

EXPLORATION OF DEEP-SEA HABITATS AROUND WAKE (NA181)

August 18 - September 18, 2026

-  **31** days at sea
-  **65,350** km² of seafloor mapped
-  **13** successful ROV dives
-  **280** hours of ROV exploration
-  **384** samples collected
-  **6** Argo floats deployed
-  **122** live ship-to-shore interactions
-  **3,902** ship-to-shore participants
-  **247,710** highlight video views
-  **629,138** livestream views
-  **48 million** social media impressions

Geographic Focus: US Exclusive Economic Zone around Wake Island
Main Operations: ROV dives and seafloor mapping using ship-based sonars
Sponsor: NOAA Ocean Exploration via the [Ocean Exploration Cooperative Institute](#)
Expedition Webpage: www.NautilusLive.org/cruise/NA181

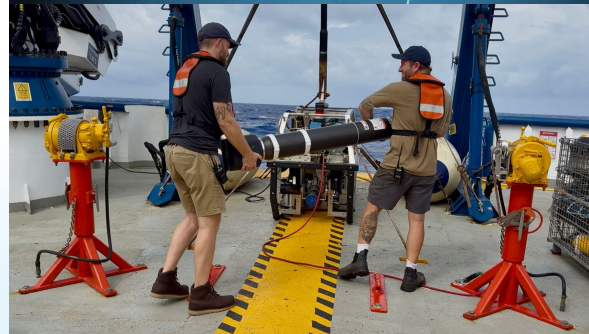


OVERVIEW

From August 18-September 18, E/V *Nautilus* conducted supported a telepresence-enabled expedition focused on exploring deep-sea habitats in the US Exclusive Economic Zone around Wake Atoll, one of the most poorly surveyed areas under US jurisdiction. This 31-day expedition used the ship's [ROV](#), [mapping](#), and [telepresence](#) systems to collect critical baseline information across this largely unexplored region, with a focus on abyssal plain habitats, seamounts, and potential maritime heritage sites associated with the World War II Battle of Wake. Furthermore, the expedition also deployed Biogeochemical Argo floats and collected surface environmental DNA (eDNA) samples to support oceanographic monitoring across poorly studied regions of the Central Pacific.

MAPPING SUMMARY

Seafloor mapping focused on using the ship's [new EM 304 multibeam sonar](#) to fill data gaps, including over dive sites without previous mapping data, as well as during transits between ROV surveys. A total of 65,350 square kilometers of seafloor were mapped over the course of the expedition, the most of any E/V *Nautilus* expedition to date, including 18,123 square kilometers in the US Exclusive Economic Zone around Wake, Guam and Hawai'i, and 8,582 square kilometers in the Federated States of Micronesia. Additionally, the expedition mapped 5 square kilometers of seafloor around Wake down to centimeter-scale using a [Norbit WBMS multibeam sonar](#) mounted on ROV *Hercules*.





ROV SURVEYS

The expedition included 13 successful ROV dives for a total dive time of 280 hours and 208 hours of bottom time exploring depths between 793 - 5,807 meters, including the deepest dive conducted off E/V *Nautilus* to date. ROV surveys included four dives focused on exploring abyssal plain habitats, two dives centered on searching for maritime heritage sites, and seven dives to explore seamounts. Noteworthy ROV observations included:

- A range of different geological substrates, including expansive polymetallic nodule fields and heavily-sedimented areas on abyssal plain habitats, extensive polymetallic crusts and confined areas with polymetallic nodules on the slopes of seamounts, as well as laminated carbonates and sheeted rock outcrops near the top of some seamounts potentially indicating drowned atoll lagoons
- Numerous fossilized shark teeth covered with ferromanganese crust
- Discovered several maritime heritage artifacts near Wake, including a World War II-era ordinance, potential cabling from the Sound Surveillance System, a sunken military barge, and fuel drums

A total of 280 physical samples were collected during ROV dives to support studies on the biodiversity and geological context of the region, including 231 biological, 37 geological, and 35 water samples for eDNA work. Preliminary analyses indicate that the collected specimens include 33 new species to science.

ARGO FLOAT DEPLOYMENTS

The expedition included the deployment of six biogeochemical floats from the Global Ocean Biogeochemistry Array, including one deployed in offshore areas of the Federated States of Micronesia and five deployed in areas beyond national jurisdiction during transits. This adds important coverage to the roughly 4,000 Argo floats that are currently operational globally in support of large-scale oceanographic monitoring..

