Derelict Clam Bags

Turning damaged clam farming equipment into oyster reef building blocks through reclamation of leases in Cedar Key, Florida

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Sea Grant Florida

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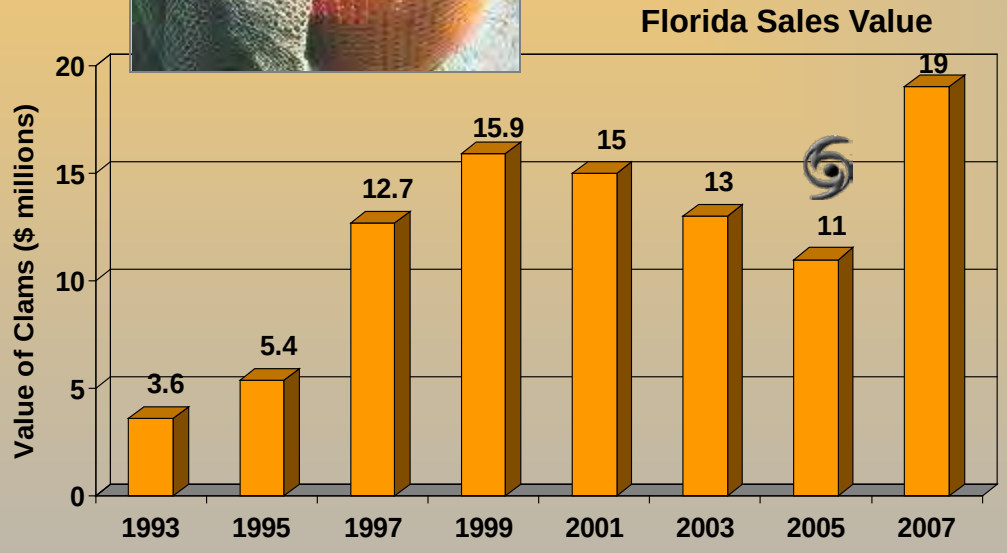
University of Florida IFAS

Background

Cedar Key clam culture industry

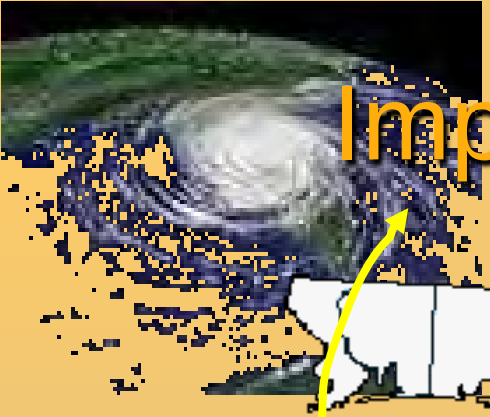


- Initiated in 1990s as a result of federally-funded job retraining programs for underemployed oyster harvesters and net fishermen
- Has brought economic revitalization to area
  - Over 200 clam farms with sales value of $13M (2007)
  - Impact of $34M (2007)
- Leading producer of hard clams by volume in nation (USDA, 1998)

Cedar Key clam culture industry

Clams are grown in polyester mesh bags staked to the bottom substrate on sovereign submerged land leases in the Gulf of Mexico

