

Dataset: Ecological and physical performance measures of four built sustainable shorelines along the Hudson River, New York

This document provides detailed information about a dataset that was generated through a 2015-2018 collaborative research project titled *Assessing ecological and physical performance of sustainable shoreline structures*. This document also provides information [about the project](#). The project was supported by the National Estuarine Research Reserve System (NERRS) Science Collaborative which is funded by the National Oceanic and Atmospheric Administration. All Science Collaborative supported projects that collect new data adhere to federal data sharing and archiving requirements.

About the Dataset

Dataset name:

Ecological and physical performance measures of four built sustainable shorelines along the Hudson River, New York

Collection period:

2017 and 2018

Geographic extent:

Data were collected at four site in the 125-mile section of the Hudson Estuary that extends from the Tappan Zee Bridge, north of New York City, to the federal dam in Troy. The sites are summarized in the following table.

Site Name	River Mile	Construction Date	Nature of Treatment	Project Steward/Manager
Coxsackie Boat Launch	124 W	2012	Rock and vegetation terrace (steps)	NYSOPRHP (Parks)
Esopus Meadows Preserve	87 W	2006	Re-grading and installation of a stone toe and soft gabions and planting of shrubs	Scenic Hudson
Foundry Dock Park	53.4 E	2005	Rip-rap, coir logs and native vegetation	Scenic Hudson
Beczak - Habirshaw Park and Tidal Marsh	18.4 E	2003-4	Placement of marsh sill, excavation, rip-rap, invasive species management	Center for the Urban River at Beczak

General description of data:

In field validating and training local managers in the rapid assessment protocols developed through the project, living shorelines performance data were collected at four sites along the Hudson River. Sites where these data were collected include the Coxsackie Boat Launch, Esopus Meadows Preserve, Foundry Dock Park, and Beczak -Habirshaw Park and Tidal Marsh. The dataset includes a suite of measures of ecological and physical functions

of built sustainable shoreline structures collected at these sites. In brief, variables were selected based on documented links to ecological or physical performance and are intended to be simple enough that a site may be assessed in a single low-tide window. Variable names and definitions are provided in the metadata record. Examples of the types of ecological data collected include species richness, presence/absence of aquatic plants, presence/absence of invasives. Examples of the types of physical data collected include erosion volume and differences in wave height and wake height between exposed and sheltered locations. Methods for data collection are described in detail in the guidance manual developed through this project (<https://www.hrnerr.org/wp-content/uploads/sites/9/2019/01/SustainableShorelinesINTERACTIVE-RevDec2018.pdf>).

Data Quality Control / Quality Assurance Procedures:

Data were entered by hand into datasheets in the field. An observer and a recorder were present during fieldwork to ensure some duplication and oversight. Errors in data entry are the most likely form of error and incorrect records were largely identified and corrected when values were entered into the master datasheet.

Contact information:

Dr. Stuart Findlay
Senior Scientist
Cary Institute of Ecosystem Studies
PO Box AB, Millbrook, NY 12545
(845) 677-7600, ext. 138
findlays@caryinstitute.org

Data access and archival link:

<https://caryinstitute.figshare.com/s/59c66288a24ab9faf5fe>

File format:

Excel spreadsheet

About the Associated Project

Project title:

Assessing ecological and physical performance of sustainable shoreline structures

Project lead and contact information:

Dr. Stuart Findlay

Senior Scientist

Cary Institute of Ecosystem Studies

PO Box AB, Millbrook, NY 12545

(845) 677-7600, ext. 138

findlays@caryinstitute.org

Name of reserve(s) involved in the project: Hudson River National Estuarine Research Reserve

Project period: September 15, 2015 to December 31, 2018

Project abstract:

Nature-based, ecologically enhanced, or soft shoreline stabilization techniques (hereafter termed "sustainable shorelines") have the potential to maintain and enhance important ecological services, provide greater resilience to physical forces, and be cost-competitive with traditional approaches such as revetments and bulkheads. In order for these techniques to be used more widely in the Hudson River Estuary, their performance must be demonstrated and evaluated locally. Landowners, site designers, and decision makers have expressed this need to enhance their confidence in proposing innovative designs to clients, investing in sustainable shoreline construction, and steering permit applications toward these less traditional options.

Over the past eight years, the Science Collaborative has supported the Hudson River Sustainable Shorelines Project, which engages a regional research team to quantify the ecological functions and physical stresses on the full range of Hudson River shorelines. This research is the basis for development of information and tools needed by regulators, engineers, and resource managers to identify the best settings and approaches for sustainable shoreline protection in the Hudson River Estuary. The research included the establishment of a sustainable shoreline demonstration network of seven sites with varying modes of construction distributed along the Hudson. The current project expands that work by 1) developing and fieldvalidating rapid assessment protocols for physical and ecological functions of ecologically enhanced shorelines and 2) training local land managers in these protocols. This work will solidify confidence in the suitability of novel shoreline techniques in the Hudson River Estuary and enable local managers to track performance.

Project links:

- Sustainable Shorelines project page: <https://www.hrnerr.org/hudson-river-sustainable-shorelines/assessing-ecological-physical-performance>
- Science Collaborative project page: <http://nerrsciencecollaborative.org/project/Findlay15>