Seagrass Monitoring in the Pensacola Bay System: A partnership between citizens and the University of West Florida

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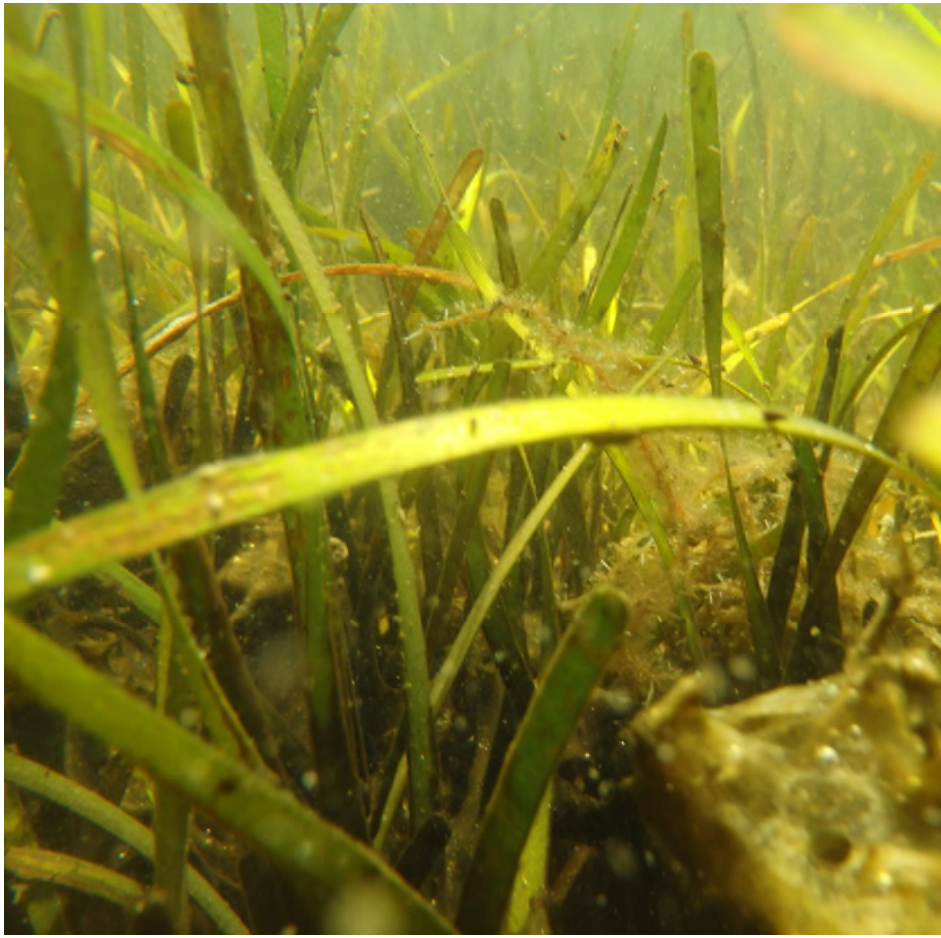


Pensacola Bay

- Significant losses throughout Bay since 1950s/60s (Handley et al. 2007)
- Still healthy beds in Santa Rosa Sound & Big Lagoon
- Increasing coverage ~13% between 2010 and 2015 (Yarbro and Carlson 2018)
- Dominant Seagrasses:
  - *Thalassia testudinum*
  - *Halodule wrightii*
  - *Ruppia maritima*

