Oyster reef mapping and monitoring to support SW Florida restoration goals

Eric Milbrandt, Mark Thompson, A.J. Martignette

Marine Laboratory, Sanibel-Captiva Conservation Foundation

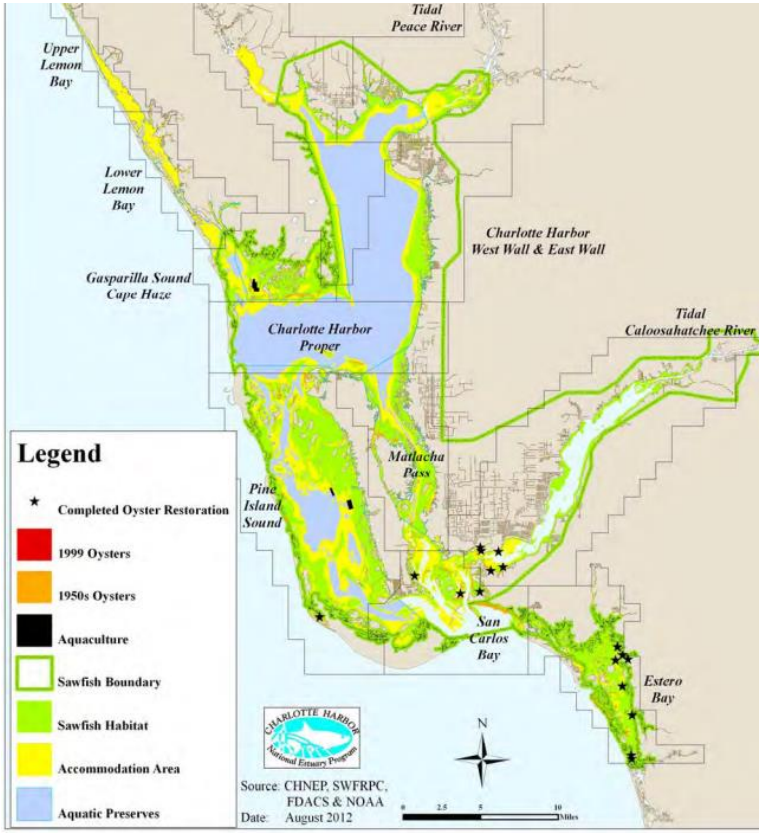
ICSR '16

Charleston, SC

SCCF
Sanibel-Captiva Conservation Foundation
Marine Laboratory

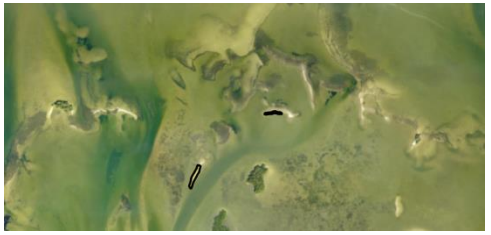
CHNEP Oyster Restoration Plan 2012

- **SW Florida Oyster Working group held workshops**
- **Restoration Suitability Model (bathymetry, salinity) identified 40K acres of potential area; actual 1-6K acres**
- **90% loss historically**
- **By 2020, map, restore and monitor oyster reefs in 50% estuary segments**



