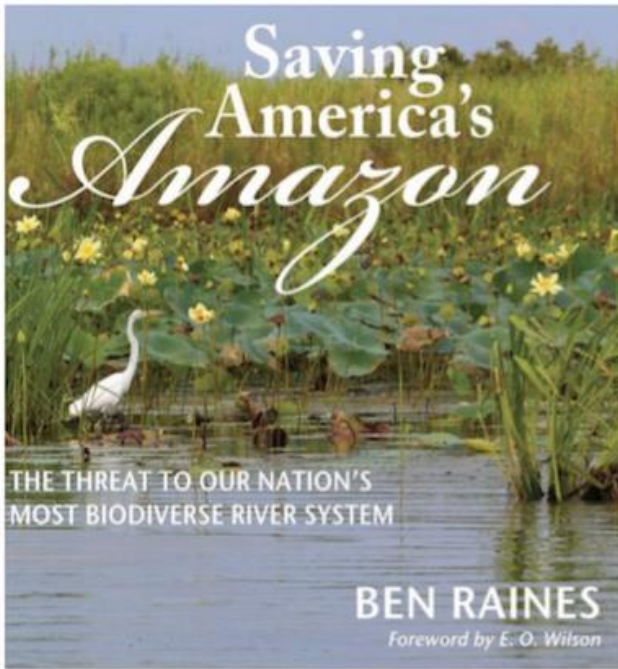




Dauphin Island Sea Lab

**Alabama Center for
Marine Education and Research**

Coastal Alabama: A hotspot for Biodiversity



Dauphin Island Sea Lab

The Mobile Bay Delta: A Rich Diversity of Estuarine Habitats



➡ The Delta is a site of extraordinary habitat diversity:

- 20,323 acres of open water,
- 10,450 acres of fresh-mixed marsh,
- 69,348 acres of swamp,
- 84,839 acres of mixed bottomland forest.

➡ As a result, The Delta food web is best characterized by a diverse assemblage of habitats that provide the basis for a highly productivity food web that probably stretches across three completely different ecosystems!



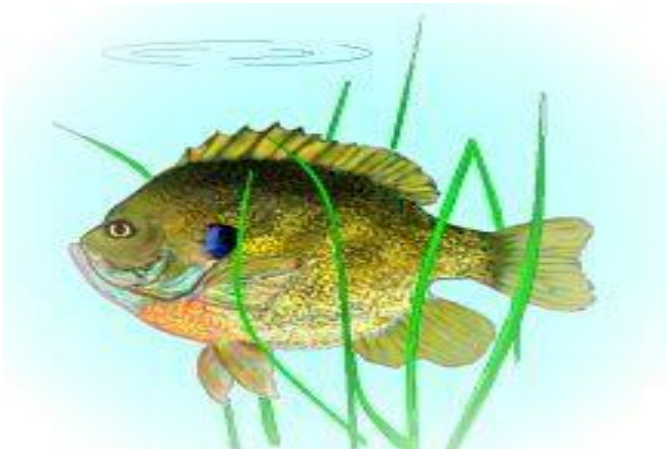
Mobile Bay Delta: A Home For Freshwater Fishes



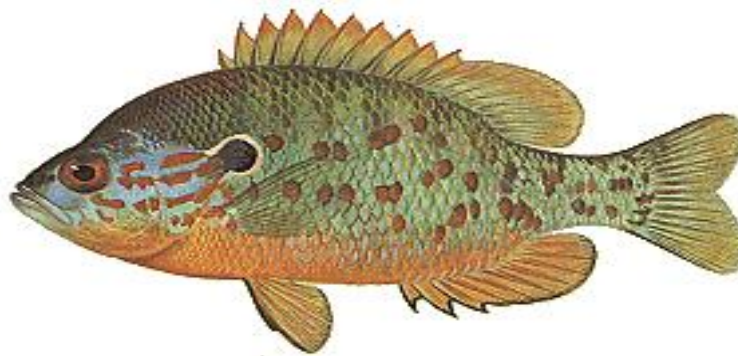
Largemouth Bass



Longear Sunfishes



Bluegills



Orangespot Sunfish

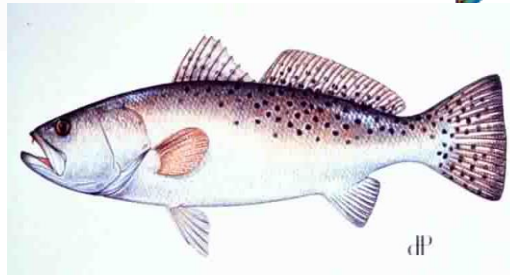
115 of the 310 species of fishes found in coastal Alabama spend some portion of their life in the Mobile Bay Delta



Mobile Bay Delta: A Home For Marine Fishes, Crabs and Shrimp Too!



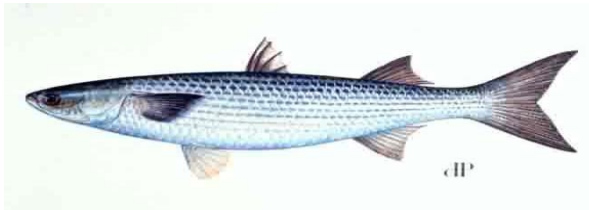
Redfish



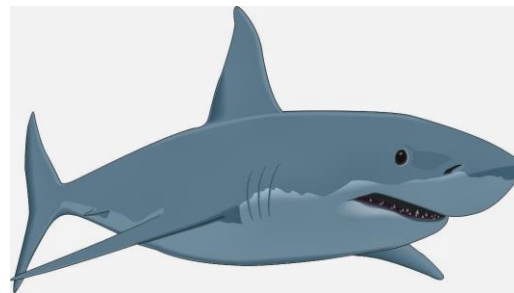
Speckled Trout



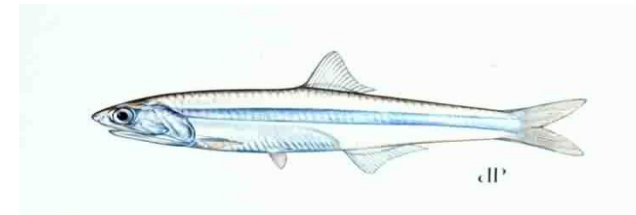
Blue Crabs



Striped Mullet



Even Bull Sharks!



