

Okeanos Explorer ROV Dive Summary

Dive Information	
General Location Map	
General Area Descriptor	Gulf of Mexico
Site Name	Hidalgo Basin / GB 903
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	DIVE06
Equipment Deployed	
ROV	Deep Discoverer

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Purpose of the Dive	<p>Dive 6 targeted Hidalgo Basin (GB903), an area that is currently being considered for expansion of the Flower Garden Banks National Marine Sanctuary (FGBNMS) under alternative 5. Specifically, the purpose of Dive 6 was to explore a mound feature for hard-bottom communities, particularly deep-sea corals, sponges and associated fauna. There have been three previous scientific dives in this general area, all of which surveyed a mound feature located ~1.5 km south of the Dive 6 target area, and recorded deep-sea corals and chemosynthetic communities. Thus, the Dive 6 site was chosen to avoid spatial overlap with previous surveys in the area, while still collecting valuable information for the Sanctuary.</p>			
Description of the Dive	<p>The ROV acquired bottom at a depth of 1095 m at 14:52 UTC. Chemosynthetic organisms were seen at the landing spot, including bacterial mats and <i>Bathymodiolus</i> mussels, in addition to a <i>Coryphaenoides</i> rattail fish. Bacterial mats and large patches of both dead and alive <i>Bathymodiolus</i> mussels were observed on numerous occasions throughout the dive, with <i>Alvinocaris</i> shrimp being observed in association with live mussels. Few individuals of the tubeworm <i>Lamellibranchia</i> were also recorded in close proximity of <i>Bathymodiolus</i> beds, as were the shrimp <i>Heterocarpus</i> sp., and the golden crab <i>Chaceon fenneri</i>. After reaching the seafloor, the ROV ascended side of the targeted mound feature and proceeded southwest toward waypoint 2. As the ROV traversed the northern portion of the mound towards the local bathymetric high at waypoint two, it periodically observed authigenic carbonate rock outcrops. The rock was fractured and discontinuous as well as encrusted by numerous organisms. Bacterial mats and dead bivalve shells were often observed in close proximity to carbonate rocks. As the ROV approached waypoint two at 17:00 UTC the bathymetry became more undulated and later, between waypoint two and waypoint three, began to exhibit large depressions and pockmarks. The bottoms of depressions were commonly characterized by white to gray to black bacterial mats, exposed authigenic carbonate rock, and alive as well as dead mussels. Some carbonate rocks around the periphery of depressions appeared upthrown, suggesting possible rapid evacuation of the depressions. At 19:06 UTC a small brine pool, approximately 1.2 meters in diameter, was observed in the bottom of a depression. Dead mussel shells surrounded the pool and were also observed under the brine. A strip of blue-gray stained sediment led up slope from the pool and appeared to be a path of previous downslope movement of brine to the pool. Just beyond the brine pool, a large continuous bed of dead mussel shells was observed. Moving towards waypoint four, live mussels gradually became more prevalent, although they generally appeared to be smaller than the dead mussels. At approximately 20:05 UTC a small mound covered in bacteria was observed releasing subsurface fluids. This was indicated by a shimmering that resulted from the significant density difference of the emitted fluids relative to the surrounding seawater. As the ROV continued towards waypoint 4, the bottom transitioned to mud with occasional dead bivalve shells and periodic burrows. The dive concluded at 20:52 UTC.</p> <p>Outside chemosynthetic communities, the most commonly observed invertebrates were the octocorals <i>Chrysogorgia</i> sp., <i>Acanthogorgia</i> sp., <i>Swiftia</i> sp. and <i>Anthomastus</i> sp., squat lobsters (<i>Munidopsis</i> sp., <i>Gastroptychus</i> sp., and <i>Uroptychus</i> sp.), the golden crab <i>Chaceon fenneri</i>, the long-legged shrimp <i>Nematocarcinus ensifer</i>, and an unidentified encrusting demosponge. Other invertebrates seen on the dive included stoloniferan octocorals (<i>Clavularia rudis</i>, and an unidentified white species), the gorgonian octocoral <i>Paramuricea</i> sp., the black coral <i>Sibopathes macrospina</i>, a single colony of the primnoid coral <i>Narella pauciflora</i> (which was sampled; DIVE06SPEC02BIO), various species of seastars (including <i>Brisinga</i> sp., <i>Circeaster americanus</i>, and Myxasteridae, the latter of which was sampled; DIVE06SPEC01BIO), holothurians (<i>Enypniastes eximia</i>, and unidentified species), and <i>Poralia</i> scyphomedusae.</p>			

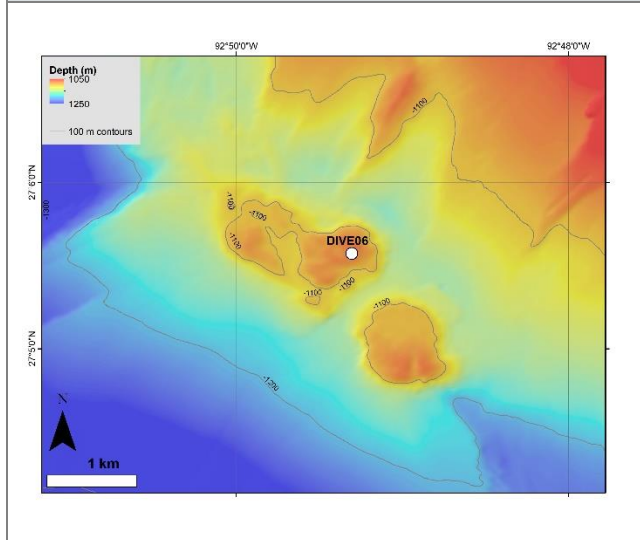


Fish observed during the dive included rattail (*Coryphaenoides* spp.), cut-throat eel (*Synapobranchus* sp.), an unidentified eelout, the goosefish *Sladenia shafersi*, the Halosaurid *Aldrovandia* sp., cusk eels (*Monomitopus* sp., *Gadomus longfilis*, *Dicrolene* sp., and unidentified Ophidiidae), and an unidentified slickhead (Alepocephalidae).

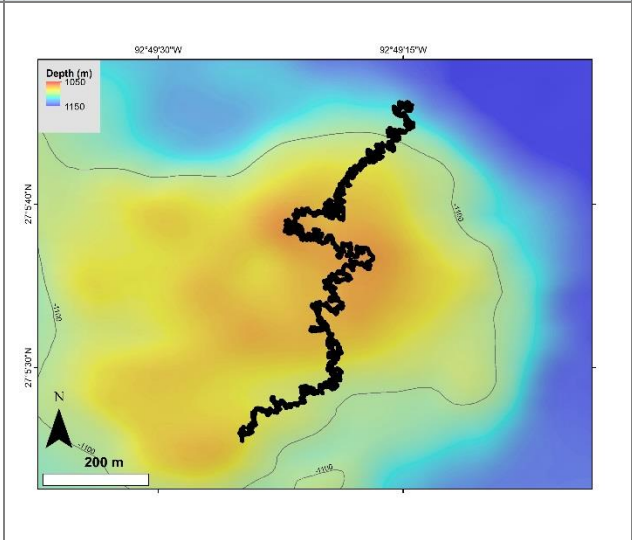
Notable Observations [Can include number of communities, notable collections or observations, high density communities, etc.]

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

Overall Map of the ROV Dive Area



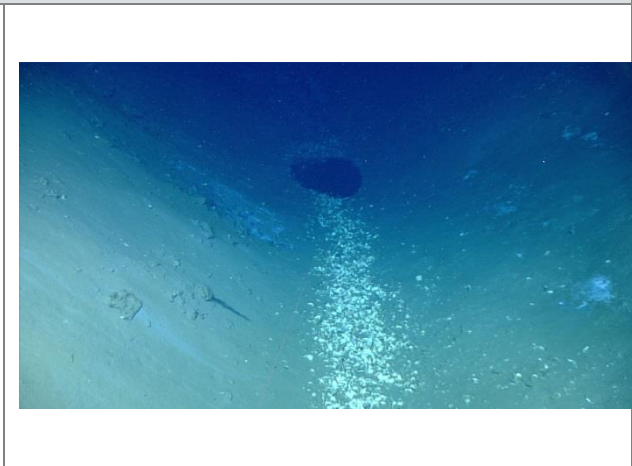
Close-up Map of Main Dive Site



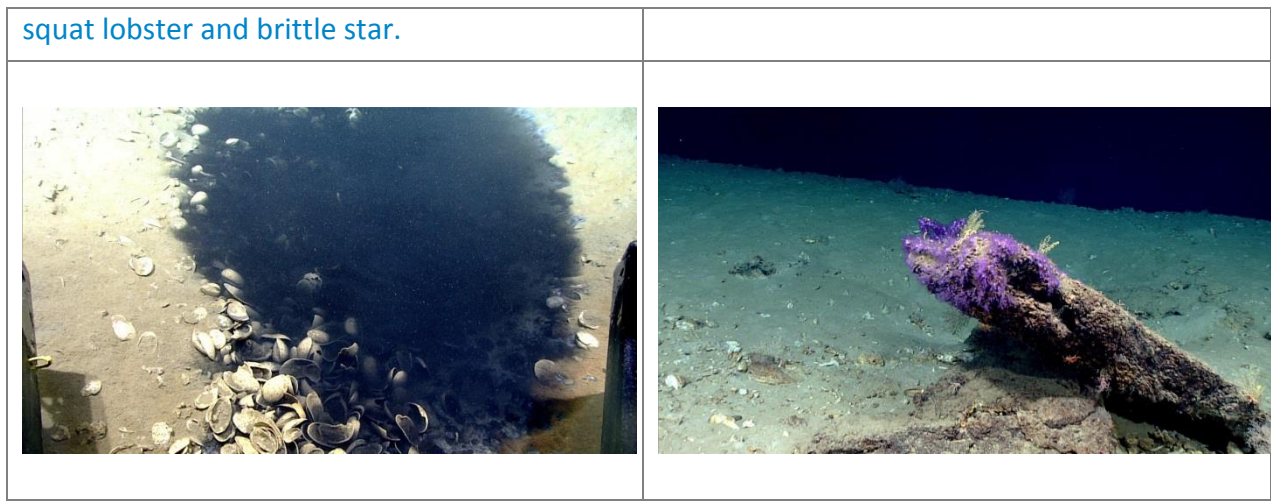
Representative Photos of the Dive



Octocoral *Paramuricea* sp. With commensal



Bivalve shells in depression near brine pool.



Bivalve shells in brine pool.

Purple stoloniferan octocoral, *Clavularia rudis*, growing on a rock.

Samples Collected

Sample

Sample ID	EX1803_20180419T151518_D2_DIVE06_SPEC01GEO	
Date (UTC)	20180419	
Time (UTC)	151518	
Depth (m)	1101.473	
Temperature (°C)	4.79121	
Field ID(s)	Authigenic carbonate rock	


Commensals	Commensal ID	Field Identification	Notes
	EX1803_20180419T151518_D2_DIVE06_SPEC01GEO_A01	Brachiopoda	N=1
	EX1803_20180419T151518_D2_DIVE06_SPEC01GEO_A02	Ophiuroidea	N=1
	EX1803_20180419T151518_D2_DIVE06_SPEC01GEO_A03	Polychaeta	N=1
Comments			

Sample

Sample ID	EX1803_20180419T174446_D2_DIVE06_SPEC02BIO	
Date (UTC)	20180419	
Time (UTC)	174446	
Depth (m)	1051.09	

Temperature (°C)	4.81		
Field ID(s)	Myxasteridae		
Commensals	Commensal ID	Field Identification	Notes
	none		
Comments			


Sample

Sample ID	EX1803_20180419T182705_D2_DIVE06_SPEC03BIO	
Date (UTC)	20180419	
Time (UTC)	182705	
Depth (m)	1054.69	
Temperature (°C)	4.85	
Field ID(s)	Narella pauciflora	

Commensals	Commensal ID	Field Identification	Notes
	none		

Comments

Sample

Sample ID	EX1803_20180419T000000_D2_DIVE06_SPEC04BIO	
Date (UTC)	20180419	
Time (UTC)	See comments	
Depth (m)	See comments	
Temperature (°C)	See comments	
Field ID(s)	Polyacanthonotus merretti	

Commensals	Commensal ID	Field Identification	Notes



	none		
Comments	This fish was found on the ROV once it was on deck after the dive. The collection time, depth, and temperature are therefore unknown. It more than likely came from the water column on the ROV accent.		

Please direct inquiries to:

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