000
  Council Role: B-3

Resources:

- Council and external funding
- Many knowledgeable institutions and ongoing activities on preventing adverse impacts from land-based sources
- Engage US and Canadian MPA managers via an Atlantic team
- Existing climate change programs
- Canada's national program of action
- Climate change research bodies (e.g. Environment Canada)

Long-term Outcome #4: Regionally significant marine habitats are managed in a way that maintains ecological integrity.

Mid-term Outcome (Behavior change)

- Managers and regulators implement effective coastal and marine management initiatives and programs
- Managers of marine managed areas coordinate and partner on marine habitat issues

Short-term Outcomes (Knowledge and skills change)

- Partners can identify regionally significant marine habitats.
- Partners know the suite of management/conservation options (e.g., policy tools to achieve and maintain thresholds of ecosystem, etc.) available to help protect marine habitats.
- Partners are knowledgeable of species that reside in significant marine habitats.
- Partners understand ecosystem dynamics and use that understanding in decision-making

Outputs

- Maps and/or informative materials on regionally significant marine habitats
- Informative materials about management options to help protect marine habitats.
- GOM Marine Habitat Conservation Strategy
- Assessment of conflicting policies and programs impeding ecosystem-based management and recommendations to reconcile conflicts
- Framework for ecosystem characterization
- Improved agreement within GOM scientific community on habitat characterization using mapping technologies and other tools
- Informative materials on existing coastal/marine managed areas in the Gulf of Maine region, including information on habitats and associated species
- Human use atlas for the GOM marine environment
- Report on thresholds and metrics for maintaining nearshore coastal/marine habitat integrity

Activities

<u>Gap analysis</u>

- Develop framework for ecosystem characterization that integrates existing chemical, physical, and biological knowledge as well as human use activities.[2]

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[2] Recommendations from Ocean Task Force --

- Describe what research, data and information exists and what is needed to move toward an ecosystem-based management approach and the priority gaps that need to be filled in the near-term. Possible elements include:
  a. Region-wide benthic habitat mapping;
  b. Identification of special management areas or marine managed areas;
  c. Long-term/sustained environmental monitoring (e.g., species, habitats, & media – air, land, water, etc.). It should commence by organizing a 2006 workshop that builds on the Council's Gulfwatch program, previous planning efforts (circa 1990), and its monitoring inventory (http://cooa.sr.unh.edu/webcoast/MP/mp.jsp). The workshop should be tasked with developing an integrated environmental monitoring proposal to the Council and other regional partners.
  d. Development of forecasting tools that assist decision-makers manage human activities in the Gulf of Maine; and
  e. Prepare a human use atlas that describes spatial and temporal patterns.
- Describe the required data and information management systems and how current efforts (e.g., Ocean Data Partnership, GoMOOS, Census for Marine Life, GOMMI, etc.) can be accelerated;

Timeline: Year 2-3
Responsible Entity: Conservation Subcommittee (& NROC/OWC?)
Resources:
Council Role: A-2

- Complete documentation (e.g., identify habitats and associated species) of existing coastal/marine managed areas in the Gulf of Maine
  Timeline: Year 1-2
  Responsible Entity: Conservation Subcommittee
  Resources: $50-75,000
  Council Role: A-2
- Select a coastal habitat type with public appeal, document its economic and social values and communicate to decision-makers.
  Timeline: Year 5
  Responsible Entity: Conservation Subcommittee
  Resources: $50,000
  Council Role: A-2
- Support the mapping of priority areas (e.g., Cashes Ledge, Platts Bank, Casco Bay, northern Georges Bank) identified in the Gulf of Maine Mapping Initiative 2-year work plan
  Timeline: Year 1-2
  Responsible Entity: Gulf of Maine Mapping Initiative
  Resources: $
  Council Role: A-3

Indicators, metrics, and methods of evaluation for progress

- Develop, track and report on habitat integrity indicators at multiple scales, including effects of climate change
  Timeline: Year 1-2
  Responsible Entity: Ecosystem Indicator Partnership
  Resources: $50,000 - $150,000
  Council Role: A-2
- Document scientific thresholds and metrics for maintaining nearshore coastal and marine habitat integrity
  Timeline: Year 3-5
  Responsible Entity: Conservation Subcommittee
  Resources: $100,000 - $150,000
  Council Role: A-2
- Establish and implement an integrated, hierarchical framework (e.g., broad-scale, rapid assessments, high resolution/intensive) for indicator-based monitoring of high priority coastal/marine habitats (e.g., seagrass, salt marsh, and nearshore sub-tidal soft bottom)
  Timeline: Year 1-5
  Responsible Entity: Habitat Monitoring Subcommittee
  Resources: $100,000/year
  Council Role: A-1
- Synthesize and display existing regional monitoring data on salt marsh and seagrass habitat indicators. Subsequently expand to include salt marsh & eelgrass vegetation indicators, additional seagrass and eelgrass indicators, other indicators.
  Timeline: Year 1-2
  Responsible Entity: Habitat Monitoring Subcommittee
  Resources: $10,000
  Council Role: A-2

Policy, coordination, and synthesis

- Identify how the Gulf of Maine Ecosystem Indicator Partnership (ESIP) indicators of ecosystem health can be used to track progress in achieving our goals;
- Identify the implementation phases, estimated costs and funding sources to commence work.

