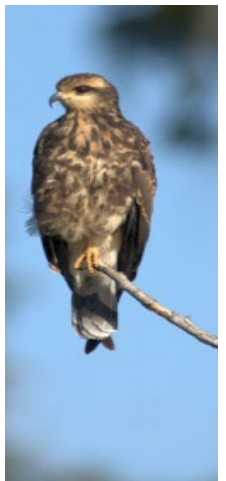
Restoration, Coordination, Verification (RECOVER)

Assess for Success:
Science Supporting CERP Restoration in Lake Okeechobee and the Northern Estuaries

Curtis Szewczyk, Jennifer Chastant – SFWMD

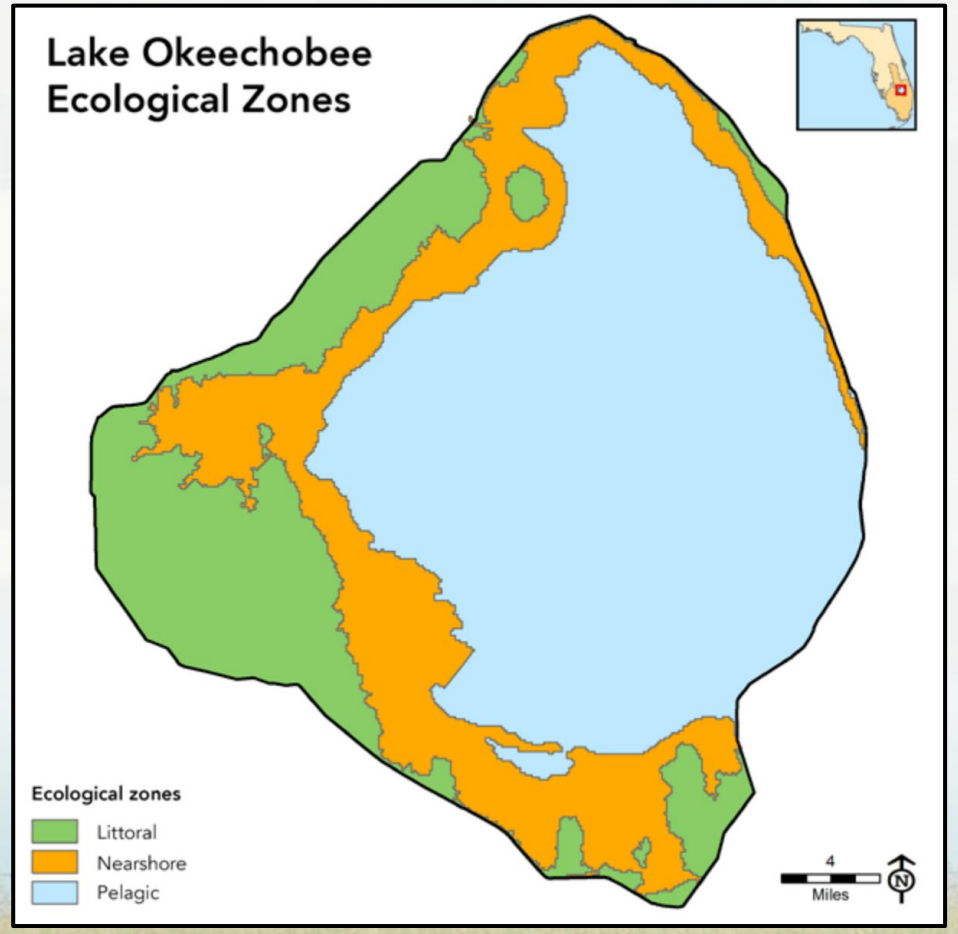


Greater Everglades Ecosystem Restoration Conference
April 22, 2025

Restoration, **Co**ordination, **Ver**ification

- **Interdisciplinary collaboration** of agencies, tribes, and institutions
- Conducts scientific and technical **evaluations** and **assessments** to improve the Comprehensive Everglades Restoration Plan's (CERP) ability to restore the south Florida ecosystem while providing for the region's other water-related needs
- Technical support to CERP with a **system-wide and integrative perspective**

Module Overview: Lake Okeechobee (LO)



