

Conservation and Restoration Florida's Coastal Marshes:

An Overview of MESS

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FWC's MESS:

- Marine/Estuarine Subsection**

- within Aquatic Habitat Conservation and Restoration Section (Division of Habitat and Species)**



- Goal 1: Restore and enhance the quality and quantity of marine and estuarine habitats to benefit Florida's fish and wildlife populations***

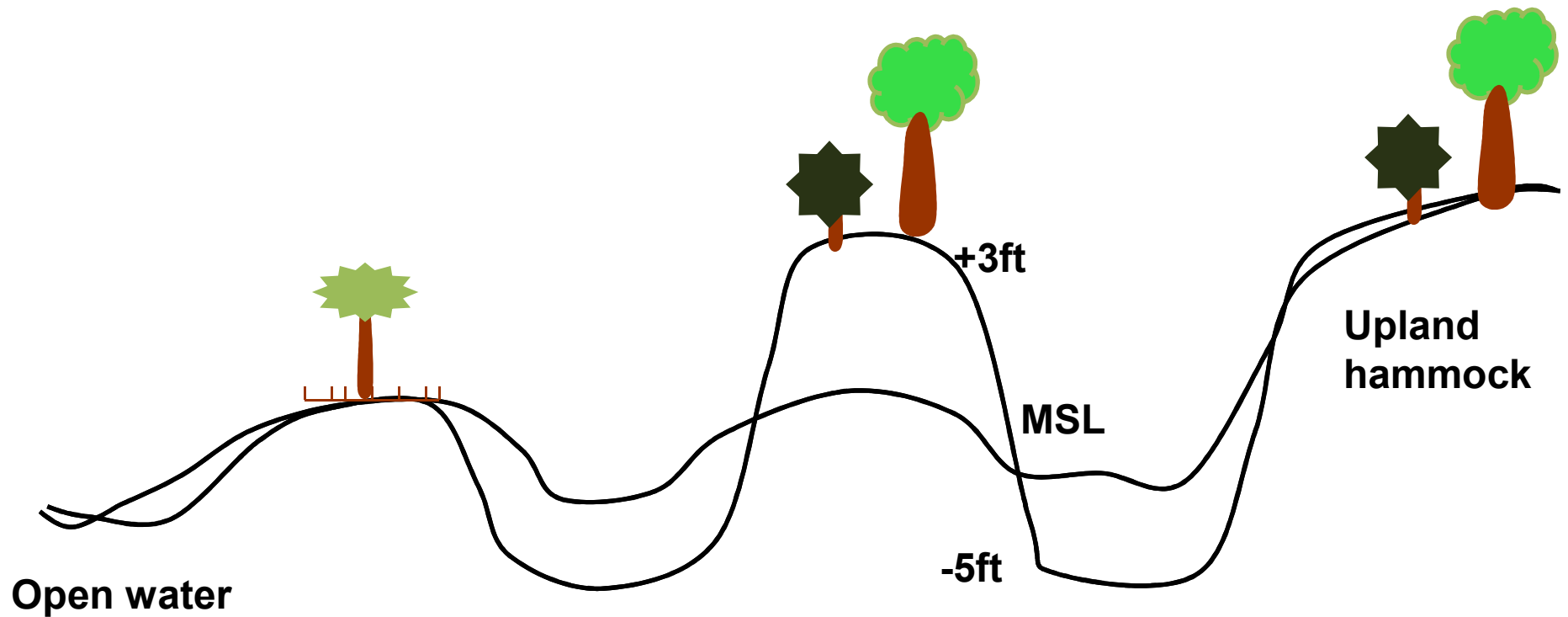
- Goal 2: Conserve and maintain intact native estuarine and marine habitats and their ecological functions for the benefit of future generations of fish, wildlife, and people.***



