

Assessing the Water Quality, Habitat, and Social Benefits of Green Riprap



STAC Workshop Report September 15, 2021 Virtual



Workshop Steering Committee:

Molly Mitchell, Virginia Institute of Marine Science, Co-chair
Rich Mason, U.S. Fish and Wildlife Service, Co- chair
Donna Bilkovic, Virginia Institute of Marine Science
Leah Franzluebbbers, U.S. Fish and Wildlife Service
Kirk Havens*, Virginia Institute of Marine Science
Dennis Whigham, Smithsonian Environmental Research Center
**STAC member*

Acknowledgements:

STAC and the workshop steering committee would like to thank the following individuals for providing expertise and support during and after the workshop:

Meg Cole, Chesapeake Bay Program Scientific & Technical Advisory Committee Coordinator, Chesapeake Research Consortium

Green Riprap is a low cost, simple restoration technique used to improve the water quality, habitat, and aesthetics of shorelines hardened with rock revetments. Green Riprap involves planting marsh vegetation in the voids between riprap rocks. Green Riprap provides another tool for waterfront homeowners and river groups to improve water quality in the Bay or river while creating a more natural look along their shoreline.

Green Riprap is not a substitute for or a type of living shoreline. Rather, Green Riprap is an enhancement of a structural shoreline solution and should be limited to areas that are already hardened or where Living Shorelines are not practicable. In addition, planting marsh grass into a riprap structure is not considered a form of tidal marsh compensation.





Before Planting (2013)



After 4 Years (2017)



After 8 Years (2021)

CONTINUUM OF SHORELINE PROTECTION APPROACHES

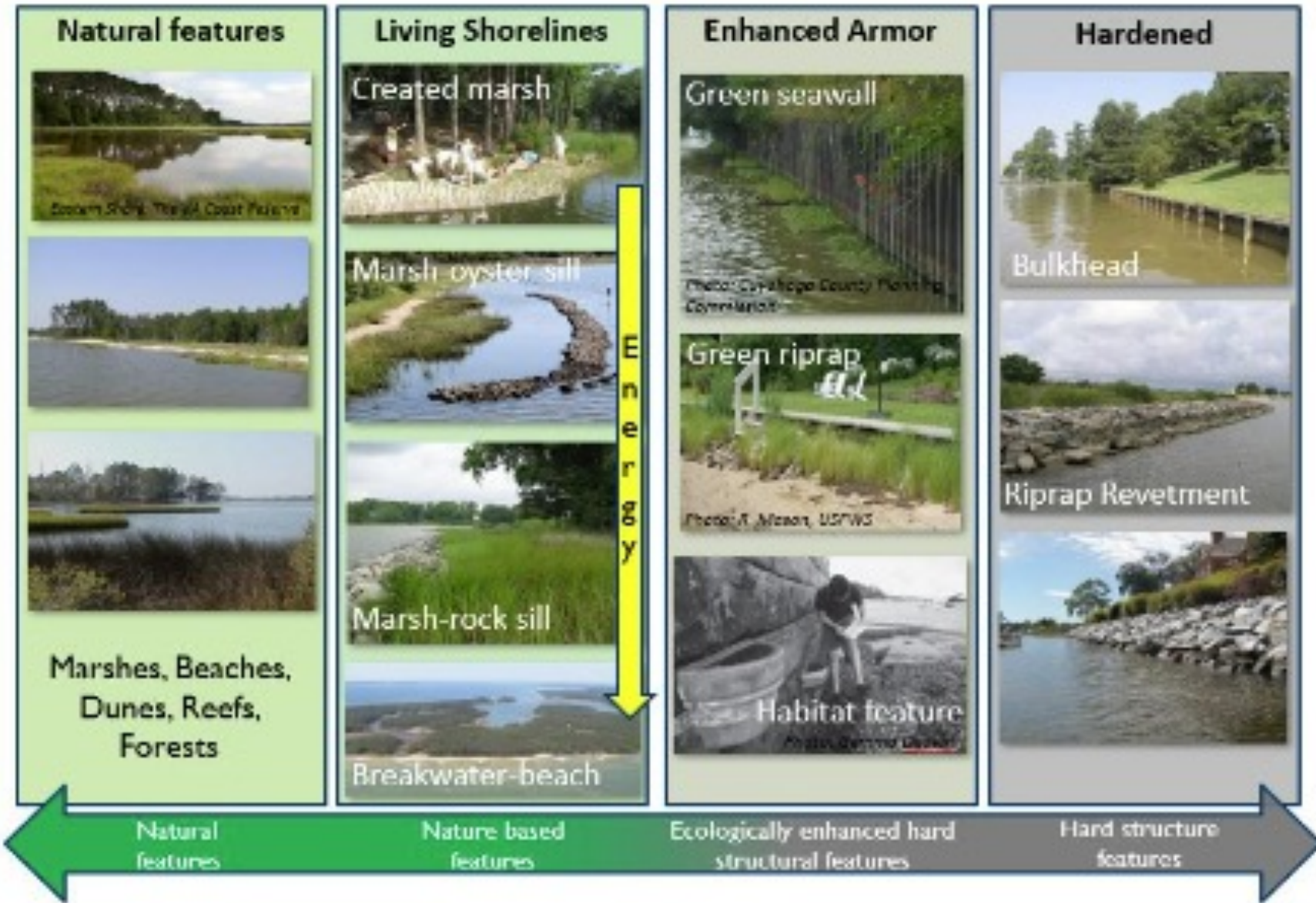


Figure by Donna Bilkovic, VIMS.

