

## Okeanos Explorer ROV Dive Summary

Dive Information	
General Location	<p style="text-align: center;"><b>Gulf of Mexico 2017</b></p>
General Area Descriptor	Gulf of Mexico
Site Name	Tunica Mound (GB299)
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	DIVE13
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_DIVE13		
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	In Water:	2017-12-16T14:22:39.098000	
		27°, 42.171' N ; 092°, 13.225' W	
	Out Water:	2017-12-16T19:18:22.306000	
		27°, 42.432' N ; 092°, 13.040' W	
	Off Bottom:	2017-12-16T18:59:38.119000	
		27°, 42.395' N ; 092°, 13.116' W	
	On Bottom:	2017-12-16T14:37:00.091000	
		27°, 42.210' N ; 092°, 13.224' W	
Dive duration:	4:55:43		
Bottom Time:	4:22:38		
Max. depth:	415.6 m		
Special Notes	none		
Scientists Involved (please provide name, location, affiliation, email)	<b>Name</b>	<b>Affiliation</b>	<b>Email</b>
	Alexandra Avila	Oregon State University / Nancy Foster Scholar (ONMS)	alexandra.m.avila@gmail.com
	Asako Matsumoto	Planetary Exploration Research Center, Chiba Institute of Technology	amatsu@gorgonian.jp
	Carolyn Ruppel	US Geological Survey	cruppel@usgs.gov
	Charles Messing	Nova Southeastern University	messagingc@nova.edu
	Daniel Wagner	NOAA	daniel.wagner@noaa.gov



	Diva Amon	Natural History Museum, London	divaamon@gmail.com
	Lauren Jackson	NCEI-Stennis	Lauren.Jackson@noaa.gov
	Megan McCuller	Southern Maine Community College	mccullermi@gmail.com
	Nolan Barrett	Harbor Branch Oceanographic Institute at Florida Atlantic University	barrettnh@g.cofc.edu
	Scott France	University of Louisiana at Lafayette	france@louisiana.edu
	Tina Molodtsova	Shirshov Institute of Oceanology RAS	tina@ocean.ru
	McGuinn Robert	NOAA Deep Sea Coral Research and Technology Program	Robert.McGuinn@noaa.gov
	Mark Benfield	Louisiana State University	mbenfie@lsu.edu

Purpose of the Dive

The dive lies within a proposed Flower Garden Banks National Marine Sanctuary expansion zone as well as within a proposed Habitat Area of Particular Concern (HAPC). The dive track climbed a series of terraces in the northern section of this area, and then headed west along a ridge. This maximized chances of encountering exposed characteristic hard substrate and coral communities in this area. The primary objective for this dive was to acquire baseline information on the distribution and abundance of benthic fauna, gaining insight into the diversity, biogeography, and connectivity of these communities. ROV exploration of this area will help determine the geological composition and origin of this area. Information gained has management implications.

Description of the Dive

The ROV touched down on the gently sloping sedimented seafloor at 'Tunica Mound' at 395 m. The shallow depth of this dive was immediately obvious given the fauna observed, many of which had shallow-water morphologies (especially the fish) and/or colours. A high diversity of fishes included *Polymixia* sp., *Cyttopsis rosea*, *Cynoglossidae* sp., *Chauliodus* sp., *Myctophidae* sp., *Sternoptychinae* sp., *Symphurus* sp., *Pteroeides* sp., *Dibranchus atlanticus*, *Poecilopsetta* sp., *Scorpaenidae* sp., *Macrouridae* sp., and, most abundantly by far, *Chlorophthalmidae* sp. Benthic invertebrates included *Rochinia crassa*, *Galathea* sp., *Hippoidea* sp., *Bathynectes longispina*, *Astropectinidae* sp. *Ceriantharia* sp., a *Pennatulidae* sp. with commensal shrimp, and, above the seafloor, *Illex* sp. (shortfin squid).

