Florida Department of Environmental Protection

Development and Implementation of a Regional Oyster Condition Assessment

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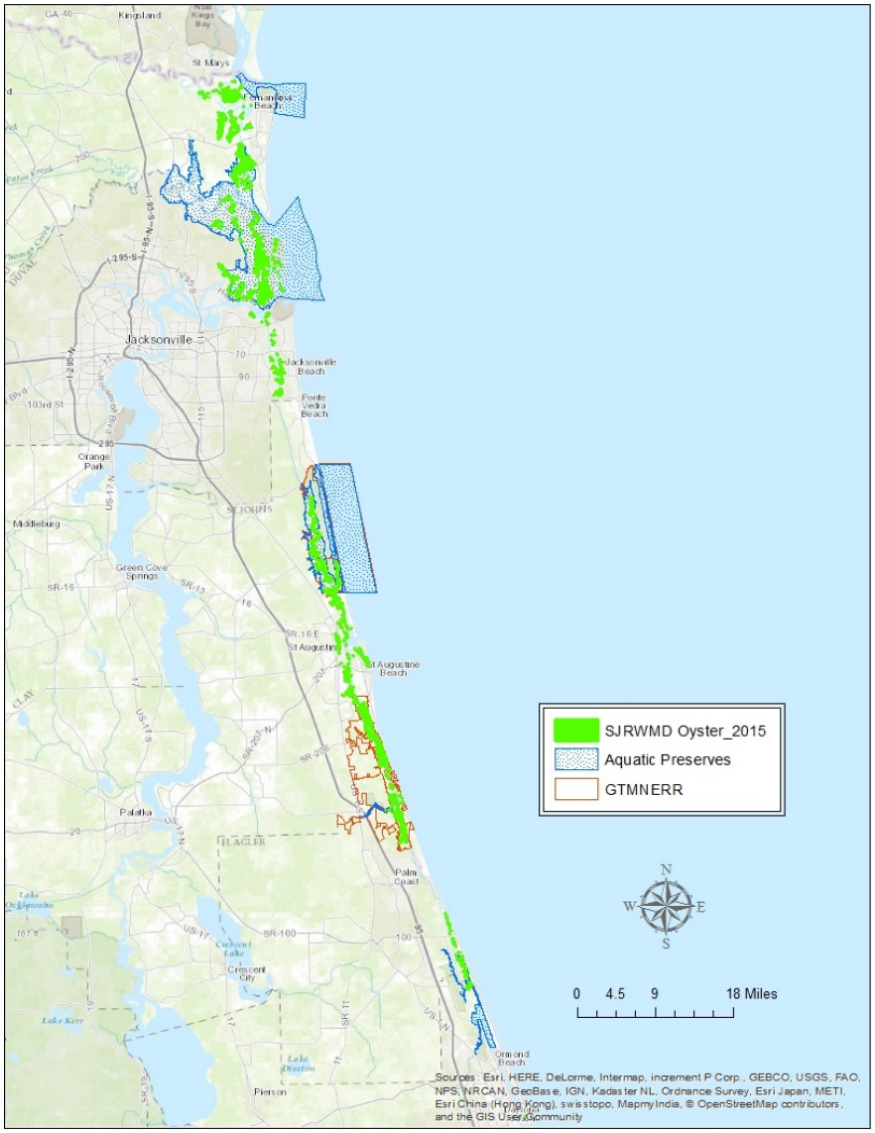
Map of Region

- Northern Coastal Basin
- Stretches >100 miles of coastline.
- Covers all the watersheds that drain towards the Atlantic from St. Mary's inlet in Nassau County to Ponce Inlet in Volusia County.

Needs Identification

- Gap identified by NERT (Northeast Estuarine Restoration Team) Restoration Plan
  - Oyster mapping (classified as Dead or Alive)
  - Dr. Nikki Dix – Research Coordinator @ GTM Research Reserve
    - Not enough to know where they are, we must know the condition

