

# Ecological functions of nearshore hard bottom: Field study

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# Project Team

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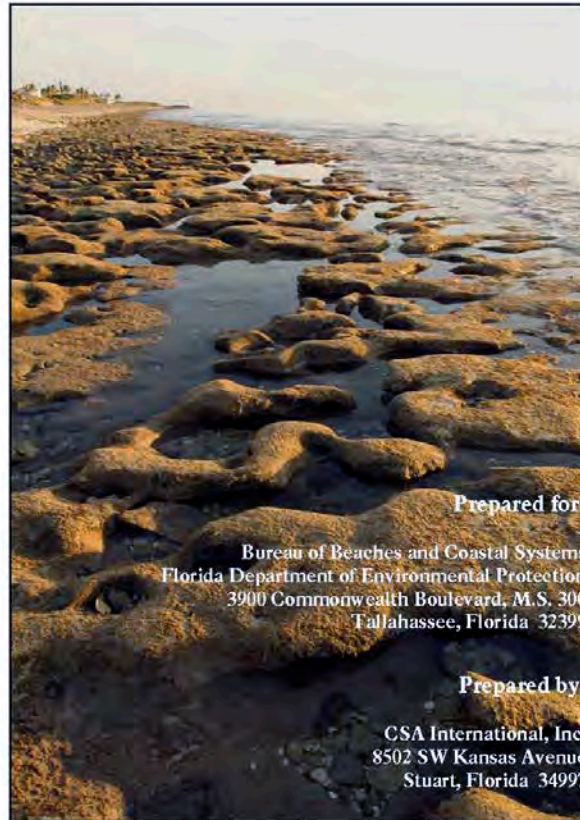
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Sponsor: Florida Department of Environmental Protection Bureau of Beaches  
and Coastal Systems



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

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# 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

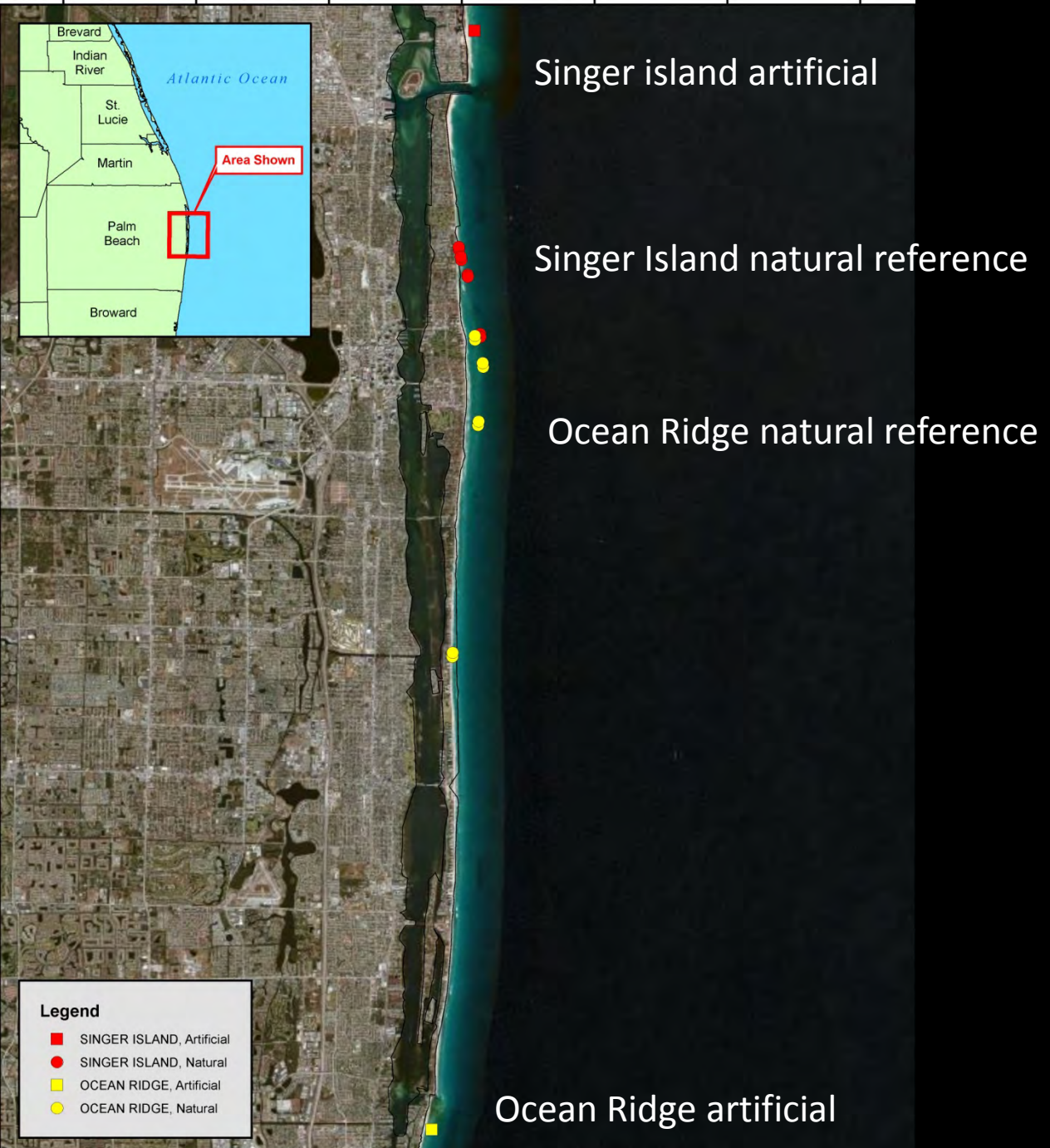
Intertidal (0-1 m)

