



Okeanos Explorer ROV Dive Summary

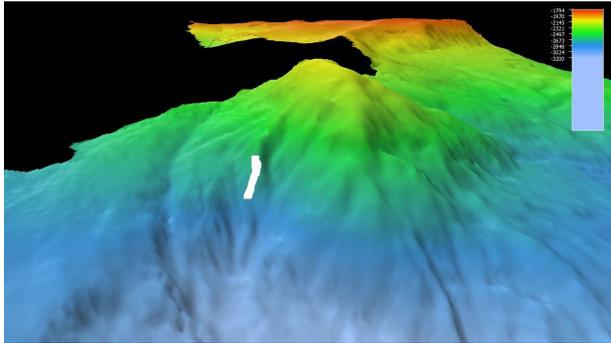
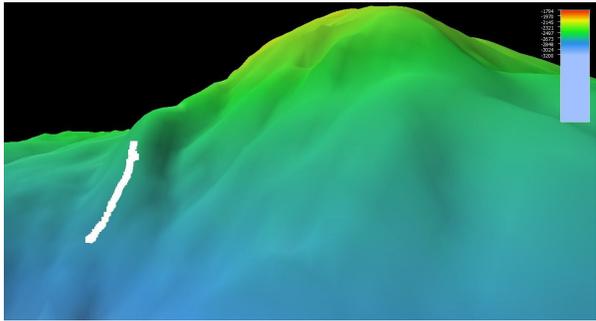
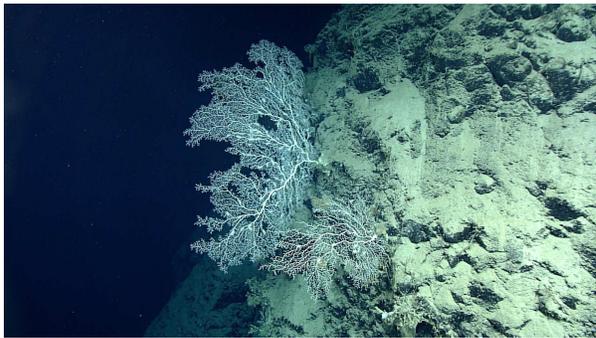
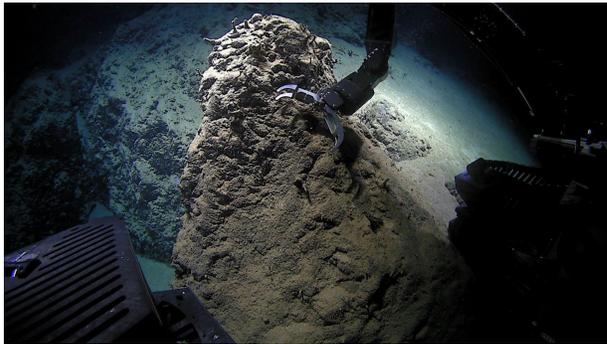
Dive Information	
General Location Map	
General Area Descriptor	U.S. Caribbean Sea
Site Name	Jaguey Spur
Science Team Leads	Stacey Williams (ISER) Steven Auscavitch (Temple)
Expedition Coordinator	Daniel Wagner (NOAA-OER)
ROV Dive Supervisor	Chris Ritter (GFOE)
Mapping Lead	Derek Sowers (NOAA-OER)
ROV Dive Name	
Cruise	EX1811
Dive Number	DIVE09
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 joylock button did not work properly during ROV pre-dive operations, but this did not affect dive operations. During ROV recovery the VSAT lost signal for a couple of minutes.																																																																	
ROV Dive Summary Data (from processed ROV data)	<table border="0"> <tr> <td>In Water:</td> <td>2018-11-09T12:36:05.682904 17°, 36.412' N ; 67°, 16.606' W</td> </tr> <tr> <td>On Bottom:</td> <td>2018-11-09T14:18:25.066223 17°, 36.343' N ; 67°, 16.493' W</td> </tr> <tr> <td>Off Bottom:</td> <td>2018-11-09T19:06:11.809417 17°, 36.441' N ; 67°, 16.38' W</td> </tr> <tr> <td>Out Water:</td> <td>2018-11-09T20:38:36.523901 17°, 36.171' N ; 67°, 15.715' W</td> </tr> <tr> <td>Dive duration:</td> <td>8:2:30</td> </tr> <tr> <td>Bottom Time:</td> <td>4:47:46</td> </tr> <tr> <td>Max. depth:</td> <td>2789.0 m</td> </tr> </table>			In Water:	2018-11-09T12:36:05.682904 17°, 36.412' N ; 67°, 16.606' W	On Bottom:	2018-11-09T14:18:25.066223 17°, 36.343' N ; 67°, 16.493' W	Off Bottom:	2018-11-09T19:06:11.809417 17°, 36.441' N ; 67°, 16.38' W	Out Water:	2018-11-09T20:38:36.523901 17°, 36.171' N ; 67°, 15.715' W	Dive duration:	8:2:30	Bottom Time:	4:47:46	Max. depth:	2789.0 m																																																	
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Scientists Involved (provide name, affiliation, email)	<table border="1"> <thead> <tr> <th>Name</th> <th>Affiliation</th> <th>Email</th> </tr> </thead> <tbody> <tr> <td>Asako Matsumoto</td> <td>Chiba Institute of Technology</td> <td>amatsu@gorgonian.jp</td> </tr> <tr> <td>Ashley Perez</td> <td>Tenenbaum Puerto Rico Trench Expedition Team</td> <td>ashley.perez@bahiapr.com</td> </tr> <tr> <td>Christopher Mah</td> <td>National Museum of Natural History</td> <td>brisinga@gmail.com</td> </tr> <tr> <td>Daniel Wagner</td> <td>NOAA/OER</td> <td>daniel.wagner@noaa.gov</td> </tr> <tr> <td>Debi Blaney</td> <td>NOAA/OER</td> <td>debi.blaney@noaa.gov</td> </tr> <tr> <td>Graciela Garcia-Moliner</td> <td>Caribbean Fishery Management Council</td> <td>graciela_cfmc@yahoo.com</td> </tr> <tr> <td>Elizabeth Gugliotti</td> <td>NOAA/NCCOS</td> <td>gugliottief@g.cofc.edu</td> </tr> <tr> <td>Jason Chaytor</td> <td>US