Oyster Reef Habitat Restoration in St. Andrew Bay, FL

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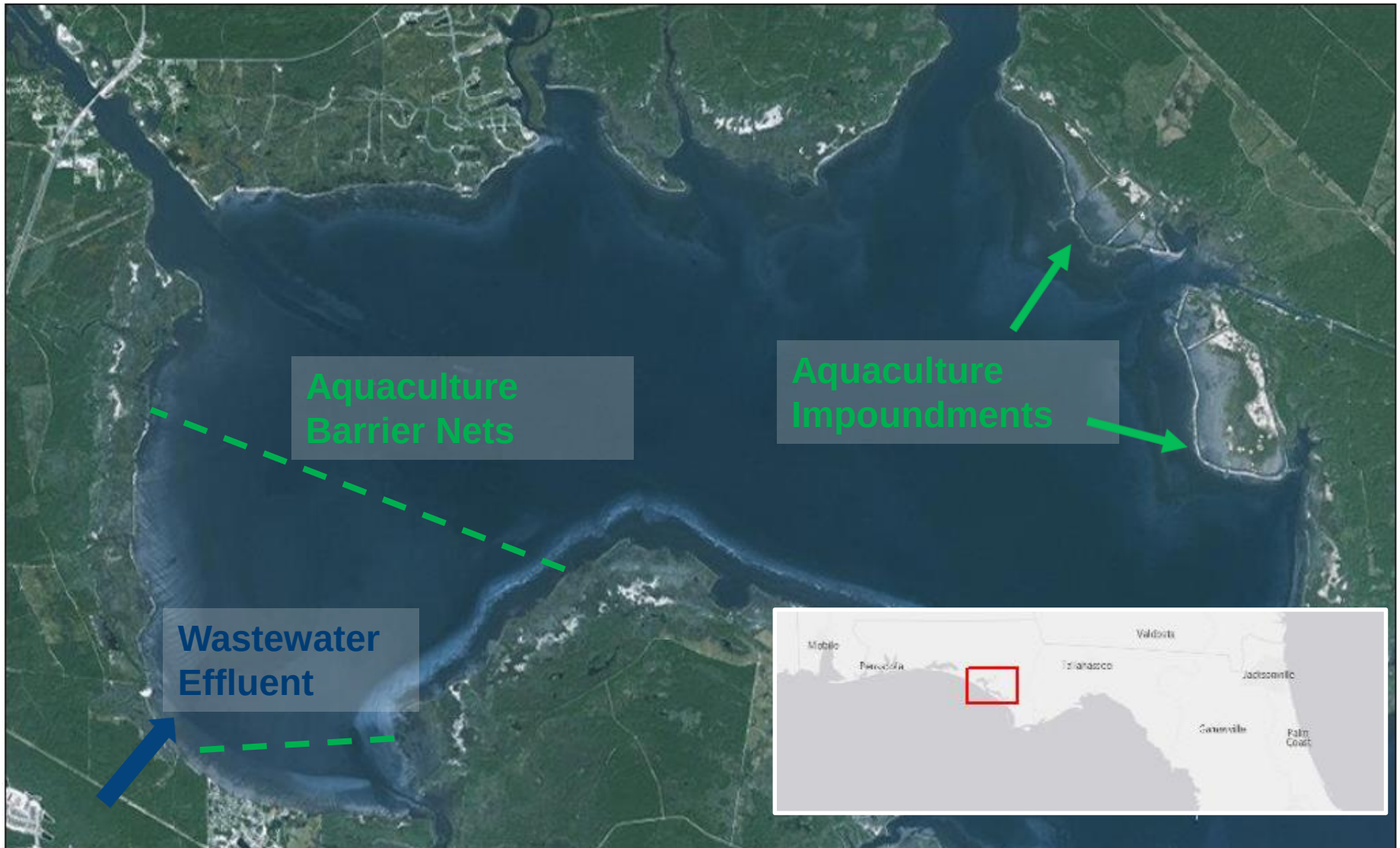
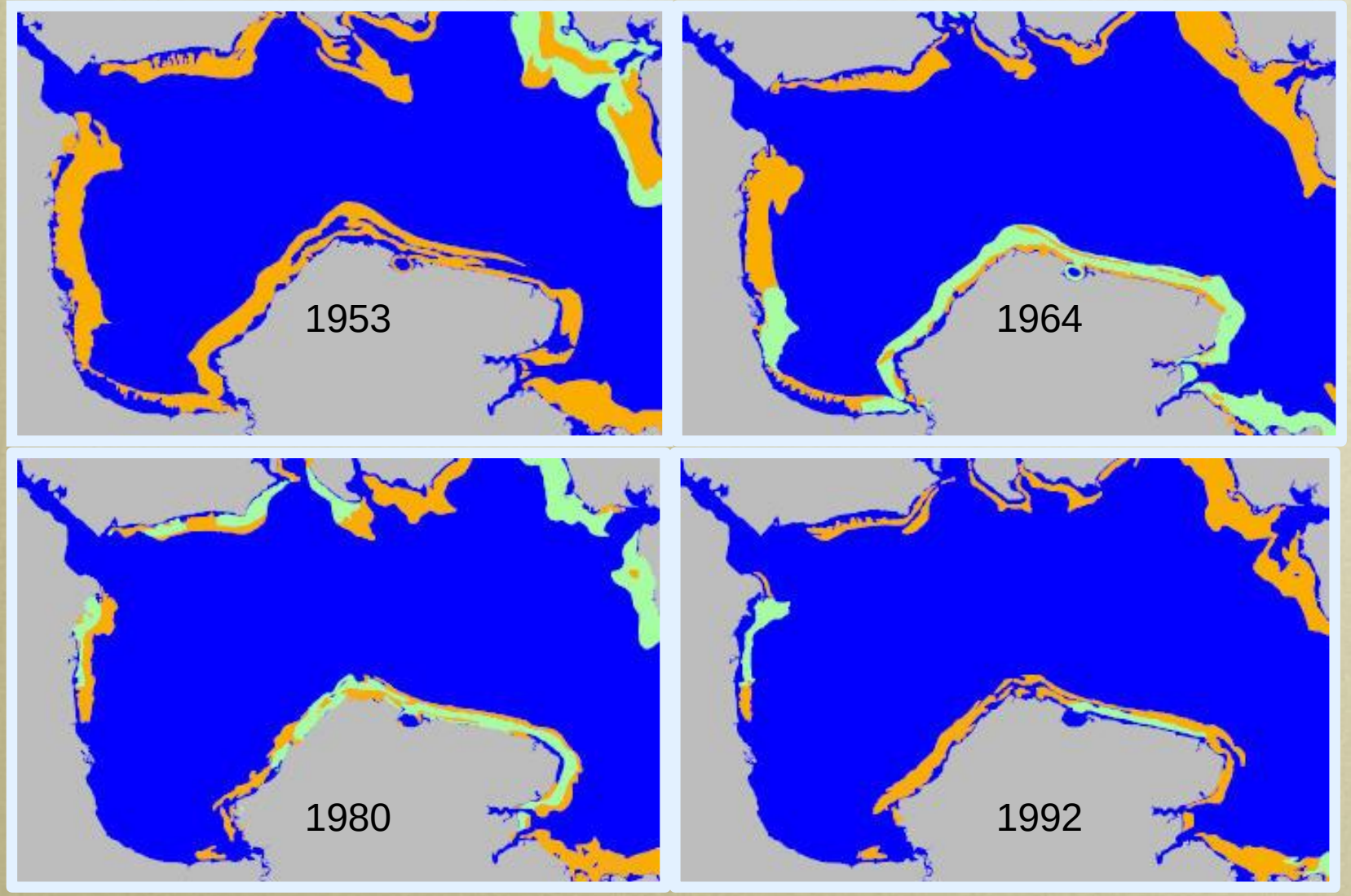
Aquatic Habitat Conservation and Restoration

