EXPLORATION OF DEEP-SEA HABITATS OFFSHORE THE MARIANA ISLANDS (NA179)

June 29 - July 21, 2026

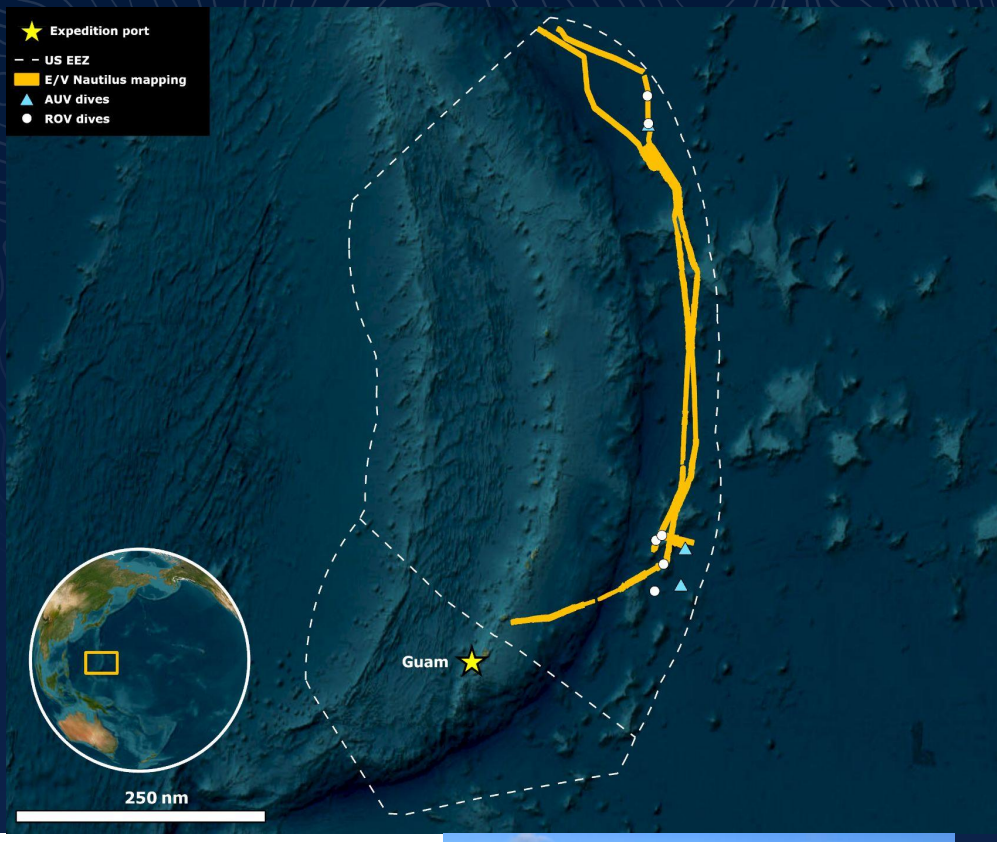
Geographic Focus: US Exclusive Economic Zone around the Commonwealth of the Northern Mariana Islands

Main Operations: ROV dives, AUV *Sentry* dives, and seafloor mapping using ship-based sonars

Sponsor: NOAA Ocean Exploration and Bureau of Ocean Energy Management via the Ocean Exploration Cooperative Institute

Expedition Webpage: https://NautilusLive.org/cruise/na179

- **22** days at sea
- **27,343** km² of seafloor mapped
- **7** successful ROV dives
- **136.2** hours of ROV exploration
- **4** successful *Sentry* dives
- **60.5** hours of AUV seafloor exploration
- **29** samples collected
- **58** live ship-to-shore interactions
- **1,130** ship-to-shore participants
- **39,861** highlight video views
- **193,973** livestream views
- **13.2 million** social media impressions

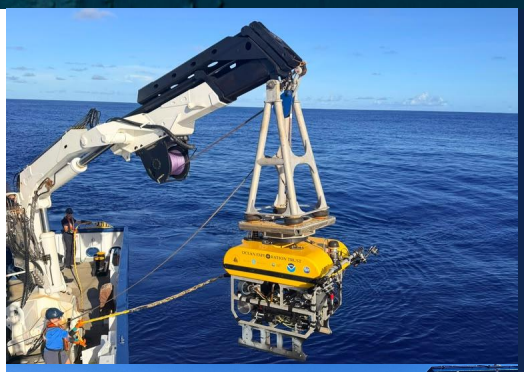


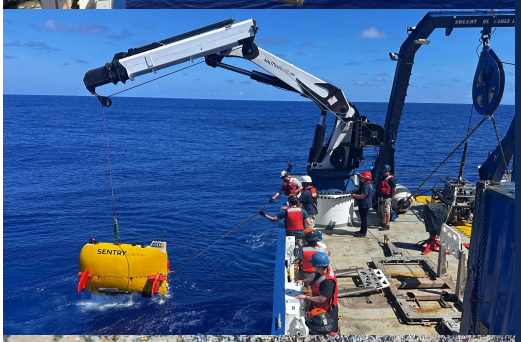
OVERVIEW

From June 28 - July 21, E/V *Nautilus* conducted a telepresence-enabled expedition to explore deep-sea habitats in the US Exclusive Economic Zone around the Commonwealth of the Northern Mariana Islands using the ship's ROV, mapping, and telepresence systems in combination with AUV *Sentry*. The expedition focused on exploring abyssal plain habitats and ancient seamounts east of the Mariana Trench, an area that contains the oldest seafloor in the Pacific, and represents by far the most poorly surveyed in the region. Despite logistical challenges caused by Super Typhoon Bavi, which resulted in the ship having to move out of the geographic focal area for six days, the expedition yielded a great wealth of new scientific information, including the deepest ROV surveys conducted in the 17-year history of the E/V *Nautilus* program.