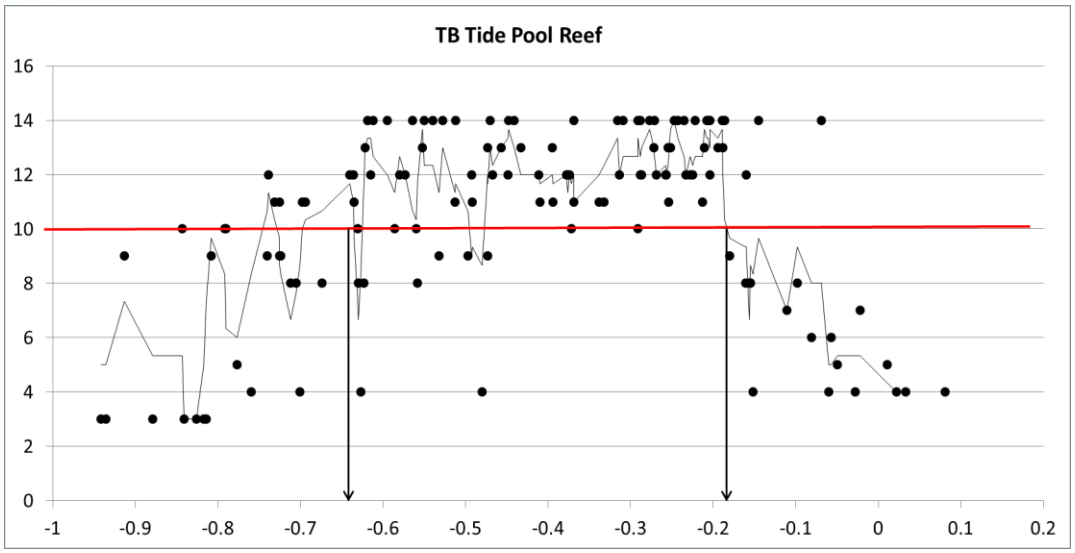
SCCF Mapping Oyster Reefs

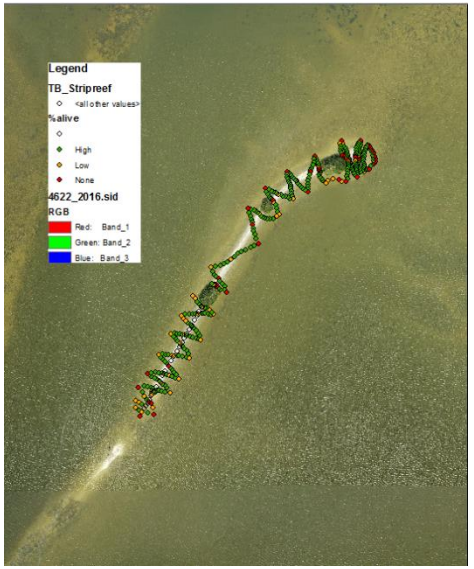
- Aerial interpretation (Grizzle et al. 2002, JSR 21: 749-756)
  - Color (gray, mottled = live oysters; white=dead)
  - Shape (round to oval, snake-like)

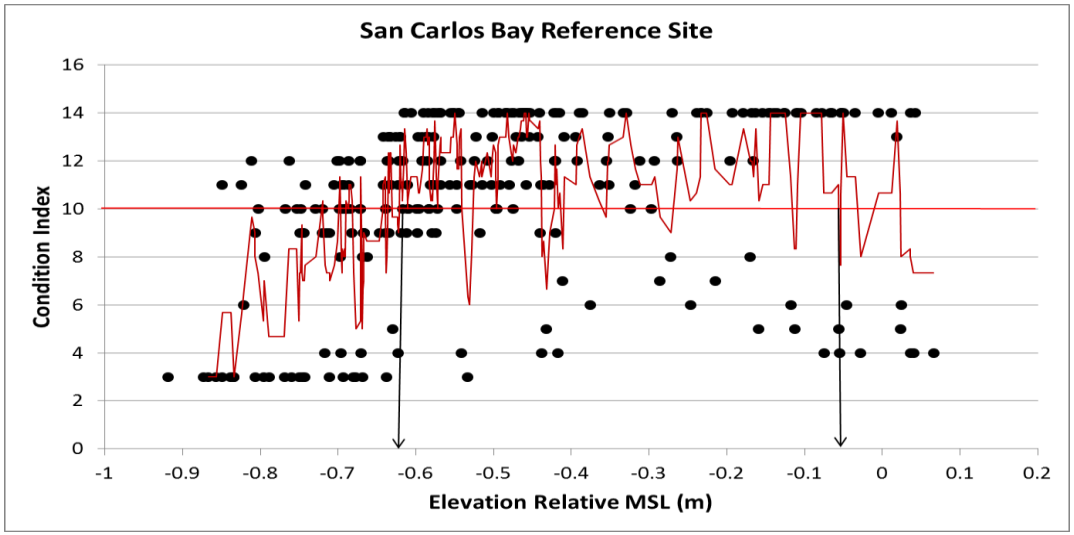


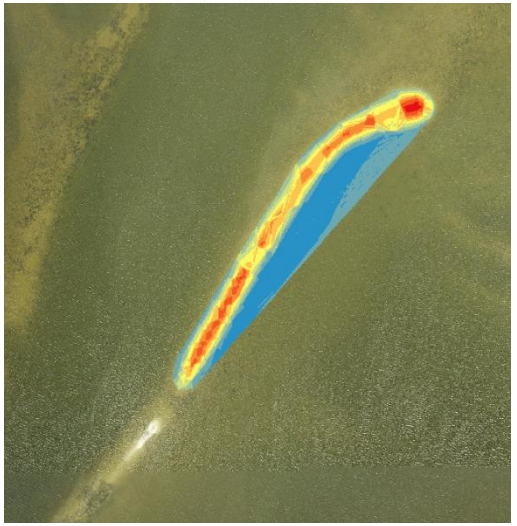
- Field Verification
  - Trimble RTK
    - Perimeter
    - Points-Elevation
  - Rapid Point Condition Index
    - Cluster size
    - Percent live/dead
  - Quadrats
    - n=5 0.0625 m2 quadrats (25cm X 25cm)

