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Deep-Diving Vehicle Gets U.S. and Canadian Scientists Close to Deep-Sea Corals in the Gulf of Maine

A team of U.S. and Canadian scientists and engineers will spend two weeks at the end of June surveying and collecting samples of deep-sea corals and related marine life in canyons in the northern Gulf of Maine in both U.S. and Canadian waters.

The scientists, lead by Martha Nizinski of the National Systematics Laboratory at NOAA's Northeast Fisheries Science Center and Anna Metaxas of Dalhousie University in Halifax, Nova Scotia, will work aboard the NOAA Ship *Henry B. Bigelow*. They will use a remotely operated vehicle (ROV) owned by Canada. Called the Remotely Operated Platform for Ocean Science-- ROPOS for short -- the vehicle can record images and sample water, sediments, and marine life using sampling gear operated from the ship by ROPOS pilots. The sites to be sampled range from 200 to 3000 meters deep, or roughly 650 to 10,000 feet deep. The ROPOS generally works in the Pacific Ocean, and this cruise marks the first time the vehicle has been used for coral research in U.S. Atlantic waters.

After loading ROPOS and associated scientific gear, the 209-foot NOAA Ship *Henry B. Bigelow* will depart Woods Hole June 18. First stop is Nygren Canyon, about a 17-hour sail from Woods Hole. Five priority areas, including Nygren Canyon, are targeted between 80 and 186 nautical miles off the coast of the northeastern U.S. and Canada. At each location the crew plans to deploy the ROPOS, and conduct water sampling and multibeam sonar operations. While at sea the team will work around the clock, with scientists standing six-hour watches. The ship will return to port in Newport, Rhode Island, July 1.

The scientific team includes biological oceanographers, taxonomists, a benthic biologist, modelers, and physical scientists from the U.S., Canada and Germany, along with eight members of the ROV Team. Institutions represented include NOAA's National Marine Fisheries Service, Northeast Fisheries Science Center headquartered in Woods Hole, Mass., and the National Ocean Service; Dalhousie University in Halifax, Nova Scotia; Memorial University in St John's, Newfoundland; Canada's Department of Fisheries and Oceans; Woods Hole Oceanographic Institution in Woods Hole, Mass.; Germany's Research Center for Marine Geosciences (GEOMAR) in Kiel, Germany, and the Delaware Museum of Natural History.

The plan is to survey and sample Nygren and Heezen Canyons in U.S. waters, Corsair Canyon in Canadian waters, the Northeast Channel Coral Conservation Area in Canadian waters, and Jordan Basin in the northern Gulf of Maine, which lies in both U.S. and Canadian waters. Several days will be spent at each site.

The overall goal of the cruise is to survey and investigate known or suspected deep-sea coral habitats off the coast of the Northeastern U.S. and Canada. The team will collect environmental and biological data to characterize benthic habitats and identify areas of coral presence, and ground-truth areas predicated to be coral hotspots based on data provided from habitat suitability models and validate those models. The team will also assess deep-sea coral abundance, distribution and size, classify coral and adjacent soft sediment habitats, and refine estimates of coral recruitment. They will also collect deep corals for taxonomic, reproduction and age analyses, and associated fauna for genetic studies. A database of photographs, species identification, abundances and distributions will be assembled.

Environmental and oceanographic data will be collected using the ship's CTD and multibeam sonar mapping capabilities. Imagery and samples will be collected by the ROPOS, which is equipped with a variety of video and still cameras and has two articulated arms that can be manipulated to collect samples.

This cruise continues work started in 2012 aboard the *Bigelow* to explore and map deep-sea canyons in the Northeast U.S. Nizinski and colleagues mapped and visually explored a number of canyons off the mid-Atlantic and Northeast Shelf in 2012 and 2013. However, no samples were collected on these cruises, just images. The 2014



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Chief scientists Martha Nizinski (left) and Anna Metaxas (right) on the bridge of the NOAA Ship *Henry B. Bigelow* with ship's captain Mark Miller (center). Photo credit: Teri Frady, NEFSC/NOAA.



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A crane lifts the 7,500 pound ROPOS onto the deck of the NOAA Ship *Henry B. Bigelow*; Photo credit: Shelley Dawicki, NEFSC/NOAA.



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Lighting, survey instruments, and articulating arms on the ROPOS. Photo credit: Teri Frady, NEFSC/NOAA.

expedition marks the second year of a three-year program funded by NOAA's Deep-Sea Coral Research and Technology Program.

Related links:

- [Coral Hotspots Found in Deepwater Canyons off Northeast U.S. Coast](#)
- [Atlantic Canyons Undersea Mapping Expeditions \(ACUMEN\) 2012](#)
- [Northeast U.S. Canyons Expedition 2013](#)
- [Deep Sea Coral Research and Technology Program Report to Congress 2014](#)
- NOAA Ship *Henry B. Bigelow*: [NEFSC site](#) and [NOAA Marine Operations site](#)
- ROPOS: [ROPOS home page](#) and [NOAA Ocean Explorer site](#)
- Dr. Martha Nizinski: [National Systematics Lab site](#), [NOAA Fisheries Feature Story](#), and [Smithsonian Institution](#)
- Dr. Anna Metaxas: [Dalhousie University](#) and [Metaxas Lab](#)
- [Explorers discover northernmost Atlantic seeps, deep-sea canyon diversity off U.S. Northeast \(Aug. 2013\)](#)
- [Northeast Fisheries Science Center](#)

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