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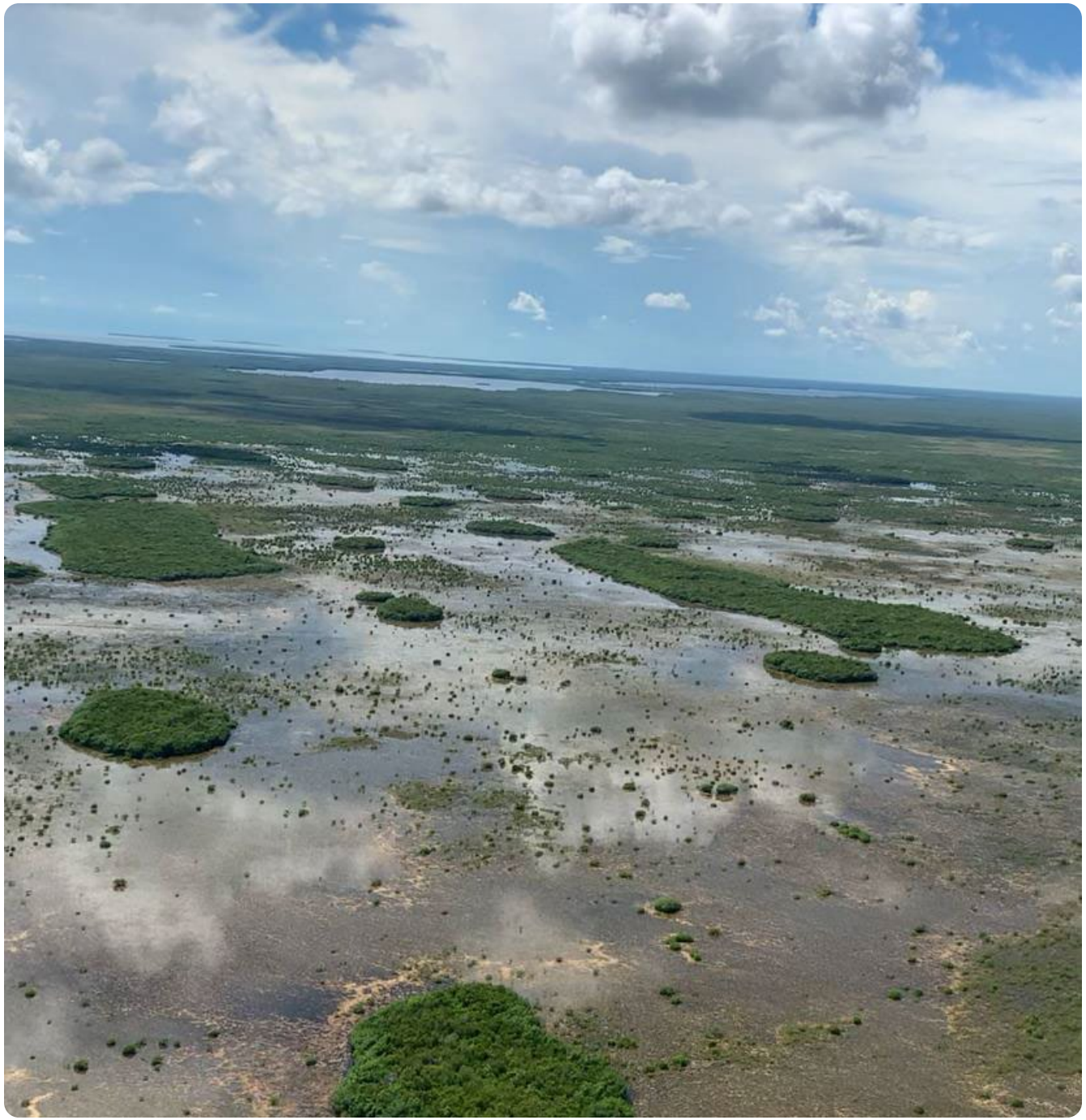
Tree Island Structure and Composition in Water Conservation Area 3

GEER Conference 2025

Sharon Ewe, Kristin Vaughan, Jean Woodmansee, Elli Danielson, Marina Loiacono, Ashley Moreno, Tiara Thanawastien (Stantec)

Carlos Coronado and Fred Sklar (SFWMD)



Agenda

1. RECOVER objectives
2. Central Everglades Planning Project (CEPP) hydrologic restoration plans
3. Tree Island Monitoring Program

RECOVER Objectives

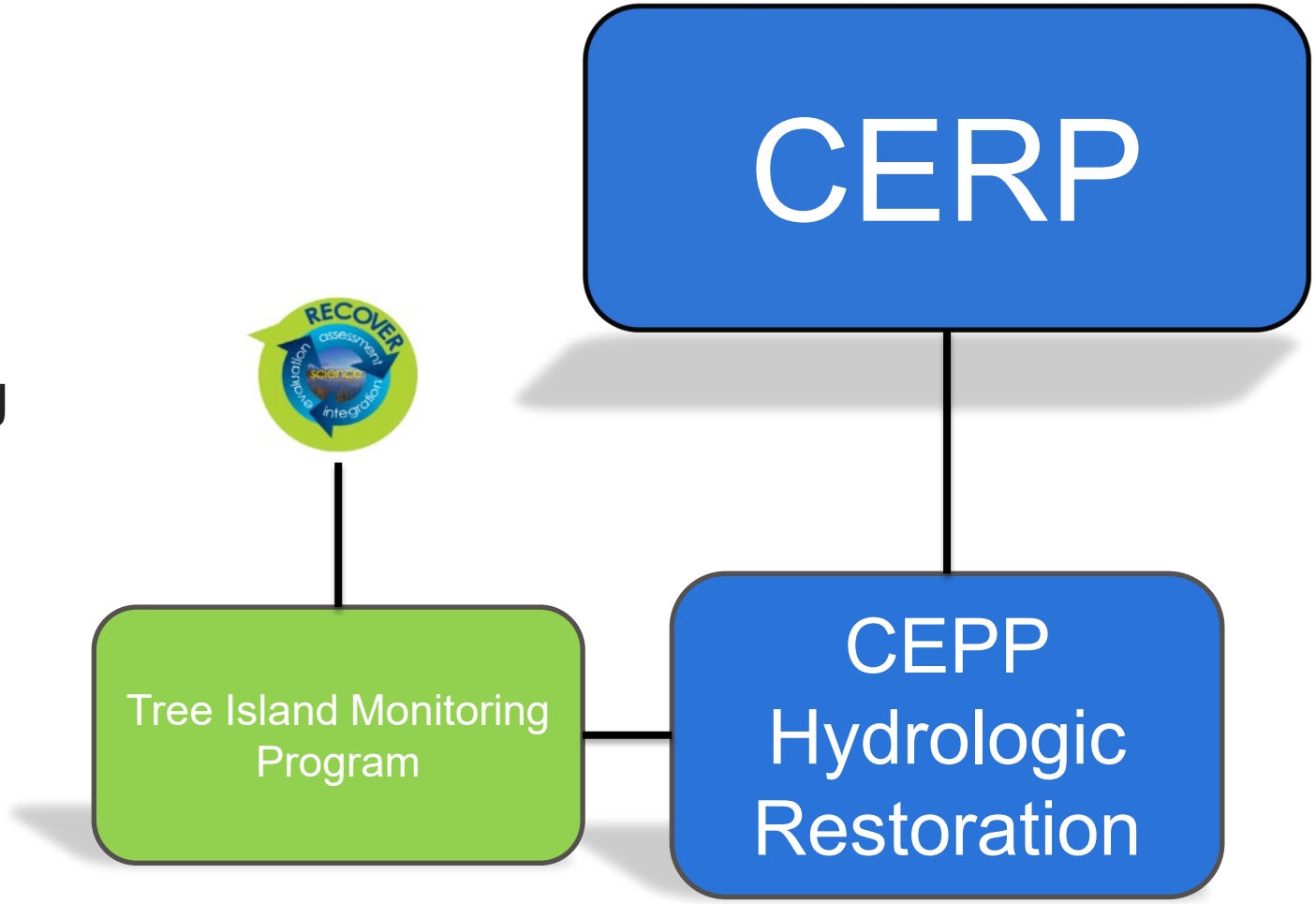
RECOVER = REstoration, COordination, and VERification

Evaluates, assesses, and provides planning support for CERP projects to ensure they meet the plan's overall goals, including:

