NATURE-BASED APPROACHES

FIELD TRIP SERIES

Boston | June 5, 2023
Winthrop | July 24, 2023
Duxbury | August 22, 2023
Falmouth | September 20, 2023

WOODS HOLE GROUP
A CLS COMPANY

Stone Living Lab

Massachusetts Office of Coastal Zone Management

DUXBURY BEACH RESERVATION, INC.

WELCOME

Thank you for participating in our Nature-Based Approaches field trip series. Your feedback is valuable to us - please take a minute to fill out this online survey at the end of the program. We hope to see you at future field trips!

CONTENT GUIDE

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UPCOMING FIELD TRIPS

The Stone Living Lab, Woods Hole Group, and the MA Office of Coastal Zone Management are organizing a series of field trips focused on nature-based approaches (NBAs) for coastal protection. These trips will showcase the use of cobble berms to enhance coastlines against storm surge and sea level rise. Coastal professionals, municipal employees, restoration experts, and community advocates curious about NBAs are encouraged to attend. The trips are free of charge supported by the MA CZM's Coastal Resilience Grant.

Coughlin Park, Winthrop

Monday, July 24th 2023 | 10:30 AM - 12:30 PM

Interested? Register Here!

Duxbury Beach Reservation, Duxbury

Tuesday, August 22 2023 | 10:30 AM - 12:30 PM

Interested? Register Here!

Trunk River, Falmouth

Wednesday, September 20th | 10:00 AM - 12:00 PM

Interested? Register Here!

ONLINE RESOURCES

Scan the QR codes below to access online resources and learn more about cobble berms. Explore interactive materials, engage with the team, and deepen your knowledge about this innovative nature-based solution for coastal resilience.

Cobble Berm Project Story Map

The Cobble Berm Story Map is an interactive webpage created for this project, designed to provide a comprehensive and dynamic narrative about cobble berms as nature-based solutions for coastal resilience. Continuously updated throughout the project's progression, this engaging platform offers rich multimedia content, including maps, images, and informative texts, allowing users to explore the research findings and project developments.

MyCoast

The MyCoast project is an initiative dedicated to documenting and sharing shoreline change and coastal resilience measures across Massachusetts through smartphone photography. Through this QR code, you can explore a collection of report uploads showcasing diverse coastal resilience measures, contributed by individuals across the state.

COBBLE BERM MONITORING

What is a cobble berm?

Cobble berms, also known as dynamic revetments or artificial dunes, are shoreline protection structures that consist of sloping beaches made up of smaller stones and cobbles. They exist naturally, but can be designed to dissipate wave energy and provide a buffer against extreme tides and storm waves. Unlike seawalls, cobble berms consist of movable materials that can be transported and sorted by waves, creating a dynamic and natural appearance.

Coughlin Park, Winthrop MA

Before Construction

After Construction

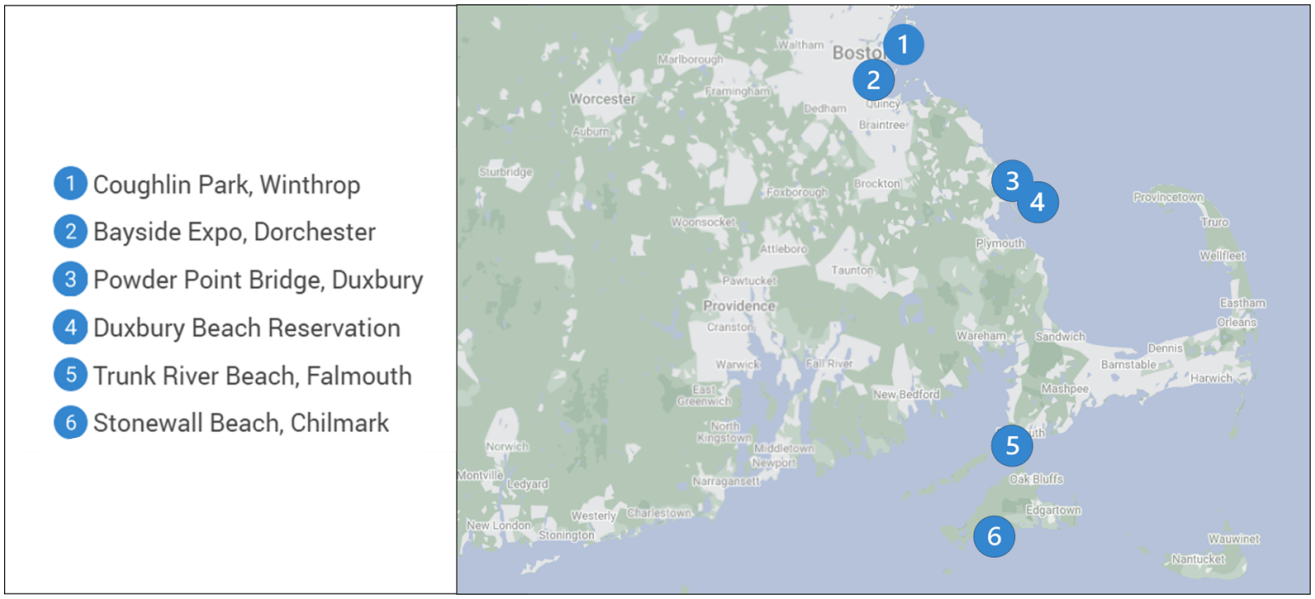
Why study cobble berms?