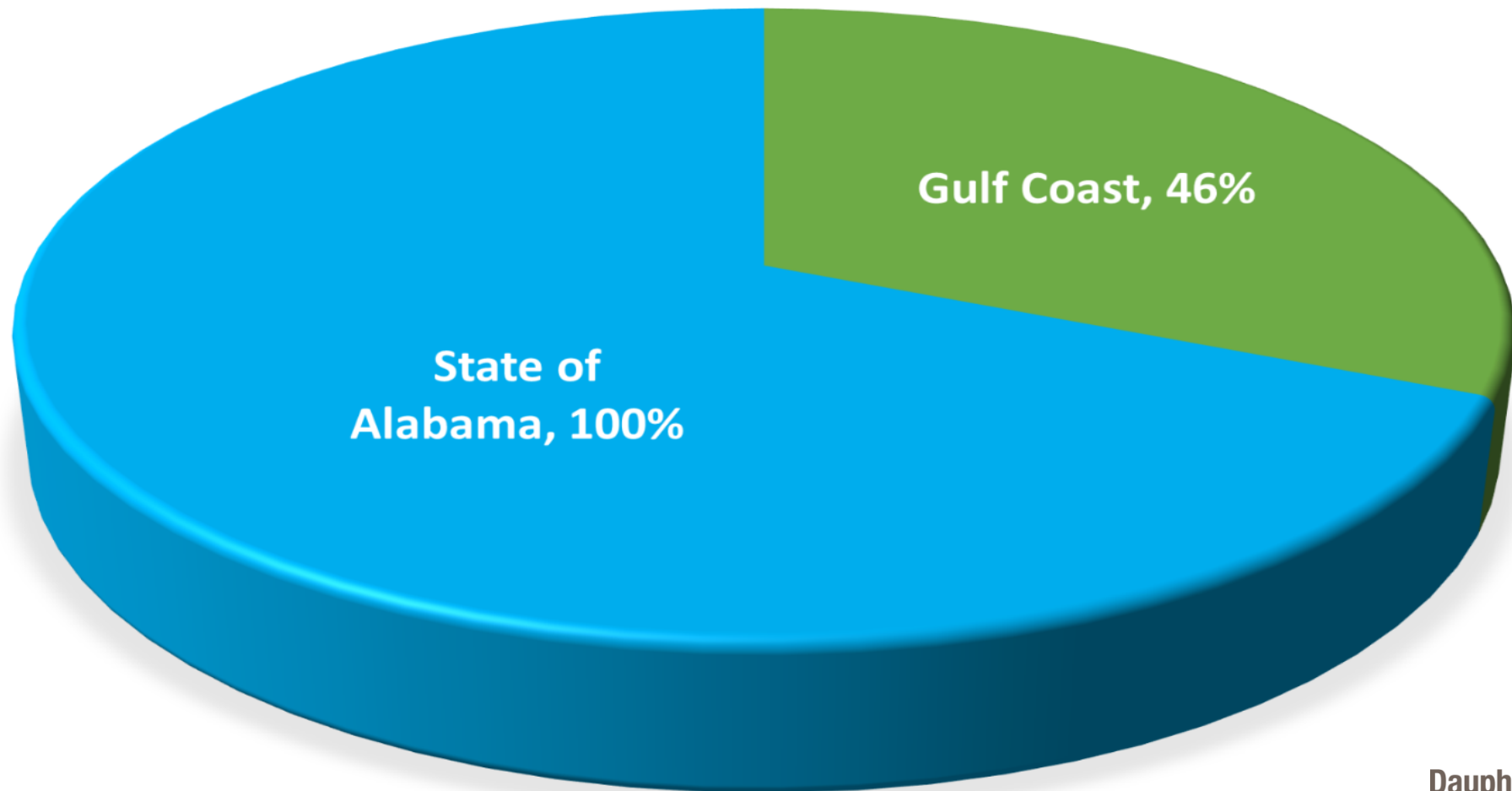
Striped Anchovies



Biodiversity: Key Element of Gulf Coast Tourism

2021 TRAVEL-RELATED EXPENDITURES

Source: Alabama Tourism Department "Tourism Industry Economic Impact Report 2021"





Dauphin Island Sea Lab

Dauphin Island Sea Lab

- Founded in 1971, DISL is a consortium marine lab for 22 Alabama Colleges and Universities
- Maximizing the marine science capabilities in higher education while minimizing duplication

Where we started...