Ecological Indicators: → **Ecological Zones:**

- Emergent Aquatic Vegetation (EAV) → Littoral
- Wading Birds → Littoral
- Submerged Aquatic Vegetation (SAV) → Nearshore
- Benthic Macroinvertebrates → Pelagic

Regional Challenges:

- Human alterations to the region have resulted in:
  - Disrupted timing, quantity, and distribution of flows
  - Loss of water storage = increased storm runoff volumes & rates
  - Spatial extent of wetlands have declined

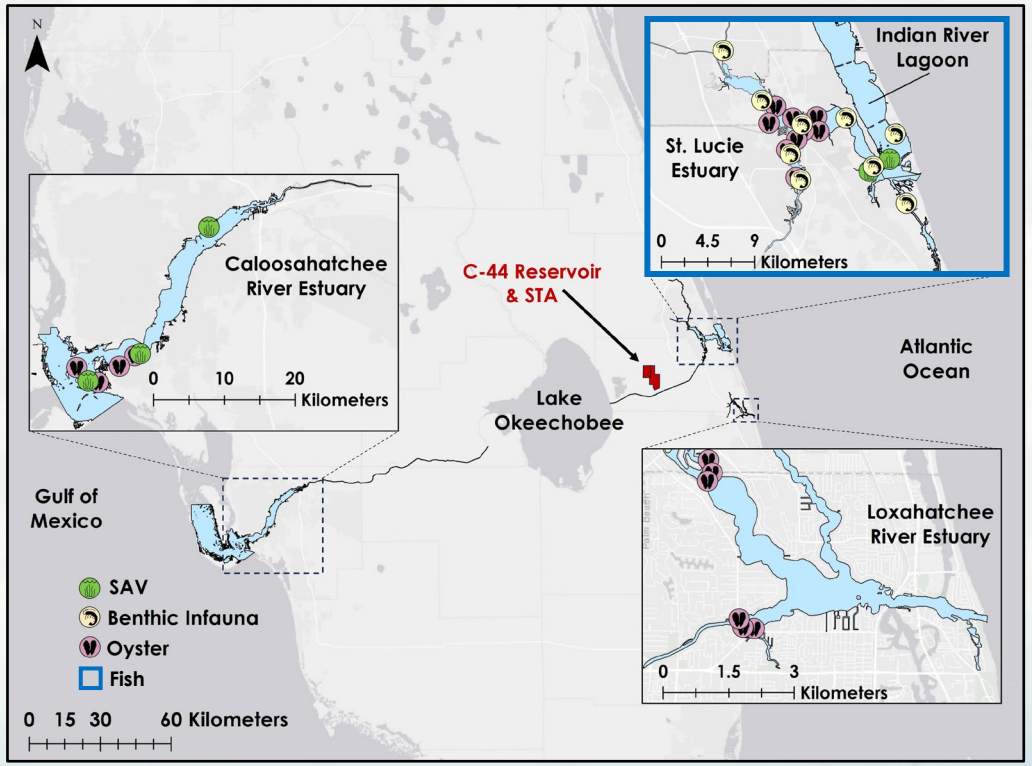
Module Overview: Northern Estuaries (NE)

Ecological Indicators:

- SAV
- Benthic Infauna
- Oysters
- Fish

Includes 4 Systems:

- Southern Indian River Lagoon (S-IRL)
- St. Lucie Estuary (SLE)
- Caloosahatchee Estuary (CRE)
- Loxahatchee Estuary (LOX)



Regional Challenges:

- Human alterations to the region have resulted in:
  - LO regulatory releases to SLE & CRE through constructed canal outflows can impact freshwater delivery volume/rates
  - LRE & SLE changed via dredging of the Jupiter and St. Lucie Inlets
  - Altered salinity is the major stressor for the NE indicators

