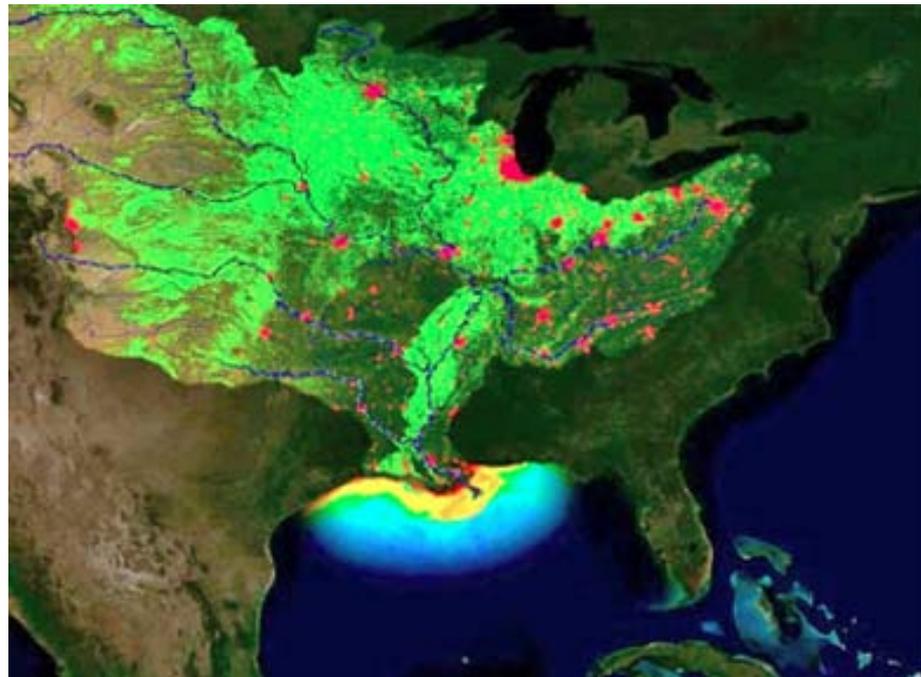




# Role of Workshop to Inform Gulf Hypoxia Management



**Alan Lewitus**  
**Center for Sponsored Coastal Ocean Research**  
**NOAA/NOS/NCCOS**

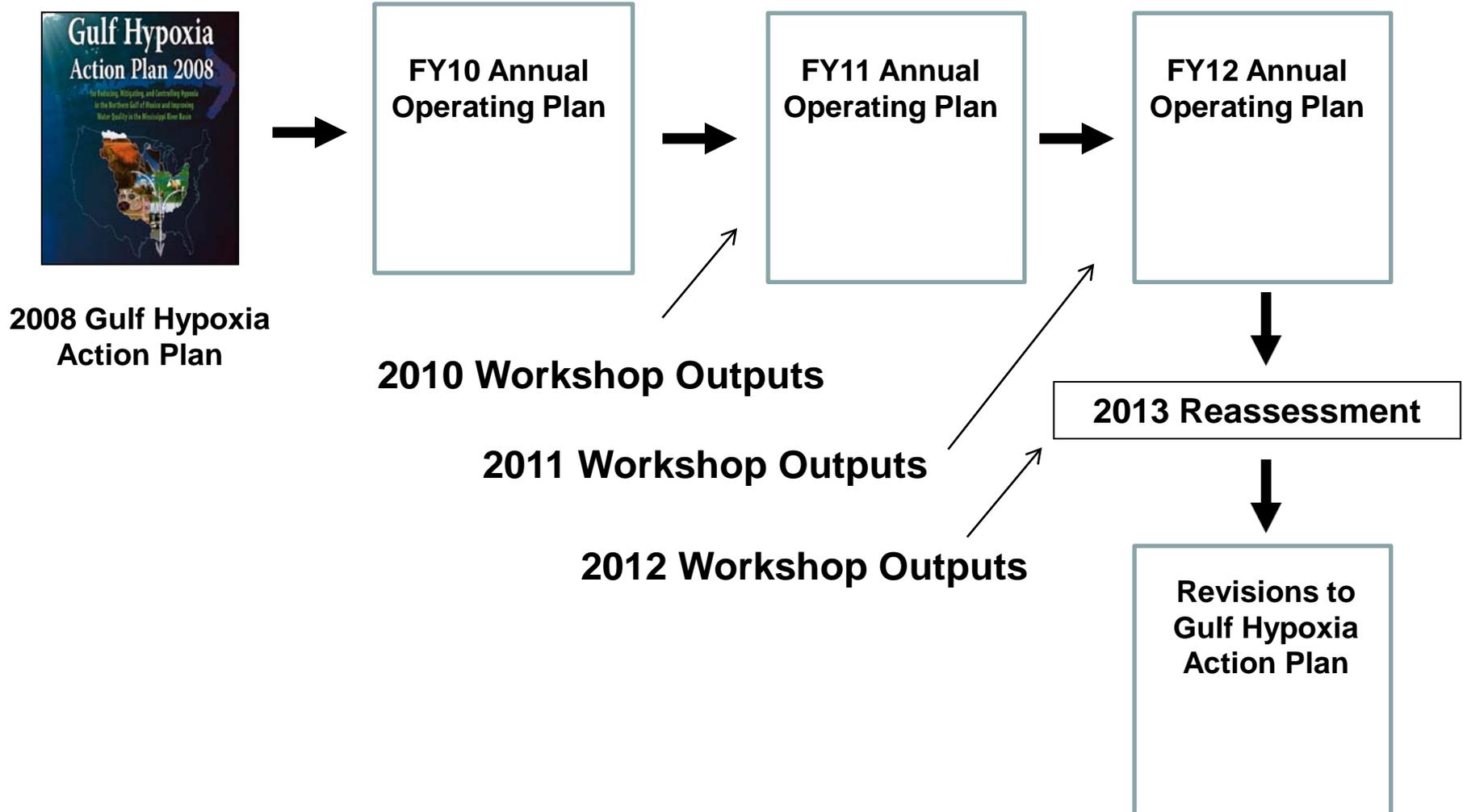


**3rd Annual Hypoxia Coordination Workshop**  
**Bay St. Louis, Mississippi; 27 March 2012**

## 2008 *Action Plan* Coastal Goal

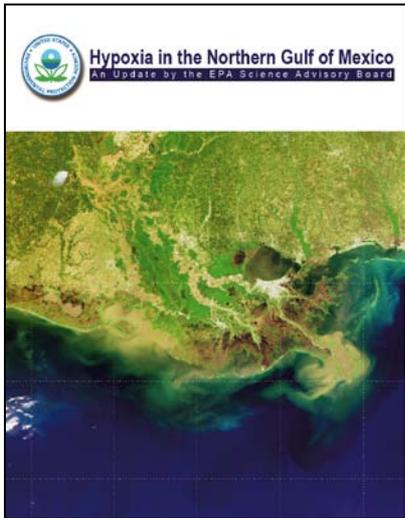
**Coastal Goal:** Subject to the availability of additional resources, we strive to reduce or make significant progress toward **reducing the five-year running average areal extent of the Gulf of Mexico hypoxic