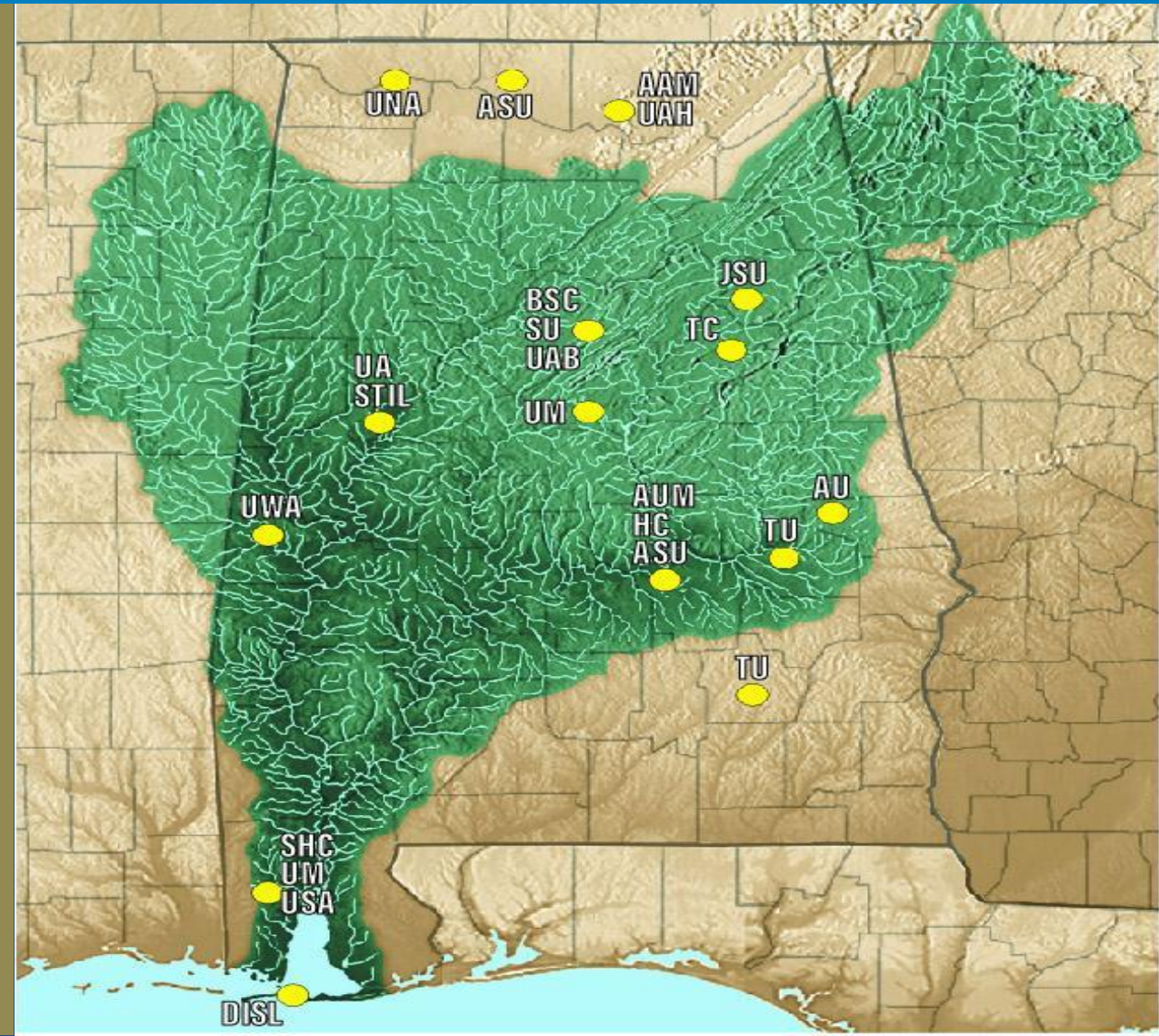


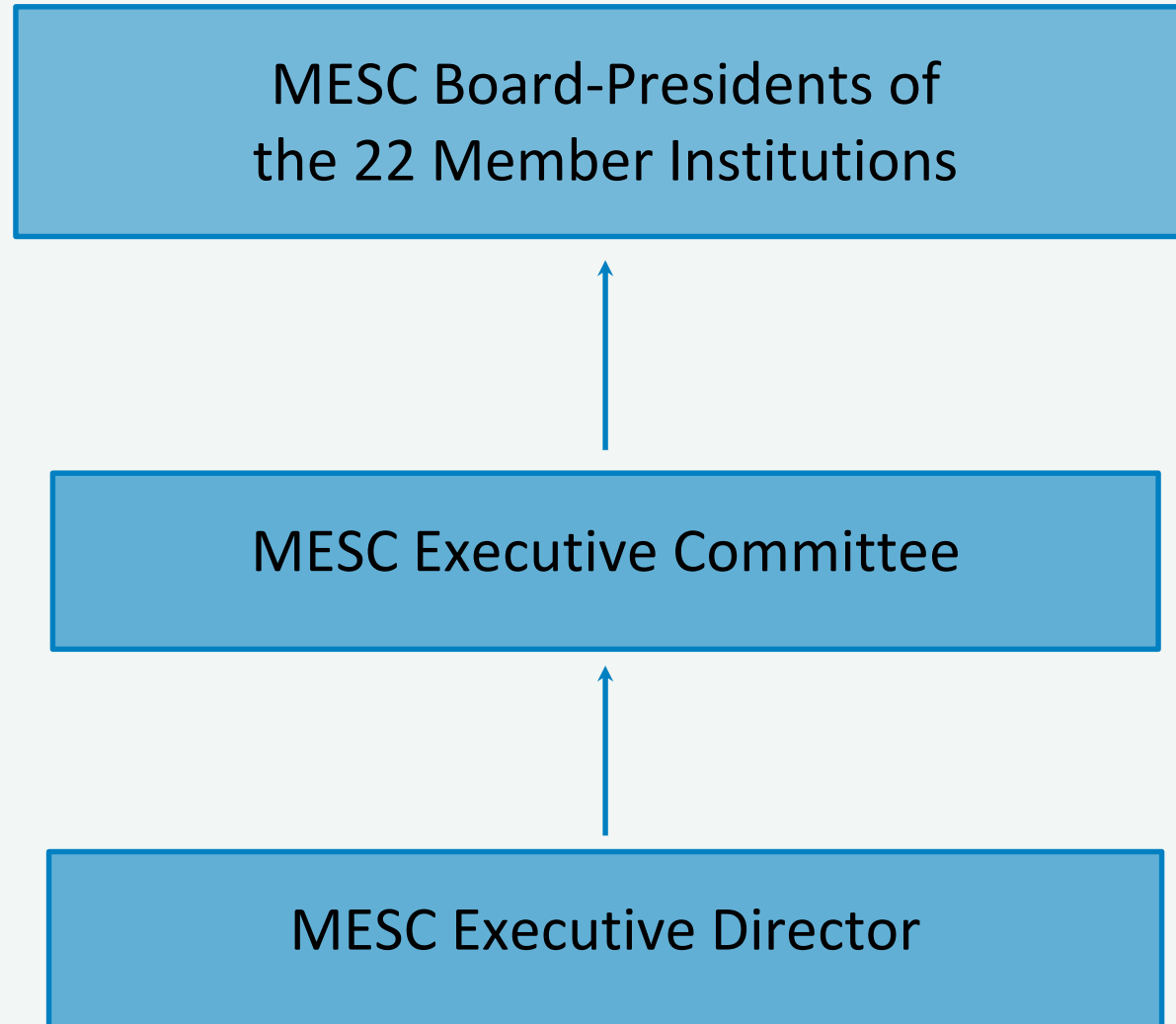


Dauphin Island Sea Lab

Mobile Tensaw Delta

Alabama A & M University
Alabama State University*
Athens State University
Auburn University*
Auburn University at Montgomery
Birmingham Southern College
Huntingdon College
Jacksonville State University*
Samford University*
Spring Hill College
Stillman College
Talladega College
Troy University
Tuskegee University*
University of Alabama*
University of Alabama at Birmingham*
University of Alabama at Huntsville*
University of Mobile
University of Montevallo
University of North Alabama
University of South Alabama*
University of West Alabama







