

# Ecosystem Approach to Management (EAM)

With Integrated Ecosystem Assessment (IEA)  
and Implications for  
Coastal and Marine Spatial Planning (CMSP)

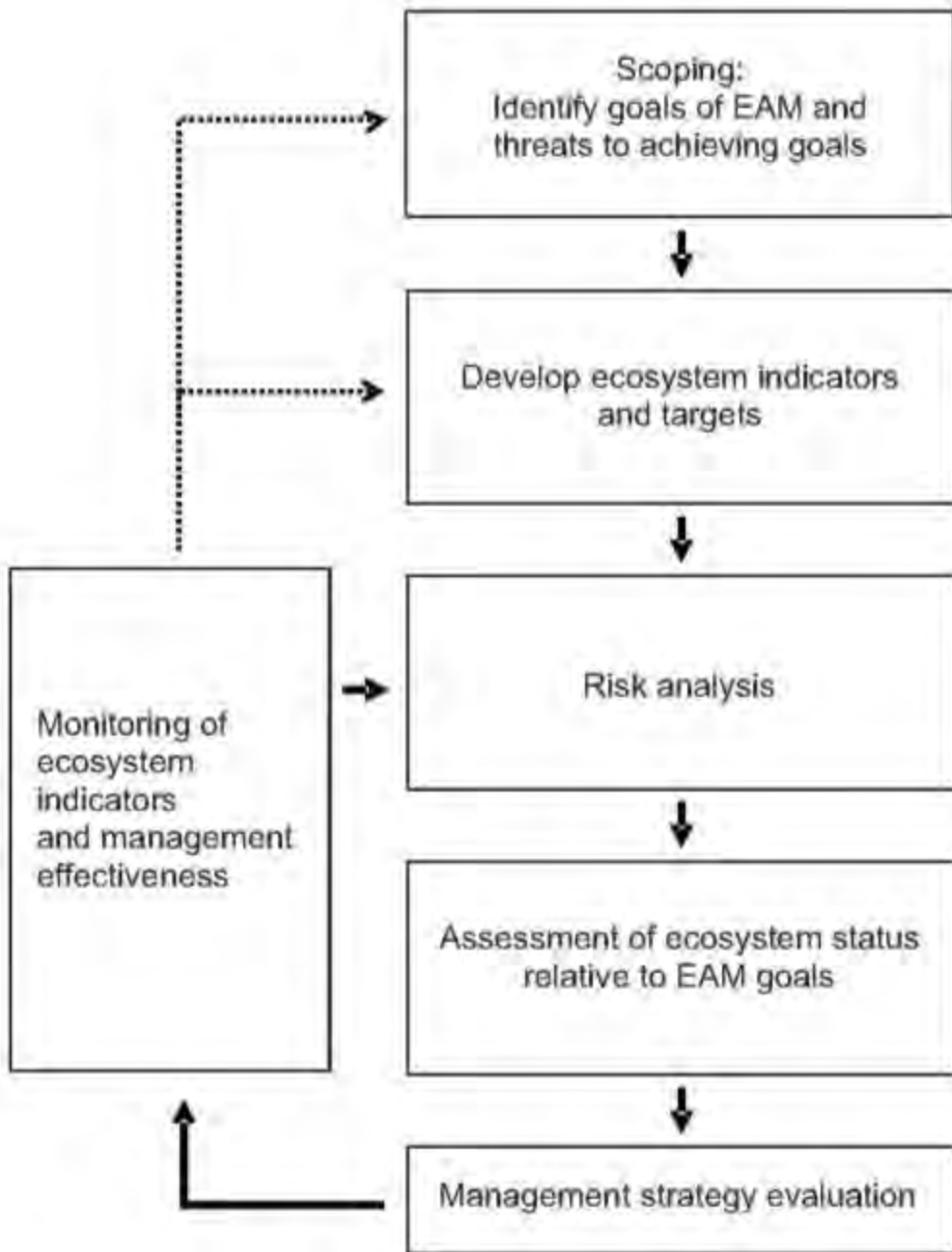


The NGI Ecosystem Team



## NGI IEA/EAM Context

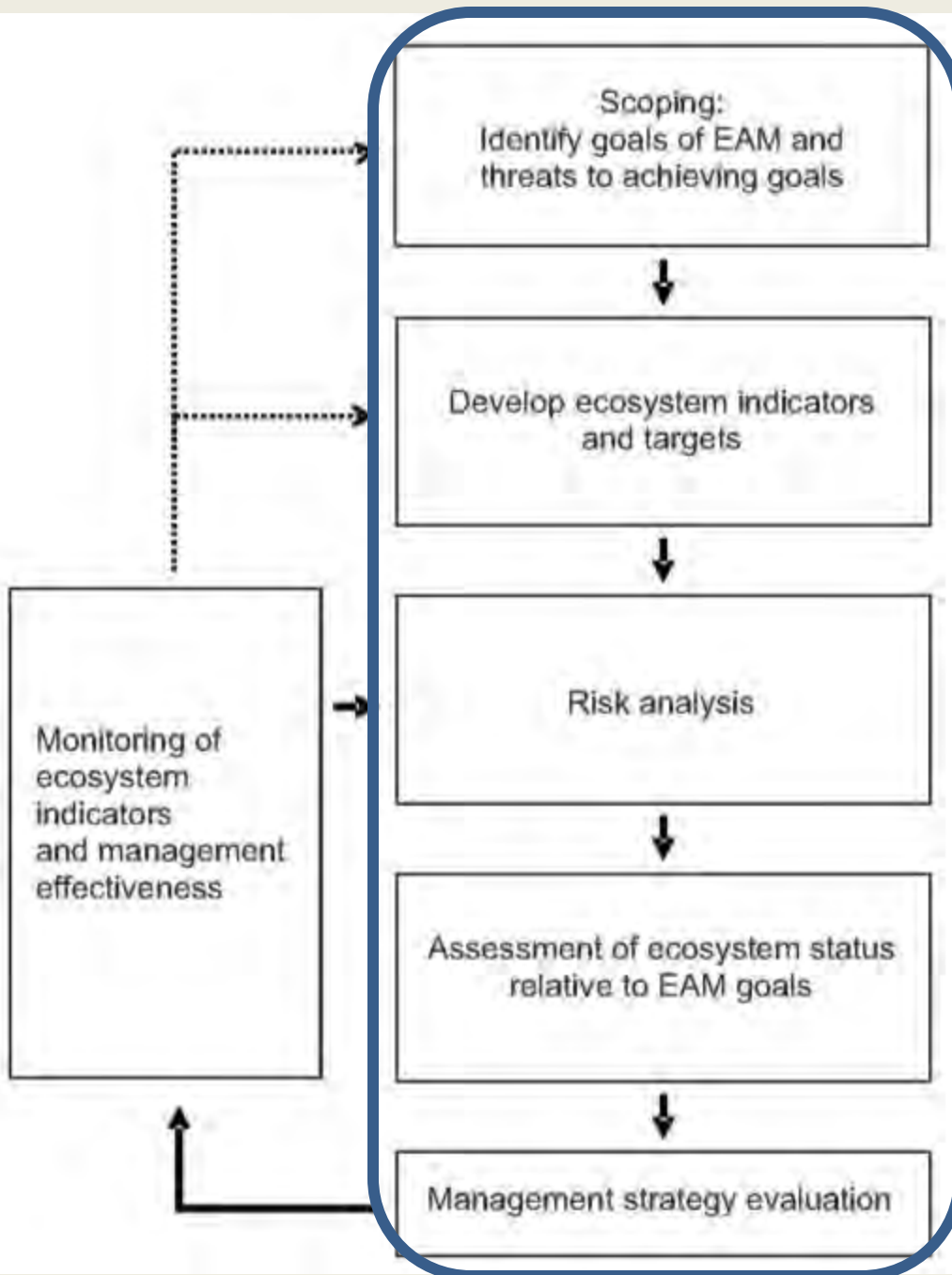
### *Adaptive Ecosystem Approach to Management (EAM)*



