

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	Okeanos Ridge
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	DIVE03
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_DIVE03		
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	In Water:	2017-12-02T13:32:11.913000	
		25°, 40.790' N ; 084°, 37.331' W	
	Out Water:	2017-12-02T21:28:00.870000	
		N/A ; N/A	
	Off Bottom:	2017-12-02T21:03:14.983000	
		25°, 40.845' N ; 084°, 36.919' W	
	On Bottom:	2017-12-02T14:12:06.393000	
		25°, 40.779' N ; 084°, 37.226' W	
	Dive duration:	7:55:48	
Bottom Time:	6:51:8		
Max. depth:	741.2 m		
Special Notes	none		
Scientists Involved (please provide name, location, affiliation, email)	Name	Affiliation	Email
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Purpose of the Dive	<p>The dive targeted an area proposed by the Gulf of Mexico Fishery Management Council as a new Habitat Area of Particular Concern (HAPC). The area showed high habitat suitability for deep-sea corals in models. Therefore, the primary objective of this dive was to acquire baseline information on the distribution and abundance of benthic fauna, in particular corals and sponges. By climbing two areas of the escarpment and crossing the exposed top edge between, the dive encountered a variety of benthic habitats. This dive generated information on the distribution, diversity, and</p>		



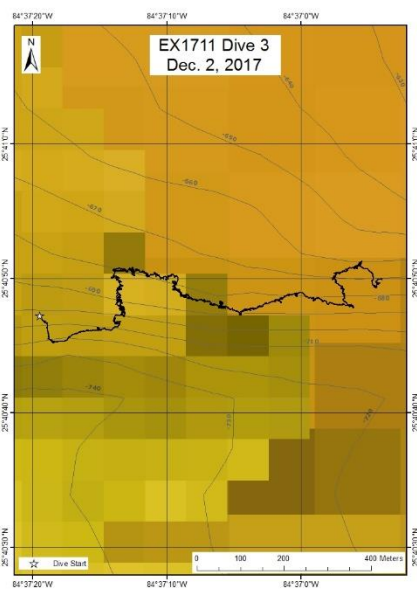
	<p>habitat use of these communities, which has management implications.</p>
<p>Description of the Dive</p>	<p>EX1711 Dive 3 was at 'Okeanos Ridge' located west of Florida. The ROV descended to the sedimented canyon floor at 740 m. Several crustaceans (<i>Nematocarcinus</i> sp., Aristeidae sp., <i>Chaceon quinquedens</i> and <i>Acanthacaris caeca</i>) and fish species (<i>Nezumia aequalis</i>, <i>Chaunax</i> sp., <i>Bathypterois</i> sp. tripod fish, Sternoptychinae sp. hatchetfish, Myxinidae sp. hagfish, and a juvenile <i>Steindachneria argentia</i>) were observed during transit to the base of the escarpment.</p> <p>The benthic communities appeared to increase in density and diversity as the ROV progressed up the escarpment wall, with the largest coral colonies observed close to the escarpment crest. However, small areas of sediment on the escarpment had much less fauna. The antipatharian escarpment community included <i>Stichopathes</i> sp., <i>Bathypathes</i> sp., <i>Alternatipathes</i> sp., <i>Elatopathes</i> sp. with polychaete worms, and <i>Sibopathes</i> cf. <i>macrospina</i>. Other anthozoan species included <i>Chrysogorgia</i> sp., <i>Acanthogorgia</i> sp., <i>Pseudoanthomastus</i> sp., Isididae sp., Zoanthidae sp., <i>Madrepora oculata</i>, and a handful of plexaurids including <i>Paramuricea</i> sp. Both dead and live colonies of <i>Lophelia pertusa</i> were observed, as well as several species of featherstars, hexactinellid sponges and purple demosponges, <i>Bathynomus giganteus</i>, and decorator crab (Majoidea). Fishes included <i>Sladenia shaefersi</i> and many Congridae sp.</p> <p>The ROV crested the escarpment and then followed the exposed edge eastward, which consisted chiefly of carbonate outcrops between sediment but also very interesting geology. Sections of the carbonate substrate differed in exposure as evidenced by varying levels of black ferromanganese crust, with older areas more heavily encrusted and supporting more abundant attached fauna. Areas of exposed white limestone included a large "amphitheater" above numerous calved slabs. Other carbonate structures included caves and pillars. The escarpment fauna closely resembled that of the crest. However, several different species observed in the water column included Scorpaenidae sp., cf. <i>Bassogigas</i> sp. and other ophidiids, several Bythitidae sp., <i>Lepidion</i> sp., and several groups of Darwin's slimehead (<i>Gephyroberyx darwini</i>) clustered among areas of karstic high relief. Additional benthic species on the crest</p>



