Arthur R. Marshall Loxahatchee National Wildlife Refuge Annual Science Workshop

Managing and Conserving Habitat in the Northern Everglades – Priorities, Challenges and Science Needs

Panelists:

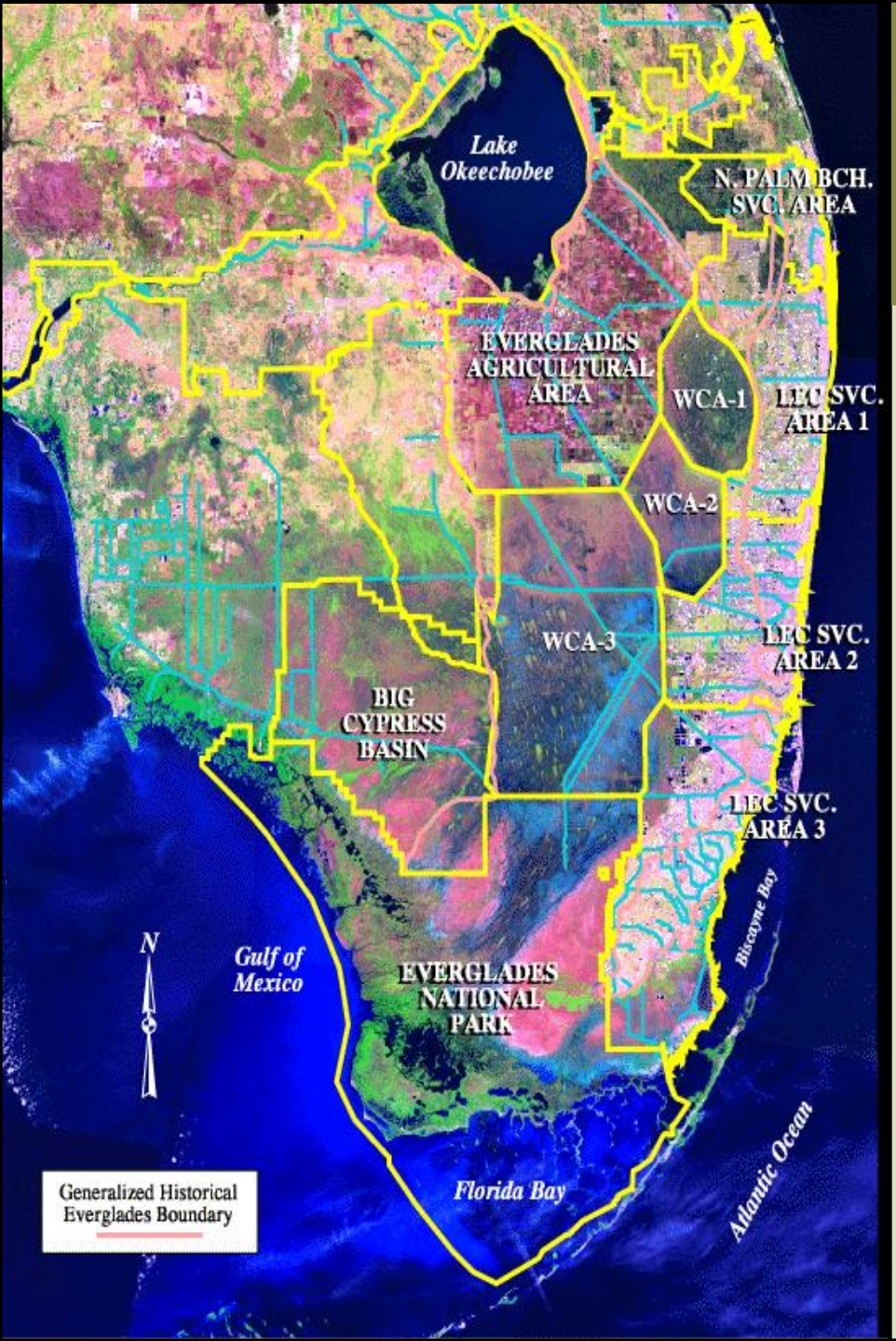
Brian Benscoter, PhD; Rebekah Gibble, PhD
LeRoy Rodgers; Donatto Surratt, PhD

Moderator:

Nick Aumen, PhD

Panel Session…..

- **Goal:**
  - ***Represent a range of perspectives in a collective discussion with wetland experts regarding ecological conservation targets, priorities, development of future desired conditions, and management strategies in the Arthur R. Marshall Loxahatchee National Wildlife Refuge.***
- **Objectives:**
  1. ***Gather expert input regarding Refuge management targets, strategies, and challenges that will be synthesized into a final report.***
  2. ***Produce list of potential priority conservation goals.***
  3. ***Produce a list of potential priority conservation targets for future development.***
  4. ***Identify major research gaps to support science-driven management.***



Arthur R. Marshall Loxahatchee National Wildlife Refuge

- Managed by USFWS
- Owned by state of Florida (SFWMD)
- Agency purpose/mission
- Multi-use
  - Wildlife Conservation
  - Water Supply
  - Flood Control

US Army Corps of Engineers ®
Jacksonville District

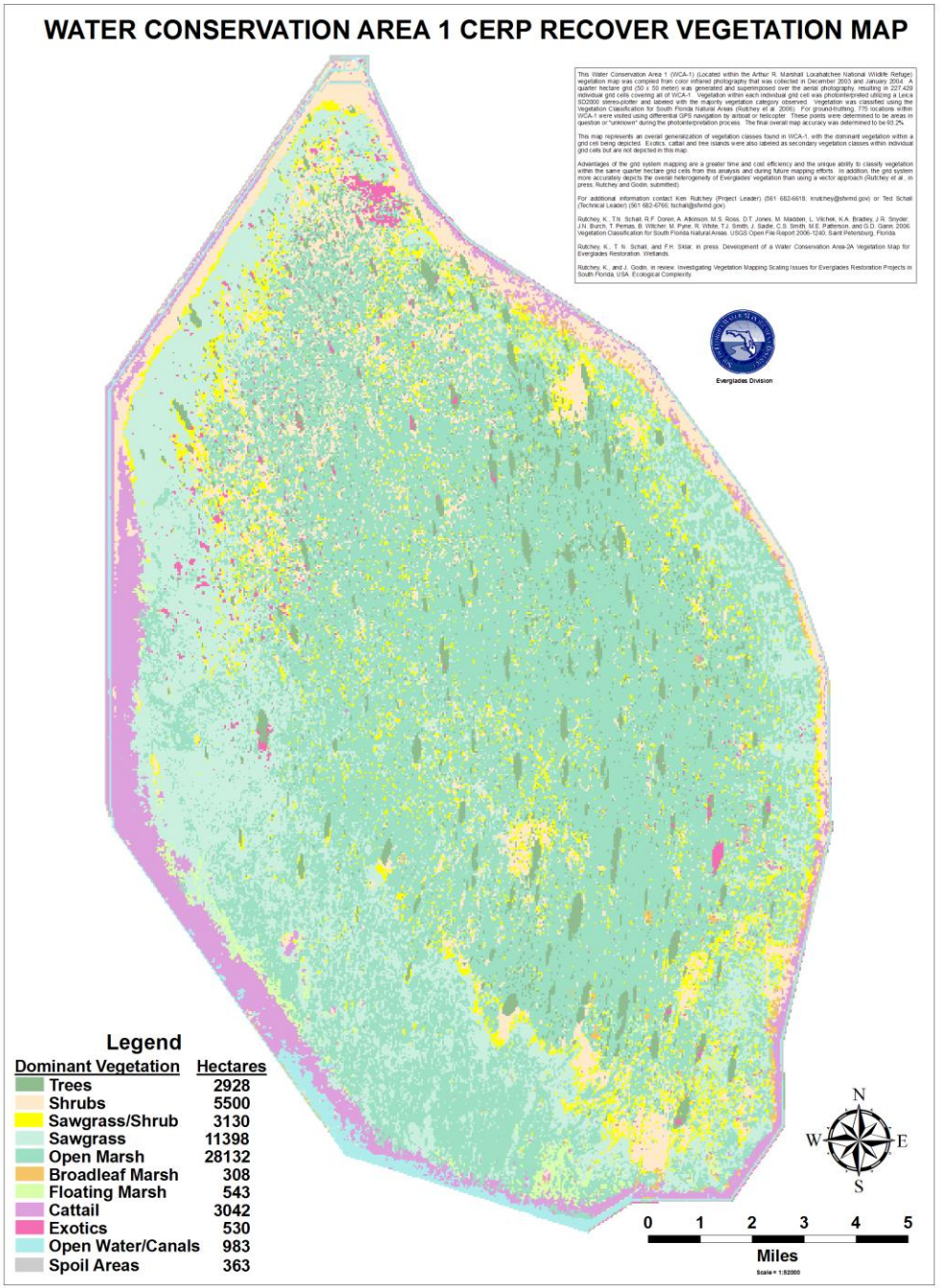
South Florida Water Management District
sfwmd.gov