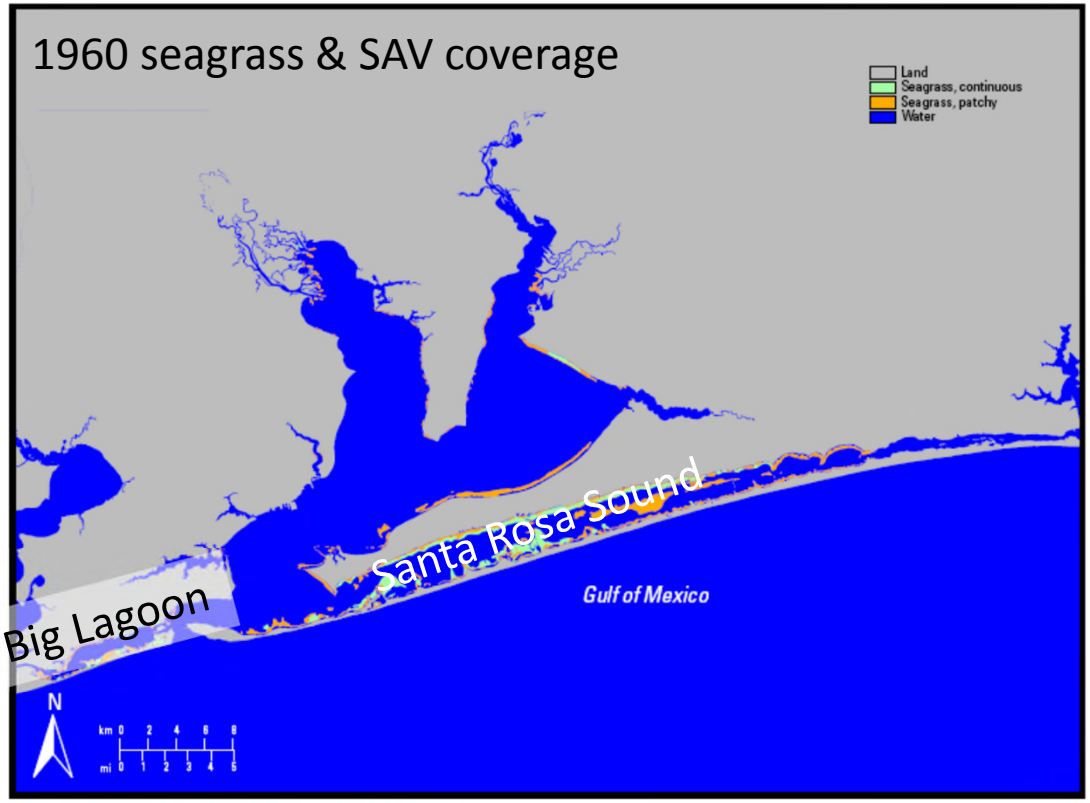
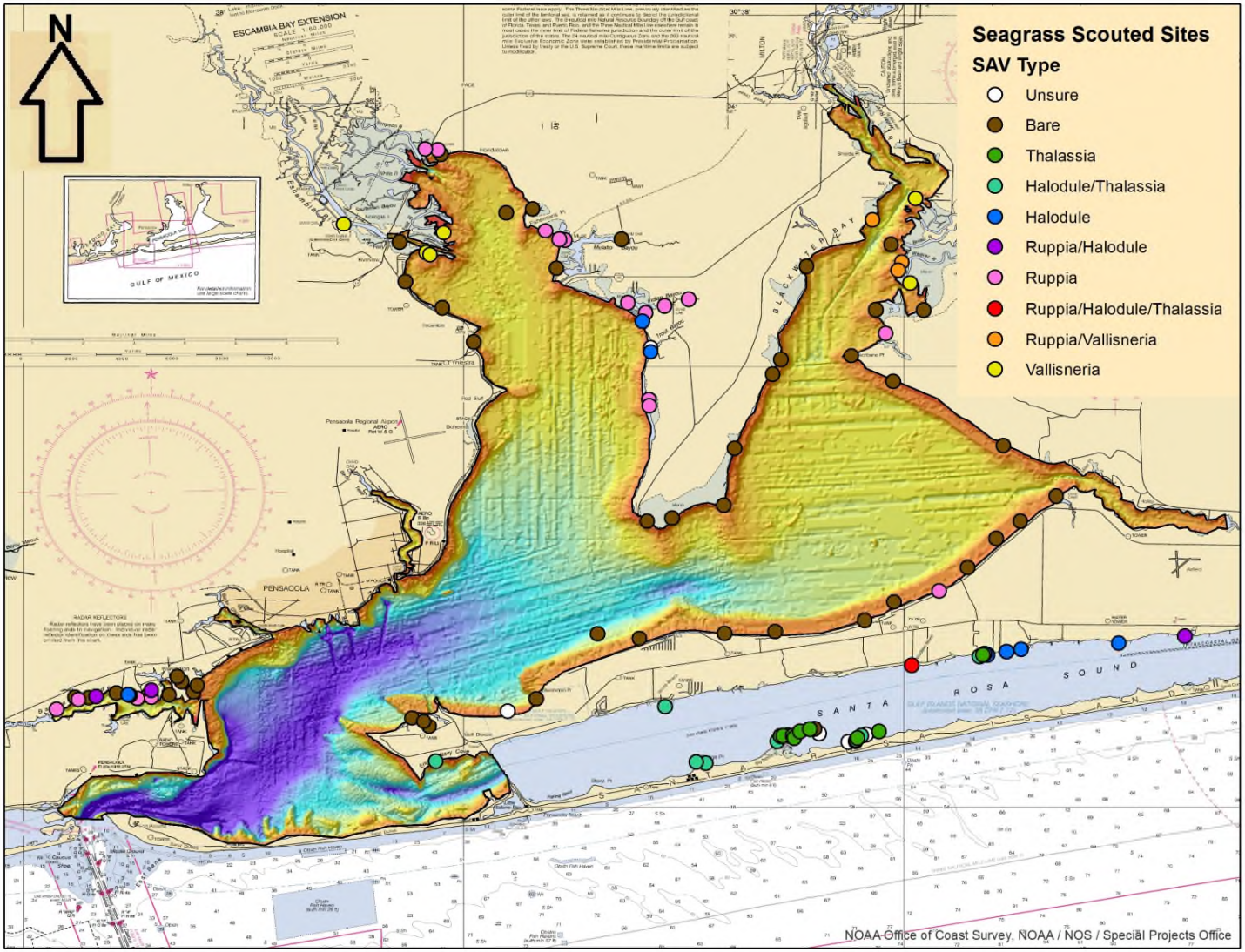


Figure 4 Distribution of seagrass in the Pensacola Bay system, 1960.

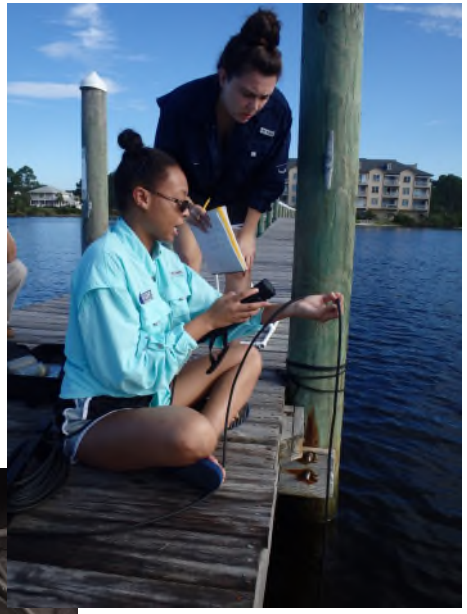
Florida Fish and Wildlife Research Institute Gulf Environmental Benefit Fund project