Impact of 2004 hurricane season

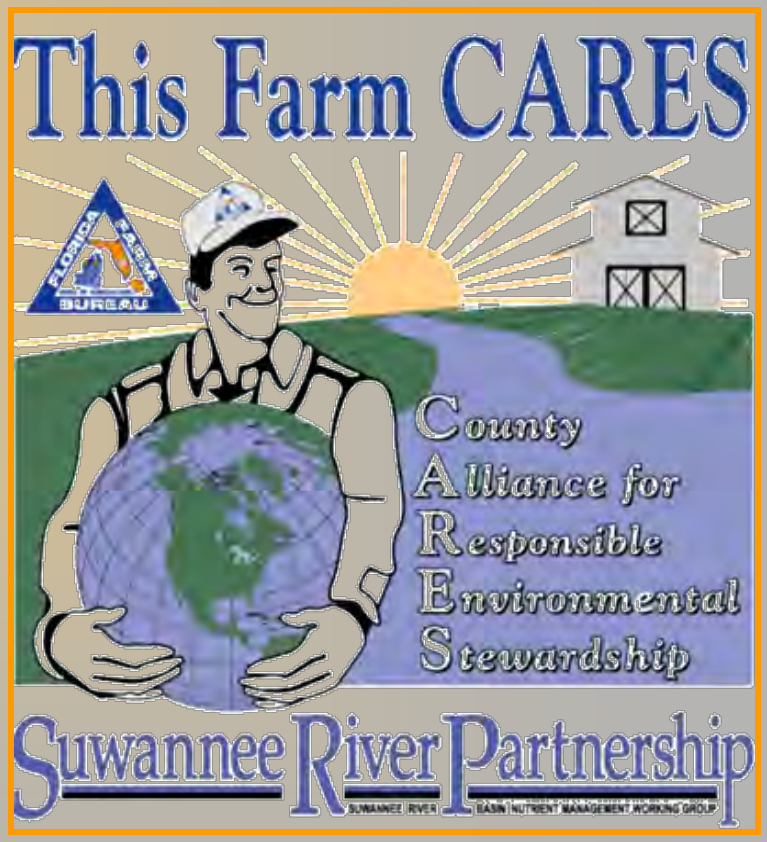


Hurricane Recovery Efforts

- In response to 2004-5 hurricanes, statewide public meetings were conducted to evaluate damage to agriculture and aquaculture crops and formulate plans to assist affected farmers
- In Cedar Key, clam farming industry met with Suwannee River Partnership
- One of the factors identified restricting the recovery of clam farming businesses was the presence of “derelict” clam bags
- Greatest concern expressed was these bags restricted growers from re-planting productive acreage

Suwannee River Partnership

- Group of federal, state, regional, and local agencies as well as private associations coordinating programs and resources to address water quality issues in the Suwannee River Basin
- Mission to encourage voluntary incentive-based programs that provide better protection to the environment through a non-regulatory approach
- Secures cost share funds to assist in implementing BMPs and verifies protect water quality
  - Dairy farms (85%) and poultry farms (95%) in the Basin implement BMPs to reduce nitrates in groundwater and surface waters
- Provides farmer recognition through a stewardship program (CARES)



What is a "Derelict" Clam Bag?

- Damaged and abandoned clam farming equipment (clam bags, cover netting, stakes)
- Excessive buryment of clam bags resulting in
  - Suffocation of clams and mortality
  - Shell in bags makes excellent substrate for oysters and attracts spat

What is a “Derelict” Clam Bag?

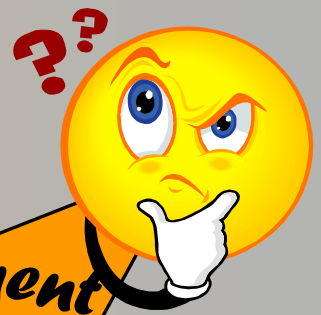
- Bags difficult to remove - excessive sedimentation and fouling organisms
- Many growers did not have necessary equipment to remove and dispose
- Estimated over 20,000 “derelict” clam bags on clam leases in Cedar Key

The Cedar Key Aquaculture Association met with members of the Suwannee River Partnership over a 2 year period, 2005-7

- To develop a project to restore state-owned submerged leases to pre-storm or pre-lease conditions
- To assist in the recovery and sustainability of the clam farming industry
- To instill stewardship and environmental practices among clam growers

Who will remove the bags?

What kind of equipment is necessary?



How will we remove the bags?

Permits?

GroanZone

Permits?

Where will we get funding?

Where will we put the bags?

$$$

The Solution

- Atsena Otie, an offshore key of cultural and historical significance, was also impacted by the hurricane seasons of 2004-5
- The northwest bank was severely eroded exposing brick foundation of Eberhard Faber Cedar Mill site

The Solution

- The Suwannee River Water Management District (land owners) with the U.S. Fish & Wildlife Service (land managers) were developing a multi-faceted program for shoreline protection
  - Installation of coir fiber logs
  - Re-vegetating shoreline

"Derelict" Clam Bag Removal Pilot Project

June - December 2007

- Recover clam bags from aquaculture lease areas
- Relocate and use as structural components to construct an off-shore oyster reef at Atsena Otie

