



Okeanos Explorer ROV Dive Summary

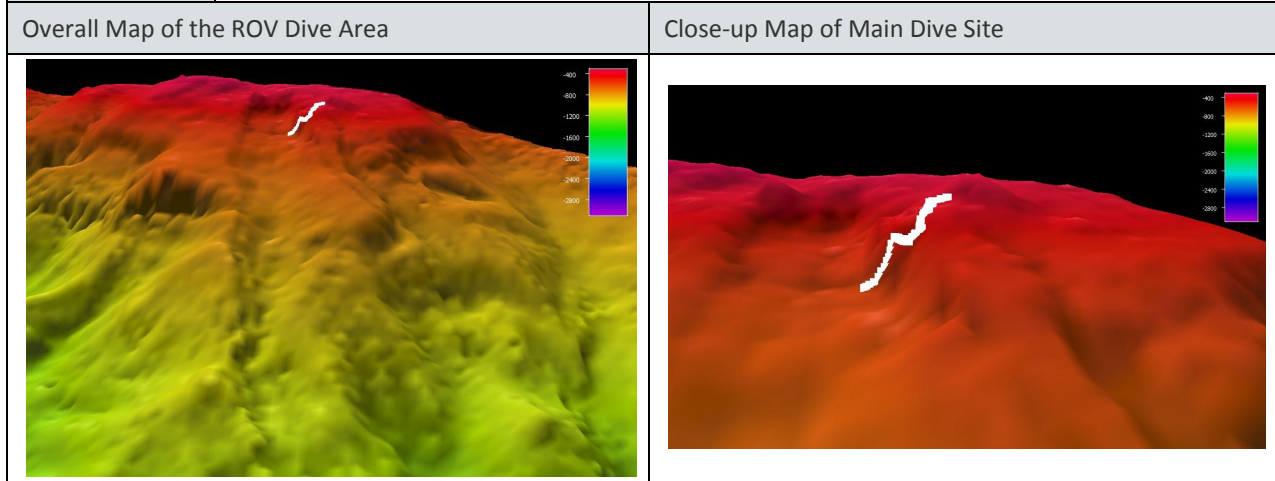
Dive Information	
General Location Map	
General Area Descriptor	U.S. Caribbean Sea
Site Name	Isla Caja de Muertos
Science Team Leads	Stacey Williams (ISER) Steven Auscavitch (Temple)
Expedition Coordinator	Daniel Wagner (NOAA-OER)
ROV Dive Supervisor	Chris Ritter (GFOE)
Mapping Lead	Derek Sowers (NOAA-OER)
ROV Dive Name	
Cruise	EX1811
Dive Number	DIVE07
Equipment Deployed	
ROV	<i>Deep Discoverer</i>
Camera Platform	<i>Seirios</i>

ROV Measurements	✓ CTD	✓ Depth	✓ Altitude
	✓ Scanning Sonar	✓ USBL Position	✓ Heading
	✓ Pitch	✓ Roll	✓ HD Camera 1
	✓ HD Camera 2	✓ Low Res Cam 1	✓ Low Res Cam 2
	✓ Low Res Cam 3	✓ Low Res Cam 4	✓ Low Res Cam 5
Equipment Malfunctions	The digital still camera was secured for a big portion of the dive due to a ground fault.		
ROV Dive Summary Data (from processed ROV data)	In Water:	2018-11-07T16:32:11.515891 17°, 49.374' N ; 66°, 34.09' W	
	On Bottom:	2018-11-07T17:25:38.656590 17°, 49.463' N ; 66°, 34.047' W	
	Off Bottom:	2018-11-07T22:00:38.939958 17°, 49.651' N ; 66°, 33.911' W	
	Out Water:	2018-11-07T22:35:09.110774 17°, 49.645' N ; 66°, 33.617' W	
	Dive duration:	6:2:57	
	Bottom Time:	4:35:0	
	Max. depth:	535.0 m	
Special Notes	ROV launch was delayed due to the ROV team having to swap out the tether because of bad fiber levels on deck. However, the dive recovery was extended by 2 hours to make up for some of this time.		
Scientists Involved (provide name, affiliation, email)	Name	Affiliation	Email
	Brian Kennedy	Boston University	brian@deepsuabmergence.com
	Cheryl Morrison	U.S. Geological Survey	cmorrison@usgs.gov
	Christopher Mah	National Museum of Natural History	brisinga@gmail.com
	Daniel Wagner	NOAA/OER	daniel.wagner@noaa.gov
	Debi Blaney	NOAA/OER	debi.blaney@noaa.gov
	Elizabeth Gugliotti	NOAA/NCCOS	gugliottief@g.cofc.edu
	Jaymes Awbrey	University of Louisiana at Lafayette	jawbrey@louisiana.edu
	Jessica Robinson	University of Victoria	jrobinson@uvic.ca
	Kate Overly	NOAA/NMFS	katherine.overly@noaa.gov
	Kevin Rademacher	NOAA/NMFS	kevin.r.rademacher@noaa.gov
	Lauren Walling	University of Louisiana at Lafayette	lauren.walling1@louisiana.edu
	Mashkoor Malik	NOAA/OER	mashkoor.malik@noaa.gov
	Megan Cromwell	NOAA/NCEI	megan.cromwell@noaa.gov
	Michelle Schärer	HJR Reefscaping	michelle.scharer@upr.edu
	Nick Pawlenko	NOAA/OER	nikolai.f.pawlenko@noaa.gov
	Nolan Barrett	Medical University of South Carolina	barrettnh@g.cofc.edu
	Ricardo Lugo	Boqueron Fishermen Association	ricardo.juan.lugo@gmail.com
	Scott France	University of Louisiana at Lafayette	france@louisiana.edu
	Stacey Williams	Institute for Socio-Ecological Research	stcmwilliams@gmail.com
Steven Auscavitch	Temple University	steven.auscavitch@temple.edu	
Tara Harmer Luke	Stockton University	luket@stockton.edu	
Tom Hourigan	NOAA/NMFS	tom.hourigan@noaa.gov	