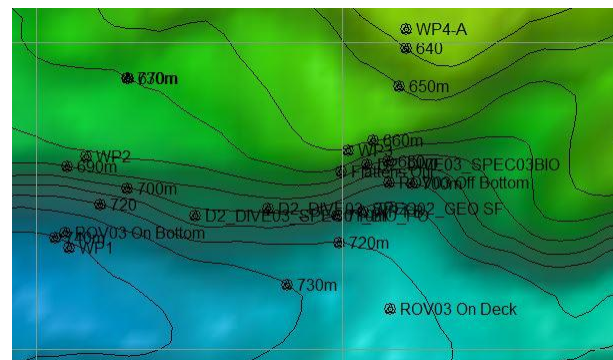
included *Plumarella* sp. primnoids, *Aquaumbra* sp. soft coral, stoloniferans, actinarians, hydrozoans, bryozoans, serpulids, ophiuroids, *Desmophyllum* sp. cup corals, *Enallopsammia rostrata*, Eumunidiidae sp., an *Acesta* bivalve, *Poecillastra* sp., and many of the small round cladorhizids and a *Chondrocladia* sp. collected during Dive 1. All or some may also have been present on the escarpment

The ROV then made a midwater descent from the crest to the escarpment floor further east, where it encountered a talus field before re-ascending the escarpment. During this second ascent, the mostly ferromanganese-encrusted escarpment supported rather dense benthic communities similar to those already observed. As on Dives 1 and 2, *Illex* sp. shortfin squid were observed, sometimes in large schools. Notable water-column observations included two swordfish, a swimming pycnogonid, a swimming munnopsid, a stunning siphonophore, which contrasted beautifully with a nearby ctenophore (one of three species), and two cutlass fish (*Benthodesmus tenius*). Notable benthic observations included two mating pairs of *Chaceon fenneri* crabs, a *Gracilechinus* urchin and *Circeaster* asteroid preying on octocorals, one Homolidae sp. crab carrying a large bryozoan and one with no luggage, a plastic bag, and a bored wood fall (potentially bamboo) with associated gastropods, shrimp and agglutinating foraminifera.

Overall Map of the ROV Dive Area



Close-up Map of Main Dive Site



Representative Photos of the Dive



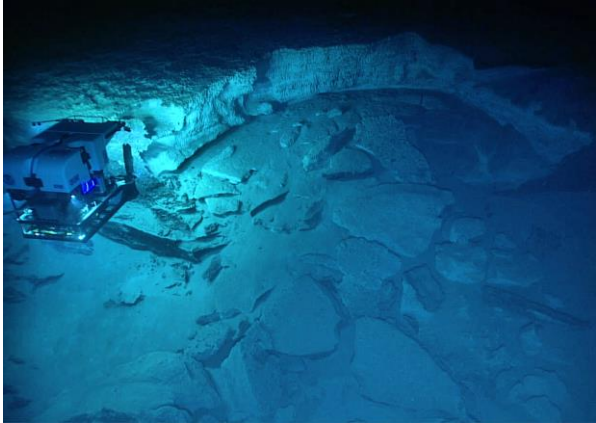
A coffinfish, *Chaunax suttkusi*, with a color pattern suitable for the clown contingent in Barnum and Bailey's Three-Ring Circus, on a sediment bottom in 740 m.



An unusual sight: a sea spider (Pycnogonida) swimming several meters above the seafloor at a depth of 715.5 m. Its slender legs are lined with numerous long fine setae to increase the surface area and stroke power.



Deeply eroded outcrops with several yellow *Paramuricea* sp. fans, *Eumunida picta* squat lobsters, small *Stichopathes* sp. corkscrew antipatharian (left), small pale primnoid octocoral (right of center), and sponges in 681 m.





Exposed, layered, white limestone 'amphitheatre' with calved slabs above a sediment slope in 690 m.

Samples Collected

Sample

Sample ID	EX1711_20171202T181713_D2_DIVE03_SPEC01BIO
Date (UTC)	20171202
Time (UTC)	181713
Depth (m)	701.18
Temperature (°C)	6.26
Field ID(s)	Chrysogorgia sp



Commensal ID and Field Identification	A pair of Chirostylidae legs (decapod legs)	
Comments		
Sample		
Sample ID	EX1711_20171202T190451_D2_DIVE03_SPEC02GEO	
Date (UTC)	20171202	
Time (UTC)	190451	
Depth (m)	693.2	
Temperature (°C)	6.34	
Field ID(s)	limestone carbonate	
Commensal ID and Field Identification	Polychaeta (bristle worm) N= 1 Acesta sp (bi-valve) N= 1 Encrusting Sponge N=1 Polychaeta (medusa worm) N=1 Bryozoa N=1	
Comments	Old tube worm tubes on rock. The rock is 2.63kg	
Sample		
Sample ID	EX1711_20171202T204110_D2_DIVE03_SPEC03BIO	
Date (UTC)	20171202	
Time (UTC)	204110	
Depth (m)	665.65	
Temperature (°C)	6.65	
Field ID(s)	Plexauridae	
Commensal ID and Field Identification	none	
Comments		

Please direct inquiries to:

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