

# Ecosystem Indicator Partnership: Where are we going and how can we get there?

Christine Tilburg  
ESIP Program Manager  
June 11, 2007



**Gulf of Maine  
Council on the  
Marine Environment**



# ESIP Organization

Gulf of Maine Council

Ecosystem Indicator Partnership Steering Committee

Program Manager

Indicator Work Groups

- Aquatic Habitats
- Climate Change
- Coastal Development
- Contaminants
- Fisheries/Aquaculture
- Eutrophication/Nutrients



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# ESIP Goals and Timelines

Indicators are quantitative or qualitative measures that provide information about the status of or changes in natural, cultural, and economic aspects of an ecosystem.

**September 2007 – Subcommittees decide on priority indicators**

**January 1, 2008 – ESIP publishes framework for regional reporting of indicators**

**March 2008 – All 6 ESIP Subcommittees revisit TOR and determine scope for next 12 months**

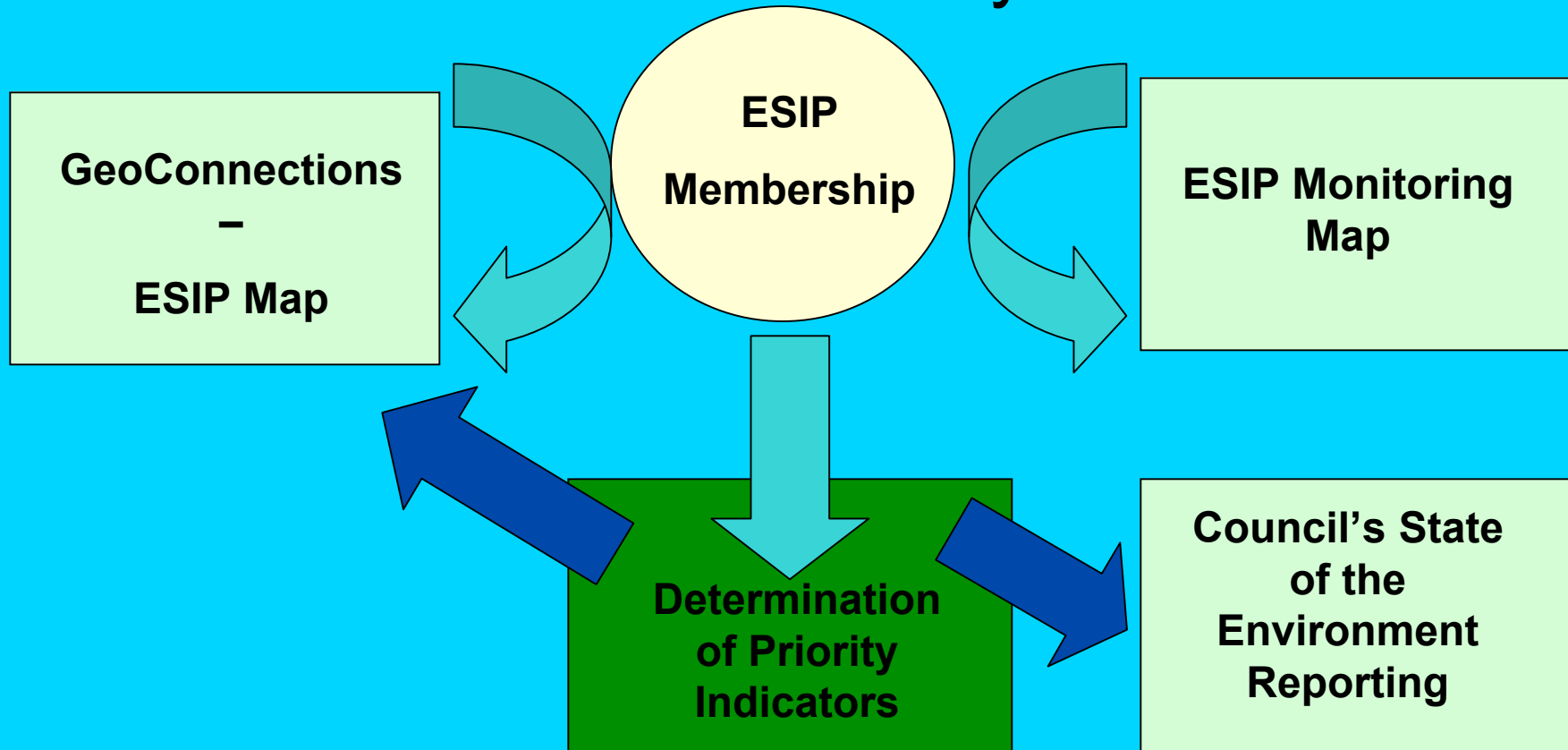
**June 1, 2008 – ESIP publishes framework for regional reporting of habitat and climate change indicators (data rich)**



