



The Nature
Conservancy



Protecting nature. Preserving life.™

Enhancing Coastal Resilience on Virginia's Eastern Shore

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Sr. Project Scientist
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The mission
of The Nature Conservancy
is to
conserve the lands and
waters
on which all life depends.

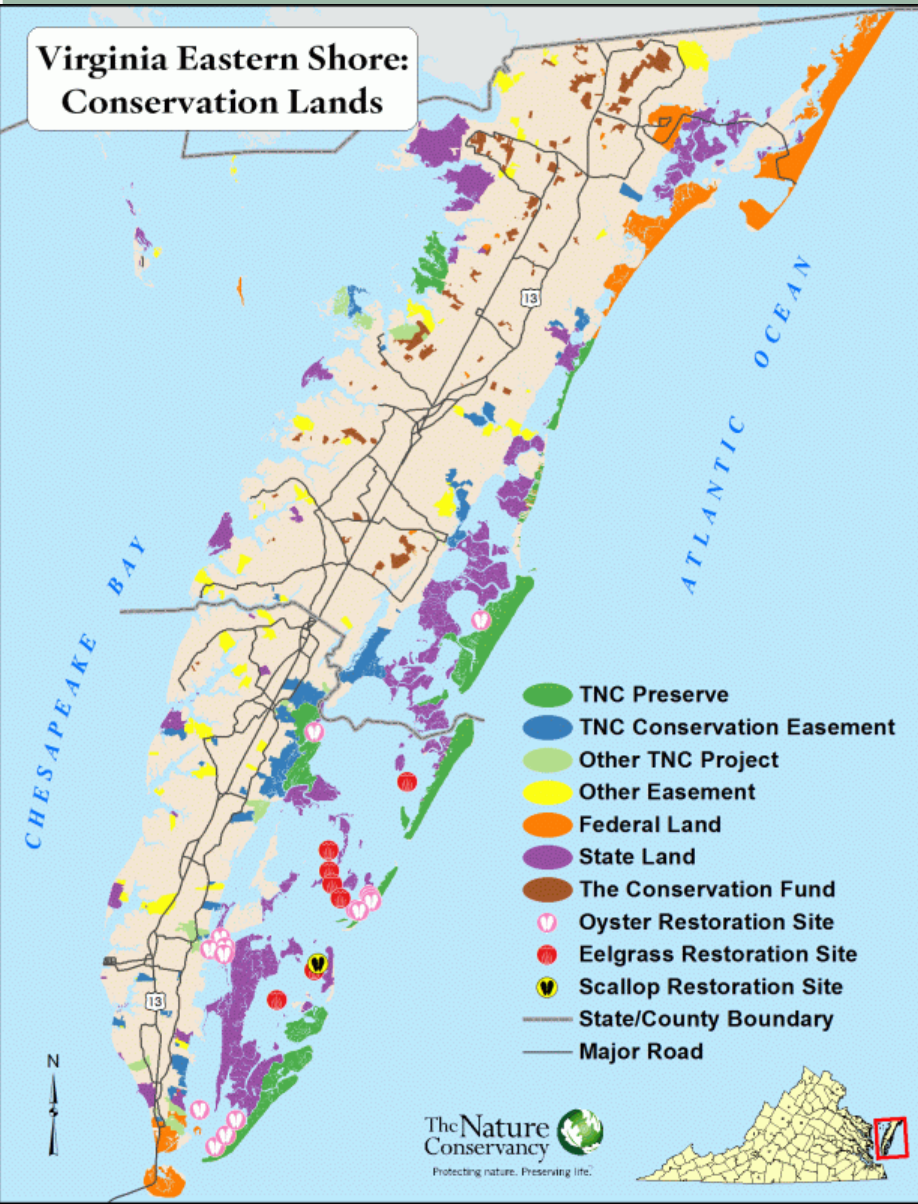
Virginia Coast Reserve



- Land Protection
- Protecting, Managing and Monitoring Shore and Water Birds
- Marine Restoration
- Outreach and Education
- Coastal Resiliency

