

An aerial photograph of a coastal property. In the foreground, a large wooden pier extends into the water, with a blue boat docked at its end. A large, multi-story house with a prominent tower is situated on a grassy area next to the pier. To the right of the house, there is a smaller building and a paved area. The background shows a mix of green grass, brownish marshland, and a winding waterway. The sky is clear and blue.

The Practice & Challenges of Building Living Shorelines

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- BS Botany & MS in Forestry (NCSU '94/'96)
- PhD Student, Integrated Coastal Sci (ECU)
- Director of Coastal Restoration for the 1st company in NC started specifically to design, permit & install living shorelines
- Managed over 100 living shoreline projects ranging in size from 15 LF to 4,170 LF, with over 24,000LF installed to date
- Co-Invented a patent-pending alternative living shoreline material/design

OLD WAY



BULKHEADS & SEA WALLS

ENVIRONMENTALLY SUPERIOR WAY

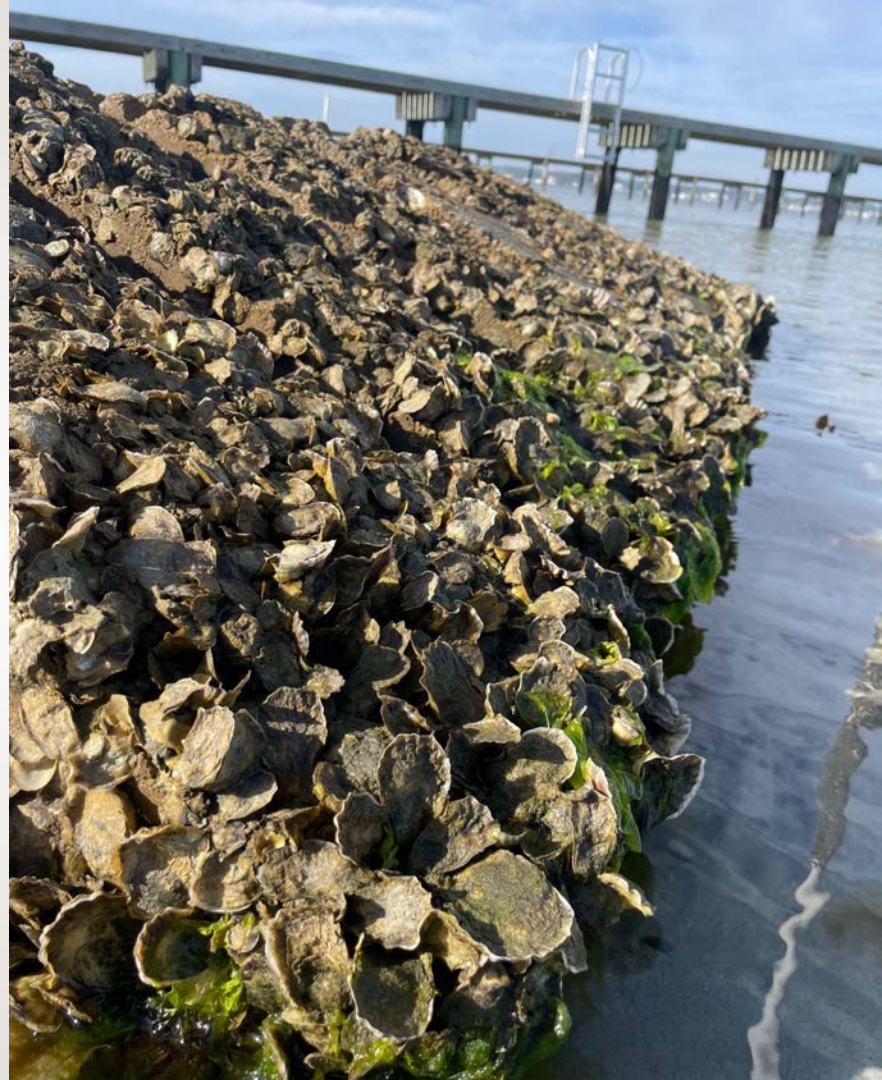


LIVING SHORELINES

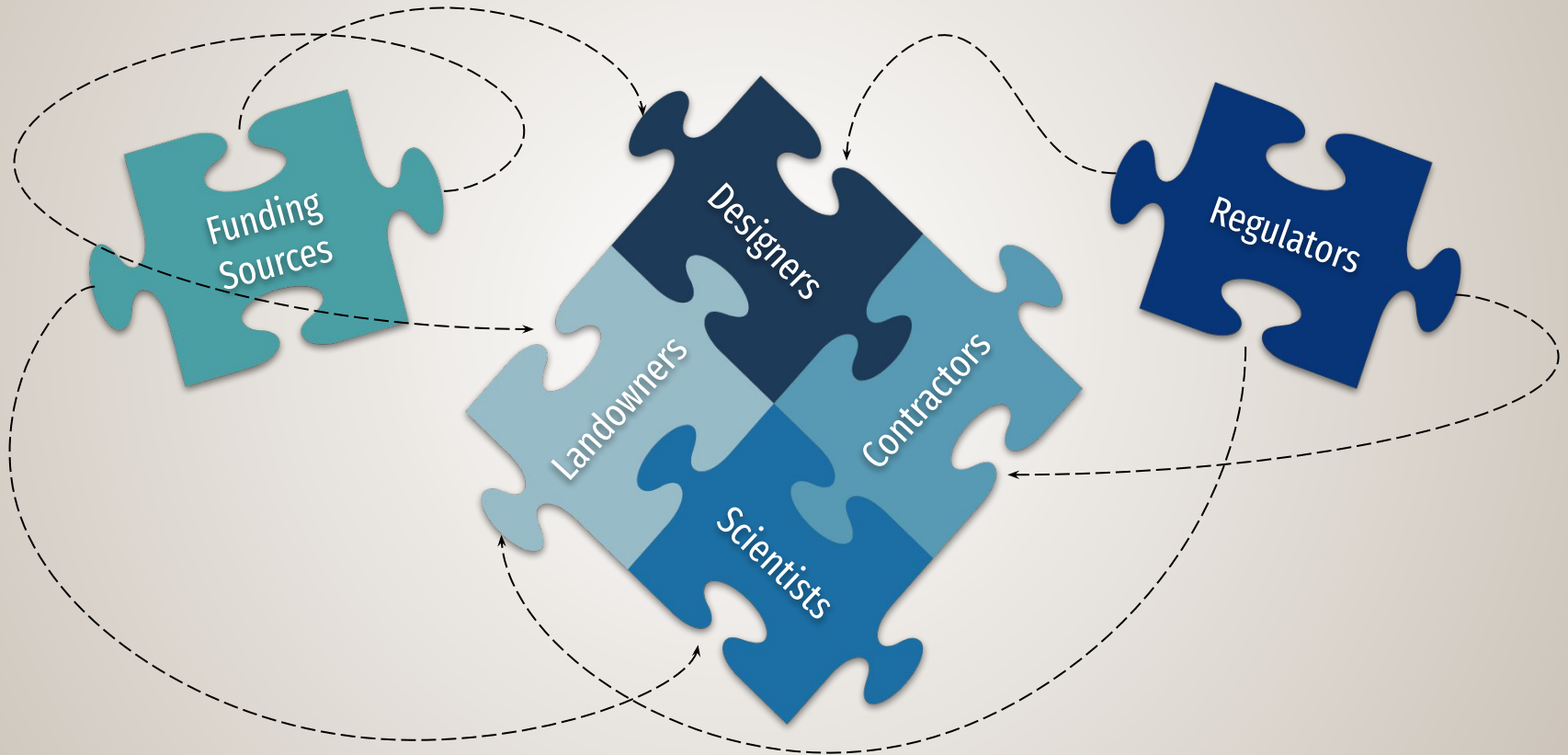
What is a Living Shoreline?

