

## LIVING SHORELINE SITE DESIGN OPTIONS



Tracy E. Skrabal

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## Living Shoreline Design Options

### Review of Shoreline Stabilization Techniques

HOW GREEN OR GRAY SHOULD YOUR SHORELINE SOLUTION BE?

GREEN - SOFTER TECHNIQUES

GRAY - HARDER TECHNIQUES

#### Living Shorelines



VEGETATION



EDGING



SILLS

#### Coastal Structures



BREAKWATER



REVETMENT



BULKHEAD

From the "Systems Approach to Geomorphic Engineering (SAGE) website



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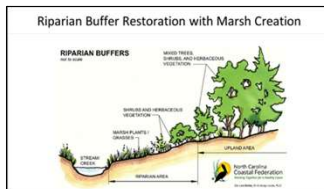
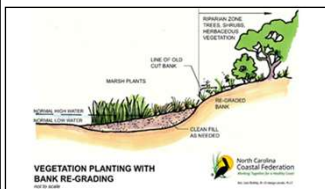
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## Bank Grading and Plantings



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## Bank Grading and Plantings



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## Hybrid Living Shoreline Measures

### Combination or Hybrid Projects

Plants with Biologs



Photo: North Carolina Coastal Federation



Photo: North Carolina Coastal Federation



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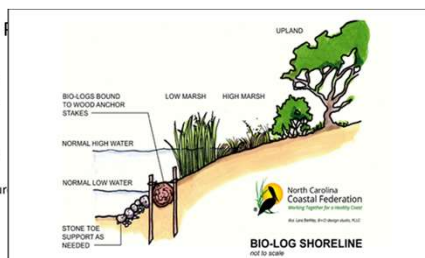
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## Coir Log Methods

- Works in areas with minimal wave energy
- Can be combined with other measures
- Biologs provide temporary protection for juvenile plants
- Need initial monitoring and minimal maintenance to ensure plants are growing



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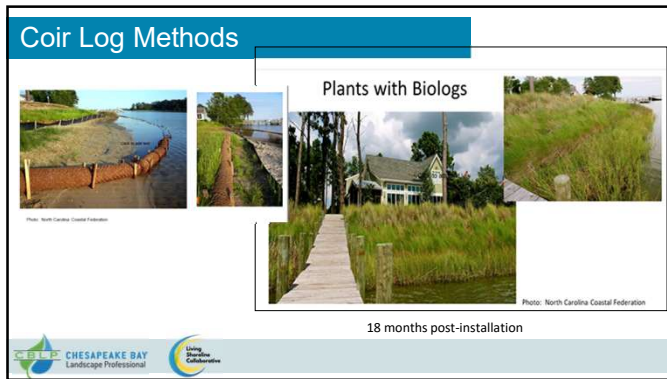
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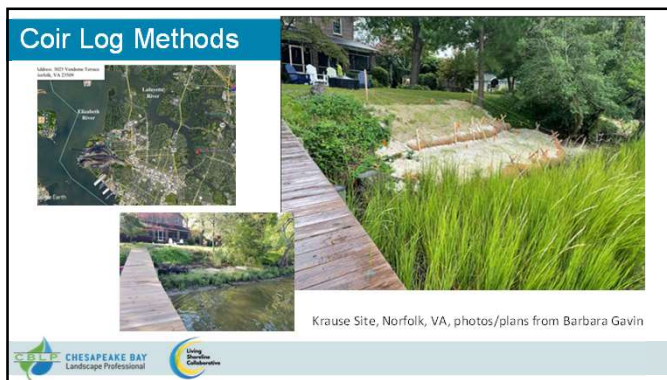
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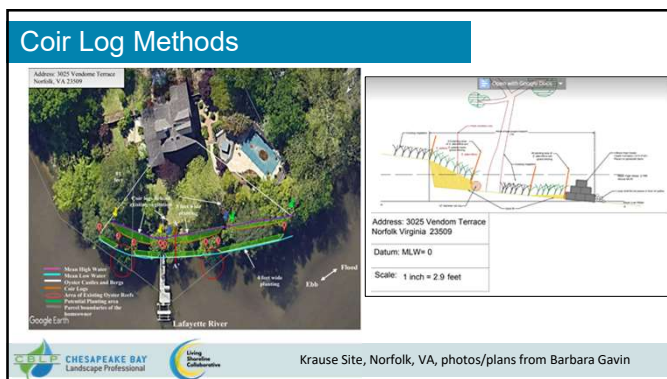
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## Containment Structures with Plantings



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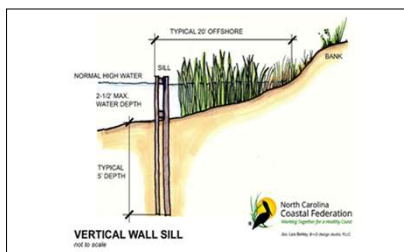
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## Vertical Wall Sills



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## Vertical Wall Sills



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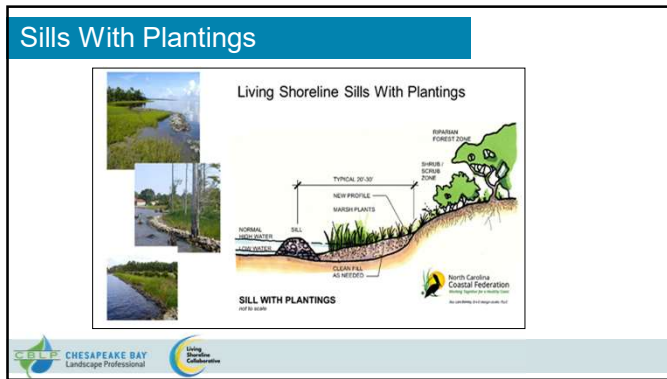
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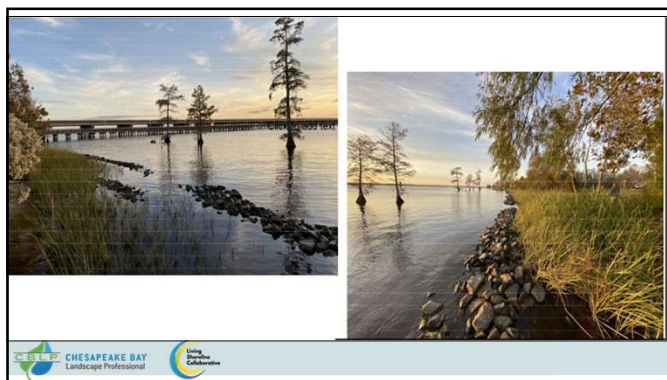
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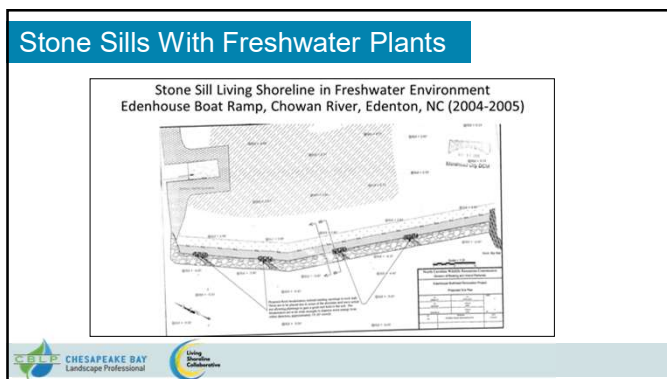
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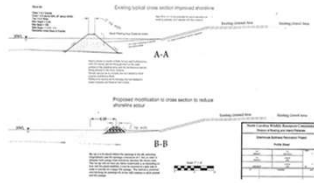
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## Stone Sills With Freshwater Plants

Stone Sill Living Shoreline in Freshwater Environment  
Edenhouse Boat Ramp, Chowan River, Edenton, NC (2004-2005)



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## Oyster Shell Living Shoreline Methods



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## Loose Oyster Shell Sills/Patch Reefs

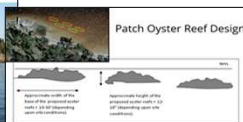
Loose Oyster Shell Methods- Morris Landing, NC



