

# Aquatic Habitat Management in Florida: A Program for Statewide Wetland Monitoring and Assessment



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# Who are we?

- ❖ Aquatic Habitat Restoration & Enhancement Sub-Section (AHRES)
  - ❖ Comprehensive management of aquatic habitats
  - ❖ Multi-disciplinary project development using best available scientific data



Incorporate standard monitoring & assessment



# Aquatic Habitat Restoration Assessment Program (AHRAP):

- ❖ A tool to support science based restoration using standard monitoring and assessment methods
- ❖ Stores & manages restoration project data within a layered database
- ❖ Provides accountability and contributes to an adaptive management approach
- ❖ Contributes to the long-term understanding of Florida's wetland functions, distributions, and processes



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## What AHRAP is **NOT**:

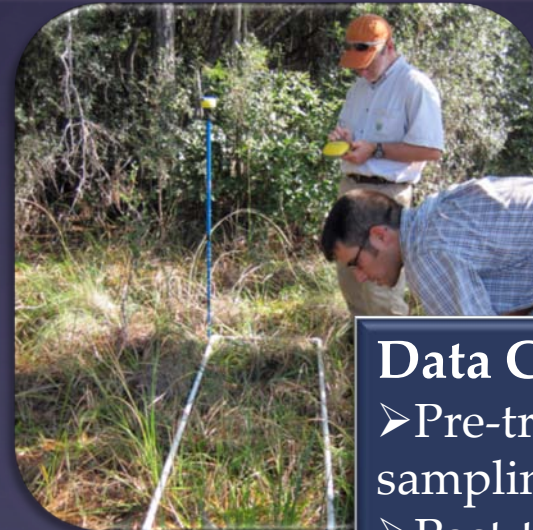
- ❖ Long-term monitoring
- ❖ Research
- ❖ Wildlife survey

# AHRAP Components



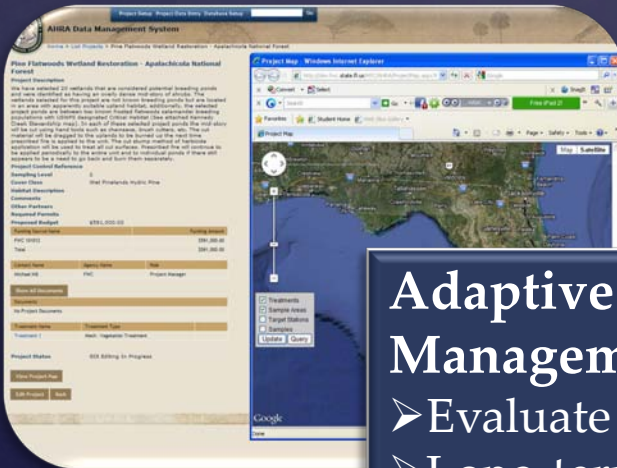
## Project Planning:

- Level of sampling intensity
- Sampling design
- Set specific objectives



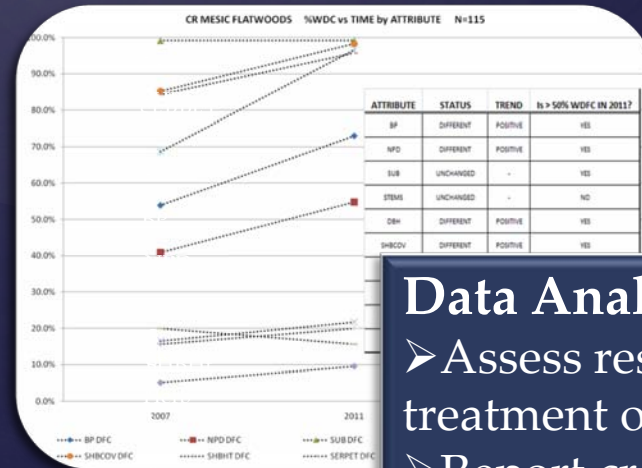
## Data Collection:

- Pre-treatment sampling
- Post-treatment sampling



## Adaptive Management:

- Evaluate & refine
- Long-term data storage



## Data Analysis:

- Assess restoration treatment outcome
- Report creation



# How intensely do we monitor?

## ❖ Evaluation criteria:

- ❖ Lake Ranking (ARPET)
- ❖ Opportunity to evaluate a new method/technique
- ❖ Significance of the resource area (biological, social/economic)
- ❖ Project impact on resource
- ❖ Longevity of benefits

