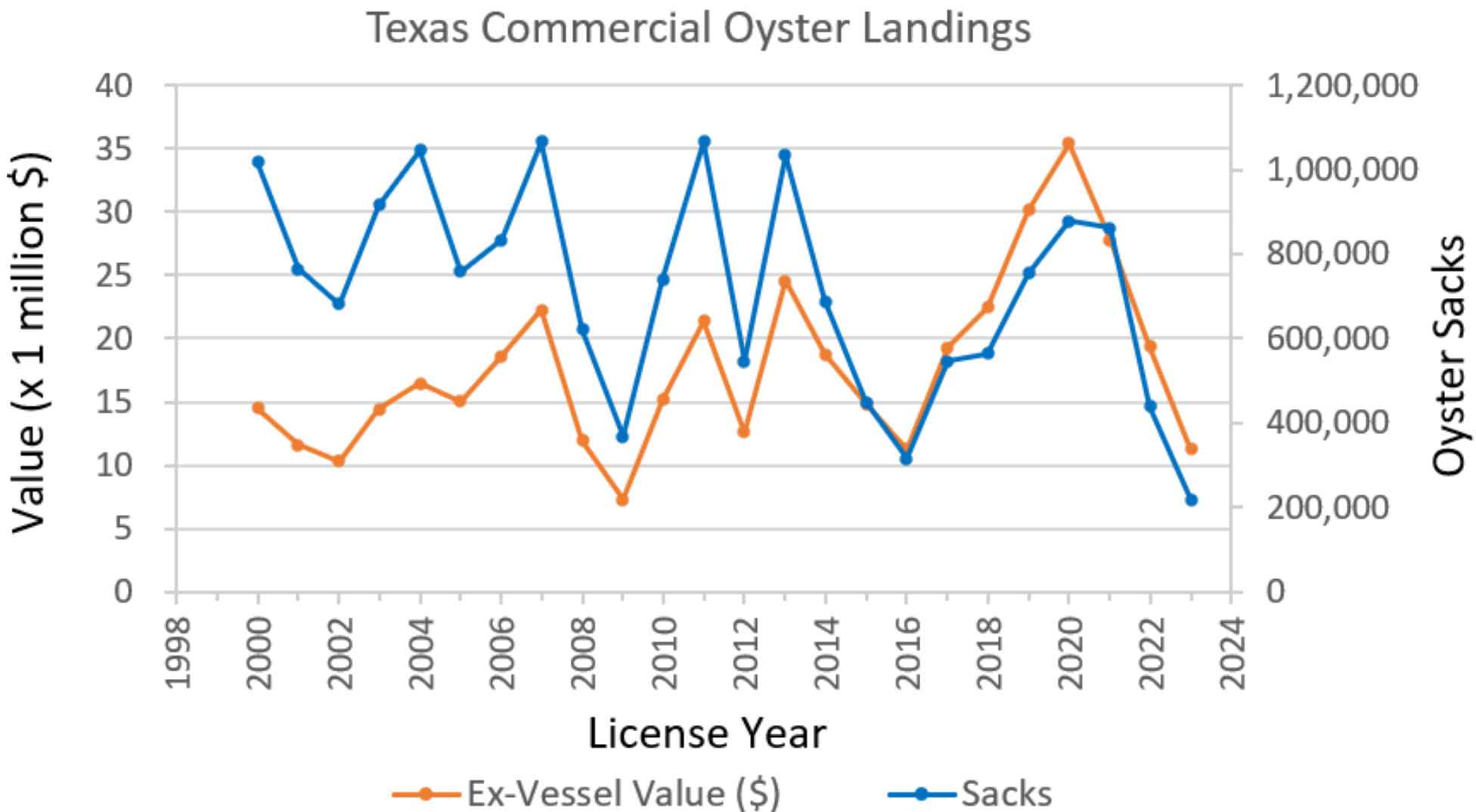




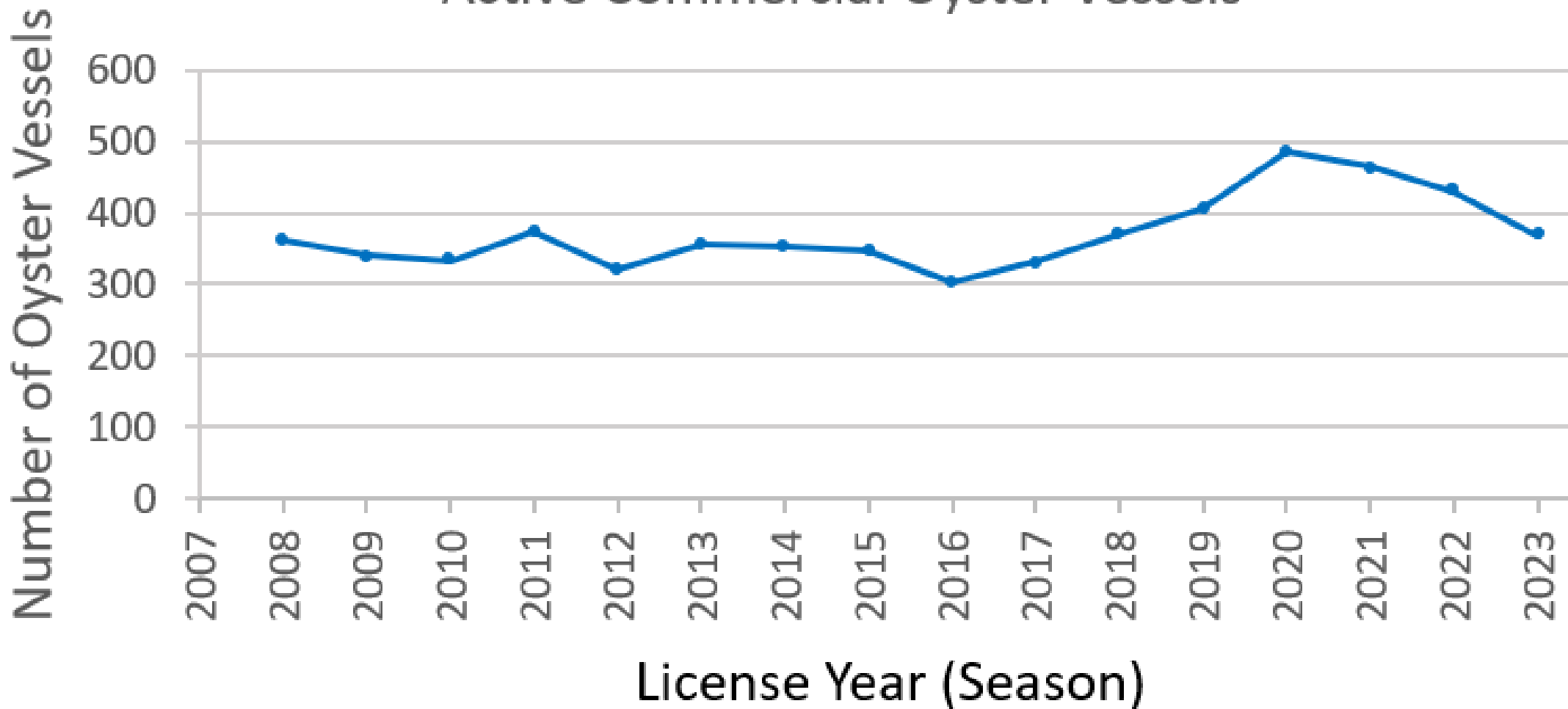
TEXAS STATE OYSTER UPDATES
GSMFC MSSC Meeting
October 2023

On-Bottom Commercial Oyster Landings Public and Private Reefs



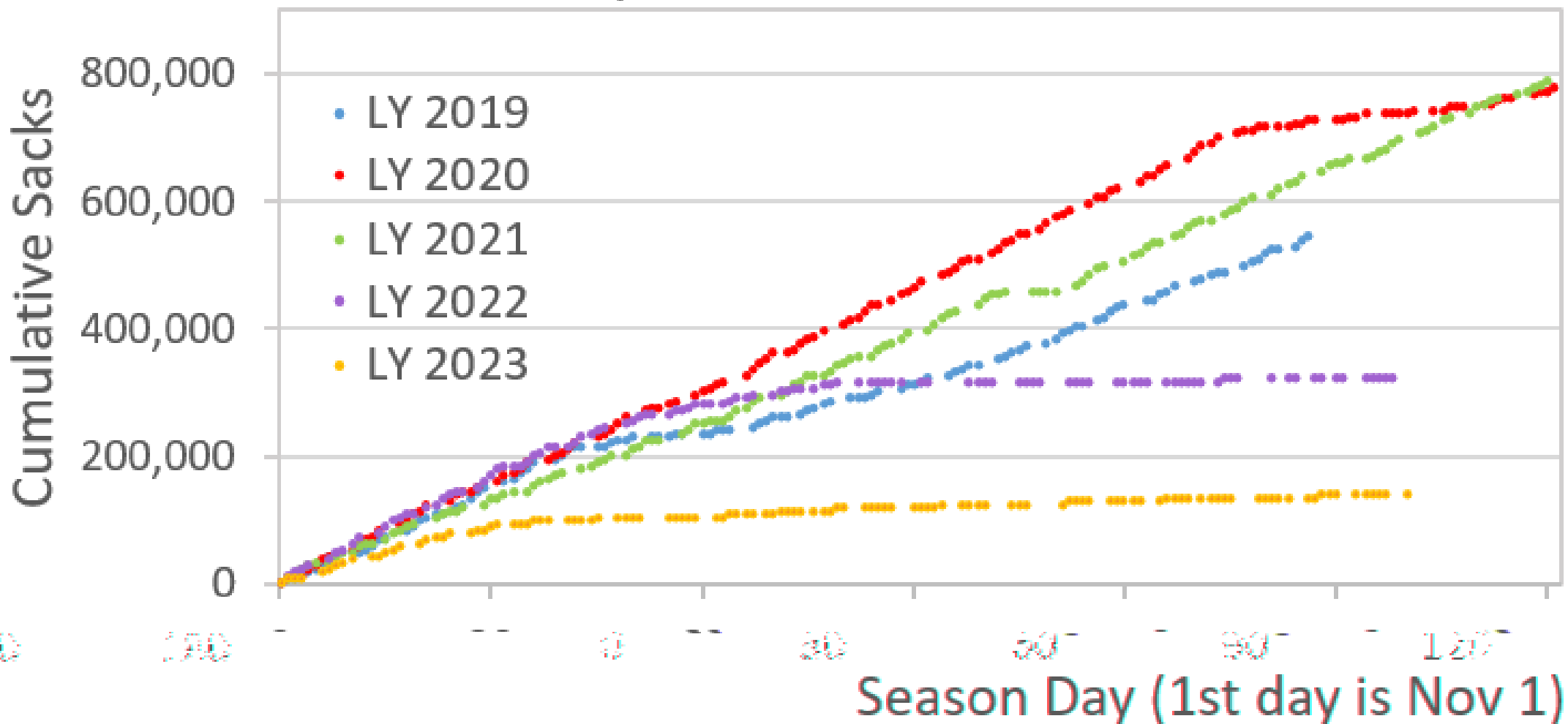
On-Bottom Commercial Oyster Landings Public and Private Reefs