Results-Condition Index vs elevation

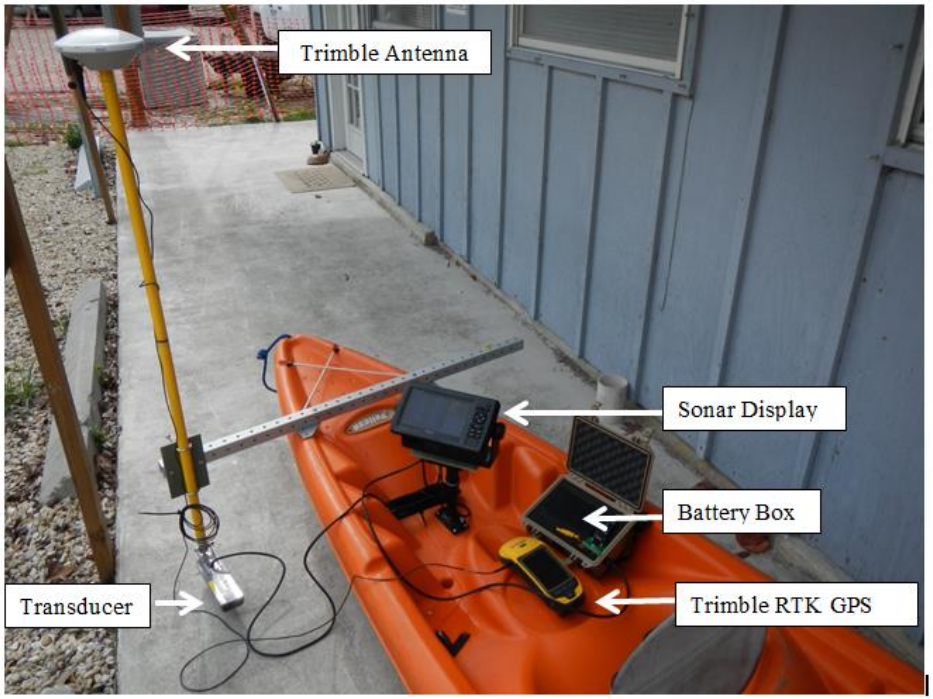


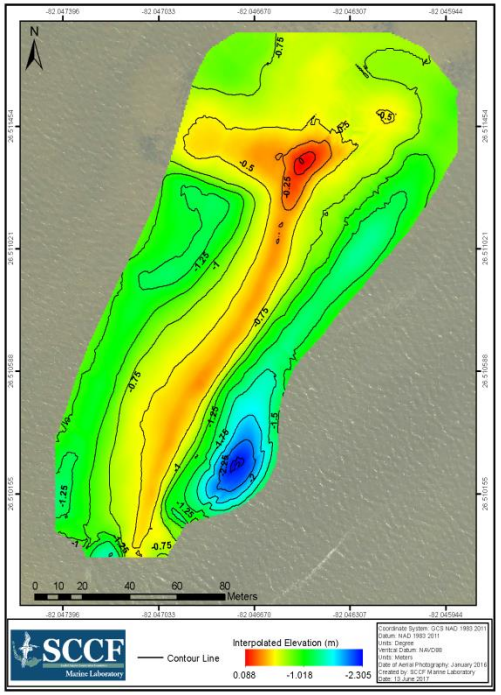






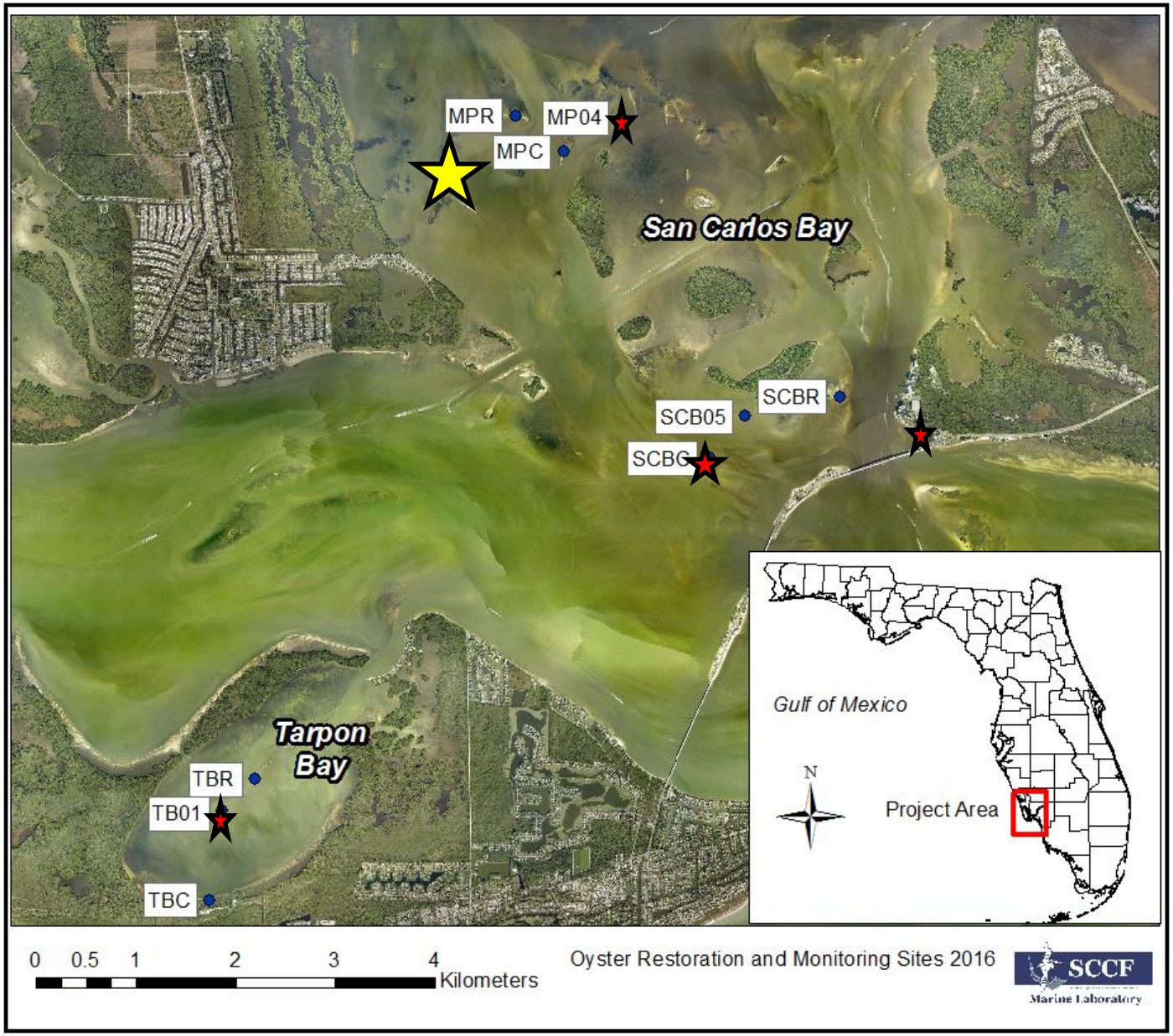
Pre-Deployment Elevation Surveys





- Done at high tide from a kayak
- Used to determine final project footprint
- Trimble used to spot check Contractor or volunteers while deployment is underway

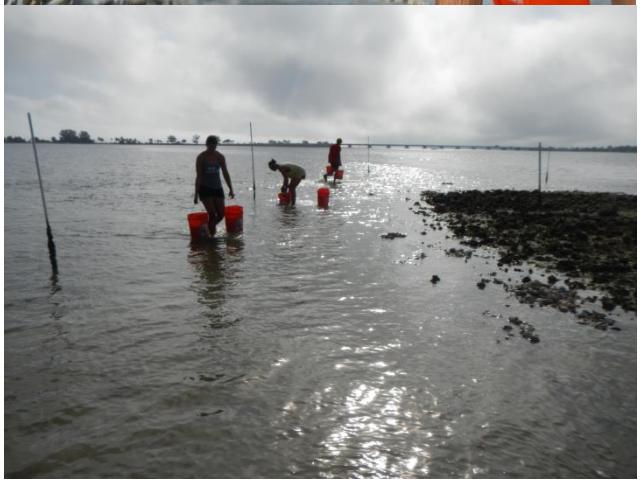
2015-2018 Restoration Projects