U.S. Fish & Wildlife Service
Department of the Interior

Loxahatchee Refuge Habitats

Consists of 143,924 acres represented by five habitat types:

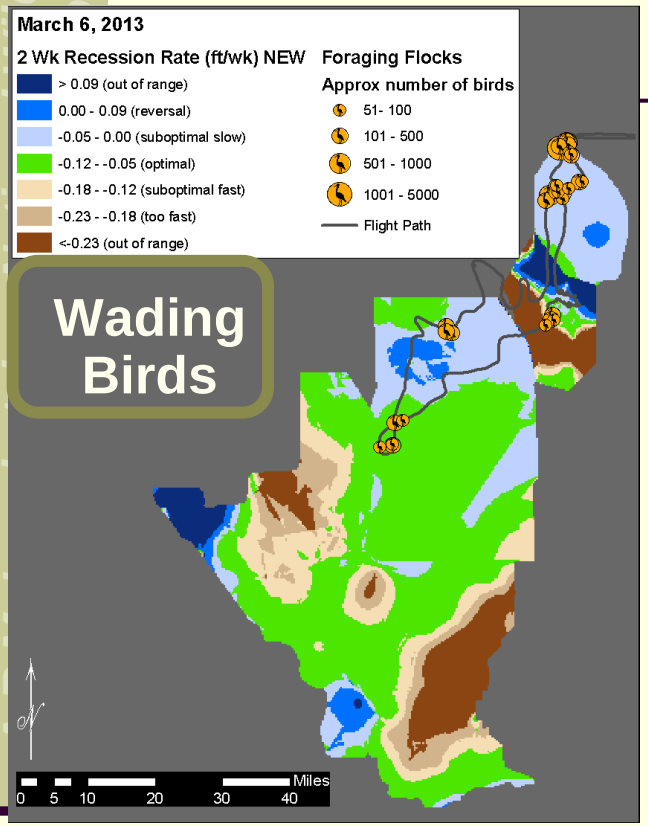
- **Tree Islands**
- **Wet Prairies**
- **Open Sloughs**
- **Sawgrass Communities**
- **Cypress Swamp**



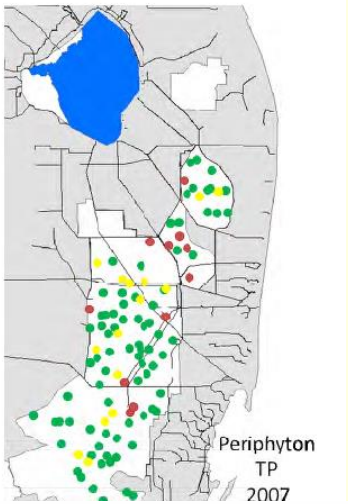
Loxahatchee Refuge Habitats

Wildlife

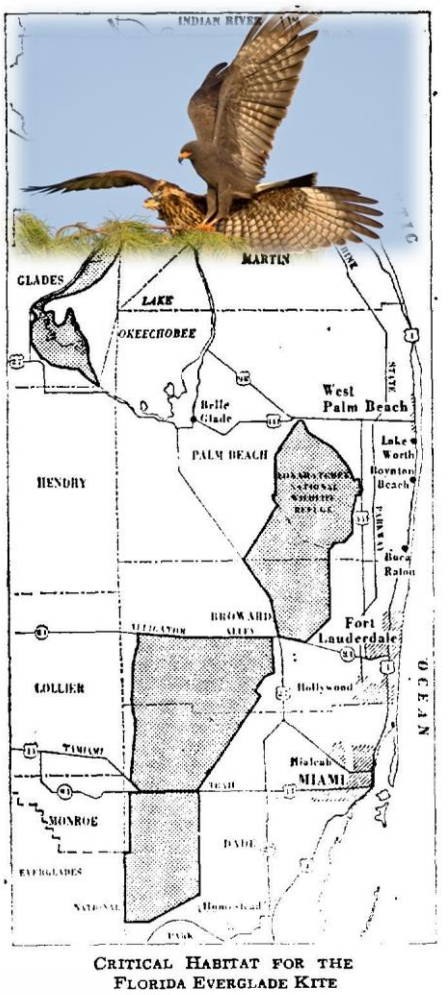
- Over 257 bird sp; 23 mammal sp; 11 sp of frogs and toads;10 sp of turtles; 8 sp of lizards; 24 sp of snakes; 40 sp of butterflies; 23 sp of dragonflies; and 7 sp of damselflies



