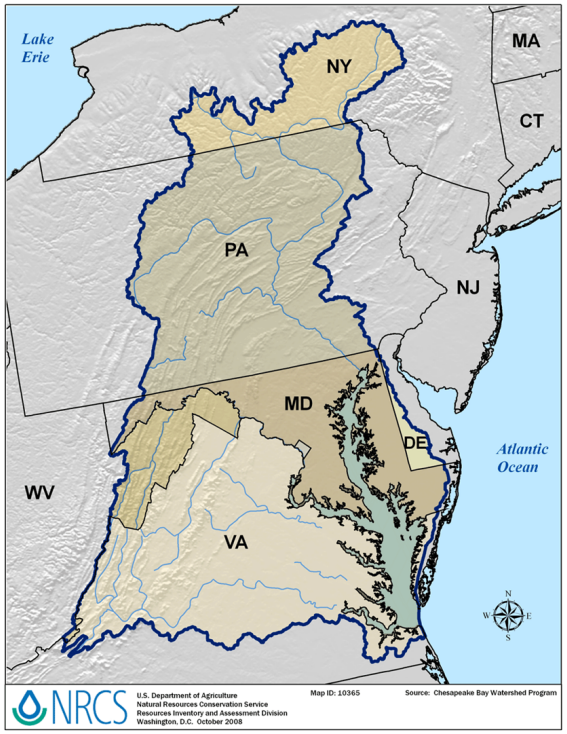
University of Maryland Center for Environmental Science

Role in Guiding our State and Region in Restoring Chesapeake Bay

University of Maryland
CENTER FOR ENVIRONMENTAL SCIENCE

Chesapeake Bay is Economically and Culturally Important to Maryland

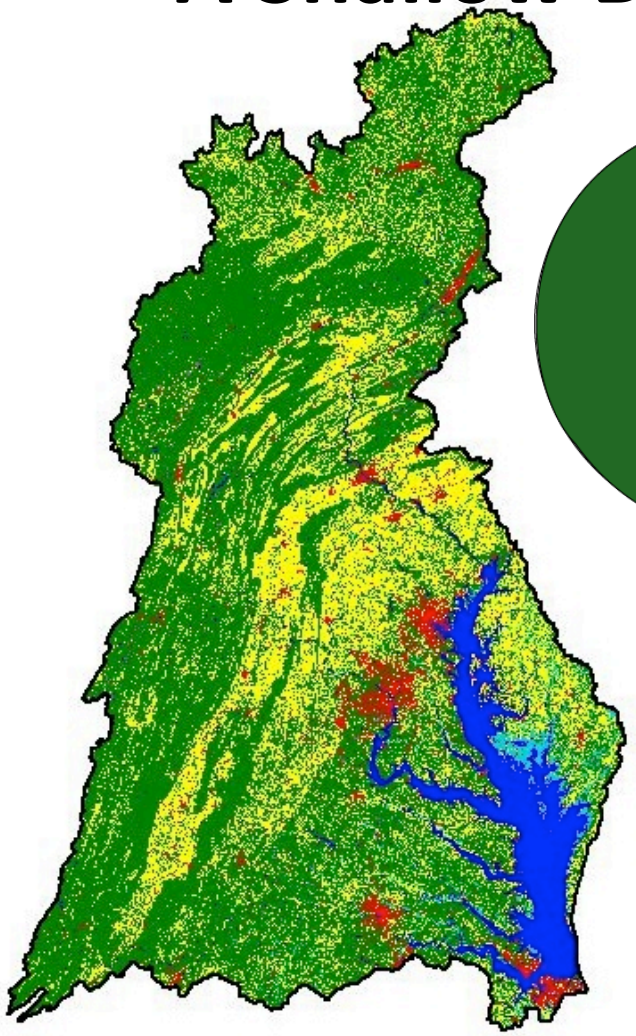


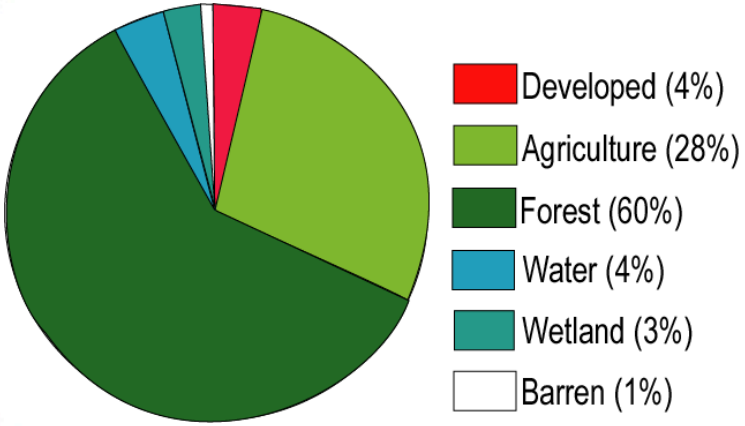
INVESTMENT: $1 of water and sewer infrastructure investment increases private output (Gross Domestic Product) in the long term by $6.35.

