

# Louisiana Sea Grant College Program at LSU

Robert R. Twilley, Executive Director



LSG 1970 (10)

**45 YRS of Service among  
LSU and Louisiana  
Universities with coastal  
communities**

**1968 - 2014**





Healthy  
Ecosystems &  
Habitats

Resilient  
Communities &  
Economies

**FOCUS  
AREAS**

Sustainable  
Fisheries &  
Aquaculture

Education &  
Workforce  
Development

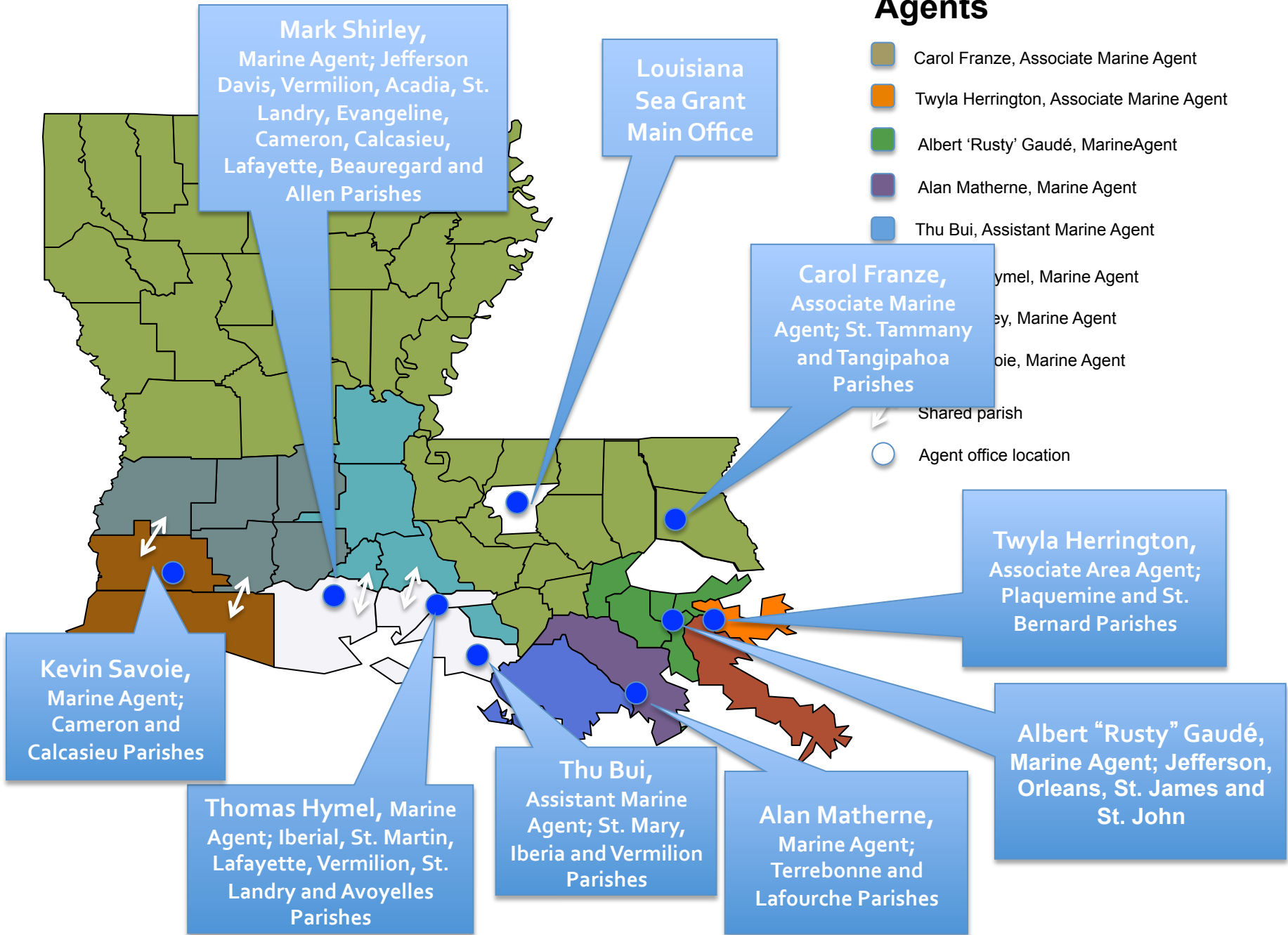
# Louisiana Sea Grant

Research • Education • Outreach

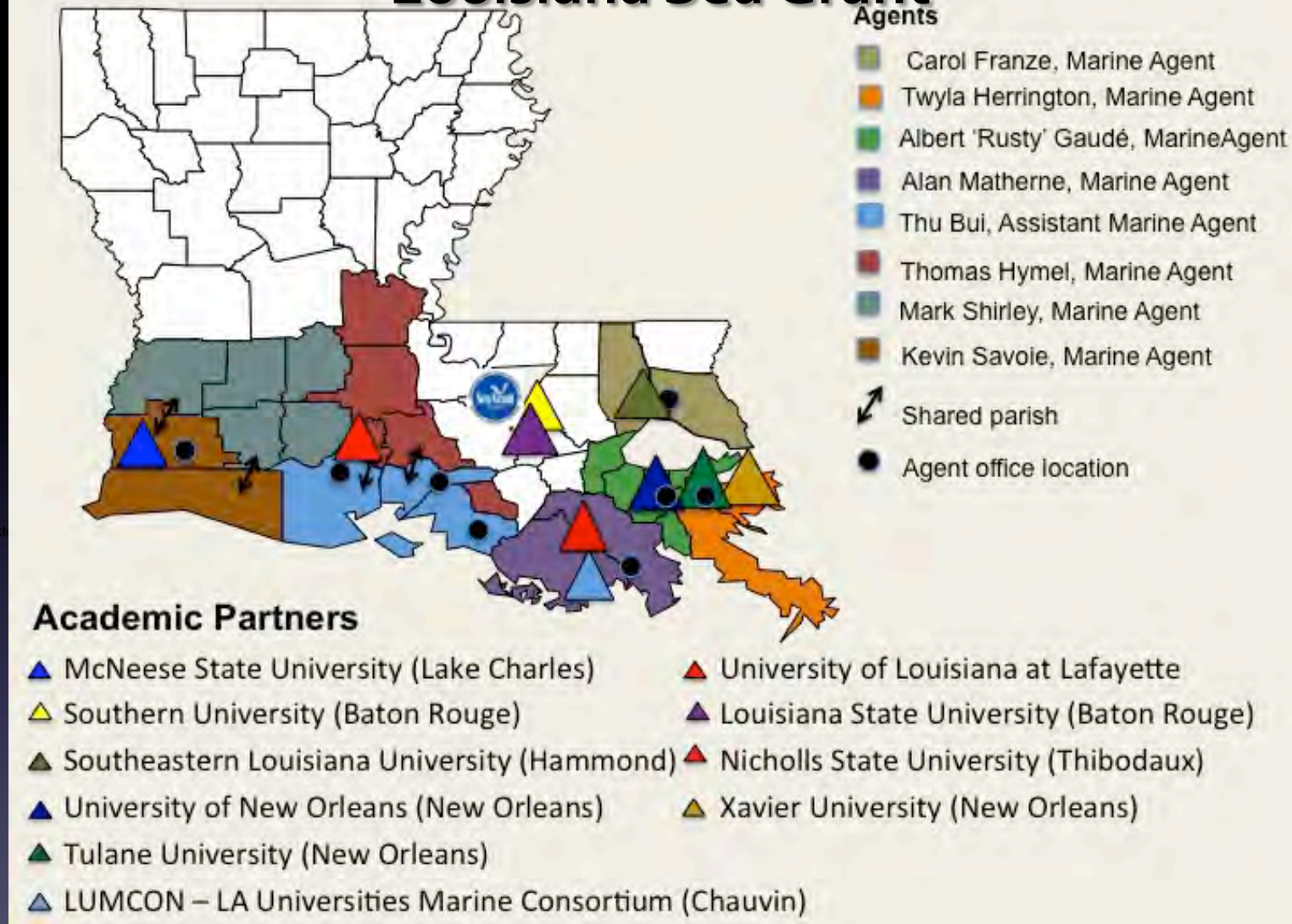
- Promote stewardship through a combination of programs critical to the cultural, economic and environmental health of Louisiana's coastal zone.

## Agents

- Carol Franze, Associate Marine Agent
- Twyla Herrington, Associate Marine Agent
- Albert 'Rusty' Gaudé, Marine Agent
- Alan Matherne, Marine Agent
- Thu Bui, Assistant Marine Agent
- Shared parish
- Agent office location



# Louisiana Sea Grant




## Research • Education • Outreach

- Sea Grant serves Louisiana's coastal population – about 70 percent of the state's residents – through Extension Agents, who live in the coastal areas they serve, and Extension Specialists, who are based at LSU.