Dragline ditched saltmarsh restoration, Mosquito Lagoon



Mosquito Lagoon Wetland Restoration



Carbon sequestered and organics maximized for fiddler crabs by burying plants





1-2 years





3-5 years



8 years





Dragline ditch





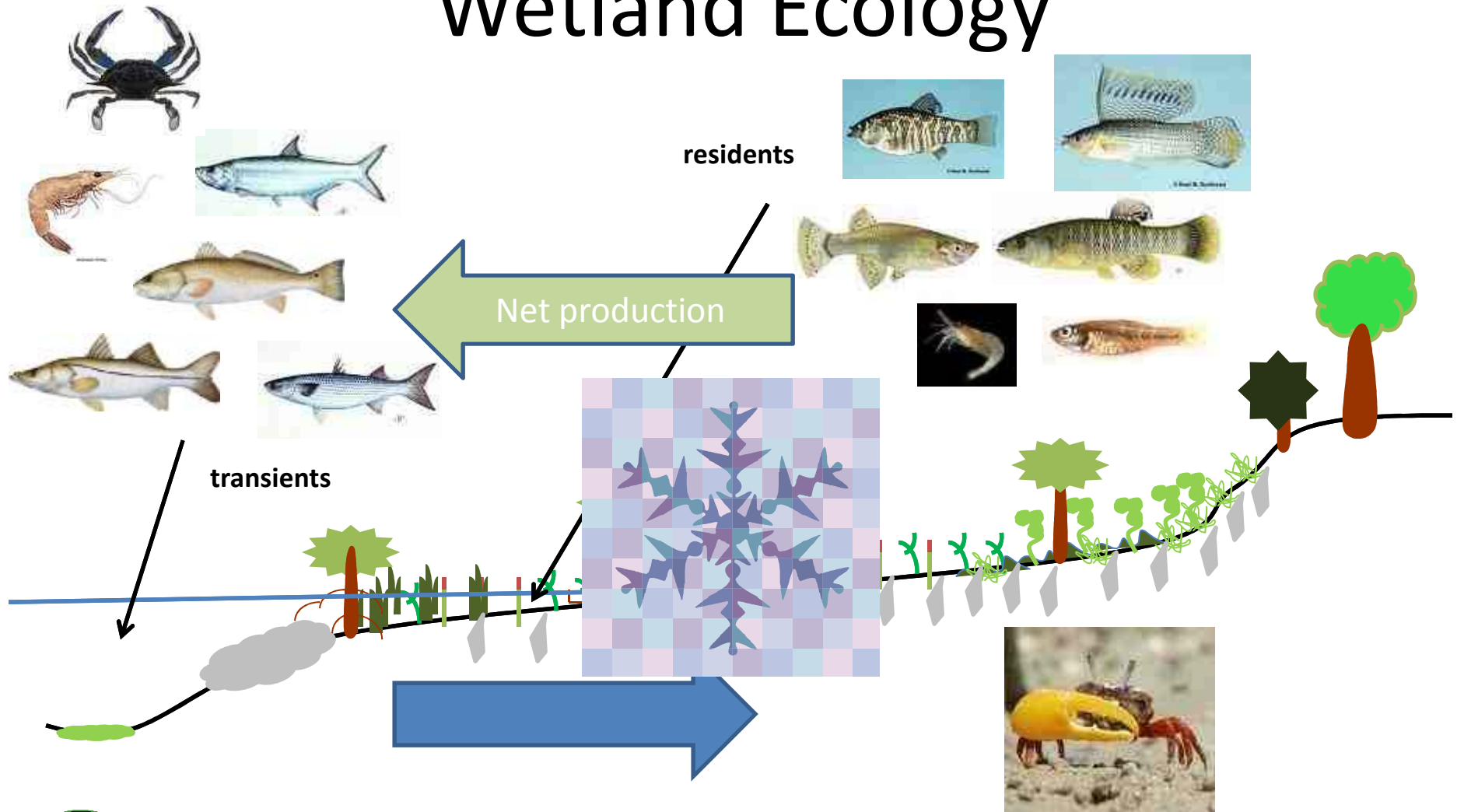
2yrs post-restoration

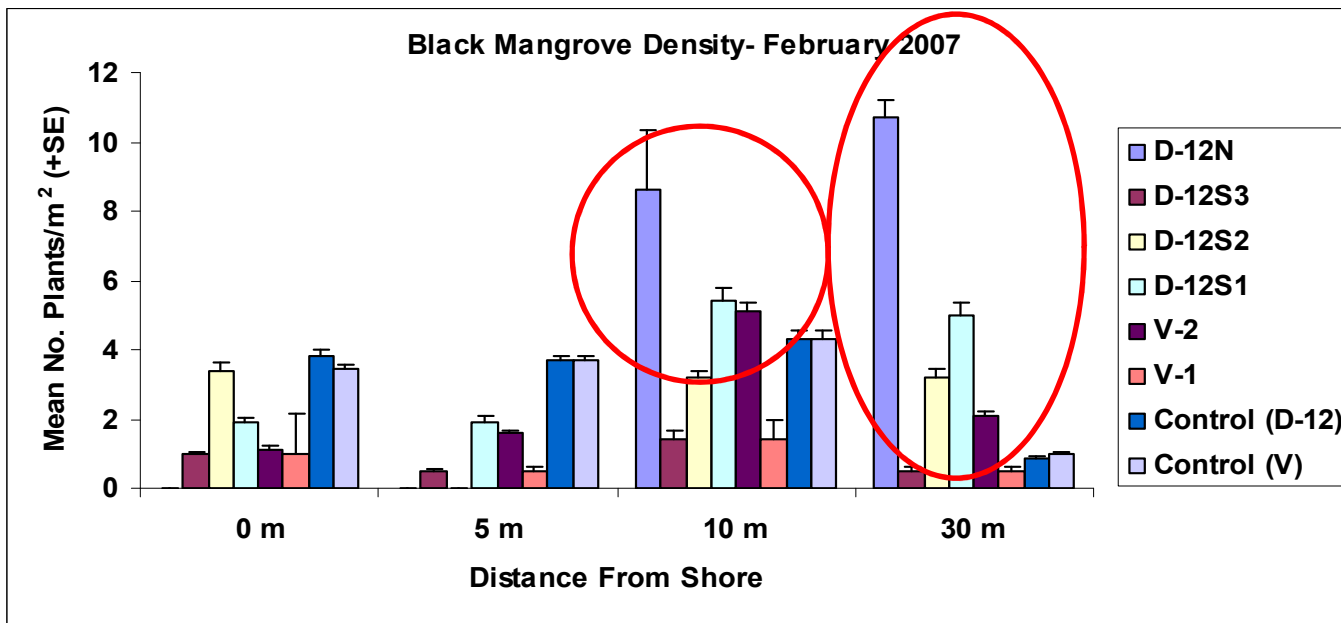




“Pristine” wetland

Mosquito Lagoon Natural Wetland Ecology

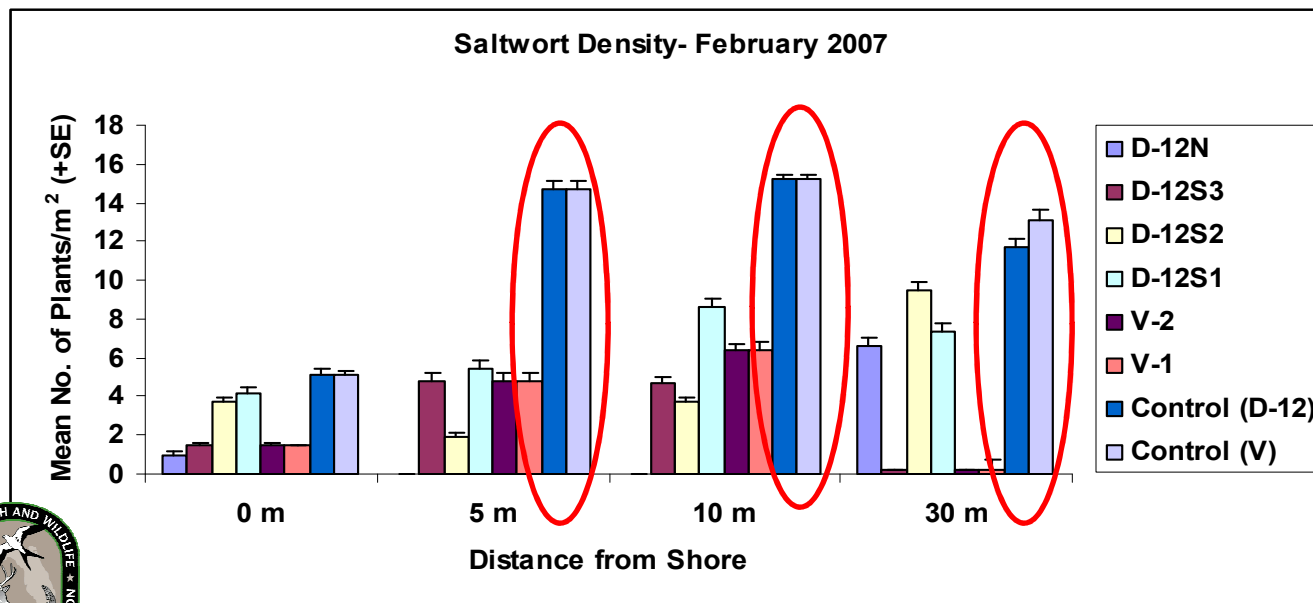




Youngest (1mth)