Wading Birds

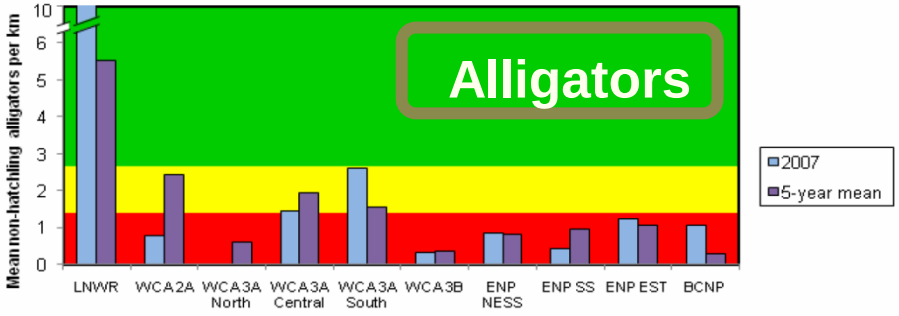


Periphyton



CRITICAL HABITAT FOR THE FLORIDA EVERGLADE KITE

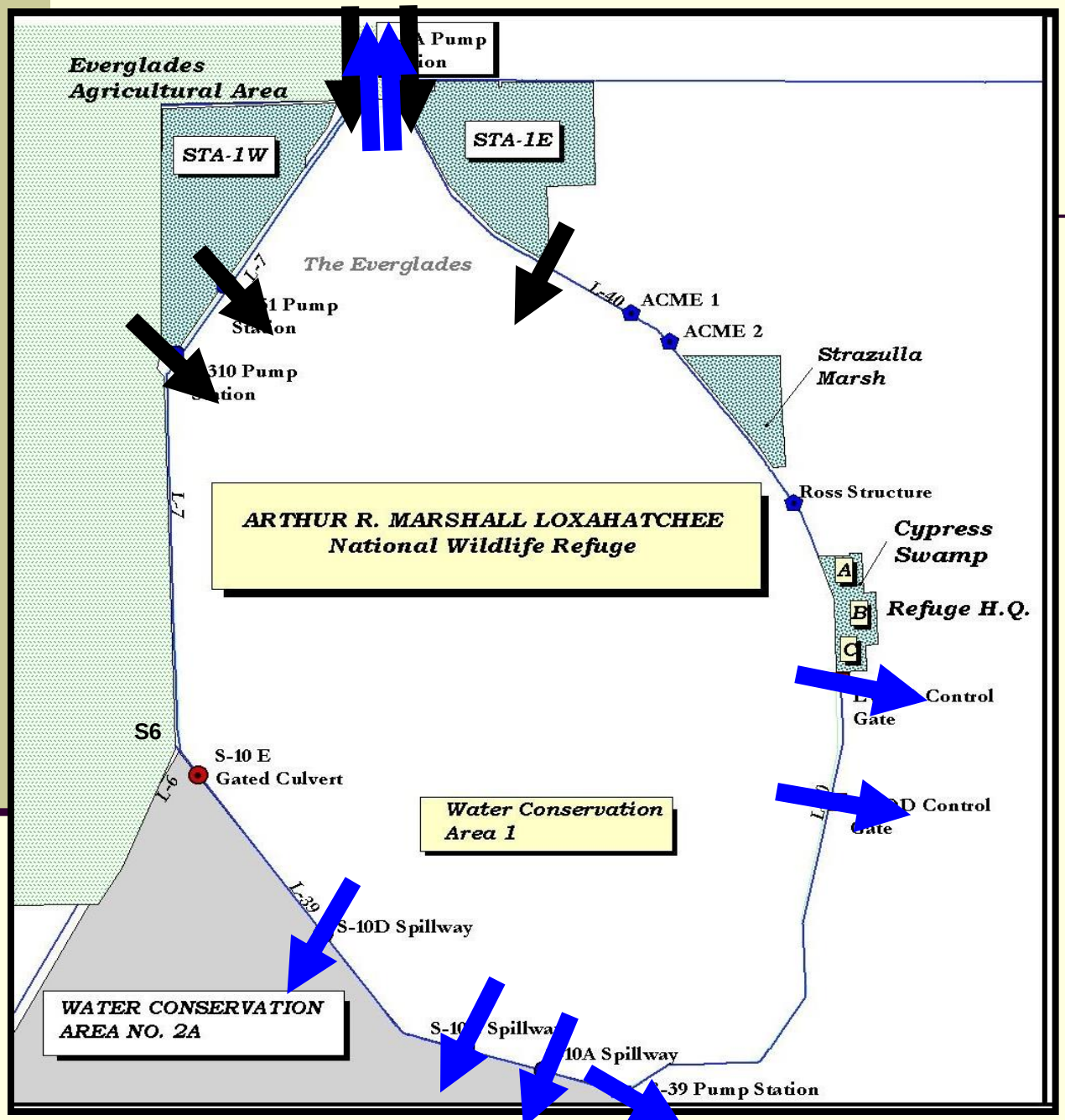
Alligators



Source: 2009 System Status

Snail kite Critical Habitat

Current Refuge Inflows and Outflows



Current Inflow

Current Outflow

US Army Corps of Engineers

Source: M. Harwell, EPA

Water Management

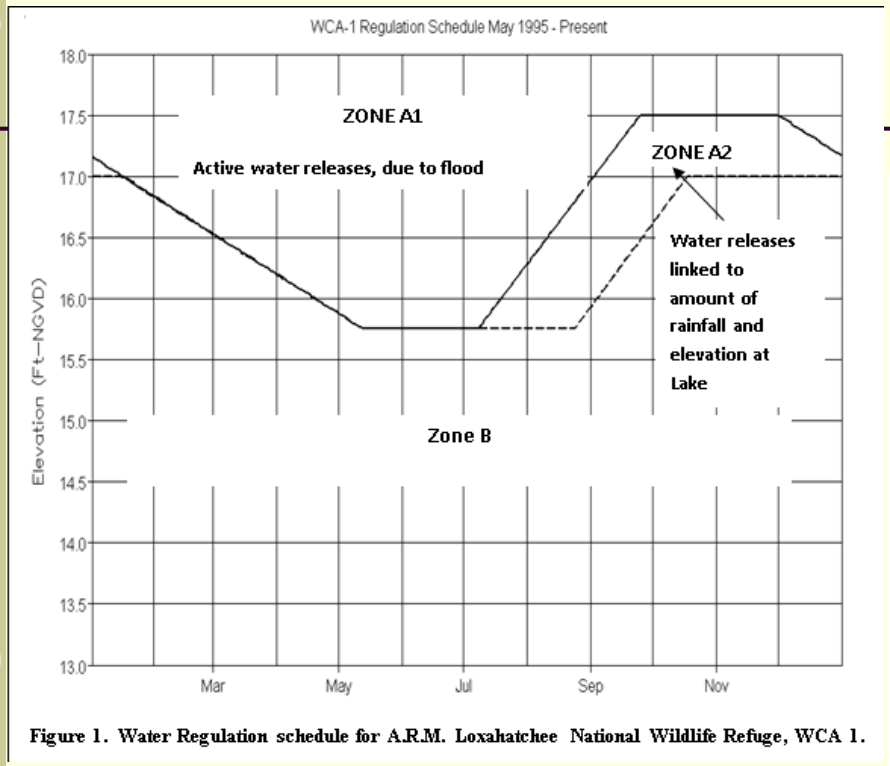
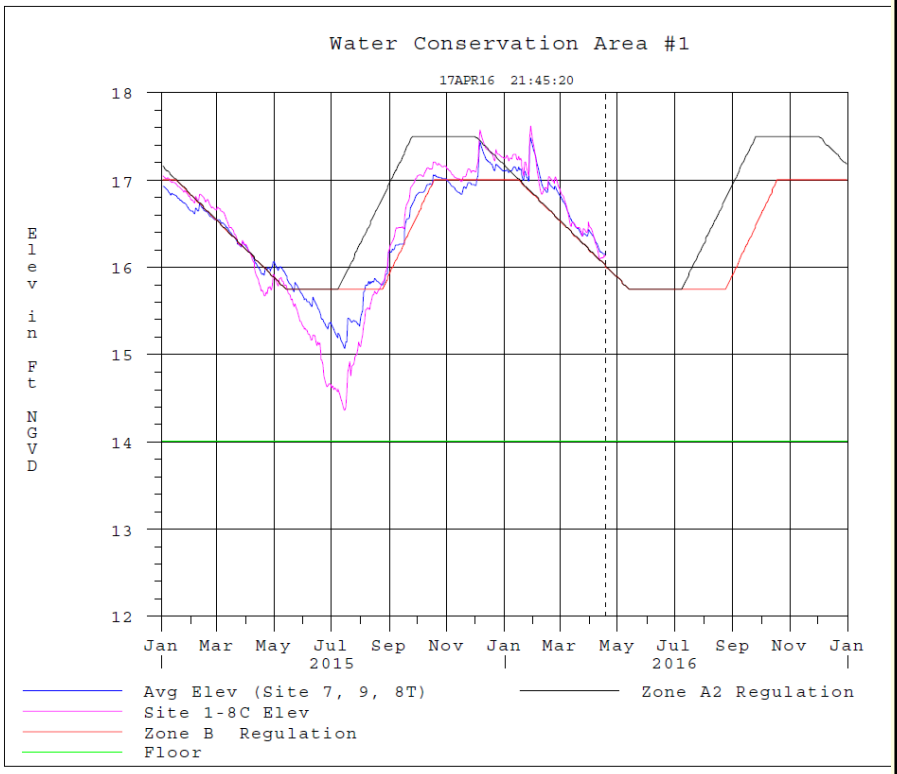


