



Okeanos Explorer ROV Dive Summary

Dive Information

<p>General Location Map</p>	
<p>General Area Descriptor</p>	<p>35 nautical miles southeast of Key West</p>
<p>Site Name</p>	<p>Key West Deep</p>
<p>Science Team Leads</p>	<p>Kimberly Galvez, University of Miami, Rosenstiel School of Marine and Atmospheric Science Stephanie Farrington, Florida Atlantic University. Harbor Branch Oceanographic Institute</p>
<p>Expedition Coordinator</p>	<p>Michael P. White, NOAA OER</p>
<p>ROV Dive Supervisor</p>	<p>Christopher Ritter, Global Foundation for Ocean Exploration</p>
<p>Mapping Lead</p>	<p>Shannon Hoy, NOAA OER</p>

ROV Dive Name

<p>Cruise</p>	<p>2019 Southeast U.S. Deep-sea Exploration</p>
<p>Dive Number</p>	<p>Dive 11</p>

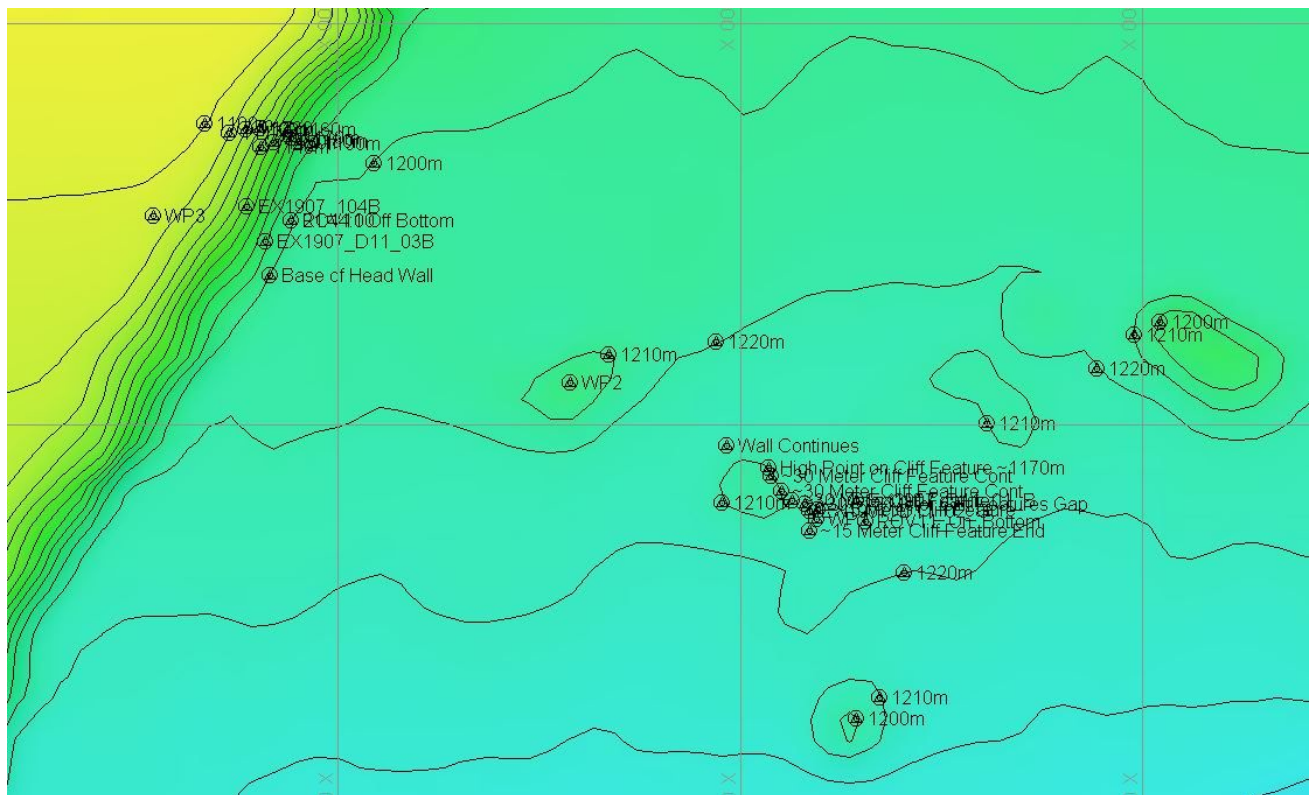
Scientists Involved (provide name, affiliation, email)