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 or AUV surveys. A total of 27,343 square kilometers of seafloor were mapped over the course of the expedition, all within the US Exclusive Economic Zone around the Commonwealth of the Northern Mariana Islands. This included mapping two sections of the Mariana Trench at maximum depths of up to 9,580 meters, as well as over several seafloor portions east of the trench.





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AUV *SENTRY* SUMMARY

The expedition completed four AUV *Sentry* dives that reached the seafloor at maximum depths of 5,855 meters for a total dive time of over 60.5 hours. AUV dives surveyed a cumulative trackline of over 128 kilometers, focused on characterizing abyssal plain habitats via the collection of high-resolution bathymetry, sidescan sonar, and video data in abyssal plain habitats identified as high priorities by the US Geological Survey and the Bureau of Ocean Energy Management. A total of 1.4 terabytes bytes of data were collected using the sensors on AUV *Sentry*, including 11,000 photos, 21 gigabytes of multibeam data, and 26 gigabytes of sidescan data along with the standard sensor suite data. Most AUV surveys were conducted in areas that were also surveyed via E/V *Nautilus*' ROVs and mapping sonars, thus collecting complementary datasets to support site characterizations.

ROV ABYSSAL PLAIN SURVEYS

The mission included three ROV dives surveys that explored abyssal plain habitats east of the Mariana Trench at depths ranging between 5,579-5,796 meters, which included the deepest ROV dives conducted off E/V *Nautilus* to date. Collectively, these dives surveyed a linear distance of over 15.5 kilometers during over 33 hours of bottom time. Noteworthy ROV observations during these abyssal habitat surveys included:

- The substrates consisted mostly of heavily-sedimented seafloor, with limited polymetallic nodules in some areas
- Discovered a new fish species of tripod fish in abyssal habitats east of the Mariana Trench
- Discovered a possibly new species of pancake urchin, along with a sponge with highly unusual morphology and several predatory sponges

ACKNOWLEDGEMENTS

Special thanks to the captain and crew of E/V *Nautilus*, the Nautilus Corps of Exploration, and all who supported the expedition from shore. The expedition was funded by NOAA Ocean Exploration and the Bureau of Ocean Energy Management via the Ocean Exploration Cooperative Institute. Transit mapping operations through the Mariana Trench Marine National Monument were executed through special use permit #12541-26001 authorized by the US Fish and Wildlife Service.

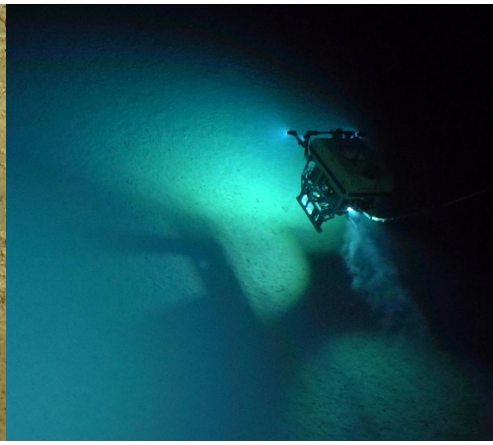
ROV SEAMOUNT SURVEYS

The expedition included four successful ROV dives that surveyed ancient seamounts east of the Mariana Trench. Over the course of over 37.7 hours of bottom time, these seamount surveys explored depths between 2,376-3,793 meters, during which 29 primary physical samples were collected for future studies on the biodiversity and geological context of the region, including 18 geological, 7 biological and 4 eDNA samples. Noteworthy observations during these seamount dives included:

- The substrates primarily consisted of steep, unconsolidated slopes of sand and boulders
- Documented numerous large sponges and fossilized glass sponge skeletons
- Seamount surveys transected across valley regions, seamount habitats that have rarely been explored in previous surveys

EDUCATION & OUTREACH

Over the course of the expedition, live-stream video feeds received 193,973 views and highlight videos garnered another 39,861 views. Expedition content on OET's social media channels attracted over 132.2 million impressions. While at sea, the team created 20 new education and outreach products and hosted 58 live ship-to-shore interactions with schools, community events, and professional meetings, reaching approximately 1,130 people across 21 US States, Guam, Commonwealth of the Northern Mariana Islands, and two other countries. Eight students sailed on the expedition, including three via OET's Science Internship Program, in addition to three professional educators that joined the mission via OET's Science Communication Fellowship Program. Early expedition results were featured in 11 media stories.



DATA ACCESS

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 (R2R)	Raw data from ship-based sensors (ship navigation, sea-surface velocity, sound velocity profiles, multibeam, and sub-bottom profiler data)
Marine Geoscience Data System (MGDS)	Processed seafloor mapping data (ship navigation and multibeam data)
YouTube	Full ROV videos
Marine Geological Samples Lab at the University of Rhode Island (MGSL)	Geological samples
Harvard University's Museum of Comparative Zoology (MCZ)	Biological samples
National Deep Submergence Facility	AUV *Sentry* sensor data