

New York City Living Shorelines
An Ecosystem- and Community-based
Learning Approach

CUNY CREST Institute

In Partnership and Support

NOAA Fisheries

&

Urban Waters Federal Partners, NY Region

New York City Living Shorelines: An Ecosystem- and Community-based Learning Approach

What are Shorelines? Why are they crucial for Ecosystems



Why

How is NOAA agency supporting shorelines remediation and protection



How

Shoreline locations/sites in NYC region



Where

Community Engagement and Benefits



Who

Shoreline Protection Plan



What

What are Shorelines? Why are they crucial for Ecosystems



One Sq. mile of salt marshes stores the carbon equivalent of 76000 gal of gas annually



Living shorelines improve water quality, provide fisheries habitat and increase biodiversity



Marshes and Oysters reefs act as natural barriers to waves, 15ft of marsh can absorb 50% of incoming wave energy



Marshes trap sediment from tidal waters allowing them elevate as sea level rises



Living shorelines are more resilient against storms than bulkheads

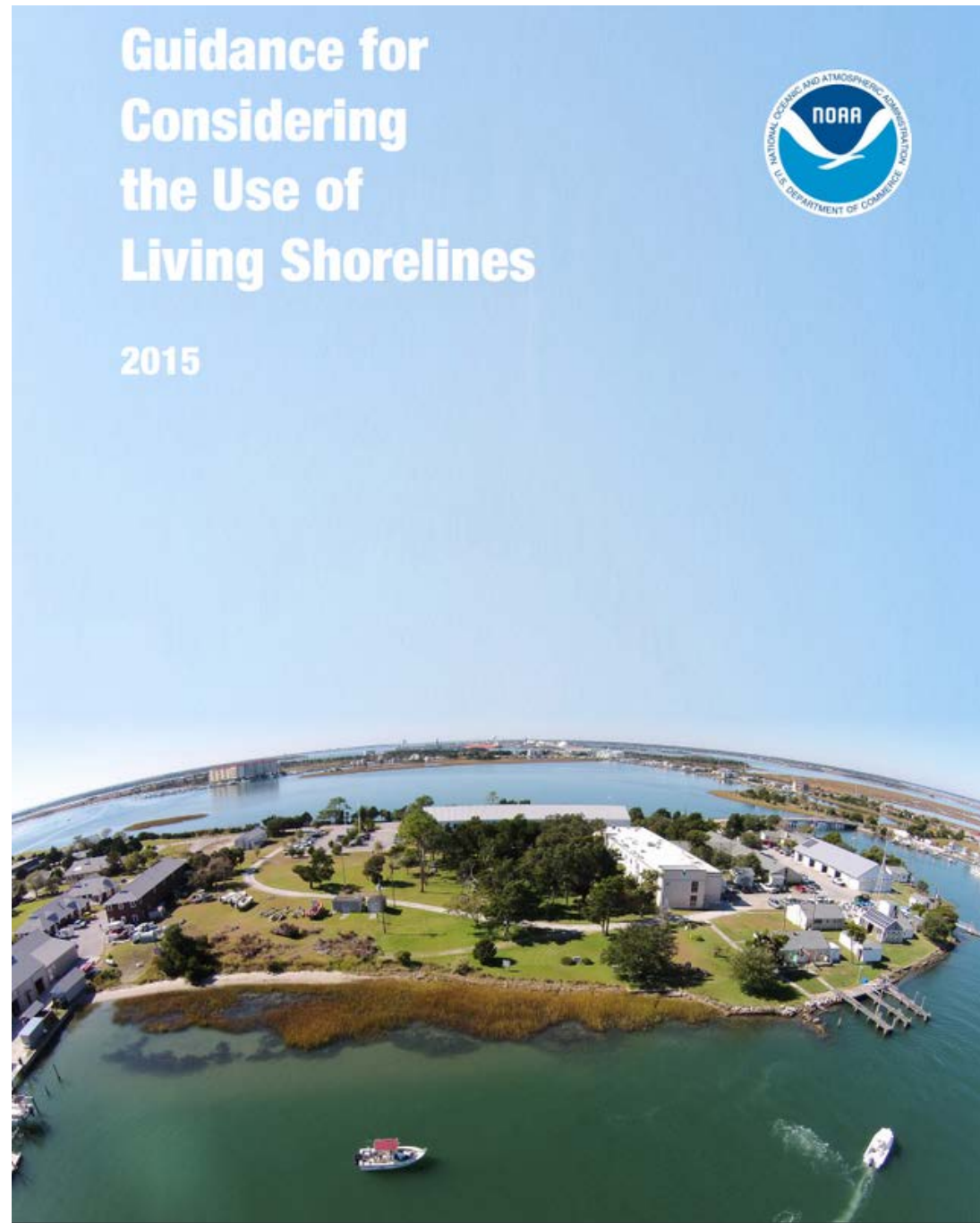


33% of shorelines in the U.S will be hardened by 2100 decreasing fisheries habitat and biodiversity



Hard shoreline structures like bulkheads prevent natural marsh migration and may create seaward erosion

How is NOAA agency supporting shorelines remediation and protection



- NOAA Fisheries support in obtaining Satellite imageries of NYC shoreline sites
- GIS - StoryMap
- Use of Google Earth
- Data Analysis - Python/Excel



<http://www.habitatblueprint/>

Some Shoreline locations/sites in NYC region



Pugsley Park in Bronx, NY



Starlight Park in Bronx, NY

Community Engagement and benefits



What will you do?

- The project will include a literature review of the NYC Natural and Nature-Based Features (NNBF) and how they have evolved and/or degraded over the period of time.
- The study will also include understanding various factors (natural and human-based) that may have attributed to the loss of the NYC living shorelines and/or change of living shoreline to hardened shorelines, and how it impacts communities through extreme weather events – such as flooding, storm run-off and storm surge.
- Students will use earth observing datasets to conduct a baseline study and map impacts over a period of time.
- The study will culminate in the development of StoryMaps, informational flyers for public campaigns, and presentations for local communities to increase advocacy on the value and need to protect our natural and nature-based resources.
- Students will also develop basic understanding of how to design and rejuvenate living shorelines.

Shoreline Protection Framework : Policy and Advocacy

A Framework for Developing Monitoring Plans for Coastal Wetland Restoration and Living Shoreline Projects in New Jersey

Recommended data collection and evaluation of project performance to facilitate adaptive management and improve future project designs