Dauphin Island Sea Lab

DISL Educational Programs and Outreach

Public Education

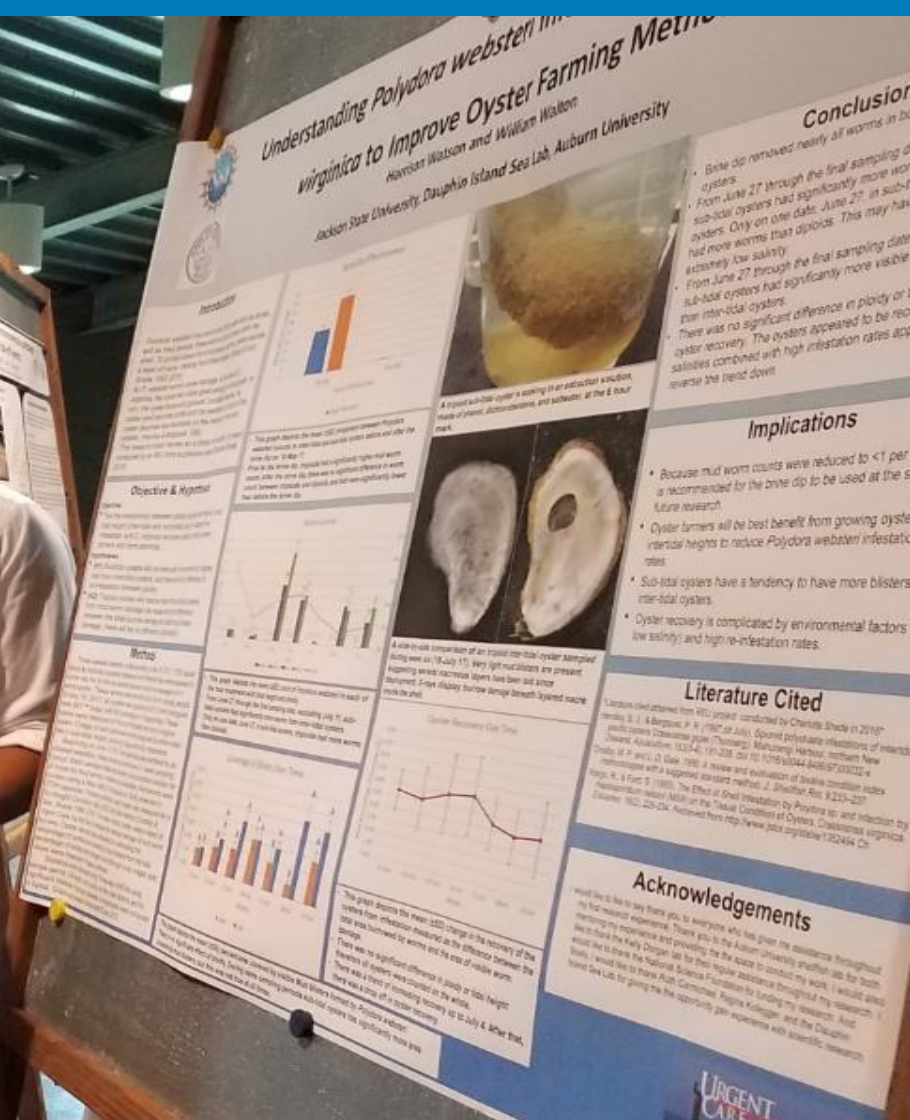
- Alabama Aquarium

Discovery Hall Programs

- K-12 Education
- Teacher Training

University Programs

- Graduate Education
- Basic and Applied Research
- National Science Foundation-REU Program
- Undergraduate Education





Dauphin Island Sea Lab

Discovery Hall Programs

Over 12,000 each year in science field trips

Serving Teachers and Students from 67 Alabama counties

Pre K-12 summer day camps to overnight and residential programs, community outreach

