

# Evaluating the Estuary Restoration Act and oyster reef restoration projects to inform Gulf restoration



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The Estuary  
Restoration Act  
of 2000

One Hundred Sixth Congress  
of the  
United States of America

AT THE SECOND SESSION

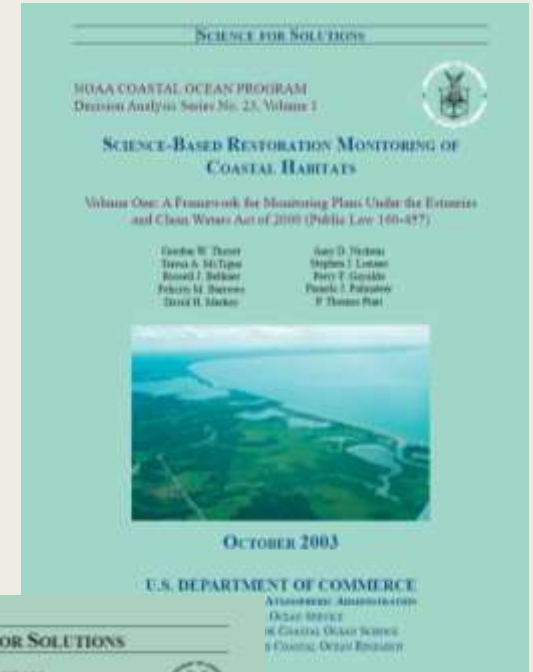
*begun and held at the City of Washington on Monday  
the twenty-fourth day of January, two thousand*

An Act

to provide for the restoration of estuary habitat through more efficient project  
enhanced coordination of Federal and non-Federal restoration  
and other purposes.

# Purposes of the ERA

- Improve cost-efficiency
- Develop common monitoring standards
- Enhance monitoring and research capabilities to ensure sound science
  - *Mandated monitoring*
  - *Public dissemination of data*



# National Estuaries Restoration Inventory

## NERI

National Estuaries Restoration Inventory



ESTUARY HABITAT RESTORATION COUNCIL

The Estuary Restoration Act (ERA) directed the establishment of a national database of restoration project information. Released in 2004, the National Estuaries Restoration Inventory (NERI) tracks estuary habitat restoration projects implemented by a variety of organizations in the United States. NERI contains information on restoration techniques, monitoring, and habitat acres restored in support of the ERA goals.

**Welcome to the National Estuaries Restoration Inventory**

This National Estuaries Restoration Inventory (NERI) has been created to track estuary habitat restoration projects across the nation. The purpose of this inventory is to provide information on restoration projects in order to improve restoration methods, as well as to track progress toward the address goals of the Estuary Restoration Act.

[Add/Update a Project](#)  
[Search the Inventory](#)  
[Maps](#)  
[NOAA & the Estuary Restoration Act](#)

NOAA and the Estuary Restoration Act

<http://neri.noaa.gov>

FOR MORE INFORMATION  
 or to inquire about including your  
 restoration projects, please contact:  
[neri@noaa.gov](mailto:neri@noaa.gov)

### SEARCH THE INVENTORY...

[Search by Location](#)

[Search by Habitat Type](#)

[Search by Restoration Technique](#)

[Search by Partner](#)

[Search by Ecosystem](#)

Search by location, habitat, technique, or partner.

Use the Advanced Search for more specific queries.

#### Projects by Restoration Technique

Select Category and Restoration Technique (optionally from the list below OR enter a keyword). Click the view button for a list of projects using that Technique.

Technique:  Keyword:

Category:  View

Restoration Technique:  View

Wetlands  
 Open Coastal Vegetation  
 Invasive Terrestrial Vegetation  
 Prairie

Records 1 to 28 of 107

View List

Click on a status heading to sort projects by that heading.

Project Name	State/County	Project Status	Priority	Restoration Techniques	Area (Acres)
Wetlands	MS	Restoration	Complete	Wetlands, Open Coastal Vegetation, Invasive Terrestrial Vegetation, Prairie	1,000
Wetlands	OK	Restoration	Complete	Wetlands, Open Coastal Vegetation, Invasive Terrestrial Vegetation, Prairie	1,000

### RUN STATUS REPORTS...

#### Status of the Inventory

Select one

- Access Restored by Habitat and Region
- Total Acres Restored by Region
- Total Acres Restored by Habitat Type
- Access To Be Restored by Project Status
- Number of Projects by Project Status
- Access Granted, Pending/Declined
- Complete List of Estuary Rest.