Active Commercial Oyster Vessels



On-Bottom Commercial Oyster Landings Public and Private Reefs

Cumulative Oyster Sacks: 2019 - 2023 Seasons



Off-Bottom Cultivated Oyster Mariculture Updates

- Rules adopted and applications accepted in 2020
- Two types of COM permits in Texas:
 - (1) Grow-Out (Farms): market oysters for consumption
 - (2) Nursery-Hatchery: Raise larval-juvenile oysters for transfer to Grow-Out facilities



PERMITTED



PENDING

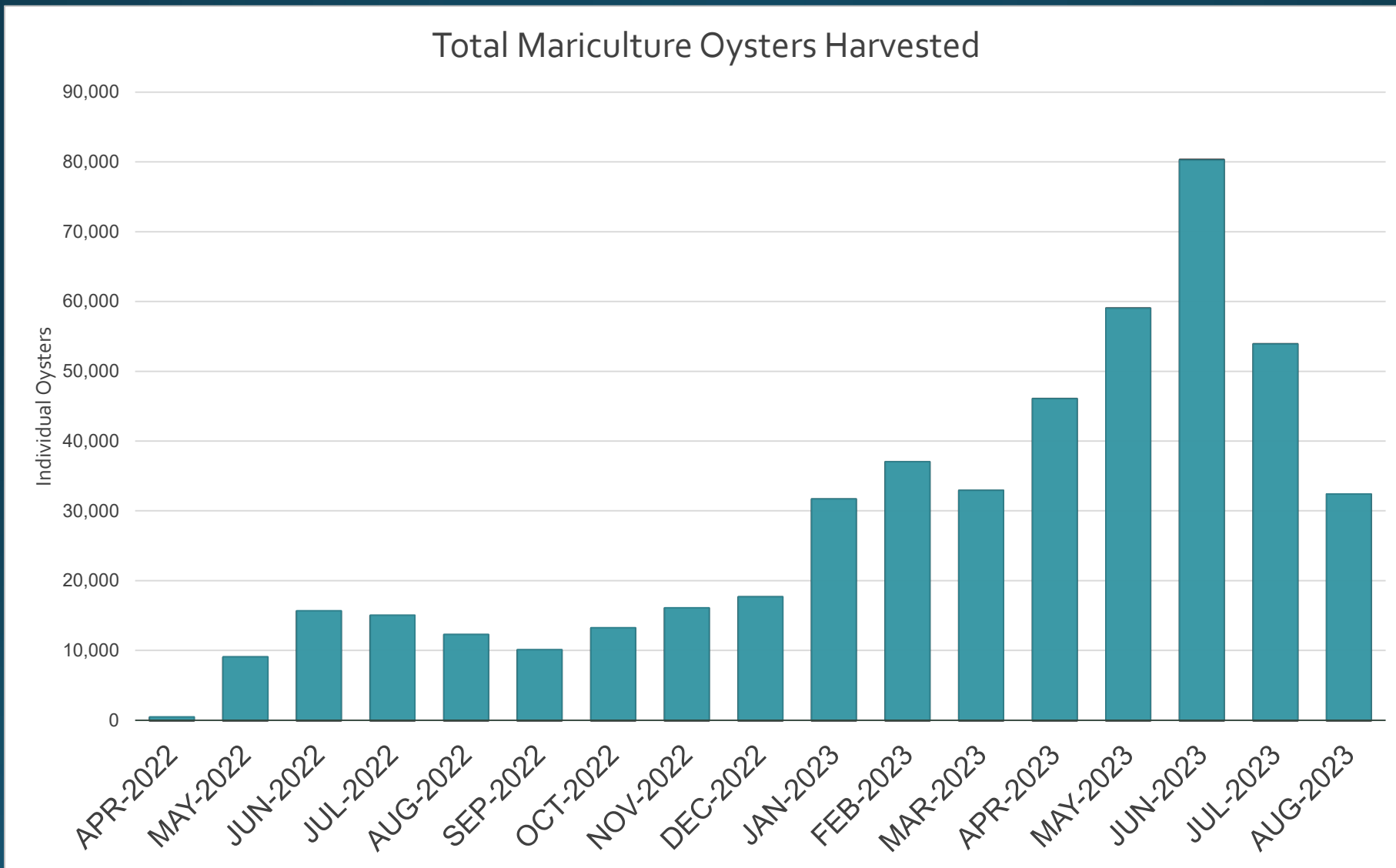
Permitted: 7 grow-out facilities; 2 nursery-hatcheries

Conditionally permitted: 6 grow-out facilities; 1 nursery-hatchery

Pending review: 2 nursery-hatcheries

Additional applicants consulting with TPWD

Off-Bottom Cultivated Oyster Mariculture Updates



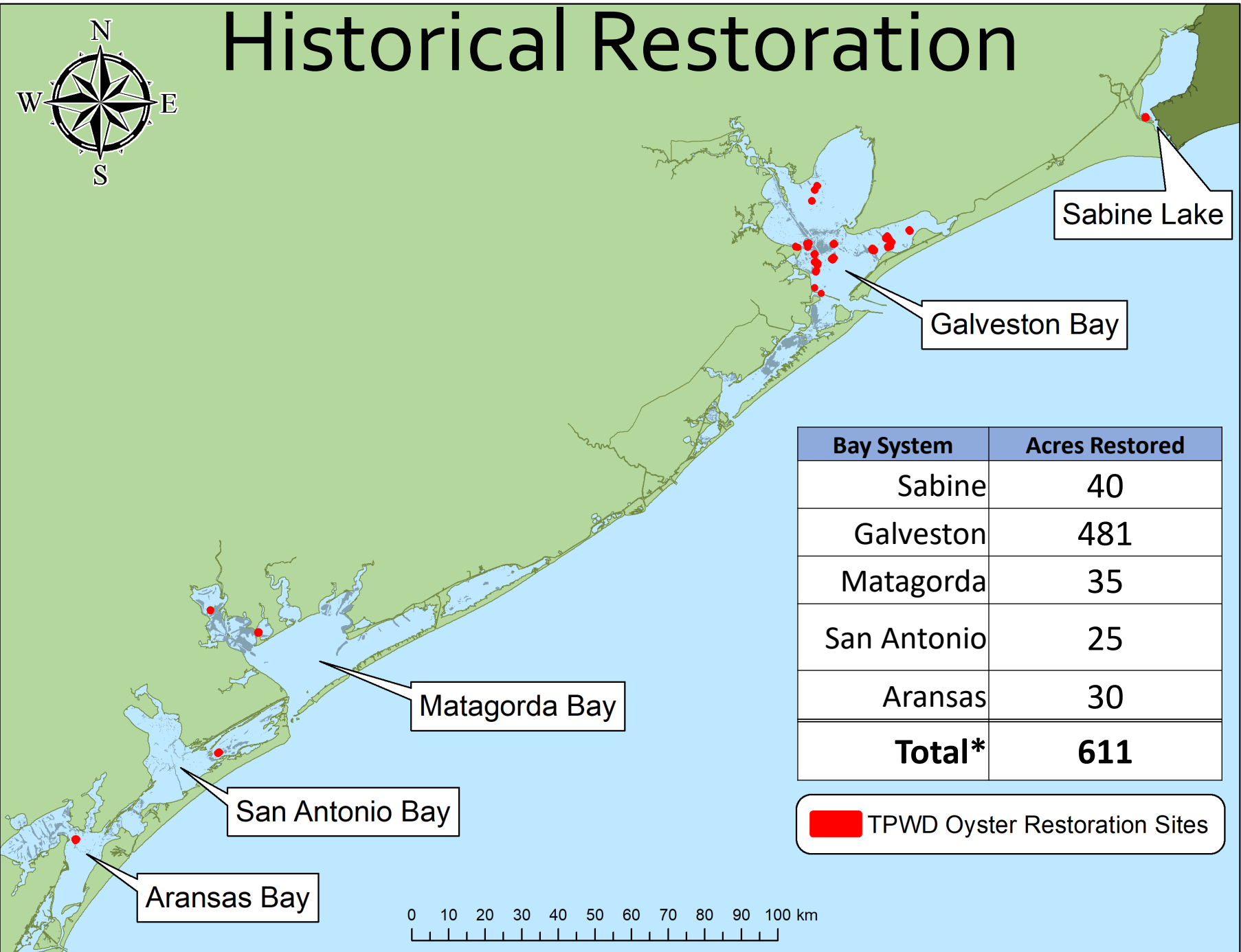
Off-Bottom Cultivated Oyster Mariculture Updates

- Continue to refine the program processes, procedures, guidance documents, and applications (e.g., updated guidance document on use of sidescan sonar for application purposes).
- Guidance document on filling out Army Corps NWP 48 verification created.
- Staff participated in the 2023 Interstate Shellfish Sanitation Conference and the 2023 States Marine Aquaculture Coordinators Network meeting.
- The online application portal has gone live. Guides were produced on how to use the portal. Additional features of Annual Fee payment, Annual Report submission, and Amendment Request will be live by the end of the year.

