



CHESAPEAKE BAY FOUNDATION

Environmental Protection and Restoration
Environmental Education

Senate Bill 417

Environment – State Wetlands – Shoreline Restoration

Date: February 15, 2023

Position: Favorable

To: Education, Energy, and the Environment Committee

From: Matt Stegman

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Chesapeake Bay Foundation (CBF) **SUPPORTS** SB 417. This bill clarifies existing state law preferencing living shorelines as a means of erosion control by specifying that improvements must be designed to increase the resiliency of the land and habitat connection between the land and the water, consist of nonstructural elements intended to improve the quality of the natural environment, and incorporate living elements like aquatic vegetation, grasses, or oysters. The bill further directs the Maryland Department of the Environment (MDE), in partnership with the Department of Natural Resources (DNR), to map and identify priority shoreline restoration zones where conditions exist that degrade the resilience of the land and the habitat connectivity between the land and water. Finally, the bill establishes a special Coastal Resilience and Living Shoreline Restoration Account within the existing Tidal Wetlands Compensation Fund to provide grants for the replacement of structural shoreline stabilization measures with nonstructural shoreline stabilization measures.

The National Oceanic and Atmospheric Administration (NOAA) defines living shoreline as “a broad term that encompasses a range of shoreline stabilization techniques along estuarine coasts, bays, sheltered coastlines, and tributaries. A living shoreline has a footprint that is made up mostly of native material. It incorporates vegetation or other living, natural “soft” elements alone or in combination with some type of harder shoreline structure (e.g. oyster reefs or rock sills) for added stability. Living shorelines maintain continuity of the natural land–water interface and reduce erosion while providing habitat value and enhancing coastal resilience.”¹ This is in contrast to structural or armored shoreline stabilizations, which include bulkheads, rip rap, stone or wood walls.

Living Shorelines Better Protect Land from Sea Level Rise and Severe Weather:

Throughout Maryland, armored shorelines such as rip rap and bulkheads remain a primary approach to protect properties from erosion. The table below shows the prevalence of armored shorelines, particularly in urban and suburban areas²:

¹ National Oceanic and Atmospheric Administration (NOAA), *Guidance for Considering the Use of Living Shorelines*. 2015. Available at https://www.habitatblueprint.noaa.gov/wp-content/uploads/2018/01/NOAA-Guidance-for-Considering-the-Use-of-Living-Shorelines_2015.pdf. Accessed Feb. 13, 2023.

² Summarized from the Chesapeake Bay Program Percent Hardened Shoreline in Maryland dataset: <https://data-chesbay.opendata.arcgis.com/datasets/percent-hardened-shoreline-in-maryland-1/>. Accessed February 13, 2023.

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| County | Hardened Shoreline (miles) | Total Shoreline Length (miles) | Percent Hardened |
|-------------------|----------------------------|--------------------------------|------------------|
| Anne Arundel | 234.72 | 537.08 | 43.70% |
| Baltimore | 97.07 | 257.76 | 37.66% |
| Calvert | 49.71 | 288.43 | 17.23% |
| Cecil | <i>unknown</i> | | |
| Charles | 31.74 | 302.79 | 10.48% |
| City of Baltimore | 47.29 | 63.14 | 74.90% |
| Dorchester | 101.28 | 1650.01 | 6.14% |
| Harford | <i>unknown</i> | | |
| Kent | 36.20 | 359.43 | 10.07% |
| Queen Anne's | 101.73 | 433.08 | 23.49% |
| Somerset | 31.35 | 1284.26 | 2.44% |
| St. Mary's | 108.78 | 485.06 | 22.43% |
| Talbot | 195.41 | 756.99 | 25.81% |
| Wicomico | 19.40 | 392.88 | 4.94% |
| Worcester | 1.67 | 84.68 | 17.95% |
| TOTAL | 1056.33 | 6895.58 | 15.32% |

Scientific models predict sea levels in coastal areas like Annapolis will rise 1.5 feet by 2050 and 3 feet by 2100, which would overwhelm our current infrastructure. If we continue armoring our shorelines in the face of this reality, we'll displace floodwaters to communities that can't afford to build ever-higher sea walls.

