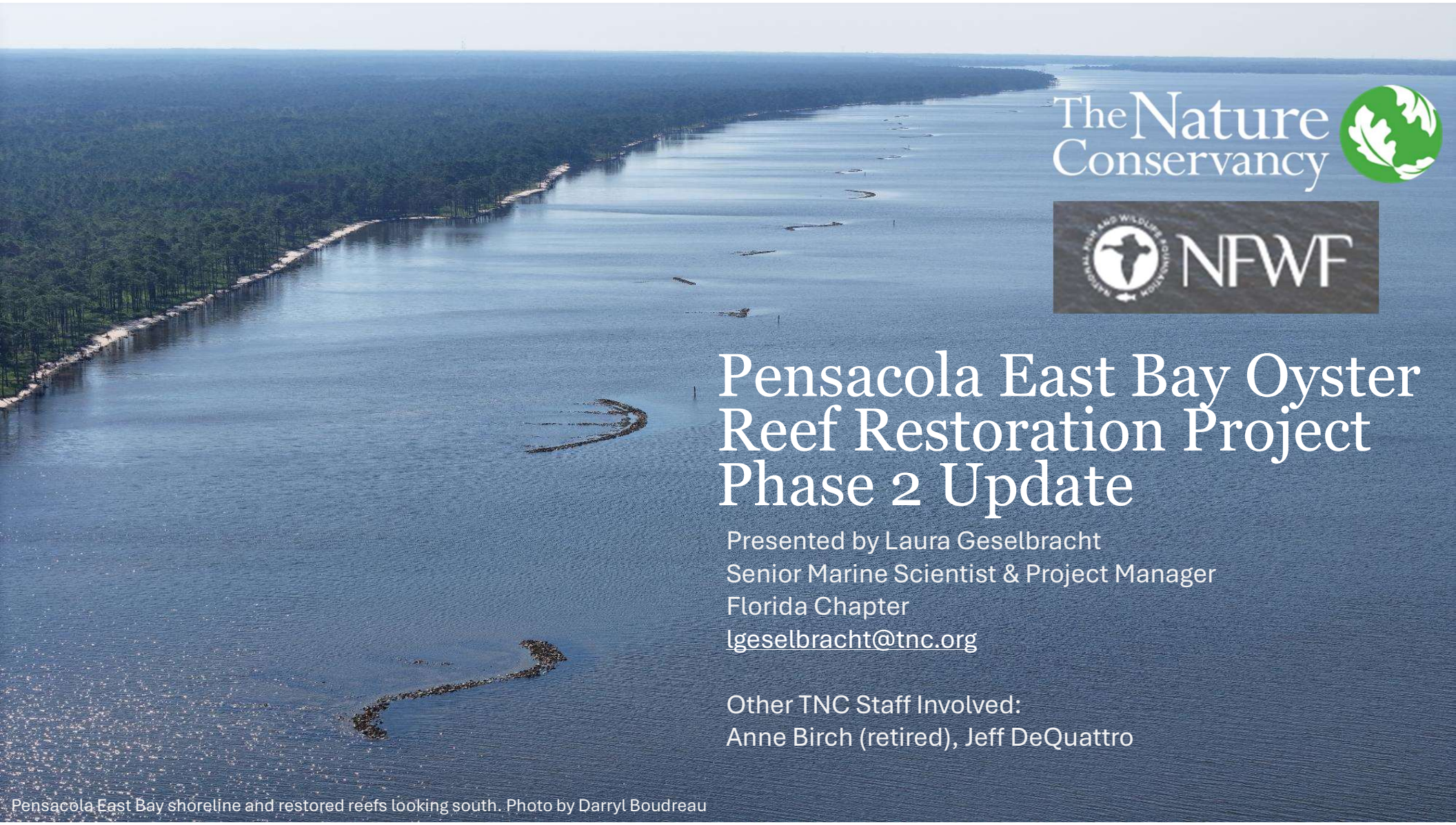

Pensacola East Bay Oyster Reef Restoration Project Phase 2 Update

Presented by Laura Geselbracht
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Other TNC Staff Involved:
Anne Birch (retired), Jeff DeQuattro

Pensacola East Bay shoreline and restored reefs looking south. Photo by Darryl Boudreau

Today's Presentation

Project Description

Did We Meet Our Project Goals?

