

Our Centers

Center for Coastal Environmental Health & Biomolecular Research (CCEHBR)

Charleston, SC | Oxford, MD

CCEHBR directs research on the effects of natural and man-made stressors on the health, functioning, and resilience of coastal ecosystems. Laboratories at Charleston, SC and Oxford, MD conduct innovative chemical, ecological, toxicological, and microbiological research related to stressor influences on coastal, ocean, and Great Lakes habitats and communities to improve both understanding of these dynamic systems and management decisions affecting their use.

Center for Coastal Fisheries & Habitat Research (CCFHR)

Beaufort, NC | Kasitsna Bay, AK

CCFHR conducts laboratory and field research that provides coastal management tools and guidance on coastal habitat change, restoration, and ecological response to climate change. The Beaufort Laboratory provides management tools that help communities adapt to changing sea levels, mitigate the risks of harmful algae to human health, and restore ecosystems. The Kasitsna Bay Laboratory conducts subarctic coastal ecosystem monitoring and research to help communities respond to climate change, shellfish poisoning, ocean acidification and oil spills.

Center for Coastal Monitoring & Assessment (CCMA)

Silver Spring, MD

CCMA assesses and forecasts coastal and marine ecosystem conditions through a diverse program of research and monitoring at national, regional, and local levels. The center's capabilities include environmental and biogeographic assessments, ecological forecasts, physical and biological oceanographic characterizations, and contaminant monitoring through the National Status and Trends Program.

Center for Human Health Risk at the Hollings Marine Laboratory (CHHR)

Charleston, SC

CHHR focuses on the relationship between the coastal ocean and human health by integrating medical and marine expertise through a diverse partnership among federal, state, and academic organizations: NCCOS, the Medical University of South Carolina, the National Institute of Standards and Technology, the College of Charleston, and the South Carolina Department of Natural Resources. The center provides information, analytical models, and diagnostic tools to resource managers and public health officials.

Center for Sponsored Coastal Ocean Research (CSCOR)

Silver Spring, MD

CSCOR supports coastal managers through competitive research funding and partnerships aimed at better understanding and predicting the impacts of natural and man-made influences on coastal ecosystems, communities, and economies. The center targets regional research that can be used to improve our coastal condition and prepare the nation for emerging issues like hypoxia (dead zones), harmful algal blooms, and climate change.

NCCOS appropriations are received from the National Ocean Service "Coastal Science, Assessment, Response and Restoration" and "Competitive Research" budget PPAs.



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NOAA
NATIONAL OCEANIC &
ATMOSPHERIC ADMINISTRATION

NATIONAL CENTERS FOR COASTAL OCEAN SCIENCE

The National Oceanic and Atmospheric Administration (NOAA) formed the National Centers for Coastal Ocean Science (NCCOS) in 1999 as the focal point for NOAA's coastal ocean science efforts. We help NOAA meet its coastal stewardship and management responsibilities, and we provide coastal managers with the scientific information necessary to decide how best to protect environmental resources and public health, preserve valued habitats, and improve the way communities interact with coastal ecosystems.

Our work includes:



Addressing Environmental Stressors

NCCOS advances the science of contaminant monitoring, research, and impact assessment in coastal ecosystems. Authorized by the Harmful Algal Bloom and Hypoxia Research and Control Act, we work to better forecast, detect, prevent, control, and mitigate harmful algal blooms and hypoxia.



Resilience and Coastal Climate Vulnerability

With laboratories located in regions vulnerable to the effects of climate change, NCCOS investigates how changes in sea levels, ocean chemistry, and temperature affect coastal ecosystems and the valuable services they sustain.



Coastal and Marine Ecology

Competition among many users of our coasts has been on the rise for decades and will continue to increase. NCCOS researchers develop innovative ecosystem maps, models, and assessments to guide communities in managing ocean space and associated coastal resources.



Monitoring and Detecting Change

We develop methodologies to measure key physical, biological, and social variables and use this information to detect and understand ecosystem change and its impacts. NCCOS is home to the nation's longest running coastal pollution monitoring and assessment enterprise.



Social Science

NCCOS is growing its capacity to identify and map human uses of "NOAA managed" ecosystems, document social and cultural values of and reliance on natural resources, and assess non-market values of ecosystem services.

