

Oyster Blueprint 2021-2025
Living Shoreline Strategy
Draft Recommendations April 2020

Overarching Goal:

Expand the use of living shorelines to become the most commonly used stabilization method in estuaries that support oyster habitats.

Workgroup members:

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Background:

Shoreline hardening, such as the installation of bulkheads and riprap revetments, has destroyed a considerable amount of North Carolina's estuarine habitats that are vital to commercially and recreationally important fisheries as well as coastal water quality. Although it has been the norm for so many years for addressing shoreline erosion, there is a need to instead protect the natural shorelines that we have left with the significantly more effective, economical and longer-term living shoreline methods. Living shorelines are environmentally friendly shoreline stabilization techniques that help reduce shoreline erosion while simultaneously protecting and restoring valuable coastal marsh and oyster habitat.

Implementing living shorelines along waterfront properties situated where oysters grow and where erosion is occurring, is a sound strategy for expanding oyster habitats, reducing shoreline erosion, and protecting and improving water quality. There is ample scientific evidence and demonstration that living shorelines built with varying materials in areas conducive to oyster growth provide new hard substrate for oyster growth and develop into productive oyster reefs that are an important source of oyster larvae for surrounding areas. Living shoreline oyster reefs also provide ecosystem services comparable to natural oyster reefs such as coastal marsh and shoreline protection, sediment stabilization, enhancement of fish and shellfish habitat and improvement of water quality through the filtering capabilities of the salt marsh grasses and oysters. These multiple benefits of living shorelines can increase public and private support for oyster restoration and stress the importance of including living shorelines as a “tool in the toolbox” for restoring oysters. Lessons learned from decades of intertidal oyster restoration and research on salinity and tidal regime in North Carolina and elsewhere have been and should be applied to the siting and design of living shorelines to promote oyster growth and development, as well as to support the numerous other ecosystem functions and services that living shorelines provide.

Accomplishments thus far:

The use of living shorelines in North Carolina has steadily increased through the years. The recent simplification of the Coastal Area Management Act (CAMA) General Permit for the construction of marsh sills has helped to remove permitting as a barrier to living shoreline implementation. CAMA Major Development permits for larger-scale, more complex living shorelines have also been increasingly quicker to obtain as familiarity with these projects has increased as more and more of these projects are being reviewed by the permitting agencies. Living shorelines have proven to fare better than hardened structures following the passage of recent hurricanes and other strong storms, as well as higher than normal water levels. Living shorelines built with varying materials in areas conducive to oyster growth have also created significantly productive oyster reefs. Despite the increased use of living shorelines in the state, we are unfortunately, still a long way away from making living shorelines the norm for shoreline stabilization instead of bulkheads and seawalls.

Draft Recommended Actions:

1. **Collaborate through the Living Shorelines Steering Committee.**
 - Identify and bring together the multiple efforts focused on promoting the use of living shorelines.
 - Provide the leadership necessary to reach the goal for living shorelines within this blueprint.
2. **Implement living shorelines to continue to demonstrate their benefits to oysters and soundfront property owners.**
 - Build at least three miles of living shorelines on public and private lands where oysters grow by 2025.
 - Continue to site and design living shorelines based on research to date and lessons learned from decades of intertidal oyster restoration in North Carolina and elsewhere to promote oyster growth and development, as well as support other ecosystem functions and services.
 - Devise and implement a communication and education strategy around each project to publicize benefits to gain more public and agency demand for these projects.
 - Engage volunteers and contractors in building living shorelines to help increase public awareness of their benefits.
 - Document the success of living shoreline projects each year (new and old) including their oyster recruitment potential, cost-benefits and resilience compared to other types of shoreline stabilization.
3. **Increase the use of living shorelines instead of bulkheads.**
 - Quantify the extent of living shorelines implemented to date that also serve as oyster habitat.

- Increase the percentage of living shorelines permitted for shoreline stabilization along shorelines that support oyster growth by 15 percent a year. The more living shorelines, the more oysters in the water.
 - Track the number and type of shoreline stabilization projects authorized each year.
 - Educate marine contractors, engineers, consultants and regulators through technical trainings to encourage the use of living shorelines. Conduct three regional 2-day trainings for marine contractors, consultants, engineers, agency staff, beginning in Wilmington in February 2021.
 - Conduct living shoreline consultations with five marine contractors per year.
4. **Create and promote consumer demand for living shorelines by property owners with a special focus on shorelines that support oyster growth.**
- Educate waterfront property owners, realtors, homeowners associations (Community Association Management Services), local governments and the general public on the value and benefits of living shorelines.
 - Develop educational outreach materials (electronic and printed) to be distributed to these audiences.
 - Conduct one on one living shoreline consultations with 50 waterfront property owners per year.
 - Market the use of living shorelines by property managers and owners at three outreach events in three regions of the coast.
5. **Protect regulated and permitted living shorelines that grow harvestable oysters.**
- Explore the protection of oyster shell bag and Oyster Catcher™ living shorelines in the next update to the N.C. Coastal Habitat Protection Plan (CHPP).
 - Experiment with the use of stronger bags or other sill materials that would not be damaged if oysters are harvested from them.
6. **Test alternative living shoreline construction materials and methods that increase oyster recruitment.**
- Test non-plastic, alternative materials for living shoreline construction at five demonstration project sites.
 - Monitor and report the performance of alternative materials.
7. **Summarize living shoreline research accomplishments and major findings to date related to oysters.**
- Provide information on how to site and design living shorelines to promote oysters based on research to date.
8. **Identify and answer living shoreline research questions and gaps as they pertain to oysters.**
- Continue quantifying the role of living shorelines in supporting oyster populations.
 - Document the degree to which living shorelines using oysters can adjust to sea level rise.
 - Research the nutrient (nitrogen, phosphorus) reduction benefits provided by living shorelines and use that information to provide incentives for living shoreline projects if warranted.

- Determine why is oyster recruitment on living shoreline materials more abundant on the seaward edge of the sill. How can they be designed differently to increase oyster recruitment?
 - On average, how many oysters per ft. can be generated from a living shoreline? On average, how much water can be filtered by oysters on a living shoreline per ft. or other unit?
9. **Qualify living shorelines for mitigation credits.**
- Determine if living shoreline projects can be built to qualify for salt marsh (\$560,000 an acre value) or nutrient mitigation credits.
 - Issue formal policy recommendations.
 - Inform mitigation bankers about this opportunity.

Living shoreline materials include but are not limited to rock (granite, limestone marl), recycled oyster shells, Oyster Catcher™, Atlantic Reefmaker, oyster castles, oyster domes, etc.