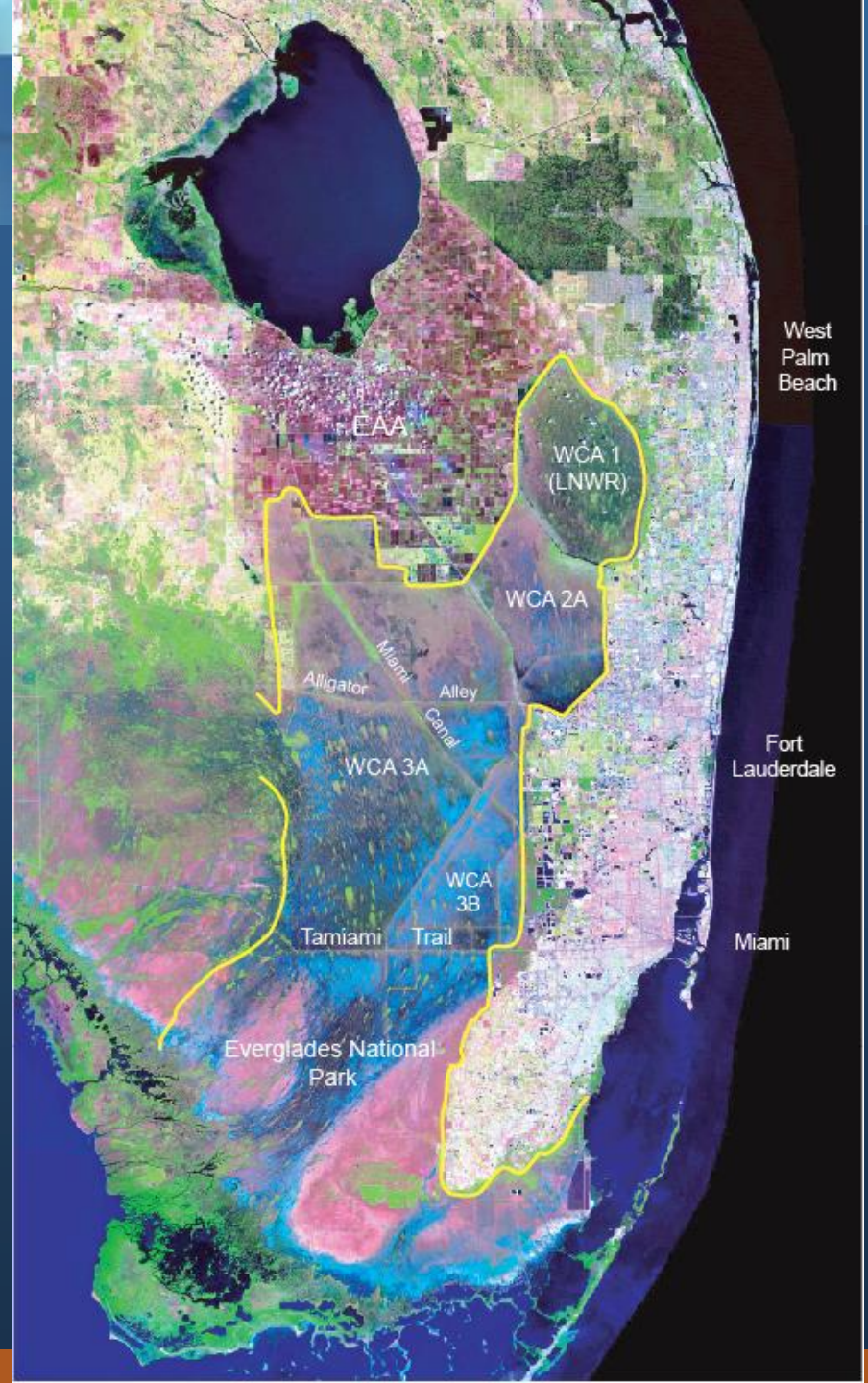
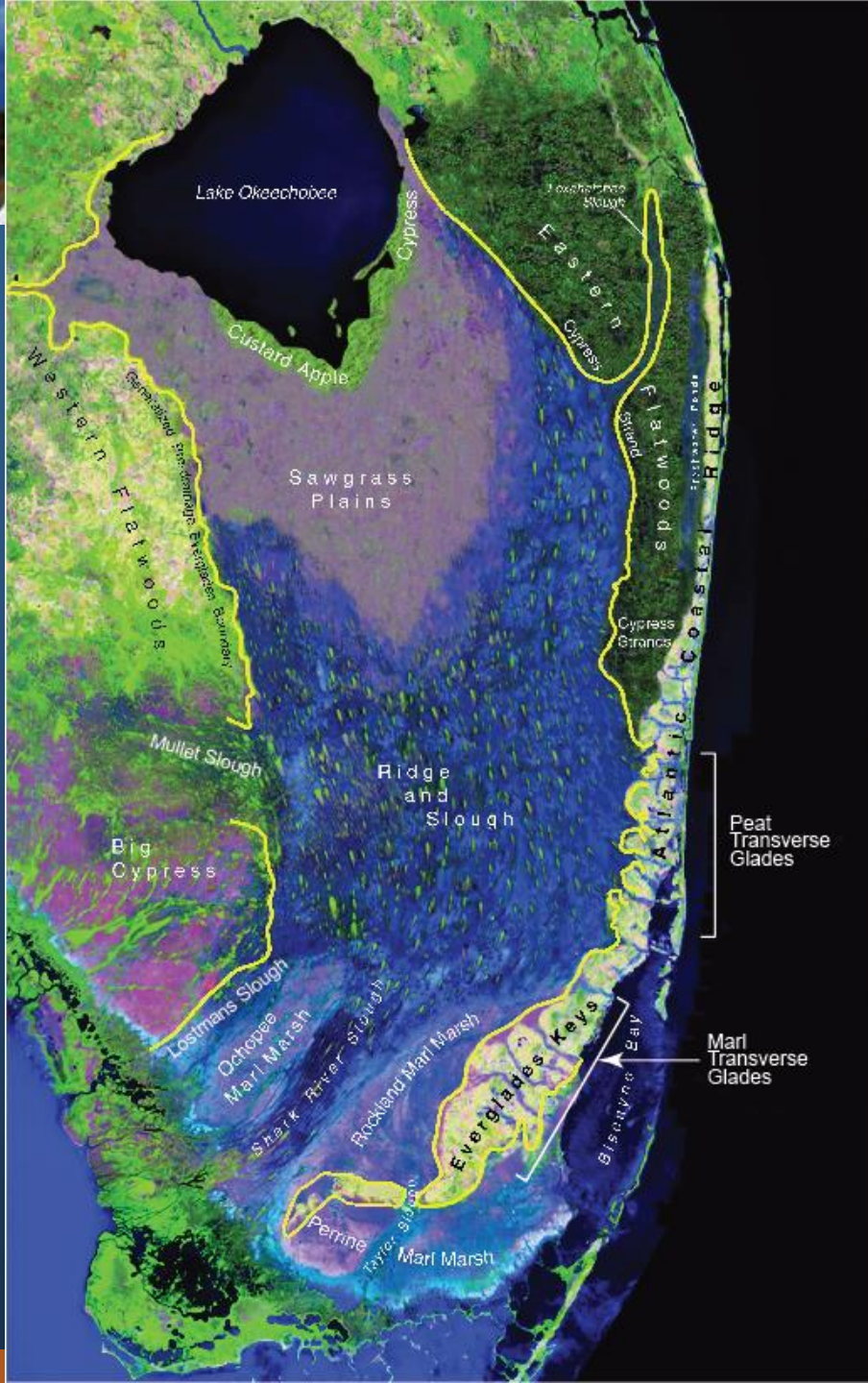