Evaluation

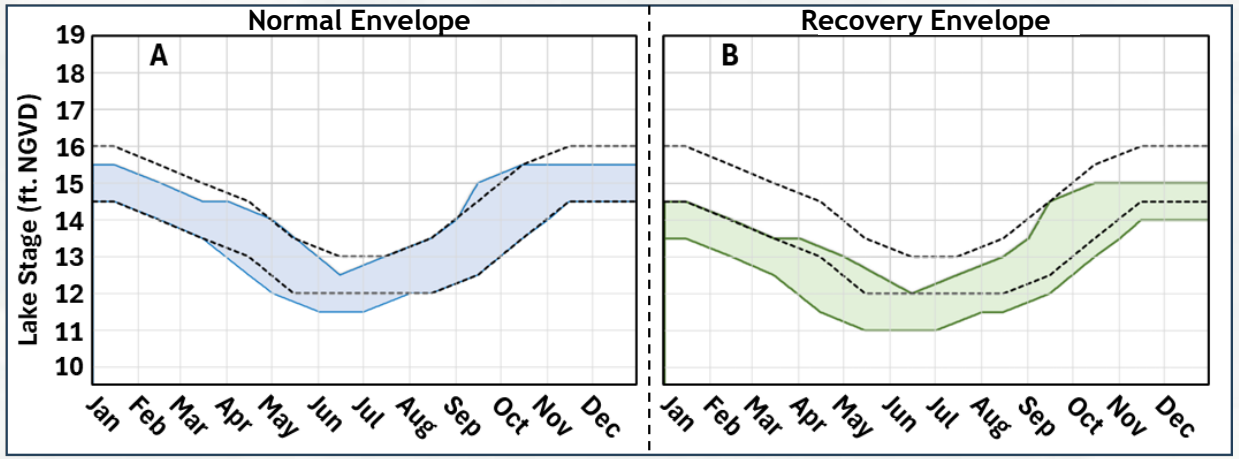
Forecasting project performance through predictive modeling & performance measures

RECOVER Performance Measures (PMs)

Tools that allow managers to evaluate the impact and effectiveness of CERP

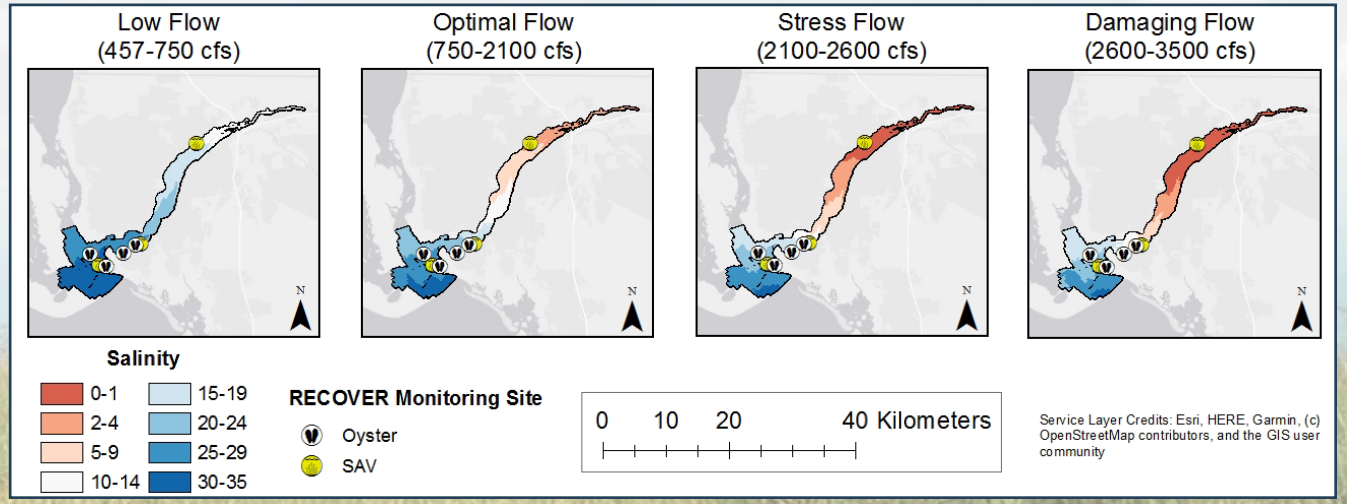
2020 LO Lake Stage PM

(Dashed lines represent 2007 PM criteria)