The effectiveness of cobble berms has not been comprehensively studied. The goal of this project is to better assess the advantages and disadvantages of utilizing cobble berms at beaches across Massachusetts. Specifically, this project aims to:

1. Asses the potential to provide shoreline protection in a variety of areas
2. Advance the understanding of performance
3. Provide improved design parameters to optimize performance
4. Identify biological effects
5. Provide valuable information for designers and regulatory guidance
6. Engage stakeholders to inform project goals and deliverables

COBBLE BERM MONITORING

Six sites along the Massachusetts coast were selected for this project to monitor over time. They span from Coughlin Park in Winthrop, Massachusetts, to Stonewall Beach in Chilmark.



The cobble berms at these sites vary in length, volume, and cobble grain size. The table below summarizes the characteristics of each of the six sites along with their funding sources.

Site Name	Location	Project Length	Volume	Grain Size	Construction Cost	Year Constructed	Funding Source
Coughlin Park (Hybrid)	Winthrop	360 feet	425 cy	3-7”	$200,000	2019	Public/ CZM Grant
Bayside Expo	Dorchester (Boston)	145 feet	Unknown	Varied, including debris	Unknown	2019-2020	Unknown
Powder Point Bridge	Duxbury	~400 feet	1000-1500 cy	6-8”	$85,000	Expected: 2023-2024	Private/ CZM Grant
Duxbury Beach Reservation	Duxbury	2000 feet	500 cy	6-8”	$35,000	2022	Private
Trunk River	Falmouth	180 feet	~400 cy	3-6”	~$40,000	2019-2020	Public
Stonewall Beach (Hybrid)	Chilmark	400 feet	900 cy	6-12”	$180,000	2020, 2022	Private

COBBLE BERM MONITORING

This project seeks to evaluate the performance and suitability of cobble berms as a nature-based approach by monitoring:

1. Geomorphological Changes

- Tracking the movement of sediment over time using land-based elevation surveys and/or drones.

2. Biological Impacts

- By conducting intertidal biodiversity assessments.

3. Salt Marsh Extent

- Tracking changes in salt marsh extent and health over time.

Project Sites - Boston Harbor

COBBLE BERM MONITORING

Project Sites - Duxbury

Project Sites - Cape Cod & Islands

CONTACT LIST

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NOTES

STORMSMART PROPERTIES

StormSmart Properties Fact Sheets, developed by the Massachusetts Office of Coastal Zone Management (CZM), serve as a valuable resource for coastal property owners. These fact sheets provide important information on measures that effectively reduce erosion and storm damage while minimizing impacts to shoreline systems. They enable property owners to collaborate with consultants and design professionals in selecting the best option or combination of options for their specific circumstances.

FACT SHEET INDEX

Fact Sheet 4, included as an example, highlights the use of coir rolls in coastal bioengineering to prevent erosion. Other Fact Sheets are available online on the following topics:

1. Artificial Dunes and Dune Nourishment
2. Controlling Overland Runoff to Reduce Coastal Erosion
3. Planting Vegetation to Reduce Erosion and Storm Damage
4. Bioengineering/Coir Rolls on Coastal Banks
5. Bioengineering/Natural Fiber Blankets on Coastal Banks
6. Sand Fencing
7. Repair and Reconstruction of Seawalls and Revetments
8. Cost Comparison Chart

Visit the StormSmart Properties Website Here: