Florida Ecosystem Impacts

Conservation in Florida: Challenges and Opportunities

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South Florida Ecological Services, U.S. Fish and Wildlife Service

Outline of Presentation

I. Landscape Conservation Cooperatives

II. Threats, SLR and urbanization

III. Areas in Florida:

   I. Big Bend area

   II. Everglades/SW Florida

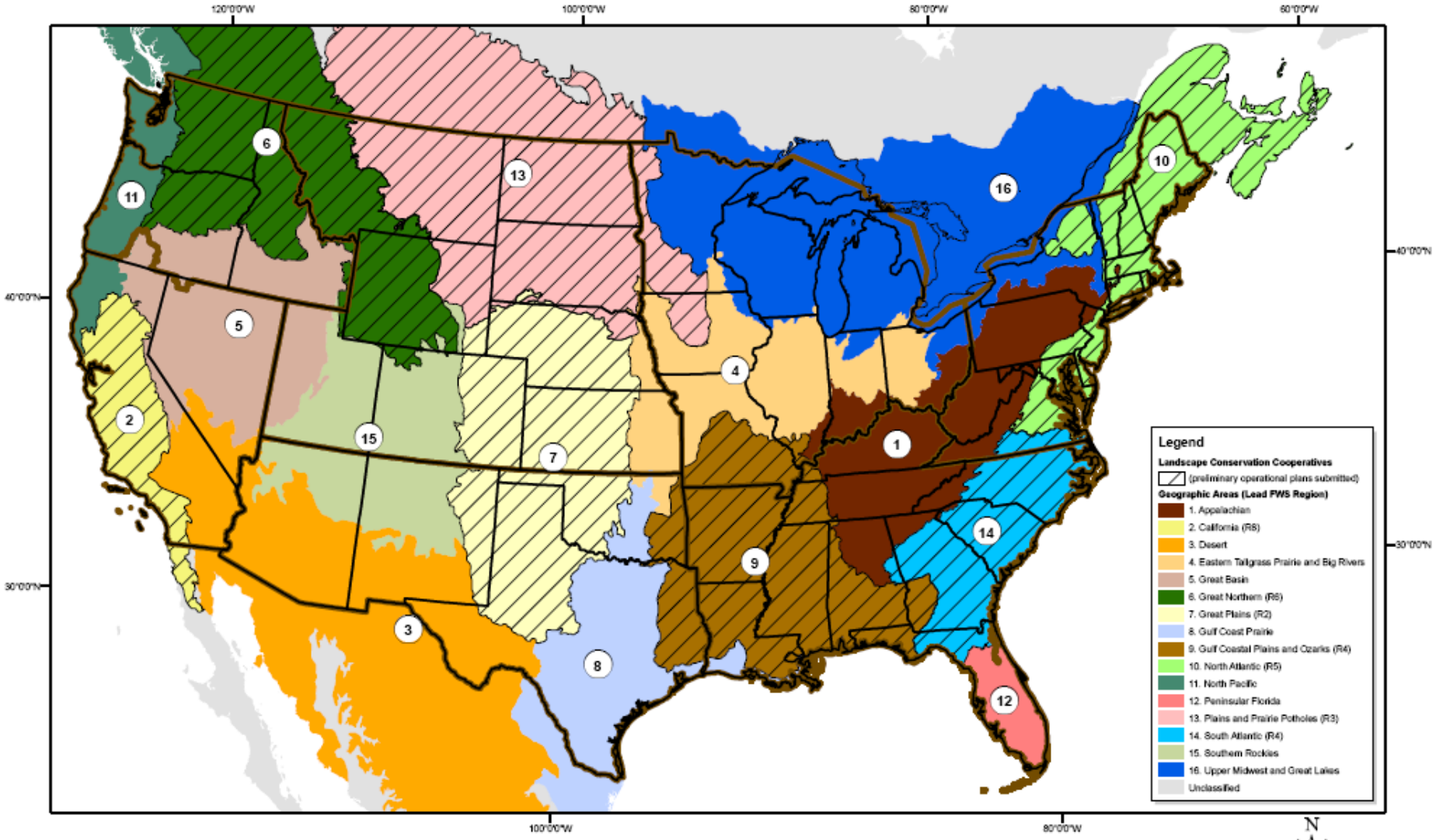
   III. Florida Keys

IV. Conservation/adaptation

*** The opinions expressed herein do not necessarily represent those of USFWS or DOI**

U.S. Department of the Interior

Landscape Conservation Cooperatives - Interim Geographic Framework



Produced by FWS, IRTM, Denver, CO
Map Date: 01222010

Albers Equal Area Conic
NAD83

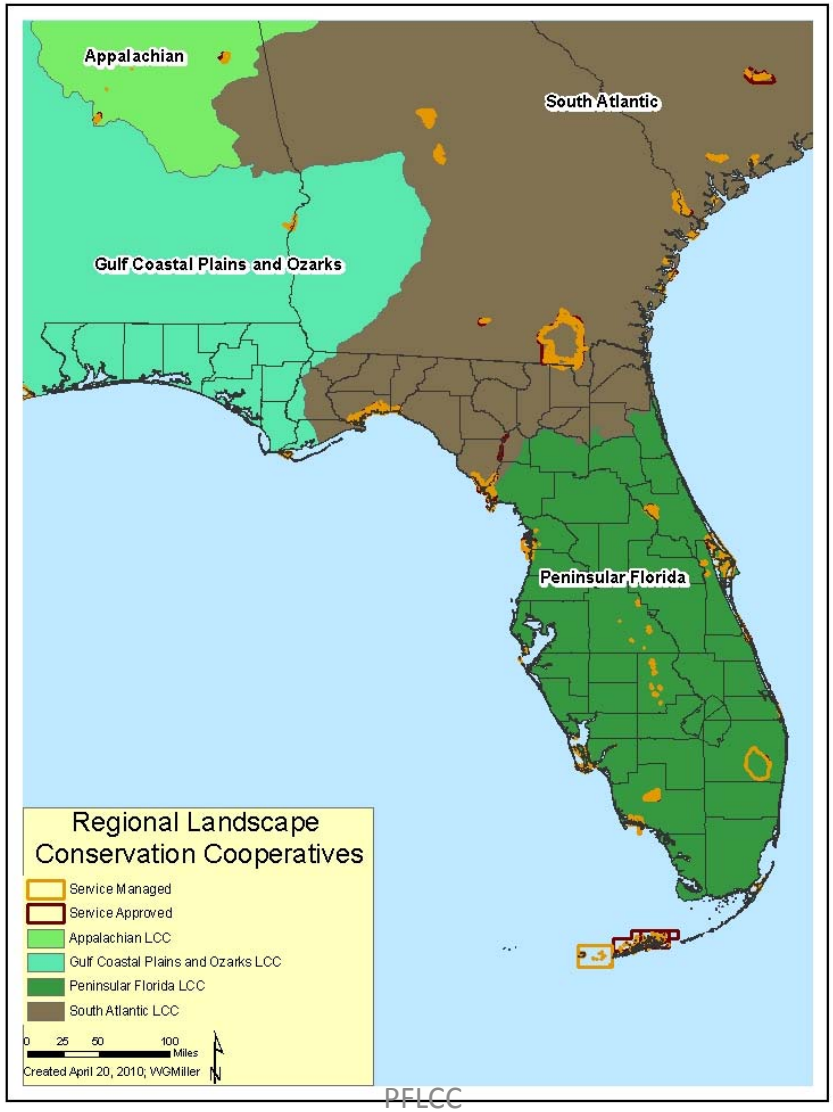
From Sally Jewell on Earth Day:

This isn't a pie-in-the-sky idea. We need look no further than the greater sage-grouse conservation effort to see what's possible when people work together across a landscape....

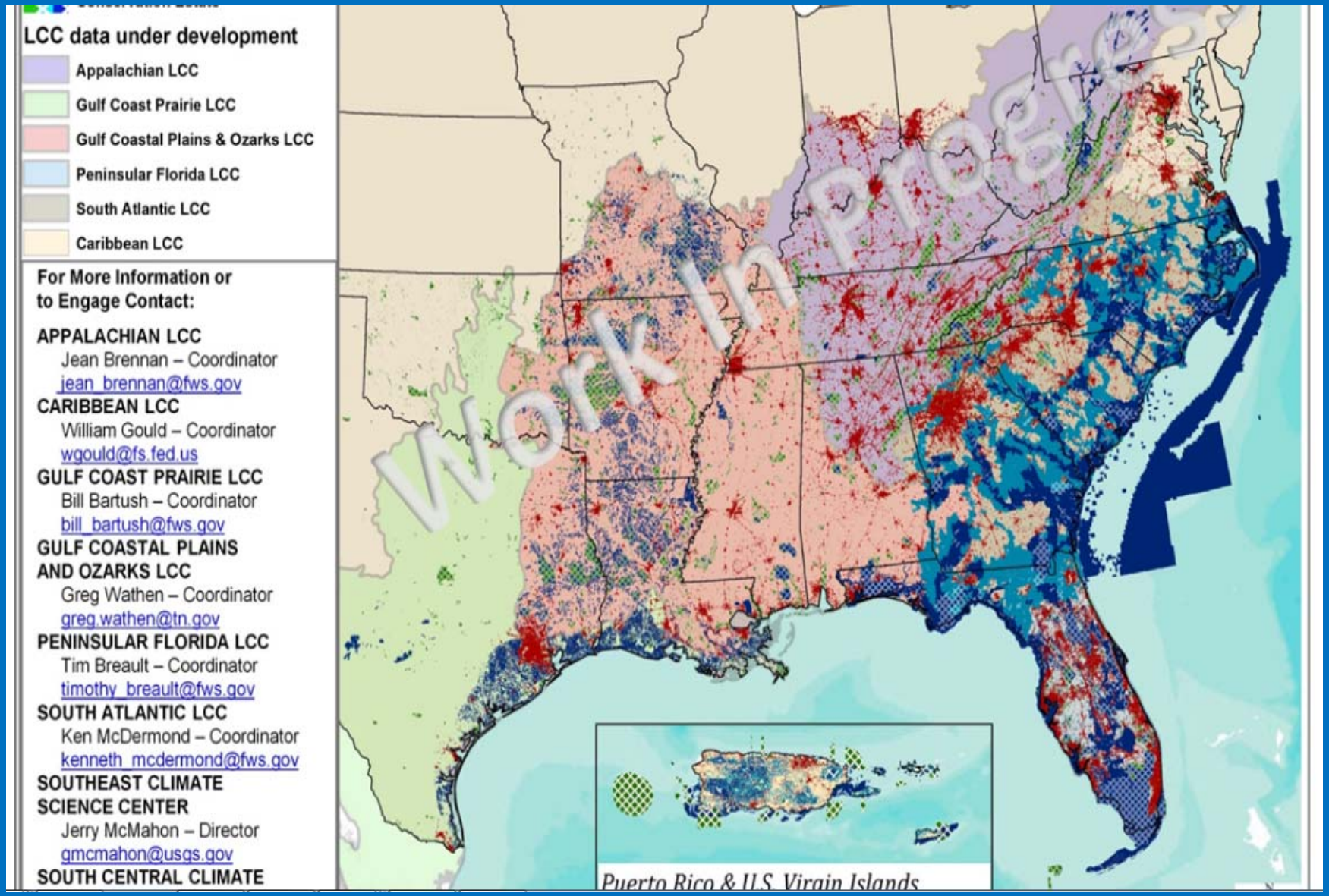
I'm not suggesting that this was an easy task. It wasn't, by any stretch of the imagination. But the epic collaboration did result in a thoughtful, science-based roadmap for a healthy ecosystem and sustainable development across a landscape.