- Identify most significant conflicting policies and programs that are impeding an ecosystem-based approach and the effects of these conflicts include an evaluation of the cumulative effect that these programs and policies have on ecosystem services. Suggest ways to reconcile these conflicts and offer a vision for the Gulf of Maine the builds on current statutes.
  Timeline: Year 1-2
  Responsible Entity:
  Resources: $75,000 - $125,000
  Council Role: A-1
- Identify existing management plans that address key ecosystem objectives, assess management goals with respect to appropriate baselines and the conservation of ecosystem services (e.g., ensuring that marine ecosystems can fully function in order to sustain the delivery of a wide range of services). These include provisioning services (e.g. food and fresh water), regulating services (e.g. climate and flood regulation), cultural services (e.g. spiritual and aesthetic values), and supporting services (e.g. nutrient cycling and primary production).[3] Use information from monitoring and research (e.g., status and trends, scientific advice, etc.) to evaluate how the plans have performed individually and cumulatively with respect to these objectives; Collaboratively develop recommendations to accelerate the work of these programs to attain ecosystem objectives.
  Timeline: Year 1-2
  Responsible Entity:
  Resources: $250,000
  Council Role: A-1
- Facilitate communication about sub-tidal habitat characterization methodologies in the GOM and work toward a consistent approach.
  Timeline: Year 1-2
  Responsible Entity: Conservation Subcommittee
  Resources: $40,000
  Council Role: A-2
- Complete the development of Human Use Atlas that document s and assesses uses in the marine environment
  Timeline: Year 2-4
  Responsible Entity: Conservation Subcommittee
  Resources: $175,000
  Council Role: A-2
- Support and enable existing programs that are implementing elements of an ecosystem-based approach through professional development, Agreements, and capacity building (e.g., technical assistance, workshops, training, matching funds, etc.)
  Timeline: Year 1-5
  Responsible Entity:
  Resources: $25,000/year
  Council Role: A-2

Resources

- Many knowledgeable institutions and ongoing activities on habitat conservation and ecosystem management
- Climate change research bodies (e.g. Environment Canada)

[3] Ecosystem-based goals should give precedence to the long-term potential of systems to deliver a broad suite of ecosystem services over short-term goals for individual services. Such goals inherently recognize that it is not possible to sustain humans without sustaining ecosystems over long time frames (Grumbine 1997).

Goal 2: Environmental and human health
Environmental conditions in the Gulf of Maine support ecosystem and human health

Long-term Outcome: Environmental conditions improve as contaminant releases are reduced.
Mid-term Outcome (Behavior change)

- Provincial and state lawmakers enact consistent standards and guidelines to reduce contaminant releases.
- The Gulf's residents implement voluntary lifestyle actions to reduce their use and release contaminants.

Short-term Outcomes (knowledge and skill change)

- Lawmakers are knowledgeable about creating and achieving consistent standards and guidelines that reduce contaminant releases
- Citizens know how lifestyle choices affect the condition of the marine environment

Outputs

- Data that supports and validates standards and guidelines
- Generate data that can be used for risk assessment (ecological and human)
- Tools and techniques to reduce contaminant releases (e.g. Best Practices) & their impacts
- Outreach campaigns to inform and motivate
- Assessment of priority contaminants

Activities

Gap Analysis

- Develop a regionally integrated baseline description of chemical contaminants in marine and estuarine ecosystems* via a workshop with invited experts (solicit and support development of key background papers, present and distill papers at the workshop, identify what is known and unknown about levels and effects of selected existing and new chemicals in environmental compartments of air, water, sediments and tissues throughout the Gulf of Maine, develop prioritized list of actions -- high, not low, priority)
  Timeline: Year 1-2
  Responsible Entity: Contaminant Monitoring Subcommittee
  Resources: $50,000
  Council Role: A-1
- Identify and summarize existing guidelines and standards in the Gulf of Maine for priority chemical contaminants (e.g., sponsor a review of relevant documents, agencies and people to compile the existing guidelines and standards from USA and Canada relevant to human and ecosystem health, covering all exposure routes and environmental compartments)
  Timeline: Year 2-3
  Responsible Entity: Contaminants Monitoring Subcommittee
  Resources: $30,000/year
  Council Role: B-1

Indicators, metrics, methods of reporting and evaluation for progress towards meeting goal

- Develop metrics and indices to describe the status and trends of nutrient levels in coastal waters
  Timeline: Year 1-2
  Responsible Entity: Ecosystem Indicator Partnership
  Resources: $30-50,000 (GeoConnections & Match)
  Council Role: A-1
- Develop and disseminate tools for managers to use Gulfwatch data and analyses
  Timeline: Year 1-2
  Responsible Entity: Contaminants Monitoring Subcommittee, Outreach, Data Management / Information
  Resources: $20,000/year
  Council Role: A-1
- Develop and implement outreach campaigns for lawmakers and general public targeting priority contaminants (point and non-point pollution) and corresponding effects of climate change

Timeline: Year 3
Responsible Entity: Outreach & Contaminants Monitoring Subcommittee & Climate Change Network
Resources: $25,000
Council Role: B-2

- Assess and report on trends in contaminant releases
  Timeline: Year 4-5
  Responsible Entity: Ecosystem Indicator Partnership & Contaminants Monitoring Subcommittee
  Resources: $25,000
  Council Role: B-2

Policy, coordination and synthesis

- Coordinate and expand the scope and scale of selected environmental monitoring programs (e.g., Gulfwatch, etc.)
  Timeline: Year 2-5
  Responsible Entity: Contaminants Monitoring Subcommittee
  Resources: $50,000
  Council Role: A-1
- Re-evaluate priority contaminants including the effects of climate change.
  Timeline: Year 4-5
  Responsible Entity: Contaminants Monitoring & Sewage Subcommittees and Climate Change Network
  Resources: $25,000
  Council Role: B-2
- Coalesce Best Management Practices for priority contaminants and achieve some consistency of Best Management Practices among the jurisdictions
  Timeline: Year 3
  Responsible Entity: Sewage Subcommittee & Contaminants Monitoring Subcommittee
  Resources: $25,000
  Council Role: B-2

Resources

- On-line monitoring program inventory
- Non-point source programs
- Gulfwatch, GoMOOS, GOMODP, RARGOM, BoFEP

* Activities recommended by the *Atlantic Northeast Coastal Monitoring Summit*, December 10-12, 2002

Goal 3: Support Vibrant Communities
Gulf of Maine coastal communities are vibrant and have marine-dependent industries that are healthy and globally competitive

Long-term Outcome
Vibrant coastal communities are supportive of marine-dependent industries and the industries are implementing innovative best practices that position them favourably for the future.

