

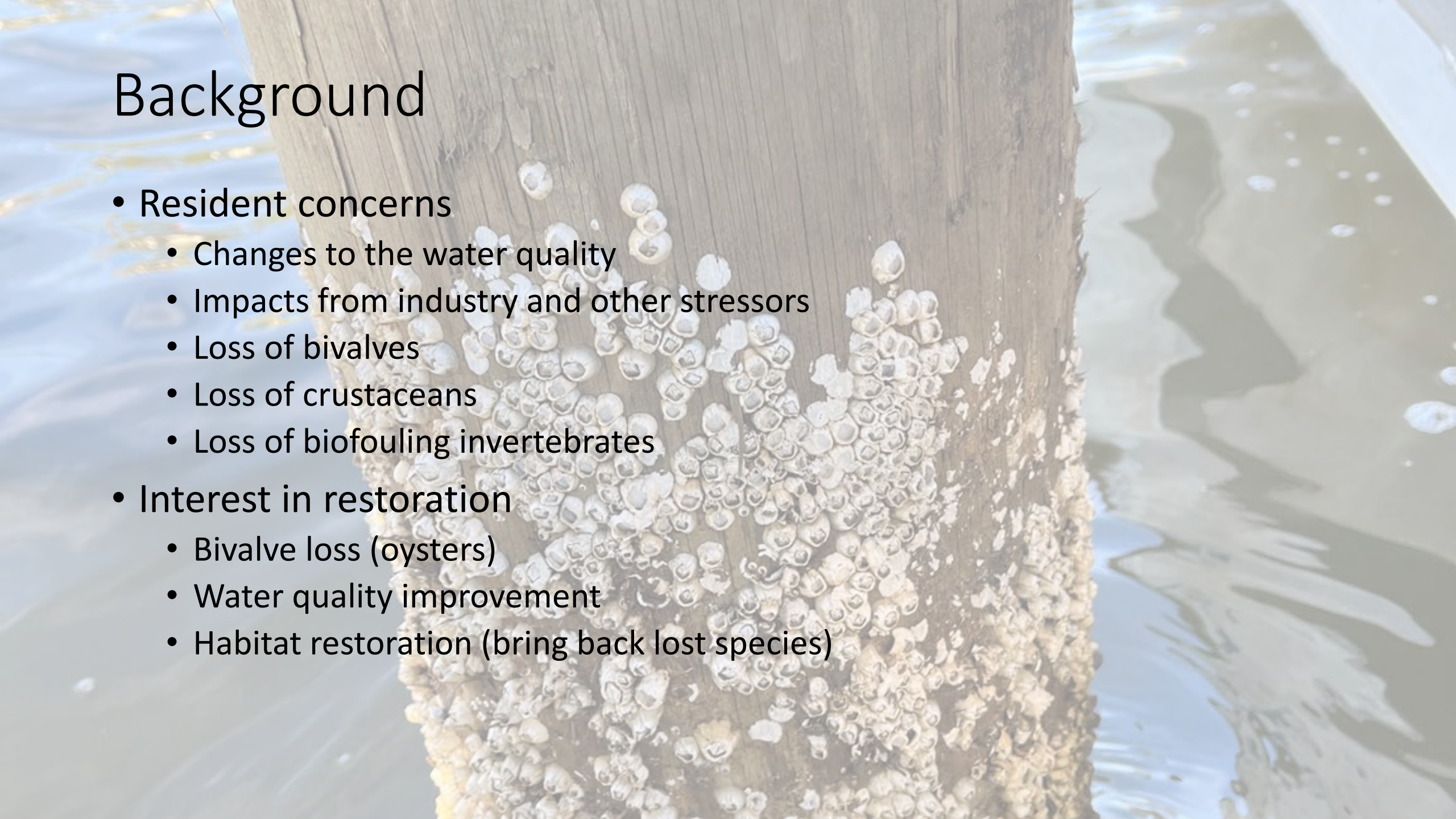
Why Settle Here?