Photo: North Carolina Coastal Federation



Photo: L.A. Jansen



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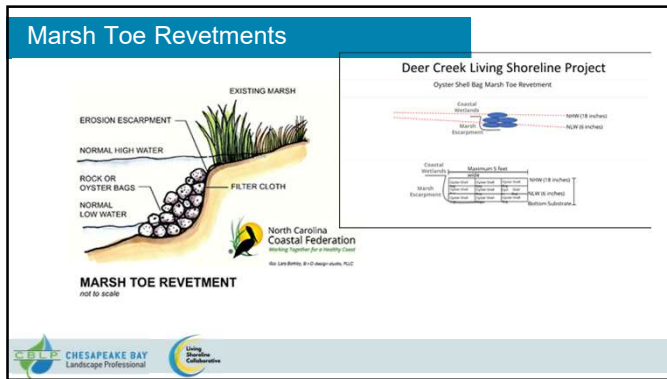
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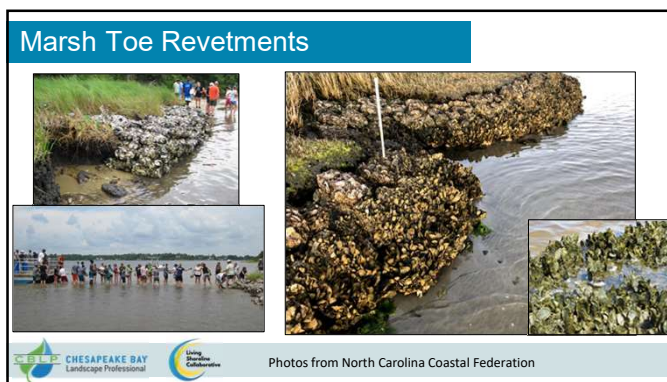
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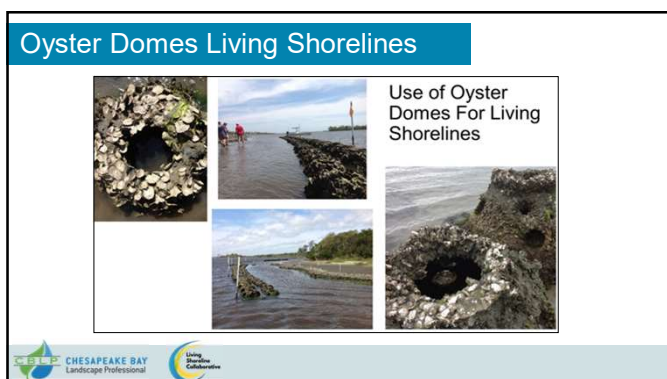
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### Innovative Living Shoreline Design

Living Shorelines: Innovative Approaches- Oyster Castles®  
 "Oyster Castles" from Allied Concrete alliedconcrete.com




Oyster Castles™- Photo by Barbara Gavin

CHESAPEAKE BAY Landscape Professional

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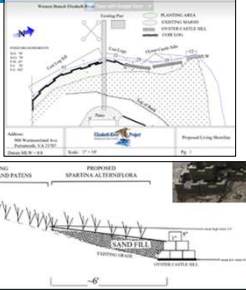
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### Innovative Living Shoreline Design

Rollings Oyster Castles- Photos and Plans Provided by Barbara Gavin

CHESAPEAKE BAY Landscape Professional

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### Innovative Living Shoreline Design

**Natrx ExoForms™**

A highly flexible, coastal resilience solution that's safer and faster to install than traditional methods, promotes habitat-growth and ecological benefits, and gets stronger over time.

Natrx Dry Forming™ Advanced Manufacturing





PHOTOS AND TEXT COURTESY OF NATRX™ (<https://natrx.io/living-shorelines-by-natrx>)

CHESAPEAKE BAY Landscape Professional

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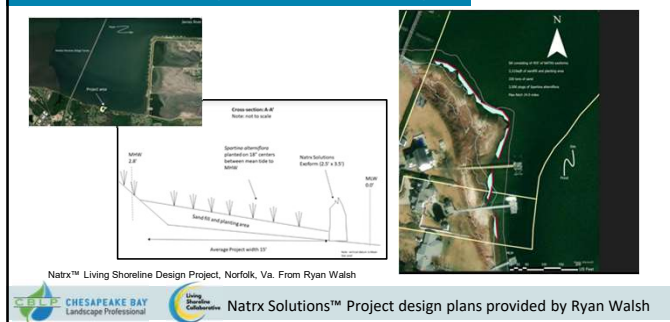
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## Innovative Living Shoreline Design



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## Innovative Living Shoreline Design



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Questions? Tracy Skrabal [skrabalt@gmail.com](mailto:skrabalt@gmail.com)



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