Virginia Coast Reserve

Virginia Eastern Shore: Conservation Lands



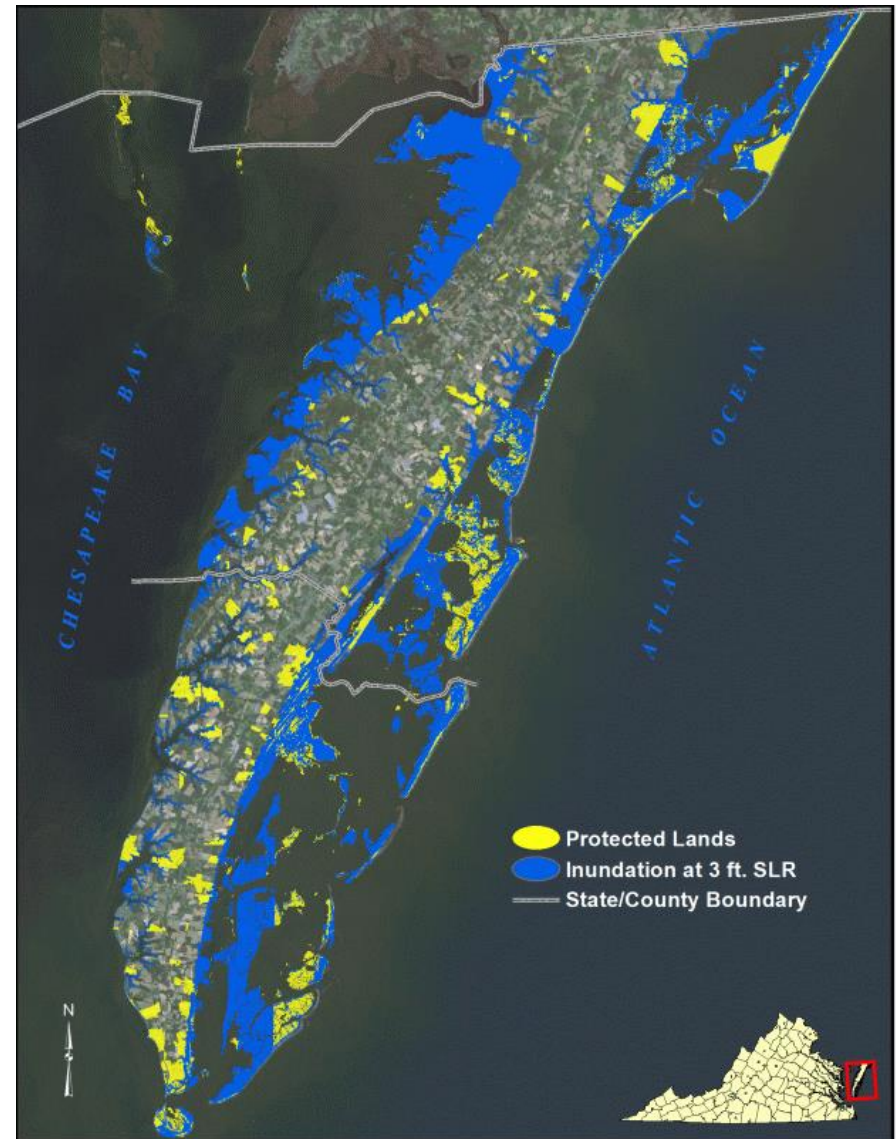
TNC + state, federal and other partners have invested \$100 million to protect and restore:

- 133,000 acres
- 70 miles of coastline (94% of seaside)
- 14 barrier islands
- 7 state managed oyster reef sanctuaries
- 50 acres of oyster reef
- 5,000 acres of eelgrass meadows
- 10,000 acres upland forest, farmland and wetlands
- 1,300 acres migratory land bird habitat

