

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	South Reed
Science Team Leads	Diva Amon and Charles Messing
Expedition Coordinator	Brian RC Kennedy
ROV Dive Supervisor	Dan Rogers
Mapping Lead	Mike White
ROV Dive Name	
Cruise	EX1711
Leg	-
Dive Number	DIVE01
Equipment Deployed	
ROV	Deep Discoverer
Camera Platform	Seirios

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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 escarpments and crossing a terrace, the dive encountered a variety of benthic habitats and communities. This dive generated information on the distribution, diversity, and habitat use of these communities.</p>		
Description of the Dive	<p>EX1711 Dive 1 was at 'South Reed', a site located in an area proposed as a Habitat of Particular Concern southwest of Florida. The ROV descended to the base of an escarpment at 816 m, where it immediately encountered a sedimented seafloor and a large school of <i>Illex</i> sp. (shortfin squid), which remained present throughout the dive. Numerous dead squid were noted in the area, some of which had been pulled into burrows, which suggested that this was a mating aggregation with subsequent die-off. This area also hosted several species of decapods: <i>Acanthacaris caeca</i> (blind white lobster) and <i>Bathynomus giganteus</i> (giant isopod), both with accompanying burrows, and <i>Nematocarcinus</i> sp. shrimp. Additional decapods—<i>Chaceon fenneri</i> (golden crab), <i>C. quinquedens</i> (red crab), and royal red shrimp (<i>Pleoticus robustus</i>)—highlighted the importance of the area for these commercially-fished species. Fish species observed in the sedimented areas included Congridae sp. eels, <i>Nezumia</i> sp. rattails, Bythitidae sp. cusk eels, <i>Cyclothone</i> sp.</p>		



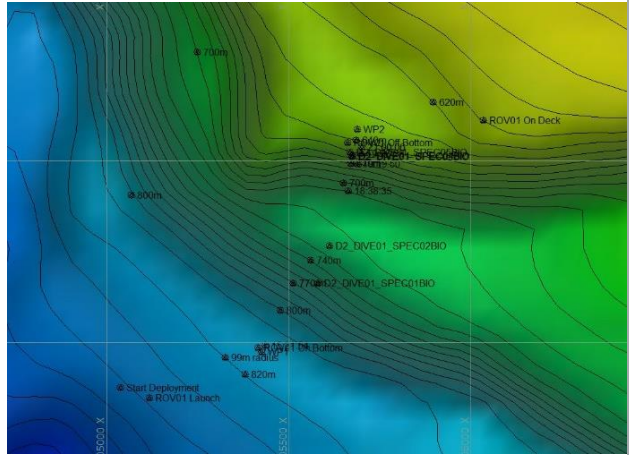
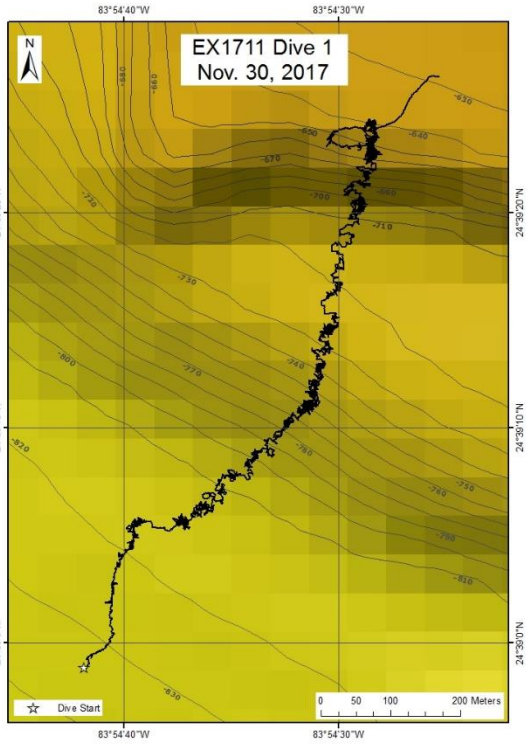
birstlemouths, *Aldrovandia* sp. halosaurs, and *Bathypterois* sp. tripod fish. A highlight included a brief visit from a hammerhead shark.