Select from a list of reports to view summaries such as the estimated acreage restored in a particular region or habitat.

#### Total Acres Restored by Region

Region	Total Acres
Alaska	1,000.00
California	200.00
Great Lakes	200.00
Gulf of Mexico	45,000.00
Hawaii	1,000.00
Mid Atlantic	8,000.00
North Atlantic	2,000.00
Pacific	1,000.00
South Atlantic	1,000.00
<b>Total Acres</b>	<b>15,400.00</b>

### VIEW PROJECT DETAILS...

#### FL DeSoto Tidal Flow Restoration

Project Name: FL DeSoto Tidal Flow Restoration

Location: DeSoto Parish, Louisiana

Project Description: This project involves the restoration of tidal flow channels and wetlands in the DeSoto Parish area. The project includes the construction of levees, dikes, and other structures to restore the natural flow of water and sediment into the wetlands.

Project Status: In Progress

Project Manager: [Name]

Project Start Date: [Date]

Project End Date: [Date]

Project Budget: [Amount]

Project Funding Source: [Source]

Project Contact: [Contact Info]



Click on a project of interest from your search results and view the summary or a detailed report.

#### Summary of acreage by habitat type:

Habitat Category	Habitat Type	Description	Area (Acres)	Restored	Access Granted	Access Denied	Total
Wetlands	Wetlands	Wetlands	1,000	1,000	0	0	1,000
Open Coastal Vegetation	Open Coastal Vegetation	Open Coastal Vegetation	1,000	1,000	0	0	1,000
Invasive Terrestrial Vegetation	Invasive Terrestrial Vegetation	Invasive Terrestrial Vegetation	1,000	1,000	0	0	1,000
Prairie	Prairie	Prairie	1,000	1,000	0	0	1,000

### USE THE INTERACTIVE MAPPER...

The Restoration Project Mapper allows users to explore NERI projects through an interactive map viewer. Pre-formatted regional maps are also available for viewing and download.

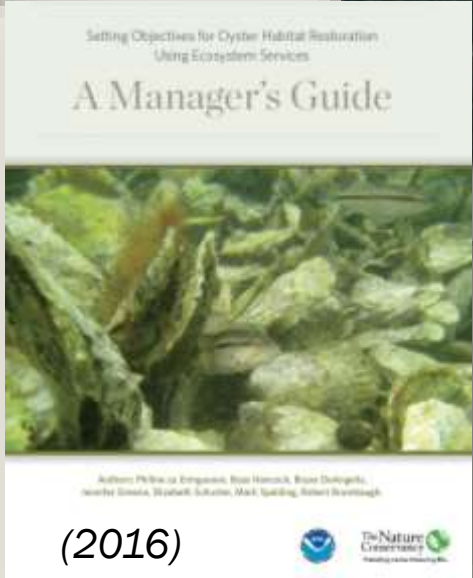
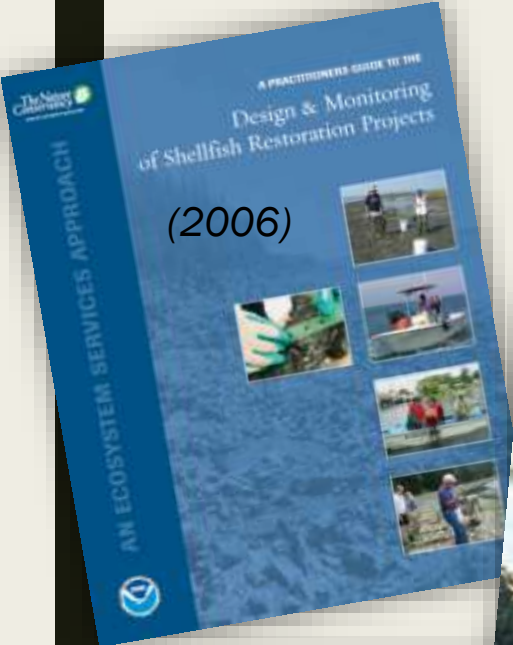
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# Case study of oyster reef projects