133,000 acres protected on
Virginia Eastern Shore

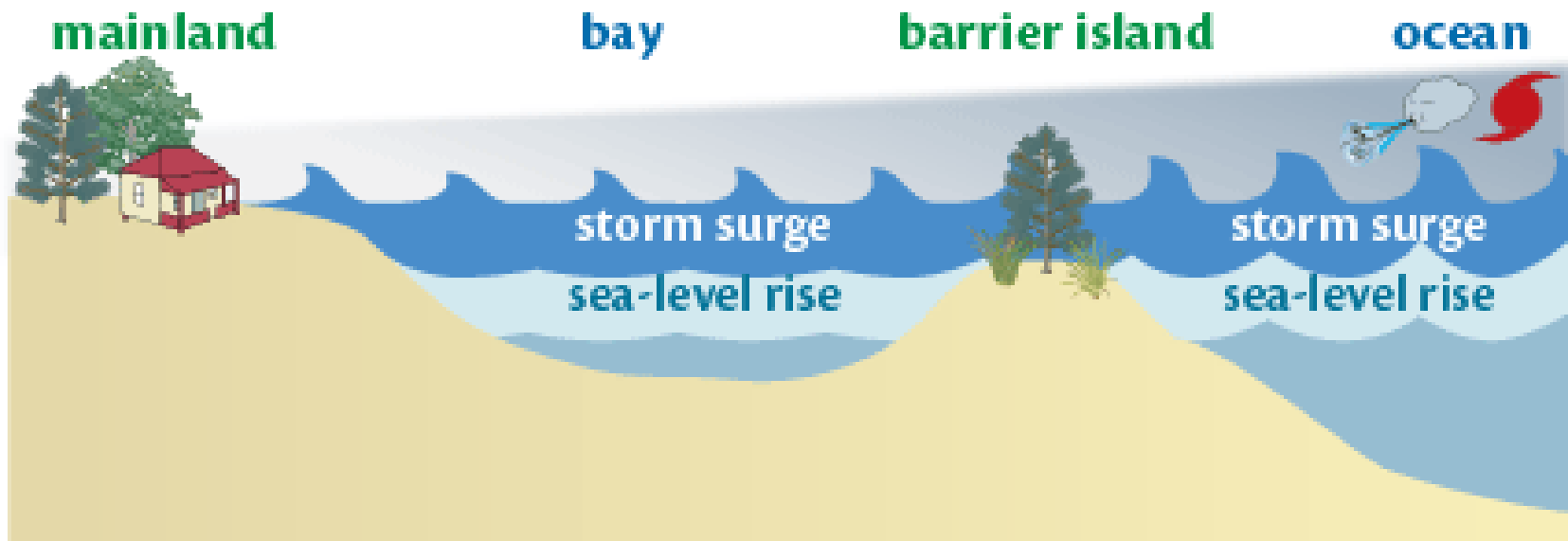


50% of the protected lands are
vulnerable to inundation





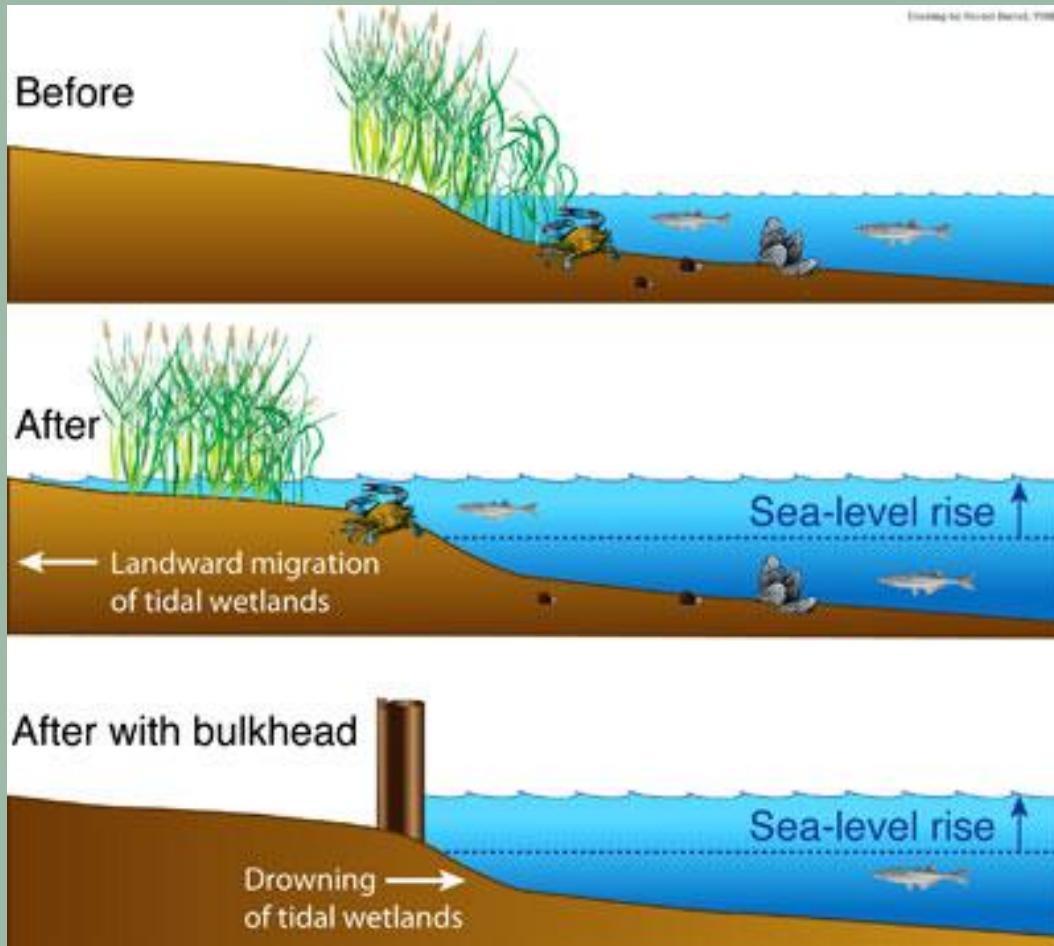
In addition to rising seas, storms are more intense and frequent; together, storm surge and sea-level rise cause extreme flooding