## ❖ Levels of monitoring intensity:

- ❖ Level 1: photo-stations - 100%
- ❖ Level 2: AHRAP quantitative monitoring – 30%
- ❖ Level 3: long-term monitoring and/or research – 5%



# Who conducts the monitoring?

## ❖ Florida Natural Areas Inventory (FNAI) - Contract

- ❖ Non-profit organization administered through FSU
- ❖ Expertise in botany, ecology, land management, GIS, etc.
- ❖ Allows for lower auditing intensity & provides consistency in data collection

## ❖ Quality Control:

- ❖ In-field shadowing
- ❖ Data validation rules





# AHRAP Sampling Parameters



## ❖ **Vegetation Measurements**

- ❖ Cover estimates (cover classes)
- ❖ Density of woody vegetation
- ❖ Frequency of occurrence (SAV)

## ❖ **Hydrology Measurements**

- ❖ Hydroperiod
- ❖ Current flow and discharge

## ❖ **Soil Measurements**

- ❖ Organic sediment depth



# Setting Specific Objectives

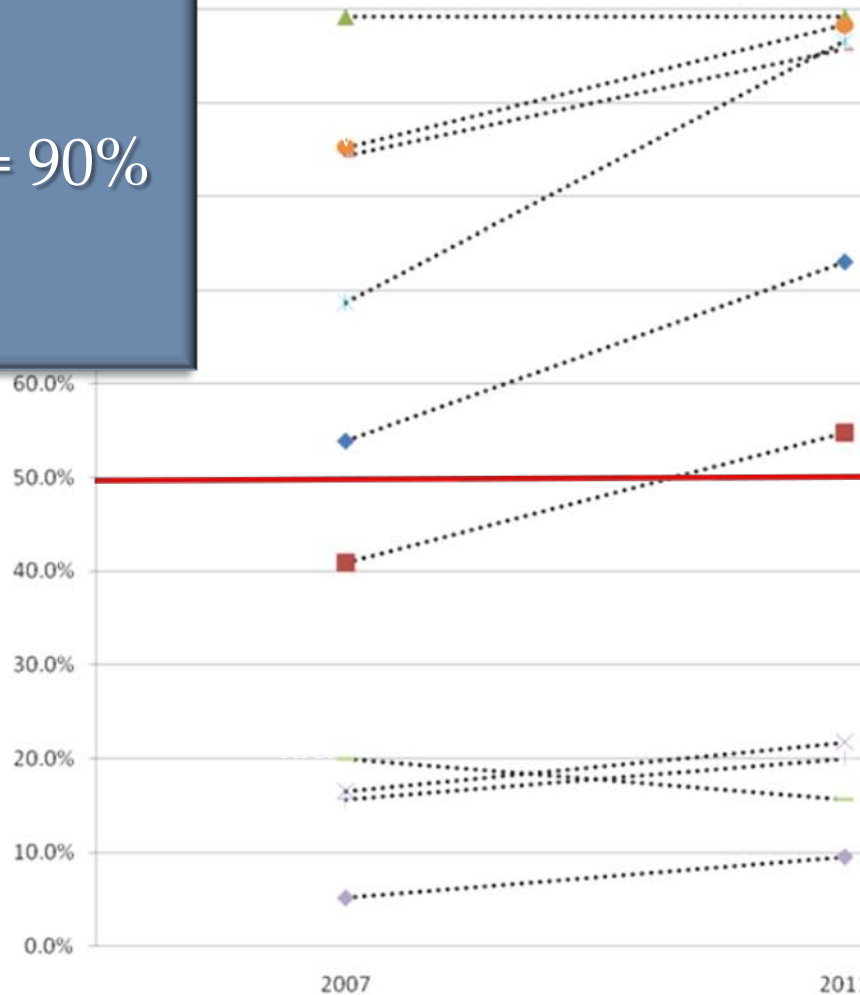
- ❖ Threshold or range by attribute
  - ❖ e.g., herbaceous cover > 60%
- ❖ The Benchmark Test:
  - ❖ Is greater than 50% of the community within the desired state?
  - ❖ Purposes addressed:
    - ❖ Accountability
    - ❖ Confirm & validate restoration treatment