Understanding Epibenthic Settlement Dynamics in Perdido Bay

Amanda Croteau, Mackenzie Rothfus, and Denzel Ortiz Hernandez

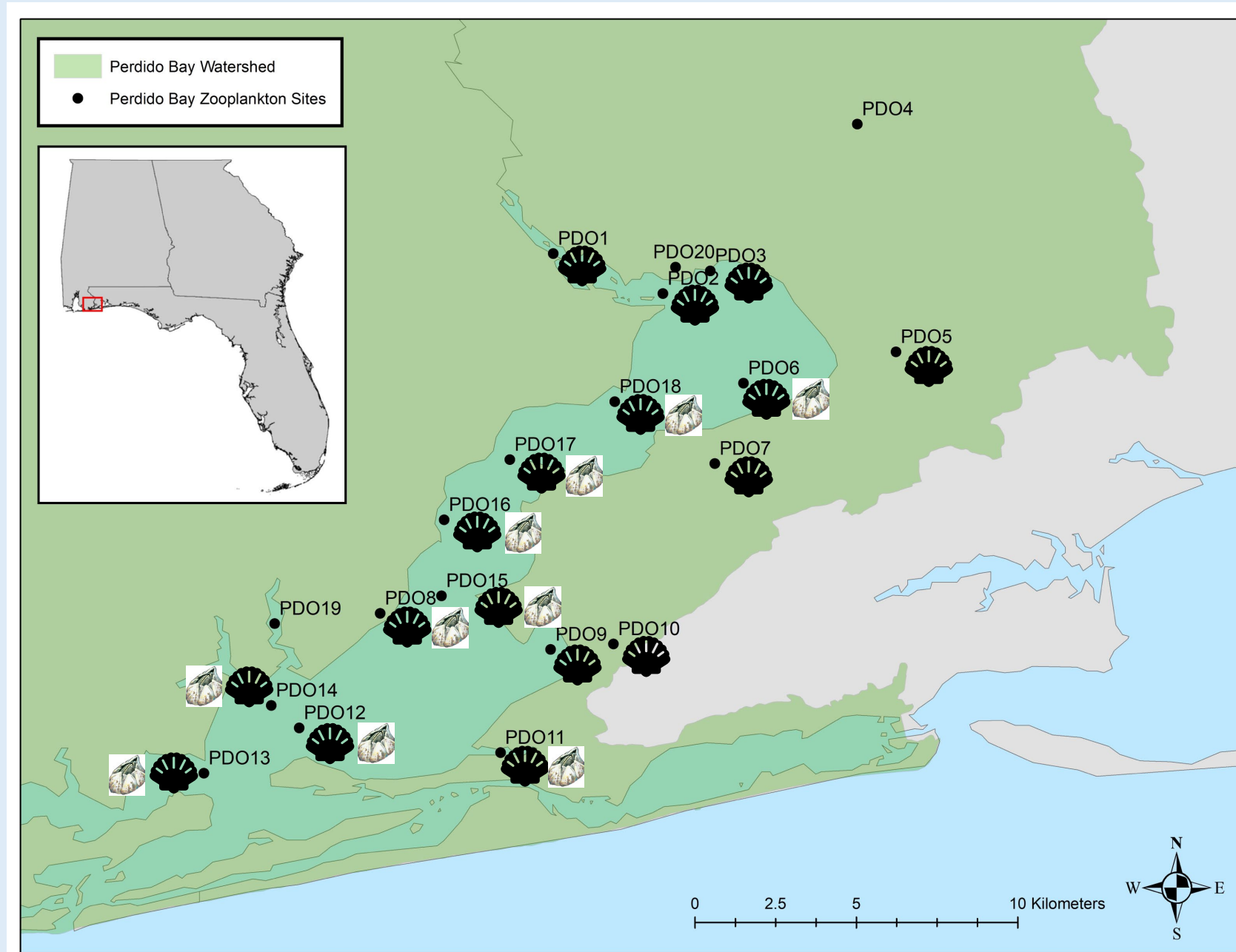
Background

- Resident concerns
 - Changes to the water quality
 - Impacts from industry and other stressors
 - Loss of bivalves
 - Loss of crustaceans
 - Loss of biofouling invertebrates
- Interest in restoration
 - Bivalve loss (oysters)
 - Water quality improvement
 - Habitat restoration (bring back lost species)



