# Living Shoreline (*noun*)- a creative approach to maintain, restore or enhance the shoreline's natural habitats while providing stabilization.

But don't just take our word for it. Here are some important findings from recent scientific research:

# Living shorelines slow down waves and protect shorelines from erosion

Salt marshes (Spartina spp.) have been shown to dissipate wave energy by 50% within the first 7.5 ft. and by 95% with 90 ft. of marsh.<sup>1</sup>

# Unlike bulkheads, living shorelines can trap sediments, helping your shoreline keep up with fluctuating water levels

Living shorelines with sills help to trap sediments which improve your shorelines capability of keeping up with changing water levels.<sup>2</sup> Living shorelines made with oyster reefs are especially capable of keeping up with fluctuating water levels.<sup>3</sup>

#### Living shorelines create valuable habitat and improve ecosystem health

Living shorelines support higher abundances and diversity of fish than areas next to bulkheads or even natural marshes.<sup>4</sup>

### Somethings really do get better with age.

As a living shoreline matures, its ability to attenuate wave energy improves, thereby improving erosion control.<sup>5</sup>

# Living shorelines outperform bulkheads during hurricane conditions

After Hurricane Irene (Cat 1 hurricane) made landfall, 76% of bulkheads surveyed were damaged, while no damage to marsh surface elevations behind sills or along natural marsh shorelines was observed.<sup>6</sup>

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2. Currin, C.A., P.C. Delano, and L.M. Valdes-Weaver (2008) Utilization of a citizen monitoring protocol to assess the structure and function of natural and stabilized fringing salt marshes in North Carolina. Wetlands Ecology and Management 16:97-118.

<sup>6.</sup> Gittman, R.K., A.M. Popowich, J.F. Bruno, and C.H. Peterson (2014) Marshes with and without sill protect estuarine shorelines from erosion better than bulkheads during a Category 1 hurricane. Ocean & Coastal Management102: 94-102.



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<sup>4.</sup> Gittman, R.K., Peterson, C.H., Currin, C.A., Fodrie, F.J., Piehler, M.F., and Bruno, J.F. 2016. Living shorelines can enhance the nursery role of threatened coastal habitats. Ecological Applications 26: 249-263. DOI: 10.1890/14-0716

<sup>5.</sup> Manis, J.E., S.K. Garvis, S.M. Jachec and L.J. Walters (2014) Wave attenuation experiments over living shorelines over time: a wave tank study to asses recreational boating pressures. Journal of Coastal Conservation Planning and Management 18(5) Published online 21 October 2014.