# National Network supported by grants from NOAA



**NOAA**  
National Sea Grant  
College Program

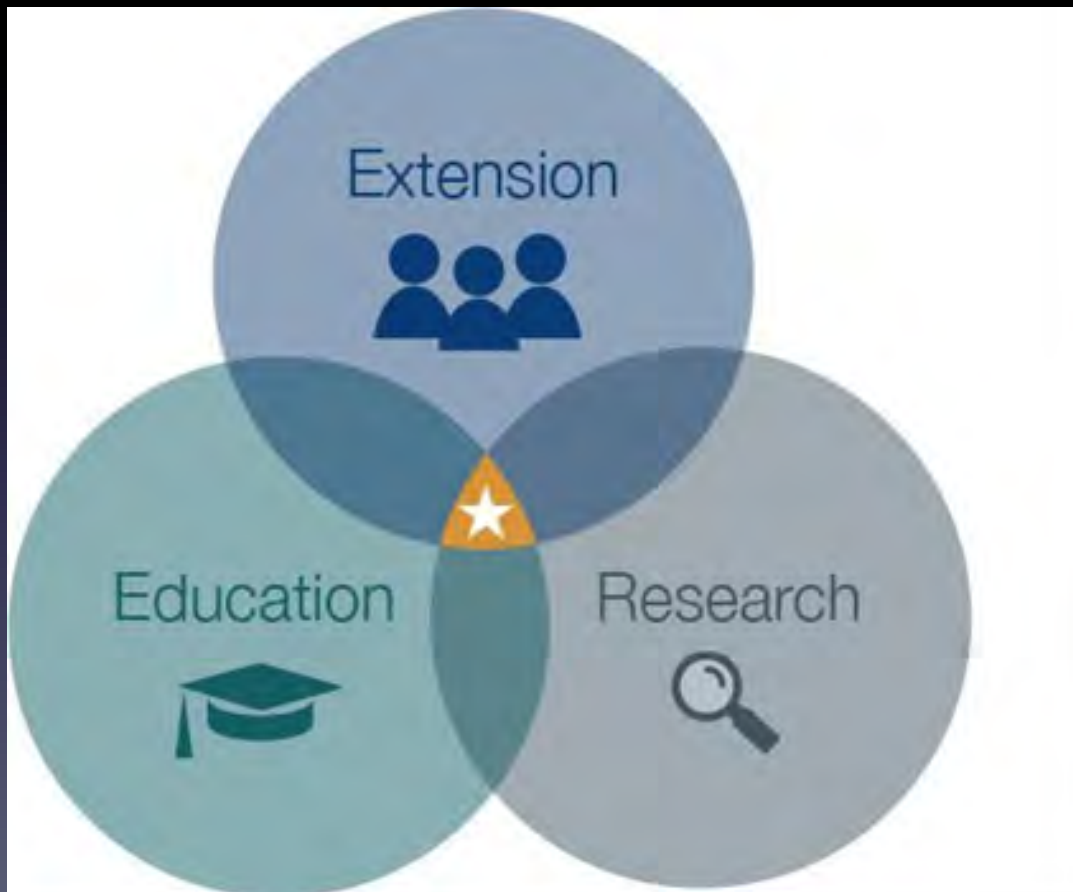


**Strategic Plan 2014-2017**

*Sustaining our nation's ocean, coastal and Great Lakes resources through university-based research, communications, education, extension and legal programs.*

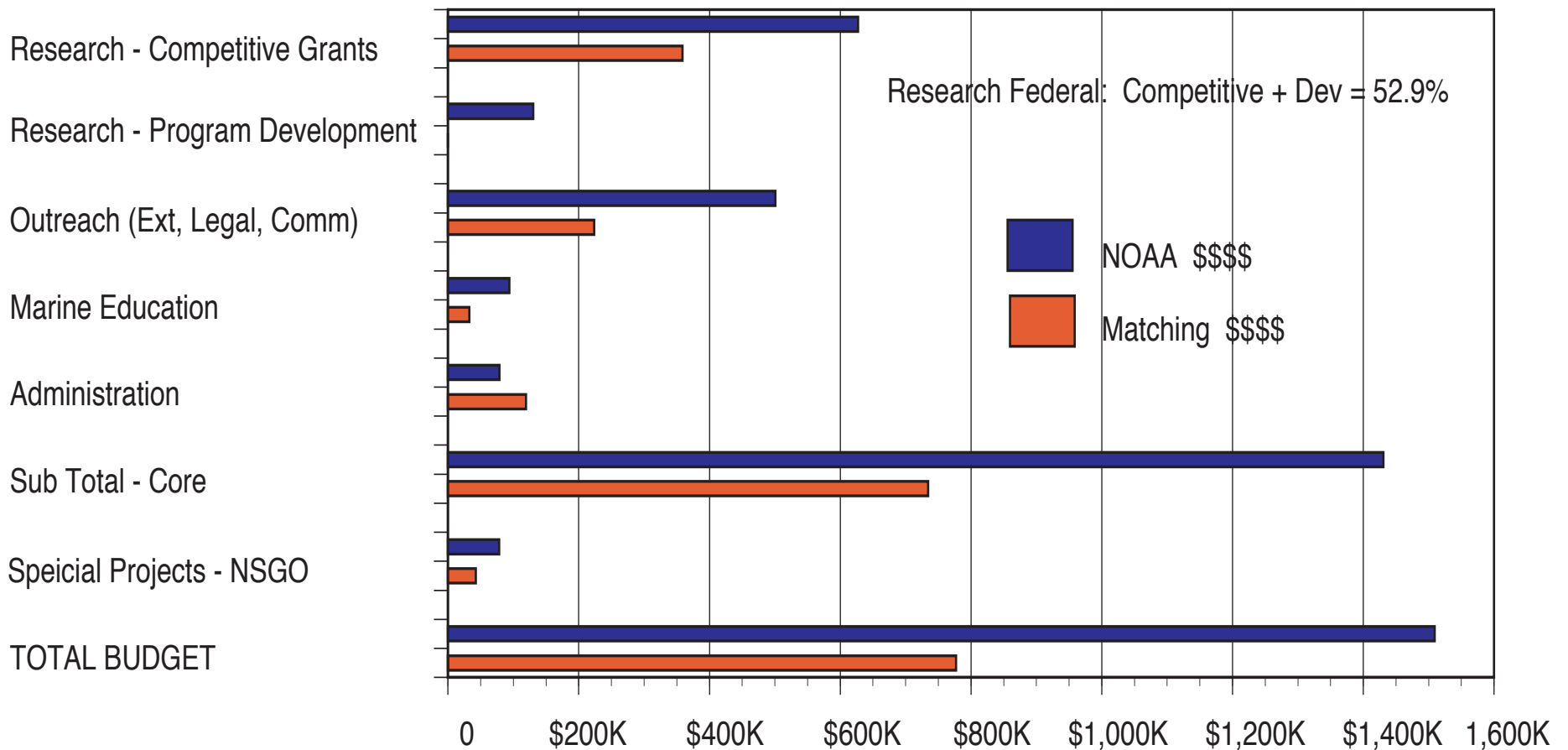
**Sea Grant**

# Building Two-way Bridges through Sea Grant Networks



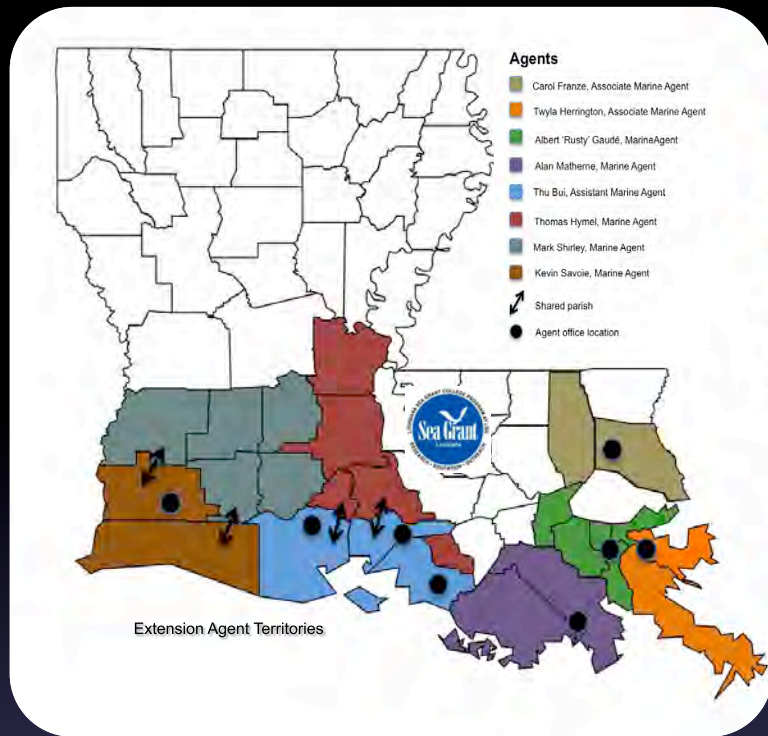
Figures courtesy of: Dr. John Jacobs, Texas Sea Grant

## YEAR ONE, 2014-2015



## NOAA Programmatic Goal

- **50% of Core Program Funds Distributed to Competitive and Program Development Research Funds combined**



**Healthy  
Ecosystems &  
Habitats**

**Resilient  
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Economies**

**FOCUS  
AREAS**

**Sustainable  
Fisheries &  
Aquaculture**

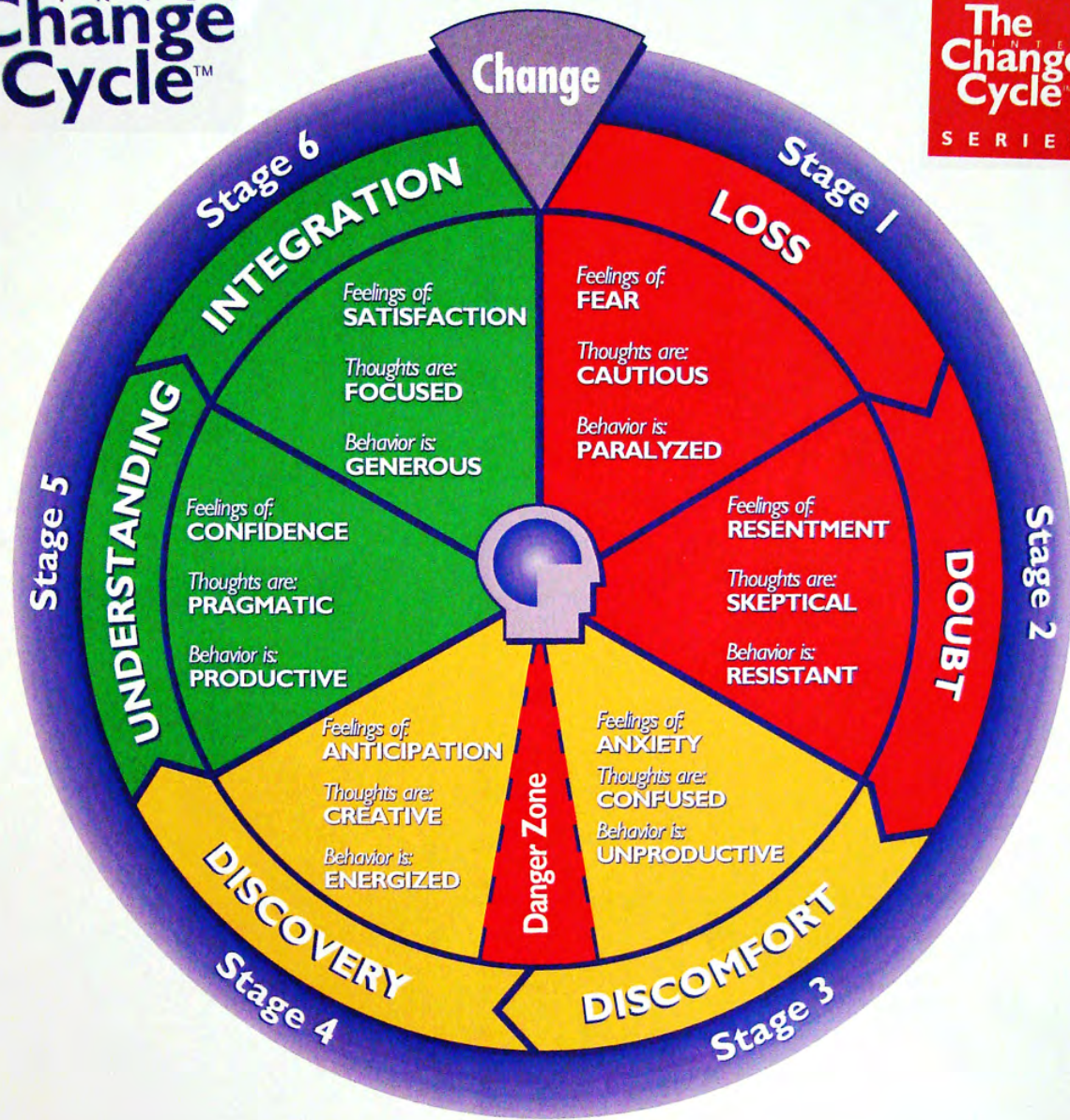
**Education &  
Workforce  
Development**

# Louisiana Sea Grant

Research • Education • Outreach

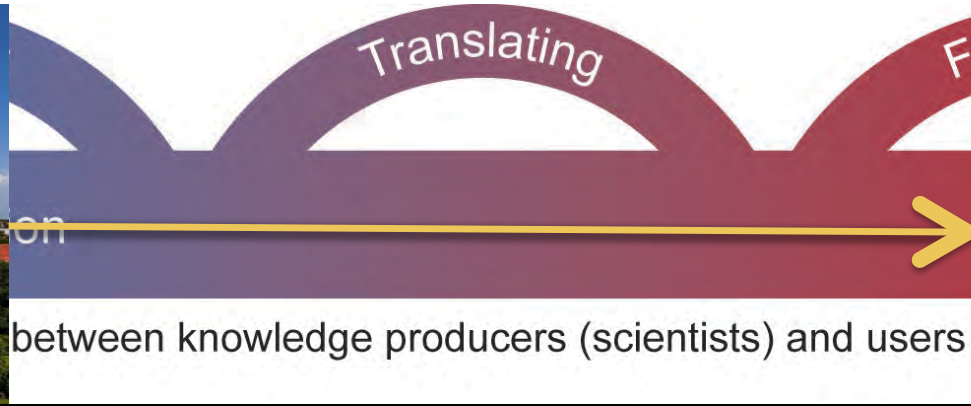
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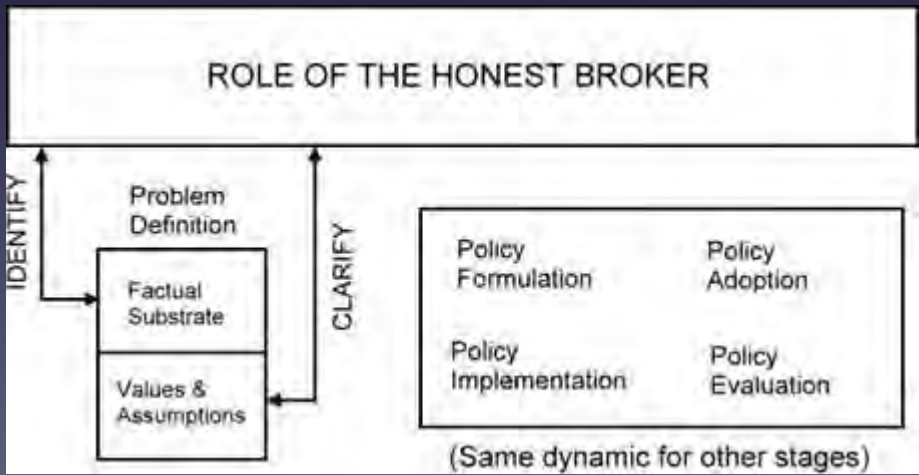
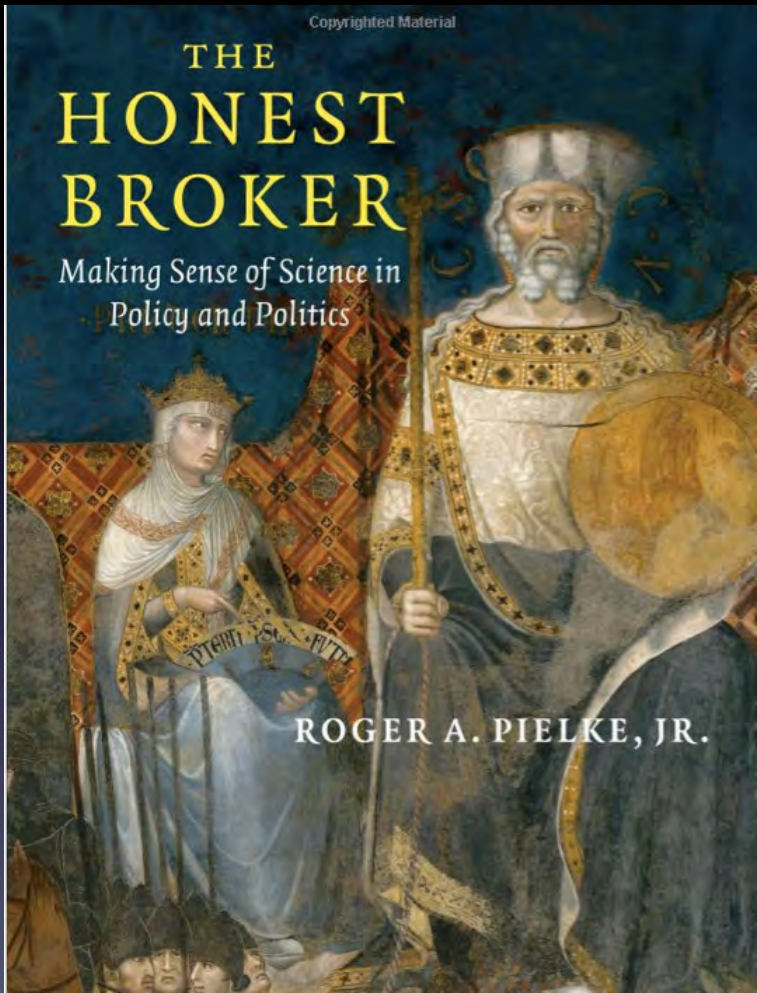


# Future Vision for Coastal Louisiana

## Delta Cycle vs The Change Cycle



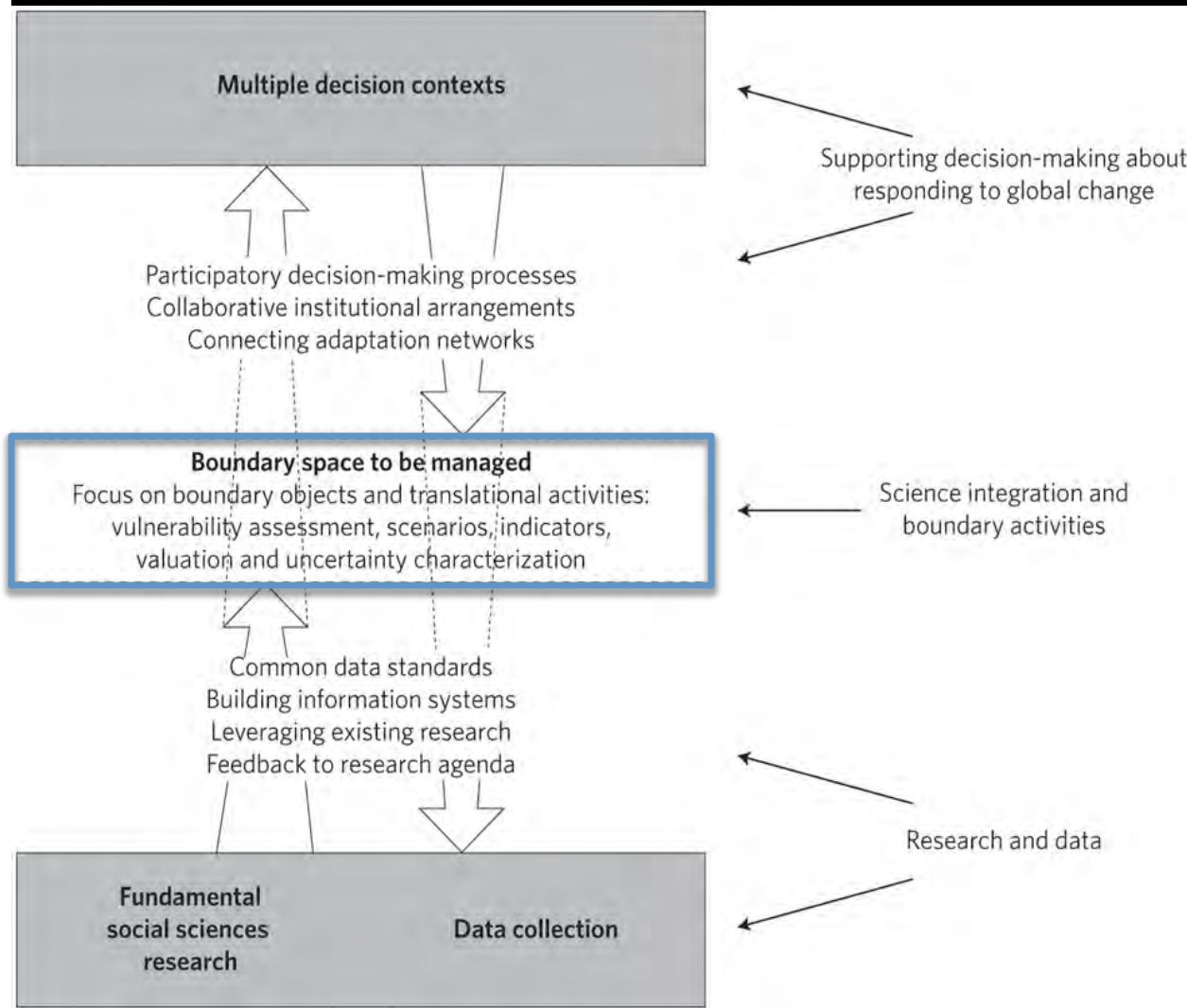
A well-informed public is more likely to engage constructively in science-related policy decisions. Government policies, management decisions, and corporate and personal decisions should be informed by the best scientific knowledge available.