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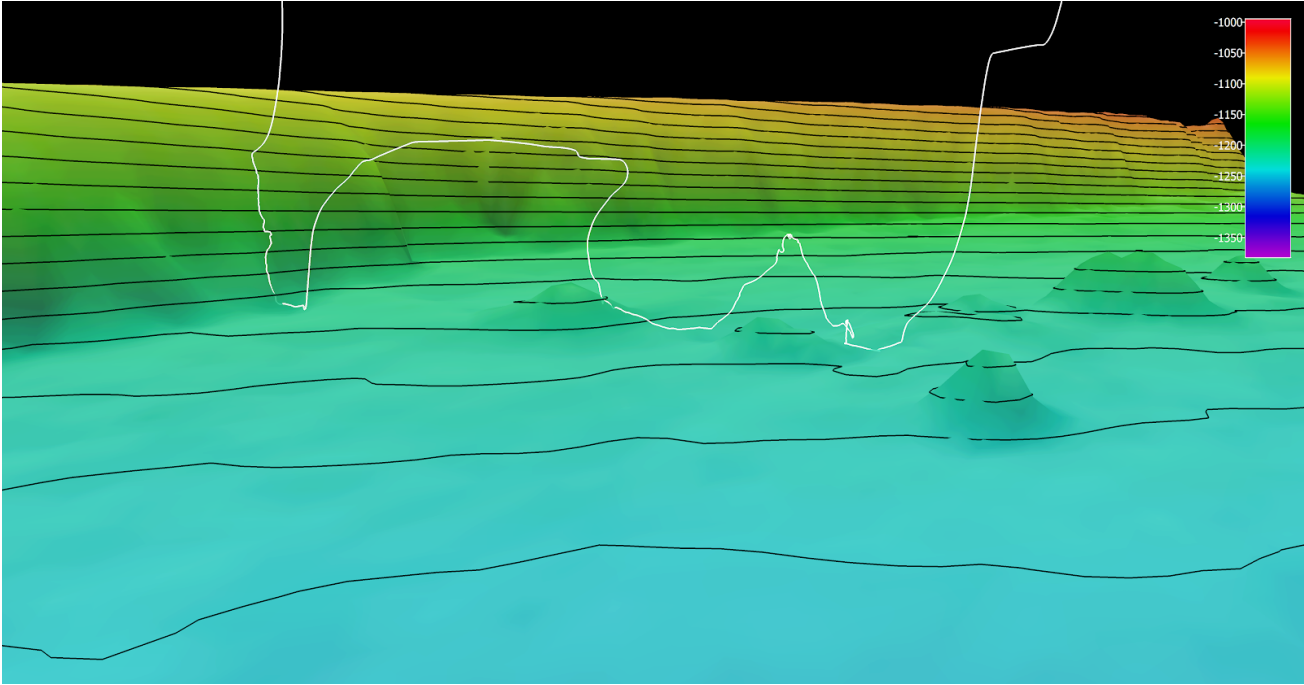
Dive Purpose	Characterizing this feature type will provide valuable information about the geologic makeup and biological communities that comprise these small mounds and escarpment. This dive will also provide valuable information about an area that very little deep submergence work in the vicinity.
Dive Description	<p>Target: 2 mounds that are about 5 m tall followed by a wall. 1210 m - 1110 m 100 m rise, 38 degrees, with a 900 m</p> <p>On bottom in the sand the 1st fish we spotted was a <i>Halosaur</i>. There were a few <i>Chondrocladia</i> (new species?) carnivorous sponges. One that was collected (EX1907_D11_01B) was 10 cm tall and collected from base under sand getting the "roots". At the foot of the mound on the MB was actually an area where the sand changes to a large boulder/ 15 m tall wall encrusted with phosphorite or Fe-Mn. The boulder seemed out of place and was likely the result of a mass wasting event from the nearby escarpment. Individual stratigraphic layers were observed by erosional properties with sediments cascading on top of each terrace-like feature. At the top, the boulder was rimmed by the outer layer of encrusted material, effectively trapping unconsolidated sediments at the top and likely indicating the feature was once larger but has since eroded away.</p> <p>On the rock feature there was more life including: pink corals- <i>Candidella imbricata</i>, <i>Solenosmilia</i>, <i>Stichopathes</i>- whips black corals- common, bamboo corals, and <i>Chrysogorgia</i>- common, as well as a variety of glass sponges: <i>Lefroyella</i> and <i>Ferrea</i>. Many of the glass sponges were infested with yellow zoanthids.</p> <p>After leaving the 1st mound to transect to the second mound there were <i>Bathynomus</i> x 2 (giant isopods) in the sandy area. The 2nd mound was very similar to the 1st boulder with a 90° angle slope and 30 m in height to the top. Terrace-like features were also visible with this boulder. Outer crusted material appeared sheet-like, with sections that likely broke off and slide to the base of the boulder. Many of the same species were spotted on this second mound with the addition of a siphonophore- dandelion.</p> <p>We came off bottom to get to the escarpment to the west so we could make it to the top before the end of the dive. There were some mid water invertebrates in the water: jellies, <i>Enypniastes</i>, and squid.</p> <p>Unconsolidated sediment area at the base of ledge: <i>Opisthoteuthis agassizii</i> - Dumbo octopus - however "<i>Opisthoteuthis</i> should have rows of light spots along the arms and onto the mantle. Could also be <i>Opisthoteuthis grimaldii</i>."- M. Vecchione (NMNH). Small blocks are seen near the base of the escarpment, composed of diagenetically altered (unconfirmed) carbonate limestone. None of these blocks had phosphorite or Fe-Mn crusts, indicating they broke off from the escarpment post-deposition of crusting material.</p> <p>base of escarpment (1200 m) The escarpment was similar to the large boulders previously seen on the dive with all the same attributes of carbonate limestone. Some sections were encrusted while other ones seemed exposed after calving from the escarpment, with a white chalky texture. Larger terraces were seen with unconsolidated sediment cover.</p> <p><i>Stichopathes</i>, mucus sacks, Black corals- <i>Parantapathes</i>, Forcipulatida star (white with slight pink tint very palpate skin- 5+ legs). On some of the ledges there were carnivorous sponges <i>Chondrocladia</i> (EX1907_D11_03B) up to 60 cm tall as well as <i>Hyalonema</i> (cotton candy sponge) and <i>Chaceon quinquedens</i> (red crab), bamboo coral, yellow c.f. <i>Ferrea</i>, <i>Solenosmilia</i> and <i>Geodia</i> (EX1907_D11_04B- 10 cm ball sponge- new species).</p>

