Florida Department of Environmental Protection

Central Panhandle Aquatic Preserves

NRDA Oyster Cultch Placement Project: Subtidal Oyster Reef Monitoring in Three Panhandle Bays

Katie Davis

Oyster Cultch Placement

- NRDA Phase III DWH early restoration project

- Goals:
  1. Foster oyster reef habitat development,
  2. To compensate the public for Spill-related injuries and losses to oyster habitat and benthic secondary productivity.

- Overall project management by DEP DWH office

- Reef selection and cultch placement coordinated and overseen by FDACS

- Monitoring performed by CPAP
  - 10 years of monitoring
  - 2x/year for first 5 years
  - 1x/year for last 5 years

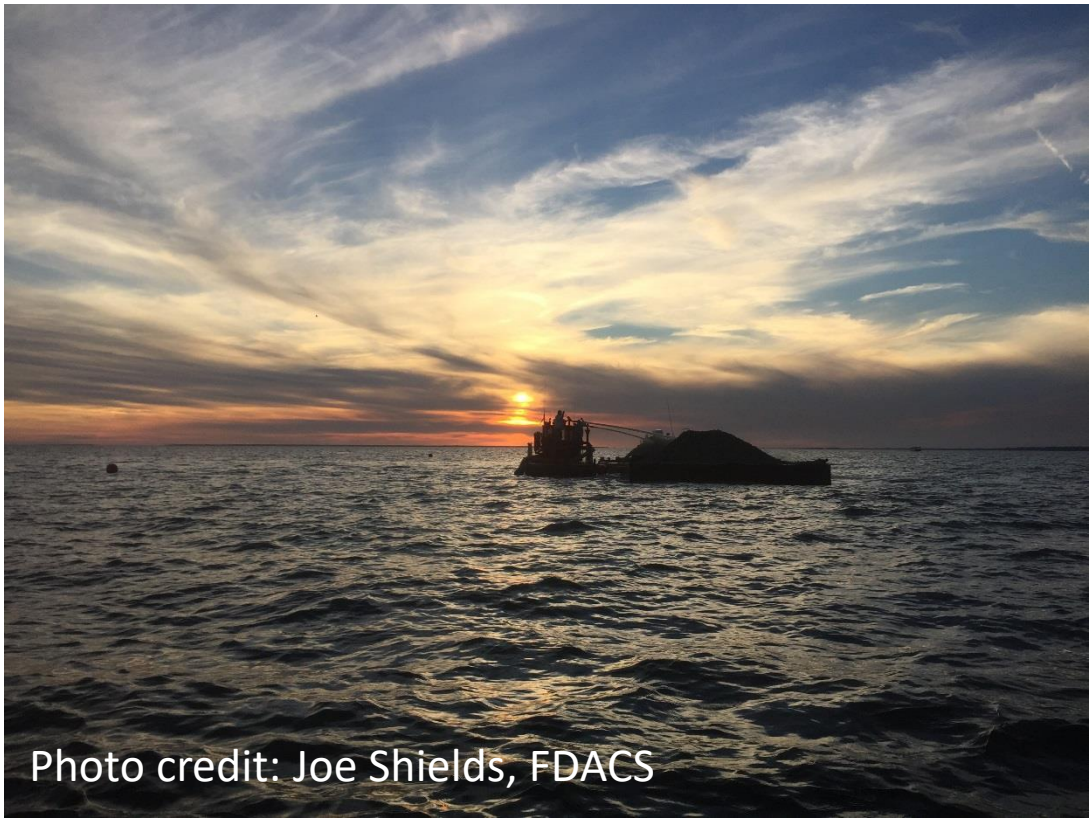
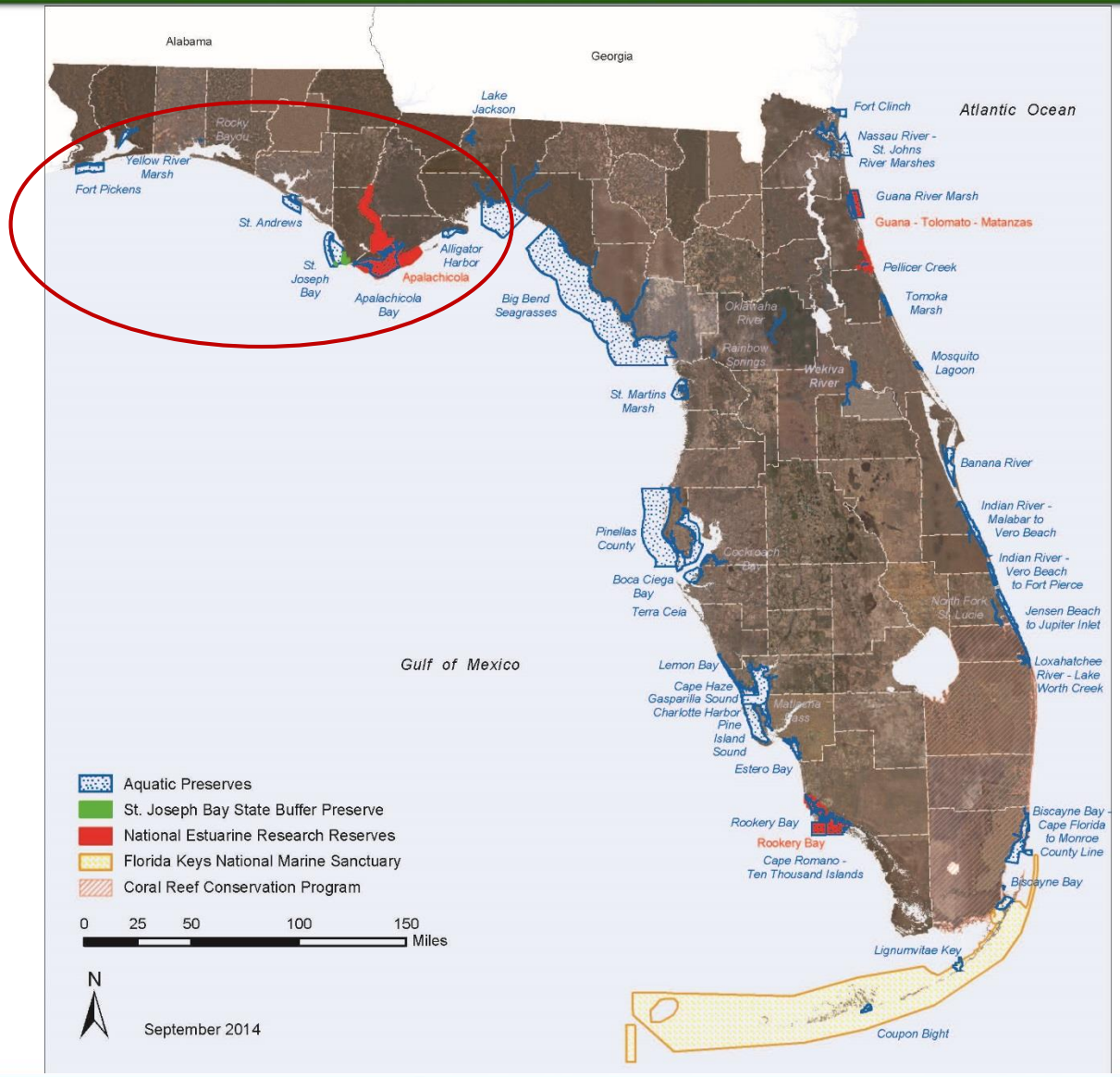


