Science Advisory Committee

April 6th, 2023

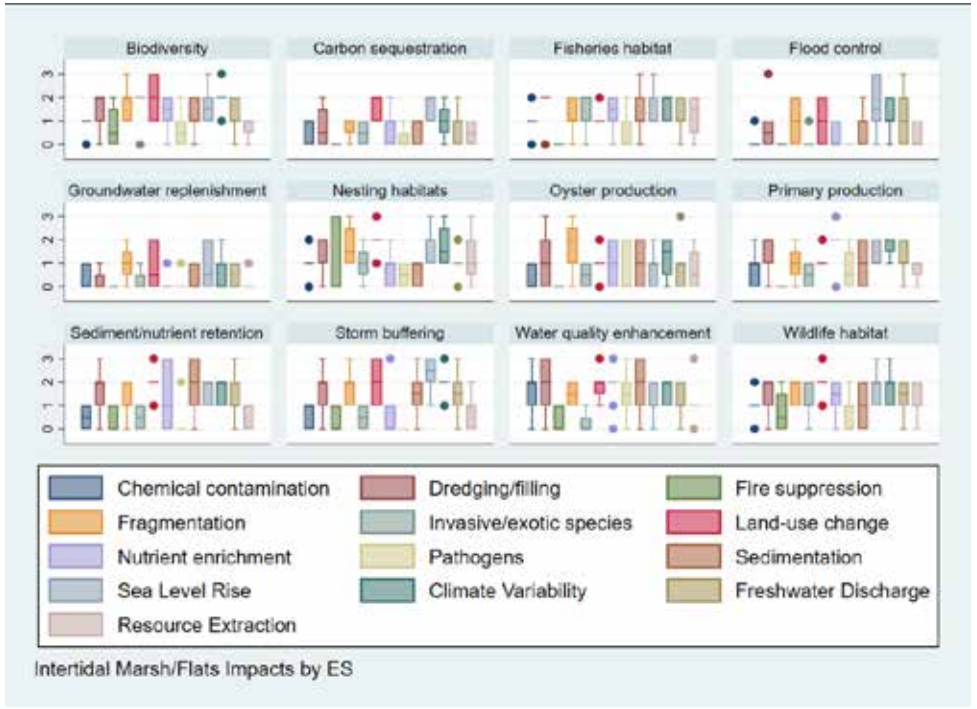
Please type your name and affiliation in the chat!

Today's Agenda

- Welcome Back
  - SAC Co-chairs Drs. Dr. John Lehrter and Amy Hunter
- Review and Approval of Minutes
- Introduction of Blair Morrison, new MBNEP Science and Monitoring Program Lead - Dr. Lehrter and Dr. Hunter
- Summary of 20 Questions Feedback at the 2022 Bays and Bayous Symposium - Blair Morrison
- Recap of the 2022 Stressor Matrix, what has changed over the past 10 years and what does that mean for us? - Dr. Missy Partyka
- Overview of the CCMP rewrite timeline, State of the Bay as a stepping stone - Roberta Swann
- Introduction to the State of the Bay document and feedback on the rewrite process - Dr. Partyka and Blair Morrison
- Announcements
- Adjourn

20 Questions Feedback at the 2022 Bays and Bayous Symposium

2022 Stressor Matrix:
What has changed over the past 10 years?
What does that mean for us?

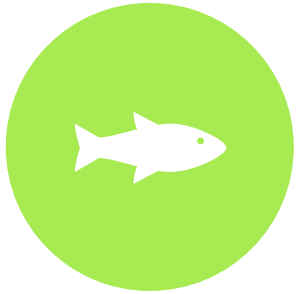


SAC Matrix participation

- 18 respondents in 2021/2022
  - 2,300 scores provided (~3,400 in 2012)
- Majority of responses within water-associated habitats (e.g., marshes, oysters, streams/rivers, buffers)
- Additional expertise solicited beyond estuarine environment (e.g., pine savannahs, maritime forest)

Some opinions same, some have changed

Streams and Rivers, Intertidal Marshes and Flats, and Freshwater Wetlands remain habitats of elevated concern



Potential negative impacts to Oyster Reefs and Pine Savannahs rose

Biodiversity, Water Quality, and Wildlife Habitat remain as ES most vulnerable to listed stressors