# Analysis of Data

$\alpha = 0.2$   
 power = 90%  
 N = 30

CR MESIC FLATWOODS %WDC vs TIME by ATTRIBUTE N=115



ATTRIBUTE	STATUS	TREND	Is > 50% WDFC IN 2011?
BP	DIFFERENT	POSITIVE	YES
NPD	DIFFERENT	POSITIVE	YES
SUB	UNCHANGED	-	YES
STEMS	UNCHANGED	-	NO
DBH	DIFFERENT	POSITIVE	YES
SHBCOV	DIFFERENT	POSITIVE	YES
SHBHT	UNCHANGED	-	NO
SERPET	DIFFERENT	POSITIVE	YES
SERCOV	UNCHANGED	-	NO
HERB	DIFFERENT	POSITIVE	NO

- BP DFC
- NPD DFC
- SUB DFC
- STEMS DFC
- DBH DFC
- SHBCOV DFC
- SHBHT DFC
- SERPET DFC
- SERCOV DFC
- HERB DFC



# These trends are supported by the output from the two-proportion z-test

	2007	2011	2007	2011	POOLED SAMPLE PROPORTION	STANDARD ERROR	TWO PROPORTION Z-TEST	If P-value is < sig level (0.20), reject null	NULL HYPOTHESIS	meaning in plain speech
attribute	P1	P2	N1	N2	P	SE	Z	P-VALUE	Ho: P1=P2	
BP DFC	0.539	0.730	115	115	0.635	0.063	-3.013	0.003	reject	The two proportions <u>are different</u> and are derived from areas with dissimilar BP
NPD DFC	0.409	0.548	115	115	0.478	0.066	-2.112	0.035	reject	The two proportions <u>are different</u> and are derived from areas with dissimilar NPD
SUB DFC	0.991	0.991	115	115	0.991	0.012	0.000	1.000	accept	The two proportions <u>are the same</u> are derived from areas with similar SUB
STEMS DFC	0.165	0.217	115	115	0.191	0.052	-1.006	0.314	accept	The two proportions <u>are the same</u> are derived from areas with similar STEMS
DBH DFC	0.687	0.965	115	115	0.826	0.050	-5.566	0.000	reject	The two proportions <u>are different</u> and are derived from areas with dissimilar DBH
SHBCOV DFC	0.852	0.983	115	115	0.917	0.036	-3.592	0.000	reject	The two proportions are different and are derived from areas with dissimilar SHBCOV
SHBHT DFC	0.157	0.200	115	115	0.178	0.050	-0.862	0.389	accept	The two proportions <u>are the same</u> are derived from areas with similar SHBHT
SERPET DFC	0.844	0.957	115	115	0.900	0.040	-2.856	0.004	reject	The two proportions <u>are different</u> and are derived from areas with dissimilar SERPET
SERCOV DFC	0.200	0.157	115	115	0.178	0.050	0.862	0.389	accept	The two proportions <u>are the same</u> are derived from areas with similar SERCOV
HERB DFC	0.052	0.096	115	115	0.074	0.035	-1.260	0.208	reject	The two proportions <u>are different</u> and are derived from areas with dissimilar HERB



# Database & Mapping



## AHRA Data Management System

Project Setup Project Data Entry Database Setup  Go

Home > List Projects > Pine Flatwoods Wetland Restoration - Apalachicola National Forest

### Pine Flatwoods Wetland Restoration - Apalachicola National Forest

#### Project Description

We have selected 20 wetlands that are considered potential breeding ponds and were identified as having an overly dense mid-story of shrubs. The wetlands selected for this project are not known breeding ponds but are located in an area with apparently suitable upland habitat, additionally, the selected project ponds are between two known frosted flatwoods salamander breeding populations with USWFS designated Critical Habitat (See attached Kennedy Creek Stewardship map). In each of these selected project ponds the mid-story will be cut using hand tools such as chainsaws, brush cutters, etc. The cut material will be dragged to the uplands to be burned up the next time prescribed fire is applied to the unit. The cut stump method of herbicide application will be used to treat all cut surfaces. Prescribed fire will continue to be applied periodically to the entire unit and to individual ponds if there still appears to be a need to go back and burn them separately.

