

Okeanos Explorer ROV Dive Summary

Dive Information	
General Location	<p style="text-align: center;">Gulf of Mexico 2017</p>
General Area Descriptor	Gulf of Mexico
Site Name	Escarpment Canyon
Science Team Leads	Diva Amon and Charles Messing
Expedition Coordinator	Brian Kennedy
ROV Dive Supervisor	Dan Rogers
Mapping Lead	Mike White
ROV Dive Name	
Cruise	EX1711
Leg	-
Dive Number	DIVE02
Equipment Deployed	
ROV	Deep Discoverer
Camera Platform	Seirios

ROV Measurements	<input checked="" type="checkbox"/> CTD	<input checked="" type="checkbox"/> Depth	<input checked="" type="checkbox"/> Altitude
	<input checked="" type="checkbox"/> Scanning Sonar	<input checked="" type="checkbox"/> USBL Position	<input checked="" type="checkbox"/> Heading
	<input checked="" type="checkbox"/> Pitch	<input checked="" type="checkbox"/> Roll	<input checked="" type="checkbox"/> HD Camera 1
	<input checked="" type="checkbox"/> HD Camera 2	<input checked="" type="checkbox"/> Low Res Cam 1	<input checked="" type="checkbox"/> Low Res Cam 2
	<input checked="" type="checkbox"/> Low Res Cam 3	<input checked="" type="checkbox"/> Low Res Cam 4	<input checked="" type="checkbox"/> Low Res Cam 5
Equipment Malfunctions	none		
ROV Dive Summary (from processed ROV data)	Dive Summary: EX1711_DIVE02		
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	In Water:	2017-12-01T13:43:24.283000	
		24°, 37.343' N ; 084°, 06.237' W	
	Out Water:	2017-12-01T21:42:37.435000	
		24°, 36.240' N ; 084°, 05.366' W	
	Off Bottom:	2017-12-01T20:20:58.976000	
		24°, 37.422' N ; 084°, 06.279' W	
	On Bottom:	2017-12-01T15:06:01.051000	
		24°, 37.260' N ; 084°, 06.173' W	
	Dive duration:	7:59:13	
	Bottom Time:	5:14:57	
Max. depth:	2321.5 m		
Special Notes	none		
Scientists Involved (please provide name, location, affiliation, email)	Name	Affiliation	Email
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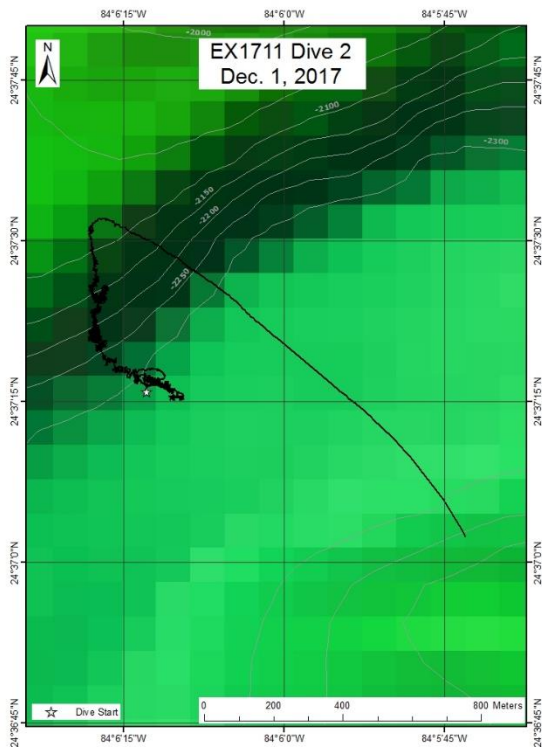


