Manatee River Oyster Restoration Potential

Presented by: Damon Moore
Manatee County Parks and Natural Resources Department
Ecological and Marine Resources Division
What are we going to go over?

I will talk about:

1. A brief historical overview of oyster habitats in the Manatee River
2. Some recent Oyster projects by Manatee County
3. Conceptual plans for large scale restoration of oyster habitat in the Manatee River
4. My wish list as a practitioner to the scientific community 😊
Quick Bio Lesson

Oyster Life Cycle

- fertilized egg
- egg
- sperm
- free-swimming larvae
- spat attached to shell

2-3 years

2 weeks
Historical Overview

Cut from J.L. William 1837 Map. Note Manatee River is referred to as "Oyster R."
Historical Overview


U.S.G.P.O. 1898

"In 1876 I came to the west coast of Florida from one of the largest oyster growing sections in the world, Chesapeake Bay. I landed at Cedar Keys and at once became interested in the oyster beds of Florida. After spending three weeks at Cedar Keys, I cruised southward, examining the most prominent oyster beds, such as Crystal River Bay, the bars of the Cootie region, Clearwater Harbor, Point Pinellas, Hillsboro Bay, Old Tampa Bay, and on to a hamlet I found at the mouth of the Hillsboro River known as Tampa; thence I continued southward to the Alafia River, Big and Little Manatee, Sarasota, Boca Grande oyster bars and 100 miles farther south, and on every hand I found the same condition - oysters, oysters everywhere. How little did I then think that in less than twenty five years every one of these bars would be partially or totally depleted."
CEDAR KEYS AND SURROUNDING COUNTRY.

A weekly line of steamships to New Orleans and Havana, and a semi-weekly line of steamers to Tampa, Manatee and Key West, with the oyster and fish trade, combine to make Cedar Keys a lively place during the winter season. The distance to Fernandina, on the Atlantic coast, is 155 miles, which is traversed by the A., G. & W. I. T. Company's Railroad. Levy county, of which Cedar Keys is the most important town (having a population of about eight hundred), contains some of the best hammock lands in Florida. That it is desirably situated is seen in the fact that it is nearly surrounded by Hernando, Marion and Alachua, three of the finest counties in the State. LaFayette county, on the opposite side of the Suwanee...
Three families located in Ogden last week.

Heavy shipments of oysters are being made from Palma Sola.

Six brothers of G. W. Holland, the Postmaster at Fort Reed, are spending a few weeks with him.

Thirty miles of wire have been used to complete the electric bell service in Hotel Ponce de Leon, at St. Augustine.

C. W. Andrews reports sale of the J. E. Parker farm and grove one-half mile out of Plant City for $6,000 to the Canada colony.

Over 1,000,000 brick have been thus far used in the construction of chimneys, arches, etc., in Hotel Ponce de Leon, at St. Augustine.

Upwards of fifty signatures have been obtained to the telephone service, thus insuring its introduction in St. Augustine, though not in time for use this winter.
Historical Overview

The Morning News.

SAVANNAH, GA., WEDNESDAY, APRIL 25, 1900.

will in all probability be the Democratic nominee for Governor. Others who have horns in their hats had just as well stand aside and let the Beggs procession pass.

**Manatee Journal:** Oyster culture should receive large attention by property owners on the waters of Manatee county. The natural beds have been destroyed, and for several years the supply must be very limited.

News comes from Cleveland, Tenn., of the death of Mr. E. H. Cheney, for years a resident of Orlando, but who sold his home in the eastern portion of that town and removed to Cleveland about a month ago. Mr. Cheney was quite well known at Orlando. He was a prominent G. A. R. man.
John Glazier remembered that Manatee Avenue was originally a sandy road which was eventually paved with live oyster shells which were taken from the river. Fie said that for several months after this paving the oyster meat rotted and Manatee Avenue was the most odiferous street in the whole United States.
**Historical Overview**