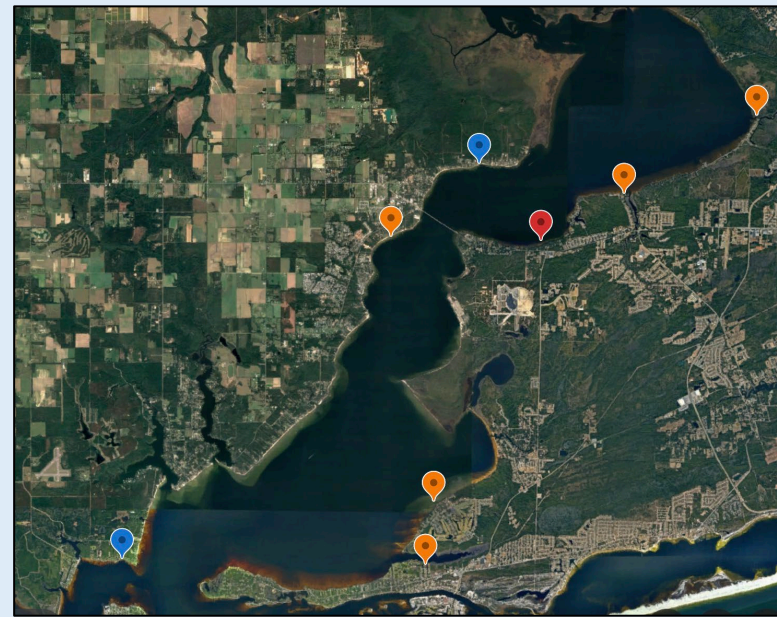
Zooplankton & Water Quality Study




- PPBEP Community Grant funded 2022-2023
- 20 sites
 - 9 Tributary and Bayou
 - 5 Upper Bay
 - 6 Mid Bay
- Zooplankton
 - Larval bivalves at 17 sites
 - Larval barnacles at 10 sites

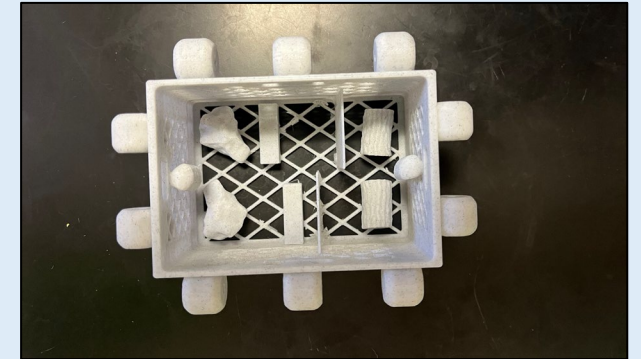
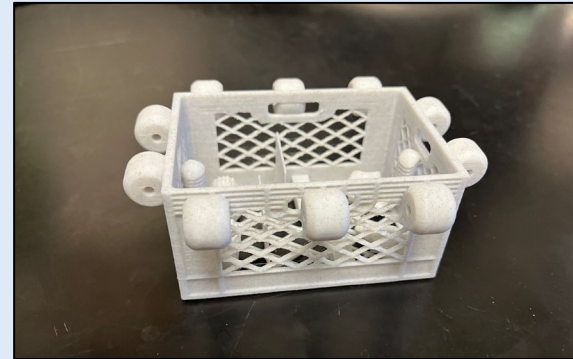


Settlement Study

- Settlement arrays
 - 5 substrates: Lime rock, concrete paver, HardieBacker board tile, oyster shells, wood
 - Sensors: dissolved oxygen, conductivity, temperature
 - Sedimentation tube
- Deployed and sampled monthly
 - January - August
- 7 locations, 9 arrays
- Water quality (monthly)
 - Ambient: temperature, salinity, pH, dissolved oxygen, turbidity, Secchi
 - Sample: nutrients, chlorophyll, color, total suspended solids