FISHERIES: Commercial seafood industry in Maryland and Virginia contributed $3.39 billion in sales, $890 million in income, and almost 34,000 jobs to the local economy. (2009 Fisheries Economics of the U.S. report)

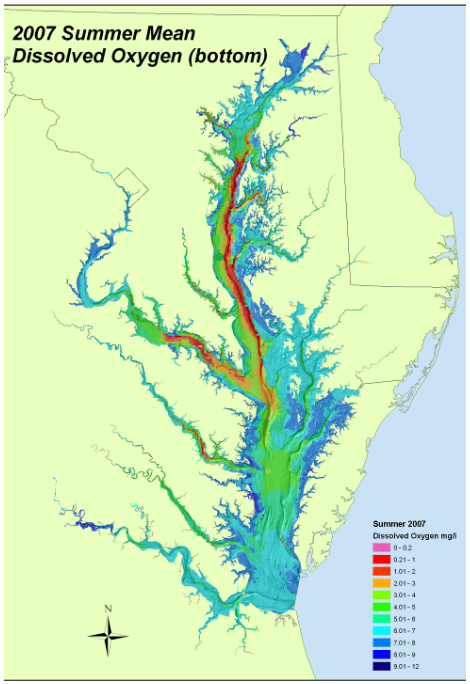
PROPERTY VALUES: An EPA study indicated that clean water can increase the value of single family homes up to 4,000 feet from the shoreline by up to 25 percent.

A Shallow Bay with a Large Watershed





Watershed: 166,000 km^2
Ave Depth: 6 m
Max Depth: 50 m
Population: 17 million



Science Advisory Role Written into Legislative Mission

"The University of Maryland Center for Environmental Science shall conduct a comprehensive program to ***develop and apply predictive ecology*** *for Maryland to the* ***improvement and preservation of the physical environment****, through a program of research, public service, and education."*

Academia's Role in Bay Restoration

- Formal Role:
  - Member of the Maryland's "Governors Chesapeake Bay Cabinet"
  - Serve on Chesapeake Bay Program Science and Technical Advisory Committee
  - Specifically inserted in Maryland Law to Provide Services
- Focus on the Big Challenges
- Apply adaptive management principles
  - Analyze and assess Bay health
  - Provide advice to the management community
  - Identify new problems and challenges
- Remain engaged with restoration programs for the long-term
- Provide advice to emerging challenges in a timely manner

UMCES Science Advisory Role Written into Legislation

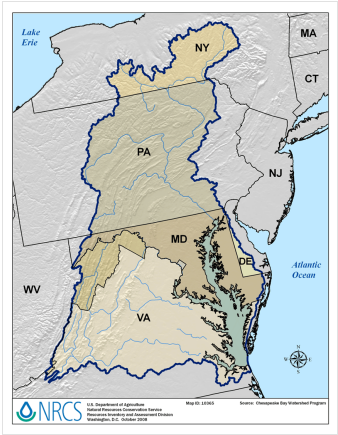
- President is a member of the **Governor's Chesapeake Bay Cabinet**
- President is member of the **Maryland Commission on Climate Change**
- President is member of the **CoastSmart Council**
- UMCES must develop **Sea Level Rise** projections every five years
- UMCES was tasked with developing an **Oyster Stock Assessment** with the resource agency