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# ESIP's Focus on Three Major Areas...Today



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# ESIP Monitoring Map

Gulf of Maine Council - Mozilla Firefox  
http://www.gulfmaine.org/esip/map/index.phtml?show\_legend=y

Ecosystem Indicator Partnership (ESIP) > Interactive map

Zoom to: Gulf of Maine (Default)

Map layers - Search - Sites - Help

Select map layers to display by clicking the checkbox. Some layers are detailed and won't be available until you zoom in. Select as many layers as you like, then scroll down this box and click the "Show/Hide layers" button.

ESIP Sites

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

Bathymetry and Elevation

- Bathymetry
- Maine Elevation Contours

Lakes, Rivers and Streams

- U.S. Hydrology
- Maine Streams

About ESIP - [Get site data](#) - [How to use these pages](#)

The Ecosystem Indicator Partnership (ESIP) is a committee of the Gulf of Maine Council on the Marine Environment. ESIP is developing indicators for the Gulf of Maine ecosystem monitoring. Activities of ESIP initially center on convening regional practitioners in six indicator areas: coastal development, contaminants and pathogens, eutrophication, aquatic habitat, fisheries and aquaculture, and climate change.

[Read more on the ESIP page on www.gulfmaine.org](#)

Home - People Finder - NGO Directory - Knowledgebase - News - Gulf of Maine Times - Overview  
Action Plan - Committees - Projects - Meetings - Publications - Media room - Opportunities - Contact us

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Done  
start | Inbox - Thunderbird | ESIPpptforCON | Gulf of Maine Council ... | 3:34 PM



Query by indicator to locate monitoring data



Follow data back to source

# ESIP's GeoConnections Project

Will use Gulfwatch as prototype for map and geospatial tool

Contaminant and Nutrient Indicators Include:

- Metals
- Chl. pesticides
- Dissolved Oxygen
- [N] and [P]

# GeoConnections Timeline

Phase	Major Deliverable	Responsible Party	Date (2007)
I	Data Discovery	ESIP and DD Contractors	Jan 1 <b>Completed</b>
II	Requirements document review	ESIP and GoMOOS	Feb 15 <b>Completed</b>
II	Tech vendor RFP	GoMOOS	Mar 26 <b>Completed</b>
III	Canadian vendor selected	GoMOOS	May 11 <b>Completed</b>
III	Data access tests for priority datasets	GoMOOS, Developer	September 30
III	Metadata registration complete	ESIP, GoMOOS, Developer	September 30
III	Report on OGC Sensor WMS and WFS	GoMOOS	September 30
IV	Development of geospatial tools	ESIP, GoMOOS, Developer	December 31
V	CGDI documentation	ESIP, GoMOOS, Developer	December 31
VI	Final project report and meetings to unveil geospatial tool	ESIP, GoMOOS, Developer	January 31, 2008

*CGDI = Canadian Geospatial Data Infrastructure*

*WFS = Web Feature Service*

*OGS = Open Geospatial Consortium*

*WMS = Web Map Service*

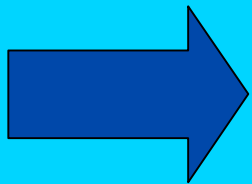


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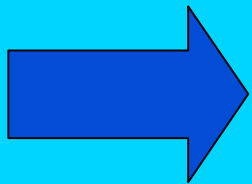