The first escarpment consisted of a lightly ferromanganese-encrusted carbonate, which hosted several species of bryozoans, octocorals with commensals (*Acanella* sp. isidids, *Plumarella* sp. primnoids, *Paramuricea* sp. plexaurids, *Pseudoanthomastus* sp., and *Swiftia* sp.); black corals with commensals (*Stichopathes* sp., *Bathypathes* sp., *Alternatipathes* sp.); zoanthids and demosponges (*Polymastia* sp. and an unknown blue species). The hard substrate on this escarpment quickly transitioned into a sedimented slope. Several *Chondrocladia verticillata* cladorhizid sponges (a poorly known species in this area) and a potential new record for the area and new species, *Abyssocladia* cladorhizid, were observed. Additional observations included a small number of cerianthid tube anemones, gonasterid seastar, potential beaked whale scour marks and two pieces of marine debris (a piece of canvas and a bag). Increasing amounts of coral rubble appeared upslope and transitioned into an area of sediment-veneered hard substrate with small patches of dead *Lophelia* sp. coral. An increasing slope indicated the beginning of the second escarpment, which was inhabited by live patches of the *Lophelia pertusa* (some with commensal eunicid polychaetes) and several colonies of *Madrepora oculata*. The community became more diverse and dense further upslope, and also included *Acanthogorgia* sp., *Paramuricea* sp., and *Pseudoanthomastus* sp. octocorals, and solitary scleractinian cup corals, many of which hosted commensals (featherstars, shrimp, chirostylid squat lobsters, and polynoid polychaetes). Additional organisms included antipatharian black corals, including *Stichopathes* sp., a potentially new species of cladorhizid sponge, several *Saccocalyx* hexactinellids, three white hake, and a “walking” octopus, *Muusoctopus januarrii*. The geology along the upper edge of the second escarpment was particularly dramatic, and consisted of several small walls of carbonate. The local high of the escarpment (645 m) was a flat terrace predominantly inhabited by a high density of three species of black corals.

Overall Map of the ROV Dive Area

Close-up Map of Main Dive Site





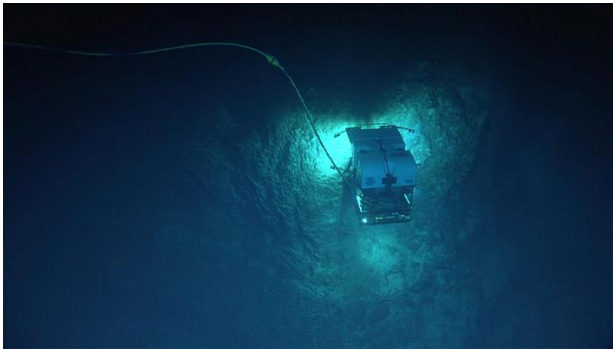
Representative Photos of the Dive



A chirostyloid squat lobster on a chiefly dead *Paramuricea* sp. fan mostly overgrown with a yellow colonial anemone (Zoanthidea), growing on a vertical, eroded face on the lower escarpment in 773.5 m.



A pair of blind lobsters, *Acanthacaris caeca*, at the entrance to their tunnel burrow on a muddy platform between escarpments in 722 m.



ROV *Deep Discoverer* sampling on the steep second escarpment in 646 m. The stony coral, *Madrepora oculata* (with commensal *Eunice* sp.), collected here also included a new species of carnivorous sponge (*Abyssocladia* sp.), chrysogorgiid, hydroids, ophiuroid, astrorhizacean foraminiferans, and a solitary coral.

Dead *Illex* sp. (shortfin squid) in a field of orange antipatharian corkscrew whips (*Stichopathes* sp.) on a sediment-veneered pavement at the escarpment crest in 644 m. The large schools and scattered individual living squid (including some resting on the seafloor), and the numerous dead squid, all encountered throughout the dive, suggest that this was a mating aggregation with subsequent die-off.

Samples Collected

Sample

Sample ID	EX1711_20171130T172531_D2_DIVE01_SPEC01BIO	
Date (UTC)	20171130	
Time (UTC)	172531	
Depth (m)	790.0	
Temperature (°C)	6.080	
Field ID(s)	LACE BRYOZOAN	
Commensal ID and Field Identification	none	
Comments		


Sample

Sample ID	EX1711_20171130T182054_D2_DIVE01_SPEC02BIO	
Date (UTC)	20171130	
Time (UTC)	182054	
Depth (m)	734.94	
Temperature (°C)	6.12	



Field ID(s)	carnivorous sponge <i>Chondrocladia</i> sp.	
Commensal ID and Field Identification	Polynoidae N=2 Ophiuroidea N=1	
Comments		


Sample

Sample ID	EX1711_20171130T195641_D2_DIVE01_SPEC03BIO	
Date (UTC)	20171130	
Time (UTC)	195641	
Depth (m)	699.53	
Temperature (°C)	6.91	
Field ID(s)	black coral (Antipatharia)	
Commensal ID and Field Identification	none	
Comments		

Sample

Sample ID	EX1711_20171130T201106_D2_DIVE01_SPEC04BIO	
Date (UTC)	20171130	
Time (UTC)	201106	
Depth (m)	692.49	
Temperature (°C)	6.92	
Field ID(s)	purple <i>Acanthogorgia</i> coral	
Commensal ID and Field Identification	none	
Comments		

Sample

Sample ID	EX1711_20171130T203543_D2_DIVE01_SPEC05BIO	
Date (UTC)	20171130	
Time (UTC)	203543	
Depth (m)	676.37	
Temperature (°C)	6.95	

Field ID(s)	Cladorhizidae sponge
Commensal ID and Field Identification	<i>Madrepora oculata</i>
	Ophiuroidea
	Demospongiae pink sponge
	<i>Bathypsammia</i> ? Orange cup coral
	<i>Eunice</i> sp.
	Astrorhizacean foraminiferan
	Hydroid
Chrysogorgiidae ?	
Comments	

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