

# History of hardbottom mitigation

- FDEP has required biological monitoring and habitat assessments of mitigation artificial reefs for nearly 20 years.
- Underlying goal of nearshore hardbottom mitigation is to create replacement habitat to replicate the epibiota and fish assemblages on natural nearshore hardbottom.
- Most assessments of mitigation success have relied on fish and benthic species diversity comparisons and have not examined changes in predatory/prey relationships or specific habitat preferences of newly settled fishes.

# Summary of mitigation differences between FDEP and USACE

- FDEP requirements for hardbottom mitigation are based on water depth and similar vertical relief/hardbottom exposure to impacted natural hardbottom.
- USACE has previously required compensatory mitigation with the condition of persistent exposure during the summer months. This translates into construction of artificial reefs in deeper water and slightly further offshore than impacted nearshore hardbottom.
- Example- Phipps Ocean Park. FDEP required construction of 3.1 acre artificial reef in waters of 5 to 12 ft. In addition to the 3.1 acre mitigation reef, USACE required construction of a 0.8 acre artificial reef in waters depths between 15 and 25 ft.

# Legislative Mandate for the Nearshore Hardbottom Mitigation Study

- FDEP received specifically appropriated funding to investigate the creation of artificial reef habitat as mitigation for nearshore hard bottom impacts.
- The proviso language states that the Department may spend up to \$500,000 conducting a study or studies to assist applicants in the appropriate design and siting of hardbottom or reef mitigation, and to assist in resolving technical differences between hard bottom or reef mitigation requirements of the State and the Corps.

# Project History/Timeline

- FDEP developed a list of research questions, held a workshop in May 2007, and solicited proposals for a study plan.
- Draft study plan was received in August 2007 by CSA Project Team. Approved by TAC in October 2007.
- Two phases- literature review and field study. Literature review was finalized in June 2009. Field study plan was approved by TAC in May 2009 (updated in 2010).
- First sampling event was conducted in June/July 2009. Due to contracting delays, Phase II was not approved by FDEP until late 2011. Second field sampling event was completed in February/March 2012.

# Field Study Research Questions

- How do specific ecological functions provided by hardbottom vary with respect to water depth in the nearshore environment of southeastern Florida (Palm Beach County)?
- What is the appropriate design and placement of hardbottom or reef mitigation that will restore ecological functions of NHB in southeastern Florida?
- Does NHB provide specific ecological functions which are lost when NHB is buried during beach nourishment?

# Purpose of TAC meeting

- The field study is being implemented using an adaptive management approach to allow for evaluation of data gaps and adjustment of field methods in Year 2.
- Solicit TAC member feedback on the changes that have occurred in the field study plan and recommendations for Year 2 sampling.
- Ultimate goal of the TAC is to ensure that the study is consistent with the FDEP legislative mandate and meets the intent of the proviso language .



# Discussion Points

- Burial of natural hardbottom sampling sites and location of Ocean Ridge natural hardbottom sites
- Burial of artificial reef limestone boulders and concrete modules
- Layout of artificial mitigation reefs and depth gradient comparisons
- Challenges in surveying for turtles during Year 1 due to weather conditions and potential changes in Year 2. Ability to target water observations with foraging habitat/shelter functions?
- Ability to assess parameters not currently in protocol?