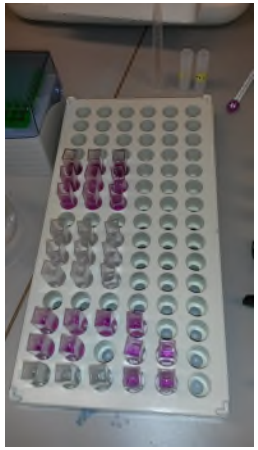
Seagrass locations - 2016

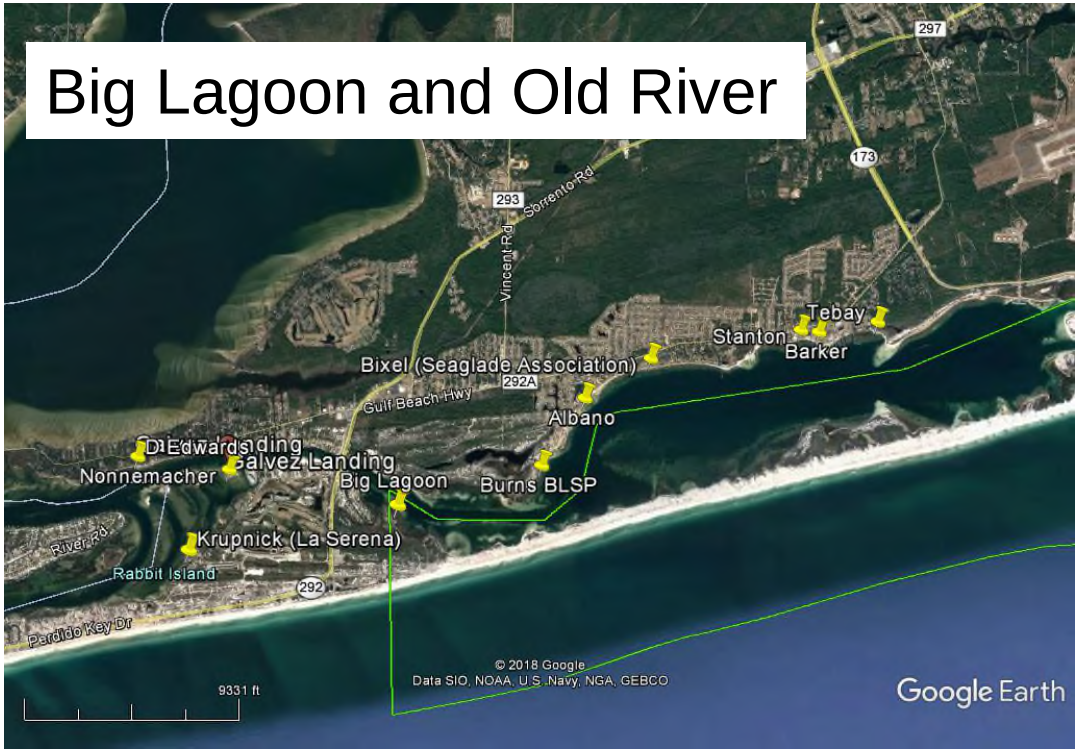


Citizen Science Seagrass Monitoring

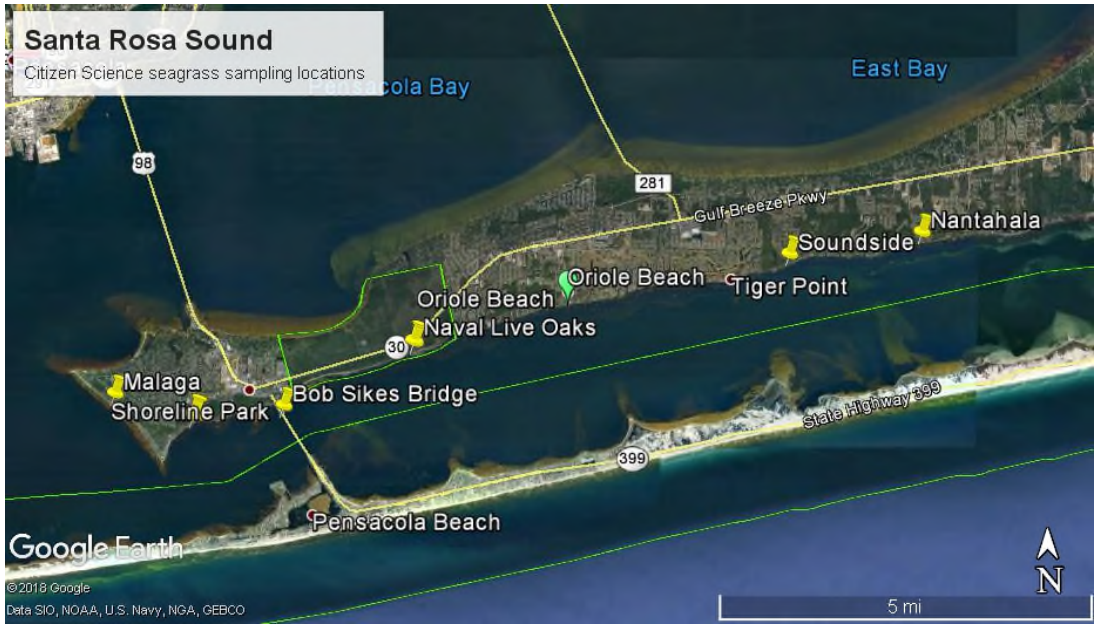
- Begun in July 2017
- Citizen scientists
  - Growing season: May – October
  - Big Lagoon and Santa Rosa Sound
  - Seagrass ID, Percent coverage and water samples
- UWF Students
  - Water analyzed for Total Suspended Solids and salinity
  - Field collection
    - Water quality
    - Light
    - Nutrients
    - Chlorophyll a
    - TSS







