Welcome to the 19th Annual Wetland Assessment Procedure (WAP) Workshop!

Southwest Florida
Water Management District

Instructors

Water Use Permitting

- Madison Frazier
- Tammy Plazak
- Francisco Faria

Environmental Flows and Levels

- TJ Venning

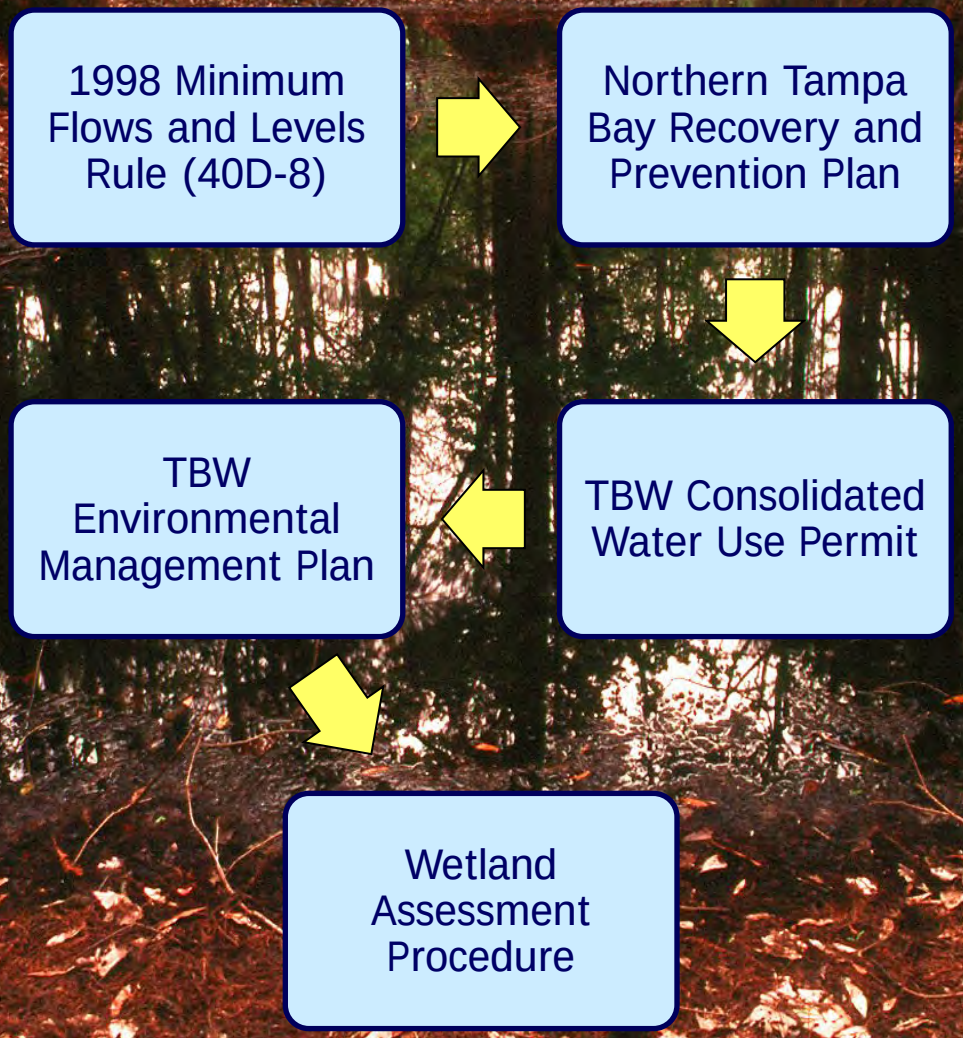
Earth Resources

- Karen Hill

Southwest Florida Water Management District

Objective: Collect information on vegetation, hydrology, soils, etc. in monitored wetlands to accurately characterize ongoing biological condition & health of each wetland

Brief History: Wetland Assessment Procedure



Original WAP Methodology (2000-2004)

- TBW evaluated 360 wetlands in Northern Tampa Bay
- District evaluated 150 wetlands
- 57 wetlands were assessed by both
- Assessments in the Spring and Fall each year

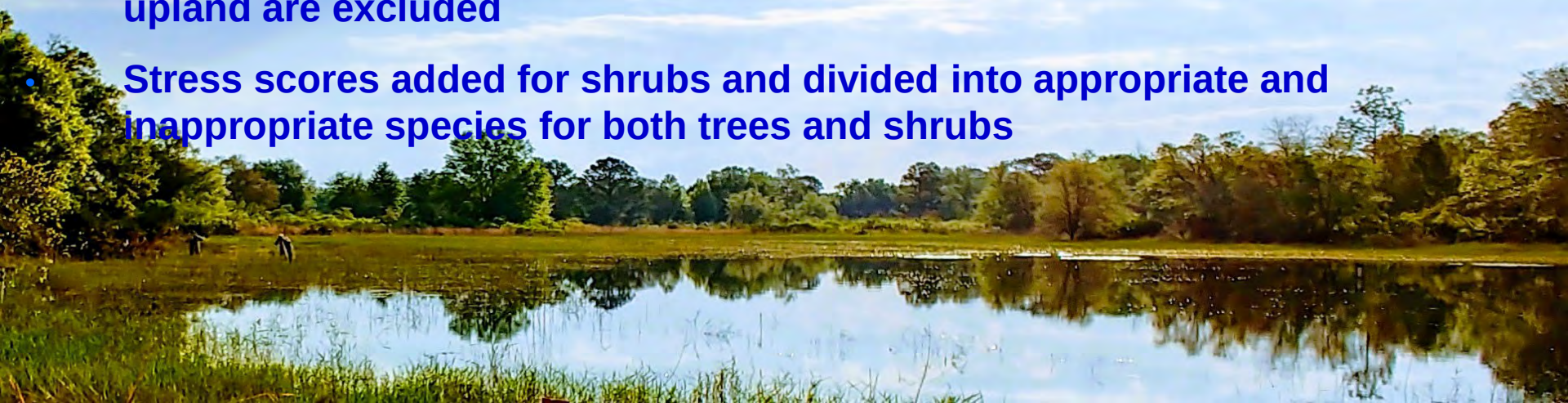
WAP Methodology Assessment (2002)

- Data collected from 2000 to 2002 was evaluated
- Results were compared from the 57 sites assessed by both TBW and the District
- Several inconsistencies were identified:
  - Variable transect set ups
  - Wetland plant zonation variable between assessors
  - Scoring system applied differently
  - Understanding of wetland history variable between assessors
  - Soil monitoring instructions interpreted differently

Revised WAP Methodology (2004)

Key changes included:

- Written wetland history required
- Transect set-up instructions clarified
- More simplistic soils method required every 5 years
- Emphasized importance of explanations and comments
- Zonation scores changed from a 3-point to a 5-point scale
- Scores for weedy and exotic species and vines discontinued
- Vegetation on hummocks, floating vegetation, and vegetation rooted in the upland are excluded
- Stress scores added for shrubs and divided into appropriate and inappropriate species for both trees and shrubs



Revised WAP Methodology Assessment (May 2004)

- Field test of 10 wetlands to be assessed by TBW, District, and Consultants (21 wetland biologists in total)
- Inconsistencies persisted:
  - Plant ID issues, even among experienced biologists
  - Differences in zone scores resulted from different assessment areas around the transect
  - Stress scores were highly variable
  - Few comments included
  - Hummocks and shallow areas difficult to assess
  - Scoring difficult for narrow transition zone

Revised WAP Methodology (October 2004)

- Replaced FDEP plant designation with one more suitable for wetland interiors
  - Plant zonation within the wetland is more useful
    - Transition (T), Outer Deep (OD), Deep (D), and Adaptive (AD) species zonation assigned to 111 plants, creating the WAP plant list
- Zonation scoring system updated to include new plant classifications
- Assessors encouraged to stay within 5 meters on either side of transect
- Percent cover and stress estimates further refined

Revised WAP Methodology Assessment (October 2004)

- Field test of 10 wetlands to be assessed by TBW, District, and Consultants who participated in May 2004 field test (10 biologists in total)
- Variability between assessors still existed but was much less compared to May field test
  - The variability in scoring was now attributed to errors by individual assessor rather than problems with the methodology
- The participants and reviewers agreed that the updated zonation scoring methodology was now more logical, and the results seemed representative of the hydrologic/biologic health of the wetland

Review of Original Wetland Assessment Procedure (WAP - March 2000) and Test Results of a Proposed Revision to the WAP, May 2004

Prepared by:

Michael C. Hancock, P.E.
Ted Rochow, Ph.D.
Jill Hood, P.G.

December 2005

Test Results of a Proposed Revision to the Wetland Assessment Procedure (WAP), October 2004 and Development of the Final WAP Methodology Adopted in April 2005

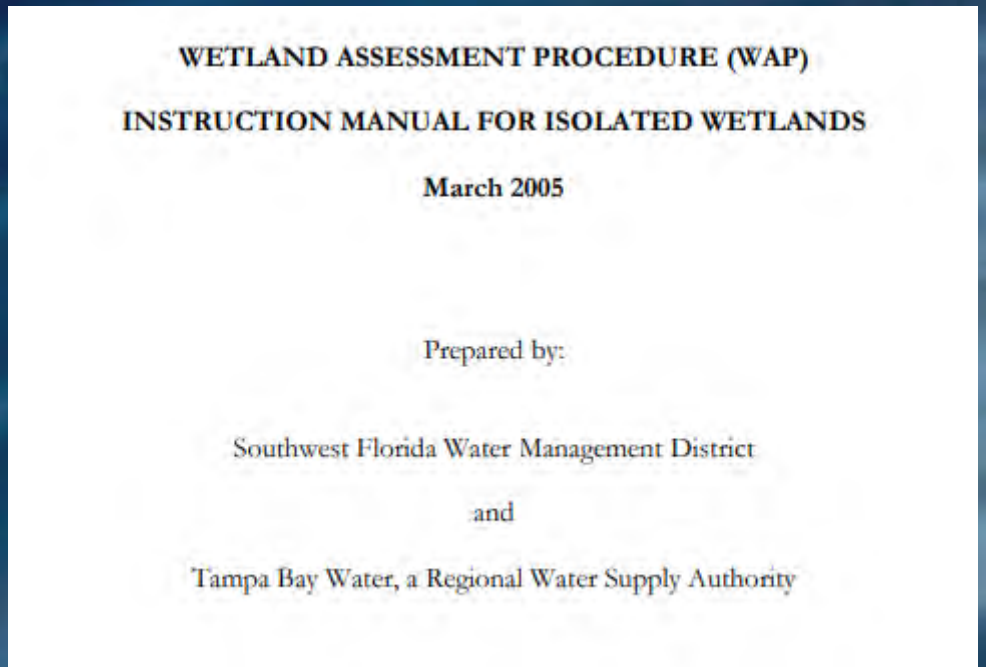
Prepared by:

Michael C. Hancock, P.E.
Ted Rochow, Ph.D.
Jill Hood, P.G.

December 2005

Today's WAP Methodology

- Completed in 2005
- This methodology has since been applied in 400+ wetlands



WETLAND ASSESSMENT PROCEDURE (WAP)

INSTRUCTION MANUAL FOR ISOLATED WETLANDS

March 2005

Prepared by:

Southwest Florida Water Management District

and

Tampa Bay Water, a Regional Water Supply Authority

2023 WAP Workshop Introduction

Purpose of Wetland Assessment Procedure (WAP)

- Collect biologic data in wetlands to be used to monitor change (if any) due to hydrologic change (ground-water)
- WAP data *supplements* hydrologic data
- Uses for data include:
  - Water Use Permitting (part of EMP)
  - TBW Recovery Assessment

Main Goal while completing the WAP

- Describe what you see on the day of your visit (snapshot)
- Data Collection
- Data Collection
- Data Collection
- Scores

WAP Limitations

- Tested and developed for isolated systems
- Most consistent in flatwoods (mesic)
- Not consistent in sandhill (xeric)

Annually

- May through June assessments
- Main components:
  - Species documentation
  - Zonation scoring
  - Explanations
  - Additional Information
    - Stress
    - Comments

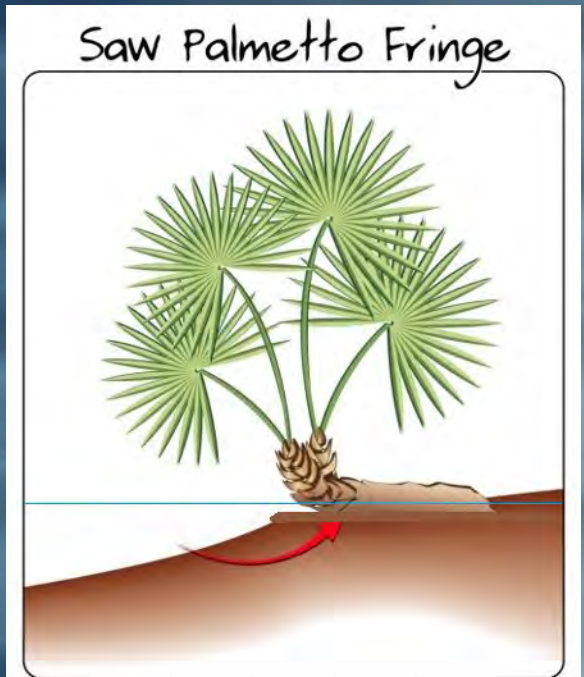
Establishing WAP Zones

WAP Zones:

Horizontal Distance From Normal Pool

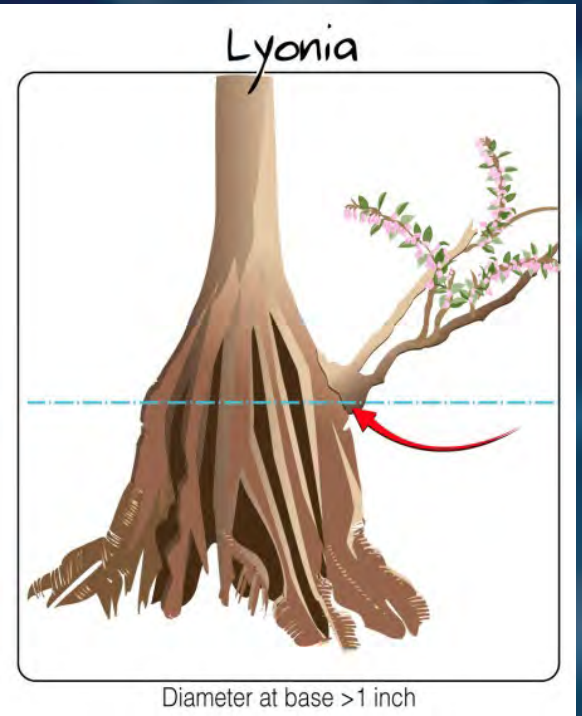
WAP Zones:

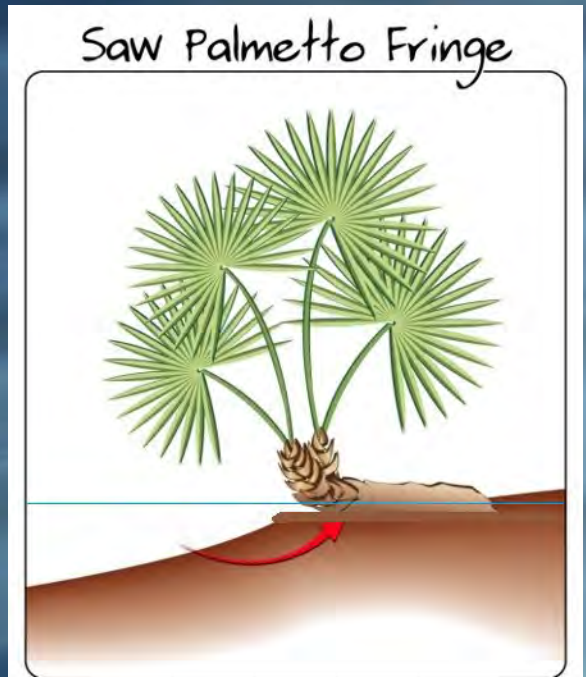
Horizontal Distance From Normal Pool

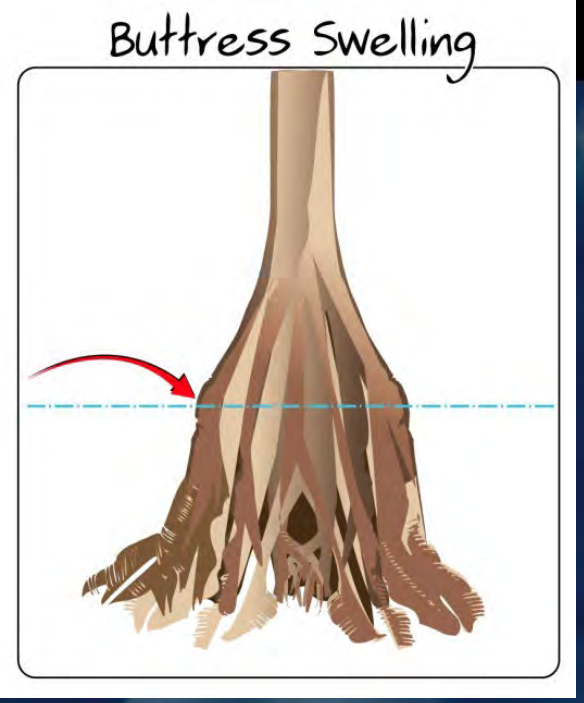


WAP Zones:

Horizontal Distance From Normal Pool

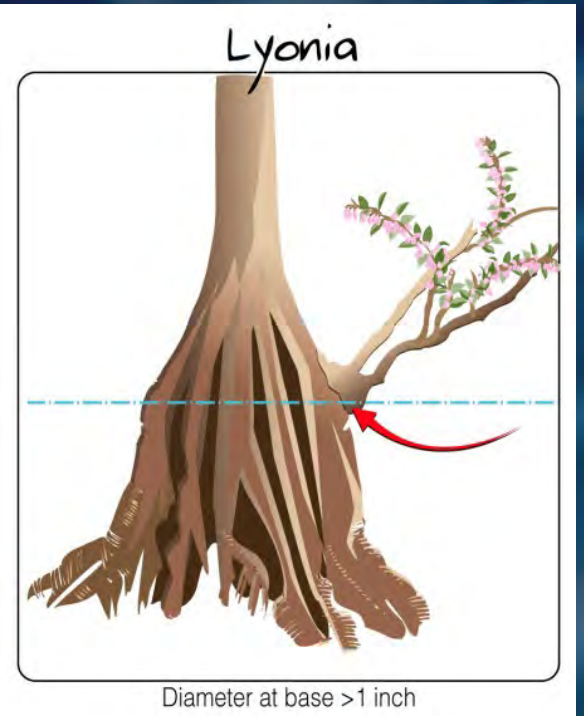


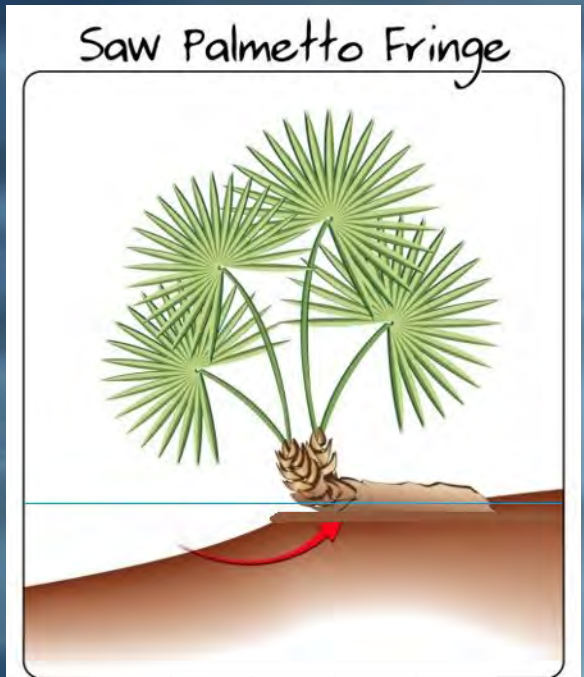




WAP Zones:

Horizontal Distance From Normal Pool



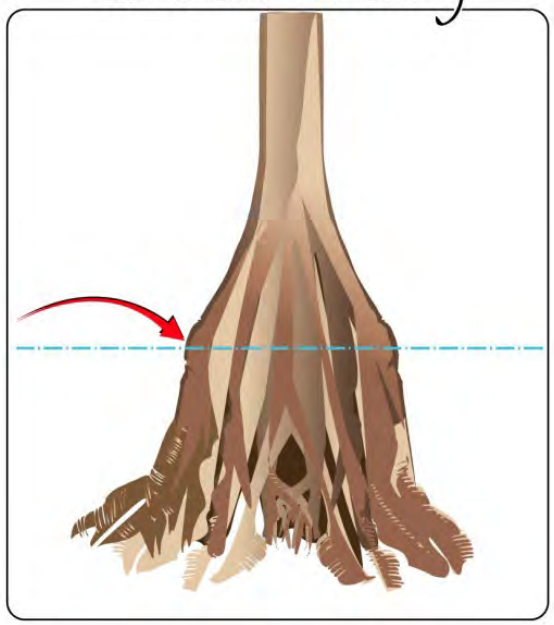


SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

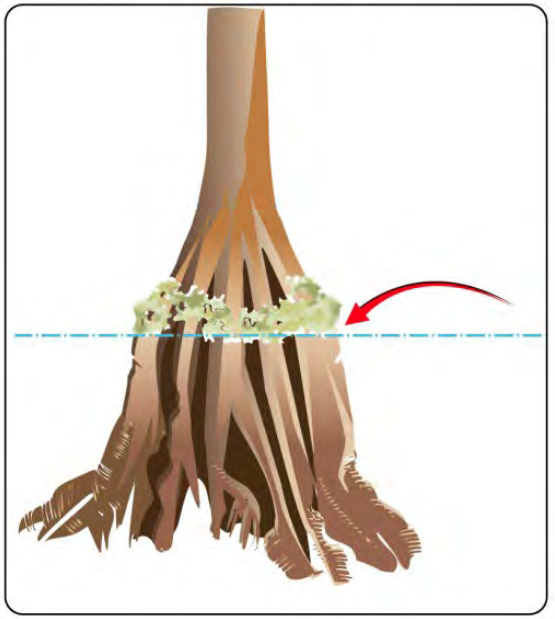
WAP Zones:

Horizontal Distance From Normal Pool

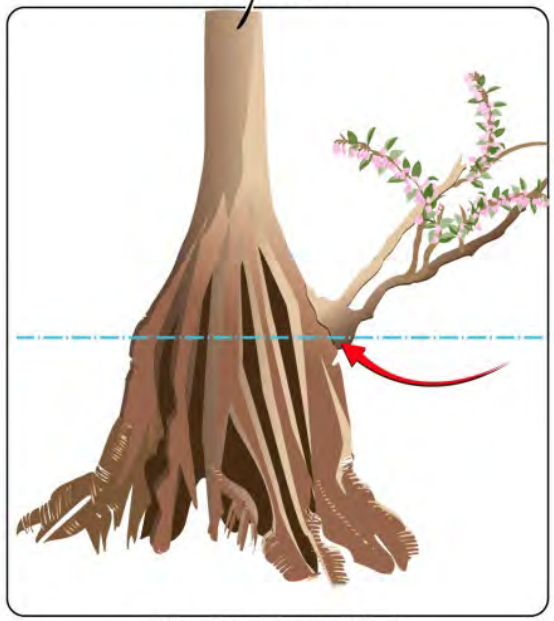
Buttress Swelling



Moss Collar

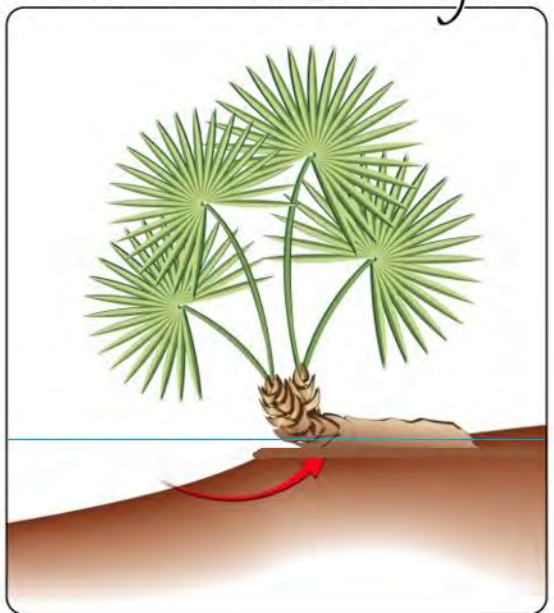


Lyonia



Diameter at base >1 inch

Saw Palmetto Fringe



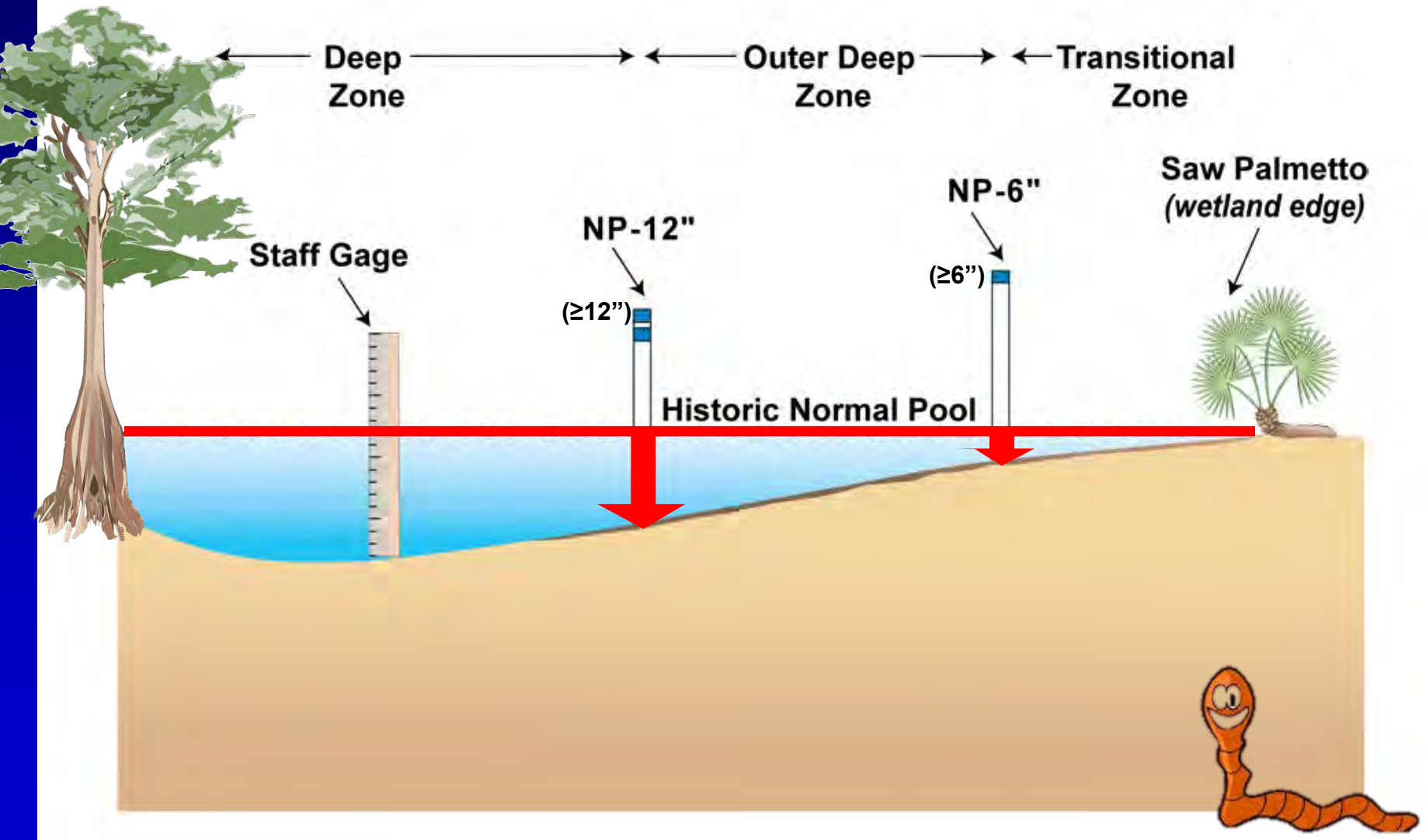
Normal Pool Indicators

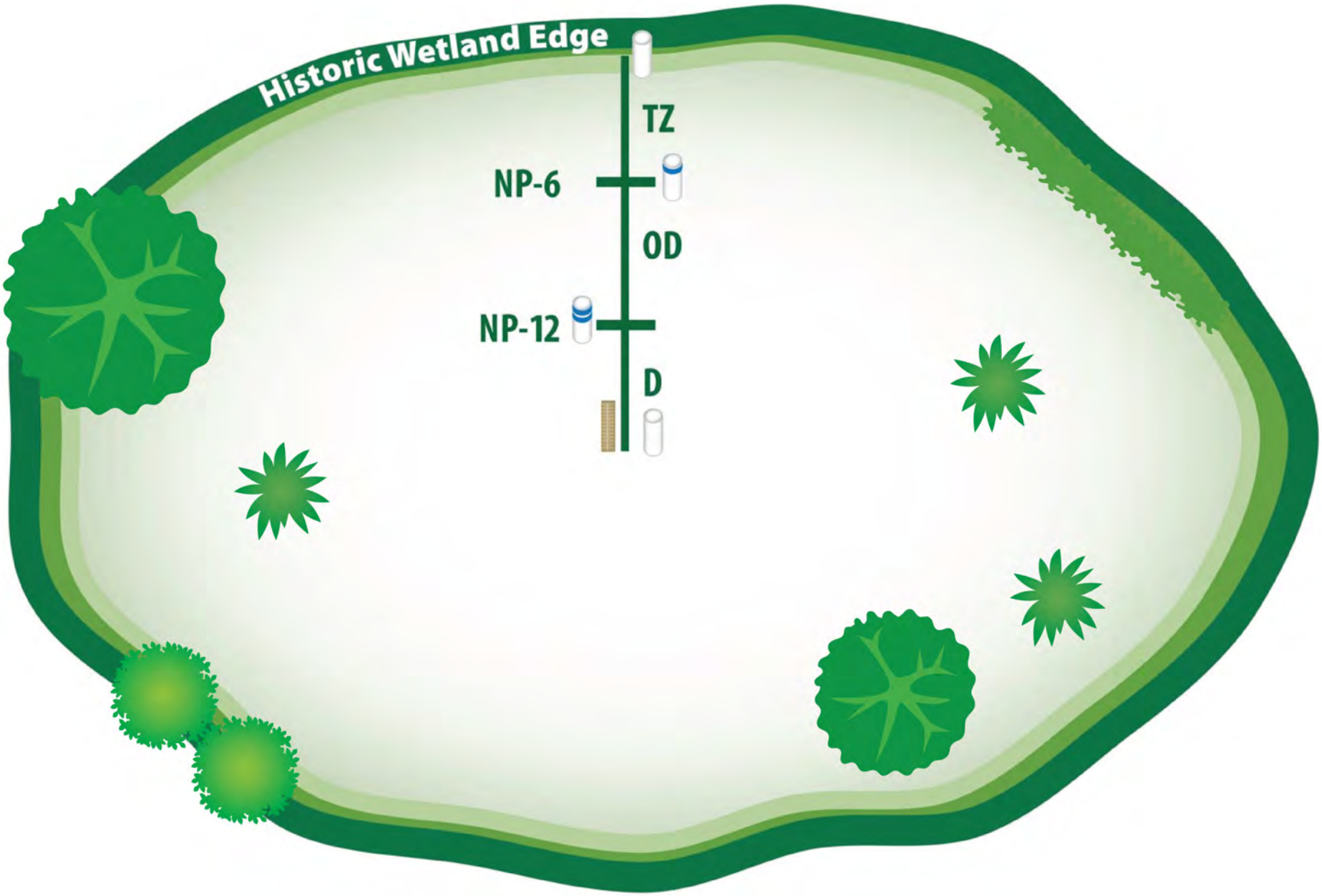
Normal Pool Indicators

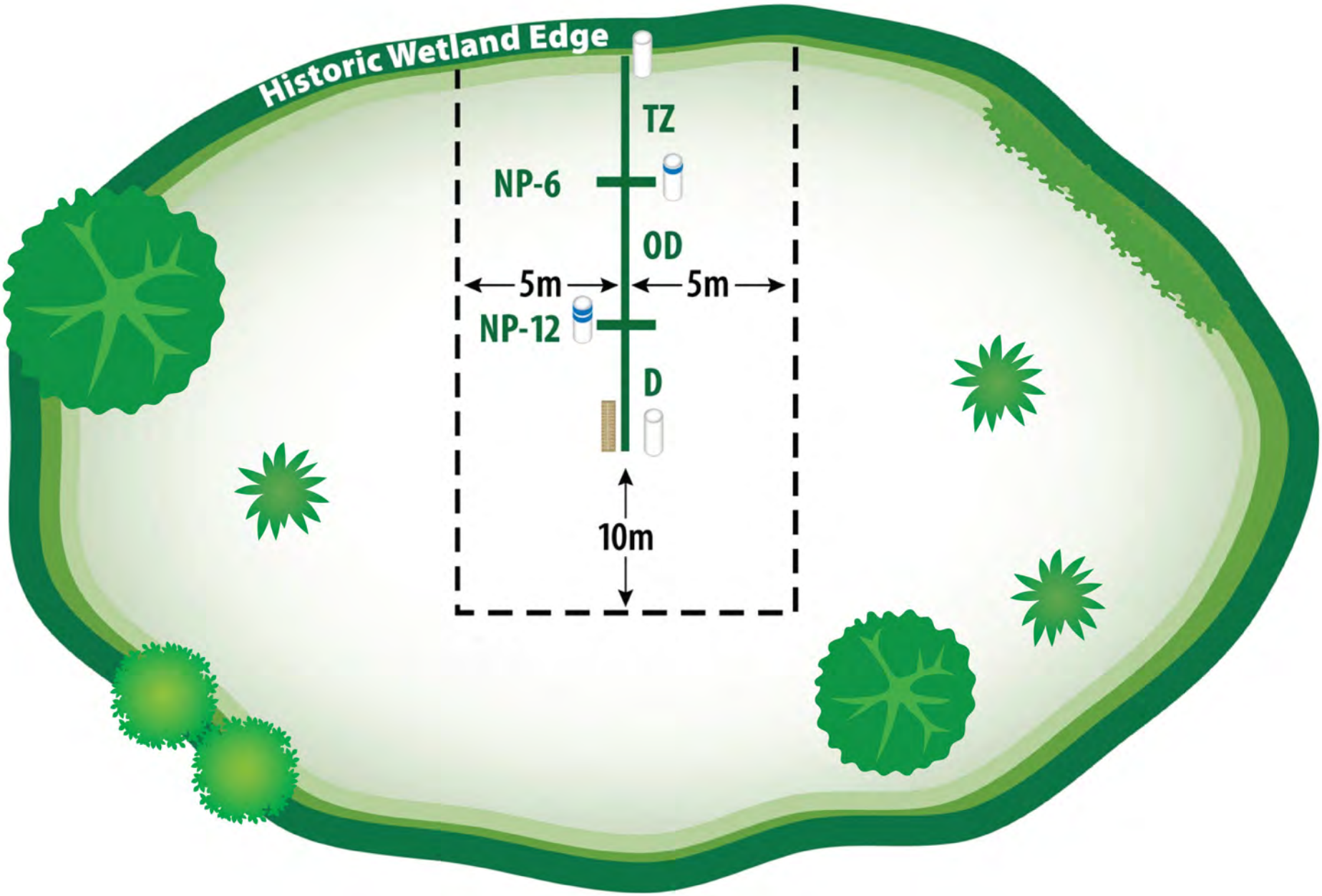
Photos by Scott Emery

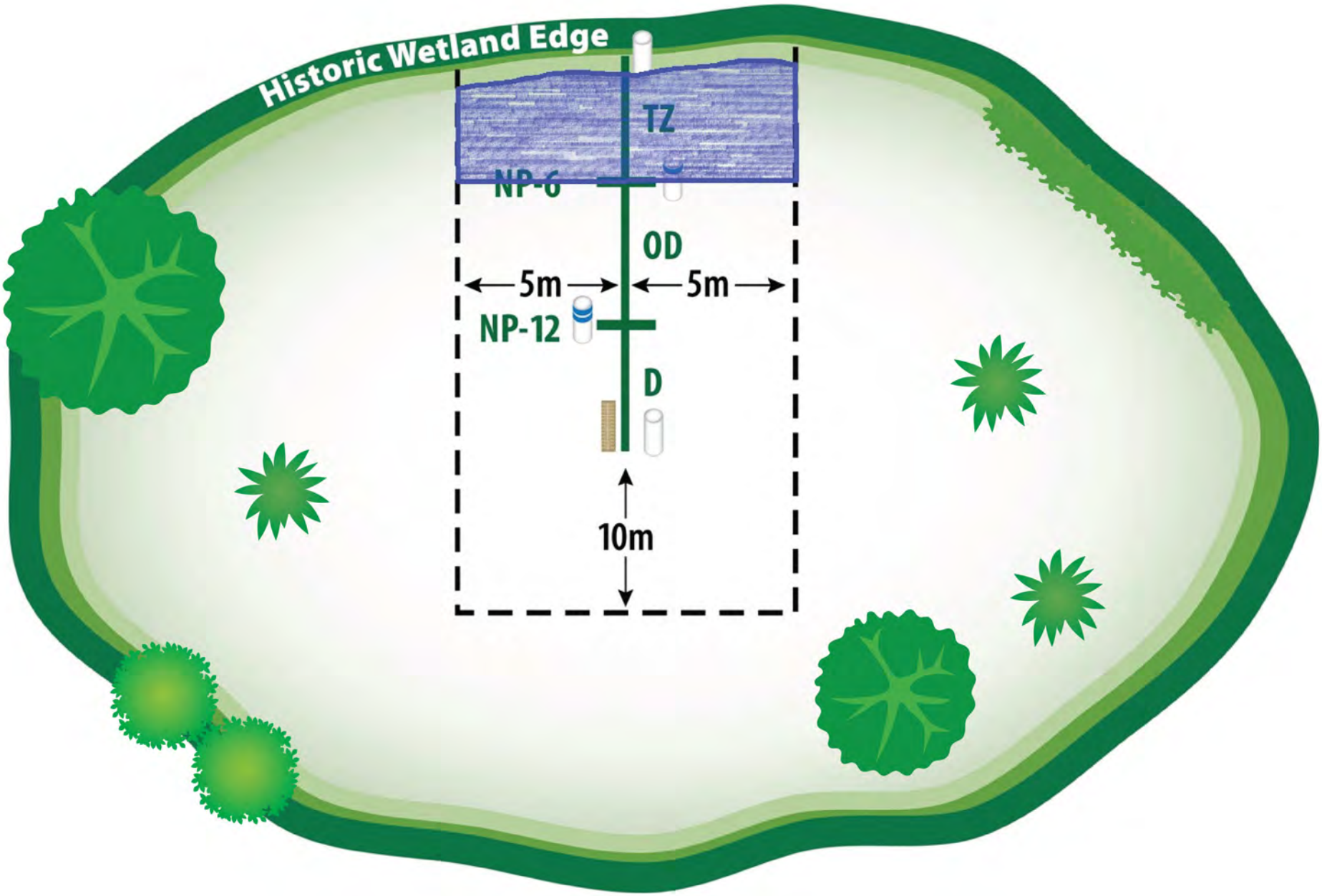

The Transect

Example of Typical WAP Transect




Historic Wetland Edge
TZ
NP-6
OD
NP-12
D


Historic Wetland Edge
TZ
NP-6
OD
5m
5m
NP-12
D
10m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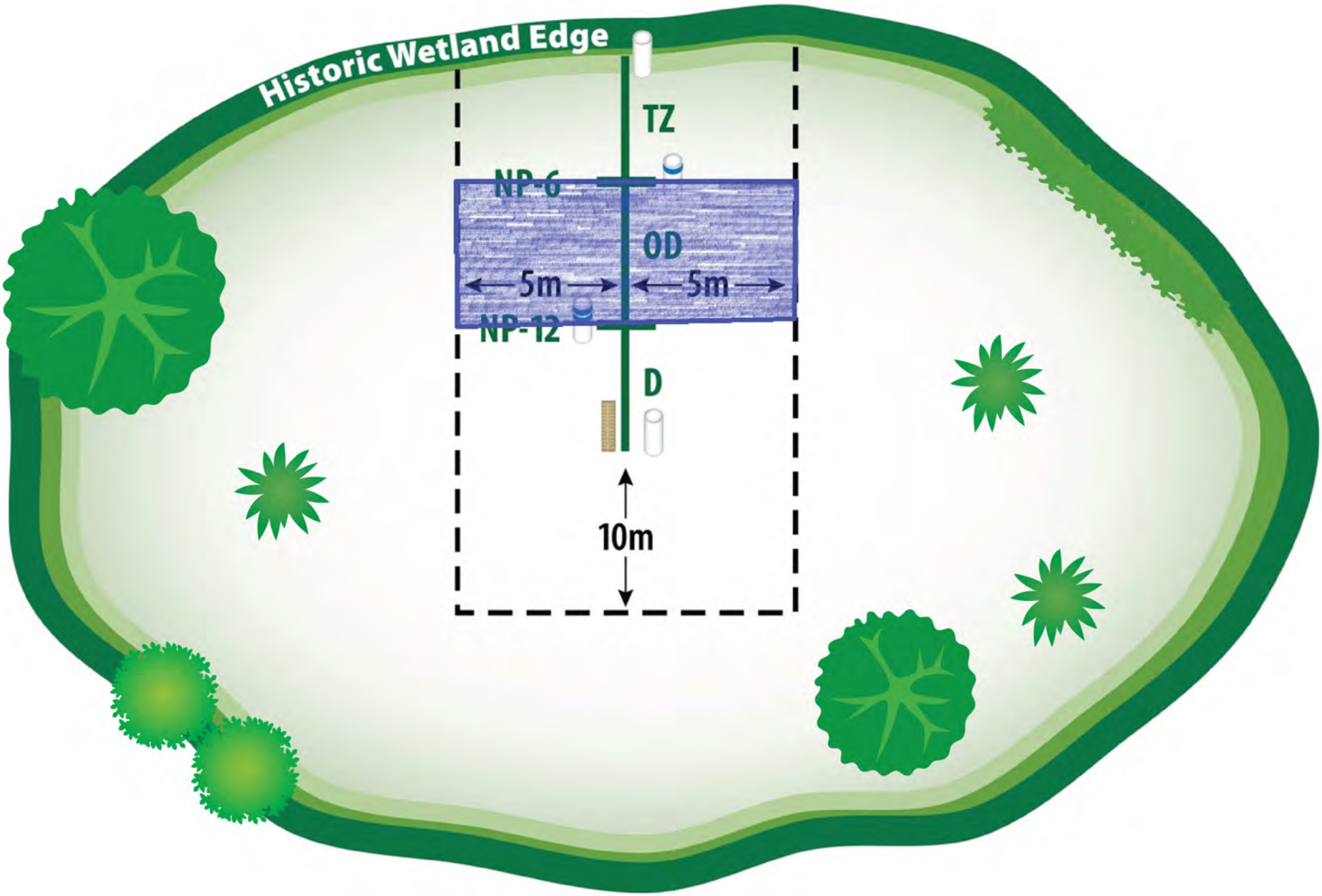
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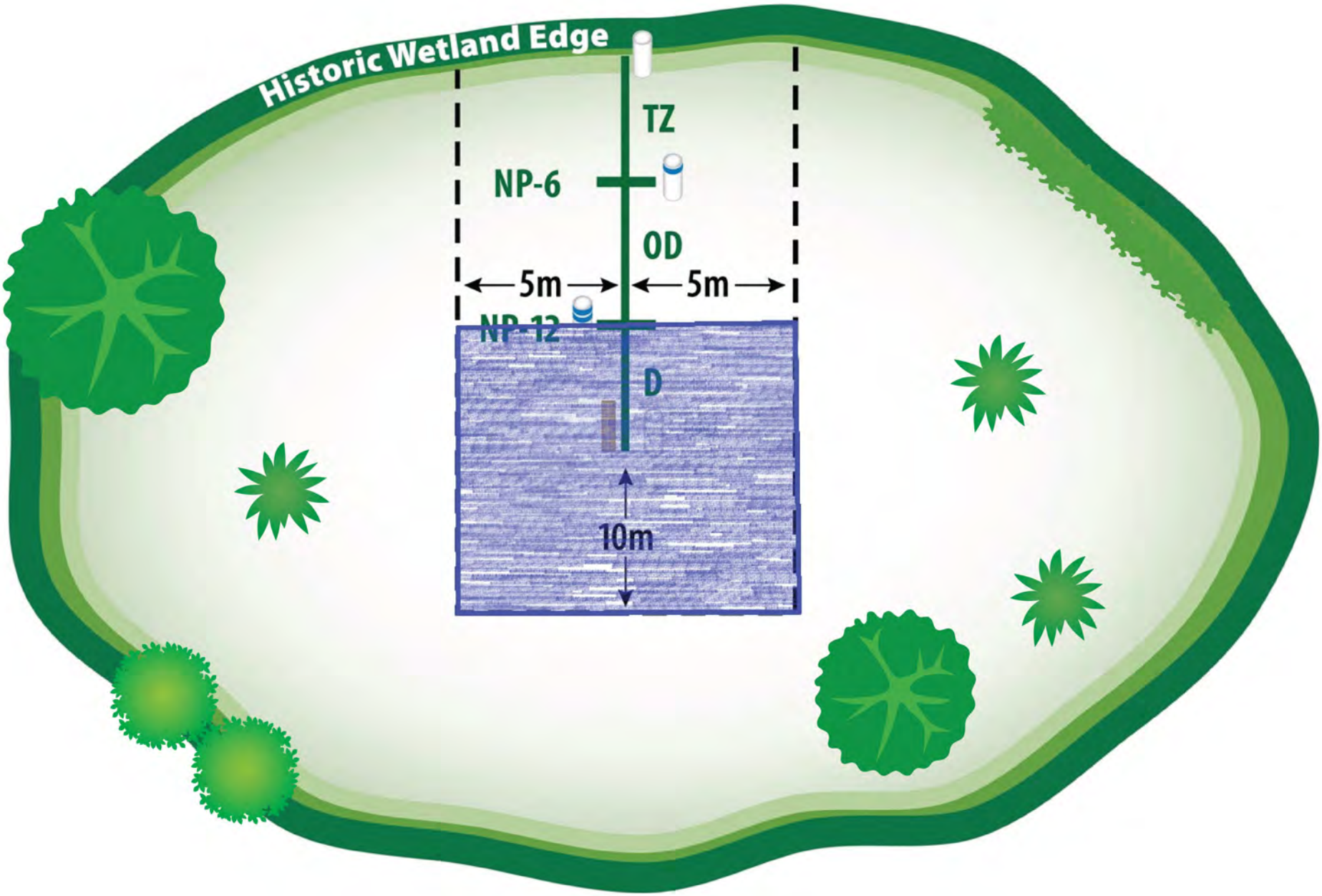
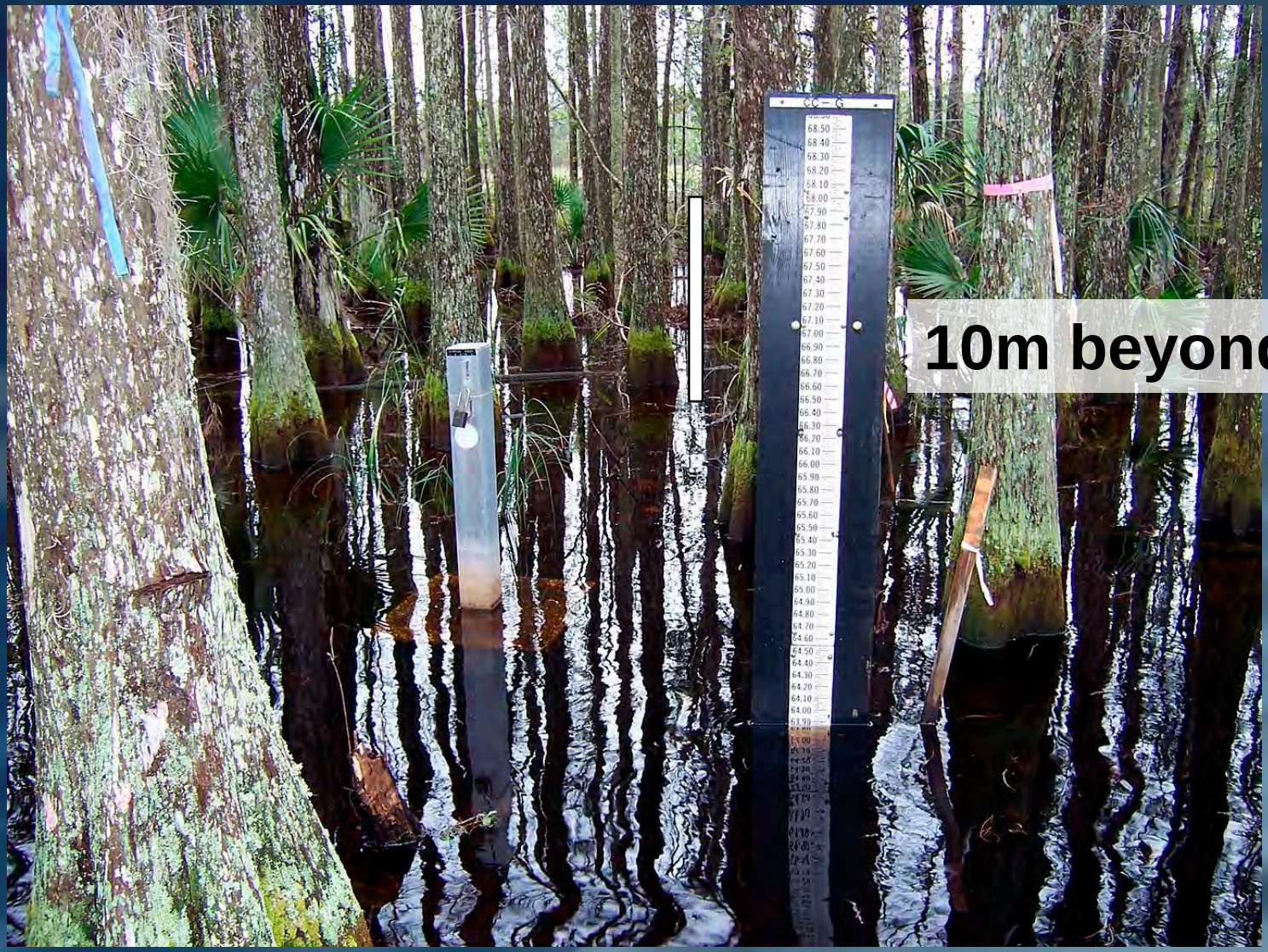
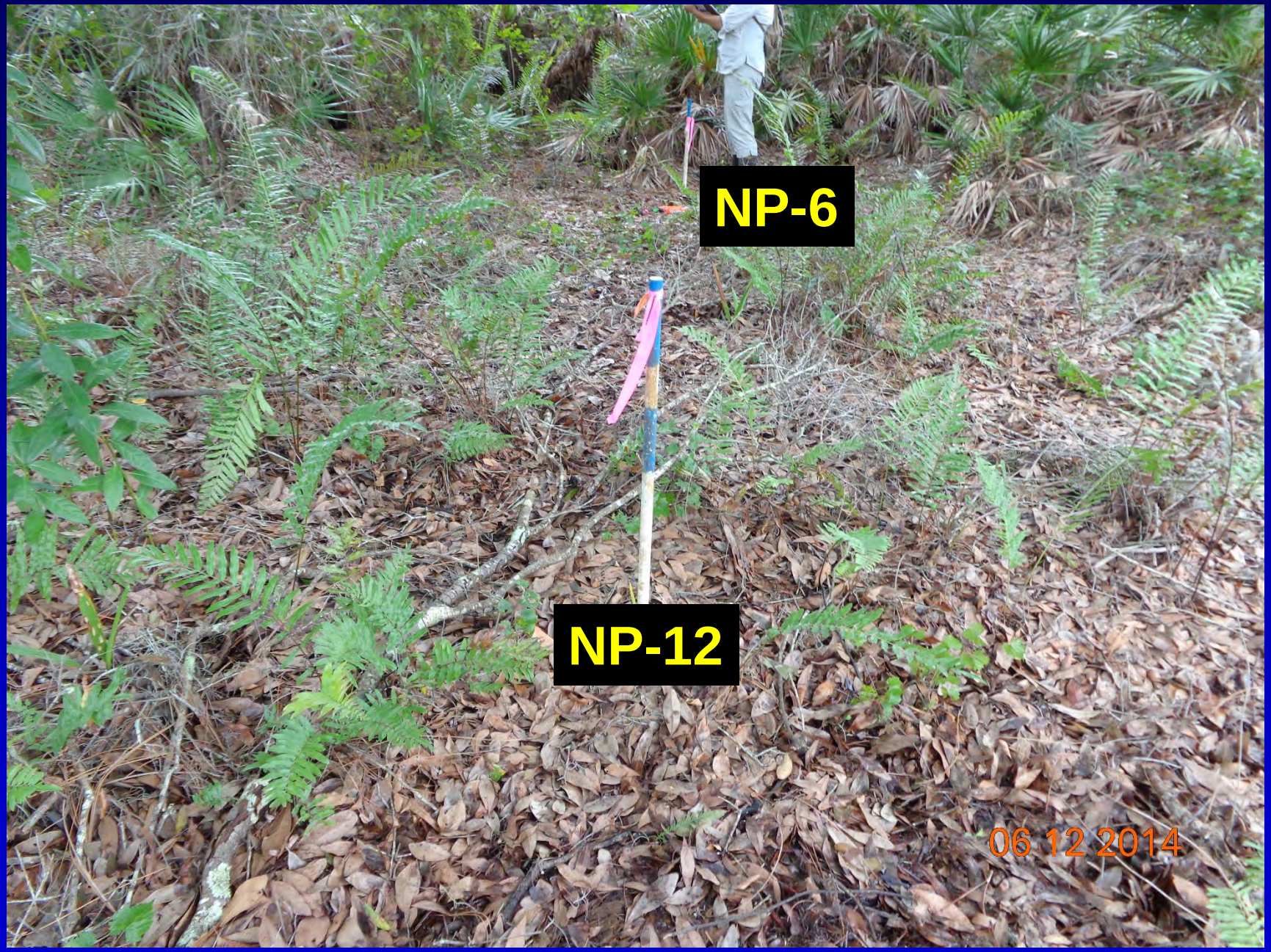

Historic Wetland Edge
TZ
NP-6
OD
5m
5m
NP-12
D
10m

Transect End

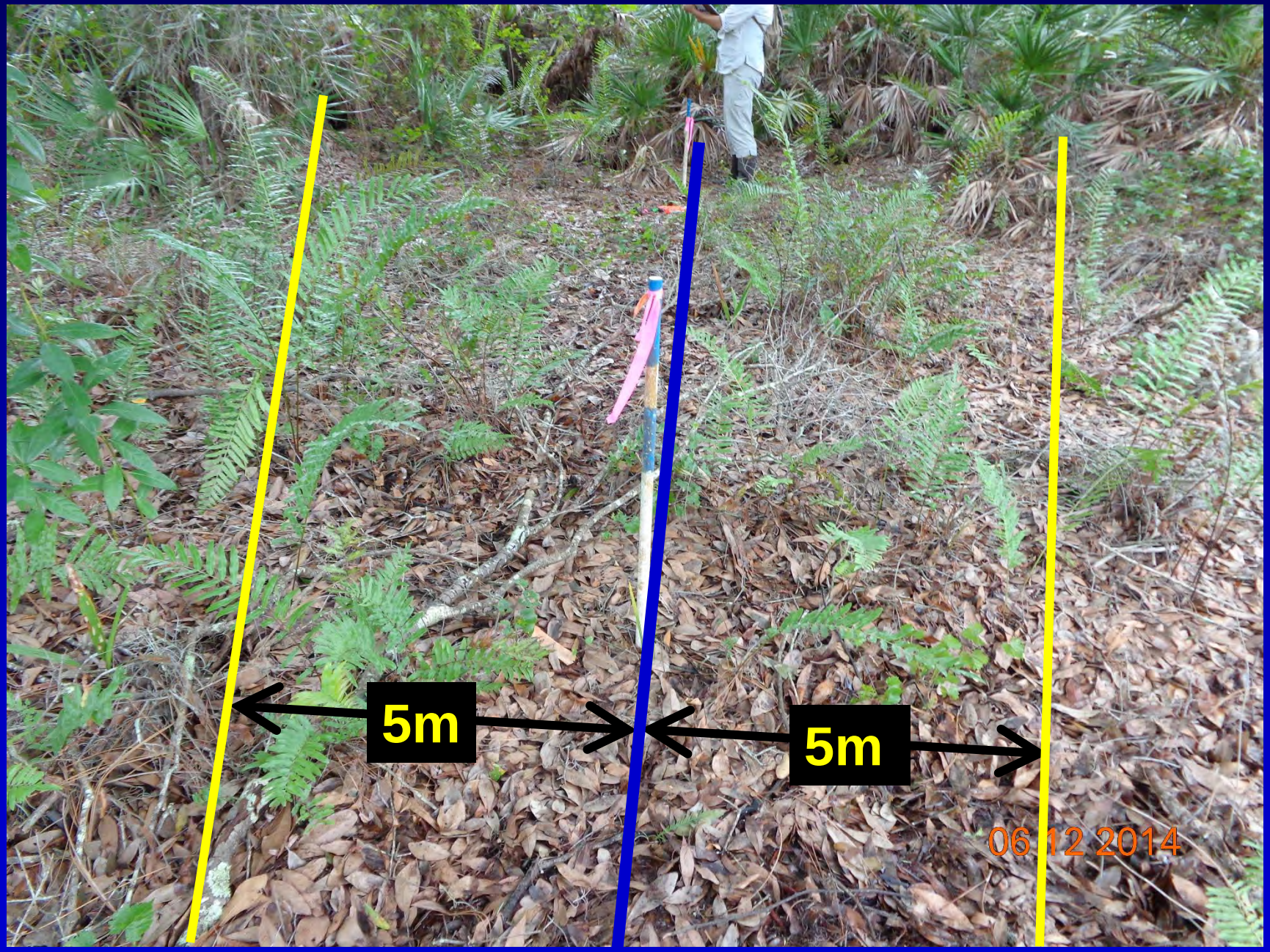


NP-6 & NP-12 Markers

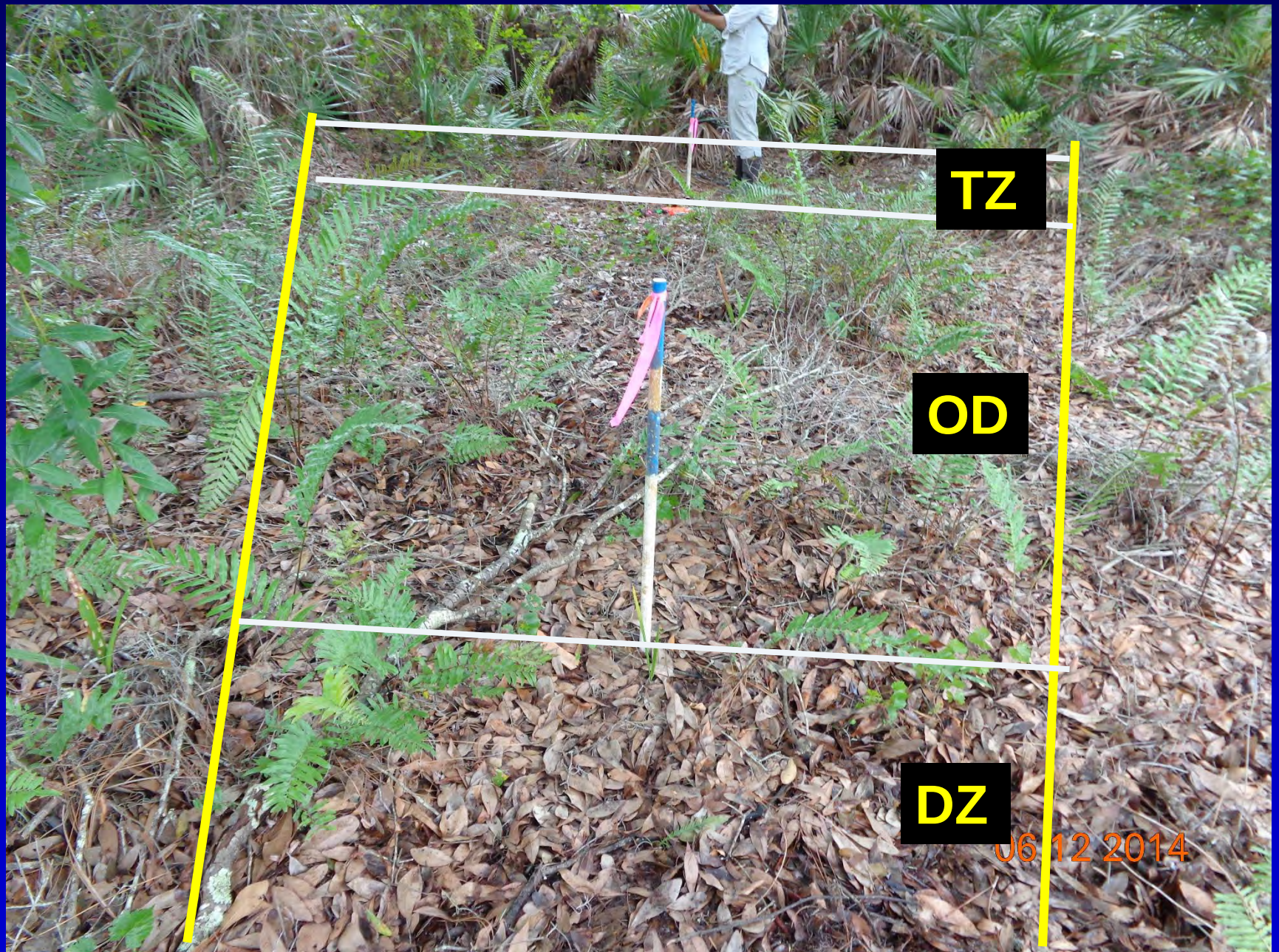


Transect Line

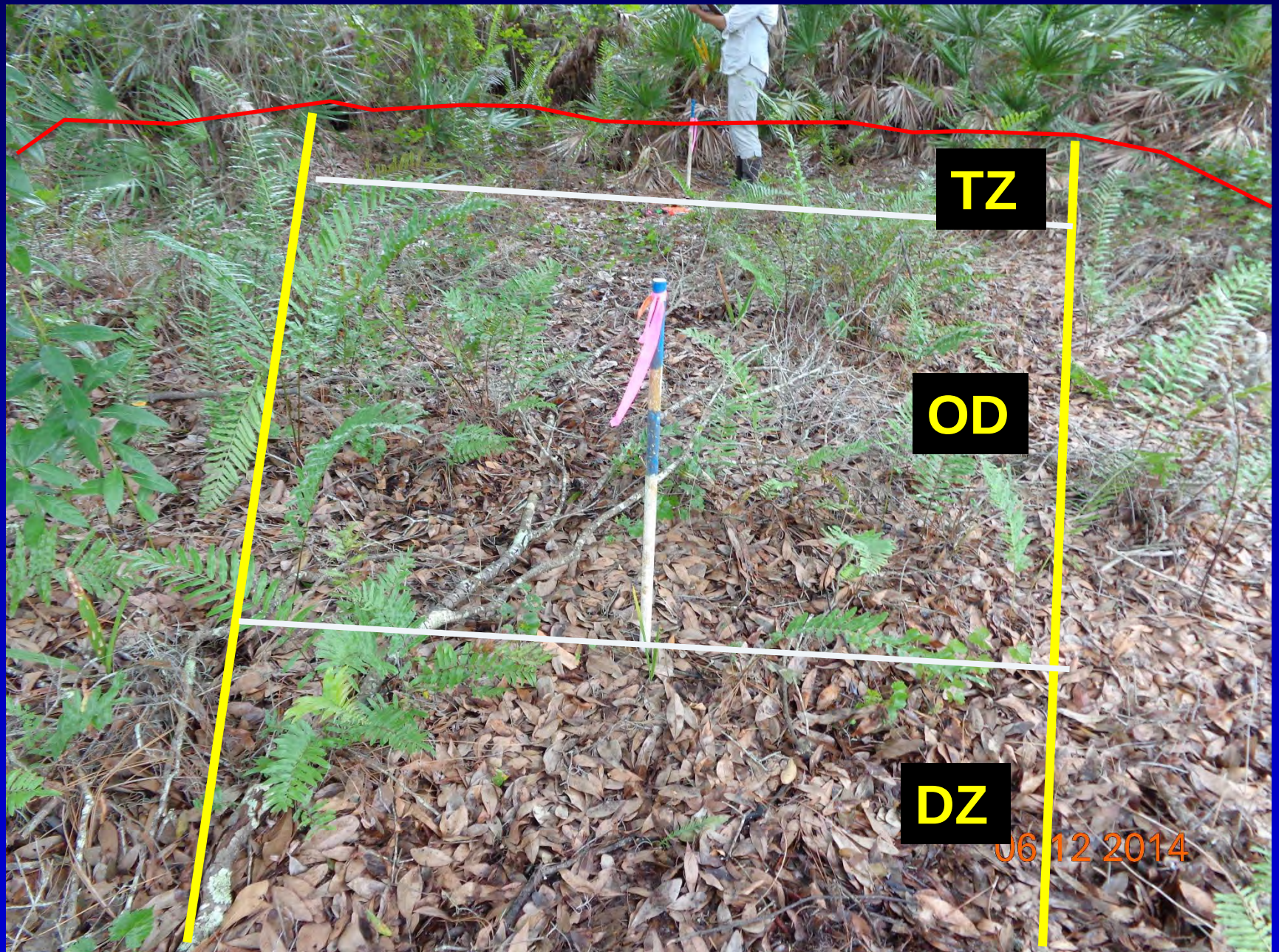
10m Boundary



Zones

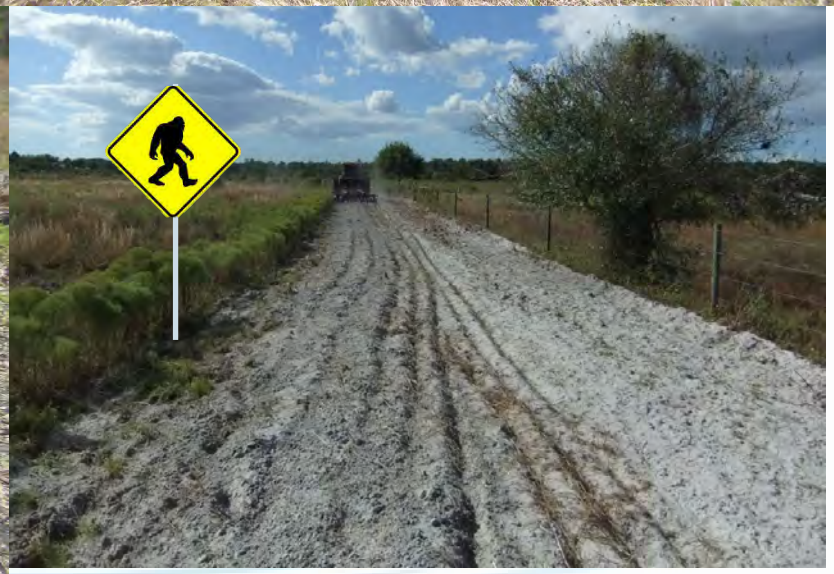


Edge Delineation

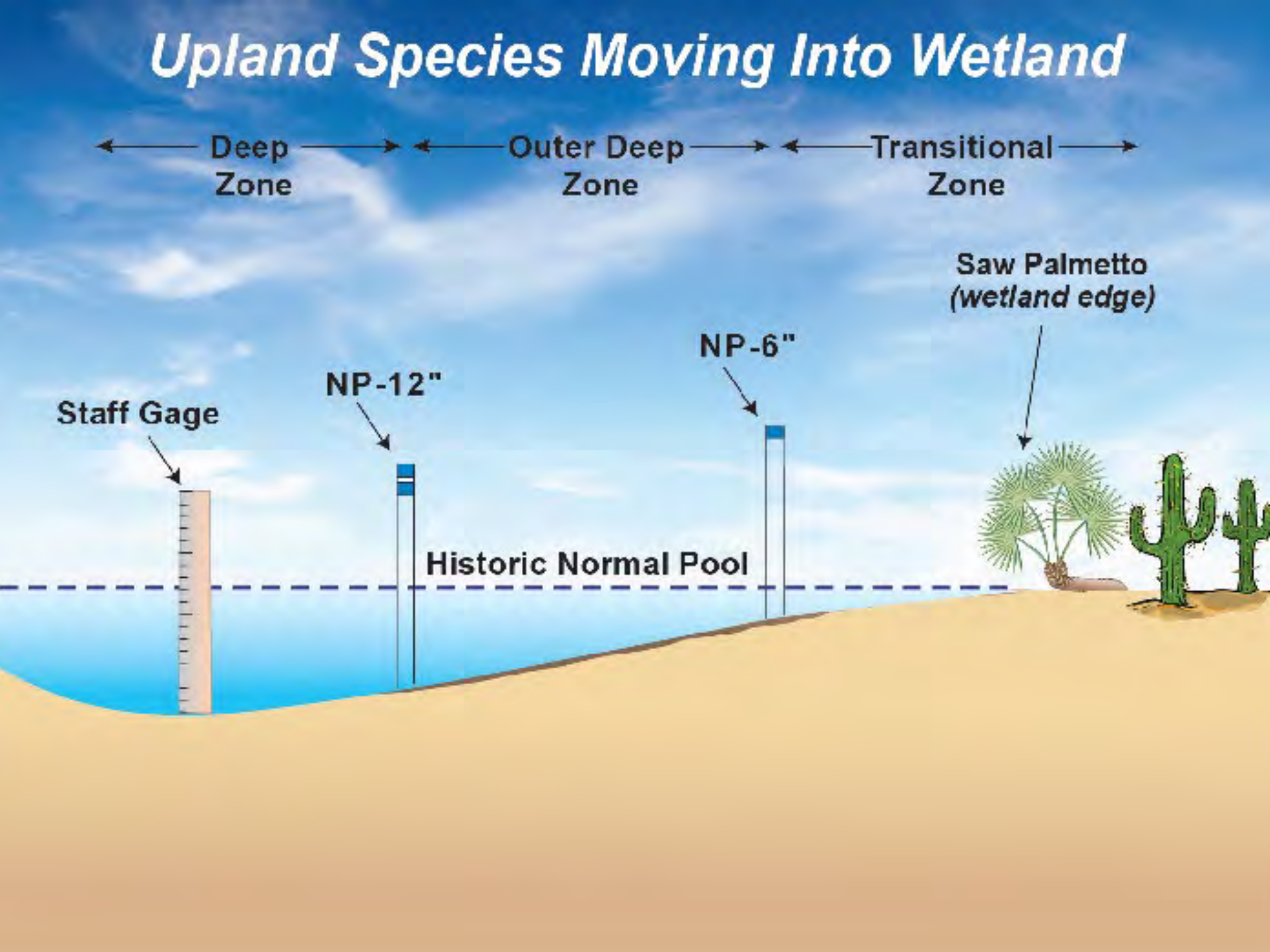


Edge

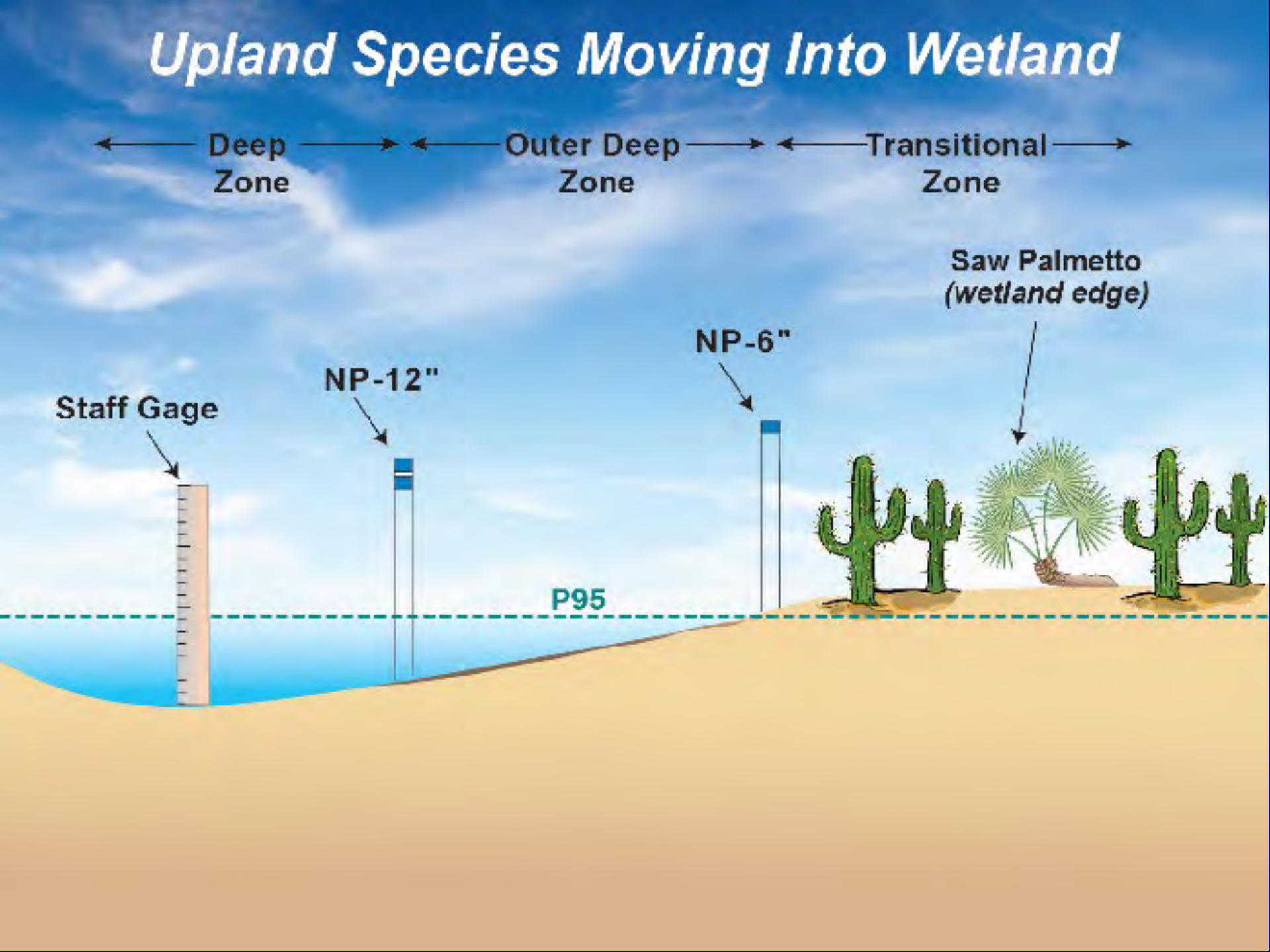
Southwest Florida Water Management District



Upland Species Moving Into Wetland



Upland Species Moving Into Wetland



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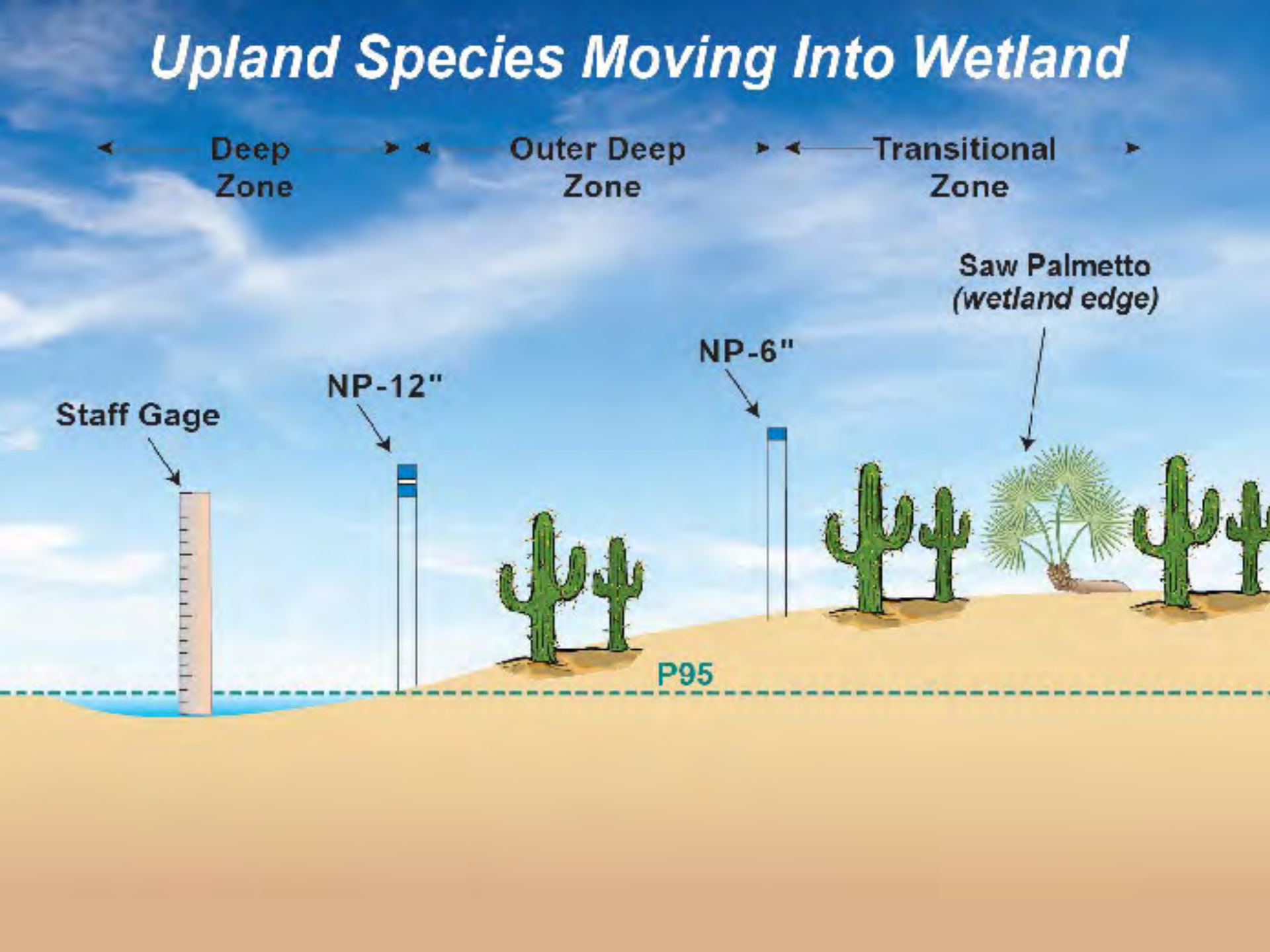
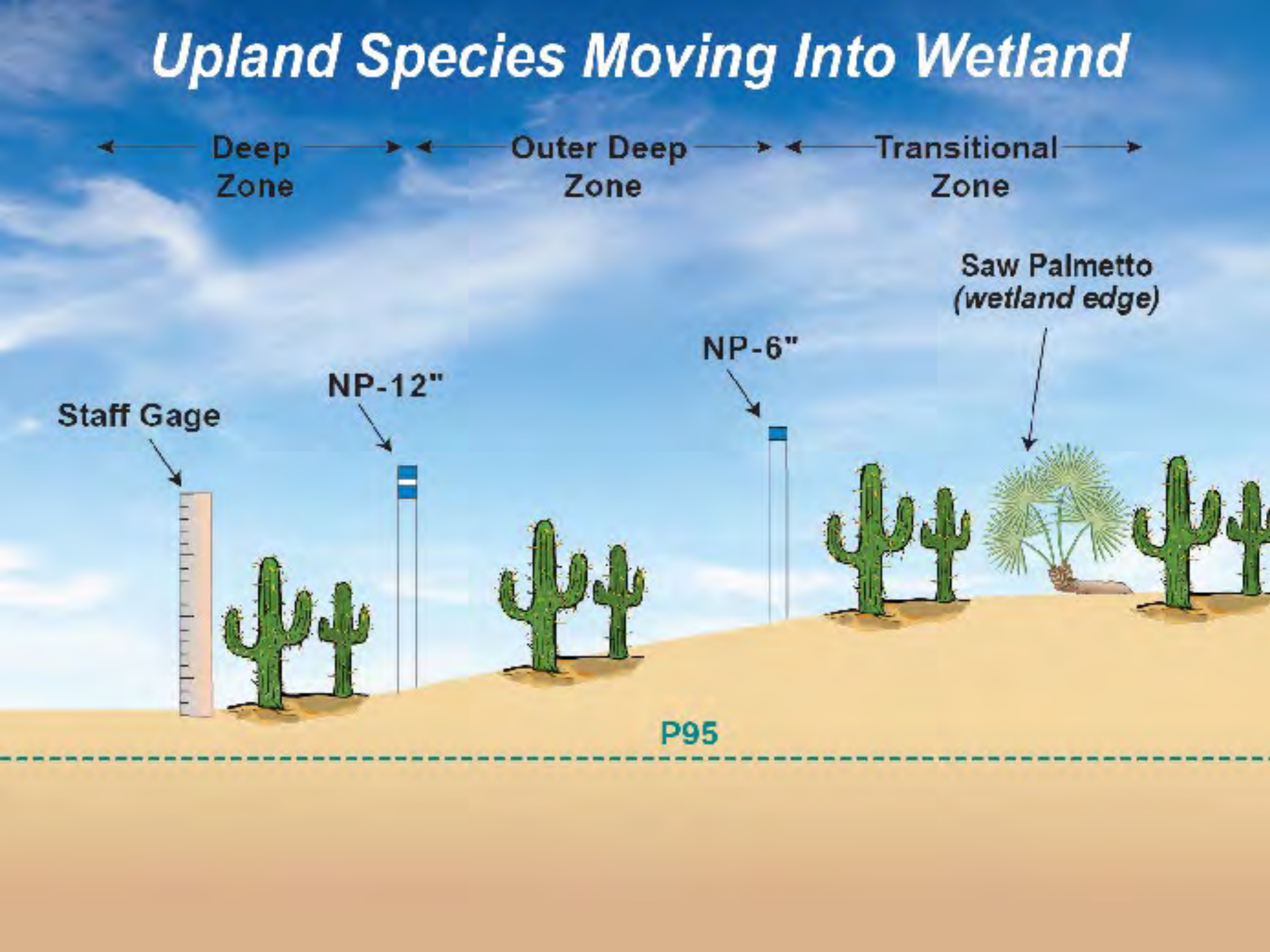
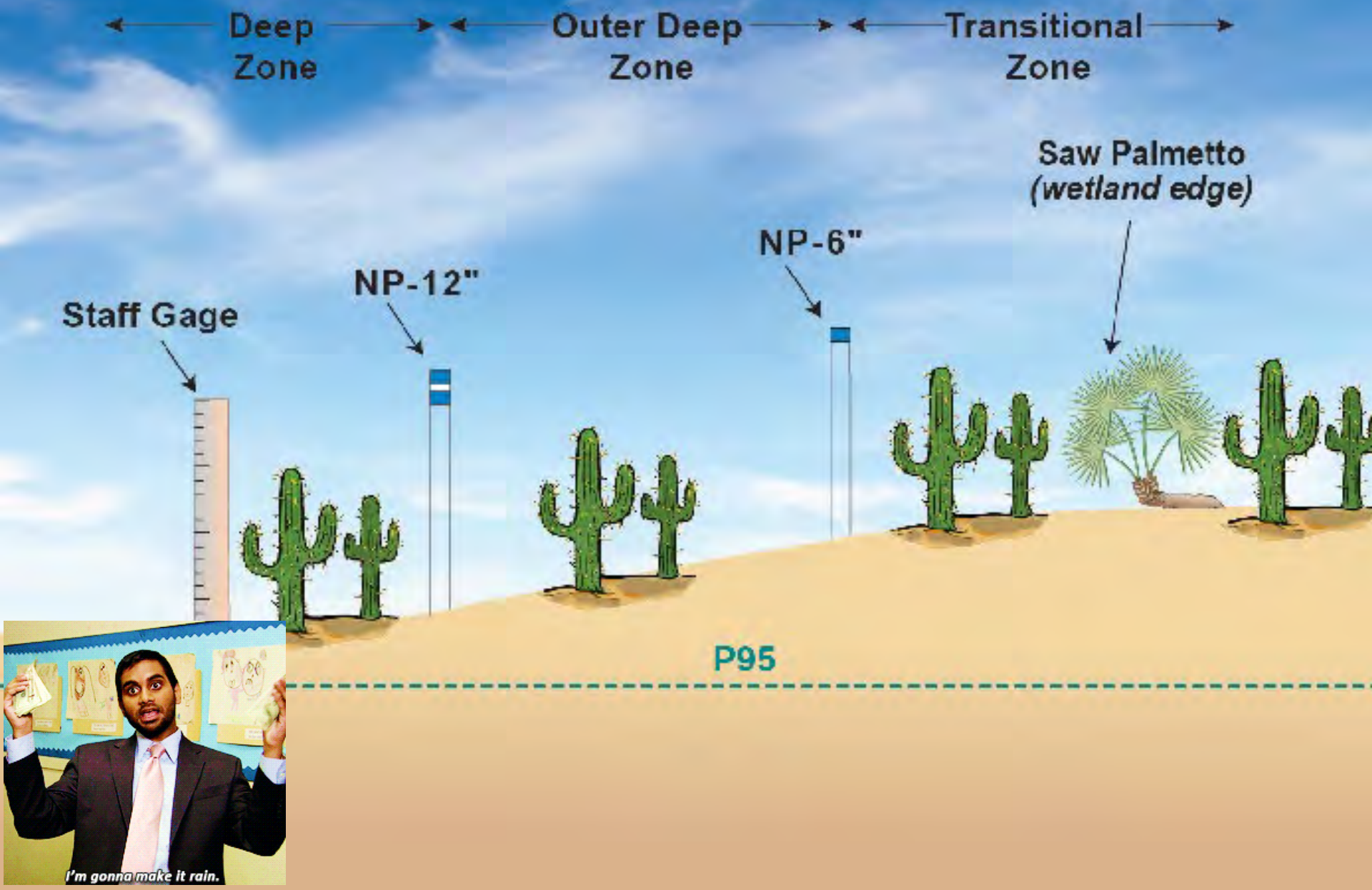


Upland Species Moving Into Wetland



Upland Species Moving Into Wetland



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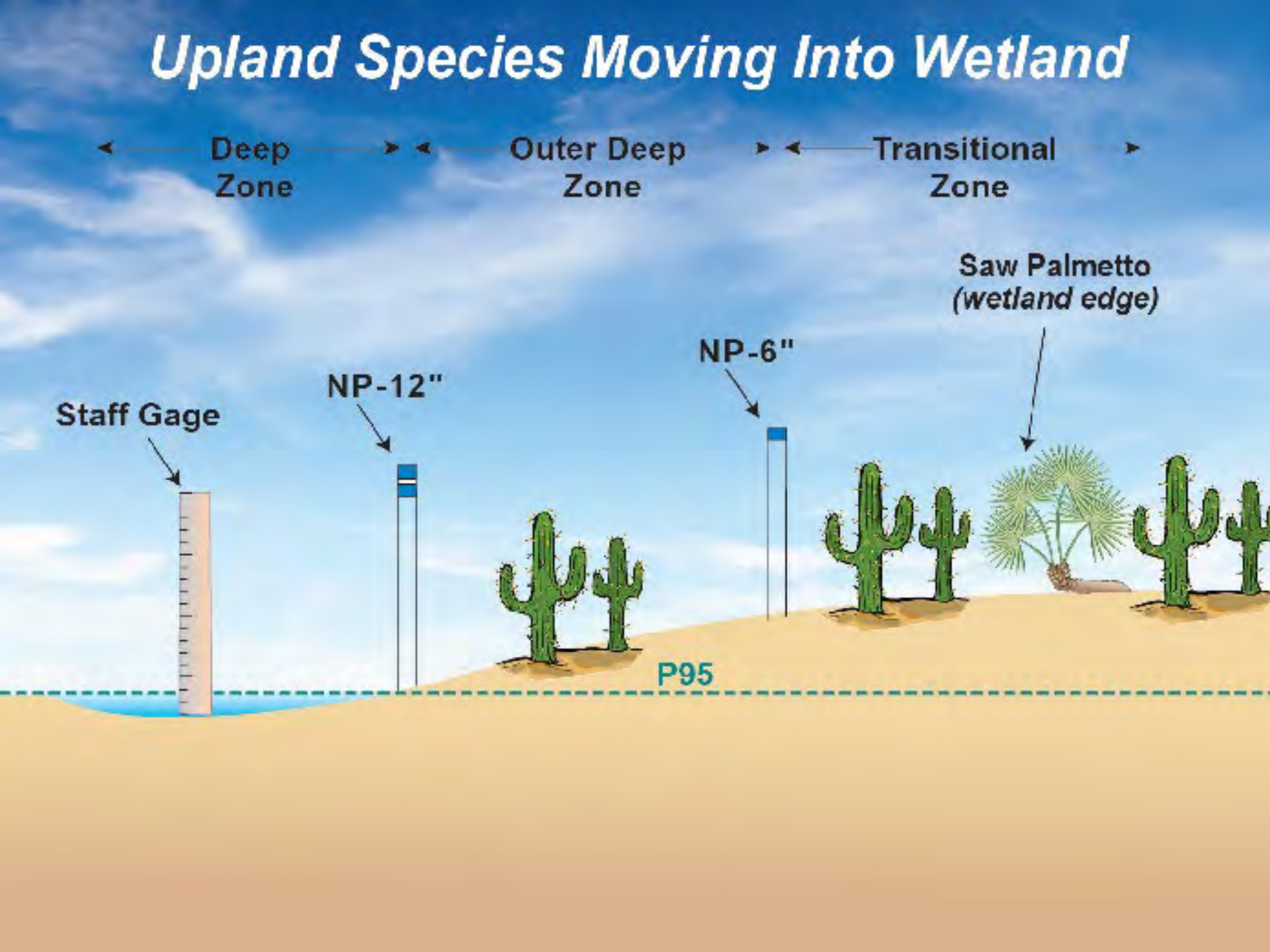
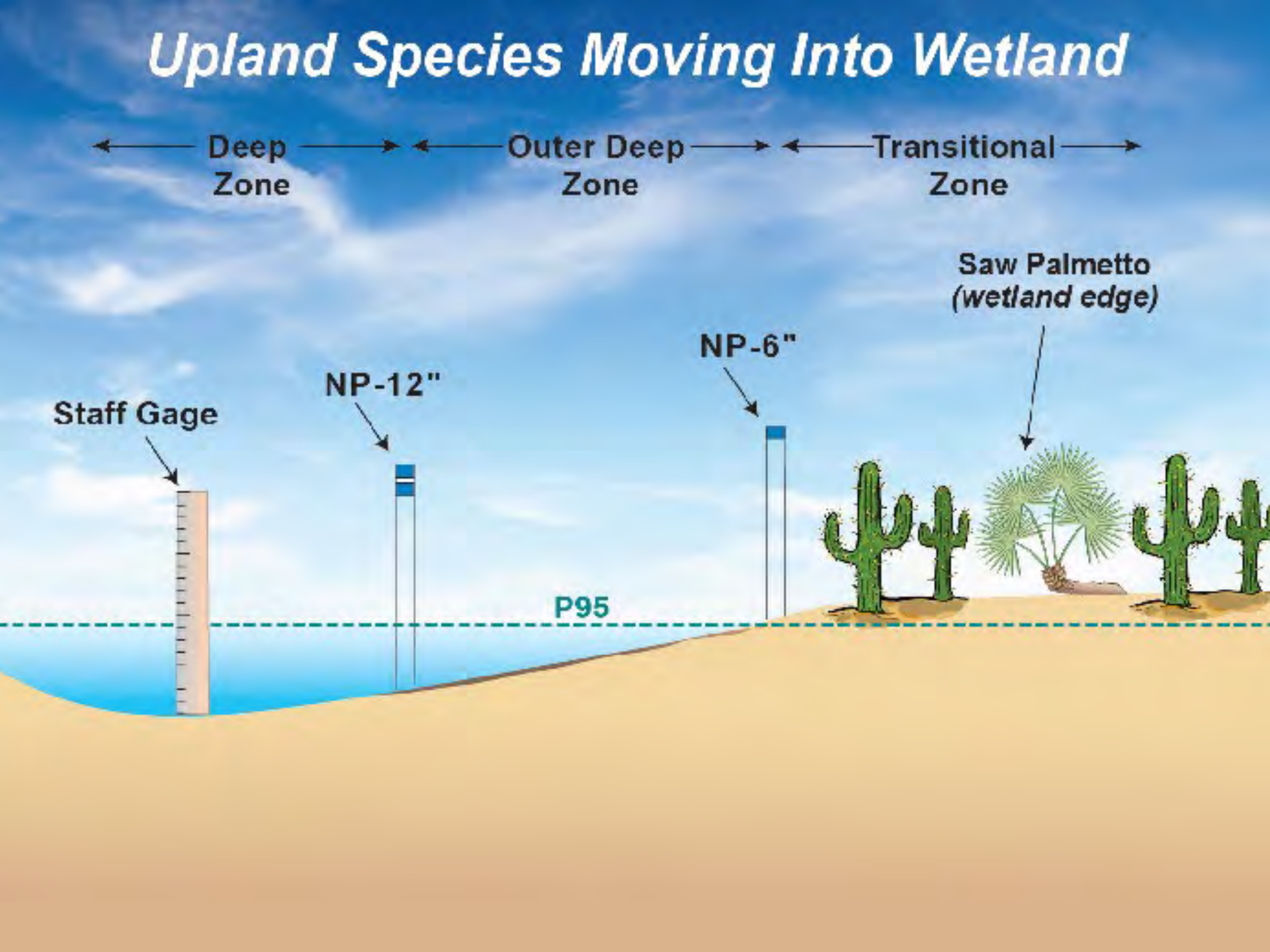
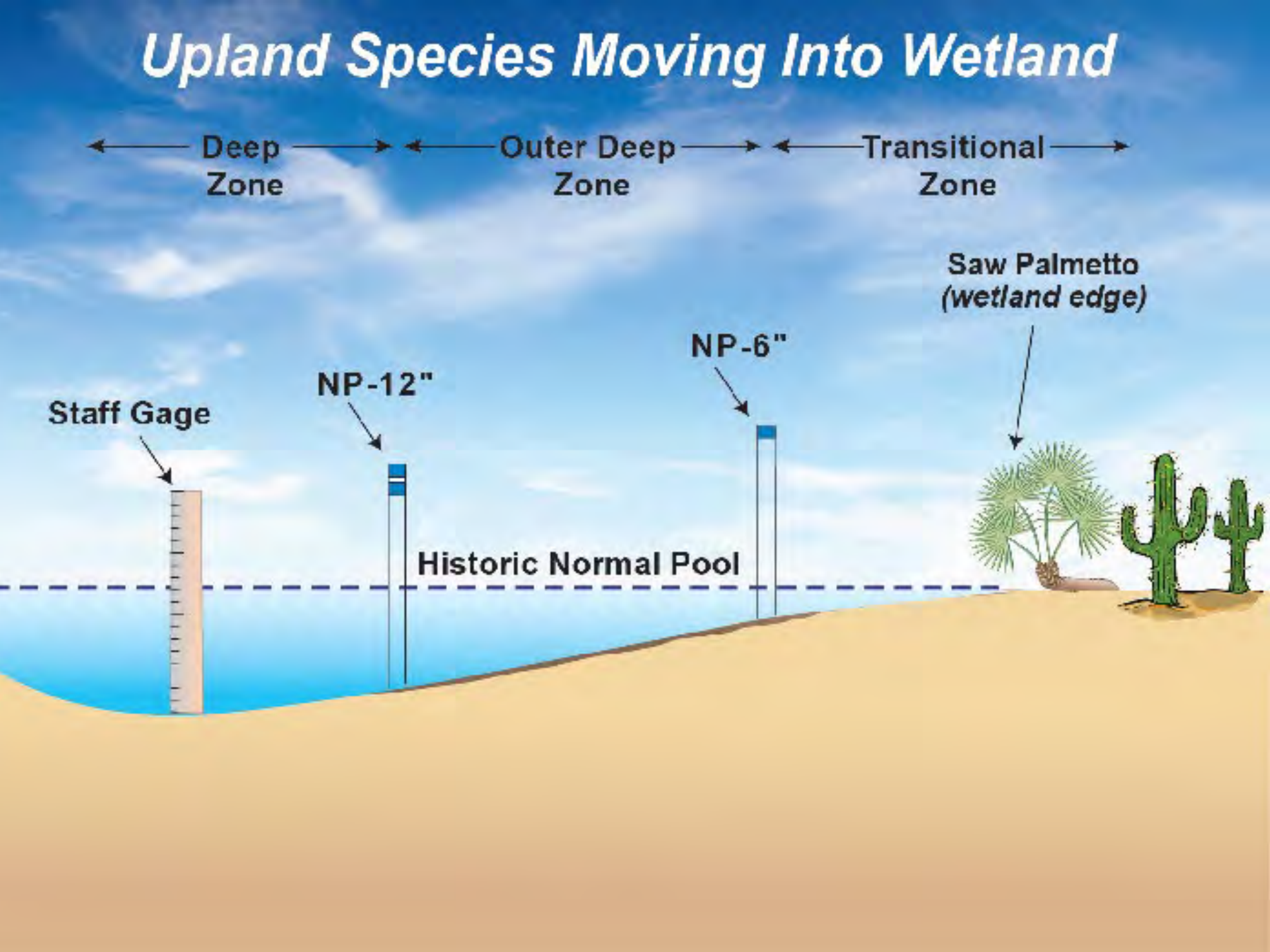


Upland Species Moving Into Wetland



Upland Species Moving Into Wetland



2022 WAP Training
Part 1 – The Form

The Form

Our first look

Wetland Assessment Procedure P. 1

DID	Wetland/Property Portfolio	Wetland Name	Wetland Type
No DID	J.B. STARKEY	Starkey T	Cypress Isolated

Wetland ID	Site ID	Data Owner	Personnel/Employer	Date	Start Time	End Time	Transect
503	776584	DIST					Starkey T A

WAP Assessment Personnel

Photo Documentation

Frame	Description	Photo Point Desc	Direction

Water Level Information

Dry? Yes No

Elevation (ft) Device Type Well/Gauge ID

Please enter Yes (Y), No (N), or Not Sure (NS) for the following questions and provide comments/explanations (2013 data shaded).

Wetland Impacts

Wetland edges filled or disturbed?	No	
Excessive dumping or trash in wetland?	No	
Hog disturbance?	Yes	
Significant impact from cattle (trampling)?	No	
Vehicles through wetland (including bicycles)?	Yes	
Insect damage?	No	
Disease?	No	

Wetland Drainage

Augmentation equipment in place?	No	
Augmentation occuring at time of WAP?	No	
Clear evidence of direct stormwater inflow?	No	
Clear evidence of direct drainage from wetland?	No	
Other drainage activities in area?	No	
Borrow pit/retention pond in wetland vicinity?	No	

Wetland Impact Comment(s)

none

Wetland Drainage Comment(s)

none

Fire

Signs of Fire? No Yes No

Lakes/Docks

Docks completely out of water
Docks touching water or with < 50% of dock over water
Docks > 50% out of water
N/A

2013 Is the littoral zone stranded? Current: Yes No

Fire Comment (year, expanse, intensity)

none

Lakes/Docks Comments:

Soil Subsidence

New signs of oxidation/subsidence: No Yes No

Soil Subsidence Comment:

none

General Comments/Observations:

Future users of these data may not want to analyze/compare these data with other wetlands due to the extensive level of:

2013 Current

Non-grounded water withdraw related disturbance
Soil subsidence

Species Count	Common Name	Evidence Description	Comment

Top - Page 1

Wetland Assessment Procedure P. 1

DID:	Wellfield/Property: Portfolio	Wetland Name	Wetland Type
No DID	J.B. STARKEY	Starkey T	Cypress Isolated

Wetland ID:	Site ID:	Data Owner:	Personnel's Employer:	Date:	Start Time:	End Time:	Transect
503	776584	DIST					Starkey T A

WAP Assessment Personnel:

Photo Documentation

Frame	Description	Photo Point Desc	Direction

Water Level Information

Dry? Yes ☐ No ☐

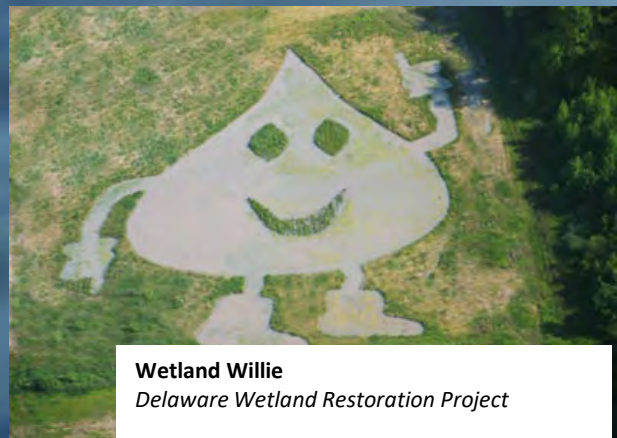
Elevation (ft): Device Type: Well/Gauge ID:

Water Levels with description of inundation

443 StkDD 6Stake Landward WAP2018.jpg

443 StkDD 6Stake Waterward WAP2018.jpg

443 StkDD Gage Cardinal N WAP2018.jpg



Wetland Willie
Delaware Wetland Restoration Project

Impacts and Drainage

Please enter Yes (Y), No (N), or Not Sure (NS) for the following questions and provide comments/explanations (2021 info is shaded. First column of yes/no entries)

Wetland Impacts

Wetland edges filled or disturbed?	No	
Excessive dumping or trash in wetland?	No	
Hog disturbance?	Yes	
Significant impact from cattle (trampling)?	No	
Vehicles through wetland (including bicycles)?	Yes	
Insect damage?	No	
Disease?	No	

Augmentation equipment in place?	No	
Augmentation occuring at time of WAP?	No	
Clear evidence of direct stormwater inflow?	No	
Clear evidence of direct drainage from wetland?	No	
Other drainage activities in area?	No	
Borrow pit/retention pond in wetland vicinity?	No	

Wetland Impact Comment(s)

none

Lower 1/2 OD rooted 6” deep - fresh

Wetland Drainage Comment(s)

none

Stormwater inflow from Publix lot

Datsun Engineering

FIRE

Fire

Signs of Fire? No ☐ Yes ☐ No

Lakes/Docks

- ☐ Docks completely out of water
- ☐ Docks touching water or with < 50% of dock over water
- ☐ Docks > 50% out of water
- ☐ N/A

2014 Is the littoral zone stranded? ☐ Current: ☐ Yes ☐ No

Fire Comment (year, expanse, intensity)

none

Lakes/Docks Comments:

Soil Subsidence

Fire

Signs of Fire? No ☐ Yes ☐ No

Lakes/Docks

- ☐ Docks completely out of water
- ☐ Docks touching water or with < 50% of dock over water
- ☐ Docks > 50% out of water
- ☐ N/A

2014 Is the littoral zone stranded? ☐ Current: ☐ Yes ☐ No

Fire Comment (year, expanse, intensity)

none

Lakes/Docks Comments:

Soil Subsidence

New signs of oxidation/subsidence: No ☐ Yes ☐ No

Soil Subsidence Comment:

none

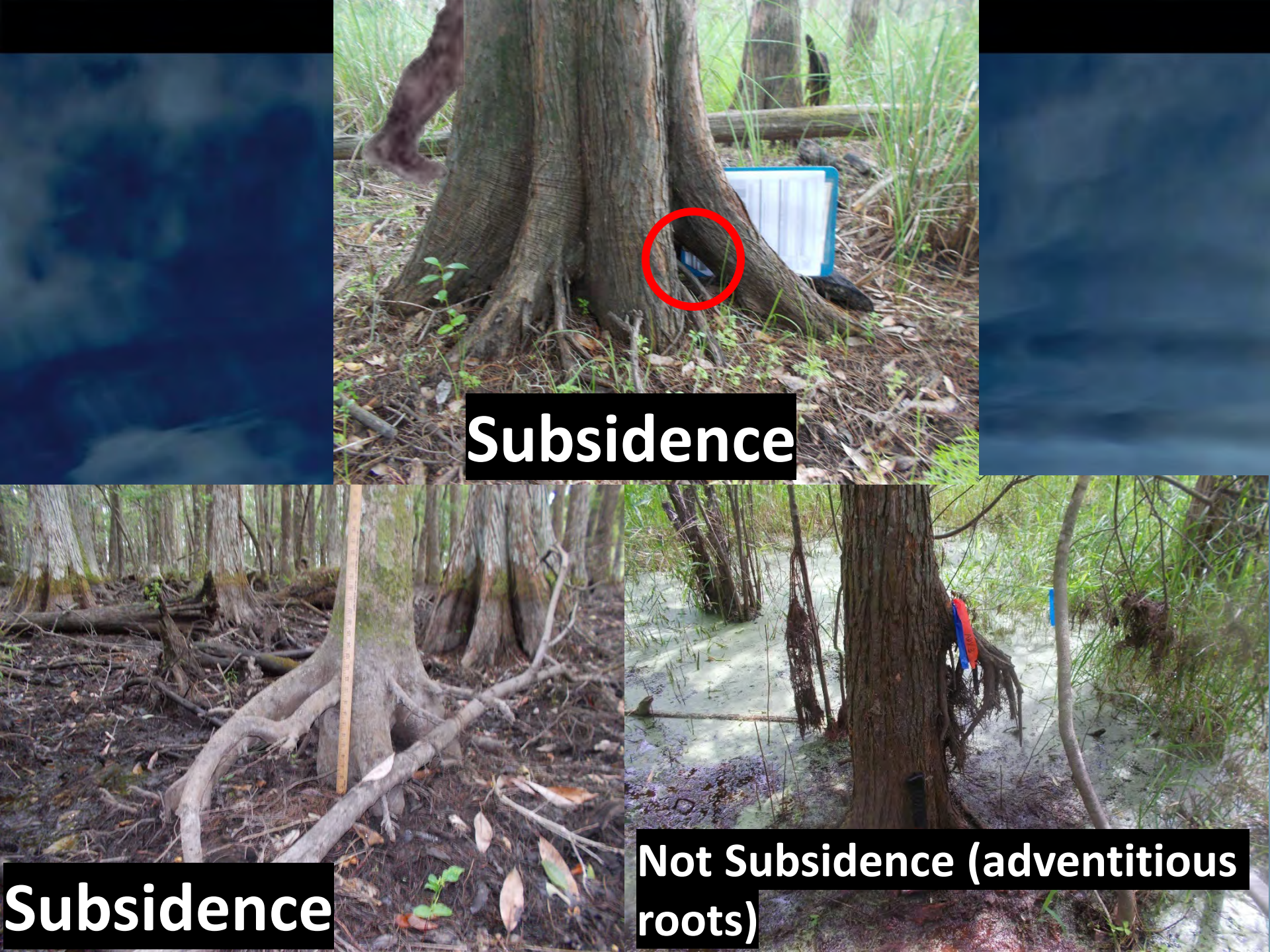
3" root exposure on several Cypress near gage

Future users of these data may not want to analyze/compare these data with other wetlands due to the extensive level of:

2014	Current	
☐	☐	Non-grounded water withdraw related disturbance
☐	☐	Soil subsidence

General Comments/Observations:

Species Count	Common Name	Evidence Description	


Subsidence
Subsidence
Not Subsidence (adventitious roots)

Soil Subsidence Comments

Forested – Root Exposure

- 0 - 1”
- 2”- 6”
- 6”-12”
- >12”
- Slumping/Pedestals

Herbaceous – Cracks / Crevices

Wildlife

Lakes/Docks

- ☐ Docks completely out of water
- ☐ Docks touching water or with < 50% of dock over water
- ☐ Docks > 50% out of water
- ☐ N/A

2014 Is the littoral zone stranded? ☐ Current: ☐ Yes ☐ No

Lakes/Docks Comments:

General Comm

Future users of these data may not want to analyze/compare these data with other wetlands due to the extensive level of:

2014	Current	
☐	☐	Non-grounded water withdraw related disturbance
☐	☐	Soil subsidence

Species Count	Common Name	Evidence Description	

Vegetation

(pp. 2, 3, and 4)

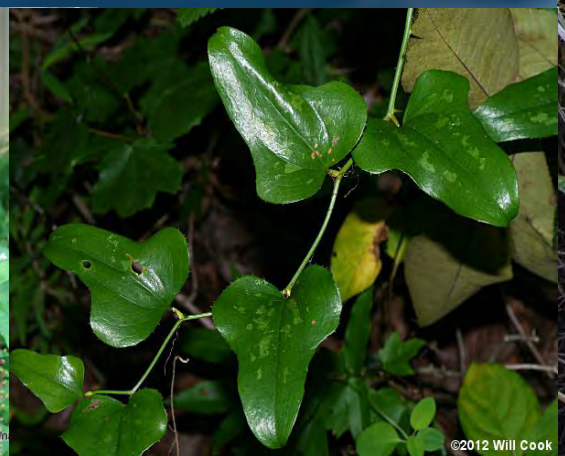
Strata

- Groundcover (page 2)
- Shrubs and Small Trees (page 3)
- Trees (page 4)


Trees
Shrubs and
Small Trees
Groundcover

Groundcover

- All non-woody species
- All woody species <1 meter tall
- Rooted in the wetland
- *Always g*roundcover*: Eupatorium, Typha, Rubus*, and all vines



Shrubs and Small Trees

- Woody plants > 1 meter tall *and* < 4 cm DBH
- Cabbage palm >1 meter tall and <6 meters tall
- Must be rooted in wetland
- Generally have multiple stems
- Includes *Hypericum* spp., *Ilex glabra, Myrica (Morella), Lyonia*, and other woody plants with multiple stems *when > 1 m tall*

Trees

- All woody plants ≥ 1 meter tall *and* ≥ 4 cm DBH
- Includes cabbage palms > 6 meters tall
- Rooted in the wetland
- *Not Trees- Myrica (Morella)*, *Lyonia* spp., and other woody plants with multiple stems that are greater than one meter tall are assessed as shrubs and small trees.

WAP Species & Assigned Zones

Appendix A. Plant list used for WAP methodology.

Botanical Name	Common Name	Synonymy	Wetland Zone
Acer rubrum	red maple		OD
Amaranthus australis	southern amaranth		T
Ambrosia artemisiifolia	common ragweed		U
Amorpha fruticosa	Bastard indigobush; false indigobush		T
Ampelopsis arborea	Peppervine		AD
Amphicarpum muhlenbergianum	blue maidencane		OD
Andropogon glomeratus	bushy bluestem		T
Andropogon glomeratus var. glaucopsis	purple bluestem		OD
Andropogon virginicus	broomsedge bluestem		AD
Andropogon virginicus var. decipiens	broomsedge bluestem		AD
Andropogon virginicus var. glaucus	chalky bluestem		U
Axonopus spp.	Carpetgrass		AD
Baccharis spp.	silverling, groundsel tree, sea myrtle		AD
Bacopa caroliniana	lemon bacopa; blue waterhyssop		OD
Berchemia scandens	alabama supplejack; rattan vine		T
Callicarpa americana	American beautyberry		U
Campsis radicans	trumpet creeper		T
Carex longii	long's sedge		T
Celtis laevigata	sugarberry; hackberry		T
Centella asiatica	Spadeleaf		T
Cephalanthus occidentalis	common buttonbush		D

Groundcover (page 2)

Groundcover

For each zone assessed, please document the following: species abbreviation, WAP zone (ZONE) (U, AD, T, OD, or D), percent cover (%) (5% or 10% - 100% in increments of 10%), count(#)(1-4), and distribution (DIST) (E=edge, B=beyond a few feet, or T=throughout).

Transition Zone

Check if no groundcover ☐

Species	Z	%	#	D

Outer Deep Zone

Check if no groundcover ☐

Species	Z	%	#	D

Deep Zone

Check if no groundcover ☐

Species	Z	%	#	D

Groundcover (page 2)

Groundcover

For each zone assessed, please document the following: species abbreviation, WAP zone (ZONE) (U, AD, T, OD, or D), percent cover (%) (5% or 10% - 100% in increments of 10%), count(#)(1-4), and distribution (DIST) (E=edge, B=beyond a few feet, or T=throughout).

Transition Zone

Check if no groundcover ☐

Species	Z	%	#	D

Outer Deep Zone

Check if no groundcover ☐

Species	Z	%	#	D

Deep Zone

Check if no groundcover ☐

Species	Z	%	#	D

Zones
WAP Instruction Manual
Appendix B – Definition of Wetland Assessment Method Terms

- Upland (U) – Plant species that are not expected to be seen in wetlands. It is possible that a few of these species may be found along wetland edges, but are not expected throughout the Transition zone.

Zones
Appendix B – Definition of Wetland Assessment Method Terms

- Adaptive (AD) – Plant species designated as FAC or UPL by DEP, but commonly seen in the Transition zone (T) in limited numbers. *When Adaptive species are found in the Outer Deep (OD) or Deep (D) zones, they should be treated the same as Transition zone species*.

Zones
Appendix B – Definition of Wetland Assessment Method Terms

- Transition (T) – Plant species commonly found in the Transition zone, and designated FACW (a few OBL) by DEP.

Zones
Appendix B – Definition of Wetland Assessment Method Terms

- Outer Deep (OD) – Plant species commonly found in the Outer Deep zone, and designated either FACW or OBL by DEP.

Zones
Appendix B – Definition of Wetland Assessment Method Terms

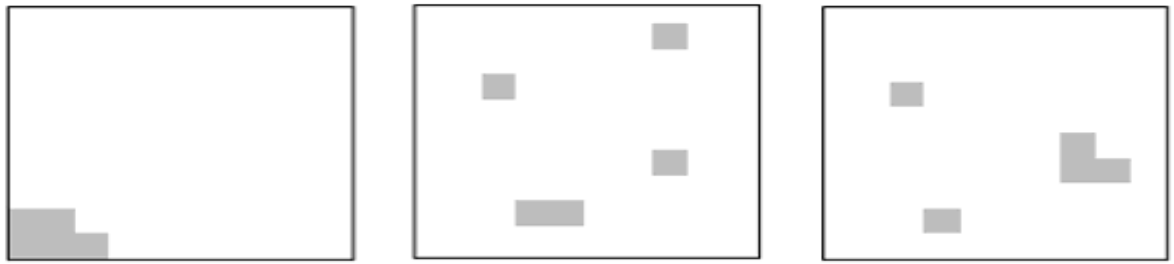
- Deep (D) - Plant species commonly found in the Deep zone, and designated OBL by DEP.

Zones

- If a species is not a WAP plant, Zone designation is NA
- However, all species observed should be recorded

Percent Cover

1% to 5%: These are all 5% cover



6% to 10%: These are all 10% cover

11% to 25%: These are all 25% cover

Groundcover (page 2)

Groundcover

For each zone assessed, please document the following: species abbreviation, WAP zone (ZONE) (U, AD, T, OD, or D), percent cover (%) (5% or 10% - 100% in increments of 10%), count(#)(1-4), and distribution (DIST) (E=edge, B=beyond a few feet, or T=throughout).

Transition Zone

Check if no groundcover ☐

Species	Z	%	#	D

Outer Deep Zone

Check if no groundcover ☐

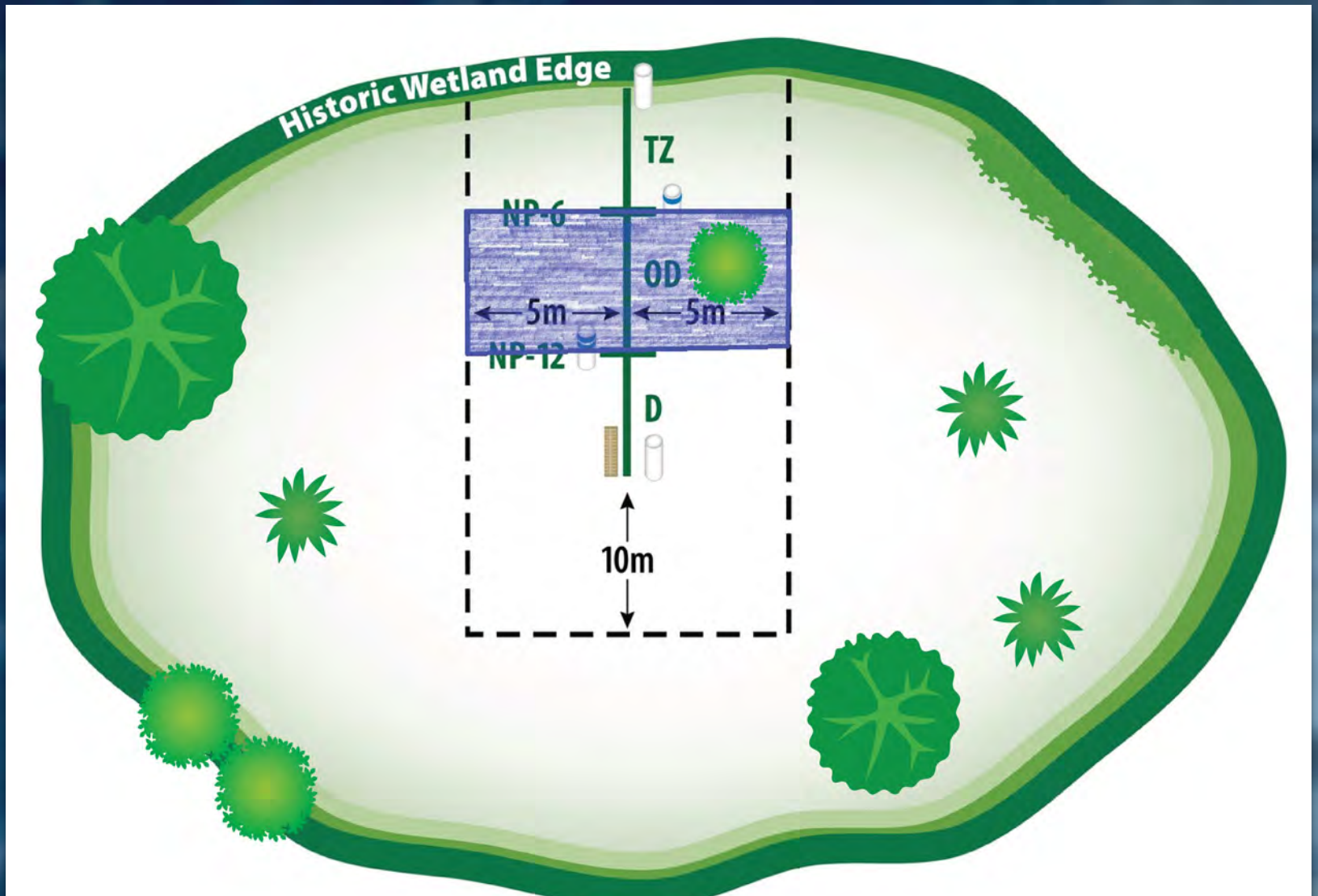
Species	Z	%	#	D

Deep Zone

Check if no groundcover ☐

Species	Z	%	#	D

Remember, only in 10% increments.
10% < 15% < 20%



Groundcover (page 2)

Groundcover

For each zone assessed, please document the following: species abbreviation, WAP zone (ZONE) (U, AD, T, OD, or D), percent cover (%) (5% or 10% - 100% in increments of 10%), count(#)(1-4), and distribution (DIST) (E=edge, B=beyond a few feet, or T=throughout).

Transition Zone

Check if no groundcover ☐

Species	Z	%	#	D

Outer Deep Zone

Check if no groundcover ☐

Species	Z	%	#	D

Deep Zone

Check if no groundcover ☐

Species	Z	%	#	D

Shrubs and Small Trees/ Trees (page 3 & 4)

Shrubs/Small Trees

For each zone assessed, please document the following: species abbreviation, WAP zone (ZONE) (U, AD, T, OD, or D), percent cover (%) (5% or 10% - 100% in increments of 10%), count (#) (1 - >50), and distribution (DIST) (E=edge, B=beyond a few feet, or T=throughout).

Transition Zone

Check if no shrubs/small trees ☐

Species	Z	%	#	D

Outer Deep Zone

Check if no shrubs/small trees ☐

Species	Z	%	#	D

Deep Zone

Check if no shrubs/small trees ☐

Species	Z	%	#	D

Shrubs/Small Trees Comments

Zonation

Zonation Score ☐ Please assign a score of 1-5 or 0 (for N/A) and provide an explanation

Zonation Score Explanation:

Groundcover (2014 data shaded)

For each zone assessed, please docu g: species abbreviation, WAP zone (ZONE) (U, AD, T, OD, or D), percent cove (5% or 10% - 100% in increments of 10%), cou (#)(1-4), and distribution (DIST) (E=edge, B=beyond a few feet, or T=throughout).

Transition Zone

Check if no groundcover 2014 ☐ Current ☐

Species	Z	%	#	D	%	#	D
		2014			Current		
Erioca decang	NA	10		T			
Amphic muhlen	OD	10		T			
Stilli aquati	D	5		T			
Eupato leptop	OD	5		T			
Pluche baccha	OD	5		T			
Droser capill	NA	5		T			
Dichan commut	NA	5		T			
Gratio ramosa	T	5		T			
Hyperi fascic	OD	5		T			
Syngon flavid	NA		1	T			
Xyris elliot	NA		1	T			
Sagitt gramin	NA		1	T			
Juncus scirpo	NA		1	T			

Outer Deep Zone

Check if no groundcover 2014 ☐ Current ☐

Species	Z	%	#	D	%	#	D
		2014			Current		
Stilli aquati	D	10		T			
Gratiola sp.	NA	5		E			
Pluche baccha	OD	5		T			
Eupato leptop	OD	5		T			
Amphic muhlen	OD	5		T			
Rhynch inunda	NA	5		T			
Erioca decang	NA		2	T			
Androp glomer glauco	OD		2	T			
Rhynch cephal	NA		2	T			
Taxodi ascend	D		1	T			
Xyris jupica	NA		1	T			
Androp glomer	T		1	T			

Deep Z

Check if no groundcover 2014 ☐ Current ☐

Species	Z	%	#	D	%	#	D
		2014			Current		
Rhynch inunda	NA	30		T			
Panicu hemito	NA	5		T			
Sagitt gramin	NA	5		T			
Carex verruc	NA	5		T			
Erioca decang	NA	5		T			
Cladiu jamaic	NA		4	T			
Pluche baccha	OD		2	B			

Shrubs/Small Tre (2014 data shaded)

For each zone assessed, please document the following: species abbreviatio AP zone (ZONE) (U, AD, T, OD, or D), percent cover (%) (5% or 10% - 100% in increments of 10%), count (#) (1 - >50), and distribut DIST) (E=edge, B=beyond a few feet, or T=throughout).

Transition Zone

Check if no shrubs 2014 ☐ Current ☐

Species	Z	%	#	D	%	#	D
		2014			Current		
Stilli aquati	D		4	T			

Outer o Zone

Check if no shrubs 014 ☐ Current ☐

Species	Z	%	#	D	%	#	D
		2014			Current		
Myrica cerife	AD	20	15	T			
Taxodi ascend	D	10	10	T			
Stilli aquati	D	5	10	T			
Hyperi fascic	OD	5	5	T			
Pinus elliot	AD	5	3	T			

Deep Zone

Check if no shrubs 2014 ☐ Current ☐

Species	Z	%	#	D	%	#	D
		2014			Current		
Taxodi ascend	D	10	17	T			
Stilli aquati	D	5	8	T			
Myrica cerife	AD	5	6	B			

Groundcover (page 2)

Groundcover

For each zone assessed, please document the following: species abbreviation, WAP zone (ZONE) (U, AD, T, OD, or D), percent cover (%) (5% or 10% - 100% in increments of 10%), count(#)(1-4), and distribution (DIST) (E=edge, B=beyond a few feet, or T=throughout).

Transition Zone

Check if no groundcover ☐

Species	Z	%	#	D

Outer Deep Zone

Check if no groundcover ☐

Species	Z	%	#	D

Deep Zone

Check if no groundcover ☐

Species	Z	%	#	D

Dead vs. Live Vegetation

Explanations and Comments

Shrubs/Small Trees

For each zone assessed, please document the following: species abbreviation, WAP zone (ZONE) (U, AD, T, OD, or D), percent cover (%) (5% or 10% - 100% in increments of 10%), count (#) (1 - >50), and distribution (DIST) (E=edge, B=beyond a few feet, or T=throughout).

Transition Zone

Check if no shrubs/small trees ☐

Species	Z	%	#	D

Outer Deep Zone

Check if no shrubs/small trees ☐

Species	Z	%	#	D

Deep Zone

Check if no shrubs/small trees ☐

Species	Z	%	#	D

Shrubs/Small Trees Comments

Zonation

Zonation Score ☐ Please assign a score of 1-5 or 0 (for N/A) and provide an explanation

Zonation Score Explanation:

Stress

Signs of stress of appropriate shrubs and small trees (including dead species)

Guidance/Reminders

- Don’t include plants in pathways / trails
- The total percent cover does not have to equal 100%
- Be careful with ID and estimates of distant plants
- Add any notes to explain yourself, as needed
- Remember to include only living plants
- Edge vs. Throughout

Guidance/Reminders

- Look at previous year's data, and try to be consistent (within reason)
- Trees shouldn't change much
- Exact width of transect is not critical
- When disagreeing with previous years, include explanation

Guidance/Reminders

If any zone has been temporarily disturbed (pig rooting, fire, etc.):

- Check “no cover” box (top of zone species list, pp. 2,3, and 4)
- Add an explanation
- Re-evaluate next year

Examples of not enough groundcover (NA)

https://vetstreet.brightspotcdn.com/dims4/default/02bd838/2147483647/thumbnail/645x380/quality/90/?url=https%3A%2F%2Fvetstreet-brightspot.s3.amazonaws.com%2Fa3%2F767b00a33511e087a80050568d634f%2Ffile%2FSphynx-4-645mk062211.jpg

When is NA an Appropriate Score?

Not enough cover in any zone to make an evaluation of a stratum

- If <5% groundcover, only one shrub or small tree, or only one tree

> **Guidance**: If you feel there is not enough of the **cover** to make a meaningful score, choose NA.

- Can also be due to high water, fire, inaccessibility, or other temporary reasons

- **Explain reasons**

Zonation Score

- For each stratum, score each zone
  - Stick closely to the rules
  - A choice of 1-5 or NA must be made for each stratum based on the *lowest zone score in each stratum*

COVER CATEGORIES RANKING SCALE

Wetland ID_____
Personnel_____
Date_____

Check the ONE box that applies for each Cover category. Each Cover category can have only 1 Rank Score, e.g.: Rank 2, GC; Rank 4, Tr; Rank 4, S; that best describes the most degraded condition for each cover category. Two different Rank Scores can never be assigned to a cover category. DO NOT accumulate percentages or numbers between zones. Copy the ranking scales derived for each Cover category to the WAP Field Form

RANK SCORE

5 **No Migration or**

Inward Migration 1 zone BEYOND or THROUGHOUT *or* **Species found only along Zone EDGE (within 1 ft.)**

GC	☐ < 5% cover for all inappropriate species	GC	☐ 5% - 25% cover for all species
S	☐ < 2 specimens	S	☐ 2 or 3 specimens
Tr	☐ < 2 specimens	Tr	☐ 2 or 3 specimens

AND/OR (Adaptive Species in the Transition Zone)

☐ < 25% GC *and/or* ☐ < 5 specimens S *and/or* ☐ < 5 specimens Tr

4 **Migration Inward 1 Zone – Species distributed BEYOND a few feet or THROUGHOUT a Zone**

GC ☐ 5% - 25% cover for all species
S ☐ 2 or 3 specimens
Tr ☐ 2 or 3 specimens

AND/OR (Adaptive Species located THROUGHOUT much of the Trans Zone)

☐ > 25% GC *and/or* ☐ > 5 specimens S *and/or* ☐ > 5 specimens Tr

3 **Migration Inward 1 Zone – Species distributed THROUGHOUT MUCH of the Zone**

GC ☐ >25% cover for all species
S ☐ > 5 specimens
Tr ☐ > 5 specimens

AND/OR (Inward Migration 2 Zones distributed BEYOND or THROUGHOUT)

GC ☐ 5% - 25% cover for all species
S ☐ >2 but <5 specimens
Tr ☐ >2 but <5 specimens

2 **Migration Inward 2 Zones – Species distributed THROUGHOUT the Zone**

GC ☐ >25% cover for all species
S ☐ > 5 specimens
Tr ☐ > 5 specimens

AND/OR (Upland species moved into DEEP zone, distributed BEYOND or THROUGHOUT)

GC ☐ 5% - 25% cover for all species
S ☐ >2 but <5 specimens
Tr ☐ >2 but < 5specimens

1 **Migration of Upland species distributed THROUGHOUT much of the DEEP zone**

GC ☐ >25% cover for all species
S ☐ > 5 specimens
Tr ☐ > 5 specimens

N/A **Not enough Cover to make an evaluation, <2 S or <5% GC (*Please explain below*)**

GC ☐
S ☐
Tr ☐

Notes: 1. AD species are treated the same as T species when they are found in the OD and D Zones
2. If there are not enough species or #'s to justify one score, choose the higher score.

Legend

GC = Ground Cover Tr = Tree Cover T = Transitional AD =Adaptive
S = Shrub & Small Tree Cover D = Deep Zone OD = Outer Deep

Ranking Scale

5. Normal **zonation**. Some species may have migrated inward one **zone**, but they are not in enough numbers and/or right along the **zone** edge. **Adaptive species** in the **transition zone** are not considered abnormal if they are not in high numbers and distribution.

4. Species have moved in one **zone** in enough numbers and distribution to be of concern, and/or species with an **adaptive** classification are in high numbers and distribution in the **transition zone**.

3. Species have moved in one **zone** in high numbers and distribution, and/or species have moved in two **zones** in enough numbers and distribution to be of concern.

2. Species have moved in two **zones** in high numbers and distribution, and/or some species with an **upland** classification have moved into the **deep zone** in enough numbers and distribution to be of concern.

1. Species with an **upland** classification have moved into the **deep zone** in high numbers and distribution.

NA. Not enough **cover** to make evaluation (< 5 percent for groundcover, and < 2 individuals for "shrubs and small trees" and "trees")

Guidance:

For **groundcover**:

a. "Enough numbers" generally means greater than 5 percent **cover** for all species.
b. "High numbers" generally means greater than 25 percent **cover**.
c. "Enough distribution" generally means located beyond a few feet of the appropriate **zone**.
d. "High distribution" generally means located throughout much of the **zone**.

For **shrubs and small trees**, and **trees:**

a. "Enough numbers" generally means 2 or 3 specimens.
b. "High numbers" generally means greater than 5 specimens.
c. "Enough distribution" generally means located beyond a few feet of the appropriate **zone**.
d. "High distribution" generally means located throughout much of the **zone**.

If there are not enough specimens to justify one score, choose the one higher. For example, if all you have is one T shrub well into the deep zone (two zone move), a "3" is not justified (less than 2 to 3 specimens). Choose a "4".

Note: For scoring purposes, AD species are treated the same as T species when they are found in the Outer Deep and Deep zones.

Created April 16, 2008

Numbers & Distribution

- "Enough numbers": >5% for groundcover and 2-3 trees or shrubs / small trees
- "High numbers": >25% for groundcover, and >5 individual trees or shrubs / small trees.
- "Enough distribution": Located beyond a few feet of the appropriate zone marker (edge, NP-6, NP-12).
- "High distribution": Located throughout much of the zone.

Numbers & Percentages

- Percentages are <u>not cumulative between zones</u>
  - 3 Adaptive (AD) plants into the Outer Deep (OD) zone, and 3 Outer Deep plants into the Deep (D) zone is *<u>not</u>* a one zone move for 6 plants
  - 15% Adaptive species into the Outer Deep zone, and 20% Outer Deep species into the Deep zone is not a 35% one zone move.

Ranking Scale

5. Normal **zonation**. Some species may have migrated inward one **zone**, but they are not in enough numbers and/or right along the **zone** edge. **Adaptive species** in the **transition zone** are not considered abnormal if they are not in high numbers and distribution.

4. Species have moved in one **zone** in enough numbers and distribution to be of concern, and/or species with an **adaptive** classification are in high numbers and distribution in the **transition zone**.

3. Species have moved in one **zone** in high numbers and distribution, and/or species have moved in two **zones** in enough numbers and distribution to be of concern.

2. Species have moved in two **zones** in high numbers and distribution, and/or some species with an **upland** classification have moved into the **deep zone** in enough numbers and distribution to be of concern.