Conventional vs. nature-based solutions



Conventional vs. nature-based solutions



Drawing by Harold Burrell
Photos courtesy of VIMS



Coastal Resilience and Risk Reduction: A Global Priority

Bring science and action together to sustain resilient coasts where nature is part of the solution to reduce risk from flooding, sea-level rise, and storm surge.



Coastal Resilience and Risk Reduction Conservation Outcomes



Communities are made safer and more resilient to natural hazards.



Ecosystem health and functionality are restored to benefit both humans and nature.



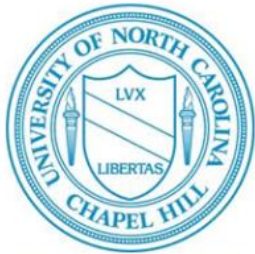
The benefits of natural solutions quantified and embraced where appropriate to reduce climate hazard risks.



Eastern Shore is the Coastal Resilience Laboratory for the Atlantic



Enhancing Coastal Resilience on Virginia's Eastern Shore Grant Project





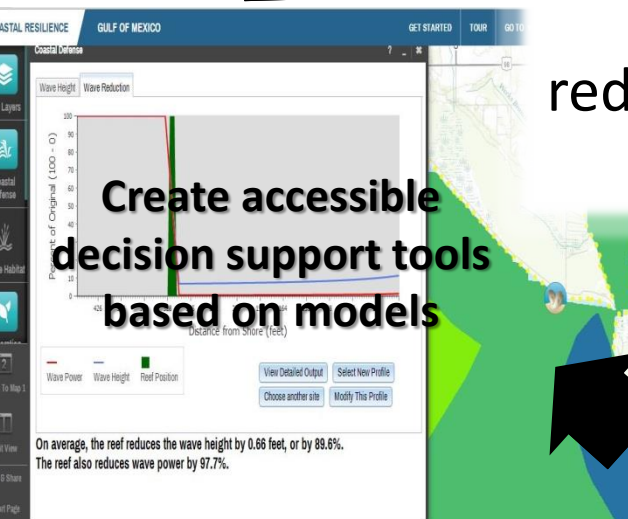
**Promote Solutions to
Protect People and
Nature**



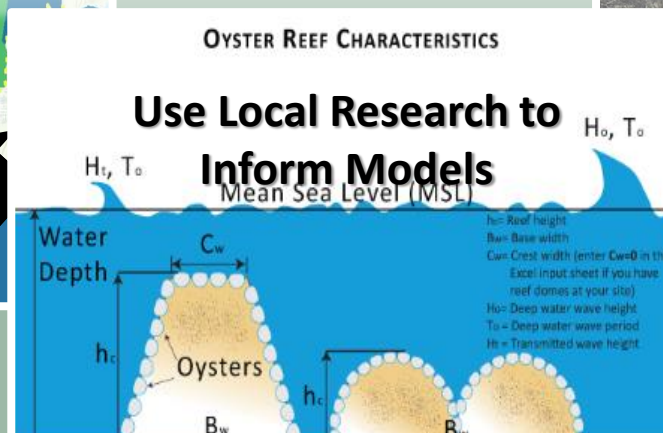
Engage Community Leaders



**Implement
Demonstration
Projects**



**Create accessible
decision support tools
based on models**



**Use Local Research to
Inform Models**



**Conduct Research
on local ecosystem**

NFWF Project Goal
Engage stakeholders and provide tangible science-based tools to develop locally-relevant climate-hazard mitigation and risk reduction strategies that include nature-based solutions.