Primary effort for recruiting



Datasheets – Version 2.0

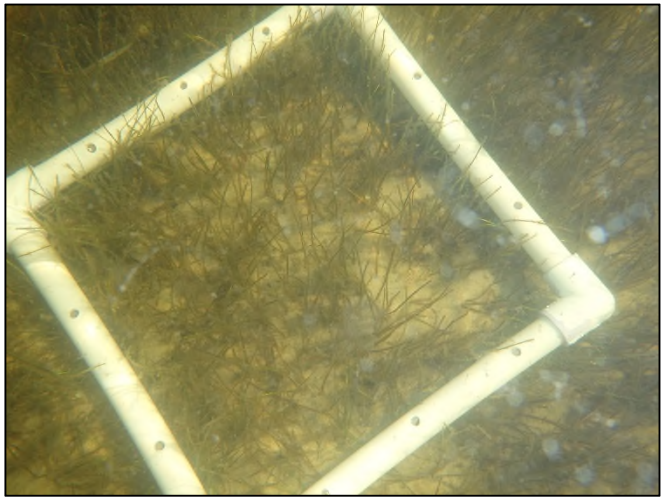
- Waterproof paper
- Simple to fill in
- units

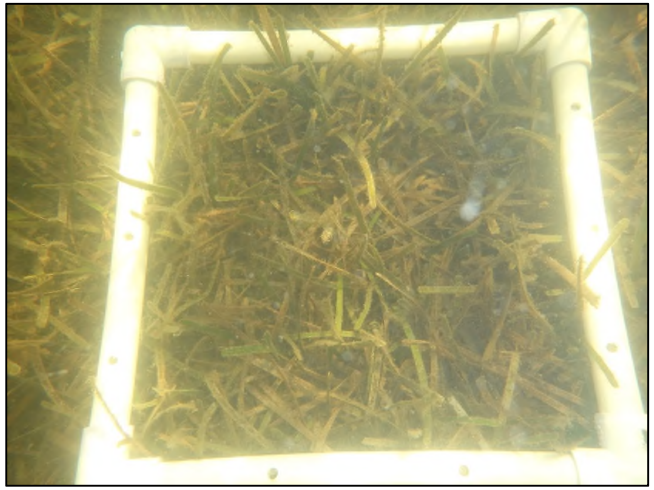
Seagrass Monitoring Data Sheet		30.377507 N. 87.299273 W.		
Location: BL, SRS, other BG - Blackwell 401 Gordon Ave. 32507		Condition of bed: patchy continuous prop scar isolated bed		
Date & time: 06/24/18 Noon		Habitat type: (circle one) Sand Mud Clay Hard		
Name: Blackwell		Water condition: (circle one) Clear Cloudy Murky		
Weather conditions	Rain in last 48 hr	YES	Wind direction from	
Sea State: (circle one) Calm Swell Chop Whitecaps	% Cloud Cover	Ø %	How many times have you monitored this site? 1st.	
Any comments?				
Quadrat #	1	2	3	4
Water Depth include units (inches, ft, cm, m)	28 cm	30.5 cm	30.5 cm	33.0 cm
% Thalassia/turtle grass				
% Halodule/shoal grass				
% Ruppia/wideon grass	100%	75%	50%	100%
% drift algae				
% bare				
Blade length - Turtle grass				
Blade length - Haoldule				
Units for blade length (inches, cm)	30.5 cm	20.3 cm	33.0 cm	28.0 cm
Animals present? (e.g. fish, snails, crustaceans?)	fish	SNAIL	fish	fish
Other notes about bed, more than one species of drift algae? General condition, nearby observations				
Contact: Jane Caffrey, UWF jcaffrey@uwf.edu		850-857-6089		

