

Windows to the Deep 2019: Exploration of the Deep-sea Habitats of the Southeastern United States

From May 30 through July 12, 2019, NOAA and partners will conduct a two-part, telepresence-enabled ocean exploration expedition on NOAA Ship *Okeanos Explorer*. The expedition will enable researchers to collect critical baseline information about unknown and poorly understood deepwater areas of the Southeastern United States. During the **Windows to the Deep 2019: Exploration of the Deep-sea Habitats of the Southeastern United States** expedition, our at-sea and shore-based science teams will work together to explore the deepwater areas of this region.

Objectives

The **Windows to the Deep 2019: Exploration of the Deep-sea Habitats of the Southeastern United States** expedition will address science themes and priority areas put forward by scientists and managers from NOAA, management agencies in the region, and the ocean science community. NOAA priorities for the expedition include a combination of science, education, outreach, and open data objectives that will support management decisions at multiple levels:

- Acquire data on deepwater habitats in the southeast U.S. continental margin to support priority science and management needs
- Identify, map, and explore the diversity and distribution of benthic habitats—including fish habitats, deep-sea coral and sponge communities, chemosynthetic communities, and biological communities that colonize or aggregate around shipwrecks
- Investigate biogeographic patterns of deep-sea ecosystems and connectivity across the southeast U.S. continental margin for use in broader comparisons of deepwater habitats throughout the Atlantic Basin
- Map, survey, and sample geologic features within the southeast U.S. continental margin to better understand the geological context of the region and improve knowledge of past and potential future geohazards
- Explore U.S. maritime heritage by identifying and investigating sonar anomalies as well as characterizing shipwrecks
- Collect high-resolution bathymetry in areas with no (or low-quality) sonar data
- Acquire a foundation of remotely operated vehicle (ROV), sonar, and oceanographic data to better understand the characteristics of both the water column and fauna that live there



NOAA Ship *Okeanos Explorer* is the only U.S. federal vessel dedicated to exploring our largely unknown ocean for the purpose of discovery and the advancement of knowledge. The ship is equipped with a state-of-the-art, dual-body ROV capable of diving to 6,000-meter depths, as well as four different types of mapping sonars that collect high-resolution data about the seafloor and the water column. *Okeanos Explorer* takes every opportunity to survey the ocean; identify new habitats, species, and resources; and contribute critical information to enhance our understanding of the ocean.



The team preps for the first remotely operated vehicle dive of the **Windows to the Deep 2018** mission. During the 2019 expedition, NOAA's ROV *Deep Discoverer* will be used to acquire high-definition visual data and collect limited samples in poorly explored deepwater areas. *Image courtesy of the NOAA Office of Ocean Exploration and Research.*

- Engage a broad spectrum of the scientific community and public in telepresence-based exploration and provide a foundation of publicly accessible data and information products to spur further exploration, research, and management activities

Why This Area?

The deepwater areas offshore Florida, Georgia, South Carolina, and North Carolina are some of the least explored areas along the eastern coast of the United States. Though this region is home to millions of Americans and is experiencing some of the highest population growth rates in the country, the southeast U.S. continental margin has some of the largest gaps in high-resolution ocean mapping data on the East Coast, and previous observations via ROVs have been limited. Exploratory missions, such as those conducted on NOAA Ship *Okeanos Explorer*, are necessary to expand our knowledge of these unknown and poorly understood deepwater areas and to provide data for decision makers. ROV dives will target areas that are likely to host deep-sea coral and sponge habitats, potential seep sites, and sites that can help scientists understand the geological context of the southeast U.S. continental margin.

In addition, the second leg of the expedition will include exploration of areas that may contain maritime heritage sites. This region is known to contain many shipwrecks due to the World War II Battle of the Atlantic, as well as ships lost at sea while navigating high traffic trade routes along the U.S. East Coast. Many of the vessels lost in this area have roughly reported sinking locations, but their final resting places remain unknown.

Why it Matters

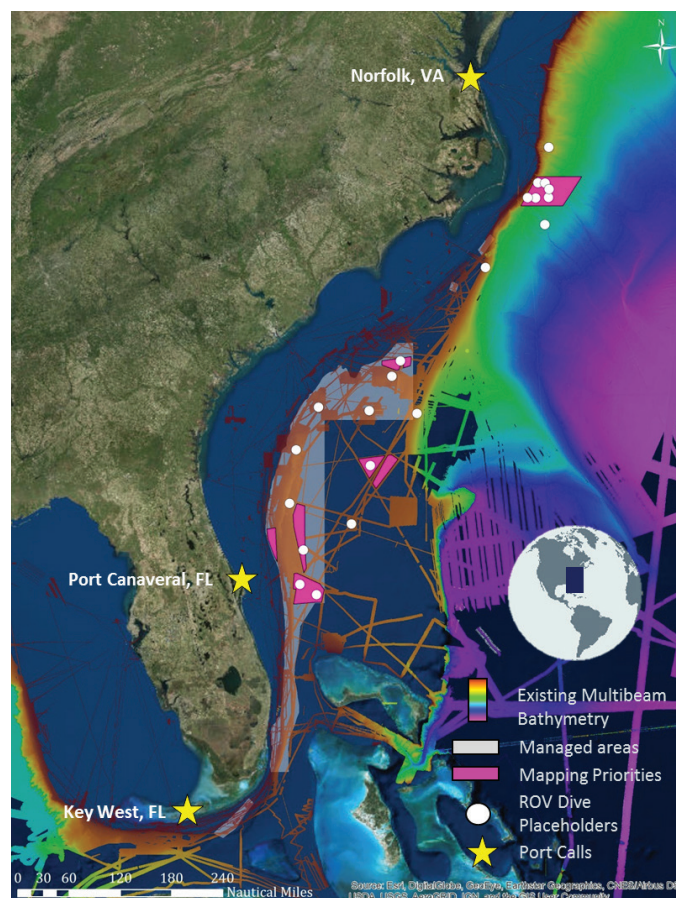
America's future depends on understanding the ocean. We explore the ocean to make valuable scientific, economic, and cultural discoveries, and because the health and resiliency of the ocean are vital to our economy and to our lives. By leading national efforts to explore our ocean, and by making ocean exploration more accessible, the NOAA Office of Ocean Exploration and Research is filling gaps in the basic understanding of U.S. deep waters and seafloor, providing critical deep-ocean data needed to sustain and accelerate the economy, health, and security of our nation.

Follow Along Live!

Anyone with an Internet connection can follow along with the expedition as high-definition video of dives is streamed live to shore from ROV *Deep Discoverer* from June 21 through July 11, 2019. The same technology that allows scientists around the world to participate in the expedition from land also enables interested members of the public to experience deep-sea exploration, the wonder of discovery, and the fascination of science in real time. Additionally, mission logs, daily updates, educational materials, and multimedia elements will be added to the Ocean Explorer website throughout the expedition.

 oceanexplorer.noaa.gov/okeanos/explorations/ex1903/

 [@oceanexplorer](https://twitter.com/oceanexplorer), #Okeanos



Map of the **Windows to the Deep 2019: Exploration of the Deep-sea Habitats of the Southeastern United States** expedition. Shown here, the pink polygons represent mapping priorities and white dots represent planned ROV dive locations. Image courtesy of the NOAA Office of Ocean Exploration and Research.

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