Coastal Resilience Approach

Get Involved • Contact Us • Connect On Twitter

Coastal Resilience

OUR WORK OUR APPROACH RESOURCES TEAM & PARTNERS



LAUNCH MAPPING PORTAL

A global network dedicated to
enhancing human and natural
coastal communities

Explore Our Work

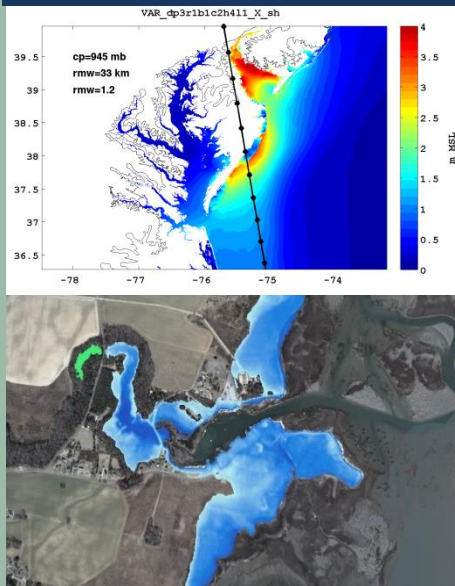


coastalresilience.org



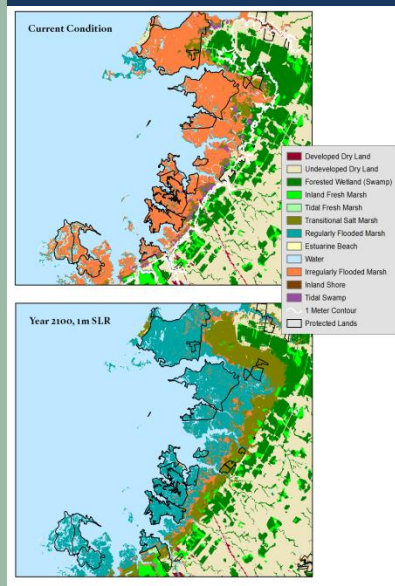
Mapping tool platform with apps

SLR & Storm Surge



SLR and
Flooding

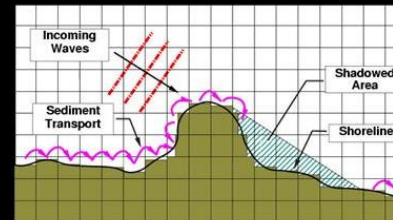
Marsh Migration



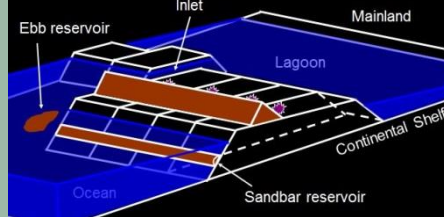
Future
Habitat

Barrier Island Evolution

Coastline Evolution Model (CEM)



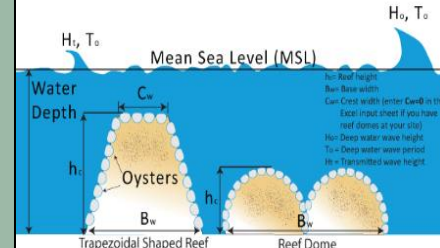
Barrier Island Model (BIM)