Photo credit: Joe Shields, FDACS

Project Area



Oyster Cultch Placement

Apalachicola Bay

- Shelled in October 2015
  - Approximately 24,840 cubic yards of shell
  - 16 oyster reefs
  - ~124-acre area in the Apalachicola Bay system in Franklin County.

St. Andrews Bay System

- Shelled in June 2016
  - Approximately 17,000 cubic yards of crushed granite
  - 9 oyster reefs
  - ~84-acre area in the St. Andrews Bay System in Bay County

Pensacola Bay System

- Shelled in October 2016
  - Approximately 20,103 cubic yards of a lime rock aggregate
  - 17 oyster reefs
  - ~88-acre area in the Pensacola Bay System in Escambia and Santa Rosa Counties

Photo credit: Joe Shields, FDACS

Oyster Monitoring Protocols

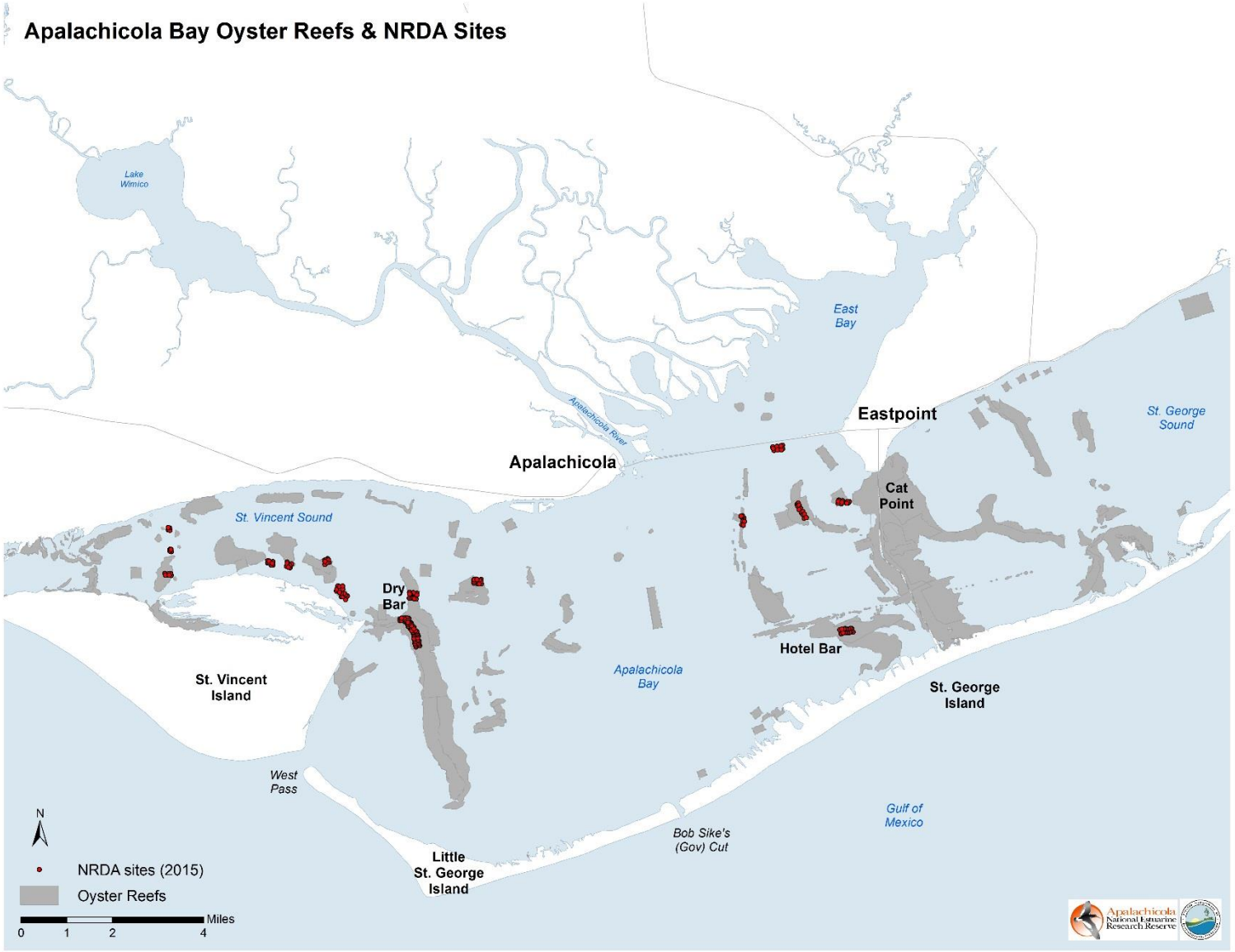
- Twice a year
- Diver surveys
- .25m^2 quadrats
- 15 quadrats per site
- Collect all shell/oyster/rock material down to the sediment

Oyster Monitoring Protocols

- Sample Weight
- All live and dead oysters counted
- Up to 100 live oysters measured
- Shell height
- Size classes
  - 0-25mm = Spat
  - 26-74 mm = Seed
  - ≥ 75mm = Adult