2025 NE Salinity Envelope PM Update (in works)

(Caloosahatchee River Estuary)



Evaluation

Forecasting project performance through predictive modeling & performance measures

RECOVER Performance Measures (PMs)

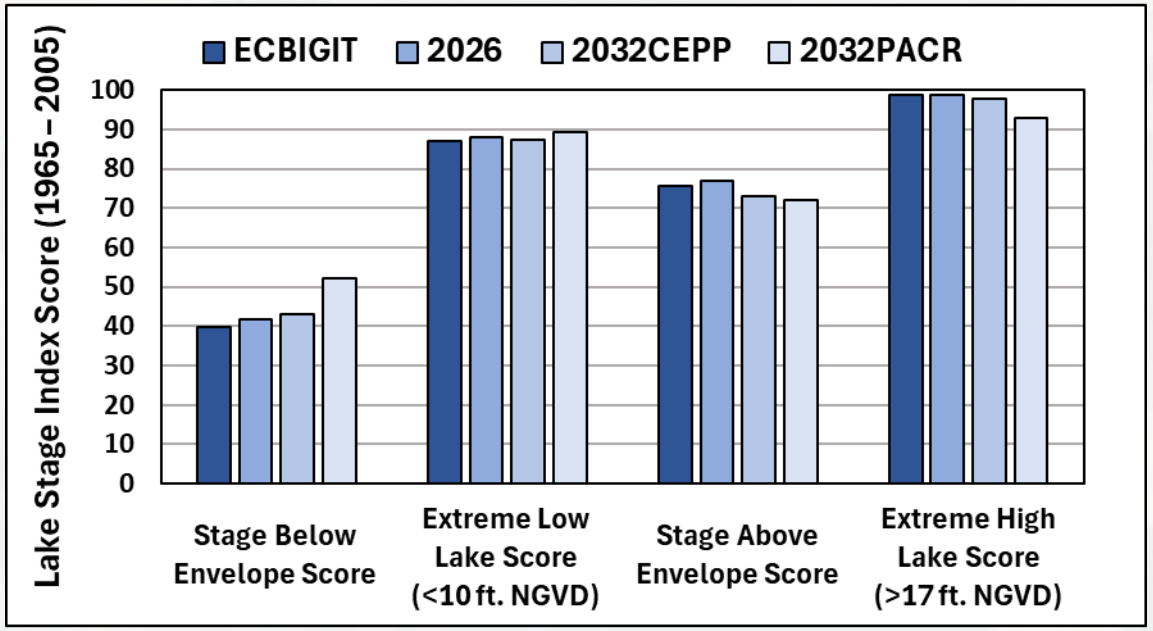
Tools that allow managers to evaluate the impact and effectiveness of CERP

Interim Goals (IGs)

Modeled ecological predictions of expected CERP restoration targets using forward-thinking project increment scenarios of CERP implementation