Figure 1. Water Regulation schedule for A.R.M. Loxahatchee National Wildlife Refuge, WCA 1.

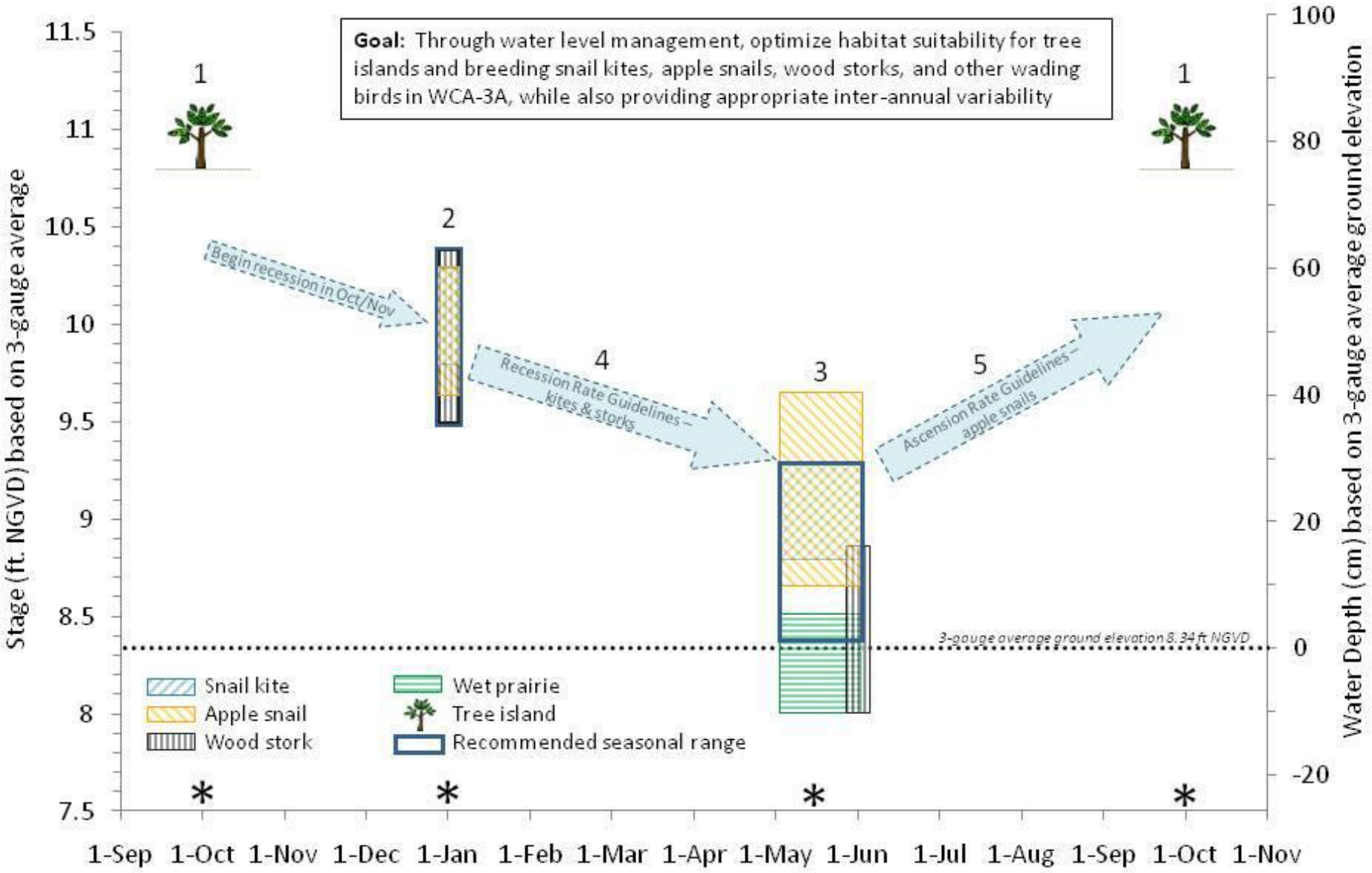


Current targets

- Water levels
- High water performance measure
- Habitat suitability
- Recession rates
- Ascension rates

