What is a Living Shoreline?

Living shorelines are engineered structures installed to control shoreline erosion while ecological goals. Retaining meeting ecological function connectivity and between the land and water are key qualities that differentiate living shorelines from other shoreline protection techniques such as bulkheads and sea walls.

Why is PDE Involved with Living Shorelines?

The Partnership for the Delaware Estuary (PDE) serves as the host of the Delaware Estuary Program, and works with various partners to restore the health of the tidal Delaware River and Bay (the Delaware Estuary). We are guided by a Comprehensive Conservation and Management Plan (CCMP) to make watershed improvements for clean healthy habitats, and strong water, communities. Living shorelines help us to deliver our clean water and healthy habitat goals by enhancing water quality and ecological uplift in the estuary which, in turn, helps strengthen communities.

A History of PDE's Living Shoreline Efforts

In 2008, PDE and Rutgers University Haskin Shellfish Research Laboratory developed the Delaware Estuary Living Shoreline Initiative (DELSI) to help stabilize eroding shorelines using a combination of plants, natural materials, and intertidal shellfish to trap sediment, absorb wave energy and provide water filtration. Since then, we have worked with a variety of public, private, and academic partners to install living shorelines across the estuary to meet a variety of sitespecific goals. As all living shorelines have ecological goals, such as habitat or water quality enhancement, material selection and design elements should help create the appropriate conditions for the targeted life to thrive.

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The Delaware Estuary Living Shoreline Initiative (DELSI)

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Mispillion River

Location: DuPont Nature Center, Mispillion Harbor, Milford, DE Goals: Water quality enhancement and shoreline stabilization, community engagement

Installed: 2014 Materials: Oyster Castles, oyster shell bags, and coir logs Length: 400 feet

Area Built: 2,471 square feet

Net Gain: 6,027 square feet Augmented: Oyster castles 2015, vegetation plantings 2016 and 2017, and additional shell bags to fill in

previously untreated areas 2019.

Lewes-Rehoboth Canal

Location: Waterfront Park, Lewes,

Goals: Shoreline stabilization and habitat enhancement (salt marsh, shellfish), community engagement Installed: 2014 and 2021

Materials: Oyster shell bags and coir logs

Length: 252 feet

Area Built: 861 square feet

Net Gain: 1,447 square feet

Augmented: Additional vegetation added in 2015, replaced damaged coir logs with shell bags in 2017, and extended the treatment by 160' with shell bags in June 2021.

Living Shoreline Examples

Here we highlight a variety of goals and materials that have been used in our living shorelines. PDE is involved in a variety of living shoreline projects across the estuary and is an active partner in developing tools and strategies to further living shoreline efforts.



Kent

MAR

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Dover

Installed (10)

Designed (1)

Conceptualized (2)



Philadelphia

Gloucester

Philadelphia

Camden

Vineland

Salem

Delaware Bay

Cumberland

Terminology

25

Cape May

Area Built: Vegetated area gain between pre-existing edge and installed materials. Net gain: Area built+area not lost due to continued erosion, as measured near the living shoreline. Net gain and can increase annually post installation.



Tidal Freshwater Prism: Bartram's Garden

Location: Schuylkill River, Philadelphia, PA

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Burlington

Atlantic

Goals: Habitat enhancement (freshwater mussel and submerged aquatic vegetation), community engagement

Installed: 2021 Materials: Oyster shell gabions Length: 60 feet

Notes: As this living shoreline is intended to build subtidal mussel and aquatic vegetation habitat, there is no defined area built or net gain



Nantuxent Cove

Location: Money Island Marina, Newport, NJ Goals: Shoreline stabilization and habitat enhancement (salt marsh, shelltish) Installed: 2016 Materials: Oyster castles, oyster shell bags, and coir logs Length: 174 feet Area Built: 555 square feet Net Gain: 3,783 square feet Augmented: Additional shell bag cusps added to pre-existing marsh slope to help elevation building in 2019.





50 Kilometers