

Greenhores vs. Ivan: Response of a Created Saltmarsh to a Major Hurricane

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Abstract

Project Greenhores is a coastal habitat restoration effort that created emergent and submerged saltmarsh vegetation along ~ 2 miles of urban shoreline on the northwest shore of Pensacola Bay, FL. The primary objective of the Project was to create a highly visible, habitat-rich, educational shoreline restoration project which will serve as a restoration model for other disturbed areas of estuarine shoreline. Project Greenhores has received several awards including the 2003 Coastal America Partnership Award, the 2004 EPA Gulf of Mexico Program's Gulf Guardian Award and The Conservation Award from the Francis M. Weston Audubon Society in 2007. The eastern, Phase I of the project was completed in 2003; construction of Phase II was initiated in 2007. In between, Pensacola Bay was subject to the worst Hurricane Ivan had to offer.

The site for Phase 1 is a southward facing pocket beach formed by the Pensacola Bay Bridge causeway to the east and Muscogee Wharf to the west. The pre-construction cross shore slope for the first 400 ft was a relatively shallow sand shelf, or flat to a depth of about - 7 ft, and then dropped off more steeply to depths of about - 20 ft. An ad-hoc revetment of broken concrete, brick, sections of pavement, and other construction debris had evolved to protect the upland roadway, Bayfront Parkway, which sits from 50' to 150' landward of the shoreline. This revetment had little, if any, effect during Hurricane Ivan as Bayfront Parkway was undermined and essentially destroyed.

Project Greenhores consists of two main components – a saltmarsh habitat, primarily smooth cordgrass planted on “islands” constructed of placed sand fill, and a segmented shore-parallel breakwater that protects the marsh from wave erosion and also provides a hard substrate habitat for oyster propagation. Both components weathered the hurricane essentially unscathed. The paper presents a summary of the pre-construction climate analysis, the original and modified design of Phase I, a brief history of the construction and pre-storm evolution of the project, and the short-term and multi-year response of Phase I to hurricane conditions. Lessons learned from the response that were incorporated into the design of Phase II are discussed.

Recommended Conference Theme: Ecosystem Resiliency: Coastal Recovery

Benefits to attendees: This paper provides a “real world” and unequivocal case study of an important, and often difficult to answer question: “How does a re-created coastal habitat respond to an extreme event?”