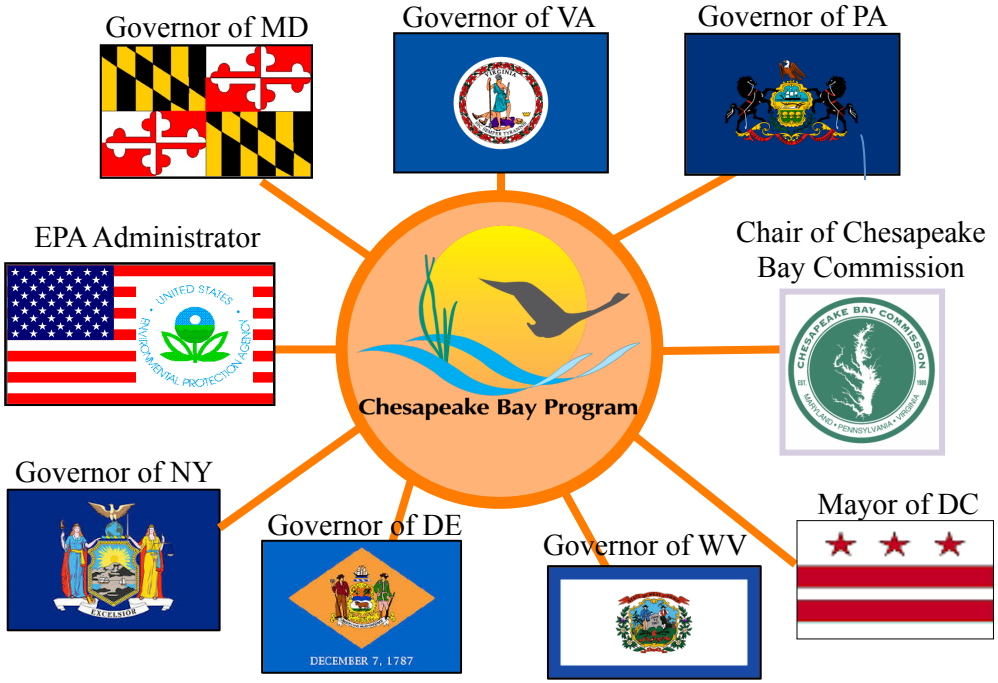
Academia's Role in Bay Governance

Maryland's Chesapeake Bay Cabinet

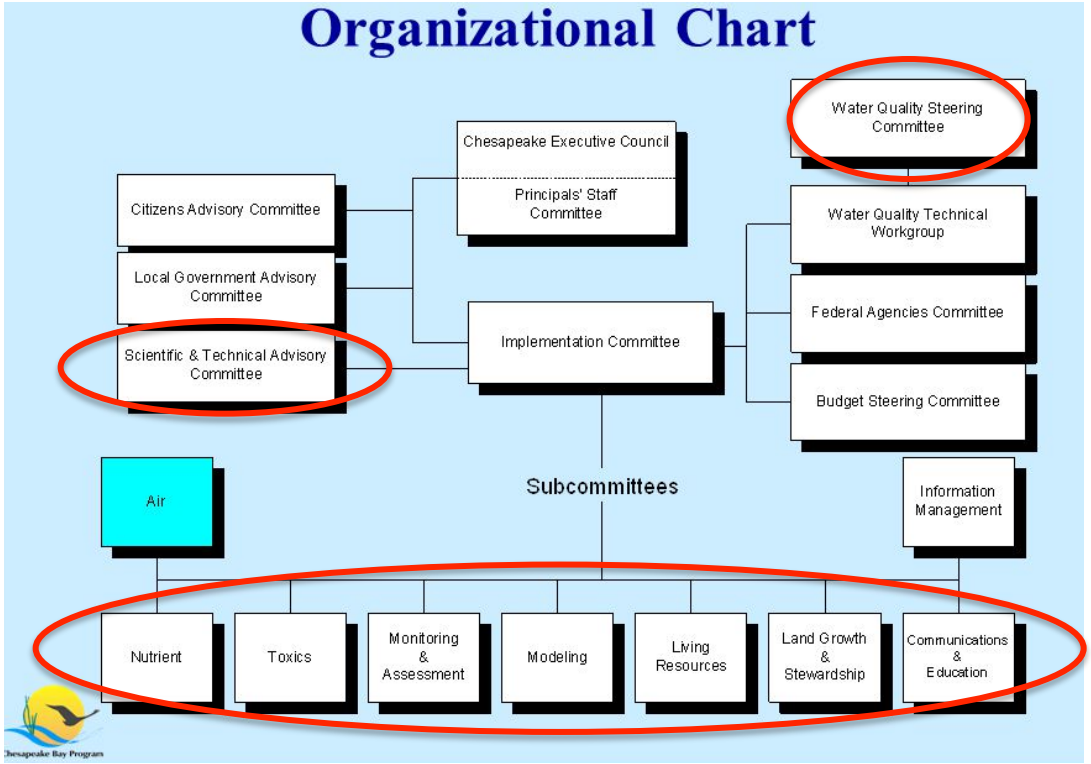
- Advises Governor of Maryland
- Focused Upon:
  - Restoration Progress, New Policies, Interagency Coordination
  - Emerging Issues
  - Communication Challenges
  - Meets every 6-8 weeks
  - Subcabinet Group (Bay Workgroup) meet at least monthly