That's the model for the future of conservation. That big-picture, roll-up-your-sleeves, get-input-from-all-stakeholders kind of planning is how land management agencies should orient themselves in the 21st century."

Florida and LCC Structure

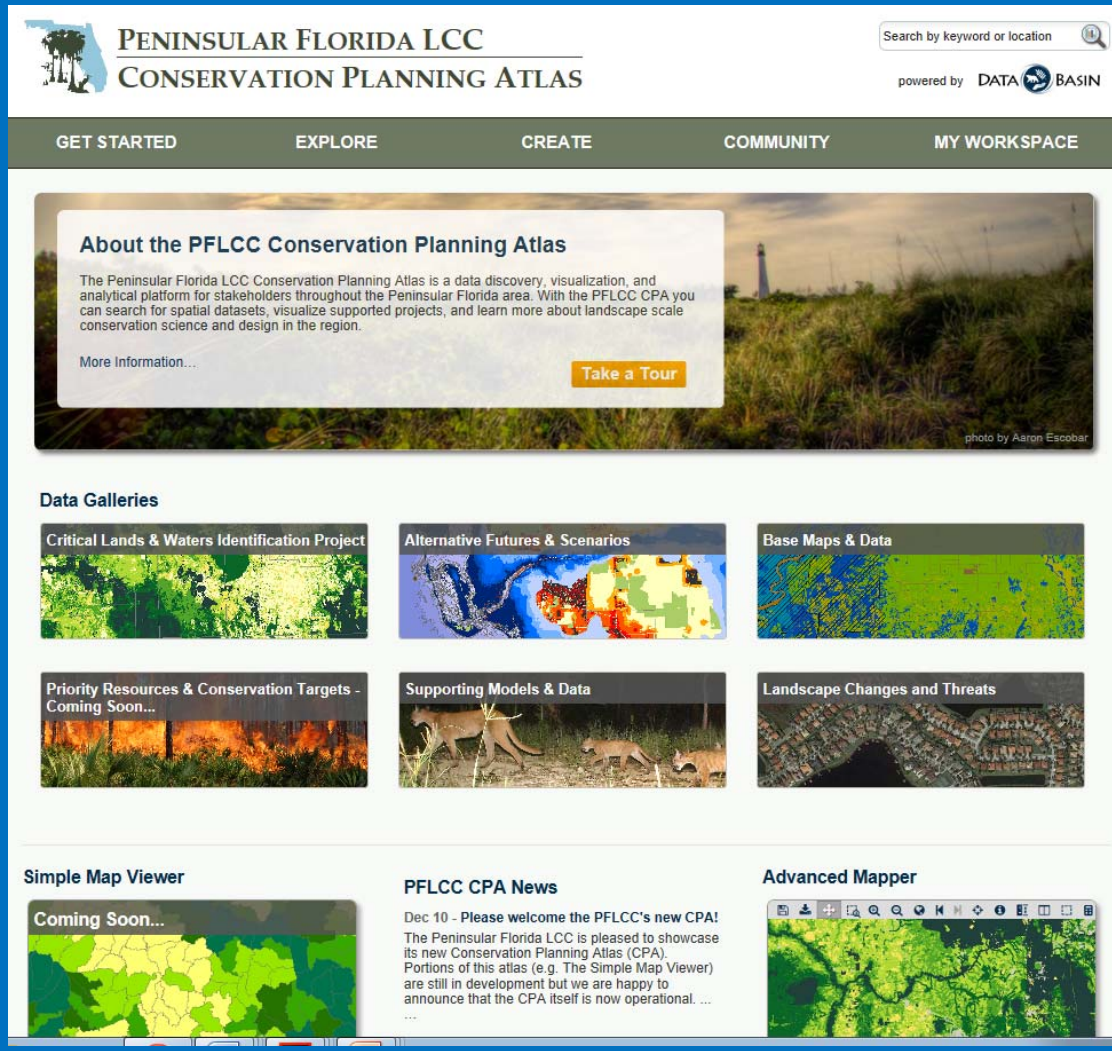


SE Conservation Adaptation Strategy



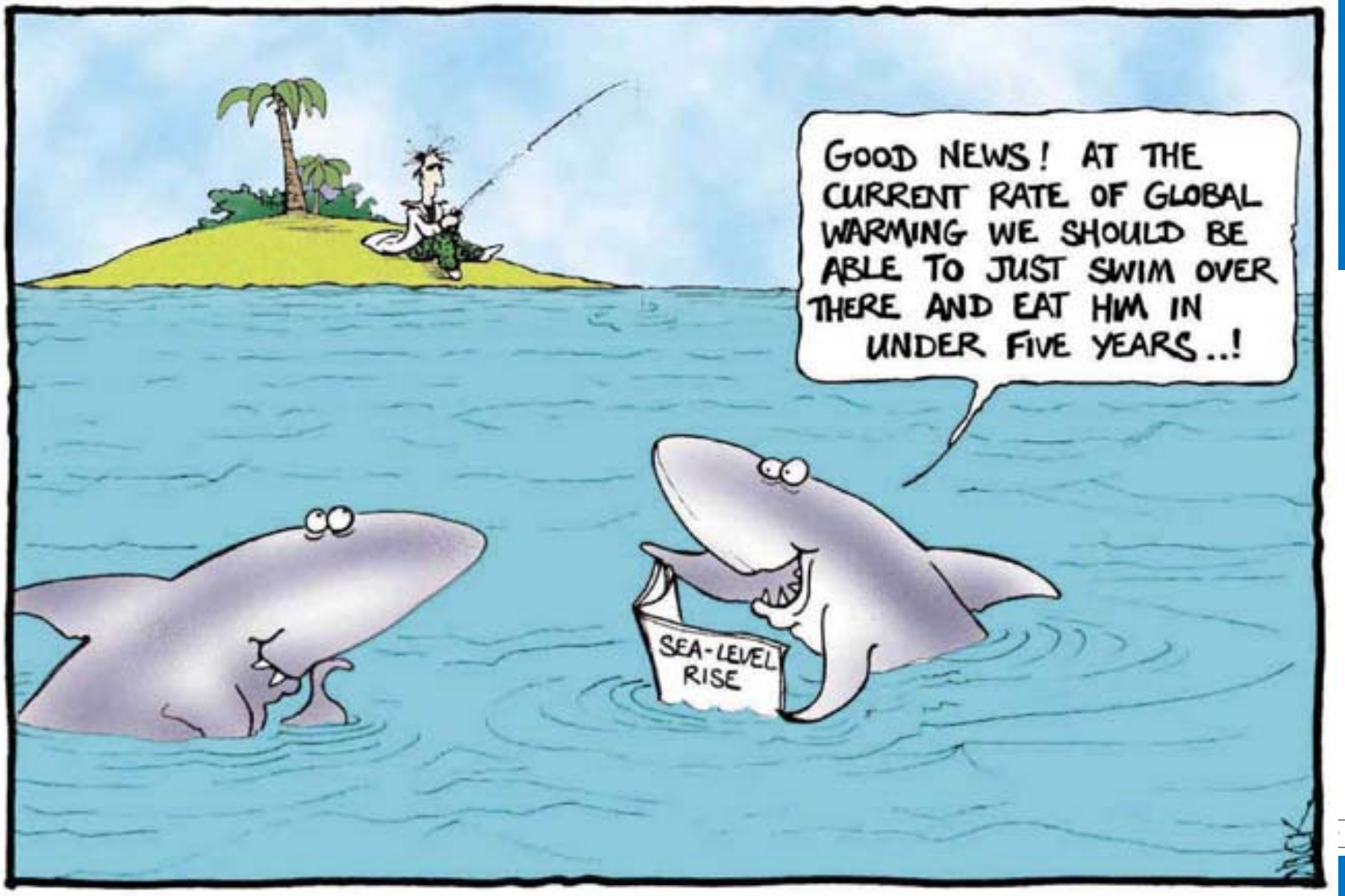
PFLCC Conservation Planning ATLSS

- HUC 12
- Simple and complex viewers
- GIS data available
- Most PFLCC science products
- All SE LCCs have a CPA