Mid-term Outcomes (behavior change)
- Marine dependent industries are sustainable and competitive in global markets
- Marine dependent industries are utilizing renewable and non-renewable resources in ways that maintain ecosystem integrity.
- The public is willing to pay a premium for marine products and services that are produced using sustainable practices
- Marine-dependent industries accelerate the adoption of practices to become even more sustainable
- Government and marine-dependent industries are working collaboratively to address social, cultural, environmental and economic concerns.
- The value of open landscapes and functioning ecosystems are incorporated into federal and provincial/state decision-making via laws, policies and programs

Short-term Outcomes (knowledge and skill changes)
- Representatives of marine dependent industries related to geo-tourism, tidal power/wind energy generation and commercial (e.g., wild and aquaculture) bivalve shellfish (e.g., hard and soft shell clams and mussels) are routinely providing advice to the Council
- The region's federal, provincial/state law-makers understand what coastal natural capital is and are advocates for it in decision-making processes
- Bivalve shellfish (e.g., hard & soft-shell clam and mussels) managers and operators in municipalities and industry are aware of Best Practices to manage and promote their products.
- One coastal community in each State/Province has jointly developed sustainability objectives for its marine dependent industries and has incorporated them into its planning documents.
- Level-one workshop participants adopt sustainable practices, which they had not previously utilized.

Outputs
- Strategic Plan to engage three marine dependent industries in GOMC activities
- Industry Sustainability Awards
- Industry Grants Program
- Workshop recommendations/reports on incorporating natural capital and socio-economics into ecosystem-based management
- Tidal power/wind energy report/ and fuel switching recommendations
- Ocean and coastal economic assessments for each jurisdiction
- Bivalve shellfish (clams/mussels) sustainable development strategy
- Survey results and analysis of tourism-linked business awareness of best management practices and sustainable tourism.
- A working pilot for level one workshops and completion of 1-3 workshops to communities in each of the jurisdictions beginning with the pilot regions Maine and New Brunswick.
- Identification of Sustainable Tourism operators within the GOM and Council web page with map of operators
- Report from annual conference that increased participation throughout the tourism industry by 25% and to develop greater "buy in" to sustainable practices and available certification opportunities.
- Compiled data on best practices for energy efficiency and reduction of processing by-catches.

TOURISM

- Adopt criteria and identify sustainable tourism operators within the GOM watershed. Develop a Council web page of this "trail" or "map" that identifies and supports quality sustainable tourism being practiced in the Gulf of Maine.
  Timeline: Years 1-3
  Responsible Entity: Sustainable Tourism Subcommittee
  Resources: $20,000 to support interns for two years to perform the work
  Council Role: To support development and maintenance of the website trail – A-2
- Survey regional tourism linked businesses to determine their interest in or knowledge of best management practices related to the implementation of certifiable sustainable tourism practices. Pilot surveys will be first done in Maine and New Brunswick. Year one goal would be to survey 100 tourism businesses in Maine and New Brunswick and year two would be to complete 100 surveys in the other three jurisdictions. This information will then be used to determine the education and marketing necessary to encourage businesses to adopt sustainable tourism ethics and guidelines for their industry.
  Timeline: Years 2-5
  Responsible Entity: Sustainable Tourism Subcommittee
  Resources: $5,000
  Council Role: To support the development, distribution and analysis of the survey with the goal to determine next steps for implementing BMPs. B-3
- Support regional initiatives such as the Bay of Fundy Partnership and the Maine Nature-based Tourism Industries Initiative through the development of level-one workshops for their target communities and providing best management practices related to the implementation of sustainable regional businesses and to support certification efforts for tourism operators. Develop a working pilot for a level-one workshop and deliver 1-3 workshops beginning with pilot projects in Maine and New Brunswick. Evaluate level-one impacts in year-5.
  Timeline: Year 3-4 (year 4-5 evaluation)
  Responsible Entity: Sustainable Tourism Subcommittee
  Resources: $25,000
  Council Role: Provide seed-funds for the workshops A-1/B-1
- Identify initial target audience of Maine tourism related businesses and hold an annual conference with the goal to increase participation in certification programs throughout the tourism industry by 25% and to develop greater "buy in" to sustainable practices and available certification opportunities.
  Timeline: Year 3
  Responsible Entity: Sustainable Tourism Subcommittee
  Resources: $15,000 (conference costs for the participants as they often have limited travel and conference funds)
  Council Role: To help finance the conferences and to distribute the outcomes through their website. A-1
- Maintain working relationship with regional and national/international certification initiatives that promote quality certification within each of their jurisdictions and provide the entity necessary to maintain a national/international certification standard within the industry.
  Timeline: on going
  Responsible Entity: Sustainable Tourism Subcommittee
  Resources: Subcommittee and partners such as The International Ecotourism Society
  Council Role: A-2

BIVALVE SHELLFISH INDUSTRY

- Work collaboration with existing jurisdictional and industry programs to develop a 3-year gulf-wide strategy on enhancing sustainability in the wild and aquaculture bivalve shellfish industry (e.g., hard & soft clams & mussels) with three major thrusts: 1) opening closed areas through improved water quality; 2) supporting the application of BMPs related to practices within industry; and 3) measuring the value of wild harvesting and aquaculture to local and regional economies.
  Timeline: Year 1-2
  Responsible Entity: Bivalve Shellfish Industry Subcommittee
  Resources: $40,000 & in-kind industry support

Council Role: B-2

- Implement 3-year gulf-wide strategy on enhancing sustainability in the wild and aquaculture bivalve harvesting industry
  Timeline: Year 3-5
  Responsible Entity: Bivalve Shellfish Industry Subcommittee
  Resources: Not known at this time
  Council Role: B-3 (garner attention to regional needs)

INDUSTRY ENGAGEMENT

- Use the *GOM Times*, the web site and other communication tools to increase awareness among the general public, decision-makers, opinion leaders, and industry about sustainable development issues and opportunities related to tidal, wave power/wind energy generation, bivalve shellfish industry, and tourism. Track effectiveness of outreach via # of bivalve shellfish industry subscribers, web-page hits, pre-post surveys, etc.
  Timeline: Year 1-2
  Responsible Entity: Maritime Activities Committee
  Resources: In-house
  Council Role: A-1
- Articulate the shared costs and benefits to the Council and industry (e.g., geo-tourism, bivalve shellfish harvesting, tidal power/wind energy generation) for expanded industry participation in Council affairs, review role of industry in similar organizations, effective methods of engagement, expectations and responsibilities, options for Council, and anticipated results.
  Timeline: Year 1
  Responsible Entity: Maritime Activities Committee
  Resources: $20,000
  Council Role: A-1
- Establish and administer annual GOM Industry Stewardship Award for industries that model/implement best practices.
  Timeline: Year 1-5
  Responsible Entity: Maritime Activities Committee
  Resources: $2,500 annually ($100 for jurisdiction awards, $2,000 for advertising in industry publications)
  Council Role: A-1
- Work in partnership with existing provincial, state, and federal industry support initiatives (i.e., tidal power and wind energy, bivalve shellfish, and sustainable tourism) to assess priority gaps and methods to address issues requiring a regional response and present options for Council consideration.
  Timeline: Year 2-5
  Responsible Entity: Maritime Activities Committee
  Resources: $15,000
  Council Role: B-3