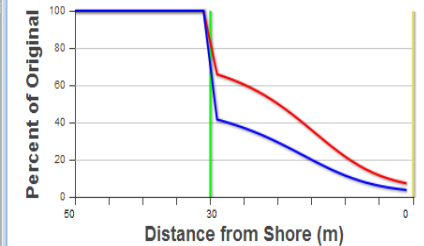
Shoreline
Evolution

Oyster Reef-Wave Attenuation

OYSTER REEF CHARACTERISTICS



Wave Attenuation Profile



Coastal
Defense

Coastal Resilience Hypothesis

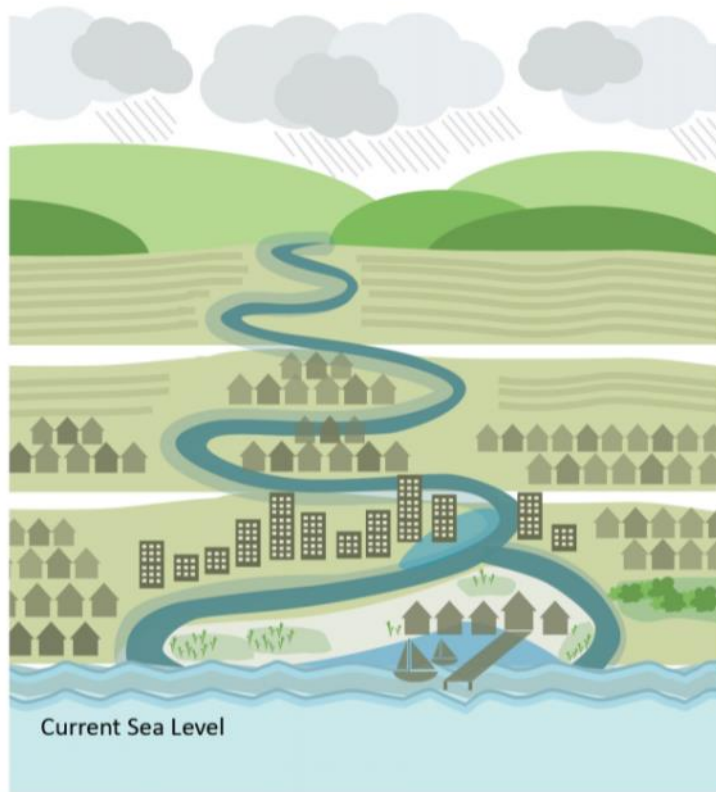


With more complete information, managers and decision-makers can make informed decisions that enhance both ecological and socio-economic resilience in the face of sea level rise and storm surge