1. Species with an **upland** classification have moved into the **deep zone** in high numbers and distribution.

NA. Not enough **cover** to make evaluation (< 5 percent for groundcover, and < 2 individuals for "shrubs and small trees" and "trees")

Wetland Assessment Procedure

Wellfield/Property: Portfolio	Wetland Name	Wetland Type
MORRIS BRIDGE	Morris Bridge Clay Gully Cypress	Cypress Isolated

Wetland ID:	Prev Yr. Assessment Area Width 2017	Zone Assessment Notes	Transect
273	5M on each side of transect	Transitional zone too narrow to evaluate.	Morris Bridge Clay Gully Cypr

Groundcover (2017 data shaded)

For each zone assessed, please document the following: species abbreviation, WAP zone (ZONE) (U, AD, T, OD, or D), percent cover (%) (5% or 10% - 100% in increments of 10%), count(#)(1-4), and distribution (DIST) (E=edge, B=beyond a few feet, or T=throughout).

Transition Zone

Check if no groundcover 2017 ☐ Current ☐

Species	Z	%	#	D	%	#	D
					2017		Current

pan hemit NA 5 T
syng flavid NA 5 T ?
androp glom glauc OD 5 T
hyp myrt T 2T
eup cap AD 1T
eup lep OD 2T
drosera NA 5 T
ilex glabra AD 5 T
lachna caro NA 5 T
xyris spp. NA 2T

AD- 5%+1 (5)

Outer Deep Zone

Check if no groundcover 2017 ☐ Current ☐

Species	Z	%	#	D	%	#	D
					2017		Current
Amphic muhlen	OD	20		T	20		T
~~Xyris spp.~~	~~NA~~	~~5~~		T			
Pteroc pycnos	NA	5		T			
Panicu hemito	NA	5		T	5		T
Androp glomer glauco	OD	5		T	5		T
Eupato leptop	OD		2	T	5		T
Pinus elliot	AD		2	T		2	T
Quercu laurif	T		1	T		2	T
Syngon flavid	NA				5		T
Fatal palmetto	NA					1	T
lachn caro	NA				5		T
drosera sp.	NA				5		T
unk herb	NA					1	T

AD+T: 4 (5)

Deep Zone

Check if no groundcover 2017 ☐ Current ☐

Species	Z	%	#	D	%	#	D
					2017		Current
Woodwa virgin	NA	30		T	40		T
~~Eupato leptop~~	~~OD~~	~~10~~		T	5		T
Juncus effusu solutu	NA	10		T	10		T
Androp glomer glauco	OD	5		T	5		T
Panicu hemito	NA	5		T	5		T
Carex verruc	NA	5		T	10		T
Lachna caroli	NA	5		T	5		T
~~Sreeht hierac~~	~~AD~~	~~5~~		T			
Smilax bona-n	AD	5		T	5		T
~~Rupate capill~~	~~AD~~	~~5~~		T			
Amphic muhlen	OD	5		T	5		T
Pinus elliot	AD		4	T		1	B
sag grami	NA				5		T
Q. laurifolia	T				5		T
Q. virginiana	U					1	T
taxodium	D				5		T
nodium	NA					1	T
polygamum	OD				5		T

AD+T: 10%+1
U: 1 (NA) (3)

Groundcover Comments

Zonation

Zonation Score: 3

Please assign a score of 1-5 or 9 (for N/A) and provide an explanation

Zonation Score Explanation:

2 zone move in smooth #'s (smilax + laurel sack into Deep)

Explanations

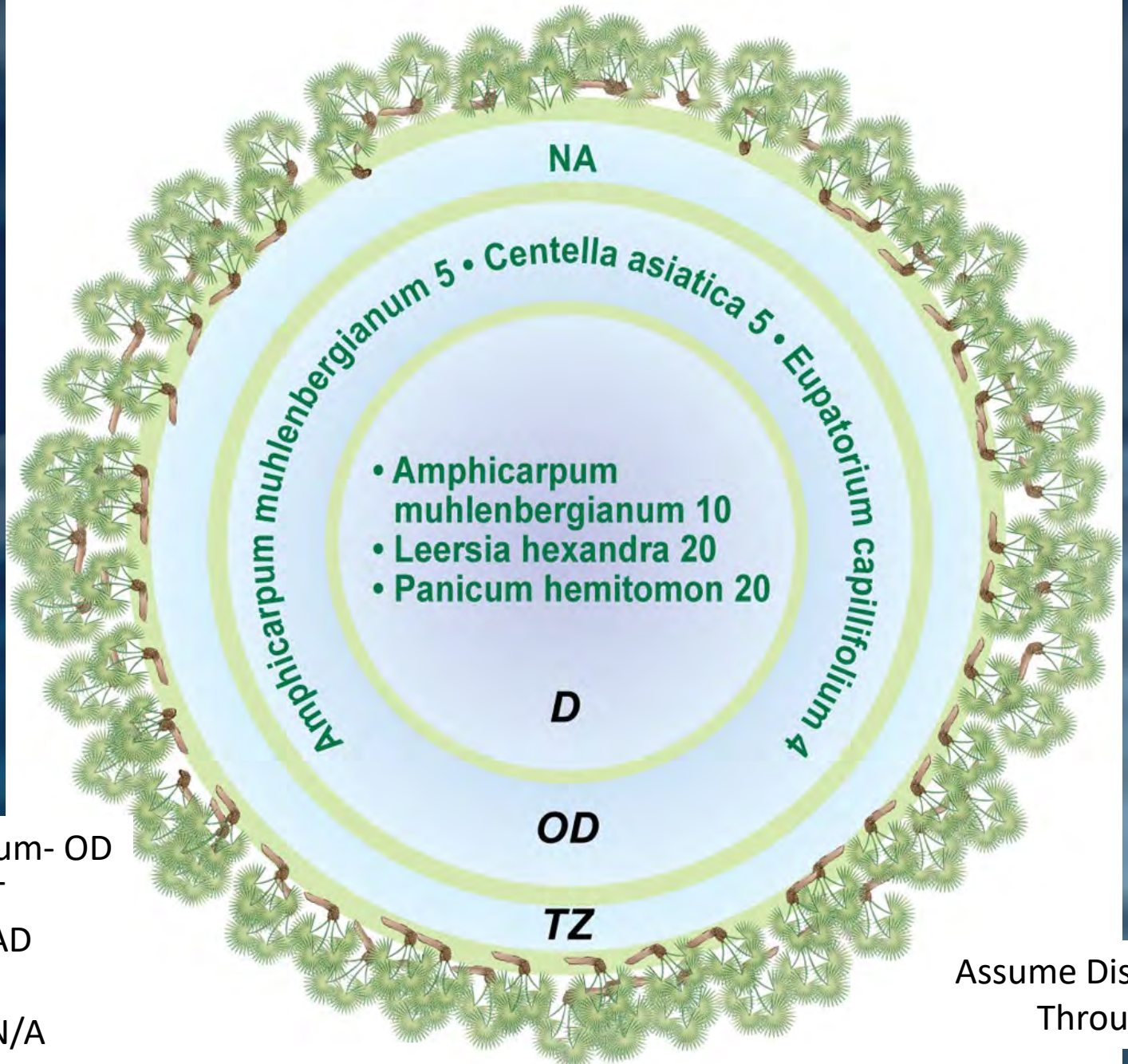
- Explain your score in the Zonation Score Explanation box

  - Critical and mandatory part of process

  - Also, comments in the Comments box, if appropriate

Example Exercises

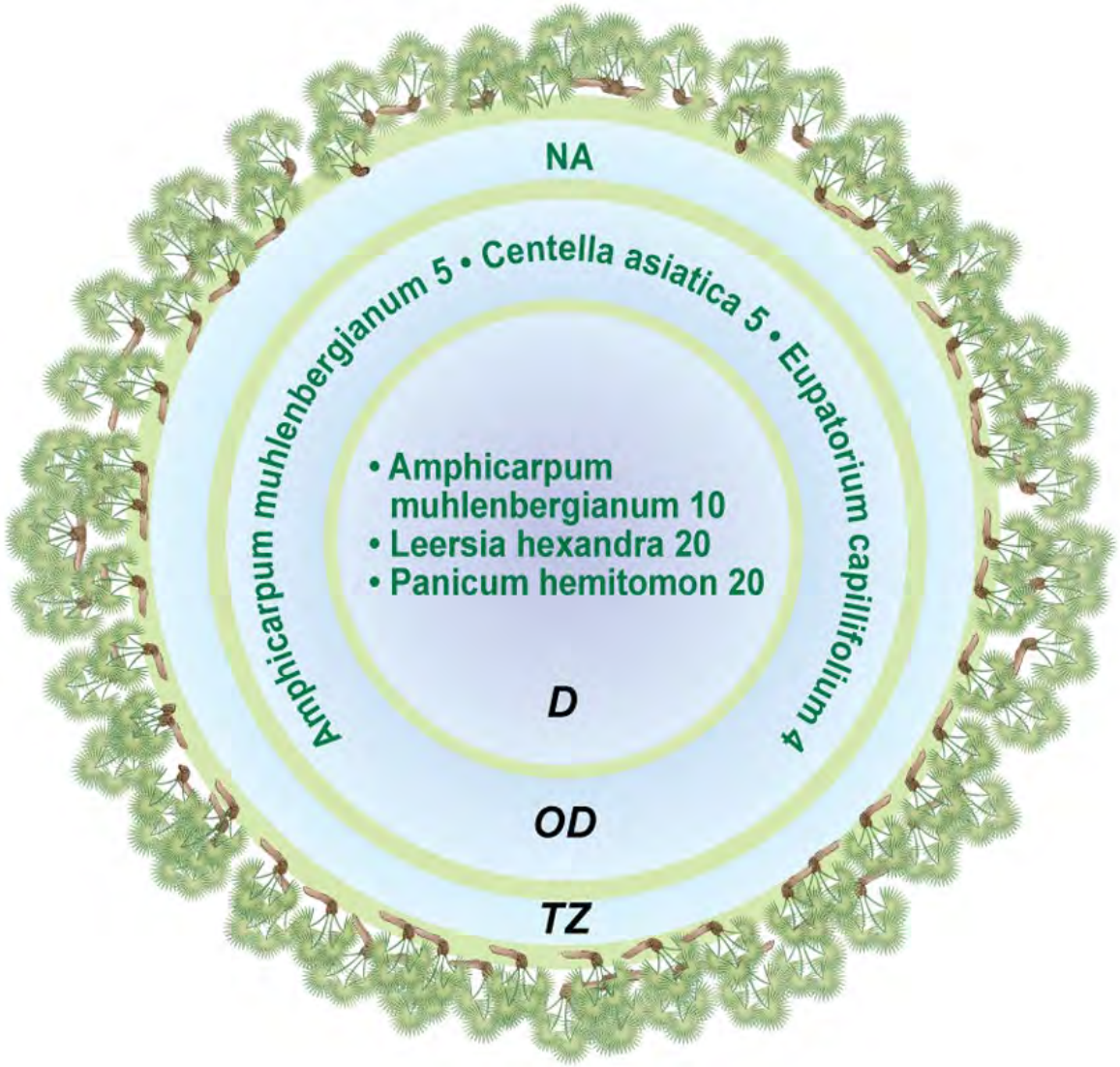
Groundcover



Amphicarpum- OD
Centella – T
Eup Cap – AD
Leersia- OD
Panicum- N/A

Assume Distribution is Throughout

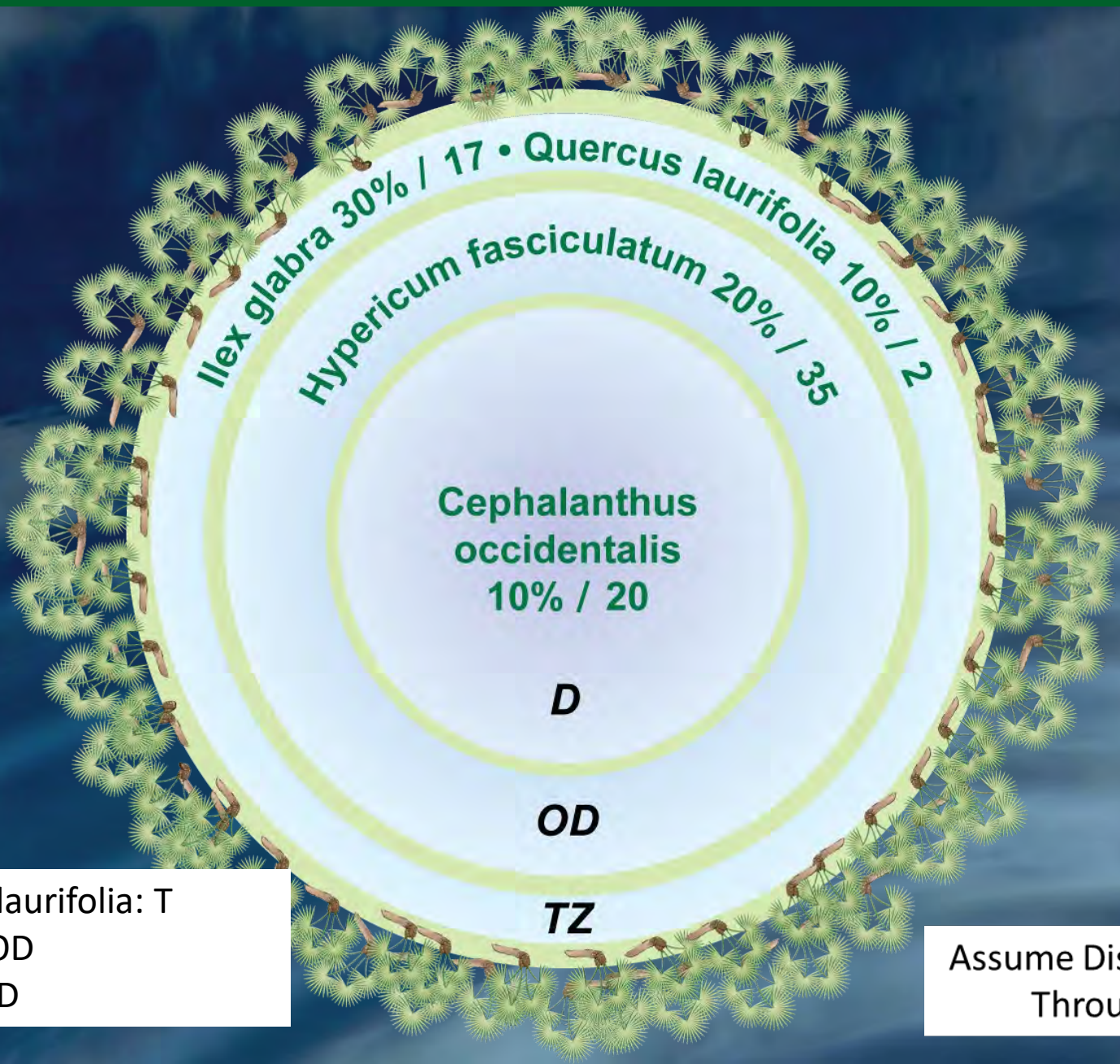
Groundcover



Groundcover Zonation Explanation

SCORE	
3	Species have moved one zone in high numbers and distribution.

Shrubs and Small Trees



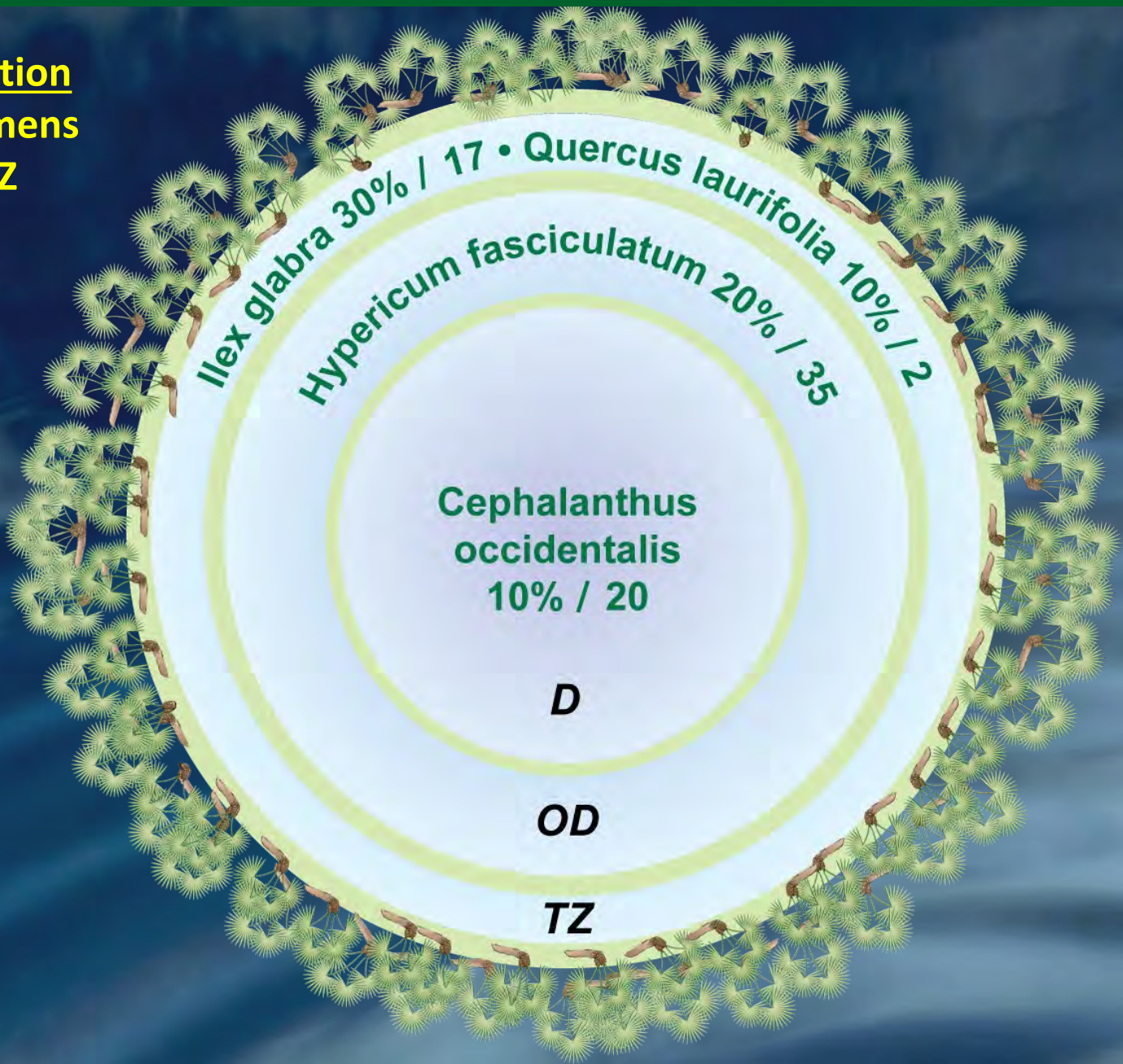
Ilex: AD, Q. laurifolia: T
Hyp. fasc.: OD
Ceph. occ.: D

Assume Distribution is Throughout

Shrubs and Small Trees

Zone Explanation

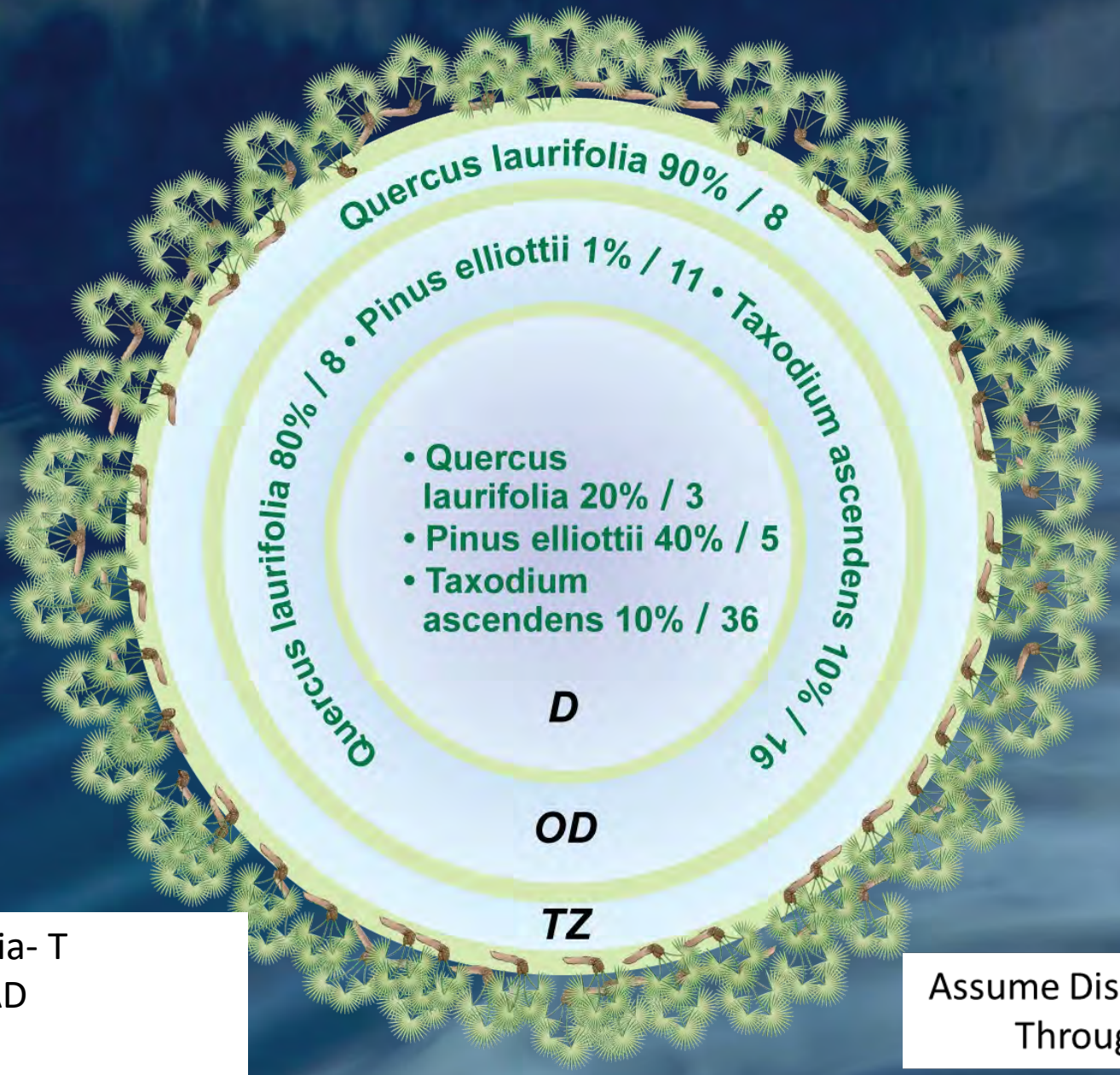
> 5 AD Specimens throughout TZ



Score

4

Trees



Quercus laurifolia- T
Pinus elliottii - AD
Taxodium - D

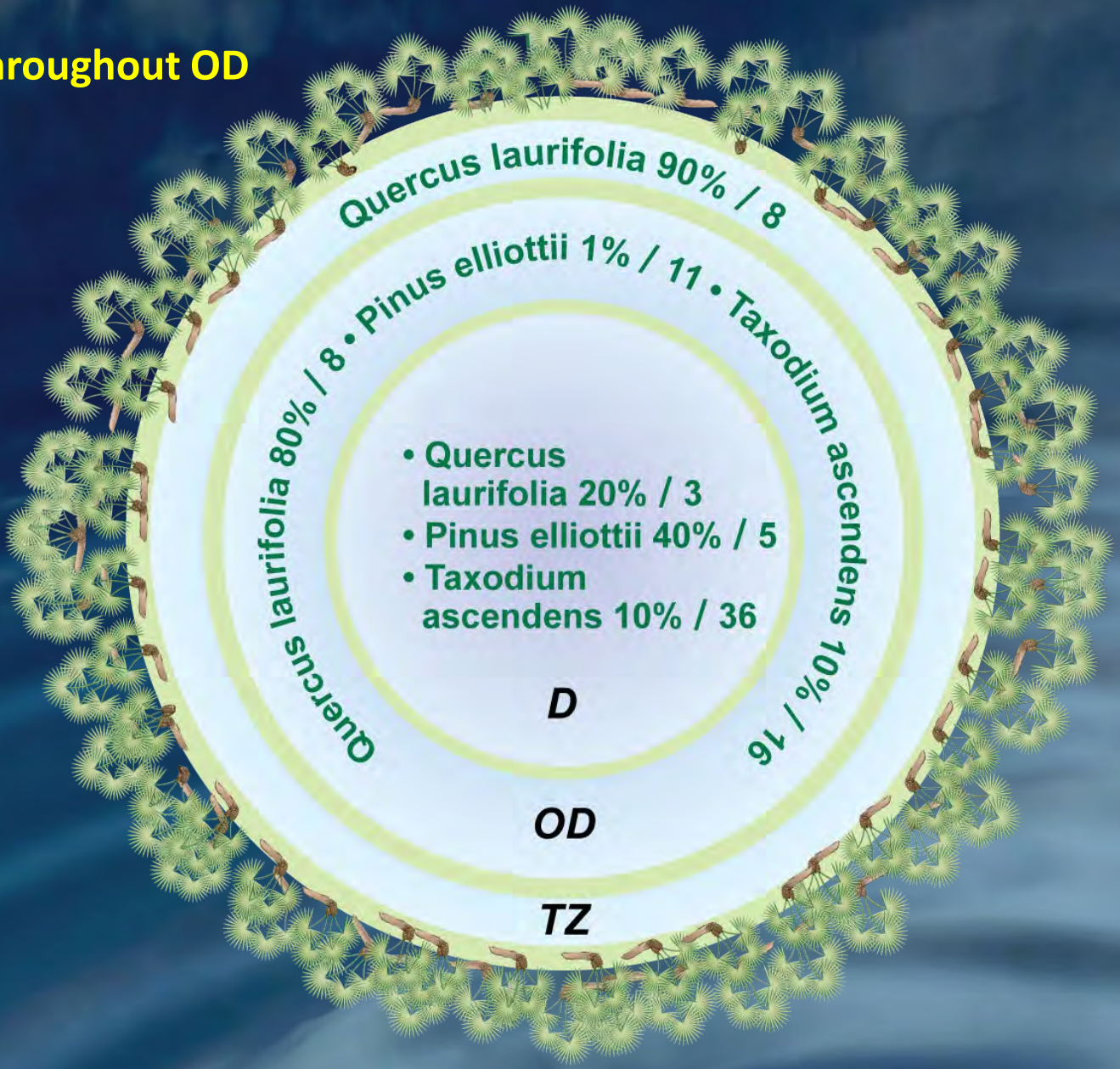
Assume Distribution is Throughout

Trees

Zone Explanation

>5 T/AD Specimens throughout OD

>5 T/AD Specimens throughout D



Score

2

2023 WAP Training
Part 2
Additional Considerations

Additional Considerations

- Additional criteria on WAP forms
  - Shrub and Tree Stress (pages 3 and 4)
  - Tree Recovery (page 4)

- Challenging aspects of WAP

Shrubs and Small Trees (page 3)

Shrubs/Small Trees

For each zone assessed, please document the following: species abbreviation, WAP zone (ZONE) (U, AD, T, OD, or D), percent cover (%) (5% or 10% - 100% in increments of 10%), count (#) (1 - >50), and distribution (DIST) (E=edge, B=beyond a few feet, or T=throughout).