NATURAL CAPITAL

- Identify existing regional efforts and facilitate their interaction/learning about pertinent methodologies and case studies for incorporating natural capital valuation and socio-economic concepts into ecosystem-based management initiatives.
  Timeline: Year 1-2
  Responsible Entity: Ad-hoc Natural Capital Group
  Resources: In-house and participating agencies
  Council Role: A-2
- Facilitate regional discussions about method of valuing coastal natural capital in the Gulf of Maine. Advocate for the explicit inclusion of natural capital in sustainable development efforts in the region.
  Timeline: Year 3-5
  Responsible Entity: Ad-hoc Natural Capital Group
  Resources: $25,000
  Council Role: A-2 or A-3

- Facilitate jurisdictional internal assessments of one sector (e.g., fisheries, land development, etc.) of their coastal policies and laws to determine how it can improve the consideration of natural capital
  Timeline: Year 4-5
  Responsible Entity: Ad-hoc Natural Capital Group
  Resources: $20,000/jurisdiction plus in-kind contributions
  Council Role: B-2 or B-3
- Conduct feasibility analysis of instituting a Baltimore Ecosystem Study type project and identify options for the region to pursue
  Timeline: Year 3
  Responsible Entity: Ad-hoc Natural Capital Group
  Resources: $50,000
  Council Role: A-3 or B-3

ENERGY

- Work in partnership with relevant state/provincial/federal agencies to facilitate discussions on offshore energy generation and storage issues (e.g., tidal, wave & wind energy) and promote regional approaches that accelerate the development of these energy sources.
  Timeline: Year 1
  Responsible Entity: Energy Subcommittee
  Resources: In-kind participating agencies, $10,000 report for public on regional GOM energy issues
  Council Role: B-2

Draft Glossary
Note: Terms not referenced are original to the working group.

Adverse (as in adverse effects; also toxicity and toxic effects) - harmful to organisms, or to their populations and communities.

Aquaculture - the controlled cultivation and harvest of aquatic plants or animals (eg, edible marine algae, clams, oysters, and salmon).
www.streamnet.org/pub-ed/ff/Glossary/glossaryfish.html

Aquatic nuisance species (cross-reference with a created "invasive species" term in the glossary) – an exotic or introduced species, plant or animal, that has been deliberately or accidently transported and released into a foreign environment through human activities and has successfully taken hold in that environment, causing ecological damage in the process. Ecologists refer to introduced species as biological invasions. (GESAMP 1997).

Assessment (distinguish assessment report from state of the environment report)
Definition……

Assimilative capacity - the ability of a natural body of water to receive wastewaters or toxic materials without harmful effects and without damage to aquatic life.
www.green-networld.com/facts/glossary.htm. 'The ability of a natural system to accept and process anthropogenic inputs or perturbations, without deleterious effect'. (OEF Forum)
www.oilandgasforum.net/oefonline/glossary.htm.

Barrier – obstacle……that prevents communication, success, etc (Sykes 1978); any physical structure built into, through or over a waterway (stream, creek, river, estuary) that changes, possible irreversibly, the physical (e.g. sedimentation, water circulation), chemical (e.g. salinity, oxygen, trace elements), biological (e.g. fish behaviour) or ecological (e.g. production) characteristics of that waterway. It is important to consider both effects of removal and modification of the barrier structures themselves vs. the the effects of the barriers to fish habitat). (see Wells 1999).

Baseline - refers to the original, unimpaired (by man) environmental or ecological conditions, set at some arbitrary time. Baselines can shift, depending upon available data and the investigator's experience, resulting in the "shifting baseline syndrome" in fisheries biology described by Daniel Pauly of UBC (Pauly 1995). In the context of environmental effects (impact) monitoring, "baseline data" characterizes environmental conditions prior to project development against which subsequent changes following development can be detected through monitoring" (Beanlands and Duinker 1983, in Curran et al. 2006). (from Wells et al. 2005)

Baseline data – quantitative data pertaining to the original conditions of a species or environment, the time of which is usually defined by the investigator and rarely more than a few decades before present.

Best Management Practices (also beneficial management practices) - management practices (such as nutrient management) or structural practices (such as terraces) that are designed to reduce the quantities of pollutants-- such as sediment, nitrogen, phosphorus, and animal wastes -- that are washed by rain and snow melt from farms into nearby receiving waters, such as lakes, creeks, streams, rivers, estuaries, and ground water.
www.polytechnic.edu.na/Schools/civil/libraries/glossarywaterenvironment/GlossaryWaterEnvironment-89.htm

Biodiversity – biological diversity (Lewis 1998); the variety and variability among living organisms and the ecosystems in which they occur (www.epa.gov).

Biotechnology - the use of living things to make products.
ehrweb.aaas.org/ehr/books/glossary.html**. Also, the industrial application of living organisms and/or biological techniques developed through basic research. Biotechnology products include pharmaceutical compounds and research materials.**
www.bioscreening.net/glossary/
Capacity – in context of this action plan, "ability to perform or produce". Also the power to contain, receive, experience, or produce (DK Publ. 1998); in the context of environmental activities, it refers to the ability to produce essential work in the short and long term. (there are many definitions).

Carrying capacity - see assimilative capacity.

Change – the action of making something different in form, quality, or state: the fact of becoming different. (Websters 3rd). See Ecosystem Change.

Citizen - a native or naturalized member of a state or other political community.
wordnet.princeton.edu/perl/webwn

Climate change - refers to changes in long-term trends in the average climate, such as changes in average temperatures. In IPCC usage, climate change refers to any change in climate over time, whether due to natural variability or as a result of human activity. In UNFCCC usage, climate change refers to a change in climate that is attributable directly or indirectly to human activity that alters atmospheric composition. (PEW Center on Global Climate Change).