## NGI IEA/EAM Context

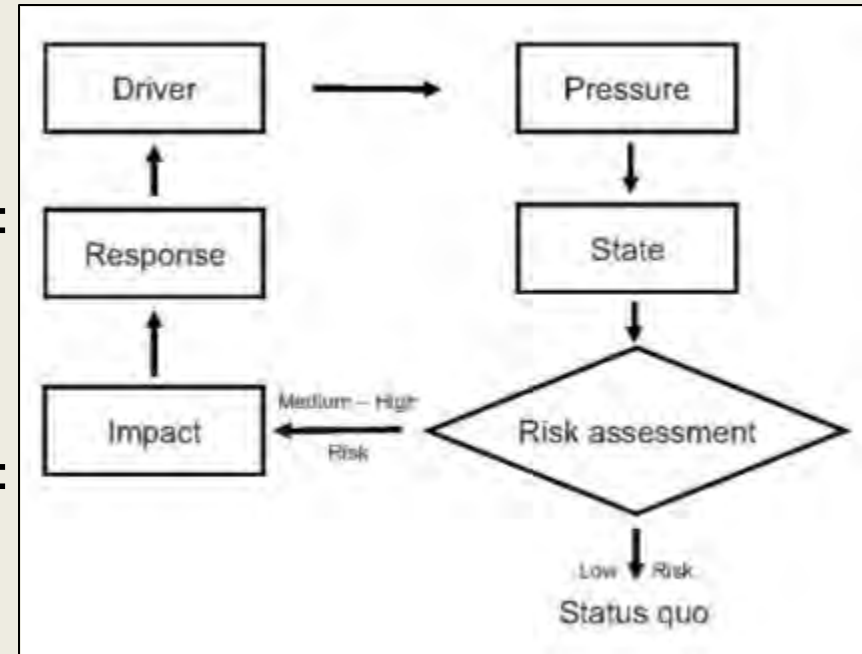
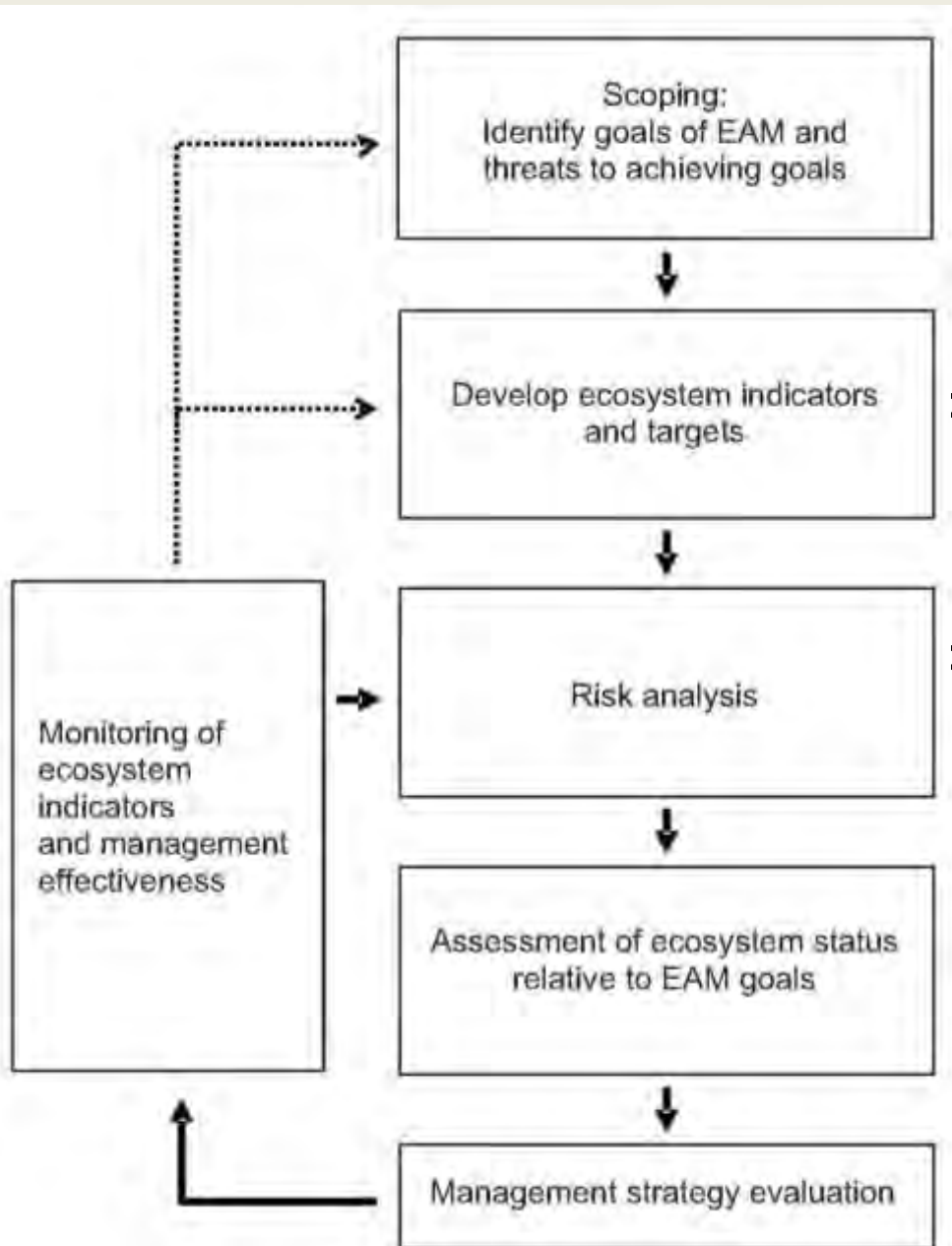
### *Adaptive Ecosystem Approach to Management (EAM)*

