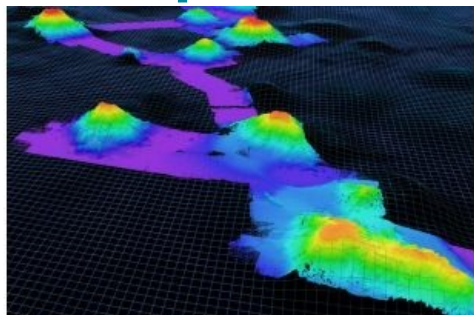
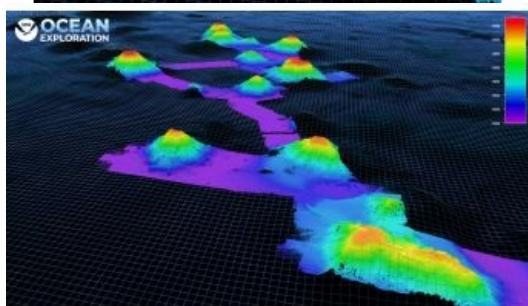


Exploring Seamounts in the Deep North Atlantic Ocean



Between 20 June and 29 July 2021, NOAA Ocean Exploration, in partnership with USGS, the U.S. Fish and Wildlife Service (USFWS), and other organizations and universities, conducted a telepresence-enabled ocean exploration to collect baseline information about unknown and poorly understood deepwater areas off the eastern U.S. coast and high seas.



This expedition, called '2021 North Atlantic Stepping Stones: New England and Corner Rise Seamounts', focused on the ecosystems of the Northeast Canyons and Seamounts Marine National Monument and other unexplored areas in the New England and Corner Rise Seamounts chain, which extend from near the Mid-Atlantic Ridge to the eastern continental margin of the United States.

ROV Underwater Machines

USGS scientists Jason Chaytor and Kira Mizell served as the geology science co-leads for the expedition. From land, they worked with multidisciplinary ship- and shore-based scientists to develop the remotely operated vehicle (ROV) underwater machines that can be used to explore ocean depths while being operated by someone at the water surface. They developed dive plans, lead and narrated 'Live Dive' events for a worldwide audience, and coordinated science outcomes. Between 2 and 28 July, the team mapped about 40 seamounts, 20 of which had little to no pre-existing data, since many of them had yet to be explored until now! Also, because many of these areas had never been seen before, the team had to conduct 14 'map and dives', meaning they conducted preliminary mapping to determine the optimal location for ROV dives. Several short video interviews with USGS scientists help to capture the science that guided the expedition's activities and highlight their roles and the collaboration between USGS and NOAA as they explore the largely unmapped seafloor.



Overview of seafloor data collected during the 2021 North Atlantic Stepping Stones: New England and Corner Rise Seamounts expedition (rainbow gradient), overlaid on the previously collected bathymetry data (blue gradient). (Credit: NOAA Ocean Exploration.)

Live Dive Events

The two 'Live Dive' events took place on 14 and 28 July. The first was hosted by Rachel Gulbraa of NOAA Ocean Exploration. Rachel introduced the expedition and Jason Chaytor (USGS, geology science co-lead), Kasey Cantwell (NOAA, expedition coordinator), Rhian Waller (University of Maine, biology science lead) and Chris Mah (Smithsonian National Museum of Natural History) discussed the research aspects related to the expedition and held a question-and-answer session with a live streaming audience. The recorded event is [available online](#).

On 28 July, staff from NOAA Ocean Exploration and Brittany Peterson (USFWS monument superintendent) explored the Northeast Canyons and Seamounts Marine National Monument through an interactive live event streamed at the Mystic Aquarium in Mystic, Connecticut, together with the visiting public so that they could learn about the wildlife and features of their own marine backyard. The team discussed the geological formations, the history and the unique and newly discovered biology of these areas with remote scientists and viewers. This event was also recorded and is [available online](#).

Wonderful Bubble-like Landscape

Midway through the expedition, Chaytor and Mizell were both asked to share their most memorable moments of the research expedition so far. Jason Chaytor replied: "The dives on the Corner Rise Seamounts provided some of the first opportunities ever to explore seafloor features that have not been mapped or seen, which is always a special experience. The numerous observations of carbonate caps on these seamounts, and the collection of samples (most importantly the nummulite agglomeration sample) that will help reveal the early history of these features, perhaps when they were at or above sea level, have been the highlight of the expedition so far." Kira Mizell said: "As a scientist who studies marine minerals, my favourite dive from the Corner Rise Seamounts was Dive 06 on Castle Rock Seamount."

During this dive, we saw thick ferromanganese crusts with very large botryoids (a rock textural feature that looks like a bunch of grapes) coating pillow lavas to create a wonderful bubble-like landscape. I also learned that the freshest, or most recently formed, ferromanganese crusts were observed during our dives to Corner Rise Seamounts in water depths between 2,000 and 2,500 metres (6,562 and 8,202 feet), which gives us clues about sedimentation, currents and water masses over the long history of this seamount complex.”



New bathymetry data of the New England Seamounts collected with the EM 304 MK II variant during the 2021 North Atlantic Stepping Stones: New England and Corner Rise Seamount Chain (EX-21-04) expedition, overlaid on the Global Multi-Resolution Topography Data Synthesis grid. (Credit: NOAA Ocean Exploration)

The 2021 Stepping Stones ocean exploration builds on two previous expeditions in the New England Seamounts that took place in 2013 and 2014. The ROV and mapping data collected during this expedition will help to fill gaps in our collective understanding of the North Atlantic seamount chains and can provide scientists and managers with a better understanding of diversity and distribution of deepwater habitats in this region, allowing for informed resource management decisions.

This work will also help to fill mapping gaps in the high seas in support of Seabed 2030 and in U.S. waters in support of the National Strategy for Mapping, Exploring and Characterizing the United States Exclusive Economic Zone (NOMECE). It also supports NOAA’s Atlantic Seafloor Partnership for Integrated Research and Exploration (ASPIRE) campaign and leverages international partnerships to support the Galway Statement on Atlantic Ocean Cooperation and the Sargasso Sea Commission.

[Read the full story – published on the USGS website – here](#)

<https://www.hydro-international.com/content/news/exploring-seamounts-in-the-deep-north-atlantic-ocean>
