Marsh Madness: monitoring of coastal wetland restoration projects along Florida's east coast

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FWC Marine/Estuarine Subsection

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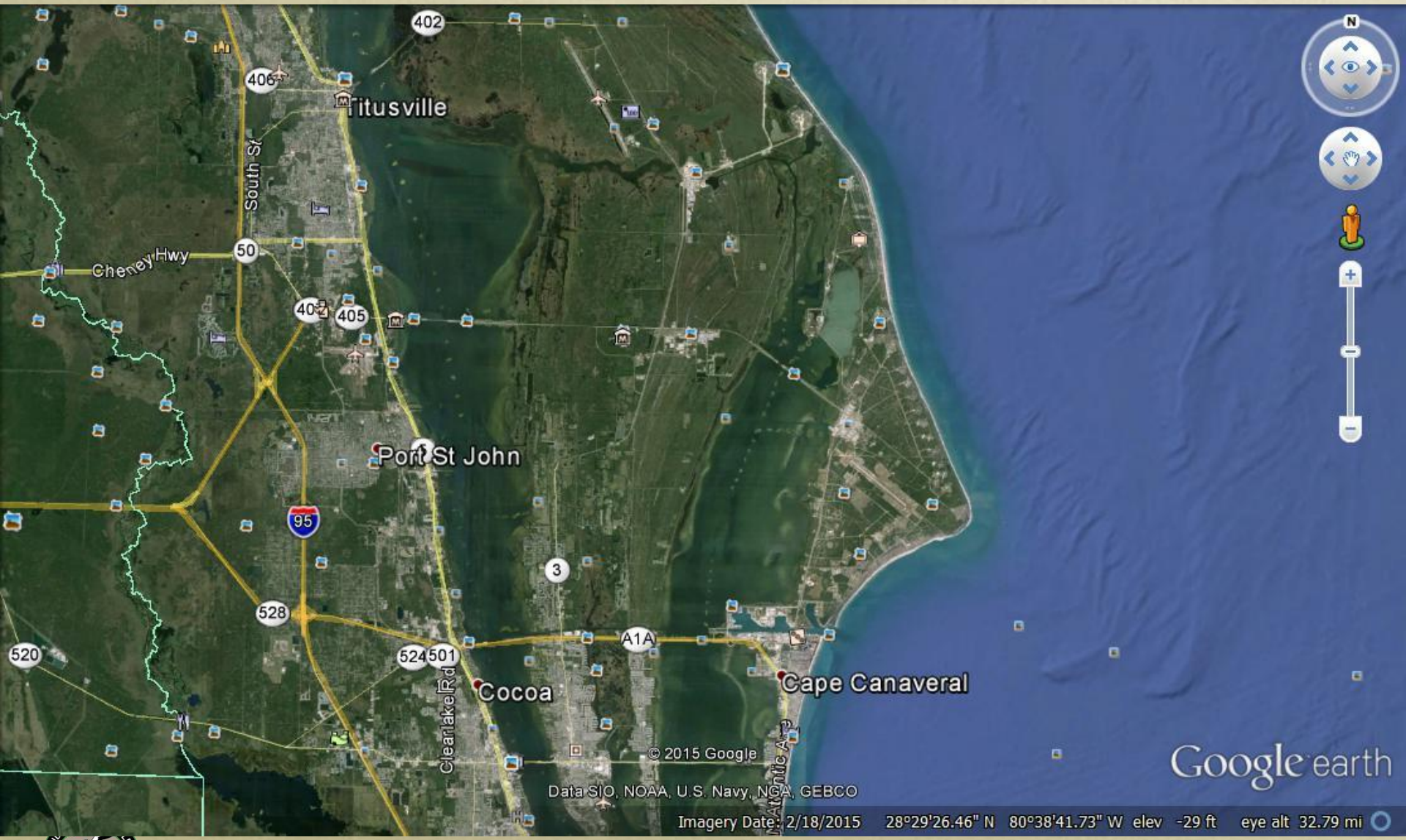
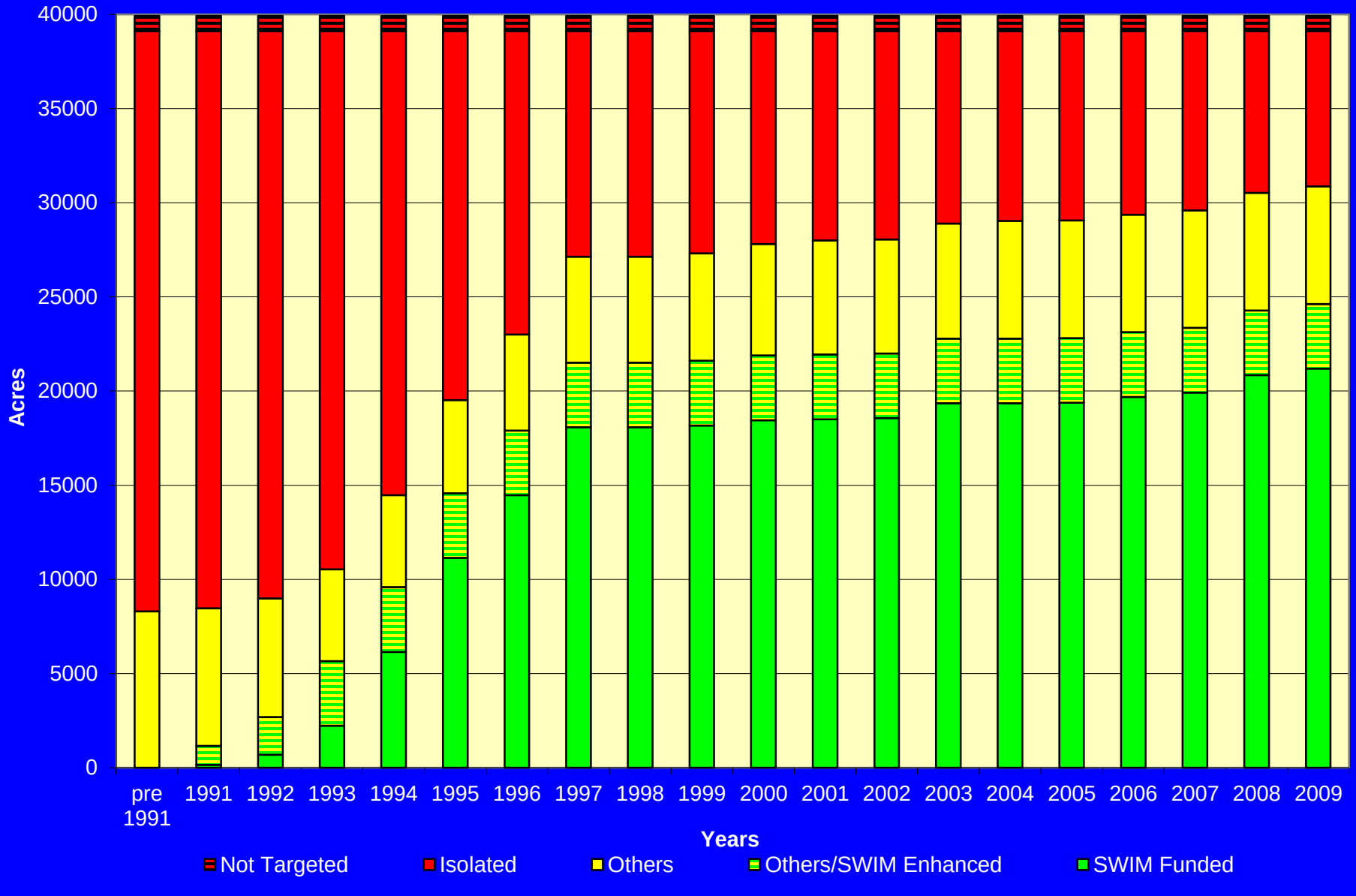
IRL history of altered coastal wetlands