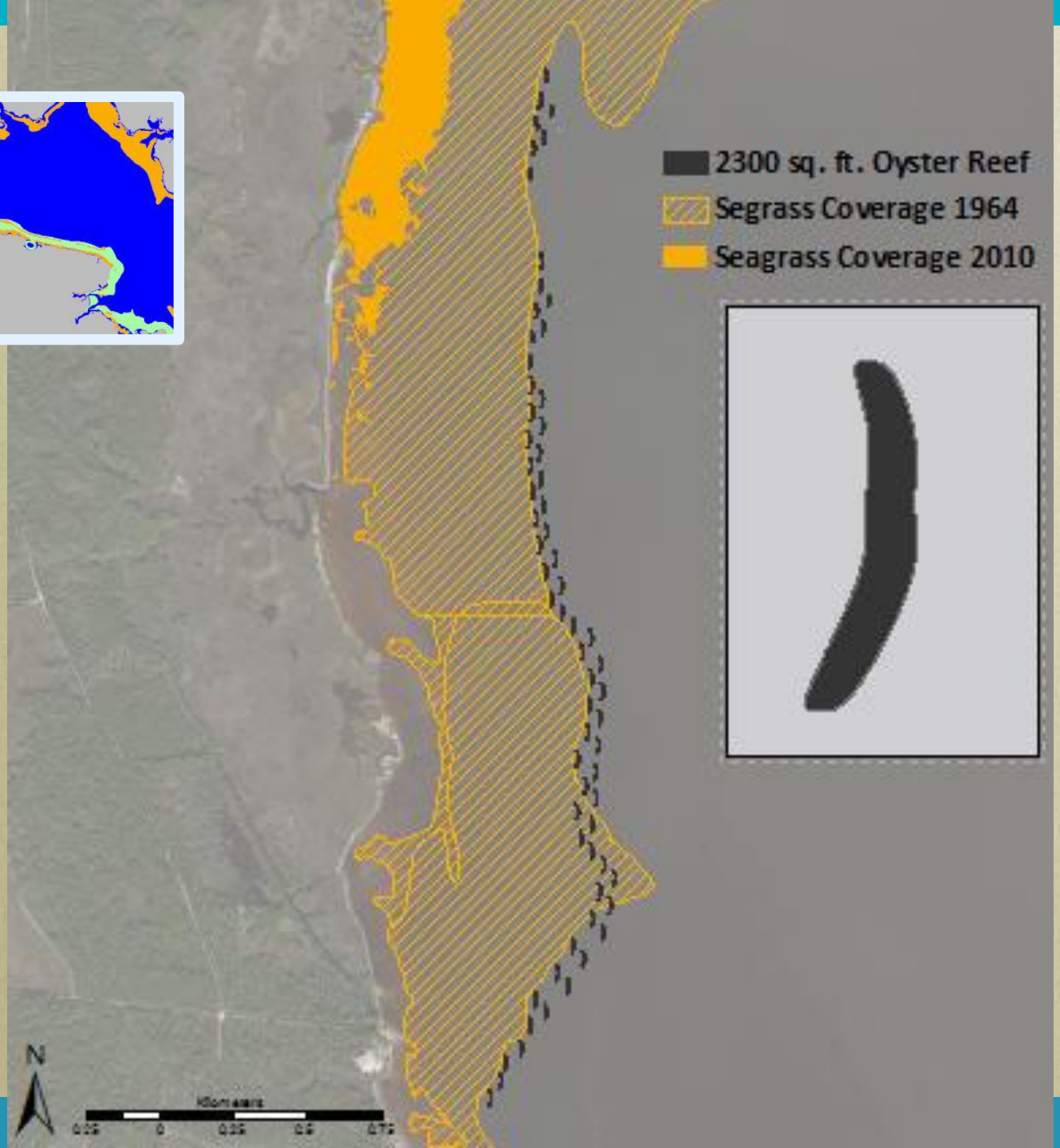
Project Location: West Bay, St. Andrew Bay, Bay County, Florida



