

Living shorelines mean thriving coastal communities

By

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This dedicated issue of *Shore & Beach* focuses entirely on advancing restoration of natural infrastructure — dunes, marshes, mangroves, oyster and coral reefs — and hybrid solutions that use a mix of more traditional hardened approaches with natural infrastructure as a valuable means of preserving our shores and ensuring vibrant coastal communities. Call them what you want — living shorelines, natural infrastructure, green infrastructure, natural and nature-based features — this issue is singularly focused on alternatives to traditional shoreline armoring and ways to more naturally mitigate shoreline erosion.

Our goal for this issue is to increase the visibility of the expanding set of shoreline solutions involving restoration of natural infrastructure to meet coastal erosion, water quality, and flood risk reduction objectives. We've brought together papers from leaders in the field. We've selected articles that represent projects from the Pacific Northwest, the Gulf of Mexico, and the eastern seaboard. The contributions are as diverse as the coastal ecosystems they seek to enhance through smart combinations of ecological and engineering design:

■ Readshaw *et al.* compares the effectiveness and relative costs of soft shore and traditional designs.

■ Gittman and Scyphers explore factors that waterfront residents consider when selecting a shore stabilization approach and compare the costs of implementing living shorelines and bulkheads.

■ Rogers provides a thoughtful photo narrative regarding the need for structures to reduce wave energy, even if they are accidental structures;

■ Weaver *et al.* describe the design, testing, and implementation of three living shoreline demonstration projects in Indian River Lagoon, Florida, that seek to

improve the biodiversity and resilience of armored and natural shorelines;

■ Traylor's contribution outlines adaptive management plans and some important lessons learned from a handful of marsh and shoreline restoration/stabilization projects in Great Egg Harbor Bay, New Jersey;

■ Weber and Buzan document their phased approach to the ecologically-driven design of a living shoreline for Shicke Point in Matagorda Bay, Texas, as well as an alternative project delivery method that allowed them to overcome substantial challenges;

■ Boyd *et al.* give a thorough explanation of the complex regulatory landscape that constrains the use of living shorelines in some Gulf of Mexico and Atlantic coast states; and

■ Peyronnin and Condrey offer a thought-provoking guest editorial that truly embodies the concept of "working with nature" with their vision of a sustainable, resilient Louisiana coast.

Taken together, these papers illustrate the rapidly expanding body of evidence that natural infrastructure solutions can be effective, provide good returns on investment, provide multiple benefits, and generate jobs. They also demonstrate the need for open, early, and frequent communication with state and federal agencies in what is a very complex and evolving regulatory landscape — a landscape that in many cases will dictate the designs of these projects.

Investing in natural infrastructure is no less important than investing in built infrastructure. It's not only critical, it's a win-win. And the sooner that investment is made, the more you benefit from it. More and more communities see that they derive multiple benefits from restoring natural infrastructure. Healthy coastal habitats reduce the impact of waves and

storm surges, improve water quality, provide habitat for important commercial fisheries, and offer recreation and tourism opportunities that are the foundation for many local economies.

Without concerted action to restore the coast, the nation stands to lose a lot of land and be increasingly vulnerable to extreme weather. Louisiana alone could lose as much as 2,250 square miles of land over the next 50 years. This land loss puts its coastal communities, natural resources and economies at risk. Also at risk are five ports, numerous oil and gas industrial facilities, and transportation infrastructure vital to the economic security of our nation. That's simply the toll in one of many coastal states that are destined to face similar pressures in the future. Louisiana's 2017 Coastal Master Plan would combat that loss and help significantly reduce damages that could exceed \$150 billion over the next 50 years without the plan. In addition to reducing risk, investments in coastal restoration and protection will also support nearly 60,000 jobs over the next 10 years. As it is in Louisiana and almost every other coastal state in the U.S., strong coastal economies are dependent upon healthy coastal ecosystems; the two cannot be separated.

Regardless of the implications of future climate variability, more people are moving to the coast and with them more investments are made in infrastructure. This means our risk in coastal areas will continue to increase even in the absence of more devastating natural hazards. Our coastal states, even the "unsalted" coasts of the Great Lakes, and communities need to develop comprehensive plans for their coasts based on sound science to make headway on protecting vital infrastructure and industries, creating jobs, restoring habitat and investing in our future. By having these plans, they will be better positioned to access federal funds and secure private sector support.