# University Research – Sea Grant And Shared Vision of Coastal Issues

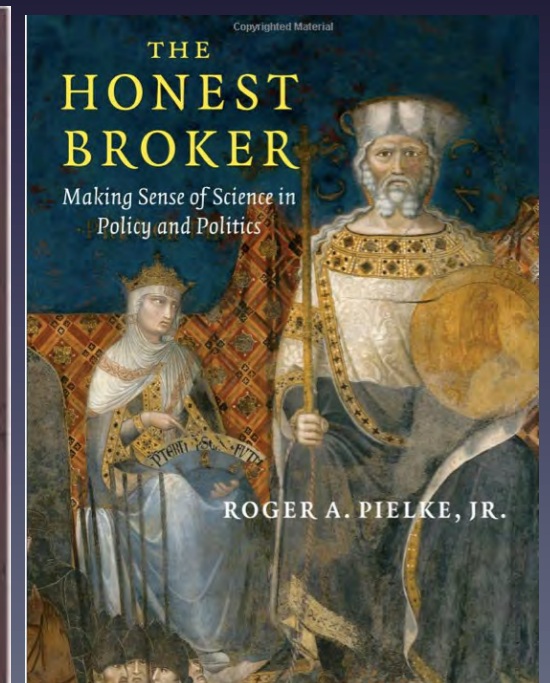
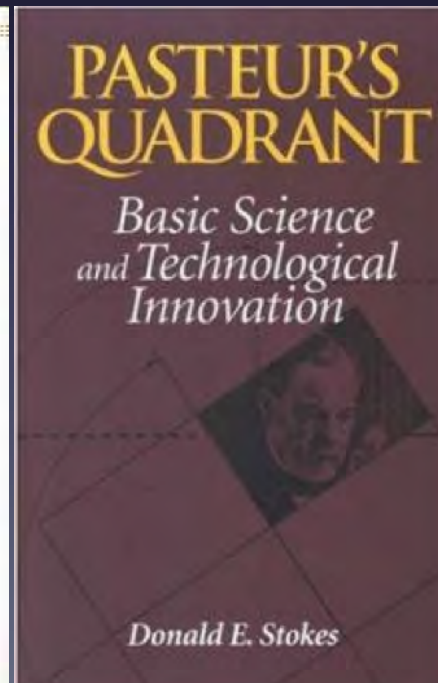
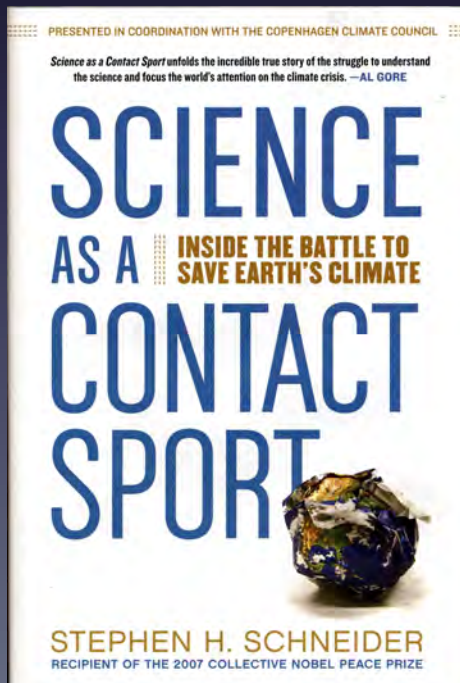
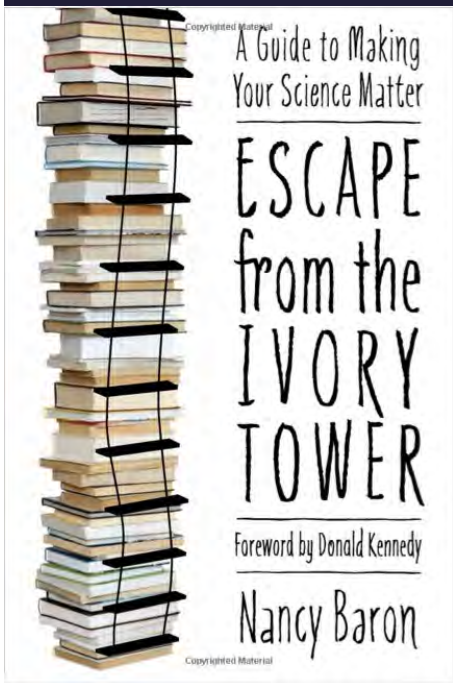


# University Research – Sea Grant A Boundary Organization?

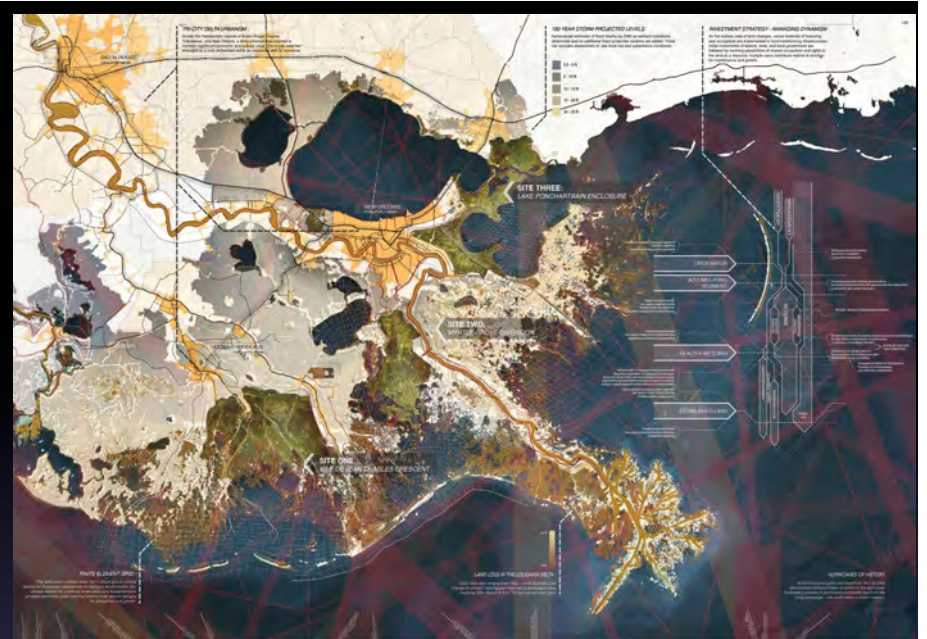


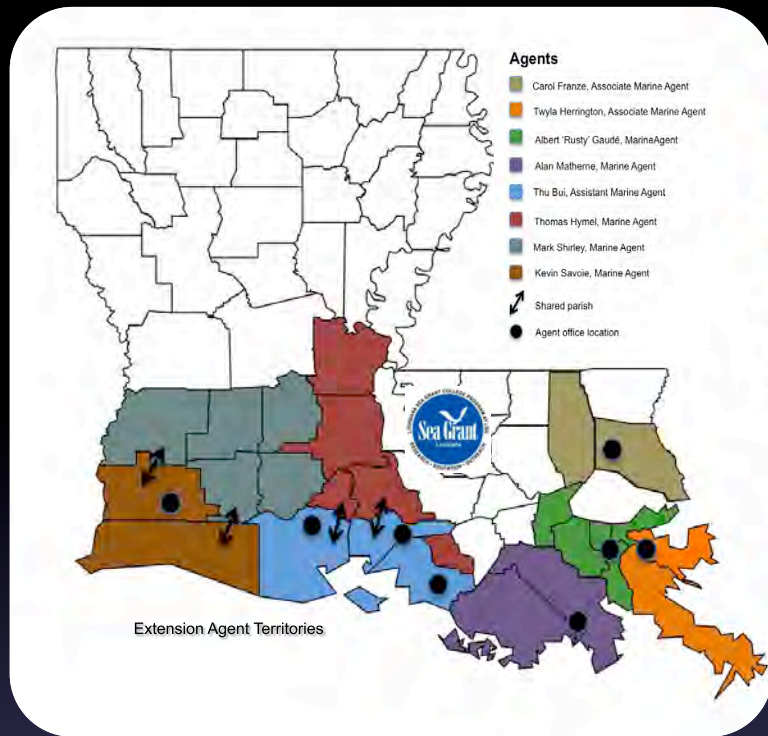
A boundary organization "serves as a bridge between the two sides and ideally has the following characteristics: non-partisan, dual accountability, safe harbor, use-driven science, and co-production of science." National Research Council, Roundtable on Science and Technology for Sustainability 2006.

# University Research – Sea Grant Partnerships: Discovery – Integration – Application



# Discovery-Integration-Application: LA DIA





Healthy  
Ecosystems &  
Habitats

Resilient  
Communities &  
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**FOCUS  
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Sustainable  
Fisheries &  
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# Louisiana Sea Grant

Research • Education • Outreach

- Promote stewardship through a combination of programs critical to the cultural, economic and environmental health of Louisiana's coastal zone.