Shallow subtidal (1-2 m)

Intermediate subtidal (2-4 m)

Deep subtidal (4 – 6m)

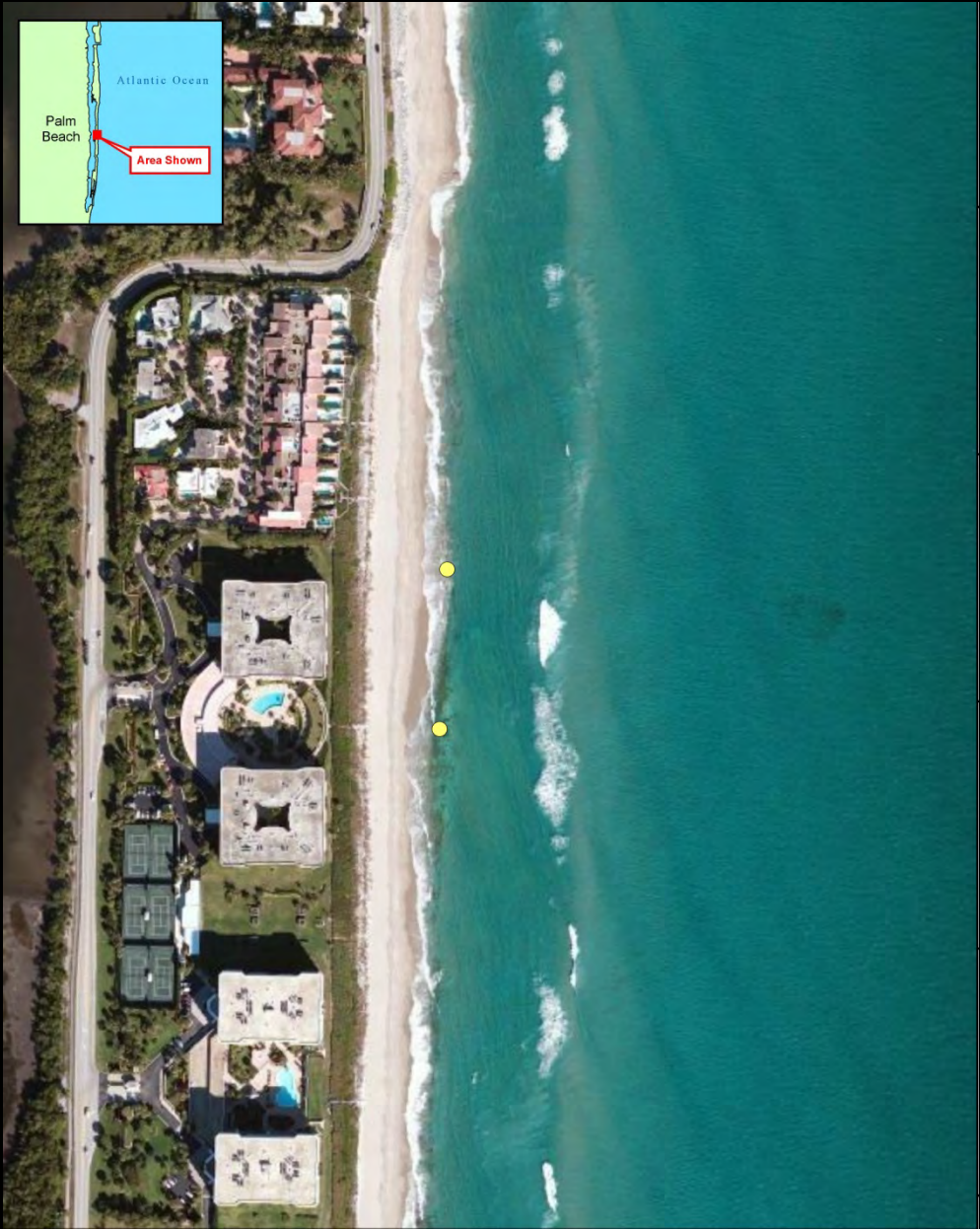
# Study Sites





# 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)**



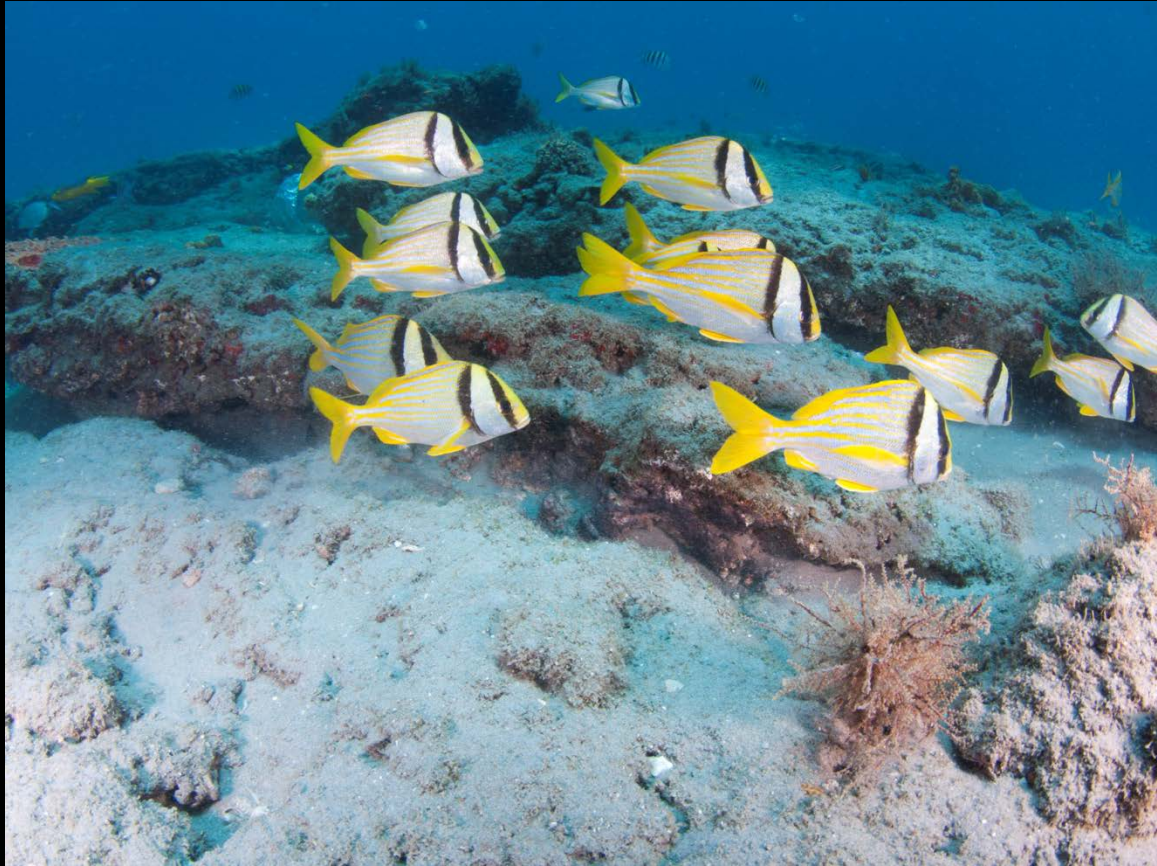
**Intermediate subtidal hard bottom (2 to 4 m)**