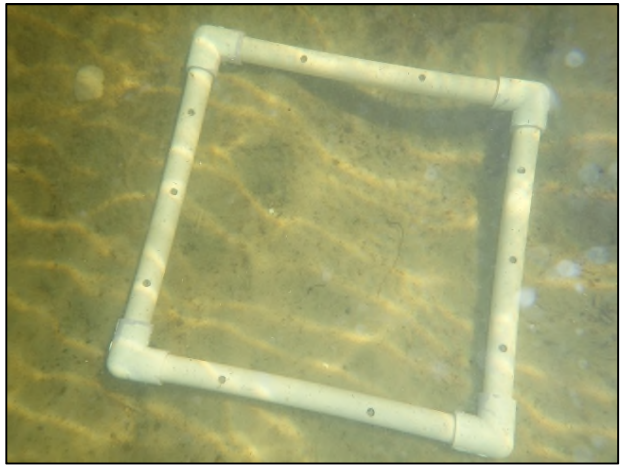
See other Side

Percent Cover

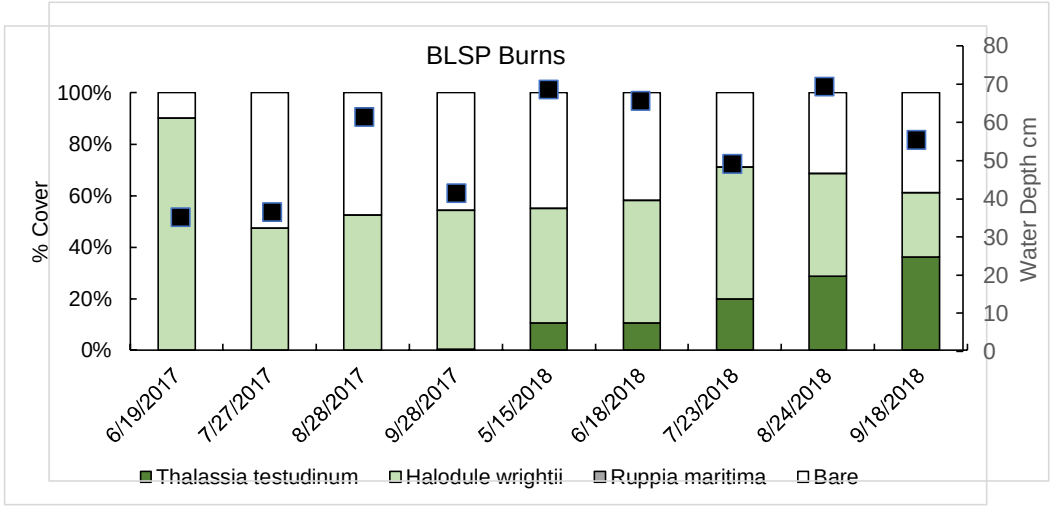
- 25cm x 25cm quadrat

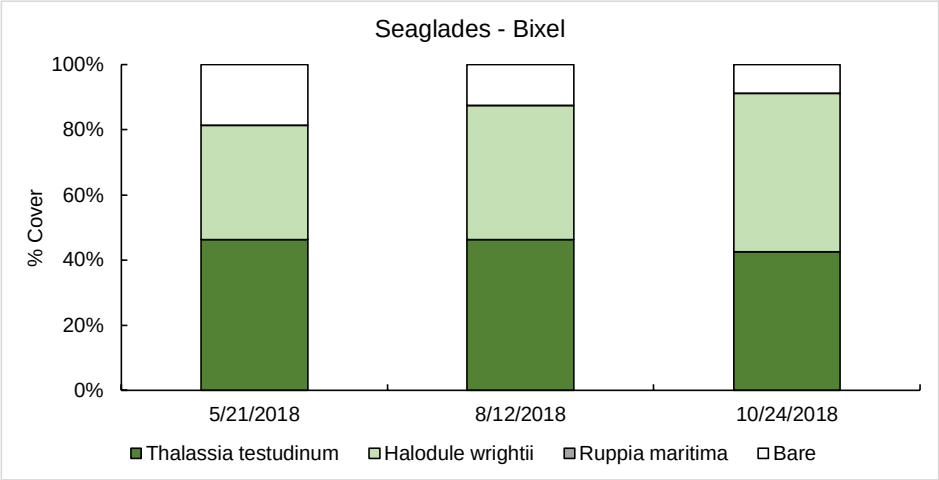






Seagrass cover – Big Lagoon





Trends

- May be difficult to compare data between years
- Is same location sampled each year?