zone to less than 5,000 square kilometers by the year 2015** through implementation of...actions...to **reduce the annual discharge of nitrogen and phosphorus into the Gulf.**

# Outputs from Hypoxia Coordination Workshops inform Hypoxia Task Force



# 2013 Reassessment: Progress Since SAB Report

2004-2008  
Reassessment



2008 EPA Science  
Advisory Board  
Hypoxia Report

Biogeochemical  
Processing Work Group



Synthesis Report to  
inform reassessment  
of Action 9

Living Resources  
Impacts Work Group



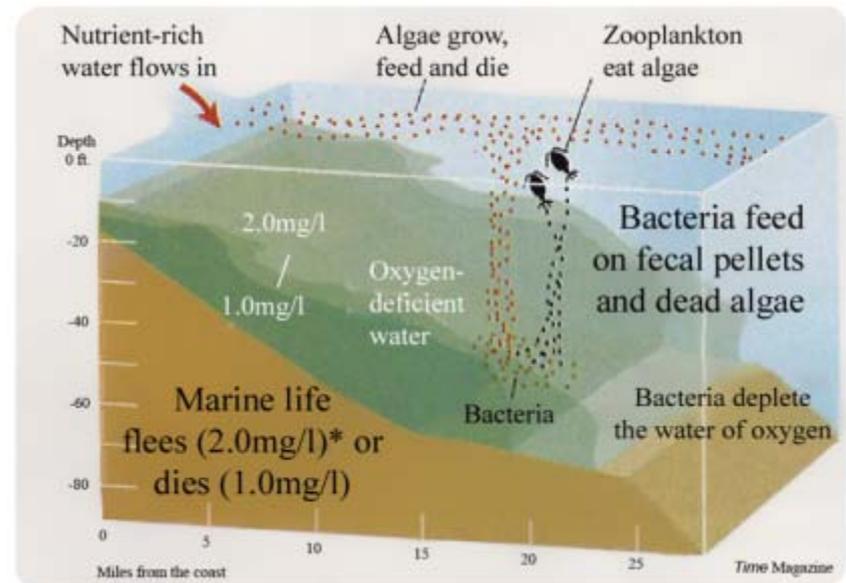
Synthesis Report to  
inform reassessment  
of Action 5