Oyster Restoration

- Contracted placement
 - Experimental designs
- Dealer placement
- Shell recovery

Historical Restoration

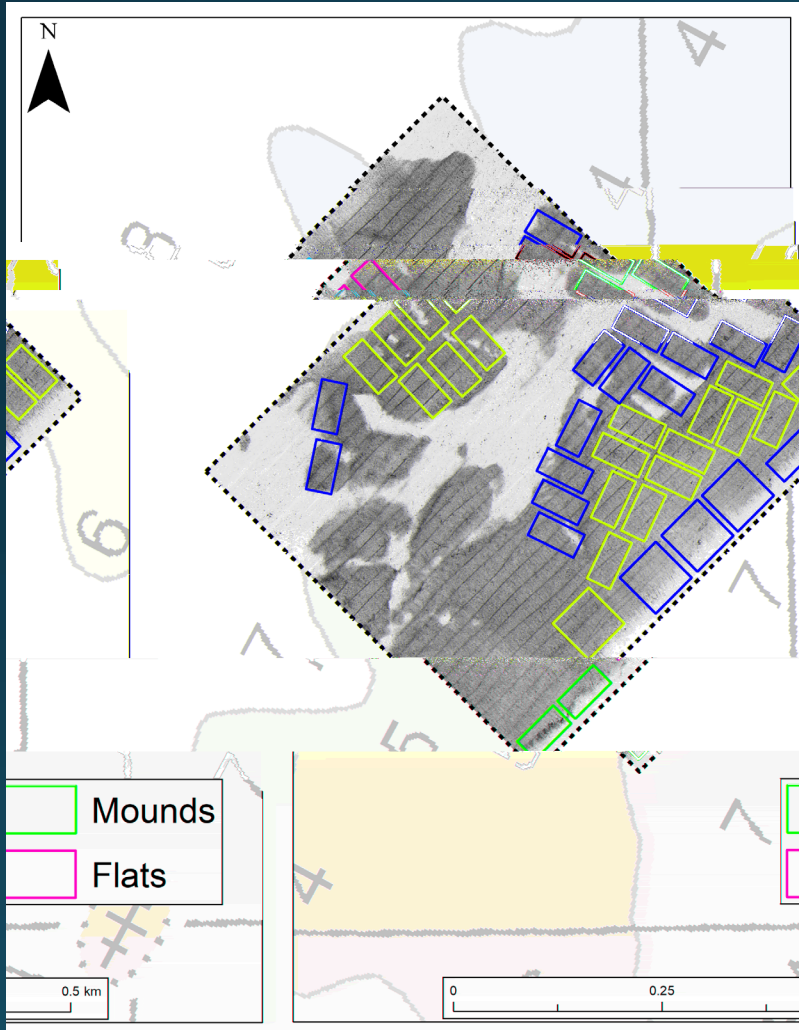


Bay System	Acres Restored
Sabine	40
Galveston	481
Matagorda	35
San Antonio	25
Aransas	30
Total*	611

