

Ecological functions of nearshore hard bottom: Field study

David Snyder
Dan McCarthy
Karen Holloway-Adkins
Ken Lindeman



Project Team

Dan McCarthy (Jacksonville University)

Karen Holloway-Adkins (East Coast Biologists)

Ken Lindeman (Florida Technological University)

David Snyder (CSA International, Inc)

Kim Colstad (Coastal Technology Corporation)

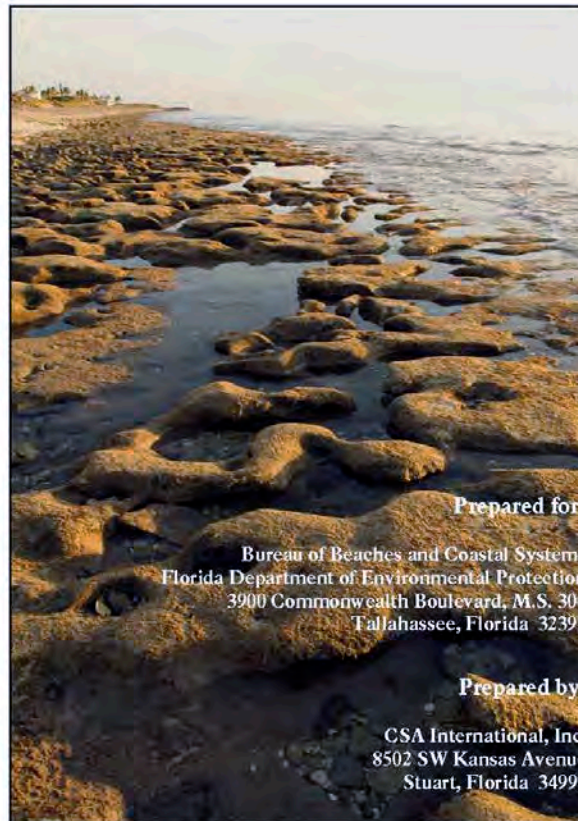
Cheryl Miller (Coastal Ecology Group)

Sponsor: Florida Department of Environmental Protection Bureau of Beaches
and Coastal Systems



Ecological Functions of Nearshore Hardbottom Habitats in East Florida: A Literature Synthesis

June 2009



Ecological functions

- Shelter and feeding resource provisions to over 1000 recorded species of algae, invertebrates, and vertebrates
- Settlement and nursery areas
- Spawning sites (for over 100 species of invertebrates and fishes)
- Feeding stations
- Recreational services

Questions

- How do specific ecological functions provided by hard bottom vary with respect to water depth in the nearshore environment?
- What is the appropriate design and placement of hard bottom or reef mitigation that will restore these ecological functions?

Approach

- Gradient analysis
- Stratified sampling
- Paired natural and artificial sampling sites
- Multiple response variables (from target biota)
- Factors

Depth/Distance from shore

Time

Relief

Stratification

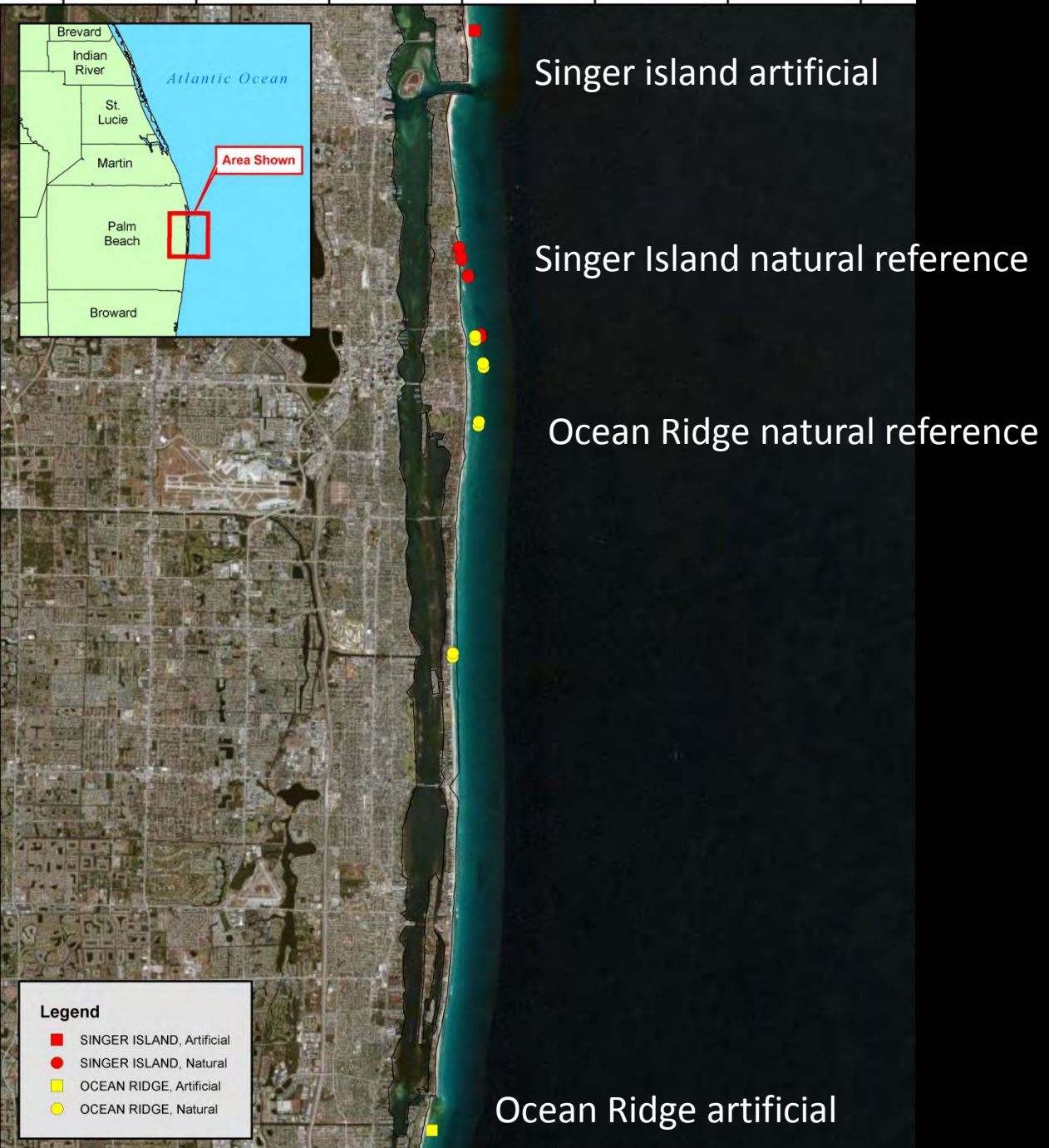
Intertidal (0-1 m)