Geological Survey</td> <td>jchaytor@usgs.gov</td> </tr> <tr> <td>Jim Masterson</td> <td>Harbor Branch Oceanographic Institute</td> <td>jmaste7@fau.edu</td> </tr> <tr> <td>Kevin Rademacher</td> <td>NOAA/NMFS</td> <td>kevin.r.rademacher@noaa.gov</td> </tr> <tr> <td>Lauren Walling</td> <td>University of Louisiana at Lafayette</td> <td>lauren.walling1@louisiana.edu</td> </tr> <tr> <td>Marcela Cañon</td> <td>Interamerican University</td> <td>marcela.canon@bahiapr.com</td> </tr> <tr> <td>Mashkoor Malik</td> <td>NOAA/OER</td> <td>mashkoor.malik@noaa.gov</td> </tr> <tr> <td>Megan Cromwell</td> <td>NOAA/NCEI</td> <td>megan.cromwell@noaa.gov</td> </tr> <tr> <td>Nolan Barrett</td> <td>Medical University of South Carolina</td> <td>barrettnh@g.cofc.edu</td> </tr> <tr> <td>Scott France</td> <td>University of Louisiana at Lafayette</td> <td>france@louisiana.edu</td> </tr> <tr> <td>Stacey Williams</td> <td>Institute for Socio-Ecological Research</td> <td>stcmwilliams@gmail.com</td> </tr> <tr> <td>Steven Auscavitch</td> <td>Temple University</td> <td>steven.auscavitch@temple.edu</td> </tr> <tr> <td>Tara Harmer Luke</td> <td>Stockton University</td> <td>luket@stockton.edu</td> </tr> <tr> <td>Tina Molodtsova</td> <td>P.P. Shirshov Institute of Oceanology</td> <td>tina@ocean.ru</td> </tr> </tbody> </table>			Name	Affiliation	Email	Asako Matsumoto	Chiba Institute of Technology	amatsu@gorgonian.jp	Ashley Perez	Tenenbaum Puerto Rico Trench Expedition Team	ashley.perez@bahiapr.com	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	Graciela Garcia-Moliner	Caribbean Fishery Management Council	graciela_cfmc@yahoo.com	Elizabeth Gugliotti	NOAA/NCCOS	gugliottief@g.cofc.edu	Jason Chaytor	US Geological Survey	jchaytor@usgs.gov	Jim Masterson	Harbor Branch Oceanographic Institute	jmaste7@fau.edu	Kevin Rademacher	NOAA/NMFS	kevin.r.rademacher@noaa.gov	Lauren Walling	University of Louisiana at Lafayette	lauren.walling1@louisiana.edu	Marcela Cañon	Interamerican University	marcela.canon@bahiapr.com	Mashkoor Malik	NOAA/OER	mashkoor.malik@noaa.gov	Megan Cromwell	NOAA/NCEI	megan.cromwell@noaa.gov	Nolan Barrett	Medical University of South Carolina	barrettnh@g.cofc.edu	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	Tina Molodtsova	P.P. Shirshov Institute of Oceanology	tina@ocean.ru
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Dive Purpose	The purpose of this dive was to characterize deep-sea coral and sponge communities in an unexplored ridge feature and slope off the southwest coast of Puerto Rico. The dive also sought to identify occurrences of deepwater demersal fish species, as well as their habitat preferences along the seafloor. The dive track was designed to explore a steeply sloped ridge between depths of 2,786 to 2,502 m.																																																																	