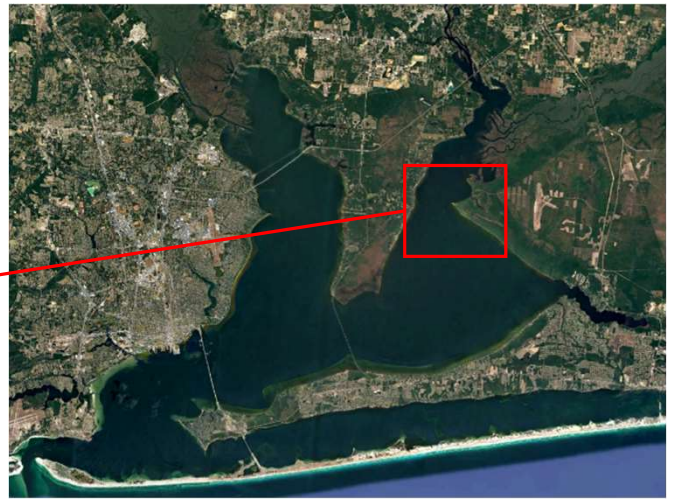
- Primary Goal - Establish more oyster reef habitat in PEB
- Secondary Goal – create the conditions for seagrass growth

Lessons Learned

- Things that worked well
- Things that didn't go so well

Looking towards shore from the reefs

Project Description



- Sited along NE coast of East Bay and SE coast of Blackwater Bay.
- 33 reefs spaced along ≈6.6 km of the shore
- Total reef area ≈6 ha
- Reef shapes are half moons pointing towards shore with fingers extending from the reef. Some of the smaller reefs are S-shaped.
- Average depth from -1.3 m to 0.8 m msl.
- Reef are offshore approx. 50 – 150 meters.
- Reefs extend above water at low tide.

Renderings at Average Low/High Tides

January

Average Low Tides

June

Average High Tides

Did We Meet Our Project Goals?

Primary - Establish more oyster reef habitat in PEB

- Have oysters survived and are they growing?
- Does the density of oysters meet our goal?
- Are new recruits continually present?
- Are the survivorship trends encouraging?
- Does recruitment of other species to the reefs suggest a thriving habitat?

Secondary – create the conditions for seagrass growth

- Is water clarity around the reefs improving?
- Is the seagrass footprint near the reefs expanding?

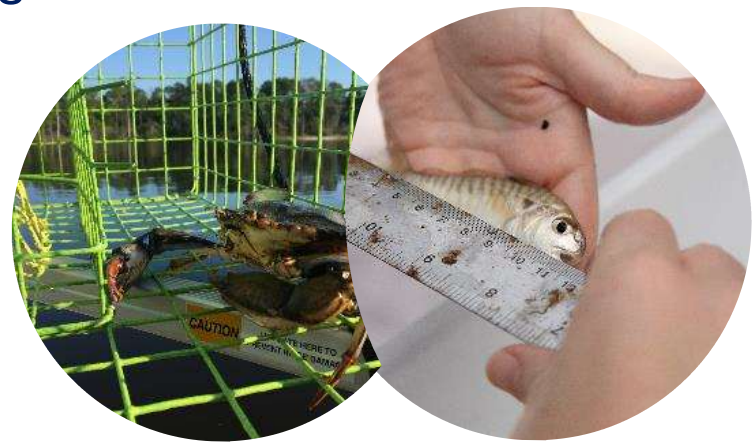
Auxiliary

- Do the reefs provide any shoreline stabilization benefits even though they were not designed for that?

