# Nature-Based Design Practices Case Study Blue Hill Maine



# Description

The project stabilized over 1,500 linear feet of eroding coastal shorefront using a variety of living shoreline stabilization techniques in combination. To do this, the design incorporated living shoreline zones, including an area of created fringe marsh that was placed father seaward. The lowest zone consisted of a substantial matrix layer supporting marsh grasses and fridge plant species. The next zone above the first consisted of pinned logs, root wads, and small boulders. The final upper zone consisted of the bluff face/upland edge which was enhanced by lifts of coir filled with organics. The project began in 2021, continues to be monitored and the plantings and design have strengthen over time.

Living shoreline zones and created fringe marsh. Photo courtesy of Nathan Robbins.

# Permitting

State permitting required a Natural Resources Protection Act Permit from the Maine Department of Environmental Protection, which included review by the Maine Geological Survey and the Maine Department of Marine Resources. Reviews focused on ensuring the project minimized siltation by not unreasonably causing erosion of soil, did not inhibit the natural transfer of sediment from terrestrial to marine environment, and did not negatively impacting marine resource species.

Maine DEP, DACF, and DMR found that the proposed activity minimized wetland impacts to the greatest extent practicable, that the design represented the least environmental damaging alternative, and that the project would not unreasonably interfere with existing scenic, aesthetic, recreational or navigational uses. The design enhances fringe marsh habitat, and restores a streambank. All construction was done in accordance with Maine Erosion and Sedimentation Control Best Management Practices (BMPs).

# Lessons Learned

The stream stabilization did not include any work in the stream. A marine resource survey was required prior to installation and the design did not extend farther than 15-20 feet from the present bank. Impacts to coastal wetlands were mitigated through creation of fringe marsh and vegetating adjacent shoreline with native edges and rushes. The permit required, consistent with

> US ACOE permitting, to monitor plantings for 5 years, which must be replaced or maintained as necessary to achieve 85% survival annually. Observations were made in 2024, following historic winter storm flooding, and found that the completed structure, coir fabric rolls, marsh restoration structure, and bluff were successfully intact.

For More Information Contact

Paul Bernacki. The Home Place Team



Stabilized bluff and restored streambank. Photo Courtesy of Nathan Robbins.

MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION www.maine.gov/dep