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

Jane Caffrey, Victoria Henry, Donald Fontenot, Barbara Albrecht
Center for Environmental Diagnostics and Bioremediation, University of West Florida

Rick O’Conner
Escambia County Extension

Chris Verlinde
Santa Rosa County Extension
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
Florida Fish and Wildlife Research Institute Gulf Environmental Benefit Fund project

Roadblocks to Seagrass Recovery: Seagrass Restoration Planning

CALL BEFORE DIGGING
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
Big Lagoon and Old River

Primary effort for recruiting
Datasheets – Version 2.0

- Waterproof paper
- Simple to fill in
- Units
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

\[ y = 0.99x \]

\[ R^2 = 0.99 \]
Total Suspended Solids

![Graph showing TSS mg/L vs Month for Big Lagoon 2017 (filled circle), Big Lagoon 2018 (open circle), Santa Rosa Sound 2017 (shaded diamond), Santa Rosa Sound 2018 (shaded diamond).]
UWF Student Water Quality measurements

• Sampling at multiple sites – 2x/yr
• meeting volunteers
• *In situ* measurements
• Samples for lab analyses
Dissolved nutrient concentrations

- **DIN** (µM):
  - June 18 to October 18
  - Data points for Big Lagoon and Santa Rosa Sound

- **DIP** (µM):
  - June 18 to October 18
  - Data points for Big Lagoon and Santa Rosa Sound

Graphs showing nutrient concentration trends over time for Big Lagoon and Santa Rosa Sound.
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


• 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 ?