# Louisiana Sea Grant

Research • Education • Outreach

## Education and Workforce Development

- Graduate School Fellowships
- Legal Fellows Program
- Undergraduate Research Opportunities
- Coastal Education Resources for Teachers
- High School Research Experience
- K-12 Student Participation
  - Ocean Commotion at LSU
  - Supporting Coastal Roots Program
  - Supporting Marsh Maneuvers

Extension Agent Territories



Staff - Dianne Lindstedt, Robert Twilley, Ocean Commotion 2012 525



9 LSU Earth Scan Laboratory, Let's See the Ocean in Motion, Ocean Commotion 2012 305

## Research Project Graduate Students (GRA)

- **1050 students in 45 yr history**
- **About 25 students per year**

## Coastal Science Assistance Program (CSAP)

- **CPRAs graduate training program administered by Sea Grant; 34 students since 2008**
- **Four new students per yr**

## Undergraduate Research Opportunities Program (UROP)

- **6-10 undergraduate research projects per yr since 1992;**
- **About six students per year; 161 students total**

## Special Graduate Student Competitions

- **Knauss Fellowships – Intern in DC**
- **Coastal Management Fellowships - NOAA**

# Louisiana Sea Grant

Research • Education • Outreach

- Science and Technology of Restoring Ecosystems
- Debris Removal for Healthy Habitats
- Biology and Ecology of Oyster Reef Restoration
- Beneficial Use of Wetlands for Wastewater Treatment
- Improving Water Quality Conditions

Healthy  
Ecosystems &  
Habitats



Marsh Grass

# Louisiana Sea Grant

Research • Education • Outreach

- Regional Planning of More Resilient Communities
- Small Business Development of Coastal Industries – Promoting Innovation
- Awareness of Coastal Flooding Risks to Communities
- Techniques to Value Ecosystem Services

## Resilient Communities and Economies



LSU Landscape Architecture Student Presentation

# Risk Reduction



Hazard Mitigation Guidebook Workshop Metairie, 10.15.08 026  
By: [unreadable] [unreadable]



# Sustainability and Resilience Program

## Harbor of Refuge Initiative



## Waterway Evacuation App

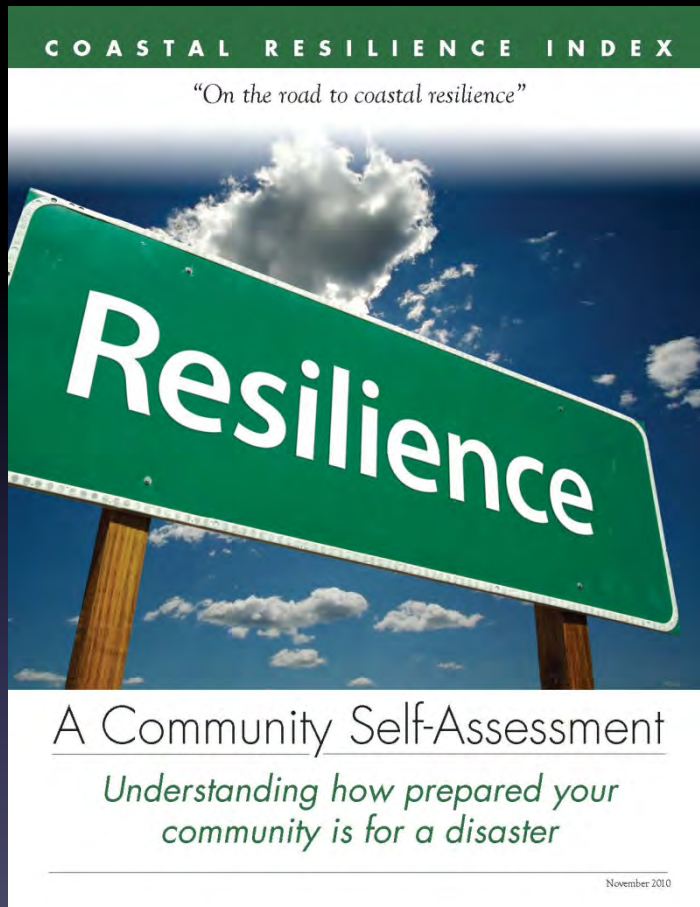


**LSU** | Center for  
**Computation & Technology**  
Interdisciplinary | Innovative | Inventive

Sea Grant works with ports to facilitate a conversation between local commercial fishermen and local, state and federal agencies to develop a plan to reduce storm damage to fishing vessels.



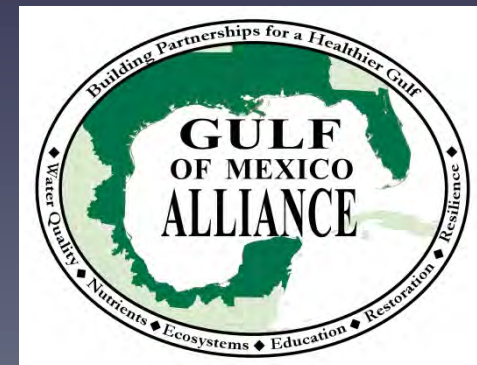
# Collaboration with Gulf of Mexico Alliance



In Development:

- Fisheries Resilience Index
- Tourism Resilience Index
- Ports and Harbors Resilience Index
- Oil and Gas Resilience Index

Sea Grant worked with partners to develop a self-assessment tool for local governments to assess their ability to return to an acceptable level of functioning after a disaster.



# Collaboration with Other Sea Grant Programs



- Develop a consistent knowledge and skill base among Gulf of Mexico experts to incorporate climate in community planning
- Inform elected officials and planners about potential impacts of climate on their communities, effectively conveying both the level of risk and the available solutions



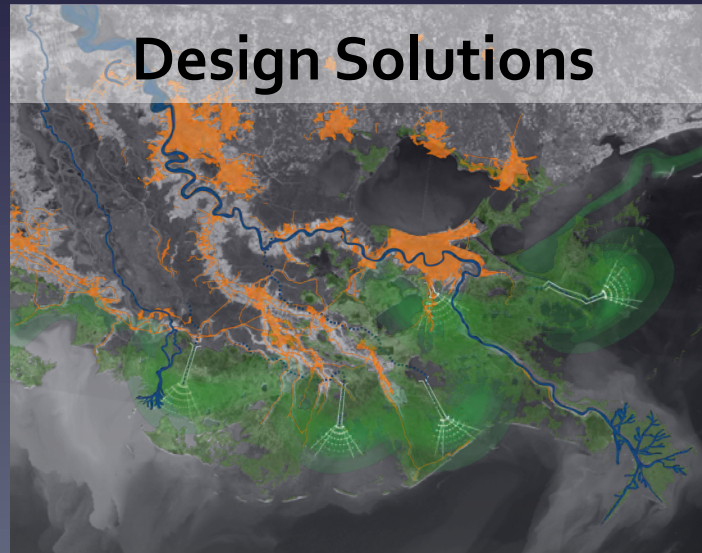


# The Studio

**Building capacity**



**Design Solutions**



**Making Impact**



# Louisiana Sea Grant

Research • Education • Outreach

- Developing Direct Marketing Opportunities for Seafood Industry
- Developing Professional Seafood Academy and Certification Program
- Developing Oyster Research to sustain aquaculture
- Oyster Reef Biology and Restoration Strategies
- Gear Technology for more fuel efficient fishing industry

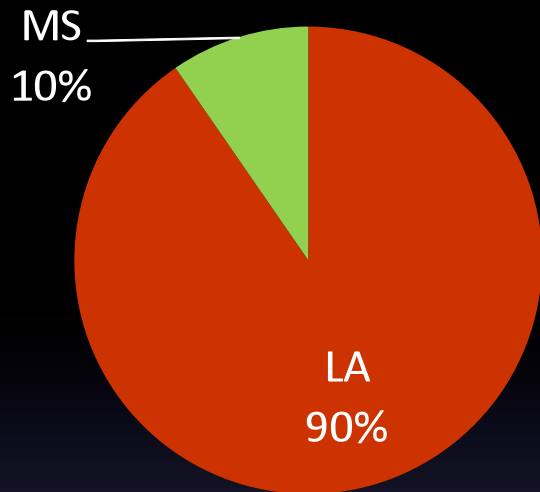
Sustainable  
Fisheries and  
Aquaculture



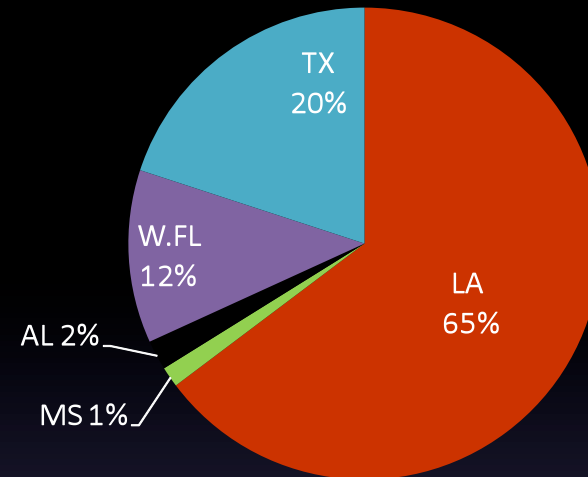
LaTer launch at Lafourche Central Market 11.10.2012 104



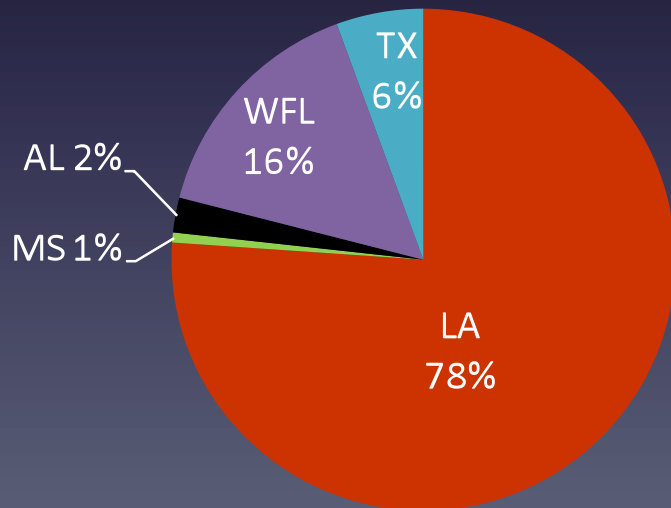
# Percent of Gulf Dockside Value by State (NMFS 2011)



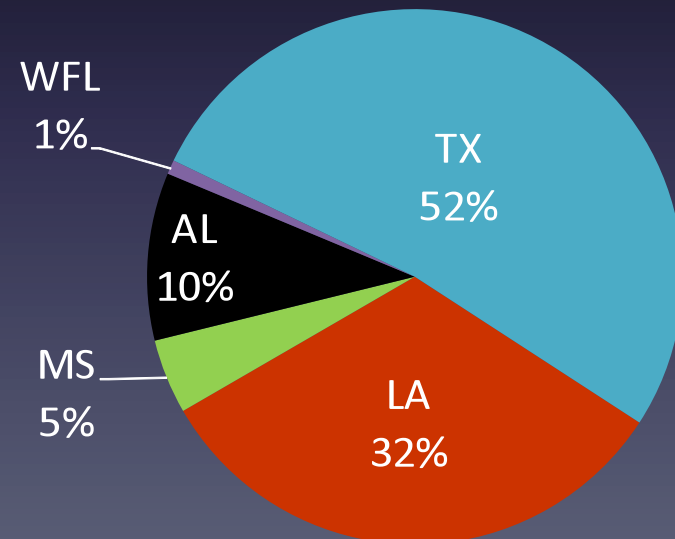
**Menhaden: \$104 million**



**Oysters: \$64 million**



**Blue Crab: \$49 million**



**Shrimp: \$409 million**



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Oyster Hatchery Field, Grand Isle Day June 2012 367



Louisiana Sea Grant Oyster Hatchery, Grand Isle 02.09.11 049



Oyster Hatchery Field, Grand Isle Day June 2012 479

LA DIRECT  
HOME

PORT  
LOCATIONS

NEWS  
& EVENTS

LINKS &  
RESOURCES

ABOUT  
LA DIRECT

CONTACT  
US

SE

# LOUISIANA DIRECT SEAFOOD

*Your Freshest Catch*



## Welcome

Quality wild-caught American seafood, all caught the traditional way is now available on a seasonable basis. Local frozen seafood is also available if desired.