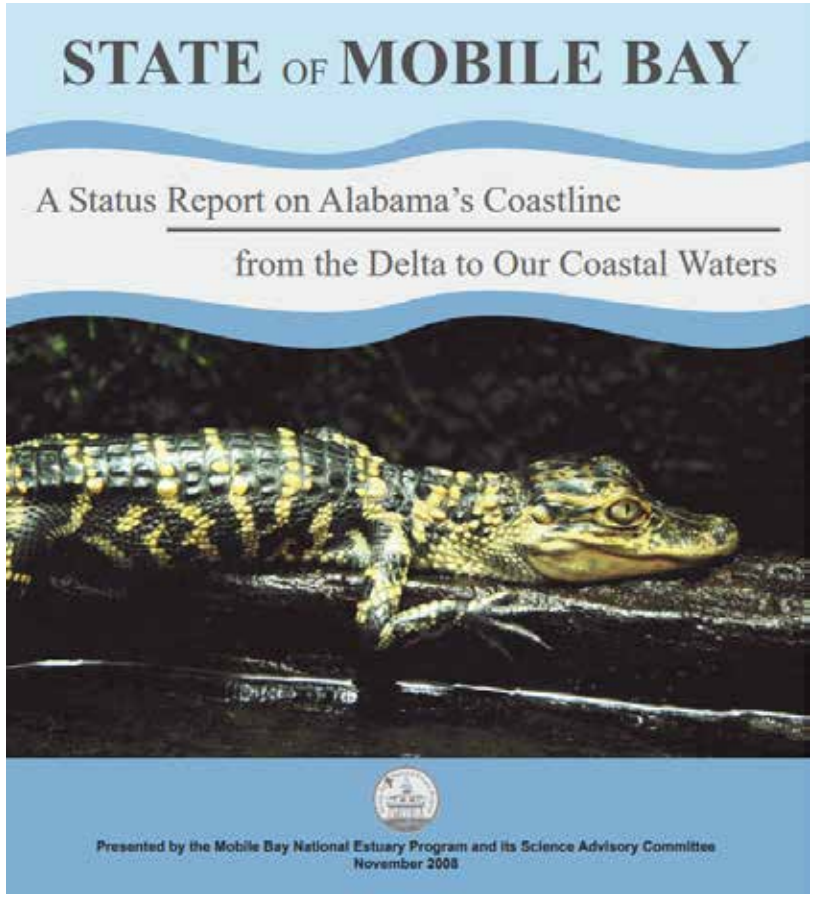
Land use change, Fragmentation, Sedimentation, Climate Variability remain top-listed stressors

Water Quality Enhancement by Habitat

- Ecosystem Service Stressor Comparison
  - Yellow = median value increased from 2012
  - Blue = median value decreased from 2012

Ecosystem Service	Chemical contamination	Dredging/filling	Fire suppression	Fragmentation	Invasive/exotic species	Land-use change	Nutrient enrichment	Pathogens	Sedimentation	Sea Level Rise	Climate Variability	Freshwater Discharge	Resource Extraction
2012 Biodiversity	1	2	1	2	2	2	1	1	2	1	1	2	1.5
2022 Biodiversity	1	2	1	2	2	2	1	1	2	1	2	1	1
2012 Carbon sequestration	0	1	0	1	1	2	1	0	1	0.5	1	1	1
2022 Carbon sequestration	1	0.5	0	1	0	1	0	0	1	1	1	0	1
2012 Fisheries habitat	1	2	0	1.5	1	1	1.75	0.75	2	1	1	1	1
2022 Fisheries habitat	1	2	0	2	1	1	1	0	1.5	1	2	2	1
2012 Flood control	0	0	0	1	0	2	0	0	0	0	0	0	0
2022 Flood control	0	0	0	1	0	1	0	0	0.5	0	1	0	0
2012 Groundwater replenishment	0	0	0	0.5	0	1.5	0	0	0	0	1	0	0.5
2022 Groundwater replenishment	0	0	0	1	0	1	0	0	0	0	1	0	0
2012 Nesting habitat for birds and turtles	1	1	0.5	2	1	2	0	0	0.5	0.5	1	0.5	1
2022 Nesting habitat for birds and turtles	1	0	1	1	1	2	0	0	0	1	1	0	1
2012 Oyster production	0	0	0	0	0	0	0	0	0	0	0	0	0
2022 Oyster production	0	0	0	0	0	0	0	0	0	0	0	0	0
2012 Primary production	1	1	0	2	1	2	1	0	2	1	1	1	1
2022 Primary production	0	1	0	1	0	1	1	0.5	1	1	1	1	1
2012 Sediment and nutrient retention	0	2	0	1.5	0	2	1	0	2	0.5	1	1	1
2022 Sediment and nutrient retention	0	1	0	1	0	2	1	0	2	1	2	1	1
2012 Storm buffer/hazard protection	0	1	0	1.5	0	2	0	0	1	1	1	1	0
2022 Storm buffer/hazard protection	0	1	0	1	0	2	0	0	1	1	1	1	1
2012 Water quality enhancement	1	2	0	1	0	1.5	2	0.5	1.5	0	1	2	1
2022 Water quality enhancement	2	1.5	0	1	0	2	2	2	2	1	1	1	1
2012 Wildlife habitat	1	2	0	2	1.5	2	1	0.5	1	1	1	1	1
2022 Wildlife habitat	1	2	1	2	1	2	1	0	1	1	2	1	1

Overview of the CCMP rewrite timeline: *State of the Bay* as a stepping stone



NEPs: The Federal Perspective

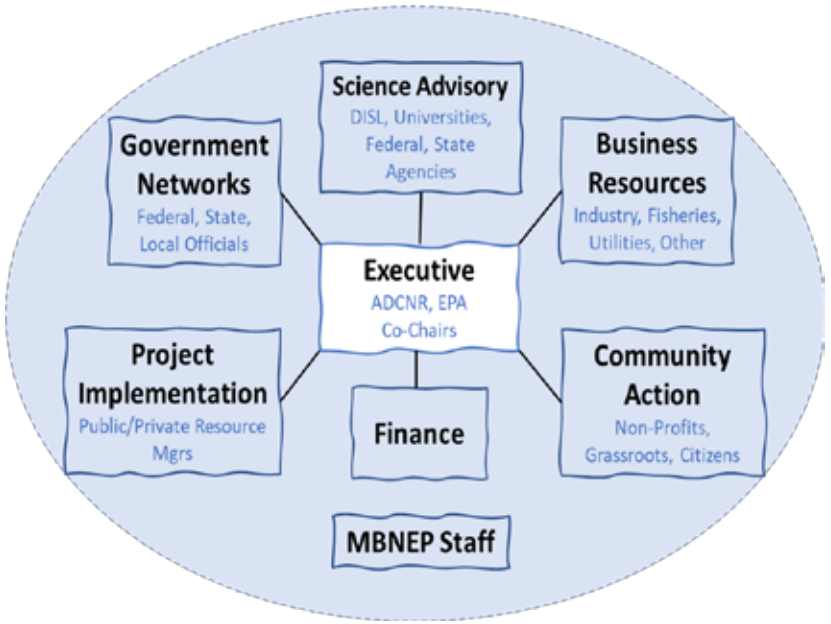
The Law: The Clean Water Act (amended, 1987)