Volunteers Deploy (Nov-Dec 2015)

Two reefs (100 yd^3) were constructed by hand with volunteers because of close proximity to seagrass (*Halodule* and *Thalassia*) and shallow depth

Tarpon Bay

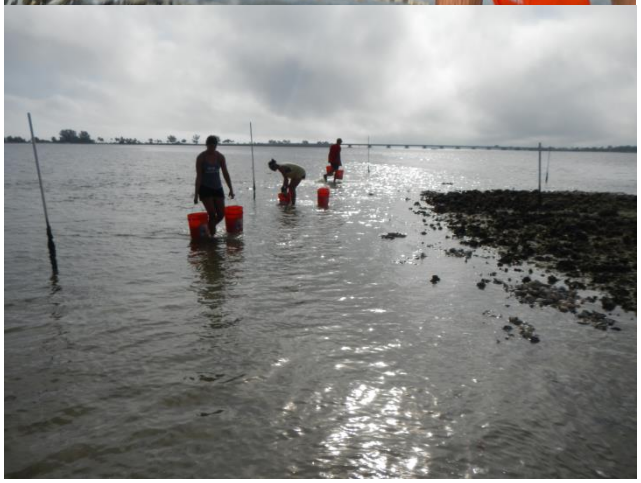


San Carlos Bay

Construction (Nov-Dec 2015)

Two reefs (100 yd^3) were constructed by hand with volunteers because of close proximity to seagrass (*Halodule* and *Thalassia*) and shallow depth