USFWS Multi-Species Transition Strategy for WCA-3A

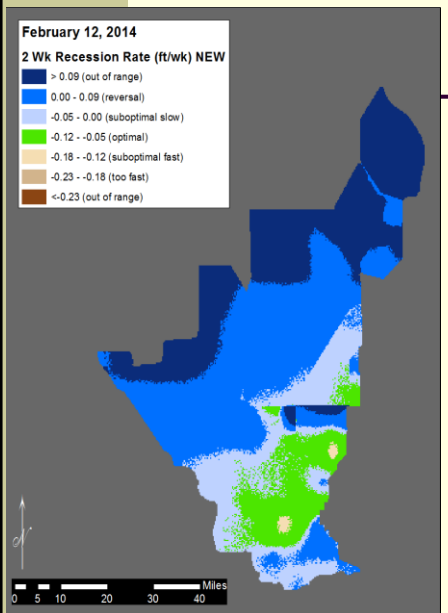
Draft July 1, 2010

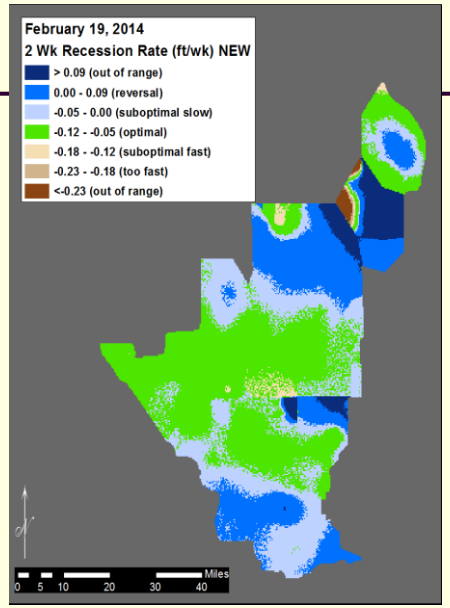


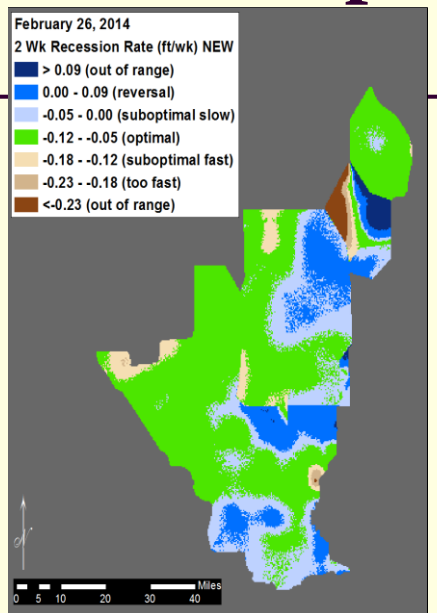
* Interagency Meeting – Management decisions (targets) to be determined by an interagency team. The team should meet regularly throughout the year (minimum October, January, and May). The intent is to manage for inter-annual variation with seasonal targets based on an interagency assessment of species' needs (evaluated w/monitoring data), forecasted climatic conditions, and past years' hydrology.

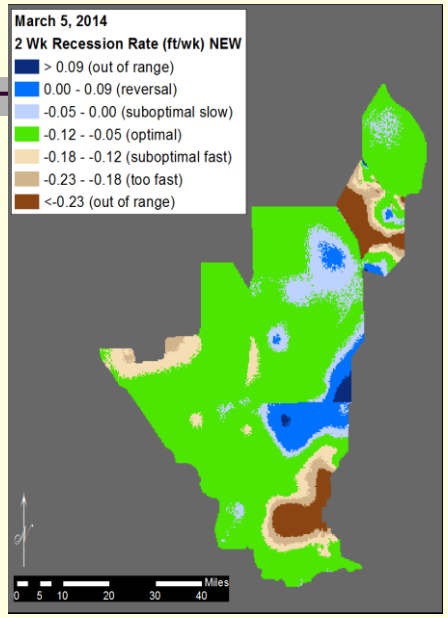
1-5 See explanatory text below for detailed information on recommended water levels and rates.

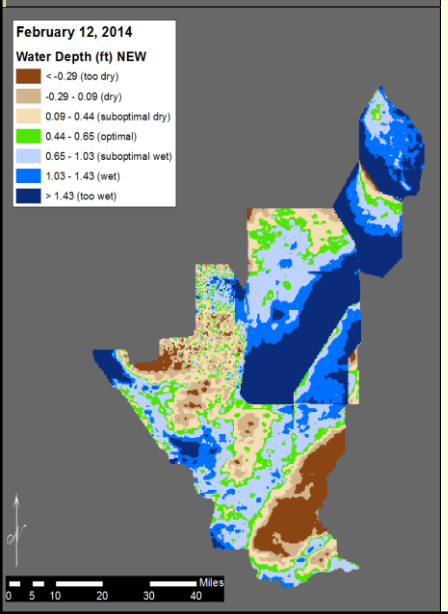
Habitat Suitability Index– Recession Rates & Depth

