



# *Oysters in APNEP:*

## From “Identify” to “Monitor” & All Management in Between

*North Carolina Oyster Workshop  
Panel on Scaling Up Restoration & Enhancement Efforts  
March 12, 2014*

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# APNEP's Mission

*To identify, restore, and protect the significant resources of the Albemarle-Pamlico estuarine system.*



# 7 Key Steps in EBM Approach

- Articulate **program goals**.
- Develop **systems-level model** for goal attainment.
- Assess management efforts – identify **gaps**.
- Develop **management strategy**.
- Develop **monitoring program**.
- Assess **performance**.
- Manage **adaptively**.



*Photo credit: Niels Lindquist.  
View in 2013 across the top of a 2-year old  
intertidal reef created in the course of  
APNEP funded project.*





# Step 1: Articulate Program Goals

- Ecosystem health goals
- Ecosystem outcomes

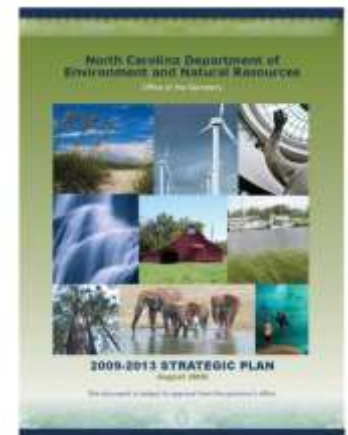
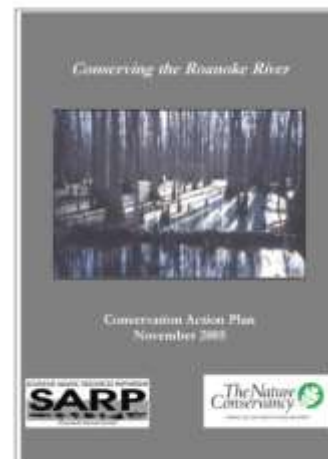
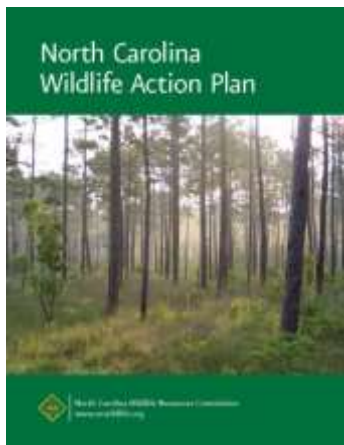


*Photo credit: Niels Lindquist*



# Steps 2 & 3: Develop Model & Identify Gaps

- Directed by conceptual models.
- Survey of partners' strategic/action plans.
- Interviews with senior management.





# Step 4: Management Strategy

- Identify
- Protect
- Restore
- Engage
- Monitor



## APNEP CCMP MANAGEMENT ACTIONS

Tuesday, March 11, 2014

ID	ACTION	KEY PARTNERS
C5.1	Construct new oyster habitats.	NCDMF, NCCF, TNC, NOAA, USACE, NCDCEM, EPA, CSI, IMS, VIMS
C5.2	Reduce the adverse impacts of harvests to existing oyster habitat.	NCDMF, NOAA, Sea Grant, CSI, VIMS, IMS
C5.3	Facilitate research to improve oyster restoration technologies and methods.	NCDMF, Sea Grant, NCCF, TNC, NOAA, SALCC, IMS, CSI, VIMS



Collaborative Actions for Protecting and Restoring the Albemarle-Pamlico Ecosystem





# CCMP's 4 Framing Questions

- What is a **healthy** Albemarle-Pamlico Estuarine System?
- What is the **status** of Albemarle-Pamlico Estuarine System?
- What are the biggest **threats** to the Albemarle-Pamlico Estuarine System?
- What **actions** should be taken to create a healthier system by 2020?





# Indicator Planning: Oysters

What is the expected trajectory of oyster indicator improvement, based on how the CCMP actions are implemented?