40000
35000
30000
25000
20000
15000
10000
5000
0
Acres
pre 1991
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
Years
Not Targeted
Isolated
Others
Others/SWIM Enhanced
SWIM Funded

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North Peninsula

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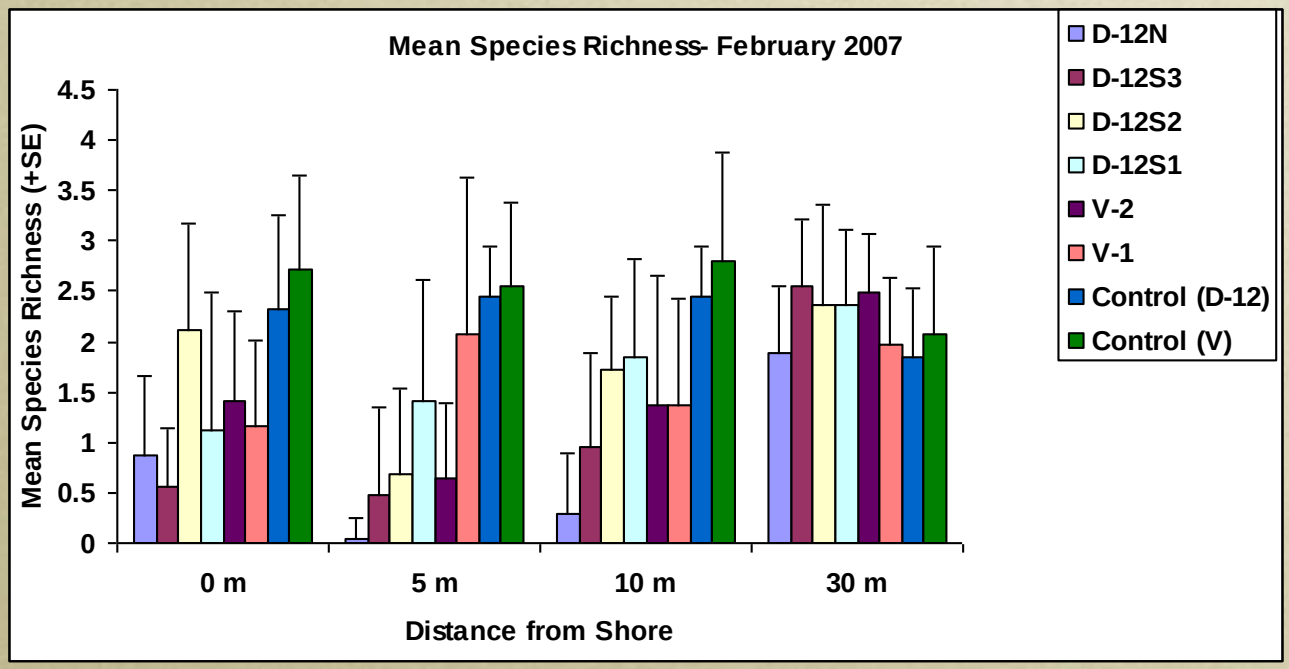
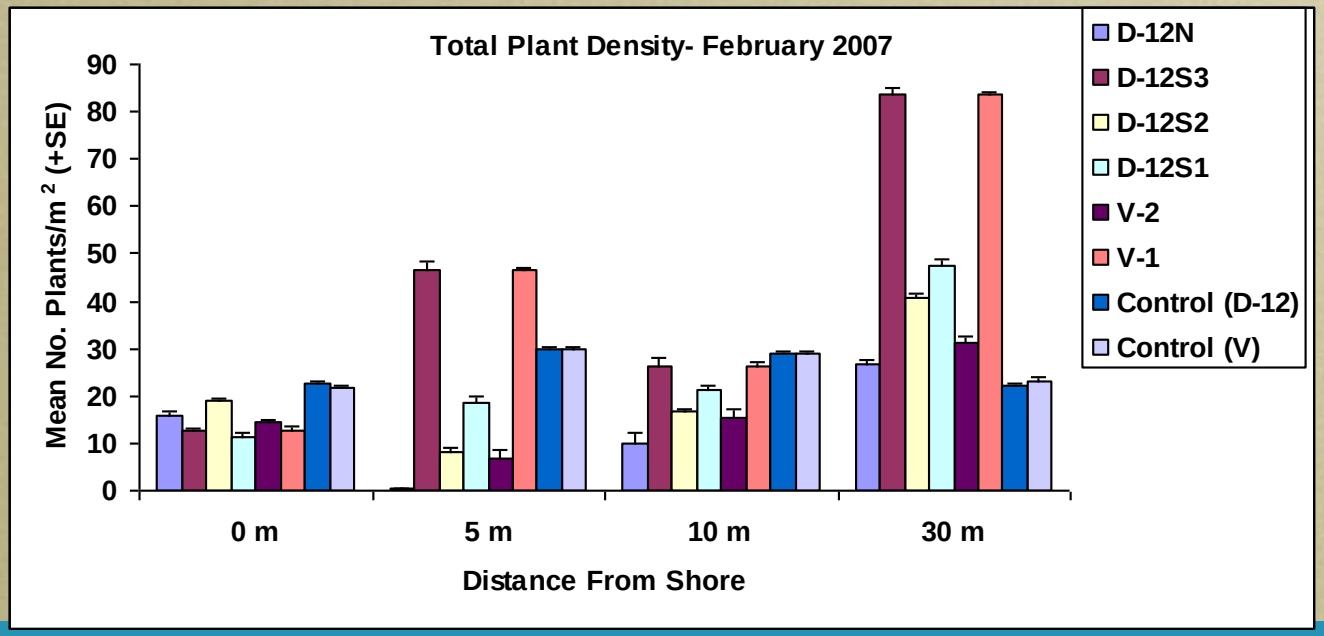
FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION



Youngest (1mth)

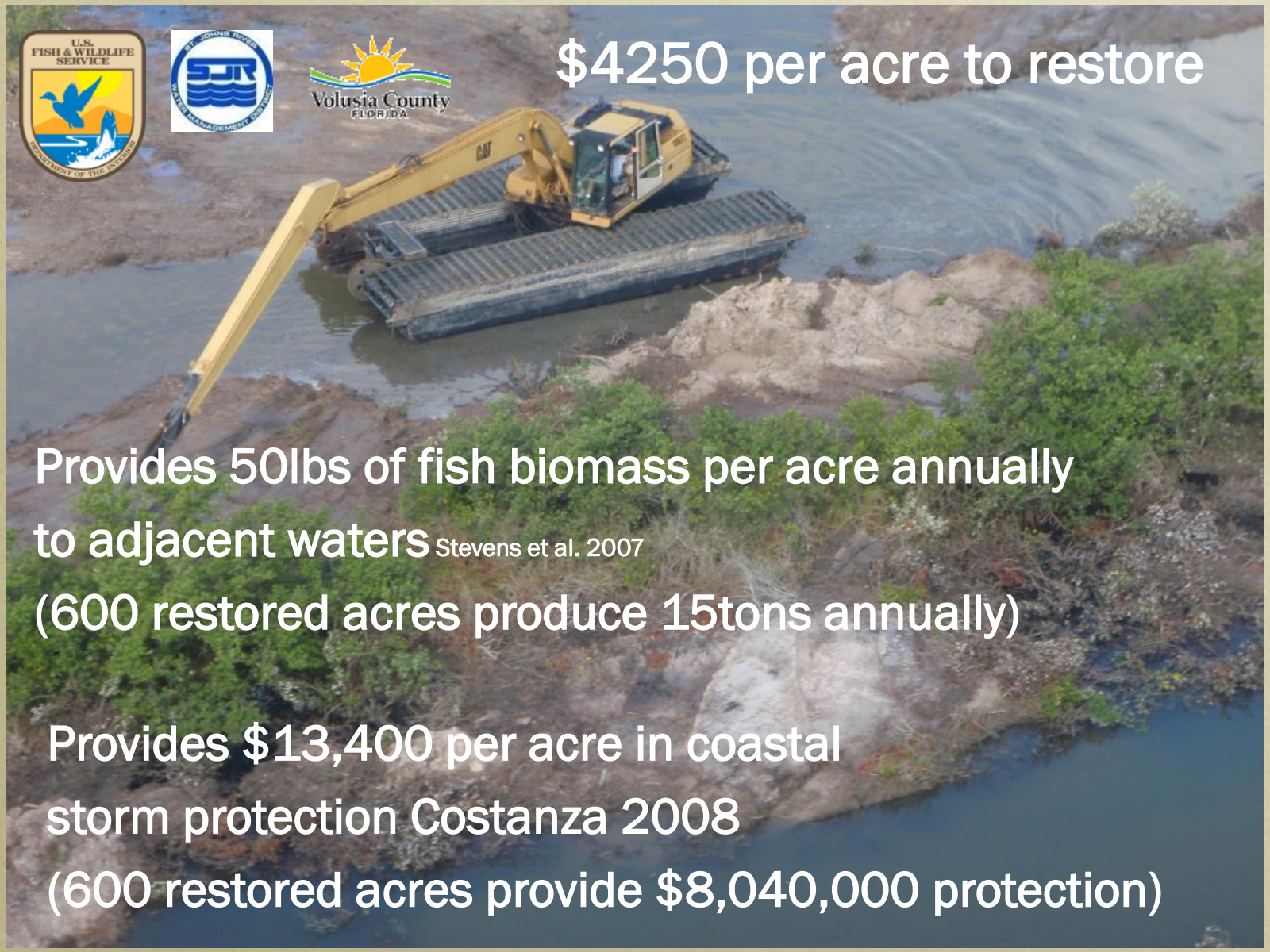
Oldest (7yrs)