#### Project Control Reference

Sampling Level 2  
Cover Class Wet Pinelands Hydric Pine

#### Habitat Description

#### Comments

#### Other Partners

#### Required Permits

Proposed Budget \$581,000.00

Funding Source Name	Funding Amount
FWC 101012	\$581,000.00
Total	\$581,000.00

Contact Name	Agency Name	Role
Michael Hill	FWC	Project Manager

#### Show All Documents

Documents  
No Project Documents

Treatment Name	Treatment Type
Treatment 1	Mech. Vegetation Treatment

Project Status GIS Editing In Progress

[View Project Map](#)

[Edit Project](#) [Back](#)

Project Map - Windows Internet Explorer

http://dev.fwc.state.fl.us/H5C/AHRA/ProjectMap.aspx?F

Search

Project Map

Map Satellite

Legend:

- Treatments
- Sample Areas
- Target Stations
- Samples

Update Query

Done Local intranet 100%



# 2011-2012 Season

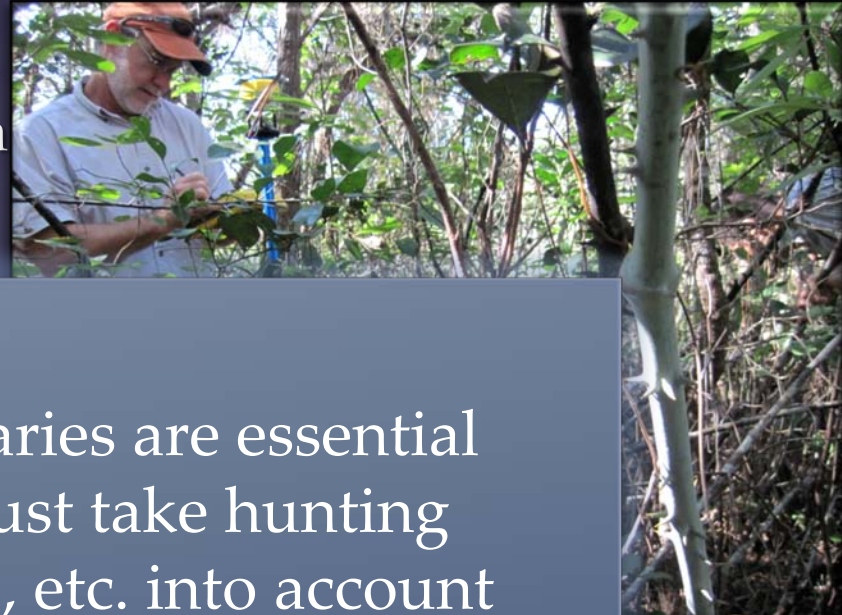
- ❖ 7 pilot projects:
  - ❖ Chemical & mechanical vegetation removal
  - ❖ Revegetation
- ❖ Database milestones:
  - ❖ Data upload/download tool
  - ❖ ArcMap extension tool
  - ❖ Photostation upload
- ❖ Sampling milestones:
  - ❖ 3 sampling protocols tested & refined
  - ❖ Criteria for level of monitoring effort defined





# 2011-2012 Season

- ❖ 7 pilot projects:
  - ❖ Chemical & mechanical vegetation removal
  - ❖ Revegetation



## Lessons Learned:

- ❖ Data
  - ❖ Accurate project boundaries are essential
  - ❖ Monitoring timelines must take hunting seasons, nesting seasons, etc. into account
  - ❖ Ar
  - ❖ Ph