**Deep subtidal hard bottom (4 to 6 m)**

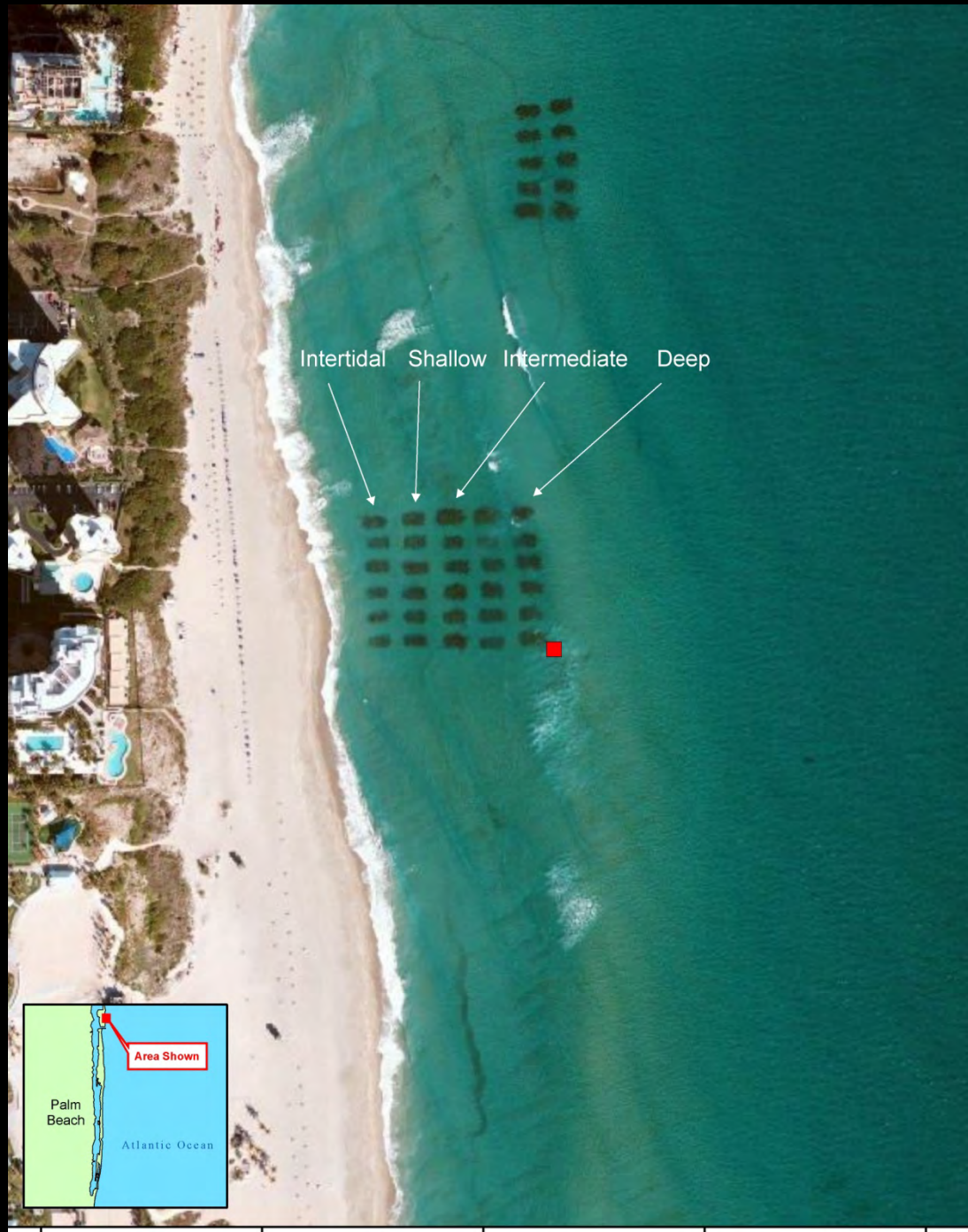


**Deep subtidal hard bottom (4 to 6 m)**



**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**