*with Embedded 5- Step  
Integrated Ecosystem  
Assessment (IEA) Process*



# NGI IEA/EAM Context

*Present & FY10 Planned*



*Driver-Pressure-State-Impact-Response (DPSIR) Framework*

# Prior Work

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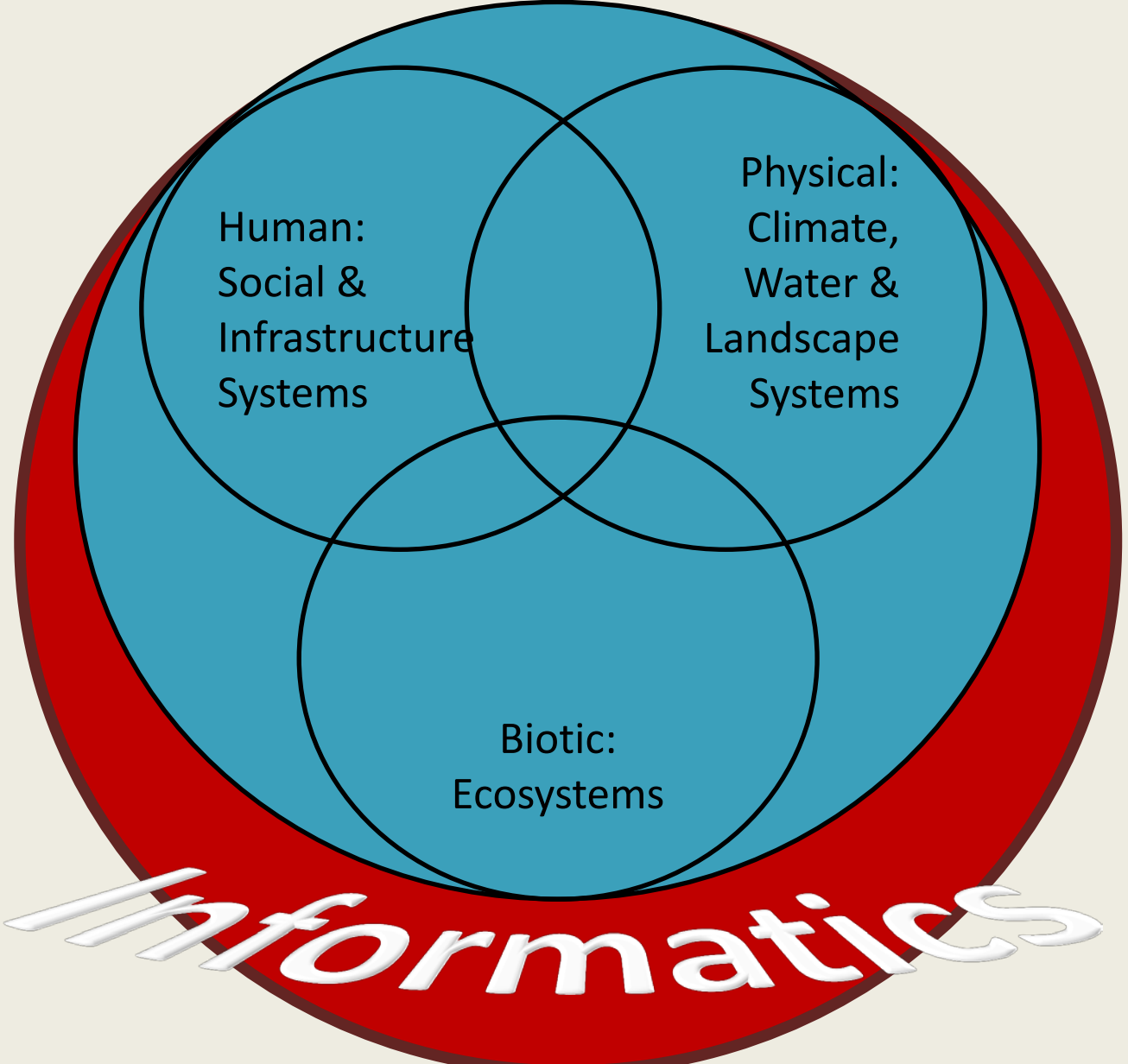
- Began the process of generating an IEA for the GOM in FY09.
- Accomplishments:
  - Identified and summarized IEA Drivers and Pressures for three representative systems in the northern Gulf of Mexico.
  - Identified the similarities and differences in Drivers and Pressures among the three systems.