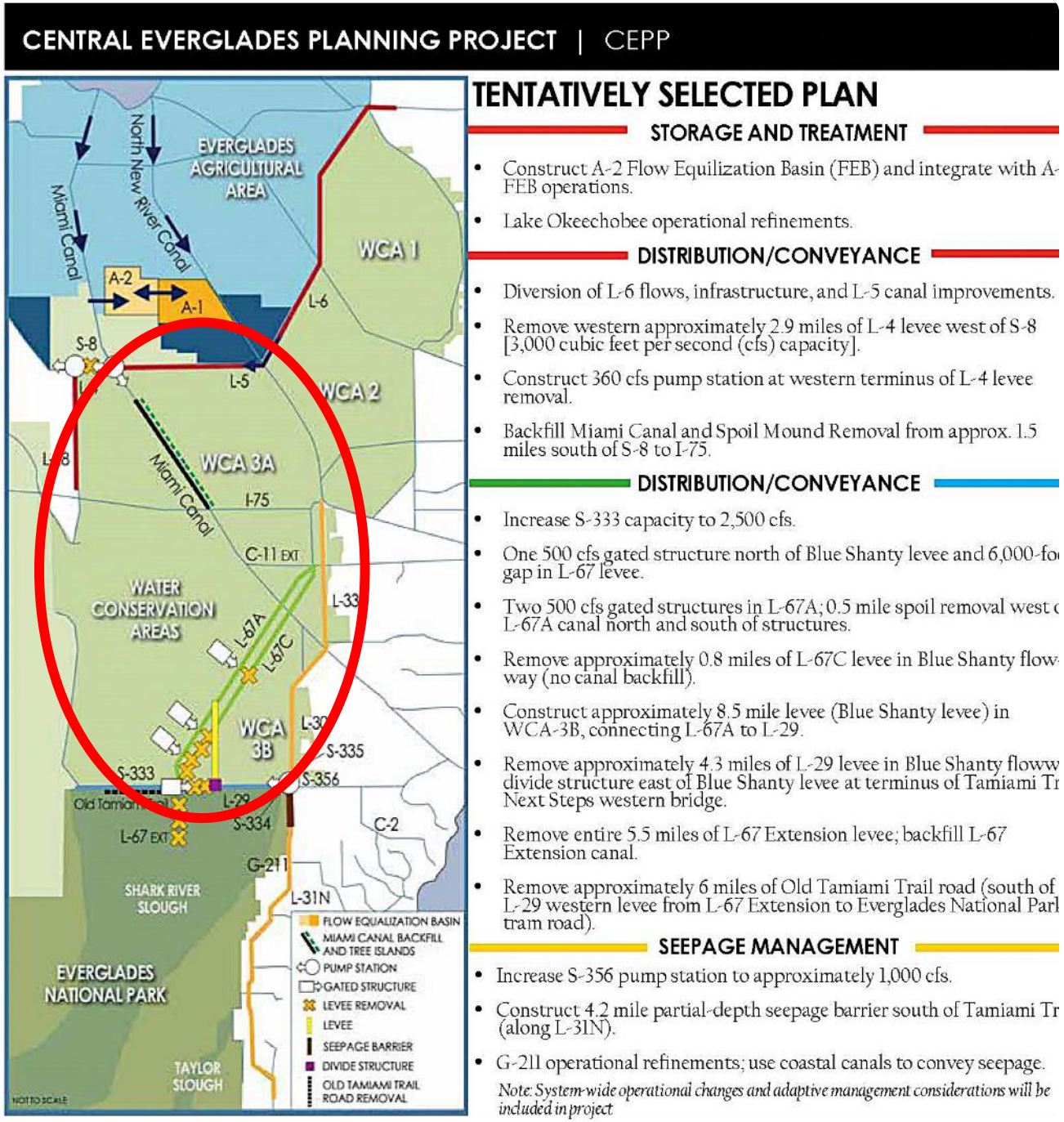
Monitoring ecological responses to restoration efforts	Providing scientific guidance for project implementation	Identifying potential improvements to CERP

Central Everglades Planning Process (CEPP) Hydrologic Restoration

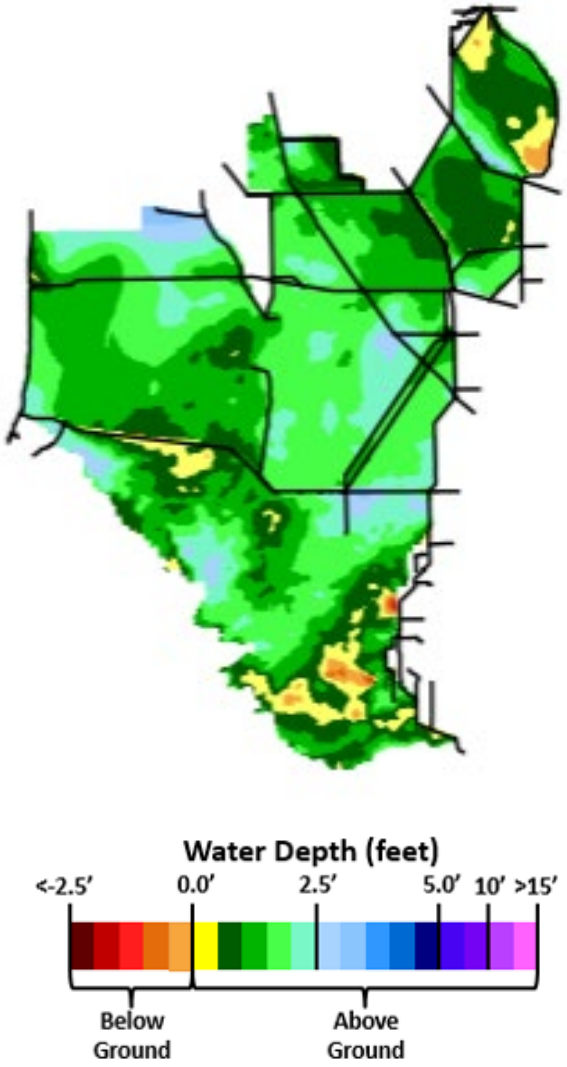
- CEPP is a CERP program
- The Tree Island Monitoring project is a RECOVER program monitoring the tree island ecological response to the CEPP hydrologic restoration



CEPP Hydrologic Restoration



CEPP North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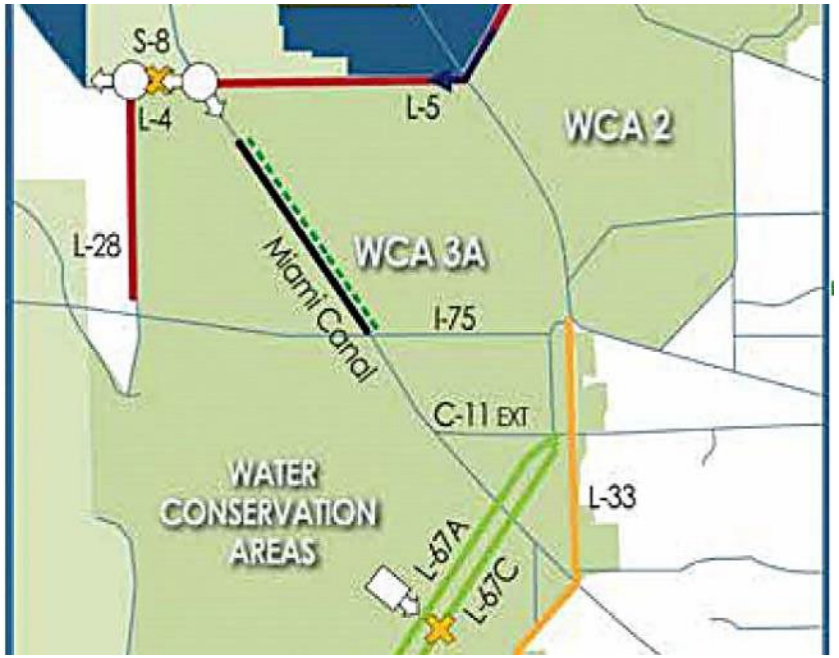
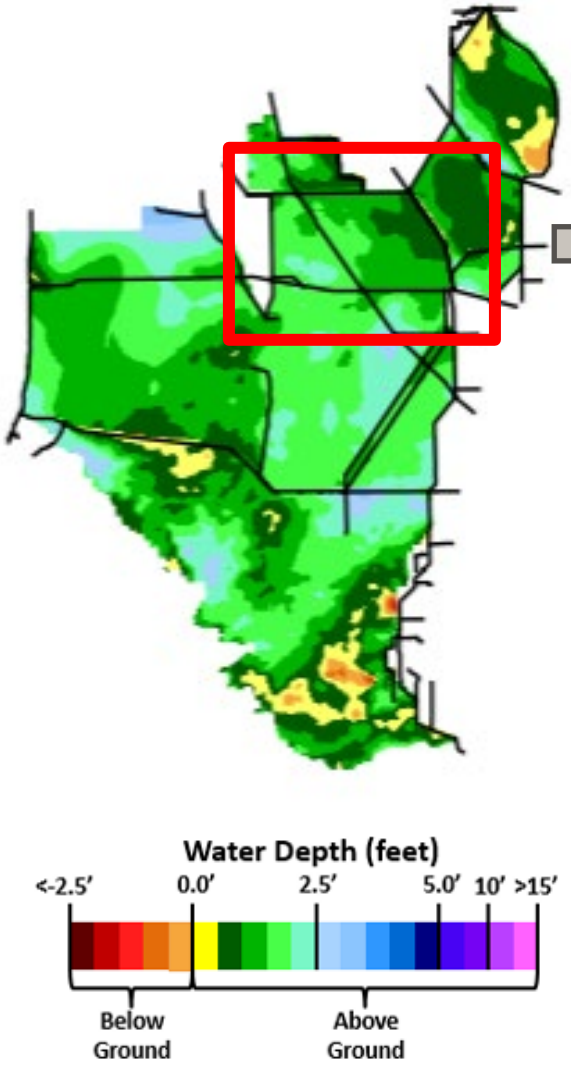
2.5'
5.0'
10'
>15'
Below Ground
Above Ground


S-8
L-4
L-5
WCA 2
L-28
WCA 3A
Miami Canal
I-75
C-11 EXT
WATER CONSERVATION AREAS
L-33
L-67A
L-67C

CEPP North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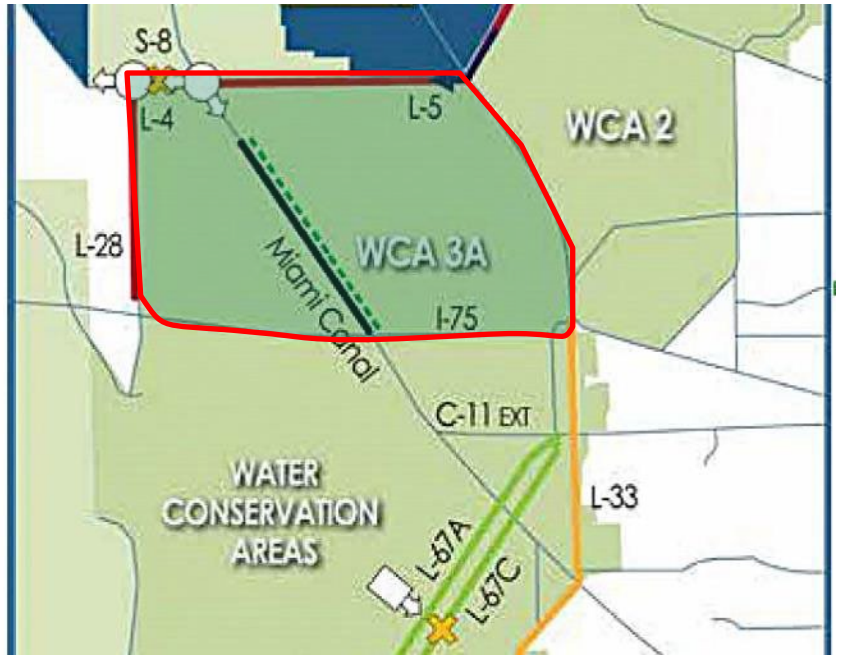
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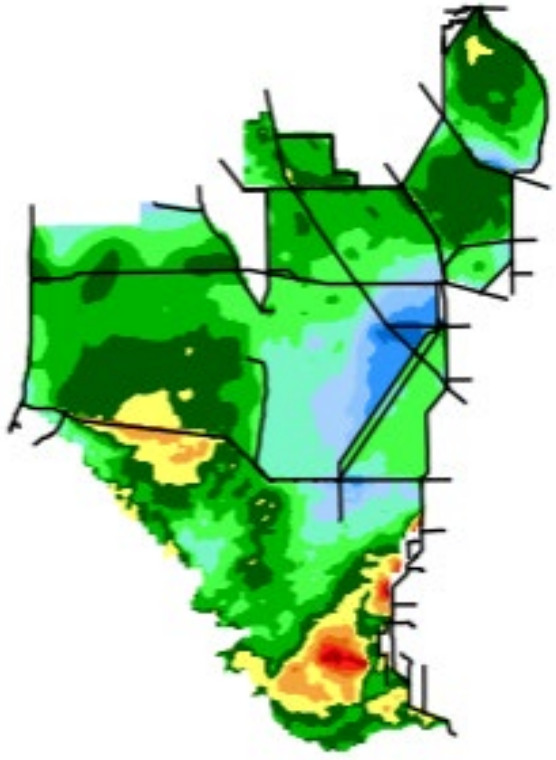
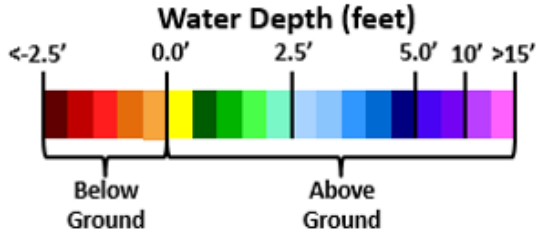
CEPP South

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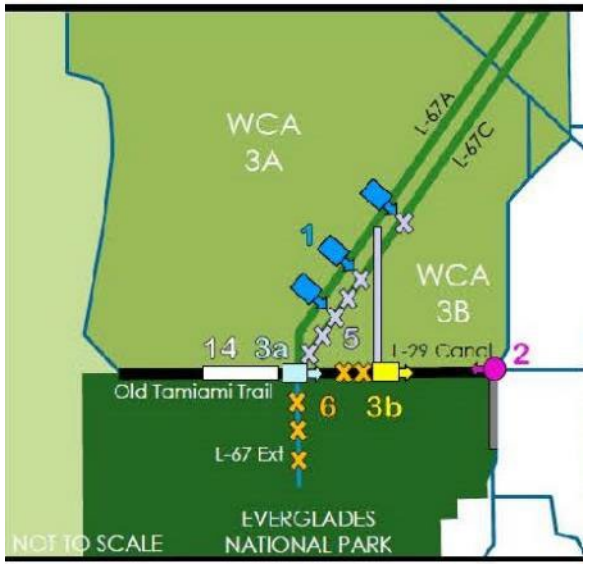
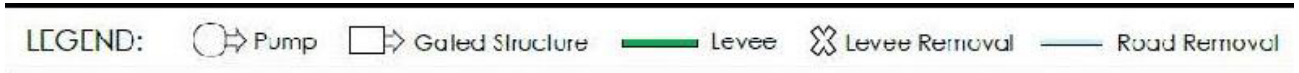
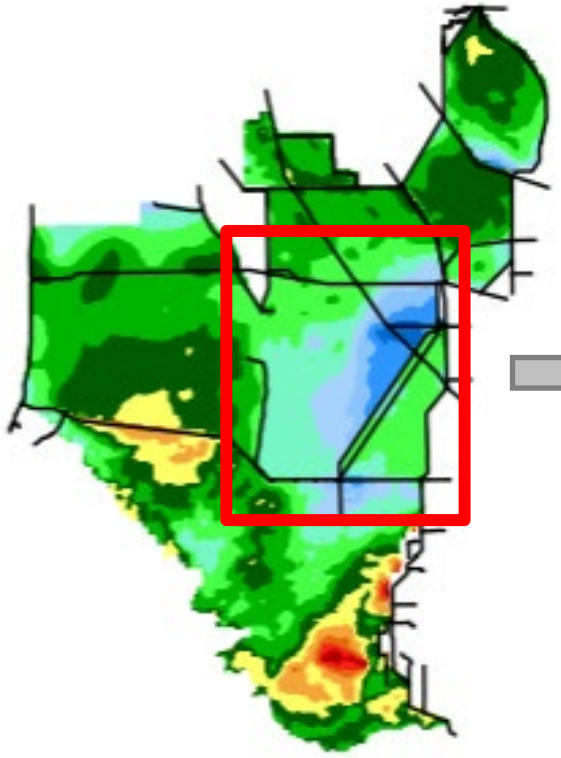
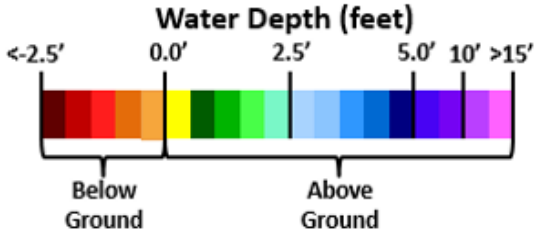

WCA 3A
L-67A
L-67C
1
WCA 3B
14
3a
5
L-29 Canal
2
Old Tamiami Trail
6
3b
L-67 Ext
EVERGLADES NATIONAL PARK
NOT TO SCALE


LEGEND:
Pump
Gated Structure
Levee
Levee Removal
Road Removal

CEPP South

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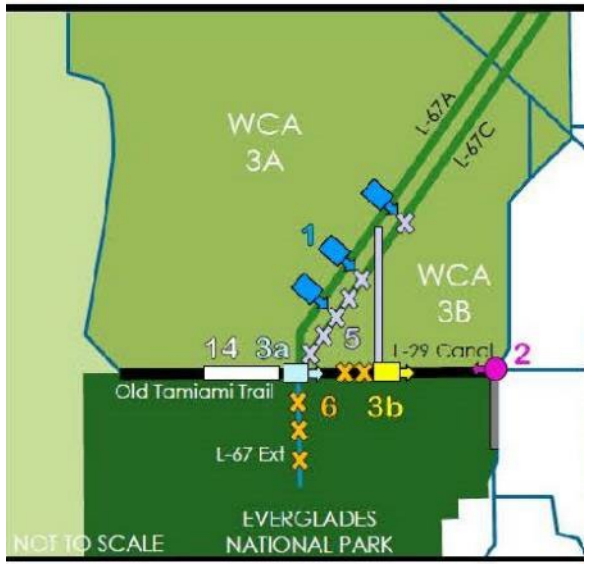
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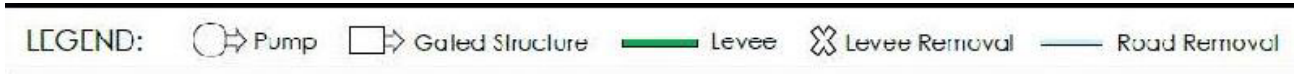
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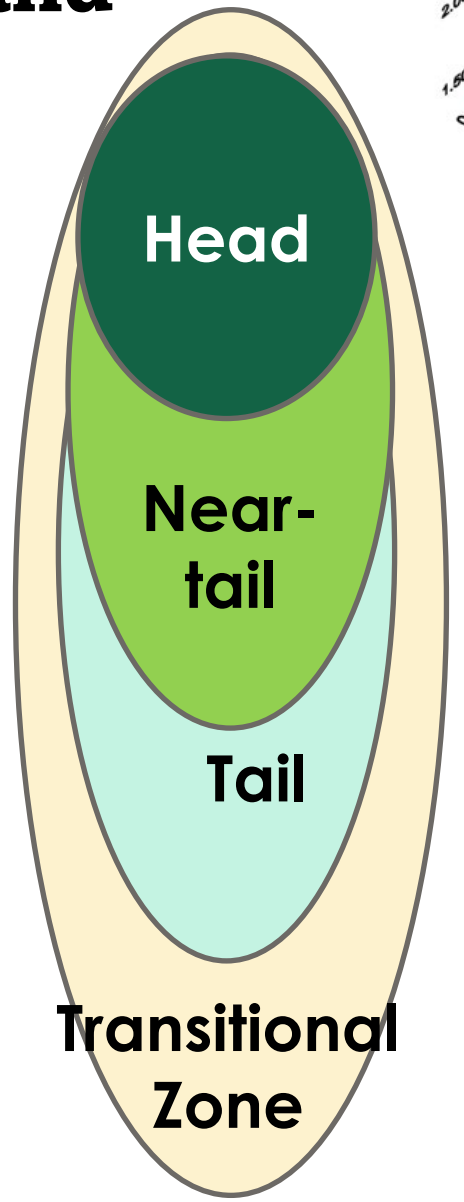
Tree Island Monitoring Program