# Restoration guidance



➤ Scale

➤ Cost

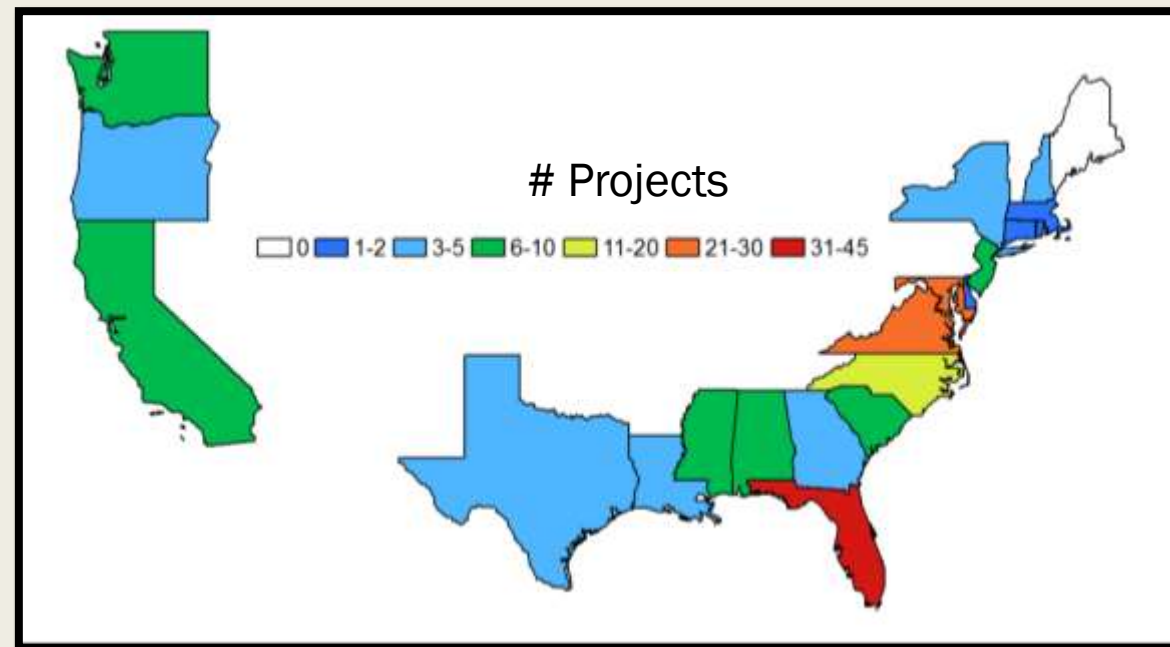
➤ Monitoring



How have project size, costs and metrics of success changed over time?

# Project distribution

- 187 projects implemented between 2000-2011
- \$45.3 million awarded
- >150 ha restored



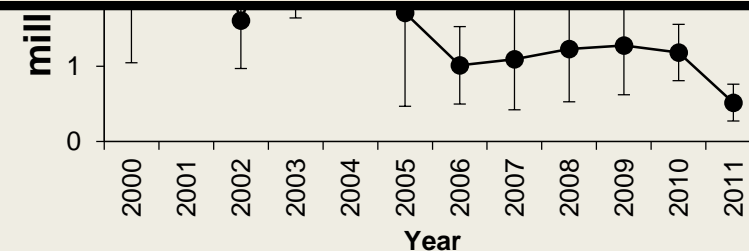
# Project size and cost

■ Project Size:



Size class	Number of projects	Total area restored (ha)	Funding			Mean cost (USD)			
			Total (millions USD)	Federal (%)	Non-federal (%)	per project	per ha		
Enhancement (0 ha)	35	0	6.5	37%	63%	\$185,180	N/A		
Small (< 0.4 ha)	80	43%	7.5	5%	9.6	52%	48%	\$121,774	\$3,477,339
Medium (0.4 - 2.0 ha)	55	46.7	15.3	66%	34%	\$278,328	\$337,399		
Large (> 2.0 ha)	17	9%	96.4	64%	13.9	87%	13%	\$819,090	\$97,989

■ American Recovery & Reinvestment Act of 2009





# Lack of monitoring data

Does this project include monitoring to gauge the success of restoration efforts? **Yes**  
Does this project's monitoring plan meet ERA Council Monitoring Standards? **Yes**  
URL for monitoring data:



MONITORING PARAMETERS & SUCCESS CRITERIA			
a. Monitoring parameters			
Parameter	Details	Start date	End date
No information has been provided to date ...			
b. Success criteria			
Monitoring parameter	Success criteria	Have criteria been met?	Comments on success criteria
No information has been provided to date ...			