Seagrass Trends

Handley *et al.* 2007




2300 sq. ft. Oyster Reef
Segrass Coverage 1964
Seagrass Coverage 2010
N

Restoration Goals

Create Habitat

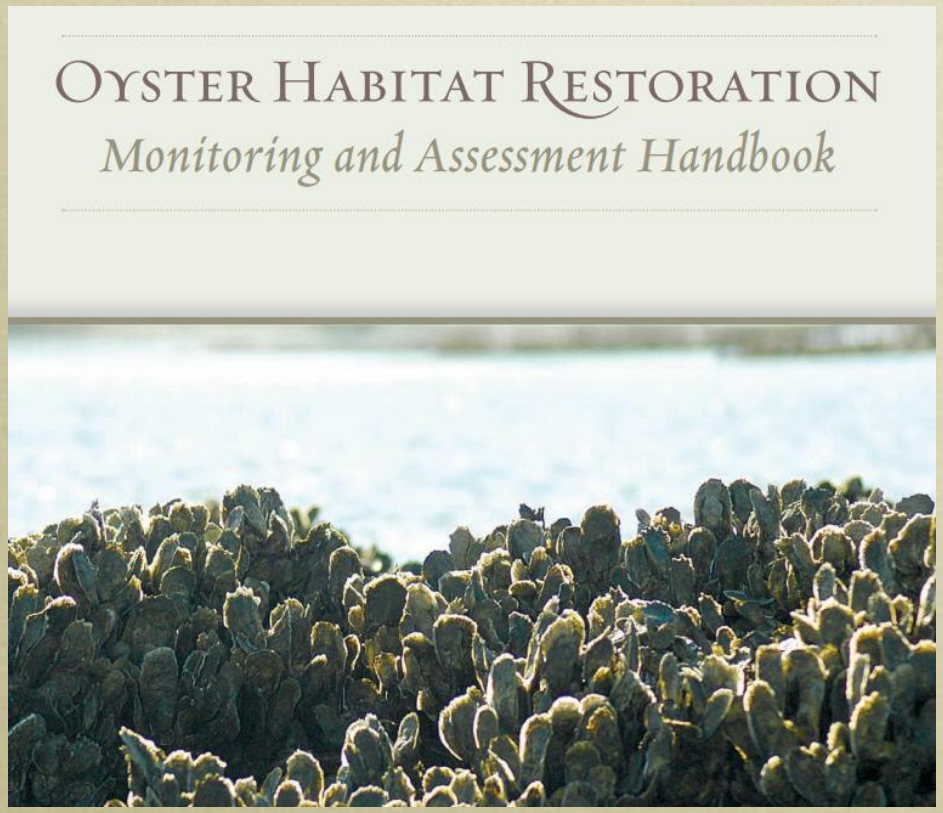
~4 acres of subtidal oyster reefs

- Increase oyster population
- Enhance fisheries
- Improve water quality/clarity
- Attenuate wave energy
- Create conditions more suitable for seagrass recruitment & recovery in adjacent historic habitat

Restoration Monitoring

Universal Metrics:

- Reef areal dimensions
- Reef height
- Oyster density
- Oyster size-frequency distribution