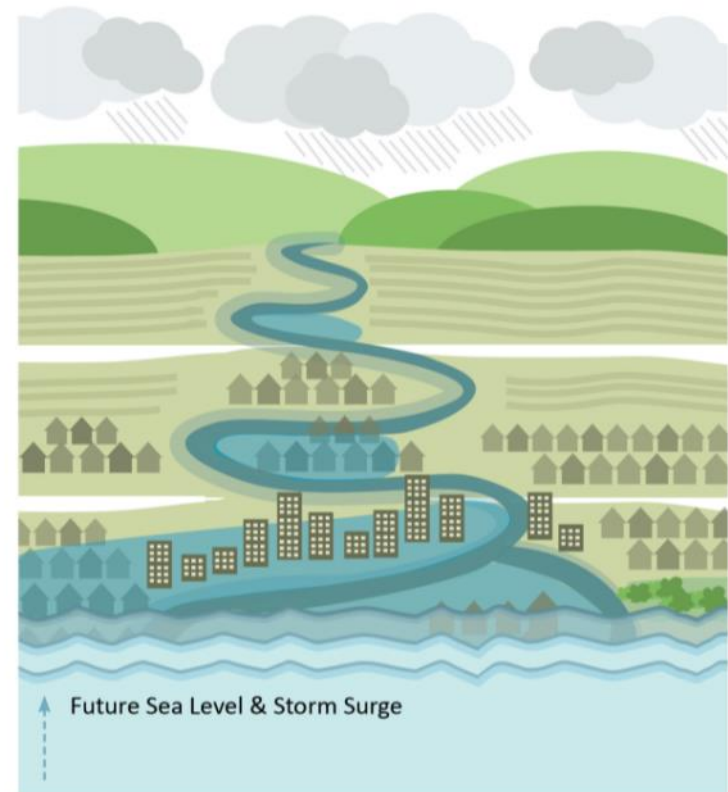
Flood and Sea Level Rise App



Current coastal and floodplain inundation scenario

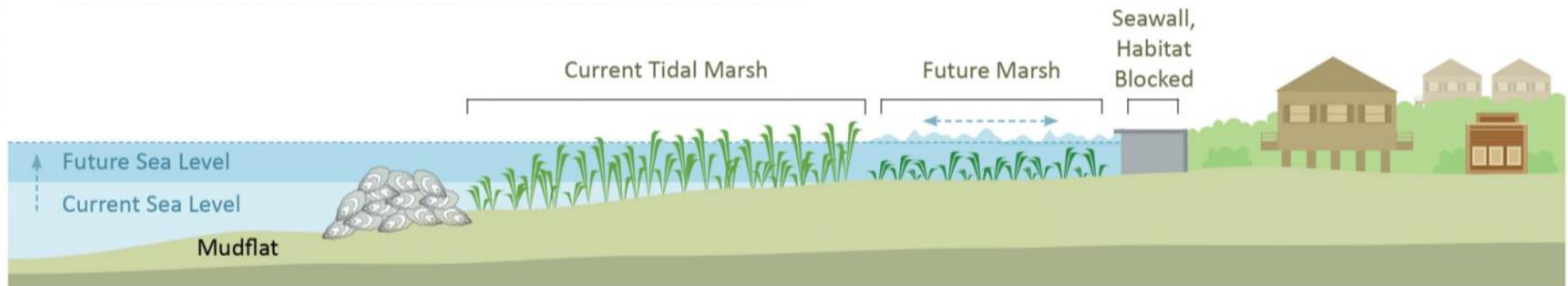


Future coastal and floodplain inundation scenario

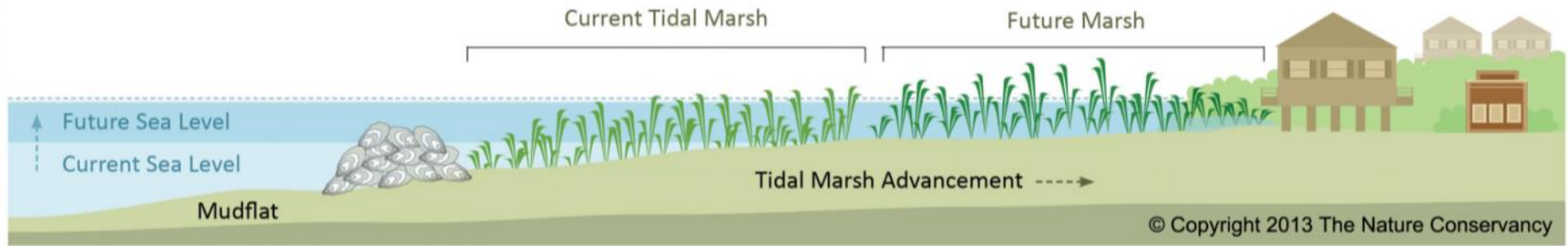




Vulnerable habitat: Marsh migration blocked as sea level rises



Resilient habitat: Marsh migrates landward as sea level rises



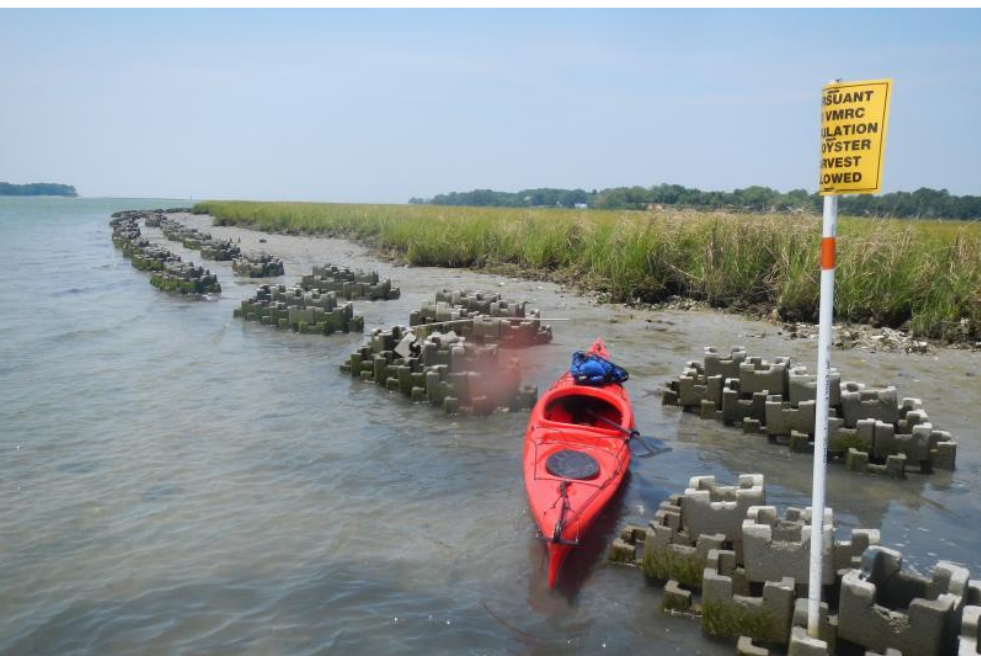
To what extent do oyster reefs protect shorelines from erosion?