- ~50% restored reefs monitored in Chesapeake Bay (Kennedy et al. 2011)
- ~20% restored reefs monitored in Gulf of Mexico (La Peyre et al. 2014)
- River restoration is US (Bernhardt et al. 2005), Salt marsh restoration in Europe (Wolters et al. 2005)

# Where are the data?

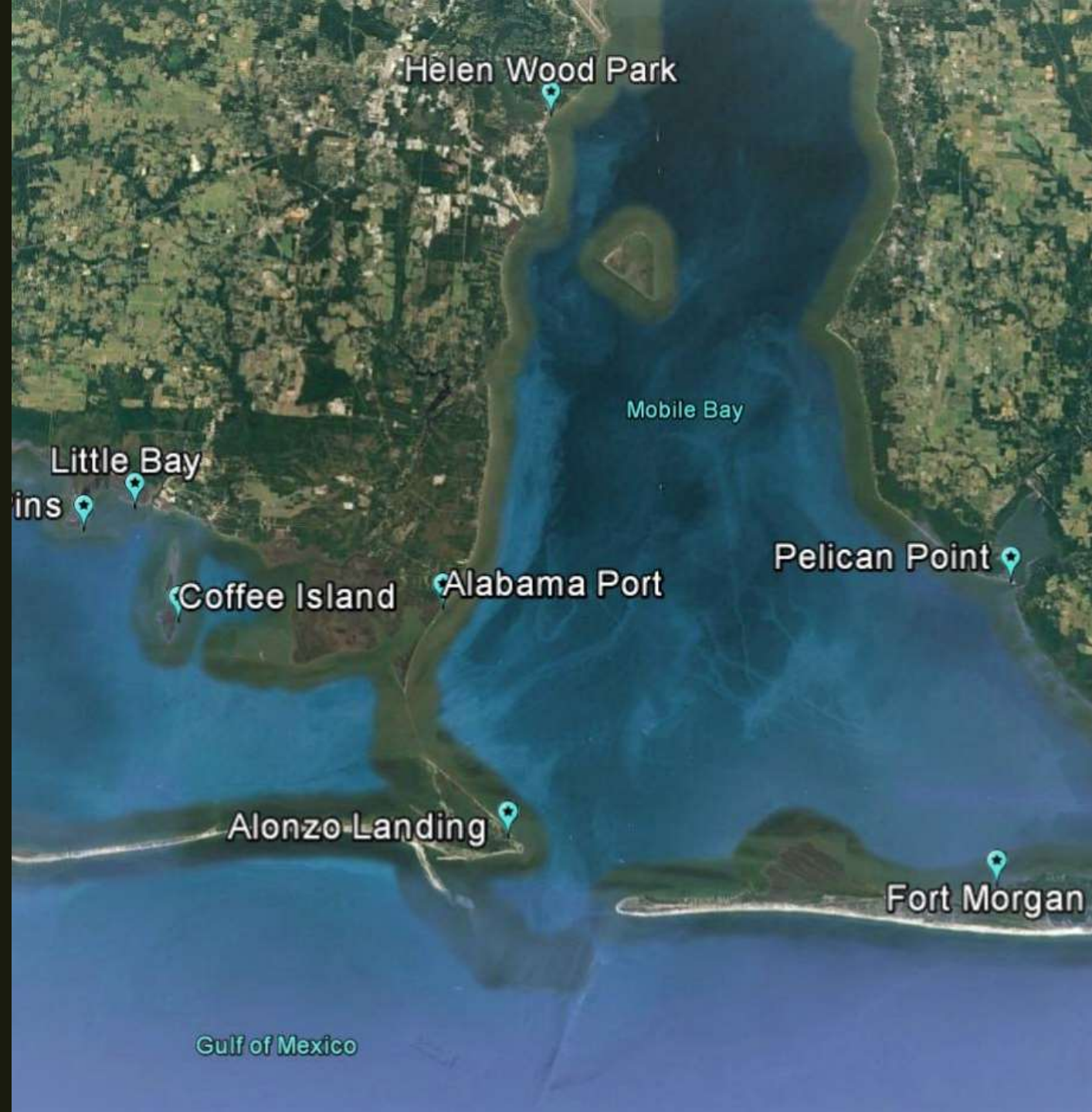
- Why are they missing?
  - *Projects not monitored?*
  - *Data never submitted?*
  - *Lack of support?*

- To be expected?
  - *Unrealistic goals?*
  - *Disconnect between on-the-ground efforts and policy making?*

“I have to state that their approach was quite naïve given what everyone should have known about these efforts (except perhaps a ‘newbee’ grad student) with laudable ideals??”