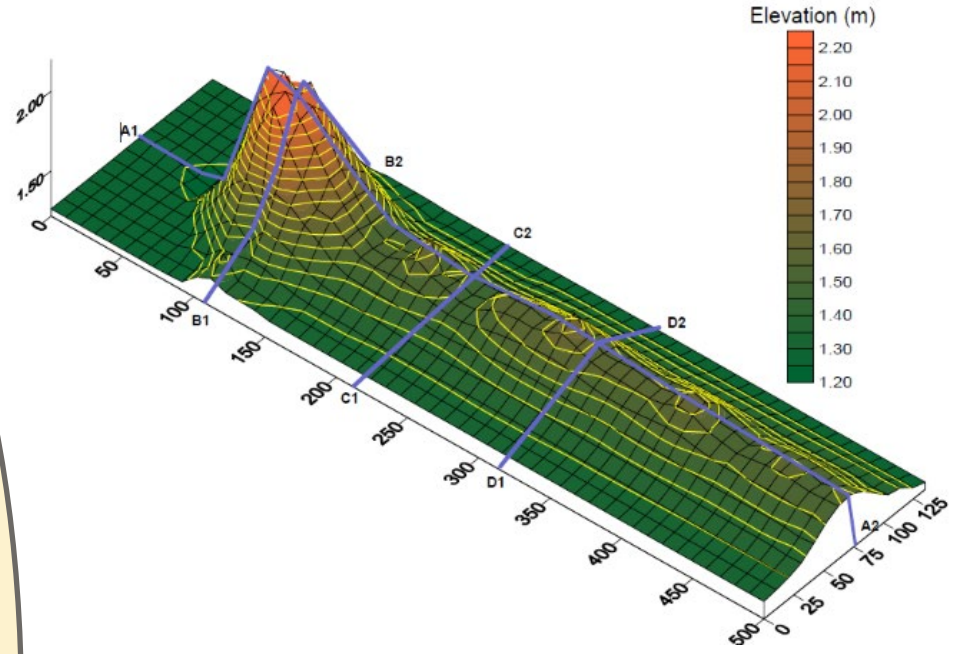
Tree Island Monitoring

- Important component of CEPP restoration
- Establish vegetation baseline conditions on as many islands as possible
- Goal: help assess impacts (if any) of hydrologic restoration on tree islands

Geography of a Tree Island

- Head
  - Widest part of the island
  - Highest elevation
  - Largest, tallest trees with lowest tolerance for inundation
- Near-tail
  - Canopy becomes shorter
  - Canopy community transitions to more flood tolerant species

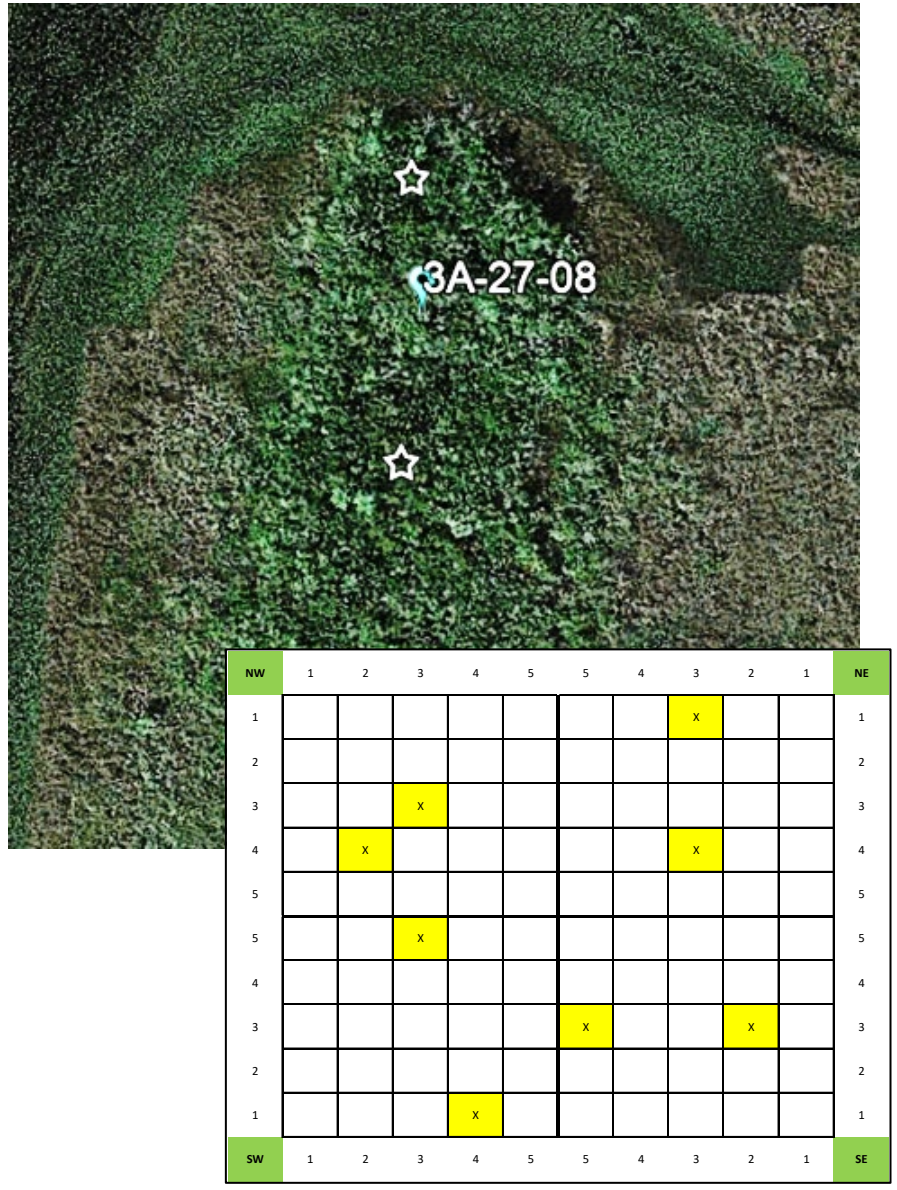




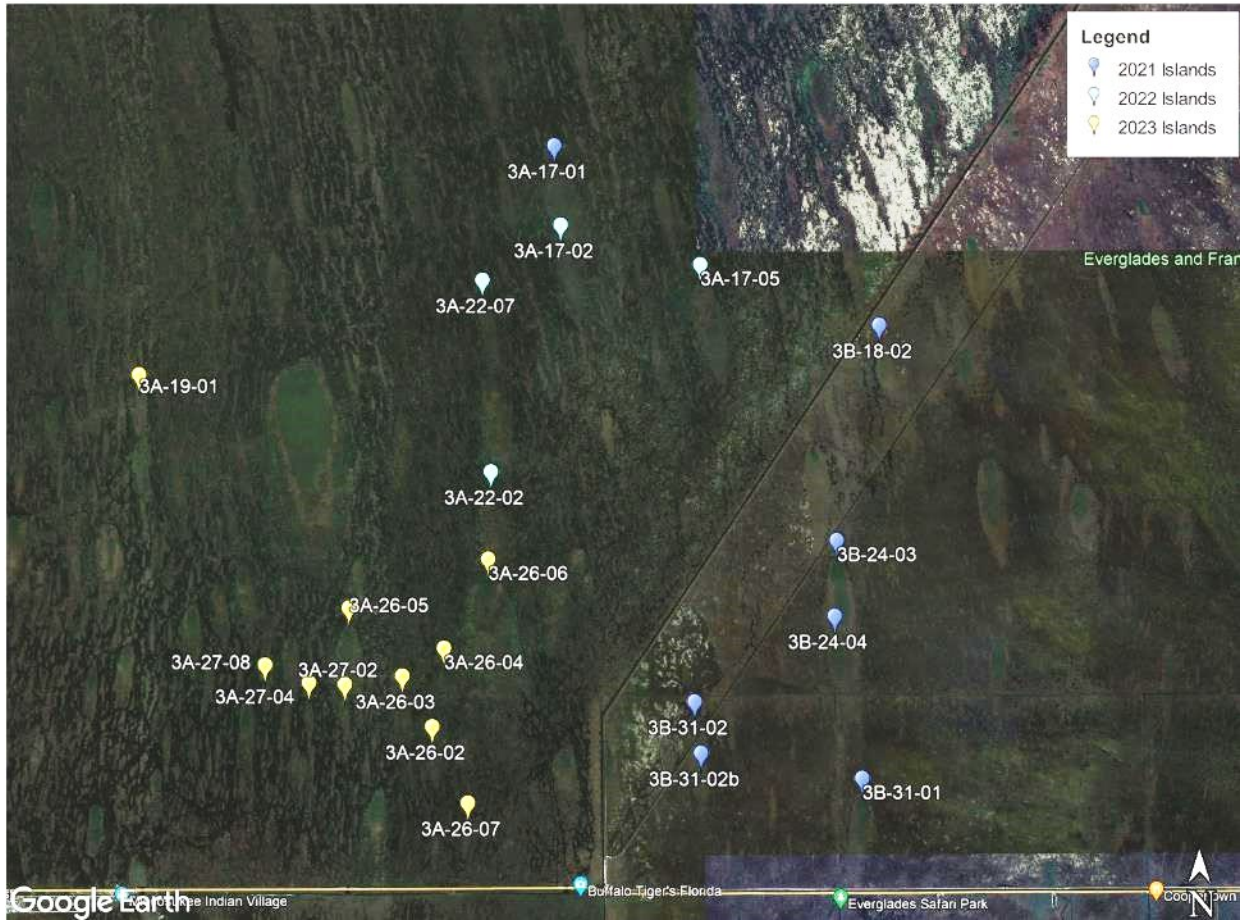
- Tail
  - Similar canopy species as near-tail, but with scrubby growth habits
- Transitional Zone
  - Usually sawgrass and/or cattail

