COASTAL RESILIENCE
Adapting Natural and Human Communities to Sea Level Rise and Coastal Hazards

Tools to Support Adaptation and Hazard Mitigation

Sarah Murdock
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costalresilience.org
nature.org/marine
Climate & Disaster Risk Reduction - Key Work Areas

Focus on coastal and riverine floods

Science
Role and Cost-Effectiveness of Natural Solutions
Assessing Risk Vulnerability & Solutions
see www.coastalresilience.org/resources

Decision Support Systems
Coastal Resilience
Climate Wizard

Action
Demonstration Projects
NE US (NY, CT, NJ)
Gulf of Mex
Small Is. Developing States (SIDS)
MesoAm Reef – Mexico

Policy and Finance
International – e.g., UNFCCC, UNISDR
US Policy

Corporate engagement
Re-Insurance
Engineering
Coastal Resilience aims to reduce socio-economic & ecological risks of coastal hazards.
Coastal Defense

Coastal Defense quantifies how natural habitats (oyster reefs, tidal marshes, seagrass ...) protect coastal areas by reducing wave-induced erosion and inundation. It uses standard engineering techniques to help you estimate how and where to restore or conserve critical habitat, and increase the resilience of your coastal community and infrastructure.

Wave attenuation with a healthy tidal marsh.

Wave attenuation with a degraded tidal marsh.
“The Coastal Resilience Network supports a community of practitioners around the world who are applying the approach, planning methods and tools to coastal hazard and adaptation issues.”
Coastal Resilience 2.0 available at http://maps.coastalresilience.org

Coastal Resilience Network

A major part of Coastal Resilience is providing easy access to and training for interactive support tools and other resources that help decision-makers
Assess Risks - social, economic and ecological - from current and future coastal hazards including storm surge and sea level rise, and Identify Solutions in conservation and development decisions to help effectively reduce those risks. We are working extensively with partners, collaborators and decision-makers in each of these geographies around the world.
Apps that address specific coastal issues
Habitat Explorer: Building a Recovery Tool in Response to Hurricane Sandy

Marsh protection analysis with 5-meter inundation
Evaluating social and economic assets behind marsh complexes

Habitat Explorer In action
Evaluating social and economic assets behind marsh complexes
Floods with social and economic data, and a view to tomorrow
Risk Explorer

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Coastal Defense: Gulf of Mexico
Coastal Defense:
Gulf of Mexico

Reef Characteristics
- Your oyster reef is 80.0m from the shoreline, with a base width of 10.0m, and a crest width of 4.0m.
- It is 0.3m tall, and the water depth is 0.53m; it is subemerged.
- Offshore wave input conditions: $H_o=0.51m$, and $T_o=3.04s$.

Model Outputs
Below are close-ups of average wave height and depth profiles near your reef - they were created by running our wave model over 7 bathymetry of profiles that:

- On average, wave heights in the region protected by your oyster reef were reduced by 52% (max=80%; min=23%).
- Wave energy was reduced, on average, by 71% (max=91%; min=41%).