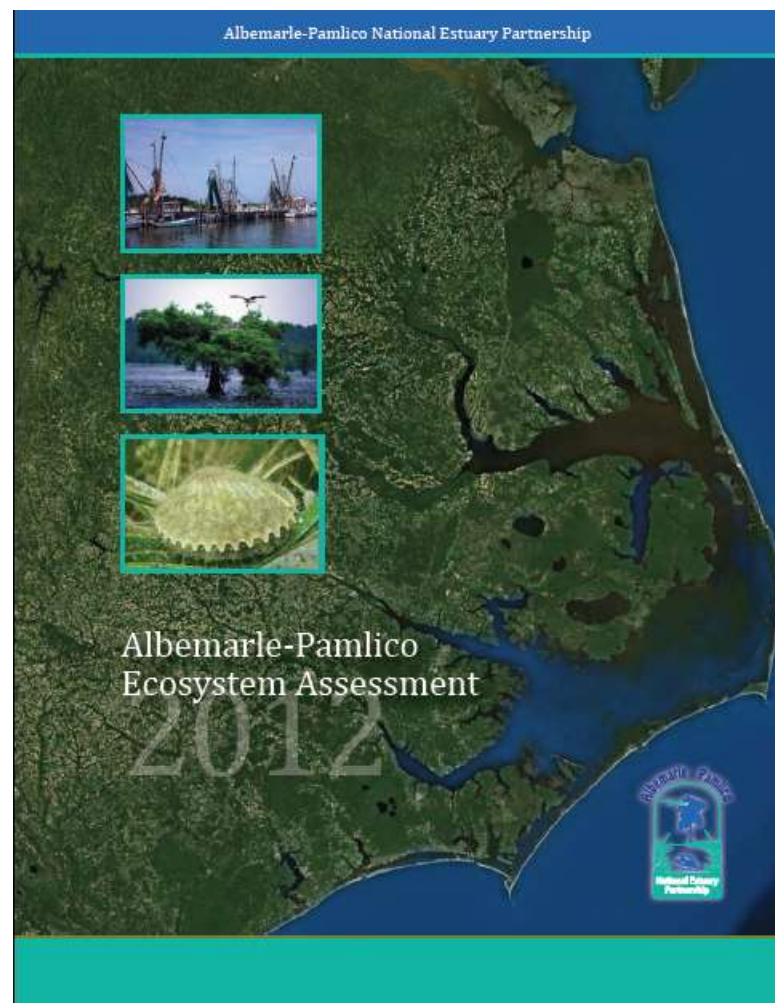


Phot credit: Niels Lindquist.  
Sign delineating permanent shellfish harvest closure. Found at many tidal creeks due to water quality issues.





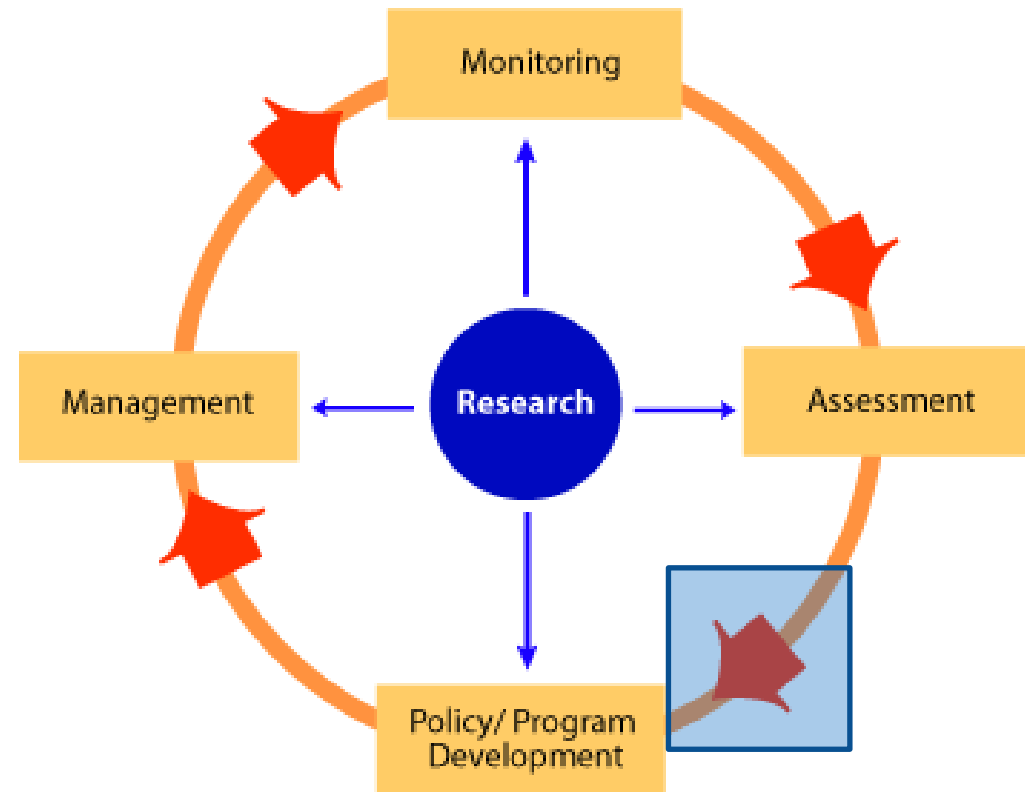
# Steps 5 & 6: Monitoring & Assessment





# Step 7: Manage Adaptively

- Most difficult step?
- Senior management engagement.
- Critical role of research.





# Summary

Partner collaboration across landscapes and waterscapes via ecosystem-based management increases the likelihood of maximizing net ecosystem services provided by oysters and other ecological endpoints.