[Thomas wanted a Link](#)

[Why Buy Direct?](#)

## PORT LOCATIONS

- [Cameron](#)
- [Delcambre](#)
- [Lafourche / Terrebonne](#)
- [South Shore - New Orleans](#)

## FRESH CATCH FINDER

Enter Address or Zip Code:

[Submit](#)

## NEWS & EVENTS

[13-Jan-2012](#)

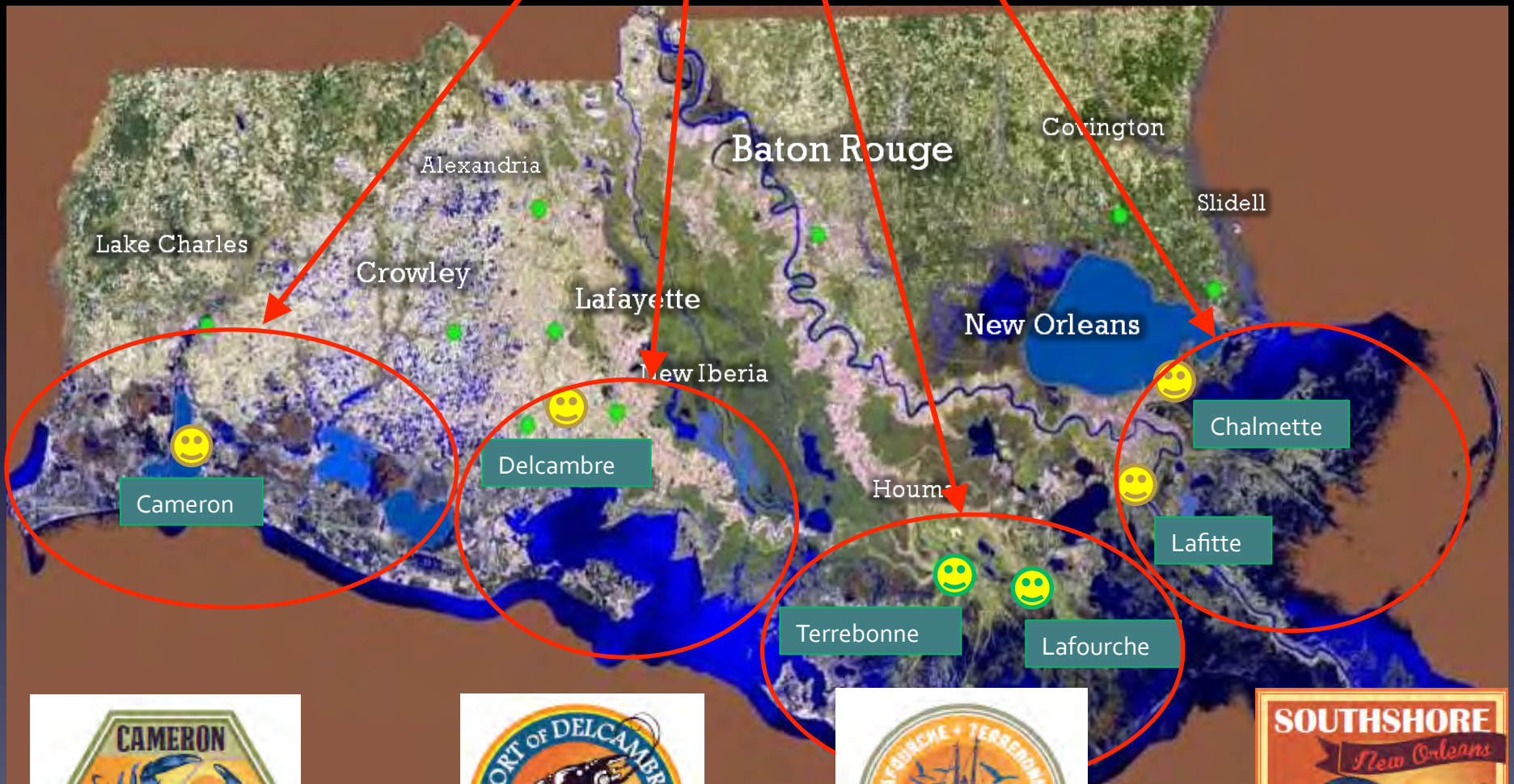
You can now write about your latest news, announcements and much more. When a customer clicks th...

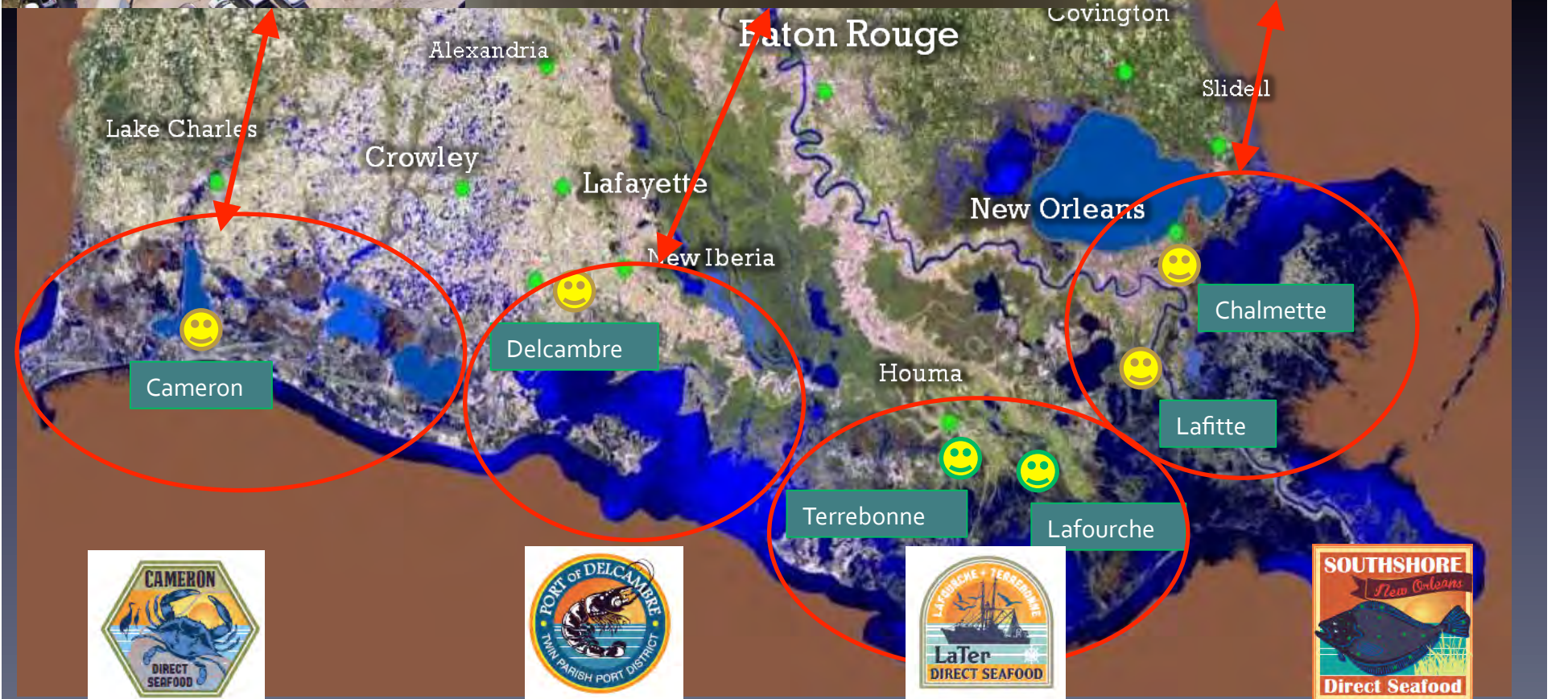
[Read More](#)

[16-Sep-2007](#)

# Louisiana Direct Seafood

Kickoff was in May 2012







# Opportunities



# WHOLE FOODS MARKET



# Where does my seafood come from?

*Delcambre*  
**SEAFOOD AND FARMERS  
MARKET**

**SPRING & FALL  
2014**

**DELCAMBRE SHRIMP  
FESTIVAL GROUNDS**

- April 5
- May 3
- June 7

**NEW DELCAMBRE DOCK  
605 S. RAILROAD**

- September 6
- October 4
- November 1
- December 6

Join us under the oaks for wild caught  
Delcambre Direct seafood and  
farm fresh, locally grown produce.  
With food, music and special events,  
enjoy a fun—and healthy!  
—shopping experience.

**Wild Caught. Farm Fresh. Pick Local.**

1-800-884-6120 ext. 6    [www.delcambremarket.org](http://www.delcambremarket.org)    [Facebook.com/DelcambreMarket](https://www.facebook.com/DelcambreMarket)



# Louisiana Sea Grant

Research • Education • Outreach

- Law and Policy of Alternative Aquaculture
- Updates on the Biggert-Waters Act for policy makers and public
- Developing coastal zone management policies
- Law and Policy of Coastal Risks Reduction and Flood Protection

Extension Agent Territories

## Sea Grant Legal and Policy

(one of only eight programs in national sea grant network)



Hazard Mitigation Guidebook Workshop Metairie, 10.15.08 011

# Louisiana Sea Grant

Research • Education • Outreach

## Coastal Crisis Management

(5 hurricanes, two floods & oil spill since 2005)



CNEEP Conference, New Orleans, May 2010 052



Ice machine dedication, St. Bernard, La., 08.23.06 187



Hazard Mitigation Guidebook Workshop Metairie, 10.15.08 026



Calcasieu Lake Debris Removal 02.07.07 101



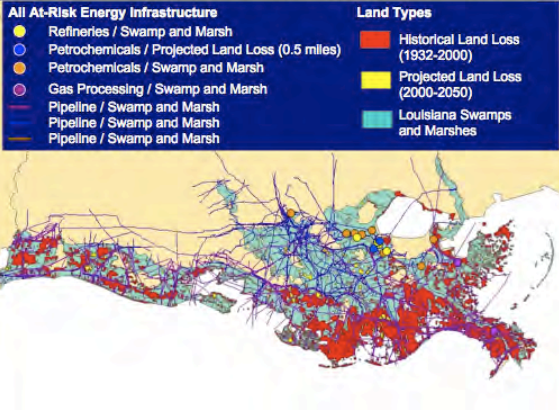
Lucina, NPR and seafood talent 07.09.2010 009

# The relative sea level rise impacts to Coastal Louisiana TODAY represent the future impacts of most other coastal landscapes TOMORROW



## The Louisiana Coast and All Infrastructure

Dispersion of assets across coastal areas that are becoming increasingly more exposed to the coast and water bodies.