Baggett *et al.* 2014

Restoration Monitoring

Universal Environmental Variables

- Water Quality

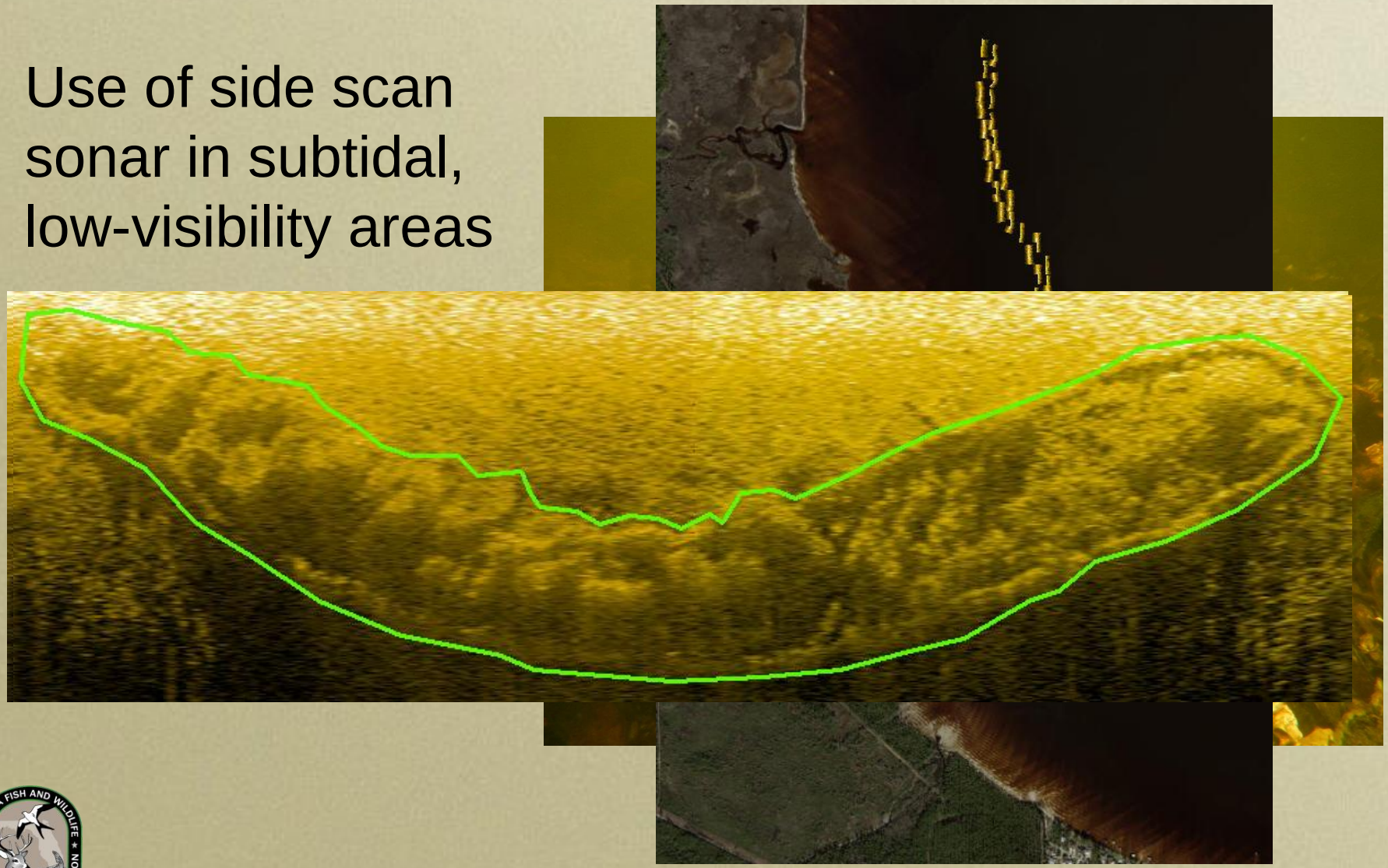
Restoration Goal-Based Metrics

- Habitat Enhancement for Resident & Transient Species
- Enhancement of Adjacent Habitats