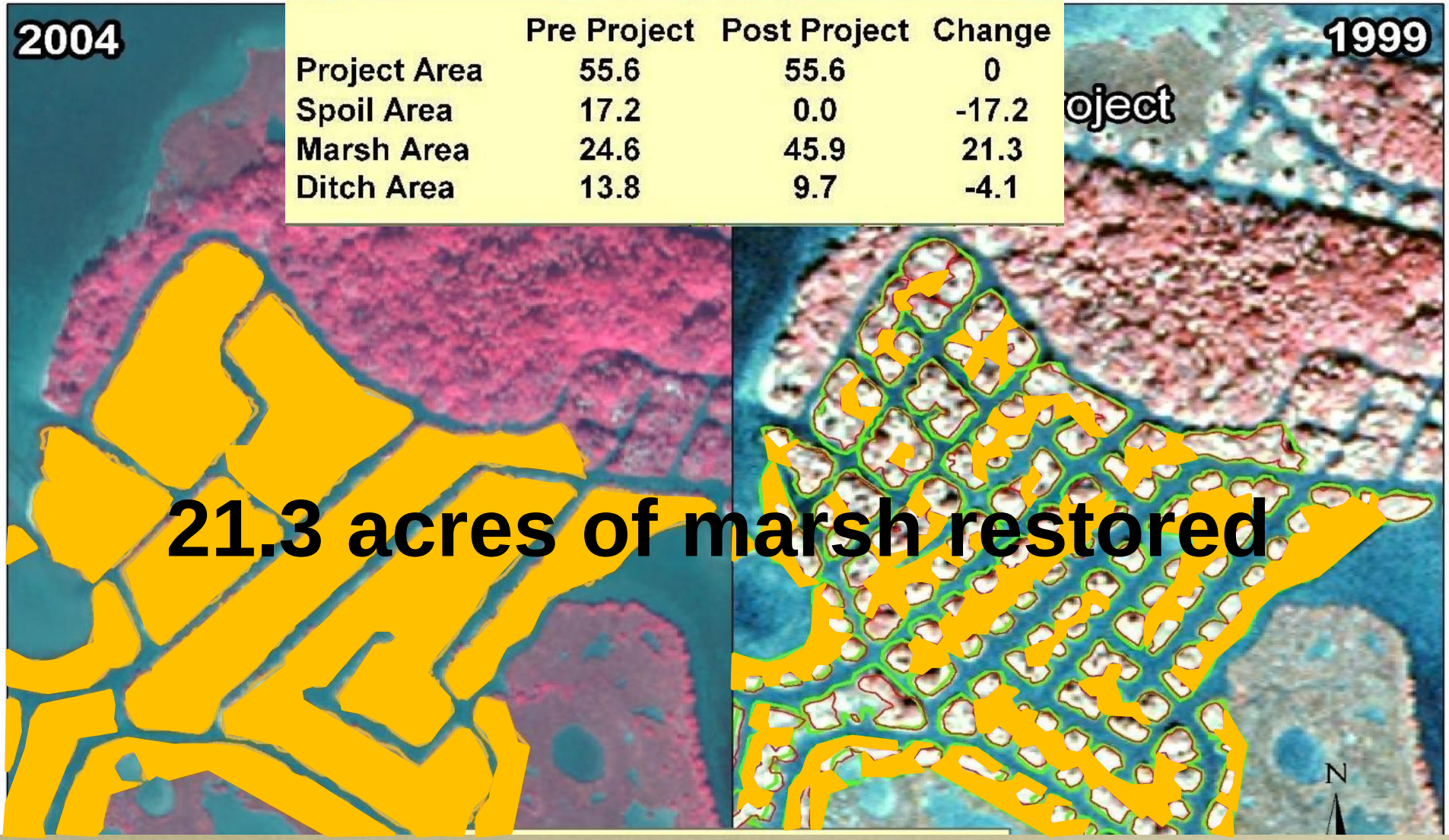
Pristine marshes in the region as controls