Progress and Challenges of Everglades Restoration

Shannon Estenoz, Director
Everglades Restoration Initiatives
US Department of the Interior



Chronology of Water Management Changes

Pre-Central & South Florida Projects

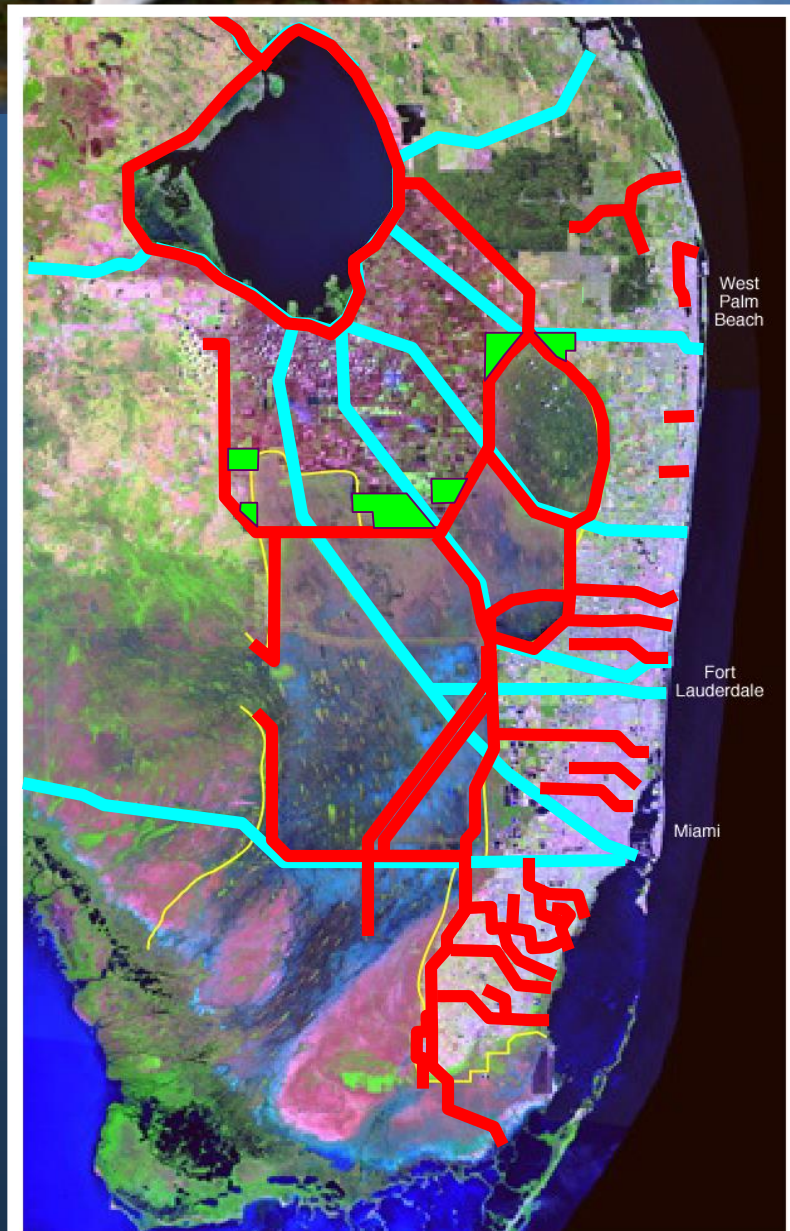
- Caloosahatchee/Kissimmee Rivers 1881-93
- East Coast Canals/St. Lucie Canal 1905-24
- Tamiami Trail – 1915-28
- Lake Okeechobee HH Dike – 1932-38