Oldest (8yrs)
Pristine wetlands



Donnelly, 2009



2004

**Canaveral National Seashore
Dragline Ditch Restoration Pilot Project
Orange Island Site**

August 2000 - December 2002

1999

21.3 acres of wetlands restored

45.9 acres of wetlands

24.6 acres of wetlands





\$3650 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)



Restoration of Dragline Ditched Coastal Wetlands:

Cooperative Efforts for the Future of Our Coastal Systems

History of Dragline Ditching for Mosquito Control

What: Dragline ditches are extensive networks of deep, wide ditches and spoil piles cut through historical coastal wetland habitat severely reducing the acreage of wetland remaining.

When: Primarily in 1950s and 1960s

Where: The most extensive ditching occurred in Mosquito Lagoon (nearly 1,200 acres), though some ditching is present throughout Indian River Lagoon and the Northern Coastal Basins.

Why: The purpose of the ditches was to interrupt the life cycle of saltmarsh mosquitoes by altering their breeding sites. The ditching replaced wetland with ditch and spoil piles decreasing the area where mosquitoes lay eggs, altering the hydrology of the remaining wetland, and provide direct access for mosquito-eating fishes.



Figure 1.

How: Large excavators, called draglines, were used to construct these ditch networks. The draglines were typically mounted to small barges (see Figure 1). Material was excavated from the wetlands and piled on either side of the ditch (see Figure 2).



Figure 2.