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# ESIP Timelines



**September 2007 – Subcommittees  
decide on priority indicators**



**January 1, 2008 – ESIP  
publishes framework for  
regional reporting of indicators**

**March 2008 – All 6 ESIP Subcommittees revisit TOR  
and determine scope for next 12 months**

**June 1, 2008 – ESIP publishes framework for  
regional reporting of habitat and climate change  
indicators (data rich)**



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# Coastal Development Subcommittee

*Goal: Select initial 2-3 indicators for reporting by Early Fall 2007*



*Photo courtesy of NOAA Photo Library.*



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# Coastal Development Subcommittee

Composed of 18 people:

Stacy Benjamin (ME SPO)

Jeb Byers (UNH)

Bruce Carlisle (MA CZM)

Norval Collins (Consultant)

Beth Della Valle (Consultant)

Al Hanson (Ca Wildlife)

Brad Haskell (Town of Bar Harbour)

David Keeley (GOMC)

Kathleen Leyden (ME SPO)

Pam Morgan (UNE)

Kathryn Parlee (EC)

Susan Russell-Robinson (USGS)

Suzy Ryan (CML)

Daniel Savard (NB Dept. of Env.)

Jack Schwartz (MA DMR)

Marilyn ten Brink (EPA)

Jane Tims (NB Dept. of Env.)

Elizabeth Mills (NOAA)

**\*\*\* Chair/Co-Chair : VACANT**

**1<sup>st</sup> Question: Are there additional people that should be invited to this group?**

**2<sup>nd</sup> Question: Are there suggestions for a chair/co-chair of this group?**



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# Coastal Development Subcommittee

## 3<sup>rd</sup> Question: What do we have?

Suggested Indicators From:

1. Gulf of Maine Council: Regional Ecosystem Indicators for the Gulf of Maine: Pre-Summit Draft
2. Gulf of Maine Council, Strategy for Gulf of Maine Ecosystem Indicators and State of the Environment Reporting
3. M. Mendelson (GOMC Intern): In Pursuit of Data: Populating the Coastal Development Indicators
4. Northeast Coastal Indicators Workshop Meeting Summary

*Goal: Select Initial 2-3 Indicators for reporting by Early Fall 2007*



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# Coastal Development Subcommittee

## Suggested Indicator List:

1. % Change in land cover to more intensive uses
2. Demographic Changes
3. Types of land use and change
4. Status and trends in threatened/endangered species
5. Status of migratory species
6. Trends in invasive plants in wetland areas
7. Type, location, and pace of habitat restoration
8. Land management/number of local govt. participating in comprehensive planning
9. Number of comp. local govt. land development ordinances

*Goal: Select Initial 2-3 Indicators for reporting by Early Fall 2007*



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# Coastal Development Subcommittee

## 3rd Question: What do we have? Continued....

In the "In Pursuit of Data" report, data sources were assessed for the following indicators:

1. Percentage and acreage of conserved land Existing Data? Yes
2. Percent of land cover that has changed to a more intensive use Existing Data? Probably available
3. Number of municipalities engaging in comprehensive planning Existing Data? Some data available, not standardized, could be difficult to use as an indicator
4. Acreage of various types of habitat that have been restored Existing Data? Routinely stated as priority indicator – however, data possibly not readily available
5. Status and trends of endangered and threatened species Existing Data? Yes, could be compiled relatively easily
6. Trends of invasive plants in wetland areas Existing Data? Not really, would be difficult to use as an indicator
7. Demographic changes in municipalities that border saltwater Existing Data? Yes

*Goal: Select Initial 2-3 Indicators for reporting by Early Fall 2007*



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# Coastal Development Subcommittee

4<sup>th</sup> Question: What should our steps be in the next 60 days in order to reach our goal?

- 1.
- 2.
- 3.
- 4.
- 5...

