

Citizen Science

An Effective Method of Educating the Public About the Health of Their Bay

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Florida Sea Grant
UF IFAS Extension

UF IFAS Water Institute Feb 2024



Florida Sea Grant Extension

- Educating the public
- Educating the workforce



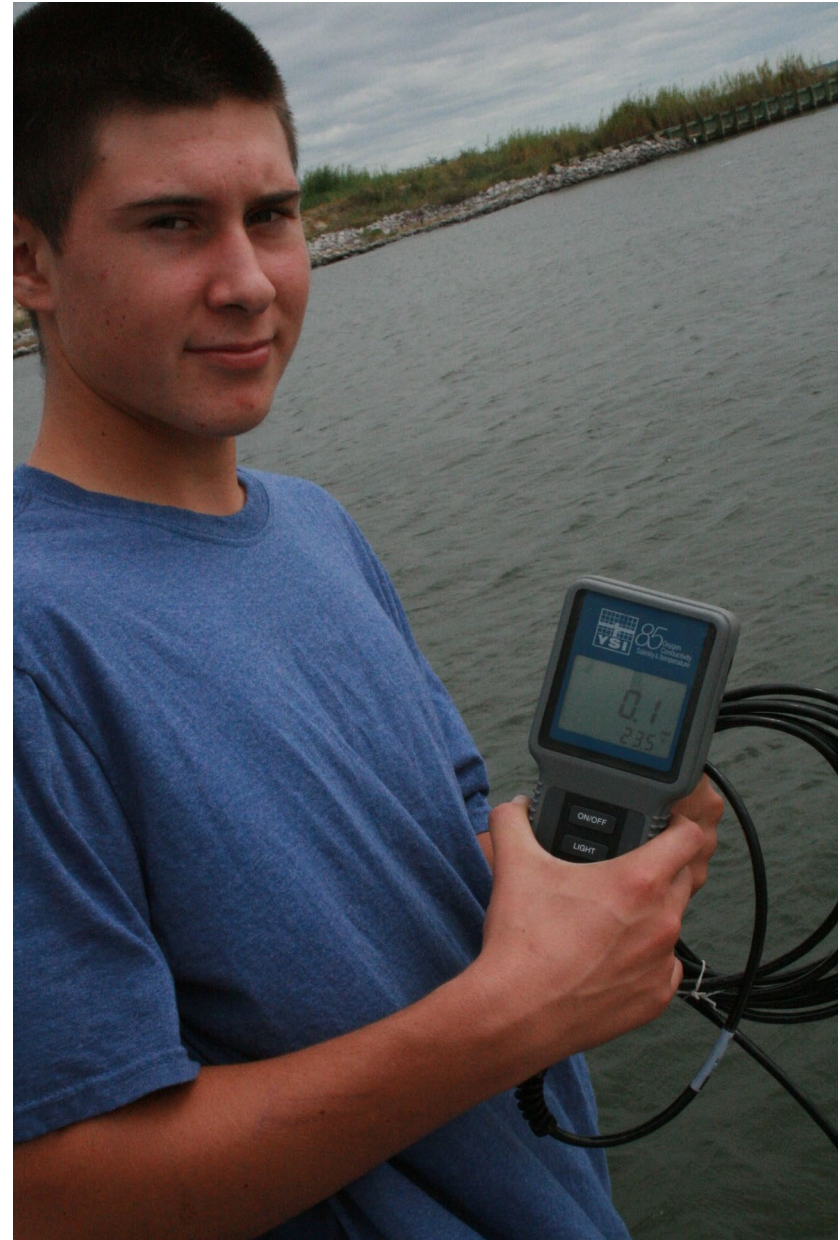


Field Classes



Classroom sessions

“If you want to learn
science... do
science”



Current Citizen Science Water Quality Projects

- LAKEWATCH
- Salinity
- Phytoplankton Monitoring



Current Habitat Monitoring Projects

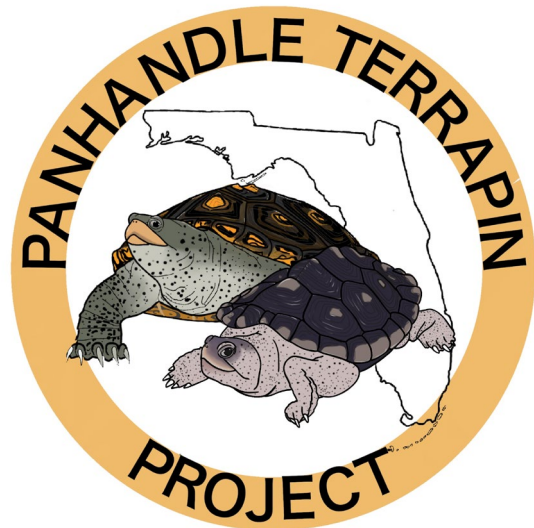
- Eyes on Sea Grass
- Pensacola Bay Mangrove Search



| EYES ON SEAGRASS |

Current Wildlife Monitoring Projects

- Panhandle Terrapin Project
- Great Scallop Search
- Florida Horseshoe Crab Watch