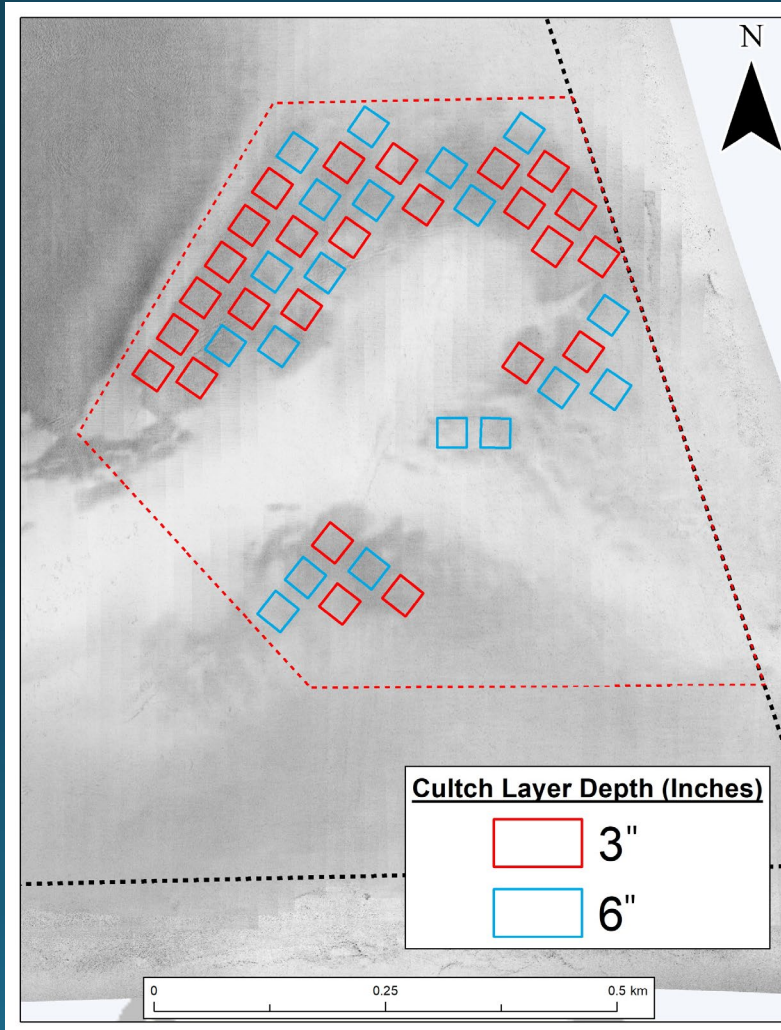
 TPWD Oyster Restoration Sites

Experimental Restoration Designs

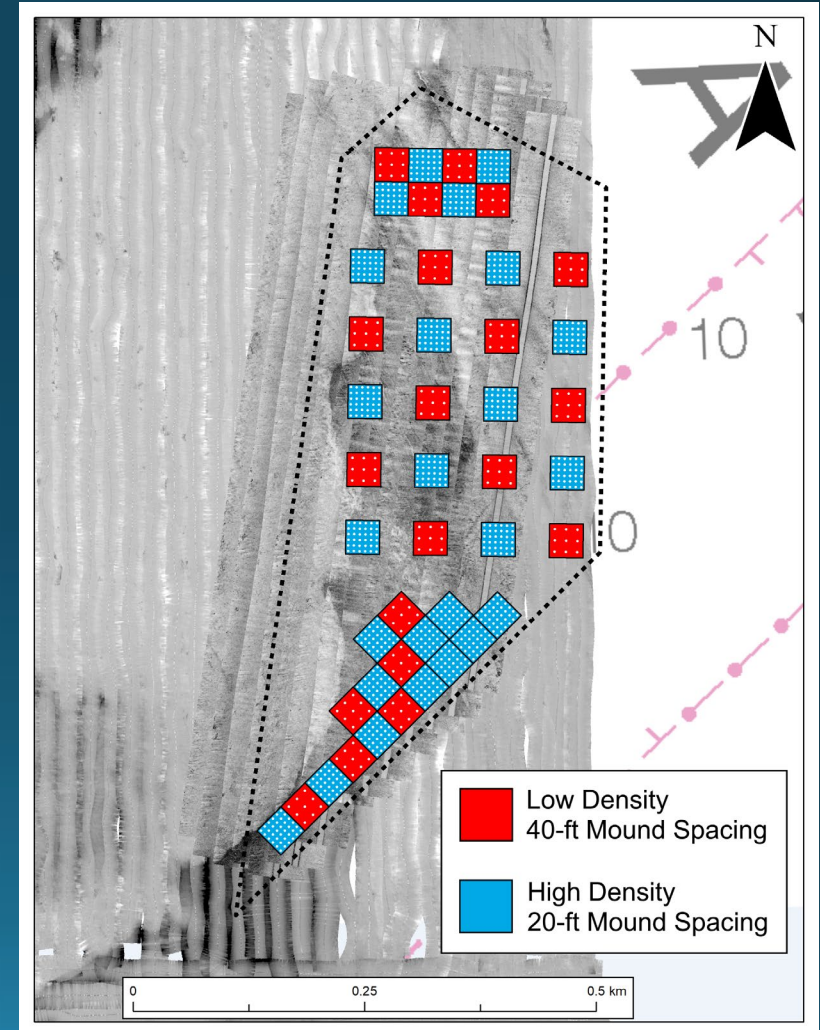
Grass Island
Mounds vs Flats



Keller Reef
Alt. Cultch Depths



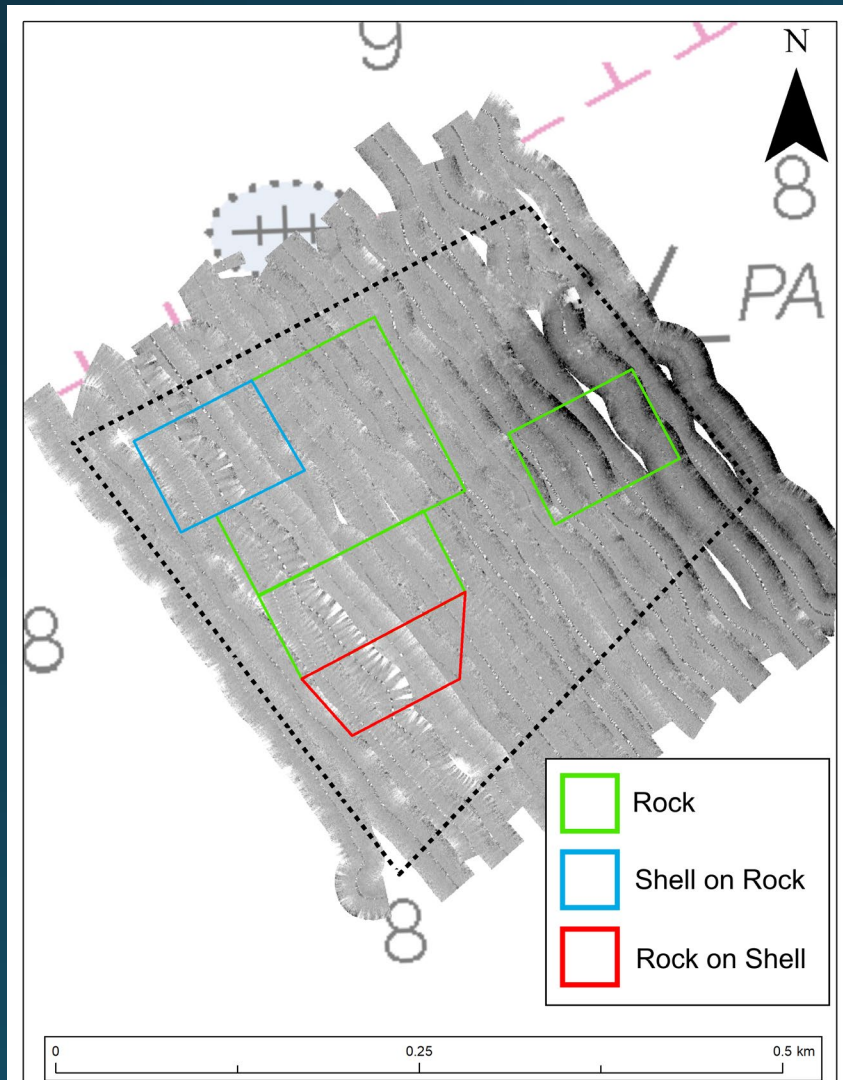
Dollar Reef
Mound Spacing



Experimental Restoration Designs

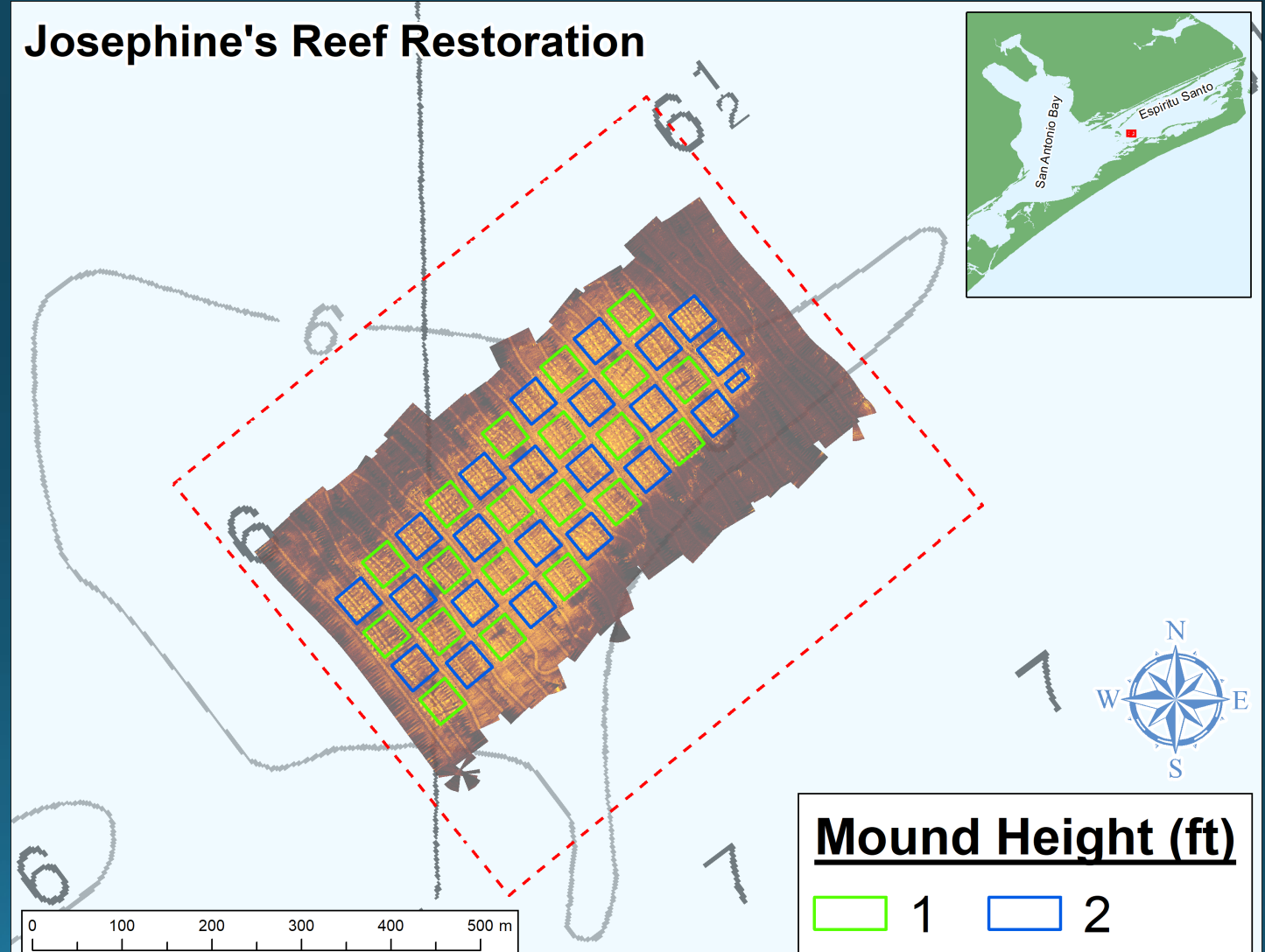
Resignation Reef

Alt. Cultch Materials

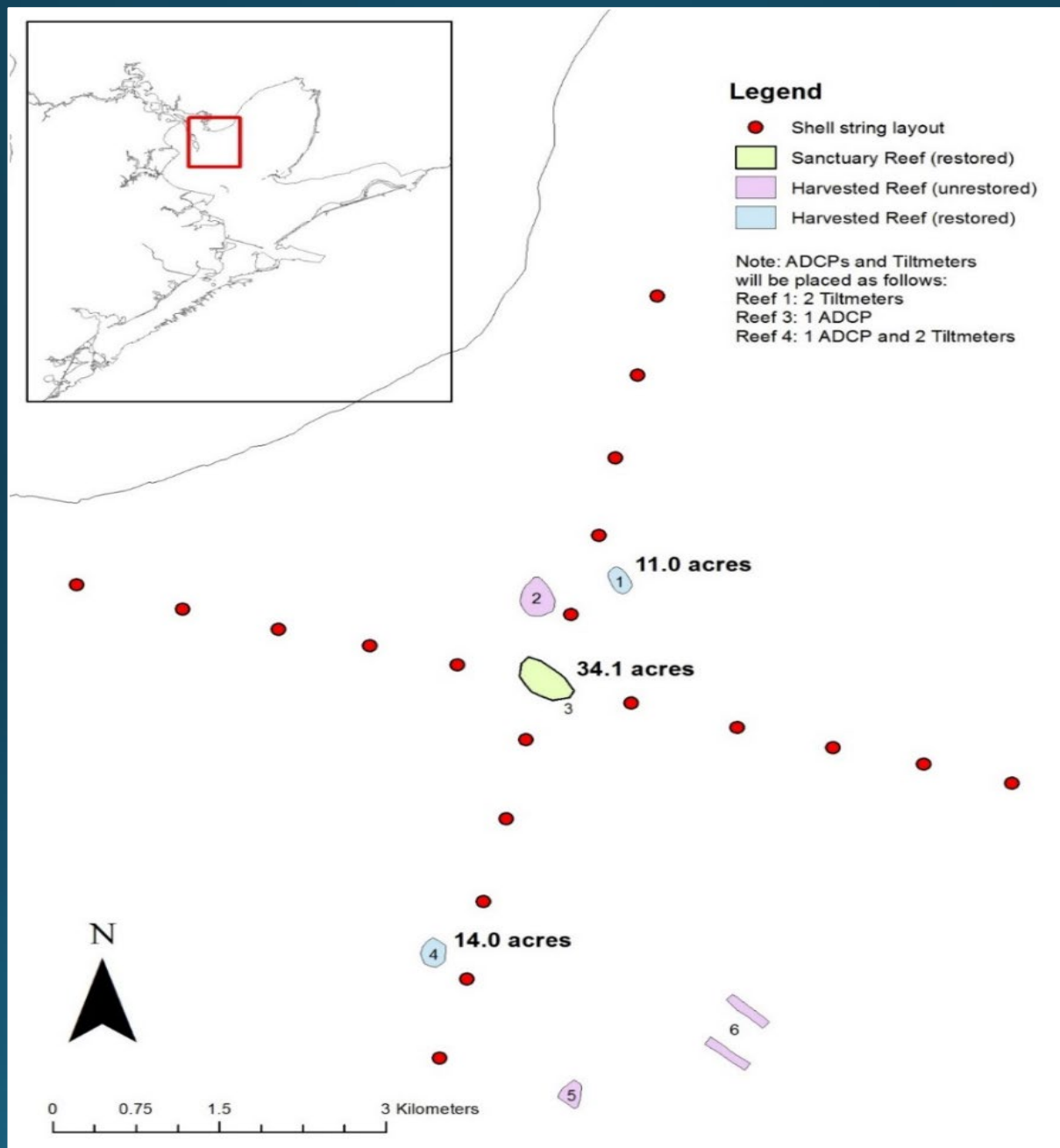


Josephine's Reef

Mound Height

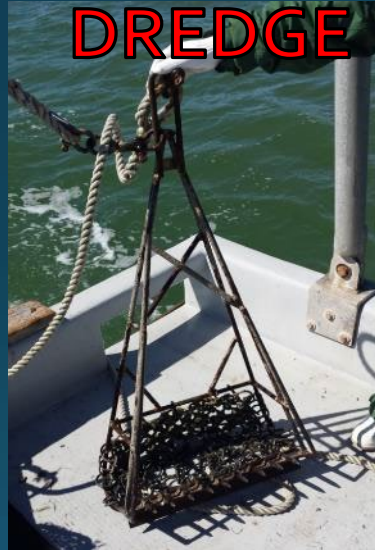


Trinity Bay Reefs: Source/Sink Dynamics



Post-Restoration Monitoring

- Biannual sampling for 3-5 years
 - Each treatment (if applicable)
 - Reference site
 - Pre- and post-harvest closure
- Sample gear



→ Quadrats

- Metrics
 - Live/dead counts
 - Recruitment (spat counts)
 - Growth (lengths)
 - Infauna

Texas Parks and Wildlife Department

Oyster Shell Recovery Program

- HB51 (2017) includes a requirement for dealers to:
 - Return 30% by volume of the total quantity of oysters harvested the previous license yearOR
 - Pay a fee to the department to return an equivalent amount of cultch to public reefs
- Currently the fee is \$1.32 per sack (no increase)

Oyster Shell Recovery

LY	Sacks Harvested	Cultch Due (cu yds)	Fee in lieu of cultch	Final Disposition		% accounted for
				Cultch (cu yds)	Fee (\$)	
2018	564,787	9,805.30	\$745,518	6,590.5	\$248,448	
2019	754,565	13,100.00	\$996,025	9,705.3	\$228,047	
2020	878,503	15,251.70	\$1,159,624	3,219.9	\$306,294	
2021	861,939	14,964.12	\$1,137,759	16,150.2	\$251,624	
2022	428,438	7,438.10	\$565,538	7,724.9	\$146,953	
2023	218,746	3,797.65	\$288,745	1,678.8	\$39,110	
Total	3,706,978	64,357	4,893,209	45,070	1,220,476	95.0
Balance (as of 9/12/2023)		3,231.6	\$252,519	70.0%	24.9%	

Stakeholder Engagement

- Oyster Regulation Workgroup
- Oyster Restoration Workgroup
- Industry Workshops

Oyster Restoration Workgroups

- Industry, NGOs, Research/Academia
- Provide high-level input, brainstorming, and direction for restoration projects
 - Identify challenges
 - Collaborate on solutions
 - Share “lessons learned”
- Engage industry in site selection, project planning, and construction for all types of restoration
- Help facilitate project-specific workshops