*Goal: Select Initial 2-3 Indicators for reporting by Early Fall 2007*



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# Habitat Monitoring Subcommittee

*Goal: Select initial 2-3 indicators for reporting by Early Fall 2007 – pretty much done....*



Photo courtesy John Sowles



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# So...Habitat Monitoring Committee

**1<sup>st</sup> Question: What do we have?**

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

Regional indicators that would fulfill ESIP's requirements are:

1. Extent and distribution of habitat types (as total areas)
2. Extent and distribution of habitat in protected status (total area and proportion protected)
3. Direct Alterations (tidally restricted or impacted from dredging, dragging, or structures (Salt marsh)
4. Adjacent land use

**2<sup>nd</sup> Question: Given that there are many possible indicators – do we agree that this is a reasonable set of indicators given the time constraints, the ability to integrate with other indicators, and what is available?**

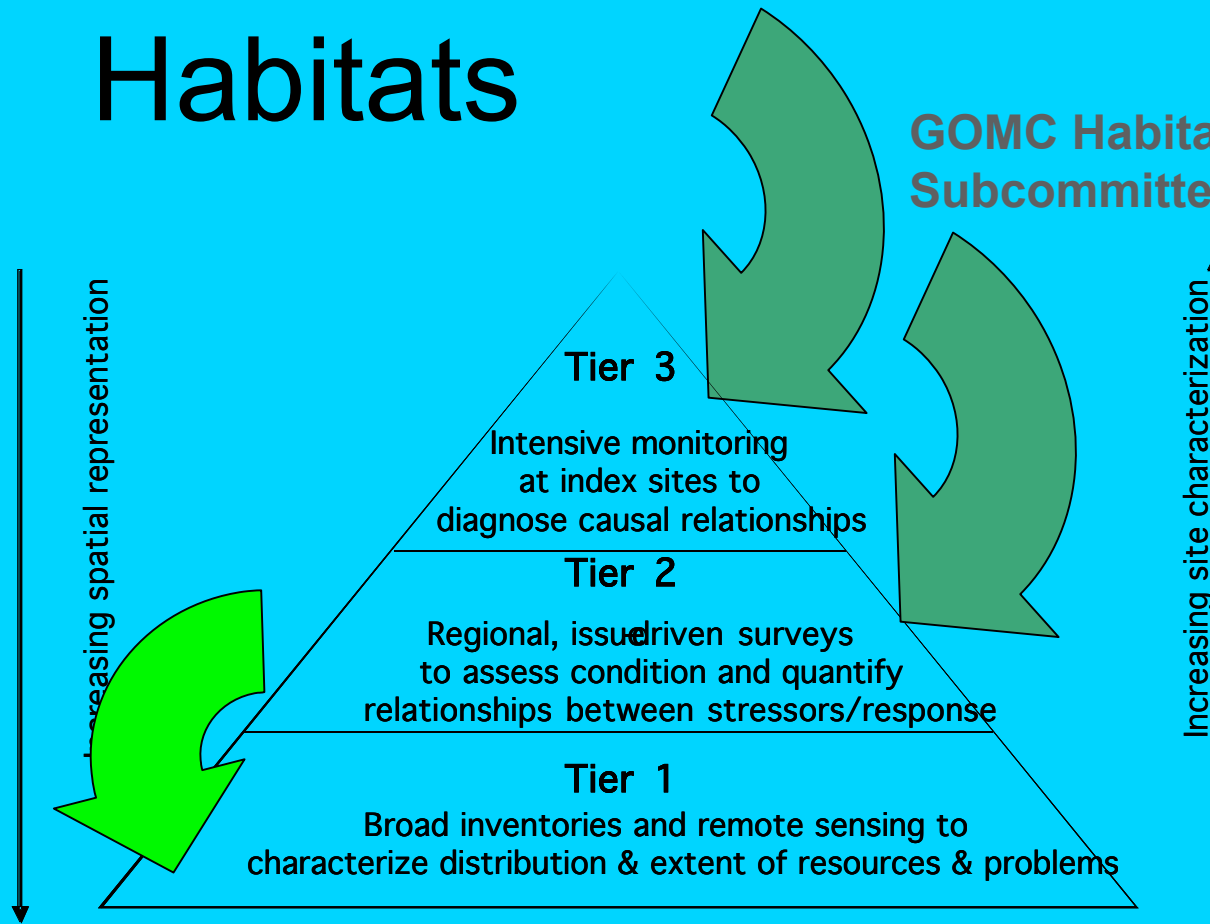


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# Habitats

GOMC Habitat Monitoring Subcommittee



## ESIP's Regional Needs



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# So...Habitat Monitoring Subcommittee

3<sup>rd</sup> Question: What should our steps be in the next 60 days in order to reach our goal?