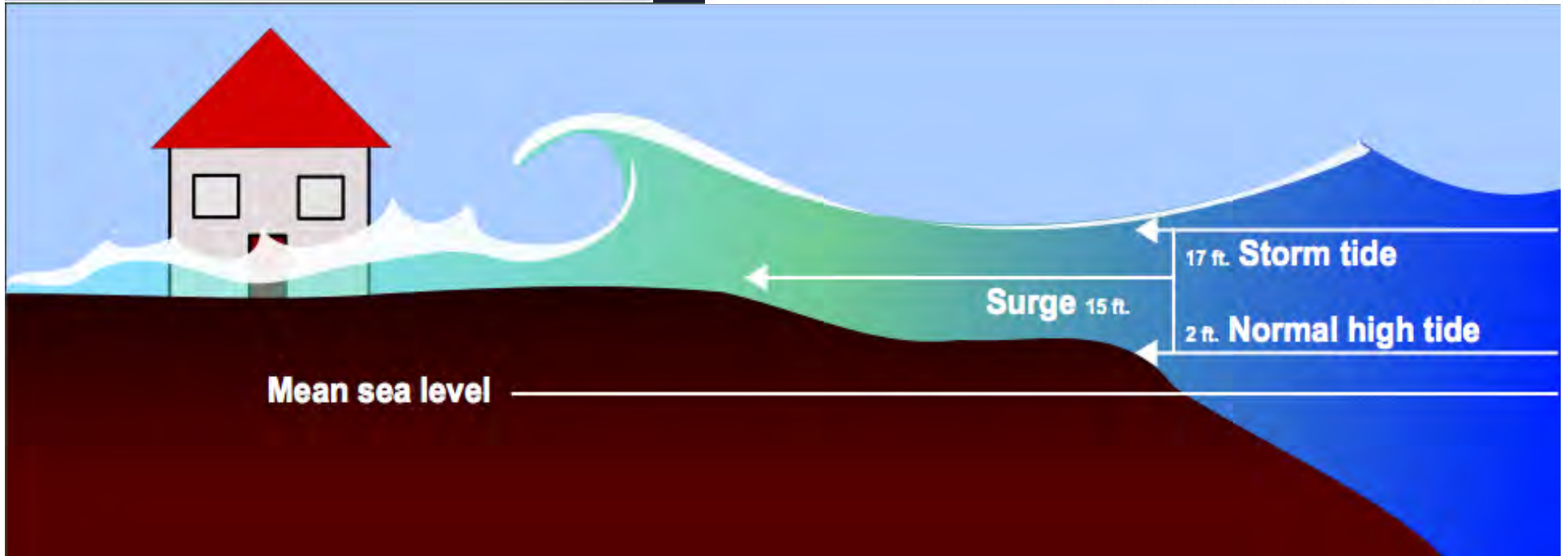


Year - 2009

Year - 2100

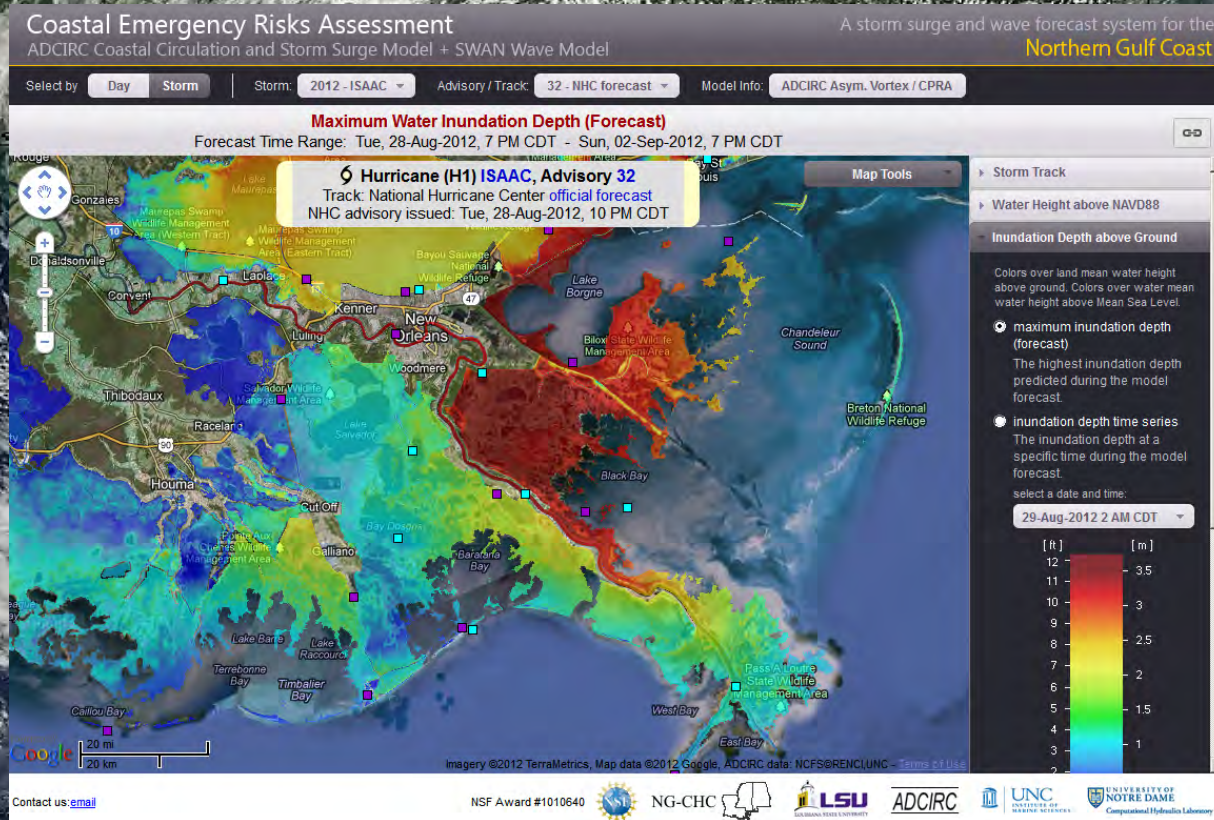


Map: Blum, M.D., and H.H. Roberts (2009). Drowning of the Mississippi delta due to insufficient sediment supply and global sea-level rise, *Nat. Geosci.*, 2, 488-491.



# ASGS – ADCIRC Surge Guidance System CERA – Coastal Emergency Risks Assessment

- real-time interactive tool during emergency situations
- development and validation tool for coastal modelers



## CERA Clients

- NOAA NWS Lower Mississippi River Forecast Center - Slidell, LA
- NOAA NWS Forecast Center - Lake Charles, LA
- Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), LA
- GIS Community
  - U.S. Geological Survey
  - Stephenson Disaster Management Institute @ LSU
  - Lake Pontchartrain Basin Foundation
  - Hazards and Vulnerability Research Institute, University of South Carolina
  - Louisiana Sea Grant
- U.S Coast Guard
- National Hurricane Center



# NWS Strategic Outcome: Weather-Ready Nation Strategic Goals

## Strategic Outcome: Weather-Ready Nation

- Ready
- Responsive
- Resilient



## NWS Strategic Goals

- Improve Weather Decisions Services
- Improve Water Forecasting Services
- Enhance climate services and adapt to climate-related risks
- Improve sector-relevant information in support of economic productivity
- Enable environmental forecast services supporting healthy communities and ecosystems
- Sustain a highly skilled, professional workforce equipped with training, tools, and infrastructure to meet mission

National Sea Grant Office Embraces WRN: “NWS Can’t Do It Alone”

# The Next Storm Surge

After Hurricane Rita, Sea Grant agents developed materials and programs to help citizens understand their vulnerability to storm surge. The program evolved into a comprehensive program on hurricanes and storm surge, using the output from the ADCIRC storm surge model to create potential inundation scenarios from hypothetical storms. During the hurricanes of 2008, evacuation numbers increased because of the awareness raised by this program.





# Communicating after the Oil Spill

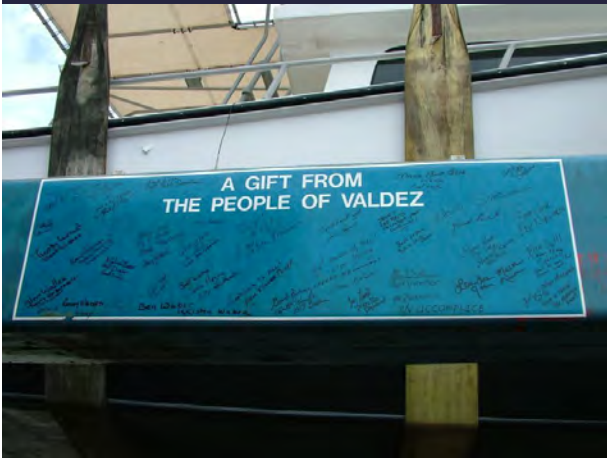


After the Deepwater Horizon Oil Spill of 2010, Sea Grant's Vietnamese extension agent translated hundreds of minutes of information briefings and Trade Adjustment Act application procedures for

# Post-Katrina Travel Lift



After Hurricane Katrina, through partnership with Alaska Sea Grant, fishermen in Valdez, Alaska donated a boat travel lift and drove it all the way to Louisiana to help remove stranded vessels from the land and the water.



