

**A Comparison of Six Biotic
Indicators of Hydrology in
Palustrine *Taxodium*
Ascendens Domes**

By

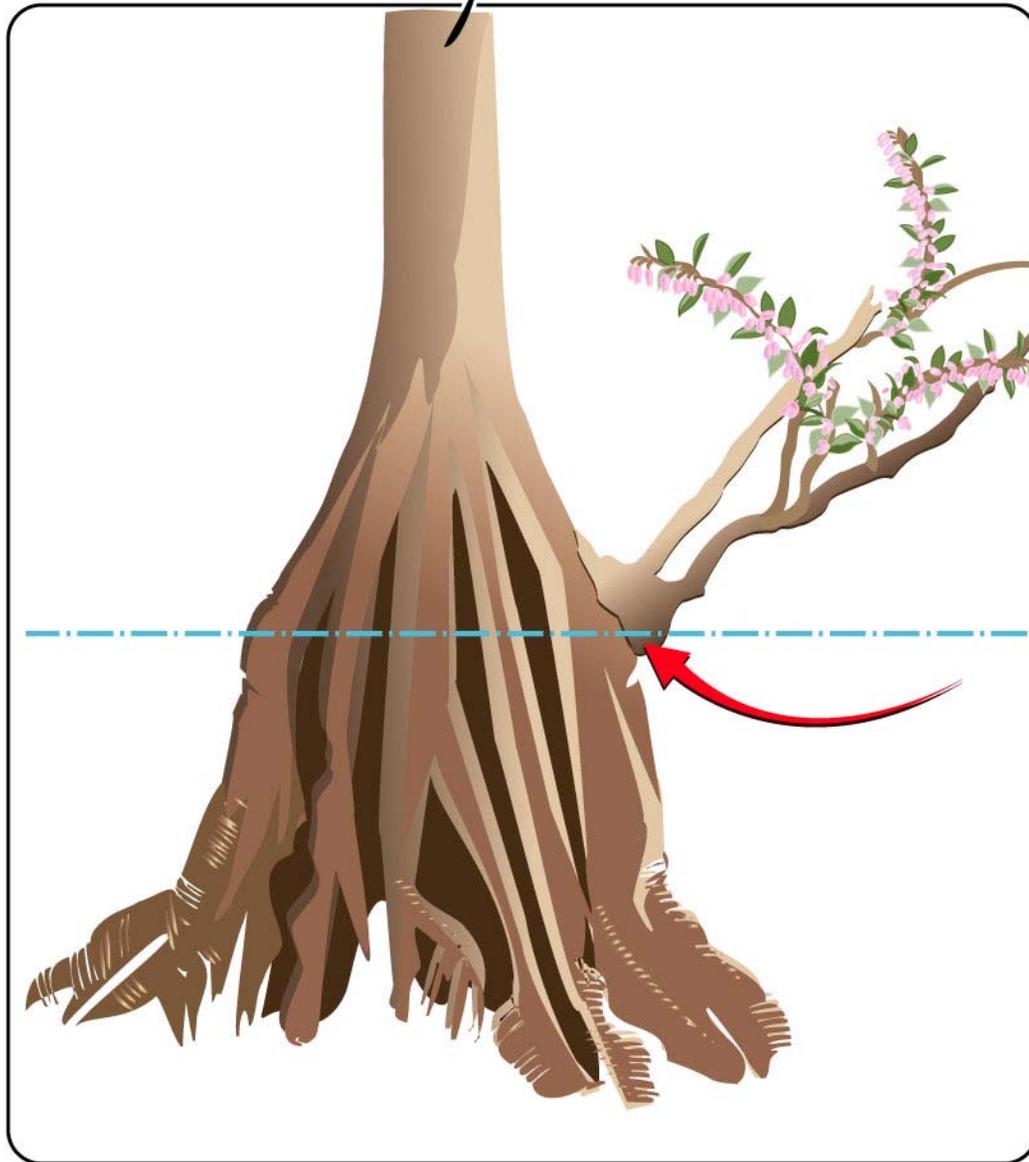
David W. Carr

And

Theodore F. Rochow