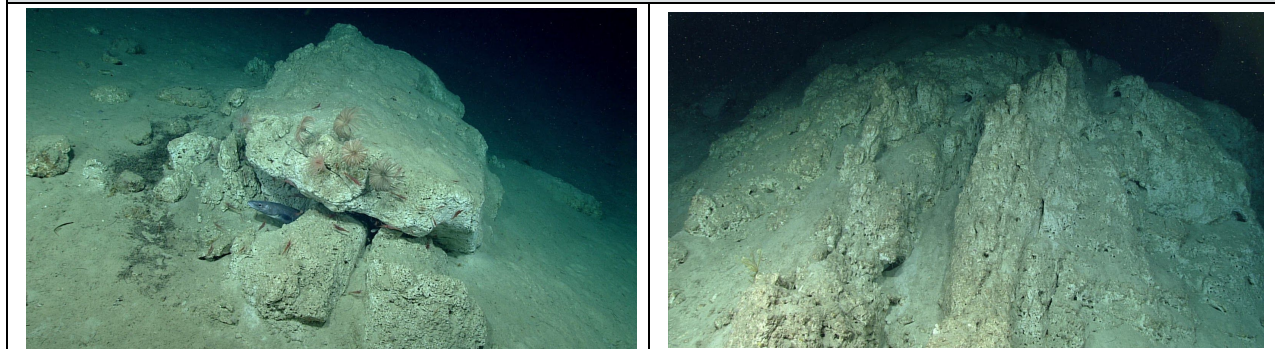


Dive Purpose	The purpose of this dive was to survey deep-sea coral and sponge communities, as well as deepwater demersal fish species along the dive track. The dive started on a steep slope (40 degrees), while traversing northeast along gentle slope area and then moved up a mound. This site was located to the south of the Caja de Muertos Island, south of Ponce, Puerto Rico.
Dive Description	<p>The dive started in a habitat dominated by soft sediment with a few boulders. There were transitions between larger boulders to smaller boulders to soft sediment. We saw a queen snapper (<i>Etelis oculatus</i>) as soon as we arrived on the seafloor at a depth of 539 m. This is a new depth record for queen snapper, as they were only known to exist as deep as 450 m. We saw at least one more queen snapper later in the dive at 432 m, and maybe another at 400 m, which could be the second fish following the ROV. Fish diversity was much higher at the deeper depths. We observed at least 10 species of fish during the dive. The fish observed were <i>Bathyclupea schroederi</i>, <i>Cyttopsis rosea</i>, Conger eel, <i>Hoplostethus</i> sp., <i>Monomitopus</i> sp., <i>Epigonus</i> sp., and <i>Ostichthys trachypoma</i>. We also saw three unidentified fish at the beginning at the dive. The most common fish was <i>Monomitopus</i> sp., which were observed at all depths and a lot of times hiding behind octocorals and black corals. They would face vertical behind branches.</p> <p>Deepwater corals had a moderate diversity at this site with 12 species from the Antipatharia, Isididae, Stylasteridae, Chrysogorgiidae, Plexauridae, Ellisellidae, Neptheidae, and solitary Scleractinia. Antipatharians observations were primarily composed of <i>Stichopathes</i> spp. whips, as well as two different color morphs of the genus <i>Elatopathes</i> (black and yellow). Bamboo whips in the S1 clade (<i>Cladarisis</i> sp.) were the most common isidids. Stylasterids were quite abundant with <i>Stylaster</i> sp. and <i>Crypthelia</i> sp. being the most common. One Chrysogorgiid, possibly <i>Chrysogorgia desbonni</i>, was observed throughout the dive. White octocoral fans, one unidentified plexaurid (<i>Scleracis?</i> sp.) and one <i>Nicella</i> sp., were also observed later on in the dive on boulders. A small unidentified neptheid species was also observed in boulder habitats.