ACKNOWLEDGEMENTS

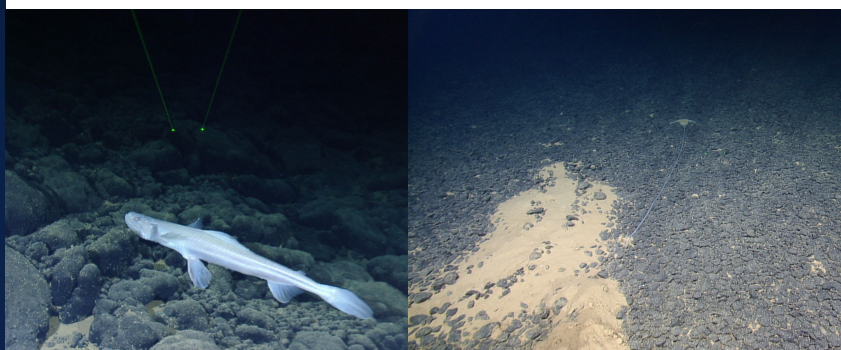
Thanks to the captain and crew of E/V *Nautilus*, Nautilus Corps of Exploration, and all who supported the expedition from shore. The mission was funded by NOAA Ocean Exploration via the Ocean Exploration Cooperative Institute. Expedition activities in the Wake Atoll National Wildlife Refuge were executed under special use permit 12543-26007 authorized by the US Fish and Wildlife Service. Transit operations in the Mariana Trench Marine National Monument were conducted under special use permit 12541-26001 authorized by the US Fish and Wildlife Service, in the Federated States of Micronesia under permit FM26-VC20252RS-26963 authorized by the National Oceanic Resource Management Authority, and in the Papahānaumokuākea National Marine Sanctuary under permit PMNM-2026-001 authorized by NOAA, US Fish and Wildlife Service, State of Hawai'i, and Office of Hawaiian Affairs.

eDNA SAMPLING

The expedition included the collection of a total of 139 eDNA samples. This included 104 eDNA samples collected at the sea surface with the Quokka eDNA sampler, an autonomous underway sampling system that was recently developed by Australia's National Science Agency and deployed in partnership with the Minderoo Foundation. An additional 35 eDNA samples were obtained at depths ranging between 50-3,800 meters by filtering water samples collected using the Niskin bottles mounted on ROV *Hercules*. Collectively, these samples represent the first deep water and most comprehensive eDNA dataset for the poorly surveyed waters around Wake.

EDUCATION & OUTREACH

Over the course of the expedition, live-stream video feeds received 629,138 views, and highlight videos garnered another 247,710 views. Expedition content on OET's social media channels attracted over 48 million impressions. While at sea, the team created 26 new education and outreach products and hosted 122 live ship-to-shore interactions with schools, community events, and professional meetings, reaching 3,902 people across 23 US States, Guam, Puerto Rico, and five other countries. Six students and early-career professionals sailed on the expedition, including three via OET's Science & Engineering Internship Program, in addition to three professional educators who joined the mission via OET's Science Communication Fellowship Program. Early expedition results appeared in 15 media stories.



DATA ACCESS

With the exception of datasets that include position information of maritime heritage sites and are protected by federal regulations, data collected during the expedition will be sent to repositories for archiving and public distribution, links to which are provided below. These datasets are also available from OET upon request.

ARCHIVE	DATA TYPES
NautilusLive.org	Expedition summary, background information, highlight imagery and informational materials
Rolling Deck to Repository	Raw data from ship-based sensors (ship navigation, sea-surface velocity, sound velocity profiles, multibeam, and sub-bottom profiler data)
Marine Geoscience Data System	Processed seafloor mapping and ROV data (ship navigation, multibeam, ROV navigation, ROV annotations, ROV CTD, and framegrabs)
NOAA National Centers for Environmental Information	Raw and processed multibeam data
YouTube	Full ROV videos
Marine Geological Samples Lab at the University of Rhode Island	Geological samples
Harvard University's Museum of Comparative Zoology	Biological samples
Global Ocean Biogeochemistry Array and Argo data portal	Argo float environmental data (temperature, conductivity, pH, nitrate, dissolved oxygen, chlorophyll, and irradiance at multiple wavelengths)
National Center for Biotechnology Information Sequence Read Archive	Genetic data from deep-water eDNA samples collected via ROV
Minderoo Oceanomics Dashboard	Genetic data from surface eDNA samples collected via the Quokka sampler