"Derelict" Clam Bag Removal Pilot Project

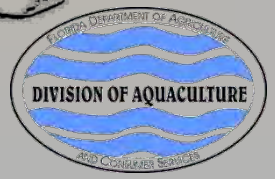
June - December 2007

- Oyster reef to serve as "break-water" to
  - Reduce wave energy
  - Allow for sediment accumulation
  - Assist in providing shoreline stabilization

Project Components and Partners

- **Funding:** 2006 Florida State Legislature, Clam Disaster Assistance - $30,000
  Suwannee River Resource Conservation and Development - $10,000
  Growers cost-share (25% of bag removal / 10% overall) - $4,125
- **Fiscal Administration:** Levy Soil and Water Conservation District
- **Project Manager:** Cedar Key Aquaculture Association
- **Permitting and Signage:** Suwannee River Water Management District
- **Technical Assistance and Resource Evaluation:**
  - FL Department of Agriculture and Consumer Services, Division of Aquaculture
  - FL Dept. of Environmental Protection, Big Bend Seagrasses Aquatic Preserve
  - University of Florida / IFAS Cooperative Extension
  - Florida Sea Grant





Project Results

28 clam farmers participated

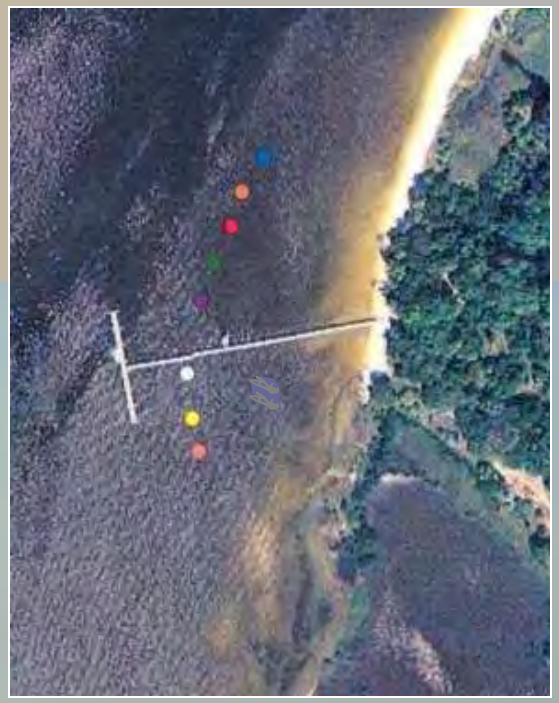
Project Results

7 “approved” bag removers

Project Results

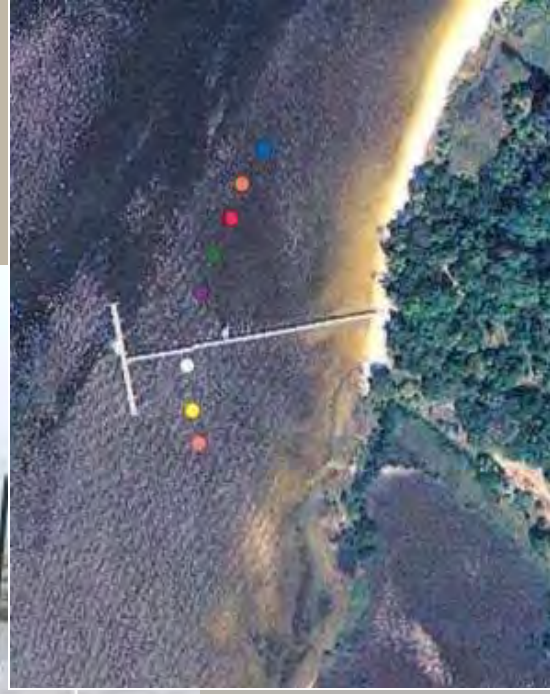
Reclamation of 0.7 acres of state-owned submerged lands

Atsena Otie Oyster Reef Habitat Site




Atsena Otie Oyster Reef Habitat Site
CAROLINA
SKIFF 24

Atsena Otie Oyster Reef Habitat Site



Atsena Otie Oyster Reef Habitat Site

1,743 derelict clam bags removed and relocated

Oyster Reef Building Blocks

Estimated 8,000 live oysters in a “derelict” clam bag and 0.15 yd^3 of cultch material