Community (as in level of ecosystem structure) **–** a general term applied to any grouping of populations of different organisms found living together in a particular environment; essentially the biotic component of an ecosystem. (Allaby 1998).

Coast - the region extending seaward and inland from the shoreline that is influenced by and exerts an influence on the uses of the seas and their resources and biota. (Wells and Rolston 1991).

Coastal – pertaining to the coast. The coast is defined as the part of the land adjoining or near the ocean. A coastline refers to a particular length of coast. The term coastal describes a location as being on or near a coast. en.wikipedia.org/wiki/Coastal.

Coastal community - a grouping of homes, village, town or city situated on the coast.

Coastal economic sector – Definition…….. (add or cross-reference with "ocean economic sector")

Coastal environment – see coastal zone, and marine environment.

Coastal erosion - the wearing away of coastal lands, usually by wave attack, tidal or littoral currents, or wind. Coastal erosion is synonymous with shoreline (vegetation line) retreat.
www.soest.hawaii.edu/SEAGRANT/bmpm/glossary.html

Coastal habitat – specific habitats e.g. salt marsh, mud flats, rocky shores, boulder beaches, that occur within the coastal zone.

Coastal natural capital - is the natural system that provides space, substratum, renewable and non-renewable resources that supports and regulates the physical, biological, and chemical processes in the

coastal zone (i.e. the geologic and hydrologic systems and cycles, flora, fauna, and ecosystems that provide human beings with tangible and intangible goods and services that have economic value). (Lange, 1999)

Coastal zone - various definitions. In practice, the coastal zone (or area) may include a narrowly defined area about the land-sea interface of the order of a few hundreds metres to a few kilometres, or extend from the inland reaches of coastal watersheds to the limits of national jurisdiction in the offshore. The definition will depend upon the particular set of issues and geographic factors which are relevant to each stretch of coast (Hildebrand and Norrena 1992).

Contaminants - potentially harmful chemical substances or physical agents in the natural environment (including within individual organisms) that are present at concentrations above natural background levels, and below levels known to cause adverse effects. Also see key contaminants, priority contaminants, toxic chemicals, climate change contaminants, air quality, emerging chemicals or contaminants).

Criterion (Criteria) – as used in the USA, this term denotes the data and/or information base behind the establishment of environmental guidelines, objectives and standards.

Cumulative Impacts or Cumulative Effects – any result of repeated equivalent exposures to a biologically active agent, or stimulus, in which the effect of any subsequent exposure is more pronounced than that of the initial exposure (Lewis 1998).

Data – facts and statistics collected together for reference or analysis (Oxford 2005).

Decision-makers - persons in positions of authority in any sector who have a responsibility to make informed decisions regarding appropriate action(s) and follow-up for effective environmental, habitat and living resource management.

Diversity – the condition or quality of being diverse; variety. (Barber 1998).
Also see biodiversity.

Ecology – the science of the interrelations between living organisms and their environment; the study of the structure and function of nature; the science of the living environment. (Odum 1959)

Ecological connections -

Ecological risk assessment or risk assessment - process intended to calculate or estimate the risk for a given target system following exposure to a particular substance, taking into account the inherent characteristics of a substance of concern as well as the characteristics of the specific target system. The process includes four steps: hazard identification, dose-response assessment, exposure assessment, and risk characterization. It is also the first step in risk analysis. (J.H.Duffus, 2001, Chemistry International).

Ecologically sound principles -

Ecosystem - is a dynamic complex of plants, animals, microbes and physical environmental features that interact with one another**.** Humans are an integral part of ecosystems, marine and terrestrial. The "interconnectedness" within and among ecosystems is provided both by the physical environment (for example, currents transporting larvae from one part of the ecosystem to another) and by biological interactions (for example, kelps or sea grasses creating habitat or predators consuming prey). (DK)

Ecosystem change – Change is always occurring in Earth's ecosystems and marine ecosystems are no exception to this rule. For each ecosystem under consideration, it is important is to distinguish between

natural ecological change, anthropogenically driven change, and the two combined where appropriate and to identify the important adverse change(s) that can be ameliorated. Changes can and should be observed or measured over the long-term, and compared to measurements of or approximations of the original conditions (the so-called baseline conditions), set at some arbitrary time. The choice of appropriate indicators, the monitoring design, and modeling are critical to successful measurement of ecosystem change (Adapted from various authors, see Wells 2003, 2005).

Ecosystem dynamics -

Ecosystem health - is defined in terms of four characteristics applicable to any complex system – sustainability, activity, organization and resilience. An ecological system is healthy and free of distress syndrome if it is stable and sustainable – that is, if it is active and maintains its organization and autonomy over time, and is resilient to stress (from Wells 2003, based on Schaeffer et al 1988 and Haskell et al 1992).

Ecosystem services - the conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfill human life. Examples include provision of clean water, maintenance of livable climates (carbon sequestration), pollination of crops and native vegetation, and fulfillment of people's cultural, spiritual, intellectual needs
www.fao.org/ag/wfe2005/glossary_en.htm

Ecosystem-based approach - An ecosystem-based approach to management is geographically specified. It is adaptive and takes into account ecosystem knowledge and uncertainties. It considers multiple external influences and strives to balance diverse societal objectives. It also requires that the connections between people and the ecosystem be recognized, including the short and long-term implications of human activities along with the processes, components, functions, and carrying capacity of ecosystems. (Sumaila, 2005) (DK)

Ecosystem-based management – is an integrated approach to management that considers the entire ecosystem, including humans. The goal of ecosystem-based management is to maintain an ecosystem in a healthy, productive and resilient condition so that it can provide the services humans want and need. Ecosystem-based management differs from current approaches that usually focus on a single species, sector, activity or concern; it considers the cumulative impacts of different sectors. Specifically, ecosystem-based management:

- Emphasizes the protection of ecosystem structure, functioning, and key processes;
- Is place-based in focusing on a specific ecosystem and the range of activities affecting it;
- Explicitly accounts for the interconnectedness within systems, recognizing the importance of interactions between many target species or key services and other non-target species;
- Acknowledges interconnectedness among systems, such as between air, land and sea; and

Integrates ecological, social, economic, and institutional perspectives, recognizing their strong interdependence. (DK)
Also see "ecosystem-based approach"

Effect – (n) – a change which is a result or consequence of an action or other cause. To be distinguished from "impact" which is a marked effect or influence. (Oxford 2005).