# Three Initial Systems





# The Conceptual Earth Ecosystem Model: Level 1



# 3 System Summary Drivers

- Hydrologic Modifications
  - Exploration and Navigation Canals
  - Flood Levee and Dam Construction
  - Freshwater Diversion
- Climate
  - Sea Level Rise/Subsidence
  - Extreme Weather Events
  - Climate Variability
- Human-Related Processes 
  - Local Population Size 
  - Trade/Industry
  - Socio-Political-Educational Perceptions
  - Tourism/Recreation 





# Three System Summary Pressures

- *Human-Related Processes* dominate Drivers, with *Local Population Size* and *Tourism/Recreation* cited for all three systems
- Five Pressures manifest those drivers:
  - Increased Urban/Coastal Development
  - Increased Fishing Effort
  - Increased Boat Traffic
  - Increased Nutrients
  - Increased Pollution



Photo courtesy of NMFS

# Present IEA/EAM Efforts

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1. Extend the Drivers and Pressures analysis , in order to separate the effects of scale from the effects of geographical location.
2. Use the stakeholder groups already assembled plus upstream (watershed) groups.
3. Begin a risk analysis framework.
4. Compile a guidance document that will serve as a template.
5. Extend the Sulis toolkit, with tools for EAM and IEA.
6. Initiate two new system IEAs.
7. Begin integration of the individual IEA into a Gulf of Mexico EAM.



# Coastal and Marine Spatial Planning

*Striving to sustain economic, ecological, and cultural resources for future generations*