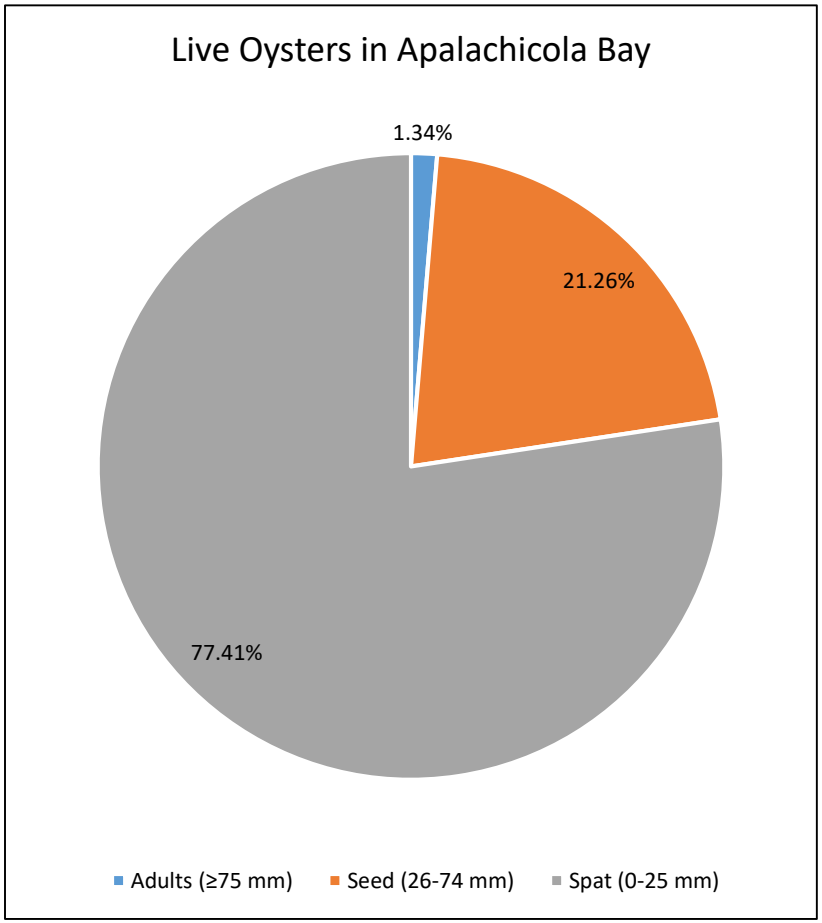
Photo credit: Bagget *et al.*

Apalachicola Bay



Apalachicola Bay

- Two rounds of sampling
  - Spring 2017 & Winter 2017/2018
- 1,854.32 kg (4,087.37 lbs) of material processed
- 21,452 Oysters
  - 16,371 Live
  - 5,081 Dead



Apalachicola Bay

Site	Total # of quads	Total # of live oysters	Density (live oysters/m)	Oysters ≥75mm (%)	Harvestable oysters/m²	Harvestable oysters/acre	Bags per acre
Bayou Flats	15	0	0.00	0.00	0.00	0.00	0.00
Cabbage Lumps	15	173	46.13	0.02	0.80	3237.60	14.39
Cabbage Top	30	42	5.60	0.12	0.67	2698.00	11.99
Cat Point	30	1560	208.00	0.01	1.89	7643.82	33.97
Dry Bar	60	47	3.13	0.00	0.00	0.00	0.00
Eleven Mile North	15	0	0.00	0.00	0.00	0.00	0.00
Eleven Mile South	15	2	0.53	0.00	0.00	0.00	0.00
Green Point	15	37	9.87	0.00	0.00	0.00	0.00
Hotel Bar	45	1567	139.29	0.00	0.00	0.00	0.00
Lighthouse	30	2302	306.93	0.00	0.53	2158.40	9.59
Little Gully	30	7	0.93	0.00	0.00	0.00	0.00
Norman's Bar Middle	30	267	35.60	0.00	0.00	0.00	0.00
Norman's Bar North	30	957	127.60	0.03	3.73	15108.80	67.15
North Spur	15	12	3.20	0.00	0.00	0.00	0.00
Redfish Creek #1	30	43	5.73	0.02	0.13	539.60	2.40
Redfish Creek #2	15	159	42.40	0.00	0.00	0.00	0.00

FDACS Protocols

> 400 bags/acre

- Healthy oyster reefs capable of sustaining commercial harvest.