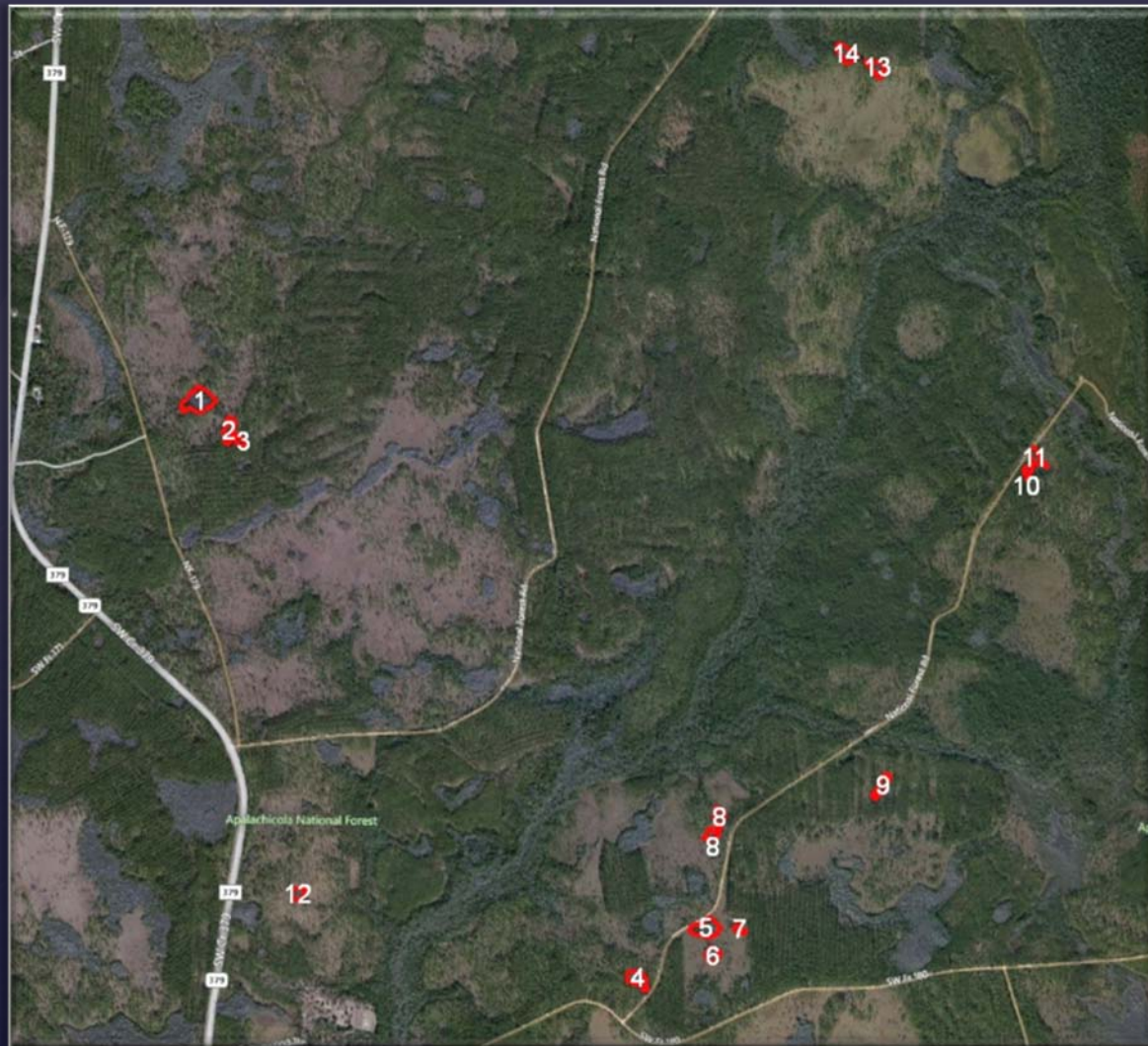
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# Pine Flatwoods Wetlands Restoration at Apalachicola National Forest





# Project planning

## Project

Increase the cover of herbaceous vegetation in ephemeral ponds by reducing shading

