CNU Oyster Project Will Protect Military Installation

Professor Russell Burke's team will build a living shoreline.

by Jim Hanchett | December 7, 2020

Above: Dr. Russell Burke (right) and students build artificial reef components

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At first glance, there is no connection between oysters and naval weapons. Dr. Russell Burke plans to use one to protect the other.

Burke and students in the Department of Organismal and Environmental Biology are key participants in a project to use oysters to support conservation and restoration within the country's largest estuary, the Chesapeake Bay.

If the project is a success, Naval Weapons Station Yorktown, on the York River in York County, will be better protected from sea-level rise and coastal erosion that threatens the base and its mission.

The Christopher Newport team will work with other researchers to create about 900 feet of living shoreline and restore more than three acres of U.S. Navy land along the York River. They will install natural and artificial oyster reefs, similar to projects Burke has directed on the Elizabeth River and other locations in coastal Virginia. They will build a biogenic breakwater reef, embedding oyster shells in the structure. Over time, the shells' surface area increases and that will diminish the impact of waves and wind. Space is left between each reef to allow natural sediment to bond with the shoreline and give oysters room to settle.

"This project will help protect both the naval weapons station and valuable shoreline along the York River," Burke

said. “It will demonstrate how oyster reefs can be engineered to generate a multiplicity of positive impacts on our coastal ecosystems.

> ”I look forward to working with our students so they can benefit by witnessing and playing an active role in a large-scale, multi-agency project that is important to both our community and environment.”

The York River reef is part of a proposal by The Pew Charitable Trusts in response to the U.S. Department of Defense’s Readiness and Environmental Protection Integration Challenge to protect and restore lands and habitats on and around military installations in seven states.

Oysters are ideal for that assignment. Pew points out in its announcement of the York River project: “Oysters are filter feeders, constantly cleaning the water and providing a healthier environment; their reef structure creates habitat for marine life, helping support valuable fisheries and jobs, and protects the coast from storms and tides.

“The project will incorporate hybrid living shorelines that integrate artificial oyster reefs and seagrass beds that will both break down wave energy and provide a physical barrier to would-be attacks, such as a terrorism strike, over the water.

“The project will also stimulate salt marsh recovery and create shallow-water habitats vital to fish and shellfish production. The work also will support Virginia’s efforts to rebuild reefs in the York River under the Chesapeake Bay Watershed Agreement, a landmark accord that establishes goals and outcomes for the restoration of the bay.”

Joining Christopher Newport, Pew and Naval Weapons Station Yorktown on this project are the Virginia Institute of Marine Science, the National Park Service, the National Oceanic and Atmospheric Administration, The Nature Conservancy, and the Virginia Marine Resources Commission.