http://pflcc.databasin.org/

Rising Seas around Florida

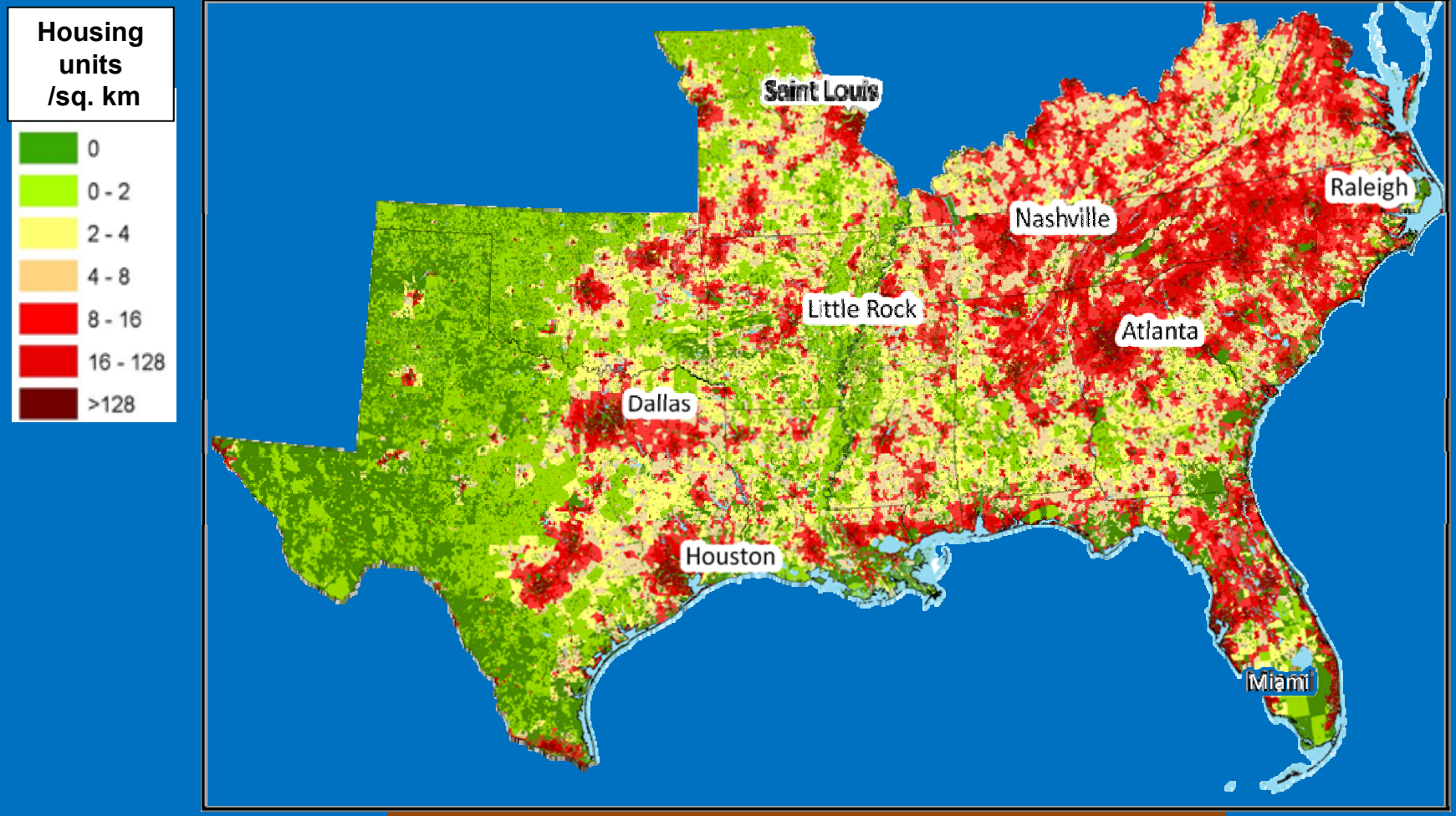


US Population (2000): 304 M

Projected population: 1 Billion by 2100

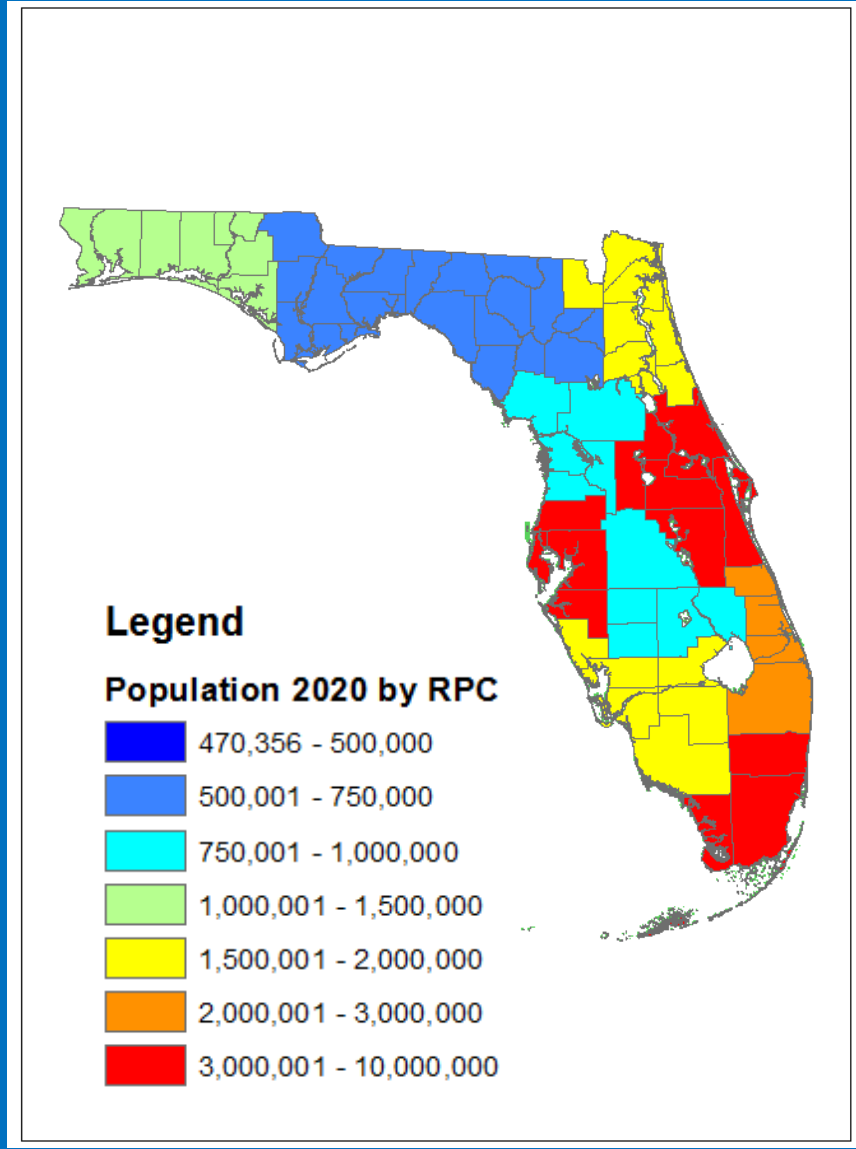
Urbanization, loss/conversion of Ag-land/Open spaces

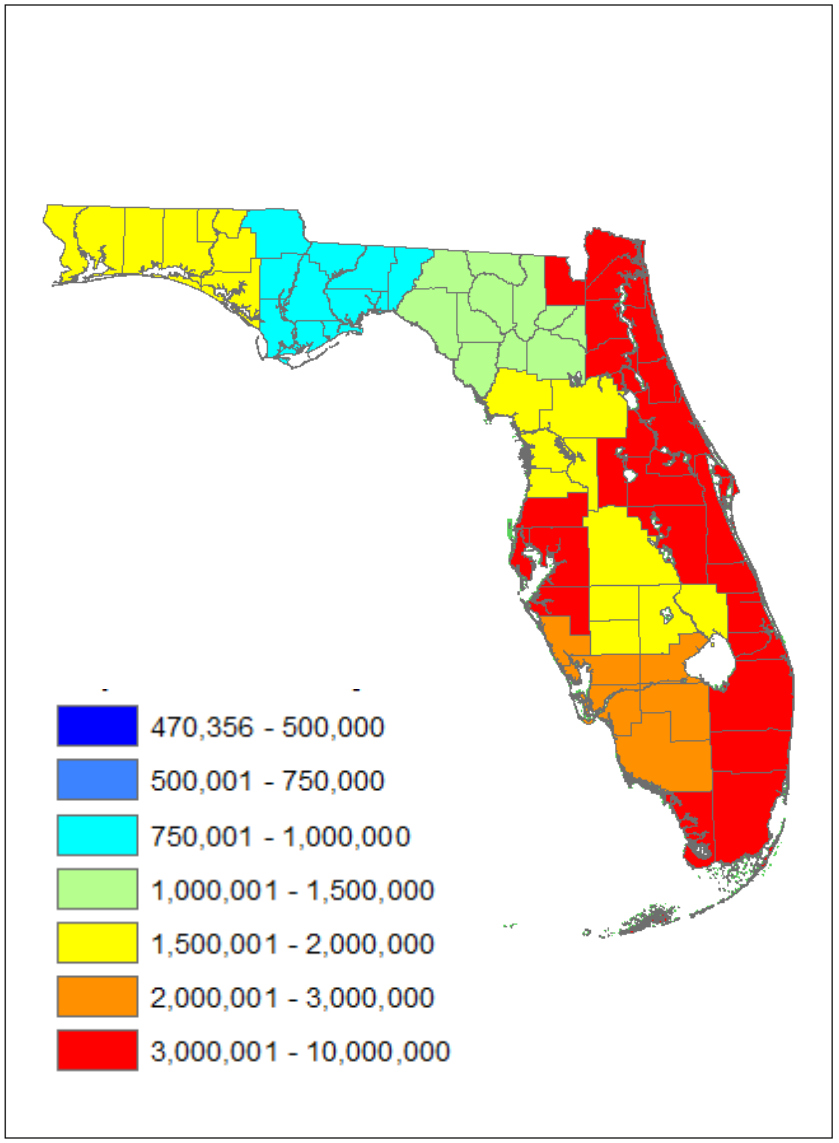
2030



Source: A. Pidgeon UWI. http://silvis.forest.wisc.edu/old/Library/HousingData.php

