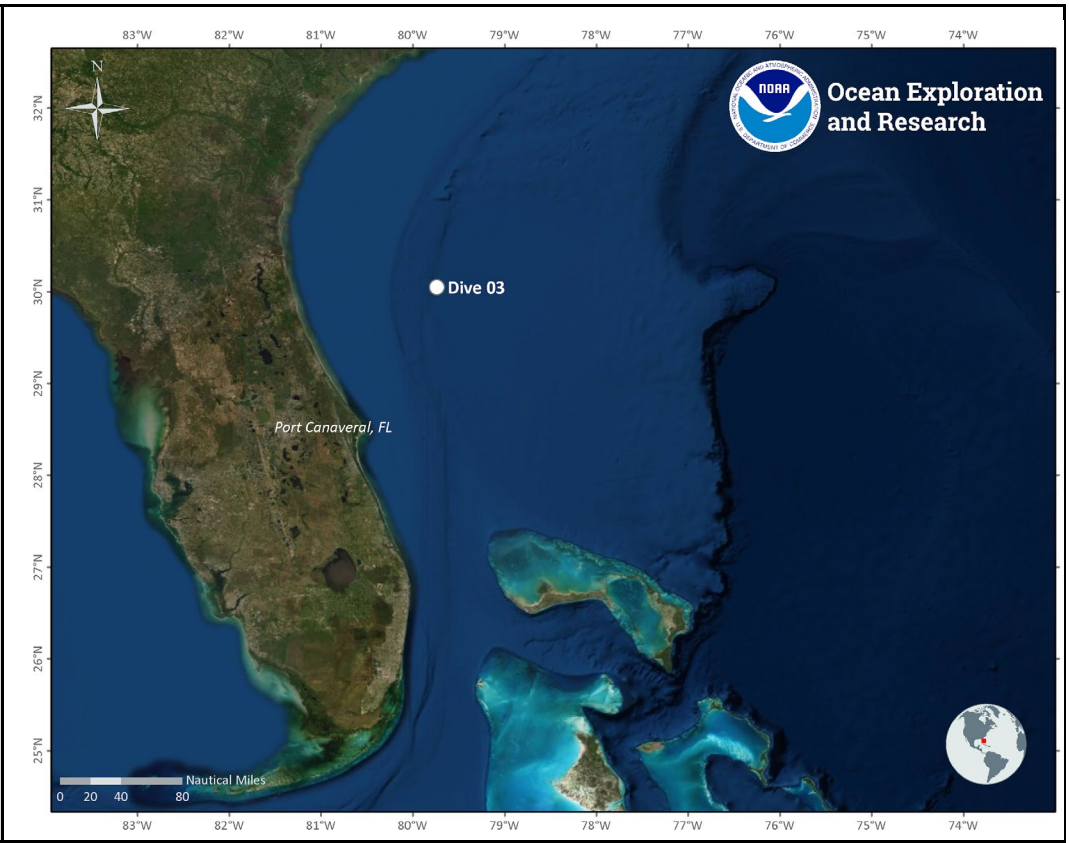
Okeanos Explorer ROV Dive Summary: EX-19-07, Dive 03, November 03, 2019

Dive Information

General Location Map	
General Area Descriptor	U.S. Southeast, Blake Plateau
Site Name	Stetson Mesa West
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 03

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_DIVE03 ^^^ In Water: 2019-11-03T15:47:21.267564 29°, 51.687' N ; 79°, 27.519' W On Bottom: 2019-11-03T17:12:06.039826 29°, 51.805' N ; 79°, 27.314' W Off Bottom: 2019-11-03T21:03:40.976138 29°, 51.59' N ; 79°, 27.344' W Out Water: 2019-11-03T21:41:25.457021 29°, 51.993' N ; 79°, 26.772' W Dive duration: 5:54:4 Bottom Time: 3:51:34 Max. depth: 809.0 m		
Special Notes	Dive delayed due to 3 kt current at 1st and 2nd locations. Final launch at 15:38 UTC.		

