

# Tree Island Structure and Composition in Water Conservation Area 3

### **GEER Conference 2025**

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# 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





### TENTATIVELY SELECTED PLAN

#### STORAGE AND TREATMENT

- Construct A-2 Flow Equilization Basin (FEB) and integrate with A-FEB operations.
- Lake Okeechobee operational refinements.

#### DISTRIBUTION/CONVEYANCE

- Diversion of L-6 flows, infrastructure, and L-5 canal improvements.
- Remove western approximately 2.9 miles of L-4 levee west of S-8 [3,000 cubic feet per second (cfs) capacity].
- Construct 360 cfs pump station at western terminus of L-4 levee removal.
- Backfill Miami Canal and Spoil Mound Removal from approx. 1.5 miles south of S-8 to I-75.

### DISTRIBUTION/CONVEYANCE

- Increase S-333 capacity to 2,500 cfs.
- One 500 cfs gated structure north of Blue Shanty levee and 6,000-fo gap in L-67 levee.
- Two 500 cfs gated structures in L-67A;0.5 mile spoil removal west c L-67A canal north and south of structures.
- Remove approximately 0.8 miles of L-67C levee in Blue Shanty flow way (no canal backfill).
- Construct approximately 8.5 mile levee (Blue Shanty levee) in WCA-3B, connecting L-67A to L-29.
- Remove approximately 4.3 miles of L-29 levee in Blue Shanty floww divide structure east of Blue Shanty levee at terminus of Tamiami Tr Next Steps western bridge.
- Remove entire 5.5 miles of L-67 Extension levee; backfill L-67 Extension canal.
- Remove approximately 6 miles of Old Tamiami Trail road (south of L-29 western levee from L-67 Extension to Everglades National Parl tram road).

#### SEEPAGE MANAGEMENT

- Increase S-356 pump station to approximately 1,000 cfs.
- Construct 4.2 mile partial-depth seepage barrier south of Tamiami Tr (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

# **CEPP North**





# **CEPP** North





# **CEPP South**





# **CEPP South**



# 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



2.10 2 00 .90 .80 .70

1.60 1.50 .40

1.30 20

# 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).





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





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

Legend

2024 Islands



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

# Summary of Findings - Monitoring Year 2021 WCA-3B



High-head Density (trees/ha) 8 450 1208 417 567\_ 25 458 Trees/ha = 4100525 367 75 n = 7 A. glabra B. halimifolia C. icaco Ficus sp. ■ I. cassine M. cerifera M. virginiana Persea sp. S. caroliniana **S.** terebinthifolia Avg. Head Plot **Inundation Days per Year** 

63 - 253

2.01

Range Average

175

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.

# Summary of Findings - Monitoring Year 2022 WCA-3A



High-head Density (trees/ha)



A. glabra	A. rubrum	C. icaco	I. cassine	M. cerifera
M. grandiflora	M. virginiana	P. borbonia	S. caroliniana	

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

High-head canopies were again dominated by <u>pond apple</u> and <u>Carolina willow</u>.

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



Density (trees/ha)

100



M. cerifera P. borbonia S. caroliniana

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

<u>Cocoplum</u> comprised more than 60% of the trees surveyed.

Density and species diversity was lower on these cocoplumdominated 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	Inundation Days per Year		
Elevation (m)	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



# A big shout-out to:

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





# **Questions?**