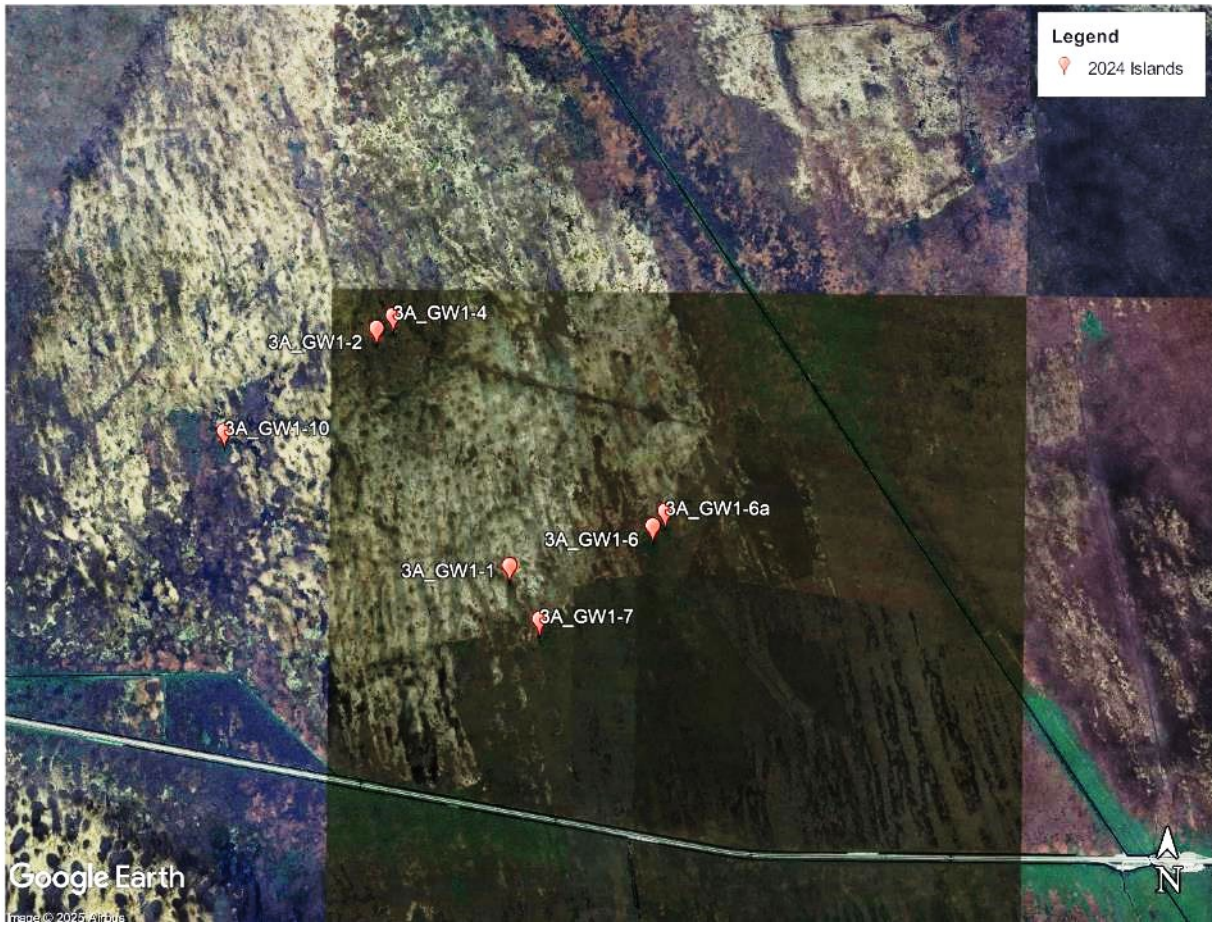
Methods

- Up to four 10m x 10m plots/island: 2 in head and 2 in near-tail.
- All trees in plots tagged, height and dbh measured.
- % cover for herbaceous vegetation in 8 1m x 1m subplots.
- Water depth measured at plot corners & at highest elevation in the plot.
- Water depth referenced to nearest benchmark (to calculate average ground elevation).



Project Timeline

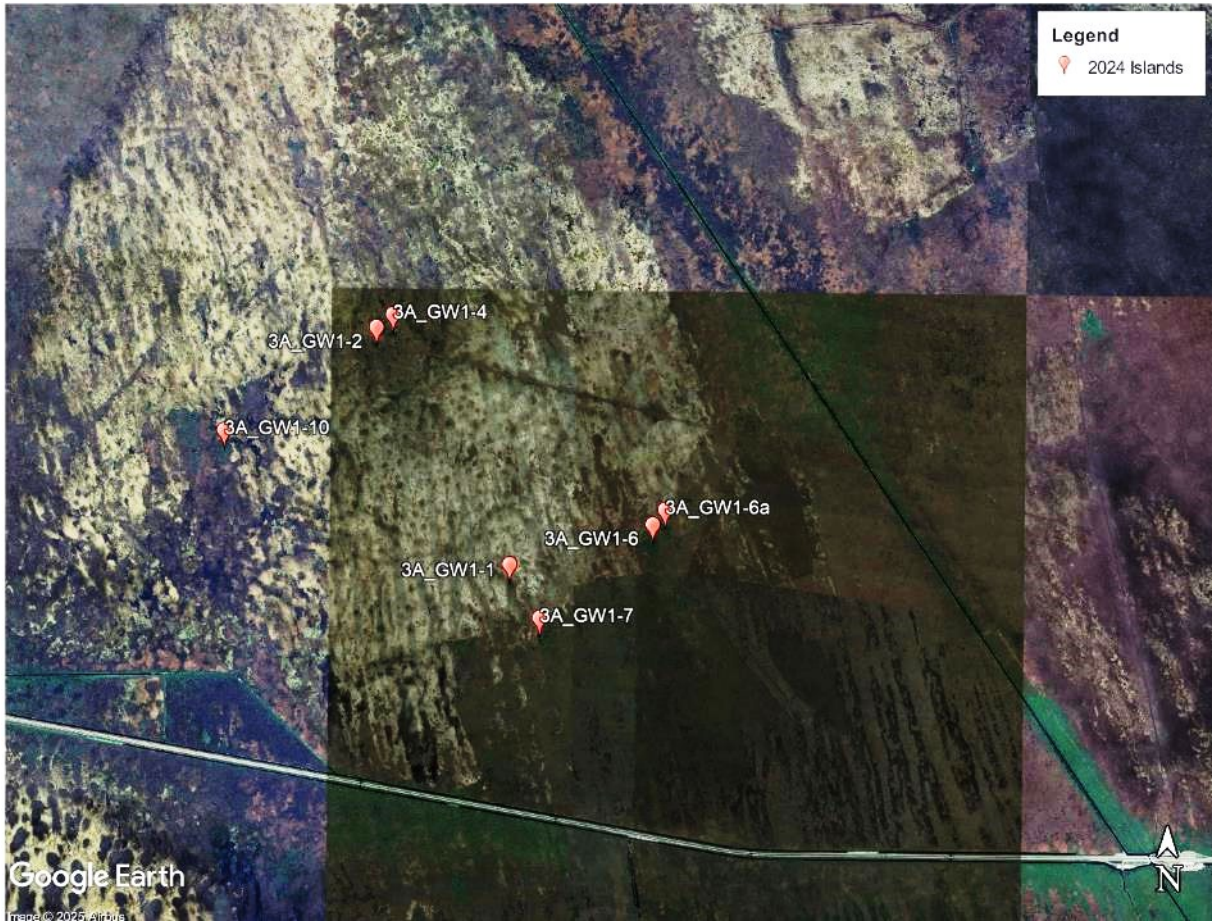




Monitoring plots established on 21 islands in WCA-3A and WCA-3B since the inception of the project in 2021.

An additional 7 islands were completed in WCA-3AN in 2024.

Project Timeline



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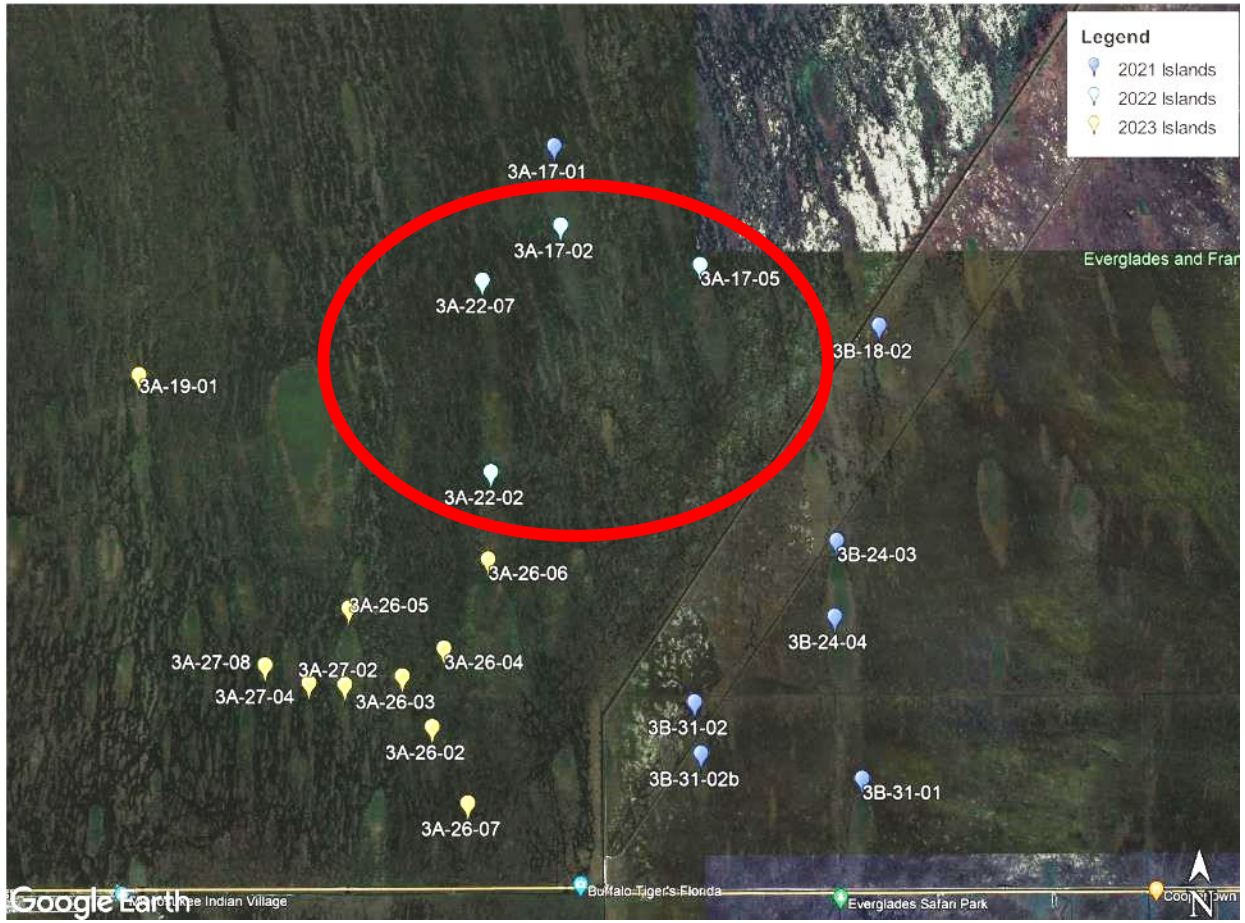

