Deepwater Wonders Of Wake:

Exploring the Pacific Remote Islands Marine National Monument

NOAA Ship *Okeanos Explorer*, operated through a partnership between the NOAA Office of Ocean Exploration and Research and the Office of Marine and Aviation Operations, is the nation's only government vessel dedicated to ocean exploration. *Okeanos Explorer* systematically explores the ocean every day while at sea to maximize public benefit from the ship's unique capabilities, which include 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.

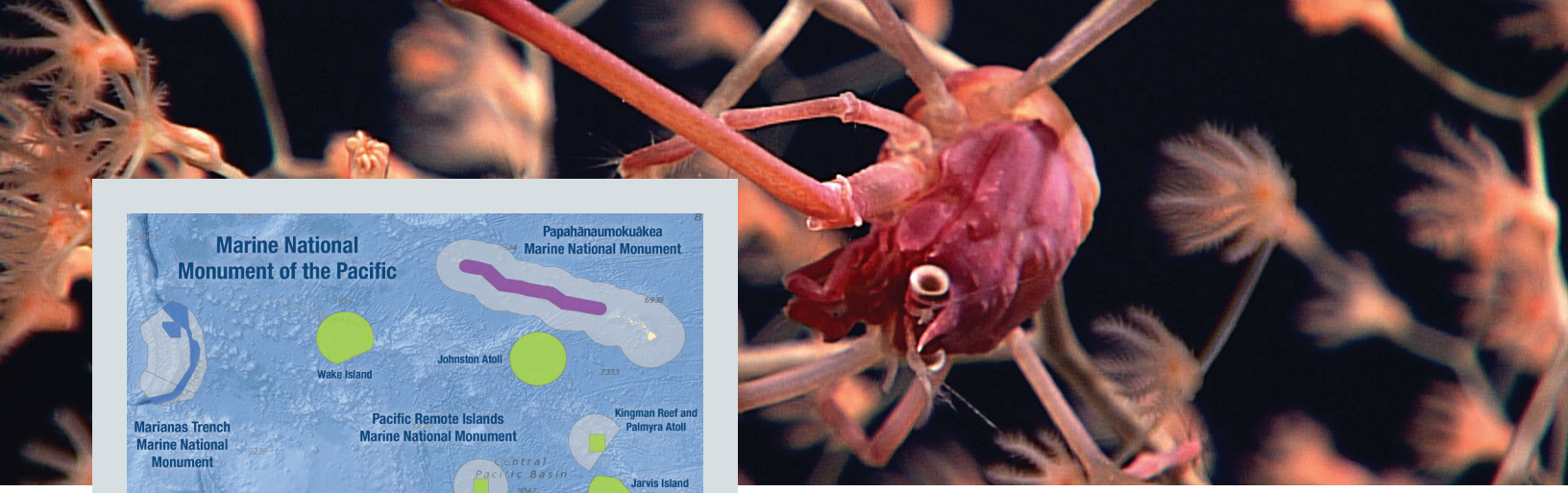
From July 27 to August 19, 2016, *Okeanos Explorer* will investigate and document deepwater environments in and around the Pacific Remote Islands Marine National Monument (PRIMNM). The expedition will commence in Guam and will conclude in Kwajalein Atoll. During the expedition, our at-sea and shore-based science teams will work together to conduct the first-ever ROV work and deepwater scientific observations in the Wake Atoll Unit of the Monument. To date, only a small number of rock dredges have been conducted in the deep waters inside the Wake Atoll Unit of PRIMNM and there has been no systematic exploration below SCUBA diving depths. This expedition provides an exciting opportunity for anyone to watch live as we visit some of the least explored parts of the planet for the first time in history.

Objectives

The 24-day expedition will address science themes, priority areas, and exploration targets put forward by scientists and managers across the broad ocean science community. Expedition priorities include a combination of science, education, outreach, and open data objectives that will support management decisions at multiple levels:

- Acquire data to support priority PRIMNM science and management needs
- Explore the diversity and distribution of benthic habitats, including bottom fish habitats and deep-sea and precious coral communities
- Characterize seamounts in and around the Prime Crust Zone – the area of the Pacific with the highest concentration of commercially valuable deep-sea minerals
- Investigate the geologic history of Pacific seamounts, including potential relevance to our understanding of plate tectonics
- Engage a broad spectrum of the scientific community and public in telepresence-based exploration
- Provide a foundation of publicly accessible data and information products to spur further exploration, research, and management activities

The expedition will include 24-hour operations consisting of ROV dives and mapping operations. Daytime ROV operations will focus on depths between 250 and 6,000 meters and will include high-resolution visual surveys and limited biological and geological sample collection. Mapping operations will be conducted overnight and when the ROV is on deck.



Pacific Remote Islands Marine National Monument

Located southwest of Hawaii, the Pacific Remote Islands Marine National Monument includes approximately 1,269,065 square kilometers of submerged lands and waters. It is the largest marine protected area in the world and an important part of the most widespread collection of marine life on the planet under a single country's jurisdiction. The unique ecosystems inside the Monument include Baker, Howland, and Jarvis Islands; Wake and Johnston Atolls; Kingman Reef; and Palmyra Atoll.

The seven islands and atolls are also designated as national wildlife refuges and sustain a diversity of species including corals, fish, shellfish, marine mammals, seabirds, land birds, insects, and vegetation not found anywhere else in the world. Wake is the northernmost atoll in the Marshall Islands geological ridge and is perhaps the oldest living atoll in the world.

The Monument is cooperatively managed by NOAA's National Marine Fisheries Service and the U.S. Fish and Wildlife Service, with the exception of Wake and Johnston Atolls which are currently managed by the Department of Defense, U.S. Air Force.

President George W. Bush established the Monument under the authority of the Antiquities Act of 1906 which protects places of historic or scientific significance, and President Barack Obama expanded the Monument in 2014. Only recently have scientists visited the deep waters of the Monument, where they observed previously unknown biological, chemical, and geological wonders of nature. These areas likely include many geological, biological, and historical secrets yet to be discovered throughout this expedition.

Why It Matters

Despite the role that the world's ocean plays in supporting our well-being, we have only explored five percent of it using advanced technologies. Increasing the baseline knowledge of these little-known or unexplored areas is critical to the conservation and management of these remarkable habitats and ecosystems. The results of this exploration are critical for ocean resource management and will assist citizens, businesses, and governments with making informed decisions that will ultimately protect lives, property, and economic well-being. This expedition is part of the 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 in the central and western Pacific.

Follow Along Live!

Anyone with an Internet connection can follow along with the expedition as high-definition video is streamed live to shore from ROV *Deep Discoverer*. 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/okeanos/explorations/ex1606/

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