7 Foot Oyster Castle Array



Oyster Restoration Process



**Oyster Castle
Wall at
Deployment**

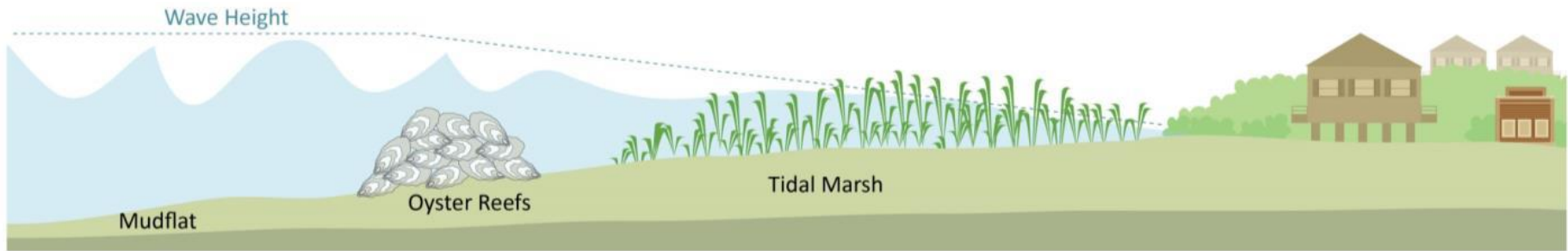


**Oyster Castle
Wall
3 years Post-
Deployment**

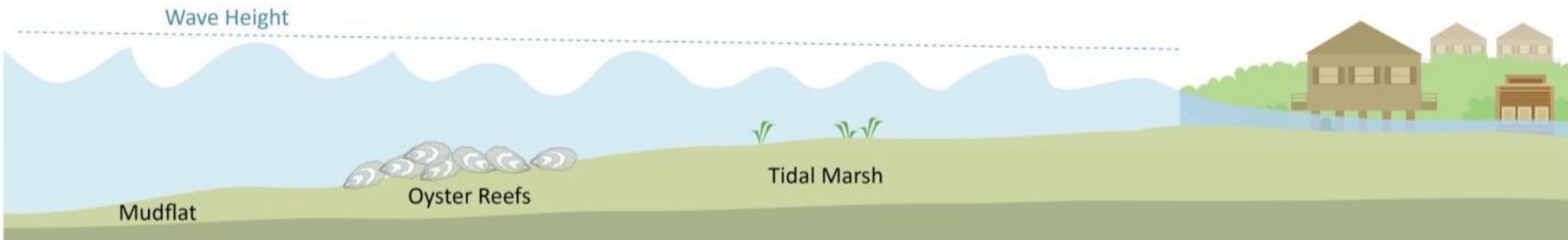


Quantifying wave reduction

Waves decreased with healthy coastal habitats



Waves with degraded coastal habitats



Coastal Defense App

COASTAL RESILIENCE

GULF OF MEXICO

GET STARTED

TOUR

GO TO ▼

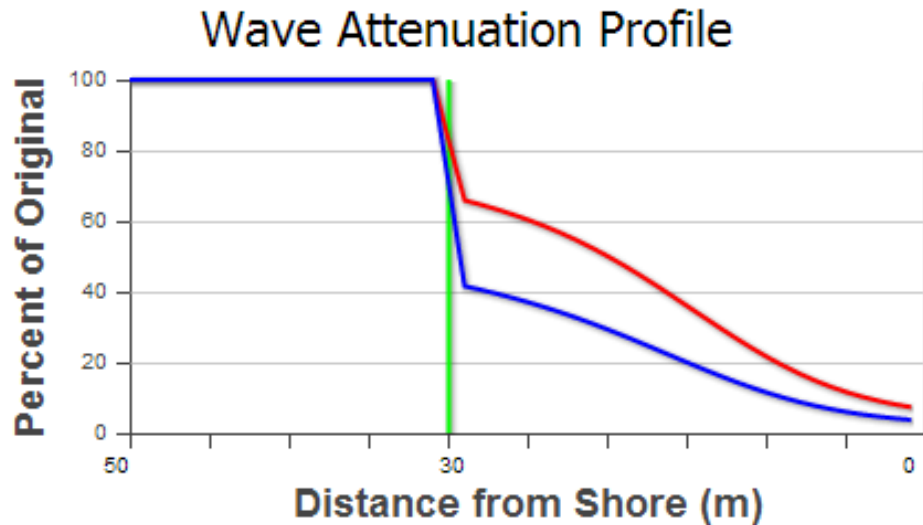
The Nature Conservancy

Partners

Legal Disclosure



Nearshore Waves Tool



— Wave Height — Wave Energy — Reef — Shore

The figure shows the average profiles of percent of wave height and energy attenuation computed from all Reef Points along your reef. Attenuation is defined as the ratio of wave height (energy) in the presence of the reef over wave height (energy) in the absence of the reef.

Layers: ☐ Wave Attenuation - (Click a profile point for attenuation detail.)

☐ Fetch Distances

☐ Bathymetry

Link to the output (turn off popup blocker): [Results Link](#)

