

USACE's National Shoreline Management Study U.S. Caribbean Regional Assessment: Recommendations for Enhanced Coastal Resilience in Puerto Rico and USVI - Marissa Swift

Under congressional authorization, the U.S. Army Corps of Engineers (USACE), with support from AECOM, has developed the National Shoreline Management Study (NSMS) Caribbean Regional Assessment to address shoreline change and management challenges in Puerto Rico and the U.S. Virgin Islands (USVI). This regional assessment delineates the physical, environmental, and economic effects of erosion and accretion, detailing the management strategies employed by federal, regional, and municipal authorities. The Caribbean Regional NSMS seeks to build upon previous USACE efforts to present a detailed overview of existing and potential erosion and accretion challenges, highlighting the importance of diverse shorelines and the impacts of natural processes and human activities on shoreline stability, and proposing updated, actionable non-binding recommendations for fostering more resilient shorelines.

Through collaborative engagement with local, regional, and national coastal external interests and a thorough review of historical, current, and projected coastal conditions, the recommendations presented in this assessment aim to strengthen shoreline management practices in the U.S. Caribbean to alleviate pressures and stressors on the shoreline. Recommended strategies include the development of regional coastal resilience plans, improvements to permitting processes, expansion of beach monitoring programs, and strengthening of collaborative partnerships, all designed to enhance regional shoreline management capabilities. These recommendations underscore the necessity of adopting adaptive management strategies to safeguard coastal communities and ecosystems. By prioritizing sustainable, hybrid/nature-based solutions and community-focused approaches, the NSMS Caribbean Regional Assessment sets a path forward for mitigating the impacts of shoreline change in Puerto Rico and USVI.

Developing Metrics for Nature-Based Solutions - Lydia Olander

Nature-based solutions (NBS) – “actions to protect, sustainably manage, or restore natural or modified ecosystems to address societal challenges, simultaneously providing benefits for people and the environment” – can help ecosystems and communities adapt to climate change while protecting the quality of the natural environment and supporting community needs. With accelerating interest in NBS, and large amounts of federal funding available, there is a growing opportunity to collect data that will help to evaluate their effectiveness in producing a variety of climate risk reduction, ecosystem service, and biodiversity benefits. Funders, decision makers, and the private sector, from the World Bank, to the Federal government, to the insurance and engineering industries, to local communities want information about the effectiveness of NBS for reducing risk and supporting adaptation. Many are also asking how to ensure that the distribution of benefits from NBS projects is reaching underserved and overburdened communities.

Our review shows that efforts to collate literature and data related to NBS strategies and projects do not meet this need. Without common metrics, it is difficult to compare outcomes.

We are starting a project to bring together those developing and design NBS projects, researchers who want to evaluate effectiveness, and NBS data providers, to identify common metrics for evaluating NBS effectiveness.

Successes and Challenges of Developing Nature-Based Pilot Projects for Currituck Sound - Kathryn Cerny-Chipman

Audubon North Carolina's Pine Island Sanctuary in Currituck Sound contains more than 2,600 acres of marsh, upland maritime forest and sandy beaches that provide habitat for birds and other wildlife in the Outer Banks. However, the marshes of Currituck Sound are experiencing shoreline erosion and internal breakup that has resulted in decreased water quality and loss of habitat. These marshes are also vulnerable to climate change impacts and degradation by non-native nutria. Audubon sought to increase marsh resilience in the Mid-Currituck Marsh Complex, reduce flood and storm surge impacts to nearby communities, and create enhanced habitat for priority bird species. To accomplish these goals, four innovative nature-based pilot projects were developed, including a coir log shoreline protection, offshore Christmas tree breakwater, and two thin-layer placement projects with nutria exclusion.

These projects were developed in part to better understand the effectiveness of various oligohaline marsh restoration techniques and to address barriers to implementation of these techniques by demonstrating how nature-based approaches can be used to build resilience to sea level rise in North Carolina and protect important marsh habitat. The long-term intent is to develop techniques that can be scaled up in Currituck Sound. This session will highlight work completed through final design of the project and the successes, challenges, and lessons learned in throughout the project design, including the experience navigating the regulatory process, developing designs, and working with a diverse set of stakeholders and partners.

Advancing Climate-Informed Ecosystem Restoration as a Marine Nature-Based Solution - Jillian Neuberger

Incorporating climate change responses into coastal and marine ecosystem restoration projects is increasingly necessary to ensure conservation and restoration objectives are successful not only today, but into an uncertain future. However, beyond a few nearshore habitats, climate-informed ecosystem restoration is a relatively new, but burgeoning, field of study and action in marine ecosystems. As climate and ocean conditions continue to change, the successful incorporation of climate change responses into marine ecosystem restoration will be critical to meet conservation and adaptation goals. In March 2024, the National Marine Sanctuary Foundation, in partnership with the U.S. National Oceanic and Atmospheric Administration's Office of National Marine Sanctuaries and the Lenfest Ocean Program, hosted a symposium on climate-informed ecosystem restoration in marine protected areas. This event brought together a diverse group of scientists, resource managers, and communities in an ambitious effort to better understand and identify science needs, successful practices, and management actions for adaptive, climate-smart ecosystem restoration in marine protected areas. This

presentation will share the results of the symposium, which are intended to inform coastal and marine restoration research, management, and policy priorities, particularly for the U.S. National Marine Sanctuary System. It will highlight climate-informed restoration case studies shared at the symposium, research needs identified for designing, monitoring, and quantifying the co-benefits of restoration as a nature-based solution to climate change impacts, and the opportunities and challenges for ecological restoration across marine protected areas.

(We will have one speaker, but have listed all possible speakers/abstract authors for now)