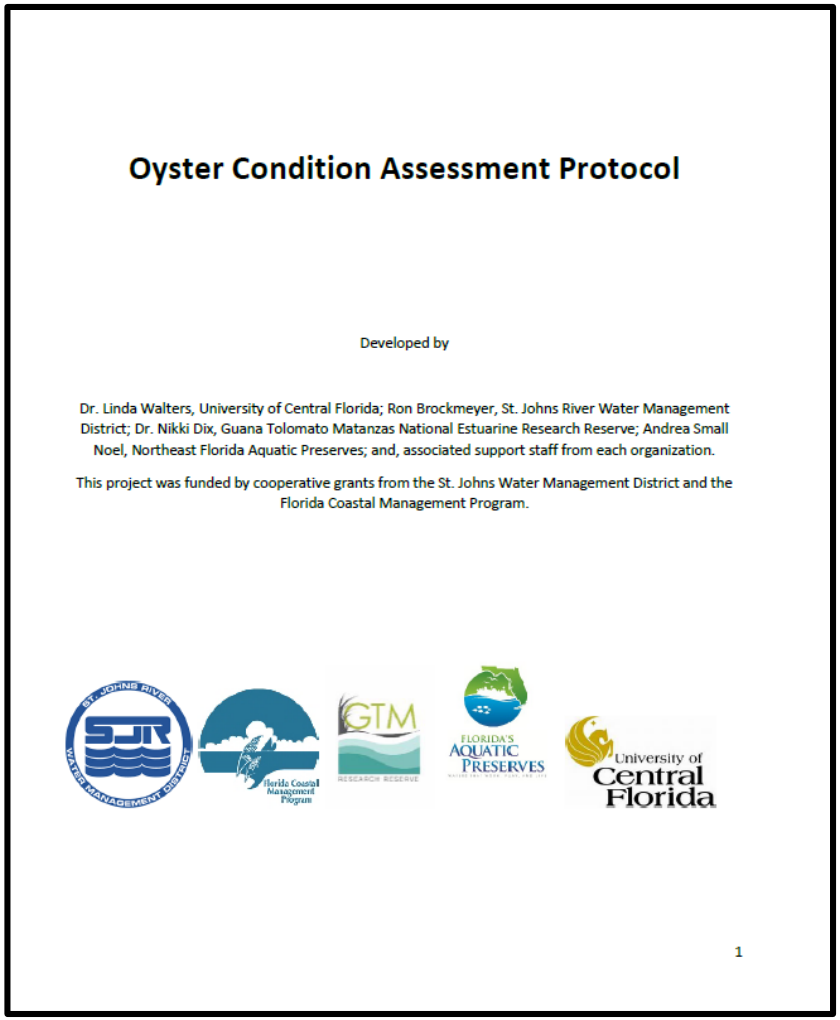


Funding

- This is a Project Award between The Florida Coastal Management Program (FCMP) and Guana Tolomato Matanzas National Estuarine Research Reserve (GTMNERR) as a sub-recipient of NOAA funds, awarded on July 1, 2014 pursuant to cooperative annual award #NA 13NOS4 l 90052.

- $50,000 from July 1, 2015 to July 1, 2016

Project Planning



Oyster Condition Assessment Protocol

Developed by

Dr. Linda Walters, University of Central Florida; Ron Brockmeyer, St. Johns River Water Management District; Dr. Nikki Dix, Guana Tolomato Matanzas National Estuarine Research Reserve; Andrea Small Noel, Northeast Florida Aquatic Preserves; and, associated support staff from each organization.

This project was funded by cooperative grants from the St. Johns Water Management District and the Florida Coastal Management Program.

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- Developed Protocol with regional team
- Protocol vetted by agencies and university representatives
- Revised language after first field season
- Reproducible product

Project Design

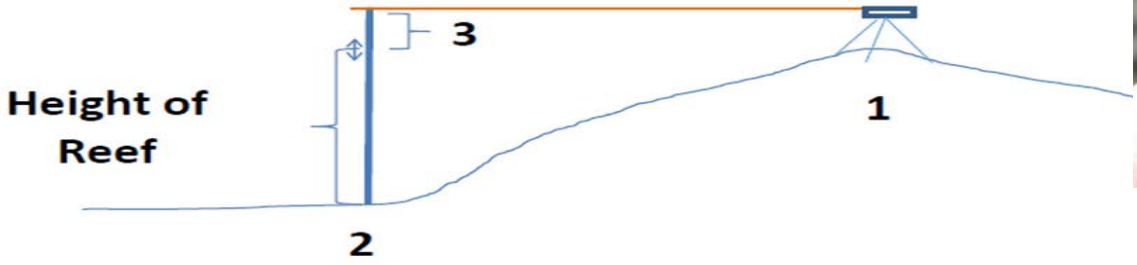
- SJRWMD (St. Johns Water Management District)
  - Produced map of randomized reefs based on % in county.
- Seasonal variance
  - Data was collected summer and winter

County	~# Reefs	Date Monitored
Volusia	52	June
Flagler	6	July
St. Johns	20	July
Duval	15	August
Nassau	15	August
	108	

Project Design

Data Collection

- Mapped & Photographed
- Reef Profile
- Percent Cover
- Oyster Density
- Oyster Size
- Oyster Depth
- Associated Fauna



Project Design

Figure 2 The 1m x 1m quadrat above shows the percent cover point-intercept method as well as the cluster and gastropod data recording. This quadrat was 11% live oysters, 76% dead shell, and 13% benthos (mud). There were 6 live oyster clusters within this quadrat.