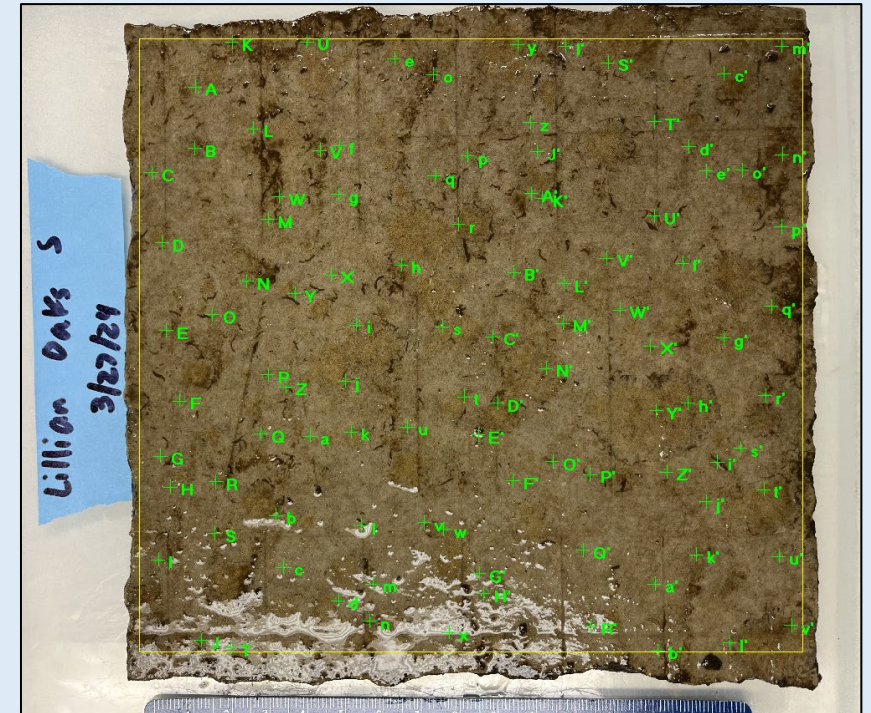
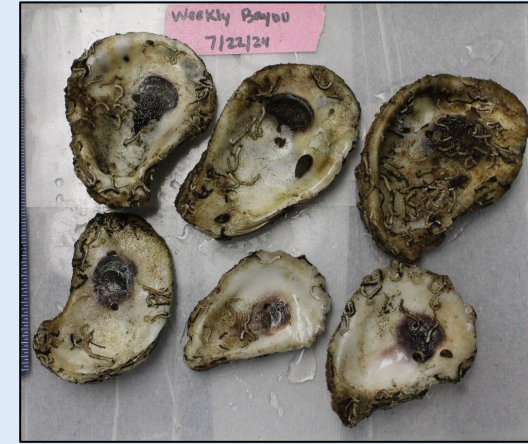


-  Surface and Bottom Array
-  Shallow Mid-water Array
-  Failed Location; Array relocated