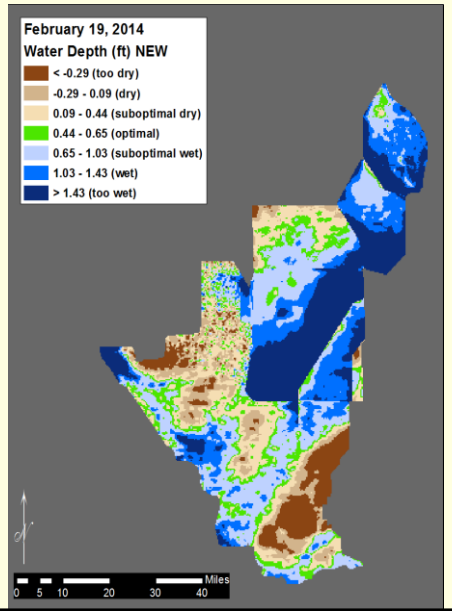


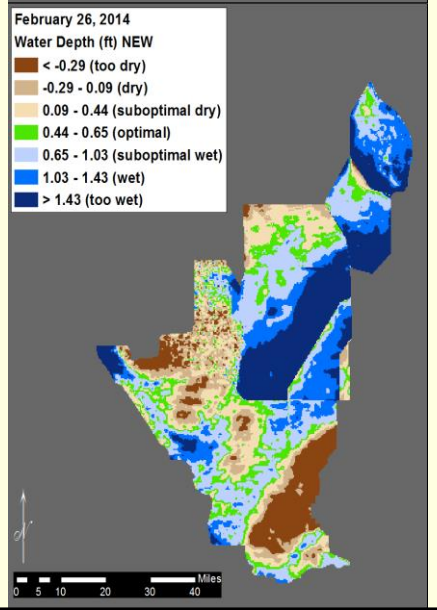


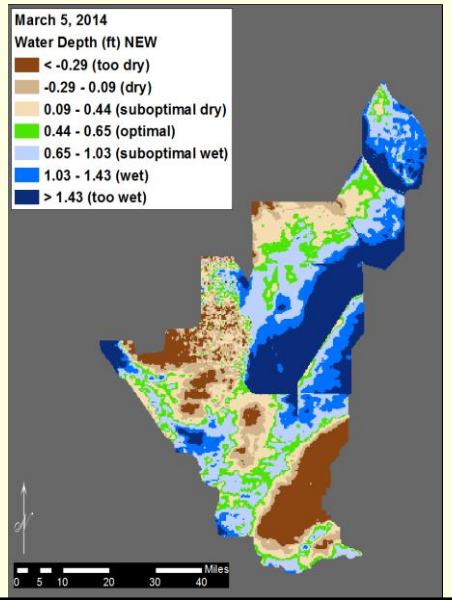












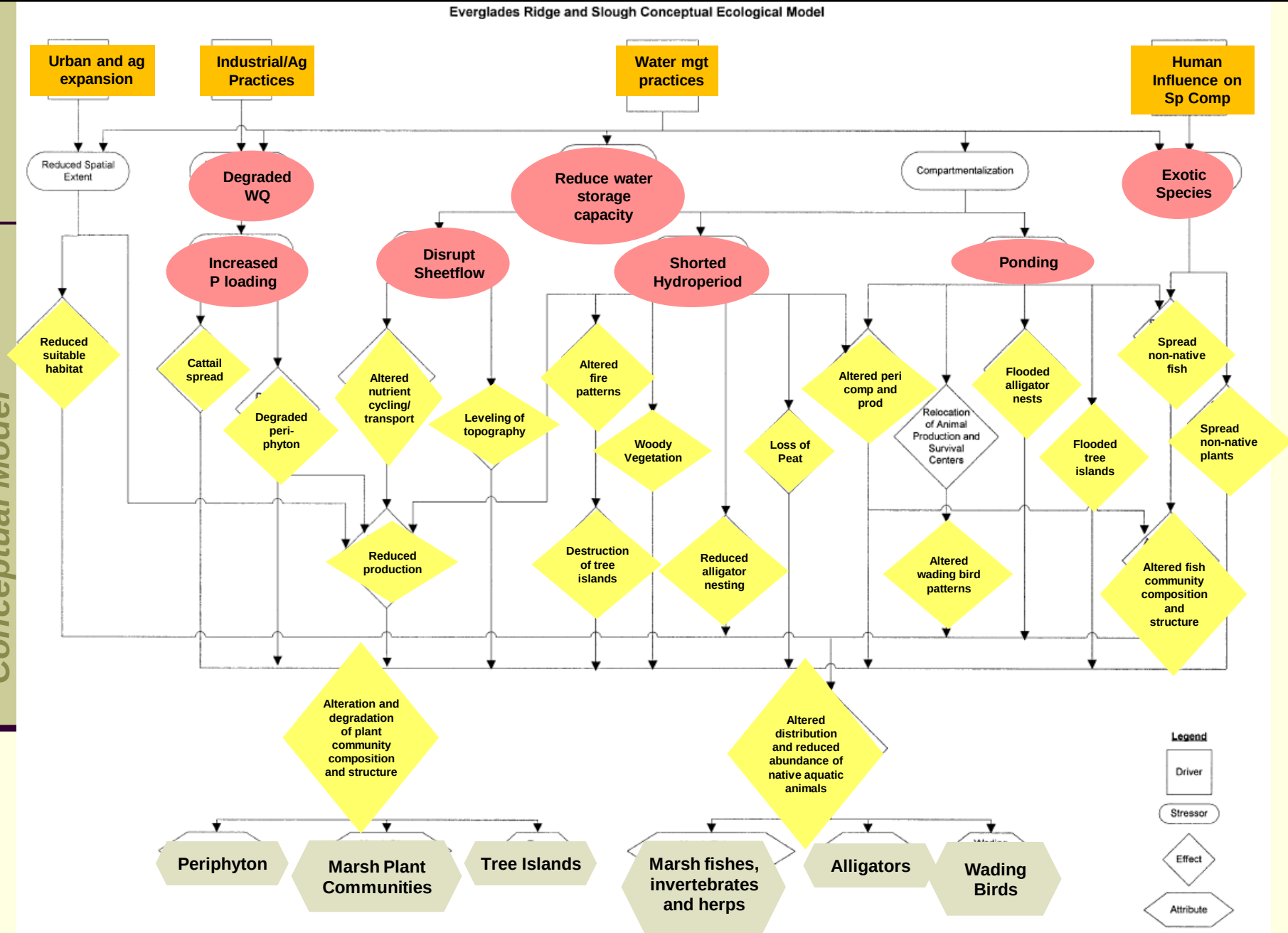
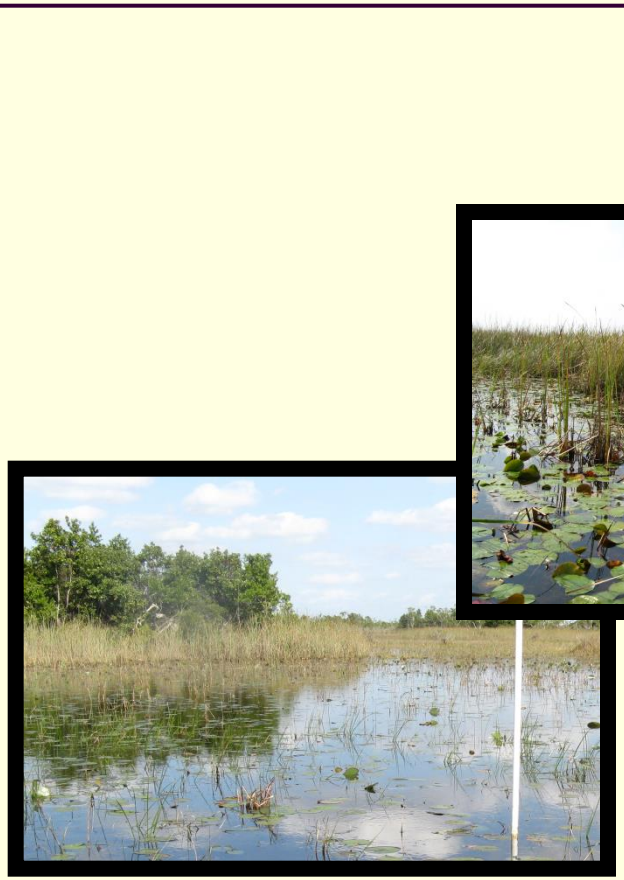
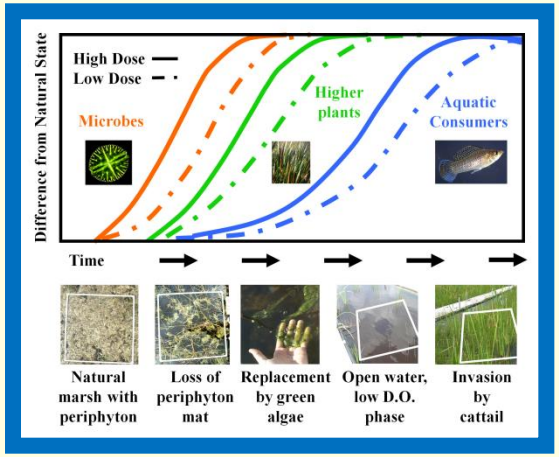


Figure 2. Everglades Ridge and Slough Conceptual Ecological Model Diagram. External drivers are shown as squares or rectangles, internal stressors as ovals, the ecological effects as diamonds, and the key attributes as hexagons (see Ogden et al. 2005).