3/31/2016

Metthea Yepsen, The Nature Conservancy

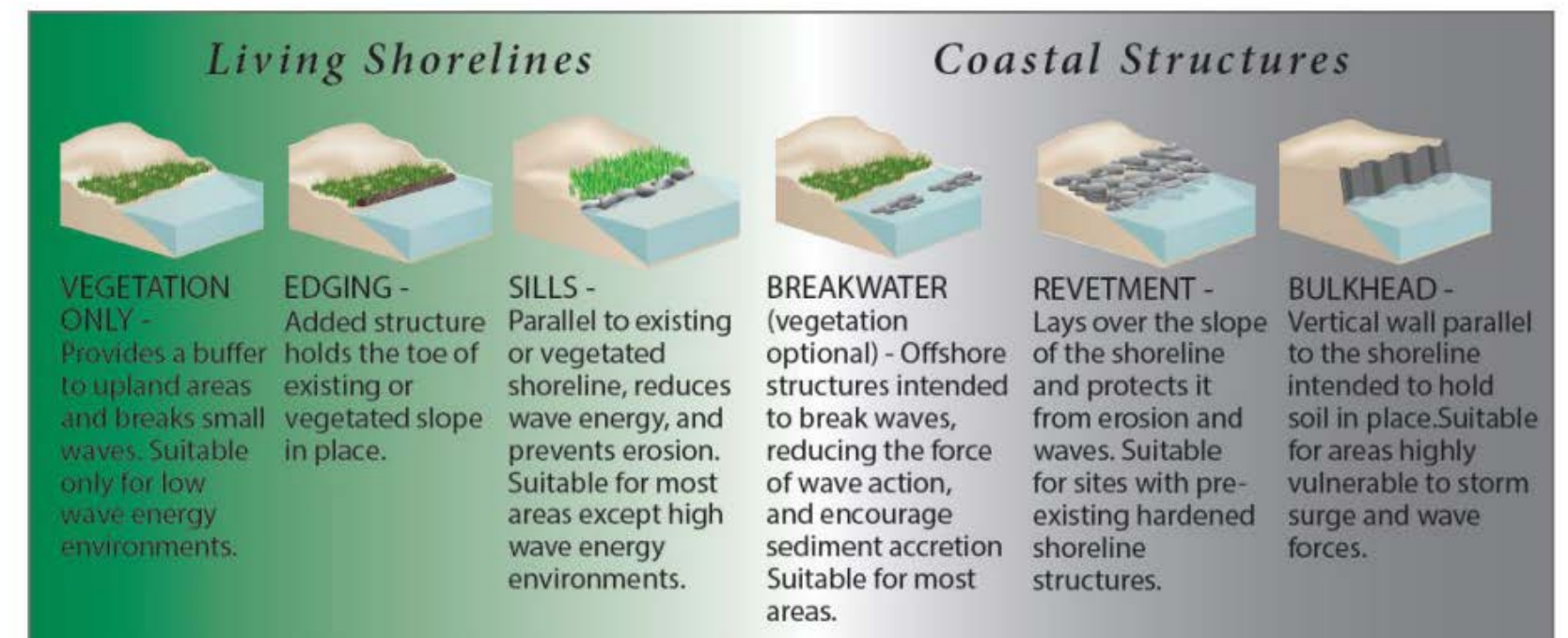
Joshua Moody, The Partnership for the Delaware Estuary

Elizabeth Schuster, The Nature Conservancy

HOW GREEN OR GRAY SHOULD YOUR SHORELINE SOLUTION BE?

GREEN - SOFTER TECHNIQUES

GRAY - HARDER TECHNIQUES



A continuum of green (soft) to gray (hard) shoreline stabilization techniques.
(Adapted from SAGE 2015 Natural and Structural Measures for Shoreline Stabilization brochure).

With a focus on Building Equitable,
Resilient and Sustainable Communities

Student Learning outcomes

- Deeper Understanding of NYC Urban Ecosystem and its services in the face of climate change.
- Community /Stakeholder Engagement and Collaboration.
- Be able to do data Collection, Assessment, Interpretation.
- Be able to understand and use of Satellite Imageries and GIS tools.
- Writing and Oral Communication Skills.

Project outcomes

- **Community Engagement and Interaction** - Students will work closely with Community Partners and Stakeholders Urban Waters Federal Programs (UWFP), Bronx Council of Environmental Quality (BCEQ), Harlem, Bronx River Working Group, Randall's Island Park Alliance (RIPA), Jamaica Bay Rockaway Conservancy .
- **Increase in NOAA mission knowledge and understanding** - the Living Shoreline NOAA ambassadors (UG Interns) will gain increased understanding of the NOAA and its mission of science, service and stewardship. They will be engaging with the cross-NOAA North Atlantic Regional collaboration Team (NART) and NOAA's Center for Satellite Applications & Research (STAR).
- **Competency in NOAA mission enterprise:** The interns will be exposed to 2-weeks of technical workshop to gain basic understanding of Remote Sensing, Python/R Studio computer programming, Data Analysis and GIS skills.
- **Story Map:** Each Intern/Living Shoreline ambassador will generate a [StoryMap](#) to hone their storytelling and communications skills.
- **Peer-Project-based Learning:** The UG Interns will serve as student mentors to a group of High School interns, who will be engaged in this project.

