Increasing Resilience and Reducing Risk through Successful Application of Nature Based Coastal Infrastructure in New England

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Continued collaboration across New England

Building the case
Shaping policy & regulations
Promoting wide-spread implementation

Photo: TNC
Nature-based projects in the coastal zone

1. Maintain or restore natural land-water interface to promote continuation of dynamic coastal processes & functions
2. Use vegetation, sediment, shellfish & biodegradable materials
3. Provide coastal resilience/hazard reduction benefits such as shoreline stabilization & flood reduction
4. Create co-benefits such as habitat, recreation space, carbon sequestration, improved water quality, etc.
Beach nourishment (Barnstable Long Beach, MA)
Dune restoration (Duxbury Beach, MA)

Photo: Woods Hole Group
Coastal bank stabilization (Orleans, MA)

Photo: Wilkinson Ecological Design
Salt marsh enhancement (Chatham, MA)
“Living” breakwater (Stratford, CT)

Photo: Sacred Heart University
Expected regional products (2022)

- Demonstration projects across New England
- Regional, standardized monitoring metrics
- Technical & policy guidance
- Outreach, education, capacity building
Demonstration projects/monitoring sites

Marsh creation/enhancement with toe protection

- North Mill Pond, Portsmouth, NH
- South Mill Pond, Portsmouth, NH
- Cutts Cove, Portsmouth, NH
- Wagon Hill Farm, Durham, NH
- Collins Cove, Salem, MA
- Wharton Point, Brunswick, ME
- Maquoit Conservation Lands, Brunswick, ME

Dune restoration/nourishment

- Duxbury Beach, Duxbury, MA (sand dune nourishment)
- Long Beach, Plymouth, MA (cobble dune nourishment)
- Breakwater Beach, Brewster, MA (sand dune nourishment)

Coastal bank - natural

- Lanes Island, Yarmouth, ME

Multi-approach projects

- Stratford Point, Stratford, CT -- living breakwater, marsh & dune restoration
- Rose Larisa Park, East Providence, RI -- intertidal sill, coastal bank with engineered core & marsh creation
- Gray’s Beach, Kingston, MA -- marsh creation/enhancement with toe protection & dune nourishment
- Coughlin Park, Winthrop MA -- coastal bank protection & cobble nourishment
Marsh Creation/Enhancement with Toe Protection
Dune Restoration/Nourishment
Coastal Bank - Natural
Multi-Approach Projects
Wharton Point
Brunswick, ME
Rose Larisa Park
East Providence, RI
Examples of monitoring categories, indicators & metrics for marsh creation/enhancement with toe protection

**Category**
- General Conditions
- Physical Conditions
- Biological Conditions

**Broad Indicators**
- Appearance
- Human Disturbance

**Metrics**
- Change in Appearance
- Presence of marine debris
- Impacts of Recreation
- Change in Position
- Presence of installed features
- Shoreline Position
- Shoreline Cross-Sections
- Change in Horizontal Position of contiguous vegetated shoreline
- Vertical change: elevation loss, gain or maintenance
- Percent Survival (if planted)
- Percent coverage by species, abundance
- Presence absence of invasive species
- Presence or absence of feeder fish
- Presence of shore vegetation
- Biota
- Vegetation
- Herbivory
New England partners

...and others in each state