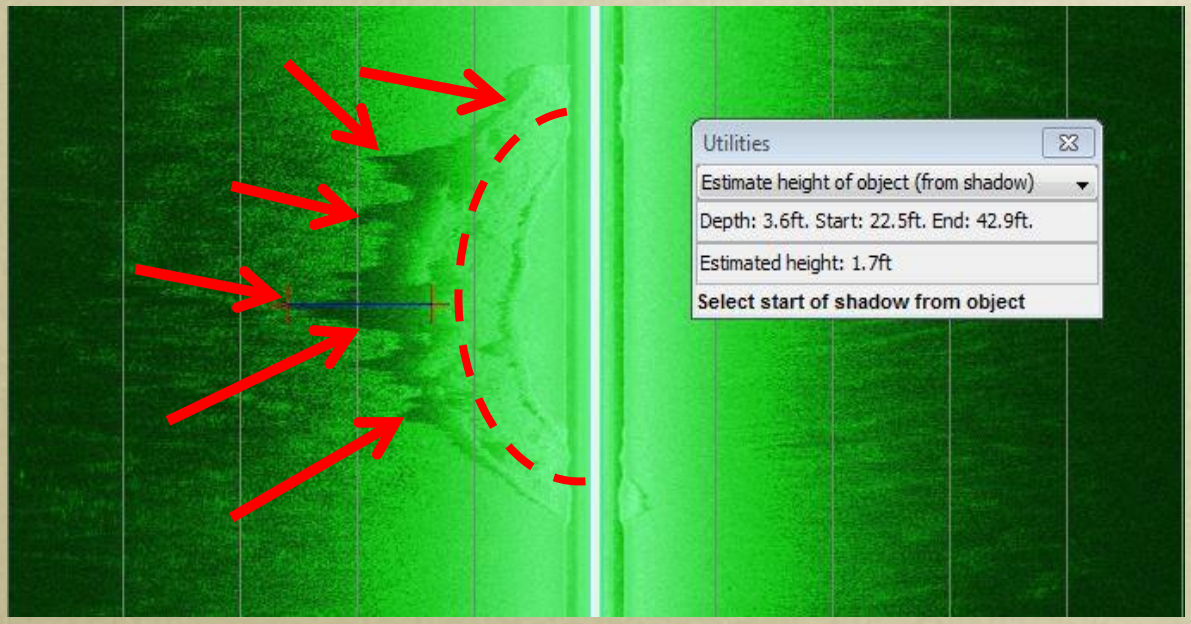
Baggett *et al.* 2014

#1 Reef areal dimensions

Use of side scan sonar in subtidal, low-visibility areas



#2 Estimating Reef Height

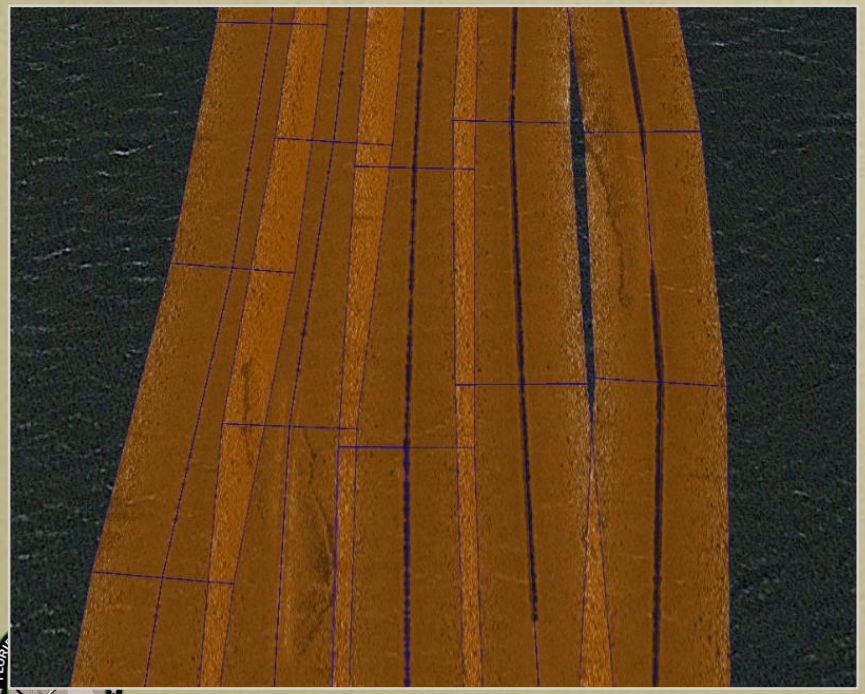


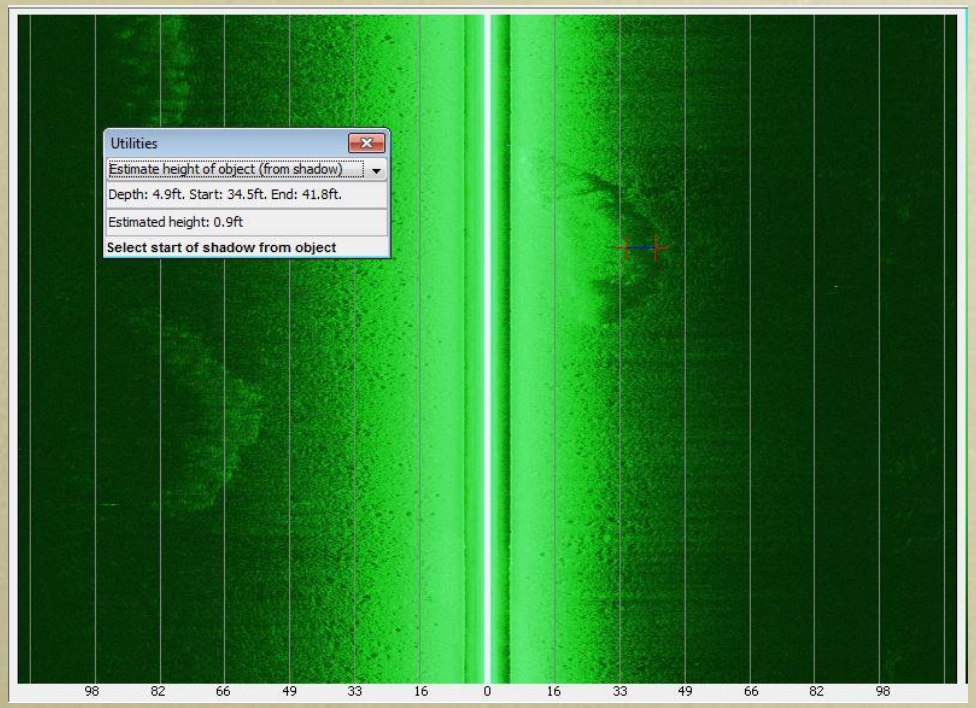
- Estimate height based on shadow length (HumViewer)
- Measure shadow length at regular intervals along the reef
- Determine maximum, minimum, average, etc.