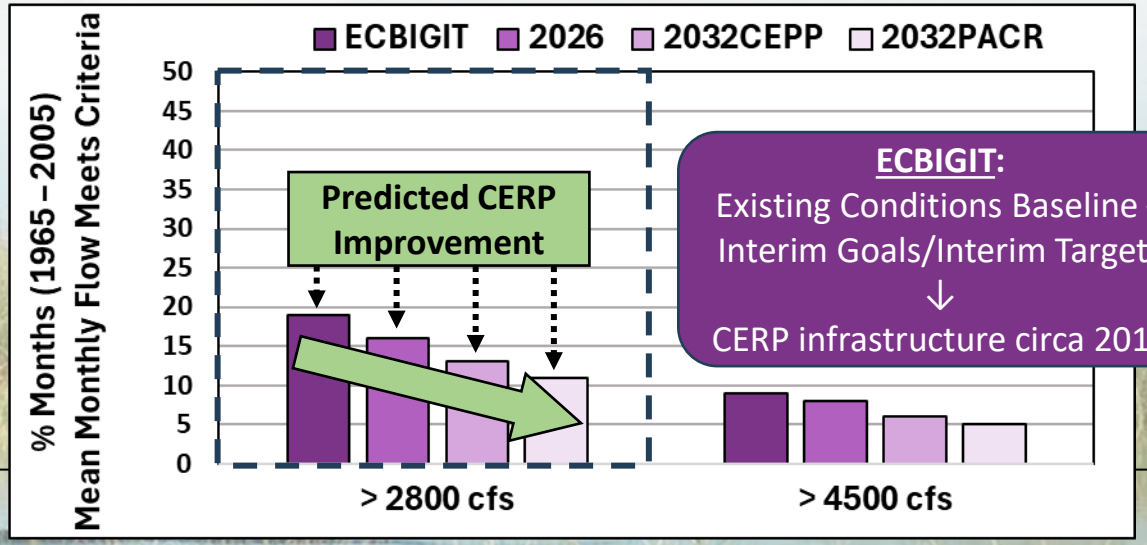
2020 LO Lake Stage Interim Goals

(IG simulations conducted using original 2007 PM criteria)