Central & Southern Florida Project

- Eastern Protective Levee System – 1952-54
- Everglades Agricultural Area – 1954-59
- Water Conservation Area Levees – 1960-63
- Lower East Coast Canals – 1954-65
- Lake Okeechobee Levees – 1960-64
- Kissimmee River Channelization – 1962-71
- South Dade System – 1965-83

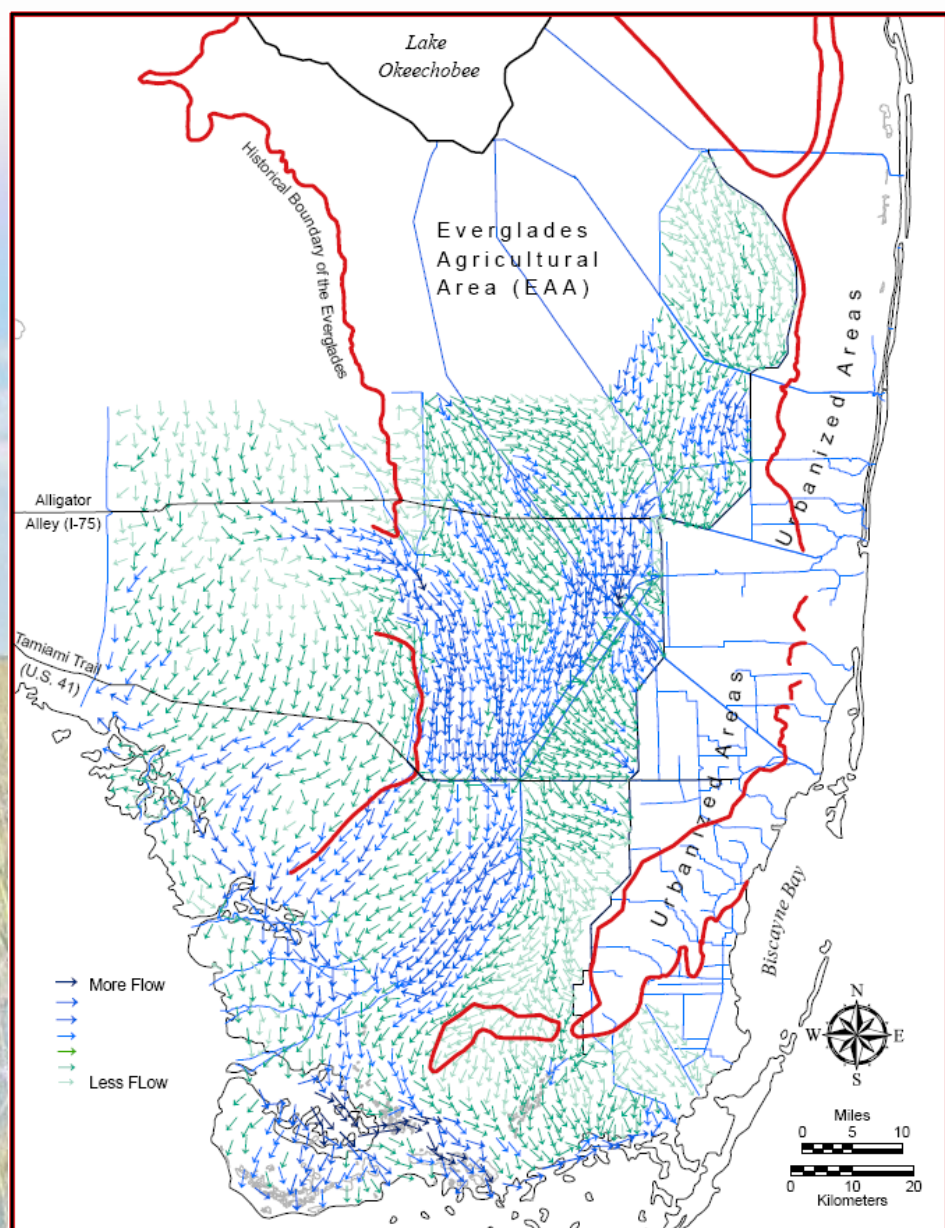
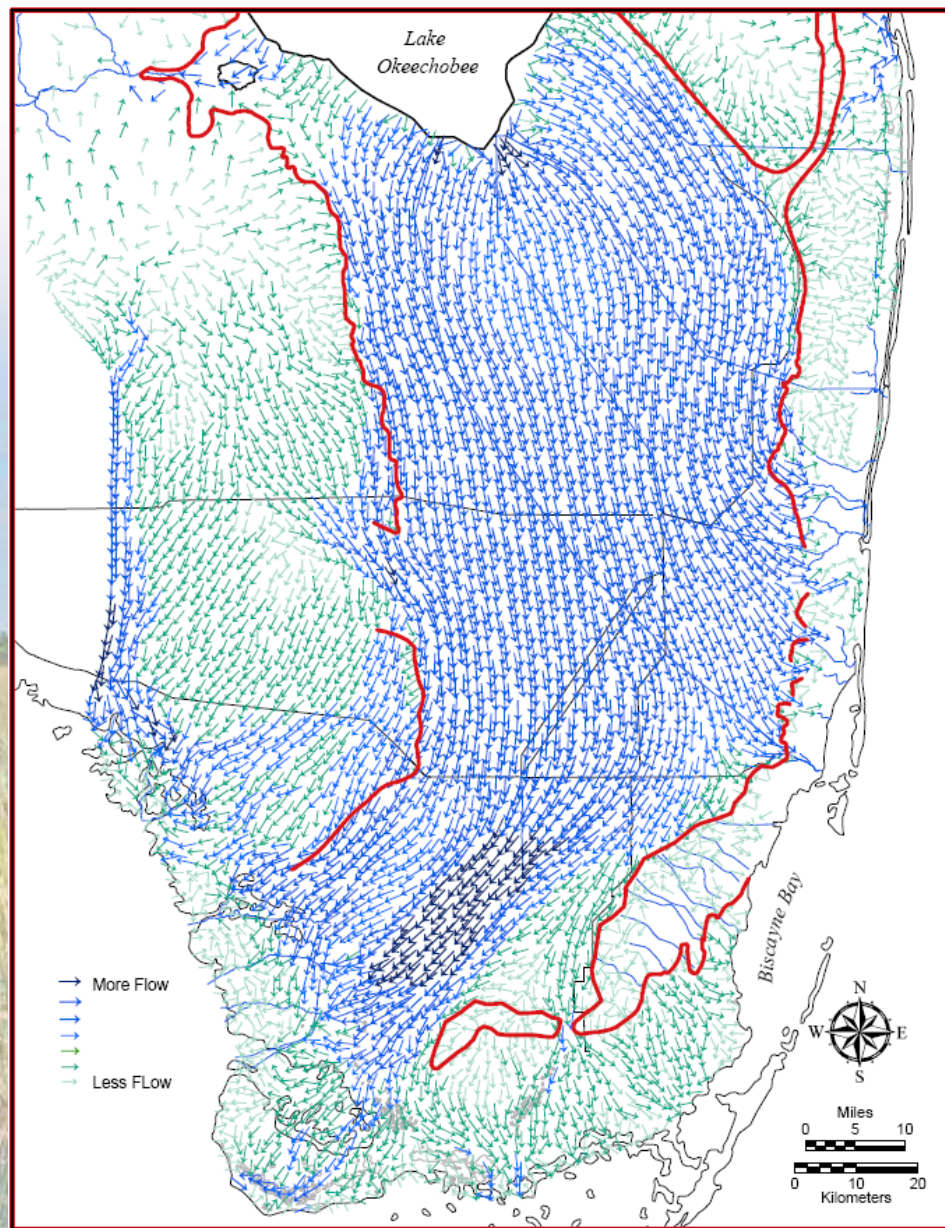
Everglades Construction Project