Scientists Involved (provide name, affiliation, email)

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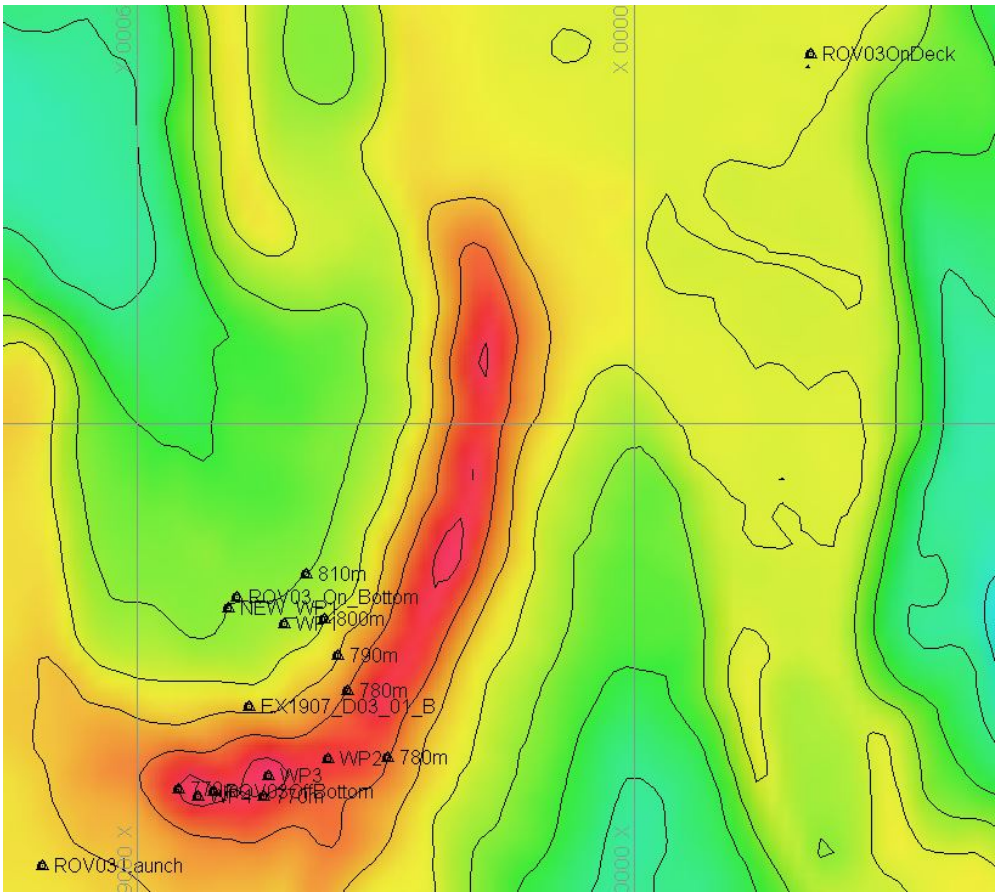
Dive Purpose	These are interesting basin and ridge features to the west of the Million Mounds area. They have not been investigated and they have the potential to focus sub-seafloor groundwater seepage, expose faults, and display a biological gradient upslope. Characterizing this feature type will provide valuable information about the geologic makeup and biological communities that comprise these basin features seen in this region of the Blake Plateau.
Dive Description	Dive delayed due to strong Florida Current at the 1st and 2nd location targets. We launched at 15:38 UTC. 810 m at base, 770 m at the top 13° slope from multibeam with a planned 620 m transect length. The ROV landed on the base of the ridge on a sandy bottom with *Lophelia* rubble. While working across the base of the ridge, the most common species present was *Phakellia connexiva* (elephant ear sponges) as well as yellow Astrophorida (POR) and *Ariosoma* (ECH) (both sparse). Loose sediments in this location are made up of coarse-grained skeletal material that is common for the area. Patches of sediments devoid of coral rubble show 10 cm wide ripples indicative of a consistent current flow. At the toe-of-slope of the ridge, ~1 m tall sand dunes are observed with coral rubble at the peaks of the dunes with sediment patches on the leeside of the dunes. Small sand pile-ups were seen behind the larger elephant ear sponges (*Phakellia connexiva*) due to the front the sponge absorbing most of the current, enabling sediments to settle rather than being swept away by the current. Heading up the 10-20° slope the biota stays similar but more patchy and sparse. <10 cm *L. pertusa* at the base of a pachastrellid sponge. There were a few fish inhabiting the base of the slope including: a cusk eel, possibly genus *Hoplunnis sp.,* 1 Nettastomidae eel, 1 black bellied-rosefish, 1 skate- *Fenestraja plutonia*, a few rattails - *Coelorinchus occa;* "This species is widespread geographically, but fairly rare. Unlikely that any subsea images of this species exist"- Ken Sulak. Continuing up slope, patches with sand waves disappear and *Lophelia* rubble fills in. There is an almost total loss of benthic macrofauna. We came across a small, 10 cm, amorphous, yellow demosponge that we collected (EX1907_D03_01B, possible new species). There were 5 armed (*Pentametrocrinus atlanticus*) and 10 armed (*Zenometra columnaris*) crinoids. Shortnose-greeneye- *Chlorophthalmus* sp., *Heterotella*, Hagfish with single gill opening - *Myxine glutinosa*. About ½ way up the slope we see a slight increase in standing dead coral. Green glass bottle debris (old) and a Goniasteridae (cookie cutter star) and a few *Ferria* (POR), one with a small lobster/crustacean living in its tubes. *Crysogorgia* with chirostylid squat lobsters were spotted. We acquired amazing footage of a wedding sponge with 2 symbiotic crustaceans living within. ¾ of the way up the slope, rock slabs appear as well as standing dead corals. *Candidella imbricata* (CNI) covered in *Ophiothrix* (ECH) and ring anemones, Small Macrouridae- *Nezumia bairdii* (Fish) angled obliquely to substrate, followed by more yellow sponges similar to the ones we saw earlier as well as a dead Pachastrellida. On the top of the mound the standing dead coral appears with *Phakellia* (POR) returning. Most of the standing dead *Lophelia* is infested with *Ophriothrix*, *Stylocidairis*, and hydroids. Small white octocorals are common and 1 *Oceanapia* was sighted*. Pentametrocrinus atlanticus* (ECH) is abundant throughout the dive. Overall the bottom was mostly coral rubble with some hard substrate (e.g. lithified carbonate) exposed as we climbed the slope, usually populated with living coral. Currents were stronger at the peak than at the depression behind the ridge feature, seen by tremoring branches of smaller corals.
Notable Observations	