Approx. 13 million oysters and 260 yd^3 of cultch planted at Atsena Otie reef site

Atsena Otie Oyster Reef Habitat Site

A 0.08-acre oyster reef (320’ x 9-12’ x 3’ high) was constructed

Monitoring

- Reef integrity
- Oyster population dynamics
- Biological diversity

Lightning Whelk
Busycon contrarium

Stone Crab
Menippe mercenaria

Sea Whip
Leptogorgia virgulata

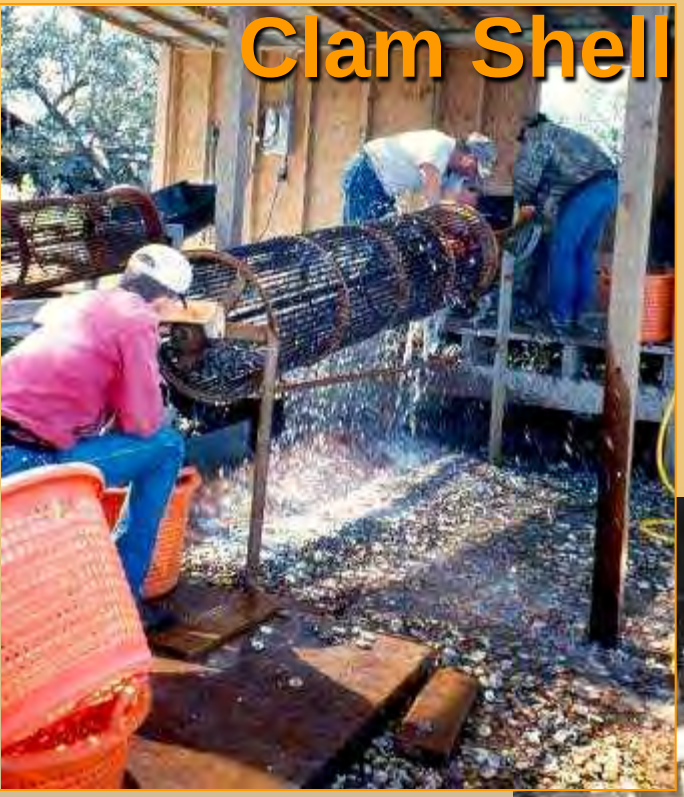
What's next?

- Partnership submitted a proposal to NOAA's Marine Debris Removal Project Grants, September 2007
- Received notice of award for $60,000, July 2008
- Phase 1 will allow for an additional 2,000 "derelict" clam bags to be removed and expand the Atsena Otie Oyster Reef to 0.15 acres, December 2008-August 2009
- Phase 2 will allow 500 bags to be used in the enhancement of 80-100 feet of intertidal, three-dimensional oyster reef habitat, September-November 2009
- Both phases will be evaluated structurally and functionally
- An outreach program will be developed for stakeholders providing educational opportunities for leaseholders, bag removers, resources users, students, and public

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE

Clam Shell Recovery and Recycling

- Clam shell is a byproduct of the washing activities at processing plants
- Federal hurricane relief funding allowed for collection of shell at plants, 2005-8
- 8 local wholesalers participated



Clam Shell Recovery and Recycling

870 cubic yards, or ~19,000 bushels, of shell collected and stored for oyster fishery enhancement efforts

Volunteer Oyster and Clam Shell Recycling

- Initiated by Cedar Key Aquaculture Association and Oystermen's Association, 2004
- Recycling station located at Cedar Key Water Plant
- Engage residents in participating

Volunteer Oyster and Clam Shell Recycling

- Recycling bins located at area festivals to educate visitors

Cedar Key's Shellfish Culture Industry C.A.R.E.S.* for the Environment!

