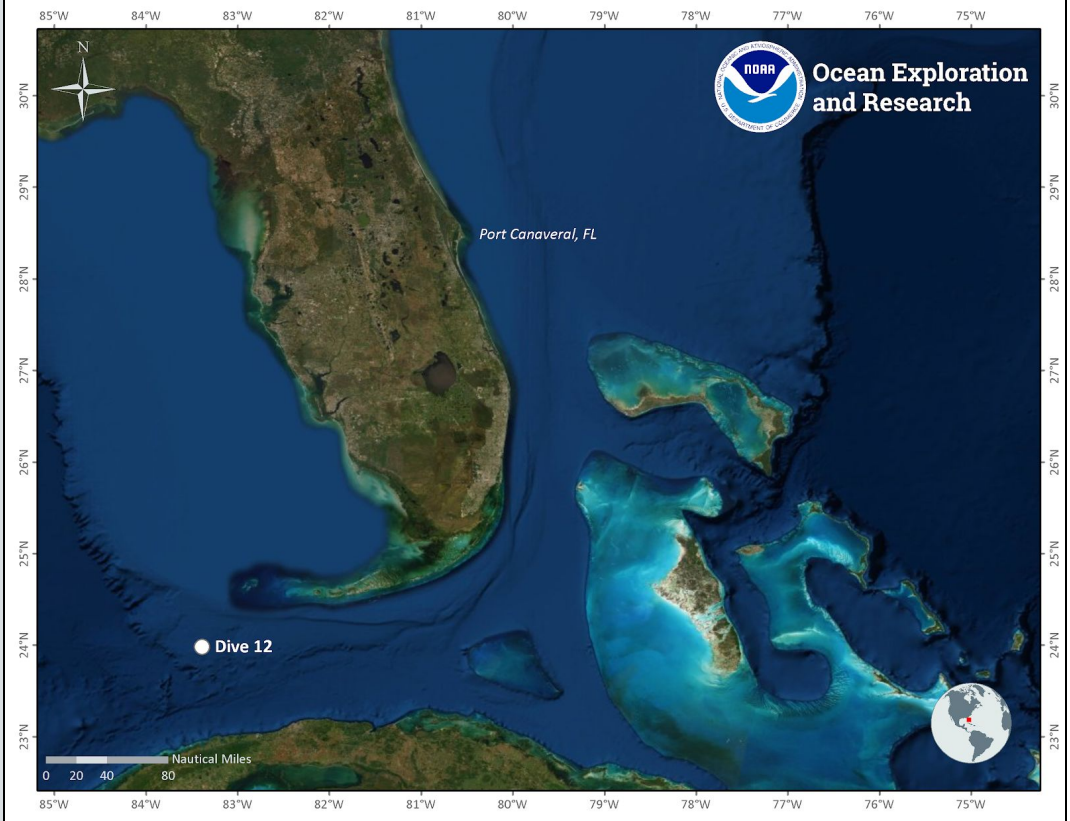
Ocean Exploration and Research

Okeanos Explorer ROV Dive Summary

Dive Information

General Location Map	
General Area Descriptor	50 nautical miles southwest of the Dry Tortugas
Site Name	'Berg Bits'
Science Team Leads	Kimberly Galvez, University of Miami, Rosenstiel School of Marine and Atmospheric Science Stephanie Farrington, Florida Atlantic University. Harbor Branch Oceanographic Institute
Expedition Coordinator	Michael P. White, NOAA OER
ROV Dive Supervisor	Christopher Ritter, Global Foundation for Ocean Exploration
Mapping Lead	Shannon Hoy, NOAA OER