Total Population 2020 and 2060

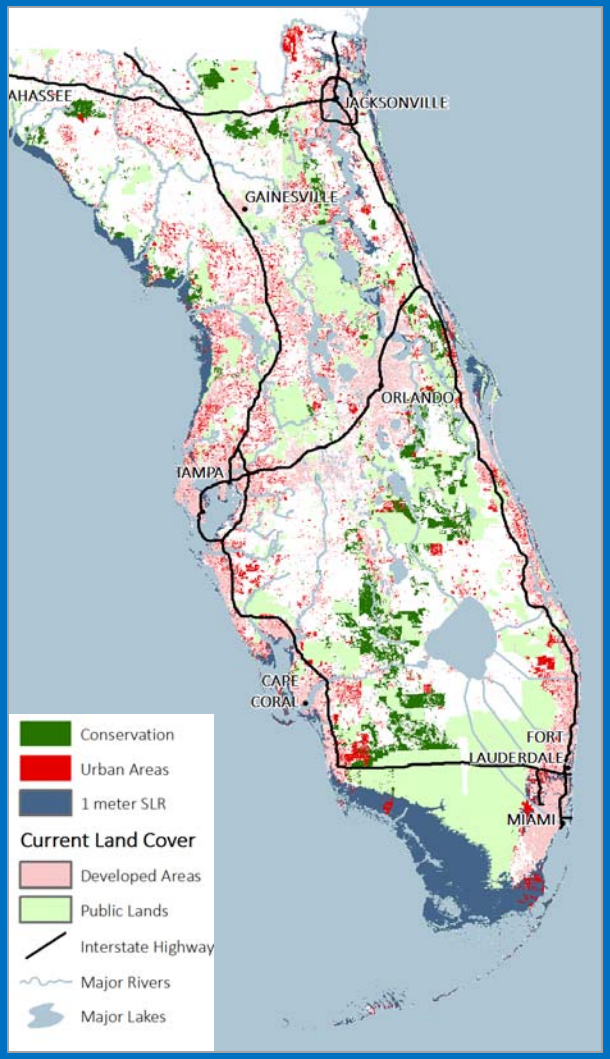




SCENARIO 1

50% Fee Simple 50% Easement +
Florida Forever targets

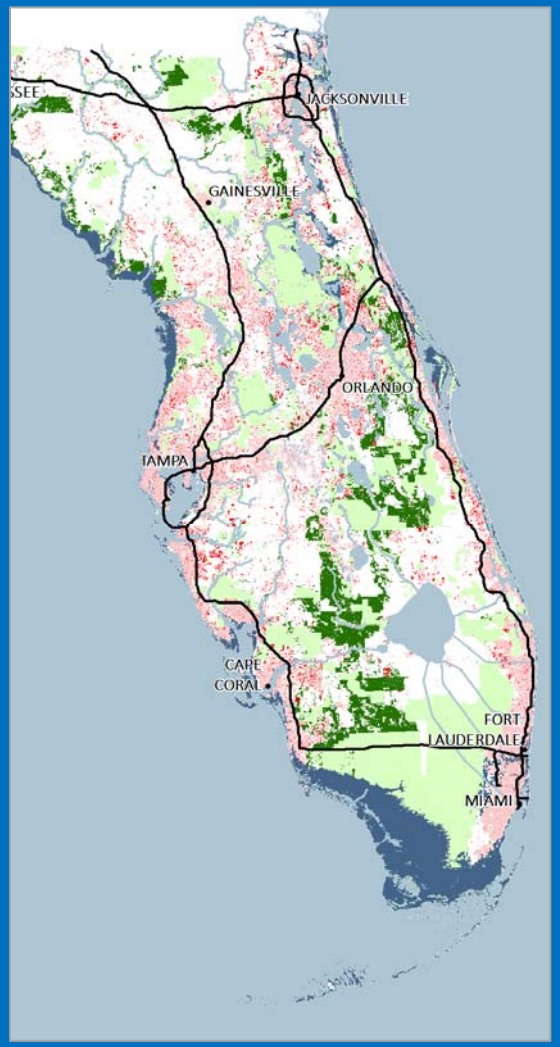
Low density greenfield development
Existing distribution of density



SCENARIO 2

10% Fee Simple | 90% Easement +
Florida Forever targets

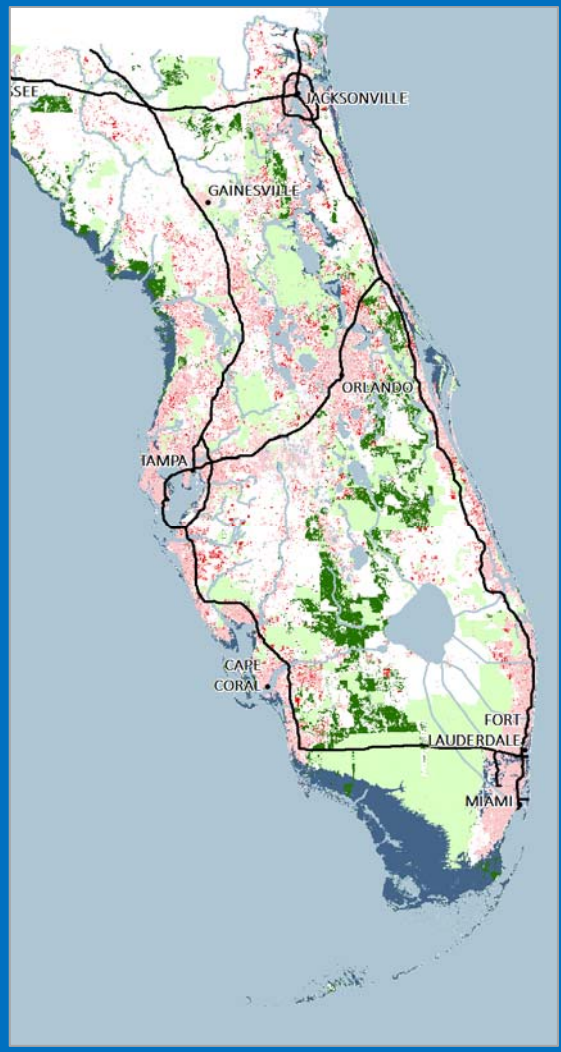
Green infrastructure+
Redevelopment + Densification