## Objectives

Decrease density of undesirable woody vegetation

Increase coverage of desirable herbaceous vegetation

## Success Criteria

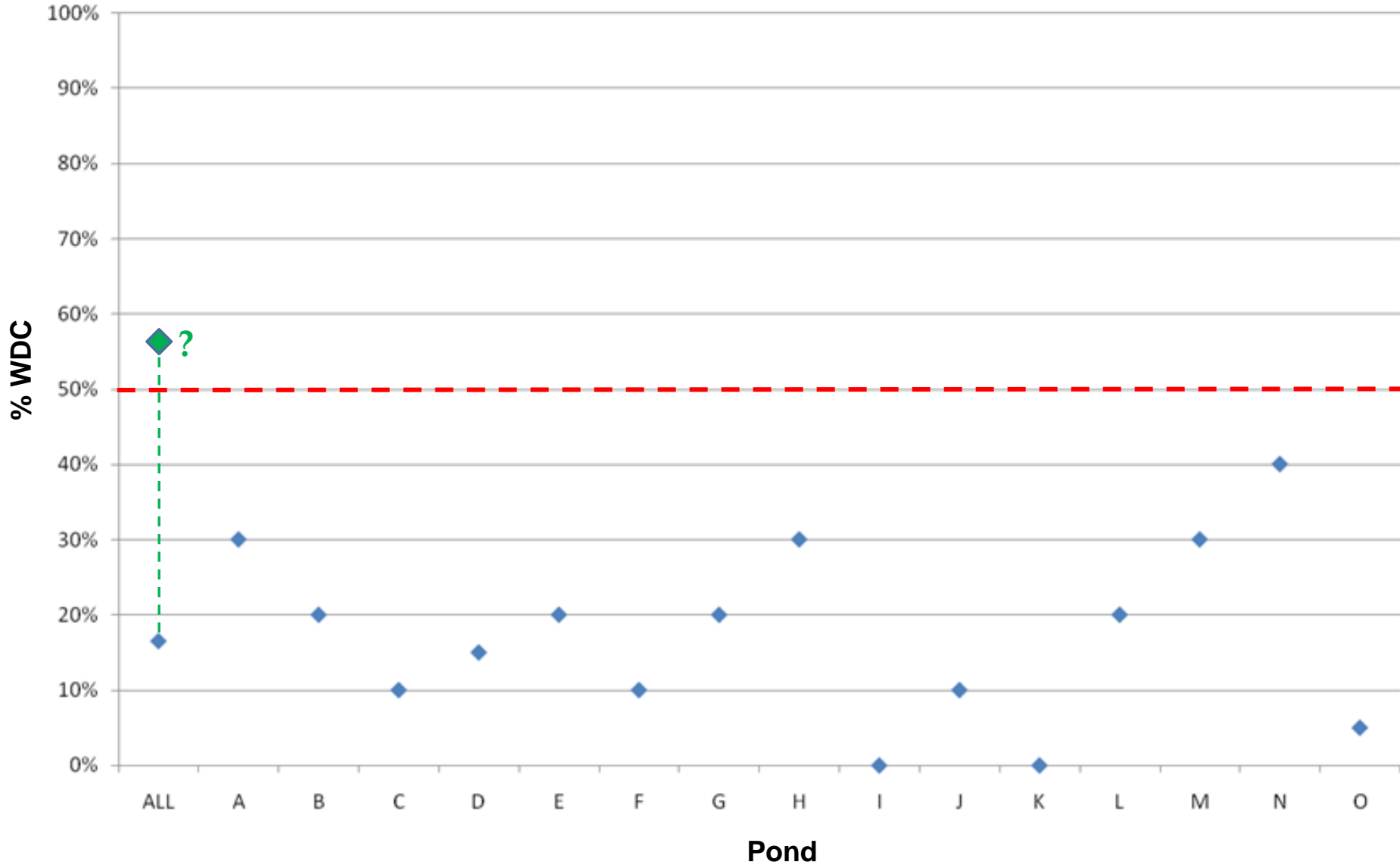
$\leq 50$  trees/acre (excluding native trees  $> 5''$  DBH and cypress)

$\geq 30\%$  cover of native herbaceous species

# Pre-treatment Sampling Results

**Pond vs. % Within Desired Condition (WDC)**

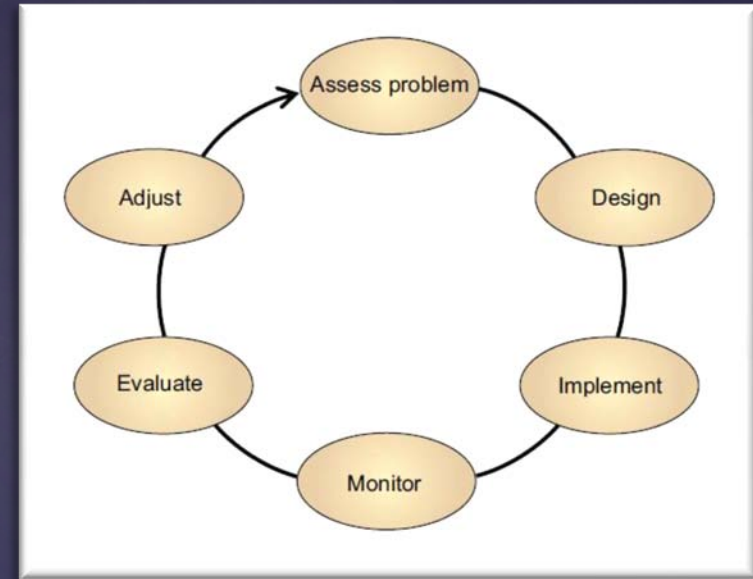
**WDC > 30% COVER**





# Future Directions & Next Steps

- ❖ Evaluate & implement adaptive management to refine program
- ❖ Expand to include other sections within FWC (e.g., Marine & Estuarine)



# Acknowledgements



I'd like to thank David Douglas, Jessica Griffith, Ron Mezich, Patrick McCord, Kathleen Swanson, George Otto and all members of the AHRAP development team.