

New species of deep-sea corals discovered in Atlantic marine monument

April 11 2019



A bubblegum coral (*Paragorgia* spp.) similar to, but distinct from, the new species identified in Lydonia Canyon. Credit: Ivan Agerton, OceanX

DNA analysis recently confirmed that Woods Hole Oceanographic Institution (WHOI) scientists and their collaborators at OceanX, the University of Connecticut (UConn), and NASA's Jet Propulsion Laboratory (JPL) discovered two new species of deep-sea corals during a September 2018 expedition in the Northeast Canyons and Seamounts National Monument, located about 100 miles from the Northeast U.S.

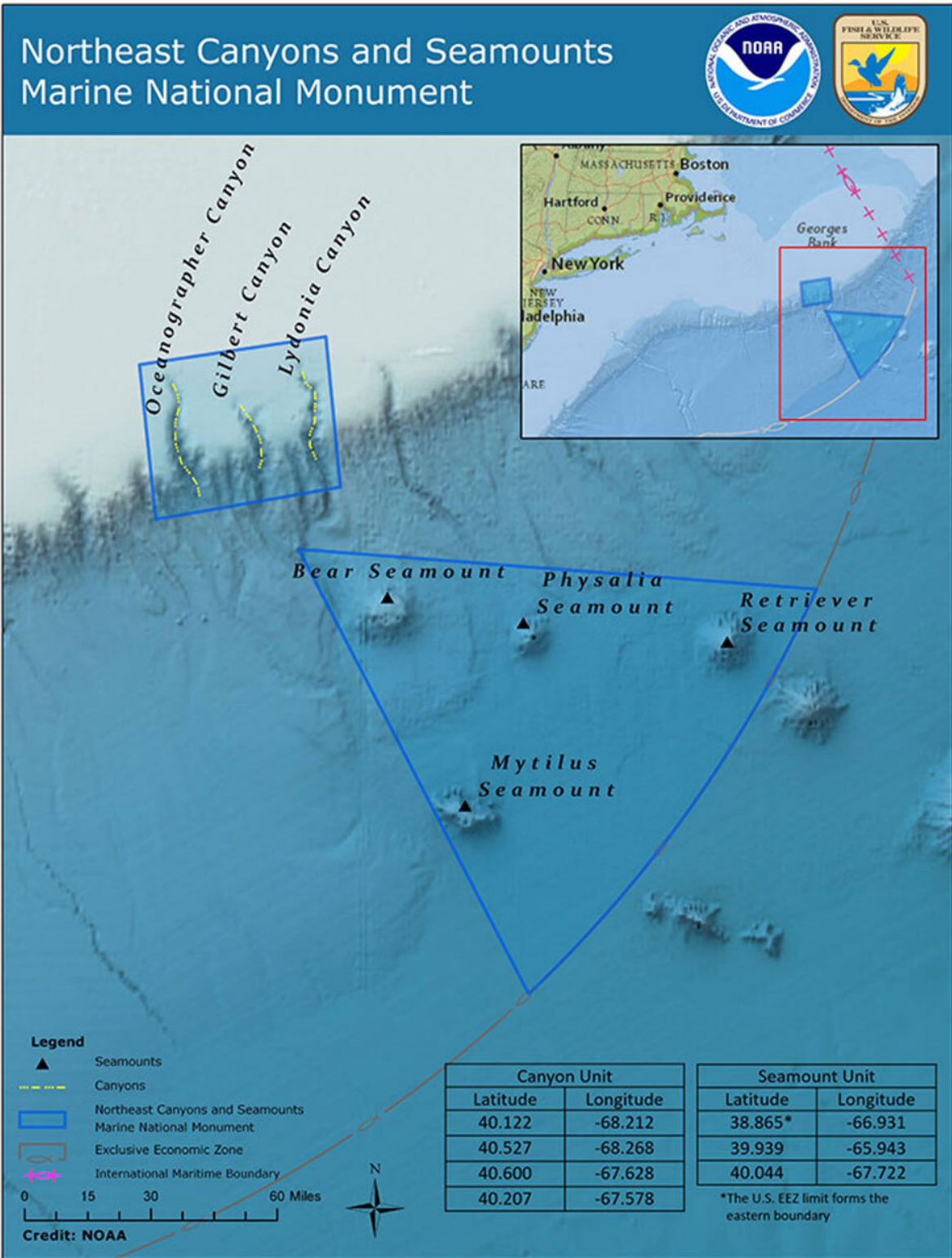
coast.

The research team was led by deep-sea biologist Tim Shank of WHOI and included co-PIs Taylor Heyl (WHOI), Rachel O'Neill (UConn), and John Leichty (JPL). Utilizing OceanX's research and exploration vessel Alucia, the team explored and surveyed several of the unique deep-sea habitats in the monument, which includes three underwater canyons deeper than the Grand Canyon.