Water Quality Impacts

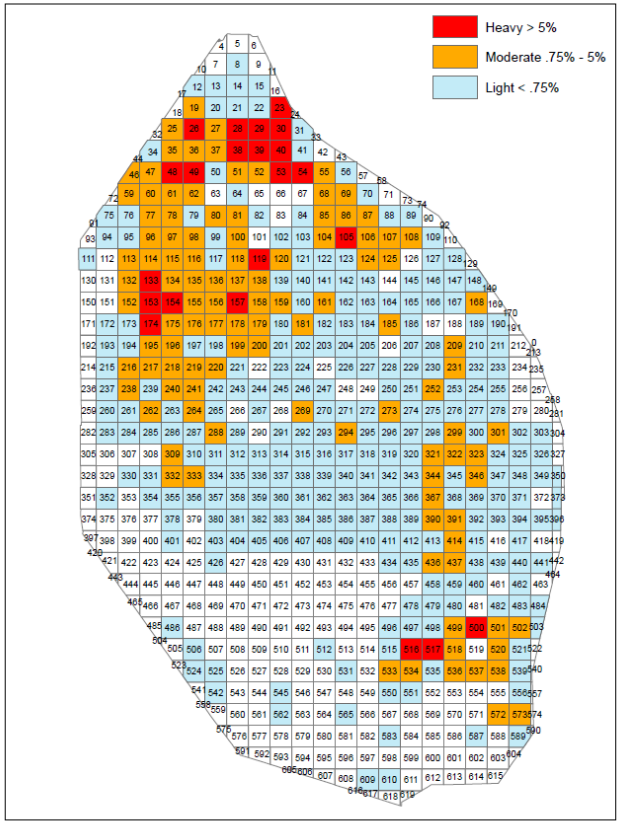


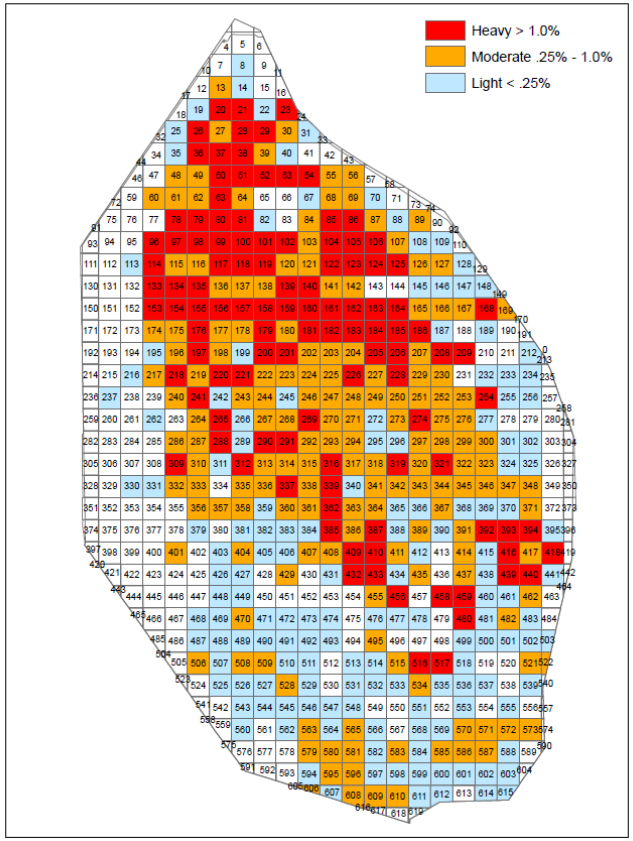


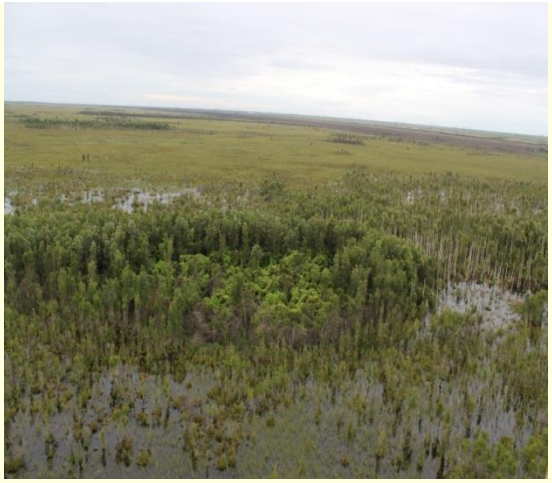
Degraded Water Quality

Ecological Effects

Exotics


2015: 1KM SRF Melaleuca
Heavy > 5%
Moderate .75% - 5%
Light < .75%


2015: 1KM SRF Lygodium
Heavy > 1.0%
Moderate .25% - 1.0%
Light < .25%

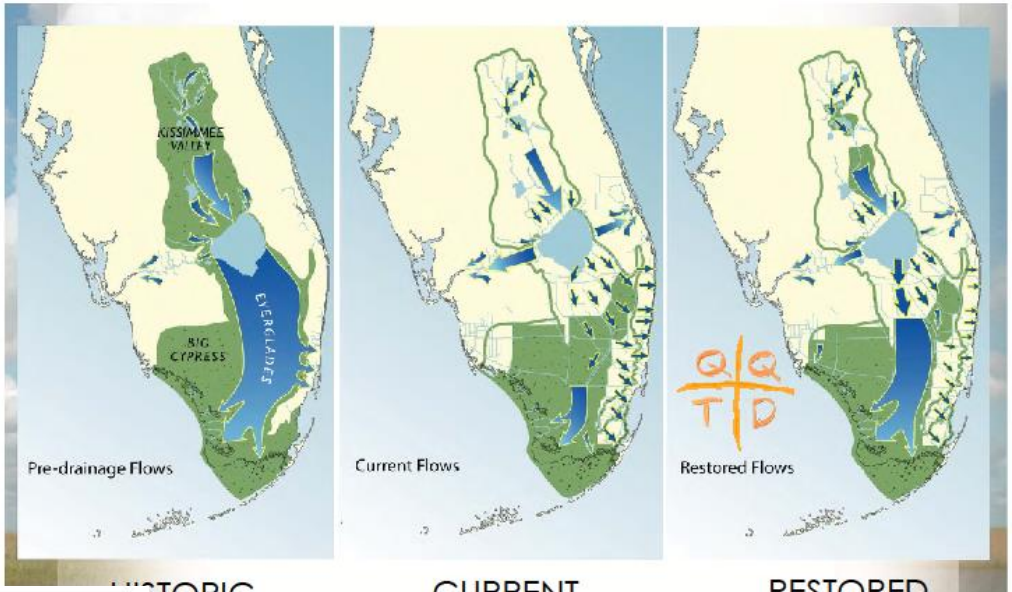


COMPREHENSIVE EVERGLADES RESTORATION PLAN

2014 System Status Report

AUGUST 2014

RESTORATION COORDINATION AND VERIFICATION



HISTORIC FLOW

CURRENT FLOW

RESTORED FLOW

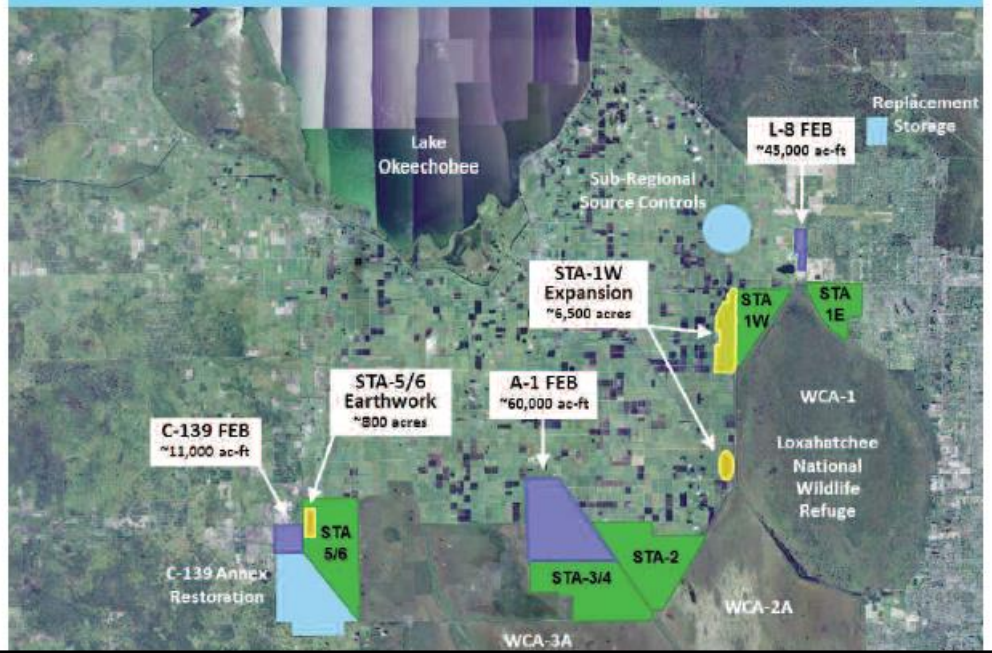
2

THE HEART OF THE EVERGLADES

CENTRAL EVERGLADES

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Restoration Strategies – Key Projects



DATES	USE GAGE	CONDITIONS
1 JAN - 30 JUN	1-8 CANAL	ALL
1 JUL - 31 DEC	1-8 CANAL	EXCEPT AS NOTED BELOW
	AUG. 1-7, 1-8T. 1-9	DURING RISING STAGES WHEN CANAL STAGE EXCEEDS AVERAGE.

CENTRAL AND SOUTHERN FLORIDA
INTERIM REGULATION SCHEDULE