Dragline ditch


2yrs post-restoration


$4250 per acre to restore
Provides 50lbs of fish biomass per acre annually
to adjacent waters Stevens et al. 2007
(600 restored acres produce 15tons annually)
Provides $13,400 per acre in coastal
storm protection Costanza 2008
(600 restored acres provide $8,040,000 protection)



	Pre Project	Post Project	Change
Project Area	55.6	55.6	0
Spoil Area	17.2	0.0	-17.2
Marsh Area	24.6	45.9	21.3
Ditch Area	13.8	9.7	-4.1

21.3 acres of marsh restored

45.9 acres of marsh

24.6 acres of marsh

Florida Marine Fisheries Enhancement Initiative

Florida represents 39% of the nation's saltwater fishing

($5.8B annual gross worth not including boats; 32,000 jobs)

Florida boating industry $18B

opportunities today and tomorrow through sound management practices.

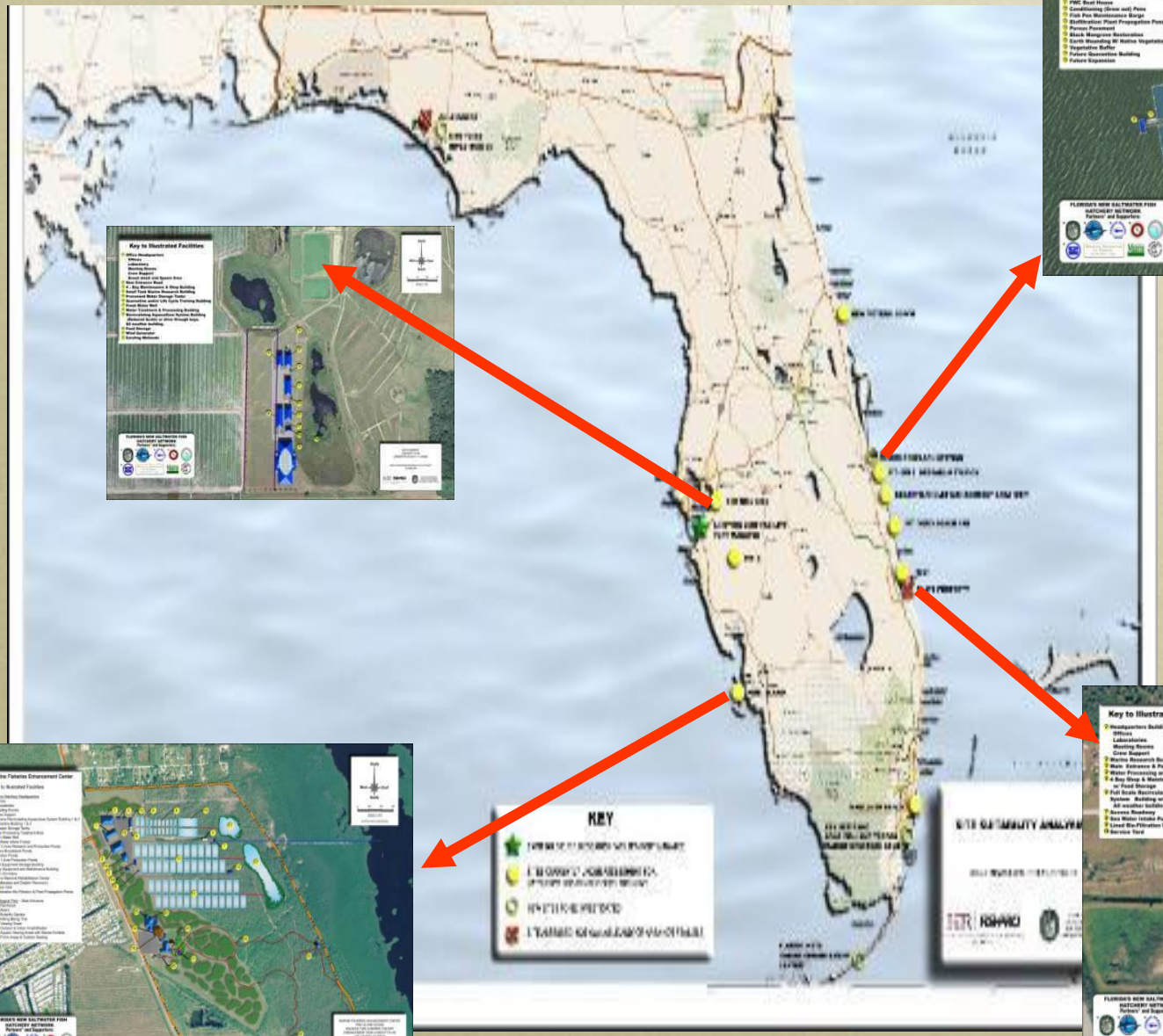
FLORIDA'S SALTWATER HATCHERY & HABITAT INITIATIVE

Enhancement Center three-pronged approach:

~Hatchery-reared saltwater species

~Habitat restoration/enhancement

~ Environmental education


KEY

Key to Illustrated Facilities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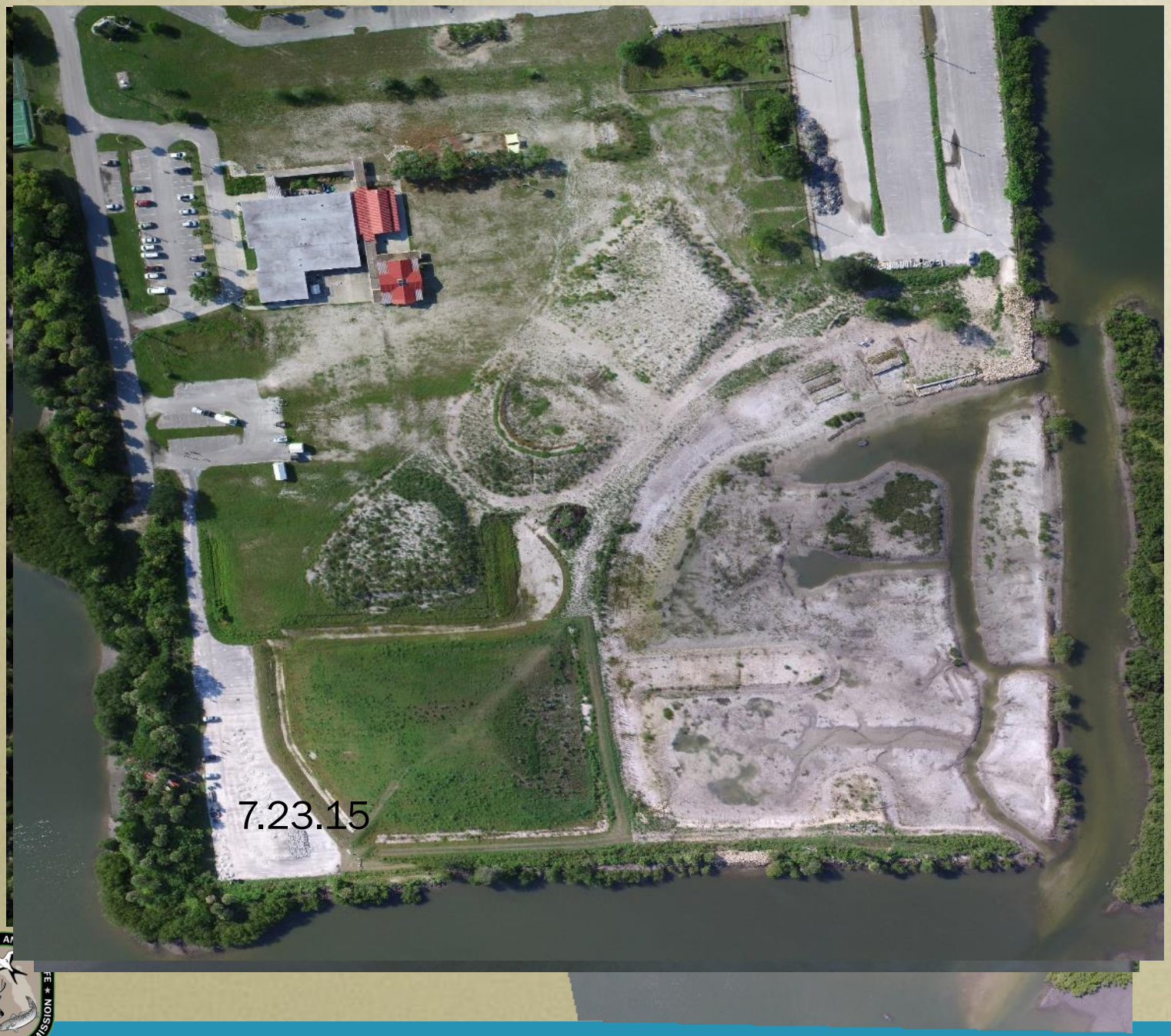
FWC's SERF site, Port Manatee

Clam Bayou, Tampa Bay (1-year sequence)

