

# Deep-Sea Symphony: Exploring the Musicians Seamounts

From September 6 to 30, 2017, NOAA and partners will conduct a telepresence-enabled ocean exploration expedition on NOAA Ship *Okeanos Explorer* to collect critical baseline information about unknown and poorly understood deepwater areas around the Musicians Seamounts and the Hawaiian Islands. During the Deep-Sea Symphony: Exploring the Musicians Seamounts expedition, our at-sea and shore-based science teams will work together to map the seafloor and make the first deepwater scientific observations in these areas.

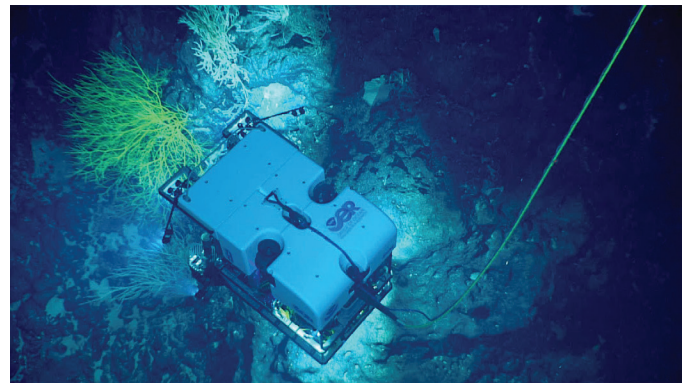
## Objectives

The Deep-Sea Symphony: Exploring the Musicians Seamounts 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 habitats near Papahānaumokuākea Marine National Monument and U.S. exclusive economic zone (EEZ) boundaries to support priority science and management needs
- Identify, map, and explore a diversity of benthic habitats and features – particularly vulnerable communities such as high-density deep-sea coral and sponge communities
- Investigate biogeographic patterns of deep-sea ecosystems and connectivity across the Musicians Seamounts
- Characterize seamounts within the upper extent of the Prime Crust Zone (PCZ), an area of the Pacific with the highest levels of commercially valuable deep-sea mineral deposits
- Investigate the geology of the Musicians Seamounts and the Murray Fracture Zone, to better understand the relationship between hotspot volcanism, mid-ocean ridges, and fracture zones
- Explore U.S. maritime heritage by investigating sonar anomalies and characterizing World War II-era shipwrecks
- Collect high-resolution bathymetry in areas with no (or low quality) sonar data
- Acquire a foundation of ROV, sonar, and oceanographic data to better understand the characteristics of the water column and the fauna that live there
- 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



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 remotely operated vehicle (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.



During the expedition, NOAA's ROV *Deep Discoverer* will be used to acquire high-definition visual data and collect limited samples in poorly explored areas near the boundaries of Papahānaumokuākea Marine National Monument and in the Musicians Seamounts.

## Why This Area?

This expedition is part of a three-year Campaign to Address the Pacific monument Science, Technology, and Ocean NEeds (CAPSTONE), an initiative to collect deepwater baseline information to support science and management decisions in and around U.S. marine protected areas (MPAs) in the central and western Pacific.

Located northwest of the main Hawaiian Islands, the Musicians Seamounts are largely unexplored. Small portions of this 650 nautical mile seamount chain have been previously mapped during transits, but the Deep-Sea Symphony expedition will involve the first dedicated mapping operations and exploration using an ROV to help us understand this fascinating region that lies just outside the U.S. EEZ.

Marine animals, such as fish and corals, do not recognize geopolitical boundaries of the world's ocean. As one of the closest seamount groups to the Hawaiian Islands, the Musicians may serve as refuge for transient fish populations that Hawaii relies upon, provide additional habitat, and serve as a pool of genetic diversity for deep-sea coral populations known from the deep waters around the Hawaiian Islands. It is also important to characterize the habitats that lie on the borders of Papahānaumokuākea Marine National Monument in order to make informed management decisions and better understand potential connectivity with the surrounding waters.

Additionally, the Musicians Seamounts offer a unique opportunity to expand our geological knowledge of fracture zones and hotspot volcanism and how these features interact in areas where they coexist. Furthermore, this expedition will fill in gaps in data regarding seamount geomorphology and manganese crust accretion.

## Follow Along Live!

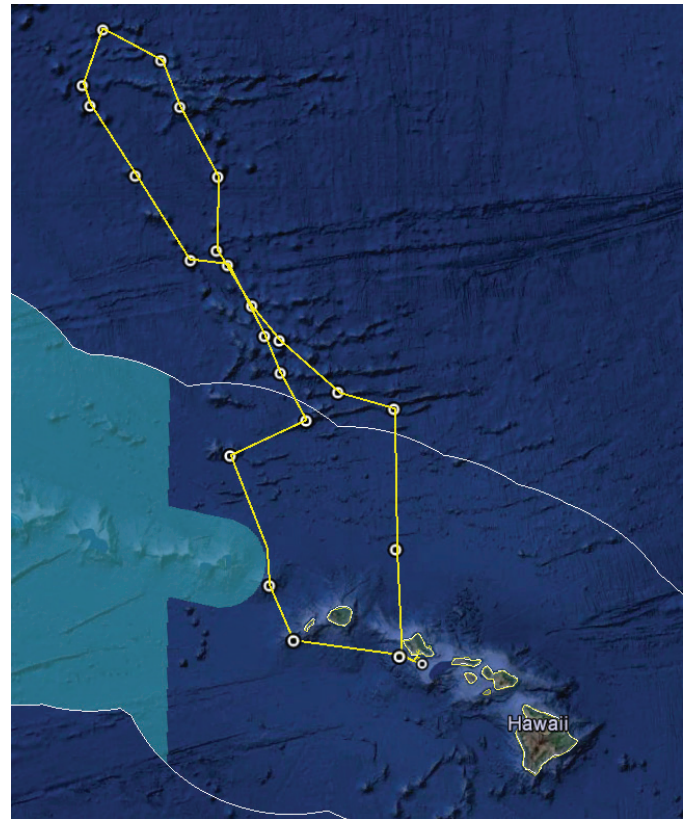
Anyone with an Internet connection can follow along with the expedition as high-definition video of dives is streamed live to shore from ROV *Deep Discoverer* from September 7 through 29. The same technology that allows scientists around the world to participate in the expedition from land also enables 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.

**Website:** [oceanexplorer.noaa.gov/oceanos/explorations/ex1708/](https://oceanexplorer.noaa.gov/oceanos/explorations/ex1708/)

**Twitter:** @oceanexplorer, #Okeanos

**Facebook:** NOAA Office of Ocean Exploration and Research  
[Facebook.com/OceanExplorationResearch](https://www.facebook.com/OceanExplorationResearch)

**Instagram:** @noaaocexploration



Map of the general expedition operating area. The yellow line is the rough cruise track through the Musicians Seamounts during the Deep-Sea Symphony expedition. The green polygon represent the boundary of the Papahānaumokuākea Marine National Monument. The white line represents the U.S. EEZ. Planned ROV dives are represented by white circles. 23 ROV dives are expected during this expedition.

## Why It Matters

America's future depends on understanding the ocean. We explore the ocean to make valuable scientific, economic, and cultural discoveries; we explore because ocean health and resilience are vital to our economy and to our lives. Exploration supports NOAA's mission priorities and national objectives by providing high-quality scientific information about the deep ocean to anyone who needs it.



**Ocean Exploration  
and Research**