Recruitment

- Social media
- Other media outlets
- Newsletters
- Mailing lists
- Florida Master Naturalists
- OUT OF STATE VOLUNTEERS – Alabama, USM



EYES ON SEAGRASS

Florida Sea Grant is looking for volunteers interested in monitoring seagrasses in the Pensacola Bay system. Surveys will be conducted once a month beginning in April and running through the end of September. Snorkeling (and your own snorkel gear) will be required.

TRAINING:

Thursday March 30
6:00pm

Escambia County Extension Office
3740 Stefani Road
Cantonment, FL 32533

Trainings will be provided in-person and on zoom.

Training

- Most trainings are in March
- Start and sampling time vary



Maintaining Participation

- Incentives
- Follow up reports
- Annual seminar of all work – provide lunch
- Show how data is being used



Data

Shared with local, district, state agencies

Shared with public



Eyes on Seagrass for Pensacola Bay



Rick O'Connor¹, Chris Verlinde², Madison Harvey³, Isabella Orrantia³, Barbara Albrecht^{3,4}, Jane Caffrey³

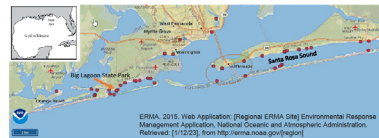
¹ Escambia County Extension ² Santa Rosa County Extension ³ Center for Environmental Diagnostics and Bioremediation, University of West Florida ⁴ Bream Fishermen Association

Abstract

In lower Pensacola Bay, Big Lagoon and Santa Rosa Sound once had large meadows of seagrass that supported bay scallops among other species. These areas have seen declines since the 1960s however, recent studies show that there has been a 13% increase in seagrass coverage between 2010 and 2015.

Since 2017 the University of West Florida (UWF), Escambia and Santa Rosa County Sea Grant Extension Program have worked together to enlist citizens and UWF students to monitor seagrass beds. Each month during the growing season (April-September), local citizens identify seagrass species and use quadrats to estimate coverage of seagrass and macroalgae at different locations in the Pensacola Bay system. They also collect water samples which are analyzed by students at UWF who measure salinity and total suspended solids. Students also measure water quality and collect water samples for dissolved nutrients and chlorophyll a from these locations two-three times during the growing season.

The goals of this program are to develop an active community of citizen scientists, train students, develop long term monitoring of seagrass habitats in the Pensacola Bay system, and to use this data to increase our understanding of factors impacting seagrass in the rapidly growing region. In 2022 the project trained nine volunteers and expanded to locations in Choctawhatchee Bay. This presentation will provide updates for the 2022 season as well as some of the issues working with citizen volunteers.



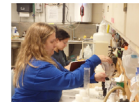
Methods

Citizen scientists

- Sampling during growing season: May – October
- Locations sampled: Big Lagoon (Old River) and Santa Rosa Sound, Bayou Grande, Bayou Texar, Project Greenhores, East SRS Sound/ Choctawhatchee Bay
- Citizens ID seagrasses, estimate percent coverage and collect water samples for analysis by UWF students

UWF Students

- Water analyzed for Total Suspended Solids and salinity
- Field collection
 - Water quality (YSI)
 - Light (light meter)
 - Nutrients¹ (DIN, DIP)
 - Chlorophyll a²
 - Total Suspended Solids³



¹Indres et al. 1978. A simple and precise method for ammonia, nitrite and nitrate determination. Canadian Journal of Fisheries and Aquatic Sciences 35 (19): 1803-1808. Parsons et al. 1984. Determination of phosphate. In: A Manual of Chemical and Biological Methods for Seawater Analysis. Oxford: Blackwell Press Ltd. P.21-25. Schneider, G. and Grotzer, G. 2014. Determination of nitrate plus nitrite in small-volume marine water samples using vanadium (III) chloride as a reduction agent. Marine Chemistry 160, pp. 95-100.