Tarpon Bay

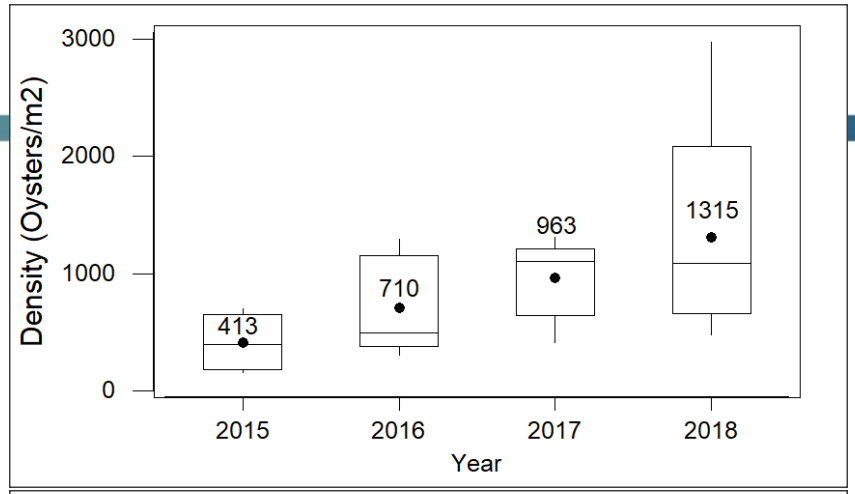


San Carlos Bay

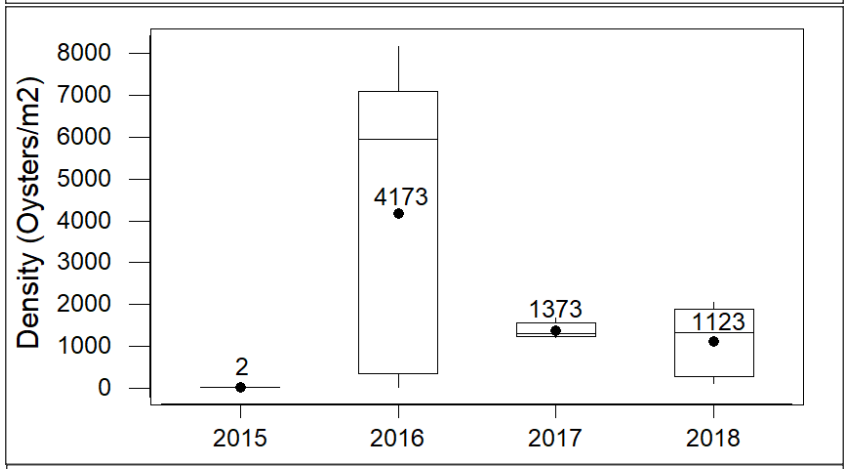
Tarpon Bay Reefs

Oyster Density

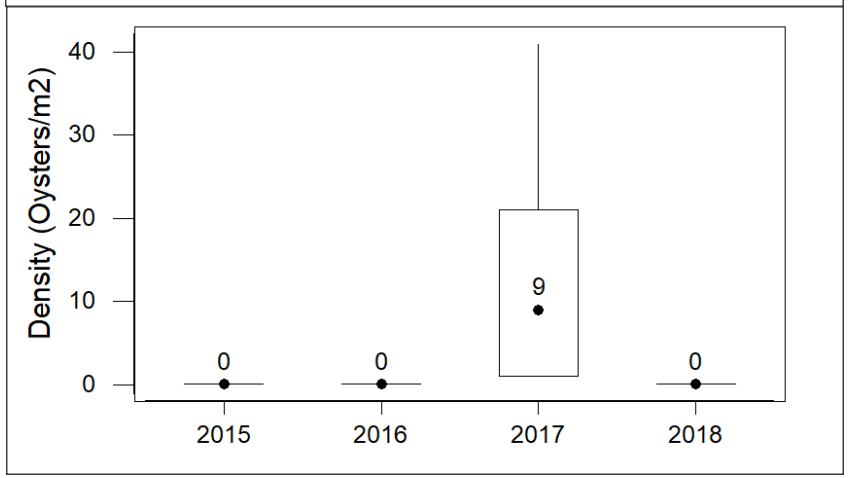
Reference



Restoration



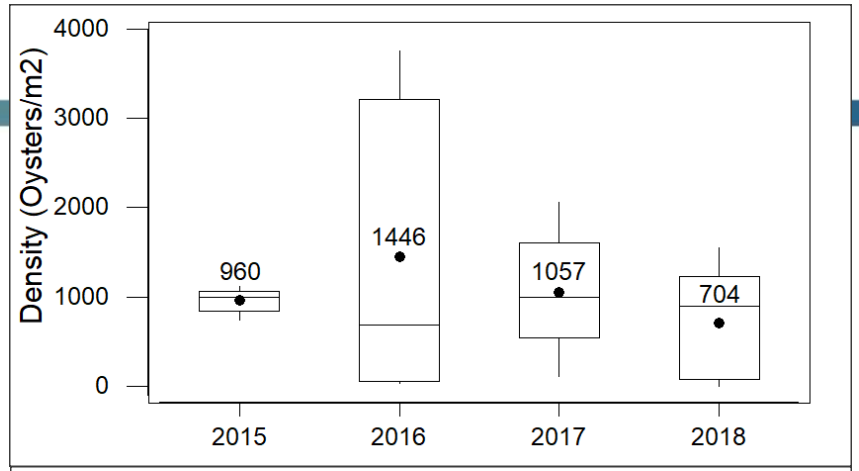
Control



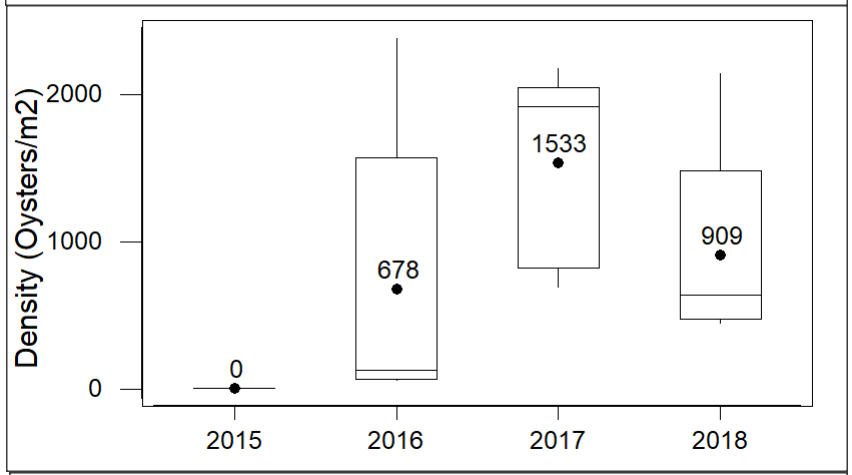