While armored shoreline elements degrade over time and may cause negative downstream effects, living shorelines can protect land from erosion and become more stable over time as plants, roots, and oyster reefs grow. While adjustments to hard materials within the living shoreline might be needed, the actual living elements of a living shoreline - like oyster reefs and grasses - are expected to maintain elevation relative to predicted sea level rise through 2100.³ Additionally, some living shorelines projects have been shown to accrete sediment on the landward side. Living shorelines further protect land from erosion by dampening wave energy. By contrast, bulkheads amplify and reflect wave energy.⁴

Living shorelines can be a vital component to protect waterfront land from severe weather events, which are becoming ever-more common as a result of climate change.⁵ Studies suggest that living shorelines not only hold up better to severe weather than armored alternatives, they may produce a significant atmospheric carbon sequestration benefit.⁶

³ National Oceanic and Atmospheric Administration (NOAA), *Guidance for Considering the Use of Living Shorelines*.

⁴ *Id.*

⁵ *Id.* "On sheltered coasts along the North Carolina outer banks, marshes (with and without sills) outperformed bulkheads during Category 1 Hurricane Irene in 2011. Those marsh and sill designs accreted sediment, while 75 percent of regional bulkheads surveyed were damaged (Gittman et al. 2014)."

⁶ Davis JL, Currin CA, O'Brien C, Raffenburg C, Davis A (2015) *Living Shorelines: Coastal Resilience with a Blue Carbon Benefit*. PLoS ONE 10(11): e0142595. <https://doi.org/10.1371/journal.pone.0142595>

Living Shorelines Have Tremendous Ecological and Economic Benefits:

Living shorelines have a documented positive impact on the natural wildlife of the Chesapeake Bay, including economically important species of fish and crabs. Conversely, a proportional negative impact on these same species can be noticed in areas with increased hardened shoreline.⁷ Living shorelines provide vital habitat for benthic organisms (clams, worms, and other bottom-dwelling creatures) that in turn are key food sources for fish and crabs. Experts from the Virginia Institute of Marine Science and William & Mary University have determined that threshold declines in key bay species occur at levels of between 10 and 30% of shoreline hardening. Notably, there was a 4% decrease in crab abundance for every 10% of additional shoreline hardening. Additionally, healthy crab and fish populations have impacts up the food chain supporting healthy communities of birds, terrapins, and other vertebrates.

Funding Partnerships Have Helped Spur Development of Living Shorelines:

SB 417 creates a special Coastal Resilience and Living Shoreline Restoration Account within the existing Tidal Wetlands Compensation Fund to provide grants for the replacement of structural shoreline stabilization measures with nonstructural shoreline stabilization measures. It is CBF's hope that this account can be used, along with other sources of public and private funding, to expand the amount of living shoreline along Maryland waterways.

This model has a successful and recent precedent in the Living Shorelines Grant Program, which brought together MDE, the Chesapeake Bay Trust, and other stakeholders to provide financial assistance for living shoreline installations.⁸ This partnership leveraged MDE's subject matter expertise and regulatory capacity and the Trust's experience in grant administration to install thousands of feet of living shorelines. We strongly encourage a return to these types of innovative partnerships.

CBF urges the Committee's FAVORABLE report on SB 417.

For more information, please contact Matt Stegman, Maryland Staff Attorney, at mstegman@cbf.org.

⁷ See, eg, Dr. Rochelle Seitz' testimony on SB 413, documenting threshold effects on aquatic species populations.

⁸ Kearney, Virginia. *MDE Partners with Chesapeake Bay Trust to Create "Living Shorelines"*. E-MDE, March 2009. <https://mde.maryland.gov/programs/ResearchCenter/eMDE/Pages/vol3no9/livingshorelines.aspx>. Accessed Feb. 13, 2023.