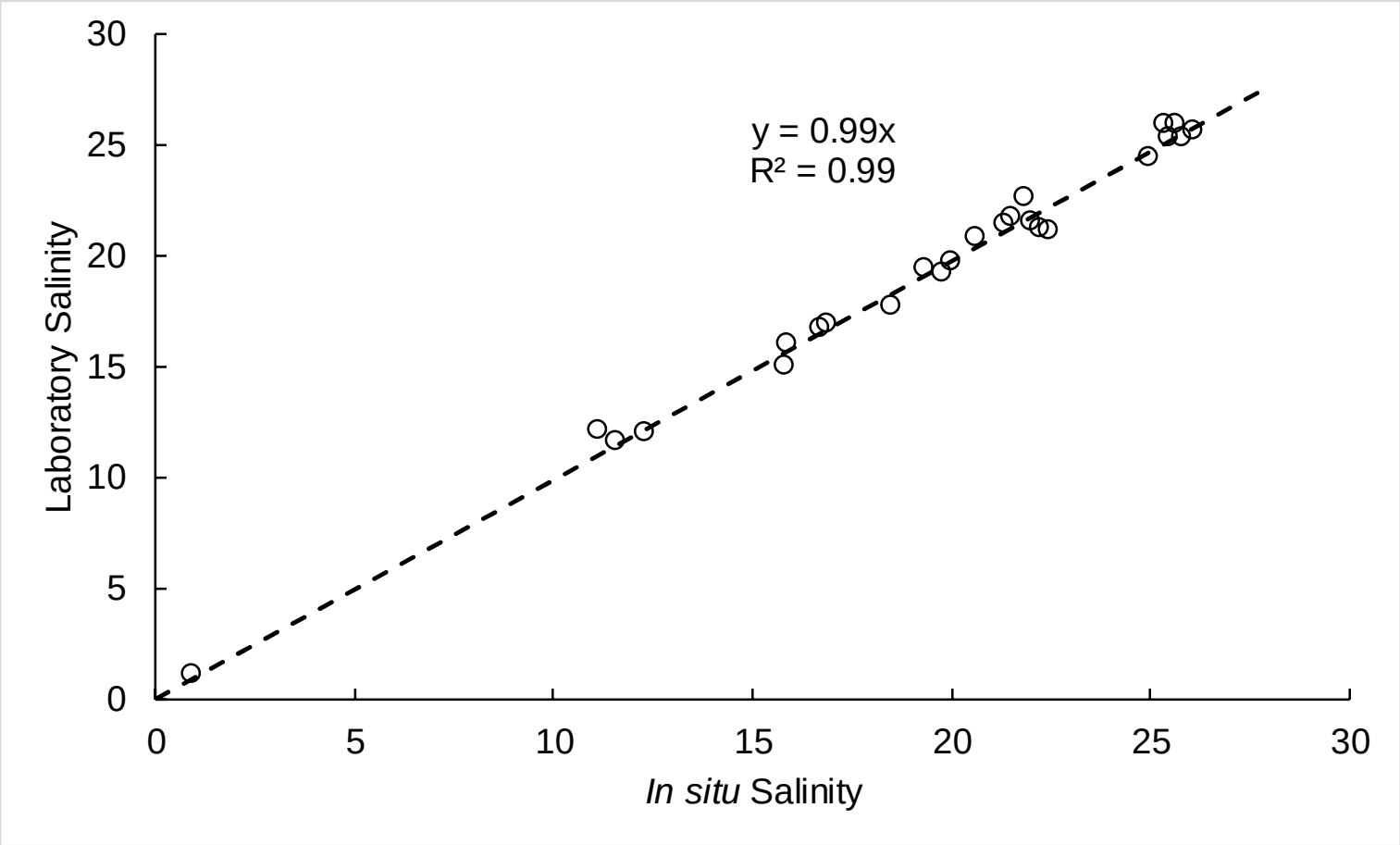
Assessment

- Different effort by volunteers – difficult to estimate by region with different sampling effort