- Stormwater Treatment Areas – 1994-2003



Managed System (2003)

Source: Light and Dineen, 1994; SFWMD & USACE, 2008



The Restoration Era

- < 1983 Focus on...
 - C&SF Project Benefits
- 1980s Focus on...
 - Water to Everglades National Park
 - Phosphorus
- 1990s Focus on...
 - Kissimmee River
 - Phosphorus
 - Restoration = Regional Sustainability
 - Development of Comprehensive Everglades Restoration Plan

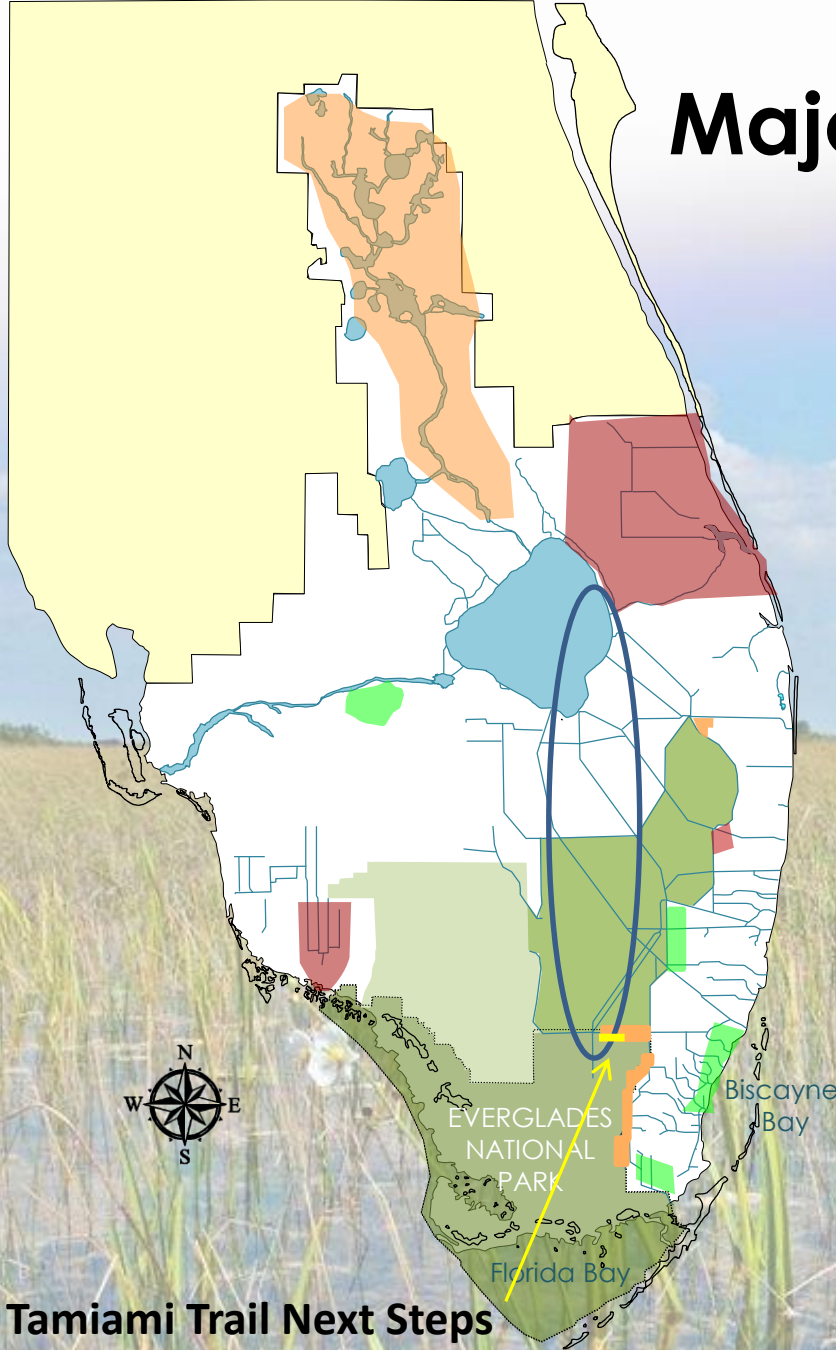


Restoration Era

- 2000s Focus on...
 - CERP Implementation
 - Phosphorus
 - Lake Okeechobee
 - Northern Estuaries
 - Tamiami Trail
 - Invasive Species
 - Climate Change



Major Restoration Projects



Foundation Projects

- ▶ Kissimmee River
- ▶ C-111 South Dade
- ▶ C-51/STA-1E
- ▶ Modified Water Deliveries

1st Generation CERP

- ▶ Site 1 Impoundment
- ▶ IRL-South
- ▶ Picayune Strand

2nd Generation CERP

- ▶ C-43 Reservoir
- ▶ Broward County WPA
- ▶ C-111 Spreader Canal
- ▶ Biscayne Bay Coastal Wetlands

3rd Generation CERP

- ▶ Central Everglades Planning Project

Tamiami Trail Next Steps

Progress (Since 2000)

Foundation Projects nearing completion

Comprehensive Everglades Restoration Project

- **1st Generation under construction**
- **2nd Generation authorized in 2014 WRRDA**
- **3rd Generation almost ready for authorization**

Water Quality

- **\$880 million new investment in water quality**
- **Phosphorus trends in the Central Everglades are headed down**

Progress Continued

- **TT2.6 is funded and will go to Design/Build Contract in 2015**
- **27,000 acres of land acquired in the Everglades Agricultural Area**
- **Significant changes made to policy frameworks**
- **Corps planning process has been reinvented**
- **Innovations to the public engagement process**

Kissimmee River Restoration



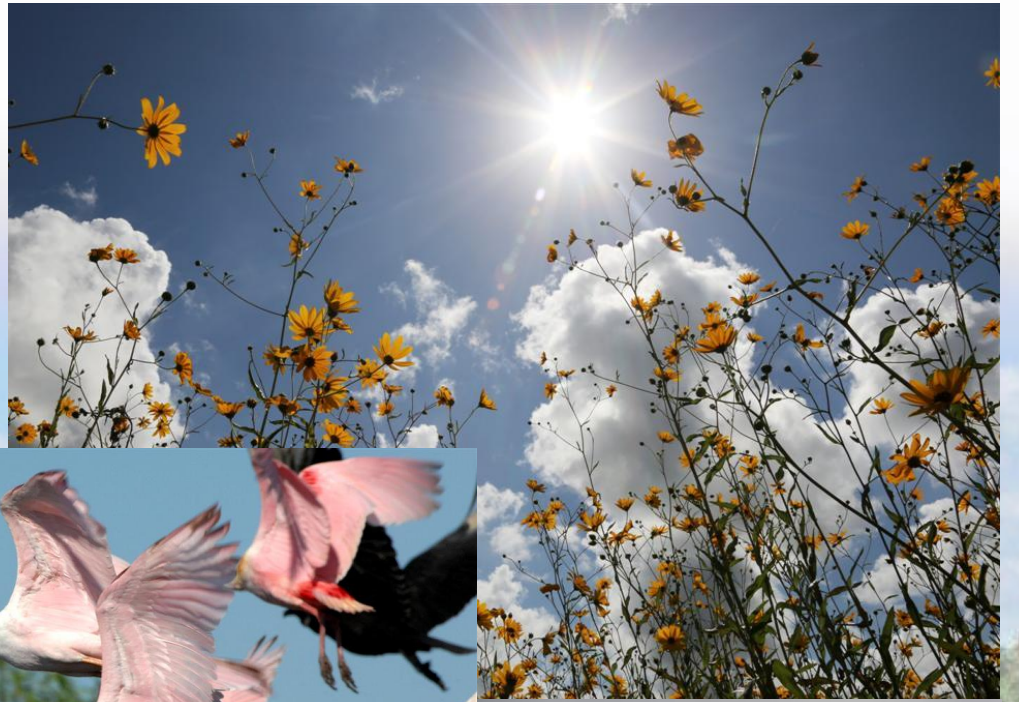
Sandbar Formation in the Phase 1 Restoration Area





March 15, 2012

A diversity of wading birds coming in for a landing in the Phase I restoration area