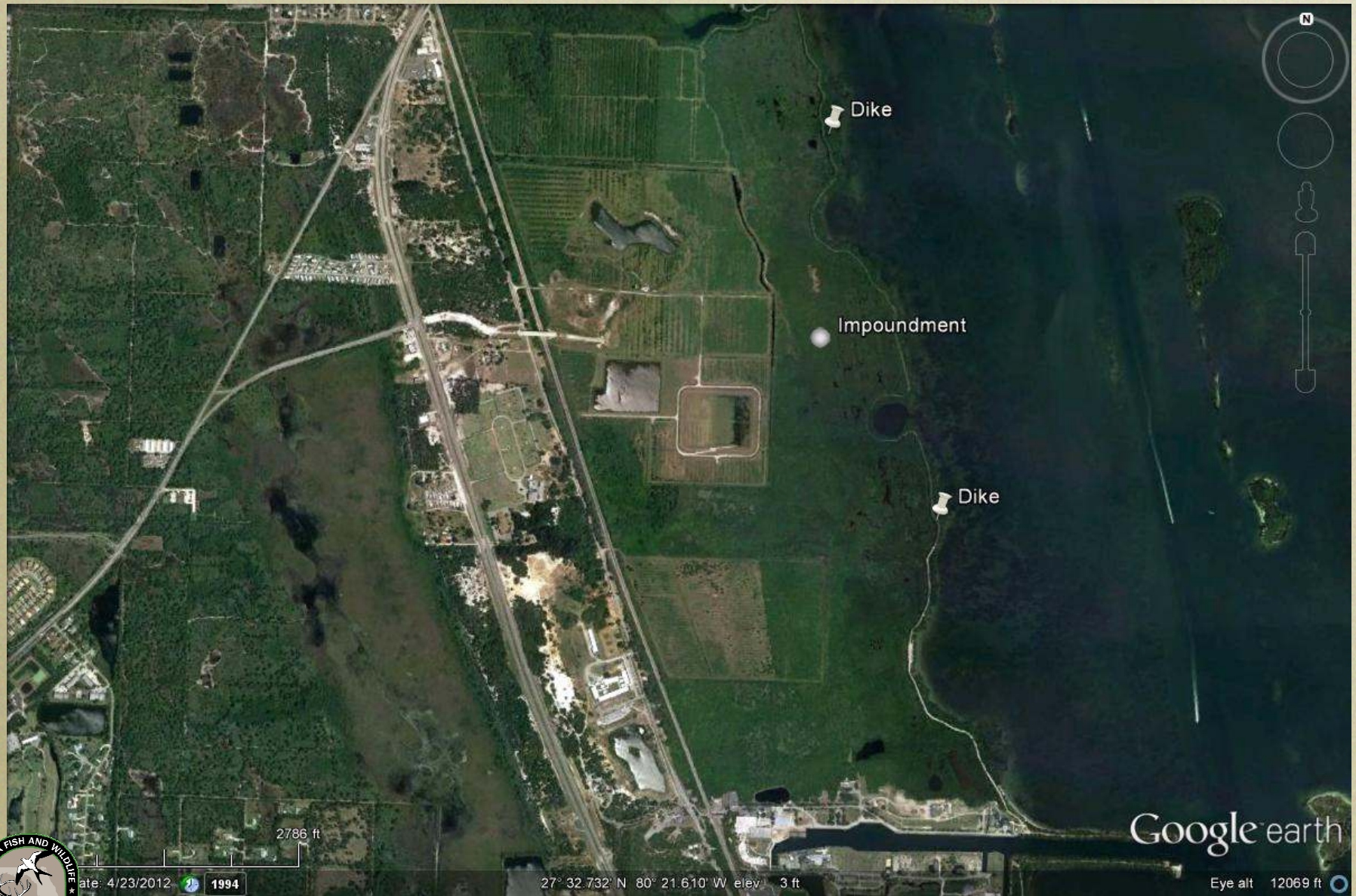


Negative Impacts of Dragline Ditches

Decreased Wetland Habitat: The amount of wetland habitat lost varies with the intensity of ditching. In the most extensively ditched areas, up to 80 percent of historical wetland is replaced with ditch and spoil pile. On



Harbor Branch Impoundment Reconnection



CURRENT CONDITIONS



- Degraded water quality
- Invasive/exotic Brazilian Pepper on 40 of 178 acres
- Mangroves in poor health due to impaired hydrology

- Marine organisms can not migrate from Lagoon to wetland for foraging/nursery
- Products of primary productivity not transported to Lagoon



PROJECT OBJECTIVES

1. Restore tidal connectivity to 178 acres of estuarine intertidal forested habitat that are currently impounded and re-establish historic mangrove marsh status.
 - Stabilize the perimeter dike with geotextile tubes, fill, and native plantings.
 - Install culverts and tide gates allowing natural tidal exchange.
 - Broadcast red mangrove propagules throughout the wetlands after natural eradication has occurred
2. Provide educational, research, and recreational opportunities to high school and FAU/HBOI students.
3. Monitor the structural and functional success of the project.



PROJECT PARTNERS AND FUNDING

\$1.15M

St. Lucie County Mosquito Control.....	\$1,500,000
US Fish and Wildlife Service (USFWS).....	1,000,000
Florida Fish and Wildlife Conservation Commission (FWC).....	5,000
State of Florida	4,500,000
South Florida Water Management District (SFWMD).....	574,000
Florida Inland Navigation District (FIND).....	480,000
FDEP/NOAA CZM program.....	150,000
Total.....	\$8,209,000