The National Estuary Program was created by the U.S. Congress in 1987 through amendments to the Clean Water Act, with the goal to "identify, restore, and protect nationally significant estuaries in the United States."

Section 320 of the Clean Water Act: NEPS will

- **Assess trends**
- **Identify causes**
- **Develop relationships**
- **Develop collective plan**
- **Coordinate collective implementation**
- **Monitor effectiveness**
- **Provide consistency reviews**

- Champion protection and restoration efforts through **cultivation of partnerships**
- Lead watershed protection by **coordinating collective actions** to measurably improve water quality, habitat management and living resource management
- Establish a **community of committed** environmental stewards



MBNEP: How we achieve Collective Impact, Why?

Common Agenda	The vision for change	*The CCMP*
Shared Measurement	Data collection, interpretation	*A Monitoring Strategy*
Mutually Reinforcing Activities	Coordinated Actions, partners	*Shovels in the ground*
Continuous Communication	Consistent and open communication	*Mgt Conference Committees*
Backbone Support	Coordination of efforts	*MBNEP*

- Access to Water and Open Spaces
- Coastlines (Beaches and Other Shorelines)
- Fish & Wildlife
- Heritage and Culture
- Environmental Health and Resilience
- Water Quality

Mobile Bay National Estuary Program

MBNEP: A Unique Among Environmental Organizations

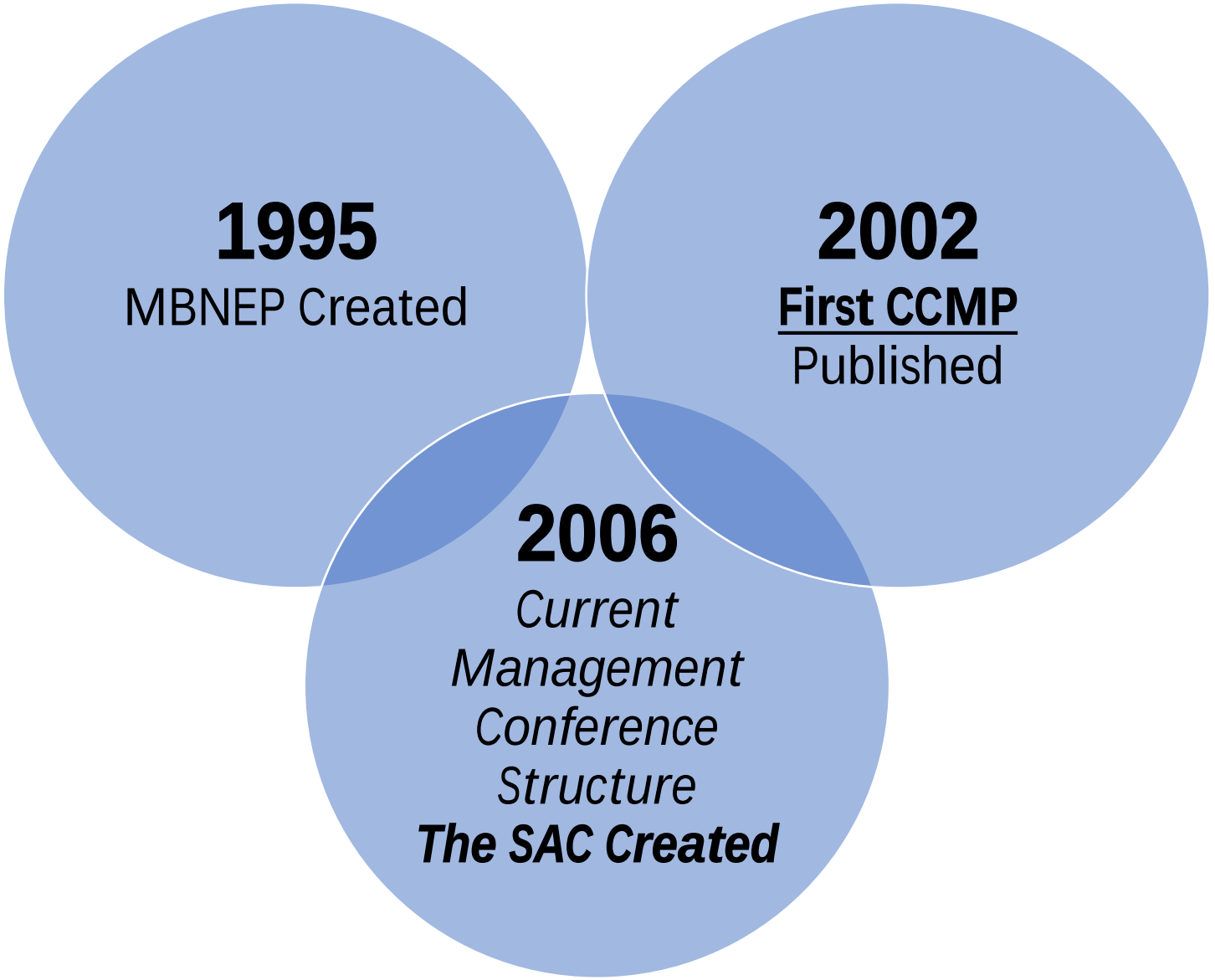
MBNEP IS:

- **Science-based**
- **A partnership organization**, lifting, promoting and complementing the work of our partner organizations
- **Funded** by US EPA, State of Alabama, Local Counties and Municipalities
- A **multi-sector "conference"** of leaders
- Guided by a Management Conference created **Comprehensive Conservation and Management Plan**

MBNEP IS NOT:

- An **activist** organization
- An individual organization **setting its own environmental priorities** at the risk of others or our environment
- Funded by **membership and donors**
- Led by **a single director** with a Board of Directors
- Focused on the **short-term environmental controversy** of the day

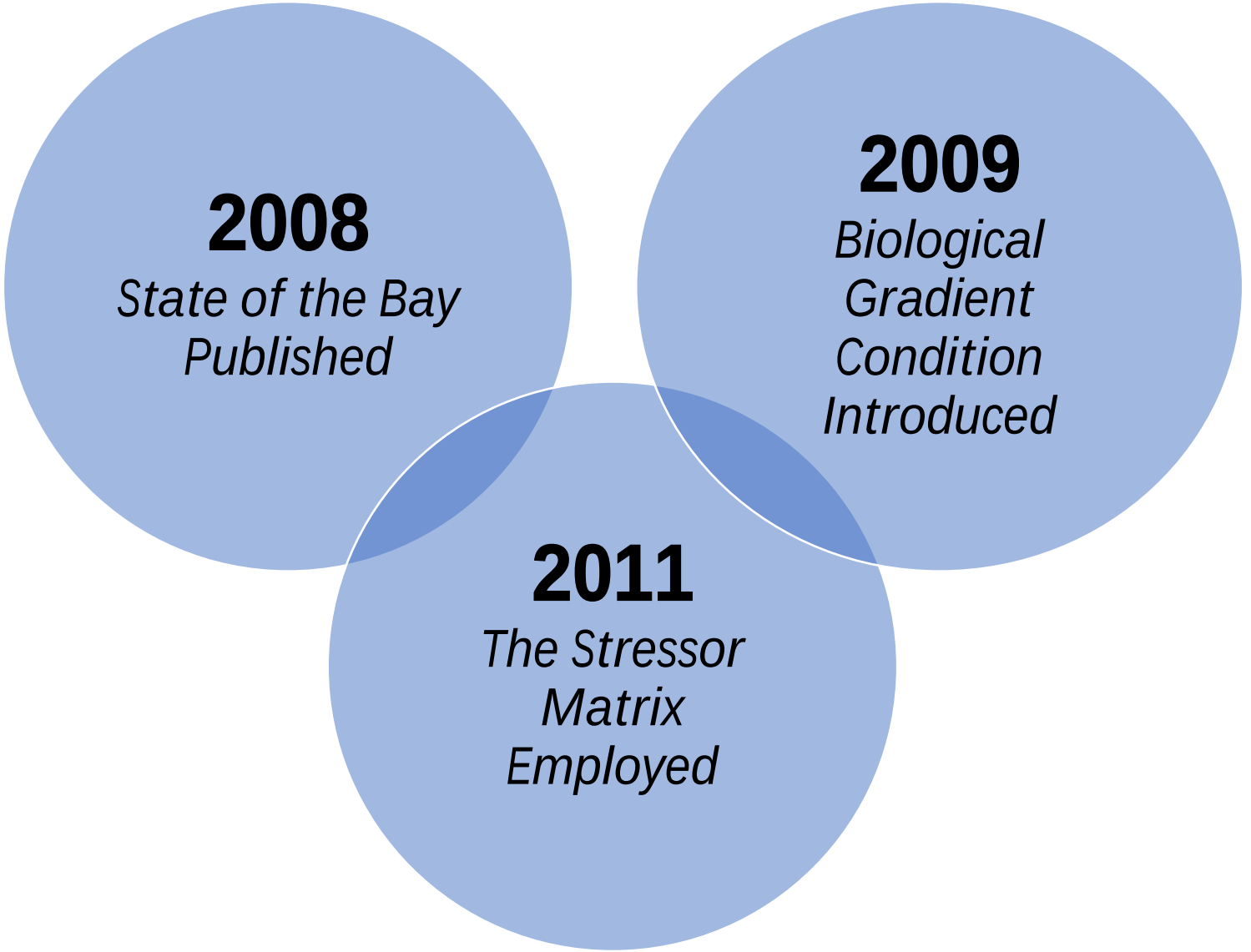
An MBNEP Timeline…



1995 2002 2006

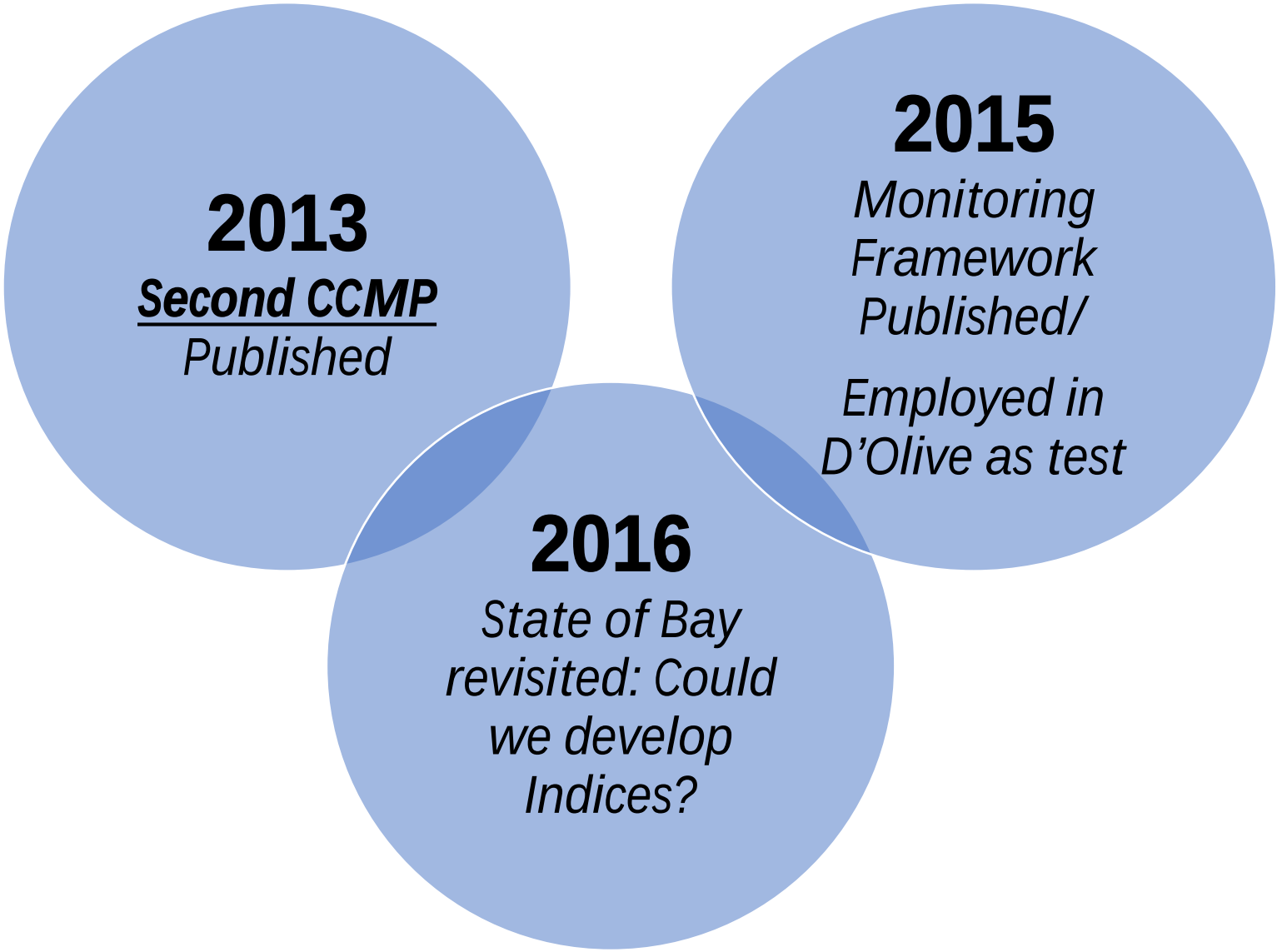
Most Stressed Habitats

- Freshwater wetlands
- Streams, Rivers, Riparian buffers
- Intertidal Marshes and Flats



1995 2002 2006 2008 2009 2011

The EST strategy: How do we use the BCG to communicate the State of the Bay?