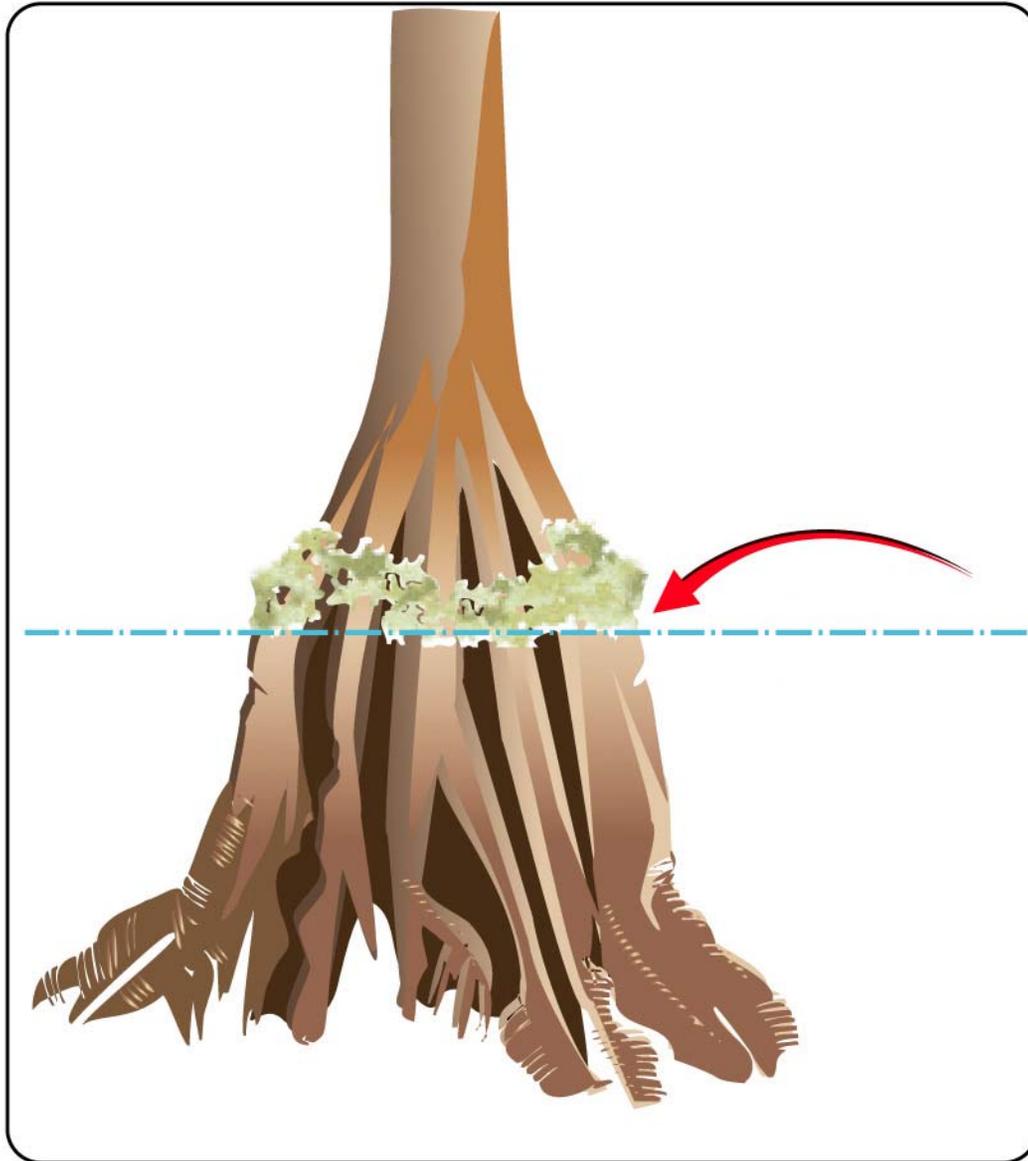
SWFWMD

Lyonia

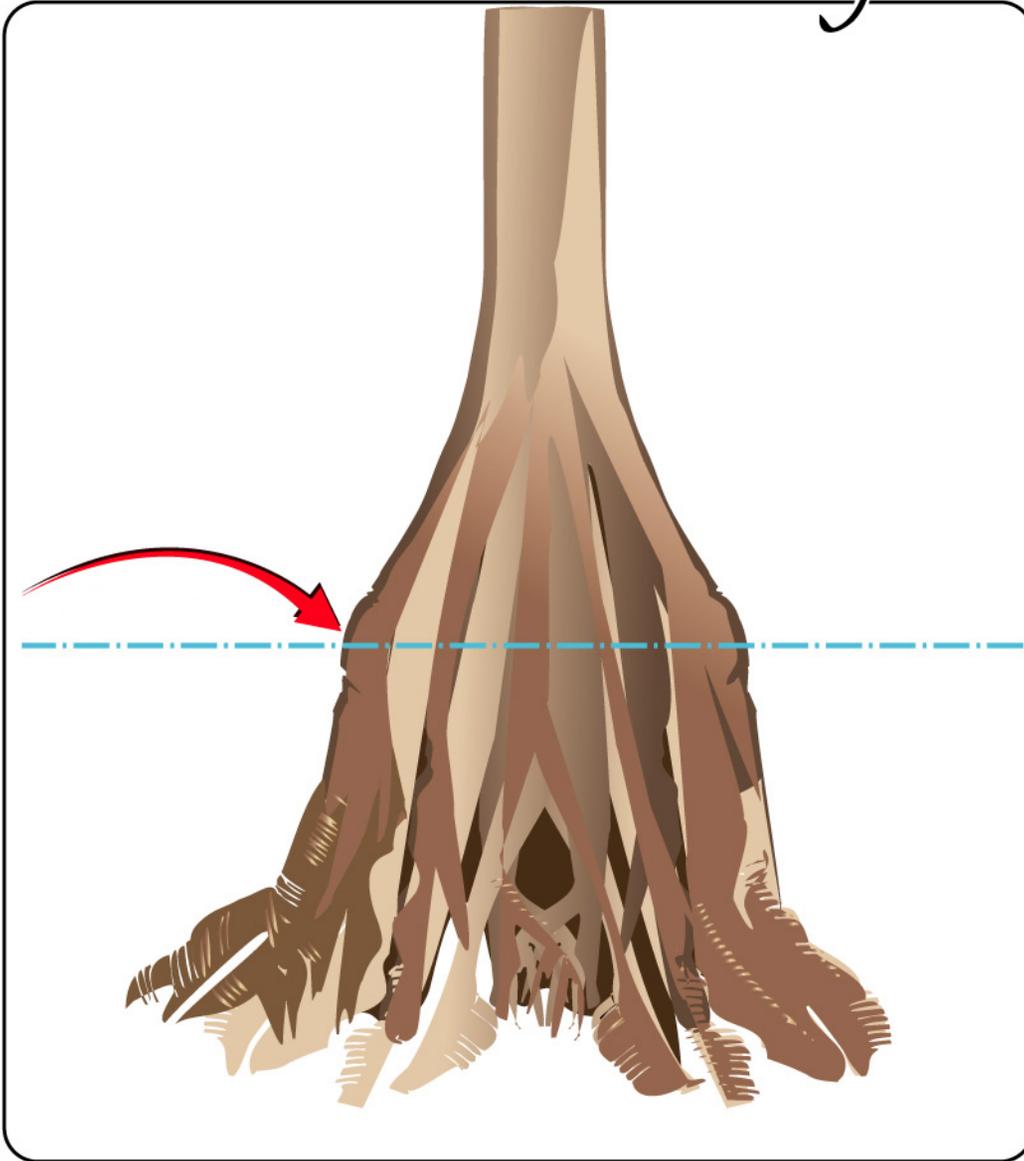


Diameter at base >1 inch

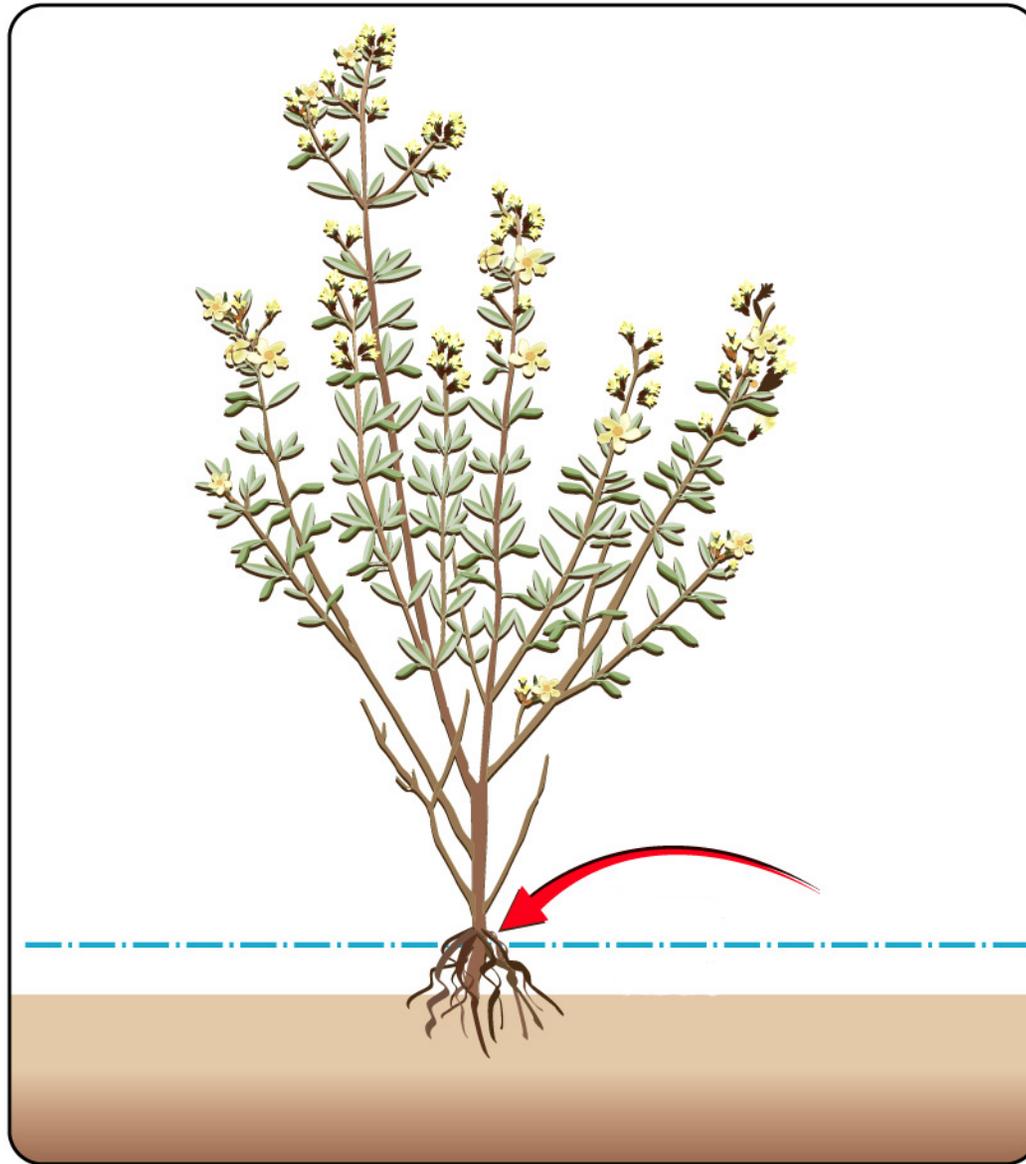
Moss Collar



Buttress Swelling