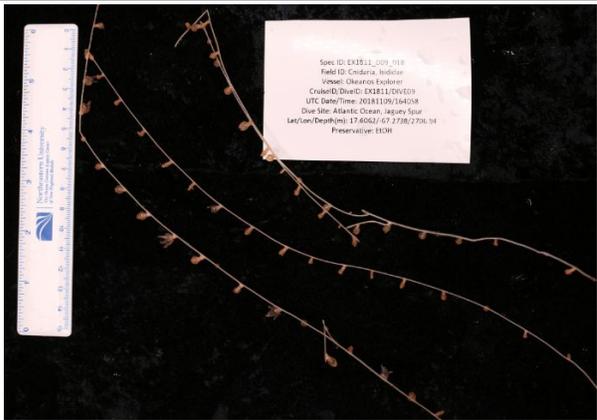


<p style="text-align: center;">Dive Description</p>	<p>This dive started on a relative steep slope dominated by sediment. Two species of fish were observed on this habitat, <i>Ipnops murrayi</i> and an unknown ophidiform. There looked to be another ophidiform far in the distance when we started to climb the steep rocky wall. Most of the dive was spent climbing a very steep wall with occasional pinnacle structures jutting out of the slope. Debris, both organic and anthropogenic was common here and consisted of tree branches, seagrass, a toothpaste tube, a bottle, and plastic. A third species of fish, the tripod fish <i>Bathypterois</i> sp., was observed at the end of the dive which ended in soft sediment.</p> <p>Deep-sea corals were unknown from Jaguey Spur prior to this exploration. We observed nine different species from the Antipatharia, Scleractinia, and octocoral families Coralliidae, Isididae, and Chrysogorgiidae. Isidids were by far the most abundant coral observed at this site. At least three different morphologies were observed, primarily from the J-clade, as well as one from the node-branching "<i>Isidella</i>"-clade. Chrysogorgiid occurrences were dominated by several observations of the large <i>Iridogorgia magnispiralis</i> with most colonies between 1-2 m in height. One of the largest fans observed on the dive was a colony of <i>Corallium</i> cf. <i>niobe</i> on a vertical wall above a sediment chute in the slope. One <i>Chrysogorgia</i> sp., more fan-shaped than bushy, was observed on three occasions. Only one black coral, <i>Heteropathes</i> cf. <i>americana</i>, was found on the boulder substrate, and only one genus of stony coral was observed (<i>Javania</i> sp.) on the dive. Throughout the dive numerous thick bases and branch debris, thought to be from old coral colonies, was found covered in Fe-Mn crusts. Though many were observed dead, no live representatives were found alive in the area. On these old bases, small colonies of yellow and white stoloniferous octocorals were seen.</p> <p>Sea stars contributed the most to the echinoderm diversity. We observed five species of sea stars. At the beginning at the dive at the sediment-dominated habitat, the sea star <i>Ceramaster</i> sp. was relatively abundant. We observed other sea stars along the rocky wall. These were <i>Pythonaster atlantidis</i>, which was eating a big glass sponge, <i>Pteraster</i> sp. and a bringsid star. No sea urchins were observed. There was only one brittle star found and one stalked crinoid (10 arms) right at the end of the dive. Sea cucumbers were common at all depths on soft sediments. We observed at least two species of sea cucumbers in the family Elpidiidae.</p> <p>The sponge diversity was also low at this site, and the majority of sponges were encrusting species. Glass sponges were also common. There were a lot of stalked glass sponges in the soft sediment and along the rock faces, including Hyalonematidae, <i>Amphidiscella</i> sp. bulbous glass sponges and <i>Dictyocalyx</i> sp. or Corbatellinae. We also saw one Euplectillid sponge, and a large vase sponge (~1.2 m tall), (<i>Bathydorus?</i> sp.), that was being grazed upon by a <i>Pythonaster</i> sp. sea star. Translucent demosponges and bryozoans were observed throughout the dive encrusting on rocky surfaces.</p>