Hypoxia  
Coordination  
Workshop

# Biogeochemical Processing

## *2008 Gulf Hypoxia Action Plan – Action 9:*

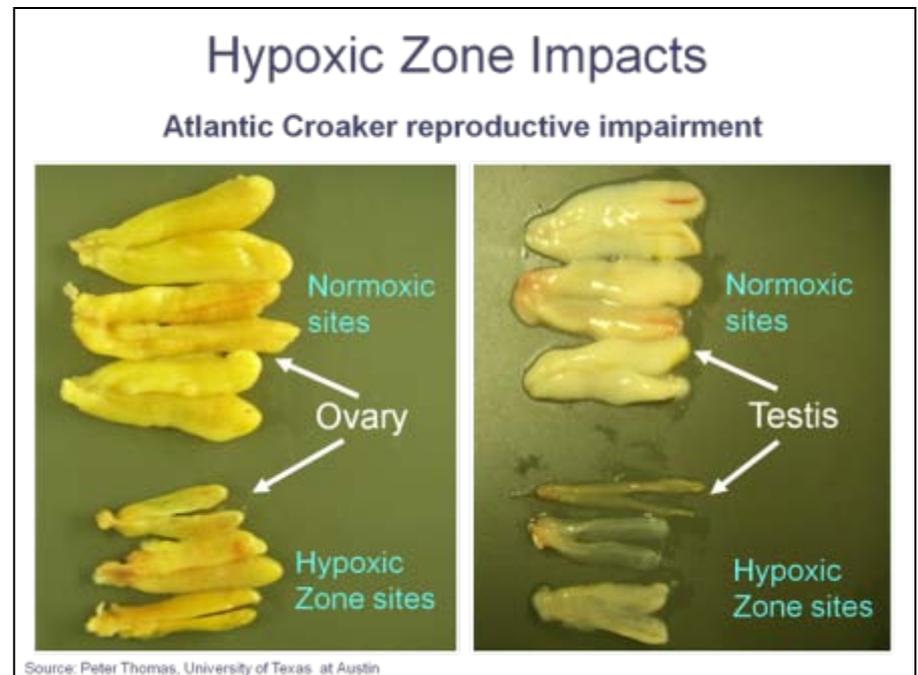
Continue to reduce uncertainty about the relationship between N and P loads and the formation, extent, duration, and severity of the hypoxic zone, to best monitor progress toward, and inform adaptive management of the Coastal Goal.



# Living Resources Impacts

## ***2008 Gulf Hypoxia Action Plan – Action 5:***

Identify and, where possible, quantify the effects of the hypoxic zone on the economic, human and natural resources in the Mississippi/Atchafalaya River Basin and Northern Gulf of Mexico, including the benefits of actions to reduce nitrogen and phosphorus and the costs of alternative management strategies.



# Biogeochemical Processes

SAB Report noted: “great uncertainty over the coupling in space or time of phytoplankton production and its decomposition leading to hypoxia”

2012 Workshop – how has our understanding advanced of:

- the biogeochemical pathways that process “new” nutrients and ultimately lead to hypoxia;
- the quantitative relationship between “new” nutrient flux and hypoxic zone area.

Critical info to refine models predicting relationship between nutrient loading and hypoxic zone areal extent – metric for Coastal Goal

## Biogeochemical Processes (cont)

SAB Report also found that “model development, calibration, and verification are hampered by the relative paucity of data on the duration and extent of hypoxia and on rates of important biogeochemical and physical processes that regulate hypoxia”;

“The development of more comprehensive monitoring should be coordinated with model development.”

# FY12 Gulf Hypoxic Zone Monitoring Implementation Plan

- Expand spatial boundaries of shelf-wide surveys.
  - Extended west and east (Miss Bight): LUMCON, TAMU, USM
- Increase number of shelf-wide surveys
  - Increased from 1 to 3: LUMCON, TAMU
- Add deployments of Autonomous Underwater Vehicles (AUVs) with dissolved oxygen sensors.
  - 2011 trials by LUMCON, USM; 2012 trials also planned by TAMU
- Create a portal to make data accessible and to facilitate exchange.
  - Progress - led by Russ Beard (NESDIS); proposals to GOMA
- Dissemination of data and findings to management communities.
  - Progress by GCOOS, Miss/AL SG, GOMA, LUMCON, Hypoxia TF

# Living Resources Impacts

SAB Report: “Biological changes have occurred in the benthic communities of the NGOM, and there is evidence that the living resources are impacted by hypoxia.”

Warned that in other systems, “regime shift occurred where today the system is more sensitive to inputs of nutrients than in the past, with nutrient inputs inducing a larger response in hypoxia as shown for other coastal marine ecosystems”

SAB Recommendation: “Nutrients should be reduced as soon as possible before the system reaches a point where even larger reductions are required to reduce the area of hypoxia.”

# Nutrient Reduction – A Shared Vision

- *Hypoxia Task Force*: focus on development and implementation of statewide nutrient reduction strategies (Catherine Ngo talk)
- *Gulf Alliance*: Long-term goal - Develop and implement strategies that reduce nutrient inputs and hypoxia (Richard Ingram talk)
- *Gulf Ecosystem Restoration Task Force*: Major Action - Decrease and manage excess nutrient levels in the Gulf through the development and implementation of state nutrient reduction frameworks (Alyssa Dausman & Jan Kurtz talk)
- *Louisiana Coastal Master Plan*: supports efforts to implement Louisiana's state nutrient reduction strategy developed from Hypoxia Task Force activities (Dugan Sabin & Chuck Killebrew talk)