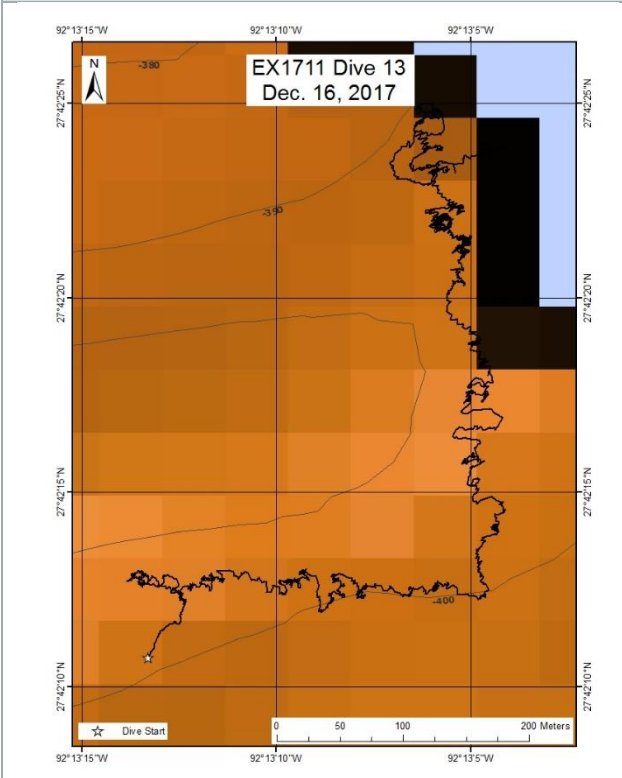
An anthropogenic tube, isolated on open sediment, was colonized by many *Sagartiidae* sp. anemones and hydroids, with sheltering *Galathea* sp. and shrimp. A number of siboglinids with red plumes and *Lamellibrachia* sp. also provided hard substrate for *Sagartiidae* sp., *Zoanthidea* sp., hydroids and *Scalpellidae* sp. Several colour morphs of the same striped cerianthid species were also seen protruding from the sediment.

Progressing upslope, the ROV encountered small carbonate mounds, which harboured cnidarians (e.g., many *Sagartiidae* sp., *Antipathes* sp., *Stichopathes* sp., and *Plexauridae* sp. and *Callogorgia delta* both with a

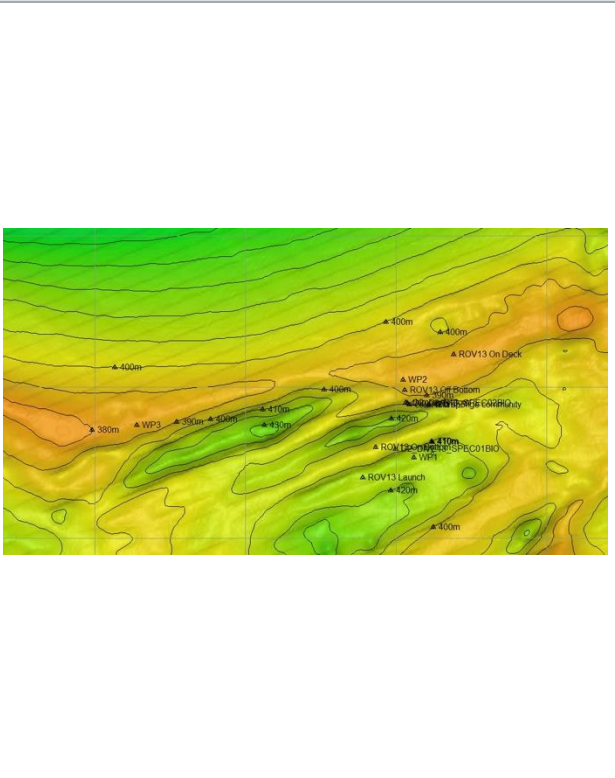
commensal Asteroschematidae sp.) and sponges including Lithistida sp. Continuing upslope, we discovered a large craggy rock column, of unknown origin and composition but covered largely with relict serpulid worm tubes, surrounded by irregular rubble (possibly fossil, shelf-edge, worm-algal carbonate reef rock). Many taxa observed on previous outcrops (noted above) were observed on the surrounding rubble, as well as *Parantipathes* sp., *Heteropathes americana*, Nidaliidae sp. and a white *Paragorgia* sp. The column supported >15 *Novodinia antillensis*, hydroids, brachiopods, Gorgonocephalidae sp., Galatheaidea sp., ?*Thaumacrinus* sp., Cidaridae sp., Cirripedia sp., *Callogorgia delta* and *Leiopathes glaberrima*. Several Scorpenidae sp., Congridae sp. and *Gephyroberyx darwinii* inhabited nooks in the column.