Shallow subtidal (1-2 m)

Intermediate subtidal (2-4 m)

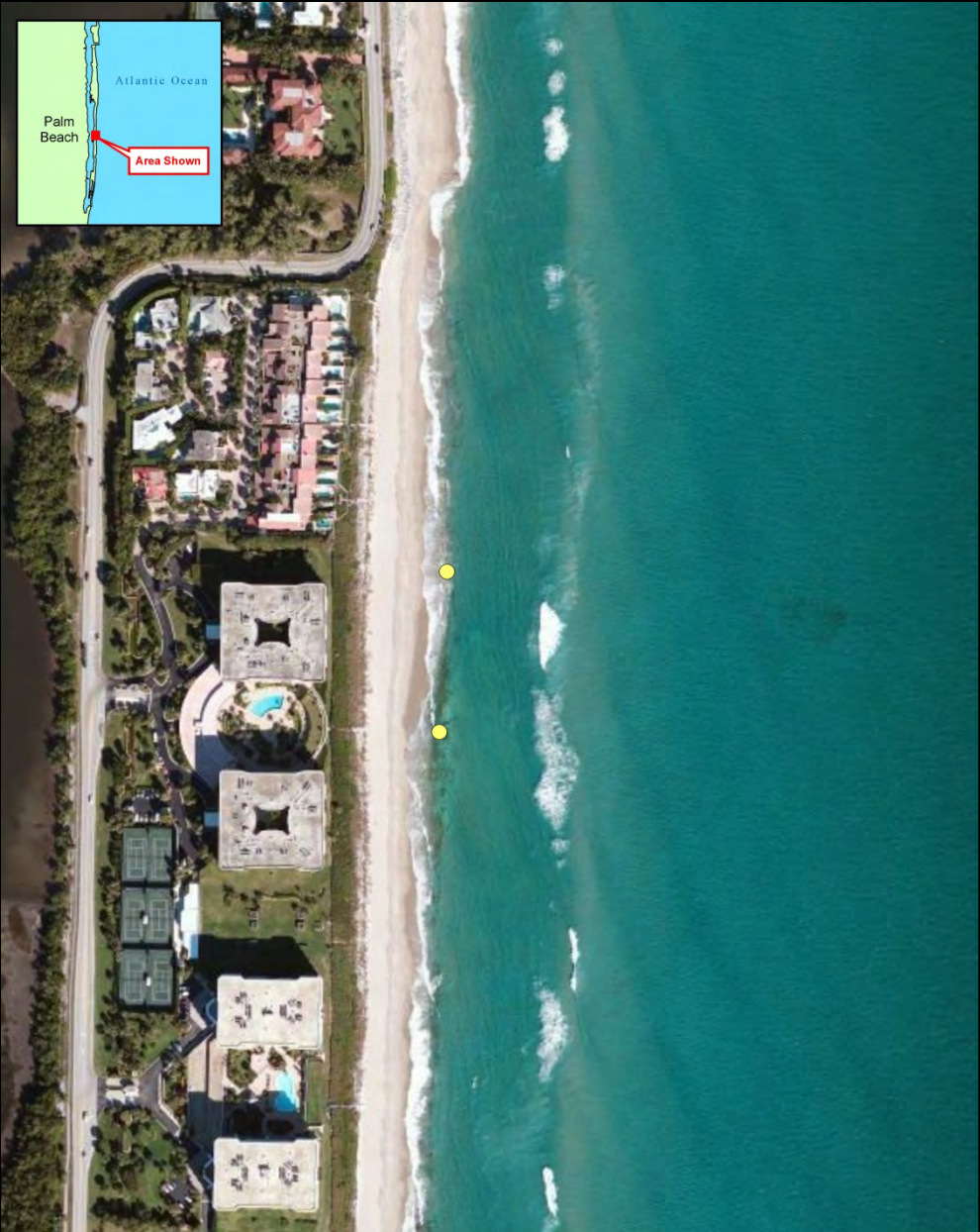
Deep subtidal (4 – 6m)