San Carlos Bay Reefs

Oyster Density

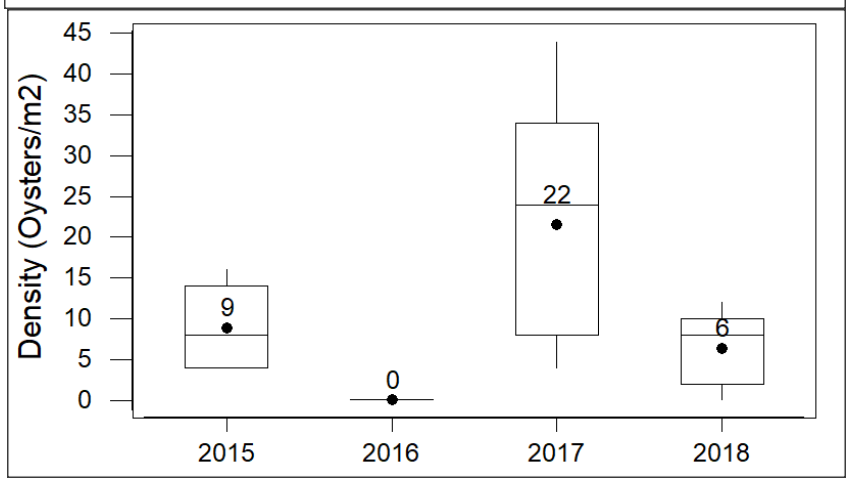
Reference



Restoration



Control



Tarpon Bay Restoration Site in 2018

Construction (Jan-Feb 2016)

One large reef (730 yd^3) constructed by a local marine contractor and excavator and barge