Results: Reef areal dimension / height

Avg. Reef Height: 16.8 cm

Avg. Reef Size: 218 m² (2350 ft²)

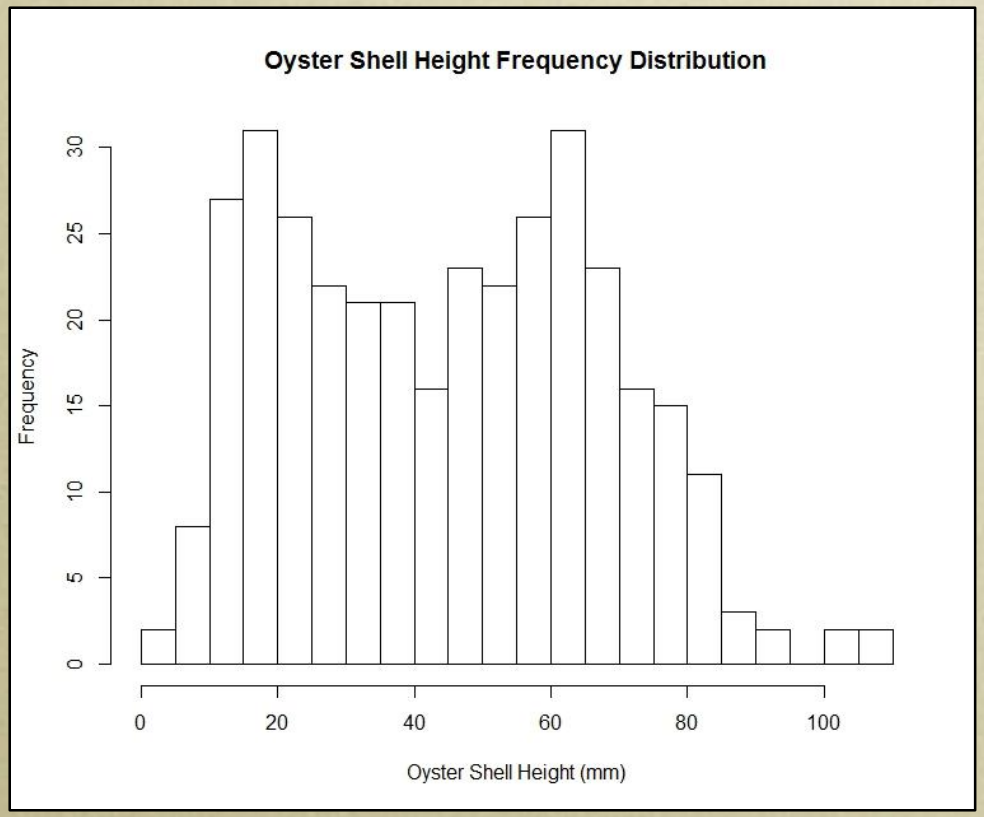




3 Oyster density &
4 Size-frequency distribution

Results: Oyster density & Size-frequency distribution

- Live oyster density
  1386/m^2 (37%)
- Shell height:
  Mean 45.0 ± 1.2 mm
  Range 3 - 110 mm
- 15.9 oysters per 5 mm size class



Results: Oyster density & size-frequency distribution

20+ million live oysters over 2.25 linear miles
1+ billion gallons of water filtered per day

Results:
Resident & Transient Species

- 13 invertebrate species

(removable 0.5 m² monitoring units)

Resident & Transient Species

18 fish species

Looking ahead:

- Compare reef areal dimension methods (sonar imagery vs. in-water records)
- Evaluate effects on localized water quality
- Evaluate effects on light availability & existing seagrass coverage
- Evaluate use of biodegradable coir fiber material for subtidal reef habitat restoration

Thank you

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