> 200 bags/acre

- Oyster reefs capable of sustaining limited harvest.

< 200 bags/acre

- Below level necessary to support commercial harvest.

< 100 bags/acre

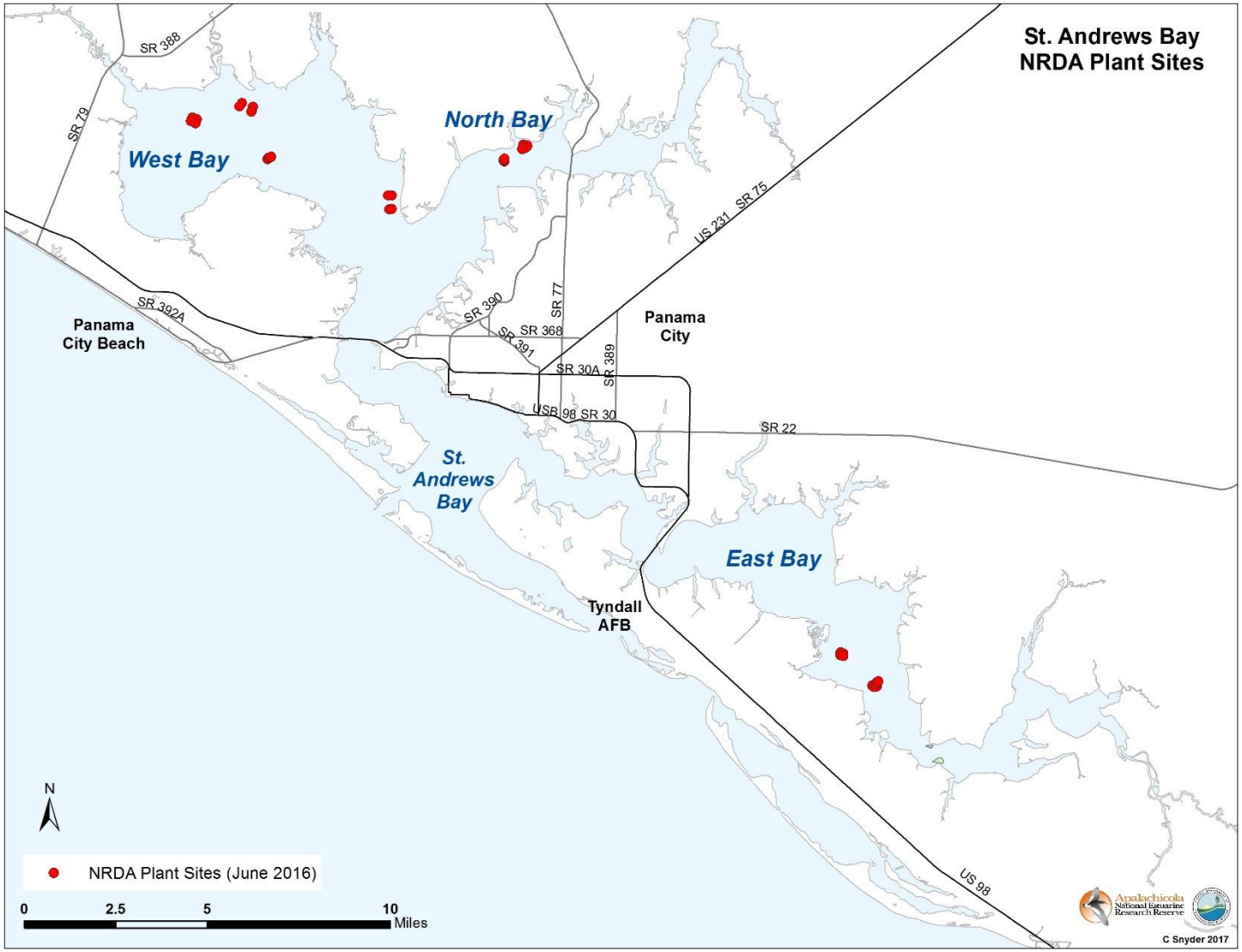
- Oyster reefs considered depleted.

Apalachicola Bay

Estimated bags per acre harvestable oysters (≥75mm) by site per sampling date.