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Purpose of the Dive	<p>The Florida Escarpment southwest of Pulley Ridge has a complex canyon and promontory system with relief exceeding 1000 m. These extraordinary “spur and groove” or “saw-tooth” structures have steep cliffs and canyon features with extensive hard substrate walls that are ideal for the establishment of deep-water sessile communities, as well as soft-sediment habitats. This dive site, given the canyon location, allowed us to encounter and characterize a variety of benthic habitats and associated communities, including the distribution and abundance of corals and sponges. This generated information on the distribution, diversity, biogeography, and connectivity of these communities.</p>		
Description of the Dive	<p>EX1711 Dive 2 was at ‘Escarpment Canyon’, located west of south Florida. The ROV descended to the sedimented canyon floor at 2319 m and encountered <i>Nematocarcinus</i> sp. and <i>Pleoticus robustus</i> (Royal Red shrimp) before quickly traversing to the base of the canyon wall. The wall initially appeared to be fractured blocky carbonate with a ferromanganese crust and hosted a number of sponge species (Euplectellidae sp., Cladorhizidae sp. and Hyalonematidae sp.). Additional organisms included two ophidiids (<i>Acanthonus armatus</i> and Ophidiidae sp.), several <i>Bathypterois</i> sp. (tripod fish), a Bathycrinidae sp. stalked crinoid, and <i>Enypniaestes eximia</i> holothurian. Moving up the wall, the slope shallowed to another sedimented area where an <i>Argonauta</i> egg case, a ctenophore, several halosaurs, an asteroid, a corallimorpharian and a <i>Coryphaenoides</i> macrourid were observed.</p> <p>The canyon wall steepened again as the ROV continued ascent. Sparse fauna dominated by a few Euplectellidae sp. sponges led to a section of wall with thousands of Euplectellidae sponges, as well as areas of large coral colonies (Isididae spp., Chrysogorgiidae spp., <i>Anthomastus/Pseudoanthomastus?</i> sp., <i>Corallium</i> sp., and solitary cup corals) apparently restricted to projections and corners (likely areas of elevated current flow). Many of these corals supported associated shrimp, brisingid asteroids, zoanthids, hydroids, scalpellid</p>		

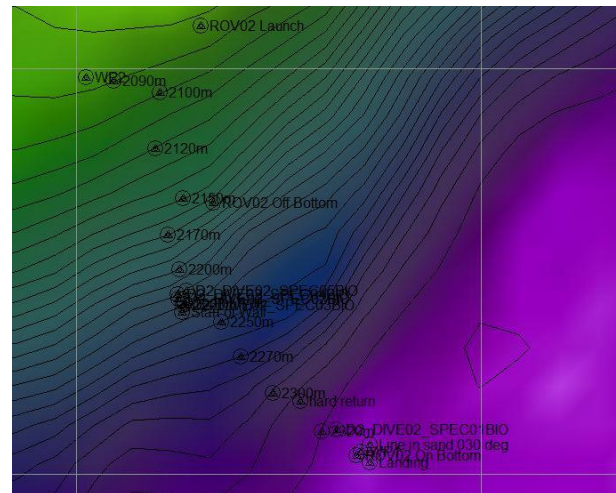


barnacles, chirostylid squat lobsters, and Antedonidae spp. featherstars. Bathyrcrinidae occurred in greater numbers higher up the slope. A notable observation made here was a live larvacean (*Bathochordaeus?* sp.). Closer to the top of the canyon wall (2180 m), a heavily sedimented area on a much shallower slope supported a surprisingly sparse fauna, including only a few deposit feeders (*Bathyploetes abyssicola* holothurian), as well as sponges (Euretidae sp. and Pheronematidae sp.), cerianthids, and a fantastic polychaete (?Onuphidae), which had incorporated a number of pteropod shells into its tube. The geology along the upper edge of the wall was particularly dramatic, and consisted of several large, heavily pitted, carbonate structures. Unfortunately, we also observe a large amount of marine debris (numerous gaskets, two plastic bags, a bucket, a Danish cookie tin, a can, two glass bottles, and a fluorescent tube) throughout the dive.

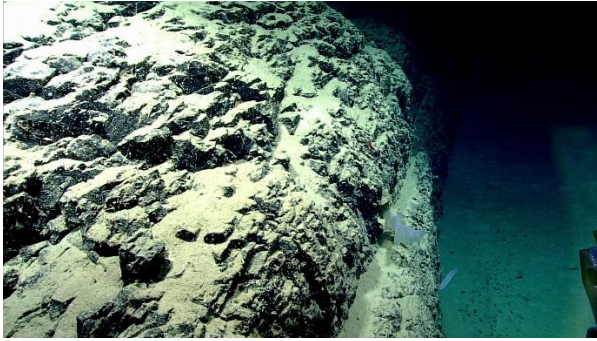
Overall Map of the ROV Dive Area



Close-up Map of Main Dive Site



Representative Photos of the Dive



Sediment-veneered, fractured blocky limestone with a ferromanganese crust at the base of the lower escarpment in 2,321 m. Two glass sponges, including Euplectellidae (slender pale tube), are visible at lower right.



