

“Fine Tuning Everglades Restoration”: The Loxahatchee Impoundment Landscape Assessment (LILA) Project



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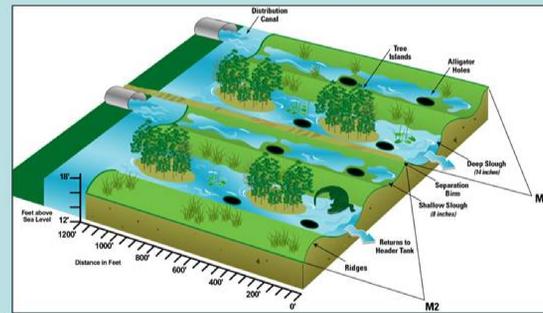
Background:

Everglades restoration is an enormous effort including many projects and activities outlined in the Comprehensive Everglades Restoration Plan (CERP). Scientists use the Loxahatchee Impoundment Landscape Assessment (LILA) project to assist in developing performance measures for Everglades restoration.

The strength of LILA is that the certainty of data interpretation is high because hydrology and other critical processes are controlled and replicated.

Project Design:

Four independent replicated 20-acre impoundments or “macrocosms” were sculpted from existing impoundments at the refuge. Water depths and flows are controlled by a re-circulating water system and are manipulated to induce responses from tree island, ridge and slough and wildlife communities.



Landscape features of two macrocosms located at the Arthur R. Marshall Loxahatchee National Wildlife Refuge.

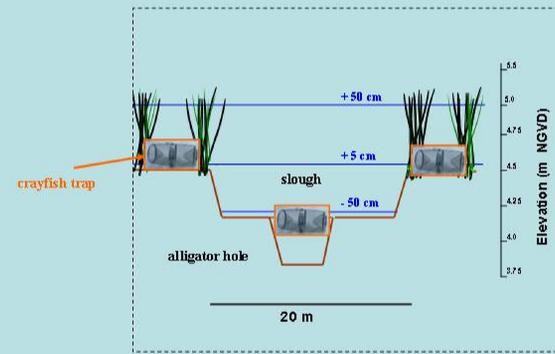
Research Projects at LILA:

I. Tree Island Vegetation I

- Flooding tolerance of 7 woody species
- Suitability of native species planting for tree island restoration based on survival
- P. Wetzel, E.A. Cline and A. van der Valk. 2008. Restoring Tree Islands in the Everglades: Experimental Studies of Tree Seedling Survival and Growth. Restoration Ecology (16:2)

II. Dispersal Response of Crayfish

- How does the Slough Crayfish (*Procambarus fallax*) respond to water recession



Crayfish sampling locations and treatment depths

III. Measurement of Floc Transport

- Quantify the movement of Everglades sediment in response to induced flow using magnetic floc



Flumes and sampling grid containing magnets to capture magnetic floc

IV. Prey Vulnerability to Avian Predation

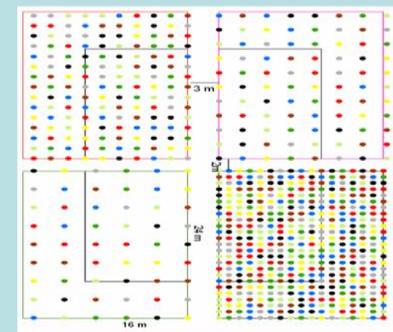
- Vegetation Density
- Water Depth



Wading Birds in predation study plot

V. Tree Island Vegetation II

- Flooding tolerance of 10 woody species (survival, above and below ground biomass)
- Planting density – competition



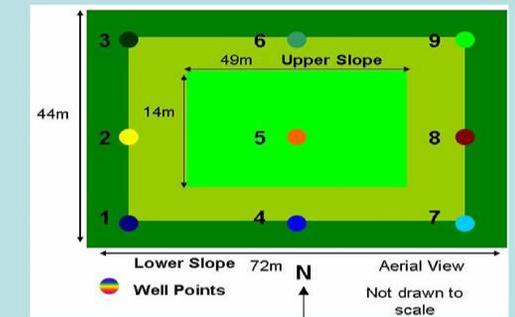
Plant density grid for one of eight islands planted



Six thousand trees were planted across the eight tree islands

VI. Groundwater and Operational Hydrology

- How operations influence water velocity within macrocosms
- Explore interactions between surface and groundwater on constructed tree islands



Nine well points on each island are used to monitor water chemistry



Scientists use Rhodamine dye to understand flow patterns as they relate to operations

Assessment Studies	
Study	CERP Performance Measure
Wildlife	
• Wading Bird Foraging and Breeding	• Wading Bird Distribution and Abundance
• Fish Concentration	• Fish Distribution and Abundance
Tree Island	
• Sustainability and Health	• Island Elevation
• Tree Island Restoration	• Water Velocity and Tree Island Development
• Flooding Tolerances	• Plant Community Composition
Ridge and Slough	
• Sustainability	• Peat Accretion & Decomposition
• Sediment Movement	• Plant Community Composition

Partners:



Acknowledgements:

We would like to thank the staff of the Arthur R. Marshall Loxahatchee National Wildlife Refuge, the South Florida Water Management District's Everglades Division, Florida International University and Florida Atlantic University for their continued support



The flumes are located in the slough next to a tree island in macrocosm #2