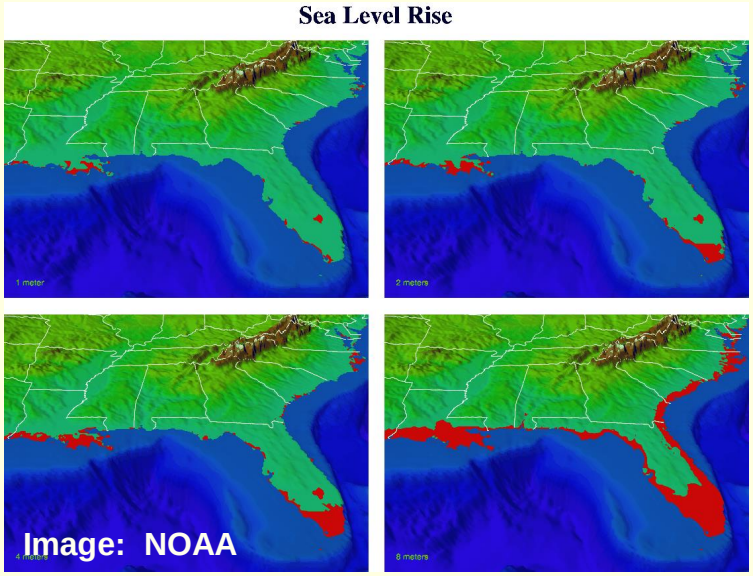
WATER CONSERVATION AREA NO. 1

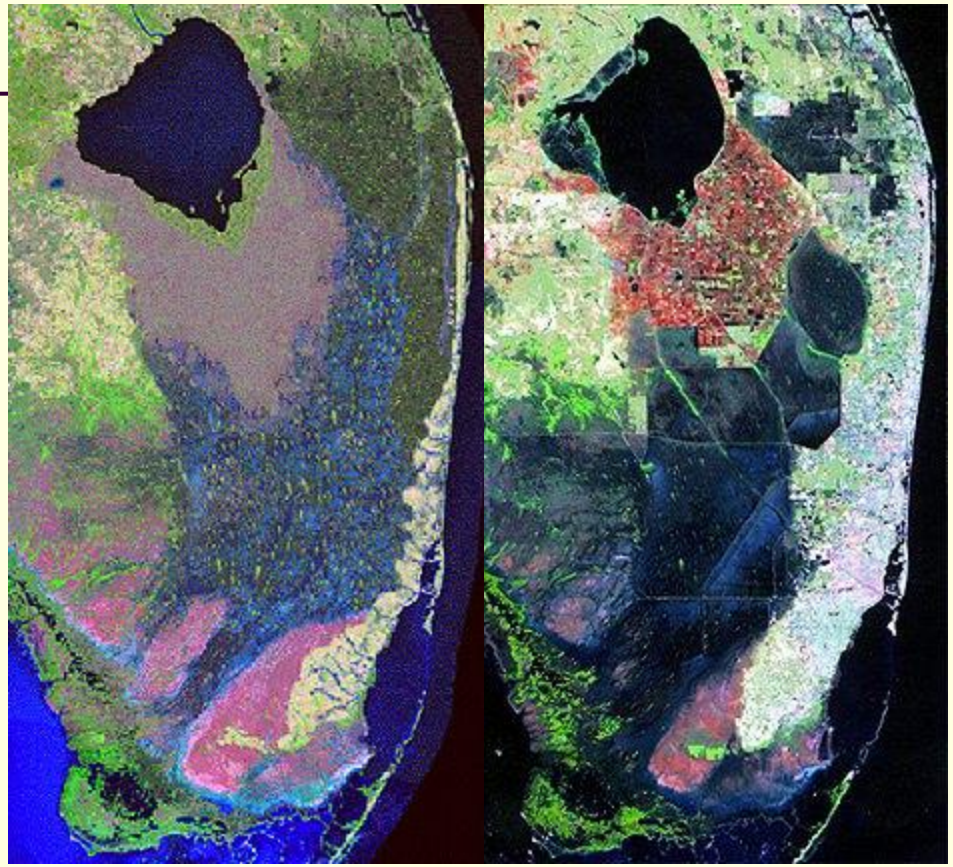
DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT, CORPS OF ENGINEERS
JACKSONVILLE, FLORIDA

DATED: 03 MAY 1995

Additional Drivers

- Urban development
- Adjacent land use changes
- Increasing urban populations/water needs
- Climate change
- Funding





Refuge Goals

- Develop future desired conditions
- Develop specific conservation targets
  - Strategic Habitat Conservation
- Update planning documents/ management plan
  - Current goals
- Continue developing science-driven management strategies
- Coordinate closely with all partners to achieve goals

Excerpt from 2009 'BioReview of existing Habitat Management Plan:

1. Determine future desired conditions of the Refuge interior. This may require assigning current staff to this task at the expense of other duties and/or securing additional personnel to review, analyze, and synthesize data.