1995 2002 2006 2008 2009 2011 2013 2015 2016

NEPs reauthorized: Required to do either an update or re-write every five years…

2017

Fowl River Marsh Health Study Begins (Funder Request); Bylaws changed

2018-19

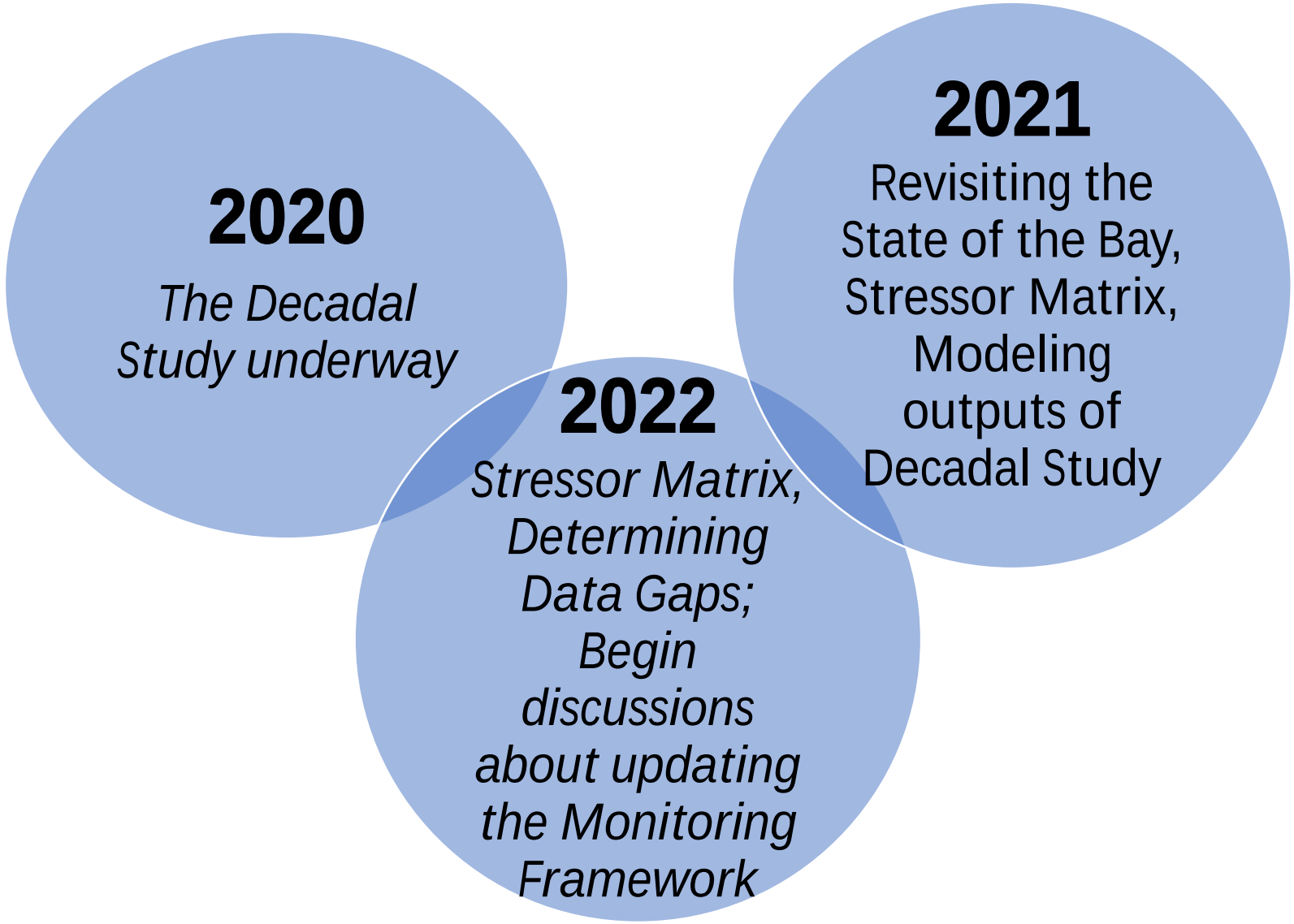
Second CCMP Update published; New Co-Chairs; GNC Coal Ash Request

2020

BCG to WCI- The D'Olive Watershed Test; Back to Stressor Matrix

With update underway, NEP begins planning for next CCMP (will it be an update or re-write)?

The Decadal study becomes a key element of the next CCMP.



1995 2002 2006 2008 2009 2011 2013 2015 2016 2017 2018 2020 2021 2022

In consultation with EPA, the amount of data generated, the number of watershed plans completed, and the opportunity to address both local and system-wide challenges through the decadal study trigger a CCMP rewrite.

2023

*Building a foundation for **Third CCMP**: Stressor Matrix Finalization; Synthesis of Watershed Plans; CCMP Evaluation; Bylaws update*

