LONG-TERM PLANNING FOR COASTAL WETLAND HABITAT RESTORATION ALONG THE GULF COAST REGION Levin College of Law UNIVERSITY of FLORIDA

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I. Context and Overview

Local sea-level is rising; temperatures are increasing; the number of cold days is decreasing; and hurricanes are intensifying.

Rising sea level and storm events are exacerbating coastal sediment erosion.

Accelerating sea-level rise and erosion are in contention with increasing coastal populations and property demands.

Shifts in regional temperature regimes are responsible for the replacement of Spartina salt marsh by mangroves.

Planned restoration efforts must account for the short-term and long-term ecological characteristics of coastal plant ecosystems.

Current mangrove management policy is restrictive due to protection by State law.

A coastal wetland management plan designed to combat erosion against climate change requires a muti-faceted approach.

Florida's Big Bend

Study Area

Figure 1. Modified from Williams et al., 1999. Map of the Big Bend Region of Florida. Locales mentioned in the text are denoted with a white star. Inset is the state of Florida, including the Gulf Coast, with the Big Bend highlighted in

II. Key Points

Figure 2. Walsh et

al., 2014. Overall

increases in the

frost-free season

regions of the U.S.

season length is the

freezing temperature

(0°C) in Spring and

The frost-free

number of days

between the last

the first freezing

occurrence in Fall.

Here, changes are

temperature

length in six different

- Coastal wetland vegetation plays a critical role in stabilizing and maintaining usable shoreline property.
- Mangroves will become more abundant in the Big Bend region. Freeze events may result in large die-offs.
- 3. Mangroves and Spartina offer multiple ecosystem services that benefit coastal communities.
- 4. Mangroves are protected by state law; landowners cannot trim or cut them down without a permit from the state.

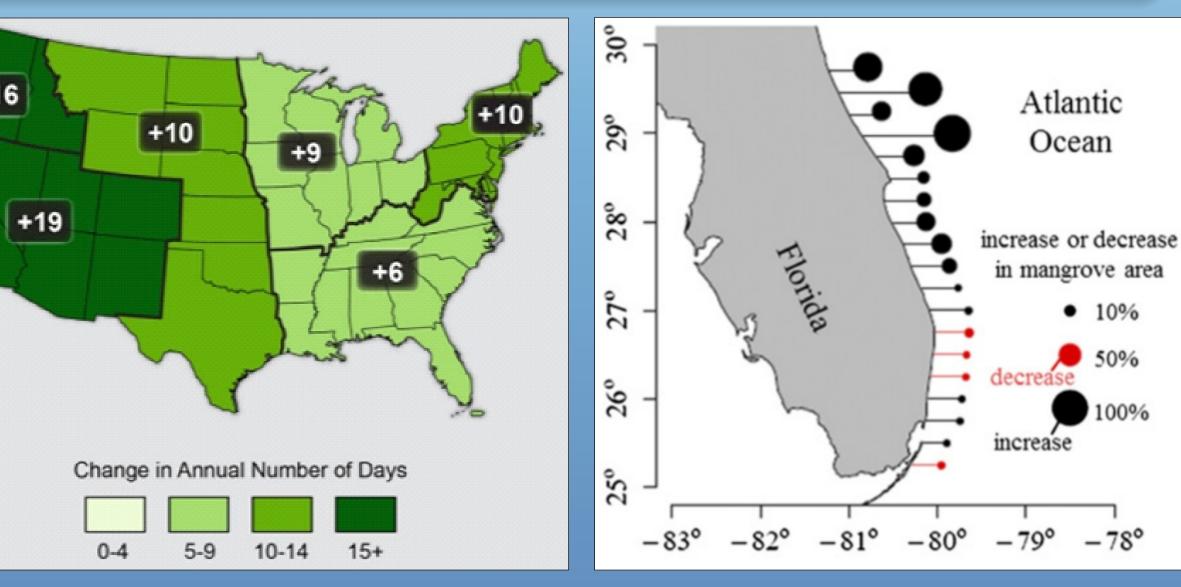


Figure 3. Cavanaugh et al. 2014. Map showing increase (black) or decrease (red) in mangrove area for each 0.25° latitudinal band.

III. Spartina salt marsh or mangrove forest: Which is better for restoration?

Spartina

for 1991-2012 relative to 1901-1960. Increases in the frost-free

season length are critical for freeze-sensitive plant species, like

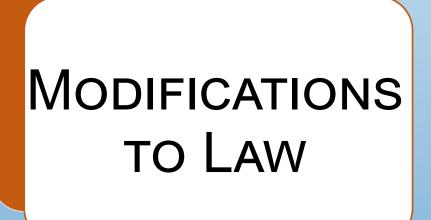
- Fast sediment accretion
- Quickly establishes and performs ecosystem services
- Freeze tolerant

mangroves, to establish and grow.

 Supports a wide range of fish and wildlife

- Long-term sediment stabilization
- Superior storm protection
- Strong carbon-sequestration tool
- Supports a wide range of fish and wildlife

EDUCATION AND OUTREACH



SHORT TERM: SPARTINA

LOCALIZED MANAGEMENT

SPECIALIZED SERVICE MANAGEMENT

LONG TERM: RESEARCH

Figure 4. Policy recommendations schematic. We propose a multi-faceted approach to wetland restoration management consiting of: continuing education and community outreach (blue), short-term Spartina restoration (dark grey); modifying the existing mangrove law (orange) and conducting long-term research into mangrove-forest die-offs (light grey).

IV. Policy Recommendations

- Lead on the continued outreach and increased education to promote legal and ecologically safe trimming of mangroves with an understanding of their ecological benefits.
- 2. Modification, reinterpretation, and/or reapplication of existing mangrove law for more localized management control and specialized service management.
- 3. Short-term shoreline restoration using Spartina saltmarsh for rapid sediment stabilization.
- 4. Long-term research plan to investigate the impact of sudden mangrove forest die-offs on coastal ecosystems.