Figure 1: ABTB shoreline restoration

Angola by the Bay, Herring Creek

Living Shoreline & Tidal Marsh Enhancement

Completed March 2023

Project Summary

Background

The Delaware Center for the Inland Bays' (Center) Living Shoreline Initiative aims to use natural alternatives to stabilize shorelines that improve water quality and provide habitat for fish, horseshoe crabs, terrapins, and other wildlife in the Bays. Living shorelines help to preserve and restore tidal marshes that are rapidly degrading in the Bays due to erosion, climate change, and sea-level rise.

Project Site

The project is located in the Angola by the Bay (ABTB) community in Southern Delaware (Figure 4). There is 2,250 linear feet of shoreline along Herring Creek—a Rehoboth Bay tributary. Community residents were concerned about the rapid erosion of the shoreline (Figure 2) and flooding (Figure 3).

Figure 2: Eroding shoreline at ABTB (2021)

Project Goals

Green infrastructure and nature-based tactics were used to retrofit, or modify, existing stone revetments, breakwaters, and rip-rap on site. The project aims to improve water quality of Herring Creek by using biochar—a soil additive used for nutrient filtering and carbon sequestration (removal).

Figure 3: Flooding at ABTB (2022)

The Specifics

- Manage 2,250 linear feet of shoreline
- Restore and stabilize 170 linear feet of shoreline using natural materials (coir, logs, sand, and plants)
- Retrofit ~1,800 linear feet of shoreline
- Manage landscape vegetation
- Serve as a demonstration site for stabilization and water quality improvement techniques using biochar

Project Lead:
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Partner(s):

- Angola by the Bay Property Owners Association
- Sovereign Consulting, Inc.
- University of Delaware

Funding:

- Community Water Quality Improvement Grant
- Clean Water Act Section 319 Grant
- Environmental Protection Agency
- Angola by the Bay Property Owners Association

Figure 4: ABTB living shoreline project (red star); other Center living shoreline projects (blue stars)

Outputs and Outcomes

A total of 2,250 linear feet of shoreline was protected and 15,000 square feet of marsh was created or enhanced. This living shoreline will work to improve water quality by reducing pollutants, providing habitat, and preventing erosion. It will further reduce nitrogen loads by roughly 67 pounds per year, and phosphorus loads by roughly 47 pounds per year.

Following construction, 360 cordgrass plugs (*Spartina alterniflora*) were planted (Figure 8) to prevent erosion and create or enhance the marshland.

In addition to the living shoreline and marsh enhancement, a pollinator strip was enhanced with biochar and planted with native mid-Atlantic wildflowers (Figure 10). This works to improve water quality, attract native wildlife, reduce erosion, and add beautification.

Volunteer Appreciation

This project could not have been completed without the help of volunteers, dedicating a combined total of over 260 volunteer hours.

Did You Know?

Biochar—the remains of burning grass or wood to ash and charcoal—works to aerate the soil texture and absorb nutrients and moisture. This soil-quality improvement technique can be found all over the world from the Amazon to the ancient Egyptians!

Before Project

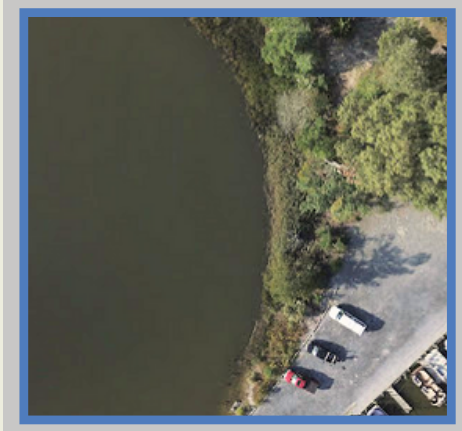

Figure 5: ABTB shoreline (2020)

Figure 7: ABTB shoreline cordgrass planting site—closeup (2021)

Figure 9: ABTB pollinator strip (March 2023)

After Project

Figure 6: ABTB shoreline (2023)

Figure 8: ABTB shoreline cordgrass planting site—closeup (2023)

Figure 10: ABTB pollinator strip (June 2023)

DELAWARE CENTER FOR THE
INLAND BAYS
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The Delaware Center for the Inland Bays is a non-profit organization established in 1994 to promote the wise use and enhancement of the Inland Bays and its watershed. With its many partners, the Center conducts public outreach and education, develops and implements restoration projects, encourages scientific inquiry and sponsors research. To learn how you can get on board with the bays go to inlandbays.org.