Mosquito Lagoon
Marine Enhancement Center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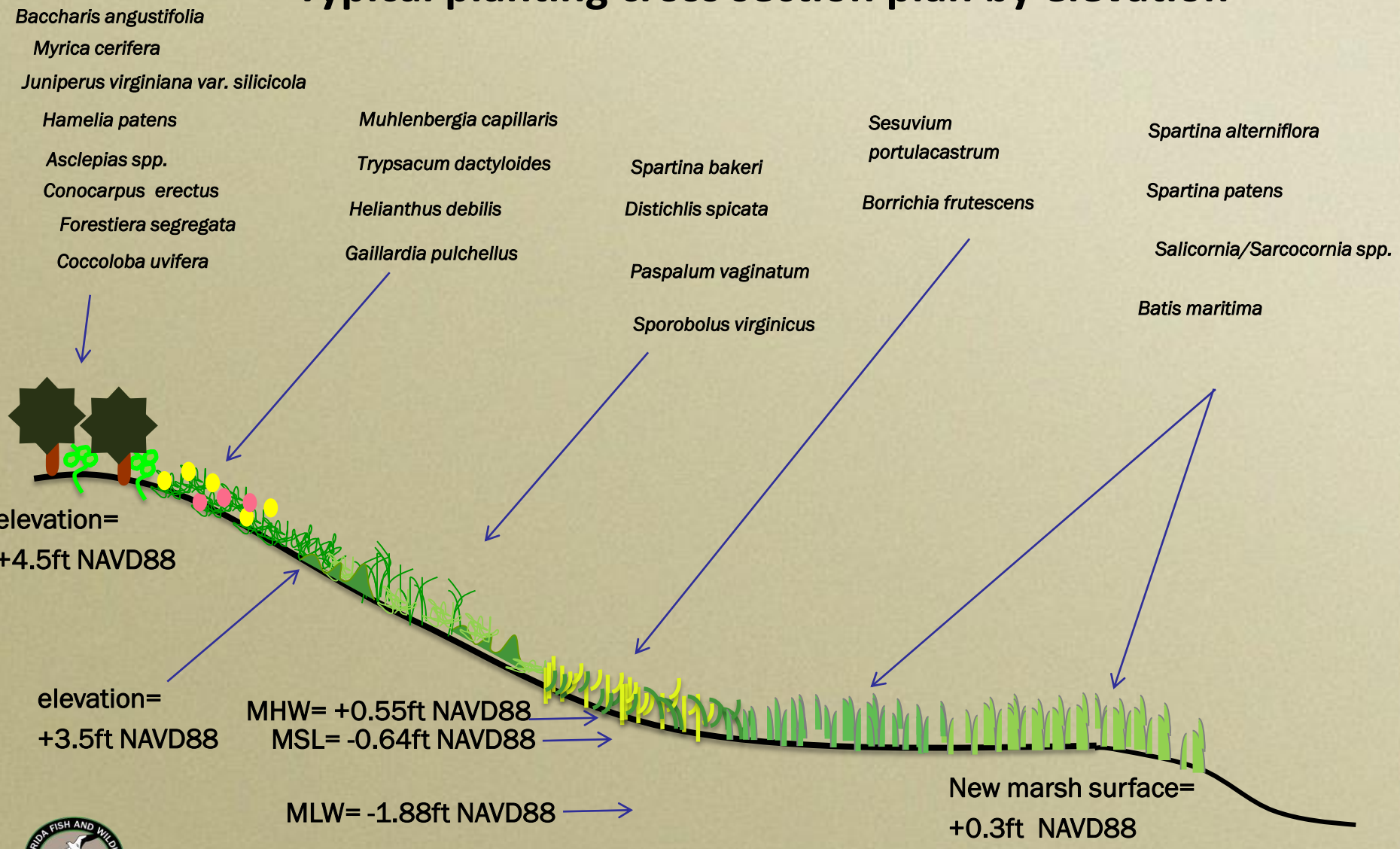
Droning on and on…