Oyster Restoration Workshops



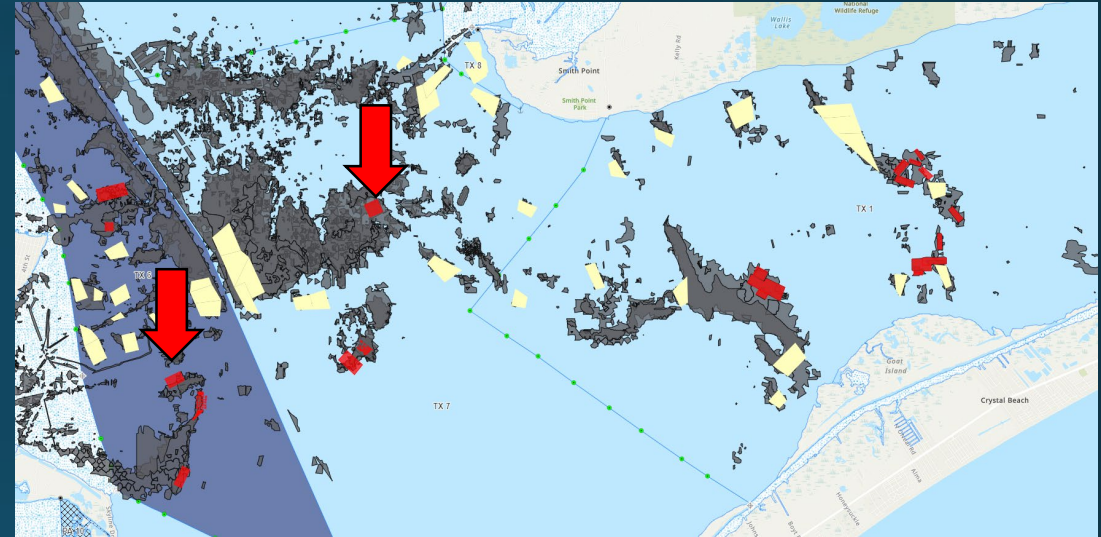
Current focus on “maintenance restorations”

Oyster Restoration Workshops



Upcoming Restoration Projects

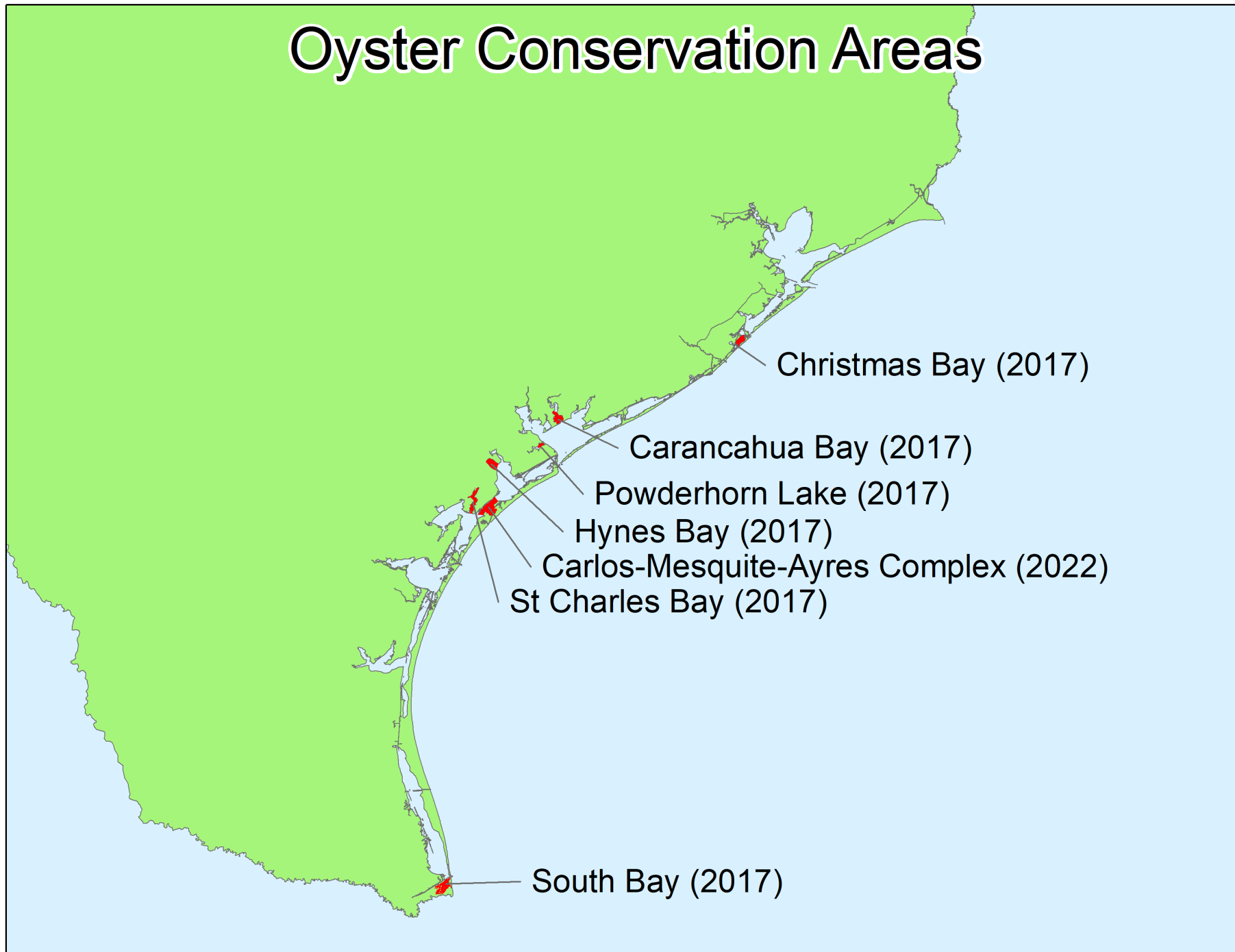
- CARES Act (2023)
 - Galveston Bay System
 - \$3.7M
 - Previously permitted areas
 - 3-6" layers of cultch
- Mesquite Bay Complex (2024)
 - Aransas Bay System
 - \$2M
 - Maintenance approach (1-2" layer)
- East Galveston Bay– NRDA (2024)
 - Galveston Bay System
 - 50 acres between 4 sites
- Pre-coordination with stakeholders
 - Site selection
 - Site visits/sampling
 - Cultch placement



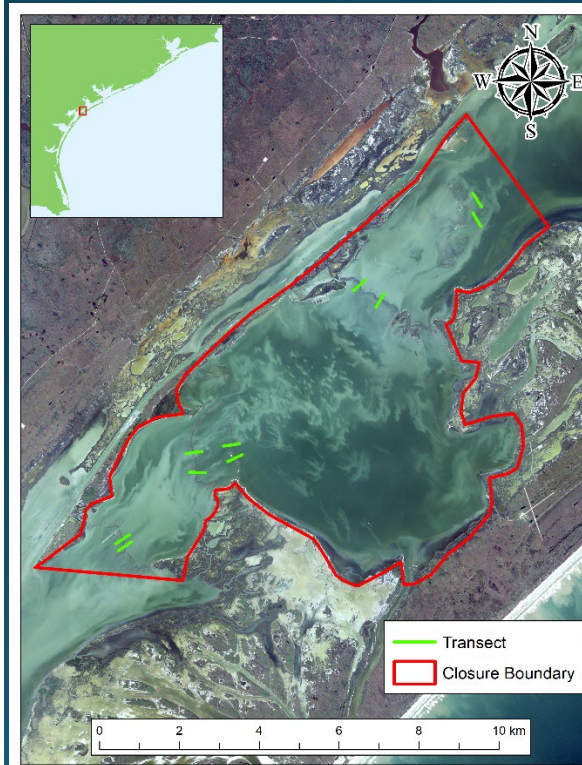
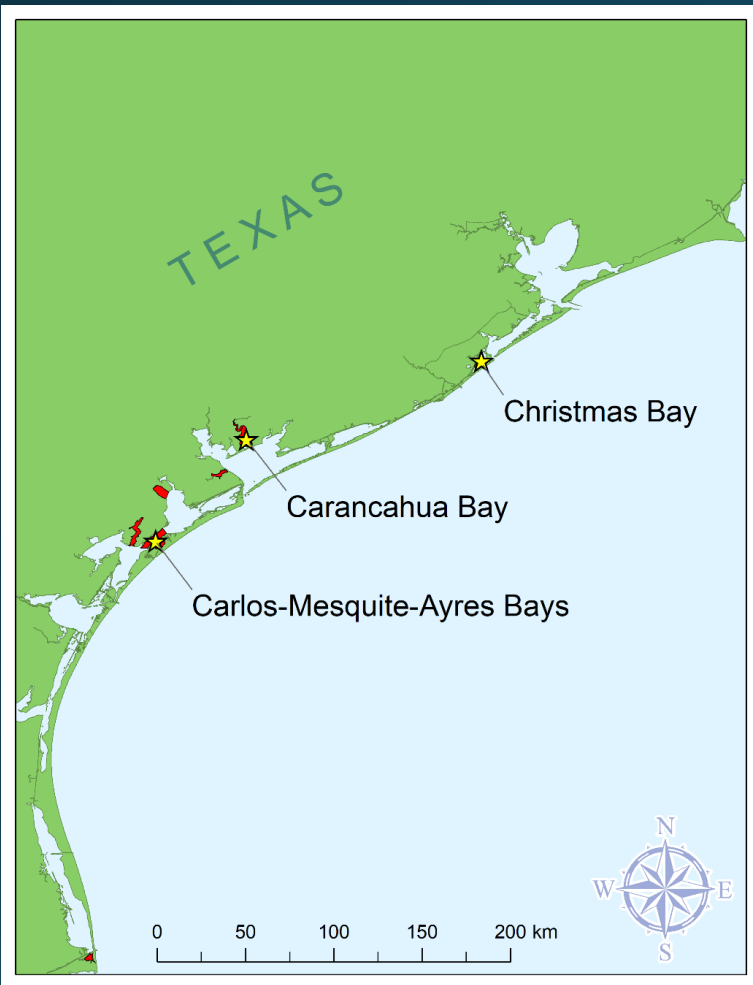
Oyster Conservation Areas

- **7 minor bay complexes closed to harvest**
 - **Area characteristics:**
 - Shallow bays
 - Intertidal/shallow reefs adjacent to sensitive habitats (e.g. seagrass)
 - Historically low harvest pressure
 - Function as de facto spawning reserves
 - **Increased harvest pressure observed as primary fishing grounds became depleted**