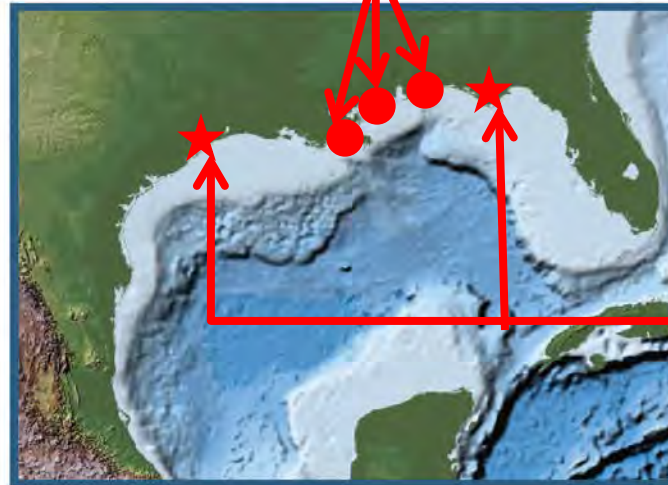
MANAGEMENT AREA

SUB AREA

DISPLAY ITEMS (Select Box for Item List)

Boundaries  Infrastructure

Habitat  Geology  Human Use



Existing Sites

New Sites

### MARITIME BOUNDARIES

- Select Items
- Territorial Sea
- Contiguous Zone
- Economic Zone
- 
- 

### MARINE INFRASTRUCTURE

- Select Items
- Marinas
- Waterways
- Ports
- Harbors
- 
- 

### HABIATAT & BIODIVERSITY

- Select Items
- Mangroves
- Seagrasses
- Inertidal Zone
- Coral Reefs
- 
- 

### MARINE GEOLOGY

- Select Items
- Coasts
- Shelves
- Deep Ocean
- 
- 

### Human Use

- Select Items
- Recreational
- Commercial
- Transportation
- Energy Exploration
- 
- 

Update Map

Generate Report

Scenario Manager



# Coastal and Marine Spatial Planning

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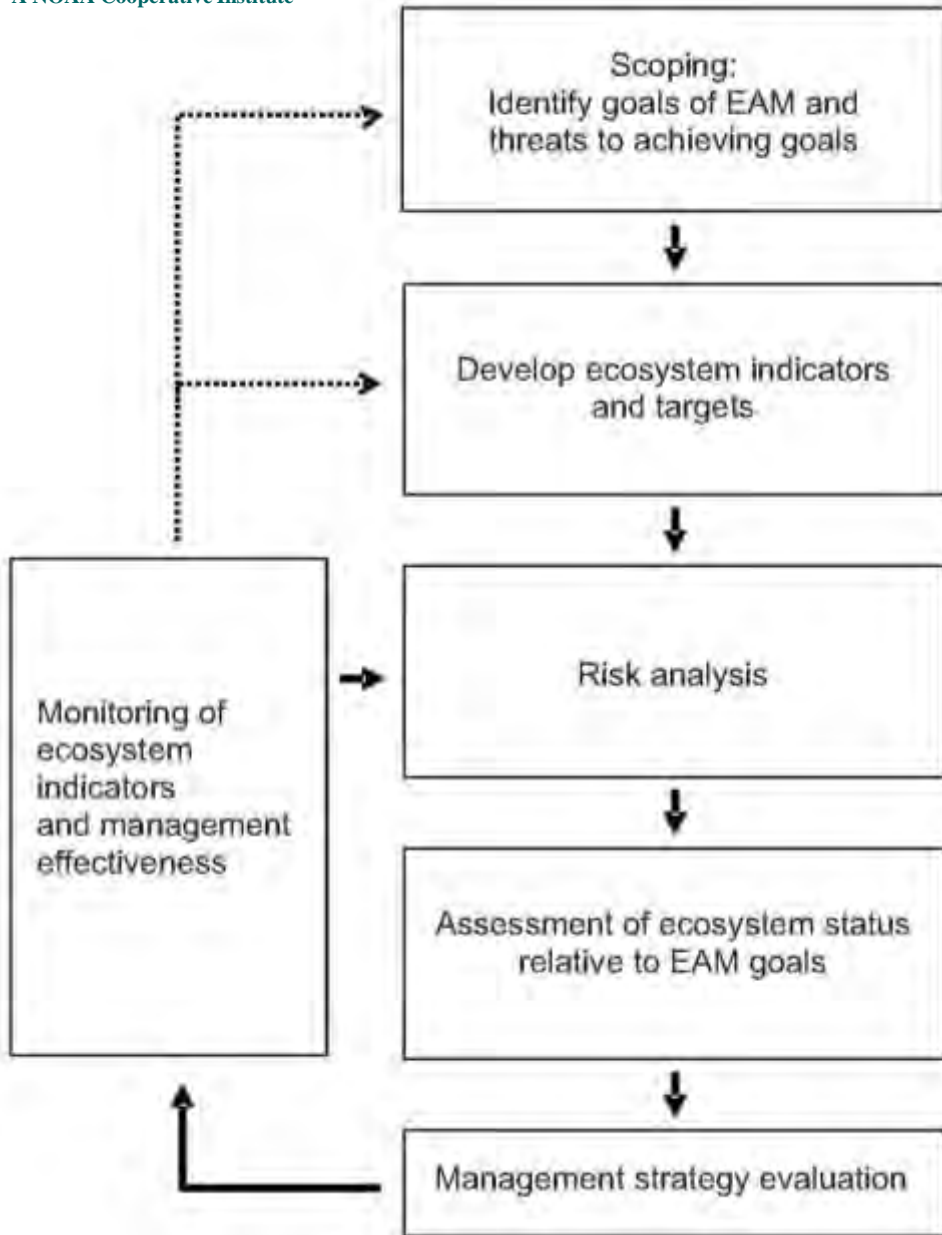
“Coastal and Marine Spatial Planning (CMSP) is a comprehensive, adaptive, integrated, ecosystem-based, and transparent spatial planning process, based on sound science, for analyzing current and anticipated uses of ocean, coastal, and Great Lakes areas.”



