OKEANOS EXPLORER ROV DIVE SUMMARY

Site Name	Nygren Mid Deep		Massachus etts OBESTON
ROV Lead/Expedition Coordinator	David Lovalvo/ Brian Kennedy		Confection Providence (Applied States Confection Confe
Science Team Leads	Amanda Demopoulos Martha Nizinski		
General Area Descriptor	Northwest Atlantic Ocean; Northeast U.S. Canyons		Density No.A. U.S. North No.A. Collection Co
ROV Dive Name	Cruise Season	Leg	Dive Number
	EX1304	2	DIVE06
Equipment Deployed	ROV:	Deep Discoverer	
	Camera Platform:	Seirios	
ROV Measurements	⊠ CTD	Depth	Altitude
	Scanning Sonar	USBL Position	☐ Heading
		Roll Low Res Cam 1	HD Camera 1 Low Res Cam 2
	Low Res Cam 3	Low Res Cam 4	Low Res Cam 2
Equipment Malfunctions			
ROV Dive Summary (From processed ROV data)	In Water at: 2013-08-06T12:29:26.669000 40°, 43.645' N; 066°, 39.613' W Out Water at: 2013-08-06T20:39:07.149000 40°, 43.930' N; 066°, 39.920' W Off Bottom at: 2013-08-06T19:45:37.602000 40°, 43.799' N; 066°, 39.691' W On Bottom at: 2013-08-06T13:20:39.685000 40°, 43.620' N; 066°, 39.652' W Dive duration: 8:9:40 Bottom Time: 6:24:57 Max. depth: 1590.4 m		
Special Notes			
Scientists Involved (please provide name / location / affiliation / email)	Primary Amanda Demopoulos (Science lead), USGS, ademopoulos@usgs.gov		
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Purpose of the Dive

The purpose of the dive was to characterize 1) the submarine canyon geomorphology and benthic habitats, including possible coral and sponge communities at a depth of ~1300-1600 m on the southwestern wall of Nygren Canyon and 2) groundtruth a model of predicted deep-sea coral occurrence.

Description of the Dive:

Dive #6 at Nygren Canyon was very exciting. The ROV was on bottom at 1325 UTC at a depth of 1579 m. While traversing over soft sediments, the seafloor was scattered with shell debris that transitioned to more abundant shell, coral skeleton, and small, dark rocks. Abundant organisms observed over or on the sediments included synaphobranchid eels, unicellular xenophyophores, and ophiuroids. There were a few sea pens and sea urchins also observed. The slope changed to more rugged topography, composed of dark, manganese encrusted rock. The hard substrate was populated by several taxa that have been documented previously on this expedition, including limid bivalves, stony corals, and sponges. On the rock surface, a coiled, pink mass, possibly a gastropod egg mass was observed. At 1558 m, the rock face changed to a lighter color, consistent with carbonate, and multiple patches of mussels populated cracks within the rock. We had discovered a seep. Other organisms found within the mussel patches included serpulids, scaleworms, gastropods, and bacterial mats. Light, white fluffy material floated away from one of the mussel patches. This white fluff also was present at the seeps to the west (near Veatch and Nantucket Canyons).

Several species of corals were documented throughout the dive, most of which occurred on the exposed rock face, but some were also found within the softer sediment at the beginning of the dive (e.g., sea pens). At least 17 octooral

species, 3 black coral species, 3-4 scleractinian species, including colonial (*Solenosmilia*) and solitary (cup corals, cf. *Javania*, *Desmophyllum*) forms, and 3 sea pens were noted. Other interesting observations were the first documentation of the black coral, *Leiopathes* and a corallimorpharian for this expedition. An unusual sediment laden crab had its carapace decorated with a sponge. Dead coral skeleton provided a substrate for several species, including three species of corals, *Acanthogorgia*, *Anthothela* and *Clavularia*, as well as anemones, hydroids, barnacles, and crinoids. Not all colonies of *Paramuricea* were found with associated ophiuroids. Other species associated with corals included squat lobsters on the *Parantipathes* (black coral) and *Jasonisis* (bamboo coral), and amphipods on other black corals. Large sponges with associated brittle stars and crinoids were found on the steep slope. Fish species included *Antimora*, synaphobranchid eels, ophidiid, oreo, and rattails. The dive ended on steep feature composed of dark, manganese coated rock. The ROV was off bottom at 1945 UTC at a depth of 1310 m.

Overall Map of ROV Dive Area Close-up Map of Main Dive Site

Representative Photos of the Dive









Please direct inquiries to:

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