- Touch Labs
- Field Exercises
- Boat Trips
- Teacher Workshops





Dauphin Island Sea Lab

BayMobile



DISL's traveling classroom reaches over 10,000 K-12 students annually

Participates in regional environmental events

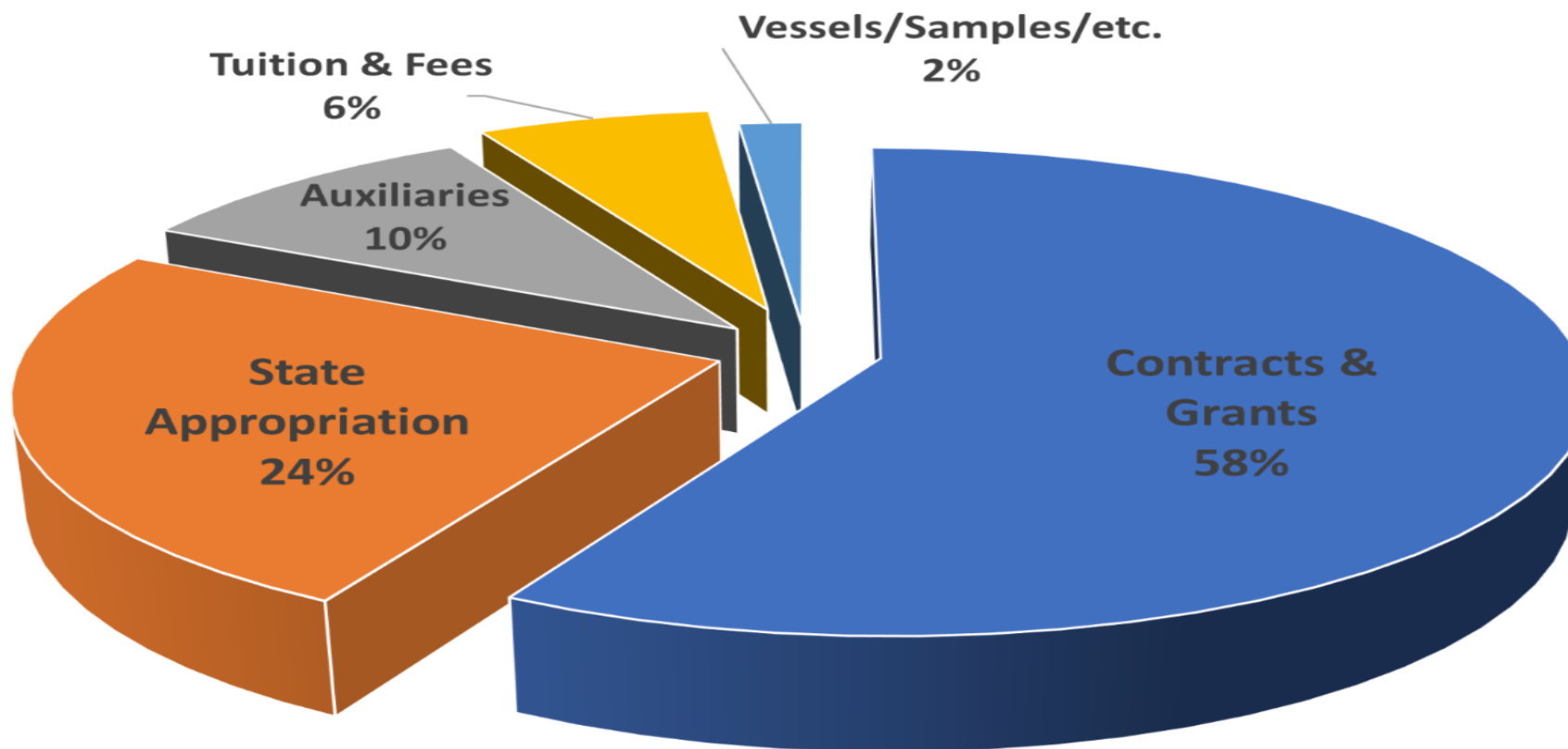
Travels to underserved K-12 schools



Funding and Operations

Where the Money Comes From

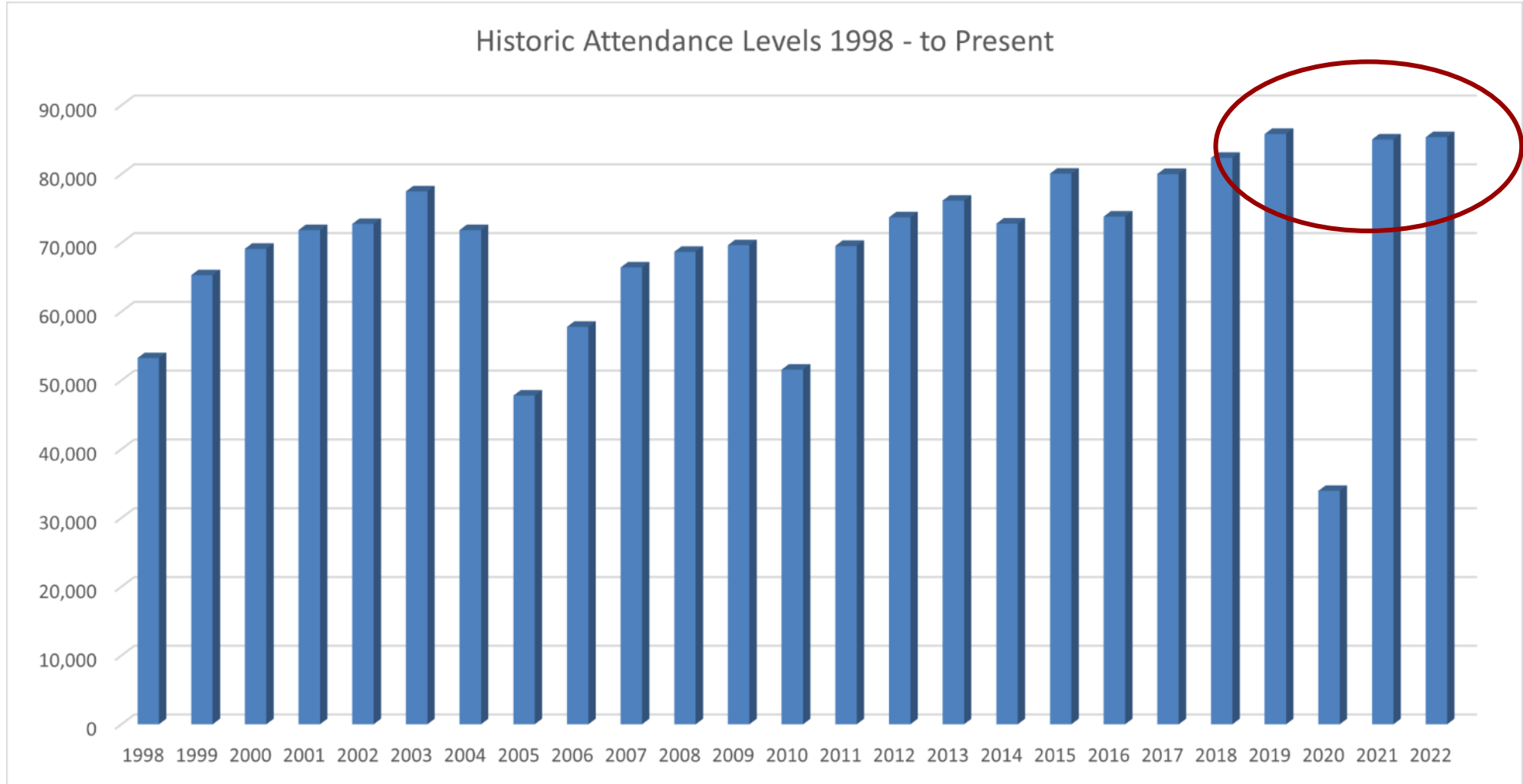
FY22 Budget - \$22,429,549





Dauphin Island Sea Lab

History of Aquarium Attendance 1998-2022