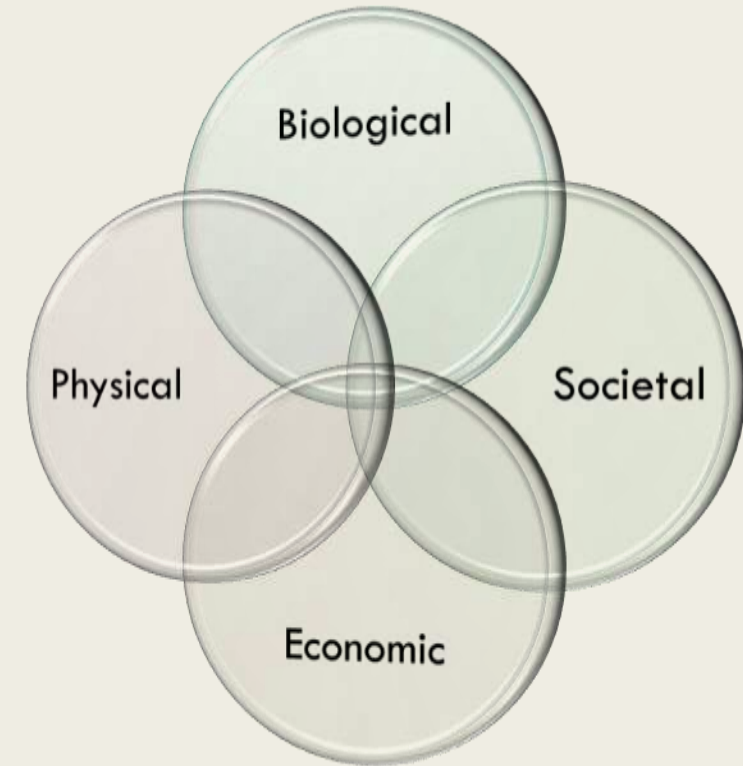


# A closer look for missing data



# Living Shorelines: Synthesizing the results of a decade of implementation in coastal Alabama

- 12 projects implemented between 2005-2013
- Different methods
- What works best? Provides the most benefits?





# Data collected and available

Project Code	Data collected:						Results available?
	Shoreline position	Reef footprint	Sessile density	Nekton abundance	Marsh cover	SAV presence	
AL05			(X)				X
PAP07	X	X	X	X	X		X
AP07	X	X	X	X	X		X
HWPO8	X		X	X			X
PAP09	X	X	X	X	X	X	X
LB10	(X)	X	(X)	(X)	(X)		X
CI10	X	X	X	X	X	X	
AP11	X	X	X	X	X	X	
HWP11	X	X	X		X	X	
ST12	X	X	X		X	X	
FM12	X	X	X		(X)	X	
PP13	X	X	X		(X)	X	