Transition Zone

Check if no shrubs/small trees ☐

Species	Z	%	#	D

Outer Deep Zone

Check if no shrubs/small trees ☐

Species	Z	%	#	D

Deep Zone

Check if no shrubs/small trees ☐

Species	Z	%	#	D

Shrubs/Small Trees Comments

Zonation

Zonation Score ☐ Please assign a score of 1-5 or 0 (for N/A) and provide an explanation

Zonation Score Explanation:

Stress

Signs of stress of appropriate shrubs and small trees (including dead species)

☐ Little or None
☐ Noticeable
☐ Significant
☐ Not Applicable

Signs of stress of inappropriate shrubs and small trees (including dead species)

☐ Little or None
☐ Noticeable
☐ Significant
☐ Not Applicable

Stress (Shrubs and Small Trees)

- Appropriate species – species found in the WAP zone in which they would normally be expected (e.g., *Myrica (Morella)* in Transition zone)
- Inappropriate species – species found in the WAP zone in which they would *not* normally be expected (e.g., *Myrica* in the Outer Deep or Deep zones)
- Include all dead shrubs and small trees (appropriate *and* inappropriate)

Stress

- Little or None

- Noticeable

- Significant

- Not Applicable

Stress

- ***Do not*** include non-WAP species in stress *assessment,* but include *comments* for stress/death of non-WAP species

- ***Do not*** include species on hummocks or overhanging from the uplands into Transition zone. It must be rooted in the wetland!

- List the species, specify zone(s), and nature of stress.


Ilex glabra

Stress
(Shrubs and Small Trees)

Stress

Signs of stress of appropriate shrubs and small trees (including dead species) 2014 Data: NOTICEABLE

Hyp fas dead in OD Zone and D Zone.

- ☐ Little or None
- ☐ Noticeable
- ☐ Significant
- ☐ Not Applicable

Trees (page 4)

Trees

For each zone assessed, please document the following: species abbreviation, WAP zone (ZONE) (U, AD, T, OD, or D), percent cover (%) (5% or 10% - 100% in increments of 10%), count (#) (1 - >50), and distribution (DIST) (E=edge, B=beyond a few feet, or T=throughout).

Transition Zone Trees

Check if no trees ☐

Species	Z	%	#	D

Outer Deep Zone Trees

Check if no trees ☐

Species	Z	%	#	D

Deep Zone Trees

Check if no trees ☐

Species	Z	%	#	D

Tree Comments:

Zonation

Zonation Score ☐ Please assign a score of 1-5 or 0 (for N/A) and provide an explanation

Zonation Score Explanation:

Stress

Signs of stress of appropriate trees (do not include dead species)

- ☐ Little or None
- ☐ Noticeable
- ☐ Significant
- ☐ Not Applicable

Signs of stress of inappropriate trees (include dead species)

- ☐ Little or None
- ☐ Noticeable
- ☐ Significant
- ☐ Not Applicable

Dead/leaning trees (include standing dead trees and dead trees on ground that are appropriate.

- ☐ Little or None
- ☐ Noticeable
- ☐ Significant
- ☐ Not Applicable

Recovery

Signs of tree recovery

- ☐ Yes
- ☐ No
- ☐ Not Sure
- ☐ Not Applicable

Inappropriate vine death suggesting recovery

- ☐ Yes
- ☐ No
- ☐ Not Sure
- ☐ Not Applicable


Taxodium


Stressed vs. Dead?

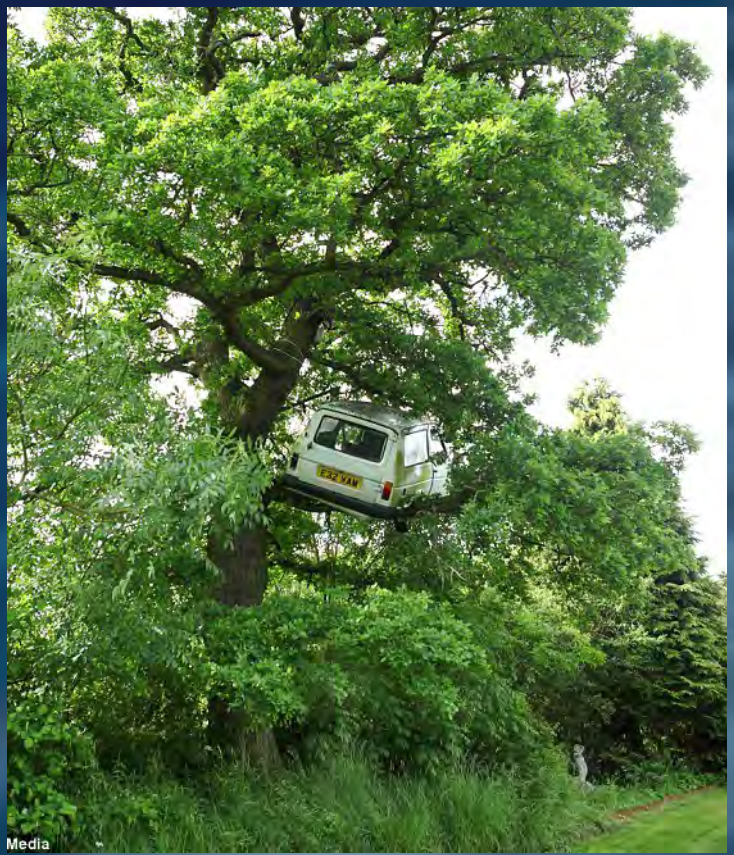
Stress of Appropriate Trees

Stress

Signs of stress of appropriate trees (do not include dead species)

2014 Data: LITTLE OR NONE

- ☐ Little or None
- ☐ Noticeable
- ☐ Significant
- ☐ Not Applicable



Stress of Inappropriate Trees

Signs of stress of inappropriate trees (include dead species)

- ☐ Little or None
- ☐ Noticeable
- ☐ Significant
- ☐ Not Applicable


Pinus elliottii

Dead and Leaning Trees

Stress

Signs of stress of appropriate trees (do not include dead species)

- ☐ Little or None
- ☐ Noticeable
- ☐ Significant
- ☐ Not Applicable

Signs of stress of inappropriate trees (include dead species)

- ☐ Little or None
- ☐ Noticeable
- ☐ Significant
- ☐ Not Applicable

Dead/leaning trees (include standing dead trees and dead trees on ground that are appropriate.

- ☐ Little or None
- ☐ Noticeable
- ☐ Significant
- ☐ Not Applicable

Recovery

Signs of tree recovery

- ☐ Yes
- ☐ No
- ☐ Not Sure
- ☐ Not Applicable

Inappropriate vine death suggesting recovery

- ☐ Yes
- ☐ No
- ☐ Not Sure
- ☐ Not Applicable

Dead and Leaning Trees

- Include only appropriate trees.
- Include all trees in entire wetland (viewable distance).
- Include standing and fallen dead trees.
- Do not include timbered trees or storm/wind impacts.
- Include leaning trees that are alive (leaning = 30 degrees *or more*.)

Think: **Is it *hydrology* related?**


30º


30º

Recovery

Trees

For each zone assessed, please document the following: species abbreviation, WAP zone (ZONE) (U, AD, T, OD, or D), percent cover (%) (5% or 10% - 100% in increments of 10%), count (#) (1 - >50), and distribution (DIST) (E=edge, B=beyond a few feet, or T=throughout).

Transition Zone Trees Check if no trees ☐

Species	Z	%	#	D

Outer Deep Zone Trees Check if no trees ☐

Species	Z	%	#	D

Deep Zone Trees Check if no trees ☐

Species	Z	%	#	D

Tree Comments:

Zonation

Zonation Score ☐ Please assign a score of 1-5 or 0 (for N/A) and provide an explanation

Zonation Score Explanation:

Stress

Signs of stress of appropriate trees (do not include dead species)

☐ Little or None
☐ Noticeable
☐ Significant
☐ Not Applicable

Signs of stress of inappropriate trees (include dead species)

☐ Little or None
☐ Noticeable
☐ Significant
☐ Not Applicable

Dead/leaning trees (include standing dead trees and dead trees on ground that are appropriate.

☐ Little or None
☐ Noticeable
☐ Significant
☐ Not Applicable

Recovery

Signs of tree recovery

☐ Yes
☐ No
☐ Not Sure
☐ Not Applicable

Inappropriate vine death suggesting recovery

☐ Yes
☐ No
☐ Not Sure
☐ Not Applicable

Recovery

Recovery

Signs of tree recovery — 2015 4 Data: N/A

- ☐ Yes
- ☐ No
- ☐ Not Sure
- ☐ Not Applicable

Example: Young cypress recruitment.

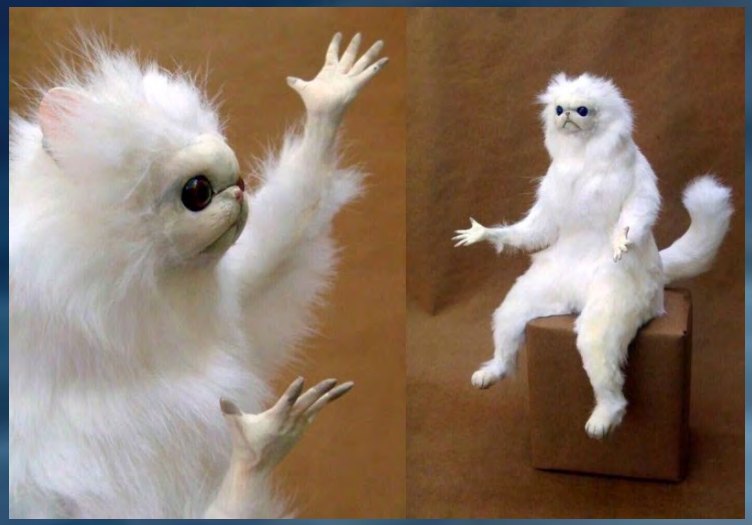
Inappropriate vine death suggesting recovery — 2015 4 Data: N/A

- ☐ Yes
- ☐ No
- ☐ Not Sure
- ☐ Not Applicable

Example: *Vitis* in deeper zones (not on hummock) now dying.

Challenging Aspects of WAP

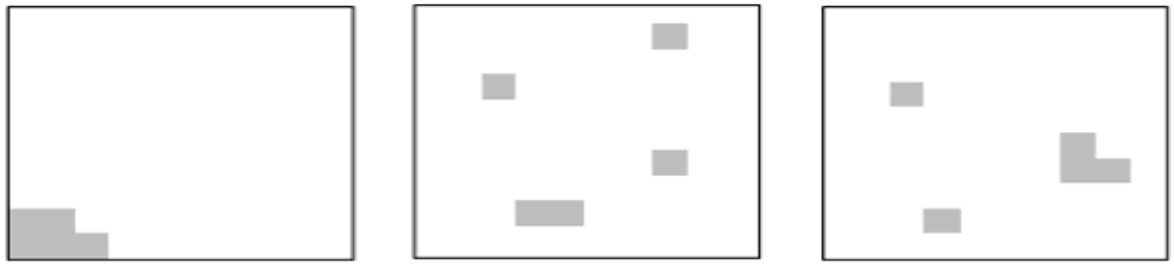
- Knowing the plants / WAP Field ID Guide
- Percent cover
- Topography
- Hummocks
- Writing down explanations
- Trusting your judgement