Notable observations included two pieces of terrestrial plant matter: a piece of water hyacinth covered in yellow amphipods, and a heavily bored wood fall surrounded by shrimp and ampharetids, and bored by numerous bivalves. Some burrows appeared to be formed by Teredinidae sp. (calcareous burrow linings), whereas others were made by Xylophagainae sp., (although no siphons were visible). Additionally, *Benthocometes robustus* were observed living within the upheld arms of *Novodinia* sp. and *Antipathes* sp. had *Oxynaspis* sp. overgrown by antipatharian tissue.

Overall Map of the ROV Dive Area

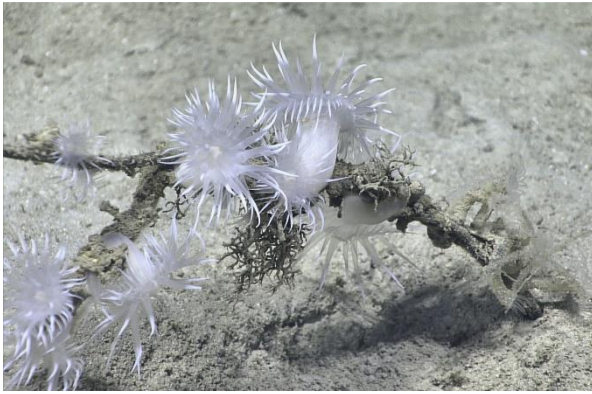


Close-up Map of Main Dive Site



Representative Photos of the Dive





Unidentified anemones (Actiniaria), colonial anemones (Zoanthidea, right), and branching astrophorid agglutinating foraminiferan on a siboglinid worm tube. Depth: 405.5 m.



Juvenile tonguefish (*Symphurus* sp.) on sediment at a depth of 408 m.



An eroded, apparently carbonate, pinnacle about 2 m tall, supporting numerous *Novodinia antillensis* and sagartiid anemones, plus many other sessile taxa and sheltering fishes (e.g., *Gephyroberyx darwinii*, Scorpaenidae and Congridae). *Stichopathes* sp. antipatharian whips dominate the surrounding rubble field. Depth: 401 m.




Serpent star, *Ophiocreas* sp., coiled in the branches of a white *Paragorgia* sp. bubblegum coral, with the cusk-eel, *Benthocometes robustus*, partially visible behind, and a cerianthid burrowing anemone in the background. Depth: 399 m.

## Samples Collected

### Sample

Sample ID	EX1711_20171216T153158_D2_DIVE13_SPEC01BIO
Date (UTC)	20171216
Time (UTC)	153158
Depth (m)	408.95



Temperature ( ° C)	9.87	
Field ID(s)	Siboglinidae (tube worm)	
Commensal ID and Field Identification	Cirripedia N=4	
	Pycnogonida N=1	
	Amphipoda N=7	
	Polychaeta species A N=3	
	Polychaeta species B N=1	
	Polychaeta Species C N=1	
Comments		
<b>Sample</b>		
Sample ID	EX1711_20171216T181731_D2_DIVE13_SPEC02GEO	
Date (UTC)	20171216	
Time (UTC)	181731	
Depth (m)	401.82	
Temperature ( ° C)	10.12	
Field ID(s)	Rock	
Commensal ID and Field Identification	Heteropathes americana N=1	
	Ophiuroidea N=1	
	Anemone polyp N=1	
	Polychaeta N=1	
	Bivalve N=1	
Comments	This rock is probably either a fossilized burrow cast or a fossilized mammal bone	

**Please direct inquiries to:**

NOAA Office of Ocean Exploration & Research  
1315 East-West Highway (SSMC3 10th Floor)  
Silver Spring, MD 20910  
(301) 734-1014