*Check out our preliminary results at tonight's poster session!*

# The RESTORE Act of 2012



# RESTORE Act of 2012

Restoration Funding in Dollars

Major Restoration Categories	Unknown Conditions	Regionwide	Open Ocean	Alabama	Florida	Louisiana	Mississippi	Texas	Total Restoration Funding*
<b>1. Restore and Conserve Habitat</b>									
Wetlands, Coastal, and Nearshore Habitats				65,000,000	5,000,000	4,009,062,700	55,500,000	100,000,000	4,234,562,700
Habitat Projects on Federally Managed Lands				3,000,000	17,500,000	50,000,000	5,000,000		75,500,000
Early Restoration (through Phase IV)				28,110,000	15,629,367	259,625,700	80,000,000		383,365,067
<b>2. Restore Water Quality</b>									
Nutrient Reduction (Nonpoint Source)				5,000,000	35,000,000	20,000,000	27,500,000	22,500,000	110,000,000
Water Quality (e.g., Stormwater Treatments, Hydrologic Restoration, Reduction of Sedimentation, etc.)					300,000,000				300,000,000
<b>3. Replenish and Protect Living Coastal and Marine Resources</b>									
Fish and Water Column Invertebrates			380,000,000						380,000,000
Early Restoration Fish and Water Column Invertebrates			20,000,000						20,000,000
Sturgeon			15,000,000						15,000,000
Sea Turtles	60,000,000	55,000,000	5,500,000	20,000,000	10,000,000	5,000,000	7,500,000		163,000,000
Early Restoration Turtles	29,256,165							19,965,000	49,221,165
Submerged Aquatic Vegetation						22,000,000			22,000,000
Marine Mammals	19,000,000	55,000,000	5,000,000	5,000,000	50,000,000	10,000,000			144,000,000
Birds	70,400,000	70,000,000	30,000,000	40,000,000	148,500,000	25,000,000	20,000,000		403,900,000
Early Restoration Birds	1,823,100		145,000	2,835,000	71,937,300		20,603,770		97,344,170
Mesophotic and Deep Benthic Communities			273,300,000						273,300,000
Oysters	64,372,413			10,000,000	20,000,000	26,000,000	20,000,000	22,500,000	162,872,413
Early Restoration Oysters				3,329,000	5,370,596	14,874,300	13,600,000		37,173,896
<b>4. Provide and Enhance Recreational Opportunities</b>									
Provide and Enhance Recreational Opportunities				25,000,000	63,274,513	38,000,000	5,000,000		131,274,513
Early Restoration Recreational Opportunities			22,397,916	85,505,305	120,543,167	22,000,000	18,957,000	18,582,688	287,986,076
<b>5. Monitoring, Adaptive Management, and Administrative Oversight</b>									
Monitoring and Adaptive Management		65,000,000	200,000,000	10,000,000	10,000,000	225,000,000	7,500,000	2,500,000	520,000,000
Administrative Oversight and Comprehensive Planning		40,000,000	150,000,000	20,000,000	20,000,000	33,000,000	22,500,000	4,000,000	289,500,000
Adaptive Management NRD Payment for Unknown Conditions	700,000,000								700,000,000
<b>Total NRD Funding</b>	<b>\$700,000,000</b>	<b>\$349,851,678</b>	<b>\$1,240,697,916</b>	<b>\$295,589,305</b>	<b>\$680,152,643</b>	<b>\$5,000,000,000</b>	<b>\$295,557,000</b>	<b>\$238,151,458</b>	

\* The total restoration funding allocation for the Early Restoration work; each restoration type; and monitoring, adaptive management, and administrative oversight is \$8.1 billion (plus up to an additional \$700 million for adaptive management and unknown conditions).

- ~\$6.5B dedicated to restoration
  - ~\$200M specifically to oyster reef habitats
- ~\$1.5B assigned for monitoring, adaptive management and administrative oversight

# Conclusions

- Hindsight is 20:20
  - *Use lessons learned from the ERA to guide RESTORE efforts.*
- Restoration ecology is a growing field
  - *It is critical that both new and current restoration practitioners and scientists are able to learn from past projects and apply that collective knowledge to future restoration efforts.*
- Restoration projects face increased scrutiny
  - *Transparency with the public about restoration goals and outcomes is important for maintaining and building support for continued restoration efforts.*



**WHY OYSTER RESTORATION GOALS IN THE CHESAPEAKE BAY ARE NOT  
AND PROBABLY CANNOT BE ACHIEVED**

**ROGER MANN<sup>1\*</sup> AND ERIC N. POWELL<sup>2</sup>**

<sup>1</sup>*Virginia Institute of Marine Science, Gloucester Point, Virginia 23062;* <sup>2</sup>*Haskin Shellfish Research Laboratory, Rutgers University, 6959 Miller Avenue, Port Norris, New Jersey 08349*

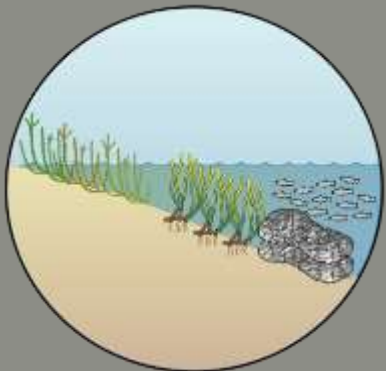
- “This commentary is written to incite debate. **Public trust has been vested in the scientific community** to restore oysters to the Chesapeake Bay. We have **spent vast amounts of money** and to date have **demonstrated little progress**. We offer the opinion that **if this had been a private industry** agricultural challenge, **we would have either been fired long ago** for not solving the problem **or the challenge would have been redefined** with pursuit of novel and tractable alternative options.”





Thank You!

Contact me at:  
[bblomberg@disl.org](mailto:bblomberg@disl.org)



Learn more about the living shorelines project at the poster session tonight!  
 (PPF20)

# Acknowledgements

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