Study Sites



Individual strata







Intertidal hard bottom (0 to 1 m)



Shallow subtidal hard bottom (1 to 2 m)



Shallow subtidal hard bottom (1 to 2 m)



Intermediate subtidal hard bottom (2 to 4 m)



Intermediate subtidal hard bottom (2 to 4 m)





Deep subtidal hard bottom (4 to 6 m)



Deep subtidal hard bottom (4 to 6 m)



Deep subtidal hard bottom (4 to 6 m)

Singer Island artificial reef built in 2009





Singer Island



Singer Island



Singer Island



Singer Island concrete module



Singer Island concrete module



Singer Island concrete module

Ocean Ridge artificial reef built in 2010





Ocean Ridge



Ocean Ridge

Target biota

- Macroalgae and associated fauna
- Wormrock and associated fauna
- Newly settled fishes
- Epibiota
- Marine turtles



Macroalgae sampling



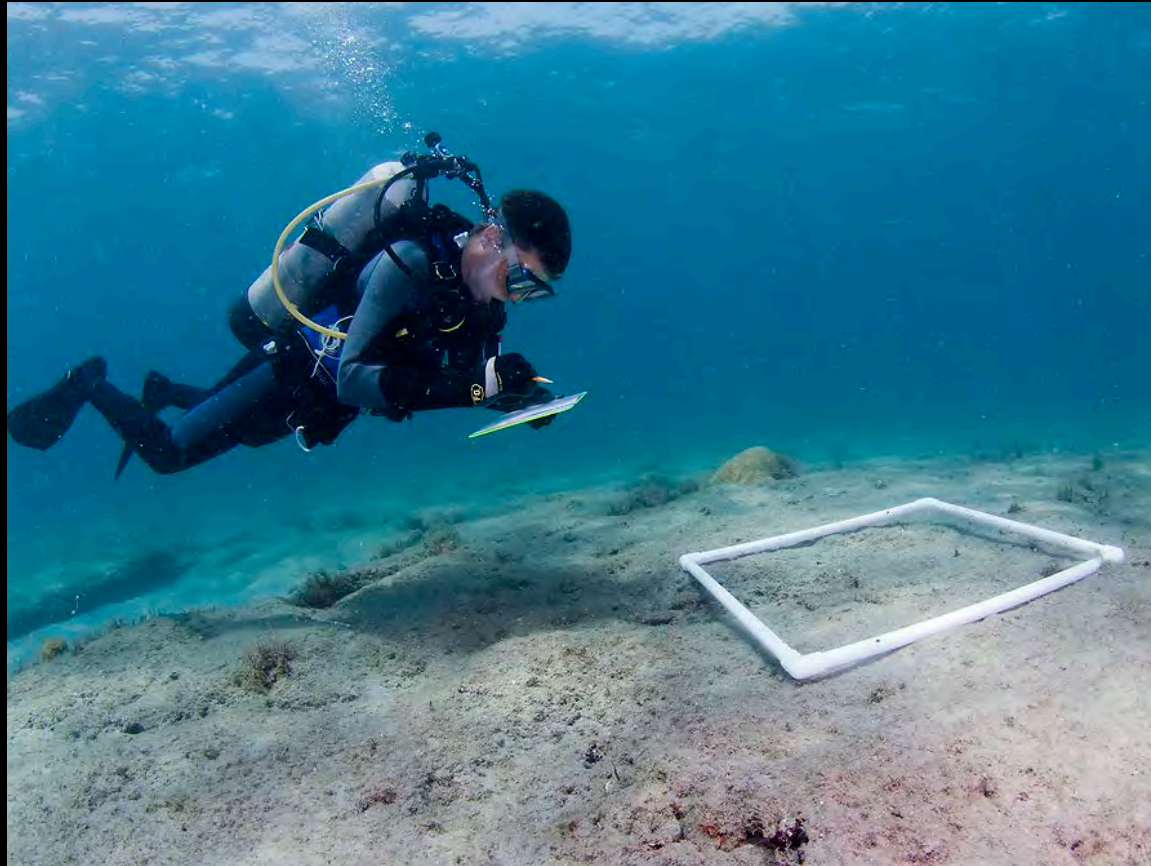
Wormrock sampling



Collecting newly settled fish



Newly settled fish



Quadrat sampling



Turtle censusing

Project schedule

[illegible]

Questions ?