Oyster Conservation Areas



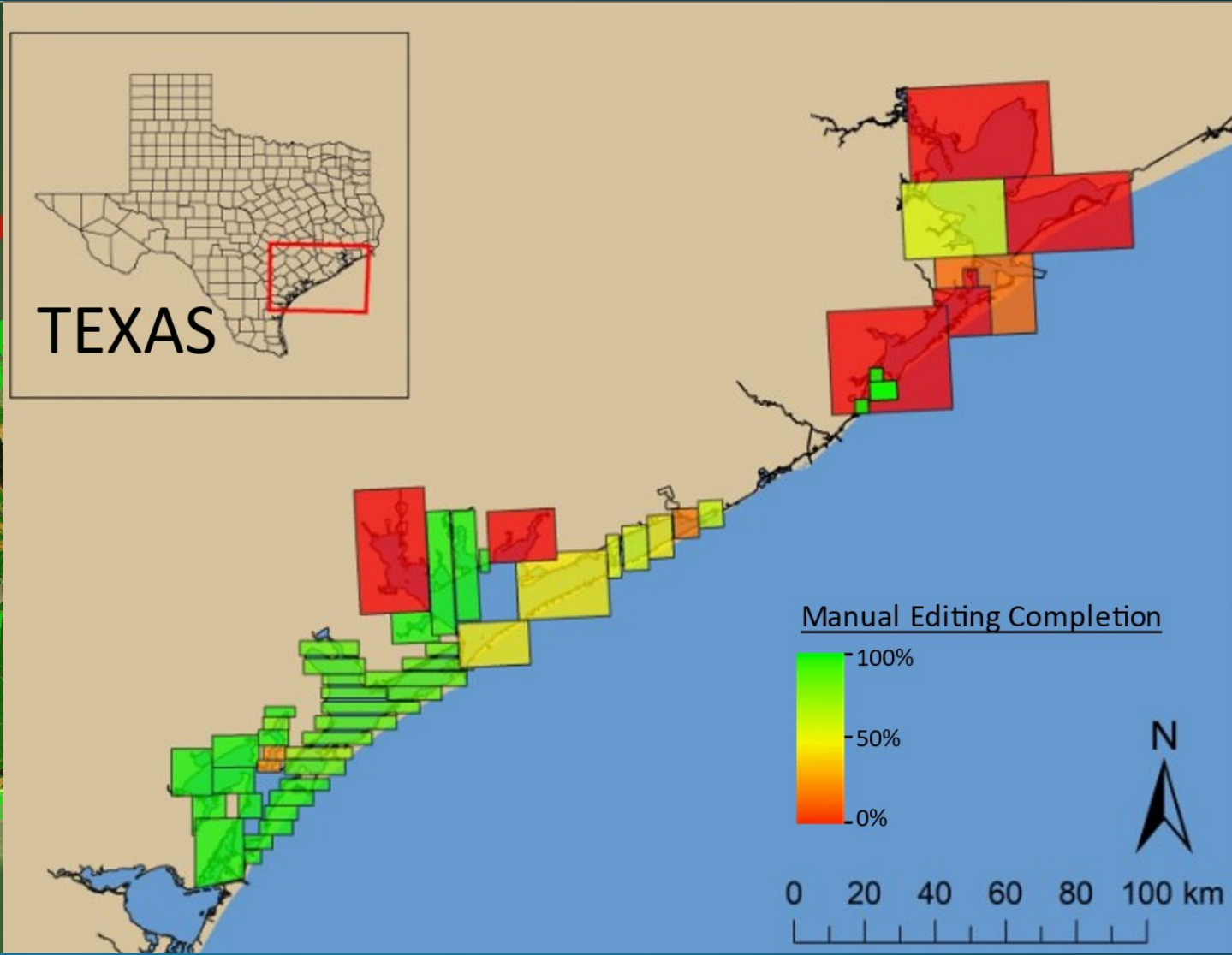
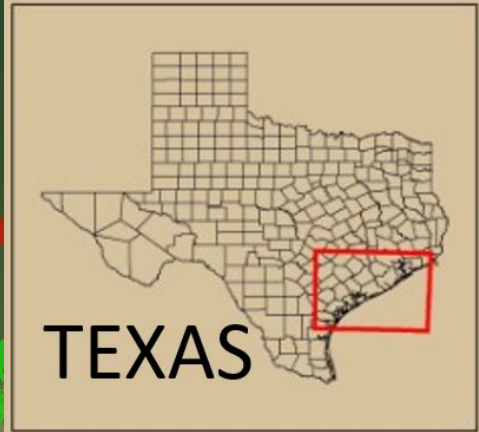
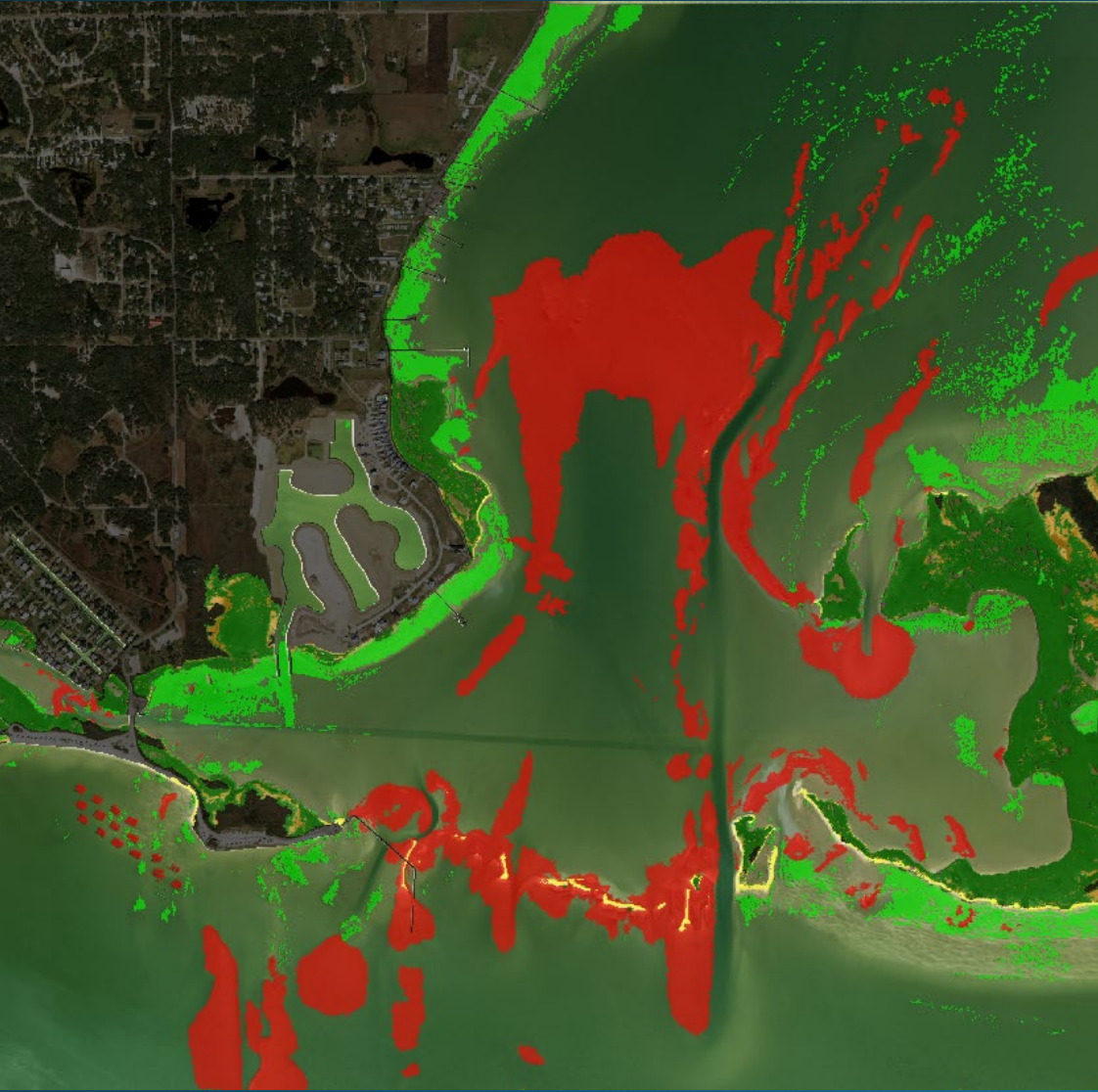
Habitat Monitoring in Oyster Conservation Areas