ROV Dive Name

Cruise	2019 Southeast U.S. Deep-sea Exploration
Dive Number	Dive 12

Equipment Deployed

ROV	*Deep Discoverer*		
Camera Platform	*Seirios*		
ROV Measurements	✔CTD	✔Depth	✔Altitude
	✔Scanning Sonar	✔USBL Position	✔Heading
	✔Pitch	✔Roll	✔HD Camera 1
	✔HD Camera 2	✔Low Res Cam 1	✔Low Res Cam 2
	✔Low Res Cam 3	✔Low Res Cam 4	✔Low Res Cam 5
Equipment Malfunctions	None		
ROV Dive Summary Data (from Processed ROV)	Dive Summary:EX1907_DIVE12 ^^ In Water: 2019-11-19T13:22:37.175940 23°, 59.073' N ; 83°, 23.173' W On Bottom: 2019-11-19T14:04:27.074364 23°, 59.049' N ; 83°, 23.171' W Off Bottom: 2019-11-19T20:56:23.688384 23°, 59.04' N ; 83°, 23.557' W Out Water: 2019-11-19T21:37:10.419427 23°, 59.329' N ; 83°, 23.66' W Dive duration: 8:14:33 Bottom Time: 6:51:56 Max. depth: 973.0 m		
Special Notes			

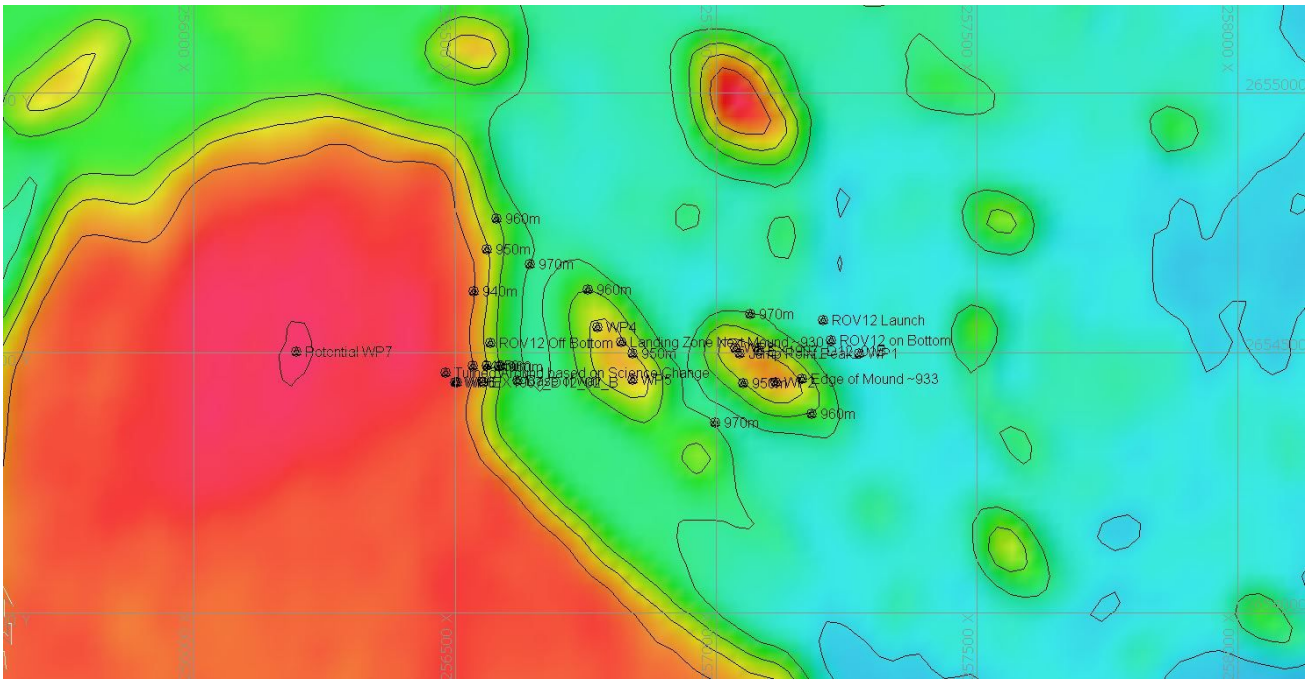
Scientists Involved (provide name, affiliation, email)