Effluent (as in industrial effluent) – liquid waste or sewage discharged into a river or the sea. (Oxford 2005).

Environment – the surroundings or conditions in which a person, animal or plant lives or operates. (Oxford 2005). The sum of all external conditions affecting the life, development and survival of an organism. www.entrix.com/resources/glossary.aspx

Environmental baseline – see baseline.

Environmental Quality (marine) – or marine environmental quality (MEQ) - Environmental quality (marine) or MEQ is the condition of a particular marine environment measured in relation to its original unimpaired or "baseline" conditions, and in relation to each of its intended uses and functions. It can be described subjectively, especially if stresses impinging on the system are large and if the ecosystem or habitat is obviously degraded. However, it is usually assessed quantitatively for each environmental compartment, on temporal and spatial scales. MEQ is measured using sensitive indicators of condition and change. To be useful, such measures are interpreted using objectives and limits set by Evironmental, health and resource agencies (adapted from Wells 1991, 2003, 2005). Under the Canada Oceans Act (1997), MEQ objectives are created in order to protect the marine environment from harm. Fisheries and Oceans (DFO) managers of Integrated Management and Marine Protected Area Plans work with scientists and others to determine what objectives will best help protect certain areas in the ocean. These objectives could include keeping sewage concentrations below a certain level or keeping the concentrations of nutrients below a certain level. MEQ objectives help us to monitor the health of our oceans. (DFO).

Greenhouse gas - any gas that absorbs infra-red radiation in the atmosphere. Greenhouse gases include water vapor, carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), halogenated fluorocarbons (HCFCs) , ozone (O3), perfluorinated carbons (PFCs), and hydrofluorocarbons (HFCs).
www.chm.davidson.edu/student/che105/masquare/glossary.htm

Guideline(s) - A statement or other indication of policy or procedure by which to determine a course of action. (www.answers.com). Guidelines are defined by the CCREM (now the CCME) as "numerical concentrations or narrative statements recommended to support and maintain a designated water use" (Wells et al. 1986). (There are differences between a criterion, a guideline, an objective and a standard.)

Gulf of Maine - the land (watershed) and water areas in Maine, Massachusetts, New Hampshire, New Brunswick, and Nova Scotia that encompass the coastal lands of the three states and two provinces, the Gulf of Maine and the Bay of Fundy, and Georges Bank.

Habitat (as in habitat characterization, habitat integrity, habitat values, habitat functions, or habitat functions and values; also see regionally significant habitats) - The place or environment where a plant or animal naturally or normally lives and grows.
www.doe.mass.edu/frameworks/scitech/2001/resources/glossary.html **Habitat (from the Latin for "it inhabits") is the place where a particular species lives and grows. It is essentially the environment—at least the physical environment—that surrounds (influences and is utilized by) a species population. ...**
en.wikipedia.org/wiki/Habitat_(ecology)

Health (ecosystem) - A systematic approach to the preventative, diagnostic, and prognostic aspects of ecosystem management, and to the understanding of relationships between ecosystem health and human health. It seeks to understand and optimize the intrinsic capacity of an ecosystem for self-renewal while meeting reasonable human goals. It encompasses the role of societal values, attitudes and goals in shaping our conception of health at human and ecosystem scales. (also see marine ecosystem health)
www.med.uwo.ca/ecosystemhealth/education/glossary.htm

Health (environmental) – the well-being of the living things in the natural and human influenced environment.

Health (human) - freedom from or coping with disease on the one hand (the medical view), and the promotion of well-being and productivity on the other (the public health view); "in essence, there are two dimensions of health – the capacity for maintaining organization or renewal, and the capacity for achieving reasonable human goals or meeting needs" (Nielsen 1999, in Wells 2003).

Health (public) - One of the efforts organized by society to protect, promote, and restore the people's health. The combination of sciences, skills, and beliefs directed to the maintenance and improvement of the health of all the people through collective or social actions. A social institution, a discipline, and a practice with the goal to reduce the amount of disease, premature death, and disease-produced discomfort and disability in the population.
www.dph.state.ct.us/OPPE/sha99/glossary.htm

Health risk assessment - scientific evaluation of the probability of harm to humans resulting from exposure to hazardous materials.
www.epa.gov/region01/superfund/basics/gloss.htm

Healthy communities - those communities which encourage, enhance and promote the overall health and well-being of all citizens, in addition to meeting the most basic needs of the population (e.g. ensuring access to food, water and housing). www.phac-aspc.gc.ca/vs-sb/voluntarysector/glossary.html**. An example of a healthy community in the Gulf of Maine is a working waterfront of a coastal town or city.**

Healthy marine-based industries -

High quality ecosystem – a subjective term meant to denote a natural ecosystem with high biodiversity and biological production, typical of what would be expected for that ecosystem in an undisturbed state.

Indicator(s) - (cross-reference with "metrics" and indices) - in an environmental context, they are measurable features of natural ecosystems that provide scientific and managerial information about the current status and change over time i.e. trends, of each ecosystem. Ideally, they are simple measures of natural ecosystems that represent complex phenomena in easily understood terms (Pesch and Wells 2004). Indicators important to human health are often included in assessments of marine ecosystem health, e.g., coliform bacteria counts, measures of PSP, levels of toxic chemicals in seafood, types and quantities of litter on beaches.

Index (indices) - (also see indicators, metrics) - Indicators can also be grouped or clustered and then used to generate indexes or indices of marine ecosystem health or coastal condition, e.g., the traffic light coding for coastal condition used by EPA; this is an important way to transmit all of the indicator information to decision makers and the public, and to track progress resolving issues.

Information - (also note or see informatics, environmental informatics) – facts provided or learned about something or someone. (Oxford 2005).

Infrastructure - the basic physical and organizational structures and facilities (Oxford 2005).