Assessing the Water Quality, Habitat, and Social Benefits of Green Riprap
September 15th, 2021

- 9:00 am Introduction**
- Welcome, expertise in the room; purpose of the workshop
 - Objectives of the workshop – *Rich Mason (FWS), Leah Franzluebbbers (FWS)*
 - Define Green Riprap vs. Living Shoreline
- 9:30 pm Virtual Field trip to Green Riprap Sites – *Severn Media***
- 9:45 am Ecological, Social, and Bioengineering Aspects of Green Riprap and Natural Shorelines**
- 9:45 am Ecological –**
- Restoring and preserving the shoreline ecotone– *Donna Bilkovic (VIMS)*
 - Above the rock: options for landscaping or naturalization – *Doug DeBerry (William & Mary)*
 - Managing phragmites – *Dennis Whigham (SERC), Kirk Havens (VIMS)*
- 10:45 am 15-minute Break**
- 11:00 am Bioengineering –**
- Structural, “how to”:
 - Case studies and techniques – *Rich Mason, Leah Franzluebbbers (FWS)*
 - Gibson Island – *Sepehr Baharlou (BayLand Engineering)*
 - Nurseries – *Tom Wheeler (Providence Center)*
- 11:45 am Social –**
- Site selection – *Rich Mason (FWS), Leah Franzluebbbers (FWS)*
 - Retrofitting existing Riprap structures
 - Best options to incorporate
 - Shoreline modification decision making - *Amanda Guthrie (VIMS)*
 - Marketing to homeowners – *Jennifer Tabanico, Lori Large (Action Research)*
- 12:45 pm Lunch**
- 1:45 pm Breakout Discussions: How can we get more of these pilot projects going?**
- 2:15 pm Reconvene and Report-out**
- 2:45 pm Whole Group Discussion**
- 3:15 pm Adjourn**

Aaron Wendt, Virginia Department of Conservation and Recreation
Alexi Sanchez de Boado, Princeton Hydro
Amanda Guthrie, Virginia Institute of Marine Science
Antonija Maderić, EcoMission
Ariel Woodworth, Cecil County Government
Cirse Gonzalez, Virginia Institute of Marine Science
Dan Gefell, U.S. Fish and Wildlife Service
Danielle McCulloch, U.S. Fish and Wildlife Service
Dennis Whigham, Smithsonian Environmental Research Center
Donna Marie Bilkovic, Virginia Institute of Marine Science
Doug DeBerry, William & Mary
Greg Noc, U.S. Geological Survey
Isabel Sanchez-Viruet, University of Maryland College of Environmental Science
Jane Cyphers, Community Members
Jennifer Tabanico, Action Research
Karina Nunez, Virginia Institute of Marine Science
Katherine Stahl, U.S. Fish and Wildlife Service
Kerry Bray, Hazen and Sawyer
Kirk Havens, Virginia Institute of Marine Science
Lauren Taneyhill, National Oceanic and Atmospheric Administration

Leah Franzluebbbers, U.S. Fish and Wildlife Service
Lew Linker, United States Environmental Protection Agency
Lori Large, Action Research
Lorie Staver, University of Maryland College of Environmental Science
Marija Hrgarek, EcoMission
Mary Bennett, Elizabeth River Project
Molly Mitchell, Virginia Institute of Marine Science
Nicole Carlozo, Maryland Department of Natural Resources
Rich Mason, U.S. Fish and Wildlife Service
Sarah Hilderbrand, Maryland Department of Natural Resources
Scott Macomber, Stormwater Maintenance LLC
Sepchr Baharlou, BayLand Consultants & Designers, Inc.

Ted Brown, Biohabitats
Thayer Young, Cicada Systems GIS Consulting
Tim Sullivan, U.S. Fish and Wildlife Service
Tom Ihde, Morgan State University
Tracey Harmon, Virginia Department of Transportation
William Nardin, University of Maryland College of Environmental Science

Key recommendations from the workshop include:

1. Additional research to help understand both the best design of these shorelines and their benefits;
2. Increased visibility of the technique through the creation of public pilot projects; and
3. Additional outreach to all the involved parties, including property owners, contractors, and regulators to ensure clear definitions and that the projects are sited and designed correctly.



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The Benefits of Green Riprap

423 views Sep 15, 2021 This video demonstrates the benefits of retrofitting existing stone riprap used as shoreline protection with native plants to improve habitat and water quality. Create [...more](#)

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