We have reservoirs, Mother Nature has floodplains

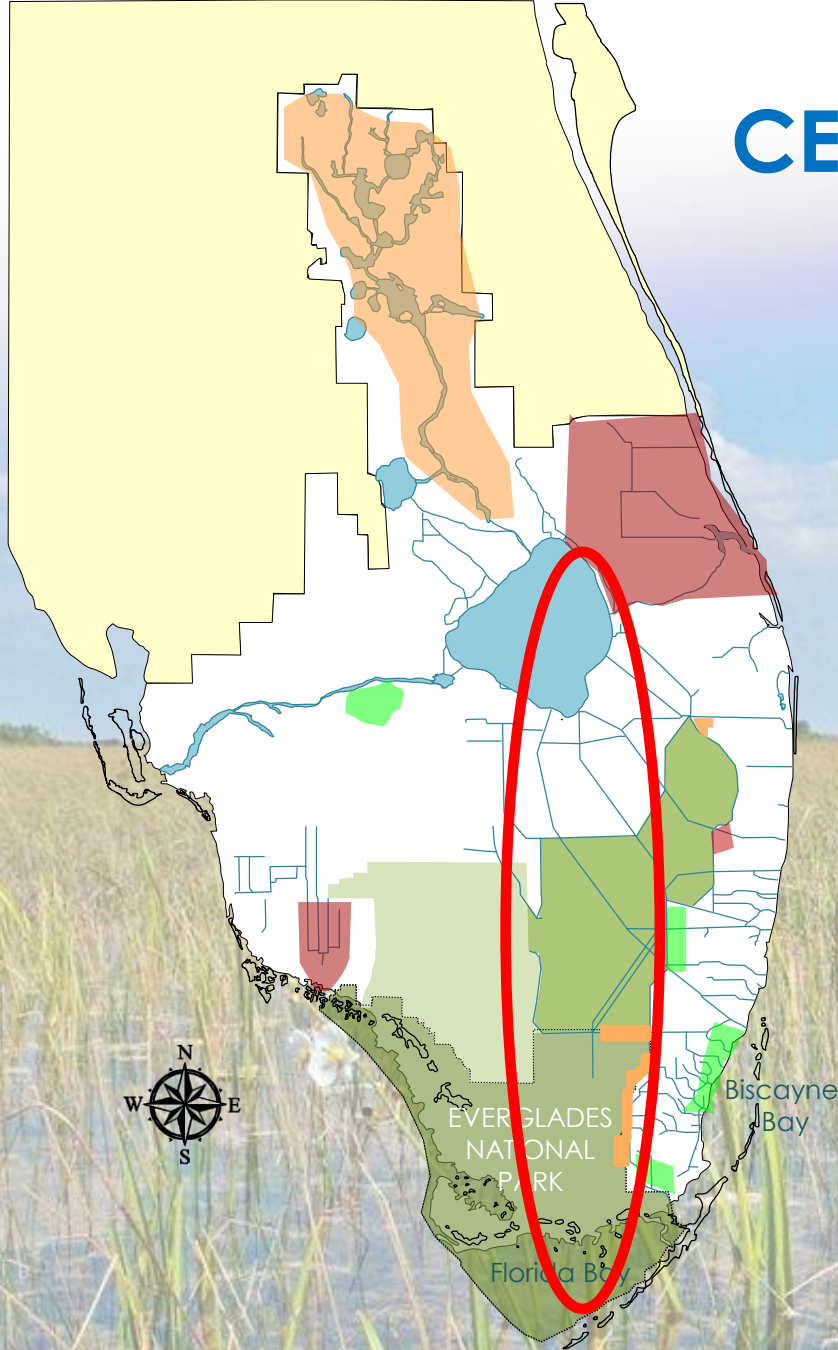


Phase I restoration area

Picayune Strand: The Mega Housing Development that Was Not to Be

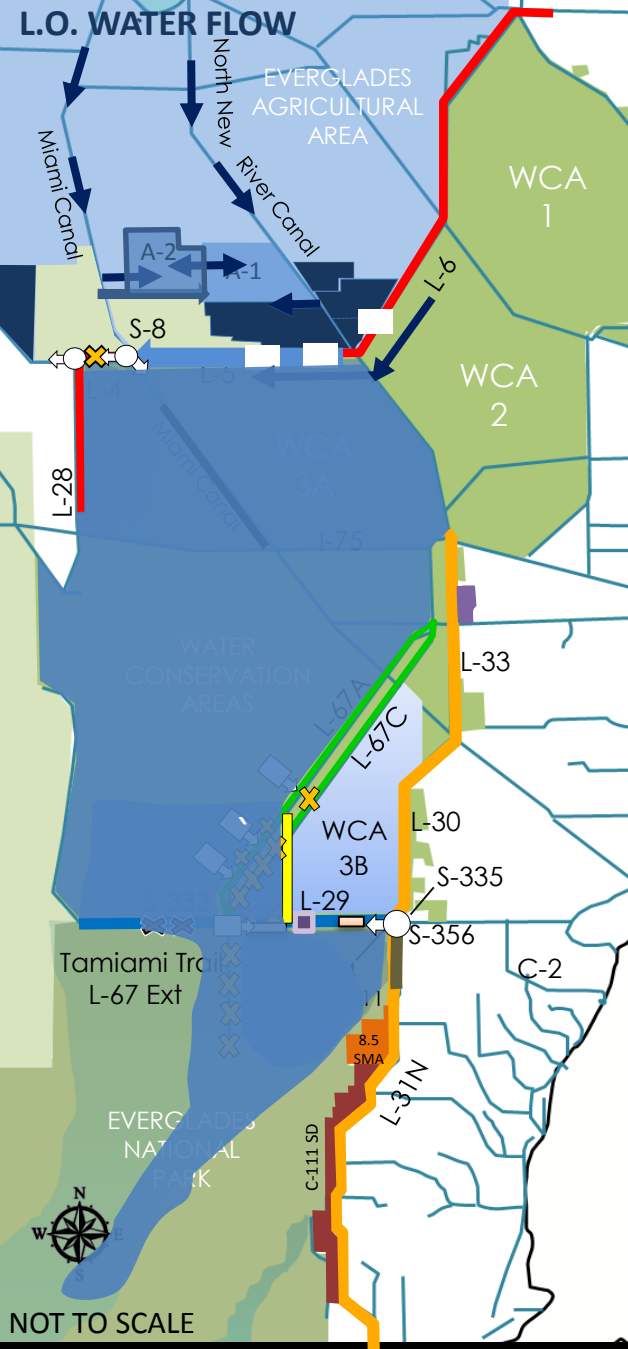


CENTRAL EVERGLADES



- Reduce undesirable discharges to east and west coast estuaries
- Deliver “new” sources of clean water to the Central Everglades and ENP
- Restore habitat in the central Everglades, focusing on the