Name	Affiliation	Email
Kimberly Galvez	University of Miami, Rosenstiel School of Marine and Atmospheric Science	kgalvez@rsmas.miami.edu
Stephanie Farrington	Florida Atlantic University. Harbor Branch Oceanographic Institute	sfarrington@fau.edu
Madalyn Newman	NOAA National Centers for Environmental Information	Madalyn.Newman@noaa.gov
Shannon Hoy	NOAA Office of Ocean Exploration and Research	shannon.hoy@noaa.gov
Tara Luke	Stockton University, School of Natural Sciences and Mathematics	tara.luke@stockton.edu
James Masterson	Florida Atlantic University. Harbor Branch Oceanographic Institute	jmaster7@fau.edu
John Reed	Florida Atlantic University. Harbor Branch Oceanographic Institute	jreed12@fau.edu
Jason Chaytor	United States Geologic Survey	jchaytor@usgs.gov
Megan McCuller	North Carolina Museum of Natural Sciences	megan.mcculler@naturalsciences.org
Scott France	University of Louisiana at Lafayette Department of Biology	france@louisiana.edu
Nolan Hunter Barrett	Georgia Institute of Technology	barrettnh56@gatech.edu

Dive Purpose	This area was mapped on an NOAA OER/Okeanos cruise earlier this year. It contains interesting seafloor features that warrant further investigation. From an exploration standpoint, there is no other known deep submergence work in the area.
Dive Description	Target: bergie bits at the base of the "antarctica mound" - a plateau shaped like Antarctica with "bergie bits" or iceberg like carved out features surrounding the plateau. On Bottom: unconsolidated sediment matrix composed of fine-grained and coarse-grained carbonate bottom with coral rubble, 0 kt current. Approaching the first mound, small blocks of carbonate material are seen at the base (some edges encrusted with ferromanganese or phosphorite) and a *Sladenia shaefersi*- frog fish spotted at the base of mound one. At the toe-of-slope- Sediments still dominated the area with some exposed substrate at a 30-40° slope and there were a few black corals (*Tanacitipatehes*?) as well as goniasterid stars and bubblegum coral. As we traveled up slope the bottom, the underlying substrate became more prevalent and denser *Enallopsammia* coral rubble. There were a few royal purple coral- *Clavularia* and *Anthomastus* soft corals. Farther up slope the standing dead corals appeared and the slope increased to >45° angle. Here were found living *Enalopsammia* (hard coral), *Placogorgia* and Corallidae- (robust white) octocorals fans and the strawberry coral *Nidalia*. On the top of mound we found bioturbated sediment and dead coral with ~0.1 kt current. *Acanella* and *Swiftia* corals (sparse), rattails, and single stalk bamboo corals *Lepidisis* (EX1907_D11_01B) the color is not typical of this species so we collected it for a morph collection or new/undescribed species collection. We jumped over the mound tops to the top of mound 2, here the habitat was similar to the top of mound one. Some of the fauna included: *Enallopsammia rostrata* - yellow colonies with living tips on top about 3 m long with solitary cup corals nested between. Here there was also *Plinthaster dentatus* - sea star feeding on a hexactinellid sponge, *Tanacetipathes* and *Cerataspis monstrosa*- royal red. There was some human debris- line/rope. We transected down the western slope of mound 2 to jump over to the base of the escarpment. Between the mound and the escarpment the bottom was sandy. Here we spotted *Opisthoteuthis agassizii*- Dumbo octopus and *Bathynomous* - the giant isopod. Similar to the approach of the first mound, small blocks from the escarpment decorated the sediment at the base of the escarpment. Some portions of the blocks were phosphorite/ferromanganese encrusted while sections (likely those that detached from the escarpment) had exposed carbonate without crusts with little to no coral rubble. Scaling up the escarpment, sections of underlying carbonate were exposed in stratigraphic packages while the rest of the feature were encrusted. There were similar species coming up the slope including glass sponges, bamboo corals and *Chrysogorgia*. At the top of the wall: Dominated by sediments composed of coarse-grained and fine-grained skeletal matrix. There was also 20-30 cm *Enallopsammia rostrata*- common in this isolated area on top along with Anthothelidae purple gorgonian. Here we found our second *c.f. Floiaster maya* (EX1907_D12_03B), a 5 cm Goniaster type sea star that is either a new species or extension of known animal from the Yucatan. The plateau was sandy bottom and we spotted the tripod fish, *Bathypterois viridensis* a gynmosome pteropod in the water as we as a frayed rope- human debris. For the remainder of the dive we returned to shelf break for last 30 min there was a 60° slope on the escarpment.