1. Can we flesh out this group with other people with GIS/regional mapping experience?
2. Where can we access the spatial data we need?
- 3.
- 4.
- 5.....

*Goal: Select Initial 2-3 Indicators for reporting by Early Fall 2007*



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# Eutrophication Committee

*Goal: Select initial 2-3 indicators for reporting by Early Fall 2007*



*Photo courtesy of Conservation Council of NB*



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# Eutrophication Subcommittee

Composed of 11 people:

Eric Luiker (EC)

John Roff (Acadia Univ.)

Todd Callaghan (MA CZM)

Marilyn ten Brink (EPA)

John Brawley (Battelle)

Chris Deacutis (URI)

Mike Doan (Friends of Casco Bay)

Becky Weidman (NEIWPC)

Phil Trowbridge (NH DES)

Mary Foley (NPS)

Scott Nixon (URI)

**\*\*\* Chair/Co-Chair : VACANT**

**1<sup>st</sup> Question: Are there additional people that should be invited to this group?**

**2<sup>nd</sup> Question: Are there suggestions for a chair/co-chair of this group?**



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# Eutrophication Subcommittee

## 3<sup>rd</sup> Question: What do we have?

Suggested Indicators From:

1. M. Dionne. RARGOM Presentation 2006
2. Gulf of Maine Council, Strategy for Gulf of Maine Ecosystem Indicators and State of the Environment Reporting
3. Gulf of Maine GeoConnections Project
4. Northeast Coastal Indicators Workshop Meeting Summary
5. Sherman, K. RARGOM Presentation 2006

*Goal: Select Initial 2-3 Indicators for reporting by Early Fall 2007*



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# Eutrophication Subcommittee

GeoConnections Project is a funded project to develop web tools for use with contaminant and nutrient data in the Gulf of Maine

Nutrient-related indicators used for GeoConnections tool:

- Dissolved oxygen
- Chlorophyll a concentration in surface water
- Nutrient concentrations and/or loads for N and P
- Submerged Aquatic Vegetation (focus on eelgrass presence/absence)
- Water clarity (Secchi depth)
- Salinity
- Temperature

*Goal: Select Initial 2-3 Indicators for reporting by Early Fall 2007*



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# Eutrophication Subcommittee

Other proposed indicators for eutrophication:

1. Land Use/Cover
2. Population
3. Number and duration of harmful algal blooms
4. Macroalgae
5. Coastal wetland loss

*Goal: Select Initial 2-3 Indicators for reporting by Early Fall 2007*



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# Eutrophication Subcommittee

3<sup>rd</sup> Question: What should our steps be in the next 60 days in order to reach our goal?

1. Assist in the suggestions for selection of databases for ESIP/GC web tool – spreadsheet will be mailed in next 2 weeks.

2.

3.

4.

5...

*Goal: Select Initial 2-3 Indicators for reporting by Early Fall 2007*



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# Fisheries & Aquaculture Subcommittee

*Goal: Select initial 2-3 indicators for reporting by Early Fall 2007*



*Photo courtesy of University of Maine*



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# Fisheries and Aquaculture Subcommittee

Composed of 15 people:

Rich Langan (CICEET)  
Andrew Rosenberg (UNH)  
Christopher Heinig (Consultant)  
Kats Haya (DFO)  
Yaqin (Judy) Li (NOAA)  
Gary Matlock (NOAA)  
Linda Mercer (ME DMR)

Kathy Mills (Cornell)  
Jack Schwartz (ME DMR)  
Jeri Fox (UNE)  
James Sulikowski (UNE)  
Verna DeLauer (UNH)  
Brad Haskell (Town of Bar Harbor)  
Ron Goldberg (NOAA)

**Chair = Jason Link (NOAA)**

**1<sup>st</sup> Question: Are there additional people that should be invited to this group?**



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# Fisheries and Aquaculture Subcommittee

## 2nd Question: What do we have?

Suggested Indicators From:

1. Gulf of Maine Council: Regional Ecosystem Indicators for the Gulf of Maine: Pre-Summit Draft
2. Gulf of Maine Council, Strategy for Gulf of Maine Ecosystem Indicators and State of the Environment Reporting
3. Rago, P. RARGOM Presentation
4. Northeast Coastal Indicators Workshop Meeting Summary
5. Sherman, K. RARGOM Presentation

*Goal: Select Initial 2-3 Indicators for reporting by Early Fall 2007*



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# Fisheries and Aquaculture Subcommittee

Suggested Topic Areas for Indicator List:

1. Size
2. Production
3. Diversity
4. “Canary” species Energy Flow – Trophodynamics
5. Habitat
6. Physio-chemical Regime
7. Status of Stocks of Interest
8. Management Performance - Response

*Goal: Select Initial 2-3 Indicators for reporting by Early Fall 2007*



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# Fisheries and Aquaculture Subcommittee

3rd Question: What is the feasibility of calculating and visualizing candidate indicators?

4th Question: Do we have the relevant partners involved?

5th Question: Is the relevant data available?

*Goal: Select Initial 2-3 Indicators for reporting by Early Fall 2007*



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# Fisheries and Aquaculture Subcommittee

6<sup>th</sup> Question: What do our steps need to be in the next 60 days to reach our goal?

- 1.
- 2.
- 3.
- 4.
- 5.....

*Goal: Select Initial 2-3 Indicators for reporting by Early Fall 2007*



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# Contaminants Committee

*Goal: Select initial 2-3 indicators for reporting by Early Fall 2007*



*Photo courtesy of New Hampshire Estuaries Project*



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# Contaminants Subcommittee

Composed of 14 people:

Esperenza Stanticoff (U ME, ME SG)  
Diane Gould (EPA)  
Marilyn ten Brink (EPA)  
*Christian Krahforst (Mass. Bays NEP)*  
Steve Jones (UNH)  
Kats Haya (DFO)

Robert Ranheim (NYC DEP)  
*Jack Schwartz (MA DMR)*  
Todd Callaghan (MA CZM)  
Adria Elskus (USGS and U ME)  
Charles Strobel (EPA)  
Keith Matassa (UNE)

**Chair/Co-Chair: *Peter Wells (Dalhousie) and Wendy Leo (MWRA)\****

**1<sup>st</sup> Question: Are there additional people that should be invited to this group?**



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# Contaminants Subcommittee

## 2<sup>nd</sup> Question: What do we have?

Suggested Indicators From:

1. Gulf of Maine Council, Strategy for Gulf of Maine Ecosystem Indicators and State of the Environment Reporting
2. Gulf of Maine GeoConnections Project
3. Northeast Coastal Indicators Workshop Meeting Summary
4. Gulf of Maine Council: Regional Ecosystem Indicators for the Gulf of Maine: Pre-Summit Draft
5. Shermann, K. RARGOM Presentation

*Goal: Select Initial 2-3 Indicators for reporting by Early Fall 2007*



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# Contaminants Subcommittee

GeoConnections Project is a funded project to develop web tools for use with contaminant and nutrient data in the Gulf of Maine

Contaminants used for GeoConnections tool:

- Polycyclic aromatic hydrocarbons (PAHs)
- Polychlorinated biphenyls (PCBs)
- Chlorinated pesticides
- Metals

*Goal: Select Initial 2-3 Indicators for reporting by Early Fall 2007*



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# Contaminants Subcommittee

Other proposed indicators for contaminants:

1. Sediment contaminants/Sediment quality
2. Contaminant levels in organisms and humans
3. Areas of shellfish beds closed
4. Annual chemical load to water bodies
5. Incidence of human disease
6. Reproductive success
7. Habitat quality
8. Water concentrations
9. Source investigations and eliminations
10. Marine organism disease incidence

*Goal: Select Initial 2-3 Indicators for reporting by Early Fall 2007*



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# Contaminants Subcommittee

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**September 2007 – Subcommittees decide on priority indicators**

**January 1, 2008 – ESIP publishes framework for regional reporting of indicators**

Conference Calls to be arranged for mid-Summer to follow-up on the activities outlined for each subcommittee.



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