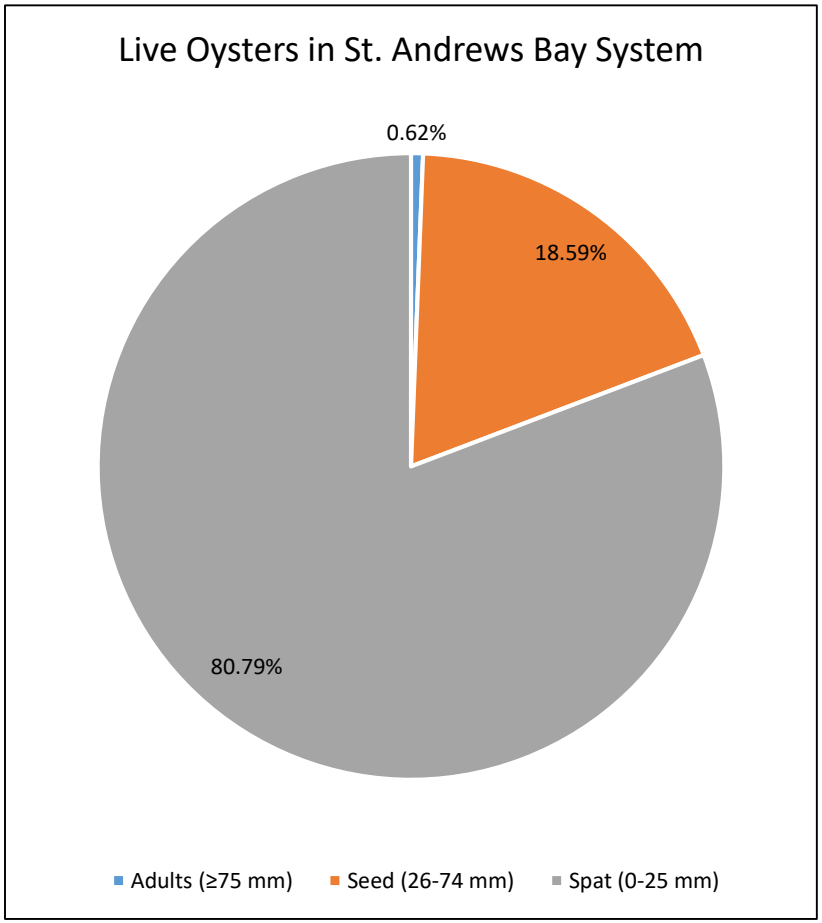
Site	Spring 2017	Winter 2017/2018
Bayou Flats	0.00	0.00
Cabbage Lumps	19.19	9.96
Cabbage Top	33.58	8.30
Cat Point	117.51	23.52
Dry Bar	0.00	0.00
Eleven Mile North	0.00	0.00
Eleven Mile South	0.00	0.00
Green Point	0.00	0.00
Hotel Bar	0.00	0.00
Lighthouse	67.15	6.64
Little Gully	0.00	0.00
Norman's Bar Middle	0.00	0.00
Norman's Bar North	33.58	46.49
North Spur	0.00	0.00
Redfish Creek #1	19.19	1.66
Redfish Creek #2	95.93	0.00