NOAA NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE



Impoundment outer berm removal

Former mariculture ponds, West Bay

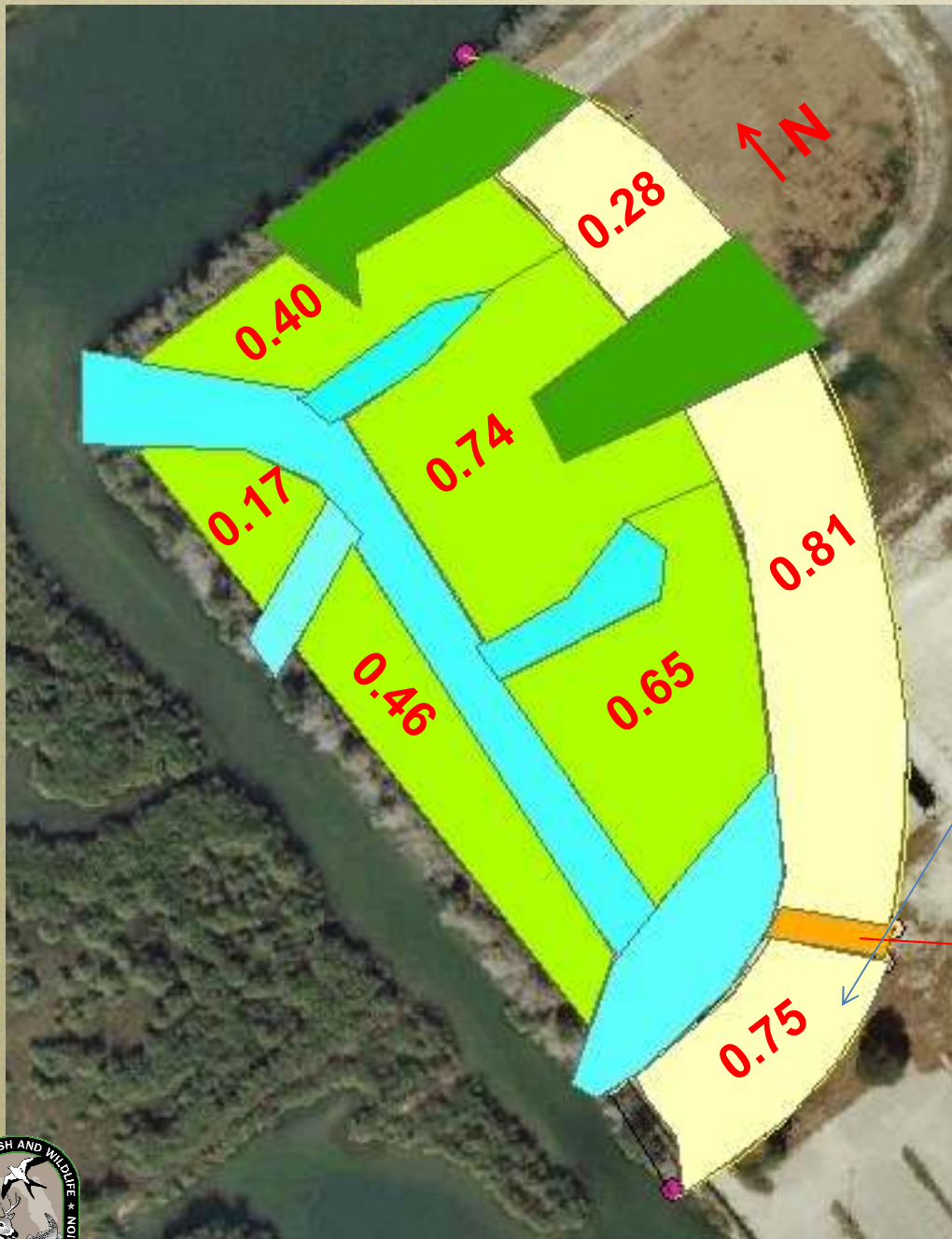


Winter Beach, IRL



FWC Mosquito Lagoon Marine Enhancement Center





Shoreline Stabilization Demo Area





Marine Enhancement Center



Florida Fish and Wildlife Conservation Commission
HDR





Clam Bayou, Tampa Bay (1-year sequence)

Indian River Lagoon Spoil Island SL15



SL 15 Mitigation Island – Ft. Pierce, FL
FDOT District IV / FTW 228758-2-52-01
Contract E4030 / PAP 7777 104a / UACJ Job #03-20
8/0/04 View of Island SL 15 from the SW