TENTATIVELY SELECTED PLAN (Ait 4R)



STORAGE AND TREATMENT

- Construct A-2 FEB and integrate with A-1 FEB operations
- Lake Okeechobee operation refinements within LORS

DISTRIBUTION/CONVEYANCE

- Diversion of L-6 flows, Infrastructure and L-5 canal improvements
- Remove western ~2.9 miles of L-4 levee (west of S-8 3,000 cfs capacity)
- 360 cfs pump station at western terminus of L-4 levee removal
- Backfill Miami Canal and Spoil Mound Removal ~1.5 miles south of S-8 to I-75

DISTRIBUTION/CONVEYANCE

- Increase S-333 capacity to 2,500 cfs
- Two 500 cfs gated structures in L-67A, 0.5 mile spoil removal west of L-67A canal north and south of structures
- Construct ~8.5 mile levee in WCA 3B, connecting L-67A to L-29
- Remove ~8 miles of L-67C levee in Blue Shanty flowway (no canal back fill)
- One 500 cfs gated structure north of Blue Shanty levee and 6,000-ft gap in L-67C levee
- Remove ~4.3 miles of L-29 levee in Blue Shanty flowway, divide structure east of Blue Shanty levee at terminus of western bridge
- Tamiami Trail western 2.6 mile bridge and L-29 canal max stage at 9.7 ft (FUTURE WORK BY OTHERS)
- Remove entire 5.5 miles L-67 Extension levee, backfill L-67 Extension canal
- Remove ~6 mile Old Tamiami Trail road (from L-67 Ext to Tram Rd)

SEEPAGE MANAGEMENT

- Increase S-356 pump station to ~1,000 cfs
- Partial depth seepage barrier south of Tamiami Trail (along L-31N)
- G-211 operational refinements; use coastal canals to convey seepage

Note: System wide operational changes and adaptive management considerations will be included in project



Challenges

- **Project implementation**
 - Funding is neither steady or adequate
 - Congressional authorization pace too slow
 - 4th generation of CERP uncertain
- **Invasive Species**
- **Science Funding**
- **Climate Change/Sea Level Rise**