Project Design

Figure 3 Field photos taken from reef 80, located in the Devil's Elbow region south of St. Augustine, FL. Left is summer 2015 sampling and right is winter 2016 sampling. Storms and nor'easter winds prevented the tides from going out in many of the winter collections.

- Measuring seasonal variations

Project Design

Part of protocol included Predator Monitoring

Table 2: Commensal fauna measured on the oyster reefs by region (organized north to south). All values are totals unless otherwise noted. Superscript letters correspond with pictures on right.

Region	n	Oysters	Average Oyster Length (mm)	Porcelain Crabs[A]	Black Ribbed Mussels[B]	Crown Conch[C]	White Barnacles
Nassau	3	47	40.2	1	7	0	1
Duval	3	41	45.3	0	0	0	7
Tolomato River	1	40	42.2	3	2	0	1
Guana River	1	50	40.0	1	1	0	5
St. Augustine	3	44	39.9	1	2	0	0
Devil's Elbow	9	43	44.4	0	1	0	3
Pellicer Creek	1	44	32.6	0	2	6	3

Photo credit: Linda Walters, UCF

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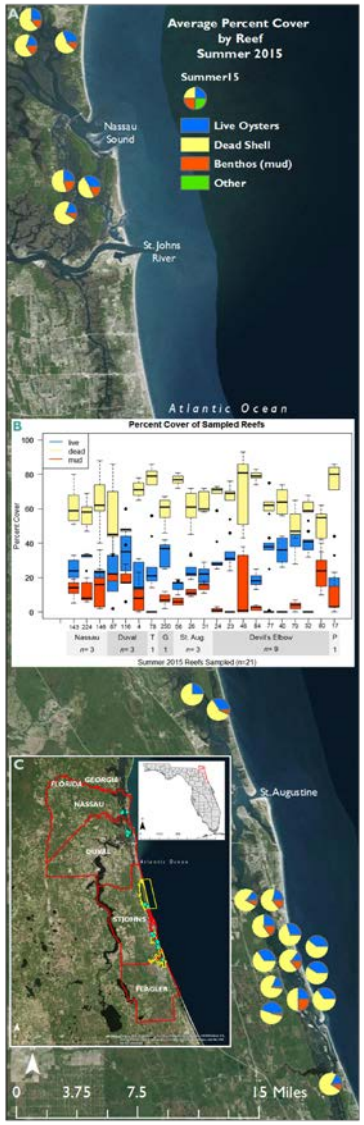
Preliminary Results



Regional Comparisons

- Some metrics are showing seasonal variation
- overall region looks similar.
- Data collection was finished April 1st
- Data analysis in progress

Preliminary Results

Data is formatted, analysis began April 22

Table 1: Physical and biological characteristics measured on the oyster reefs by region. Regions are organized north to south. **n** is the number of sampled reefs. *All values are averages unless otherwise noted.

Region	n	Physical Characteristics							Biological Characteristics				
		Percent Cover			Reef Height (cm)	Reef Thickness (mm)	Burial Depth		Clusters	Oysters	Oyster Lengths*		
		Live	Shell	Mud			Above (mm)	Below (mm)			Min	Mean	Max
Nassau	3	25	61	13	104.6	58.9	71.8	-69.4	18	47	6.5	40.2	92
Duval	3	26	59	15	378.3	88	107.8	-81.9	18	41	4	45.3	124.2
Tolomato River	1	25	75	0	63.5	101.5	111.0	-74.6	13	40	5.1	42.2	101.7
Guana River	1	34	59	7	109.2	61.1	93.3	-37.5	14	50	3.9	40	87.1
St. Augustine	3	20	67	13	66.5	65.9	70.5	-78.2	18	44	2.6	39.9	100.8
Devil's Elbow	9	31	63	5	76.3	83.3	79.0	-54.6	18	43	2.9	44.4	99.9
Pellicer Creek	1	18	73	9	144.8	69.6	68.5	-58.4	18	44	5.4	32.6	62.4