DEPARTMENT OF ENVIRONMENTAL PROTECTION
FLORIDA

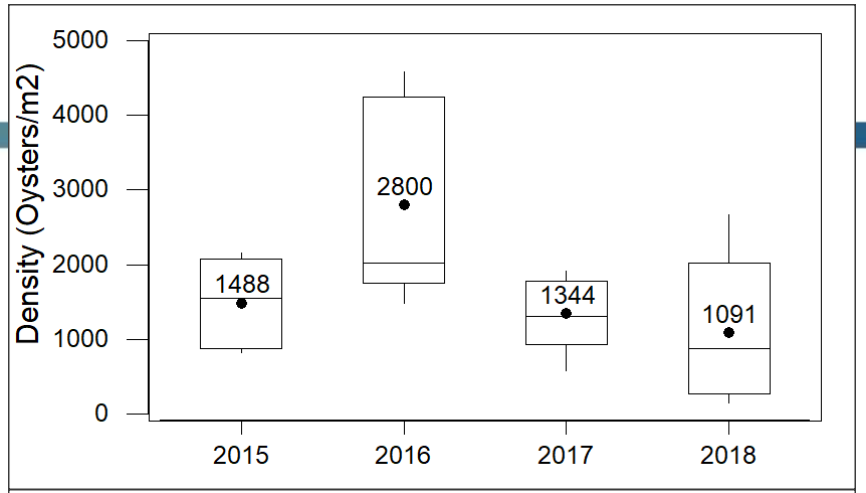
Reference

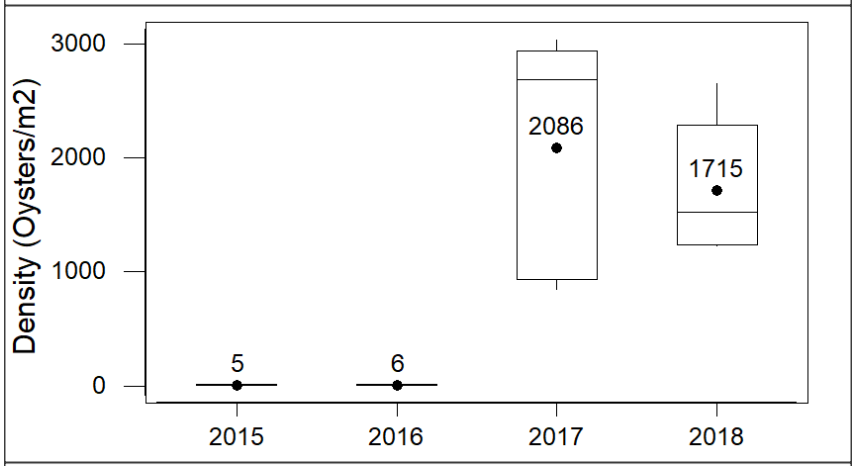
Matlacha Pass Reefs

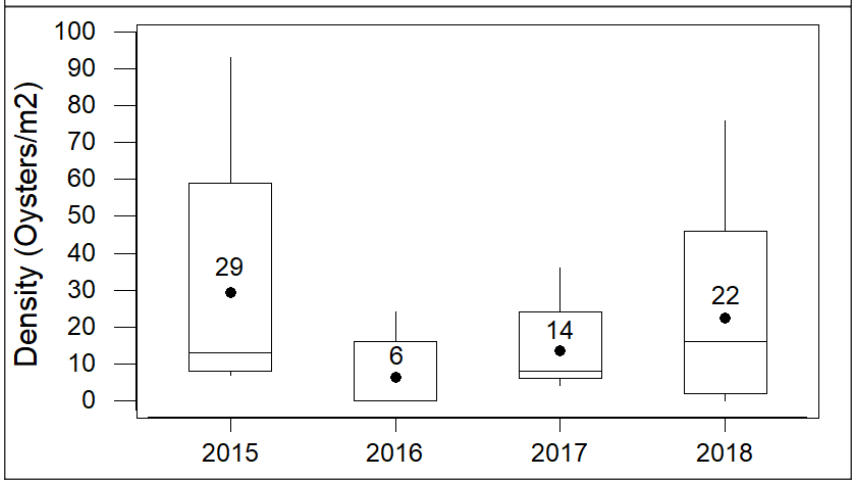
Oyster Density

Restoration

Control





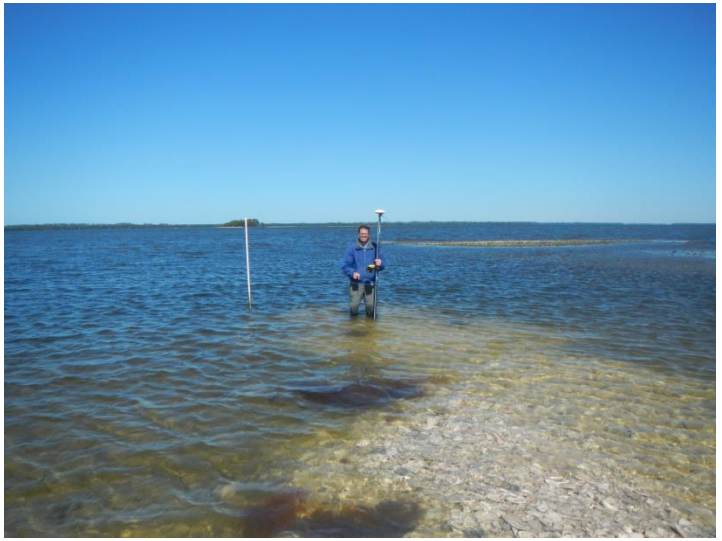


Summary Tables 2009-2016

Site	acres_restored
PuntaRassaRest	0.20
SCBRest01	0.24
MPRest01	0.29
MPRest02	0.78
TBRest01	0.68
CBRest06	0.01
CBRest05	0.04
CBRest04	0.03
CBRest02	0.03
CBRest03	0.03
CBRest01	0.05
Total	2.38