Time series Site 4-4 west

>600 hours

>25,000 plants

Typical planting cross section plan by elevation



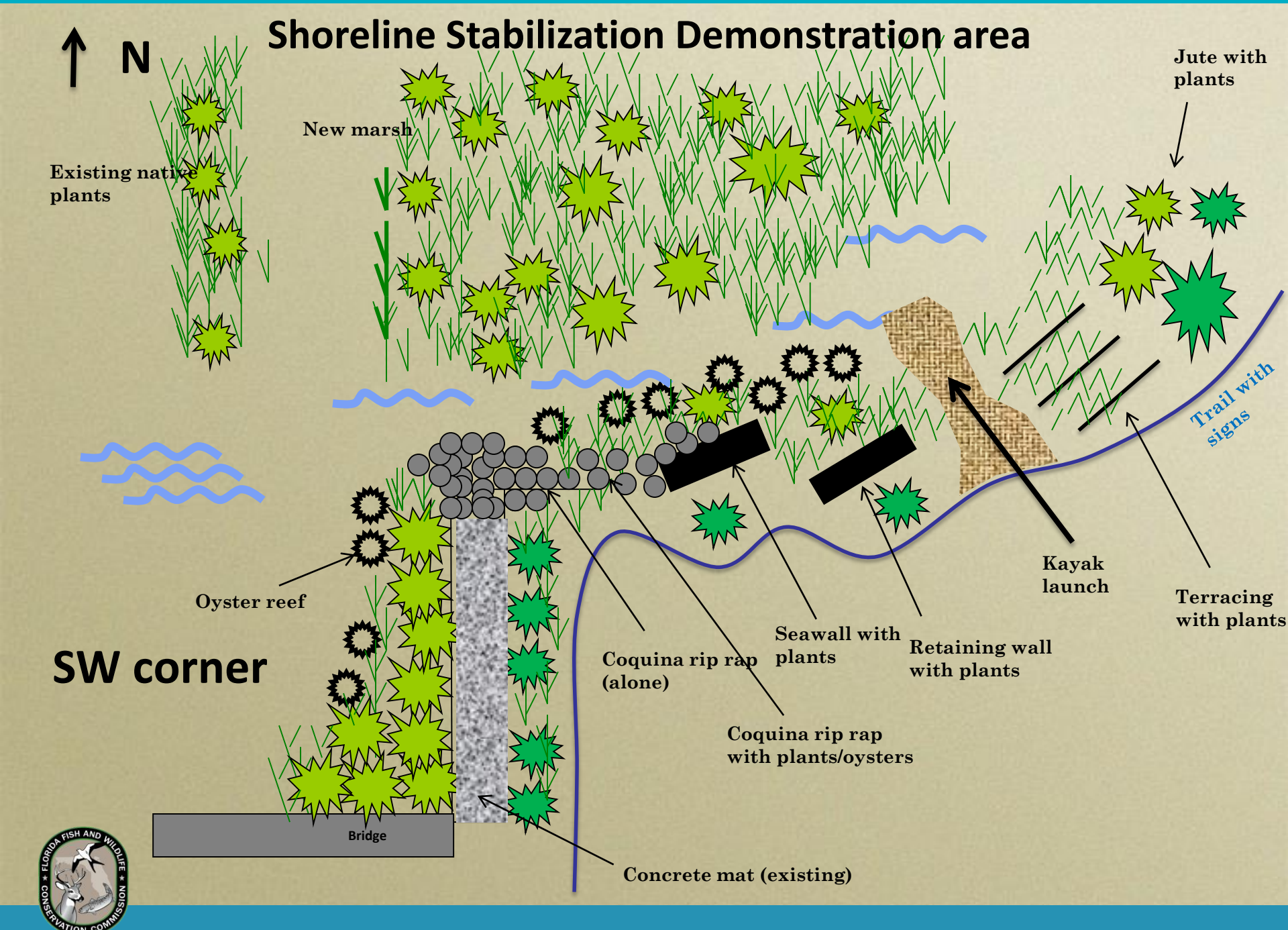
Citizen Science…MEHRMA

Marine Estuarine Habitat Restoration Monitoring and Assessment

MDC

MARINE DISCOVERY CENTER

Shoreline Stabilization Demonstration area



SW corner

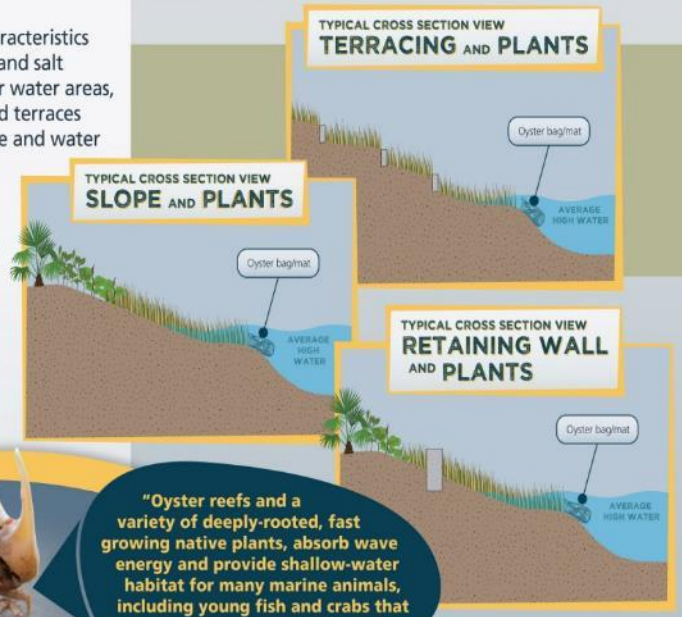
Shoreline Stabilization Demonstration Area

Rip-rap with native plants/oysters

Seawall Retrofits

What is a Living Shoreline?

This area has many characteristics of a natural oyster reef and salt marsh system. In deeper water areas, the addition of walls and terraces can help create the slope and water depths required by specific plants. The shoreline can be all plants or a combination of retaining walls, terraces, plants and oyster reefs.



"Oyster reefs and a variety of deeply-rooted, fast growing native plants, absorb wave energy and provide shallow-water habitat for many marine animals, including young fish and crabs that provide food for other animals."

Oyster bags are stacked along the shoreline in front of these mangroves to create a natural buffer to waves, and protect the shoreline from erosion. The combination of oysters and mangroves (or other marsh plants) creates a living shoreline design.

Volunteers drill holes in recycled oyster shell and attach them to mesh material in preparation for placement water-ward of the shoreline. These mats allow oysters to form reefs that protect the shoreline from erosion.

Did You Know?

In the southeast, one acre of coastal wetland provides **$10,000** in storm protection benefits every year.

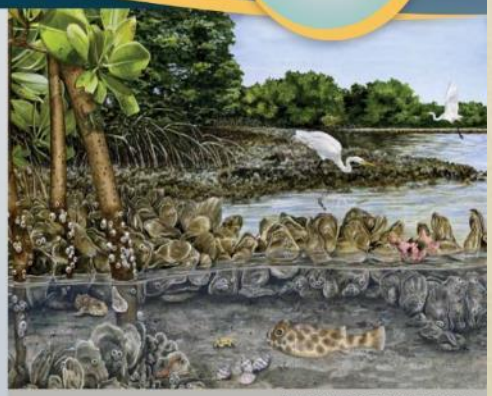


Illustration provided by Loxahatchee River District

The combination of the oyster reef, mangrove and marsh habitats supports a complex and diverse community of fish and wildlife, and secures the shoreline from damaging waves. This natural armor is highly productive, and supports the fish we like to catch, the shellfish we like to eat and the birds we like to watch.

www.floridalivingshorelines.com

Mosquito Lagoon Marine Enhancement Center

- $300K for construction of marsh, shoreline demo, and educational signs
- in-kind match from FWC/SJRWMD salary, MDC, Brevard Zoo, UCF, and Costa Del Mar volunteers
- 14 total partners benefitting from plants and other amenities

55K plants harvested annually

Living Shorelines

Subsided marsh restoration MINWR