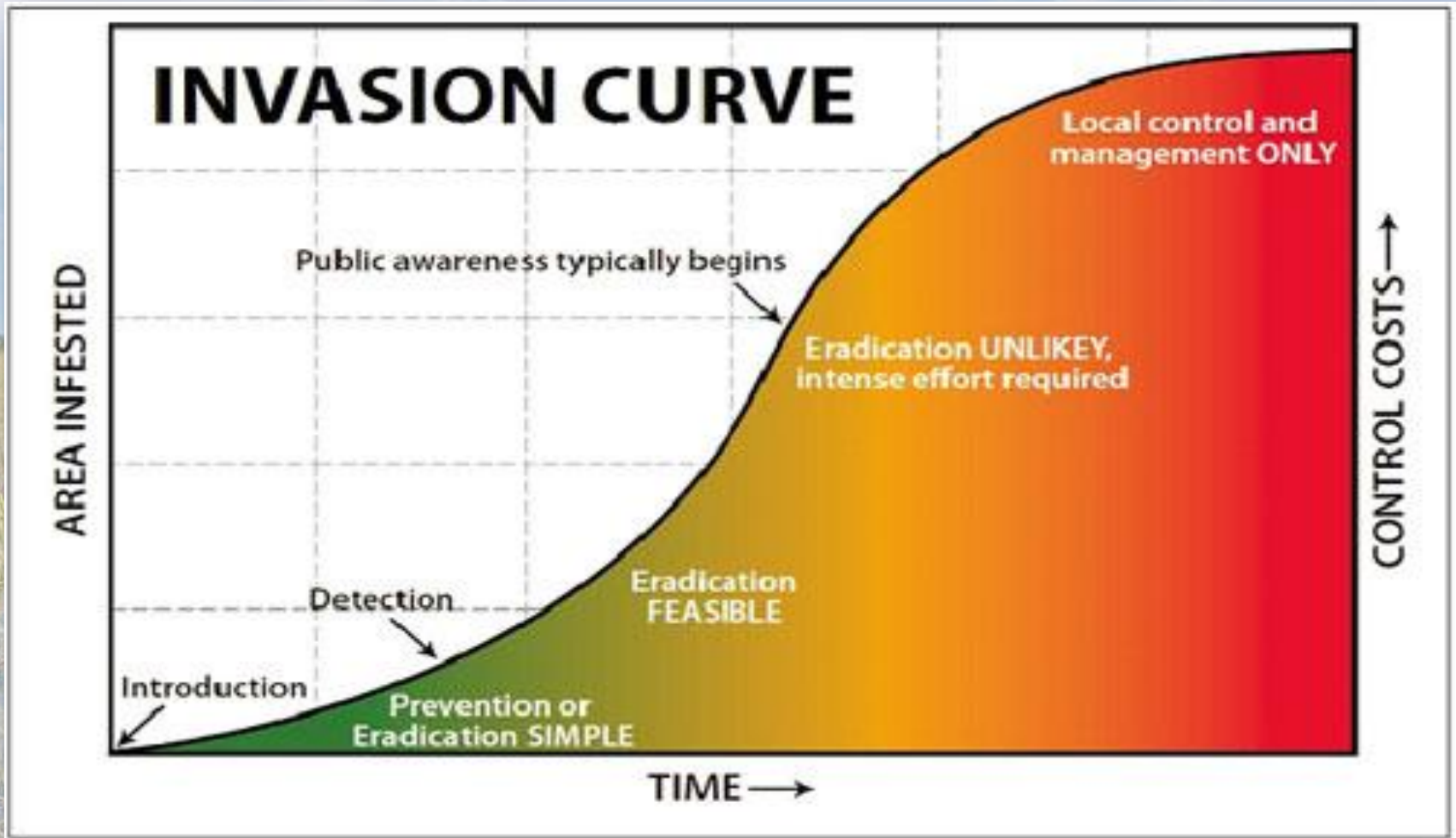
Everglades Non-Native Species

- 77 Plants (Category I Invasive)
- 34 Invertebrates
- 12 Mammals
- 4 Amphibians
- 43 Reptiles
- 11 Birds
- 20 Fishes



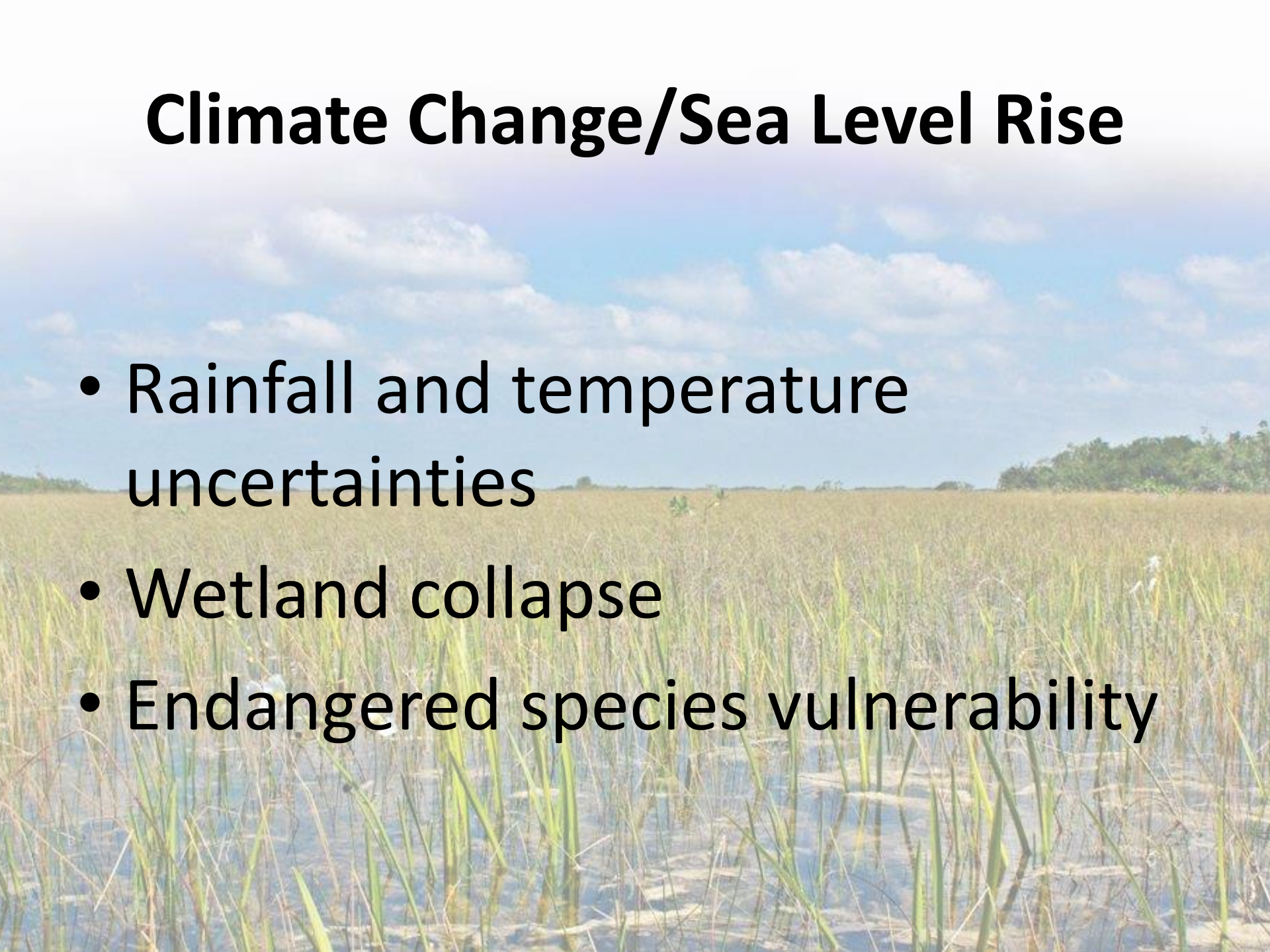
Pictured above**Feral Hog (Pig) *Sus scrofa*,The Purple Swamphen (*Porphyrio porphyrio*), Cuban Treefrog *Osteopilus septentrionalis*, Catfish *Pterygoplichthys disjunctivus*, Sailfin ,The Redbay Ambrosia Beetle, *Xyleborus glabratus* ,), Nile Monitor - *Varanus niloticus*

A Helpful Way to Organize Our Thinking About a Complex Problem:



Climate Change/Sea Level Rise

- Rainfall and temperature uncertainties
- Wetland collapse
- Endangered species vulnerability



QUESTIONS?