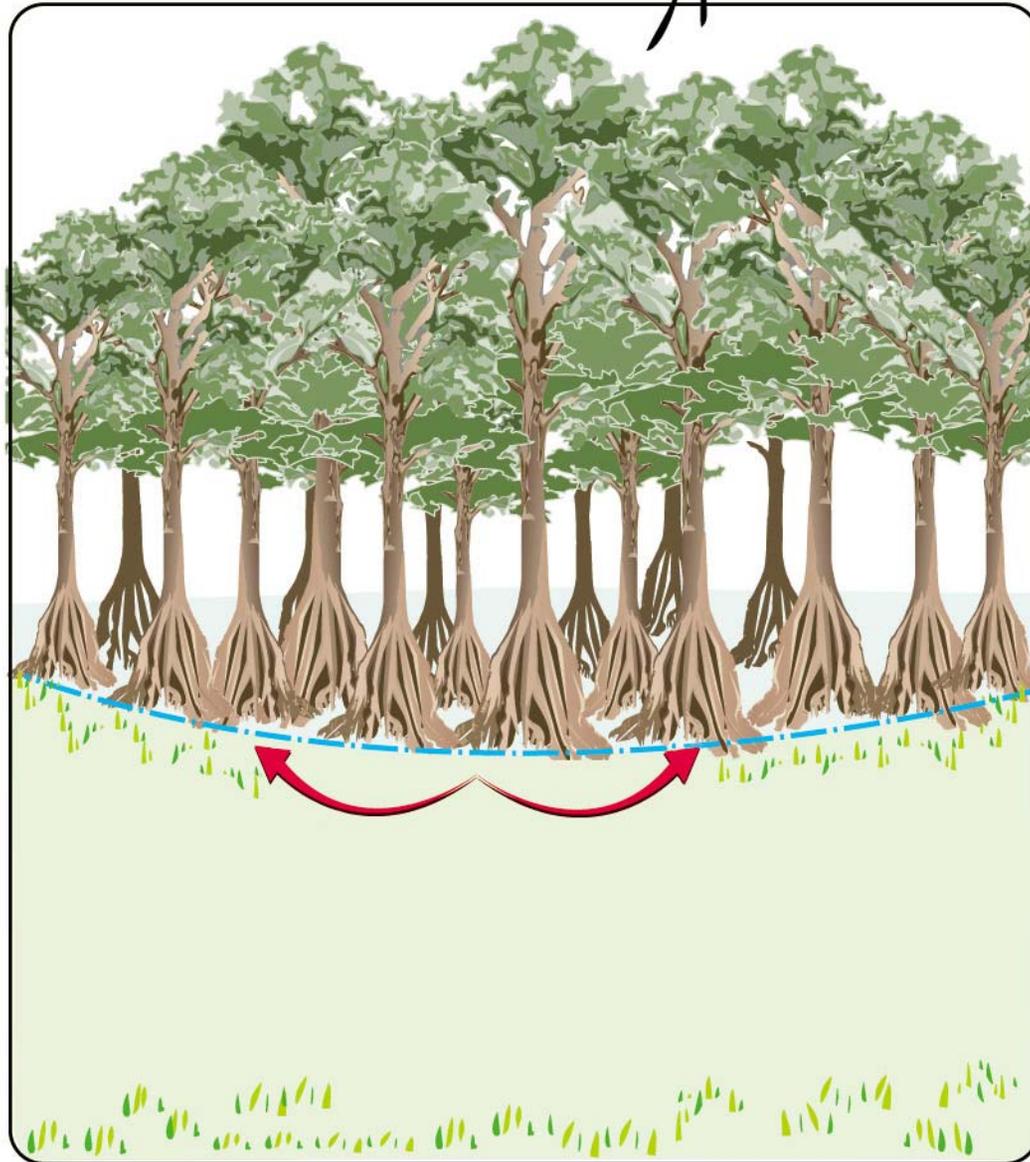


Hypericum Adventitious Rooting



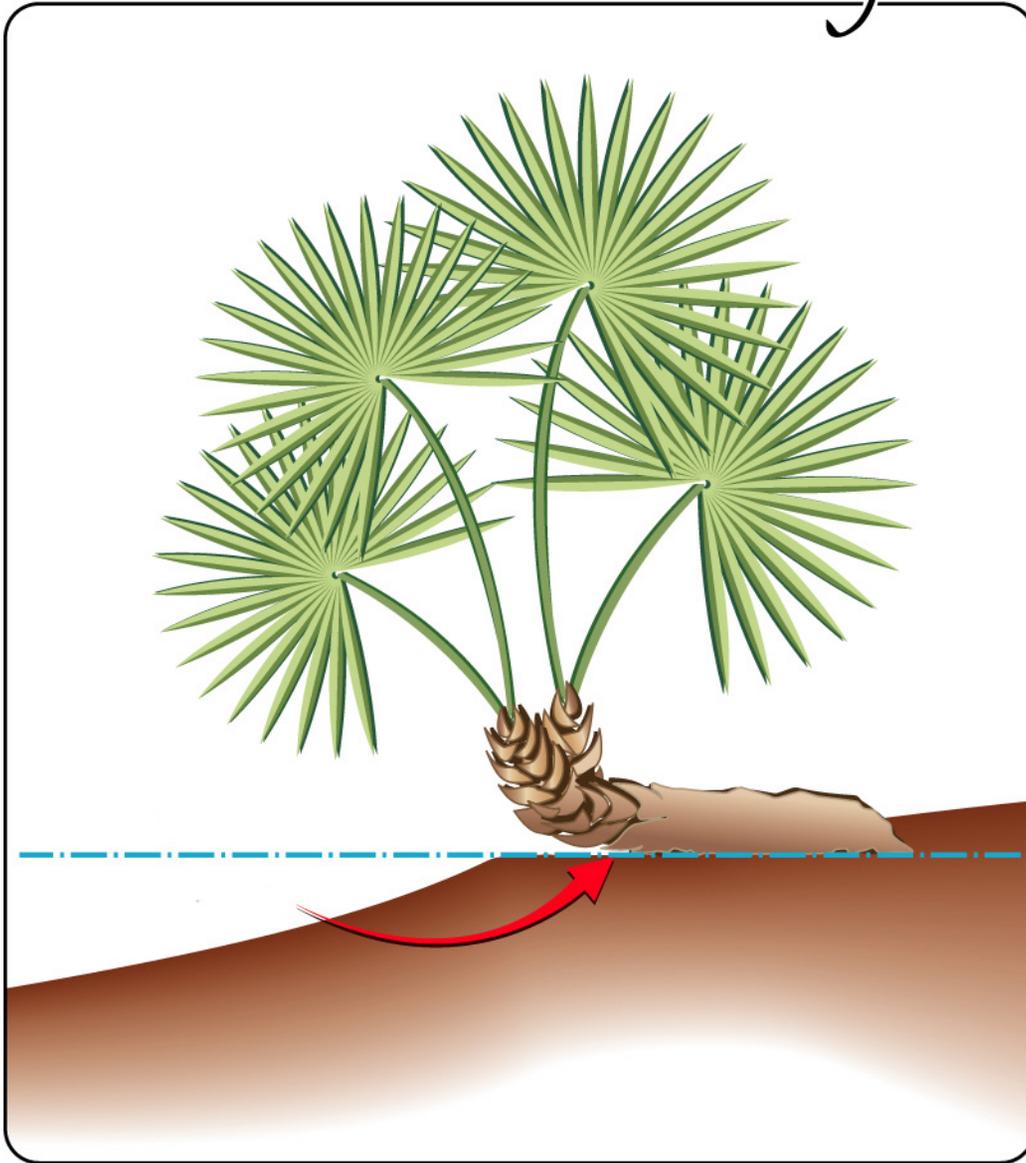
Woody root >0.063 inches diameter

outermost Cypress



DBH >1.6 inches, <3.9 inches

Saw Palmetto Fringe



Range of Hydrologic Indicators in 35 "Not Significantly Harmed" Wetlands

CALCULATIONS - TRIMMED DATA

(max and min of each wetland trimmed)