Community Presence/ Absence (community is defined as more than two species)	◀ Corals and Sponges ✔ Chemosynthetic Community ✔ High biodiversity Community ✔ Active Seep or Vent ✔ Extinct Seep or Vent ✔ Hydrates
CMECS Feature Type	
SeaTube Link (science annotation system)	https://data.oceannetworks.ca/SeaTubeV2?resourceTypeId=1000&resourceId=23621&diveId=1443

Overall Map of the ROV Dive Area



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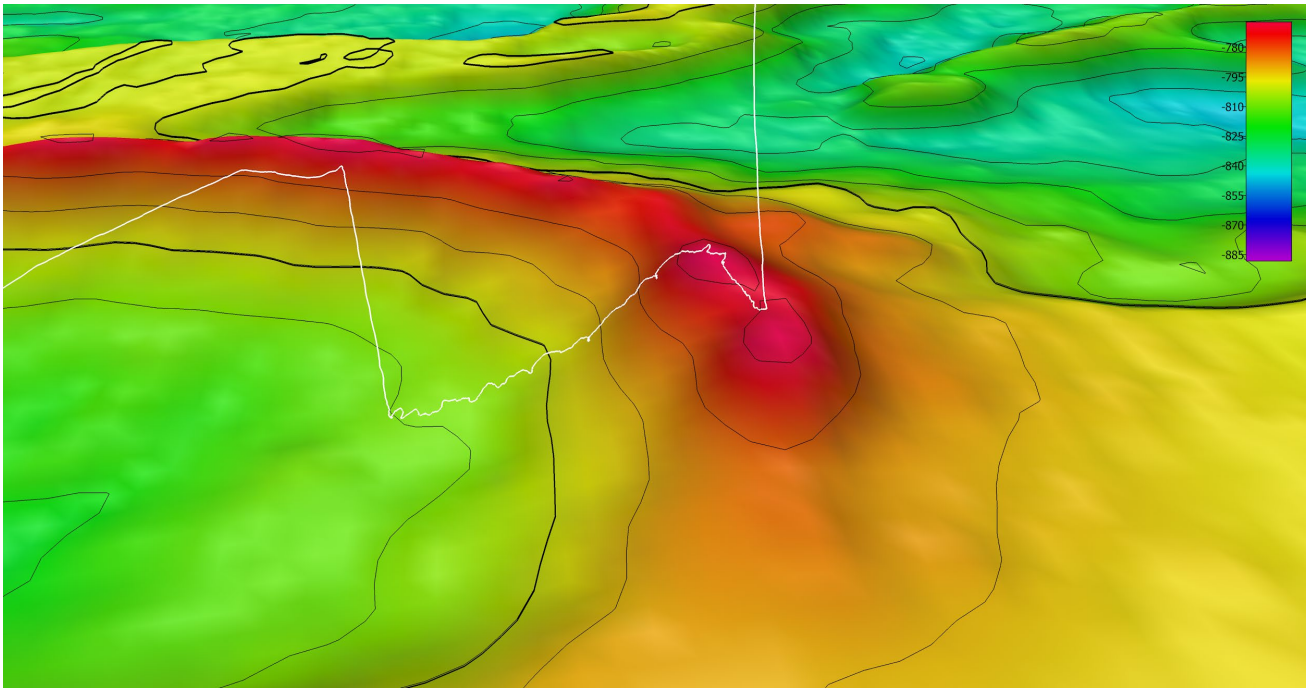
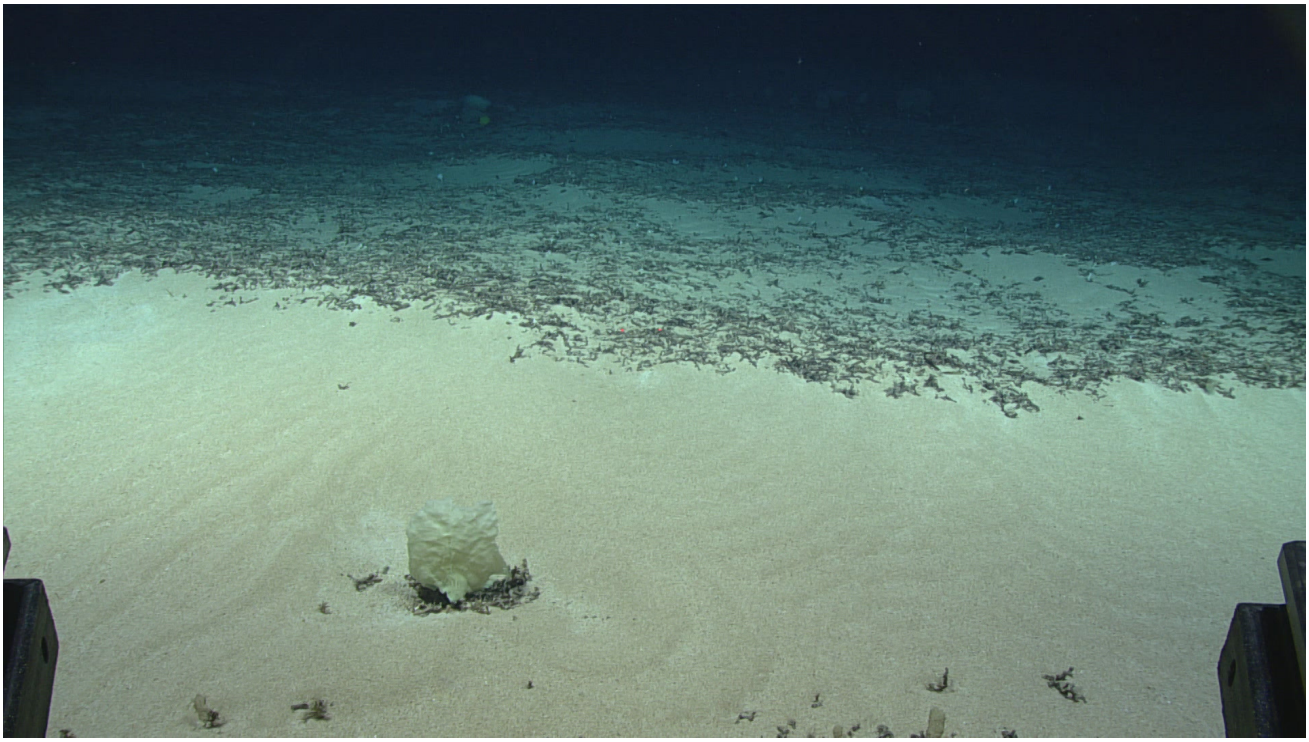
Close-up Map of Main Dive Site