During the two-week expedition, the scientists collected a total of 29 [coral](#) samples in Lydonia Canyon at depths between 369 meters (1,211 feet) and 903 meters (2,963 feet) using the submarine Nadir. These were the first human-occupied submersible dives in this [canyon](#) since 1982 and only the third deep-submergence mission to Lydonia Canyon.

"Through ongoing genetic barcoding, we have identified at least two corals so far that represent genetically different [species](#)," Shank said. "They don't show sufficient genetic similarity to be any species that is currently known in the world's repository for DNA sequences."

According to Heyl, the two likely new species found in Lydonia Canyon are bubblegum corals, which she described as soft, deep-water corals, "with bundles of polyps that resemble wads of bubblegum along their branches."



The Northeast Canyons and Seamounts National Monument covers

approximately 4,913 square miles (12,724 square kilometers), is located about 130 miles east-southeast of Cape Cod, and includes two distinct areas: one that covers three canyons and one that covers four seamounts. Credit: NOAA

"We didn't expect to find bubblegum corals there at all, since they haven't been found in any of the neighboring canyons," Shank said. "We found pink, red, and white bubblegum corals thriving there."

"We observed a high diversity of other corals—at least 24 species—on the seafloor and are discovering more through genetic analyses," he added.

Shank noted that coral species deep in the canyon at more than 900 meters (2,953 feet) below the surface were very different from those found in shallower waters. In total, the team collected some 200 samples of corals, sponges, and other marine life during the expedition's three submersible dives.



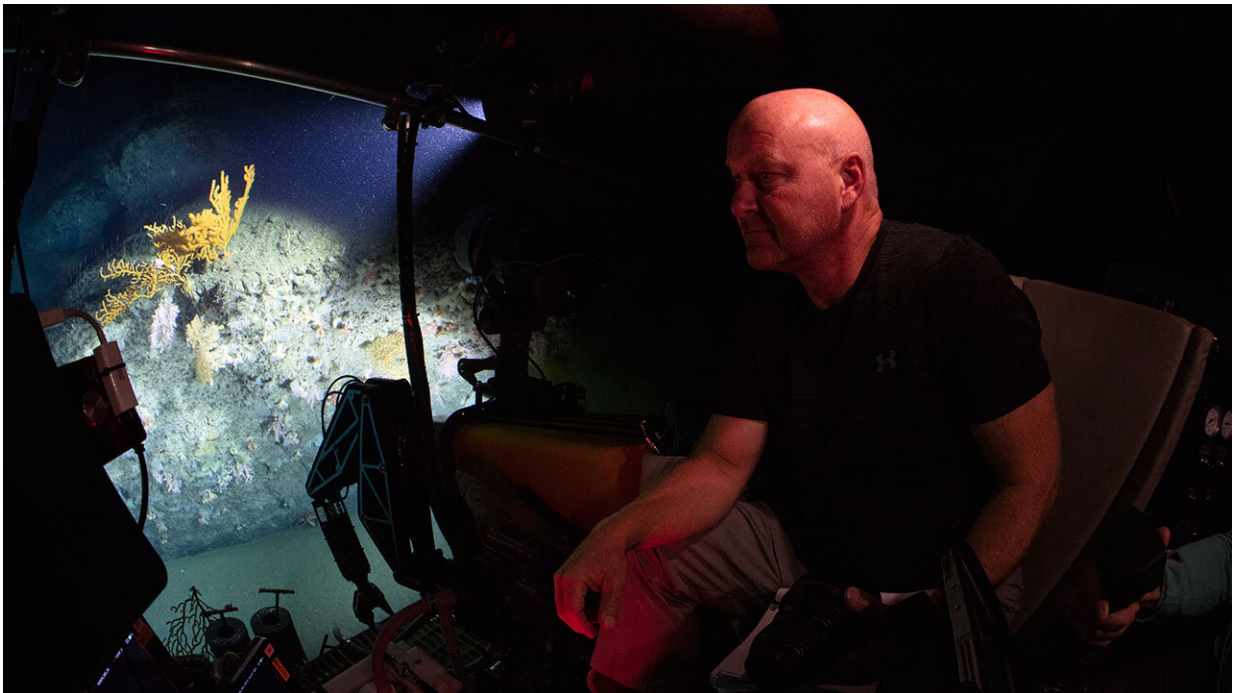
Deep-sea corals like these in Lydonia Canyon are the foundation for diverse ecosystems that thrive far beneath the ocean surface. Credit: Luis Lamar, National Geographic

"We're still analyzing the data," he noted. "But we found surprising patterns of species diversity at different depths and among the different canyons in the monument."