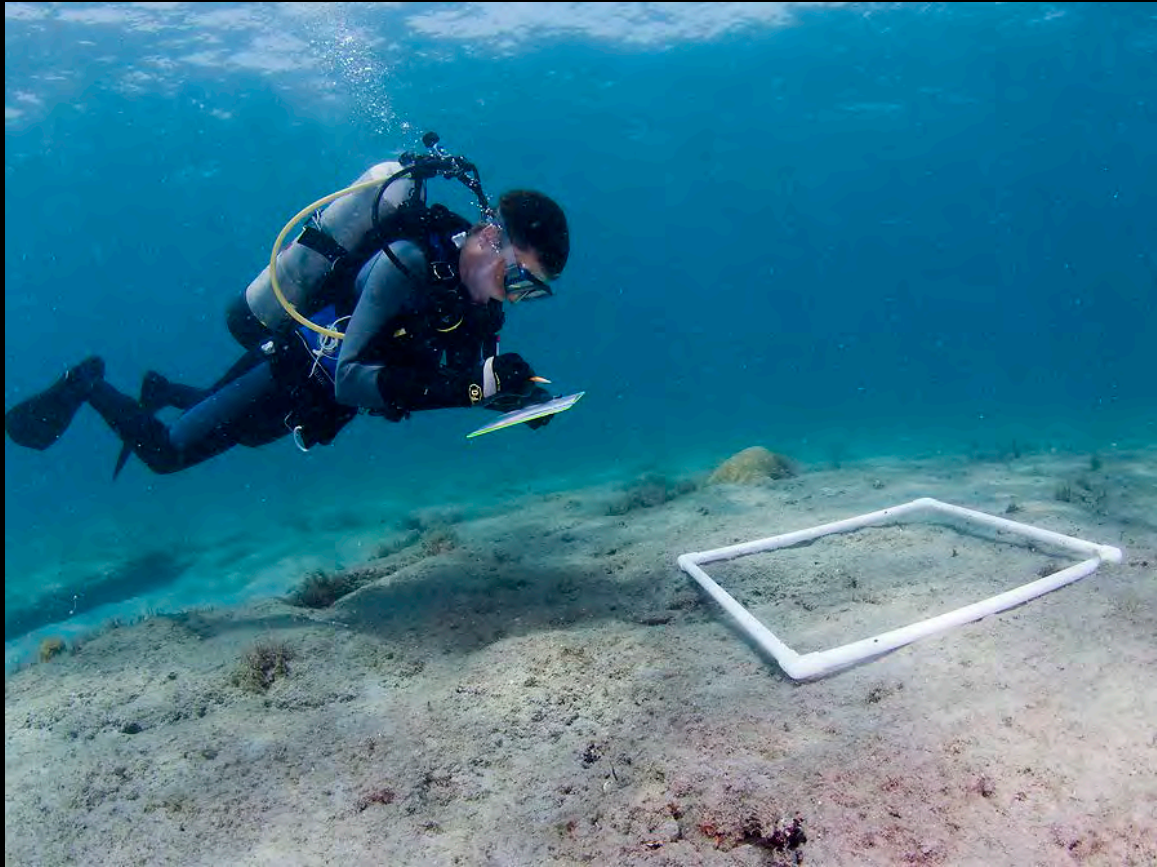




**Collecting newly settled fish**



**Newly settled fish**



**Quadrat sampling**



**Turtle censusing**



# Questions ?