</p> <p>Sponge abundance and diversity was overall low. Most of the sponges were small in size. There were very few glass sponges, Euplectillids and <i>Farrea occa</i>. There were some larger demosponges that looked like <i>Geodia</i> sp., but mostly were encrusting. There was a blue encrusting sponge that was common throughout the dive and shore-side scientist had an interest in collecting it, but it was always located in inaccessible habitats on large boulders.</p> <p>The echinoderm diversity was relatively high at this site. There were strange cidarid urchins at the beginning of the dive. They had modified spines that looked like paddles. These were identified during the 2015 <i>Okeanos Explorer</i> expedition to Puerto Rico as <i>Cidaris blakei</i>. We also saw an <i>Aspidodiadema</i> sp. and another strange sea urchin with long spines with red bands on the spines (<i>Stylocidaris lineata</i>). The second species may be another Diadematoïd, because it looked like it might have an anal cone. We also saw another cidarid and some <i>Areosomas</i> sp. in the shallower depths. We saw a group of irregular sea urchins, <i>Conolampas sigbei</i>, close to the transition between habitats when there was more hardground and larger boulders. Chris Mah stated that these urchins have never been seen alive. There were three species of sea cucumbers observed. One was very small attached to face of the hard substrate. There were three species of sea stars, slime star, white seastar, and a cookie star (Gonoasteridae). Brittle stars (<i>Asteronyx</i> sp.) were very common and they were mostly attached to octocorals and black corals. We collected one octocoral with two commensal brittle stars. This brittle star was smooth and white with brown bands along the arms. Yellow crinoids were very common throughout the dive. They were frequently attached to bamboo corals. There was a <i>Holopus</i> sp. crinoid along the dive and we also observed stalked crinoids.</p>
Notable Observations	Queen snapper (<i>Etelis oculatus</i>) at 539 m depth. There was a lot of trash at this site. Mostly glass bottles, but we did see some cloth and metal cable. We also saw two hermit crabs using hollowed wood pieces.

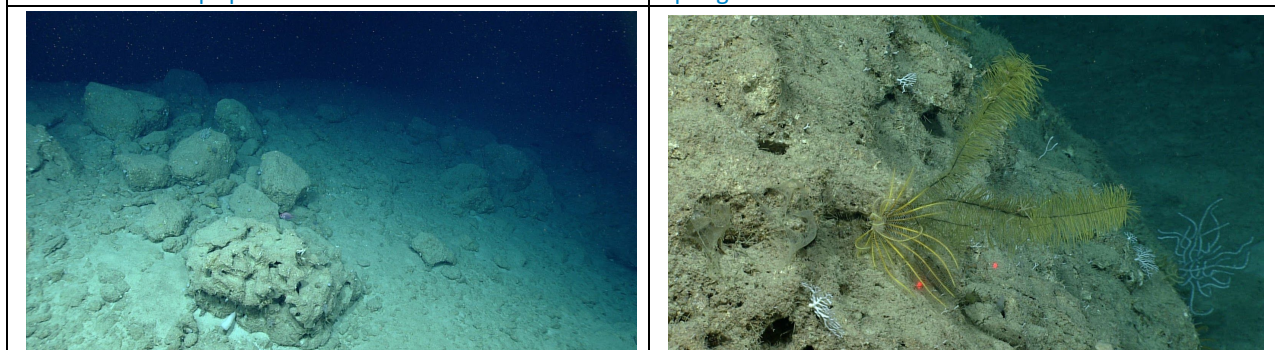
Community Presence/Absence (community is defined as more than two species)	<input checked="" type="checkbox"/> Corals and Sponges
	<input type="checkbox"/> Chemosynthetic Community
	<input checked="" type="checkbox"/> High biodiversity Community
	<input type="checkbox"/> Active Seep or Vent
	<input type="checkbox"/> Extinct Seep or Vent
	<input type="checkbox"/> Hydrates