National Ocean Council

## NGI IEA/EAM Context

### *Ecosystem-based Coastal & Marine Spatial Planning*



- CMSP 5a: Map important ecological areas
- CMSP 5b: Map existing human activities
- CMSP 6a: Map future ocean space demands
- CMSP 5c: Identify spatial conflicts & compatibilities

# NGI Ecosystem Team

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*A NOAA Cooperative Institute*

Funding and Direction: Buck Sutter, NOAA Fisheries Service Southeast Regional Office



# Contacts

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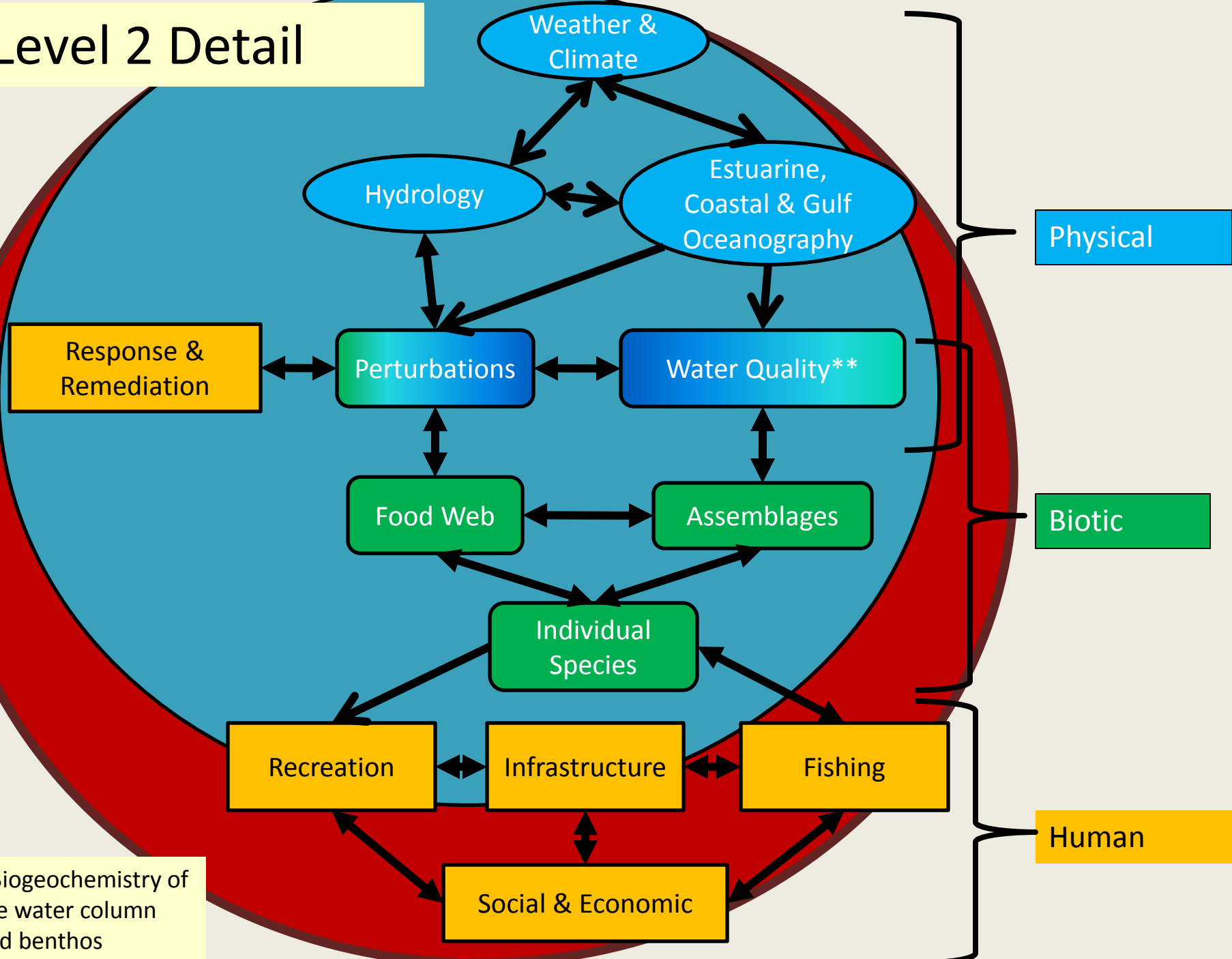
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- Extra slides in case of questions.