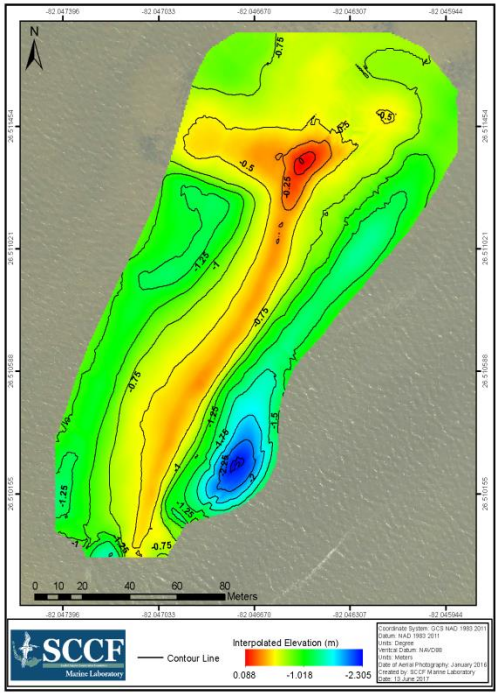
2018 Deployment

Large reef (750 yd^3) by Texas Aquatic Harvesting



WCIND

2018 Deployment



Pre-deployment survey

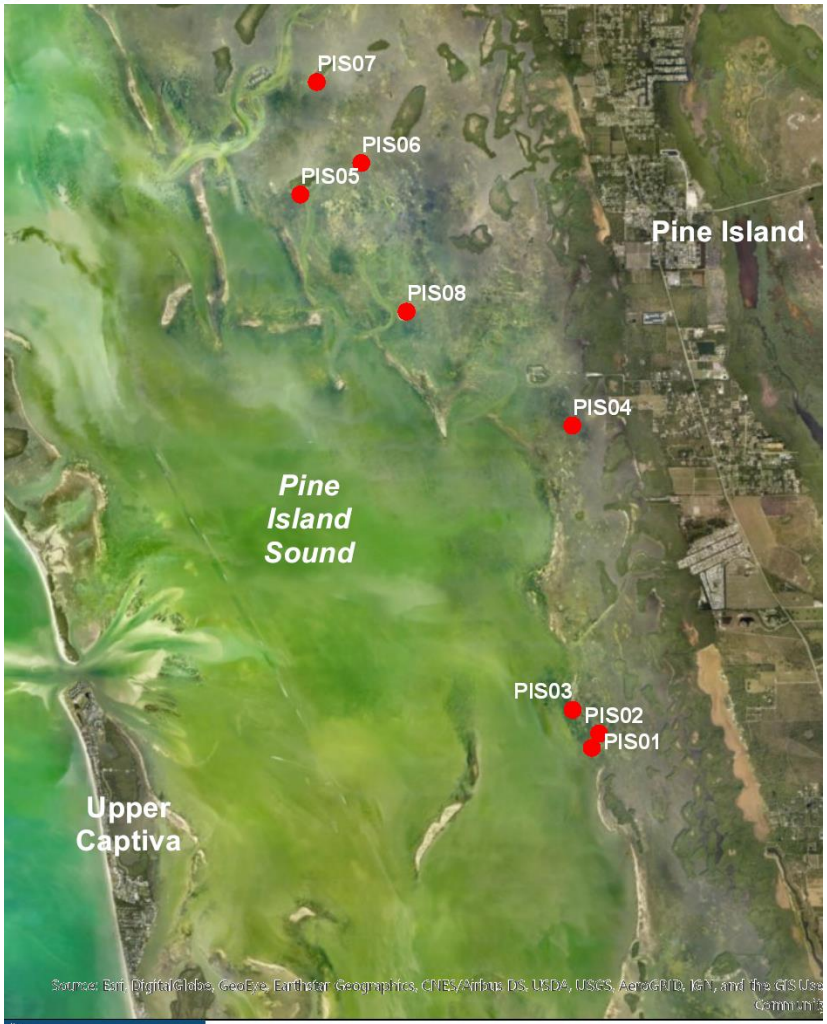
~1.0 acre
Spot checked elevations
Plan to re-survey in May 2018
Quadrat sampling in February 2019

On the horizon 2019-

Initial site visits May 8

Applying for FDEP (05/25/18; pre-app meeting) and USACOE requesting informal sawfish consultation (A. Brame, NMFS)

Pine Island Sound Rookery Island Restoration



Ecological Engineering 83 (2015) 394–404

Contents lists available at ScienceDirect

Ecological Engineering

journal homepage: www.elsevier.com/locate/ecoleng

A multiple habitat restoration strategy in a semi-enclosed Florida embayment, combining hydrologic restoration, mangrove propagule plantings and oyster substrate additions

E.C. Milbrandt[a,*], M. Thompson[a], L.D. Coen[b], R.E. Grizzle[c], K. Ward[c]

[a] Marine Laboratory, Sanibel-Captiva Conservation Foundation, 900A Tarpon Bay Rd, Sanibel, FL 33957, United States
[b] Department of Biological Sciences and Harbor Branch Oceanographic Institute at Florida Atlantic University, 5700 U.S. 1 N, Ft. Pierce, FL 34946, United States
[c] Jackson Estuarine Laboratory, University of New Hampshire, Durham, NH 03824, United States

Date: 05/02/18
Eric Milbrandt

Paul Tritaik Jeremy Conrad USFWS
Mindy Brown, CHAP

Lessons Learned

- Plan ahead for permitting; visit sites and check elevations
- Understanding reference reefs in your location will help prioritize and design projects
- Use volunteers for outreach and to install a “conservation ethic”
- CHNEP Oyster Restoration Plan goal to restore in “at least 50% of the CHNEP estuary segments,” the right goal?
- Use a multiple habitat approach where appropriate


LET'S
MARINE
LABORATORY
OCEANRIVER
FLORIDA