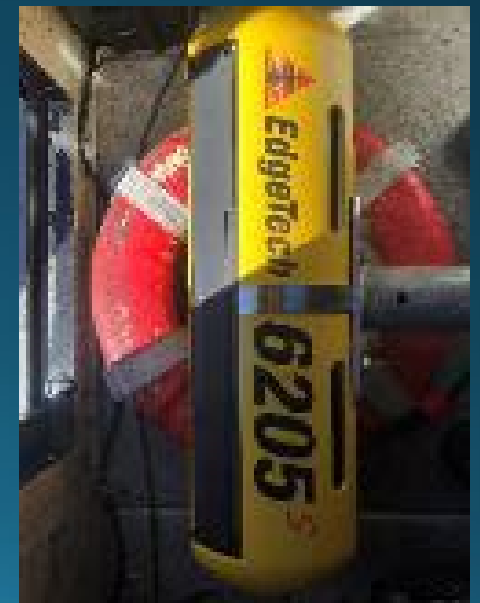
Oyster Mapping Efforts

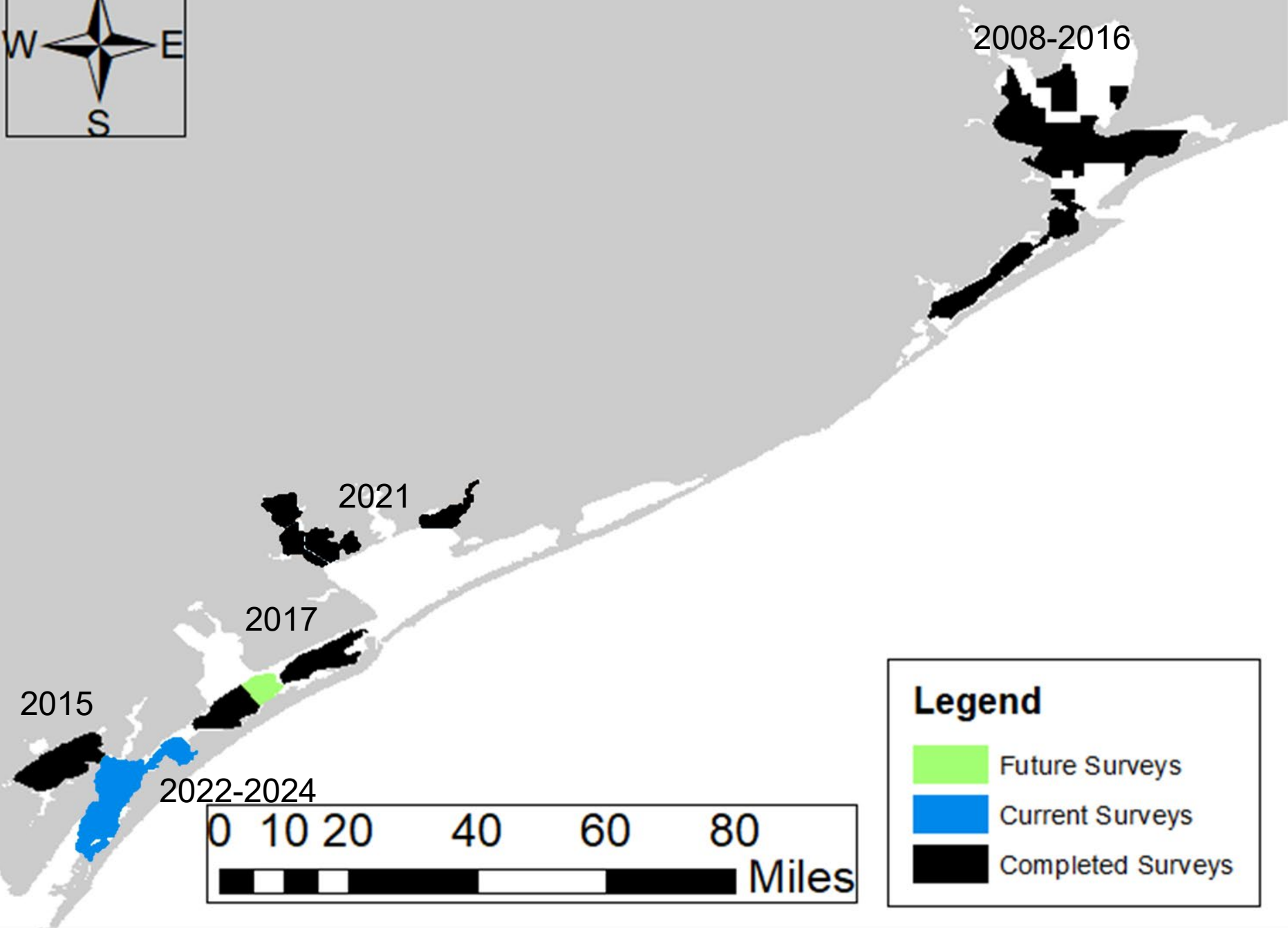
- **Aerial imagery assessments**
 - Shallow reefs
- **Sonar surveys**
 - Bay-wide (large-scale) surveys of deep reefs
 - Targeted (small-scale) surveys
 - Restoration planning, design, verification, and monitoring