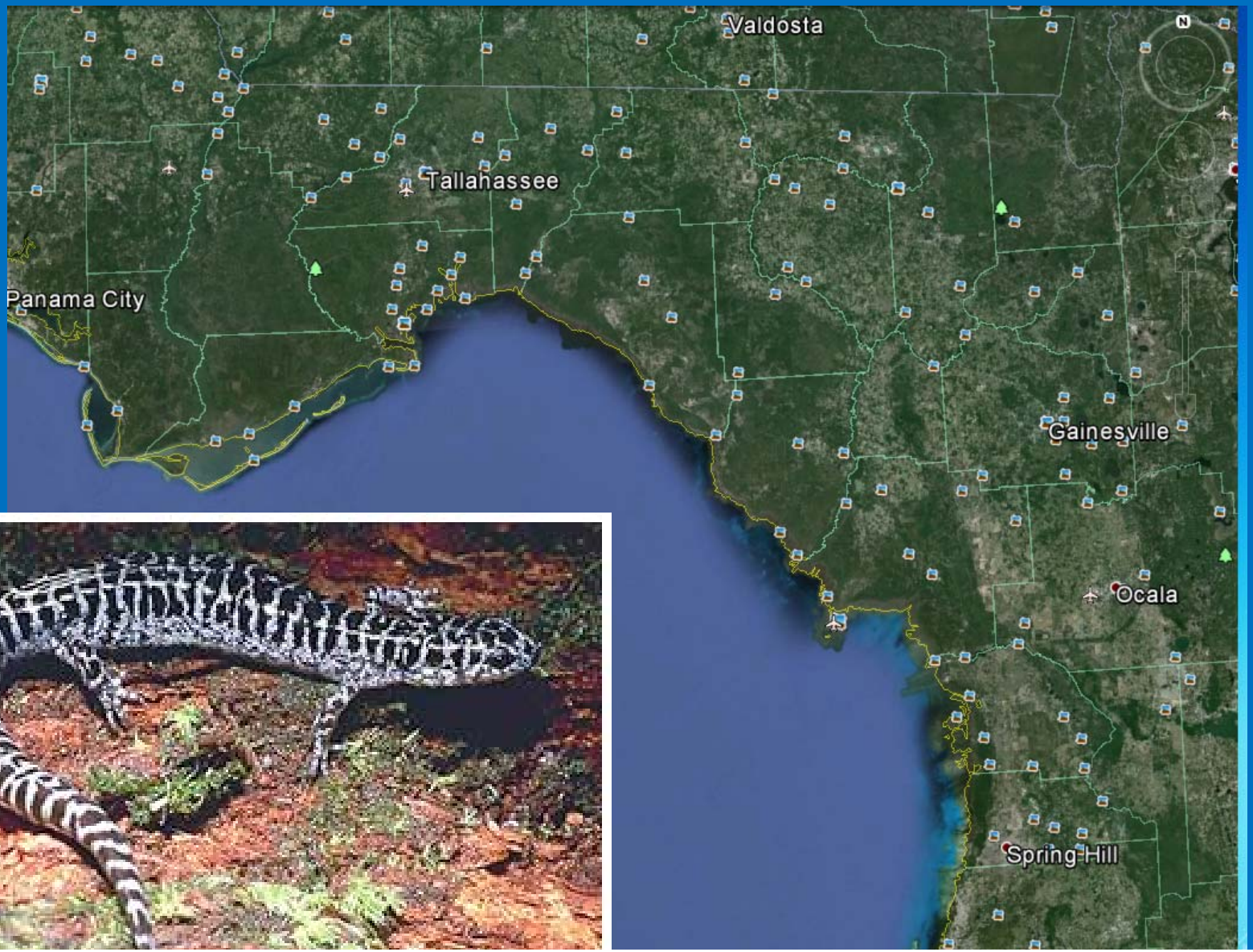
SCENARIO 3

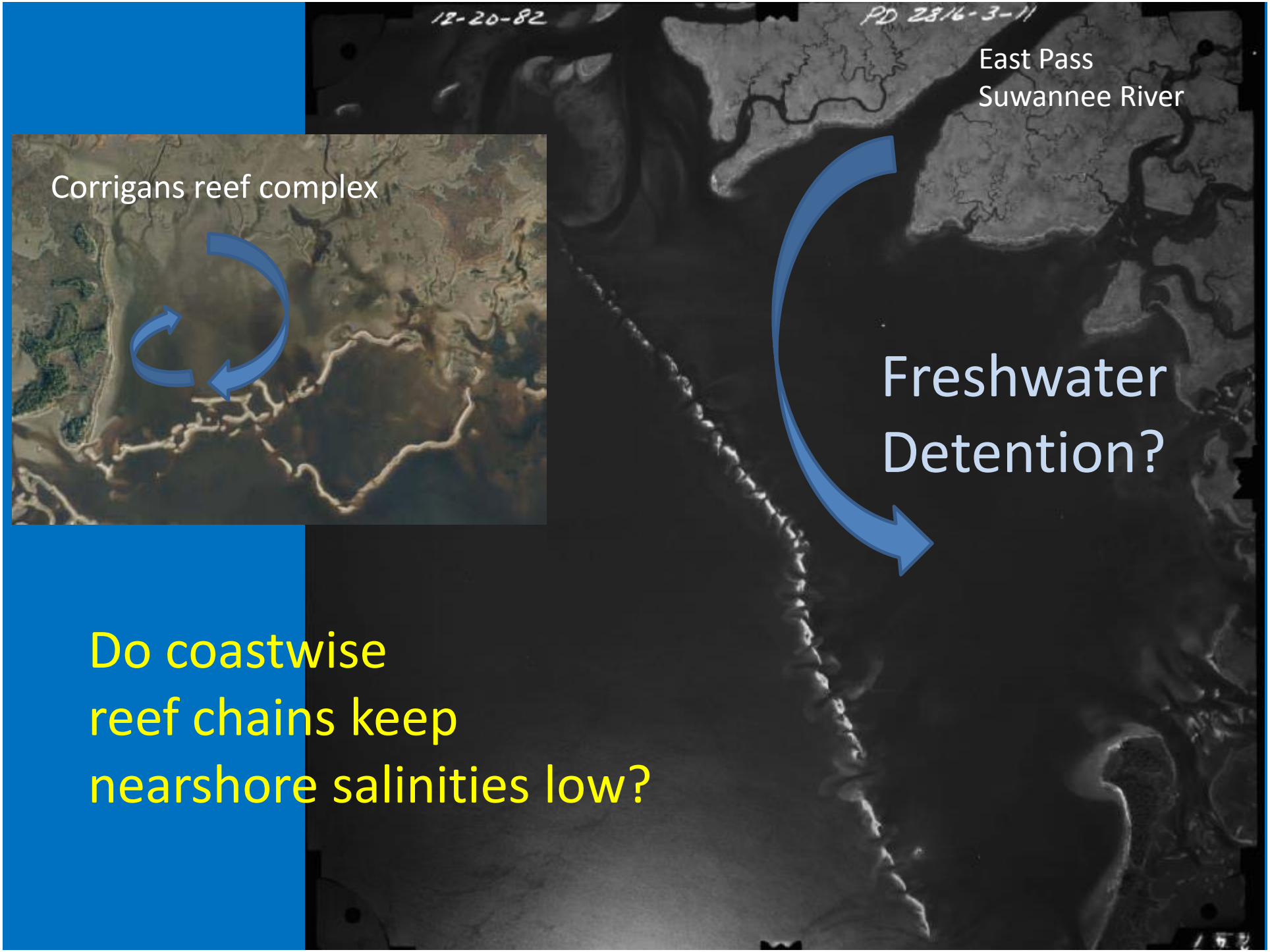
10% Fee Simple | 90% Easement +
P1-CLIP 3.0

Green infrastructure+
Redevelopment + Densification



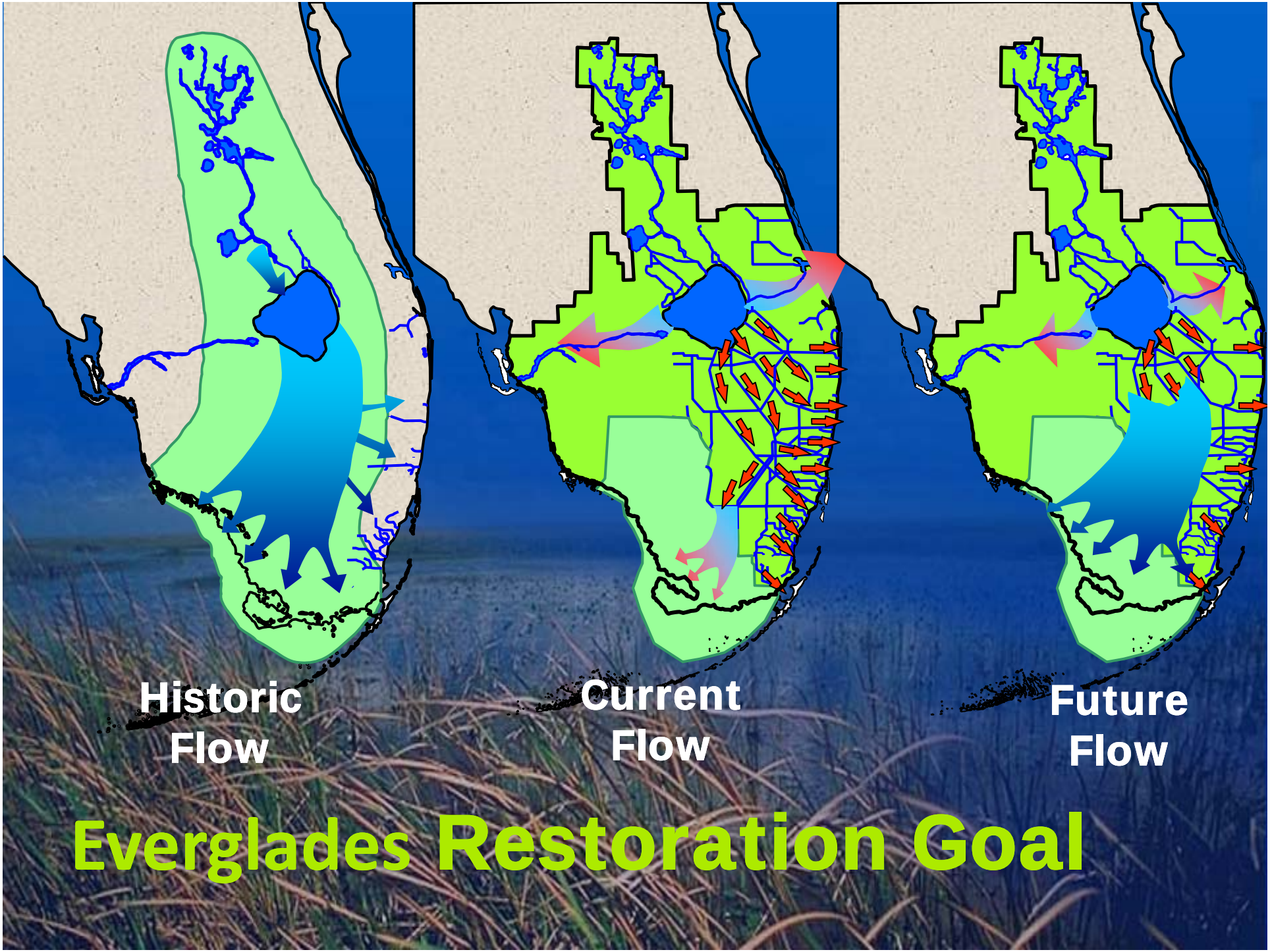
Big Bend, Florida





Do coastwise reef chains keep nearshore salinities low?


2010
Lone Cabbage Reef


Historic
Flow
Current
Flow
Future
Flow
Everglades Restoration Goal

SOUTHERN FLORIDA WETLAND

EIGHTH IN A SERIES

NATURE OF AMERICA

Crocodile Lake

(Not a crocodile)

Everglades N.P.