Representative Photos of the Dive

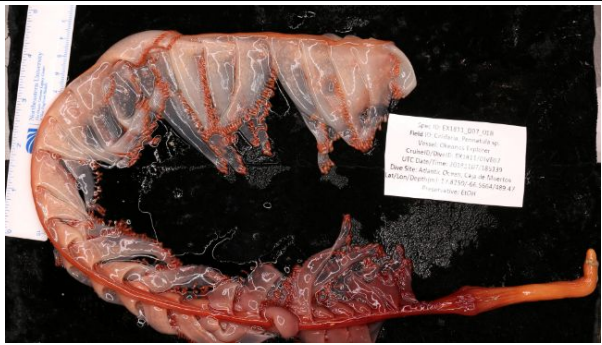
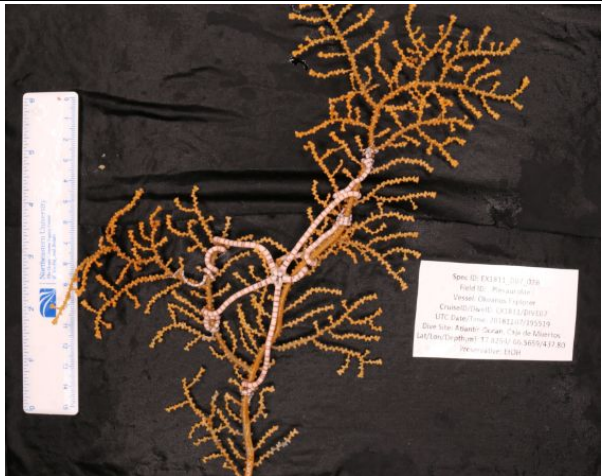


Early on in the dive, carbonate boulders provided significant relief for benthic megafauna, particularly fishes and shrimp species.	Slopes encountered on this dive were not heavily colonized by attached fauna, but could be seen with sponge and invertebrate fauna.
---	---



The second half of the dive along the ridge was dominated by carbonate boulder fields with intermittent soft-bottom expanses. Hard substrate was colonized by corals, sponges and other encrusting life.	Larger boulders were typically observed to have a higher species diversity. Here black corals, stylasterids, and octocorals are shown on one of the larger boulders in one field.
--	---

Samples Collected

Sample ID	EX1811_D07_01B									
Date (UTC)	20181107									
Time (UTC)	185139									
Depth (m)	489.474									
Temp. (°C)	13.347									
Field ID(s)	<i>Pennatula</i> sp.									
Commensals	No commensals									
Comments										
Sample ID	EX1811_D07_02B									
Date (UTC)	20181107									
Time (UTC)	195519									
Depth (m)	437.801									
Temp. (°C)	14.414									
Field ID(s)	Plexauridae									
Commensals	<table border="1"> <thead> <tr> <th>Commensal Sample ID</th> <th>Field Identification</th> <th>Count</th> </tr> </thead> <tbody> <tr> <td>EX1811_D07_02B_A01</td> <td>Brittle stars</td> <td>2</td> </tr> <tr> <td>EX1811_D07_02B_A02</td> <td>Shrimp</td> <td>2</td> </tr> </tbody> </table>	Commensal Sample ID	Field Identification	Count	EX1811_D07_02B_A01	Brittle stars	2	EX1811_D07_02B_A02	Shrimp	2
Commensal Sample ID	Field Identification	Count								
EX1811_D07_02B_A01	Brittle stars	2								
EX1811_D07_02B_A02	Shrimp	2								
Comments										

Sample ID	EX1811_D07_03B	
Date (UTC)	20181107	
Time (UTC)	215439	
Depth (m)	407.409	
Temp. (°C)	15.364	
Field ID(s)	Octocoral whip coral	
Commensals	No commensals	
Comments		

Please direct inquiries to:

NOAA Office of Ocean Exploration & Research
1315 East-West Highway (SSMC3 10th Floor)
Silver Spring, MD 20910
(301) 734-1014