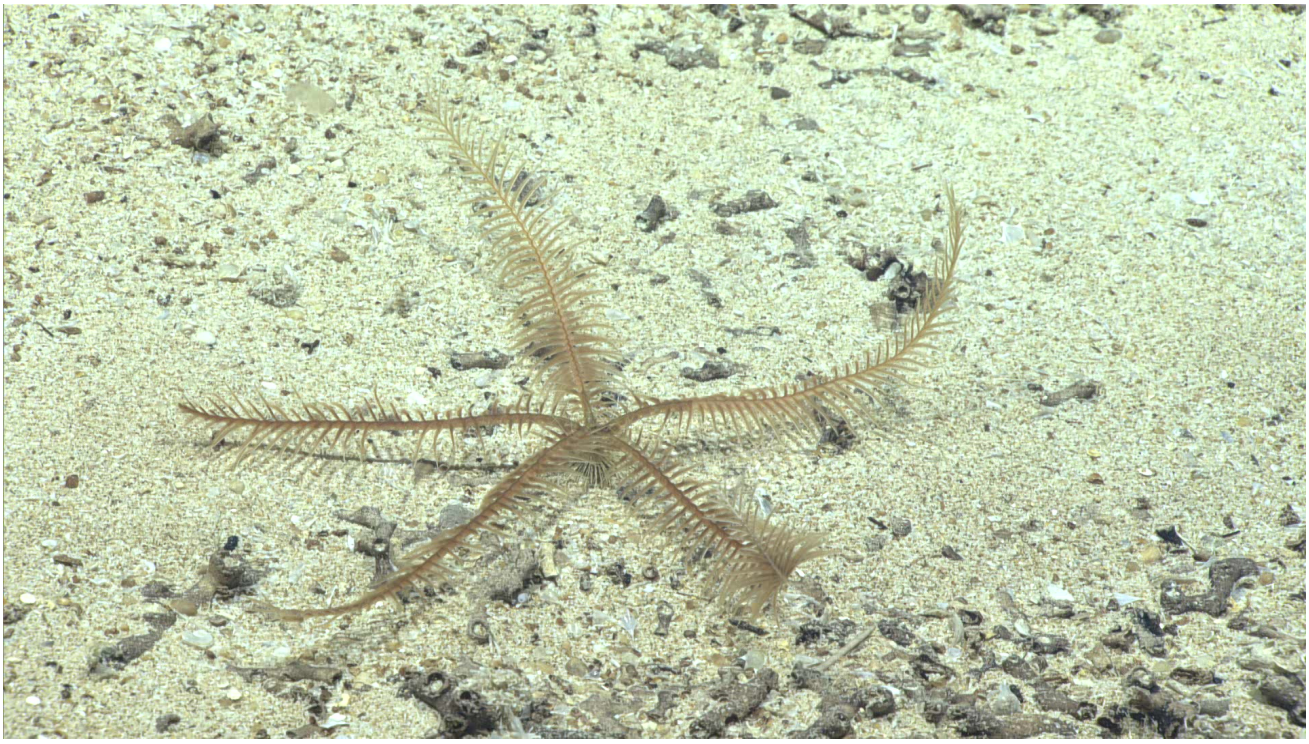


Smoothed ROV dive track in white on 25x25 cell size bathymetry, 3x vertical exaggeration, depth in meters, 10 meter contours