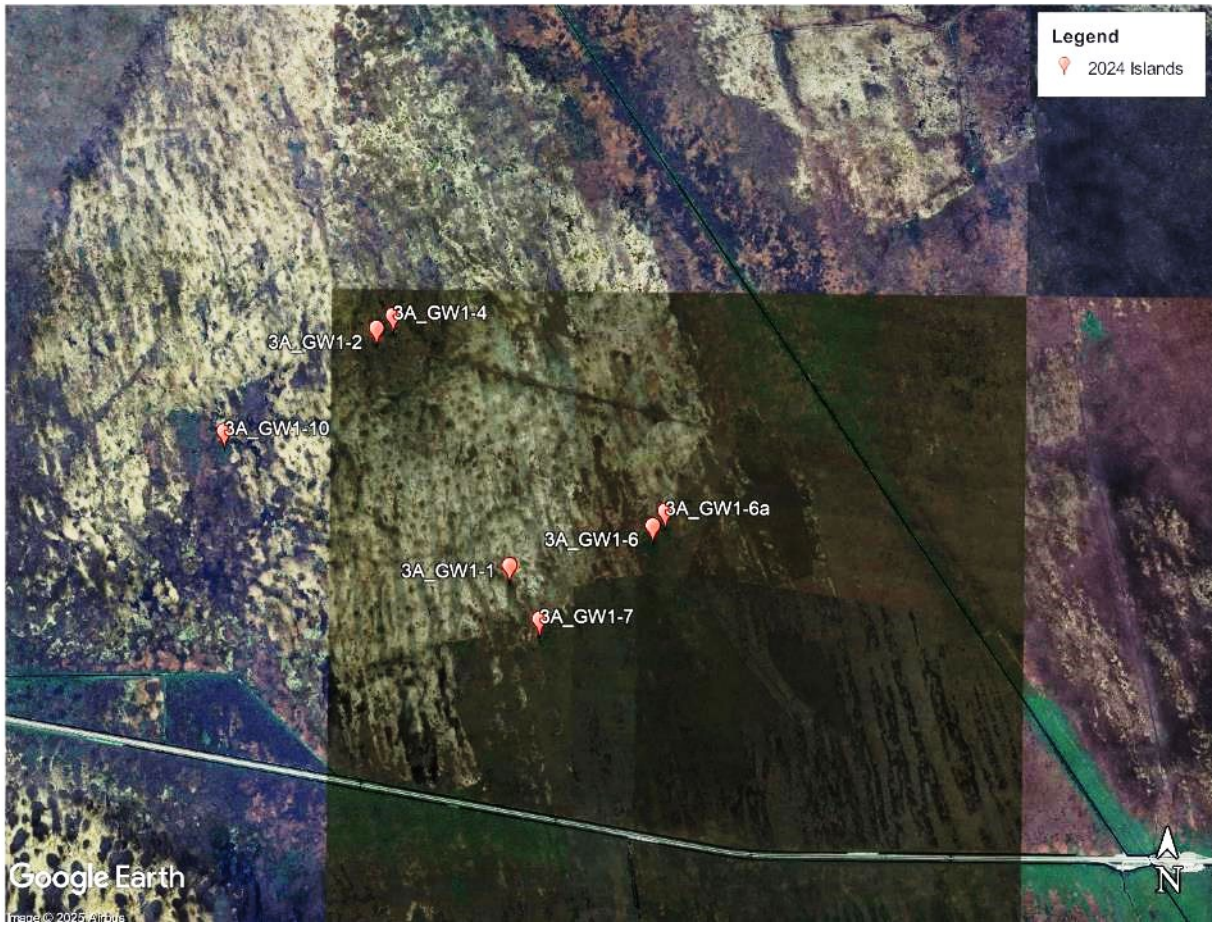

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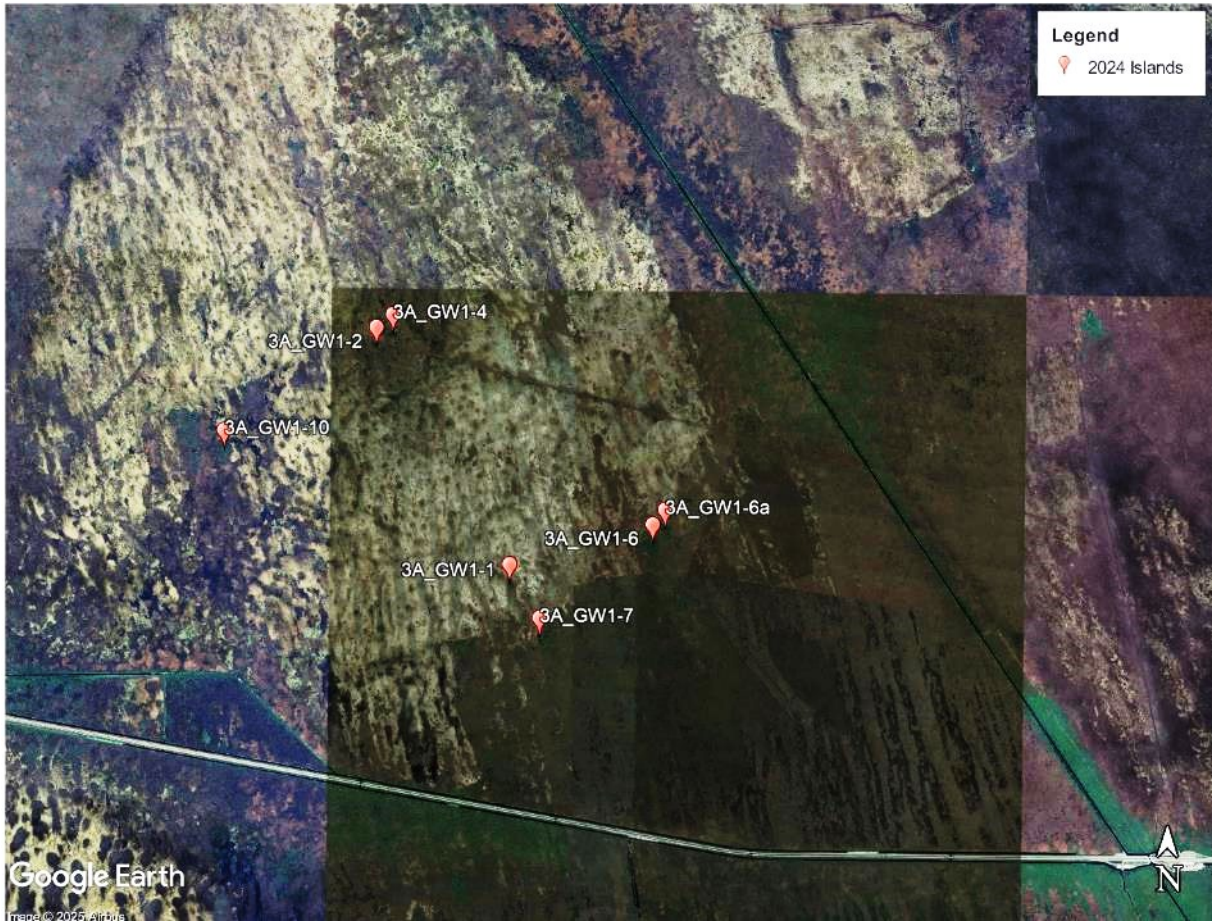