Corals found at these depths grow at an extremely slow pace: One that is a foot tall could be as much as 500 years old. Deep-water corals around the world also provide the framework to support entire ecosystems that contain more than 2,500 species living on and around them, including brittle stars, squat lobster crabs, and sea lily crinoids.

In addition, the team tested a new universal barcode for invertebrates during the expedition. Barcoding is a technique that uses a specific

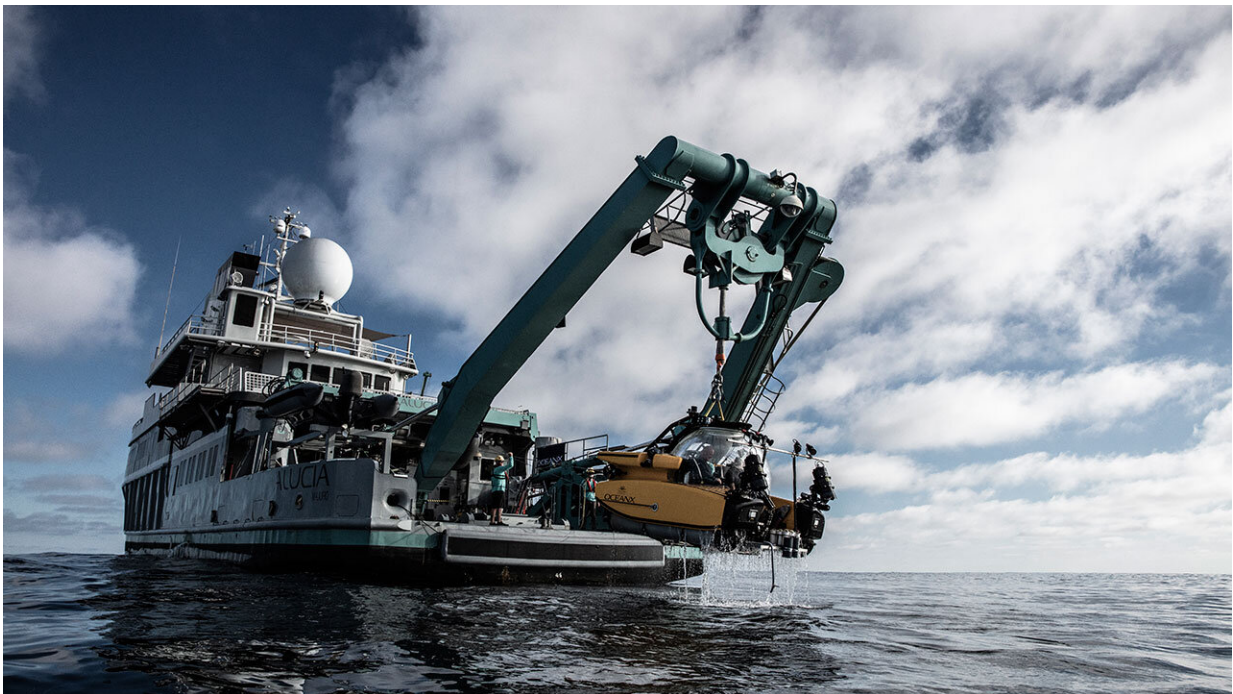
segment of an organism's DNA to identify [different species](#) at the genetic level, rather than by analyzing an organisms physical characteristics. UConn's O'Neill and her team were able to validate the effectiveness of the new barcode by distinguishing all of the different salp species present in a single, commingled sample. Salps are a gelatinous, free-swimming animal common to the [open ocean](#) that may play an important role in Earth's climate system by consuming carbon near the surface and excreting it in pellets that sink into the deep ocean.



WHOI deep-sea biologist Tim Shank in the OceanX submersible Nadir diving in Lydonia Canyon. Credit: Luis Lamar, National Geographic

The monument was created by President Barack Obama in 2016 and is the first and only national marine monument in the Atlantic Ocean. However, it is currently under threat of losing its protected status.

"The Northeast Canyons represent some of the most unique and biodiverse habitats in the Atlantic Ocean, and exploring and understanding these canyons is critical to creating awareness for and protecting them," said Vincent Pieribone, Vice Chairman, OceanX. "We are thrilled to learn with our partners at WHOI, JPL, UConn and Bloomberg Philanthropies that this mission uncovered new species of coral. These discoveries will help move us toward a better understanding of our oceans, our planet's most important and most under-examined natural resource."



The OceanX research vessel Alucia and submersible Nadir. Credit: Luis Lamar, National Geographic

Provided by Woods Hole Oceanographic Institution

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