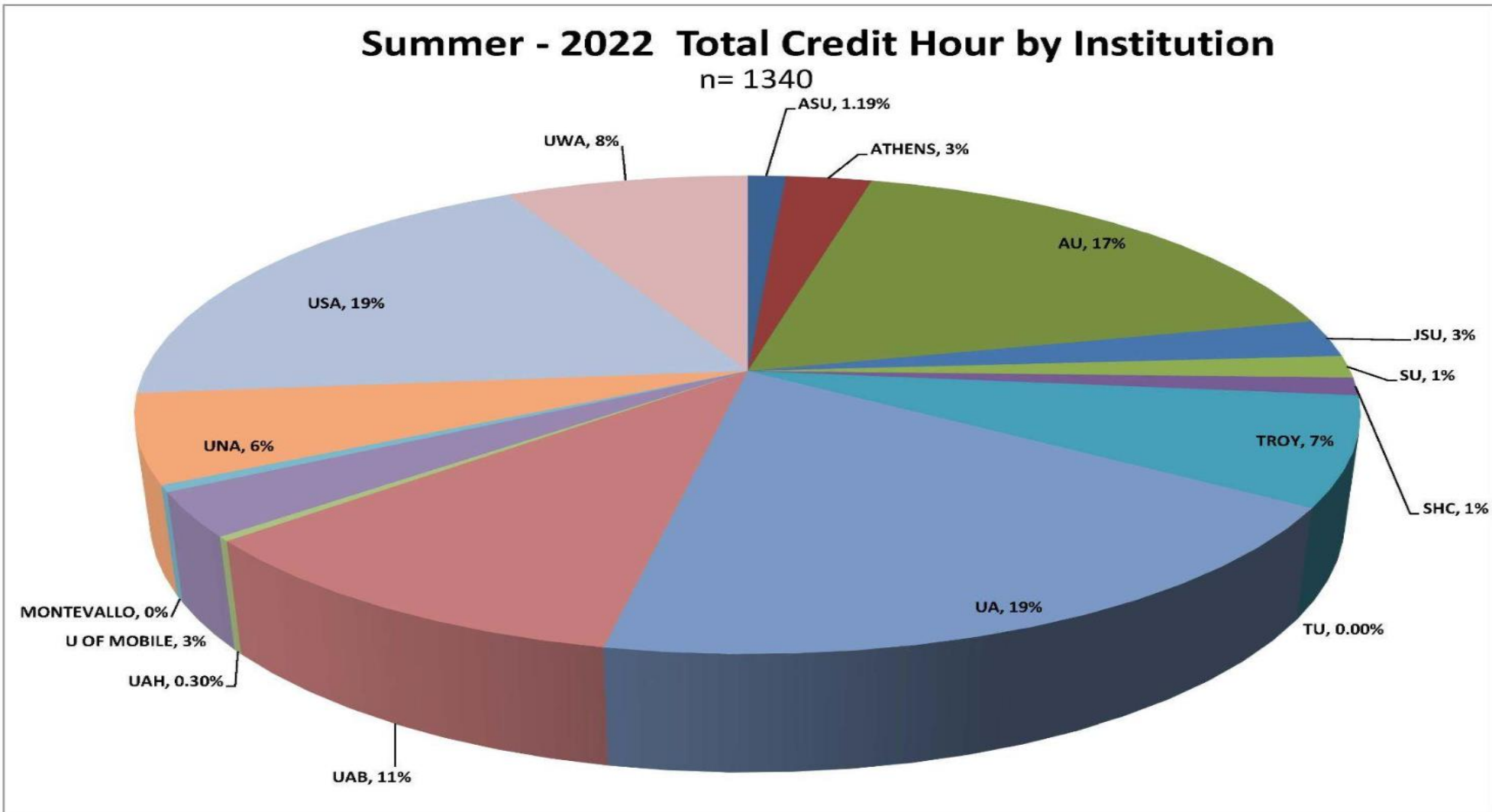




Institutional Participation

Summer - 2022 Total Credit Hour by Institution

n= 1340





Dauphin Island Sea Lab

Basic and Applied Research

Research conducted at scales ranging from the ecosystem to the beaker

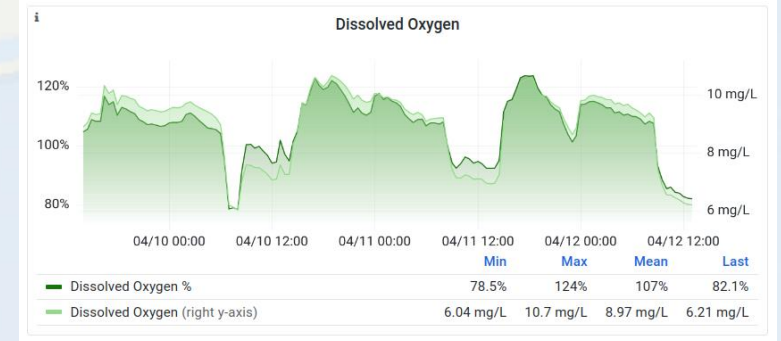
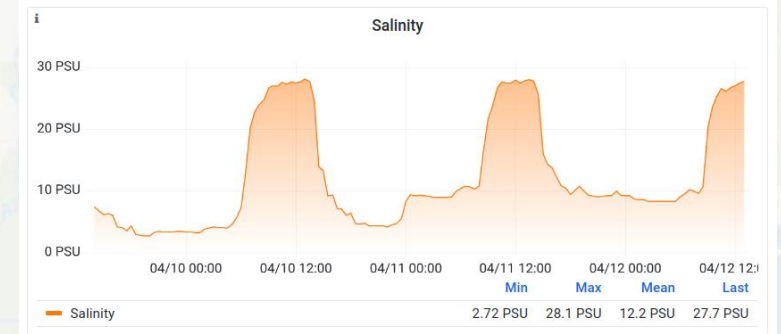
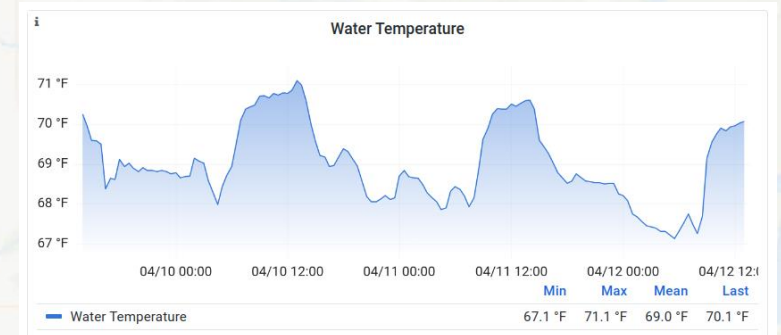
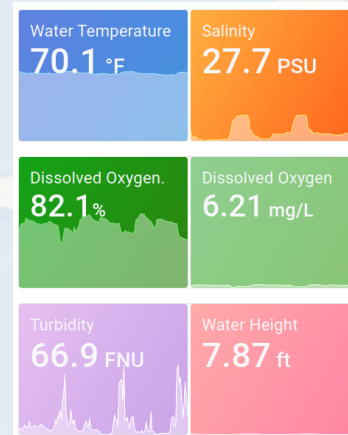
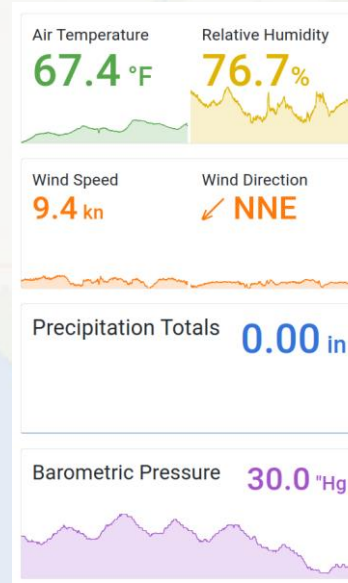
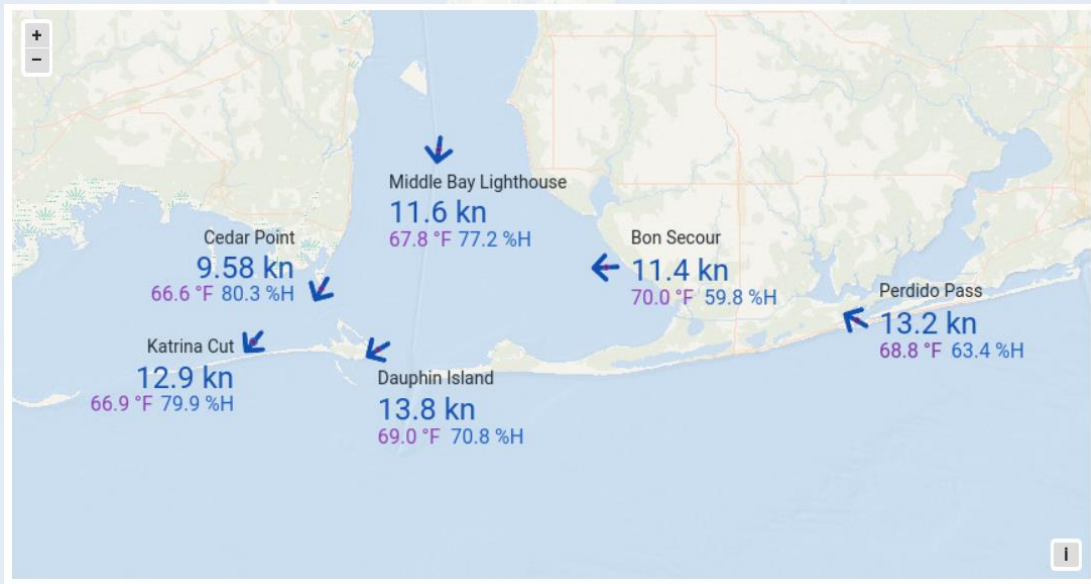