“A living shoreline is a protected, stabilized coastal edge made of natural materials...Unlike a concrete seawall or other hard structure, which impede the growth of plants and animals, living shorelines grow over time...They are an innovative and cost-effective technique for coastal management.” - NOAA

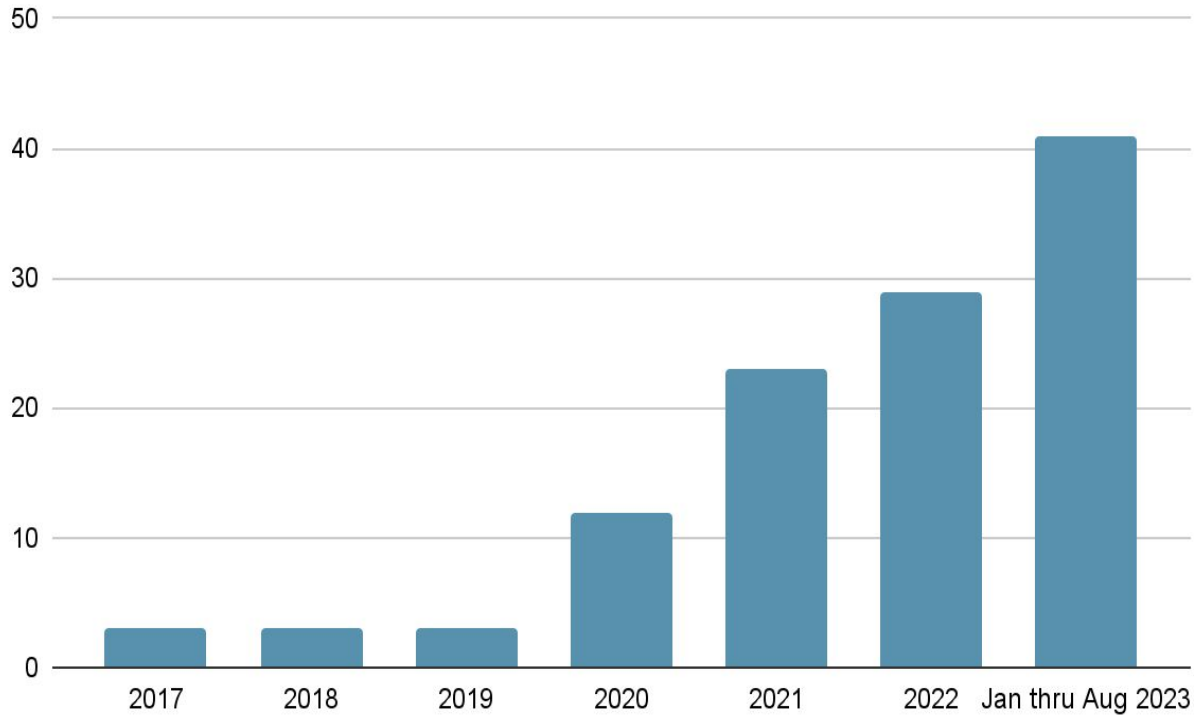
*Learn more at
livingshorelinesacademy.org*



WIDESPREAD IMPLEMENTATION OF LIVING SHORELINES TAKES TEAMWORK



NS Living Shorelines Installed



Unfortunately,
Landowners still
overwhelmingly
choose to harden
their shorelines

And, when they *DO*
choose a
living shoreline...



*Implementation can be hindered by a
lack of engineering approval
for alternative substrates*

WHY ALTERNATIVE MATERIALS??

We can just build living shorelines from rip rap, right?

Innovative & Evolving

Consultation with stakeholders continuously incorporates input into new designs & concepts



Adaptable

Custom solutions can be designed quickly & efficiently



Cost-effective

Many alternative materials are less expensive/LF than conventional materials



Use Native Materials

Can incorporate local limestone, on-site dredge spoil, etc. into substrate composition



Enhance Biodiversity

Interstitial space, substrate composition/rugosity, & ability to capture sediments can create/enhance habitats



Can Keep Pace with SLR

When colonized with oysters, can keep pace with rising sea levels





Most alternative materials are used in low to moderate energy situations where they are an economical option and failure is unlikely

We encounter 2 issues commonly:

1. Small-scale, medium-to-high-energy projects where success is uncertain but there is no engineering budget
2. Large-scale, low-energy projects where success is not a concern but engineer-approval is required



Images courtesy of Living Shorelines Academy, livingshorelinesacademy.org



We need the help of the engineering community to overcome these alternative-materials challenges



IN PARTICULAR...

1. How can we collaborate to overcome the semantic barriers between restoration practitioners & engineers?
2. How do we address the liability issues satisfactorily?
3. Does a precedent exist elsewhere (in or out of coastal engineering) that could be extrapolated to find a common ground for alternative materials?



THANKS!

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