Aerial Imagery

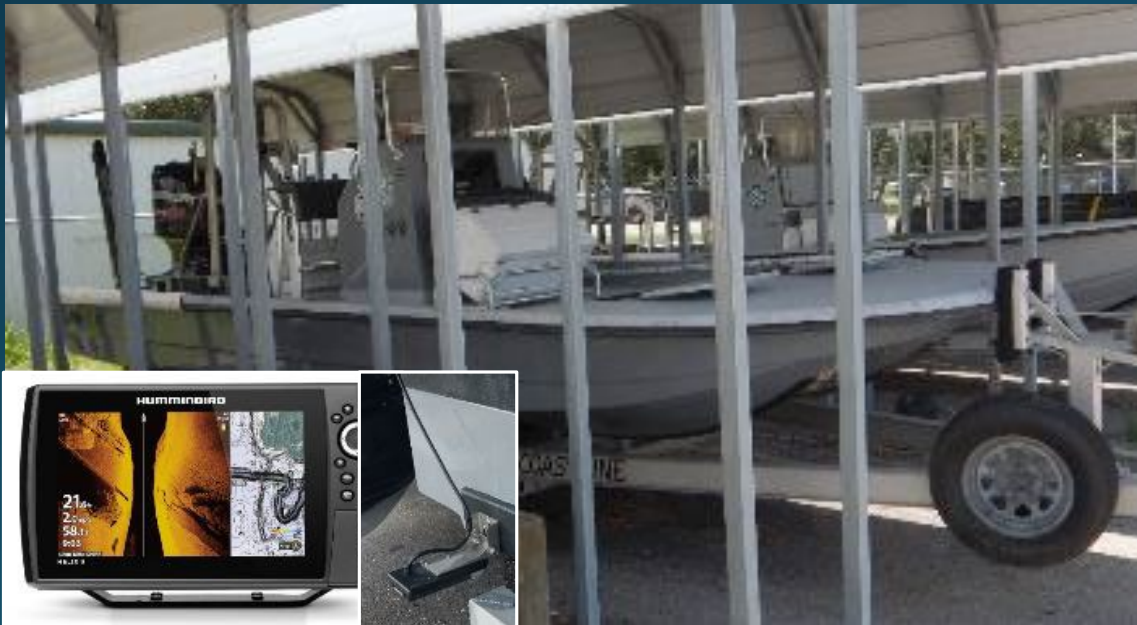


Scientific-Grade Sonar Surveys



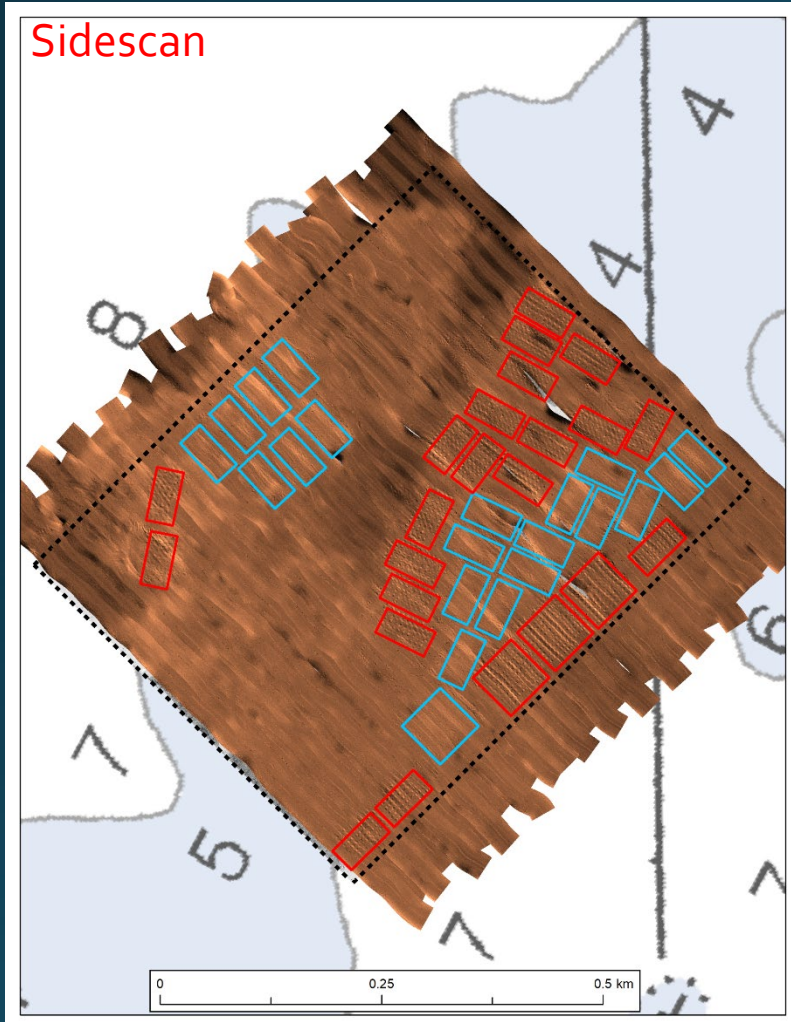


Recreational-Grade Sonar Surveys

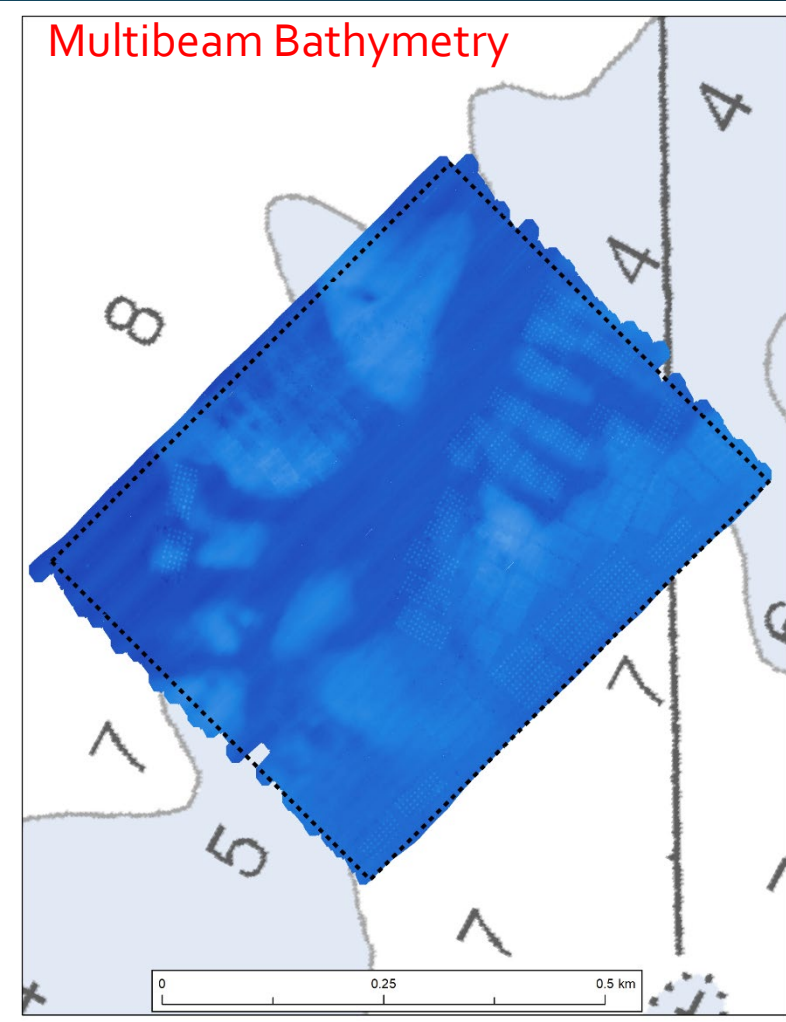
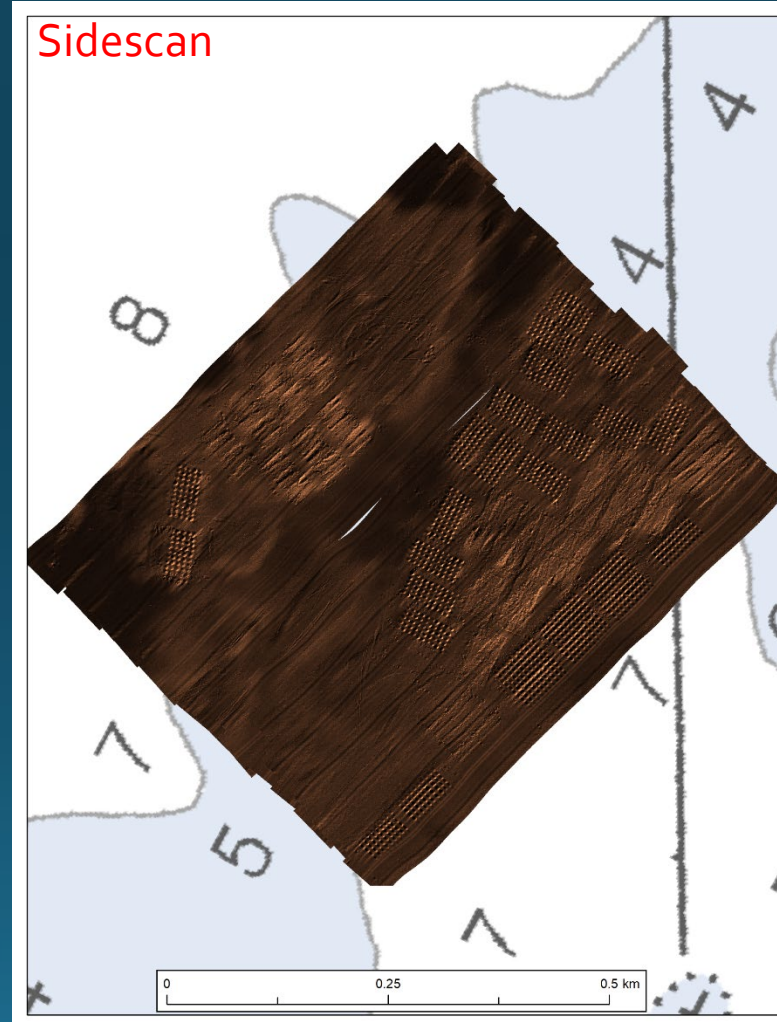


Post-Restoration Placement Verification & Monitoring

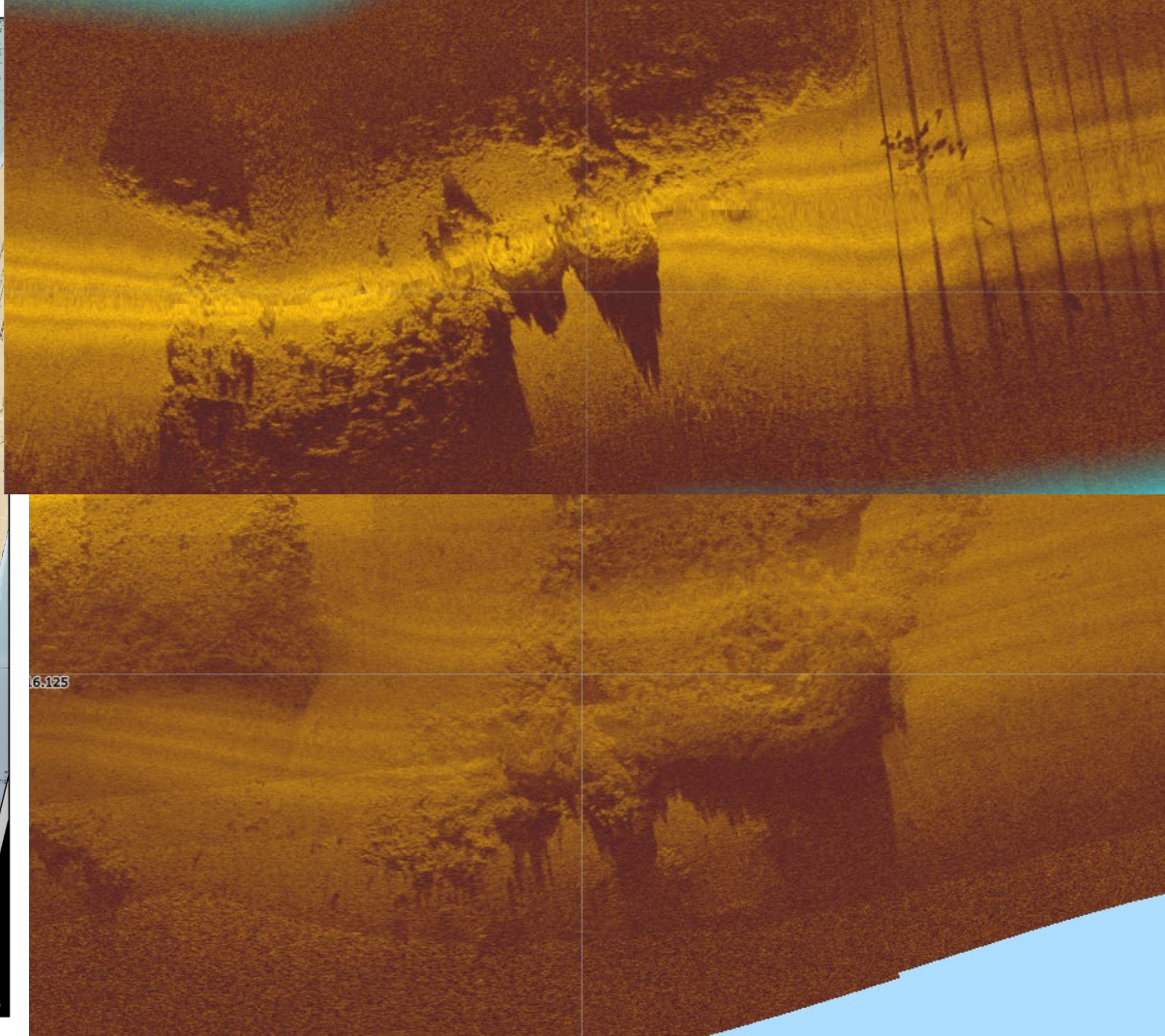
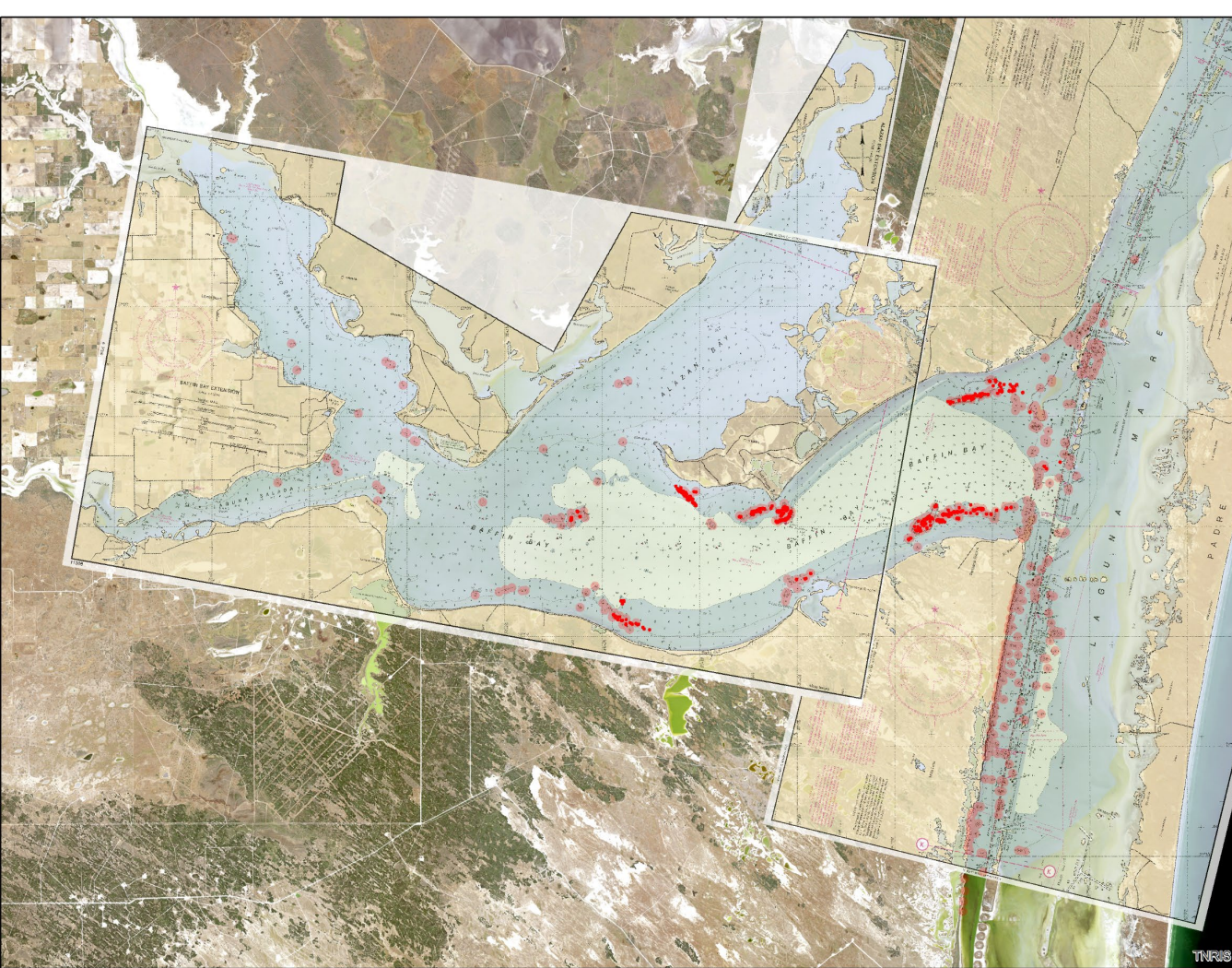
Rapid/Periodic Verification
Humminbird SS and Echosounder



High-Resolution Verification
Edgetech SS and Multibeam



Recreational-Grade Sonar Surveys





Questions?