Alabama's Real-Time Coastal Observing System (ARCOS)

8 Stations

Since 1974 (DISL)

Real-Time Reporting





Dauphin Island Sea Lab

Reef Fish: Lionfish, Red Snapper, and Triggerfish





Dauphin Island Sea Lab

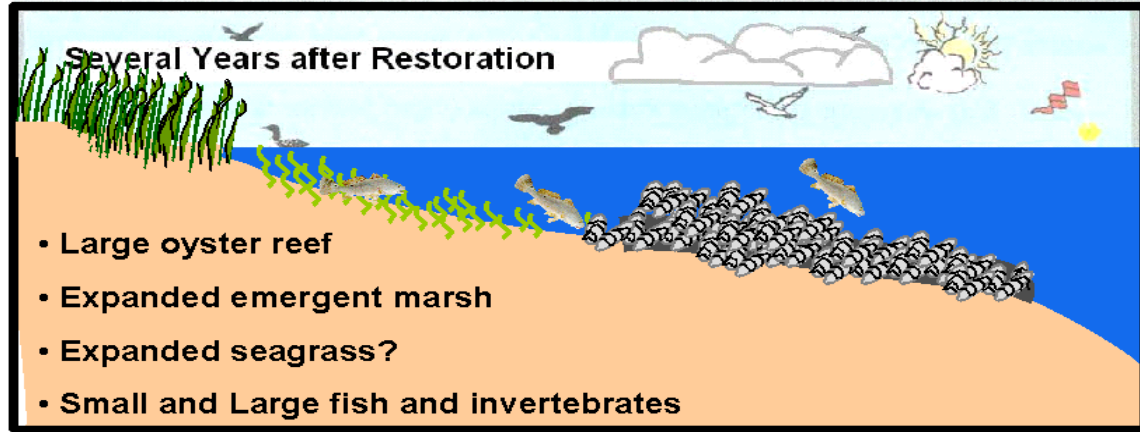
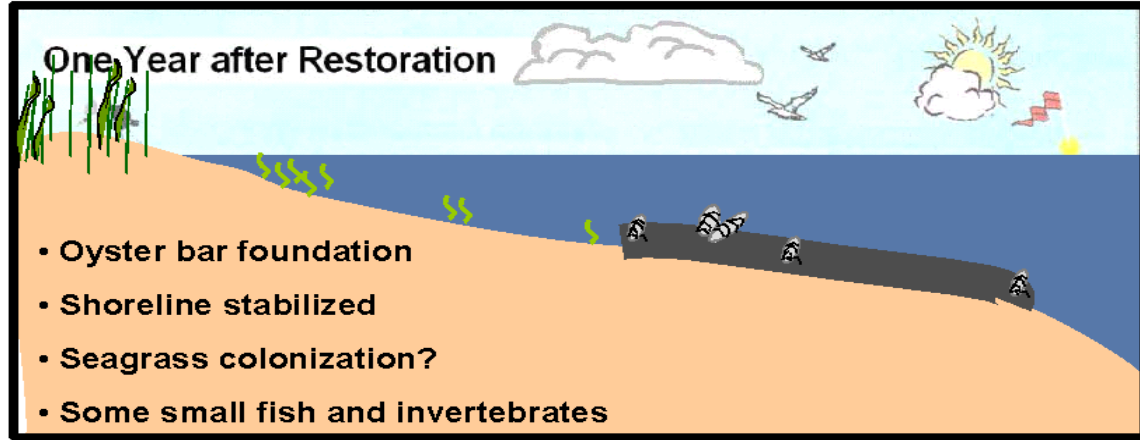
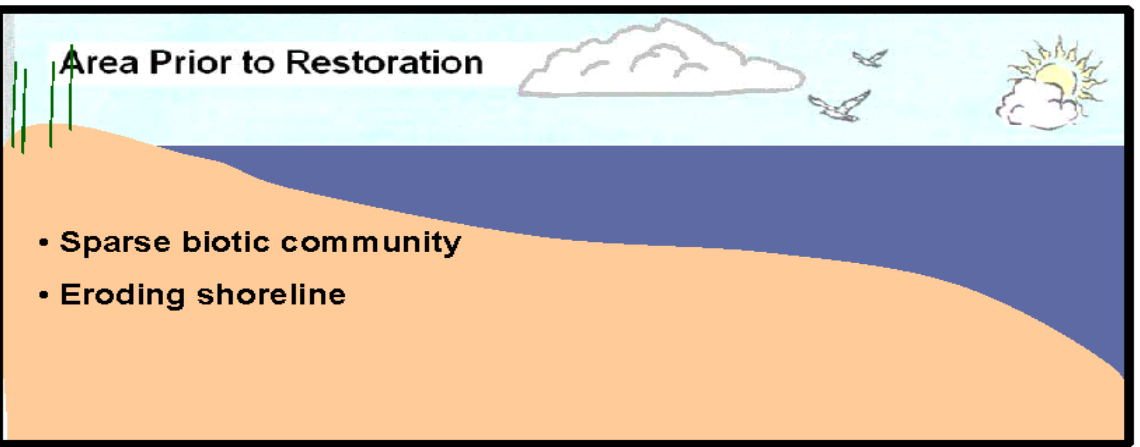
Marine Mammal Stranding Network and Manatee Sighting Network



Applied Research at DISL

Goals of Living Shoreline Projects

Reef construction, shoreline stabilization, marsh regrowth, faunal utilization and seagrass colonization.



Macroalgal Blooms are Common in the Enclosed Causeway Embayments



- ➡ Summer macroalgal blooms imply that elevated nutrient levels may be an issue!
 - But how can that be given the low levels of development on the causeway?
- ➡ Consequence: Loss of nursery habitat function





Dauphin Island Sea Lab

Deepwater Horizon



Early morning Day 2 – Note the hole burned through the aluminum helideck



The drilling mast has toppled over here – they usually melt pretty fast when fire breaks out



Dauphin Island Sea Lab

DISL Economic Impact

Economic Impact of DISL to Alabama

| Impact | Lower Alabama | Statewide |
|-------------------|----------------|----------------|
| Value Added | \$27.9 million | \$29.6 million |
| Total Revenue | \$54.4 million | \$56.2 million |
| Employment | 513 jobs | 508 jobs |
| Personal Earnings | \$16.3 million | \$17.4 million |
| Total Tax | \$361,984 | \$1.8 million |



Dauphin Island Sea Lab

The Take Home Message: Biodiversity Matters to The Gulf's Ecological and Economic Resilience



A healthy coastal economy cannot exist without a healthy Gulf of Mexico and a healthy Gulf of Mexico can not exist without a healthy economy!



