

# SYNTHESIZING EVIDENCE ON THE USE OF BUILT STRUCTURES IN CORAL REEF ECOSYSTEMS

## ABOUT

This goal of this project is to assess the current state of knowledge on the design, siting, implementation, and performance of built structures used for coral restoration, coastal protection, and other applications through a process called systematic mapping.

## WHAT WE'RE DOING

Through systematic mapping, we are identifying and compiling published evidence on the use of built structures in coral reef restoration and related initiatives through a global synthesis of primary literature. This analysis will fill knowledge gaps on built structures in coral restoration and inform future management decisions.

## WHY IT MATTERS

Amid global declines in coral reefs, restoration practitioners and managers increasingly consider incorporating built structures in restoration. These structures include custom-designed reef modules, repurposed artificial materials, natural rocks, and underwater artwork, which have been used to form substrate for corals. However, key questions remain on how built structures should be considered in management and restoration decisions.

## PROJECT TEAM

NOAA National Centers for Coastal Ocean Science, U.S. Army Corps of Engineers - Engineering with Nature®, and U.S. Geological Survey

## RESEARCH QUESTIONS

- ❓ **What types and materials of built structures have been used in coral reef-related applications?**
- ❓ **What is the distribution and abundance of evidence on the outcomes of built structures?**
  - **Parameters:**
    - **Ecological (coral recruitment, coral condition) &**
    - **Physical (waves, erosion)**
- ❓ **How does evidence differ by depth, spatial scale, and geographic region?**

## LITERATURE SOURCES

Indexing platforms  
Bibliographic databases  
Open citation indexes  
Web search engine  
Organizational websites  
Stakeholder contributions