

## *Okeanos Explorer* ROV Dive Summary

Dive Information	
General Location Map	
General Area Descriptor	Gulf of Mexico
Site Name	South of Long Mound
Science Team Leads	Daniel Wagner (Biology) Adam Skarke (Geology)
Expedition Coordinator	Nikolai Pawlenko
ROV Dive Supervisor	Karl McLetchie
Mapping Lead	Mike White
ROV Dive Name	
Cruise	EX1803
Dive Number	DIVE11
Equipment Deployed	
ROV	Deep Discoverer
Camera Platform	Seirios



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Purpose of the Dive	<p>The purpose of Dive 11 was to survey the biology of coral mounds in a site that is located between two areas that are currently being considered for the establishment of new habitat areas of particular concern (HAPC) by the Gulf of Mexico Fishery Management Council, Long Mounds and Many Mounds. Both Long Mounds and Many Mounds have been previously surveyed by submersibles, and those dives documented extensive reef-building corals (<i>Lophelia pertusa</i>) at depths between 400-600 m. However, the area located between Long Mounds and Many Mounds has never been surveyed, and is thought to contain similar habitats. This dive also included the first midwater transects of the expedition, which would be carried out as the ROV ascended at the end of the dive. These transects, each 10 min in duration, would target the following depths: 10 m above seafloor, 400 m, 300 m. Four to six replicate transects would be conducted at each depth depending on the remaining bottom time.</p>			
Description of the Dive	<p>The ROV landed on a heavily-sedimented flat surface at a depth of 530 m at 14:12 UTC. There was little current at the landing spot, which was located just south and at the base of a large mound feature. After reaching the seafloor, the ROV proceeded to the northwest toward waypoint 1 at the top of a coral mound. As the ROV moved upslope, carbonate rock rubble became more abundant on the sediment covered seafloor and increased in size from cobbles to small boulders. The carbonate rocks exhibited a number of attached corals and sponges. The ROV arrived at the edge of a mound at 14:54 and observed a dense community of corals attached to the exposed carbonate rock as well as abundant fish, echinoderms, and arthropods. The rock was tan in color and highly weathered. In some locations a dense matrix of dead coral skeletons, primarily <i>Lophelia</i>, completely encrusted and obscured the underlying rock surface. At 15:34 UTC the ROV reached waypoint 1 at the peak of the dense coral</p>			

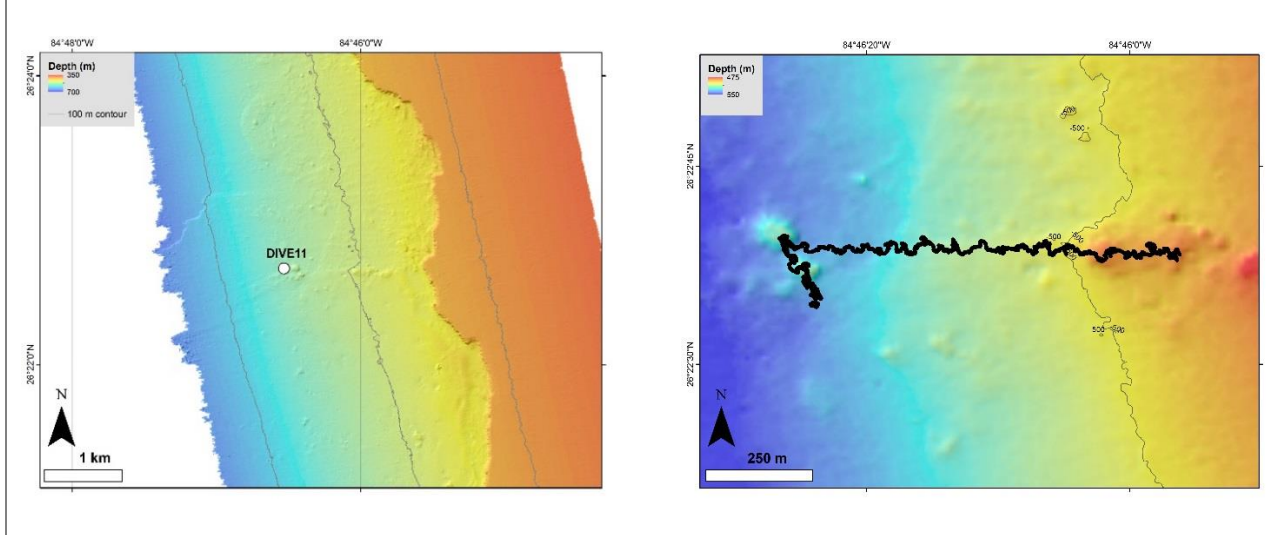


	<p>mound. The ROV then came slightly off bottom for the transit down the opposite side of the mound and returned to the seafloor at the base of an adjoining mound. The second mound on the dive demonstrated dense coral and sponge communities, attached to weathered carbonate rock, similar to those observed on the first mound. The ROV reached waypoint 2 at the peak of the second mound at 16:22 UTC. After departing waypoint 2 the ROV moved to the east towards waypoint 3 on a third mound. While moving towards waypoint three the ROV transited over a sediment bottom with periodic small rock mounds and scattered rock rubble. Corals and sponges were observed on the mounds as well as rocks and the sediment exhibited pronounced asymmetrical linear ripples indicating a prevailing current oriented north-south. Some rocks and mounds exhibited deep scour marks on a lee side indicating high current velocity. Man-made debris (bottle, metal barrel) was observed during this transit. At 18:45 UTC the ROV began to move up the third mound, which was composed of weathered carbonate rock and characterized by dense coral and sponge communities similar to those observed at mounds one and two. Mound three was the largest mound visited during the dive and characterized by the tallest rock exposures, which formed vertical walls in many locations. The ROV reached waypoint 3 at the peak of the third mound at 19:11 UTC. The ROV continued to move east, exploring mound three until 20:31 UTC.</p> <p>The most commonly observed animals on the seafloor portion of the dive were dead and alive <i>Lophelia pertusa</i> corals. Noteworthy was the documentation of a single orange color morphotype of <i>Lophelia pertusa</i> at 18:22 UTC. Other animals observed on the seafloor included various other species of corals (<i>Paramuricea</i> spp., <i>Plumarella</i> sp., <i>Acanthogorgia</i> spp., <i>Muriceaides</i> sp., <i>Anthomastus</i> sp., <i>Stolonifera</i>, <i>Aquaumbra</i> sp., unbranched <i>Isididae</i>, <i>Pennatulacea</i>, <i>Stylaster</i> sp., <i>Leiopathes</i> sp., <i>Bathypathes</i> spp., <i>Stichopathes</i> sp., <i>Heteropathes</i> cf. <i>americana</i>, <i>Caryophyllia</i> sp.), sponges (<i>Aphrocalliastes beatrix</i>, and various unidentified <i>Hexactinellid</i> and <i>Demosponges</i>), squat lobsters (<i>Eumunida picta</i>, <i>Gastroptychus</i> sp.), zoanthids (unidentified <i>Zoantharia</i>), crabs (<i>Chaceon fenneri</i>, <i>Chaceon quinquedens</i>), urchins (<i>Gracilechinus</i> sp., <i>Cidarodia</i>), crinoids (<i>Comatonia</i> sp.), seastars (<i>Tamaria</i> sp.), tube-dwelling anemones (<i>Ceriantharia</i>), anemones, (<i>Actinaria</i>), and octopi (<i>Cephalopoda</i>).</p> <p>Fish observed during the seafloor portion of the dive included Western roughy (<i>Hoplostethus occidentalis</i>), cusk eels (<i>Benthocometes robustus</i>), toad fish (<i>Chaunax suttkusi</i>), blackbelly rosefish (<i>Helicolenus dactyloperis</i>), thorny tinsselfish (<i>Grammicolepis brachiusculus</i>), rattails (<i>Nezumia</i> sp.), hatchetfish (<i>Polypnus clarus</i>), spikefish (<i>Hollardia</i> sp.), catshark (<i>Galeus</i> sp.), cods (<i>Laemonema goodebeanorum</i>, <i>Laemonema barbatulum</i>), rockfish (<i>Trachyscorpia cristulata</i>), scorpionfish (<i>Pontius</i> sp.), hake (<i>Merluccius albidus</i>), herring smelt (<i>Argentina striata</i>), cardinalfish (<i>Epigonus</i> sp.), duckbill flathead (<i>Bembrops</i> sp.), slope dragonets (<i>Centrodraco</i> sp.), batfish (<i>Dibranchus</i> sp.), blackmouth bass (<i>Synagrops bellus</i>), searobin (<i>Peristedion</i> sp.), and a swordfish (<i>Xiphias</i> sp.).</p> <p>The seafloor portion of the dive ended at 20:31 UTC at a final depth of 478 m. At this point, the ROV ascended to a depth of 460 m to begin a series of midwater transects. Animals observed during the midwater portion of the dive included ctenophores, polychaetes, siphonophores, salps, larvaceans, hatchefish, and two cephalopods.</p>
Notable Observations	Extensive deep-sea coral mounds ( <i>Lophelia pertusa</i> ) recorded throughout the dive. A single colony of an orange morphotype of <i>L. pertusa</i> was recorded at 18:22 UTC.

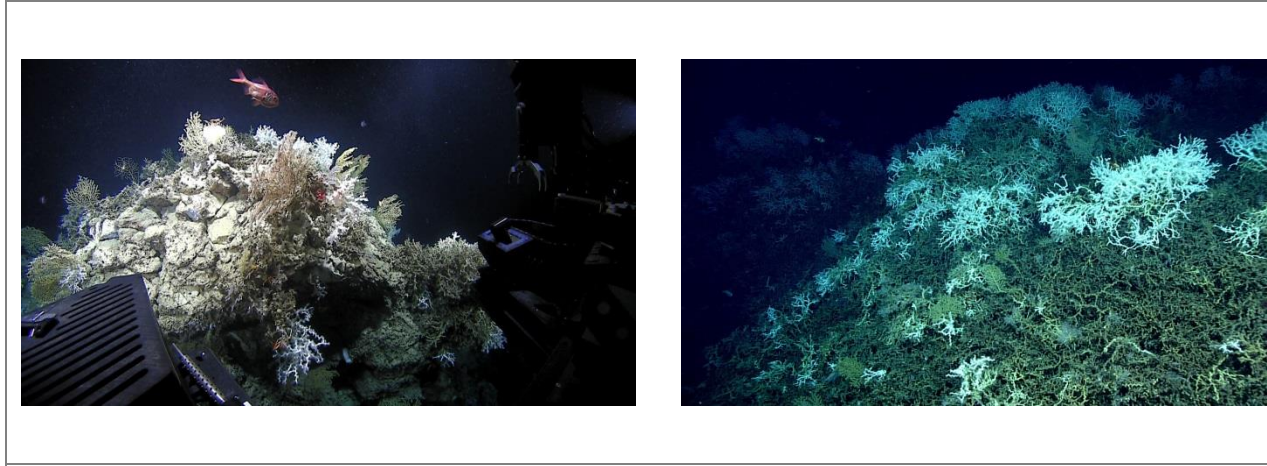


Community Presence/ Absence ( <i>community is defined as more than two species</i> )	<input checked="" type="checkbox"/> Corals and Sponges Present	<input type="checkbox"/> Active Seep or Vent
	<input type="checkbox"/> Chemosynthetic Community Present	<input type="checkbox"/> Extinct Seep or Vent
	<input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

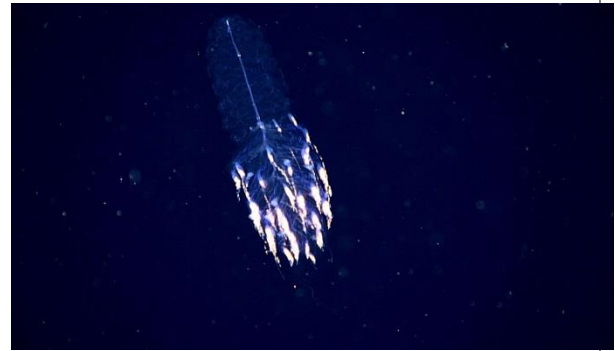
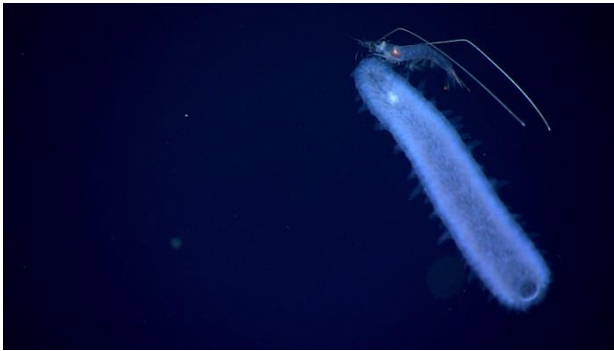
Overall Map of the ROV Dive Area	Close-up Map of Main Dive Site
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Representative Photos of the Dive



Coral mound of the reef-building coral <i>Lophelia pertusa</i> .	Coral mound of the reef-building coral <i>Lophelia pertusa</i> .
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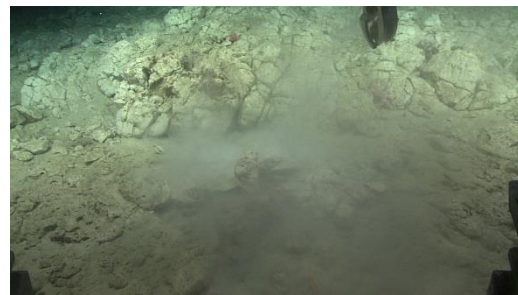
Pyrosome imaged during midwater transect.

Syphonophore imaged during midwater transect

Samples Collected

Sample

Sample ID	EX1803_20180428T144232_D2_DIVE11_SPECO1GEO
Date (UTC)	20180428
Time (UTC)	144232
Depth (m)	532.17
Temperature (°C)	7.27
Field ID(s)	Carbonate Rock



Commensals	Weight 0.21kg		
	Commensal ID	Field Identification	Notes
	none		

Comments

Sample

Sample ID	EX1803_20180428T151742_D2_DIVE11_SPECO2BIO
Date (UTC)	20180428
Time (UTC)	151742
Depth (m)	525.27
Temperature (°C)	7.3
Field ID(s)	<i>Acanthogorgia</i> sp.



Commensals	Commensal ID	Field Identification	Notes
	EX1803_20180428T151742_D2_DIVE11_SPEC02BIO_A01	Chyrostylidae	N=1
	EX1803_20180428T151742_D2_DIVE11_SPEC02BIO_A02	Polychaeta	N=2

Comments

**Sample**

Sample ID	EX1803_20180428T161221_D2_DIVE11_SPEC03BIO
Date (UTC)	20180428
Time (UTC)	161221
Depth (m)	520.83
Temperature (°C)	7.37
Field ID(s)	<i>Acanthogorgia</i> sp.

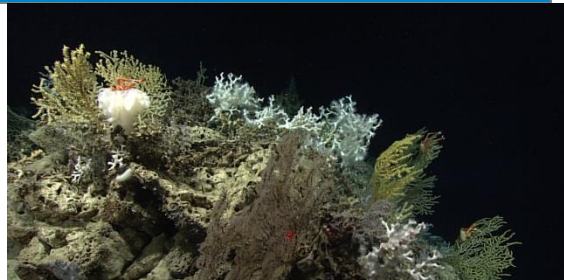



Commensals	Commensal ID	Field Identification	Notes
	none		

Comments

**Sample**

Sample ID	EX1803_20180428T194008_D2_DIVE11_SPEC04BIO
Date (UTC)	20180428
Time (UTC)	194008
Depth (m)	472
Temperature (°C)	8.11



Field ID(s)	Paramuricea		
Commensals	<b>Commensal ID</b>	<b>Field Identification</b>	<b>Notes</b>
	EX1803_20180428T194008_D2_DIVE11_SPEC04BIO_A01	Hexactinellidae	N=1
	EX1803_20180428T194008_D2_DIVE11_SPEC04BIO_A02	Polychaeta	N=1
Comments			
<b>Sample</b>			
Sample ID	EX1803_20180428T202549_D2_DIVE11_SPEC05GEO		
Date (UTC)	20180428		
Time (UTC)	202549		
Depth (m)	478.7		
Temperature ( °C)	7.63		
Field ID(s)	Carbonate rock		
Commensals	<b>Commensal ID</b>	<b>Field Identification</b>	<b>Notes</b>
	EX1803_20180428T202549_D2_DIVE11_SPEC05GEO_A01	Nuriceides	N=1
	EX1803_20180428T202549_D2_DIVE11_SPEC05GEO_A02	Ophioroidae	N=2
	EX1803_20180428T202549_D2_DIVE11_SPEC05GEO_A03	Hexactinellidae	N=20
	EX1803_20180428T202549_D2_DIVE11_SPEC05GEO_A04	Polychaeta	N=7
	EX1803_20180428T202549_D2_DIVE11_SPEC05GEO_A05	Stylasteridae	N=3
	EX1803_20180428T202549_D2_DIVE11_SPEC05GEO_A06	Caryophyllia	N=16
	EX1803_20180428T202549_D2_DIVE11_SPEC05GEO_A07	Hydroidolina	N=1
	EX1803_20180428T202549_D2_DIVE11_SPEC05GEO_A08	Octocorallia	N=2
Comments			



**Please direct inquiries to:**

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