*County Alliance for Responsible Environmental Stewardship

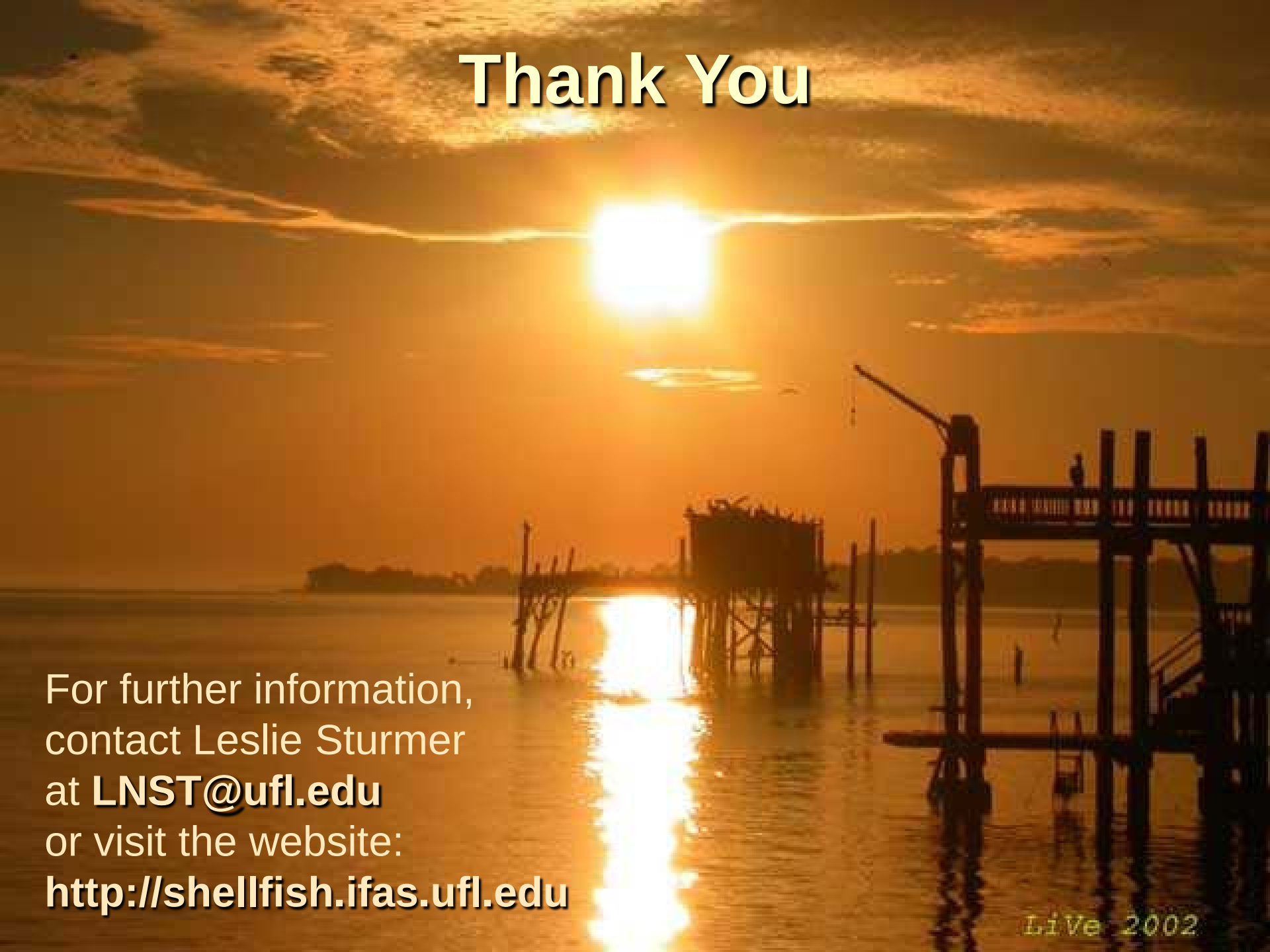
Removal of "Derelict" Clam Bags from Leases

- ✓ Restoring ecological and commercial value to impaired state-owned lands
- ✓ Accelerating the recovery of clam farming businesses
- ✓ Providing economic benefits
- ✓ Instilling environmental practices

Creation of Oyster Reef Habitat

- ✓ Providing fisheries habitat
- ✓ Improving water quality by filtration
- ✓ Allowing for sediment accumulation
- ✓ Reducing shoreline erosion
- ✓ Protecting natural, archaeological, and cultural resources

Thank You



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