	L	MC	OC	H
n	238	16	8	5
@VARS, s ²	0.008	0.002	0.017	0.002
n(90%, .04)	13	4	29	3
+2 (min&max)	15	6	31	5

$$n = (z_{\alpha/2})^2 (s)^2 / (E)^2$$

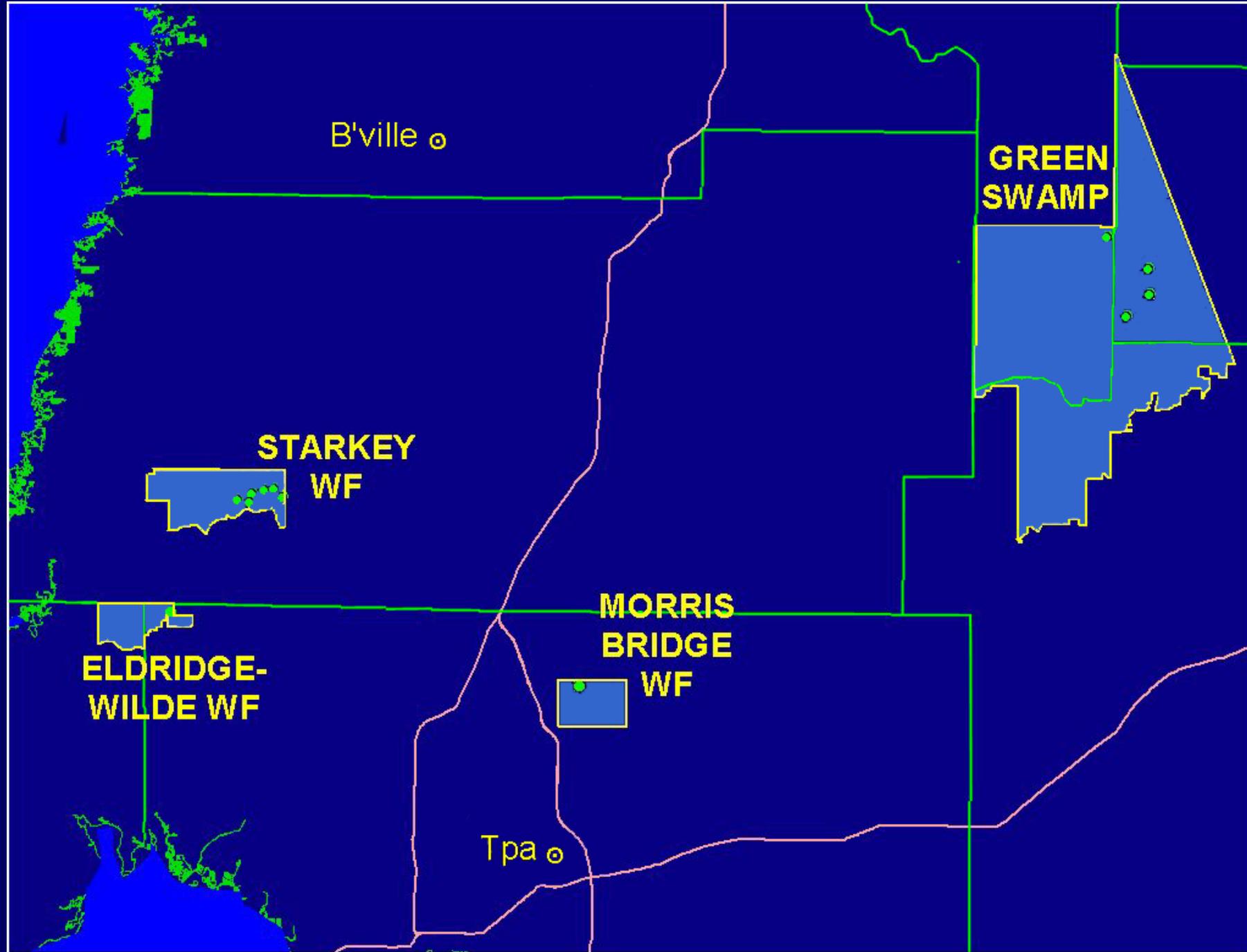
n = number of samples

$z_{\alpha/2}$ = desired confidence level

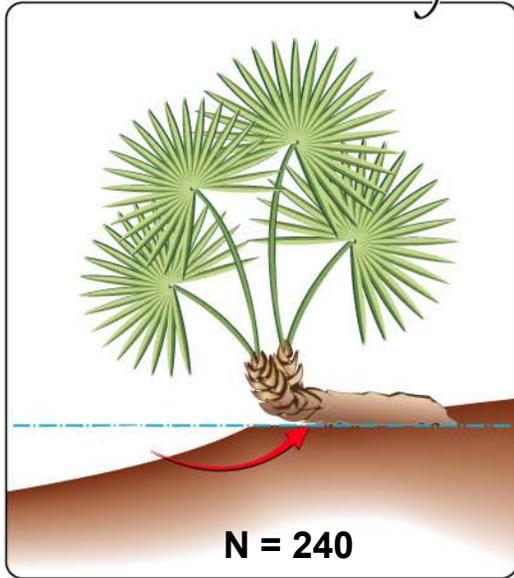
s^2 = population variance

E^2 = tolerable error

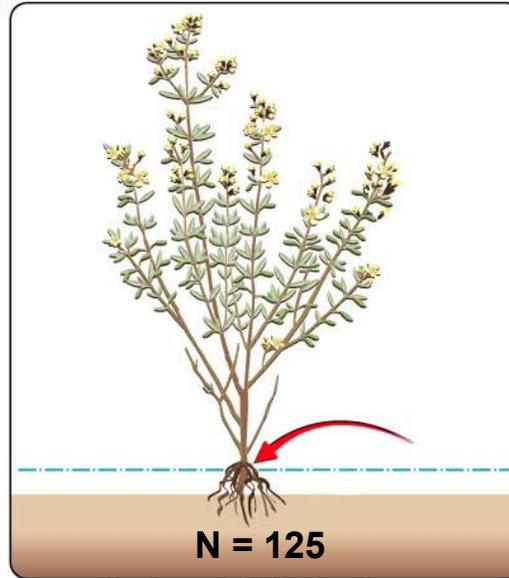
Buttress Swelling: 10 Saw Palmetto: 10



Saw Palmetto Fringe

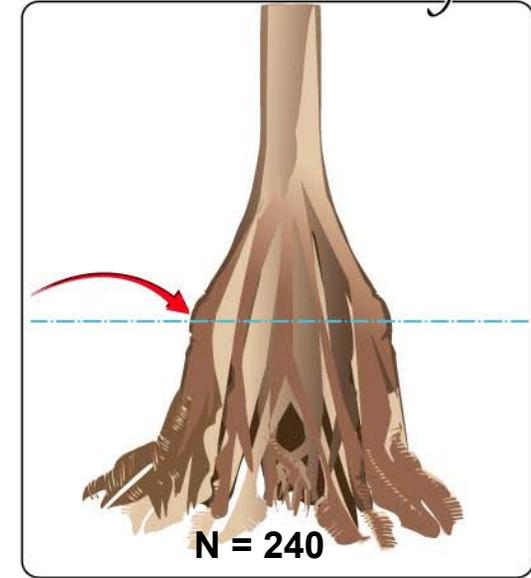


Hypericum Adventitious Rooting

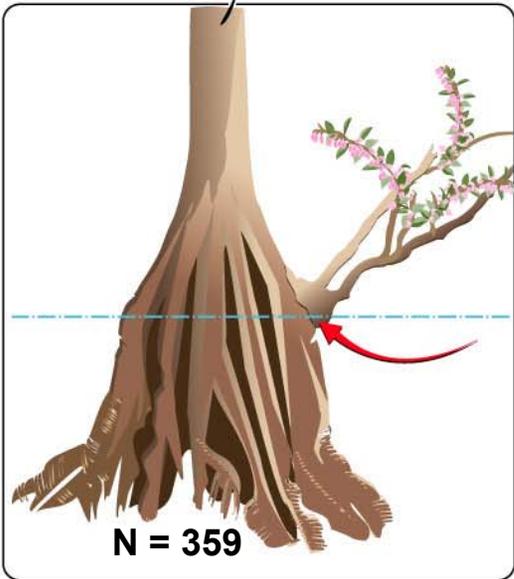


Woody root >0.063 inches diameter

Buttress Swelling

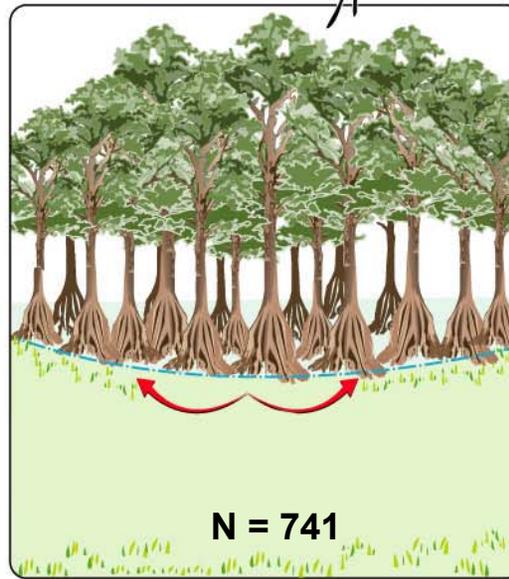


Lyonia



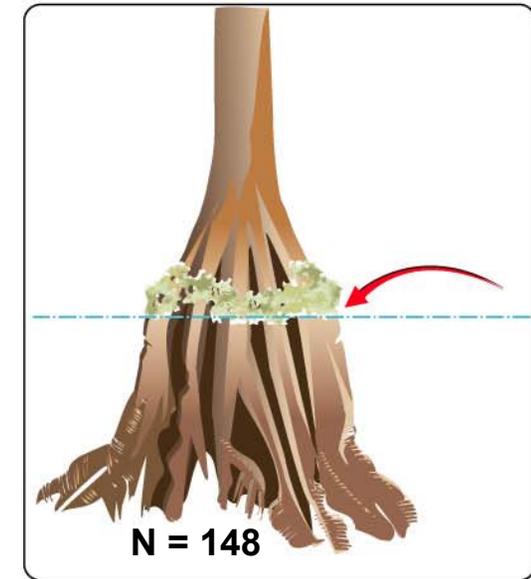
Diameter at base >1 inch

outermost Cypress



DBH >1.6 inches, <3.9 inches

Moss Collar



Marked and Surveyed Indicators

P50 of a 10 Year Water Level Data May 1989 - April 1999.

“Centered” Data: Each Indicator Elevation - P50

Nonparametric, Kruskal-Wallis test

This test looks for differences among the population medians.

Data from all wetlands combined and centered to the P50 monthly water levels (indicator-P50).

Indicators	N	Median
Lyonia root crown	359	1.16
Moss collar	148	1.09
Buttress swelling	240	1.14
Hypericum roots	125	0.79
Saw Palmetto	240	0.90
Outermost Cypress	741	0.60

ALL PROBABLE POPULATION COMBINATIONS WERE DIFFERENT EXCEPT:

The medians of L,MC&B were identical.