Chesapeake Bay Program



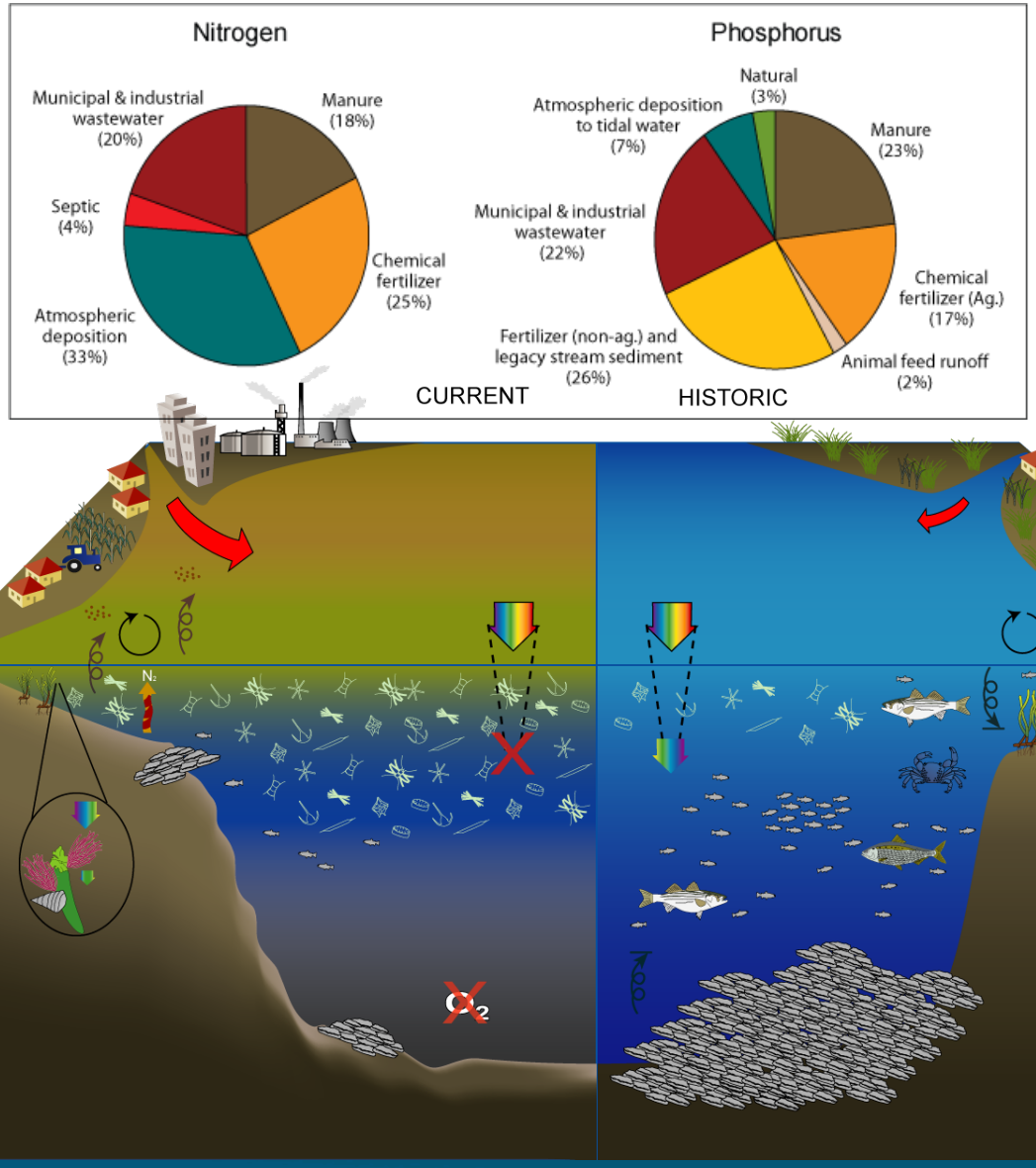


Academia's Role in Chesapeake Bay Program



- **STAC** Membership: Leading scientists from various universities and agencies
  - Convenes workshops and develops technical reports and papers
  - Reviews projects and programs