# Level 2 Detail



\*\* Biogeochemistry of the water column and benthos

Scoping:  
Identify goals of EAM and  
threats to achieving goals



Develop ecosystem indicators  
and targets



Risk analysis



Assessment of ecosystem status  
relative to EAM goals

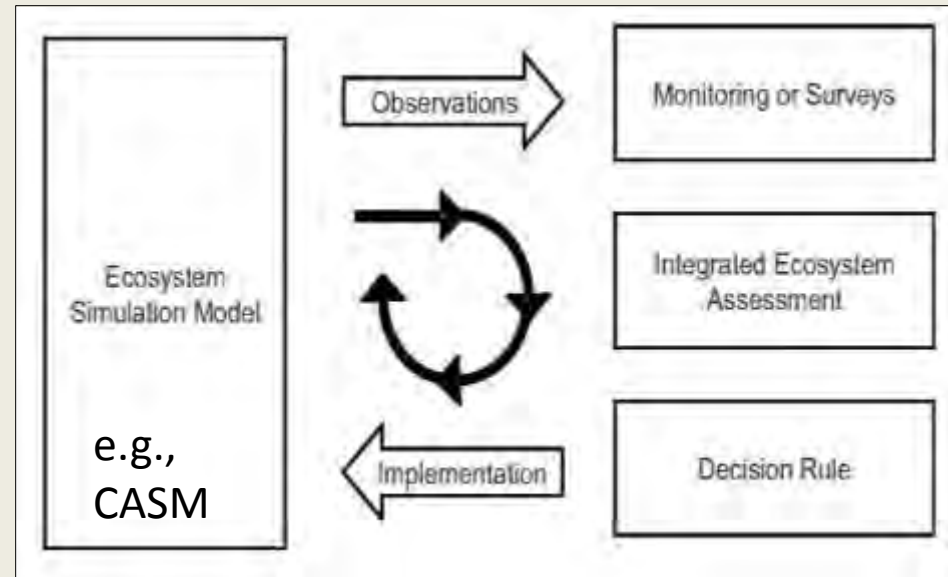


Management strategy evaluation

Monitoring of  
ecosystem  
indicators  
and management  
effectiveness



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## NGI IEA/EAM Context

### *Future Work*