Ding Darling

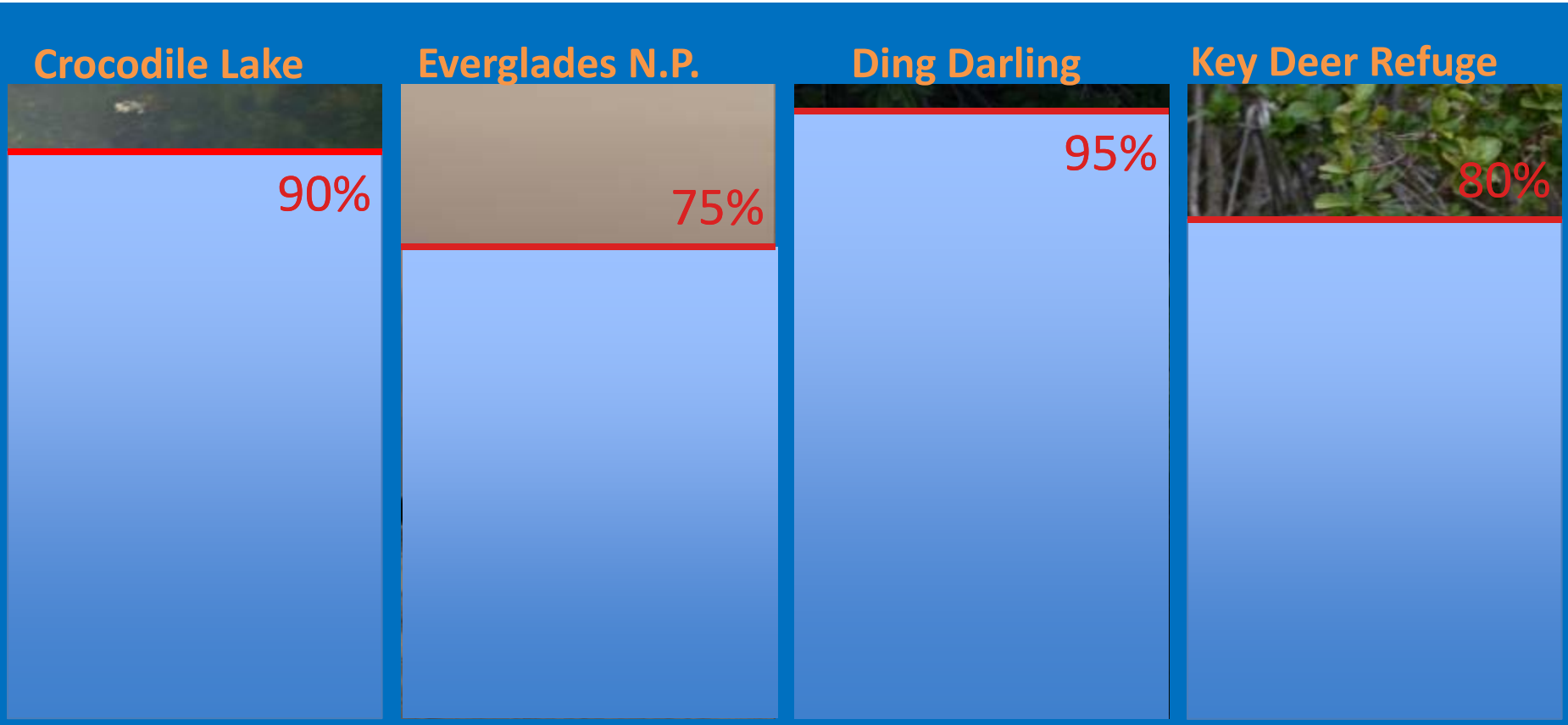
Key Deer Refuge

Sea level rise threatens critical South Florida coastal refuges.

How will 1 meter SLR affect key refuges?

How much land will be lost with varying degrees of SLR?

What other damage can we expect?



	Sea Level Rise			
Federal Reserve	**3.6”**	**18.4”**	**39.1”**	**113”**
Caloosahatchee National Wildlife Refuge	40%	73%	**100%**	100%
Island Bay National Wildlife Refuge	2.5%	**88%**	93%	100%
Pine Island National Wildlife Refuge	5.5%	**77%**	82%	87%
Ten Thousand Islands NWR	8.1%	**77%**	96%	100%
Hobe Sound National Wildlife Refuge	6.5%	46%	**70%**	83%

Landscape Conservation Design Framework

Direct Drivers (Future Scenarios)

- Climate Change Vulnerability- incorporated as impacts to habitat
- Human Growth Impact Areas- including impact buffers
- Direct Loss of Habitat- from sea level rise or other applicable factors

Indirect Drivers

- Management Directives
- Conservation Partner Opportunities
- Use of Directed Funding/Programs
- Habitat Improvement- (will be incorporated as a direct driver in scenarios if possible and available, e.g. fire regimes, water management)

Conservation Priorities

- Imperiled Species /'Expert Selection' Species
- Impacted Habitats
- Underrepresented Habitats
- Priority Linkages
- Network Criteria
- Ecosystems?

Current Plans and Management Actions

- All applicable current management and conservation plan directives and goals will be incorporated into the landscape conservation designs for the focal sites

Landscape Conservation Design and Planning

MARine Estuarine goal Setting (MARES) for South Florida

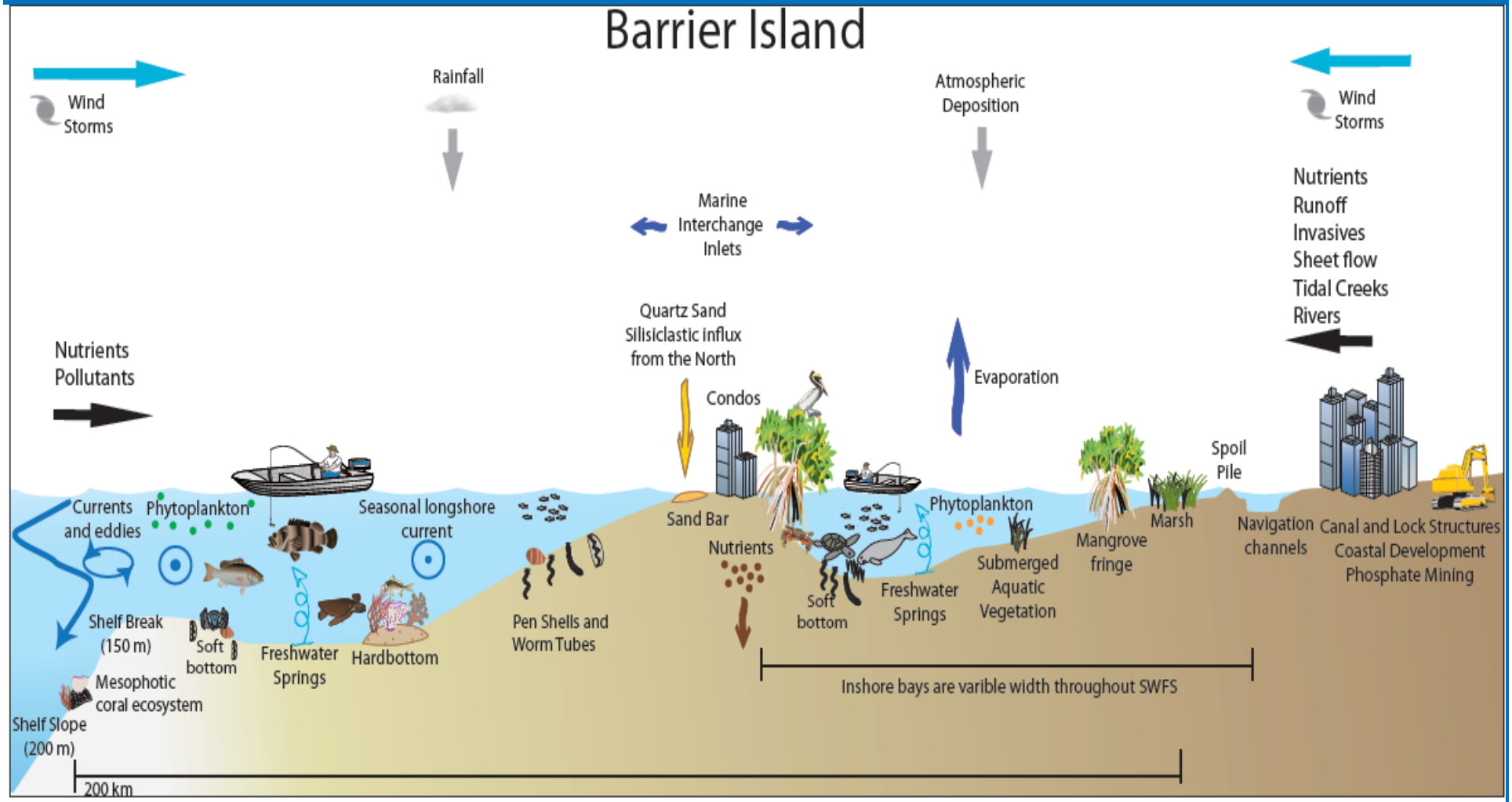
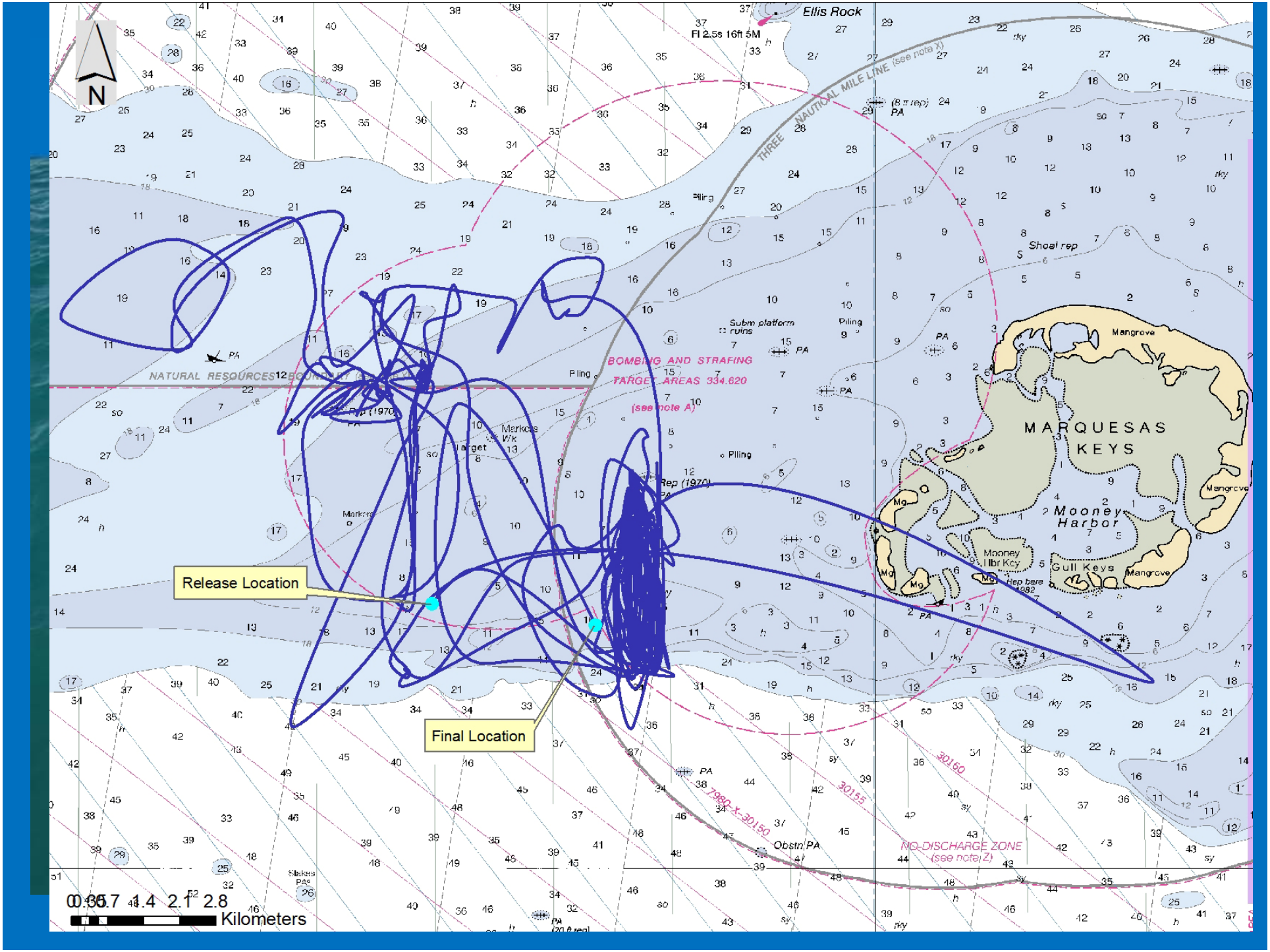


Figure 3a. Conceptual diagram of the Southwest Florida Shelf Barrier Islands Province ecosystem, processes operating upon it, and factors affecting its condition.