St. Andrews Bay System



St. Andrews Bay System

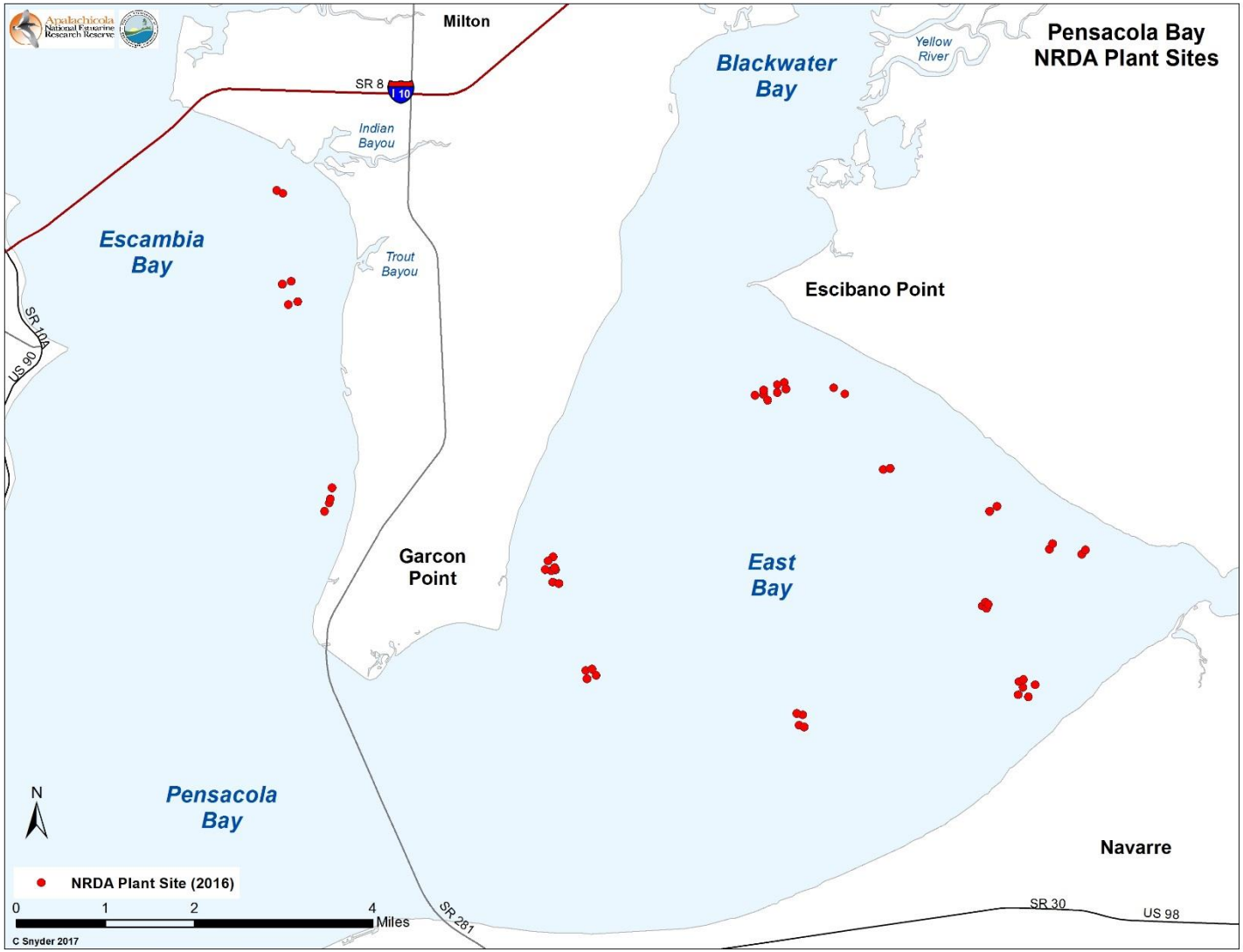
- One round of sampling
  - Summer 2017
  - Second round ongoing
- 439.69 kgs (96.32 lbs) of material
- 8780 Oysters
  - 5835 Live
  - 2945 Dead