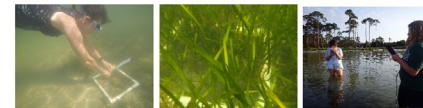
²Wetzelberger, S.A., 2004. Fluorometric analysis of chlorophyll a in the presence of chlorophyll b and phaeophytin. L&D 39: 1565-1592

³TPA method 630.2. modified, non-iterative (Grassroots)

Estuary	Citizen Science Volunteer Effort		Years sampled
	Number of volunteers	Number of times sampled	
Bayou Chico	2	2	2021
Bayou Grande	3	18	2018-2022
Bayou Texar	2	4	2022
Big Lagoon	38	93	2017-2022
Choctawhatchee Bay	4	1	2022
Old River	2	9	2018-2019
Pensacola Bay	2	5	2022
Perdido Bay	2	3	2021
Santa Rosa Sound	38	51	2017-2022

Estuary	UWF Student participation		Years sampled
	Number of Classes/Projects	Number of times sampled	
Big Lagoon	8	20	2017-2019, 2021-2022
Santa Rosa Sound	17	21	2017-2022

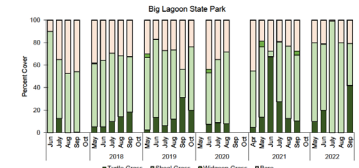
- A total of 89 citizens have volunteered over the 6 years of this program
- 14 have volunteered for 2-3 years and 6 have volunteered for at least 4 years
- Citizen's effort represents over \$5,600 (\$29.95/hr * 1 hr/time sampled *186 sampling trips)
- Classes and individual student projects provide more in-depth information about conditions in these systems



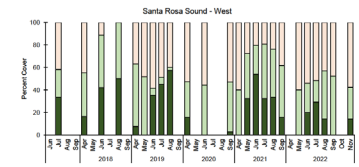
Acknowledgements

Citizen Scientists: Abby Nonnemacher, David Grimm, Glenn Conrad, Glenn Ballard, Suzanne Robbert, Amy Filgren, Jennifer and Joanna Powell, John Williams, Riley Hayes, Mark Cumpston, Sara Everhart, Jenna Klipatrick, Carole Tebay, April Smith, Charles Krupnick, Gil & Kathy Bixel, Steve Burns, John & Chry Blackwell, Charlie Lurton, Donna Edwards, Erica Khetran & Chris Tamer, Ali Egan & Kate Dawson, Laura Vendetti, Phillip Asiala, John Albano, Katherine Edwards, Kimberly Bremner, Marsha Stanton, Patty Barker, Sarah Beth Gordon, Sarafina Howe & Genia Edwards, Shelley Mangram, Dave Barker, Sandy Dimick, Sara Marks, Kellie Isaacks, Heather & Ian Stone, Caroline Hornfeck & Bailey Walkinshaw, DeGraaf, Sam Engster, Faolyn Phillips, Mike & Susan Mead

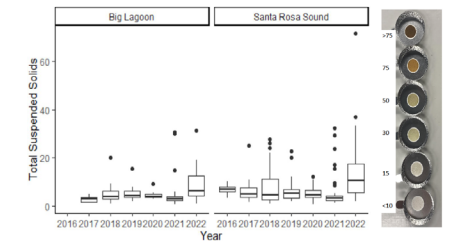
UWF students: Madison Harvey, Isabella Orrantia, Lacey Bowman, Hue Worrells, Anthony Alberda, Caitlyn Turnbull, Jennifer Gibson, Juliana O'Bar, Jade Jacobs, Kai Smyth, Mackenzie Rothfus, Grace Sommersville, Sean Gordon, Hope Ebert, Alexia Figueroa, Jessica Marquis, Maisha Epps, Olivia Sanders UWF Colleagues: Amanda Croteau, Barbara Albrecht, FIO 2017, 2018, 2022 classes



- Big Lagoon State Park sites averaged by month and year (orange arrow on map)
- Seagrass cover increases over the growing season & is greater than 60%
- UWF student samples are often deeper so Thalassia % cover is greater in those months



- Sites in western SRS averaged by month and year (orange circle on map)
- Seagrass cover increases over the growing season & is greater than 50%
- UWF samples are often deeper so Thalassia % cover is greater in those months



- High Total Suspended Solids reduce light available for seagrass growth
- Concentrations are usually less than 10 mg/L at both locations
- Concentrations were higher in 2022 at both locations than previous years
- Occasional high concentrations at some sites



Lessons Learned

- **People management** - #'s, email, text
- **Time management** - # of projects, locations
- **QC/QA concerns** – train well
- **Trainings** – short fact sheets, videos, flexible with time, virtual options
- **Data management** – plan for

We are meeting our objectives

- Annual reports on all projects provided to the public
- Volunteer appreciation lunch and seminar
- Useful data provided to local, district, and state agencies



Thank you!



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