Notable Observations	
Community Presence/ Absence (community is defined as more than two species)	X Corals and Sponges ✔ Chemosynthetic Community ✔ High biodiversity Community ✔ Active Seep or Vent ✔ Extinct Seep or Vent ✔ Hydrates
CMECS Feature Type	Scarp/Wall, Slope, Flat, Outcrop/Rock Outcrop, Plateau
SeaTube Link (science annotation system)	https://data.oceannetworks.ca/SeaTubeV2?resourceTypeId=1000&resourceId=23621&diveId=3860

Overall Map of the ROV Dive Area

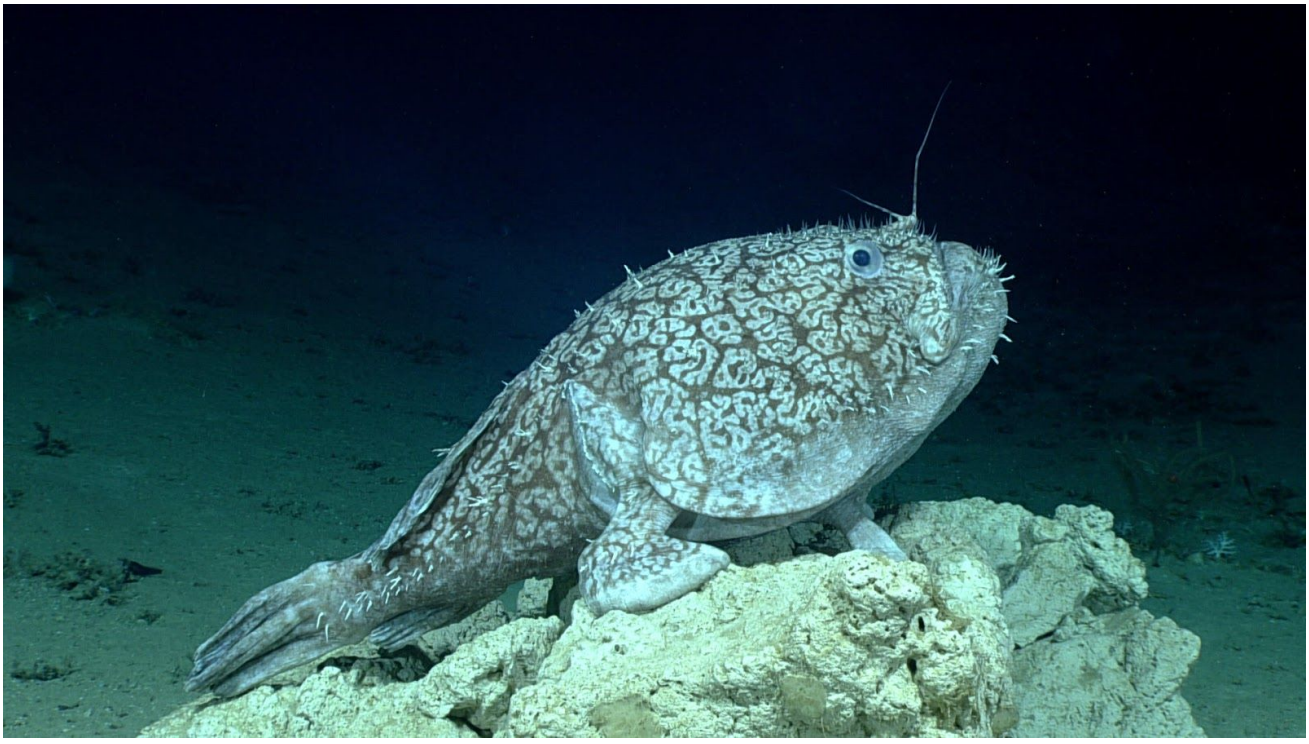


Ocean Exploration and Research

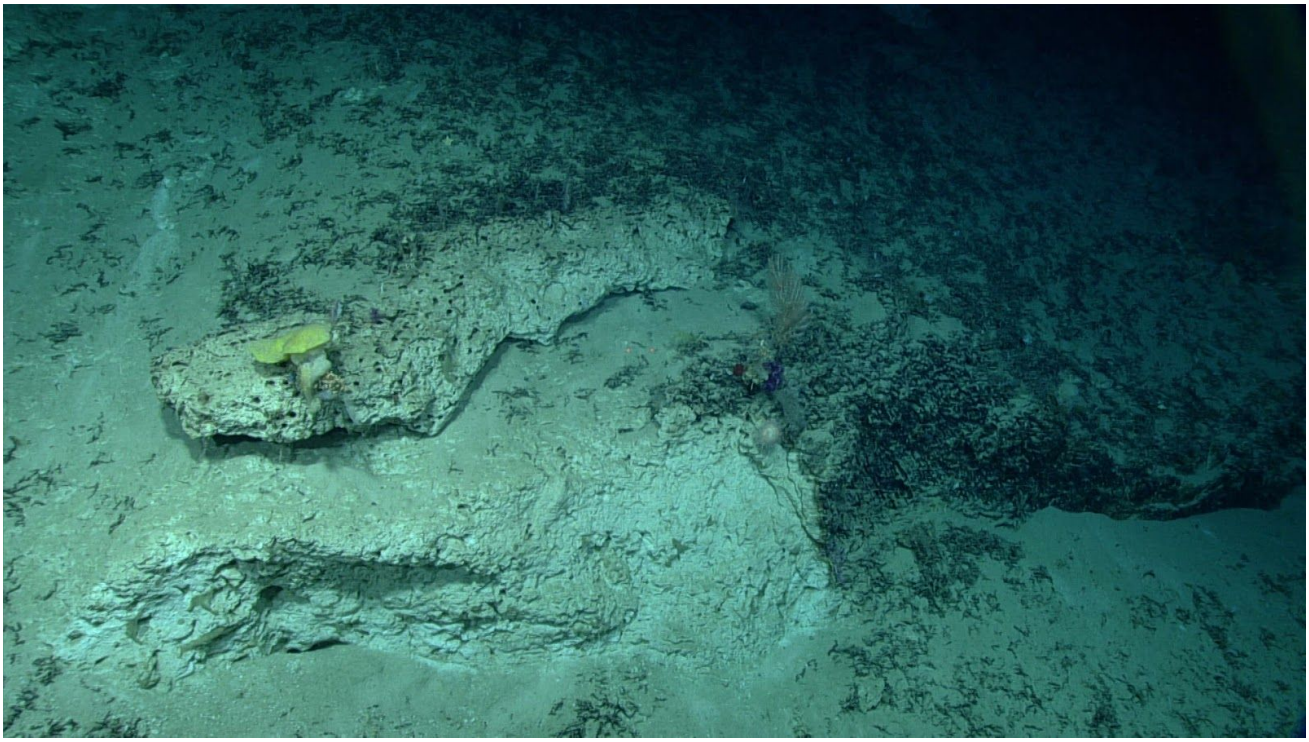
Close-up Map of Main Dive Site

Smoothed ROV dice track in white on 25x25 cell size bathymetry, 3x vertical exaggeration, depth in meters, 10 meter contours