Knowing the Plants

Percent Cover

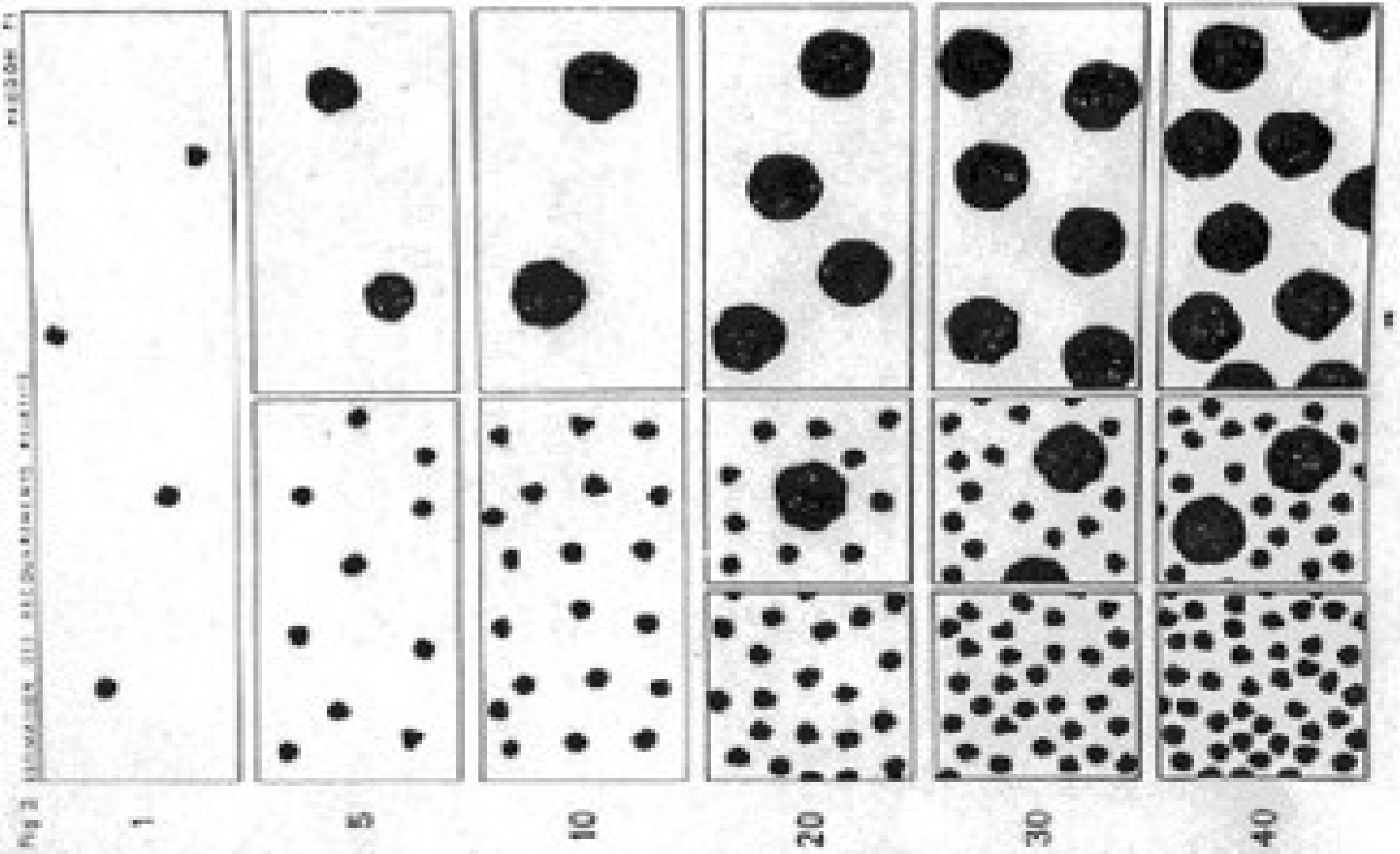
1% to 5%: These are all 5% cover



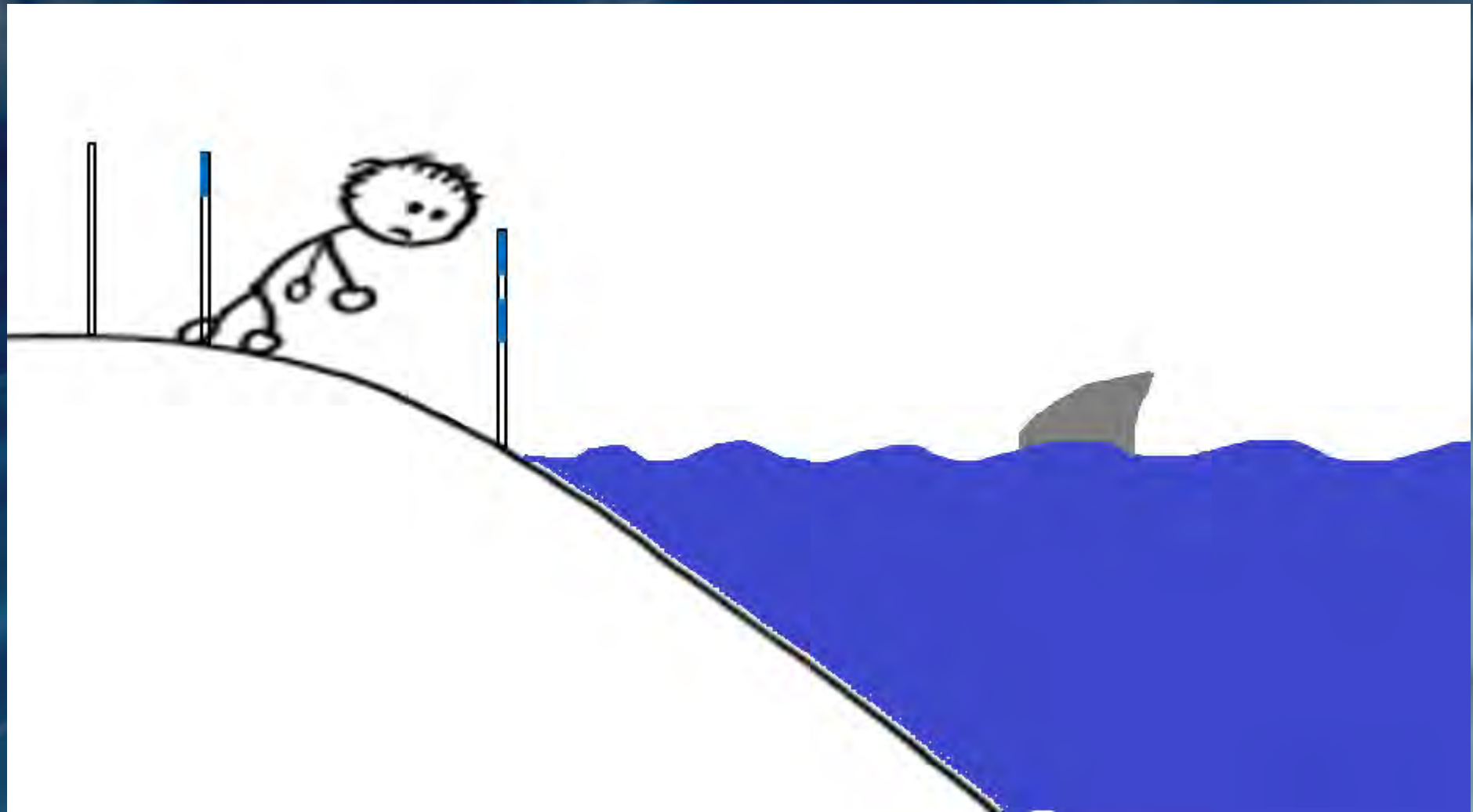
6% to 10%: These are all 10% cover

11% to 25%: These are all 25% cover

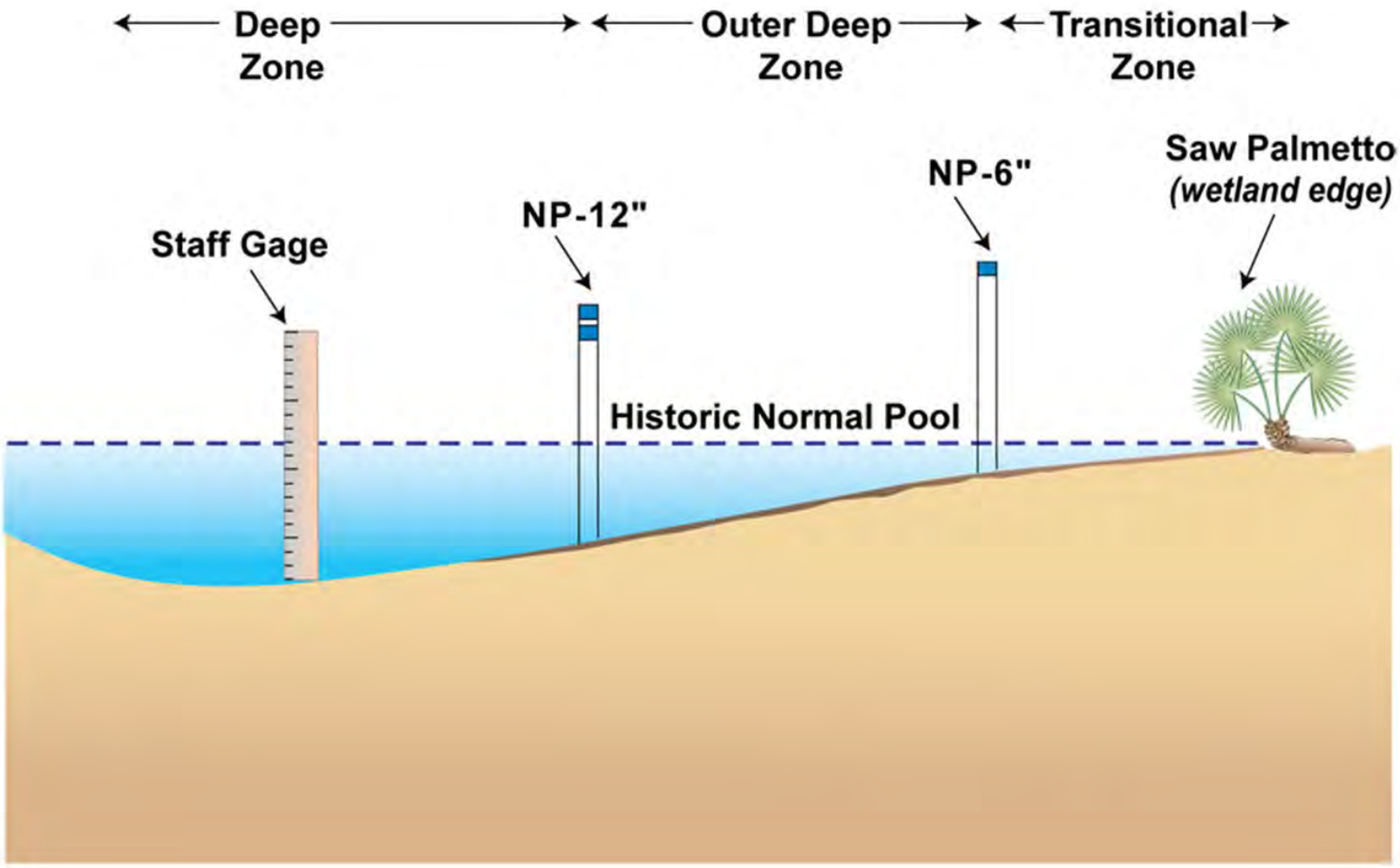
Percent Cover

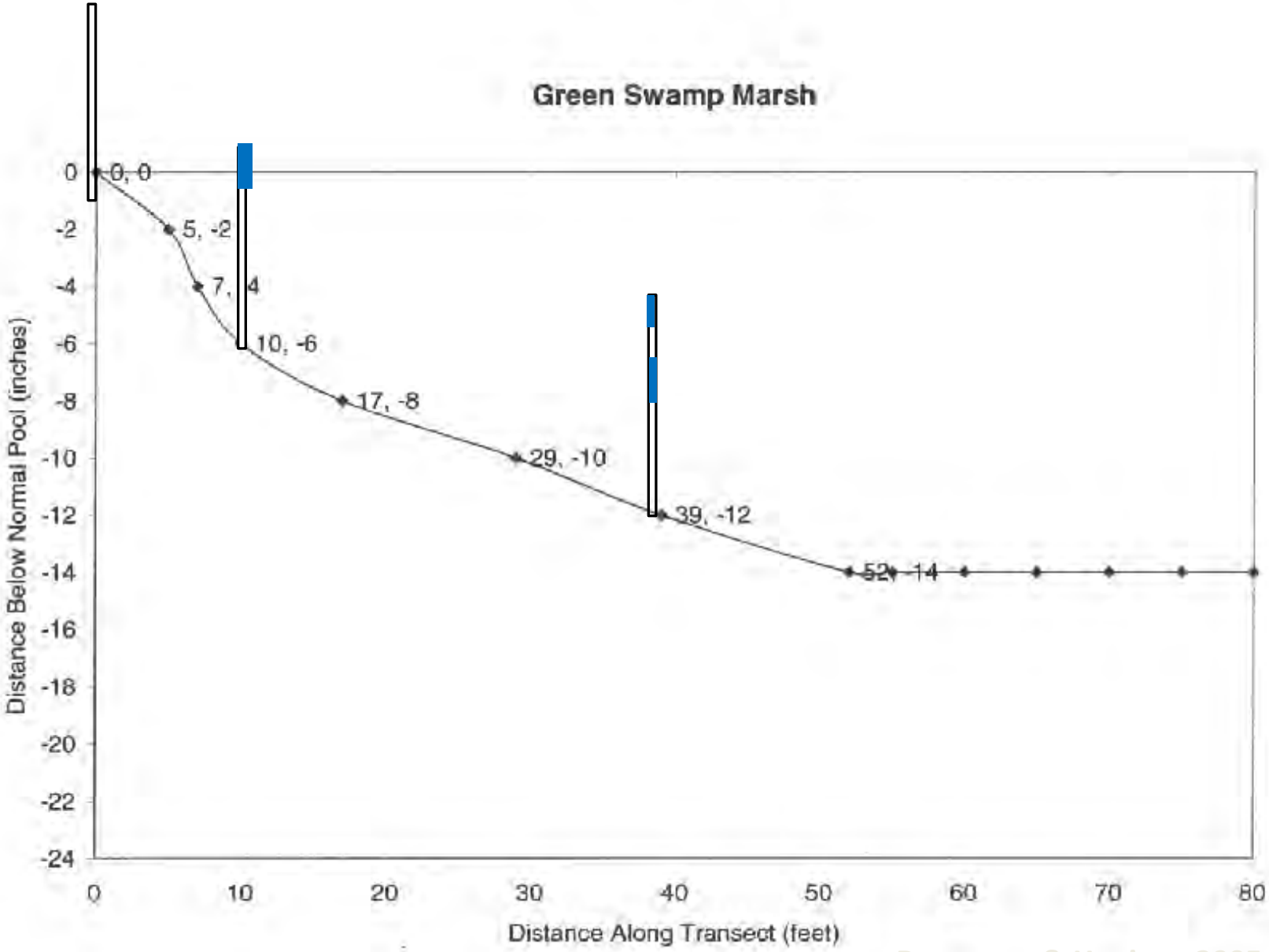


Topography
Transect Issues



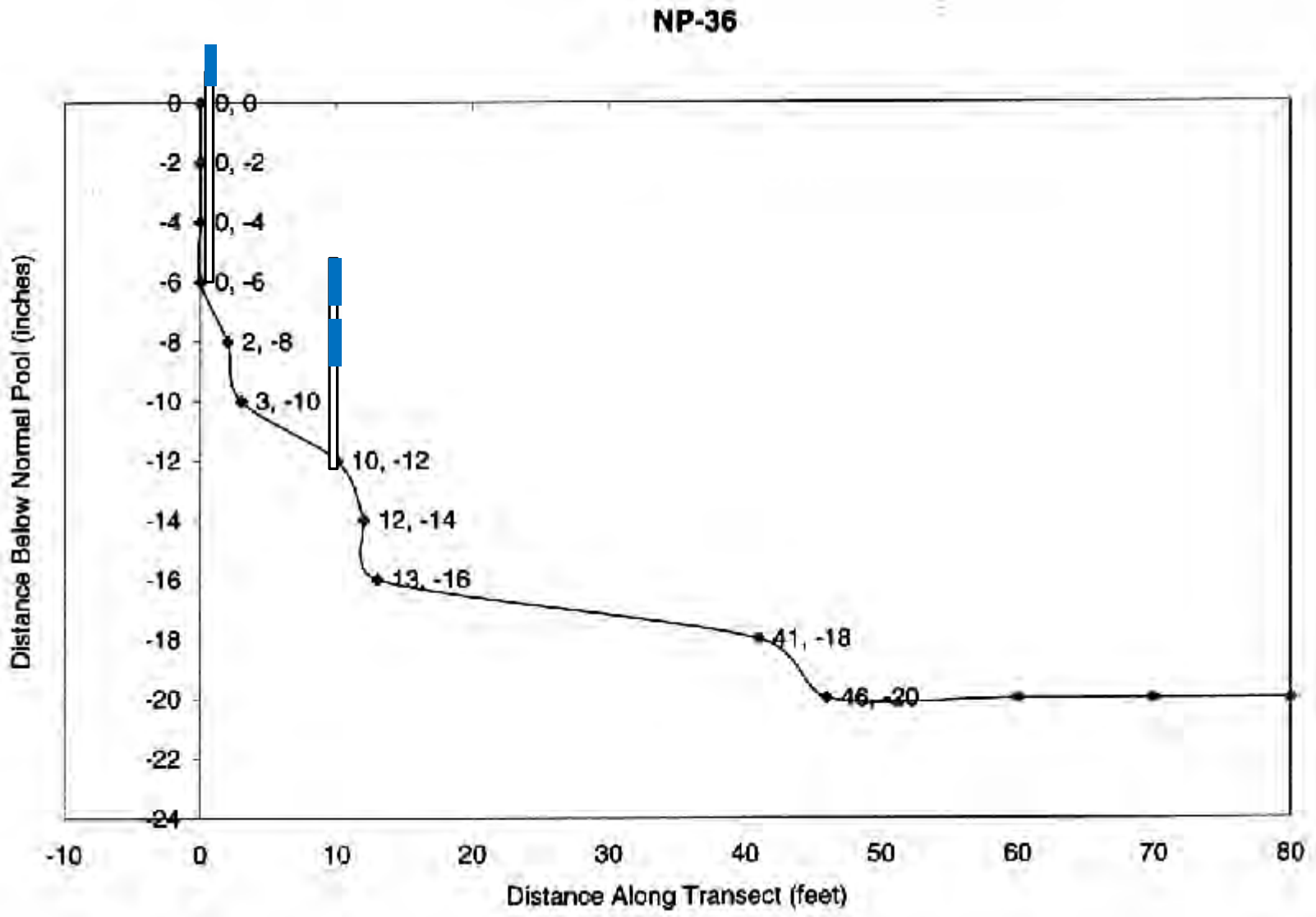
Example of Typical WAP Transect





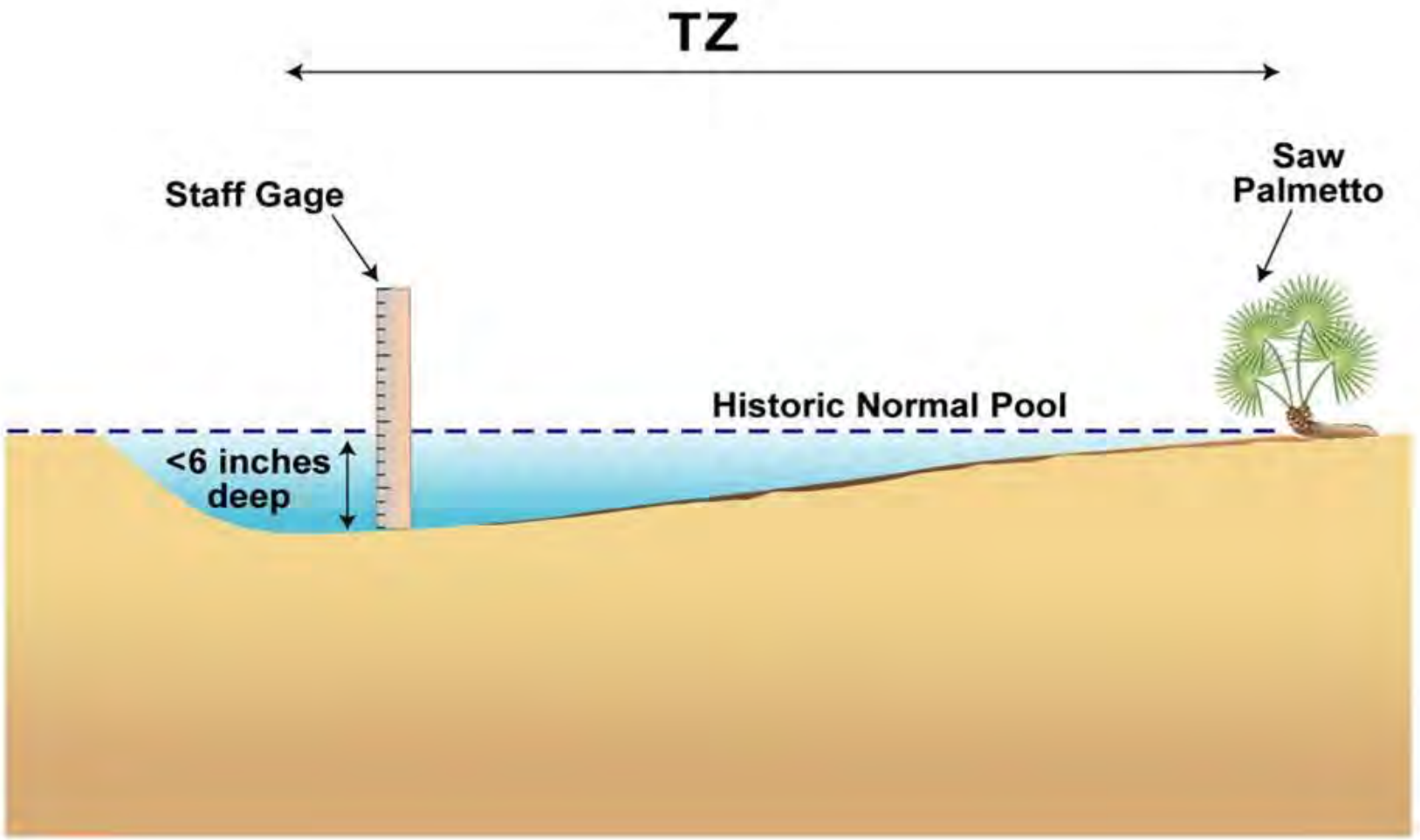
Berryman & Henigar, 2005

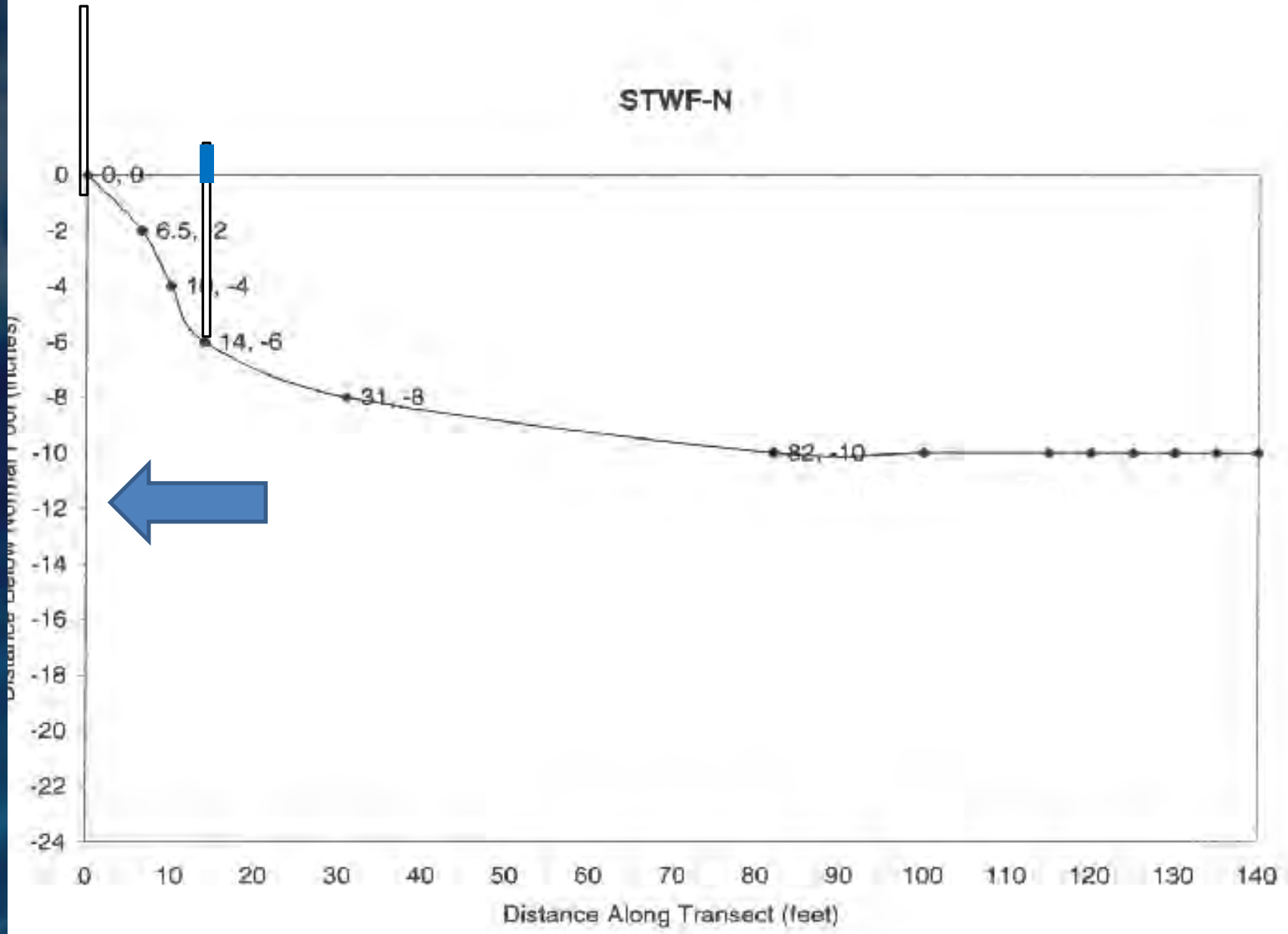
Missing Zones



Berryman & Henigar, 2005

Example of WAP Transect in a Shallow Wetland



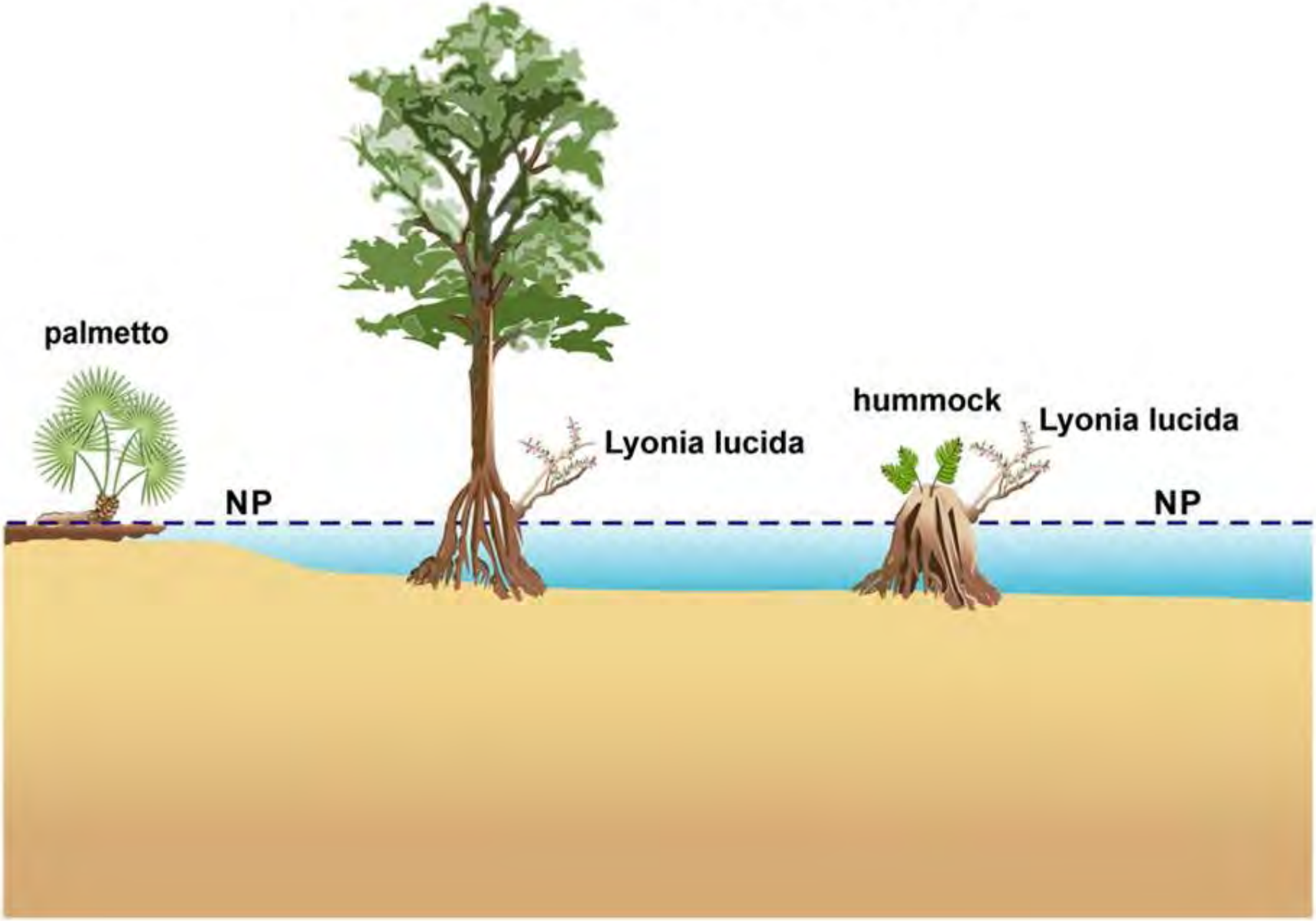


Berryman & Henigar, 2005

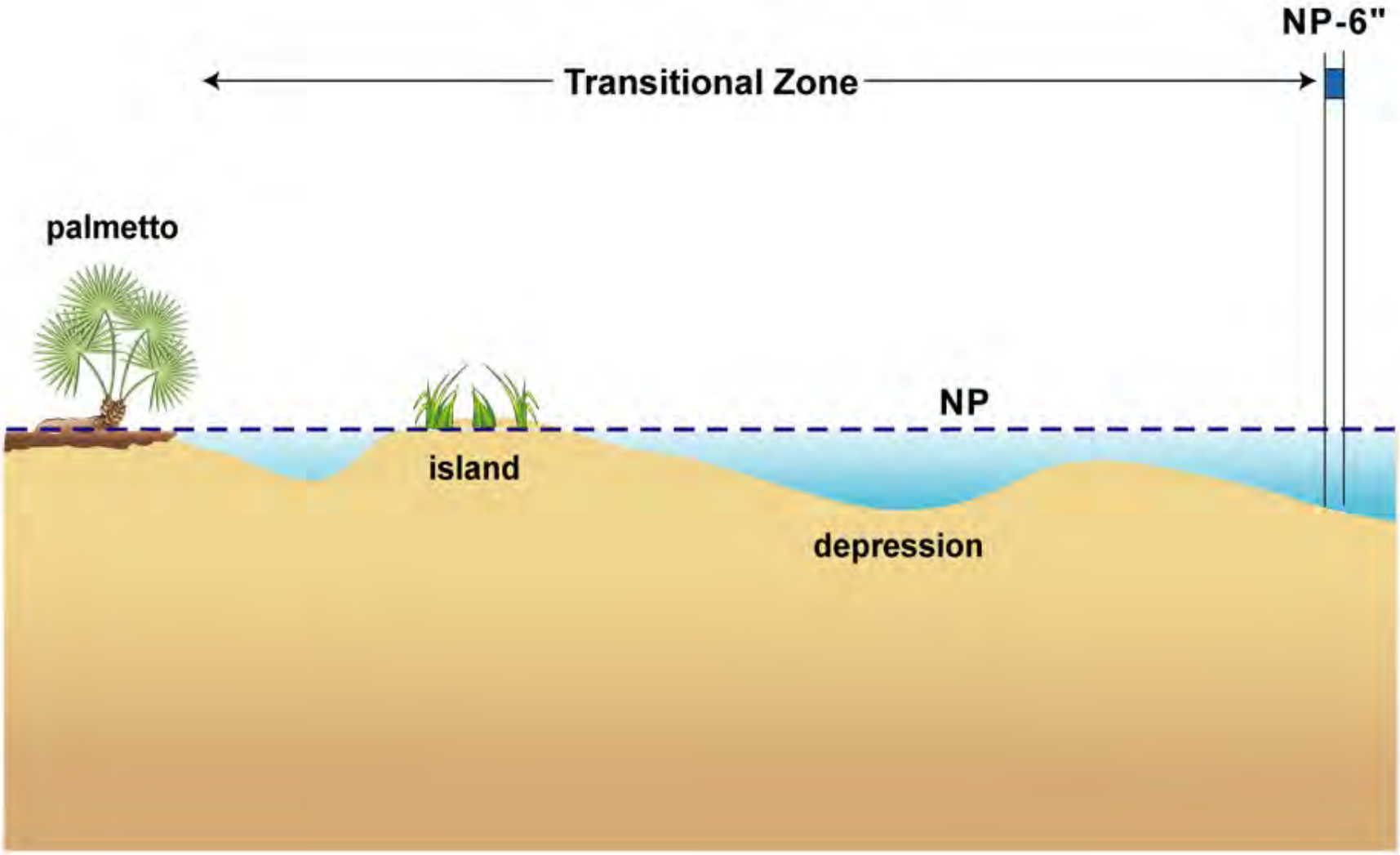
Hummocks

Hummocks

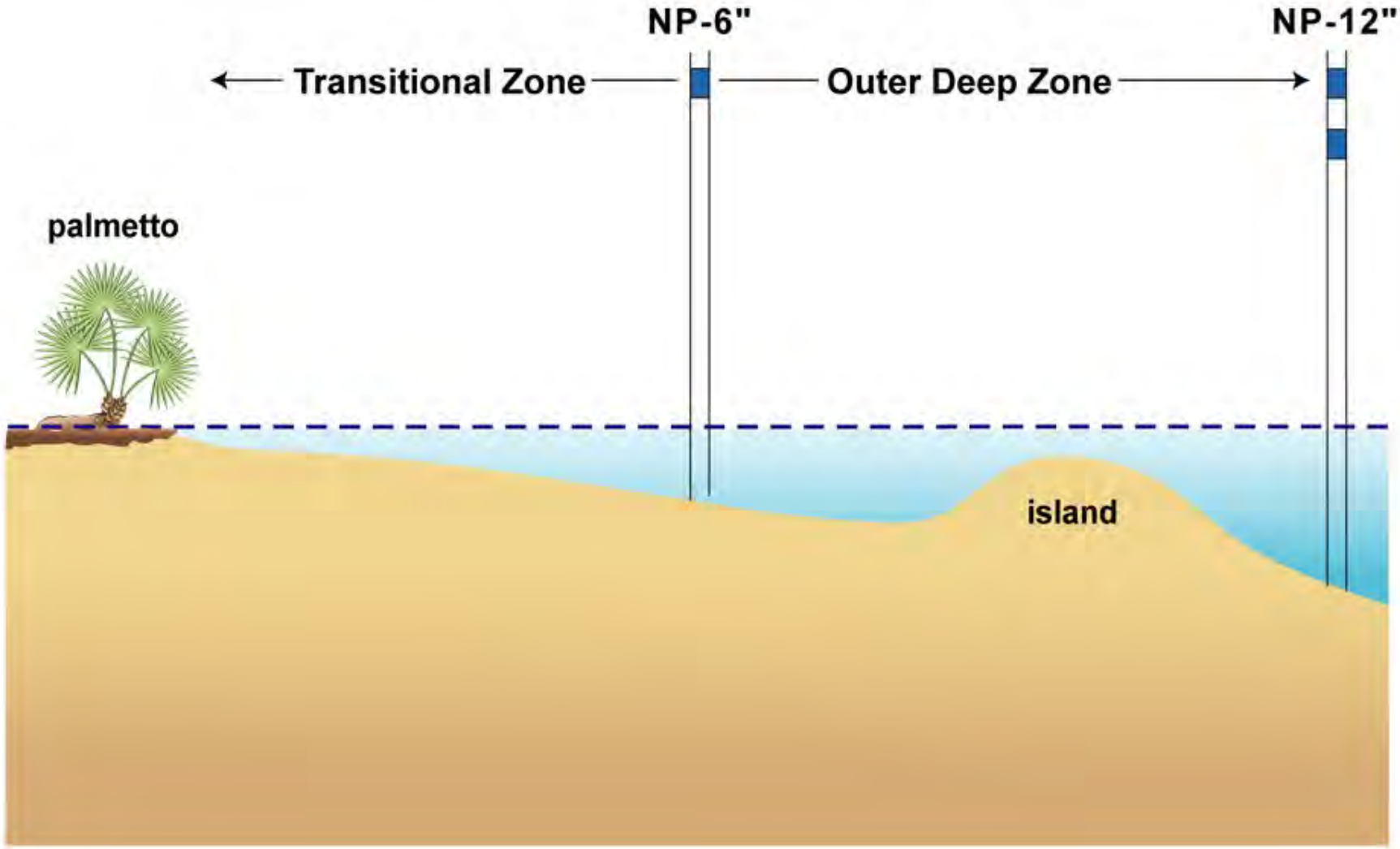
Tree Bases and Hummocks

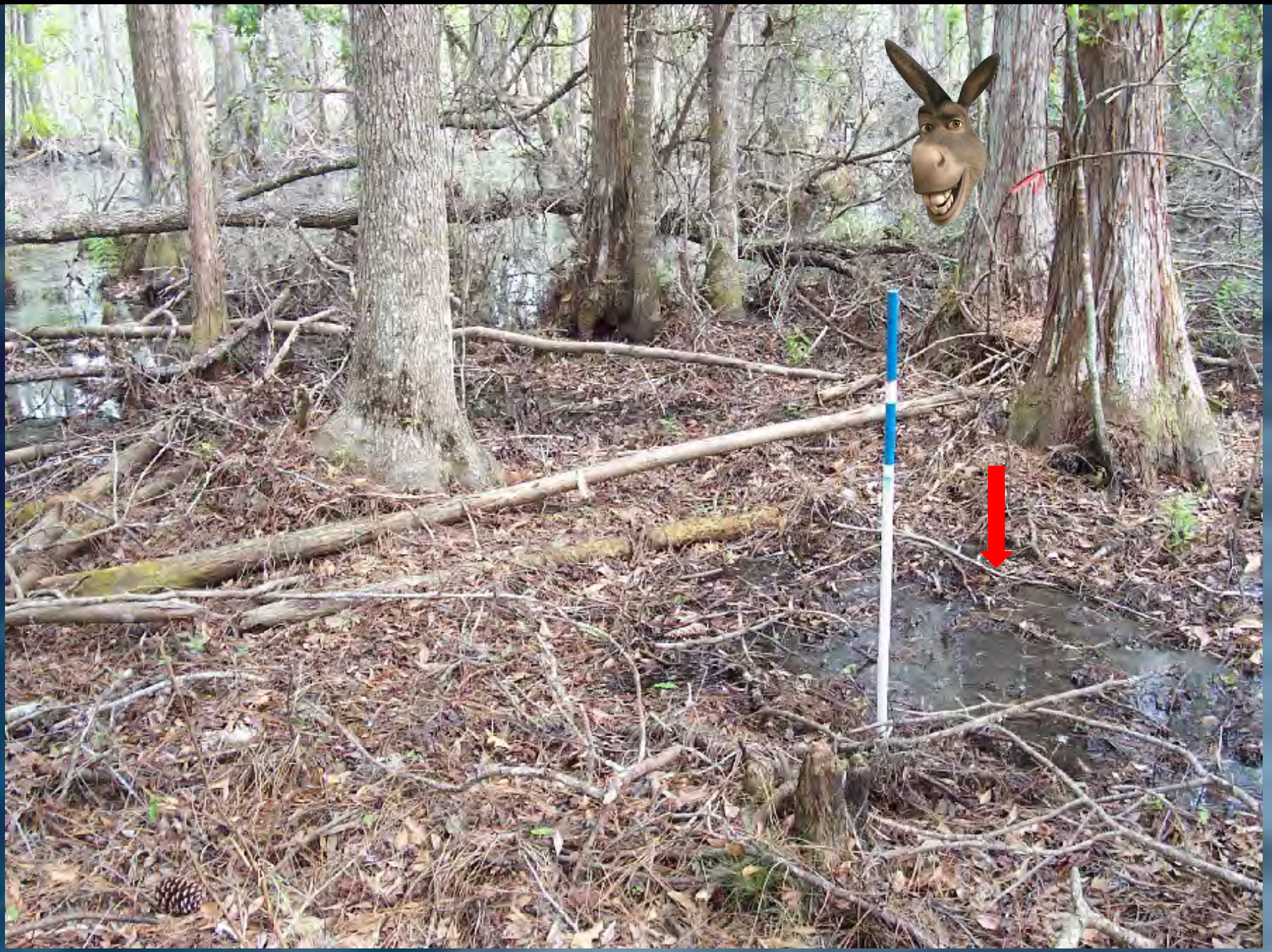


Island and Depression in the Transitional Zone



"Island" in the Outer Deep Zone





Vehicle Impacts

Exclude?
Include?
Note it.

Appendices of WAP Manual

A - Plant List
B - Definitions
C - Historic Normal Pool and Historic Wetland Edge
D - Wetland Types
E - Wetland History
F - Transect Information “Worksheet”
G - References

https://www.swfwmd.state.fl.us/projects/ntb-wetland-assessment-procedure