Florida Keys Species


Release Location
Final Location
MARQUESAS KEYS
Mooney Harbor
Gull Keys
Ellis Rock
Fl 2.5s 16ft 5M
BOMBING AND STRAFING
TARGET AREAS 334.620
(see note A)
NATURAL RESOURCES
NAUTICAL MILE LINE (see note X)
THREE
Shoal rep
Subm platform ruins
Piling
Mangrove
Obstn PA
NO-DISCHARGE ZONE
(see note Z)
7980-X-30150
30150
30155
0.35 0.7 1.4 2.1 2.8
Kilometers

Butterflies

Zestos skipper

Rockland grass skipper

Pine Rockland

PROPOSED RULE TO LIST

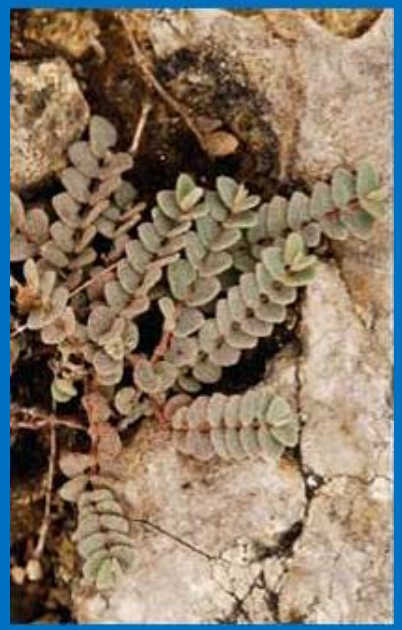
FOUR FLORIDA KEYS PLANTS

And Designate Critical Habitat

Sand Flax

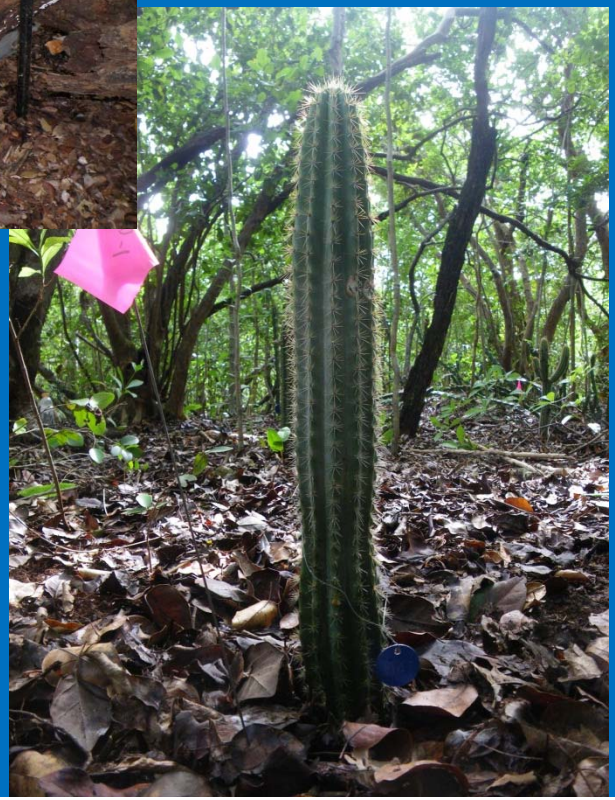
Big Pine Partridge Pea

Wedge Spurge



Blodgett's Silverbush

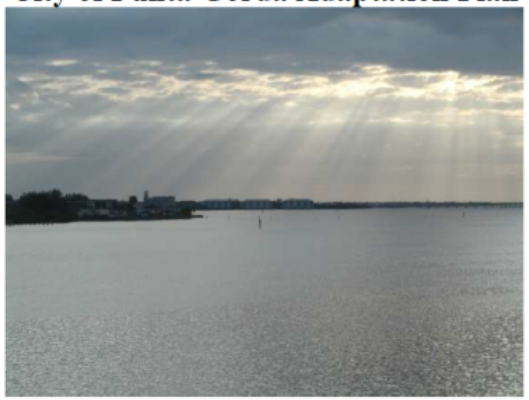
Keys tree cactus adaptation planning



Hopeful solutions

Amendment 1

Type Constitutional amendment
Origin Citizens
Topic Environment
Status Approved



City of Punta Gorda Adaptation Plan

Southwest Florida Regional Planning Council
Charlotte Harbor National Estuary Program
Technical Report 09-4
11/18/2009
James W. Beever III, Whitney Gray, Daniel Trescott, Dan Cobb, Jason Utley, David Hutchinson,

Priority Agenda

Enhancing the Climate Resilience *of* America's Natural Resources

COUNCIL ON CLIMATE PREPAREDNESS AND RESILIENCE

Email Steve_Traxler@fws.gov

Crocodile Lake

(Not a crocodile)

Everglades N.P.

Ding Darling

Key Deer Refuge

Sea level rise threatens critical South Florida coastal refuges.

How will 1 meter SLR affect key refuges?

How much land will be lost with varying degrees of SLR?

What other damage can we expect?

Landscape Change

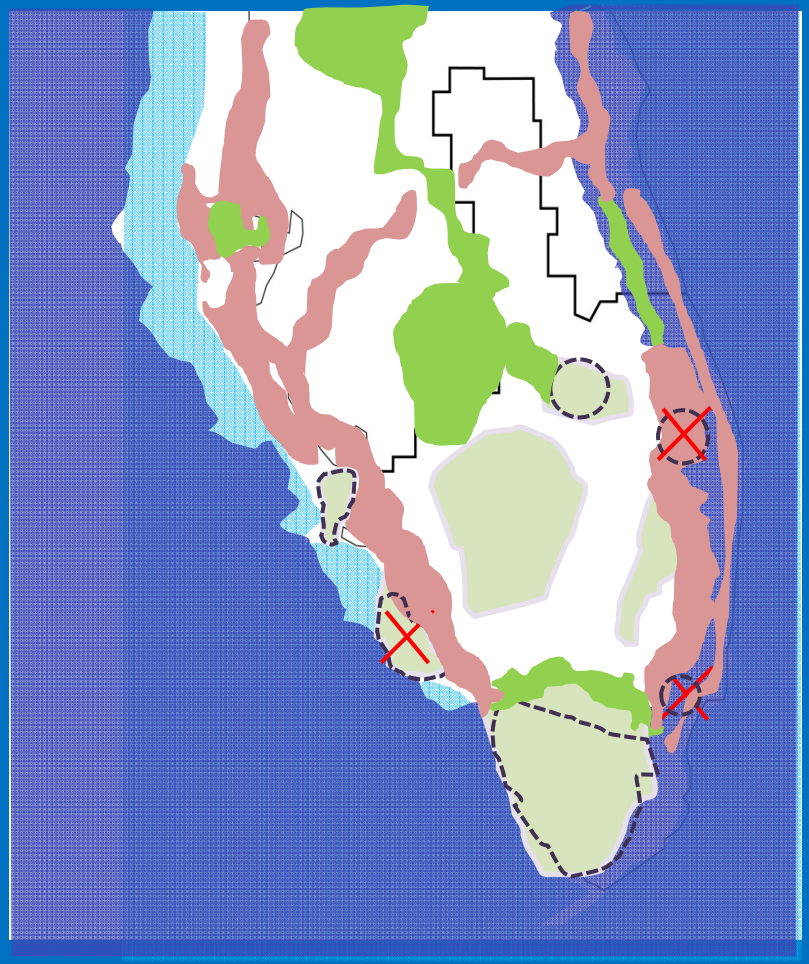
-under climate change and urbanization-

Current urban areas

Strategic Ecological Areas

Existing DOI Conservation Areas

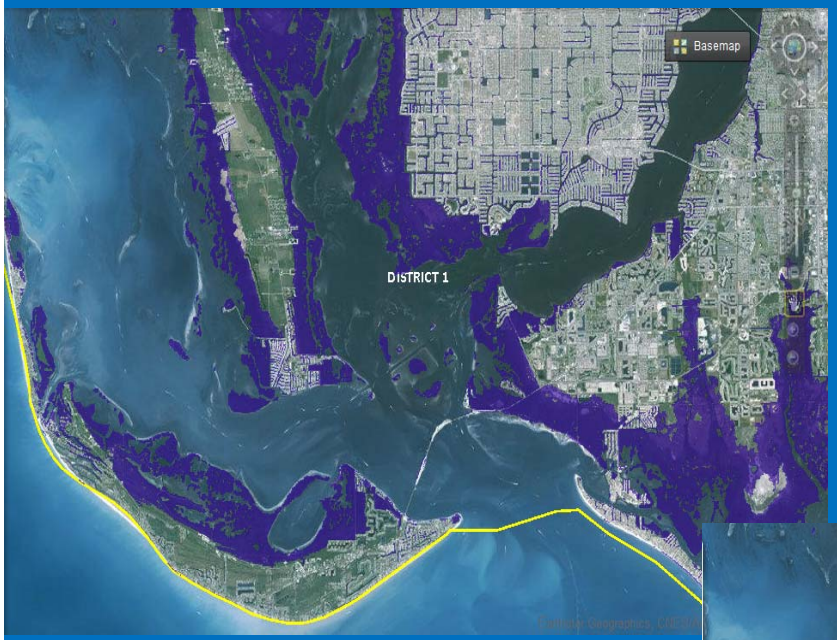
Future protected areas



Vargas-Moreno, J.C. 2009. Climate Change and Landscape Planning. MIT

Anticipating movement enables increased future protection and Good urban planning is a Key to conservation

