

DEEP-SEA HABITATS OF THE COOK ISLANDS (NA176)

October 1-21, 2025

-  **21** days at sea
-  **14,145** km² of seafloor mapped
-  **7** successful ROV dives
-  **199** hours of ROV exploration
-  **50** km of seafloor surveyed with ROVs
-  **2** benthic landers deployed
-  **86** live ship-to-shore interactions
-  **3,560** ship-to-shore participants
-  **196,612** highlight video views
-  **116,222** livestream views
-  **10.9 million** social media impressions



Geographic Focus: Cook Islands' Exclusive Economic Zone

Main Operations: ROV dives and seafloor mapping using ship-based sonars

Sponsor: NOAA Ocean Exploration via the [Ocean Exploration Cooperative Institute](#)

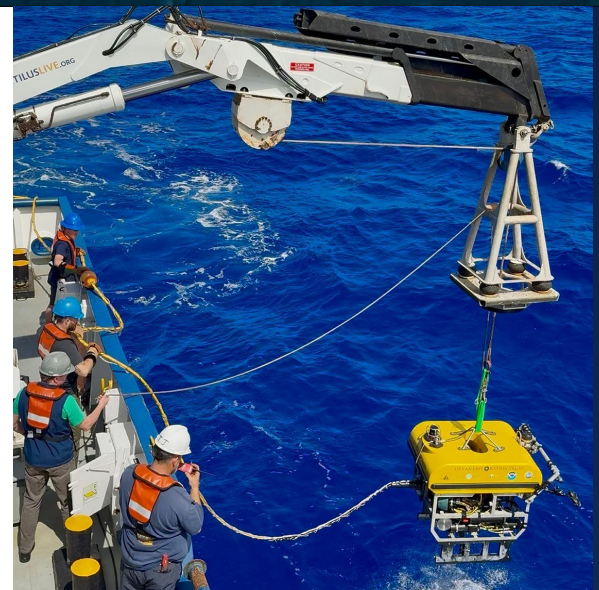
Expedition Webpage: <https://NautilusLive.org/cruise/na176>

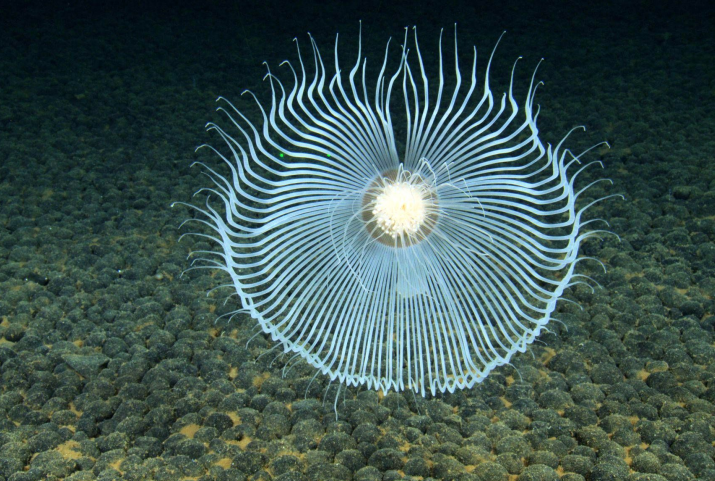
OVERVIEW

Between October 1-21, E/V *Nautilus* conducted a telepresence-enabled expedition to explore deep-sea habitats around the Cook Islands. This 21-day expedition utilized the ship's [ROV](#), [mapping](#), and [telepresence](#) systems to explore deep-sea areas, focusing on abyssal plain and deep slope habitats, to increase understanding of seabed environments and natural and mineral resources in the region. Additionally, two autonomous benthic mini-landers were successfully deployed to support long-term oceanographic monitoring. Throughout the planning and execution of the mission, the team worked closely with Cook Island stakeholders to ensure that expedition activities addressed local management and science priorities. Seven Cook Island-based scientists sailed on the expedition to facilitate this process, with many more participating from shore.

MAPPING SUMMARY

Seafloor mapping focused on filling data gaps, including over ROV dive sites without previous mapping data, during transits between ROV surveys, as well as around the islands of Aitutaki, Suvarrow, and Rarotonga. A total of 14,145 square kilometers of seafloor were mapped over the course of the expedition.