Integrated management – in a marine context, a planning process in which interested parties, stakeholders and regulators reach general agreement on the best mix of conservation, sustainable resource use and economic development for coastal and marine areas. Goals include sustainable use and economic diversification.
www.mar.dfo-mpo.gc.ca/communications/maritimes/FactSheets04E/GlossaryE.html

Invasive species - an exotic or introduced species, plant or animal, that has been deliberately or accidentally transported and released into a foreign environment through human activities and has successfully taken hold in that environment, causing ecological damage in the process. Ecologists refer to introduced species as biological invasions. (GESAMP 1997). Also called alien species; exotics; introduced species; nuisance species; and opportunistic settlers.

Jurisdiction – the territory or sphere of activity over which the legal authority of a court or other institution extends (Oxford 2005). In the context of the GOMC, the jurisdictions are the Provinces of New Brunswick and Nova Scotia and the States of Maine, Massachusetts, and New Hampshire.

Key contaminants – persistent chemicals on the EPA Priority Chemicals List, as well as those recently identified as being present in the environment and of concern by other expert bodies. Also see priority contaminants.

Knowledge – the sum of what is known about a subject (Oxford 2005).

Land-based activities (also referred to as land-based pollution) – the range of activities on land (i.e. in the watersheds) affecting the coastal zone. This term is formally defined in detail in the UN Global Programme of Action (GPA) on Land-Based Activities (1995), otherwise known as the Washington Protocol. GPA pollutant source categories include: wastewater/sewage, physical alteration or destruction of habitats, nutrients, persistent organic pollutants, radioactive substances, heavy metals, sediment mobilization, litter, and oil (hydrocarbons).

Lawmaker(s) – a legislator (Oxford 2005). (add or cross-reference with "elected officials"? Explore relationship with "municipal governments?)

Long-term outcome

Marine - relating to or found in the sea (Oxford 2005).

Marine-based activities
Definitions (include industries that depend on high quality resources vs. those that don't)

Marine-based industry

Marine ecosystem health - see ecosystem health.

Marine environment - estuaries, coastal waters and offshore waters of the oceans. Also see "coastal environment".

Marine environmental quality (MEQ) - is the condition of a particular marine environment measured in relation to its original unimpaired or "baseline" conditions, and in relation to each of its intended uses and functions. It can be described subjectively, especially if stresses impinging on the system are large and if the ecosystem or habitat are obviously degraded. However, marine environmental quality or MEQ is usually assessed quantitatively for each environmental compartment, on temporal and spatial scales. It is measured using sensitive indicators of condition and change. To be useful, such measures are interpreted using objectives and limits set by environmental, health and resource agencies (adapted from Wells 1991, 2003, 2005). MEQ is also defined in the Canadian Oceans Act as …….

Marine Protected Areas (MPAs) - Any coastal or open ocean area in which certain uses are regulated to protect natural resources, biodiversity, or human livelihoods. The level of protection between MPAs varies considerably; most allow some extractive activities such as fishing, while prohibiting others such as drilling for oil or gas.
research.amnh.org/biodiversity/symposia/archives/seascapes/glossary.html

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Maritime (versus coastal) – connected with the sea; living or found in or near the sea (Oxford 2005).

Metrics

Definition (cross-reference with "indicators")

Monitoring - testing on a routine basis, with some degree of control, to ensure that the quality of water or effluent has not exceeded some prescribed criteria range (Wells and Rolston 1991). Measuring, usually over time, the concentration of substances in either environmental media or living organisms (Hodgson et al. 1998). The systematic process of collecting and storing data related to particular natural and human systems at specific locations and times; determination of a system's status at various points in time yields information on trends, which is fundamental to the potential for monitoring to detect system change (also termed status and trend detection) (Busch and Trexler 2003).

Mid-term outcome

Municipal governments – the governing bodies of towns or districts (adapted from Oxford 2005).

Natural capital - natural capital refers to the mineral, plant, and animal formations of the Earth's biosphere when viewed as a means of production of oxygen, water filter, erosion preventer, or provider of other natural services. It is one approach to ecosystem valuation, an alternative to the traditional view of all non-human life as passive natural resources, and to the idea of ecological health. en.wikipedia.org/wiki/Natural_capital

Natural barriers - those naturally created areas such as stream beds, banks, hill sides, brush lines or other changes in vegetation, or ground surfaces that generally can interrupt human passage, or cause change of stride, exaggerated or additional footprint sign that will be more easily seen by trackers. trackerarchive.tripod.com/glossary.htm **((needs checking for context!!))**

Nature-based tourism – tourism associated with experiencing the many attributes of the natural environment; sometimes referred to as ecotourism. ((my def – check!!))

Non-point source pollution – contamination and pollution originating from a variety of generally unidentified and disparate sources, such as river inputs, runoff from the land, and the air.

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Objectives – for water, objectives are the numerical or narrative limits on constituents or characteristics of water designated to protect designated beneficial uses of the water. [California Water Code Section 13050 (h)]. For example, California's water quality objectives are established by the State and Regional Water Boards in the Water Quality Control Plans.
www.floodcontrol.co.riverside.ca.us/districtsite/content/glossary.htm

Oceanic – relating to the ocean; of or inhabiting the part of the ocean beyond the edge of a continental shelf (Oxford 2005).

Opinion leader -

Optimum - Definition (used in Goal 2 regarding human health—is it just physical? Mental? For a "whole" community? Other?)

Phylum - a major taxonomic unit comprising organisms sharing a fundamental pattern of organization and presumably a common descent (Websters 3rd).

Point-source pollution - refers to a source of pollutants from a single point of conveyance, such as a pipe. For example, the discharge from a sewage treatment plant or factory is a point source (EPA 1998).

Policy-maker - someone who sets the plan pursued by a government or business, etc. wordnet.princeton.edu/perl/webwn**. Also see law-makers, decision makers.**

Pollution - the UN GESAMP definition, widely accepted and in legal usage, is 'the introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as to harm living resources and marine life, be hazardous to human health, hinder marine activities, including fishing and other marine uses, or impair the quality of sea water and reduce amenities'. (Wells and Rolston 1991). Also see point and non-point source pollution.

Priority contaminants – chemicals, mostly anthropogenic, that are persistent, bioaccumulative and toxic at very low levels, and considered by agencies, countries and international bodies to be in need of regulation or banning. Examples are the EPA (USA) listing of priority chemicals, and the POPs (persistent organic pollutants) of the recent UNEP convention. ((check this – I made it up))

Private entities

Private sector – the part of the national economy that is not under direct state control (Oxford 2005).