2024

Next State of the Bay; Synthesis of all we know to inform EST Strategy

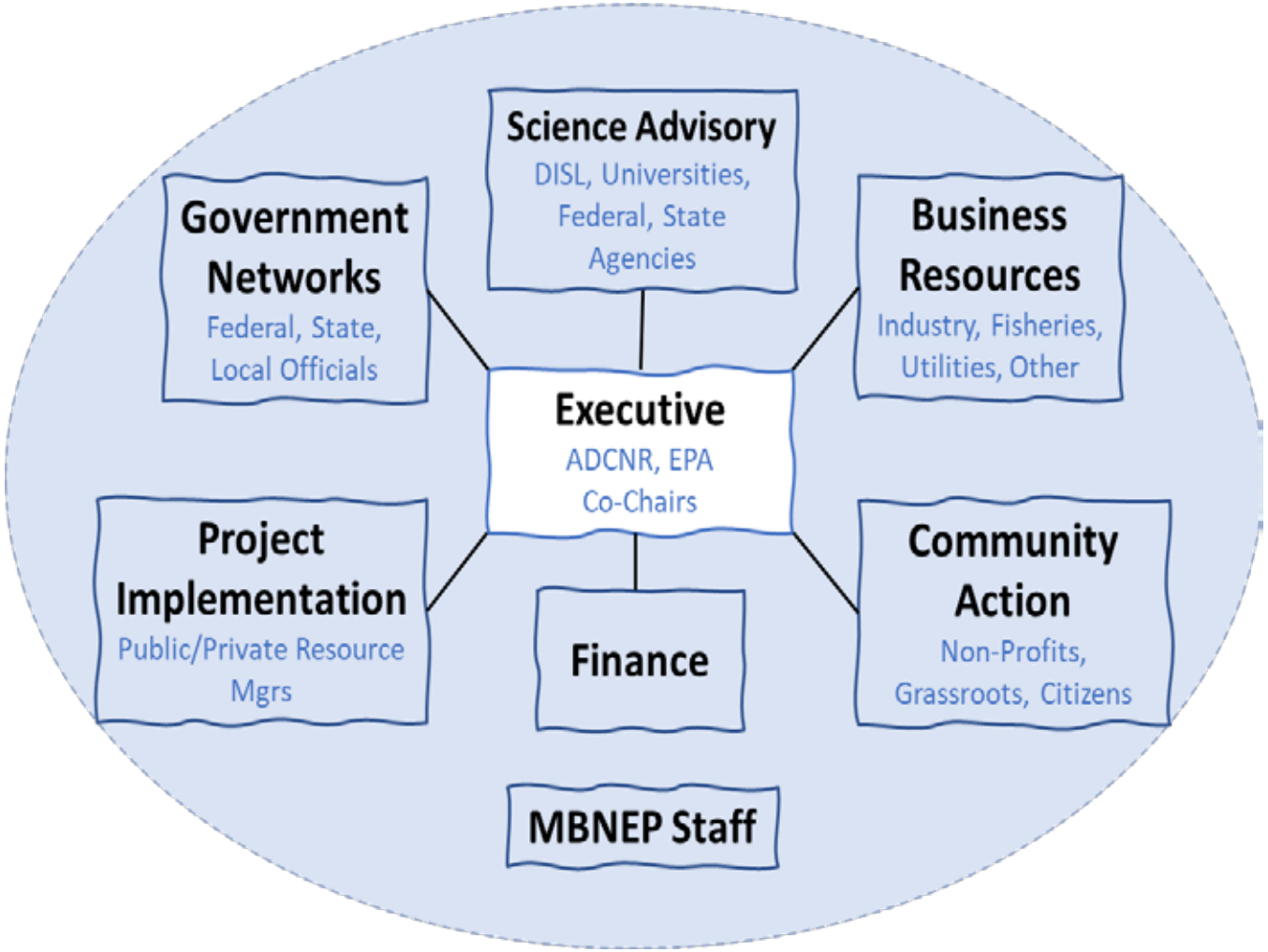
2025

Third CCMP to be published.

The Road Ahead

Year	Target Date	Activity
2023	March/April 31	Watershed Assessment
	May 31	CCMP Evaluation
	June 30	Stressor Evaluation Technical Report
	December 31	Community Outreach Phase One
2024	January 31	MC Organizational Structure Assessment
	March 31	State of Alabama's Estuaries and Coast
	December 31	Outreach Phase Two
2025	June 30	CCMP Re-Write: Strategy Development
	August 31	CCMP Out for Public Comment
	September 30	CCMP Finalization and Approvals
	October 1	Begin Implementation

Place of the SAC within the MBNEP



Purpose and Tasks of the SAC

- **Assess trends**
  to determine where stresses are most acute in the system.
- **Develop frameworks**
  and monitoring protocols for measuring changes in ecosystem health.
- **Provide technical advice**
  or conduct scientific review of issues/activities requested by other committees.
- **Identify opportunities for public participation**
  and project involvement (i.e., citizen monitoring).
- **Identifying projects and assisting with planning**
  for their implementation (i.e., water quality monitoring, data management, Fowl River Marsh Health).
- **Cooperatively identifying tasks/roles for MBNEP**
  in addressing issues or galvanizing action.