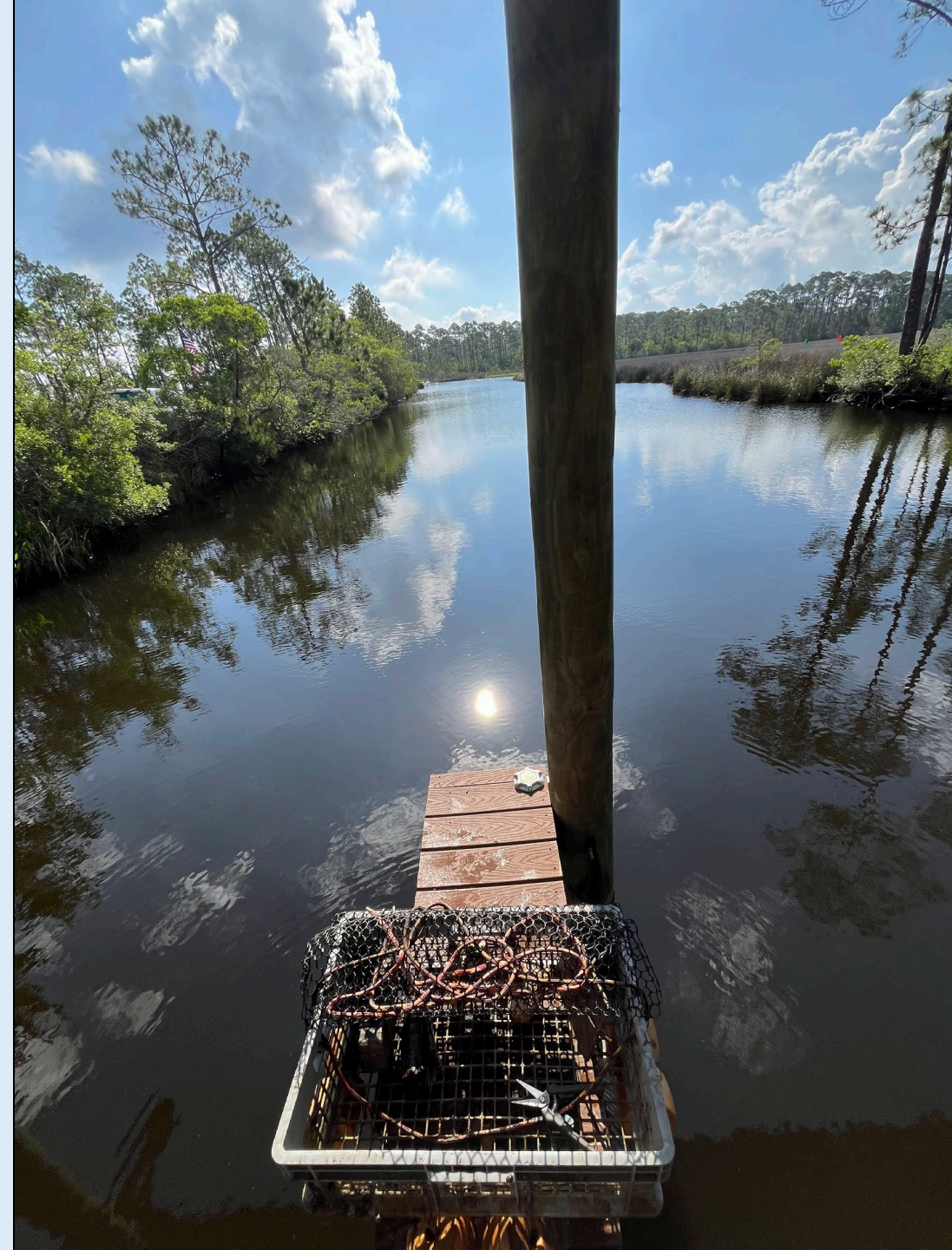
Array Processing

- Collected live, held with site water in individual containers
- Photographed for analysis with Coral Point Count software
 - Subset examined under microscope
- Mobile organisms collected and preserved



What did we find?

- We had settlement at all locations within 1 month
 - Barnacles
- Encrusting community changed over time
 - Barnacles
 - Mussels
 - Oysters
 - Bryozoans, hydroids, tunicates, macroalgae
- Associated mobile community changed over time
- Increasing diversity with increasing temperature
- Small differences in substrate





Site differences?

- Salinity
 - Increasing salinity generally increased settlement and diversity
 - Freshwater sites: community included aquatic insects; higher densities of mussels
- Bay v. Bayou
 - Bay generally more diverse
 - Bay sites generally had more settlement (% coverage)