Public entities

Public health - One of the efforts organized by society to protect, promote, and restore the people's health. The combination of sciences, skills, and beliefs directed to the maintenance and improvement of the health of all the people through collective or social actions. A social institution, a discipline, and a practice with the goal to reduce the amount of disease, premature death, and disease-produced discomfort and disability in the population.
www.dph.state.ct.us/OPPE/sha99/glossary.htm

Public sector - the part of the economy that is controlled by the state (Oxford 2005).

Quality (also see marine environmental quality) – the standard of something as measured against other things of a similar kind; the degree of excellence of something (Oxford 2005).

Region

Regionally significant coastal habitats – a term used by the Gulf of Maine Council on the Marine Environment (GOMCME) for identification of "regionally significant habitats" for management, protection and restoration. The designation of regionally significant habitats is based on their utility to regionally important species, selected according to social, commercial, ecological, and institutional criteria. The designation of regionally significant habitats requires comparison of all potentially significant habitats in the watershed, a major undertaking. (GOMC website).

Regulation (also regulations)

Resources, natural and living (as opposed to financial or human resources) -

Resource managers

Restoration (habitat) - the return of a habitat to its original community structure, natural complement of species and natural functions. Source: Specialized encyclopedia and dictionaries
europa.eu.int/comm/research/biosociety/library/glossarylist_en.cfm

▪

Risk - the possibility of loss, injury, disadvantage, or destruction. (Websters 3rd). As used in risk assessments, the probability or likelihood of some adverse consequence occurring to an exposed human or to an exposed ecological entity. (Newman and Unger 2003).

Risk analysis - a process consisting of three components: risk assessment, risk management and risk communication performed to understand the nature of unwanted, negative consequences to human and animal health, or the environment.
aviscollege.com/tools/8000-terms.asp

Risk assessment (also see ecological risk assessment) - process intended to calculate or estimate the risk for a given target system following exposure to a particular substance, taking into account the inherent characteristics of a substance of concern as well as the characteristics of the specific target system. The process includes four steps: hazard identification**,** dose-response assessment**,** exposure assessment**, and** risk characterization**. It is also the first step in** risk analysis**. (J.H.Duffus, 2001, Chemistry International).**

Science translation – the process of communicating scientific facts and knowledge to a general audience i.e. the public. ((check this))

Sea level rise - long-term increases in mean sea level. The expression is popularly applied to anticipated eustatic sea level changes due to the greenhouse effect and associated global warming.
amsglossary.allenpress.com/glossary/browse

Sewage - the waste and wastewater produced by residential and commercial sources and discharged into sewers.
www.sbeach.navy.mil/Programs/Environmental/IR/Reading_Room/Glossary/G_S.htm

Shifting baseline syndrome (also see baseline) - a shifting baseline that develops as members of the present generation (e.g. of fisheries biologists) use stock sizes and composition known during their lifetimes as reference points against which to compare the current status of fisheries (Daniel Pauly, UBC, Vancouver, BC). The principle can also apply to practitioners of environmental monitoring, as baseline data are often those collected or otherwise accessed only within the practitioner's lifetime, and may not represent the original, pre-settlement, pristine conditions.

Short-term outcome

Species - a group of individuals similar in certain morphological and physiological characteristics that are capable of interbreeding and are reproductively isolated from all other such groups (EPA 1998). Also see phylum/phyla.

Standards -

Stewardship - related to the environment, the concept of responsible caretaking; based on the premise that we do not own resources, but are managers and are responsible to future generations for their condition
www.jcpsky.net/Departments/EnvironmentalEd/blackacre/glossary.html

Stress - the state or condition of strain and especially of intense strain. (Websters 3rd). Any factor (external or internal) that disturbs the equilibrium of a system. (Lewis 1998).

Stressors – the variable(s) that cause(s) stress. Often used synonymously with stress.

Survey (noun) -

Sustainability (sustainable development) - the process of conserving an ecological balance by avoiding depletion of natural resources. (adapted from Barber 1998). Sustainable (adjective) refers to development. Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. (WCED 1987).

Threat – a person or thing likely to cause damage or danger. (Oxford 2005)

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Threshold (as in toxicity threshold; critical threshold) - in the context of chemical or physico-chemical levels in the environment, thresholds are "the maximum level of concentration (of a substance) considered to be acceptable or safe". (Oxford 2005). In aquatic toxicology, thresholds such as NOECs (no observable effect concentrations), LOECS (lowest observable effect concentrations), and MATCs (maximum acceptable toxicant concentrations) are estimated from toxicity tests.

Treatment technologies - in the context of sewage, there are various kinds of wastewater treatment e.g. primary; enhanced primary (chemical coagulation or ballasted flocculation); secondary . ((check - Goal 2 usage)

Working landscape -

Working waterfront – a harbour and its facilities that are functioning economically, maintaining historical and cultural connections to the sea and its living resources. Often done to promote tourism. ((check this – I made it up!!))

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Other notes, questions, and issues to consider:

Do we want to exclude terms for which we are using a dictionary definition and cite that tome, i.e., cite a particular dictionary and instruct Action Plan readers that those terms not defined in the glossary are defined in that cited dictionary.

Make consistent all terms throughout plan including "Gulf of Maine" vs. "Gulf of Maine region" or "Gulf of Maine watershed"

Executive summary

Introduction with 20/20 history and background

Do we want to define the terms of objectives (or outcomes)? What term do we want to use for the SMAARTened logic models?

Include in AP introductory text a paragraph/bullets outlining the three levels of the Council's involvement
Cite documents that are referenced in the *2006-2011 Action Plan* or provided guidance and recommendations for decision-making in this *Plan*.

Decision Matrix and Council Role	**Lead** (will not get done otherwise)	**Partner** (Substantive role in joint effort)	**Supporter** (Minor role)
Regional (requires or significantly benefits from collaboration)	**A-1**	**A-2**	**A-3**
Common (oand can be addressed at that scale)	**B-1**	**B-2**	**B-3**
Isolated (occurs in a few jurisdictions)	**C-1**	**C-2**	**C-3**