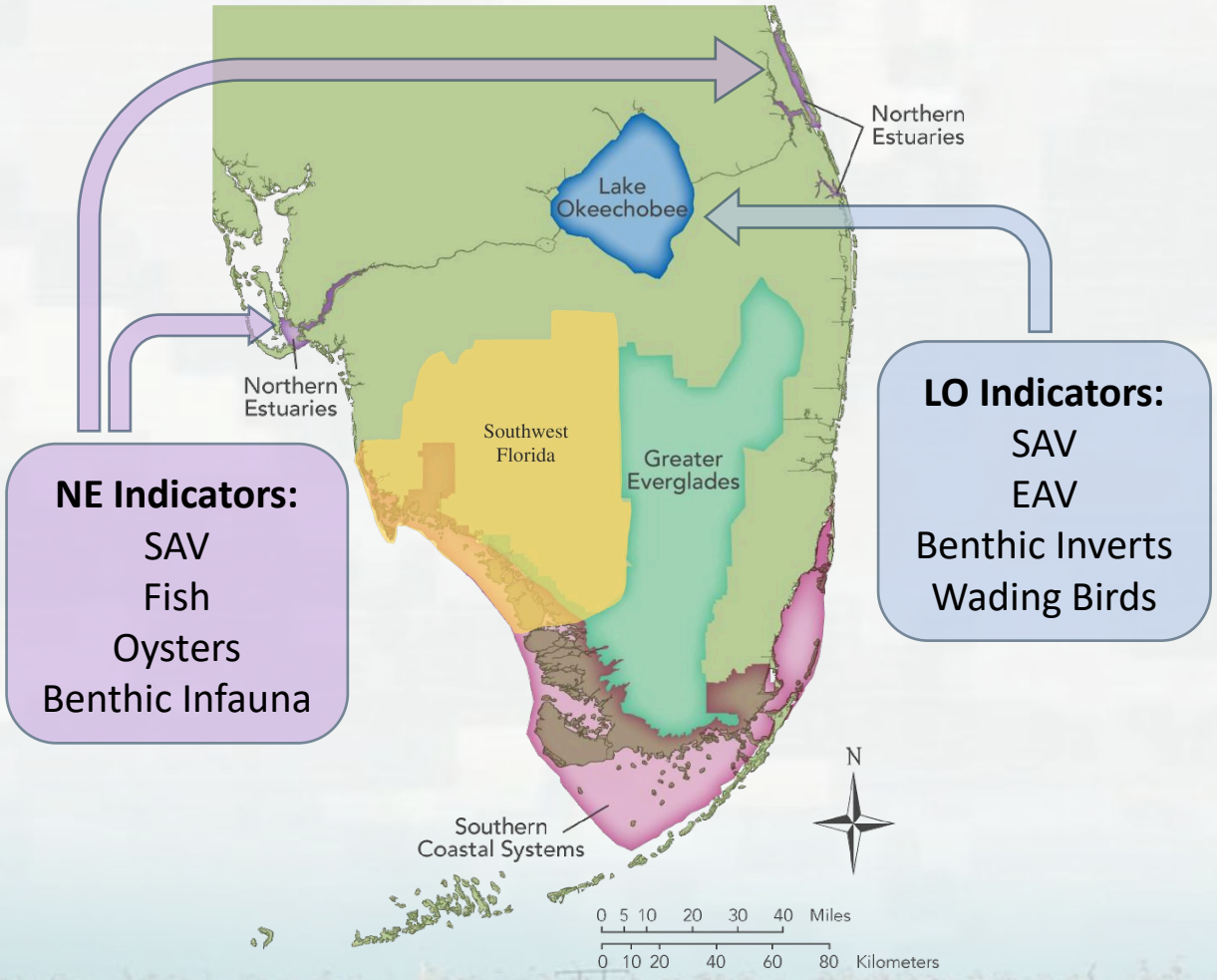


2020 NE Hydrology Interim Goals

(IG simulations conducted using original 2007 PM criteria)



MAP Monitoring Efforts (LO & NE)



NE Indicators:
SAV
Fish
Oysters
Benthic Infauna

LO Indicators:
SAV
EAV
Benthic Inverts
Wading Birds

Assessment

Measuring project performance through real-world monitoring efforts

RECOVER Monitoring & Assessment Plan (MAP)

Establish the framework for measuring and understanding system responses to CERP

Determine how well CERP is meeting its goals and objectives

Identify opportunities for improving performance of CERP, where needed

Evaluation | **How do we bridge the gap?** | **Assessment**

CERP Programmatic Regulations:

"…at least every five years, RECOVER shall prepare a technical report that presents an assessment of whether the goals and purposes of the Plan, including the Interim Goals and Interim Targets, are being achieved or are likely to be achieved"

Expected trends from IG effort:

ECBIGIT: (CERP circa 2017)
2026: (CERP expected in 2026)

To see how we did, please check out the handout.

RECOVER MAP data & trends:

Baseline: (WY2005 - WY2017)
Reporting: (WY2018 - WY2024)

PM Inventory: Lake Okeechobee

Performance Measure (PM)	Evaluation Tool?	Assessment Design?	Desired Restoration Condition Defined?	Current Version	Are Evaluation and Assessment Metrics aligned?
Lake Stage	Yes	Yes	Yes	2020	Yes *(LO Stage IG to adopt updated PM)*
Benthic Invertebrates	No	Yes	Yes	2007	No
EAV	No	Yes	Yes	2018	No
★ SAV	No	Yes	Yes	2016	No
★ Wading Birds	No	Yes	No	No LO PM	No

Requires development of modeling tools.

PM updates needed; requires development/revisiting of desired restoration condition, leveraging monitoring data.

Ensure, where possible, modeling and monitored metrics are the same, or relative

PM Inventory: Northern Estuaries

Performance Measure (PM)	Evaluation Tool?	Assessment Design?	Desired Restoration Condition Defined?	Current Version	Are Evaluation and Assessment Metrics aligned?
Salinity Envelope	Yes	Yes	Yes	2025 in progress	Yes *(NE Hydro IG to adopt updated PM)*
Benthic Infauna	No	Yes	No	2007	No
Fish	No	Yes	No	2007	No
Oyster	Yes	Yes	Yes – acreage only *(should be revisited)*	2007	Oyster habitat quantity – Yes *(Metrics of oyster quality – No)*
SAV	No	Yes	Yes – acreage only *(should be revisited)*	2007	No

Regional Progress and Next Steps:

LO – SAV

Evaluation Tool – Model Development:

Dr. Corey Callaghan (UF) contracted to help develop an SAV predictive model for a future LO SAV PM.

Other Progress:

Participation at Southern Coastal Systems SAV Workshop, helping ensure system-wide synthesis.

LO – Wading Birds

Evaluation Tool – Model Development:

Dr. Corey Callaghan (UF) contracted to help develop a Wading Bird predictive model for a future LO Wading Bird PM.

Other Progress:

Participation at RECOVER Wading Bird Workshop series, helping ensure system-wide synthesis.

NE – Ecological Indicators

Path Toward Improved Evaluation:

Initiated NE Workshop series aimed to:

(1) Leverage MAP data to update or define Desired Restoration Conditions.

(2) Determine criteria needed for Habitat Suitability Index (HSI) curves.

(3) Once determined, seek HSI modeling support for PM development.

QUESTIONS?

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