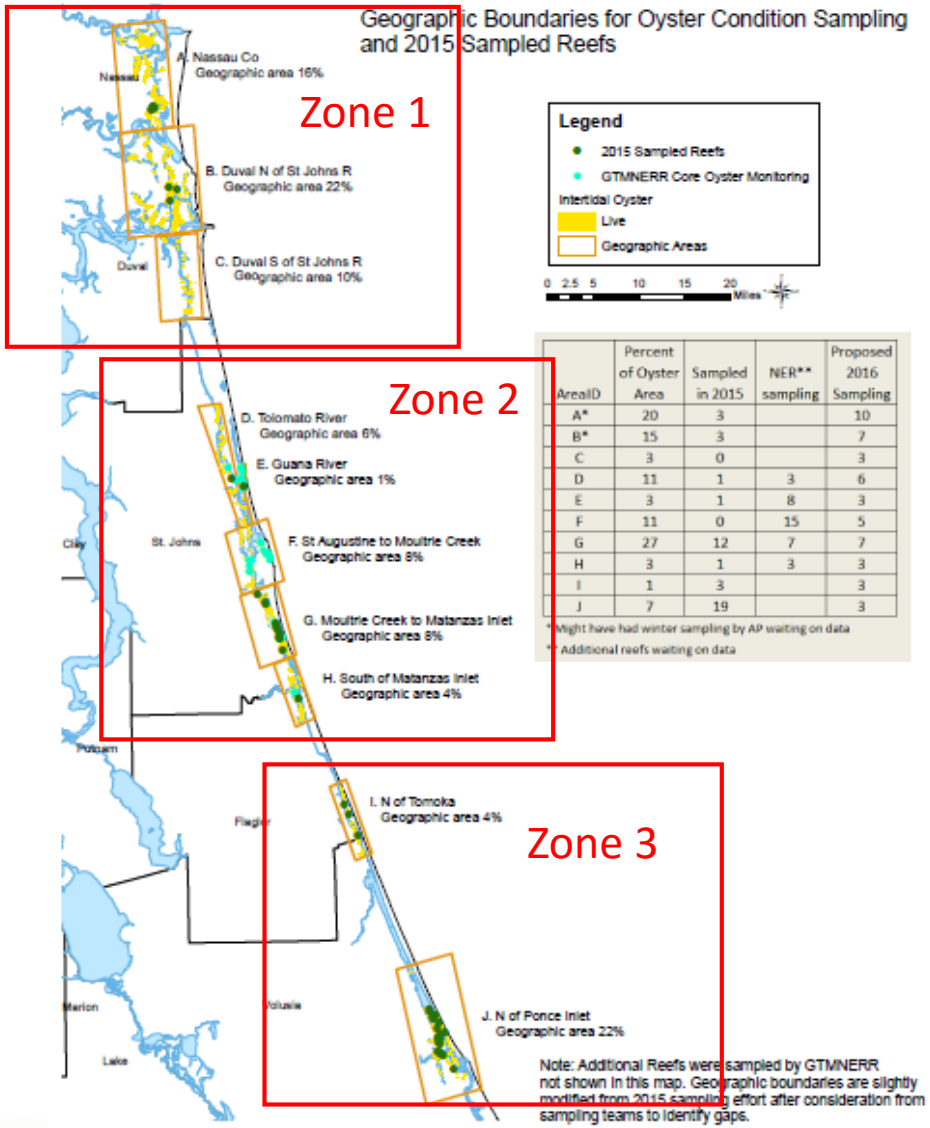
Products

- Regional scale product
  - Available to public ~June 2016
- Map of oyster reefs
  - Live vs Dead
  - Ability to access data for monitored reefs
- Baseline assessment that we can use to measure change in the future
  - Better understanding of the current condition of the reefs
- Standardized oyster monitoring protocol for the region

Beyond Funding

- The estuaries Foundation contracted with 3 Universities to conduct summer 2016 field season
- Funded by the SJRWMD – an additional $30k

Beyond Funding



Summer 2016 Sampling

- Zone 1
  - University of North Florida- 20 reefs
  - Aquatic Preserve staff – 8 Reefs
- Zone 2
  - University of Florida – 21 reefs
  - GTM NERR staff – 10 reefs
- Zone 3
  - University of Central Florida – 9 reefs

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Thank You

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