Living Shorelines & Habitat Restoration

How do we effectively incorporate habitat components into shoreline restoration and enhancement
Living Shorelines are About …

“Process”
Yantz Cove - 1994

Yantz Cove - 2007

Littoral Drift

Littoral Drift
Ecosystem Restoration Services

Process & Habitat are Linked Together
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Ecosystem Restoration Services
Ecosystem Restoration Services

Stable Beach

Eroding Cliff

Net Littoral Drift

Feb 29, 2008
“HABITAT”
Erosion Is Not Necessarily a Bad Thing
Some of the Best Shorelines are Those That Provide for a Diversity of Habitat
Offshore Considerations
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Biological habitat and food availability
The surrounding biota (riparian forests, marshes, submerged aquatic vegetation beds, oyster reefs) provide refuge and food sources.

Water quality
Sediment and nutrient loads have a strong relationship with dissolved oxygen and phytoplankton (food) levels. Issues of concern also include toxicants and harmful algal blooms.

Substrate (structure)
Depending on the species, a specific substrate may be preferred for spawning or finding food (e.g., muddy bottom indicates filter feeders). Rocky or reef habitats may provide additional refuge or protection from predators.

Life history/species preferences*
Depending on the life stage of a species, its environmental preferences may vary greatly. The pairing of these biological, physical, and chemical preferences with knowledge about available habitat will foster greater understanding of population dynamics.

Symbols courtesy of the Integration and Application Network (www.ian.umces.edu/symbols/), University of Maryland Center for Environmental Science.
Oyster Bottom Survey Completed in the Early 1900’s

Chester River Area

Oyster Reef in Virginia
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Marsh Breakwaters

Submerged Oyster Reef
Eastern Bay

Horsehead Living Shoreline Project
Project Purpose
The purpose of this project is to demonstrate alternative methodologies for shoreline protection which will also provide benefits for aquatic resources through habitat enhancement and restoration. The project incorporates four practices which can be utilized to enhance fisheries habitat as well as protect the shoreline from excessive erosion. Sedges on the land and moving into the water columns, the project incorporates: 1. reestablished beach sand with native grass plantings; 2. restoration of the eroded peri-wetland; 3. the creation of two small islands to protect the beach from wave energy; and 4. the installation of an oyster reef to help dissipate wave energy. The goal of this project is to stabilize and restore shoreline habitat in an effective and ecologically sound manner.

This project was designed from input provided by all partners which consisted of staff from the Maryland Department of Natural Resources, the Chesapeake Bay Foundation, The Wildlife Trust of North America and Sustainable Science LLC.
During Construction

After construction
Offshore Structures Colonized By:

Mussels, Clams, Oysters, Barnacles…
Use of Headland Control Structures

Spaniard Pt. (before)

Spaniard Pt. (after)
Vegetation
Ecosystem Restoration Services
Ecosystem Restoration Services

Maryland Department of Natural Resources

Graphs showing the abundance of various species (
blue crab, Fundulus spp., Striped bass, mummichog, and
graze shrimp) across different shoreline types (sills,
sill window, groins, and marsh).
Woody Debris
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Rock Placement