Pre/Post Construction Monitoring

- Live Oyster Density
- Oyster Size Frequency
- Salinity
- Dissolved Oxygen
- Temperature

- Blue Crabs
- Transient Crustaceans & Juvenile Fish
- Epifaunal Sessile Invertebrates
- Submerged Aquatic Vegetation (SAV)
- Birds



Primary Goal: Has Oyster Reef Habitat Increased in PEB?

Have oysters survived and are they growing?
Yes, prior to reef deployment, the substrate was bare sand with few observations of other species.

Does the density of oysters meet our goal?
Yes, we set a conservative goal of 50 oyster per m^2.

Are new recruits continually present? Yes

Are the survivorship trends encouraging? Yes

Does recruitment of other species to the reefs suggest a thriving habitat? Mixed results.

Fish/inverts caught in seines adjacent to the reefs: Inland silverside, scaled sardine, Atlantic croaker, flagfin mojarra, pinfish, longnose killifish, spotted sea trout, spot, leatherjacket, Gulf menhaden, blue crab.

<u>Oyster Stats from Monitoring as of Fall 2025</u>

- Estimated live oysters per m^2 = 164
- Percent Live = 93%
- Range in size from spat to 96 mm with bell-shaped distribution.

<u>Other Macro Species Observations</u>

- A variety of bird species have been seen in and around the reef and standing on the reef, floating in the water and resting in nearby trees.
- Ivory barnacles, ribbed mussels and mud crabs have been caught in high numbers in substrate baskets placed on the reefs. Other typical reef invertebrates and small demersal fish are also present.

Secondary Goal: Create conditions for expansion of seagrass
Auxiliary Goal: Are the reefs stabilizing shorelines?

Is water clarity around the reefs improving?

- Visually the reefs attenuate wave height however we have been unable to measure that with the methods employed.
- Seston sampling has been employed around the reefs during different tidal heights to measure oyster filtration capabilities. Results are pending.

Is the seagrass footprint near the reefs expanding?
Perhaps

- Quadrats done near the reefs are absent of seagrass
- Aerial drone photography adjacent to the shoreline of two reefs show an increase of seagrass. **More on next slide**

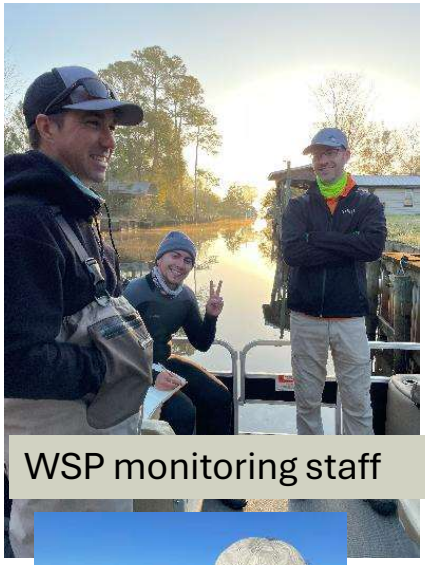
The Reefs are not stabilizing the shorelines, but help is needed.

SAV Expansion Near PEB Reefs 2017 to 2024

We can't say if the reefs were the reason or one of the reasons. More analysis is needed.

Lessons Learned – Monitoring Focused

- Prior planning is essential - A well thought out monitoring plan prior to construction is essential.
- Be flexible - Adjust monitoring as needed when approaches are not delivering reliable or useful data, preferably early in the monitoring process.
- Don't fret if weather or other conditions delay monitoring. It will happen.
- Participate in contractor monitoring events, worth 1,000 words.
- Take lots of pictures of people working, the monitoring subjects (oysters, fish, inverts, etc.), the restoration project and nearby scenery!
- Communicate results to interested audiences regularly.



WSP monitoring staff

Jeff DeQuattro, TNC, happy to see first oysters on reefs

Boat Captain Ken Ponsell

Any Questions?

Pensacola East Bay looking south
Photo by Darryl Boudreau

Oysters on the Reefs!

Even more oysters growing on the reefs

October 2023

1st oysters found growing on the reefs 10 months after construction!

June 2022