Before



6yrs after

Grassy Flats Lake Worth Lagoon

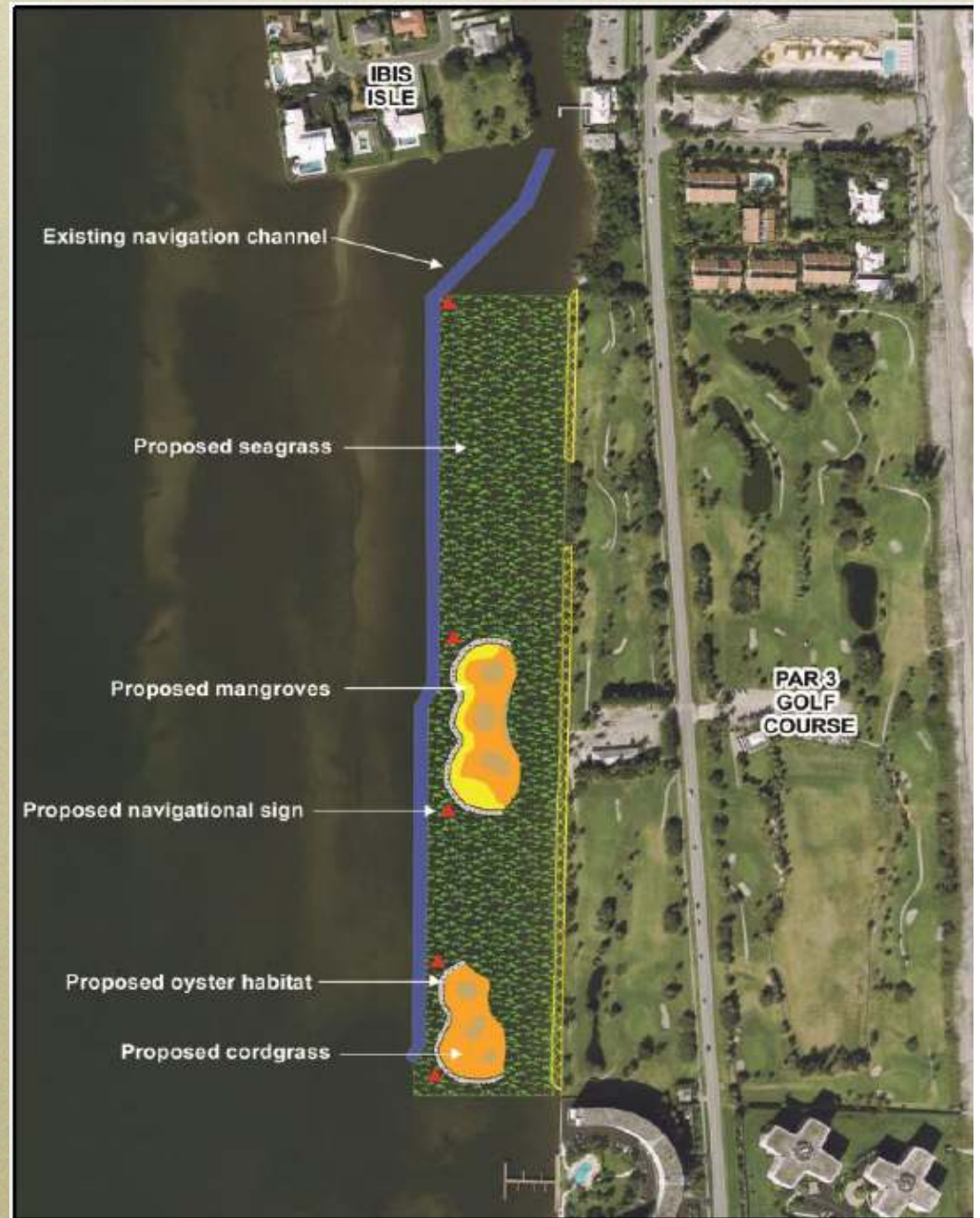
- Tidal Marsh
- Tidal Flat
- Mangrove
- Oyster Reef
- Seagrass



US Army Corps of Engineers



Atlantic Coastal Fish Habitat Partnership



Grassy Flats Restoration Methods

- Place approx. 50,000 cu yards of sand over 12.8 acres of muck with sand shooter
- Place 5,000 tons of limestone to stabilize sediments
- Plant 2,900 red mangroves (volunteers)
- Plant 25,000 plugs of smooth cordgrass (volunteers)
- Scheduled to begin Fall 2013/Winter 2014



Grassy Flats Benefits

- 19.83 acres seagrass habitat (restored and enhanced)
- 1.74 acres of tidal marsh, tidal flat and mangroves
- 0.57 acre oyster reef
- Water quality improvements (muck capping, vegetation, oysters)
- Species to benefit include fish & birds and federally listed Johnson's seagrass & manatees
- Increased shoreline resilience to climate change



Fringing wetlands

