Maryland’s Shorelines: Planning for the Future

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Primer on Erosion

- Erosion Is Not a Bad Thing!!
- Erosion happening in all 16 coastal counties of MD
Traditional Methods of Erosion Control

Wooden Bulkhead

Rip-rap or Revetment
Going overboard ??

Great Wall of China
Problems Associated with “Structural” Approach

Fighting nature instead of working with it!!
### Comprehensive Shoreline Assessment

<table>
<thead>
<tr>
<th>Rate of change</th>
<th>Shoreline Length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Miles</td>
</tr>
<tr>
<td>Accretion</td>
<td>2,006</td>
</tr>
<tr>
<td>No Change</td>
<td>75</td>
</tr>
<tr>
<td><strong>Slight erosion</strong></td>
<td>3,740</td>
</tr>
<tr>
<td>0 to -2 feet/year</td>
<td></td>
</tr>
<tr>
<td><strong>Low erosion</strong></td>
<td>618</td>
</tr>
<tr>
<td>-2 to -4 feet/year</td>
<td></td>
</tr>
<tr>
<td><strong>Moderate erosion</strong></td>
<td>173</td>
</tr>
<tr>
<td>-4 to -8 feet/year</td>
<td></td>
</tr>
<tr>
<td><strong>High erosion</strong></td>
<td>48</td>
</tr>
<tr>
<td>Over -8 feet/year</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>6,659</td>
</tr>
</tbody>
</table>
Living Shorelines: Working with nature

- Shoreline Protection
- Habitat
- Aesthetics
- Coastal Resilience
What Kind of Living Shoreline Project is the Best?

- Energy Regime
- Project Objective(s)
- Site Conditions

• One size **DOES NOT** fit all!!
<table>
<thead>
<tr>
<th>Items</th>
<th>Structural Projects</th>
<th>Living Shoreline Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Projects</td>
<td>484</td>
<td>480</td>
</tr>
<tr>
<td>LF of shoreline protected</td>
<td>201,649</td>
<td>202,050</td>
</tr>
<tr>
<td>Sq ft of marsh created</td>
<td>12,412</td>
<td>3,859,855</td>
</tr>
<tr>
<td>Amount of State loans</td>
<td>$31,511,944</td>
<td>$3,990,381</td>
</tr>
</tbody>
</table>
How are MD Projects doing?

- Assessment study analyzed:
  - Marsh erosion
  - Structure condition
  - Non-planted vegetation
• Out of 177 projects, **131** of them were good or better.

• Maintenance - Crucial for the success of a project.

*Switching gears... To Hurricane Isabel and beyond*
• Enhance the **resilience of bay**, aquatic and terrestrial ecosystems and/or increase on-site carbon sequestration.

• **Incorporate** factors associated with **climate change in all phases** of project.

• Compile a **compendium (shortlist)** of BMPs for habitat restoration project design.

• Conduct a GIS-based audit of DNR-owned lands to identify habitat restoration potential for **enhancing ecosystem resilience and/or increasing carbon sequestration**.
MD-DNR’s Coastal Adaptation Policy

Science

Planning/Policy/Law

Implementation Projects
CHAPTER FIVE

Comprehensive Strategy for Reducing Maryland’s Vulnerability to Climate Change
Phase I: Sea-level rise and coastal storms

REPORT OF THE MARYLAND COMMISSION ON CLIMATE CHANGE
ADAPTATION AND RESPONSE WORKING GROUP
Confluence of Science, Policy, Planning & Implementation!!

SHORE PROTECTION
A Guide for Engineers and Marine Contractors Working in the Chesapeake Bay Region

2013

This information is presented as a public service. Inclusion of any shore protection device or method does not necessarily constitute a government recommendation or endorsement, nor is it guaranteed that any particular method will be successful for a specific application.

Building resiliency through restoration... was born!!
Resiliency Through Restoration (RtR)

- Resiliency through Restoration (RtR) Initiative- a new effort launched in FY-2018.

- Goals- to build community and ecological resilience throughout the Maryland with nature-based adaptation solutions.

- Investing in natural features like wetlands, forest buffers, dunes, and living shorelines.

- With natural buffers in place, communities will be better able to bounce back following climate-related events.
Components of RtR

1. Targeting using Coastal Resiliency Assessment
   - Identify vulnerable coastal communities
   - Identify locations where nature can help reduce risk

2. Community Resiliency Grant Program
   - Technical and financial assistance
   - Protect residents, economies, infrastructure and public resources.

3. Innovative Climate-Resilient Designs
   - Tidally influenced sites (SLR, marsh migration, storm surge, etc.)
   - Non-tidal/inland sites (Precipitation, streamwater flow, etc.)

   - Identify physical, chemical and biological metrics
   - Improve design with changing conditions

5. Outreach, Communication & Education
Coastal Resiliency Grant Program

• **Eligible Projects:**
  – **Year 1:** Natural and nature-based shoreline stabilization and coastal flood reduction projects.
  – **Year 2:** Expansion to upland/non coastal communities with stormwater and/or floodplain climate impacts

• **Community Resilience Grant Solicitation**
  – Phase 3: Implementation
  – 22 requests (over $1.6 M)
  – Design/permitting
  – Future funding: construction, adaptive management
Edgar W. Garbisch

- Founded Environmental Concern (St. Michael’s, Maryland) in 1972.
- Wrote *The Do’s and Don’ts of Wetlands Construction: Creation, Restoration & Enhancement*.
- One of the first large marsh/shoreline restoration projects at Hambleton Island in Talbot County.

"His work is interesting, but I don't want to see him running around the country like Johnny Spartinaeed."

- John Clark (Conservation Foundation)
Evolution of Living Shorelines

High-profile sills with no gaps
Fiber Glass Boat Analogy:

“Less is More”
Spaniard Point, Centreville, MD

Completed: April 2010
Cost: $131,167
Cost/Linear feet: $205

“Crab Claw Design”
Windy Hill Farm, Centreville, MD

Before...  
Completed: July 2010  
Cost: $226,302  
Cost/Linear feet: $326

After
Windy Hill Farm, Centreville, MD
Gunston School LS Project:
First Project in the US to incorporate SLR into the design

“Wishbone Design”

Completed: August 2013
Cost: $115,000
Cost/Linear feet: $144
NextGen Project: Crucial Next Step in the Evolution of LS Projects

Conquest
Preserve Living Shoreline Project
USACE Study: Alternative #1
Estimate- $1.5 mn
USACE Study: Alternative #2
Estimate- $1.1 mn
USACE Study: Alternative #3
Estimate- $1.8 mn
DNR Concept Plan
Estimate - $360,409

Conceptual Plan

Chester River

Reuse woody debris
Conquest Preserve Living Shoreline Project

Before...  
Completed: August 24, 2016  
Cost: $271,473  
Cost/Linear feet: $232  

After
Take-Home Message

PLAN TOMORROW

TODAY

Tool should match the objective/goal

Vs.

CD BANK
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