The bony-eared assfish, *Acanthonus armatus* (Ophidiidae), on a muddy bottom in 2,283 m.



A soft coral, either *Pseudoanthomastus* sp. or *Anthomastus* sp. (Alcyoniidae), on a vertical wall in 2,254 m. The mustard-colored worm coiled around the coral is an unidentified aplacophoran mollusk.

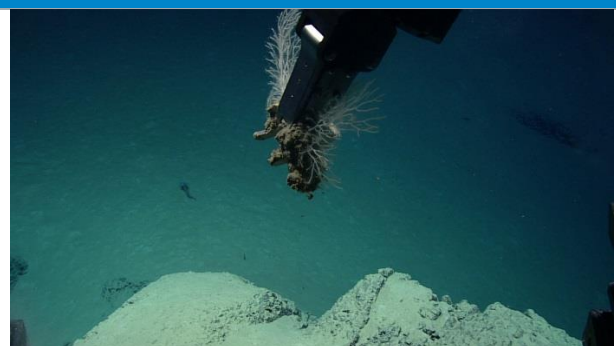


Giant gooseneck barnacles (Scalpellidae) on a dead octocoral colony, with slender-branched bamboo coral (Isididae) on either side on an escarpment wall in 2,221 m.

Samples Collected

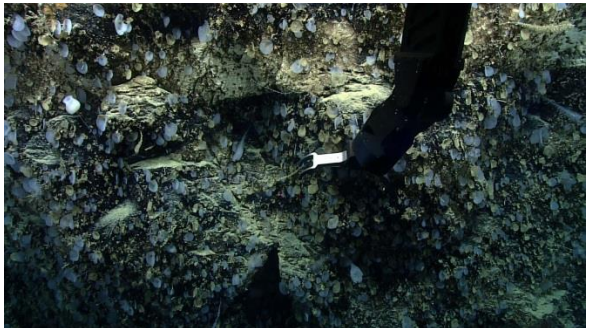
Sample

Sample ID	EX1711_20171201T154009_D2_DIVE02_SPEC01BIO
Date (UTC)	20171201
Time (UTC)	154009
Depth (m)	2312.58
Temperature (°C)	4.35
Field ID(s)	Cladorhizidae sp (Sponge)




Commensal ID and Field Identification	Polychaeta N=2
Comments	

Sample

Sample ID	EX1711_20171201T180514_D2_DIVE02_SPEC02BIO	
Date (UTC)	20171201	
Time (UTC)	180514	
Depth (m)	2224.74	
Temperature (°C)	4.35	
Field ID(s)	Euplectellidae sp (Sponge)	


Commensal ID and Field Identification	none
Comments	

Sample

Sample ID	EX1711_20171201T183013_D2_DIVE02_SPEC03BIO	
Date (UTC)	20171201	
Time (UTC)	183013	
Depth (m)	2219.84	
Temperature (°C)	4.35	
Field ID(s)	Isididae, maybe <i>Caribisis</i> sp (bamboo coral)	


Commensal ID and Field Identification	none
Comments	

Sample

Sample ID	EX1711_20171201T190455_D2_DIVE02_SPEC04BIO	
Date (UTC)	20171201	
Time (UTC)	190455	
Depth (m)	2211.35	
Temperature (°C)	4.34	
Field ID(s)	<i>Corallium</i> sp. (precious coral)	

Commensal ID and Field Identification	none
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Comments		
Sample		
Sample ID	EX1711_20171201T192027_D2_ DIVE02_SPEC05BIO	
Date (UTC)	20171201	
Time (UTC)	192027	
Depth (m)	2209.32	
Temperature (°C)	4.36	
Field ID(s)	Bathycrinidae (crinoid)	
Commensal ID and Field Identification	Antedonidae (feather star) N=1	
	solitary hydroid N=1	
	Sabellidae N=1	
	juvenile feather star N=1	
Comments		

Please direct inquiries to:

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