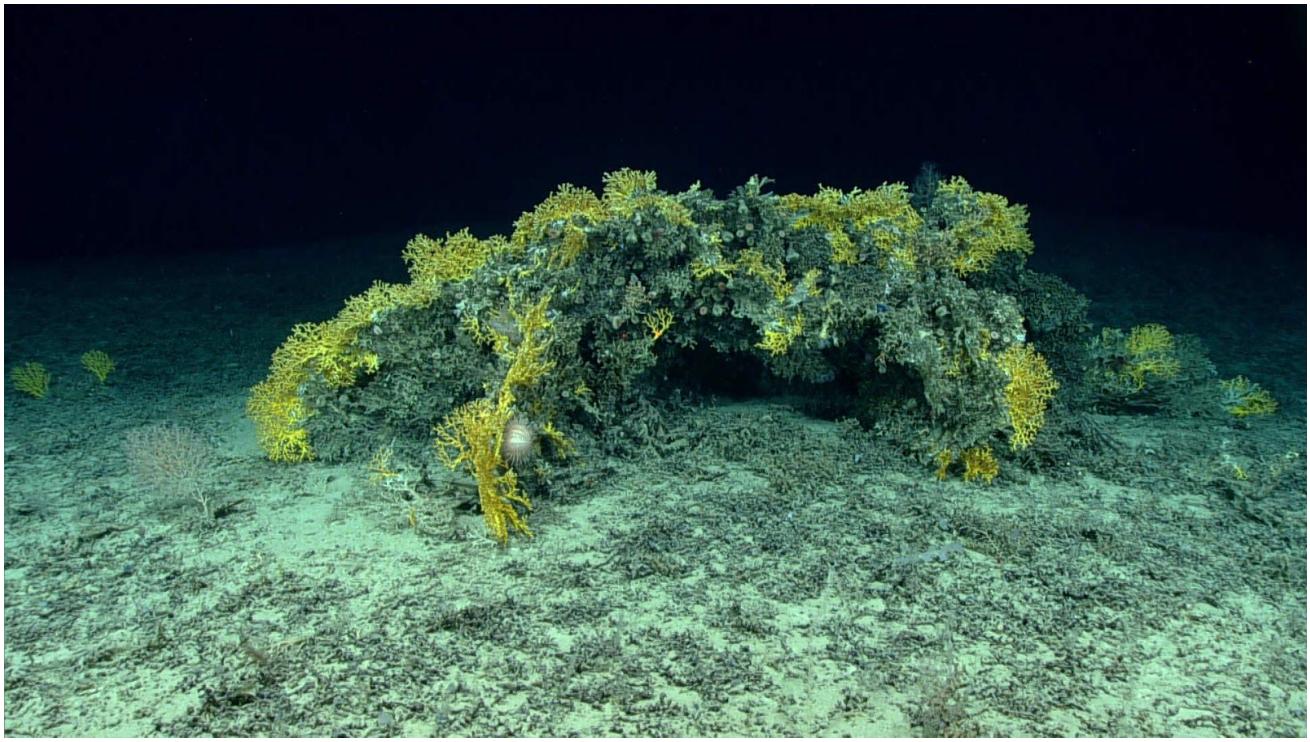
Representative Photos of the Dive



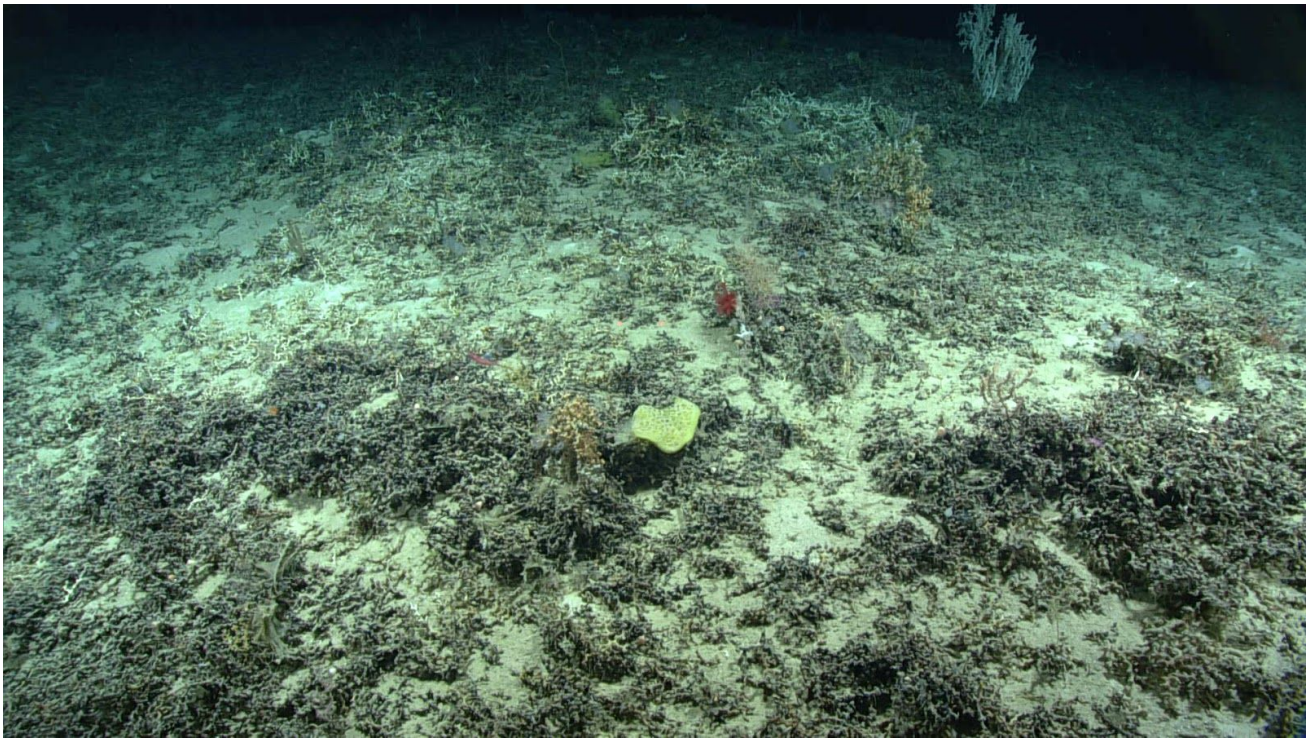
Sladenia shaefersi- frog fish spotted at the base of mound one.



Face of the escarpment, is also typical of the and mounds.



Enalopsammia at the top of the Escarpment.



Standing dead *Enalopsammia* coral typical of many parts of this dive.

Samples Collected -

Sample ID	EX1907_D11_01B

Date (UTC)	20191119
Time (UTC)	16:08
Depth (m)	930
Temp. (°C)	4.785
Field ID(s)	Lepidisis | ID: 125307 [WORM]
Associates	

Associates Sample ID	Field Identification	Count

Comments	Color is not typical of this species- morph collection or new species collection

Sample ID	EX1907_D12_02B
Date (UTC)	20191119
Time (UTC)	18:38
Depth (m)	933
Temp. (°C)	4.767
Field ID(s)	*c.f. Floiaster maya*

Associates	<table><tr><th>Associates Sample ID</th><th>Field Identification</th><th>Count</th></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table>
Comments	5 cm Goniaster type - new species or extension of known animal from Yucatan

Please direct inquiries to:

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