### Table 6: Known Production History of Long Inactive Shell Lease Companies

| LESSEE                        | LEASE NO. | INCLUSIVE DATES OF LEASE | REPLACED BY | ROYALTY RATE | YEAR | REPORTED PRODUCTION (cu yd) | ROYALTY PAID ($)
<table>
<thead>
<tr>
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<tr>
<td>Bradenton Dredging &amp; Shell Company</td>
<td>36</td>
<td>Oct. 23, 1931 to Sept. 30, 1936</td>
<td>144</td>
<td>5¢/cu yd</td>
<td>1931</td>
<td>unknown</td>
<td>unknown</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1932</td>
<td>unknown</td>
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<td></td>
<td></td>
<td>1933</td>
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<td></td>
<td></td>
<td></td>
<td>1934</td>
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<td></td>
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<td>1935</td>
<td>unknown</td>
<td>$ 137.70</td>
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<td></td>
<td></td>
<td>1936</td>
<td>0</td>
<td>$ 0</td>
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<td><strong>Totals</strong></td>
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<td><strong>$ 754.45</strong></td>
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<td>144</td>
<td>Sept. 30, 1936 to Sept. 30, 1939</td>
<td>61</td>
<td>5¢/cu yd</td>
<td>1936</td>
<td>7,767</td>
<td>387.85</td>
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<td>1937</td>
<td>10,903</td>
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<td>1938</td>
<td>17,930</td>
<td>898.48</td>
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<td>1939</td>
<td>5,768</td>
<td>289.40</td>
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<td><strong>Totals</strong></td>
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<td>1940</td>
<td>6,250</td>
<td>497.10</td>
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<td>1941</td>
<td>1,600</td>
<td>130.00</td>
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<td>1942</td>
<td>1,467</td>
<td><strong>110.00</strong></td>
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<td>1943</td>
<td>unknown</td>
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<td>1944</td>
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<td>1945</td>
<td>2,250</td>
<td>225.00</td>
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<td>1946</td>
<td>13,370</td>
<td>1,337.00</td>
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<td>1947</td>
<td>22,600</td>
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<td>1948</td>
<td>9,320</td>
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<td>1949</td>
<td>4,032</td>
<td>403.00</td>
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<td>1953</td>
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<td>1,762.30</td>
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<td>1954</td>
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<td>5,552.10</td>
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<td>1955</td>
<td>40,582</td>
<td>4,058.22</td>
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<td>1956</td>
<td>36,165</td>
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<td>1957</td>
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<td>1959</td>
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<td>3,087.71</td>
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<td><strong>1960</strong></td>
<td>24,821.8</td>
<td>2,482.18</td>
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<td>1961</td>
<td>11,978.6</td>
<td>1,197.86</td>
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<td>1585</td>
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<td>15¢/cu yd</td>
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<td>1961</td>
<td>11,783</td>
<td>1,767.45</td>
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<td><strong>Grand Totals</strong></td>
<td>651,255.3</td>
<td><strong>$62,964.10</strong></td>
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</table>

Lease number 1585 was applied for on July 12, 1961. The application was assigned number 1585 and the lease was approved by the Trustees on January 9, 1962. The lease was never issued and the application was withdrawn on March 10, 1962, by the company. Bradenton Dredging and Shell Company abandoned shell dredging after over 30 years operating in the Manatee River, Manatee County.
Historical Overview

Shell Dredge in Tampa Bay
(The Florida Anthropologist
Volume 25 June 1972 No. 2 Part
1 Commercial oyster Shell of
Tampa Bay I. O. Warren)
Historical Overview

Bradenton 10th Street
1951
Historical Overview

Bradenton 10th Street Now
Robinson Preserve Project

2004 – Before any ecological enhancements
Robinson Preserve Project

2013 – After ecological enhancements, but before oyster habitat creation
Robinson Preserve Project

2019 – After ecological enhancements, and after oyster habitat creation establishment
Robinson Preserve Project
Robinson Preserve Project

Healthy Live Oysters
January 2018 @ 11.89 live oysters/square foot.

THANKS TBERF!!
Both tanks in this photo are full of water from the same source, but the tank on the right has oysters in it. A single adult oyster can filter as much as 50 gallons of water a day.
Robinson Preserve Project

- Robinson Project = about 1 Acre of oyster beds
- 1 Acre = 43,560 Square Feet
- Assume 10 live oysters per square feet
- An acre of oyster bed gives us 435,600 Oysters!
- Those oysters can filter 21,780,000 gallons PER DAY!
- That’s 33 Olympic Swimming Pools of water PER DAY!!
Conceptual Future Plans

GO BIG!!!!!
Pictometry of area along south shore of Manatee River west of I-75. This is a typical large area with high potential for oyster restoration. (Manatee County GIS 2016)
2015 aerial shows the location of the area highlighted (Figure 1 Area) in context of large shallow sand areas with the same aerial signature. (Manatee County GIS 2016)
Conceptual Future Plans

475 Acres identified as **POTENTIAL** oyster restoration areas
Conceptual Future Plans

• Manatee River Potential = about 475 Acres of oyster beds
• 475 Acres = 21,691,000 Square Feet
• Assume 10 oysters per square feet
• 475 acres of oyster bed gives us about 207 million Oysters!
• Those oysters can filter 10.345 BILLION gallons PER DAY!
• That’s 15,669 Olympic Swimming Pools of water PER DAY!!
• It is approximately 51,000 feet from I-75 to Tampa Bay Down the Manatee River
• The River has an average width of approximately 4,500 from I-75 to the Bay
• Assume 10’ average depth
• That’s 17.17 Billion Gallons of Water
• 475 Acres of Oyster bed could filter all of that less than 2 days.
Other Oyster Benefits

• Habitat for fish, shrimp, clams, crabs, snails, and so on.
• Expands seagrass growth
• Nitrogen removal
• Shoreline Protection
• Carbon Sequestration?
• Jobs
• Tourism
• Commercial & Recreational Fishing
• Cultural Heritage
Practitioner’s Wish List.

To guide restoration design, and make it easier to get that money:

• A locally applicable value for volume of water filtered/day and a real definition of what “filtered” accomplishes in the water.
• Any quantifiable water quality improvement parameter; Especially connections to reduction in red tide$$. $$
• Any quantifiable benefits related to wave attenuation and shoreline protection, especially intertidal, and subtidal bars. Do Oysters really protect infra$tructure?
• Locally applicable ROI metrics.
Remember, I said conceptual.

THANKS FOR LISTENING