The CCMP's Estuary Status and Trends Strategy

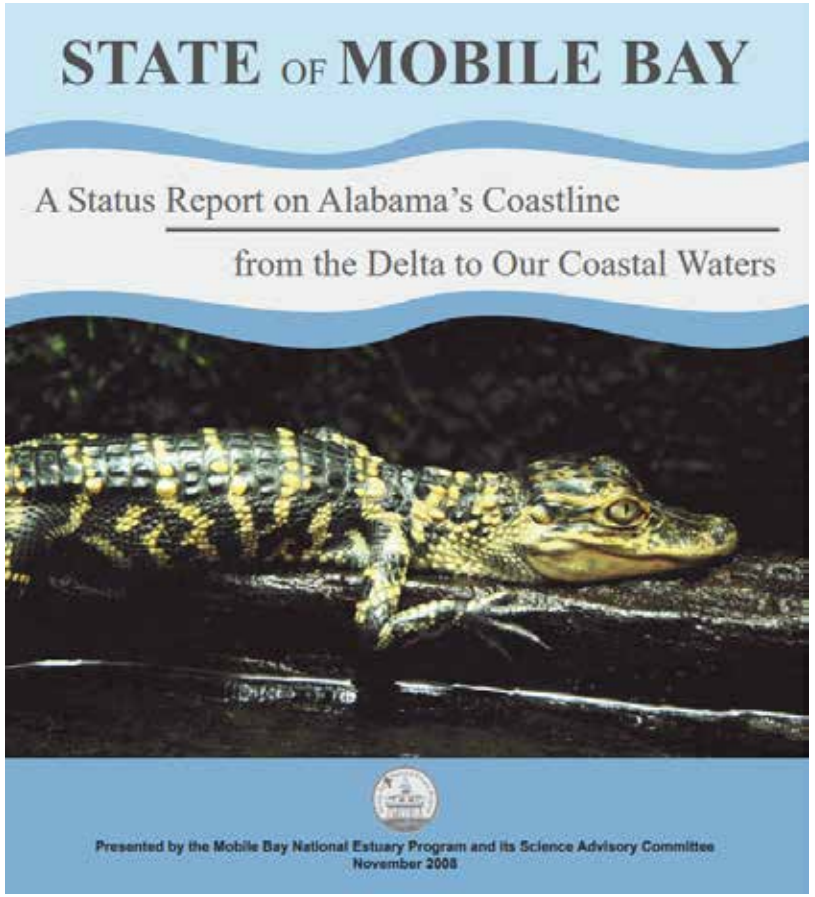
EST-1: Monitor Conditions

EST-2:Communicate Conditions

EST-3: Forecast Conditions and Inform Future EST 1&2 Actions

EST	ECOSYSTEM STATUS AND TRENDS: Goals > Objectives > Suggested Activities	Y1	Y2	Y3	Y4	Y5	Performance Measure	Outcomes	Annual Cost	Lead
EST-1: Increase availability and use of data related to how coastal ecosystems and their services responses to man-made stresses.										
1.1	Establish a data management and usage strategy.									
	a. Ensure that all data generated through MBNEP activities are stored in the Dauphin Island Sea Lab repository.	X	X	X	X	X	• Adopted data management and usage strategy • # of datasets added to repository	Improved data management and use	$$-$$$	SAC
	b. Ensure that all environmental data related to coastal Alabama has appropriate metadata and is catalogued to ensure accessibility.		X	X	X	X				
1.2	Maintain or improve existing level of monitoring and data analysis to assess trends in coastal ecosystem health at a watershed scale.									
	a. Update and refine the Monitoring Framework to ensure consistency with other monitoring guidelines throughout the Gulf (i.e., Federal RESTORE Monitoring and Adaptative Management Procedures and Guidelines Manual).		X	X	X	X	• Coordinated monitoring program and updated framework	Improved tracking of environmental conditions	$$-$$$	SAC & CAC
	b. Implement and adapt the Monitoring Framework as applicable in coastal watersheds.		X	X	X	X				
	c. Integrate volunteer environmental monitoring data into the Monitoring Framework.		X							
1.3	Promote consistent system-wide monitoring to assess trends in coastal ecosystem health.									
	a. Recommend data collection needs and monitoring protocols for:	X	X	X	X	X	• Increased/improved baseline, pre-restoration, and post-restoration data • Comparative study of bacterial monitoring methodologies	Improved understanding of ecosystem response to land-use changes and restoration	$$$	SAC & CAC
	Land use and land cover/habitat distribution and characterization (including, but not limited to, submerged aquatic vegetation and wetlands)	X	X	X	X	X				
	Water quality (dissolved oxygen, nutrients, sediments, and pathogens)	X	X	X	X	X				
	Benthic communities (including oysters)	X	X	X	X	X				
	Socio-economic factors	X	X	X	X	X				
	Human uses (including traditional and cultural uses)	X	X	X	X	X				
	Shorelines	X	X	X	X	X				
	Human health	X	X	X	X	X				
	Living coastal, estuarine, and marine resources	X	X	X	X	X				
	Hydrology, meteorology, and hydrodynamics	X	X	X	X	X				
	Dam and impoundment integrity and safety	X	X	X	X	X				
	Other									
	b.Undertake a comparison study of sanctioned methodologies for bacterial monitoring in brackish waters (*Enterococci* , *E. coli*).		X							
	c. Develop a remote sensing strategy to augment monitoring.	X	X	X						
	d. Promote development of a framework for baseline environmental data collection and consistent post-construction monitoring of the ship channel and other hydrologic modifications to measure enviromental impacts.			X						
	e. Promote better coordination of testing methodologies and policies of State agencies related to fishery closures.		X	X	X					
	f. Develop communication tooLs/materials to track trends in issues pervasive across coastal Alabama watersheds (*e.g.* , waterborne trash and litter, oyster populations, and sediments).	X	X	X	X	X				
EST-2: Establish a process for measuring, analyzing, and communicating change in marine, estuarine, and freshwater ecosystem conditions.										
2.1	Synthesize monitoring data to develop a watershed condition index to track and communicate trends in watershed restoration and management.									
	a. Use a watershed condition index (WCI) to measure ecological benefits of restoration (with the D'Olive Watershed as a pilot).	X					• Watershed Condition Index • Coastal Condition Report	Improved understanding of trends in watershed health	$$$	SAC
	b. Adapt WCIs to three other watersheds to calibrate and begin to evaluate relative health of coastal watersheds under watershed management plan implementation.			X	X	X				
	c. Aggregate information from WCIs into a coastal condition report to be produced on five-year intervals.					X				
EST-3: Model and predict connections between ecosystem condition and the ecosystem services people value.										
3.1	Manage system for multiple services.									
	a. Determine the relationship between hydrologic, hydrodynamic, sedimentological, and biological processes to inform restoration engineering and design and reduce risk of unintended consequences to downstream ecosystem function and services.	X		X	X	X	Demonstrations of relationships between stressors and ecosystem services	Improved understanding of benefits and value of ecosystem restoration	$$$	SAC & CAC
	b. Determine the relationship between habitat extent and quality and abundance of aquatic faunal communities.			X	X	X				
	c. Quantify changes in abundance of key recreationally and commercially harvested species related to restoration efforts.			X		X				
	d. Develop framework for assessing economic impact of habitat protection and restoration activities on local government budgets and capital improvement programs.	X	X							
	e. Quantify stressors such as sea surface temperatures, ocean acidification, hypoxia, and sea level rise.			X	X	X				
	f. Determine the relationship between environmental protection and quality of life.				X	X				

State of the Bay rewrite: discussion and feedback



Thank You For Attending!