



5-2021

Vignette 06: Living Shorelines in Puget Sound

Jason Toft
University of Washington

Follow this and additional works at: https://cedar.wvu.edu/salish_pubs



Part of the [Biodiversity Commons](#), [Biology Commons](#), [Environmental Monitoring Commons](#), [Marine Biology Commons](#), and the [Terrestrial and Aquatic Ecology Commons](#)

Recommended Citation

Toft, J. (2021). Living Shorelines in Puget Sound. In K.L. Sobocinski, State of the Salish Sea. Salish Sea Institute, Western Washington University. <http://doi.org/10.25710/vfhb-3a69>

This Vignette is brought to you for free and open access by the Salish Sea Institute at Western CEDAR. It has been accepted for inclusion in Institute Publications by an authorized administrator of Western CEDAR. For more information, please contact westerncedar@wwu.edu.

06 | LIVING SHORELINES IN PUGET SOUND

Jason Toft, University of Washington



Armor removal and restoration at Seahurst Park, a site of longer-term monitoring as highlighted in the press.

Nearly one third of Puget Sound’s shorelines are armored (e.g., seawall, bulkhead, riprap). Armoring has documented negative impacts on the flora and fauna that benefit from healthy intertidal beaches. Although shoreline armor may be necessary in some cases to protect people and property, there are often promising “living shoreline” options to restore natural features, also referred to as soft or green shorelines. These options can be applied to situations where complete restoration is either impractical or not feasible given human constraints. Living shoreline techniques often include a mix of design options, including armor removal, sediment nourishment of beaches, log placement, planting vegetation, and moving seawalls further inland. Depending on site characteristics, some engineering may be required for stability. Through regular monitoring, we can determine the effectiveness of these restoration efforts and their value to the nearshore ecosystem, applying what we learn to future management scenarios.

Summary of Monitoring Efforts

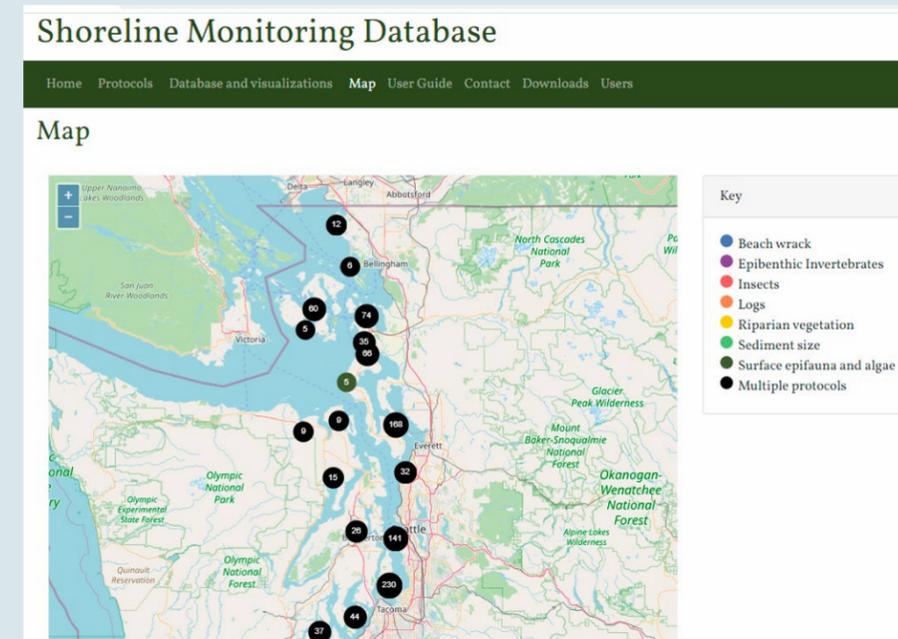
The Puget Sound Ecosystem Monitoring Program (PSEMP) Nearshore Work Group recently compiled a list of sites that have been restored and monitored since 2005. The focus was on sites where shoreline armor has been or will be removed, and also included other living shoreline techniques from the Marine Shoreline Design Guidelines (MSDG) and Your Marine Waterfront. The list details 54 sites, of which 38 had armor removed as of February 2020, totaling 21,132 feet of armor removed. A total of 26 different groups helped with monitoring efforts, a striking demonstration of the participation breadth across Puget Sound. Further information on armor removal can be found at the Shoreline Armoring Puget Sound Vital Sign, and the Washington Department of Ecology’s web app for soft shore projects.

Current efforts support coordination of data collection, stewardship, and analysis.

Development of standardized monitoring protocols and a centralized Shoreline Monitoring Database (shoremonitoring.org) enables multiple groups to collect and upload data (e.g., citizen science groups, agencies, and academics), combining datasets and ensuring data longevity and compatibility across groups. Ongoing efforts support addition of more protocols to the database, incorporation of historical data, improvement to database features, addition of data visualizations, and analysis of data to evaluate restoration effectiveness. This tool could be adopted to include all shorelines of the Salish Sea, an important goal to integrate efforts across the United States-Canada border. Often, citizen scientists and students are engaged in monitoring activities. As an example of citizen science engagement, the Northwest Straits Foundation has been leading volunteer surveys at Bowman Bay since 2013, documenting success stories such as forage fish spawning four years after restoration. Overall, 87 volunteers have contributed over 1,980 hours monitoring the project. The Vashon Nature Center BeachNET program engaged 177 volunteer hours in 2019, monitoring restoration effectiveness across five sites. These citizen scientists were a mix of community volunteers, students, and land trust interns, and have changed the views of local citizens.

Current Gaps and Priorities for Future Monitoring

Funding is instrumental not only for living shoreline design and implementation, but for monitoring to measure effectiveness, as successful volunteer and student involvement requires ongoing training, staff time for organizational support, and stewardship and analysis of the data. Expansion of data collection and interpretation will provide an adaptive management framework to evaluate project effectiveness and will generate information that can inform future living shoreline applications. Although we have made large strides in recent years in coordinating efforts and standardizing protocols across diverse groups, given the range of organizations and geographic scope involved, continued support would help make levels of effort consistent across regions. Future efforts should focus on maintaining long-term monitoring of before and after restoration data, in order to learn from the temporal trends that can inform management actions. Living shorelines are often unique in their setting and design application. New sites should be incorporated to expand our spatial framework for analysis and address specific design details. By addressing both physical and ecological functions of beach restoration, we will be able to better plan for restoration actions that will be sustainable, especially when faced with coastal resiliency and sea level rise.



Shoreline Monitoring Database - Map Feature.