Big Challenge: Nutrient Over-enrichment



Big Challenge: Decline of Key Habitats

- Seagrass beds have declined
  - Currently rebounding

Seagrass beds are important

- Fishery nursery grounds
- Reduce resuspension
- Limit shoreline erosion
- Increase water clarity
- Act as nutrient filter

Big Challenge: Decline of Key Habitats

- Oysters are at 0.3% of historic populations
  - Decline caused by overfishing and disease
  - Focus on sanctuaries and targeted restoration programs

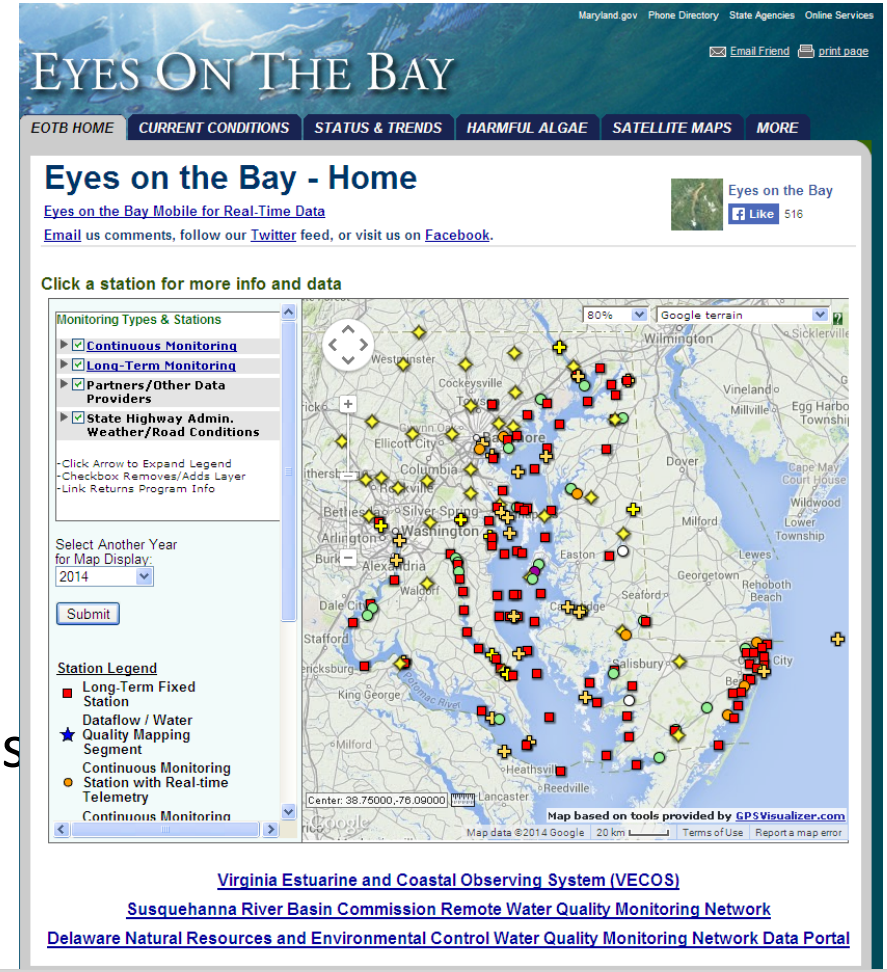
Oyster reefs are important

- Only natural hard substrate
- Filtration of water
- Increase biodiversity
- Economic potential