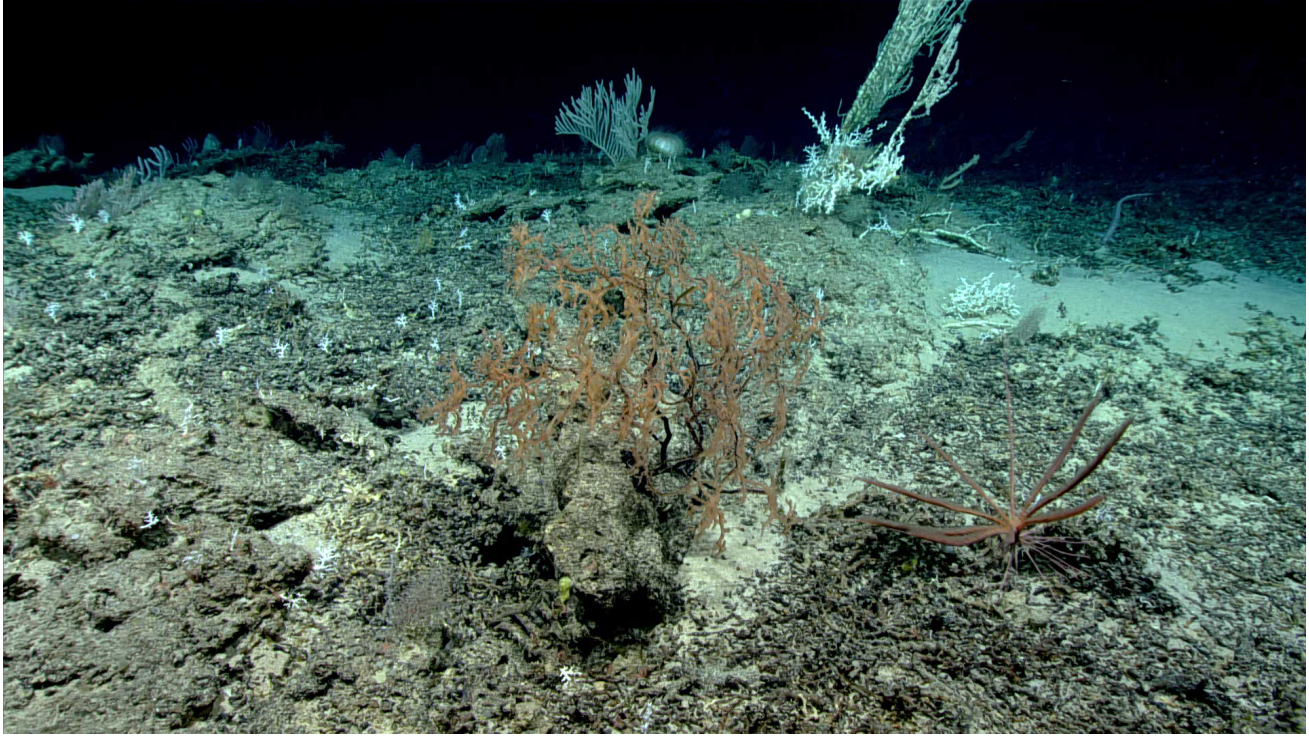
Representative Photos of the Dive



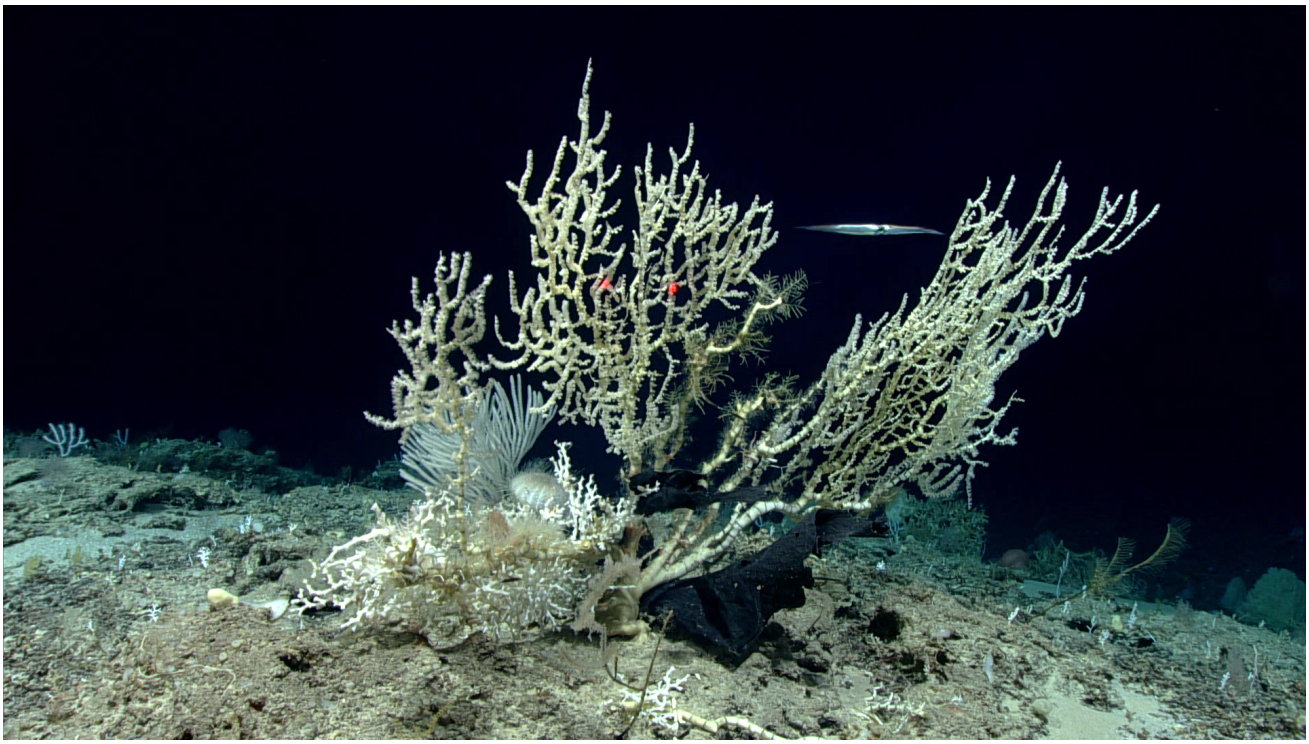
The base of the mound was covered in sandy patches (showing ripples) with *Lophelia* coral rubble and *Phakellia connexiva* (elephant ear sponges).



Pentametrocrinus atlanticus was common throughout this dive.



Leiopathes sp. and *Zenometra columnaris* crinoid on the top of the mound.



A squid passes by a large bamboo coral and living *L. pertusa*, all uncommon at this site. Black material at the base of the coral is plastic trash.

Samples Collected -

Sample ID	EX1907_D03_01B
Date (UTC)	11/3/2019
Time (UTC)	18:36
Depth (m)	790 m
Temp. (°C)	8.58
Field ID(s)	Porifera
Associates	

Associates Sample ID	Field Identification	Count
EX1907_D03_01B_A01	Coral Rubble	15

Comments	bright yellow 10 cm, amorphous, yellow sponge - can't ID past Porifera, possible new species. (DNA and type specimen). Elastic texture upon touch.

Please direct inquiries to:

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