We deliver
ecosystem
science solutions
to sustain
thriving coastal
communities and
economies

Top Accomplishments in Fiscal Year 2015

Improved Forecasts and New Sensors for Harmful Algal Blooms

NCCOS continues to improve the nation's ability to forecast, detect, and mitigate the impacts of harmful algal blooms (HABs) through intramural work and nearly \$2 million in competitive grants awarded in 2015. NOAA and its partners provide HAB forecasts for Lake Erie, the Gulf of Maine, and the Gulf of Mexico. In 2015, in response to increased demand for HAB information, we issued a new, early seasonal projection of bloom severity in western Lake Erie to further help resource and public health managers address toxic blooms. As part of our HAB toxin detection program, we delivered toxin sensors for deployment on autonomous environmental sample processors that can now report toxin levels in real time or near real time in the Gulf of Maine, Lake Erie, and the state of Washington.



New Awards to Prepare for Sea Level Rise and Coastal Flooding

In 2015, NCCOS awarded over \$1.2 million to initiate a series of research projects that will inform coastal resilience and adaptation planning to sea level rise, storm surge, and inundation. These projects include modeling the ability of marshes to attenuate high tides and storm surge in North Carolina, beach and dune modeling in North Carolina, the role of changing landscapes and sea level rise on storm surge in Virginia, advancing marsh modeling in San Francisco Bay, and improved modeling to guide conservation planning along the coast of Hawaii.



Promoting 'Living Shorelines' to Protect the Coast

Bulkheads and other hardened structures used to stabilize the shoreline often end up accelerating coastal erosion and destroying habitat. "Living shorelines" use natural elements, like marsh grass and oyster reefs, to stabilize the shoreline and preserve ecosystem dynamics. In 2015, NCCOS staff helped lead "living shorelines" training workshops in North Carolina for marine contractors, engineers, landscape architects, and land use planners. Also in 2015, NCCOS launched a project with Oregon State University's Cooperative Institute of Marine Resources Studies to assess the value of coastal natural infrastructure flood protection to homeowners.



Advancing the Science of Oil Spill Assessment and Response

NCCOS supported the Natural Resource Damage Assessment of the *Deepwater Horizon* oil spill by quantifying the spill's impacts to bottlenose dolphins, benthic organisms, and sediment quality. Our findings are included in the Draft Programmatic Damage Assessment and Restoration Plan released in October 2015. We are also improving NOAA's oil spill response capabilities by examining the toxicity of dispersants and dispersed oil on estuarine animals. Our results are being used to predict the benefits and impacts of dispersants, to support recovery assessments, and to support decisions on dispersant use in future oil spill events.



Maps and Assessments Inform Coral Conservation

NCCOS mapping products and spatial analyses of deep-sea corals informed a near-unanimous vote by the Mid-Atlantic Fishery Management Council in 2015 to protect more than 38,000 mi² of Atlantic seafloor from bottom fishing activities. The data provided enabled stakeholders to reach a consensus on proposed boundaries, leading to deep-sea coral protection that minimizes potential impacts to fisheries. Also in 2015, NCCOS scientists assessed the ecological impacts of management alternatives proposed by the Florida Keys National Marine Sanctuary Advisory Council. The assessment, along with maps and human-use information developed by NCCOS, will support sanctuary zoning and conservation decisions based on the best-available science.



NCCOS Tools and Expertise Help U.S. Aquaculture Industry Expand

In 2015, using modeling, we quantified the ecosystem service provided by oyster filter feeding and shared the results with East Coast shellfish growers. The valuation can be used by state nitrogen removal trading programs to give growers credit and payment for the avoided cost of additional water treatment by traditional measures. On the West Coast, California is using NCCOS products to develop environmentally sustainable offshore finfish aquaculture in Southern California. In 2015, NCCOS co-led a workshop for the state to identify and address development conflicts, increase awareness of the benefits of marine aquaculture, and inform outreach and education.



Social Science Research for Management of Coastal Areas

We are identifying how people use and depend on special and protected coastal areas to help coastal managers reduce potential conflicts between user groups and ensure sustainable use. In 2015, NCCOS scientists surveyed coastal communities in Puerto Rico, Hawaii, and the U.S. Virgin Islands to assess their use of coral reef resources. The data will support a range of coral conservation efforts. Also in 2015, we assessed what users value about the Mission Aransas National Estuarine Research Reserve in Texas and the Olympic Coast National Marine Sanctuary in Washington to refine outreach efforts at both locations and to help reserve and sanctuary managers optimally invest limited resources for management of these sites.



Invasive Lionfish Web Portal Supports Coastal Communities

Lionfish—an Indo-Pacific species now found in U.S. Atlantic, Gulf of Mexico, and Caribbean waters—have no natural predators and are taking food and habitat from native fish that are important to local economies and ecosystems. In 2015, NCCOS and partners launched a website that provides the latest information on the lionfish invasion in the Atlantic. The Invasive Lionfish Web Portal provides coastal managers, educators, and the public with scientifically accurate information on the lionfish invasion and its impacts in the form of training videos, fact sheets, examples of management plans, and guidelines for monitoring.