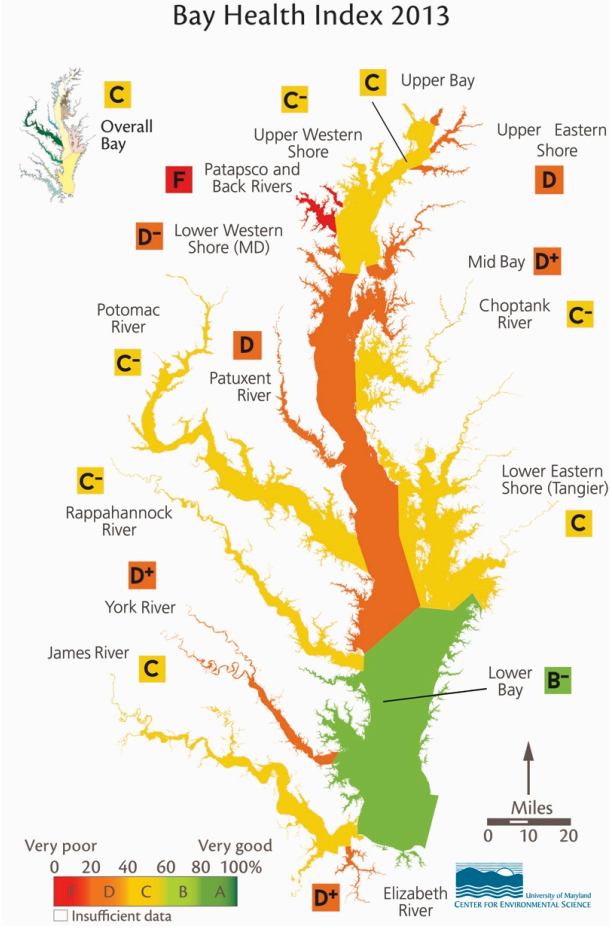
Applying Adaptive Management Principles

Adaptive Management: Monitor and Measure Bay Health

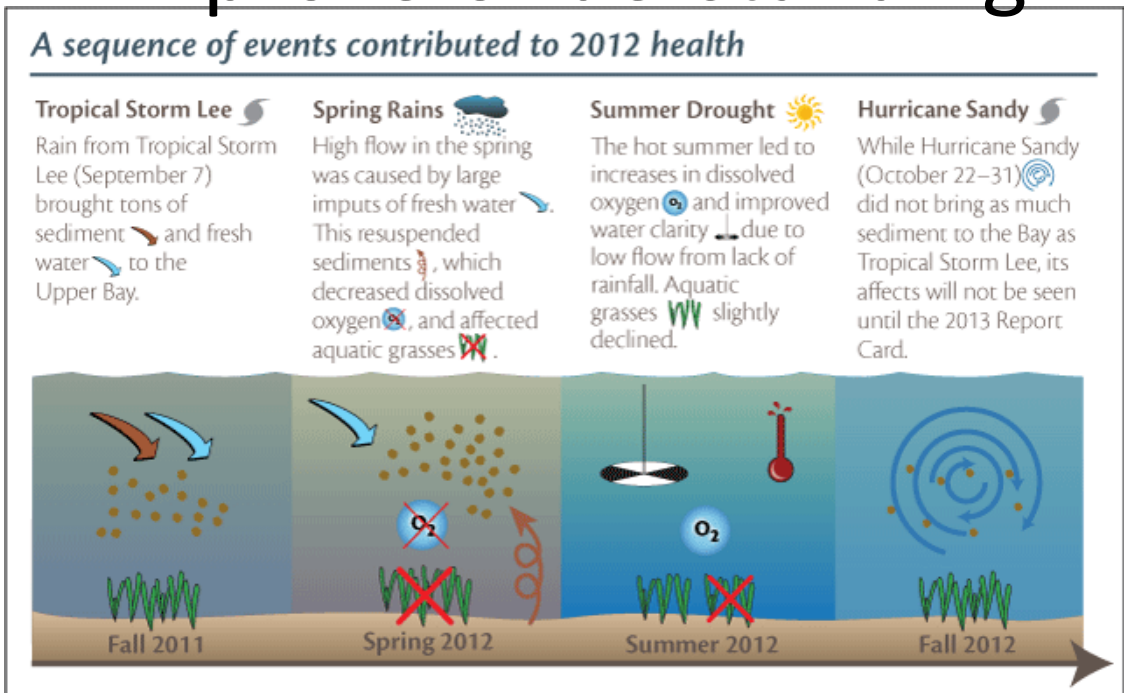
- Track changes over time to determine responsive to management actions
- Develop metrics that addresses both the habitat and biological response
- Communicate results to a broad audience
- Improve scientific understanding and impact of management actions



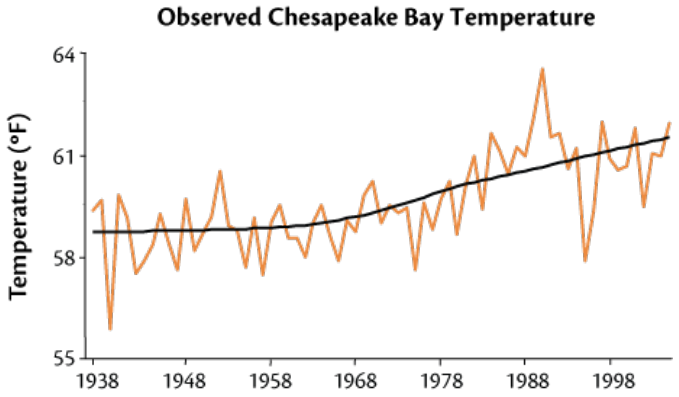
Adaptive Management: Analyzing and Integrating Monitoring Data

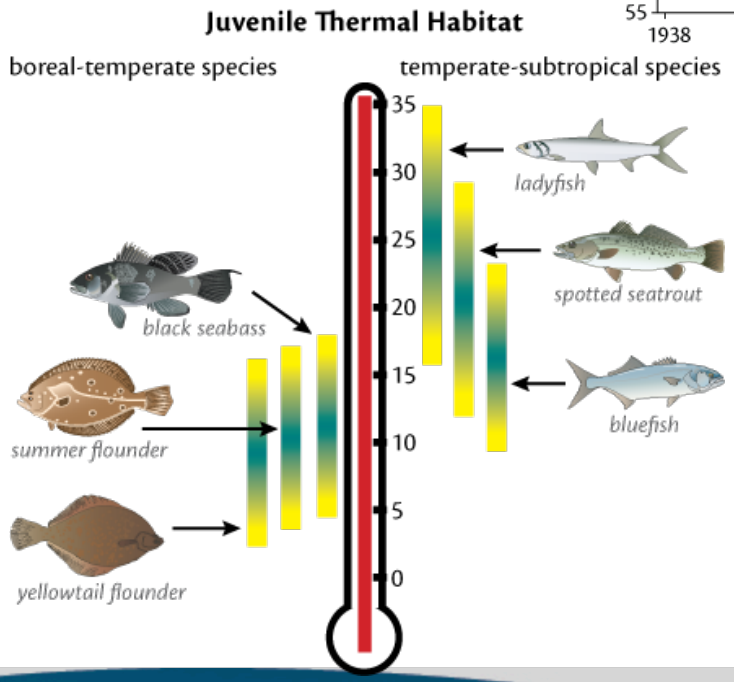


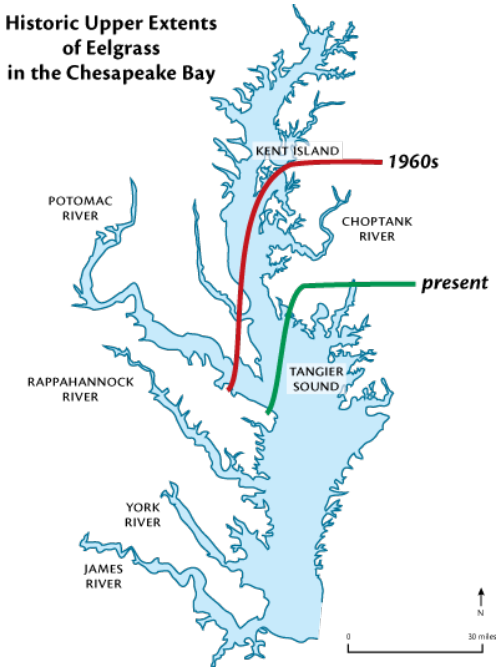
Improve Understanding



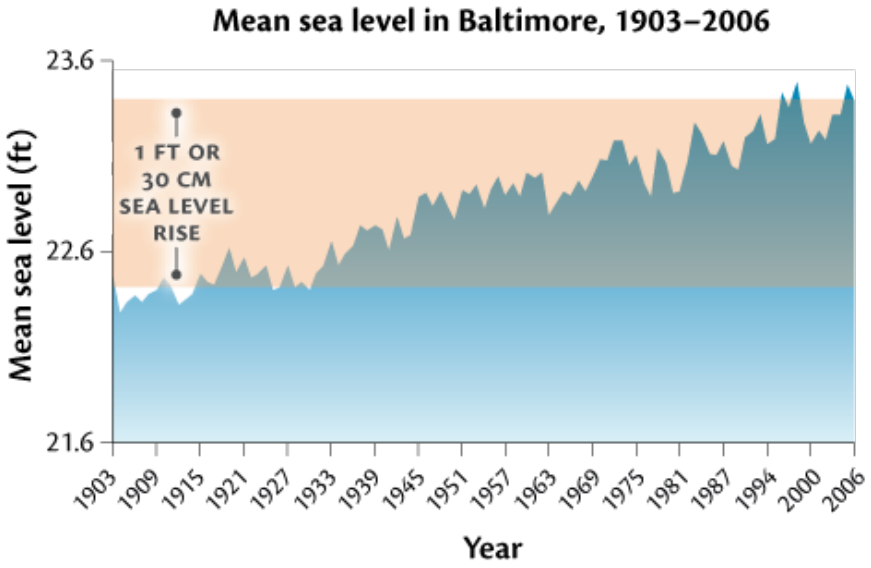
A Warmer Chesapeake Bay

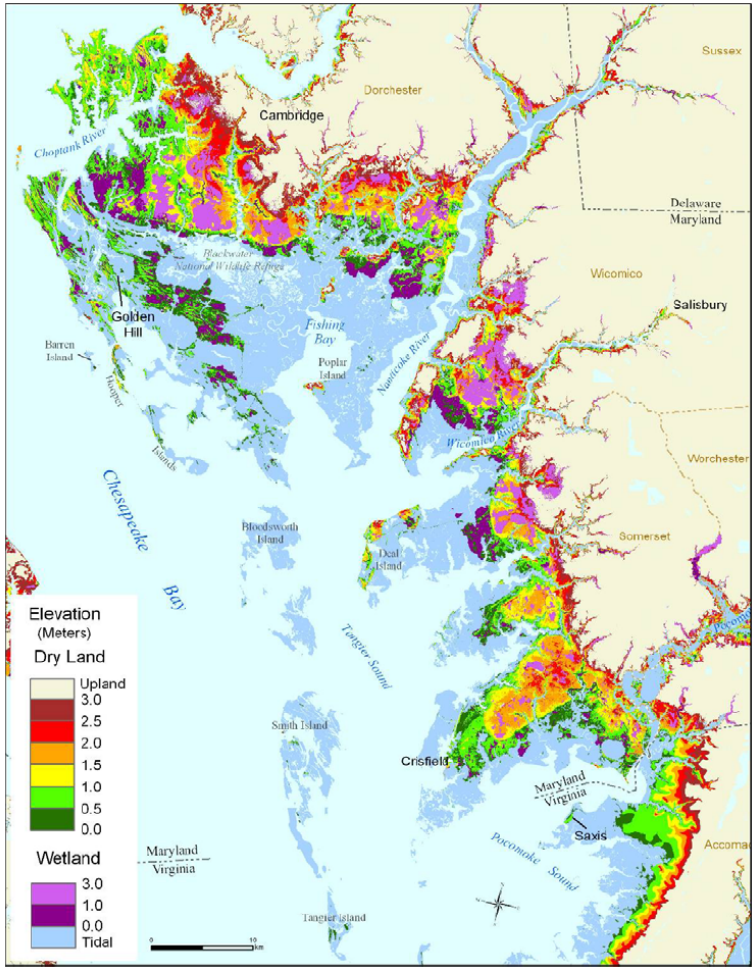






Sea-level Rise Will Redraw Maps





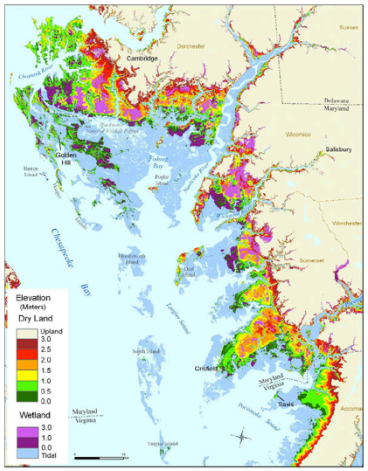
Provide Scientific Leadership to Emerging Challenges

Organize scientific panels to provide consensus on causes and solutions

Engage the management community in the deliberations

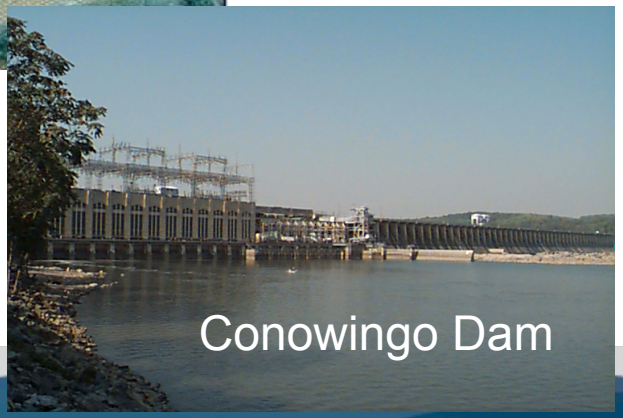
Provide reports in a public friendly manner to communicate the problems and solutions to a broad audience

Harmful Algal Blooms



Sea Level Rise

Introduced Species



Dave Nemazie

nemazie@umces.edu

Websites for more info:

www.umces.edu

www.chesapeakebay.net