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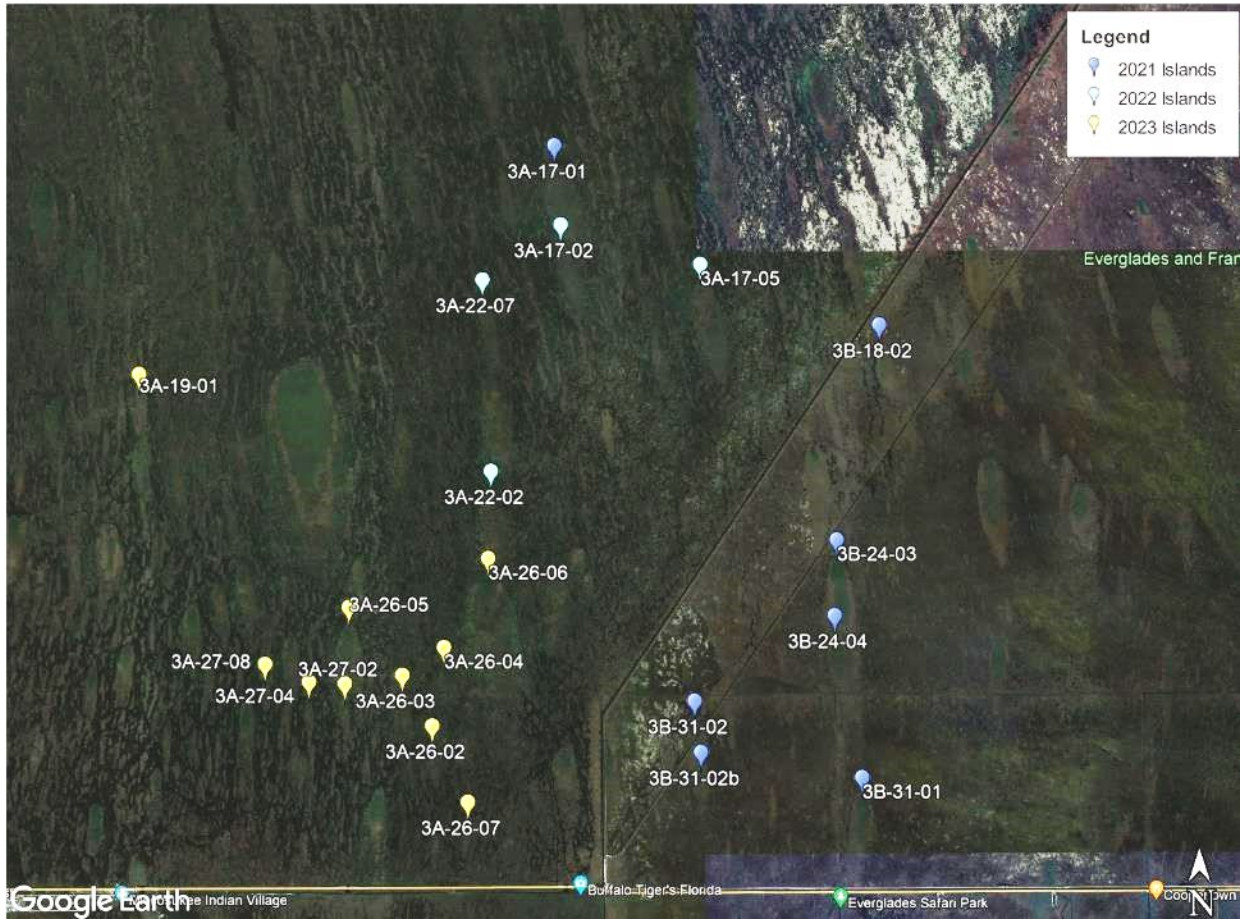

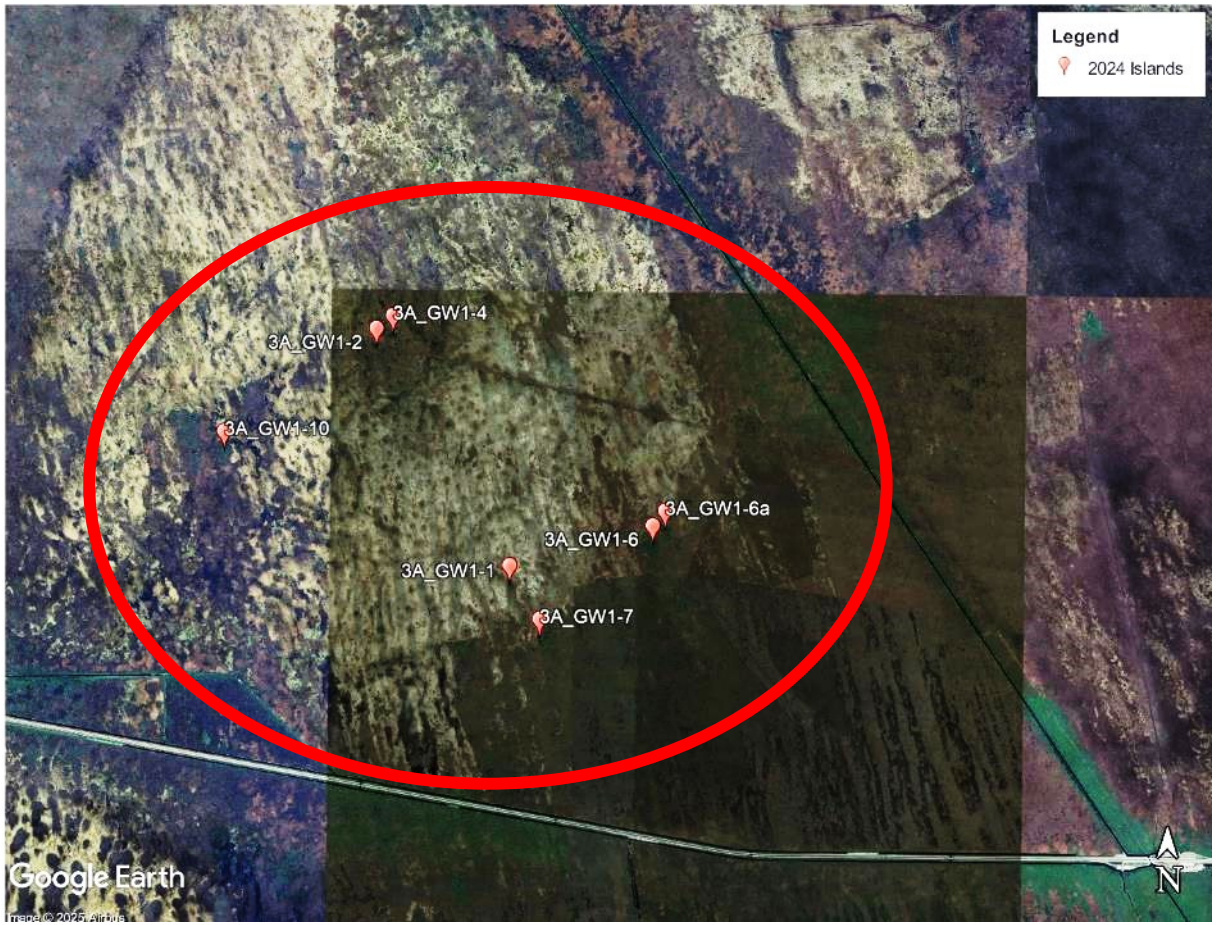

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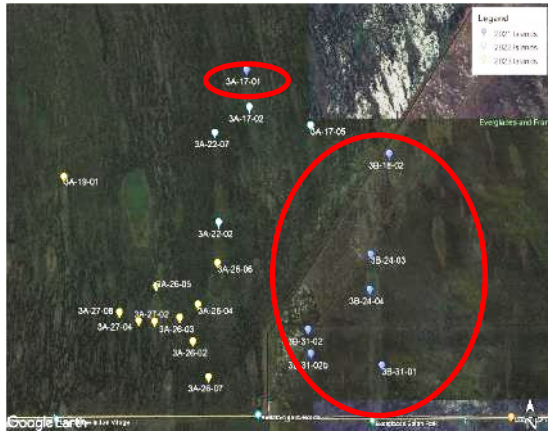
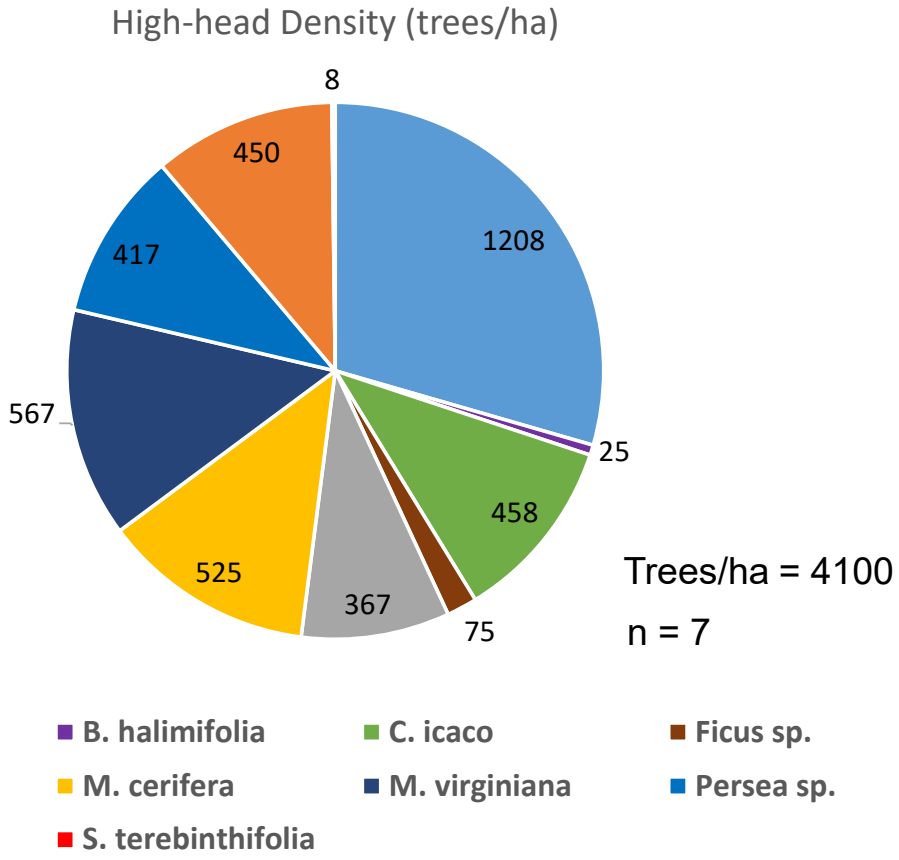
Summary of Findings - Monitoring Year 2021 WCA-3B