# New York/New Jersey Sea Grant Exchange



In May 2014, Louisiana Sea Grant hosted Sea Grant program personnel from New York and New Jersey, who are recovering from the impacts of Hurricane Sandy (2012). They visited communities across coastal Louisiana to hear stories of response and recovery after Hurricanes Katrina and Rita. Lessons learned included the importance of patience, persistence, and having a vision for long-

# Rising Tides, Real Risks

## Louisiana Smart Growth Summit 2014

Robert R. Twilley

Executive Director, Louisiana Sea Grant College Program

### Confronting Climate Change in the Gulf Coast Region

Prospects for Sustaining Our Ecological Heritage

The map displays the Gulf Coast region of the United States, highlighting several key ecological zones: Central TX/OK Plain, Southern Texas Plain, North Central Plain, Southeastern Plain, Southern Coastal Plain, Central Texas Plateau, Western Gulf Coast, Mississippi River Deltaic Plain, Mississippi River Alluvial Plain, South Florida Coastal Plain, Florida Keys, Texas Claypan Area, and Gulf of Mexico. Below the map are five circular inset images showing coastal and wetland environments.

A REPORT OF  
The Union of Concerned Scientists and  
The Ecological Society of America

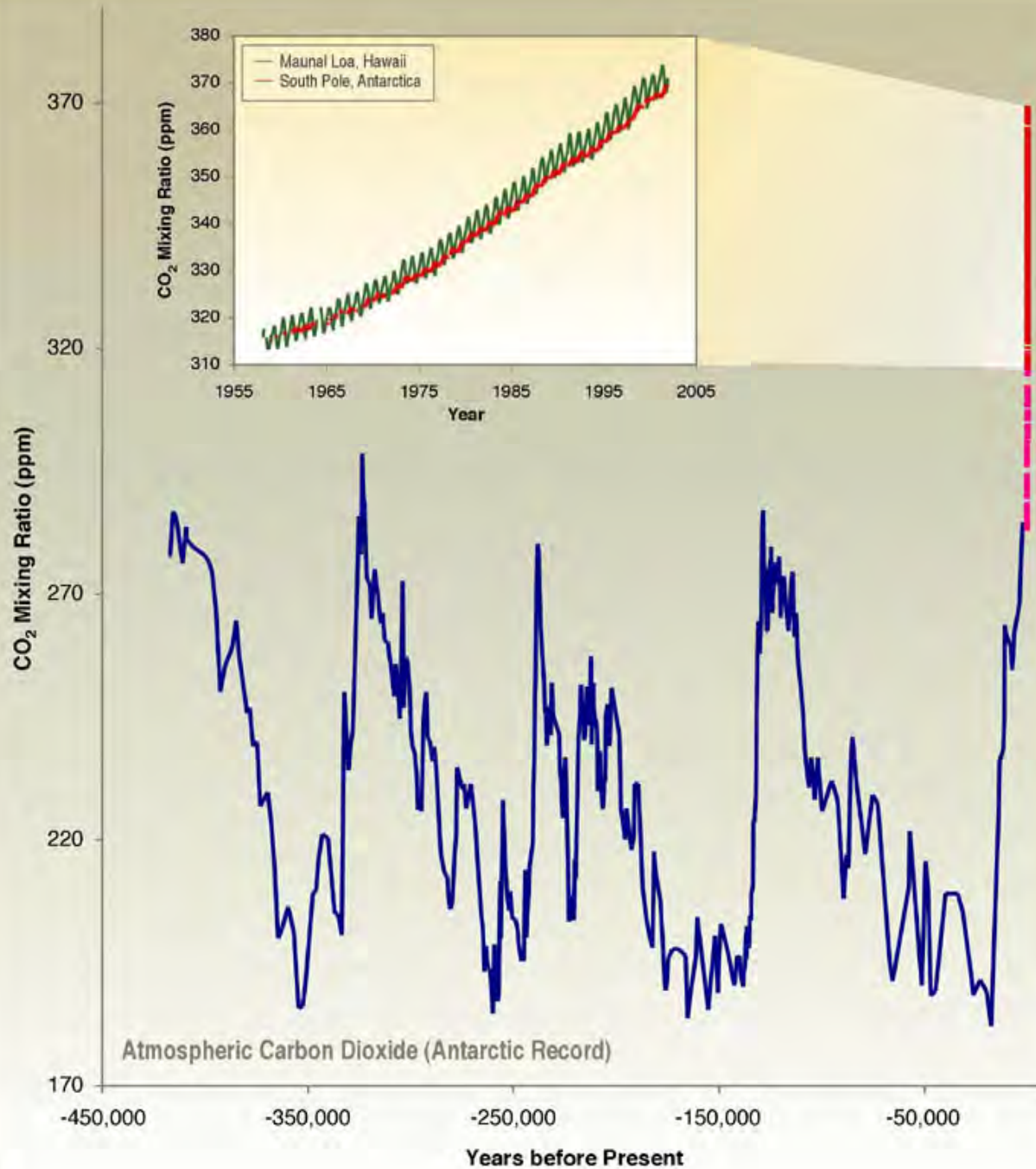
### HIGHLIGHTS OF Climate Change Impacts in the United States

#### Observed U.S. Temperature Change

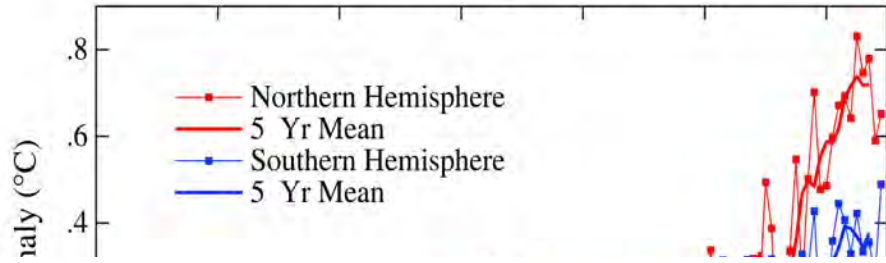
The map shows temperature changes over the past 22 years (1991-2012) compared to the 1901-1960 average for the contiguous U.S., and to the 1951-1980 average for Alaska and Hawaii. The bars on the graph show the average temperature changes for the U.S. by decade for 1901-2012 (relative to the 1901-1960 average). The bar right bar (2000s decade) includes 2011 and 2012. The period from 2001 to 2012 was warmer than any previous decade in every region. (Figure source: NOAA NCDC / CIRES-NC)

Temperature Change (°F)
+1.5
+3.0-1.0
+2.0-0.5
-0.5-0.0
-0.5-1.0
-1.0-1.5
-1.5-2.0
-2.0-2.5

Members of the National Guard lay sandbags to protect against Missouri River flooding. Energy choices will affect the amount of future climate change. Climate change is increasing the vulnerability of forests to wildfires across the U.S. West. Solar power use is increasing and is part of the solution to climate change.



### Hemispheric Temperature Change



### Ice Loss from the Two Polar Ice Sheets

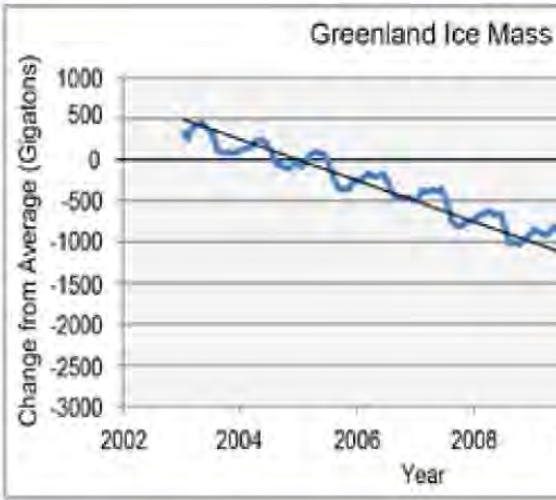
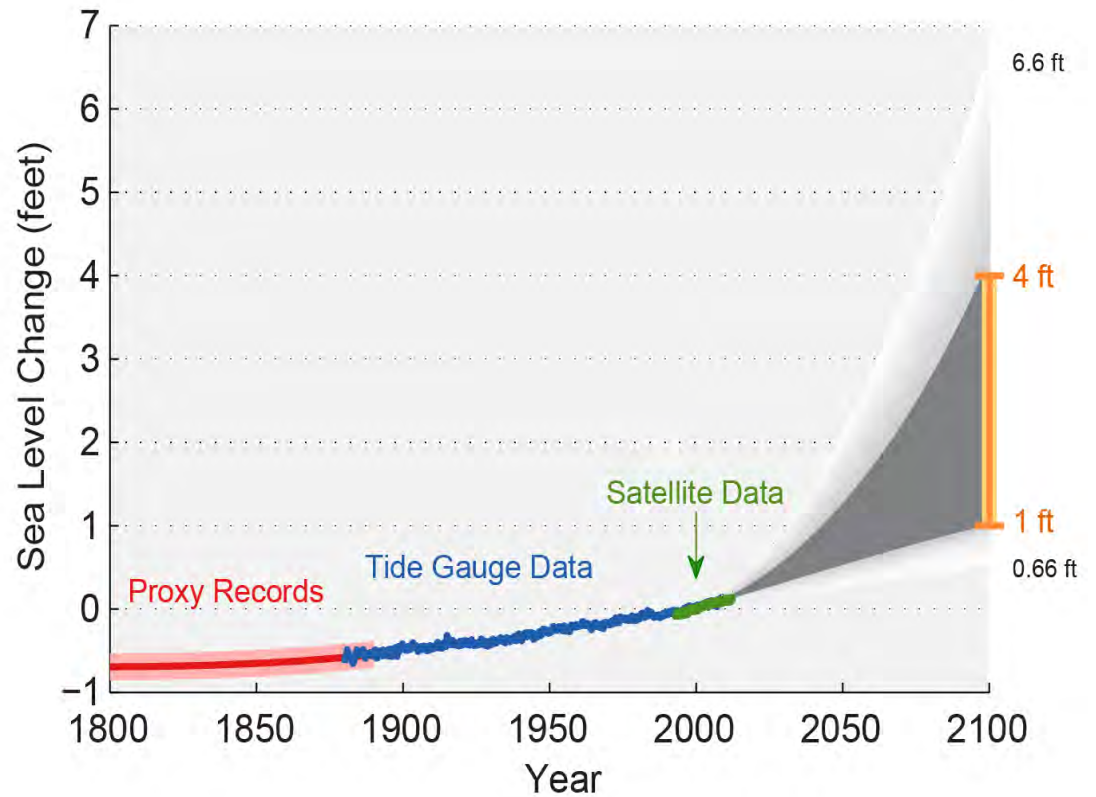


Figure 17. GRACE (Gravity Recovery and Climate) data shows that the ice sheets are, on the whole, losing ice as the atmosphere

### Past and Projected Changes in Global Sea Level



# Thank You