ROV SUMMARY

Using the two-body ROV system consisting of ROV *Little Hercules* and towsled *Atalanta*, the expedition completed 7 dives that reached the seafloor at depths ranging between 1,247-5,199 meters for a total dive time of over 199 hours and 148 hours on the seafloor. Collectively, these dives surveyed a linear distance of over 50 kilometers, and mostly focused on exploring abyssal plain habitats north of Aitutaki Island, with some surveys also transecting a seamount and a knoll complex in the central portion of the Cook Islands Exclusive Economic Zone, the deep slope of Aitutaki, and a short dive on the Manihiki Plateau. In addition to its standard sensors, ROV *Little Hercules* was equipped with a MxD SeaCam from Deep-Sea Power & Light during this expedition, which provided detailed imagery of the seafloor, including of over 400 unique species, many of which were recorded in the Cook Islands for the first time. Noteworthy ROV observations included:

- A range of different geological substrates, including expansive polymetallic nodule fields, sedimented seafloor, and polymetallic crusts on the slopes of seamounts
- Documentation of the rare *Magnapinna* deep-sea squid, the faceless cusk eel (*Typhlonus nasus*), and a wide variety of other benthic organisms, including molluscs, sponges, corals, gastropods, sea stars, anemones, bryozoans, fish, worms, and crustaceans
- Observations of sponge gardens atop abyssal seamounts
- Documentation of sediment bioturbation by acorn and spoon worms and several other invertebrates

ACKNOWLEDGEMENTS

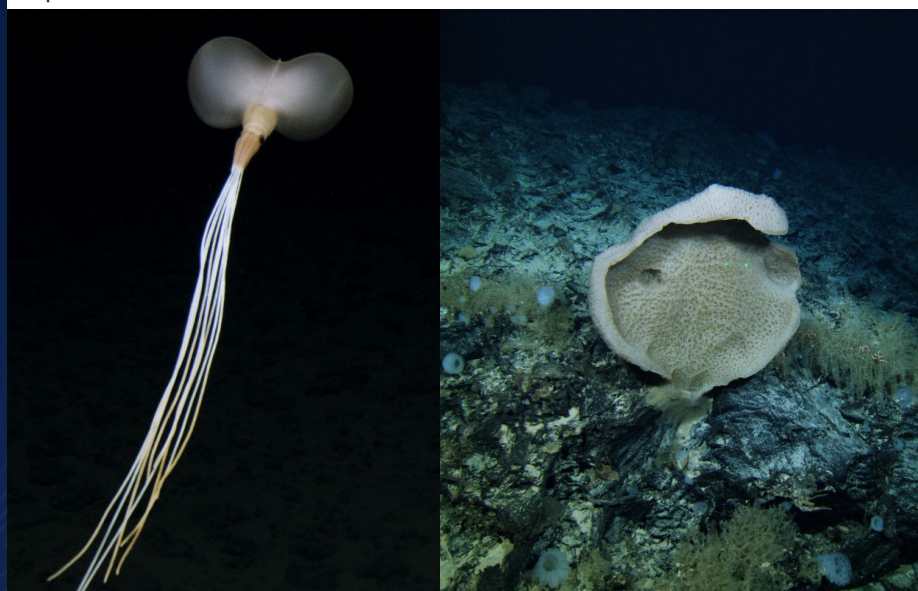
Special thanks to the captain and crew of E/V *Nautilus*, the Nautilus Corps of Exploration, the Ocean Exploration Trust, and all who supported the expedition from shore. The expedition was funded by NOAA Ocean Exploration via the Ocean Exploration Cooperative Institute in partnership with the Cook Islands Seabed Mineral Authority, and executed under diplomatic clearance 28/2025-26 from the Cook Islands Ministry of Foreign Affairs and Immigration, approval from the Cook Islands National Environmental Service, and permission from the Cook Islands Seabed Mineral Authority.

BENTHIC LANDER DEPLOYMENTS

The expedition included the successful deployment of two autonomous benthic mini-landers over abyssal plain habitats in the central portion of the Cook Islands Exclusive Economic Zone at seafloor depths of 4,830 and 4,968 meters. These benthic landers will collect continuous acoustic and environmental data until their planned retrieval in January 2026, providing baseline information for abyssal habitats and supporting long-term oceanographic monitoring across the region.

EDUCATION & OUTREACH

Over the course of the expedition, live-stream video feeds received 116,222 views and highlight videos garnered another 196,612 views. Expedition content on OET's social media channels attracted over 10.9 million impressions. While at sea, the team created 13 new education and outreach products and hosted 86 live ship-to-shore interactions with schools, community events, and professional meetings, reaching approximately 3,560 people across the Cook Islands, 25 U.S. states, and 4 other countries. This included a live interaction with the Prime Minister of the Cook Islands. Early expedition results were featured in 62 media stories published in 13 countries.



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) & Cook Islands Seabed Data Repository (CSD)	Ship navigation, weather, and mapping data
Marine Geoscience Data System (MGDS) & Cook Islands Seabed Data Repository (CSD)	Seafloor mapping, and ROV data
YouTube	Full ROV videos