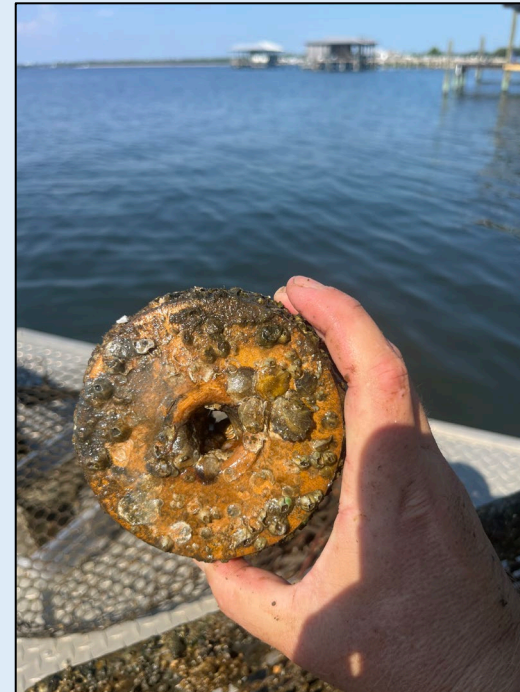
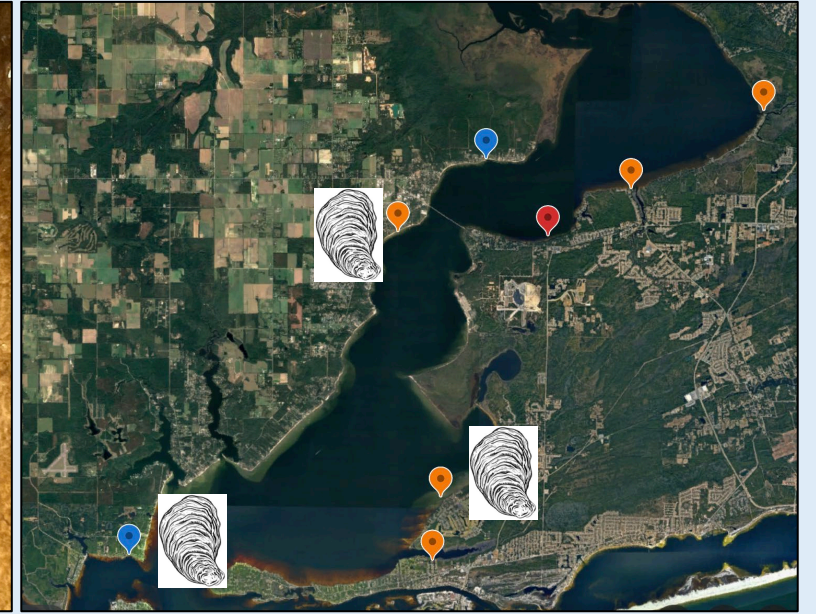
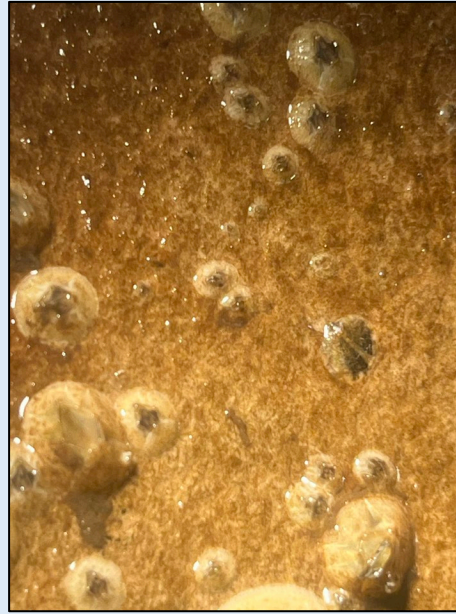
Survival?

- During the grant period we didn't see any mass mortality events
- During the summer we saw evidence of loss, followed by recolonization within the same month
 - Unclear whether driven by dissolved oxygen, or salinity fluctuations
- Predation
 - Oyster drills (rock snails) were present at sites with higher salinity; Present on both surface and bottom; Greater numbers on bottom array; Eggs present during summer
 - Some evidence of fish predation (substrates protected)



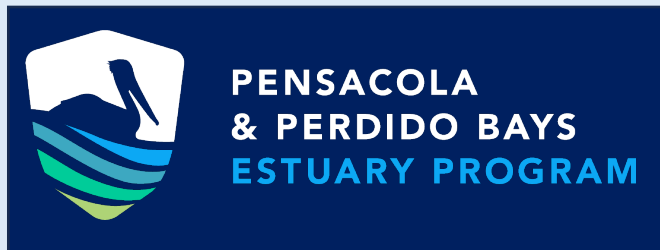
Oysters?

- Observed June-August
 - Arnica Bay (surface and bottom)
 - South of Lillian Bridge (July)
 - Weekly Bayou (July)
- Settlement on more than just the substrates
 - Crates, sensors, floats...



Thank you!

- Homeowners: Lee Hoffman, Sherry Smith, Dr. Jerry Taylor, David Freeman, Bill Brooks, Christie Draper, Jake Christopher, Colette Perry, Bob Pitts, and Robert Jackson
- Mackenzie Rothfus & *Denzel Ortiz Hernandez*
- Volunteers: Dr. Geoffrey Smith, *Madison Harvey, Nick DeCosmo, Sierra Rich, Emma Mensen, Tuesday Williams, Destiny Pennington*, and Barbara Albrecht





Questions?