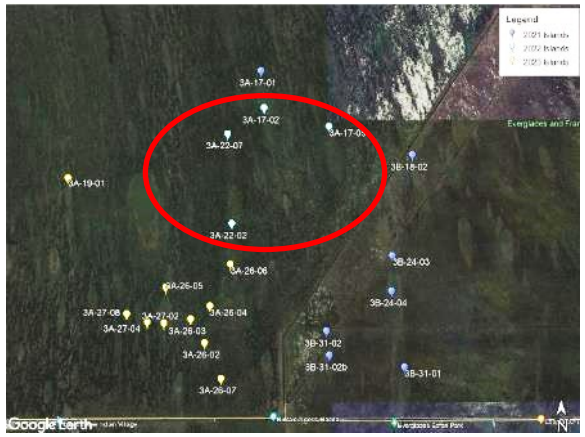


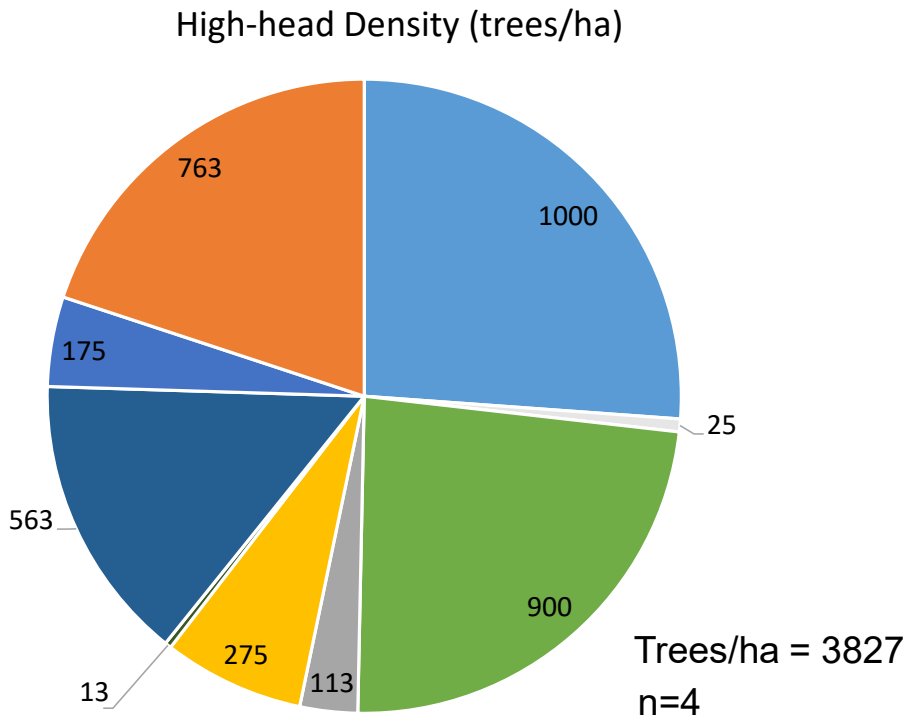
Dominant canopy species were typically pond apple (*A. glabra*) and Carolina willow (*S. caroliniana*).

Across all islands surveyed in 2021, the density of canopy species was more evenly represented relative to islands from WCA-3A.

Avg. Head Plot Elevation (m)	Inundation Days per Year	
	Range	Average
2.01	63 - 253	175

Summary of Findings - Monitoring Year 2022 WCA-3A





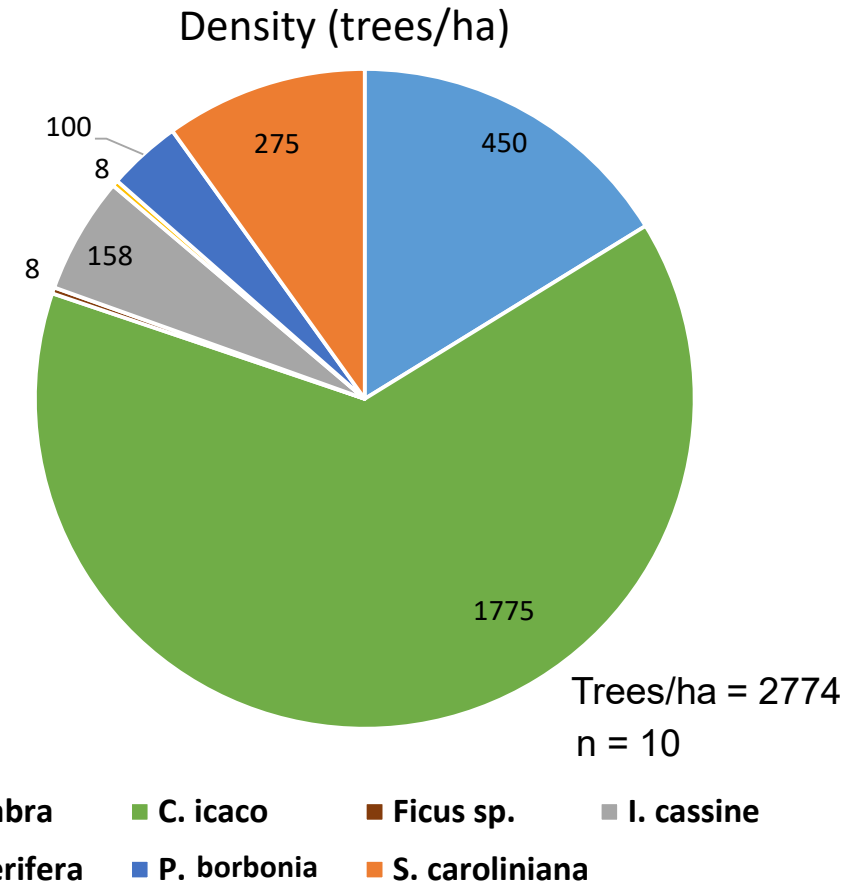
Avg. Head Plot Elevation (m)	Inundation Days per Year	
	Range	Average
2.39	181 - 268	231

High-head canopies were again dominated by pond apple and Carolina willow.

Almost 70% of canopy density in the heads was comprised of pond apple, Carolina willow, and cocoplum.

The 2022 islands experienced the most inundation days per year relative to islands in WCA-3B and southern WCA-3A.

Summary of Findings - Monitoring Year 2023 WCA-3A



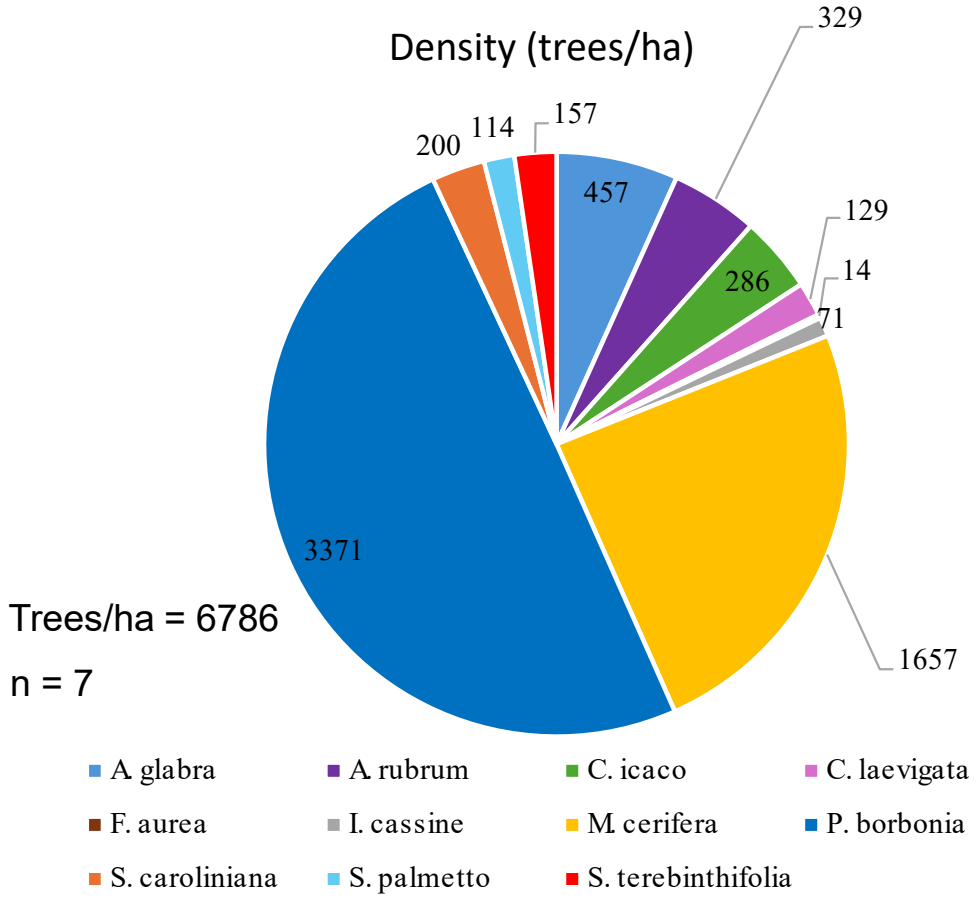
Avg. Head Plot Elevation (m)	Inundation Days per Year	
	Range	Average
2.46	67 - 214	142

Cocoplum comprised more than 60% of the trees surveyed.

Density and species diversity was lower on these cocoplum-dominated islands compared to WCA-3B and further north islands in WCA-3A.

These islands had fewest inundation days/year compared to WCA-3B and other WCA-3A islands.

Summary of Findings - Monitoring Year 2024 WCA-3AN



Avg. Head Plot Elevation (m)	Inundation Days per Year	
	Range	Average
3.27	0 - 62	34

Four of the 7 islands were engineered, planted and managed by FWC.

These 7 islands experience the fewest inundation days per year compared to islands in WCA-3A and 3B.

Canopy species composition was very different from islands surveyed in WCA-3A and 3B.

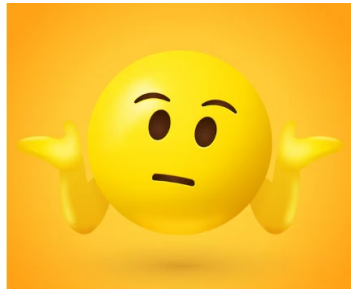
Overall Takeaways

- Large variations in canopy species density, diversity, and structure observed.

- Each island has its own unique characteristics that will influence how its vegetation might respond to hydrologic restoration.

- Tree islands are critical components of the Everglades ecosystem. Continued long-term monitoring is crucial to their protection.

WHY should we care?



- CERP aims to:
  - Restore and protect natural habitats and species
  - Get the water right
  - Ensure compatibility of built and natural systems

- Continued long-term monitoring under RECOVER is crucial in ensuring that CERP projects are meeting the program's overall goals

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A big shout-out to:

Carlos Coronado, Michael Manna, and Fred Sklar (SFWMD)

Jean Woodmansee, Sharon Ewe, Marina Loiacono, Ashley Moreno, and Elli Danielson (Stantec)

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Questions?