St. Andrews Bay System

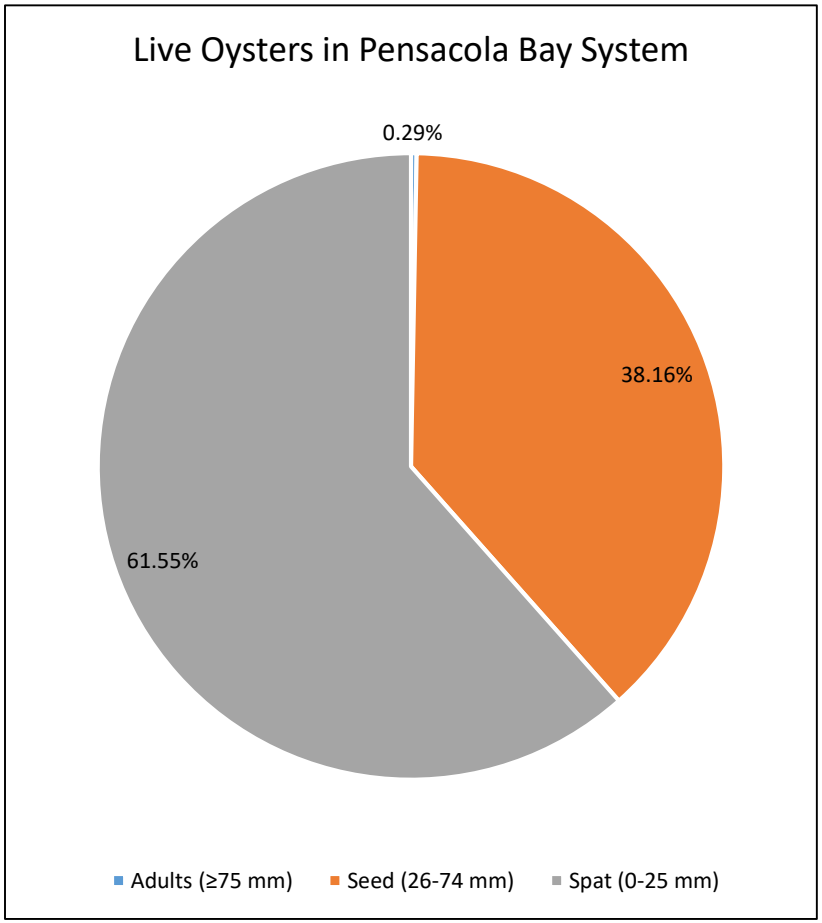
Site	Total # of quads	Total # of live oysters	Density (live oysters/m)	Oysters >75mm (%)	Harvestable oysters/m²	Harvestable oysters/acre	Bags per acre
Crooked Creek Point	15	63	16.80	0.02	0.27	1079.20	4.80
Doyle Bayou Point	30	1130	150.67	0.00	0.00	0.00	0.00
East of Power Lines Ridge	15	21	5.60	0.00	0.00	0.00	0.00
Goose Point	15	65	17.33	0.05	0.80	3237.60	14.39
Little Oyster Bar Point	15	82	21.87	0.00	0.00	0.00	0.00
Newman Bayou	15	53	14.13	0.08	1.07	4316.80	19.19
Off Little Oyster Bar Ridge	15	87	23.20	0.00	0.00	0.00	0.00
South Channel	15	616	164.27	0.04	5.87	23742.40	105.52
West Bay Point	30	3579	477.20	0.00	0.27	1079.20	4.80

Pensacola Bay System



Pensacola Bay System

- One round of sampling
  - Fall 2017
  - Second round planned for June 2018
- 611.34 kgs (1,347.77 lbs) material collected
- 7302 Oysters
  - 5532 Live
  - 1770 Dead



Pensacola Bay System

Site	Total # of quads	Total # of live oysters	Density (live oysters/m)	Oysters >75mm (%)	Harvestable oysters/m²	Harvestable oysters/acre	Bags per acre
Big John Bar	15	360	96.00	0.00	0.00	0.00	0.00
Boathouse Lumps #1	15	128	34.13	0.78	0.27	1079.20	4.80
Boathouse Lumps #2	15	348	92.80	0.00	0.00	0.00	0.00
East River #1	30	151	20.13	0.00	0.00	0.00	0.00
East River #2	15	1172	312.53	1.11	3.47	14029.60	62.35
East River #3	15	1	0.27	0.00	0.00	0.00	0.00
Escribano Point #1	15	5	1.33	0.00	0.00	0.00	0.00
Escribano Point #2	15	0	0.00	0.00	0.00	0.00	0.00
Half Moon Bar	15	759	202.40	0.00	0.00	0.00	0.00
Mussel Beds	15	164	43.73	0.00	0.00	0.00	0.00
No Name Bar	15	427	113.87	0.00	0.00	0.00	0.00
Point No Point	15	5	1.33	0.00	0.00	0.00	0.00
Square Bar	15	409	109.07	0.00	0.00	0.00	0.00
Trout Bayou #1	15	1	0.27	0.00	0.00	0.00	0.00
Trout Bayou #2	30	1544	205.87	0.13	0.27	1079.20	4.80
White Point Bar #1	15	23	6.13	0.00	0.00	0.00	0.00
White Point Bar #2	15	35	9.33	0.00	0.00	0.00	0.00

Future Oyster Work

- Continue NRDA Project monitoring
- RESTORE monitoring in Apalachicola Bay
- Mapping of NRDA and RESTORE reefs
- Cat Point Living Shoreline monitoring

Questions?

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Thank you!
Jonathan Brucker, Nikkie Cox,
Megan Christopher