The Dauphin Island Sea Lab Foundation provides funds to:

- Sustaining the activities of the Sea Lab
- Promoting awareness of the Sea Lab and environmental issues
- Building an endowment for the Dauphin Island Sea Lab.

www.sealabfoundation.org



MOBILE-TENSAW RIVER DELTA

Where Rivers Sculpt Life Out of Clay

Deltas are uniquely valuable. They provide wetland habitat for an abundance and diversity of plants and animals. This contributes to healthy functioning ecosystems. They also play an important role in the retention and filtering of floodwater. The geographic situation of deltas, connecting rivers and sea, makes them important to humans for transporting material resources.



Deltas form where rivers empty into larger water bodies. As rivers flow, they erode and carry sediment. Sediment falls out of suspension as energy slows down near the coast, over time forming land sculpted into a fan-shaped area of channels, swamps, marshes, and islands.

MOBILE-TENSAW RIVER DELTA

The Mobile-Tensaw River Delta, situated between Mobile Bay to the south, and one of the largest watersheds in the U.S. to the north, is one of the most biologically diverse regions in the U.S. With connection to the Gulf of Mexico, this region has been valued and utilized by humans for centuries, from Native American traders, to European explorers, to modern-day merchants.

EAST FACTS

260,000 acres
2nd largest delta in the U.S.
National Natural Landmark recognition



American black bear (Ursus americanus) populations still find southern hardwood forests in the Mobile-Tensaw River Delta.

Renovation of Alabama Aquarium Underway





Dauphin Island Sea Lab

Seafood Farming Proof of Concept



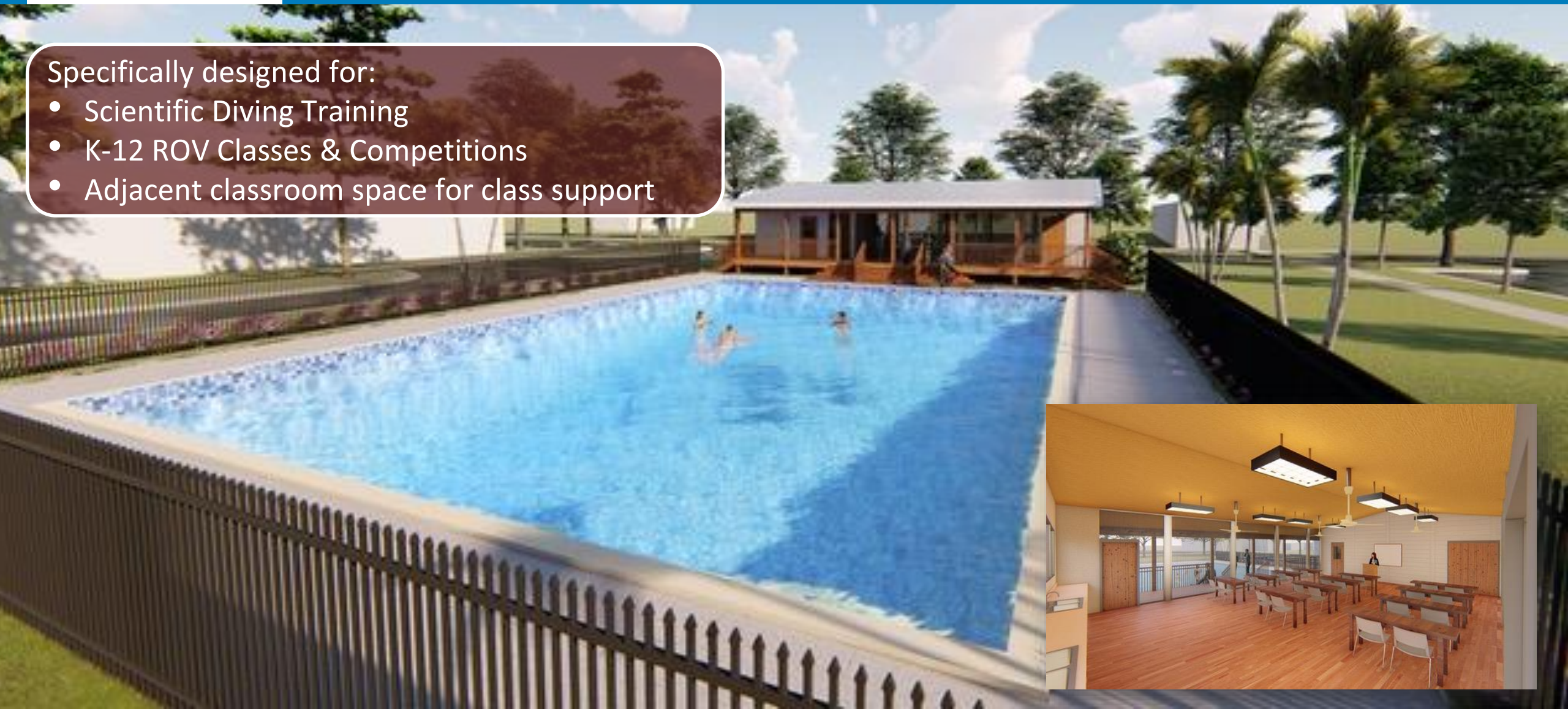


Dauphin Island Sea Lab

New Pool & Outdoor Classroom

Specifically designed for:

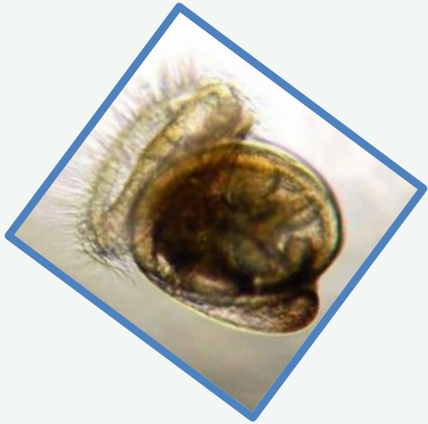
- Scientific Diving Training
- K-12 ROV Classes & Competitions
- Adjacent classroom space for class support





Auburn University Shellfish Lab

Ensure a thriving shellfish seafood community



Taking the pulse of coastal marine ecosystems



MarineGEO

THE TENNENBAUM
MARINE OBSERVATORIES NETWORK



Smithsonian Institution
marinegeo@si.edu