

NCCOS FY19 ECOLOGICAL EFFECTS OF SEA LEVEL RISE PROGRAM AWARDS

EESLR: Quantifying the Benefits of Natural and Nature-Based Features in Maryland's Chesapeake and Atlantic Coastal Bays to Inform Conservation and Management Under Future Sea Level Rise Scenarios

Institutions: George Mason University, Maryland Department of Natural Resources, The Nature Conservancy

Project Period: September 2019 – August 2022

Location: Chesapeake Bay and other Atlantic coastal bays

FY19 Funding: \$247,050

Total Anticipated Funding: \$738,081

Project Summary: The Chesapeake Bay region has one of the highest rates of sea level rise in the U.S. due to rising waters and sinking lands. This project will analyze how marshes, aquatic vegetation, and other natural features reduce wave energy and flood risks along the Chesapeake Bay and Atlantic coastal bays. Project goals include calculating the economic value of natural protection, estimating a statewide flood protection capacity of natural features under current and future sea level rise, and recommending conservation and ecosystem management actions to enhance coastal resiliency. This is the first project supported by the EESLR program in the Chesapeake Bay region.

EESLR: Ecosystem and Community Vulnerability to Surface and Subsurface Flooding and Salinity Dynamics with Sea Level Rise and Adaptation Strategies

Institutions: University of Wyoming, Point Blue Conservation Science, University of Texas Arlington, U.S. Geological Survey, University of California Sea Grant

Project Period: September 2019 – August 2022

Location: California

FY19 Funding: \$249,862

Total Anticipated Funding: \$748,865

Project Summary: Due to sea level rise, coastal communities and in-land areas will see more frequent and severe flooding. This project will identify the role of several different natural habitats, nature based features, and gray infrastructure in controlling local flood hazards now and under future sea level rise conditions. This model will be tested in two different coastal settings – Santa Monica Bay and Humboldt Bay in California.

EESLR: Optimizing the Ecosystem Services of U.S. Pacific Northwest Coastal Beaches and Dunes Through Adaptation Planning

Institution: Oregon State University

Project Period: September 2019 – August 2022

Location: Pacific Northwest

FY19 Funding: \$249,802

Total Anticipated Funding: \$748,536

Project Summary: Beaches and dunes provide important ecosystem services like coastal protection, recreation, carbon storage, and biodiversity conservation. This project will take into account optimal land use and the economic value of beaches and dunes to inform management decisions in the Pacific Northwest. The project will evaluate options based on their ability to maximize ecosystem services and economic returns.

EESLR: Is an Old Dune a More Resilient Dune? Assessing the Importance of Ecological History in Coastal Protection from Storms and Sea Level Rise

Institutions: College of William & Mary/Virginia Institute of Marine Science, U.S. Army Corps of Engineers, Virginia Commonwealth University

Project Period: September 2019 – August 2022

Location: North Carolina

FY19 Funding: \$249,675

Total Anticipated Funding: \$687,850

Project Summary: Sand dunes are the first line of defense from ocean flooding and coastal towns build them to enhance coastal protection. This project will determine the tradeoffs between constructed and natural dunes across the Outer Banks, NC to inform coastal management decisions. Natural dunes develop slowly and have an internal structure consisting of roots and fungi, which can reduce erosion from storms, and overall strengthen the dune. Constructed dunes are less stable allowing for more sediment transport, which reduces water levels during storm events and may promote faster dune recovery. This study will explore what new and old dune attributes mean for the best management practices of dunes in North Carolina.

EESLR: Assessing the Role of Natural and Nature-Based Features in Enhancing Coastal Resilience of Urban and Natural Ecosystems in the 21st Century (ACUNE+)

Institutions: University of Florida, Florida Gulf Coast University, South Florida Water Management District, U.S. Geological Survey, University of Miami, U.S. Army Corps of Engineers, Rada Engineering, Inc.

Project Period: September 2019 – August 2022

Location: Florida

FY19 Funding: \$250,000

Total Anticipated Funding: \$750,000

Project Summary: Coastal urban and natural ecosystems are seeing increasing floods due to sea level rise and an increase in rainfall. Southwest Florida is especially seeing more flood hazards due to increasing coastal population, frequent hurricanes, sea level rise, and salt-water intrusion into aquifers. Natural features like mangroves and marshes can help to mitigate these flood risks. Scenarios of sea level rise and rainfall will be simulated to determine how mangroves will be impacted in the future, providing insights for future restoration needs.

EESLR: Ecohydrological Impacts of Sea-Level Rise on Flood Protection and Blue Carbon Sequestration in Pacific Northwest Tidal Wetlands

Institutions: Oregon State University, Institute for Applied Ecology, Pacific Northwest National Laboratory (US DOE), University of Oregon

Project Period: September 2019 – August 2022

Location: Pacific Northwest

FY19 Funding: \$249,033

Total Anticipated Funding: \$743,837

Project Summary: Increasing flood and salinity levels from sea level rise are harming the ecosystem services wetlands can provide throughout the Pacific Northwest. Coastal wetlands provide flood protection, capture carbon, and offer benefits to fisheries. Restored wetlands can maintain and enhance these services, and this project seeks to evaluate how restored and natural wetlands buffer flooding impacts in the Coos Estuary and Grays Bay.