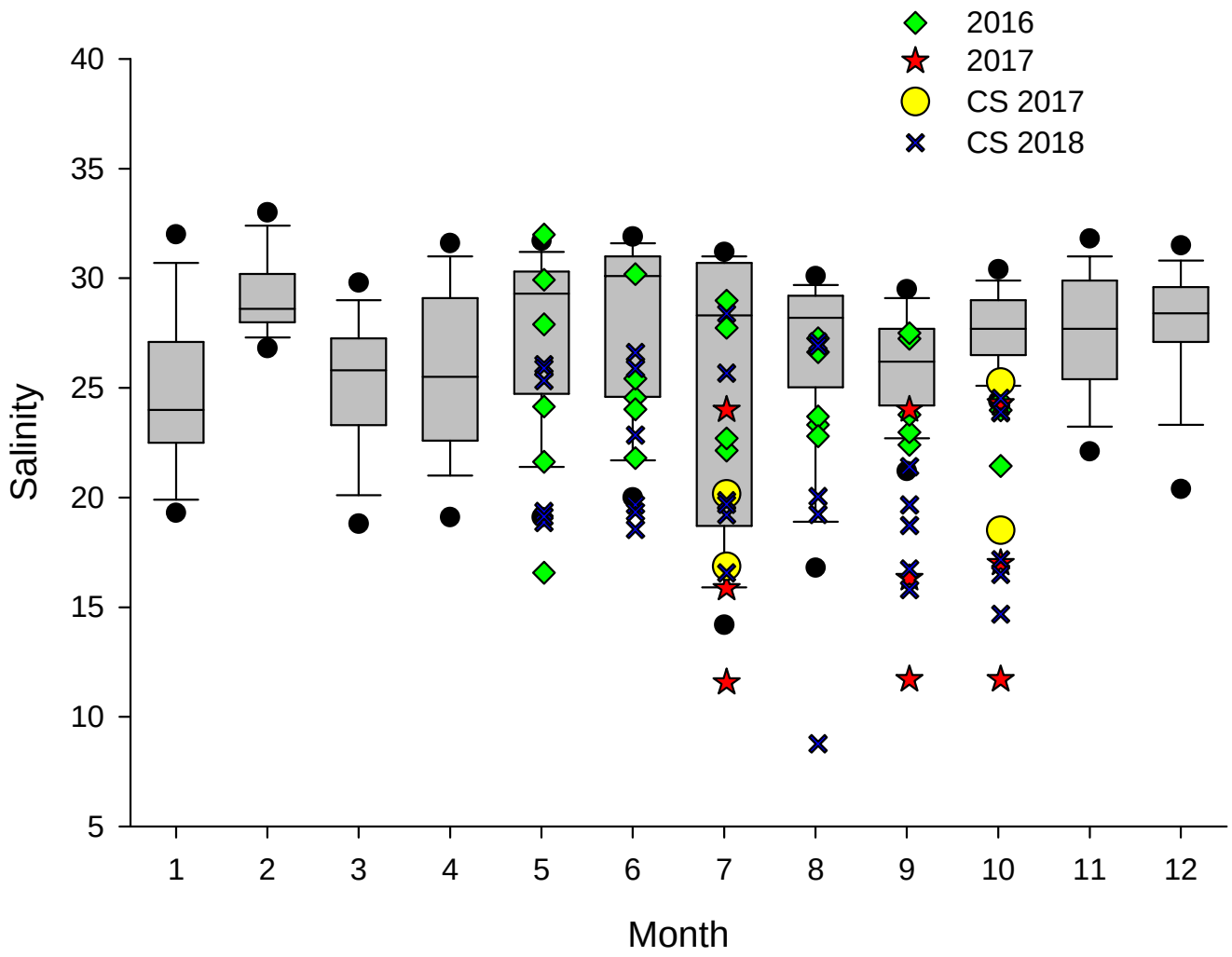
Value

- Eyes on the ground

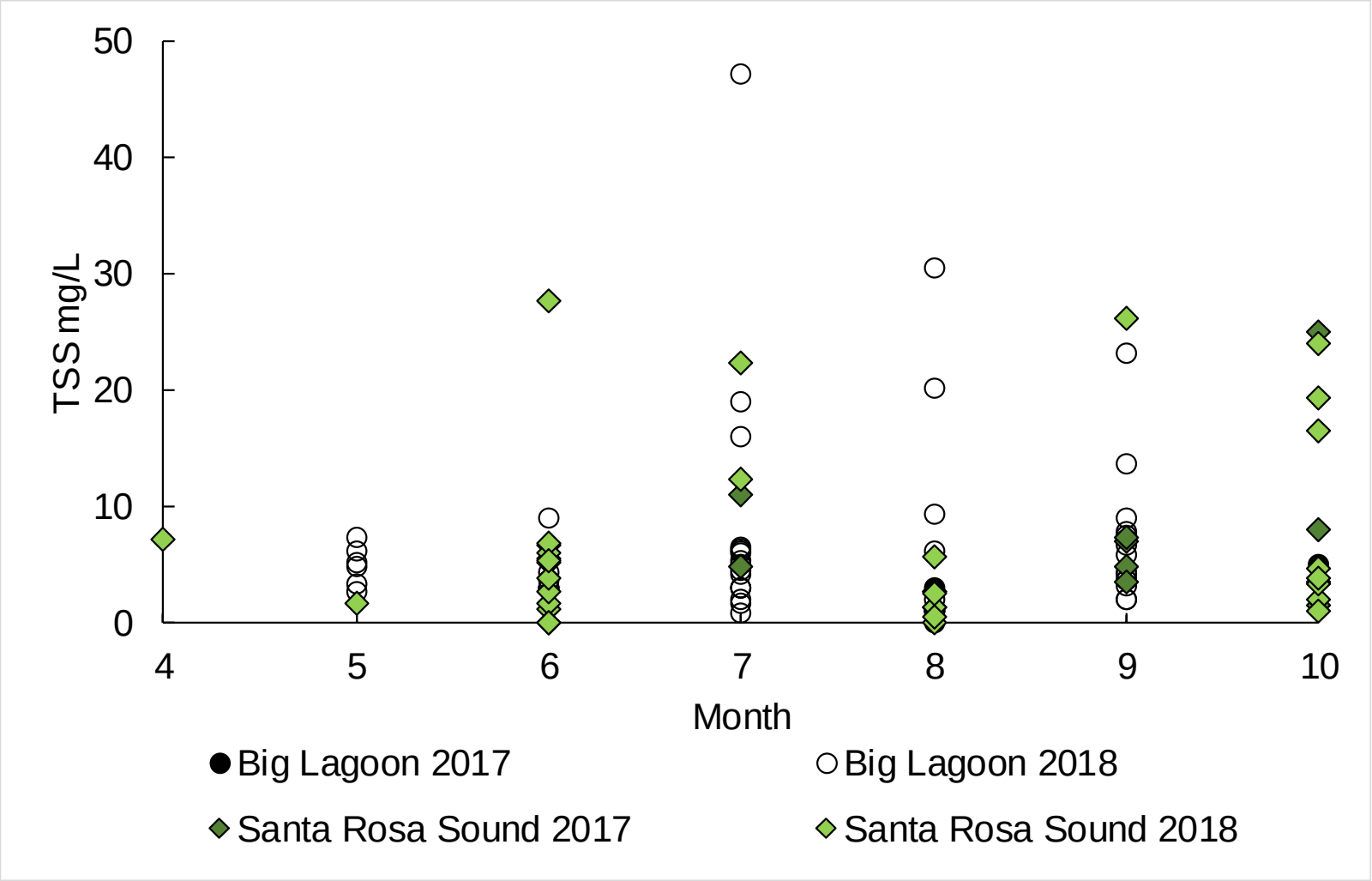
Storage effects on salinity



Salinity


2016
2017
CS 2017
CS 2018
40
35
30
25
20
15
10
5
Salinity
1
2
3
4
5
6
7
8
9
10
11
12
Month

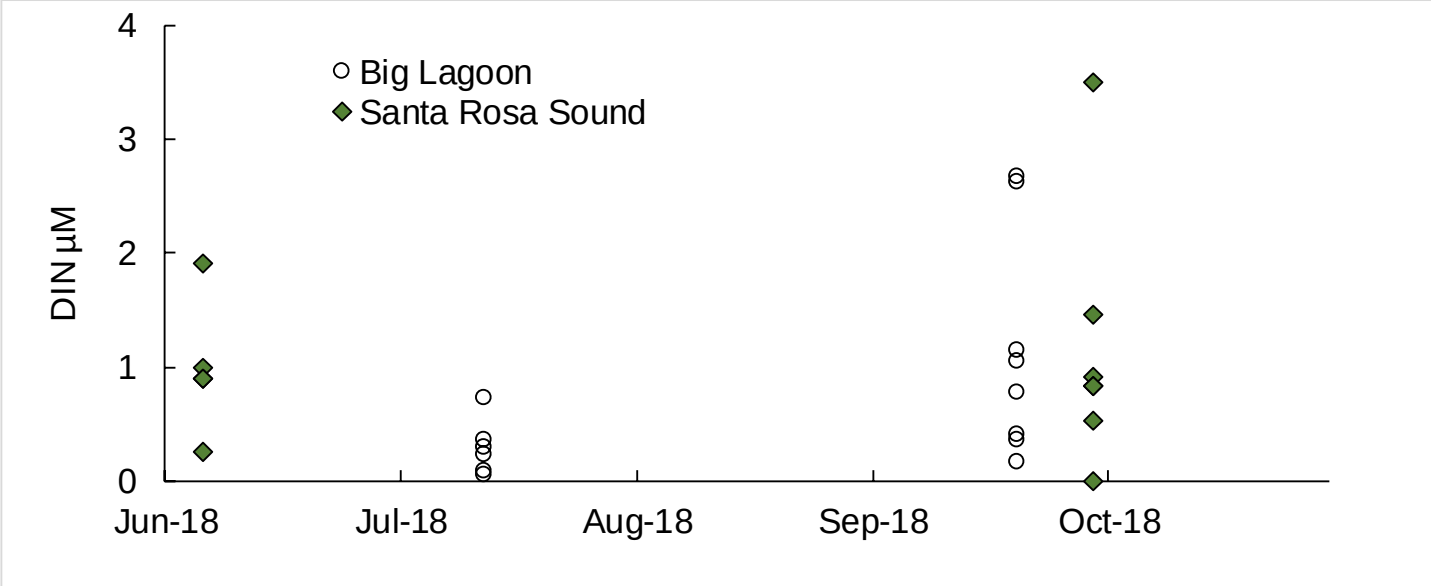
Total Suspended Solids

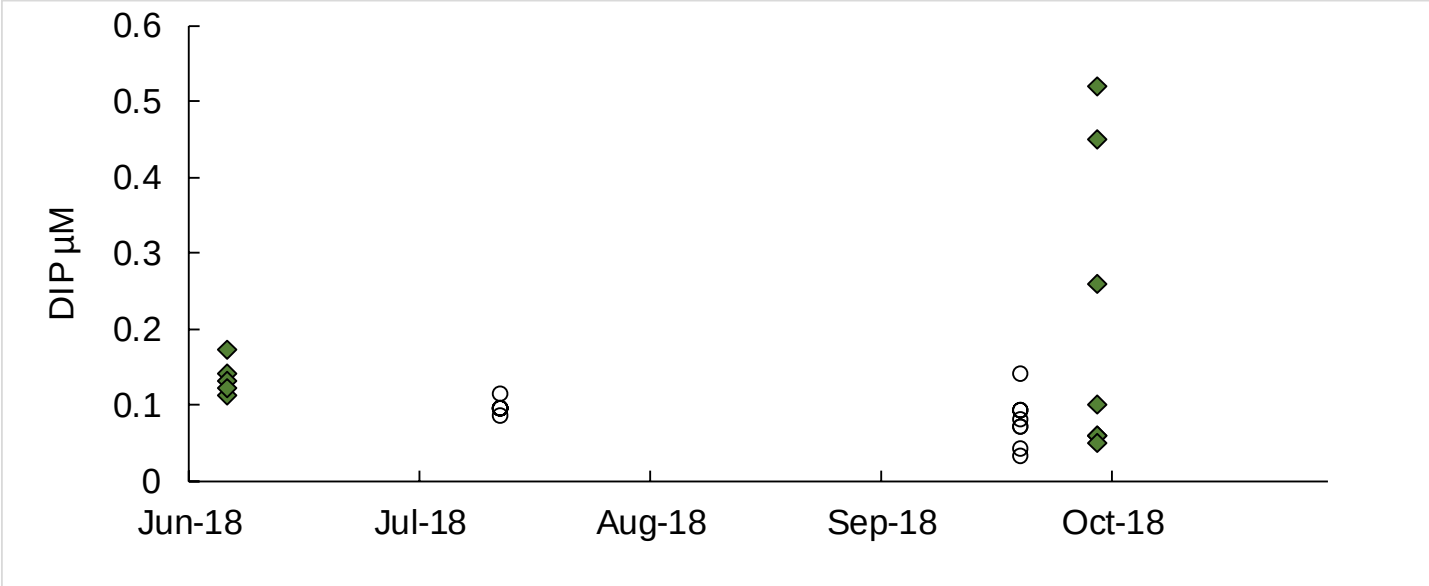


UWF Student Water Quality measurements

- Sampling at multiple sites – 2x/yr
- meeting volunteers
- *In situ* measurements
- Samples for lab analyses

Dissolved nutrient concentrations



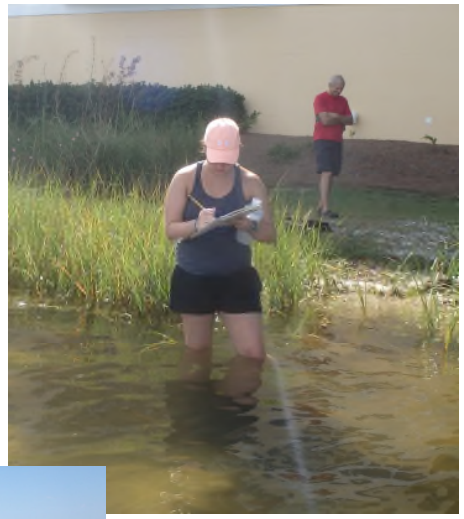


Next steps

- Continued volunteer training
  - Field samples: cover & units
  - Labeling sample bottles
- Targeted recruitment of new volunteers
  - Greater spatial coverage in Santa Rosa Sound
  - Urban Bayous
  - Fresh/Brackish regions - SAV/Ruppia
- Student sampling during spring (late April)
- Analysis of factors affecting species composition and cover

Acknowledgements

- Citizen Scientists: Abby Nonnemacher, April Smith, Charles Krupnick, Donna Edwards, Gil & Kathy Bixel, John Albano, Katherine Edwards, Kimberly Bremner, Marsha Stanton, Patty Barker, Sarabeth Gordon, Sarafina Mowe, Shelley Mangram, Steve Burns, John & Chrys Blackwell, Charlie Lurton
- UWF students: Caitlyn Turnbull, Jennifer Gibson, Julianna O'Barr, Jade Jacobs, Kat Smyth, Mackenzie Rothfus, Grace Sommerville
- FIO 2017 & 2018 classes
- High School Students: Kristin Streeter & Lucy Ho
- Florida Sea Grant



Questions ?