<p style="text-align: center;">Notable Observations</p>	<p>Large Fe-Mn crusted bases of presumably dead corals and debris. Massive colonies of <i>Iridogorgia magnispiralis</i>, <i>Corallium</i> cf. <i>niobe</i>, and a Hexactinellid sponge. Rocky vertical landscape.</p>
<p style="text-align: center;">Community Presence/ Absence (community is defined as more than two species)</p>	<ul style="list-style-type: none"> <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



Overall Map of the ROV Dive Area	Close-up Map of Main Dive Site
	
Representative Photos of the Dive	
	
<p>A 1.2 m tall sponge, possibly in the Rosselidae, being predated upon by a seastar (<i>Pythonaster</i> sp.).</p>	<p>Two large colonies of <i>Corallium</i> cf. <i>niobe</i>, one of the few Coralliids observed on this expedition, were found attached to vertical surfaces of the wall.</p>
	
<p>Thick black stems and bases, suspected to be from corals, were abundant throughout the dive. Many organisms, including sponges, corals and echinoderms were observed colonizing or attached to this hard substrate.</p>	<p>Rocky pinnacles were occasionally found jutting out of the hillside. These pinnacles typically had higher abundances of attached fauna and Fe-Mn covered coral bases.</p>

Samples Collected

Sample ID	EX1811_D09_01B														
Date (UTC)	20181109														
Time (UTC)	164058														
Depth (m)	2706.942														
Temp. (°C)	4.141														
Field ID(s)	Isididae														
Commensals	No commensals														
Comments															
Sample ID	EX1811_D09_02G														
Date (UTC)	20181109														
Time (UTC)	183024														
Depth (m)	2638.711														
Temp. (°C)	4.142														
Field ID(s)	Rock														
Commensals	<table border="1" style="width: 100%; border-collapse: collapse; text-align: left;"> <thead> <tr> <th style="width: 30%;">Commensal Sample ID</th> <th style="width: 50%;">Field Identification</th> <th style="width: 20%;">Count</th> </tr> </thead> <tbody> <tr> <td>EX1811_D09_02G_A01</td> <td>Sponge</td> <td style="text-align: center;">1</td> </tr> <tr> <td>EX1811_D09_02G_A02</td> <td>Glass Sponge</td> <td style="text-align: center;">1</td> </tr> <tr> <td>EX1811_D09_02G_A03</td> <td>Bryozoan</td> <td style="text-align: center;">1</td> </tr> </tbody> </table>			Commensal Sample ID	Field Identification	Count	EX1811_D09_02G_A01	Sponge	1	EX1811_D09_02G_A02	Glass Sponge	1	EX1811_D09_02G_A03	Bryozoan	1
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Comments															

Please direct inquiries to:

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