Patterns of change in oyster reefs in the Big Bend, Florida.

Quantifying amount & spatial configuration of changes over the past 30-40 years
Gulf of Mexico

Box A measuring across gradients of salinity & wave energy
Methods- Data


2) Ground truthing (for 2010)
Oyster bar categories

1) Marsh/oyster
2) Sand/oyster
3) Unresolved
1967 - only covered 1 of 4 study areas so I dropped for most comparisons
Suwannee Reef disappears!
Suwannee Reef 2010
Offshore reefs were once abundant (Baker et al. 2006, Grinnell 1972, local watermen)
% Oyster Cover by Location

Corrigan’s Reef - most oysters
CA Swamp Flow

Suwannee Flow

Suwannee Reef Complex

Lone Cabbage Reef Complex

Corrigan's Reef Complex

Cedar Key

? Freshwater?
Figure 13. Waccasassa Bay region temperature-anomaly Levels 1-4 showing submarine seep sites.

Raabe and Bialkowska-Jelinska, 2010.
Why Isn’t the Suwannee maintaining bars?
Conclusions

Regions are not equal:
- Offshore regions impacted MORE
- Suggests that regions with more consistent freshwater impacted LESS

What about type of oyster bar?
Total area by bar type

AREA (SQ M) vs. YEAR

- 27% increase
- 250% increase

Bar types:
- Marsh/Oyster
- Sand/Oyster
- Unresolved
Distance from shoreline by bar type

Marching Inland

YEAR
1982 1995 2001 2010
DISTANCE FROM SHORE (M)
0 100 200 300 400 500 600 700

Green: Marsh/Oyster
Orange: Sand/Oyster
Purple: Unresolved
Marsh/Oysters:

- Total area
- Inland movement
- Average bar size
- Count

![Graph showing changes in marsh/oyster area and count over years](image-url)
Sand/Oysters:

- **Total area**
- **Inland movement**
- **Average bar size**
- **Count**
Tracking fate of bars at a finer scale...
Offshore samples - simple story: gone

Inshore samples

Nearshore samples

Lone Cabbage:
Nearshore Sand

Expanding & flattening sandbars
Inshore Marsh

1985

Sand to marsh transition
### June Oyster Density (m²)

<table>
<thead>
<tr>
<th></th>
<th>Cedar Key</th>
<th>Corrigans Reef</th>
<th>Horseshore Beach</th>
<th>Lone Cabbage Reef</th>
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</thead>
<tbody>
<tr>
<td><strong>Inshore</strong></td>
<td>34.99</td>
<td>46.26</td>
<td>41.28</td>
<td>33.17</td>
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<tr>
<td><strong>Nearshore</strong></td>
<td>27.29</td>
<td>14.27</td>
<td>1.96</td>
<td>2.16</td>
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<tr>
<td><strong>Offshore</strong></td>
<td>3.40</td>
<td>13.57</td>
<td>0.69</td>
<td>4.18</td>
</tr>
</tbody>
</table>
Conclusions

1) Offshore bars are very vulnerable
2) Importance of freshwater sources
3) Loss of sand/oysters
4) Future appears to be more marsh/oyster bars
5) Raises questions about the importance of offshore and/or sand bars- do we want to maintain diversity of oyster bar types?
Cooperators & Partners