



# SYNTHESIZING EVIDENCE ON THE PERFORMANCE OF NATURE-BASED SOLUTIONS FOR COASTAL PROTECTION

## ABOUT

The goal of this project is to discover and summarize what is known about the performance of nature-based solutions (NBS) for coastal protection. The project uses a “systematic map” approach.

## WHAT IS A SYSTEMATIC MAP?

This is an inventory of knowledge that ‘maps’ what is known and identifies information gaps. We are using a technique called a ‘systematic map’ to summarize the distribution and abundance of evidence from primary and secondary literature. This project will capture the state of the science on NBS.

## PROJECT SCOPE

Papers and reports with these criteria will be reviewed and included in the systematic evidence map:

Geography: GLOBAL

Ecosystems: SALT MARSH, SHELLFISH REEF, KELP, MANGROVE, SEAGRASS, CORAL REEF

Timeline: STUDIES PUBLISHED FROM 1980- PRESENT

Literature Sources: INDEXING AND BIBLIOGRAPHIC PLATFORMS, WEB SEARCH ENGINE, ORGANIZATIONAL WEBSITES, AND STAKEHOLDER CONTRIBUTIONS

Measured Outcomes: ECOLOGICAL (E.G., SPECIES, COMMUNITY), PHYSICAL (E.G., WAVES, WATER LEVEL), SOCIAL (E.G., SAFETY, HEALTH, CULTURE), ECONOMIC (E.G., LIVELIHOODS, CAPITAL)

## WHY IT MATTERS

With threats from coastal hazards like flooding and erosion, humans increasingly work with nature to buffer against and overcome coastal threats. These interventions are types of “nature-based solutions” (NBS). Despite the growing popularity of NBS for coastal protection, gaps remain in understanding how these interventions perform over time. This project helps fill these gaps by synthesizing existing information on NBS performance across a variety of coastal ecosystems to help guide future use of NBS for coastal resilience.

## WHAT WE’RE DOING

We are documenting *interventions used to enhance coastal protection* that involve working with nature. These types of interventions will include more ‘green’ and less ‘gray’ infrastructure and can be broadly categorized as:

HABITAT RESTORATION AND CREATION  
STRUCTURE ADDITION (ARTIFICIAL OR NATURAL)  
RETROFITTING (OR MODIFYING) GRAY INFRASTRUCTURE  
MODIFYING (OR ALTERING) MORPHOLOGY OR SEDIMENT

## PROJECT TEAM

NOAA National Centers for Coastal Ocean Science, NOAA Central Library, NOAA Office for Coastal Management, Duke University, East Carolina University, and NC State University