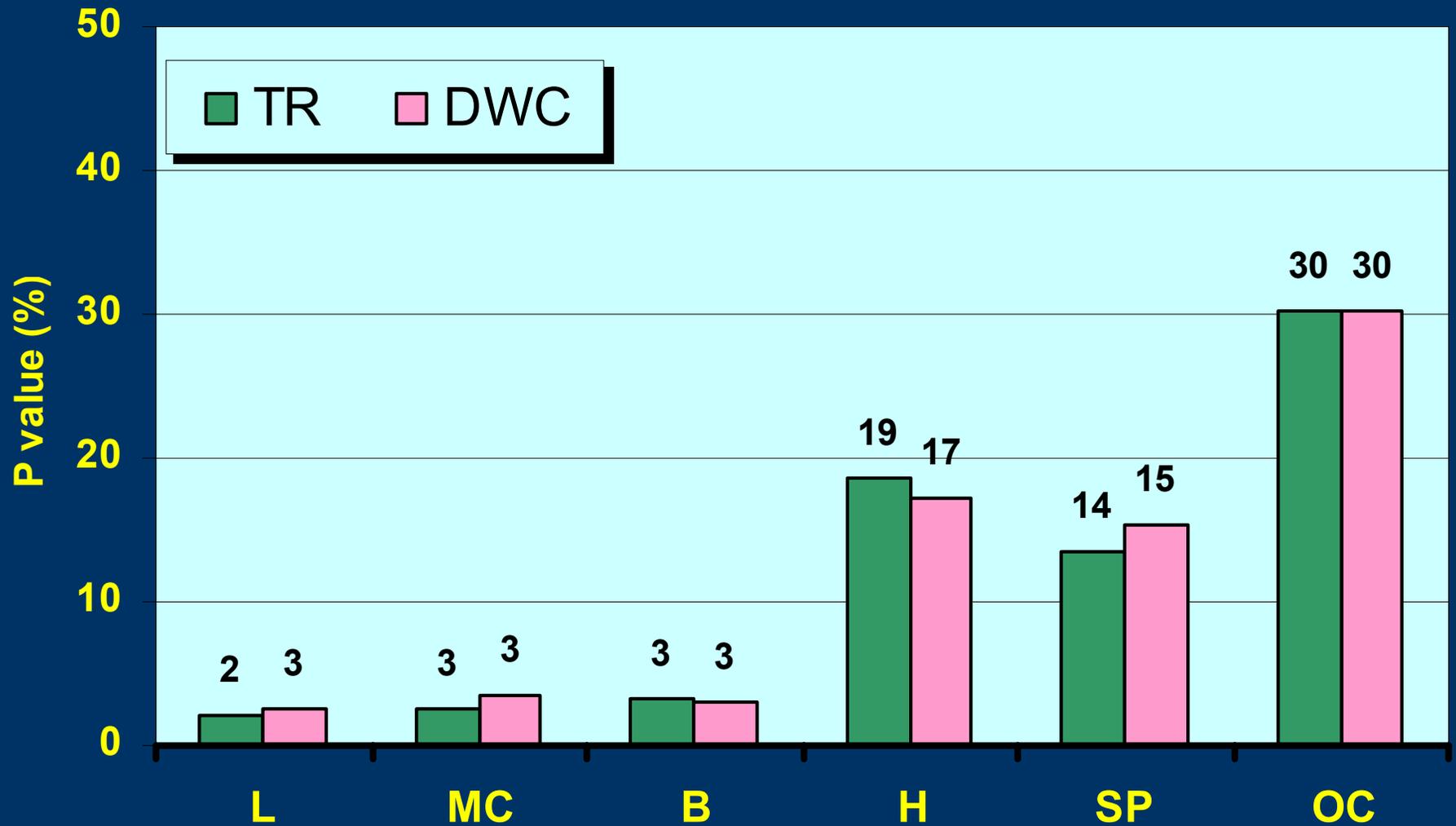
The medians of H&SP were identical.

Indicator P Values

Monthly Water Level Readings From May, 1989 to April 1999.

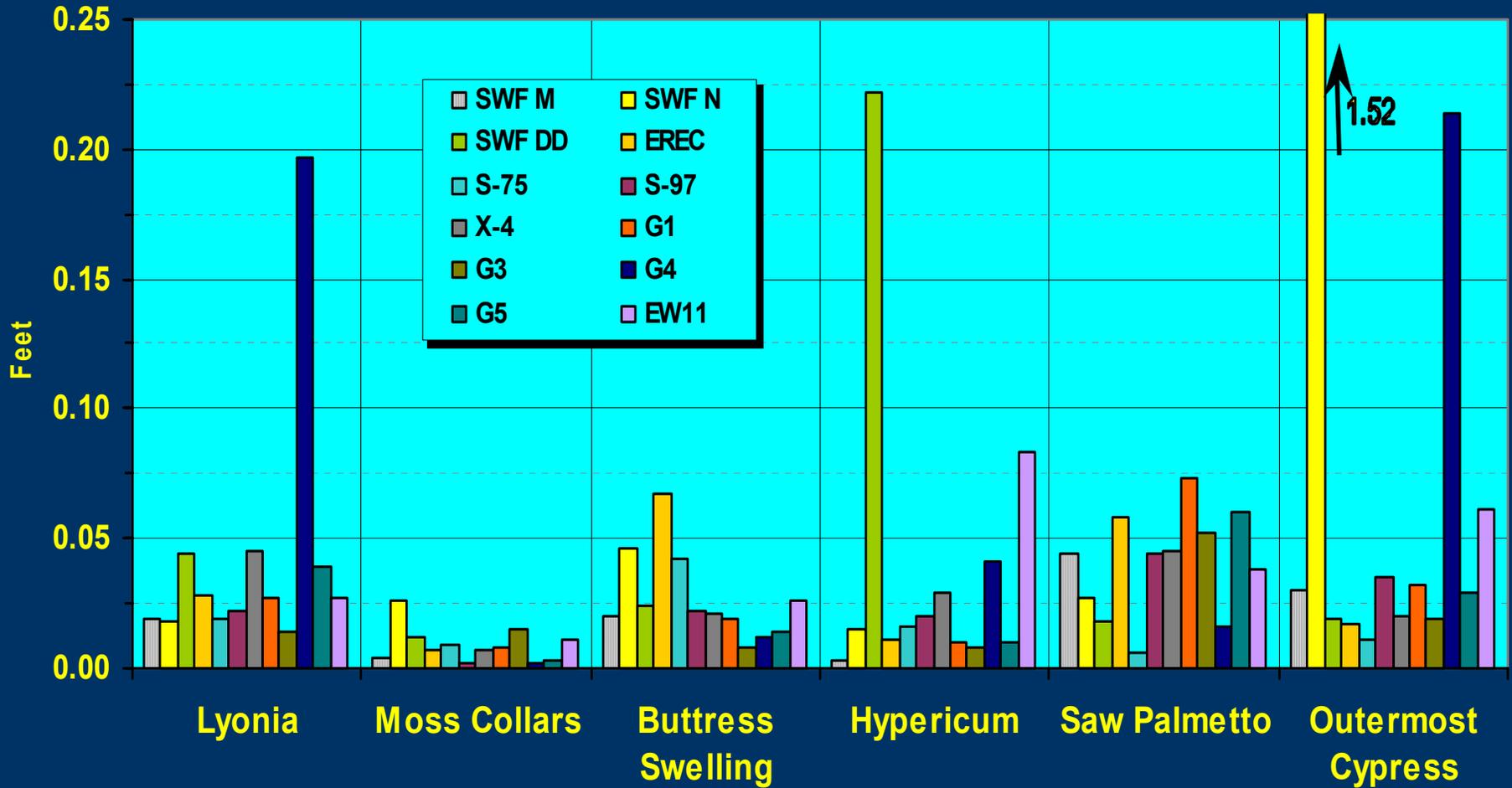
Site	Lyonia		Moss Collar		Buttress Swelling		Hypericum rooting		Saw Palmetto		Outermost Cypress	
	DC	TR	DC	TR	DC	TR	DC	TR	DC	TR	DC	TR
G1	NA	NA	6.1	NA	NA	NA	14.9	36.9	19.6	NA	47.6	43.4
G3	NA	NA	2.9	0.4	1.9	NA	17.3	13.9	11.7	NA	30.2	30.2
G4	2.0	2.1	4.4	3.9	3.7	2.3	32.2	11.7	10.2	2.6	30.3	12.8
G5	2.5	0.3	1.2	NA	1.3	NA	9.5	13.6	NA	12.9	14.3	12.3
EW11	2.5	1.1	2.8	1.7	0.2	2.5	22.3	16.3	13.1	14.2	17.8	19.1
MBWF x-4	1.2	0.8	1.3	0.8	0.8	0.6	3.5	20.1	1.1	3.5	21.5	17.9
SWF N	9.1	7.0	10.5	5.6	7.7	6.5	16.8	9.1	22.6	14.6	46.4	40.5
SWF M	NA	2.0	2.4	4.4	NA	3.3	31.7	29.9	20.3	13.3	37.4	34.1
SWF DD	3.7	2.9	4.0	3.4	3.5	6.0	30.2	28.5	35.0	27.8	46.7	47.0
SWF EREC	NA	NA	NA	NA	3.0	NA	15.6	18.6	17.5	13.8	34.6	32.9
SWF S-75	5.4	5.4	4.6	0.3	5.7	6.7	30.0	21.7	12.7	13.6	22.0	23.1
SWF S-97	2.8	2.9	3.2	3.4	2.8	3.0	4.7	6.5	26.9	14.1	28.2	27.3
MEDIAN	3	2	3	3	3	3	17	19	15	14	30	30

P Values for the 6 Hydrologic Indicators



Variance of Hydrologic Indicators

In 12 Healthy Cypress Wetlands



Conclusions



Lyonia, Moss Collars and Buttress Swelling are identical.

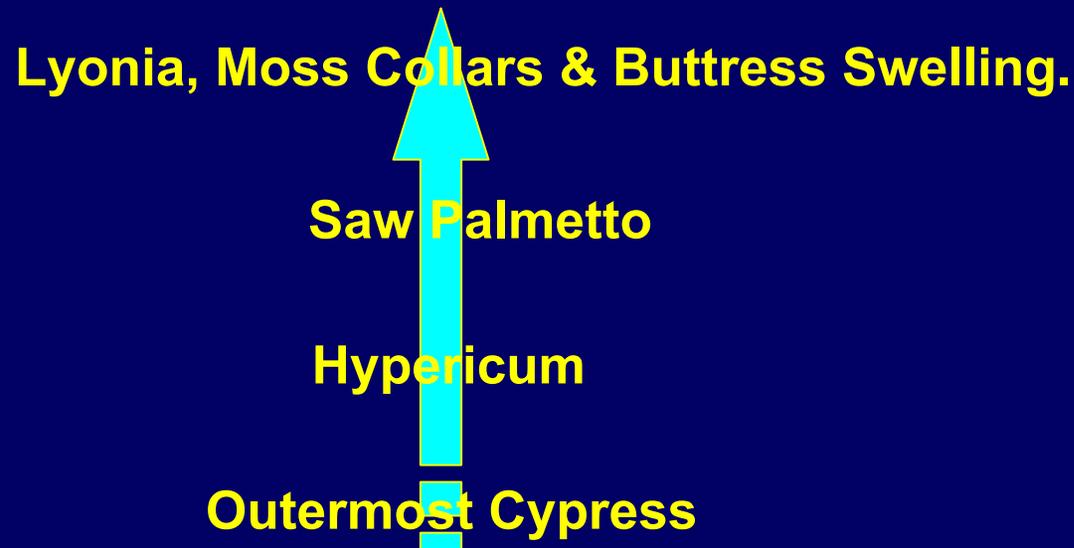


Hypericum & Saw Palmetto are identical.



L, MC and B =	P3	} wet less often at interior!?
H =	P18	
SP =	P15	} wet more often at edge!?
OC =	P30	

Conclusions continued



The variability of the indicators are generally low.