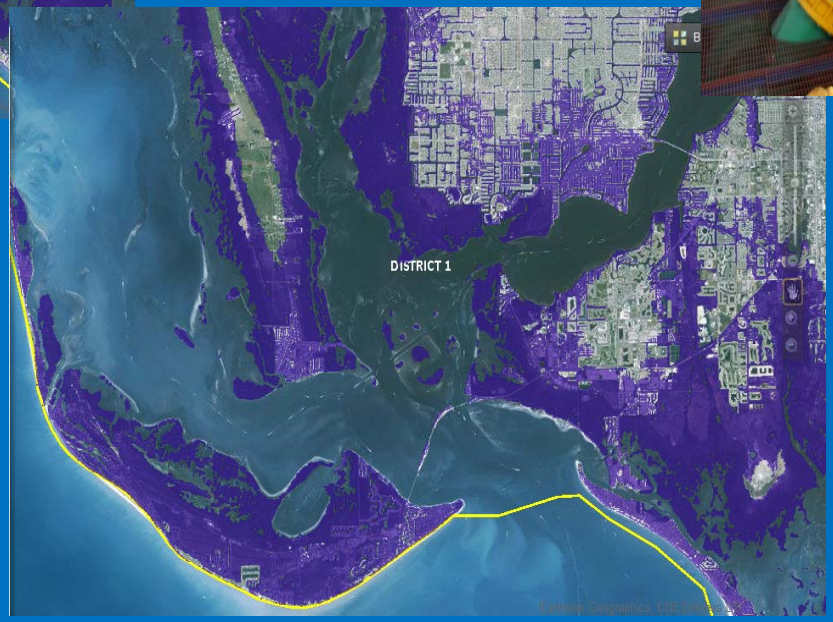
High SLR 2060

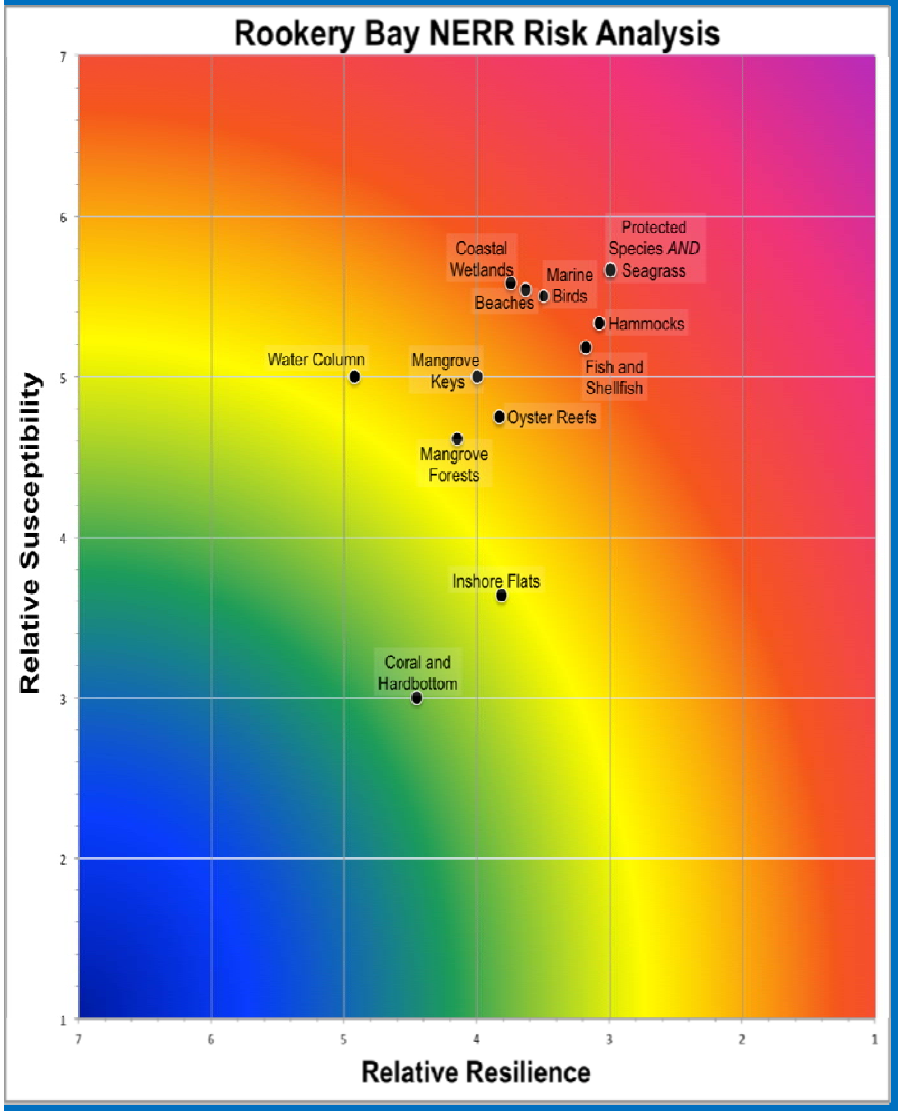


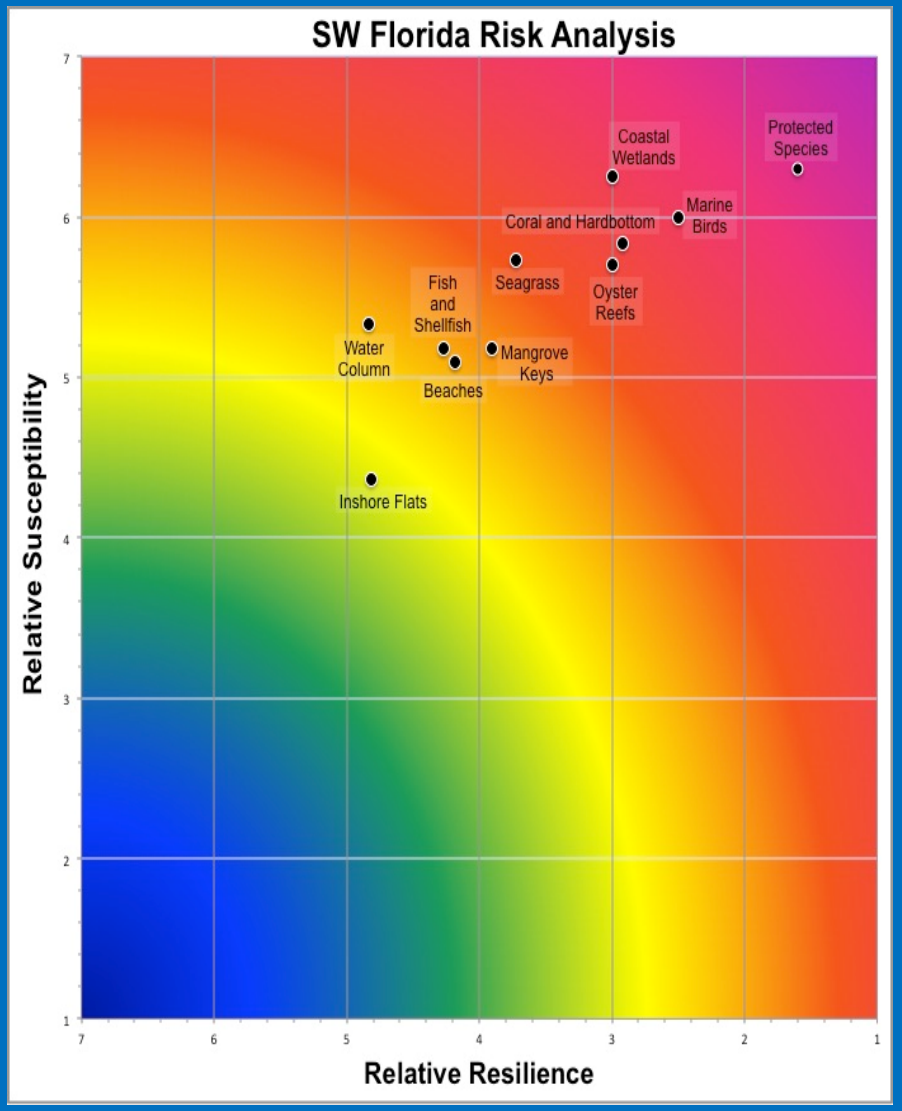
Florida Sea Level Scenario Sketch Planning Tool
District 1

http://sls.geoplan.ufl.edu/

High SLR 2100




Rookery Bay NERR Risk Analysis
Relative Susceptibility
Relative Resilience
7
6
5
4
3
2
1
Coastal Wetlands
Protected Species AND Seagrass
Marine Birds
Beaches
Hammocks
Water Column
Mangrove Keys
Fish and Shellfish
Oyster Reefs
Mangrove Forests
Inshore Flats
Coral and Hardbottom


SW Florida Risk Analysis
Relative Susceptibility
Relative Resilience
7
6
5
4
3
2
1
Coastal Wetlands
Protected Species
Coral and Hardbottom
Marine Birds
Seagrass
Oyster Reefs
Fish and Shellfish
Water Column
Mangrove Keys
Beaches
Inshore Flats

"We must act now, as if the future of fish and wildlife and people hangs in the balance — for indeed, all indications are that it does."

– FWS Climate Change Strategic Plan "Rising to the Urgent Challenge," 2010