Notable Observations	
Community Presence/Absence (community is defined as more than two species)	<p>X Corals and Sponges</p> <ul style="list-style-type: none"> ✓ Chemosynthetic Community ✓ High biodiversity Community ✓ Active Seep or Vent ✓ Extinct Seep or Vent ✓ Hydrates
CMECS Feature Type	outcrop/rock outcrop, scarp/wall
SeaTube Link (science annotation system)	https://data.oceannetworks.ca/SeaTubeV2?resourceTypeId=1000&resourceId=23621&divId=3860

Overall Map of the ROV Dive Area



Close-up Map of Main Dive Site

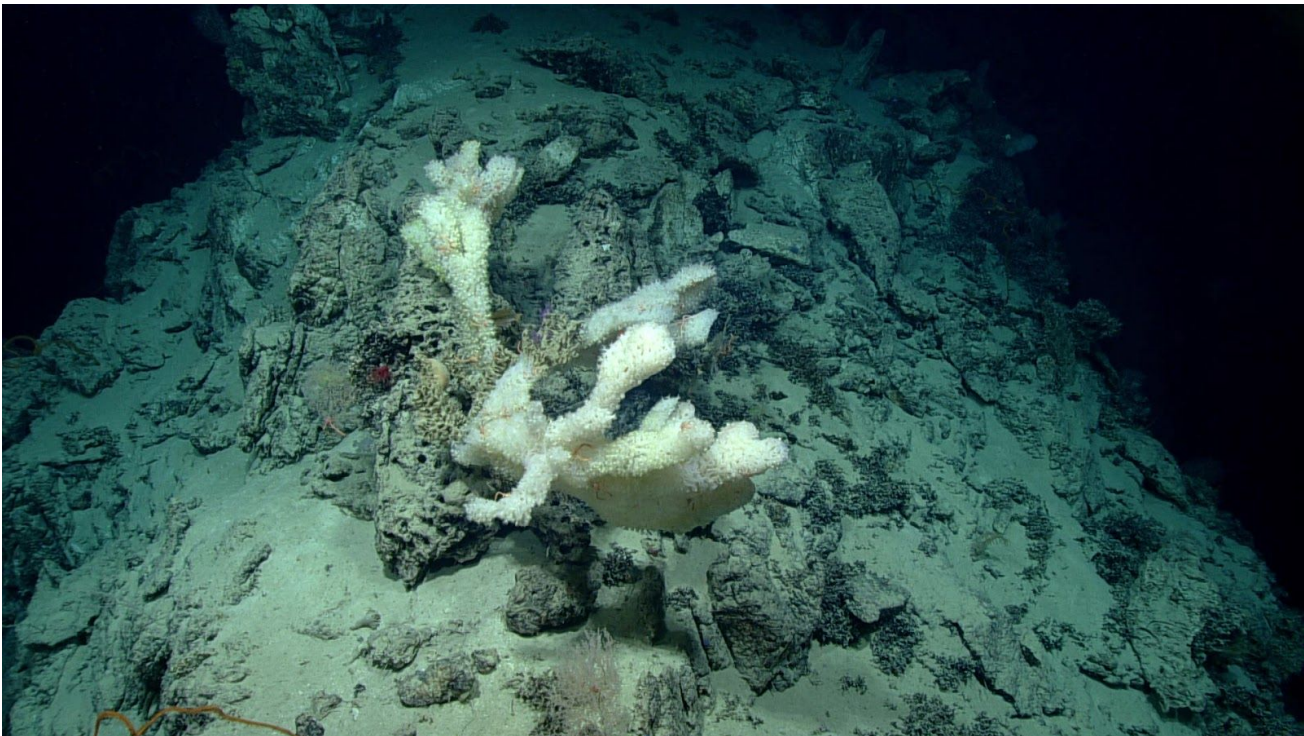


Smoothed ROV dive track in white on 25x25 cell size bathymetry, 3x vertical exaggeration, depth in meters, 10 meter contours

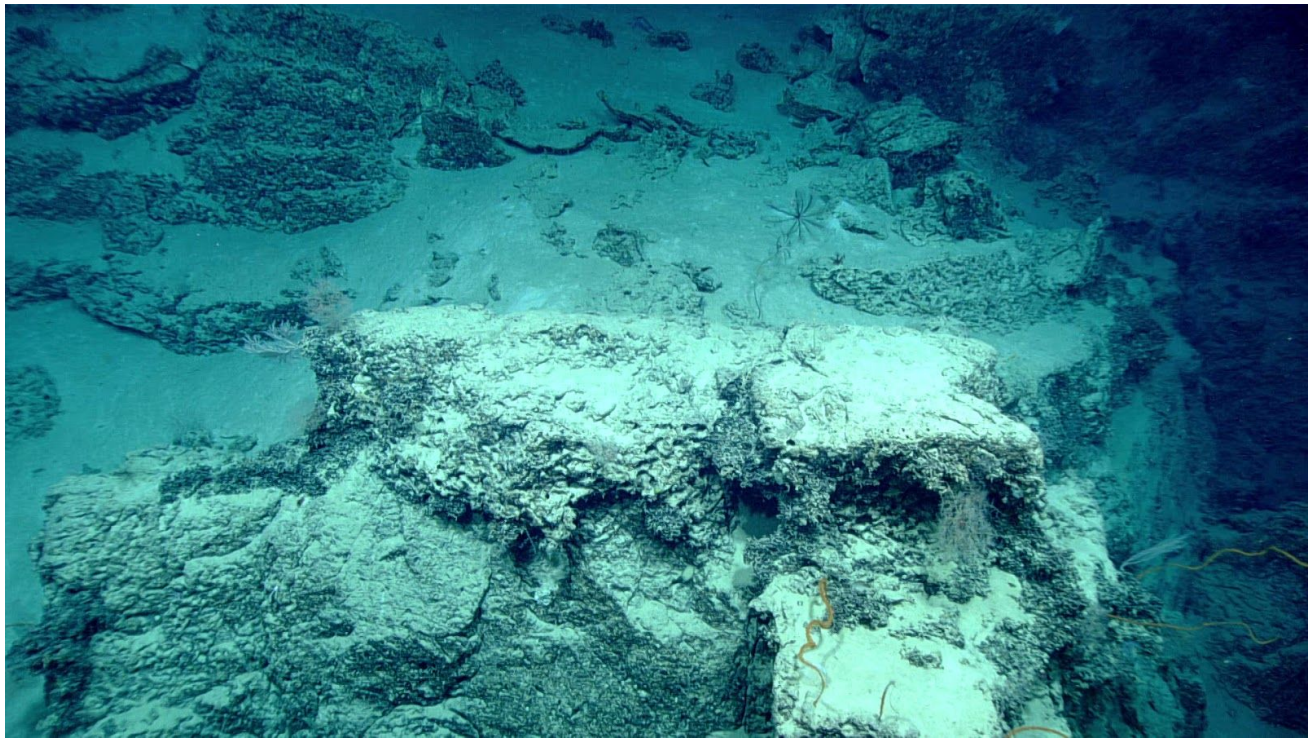
Representative Photos of the Dive



The first large mound we found was faced with this 90° angle rock wall.



Large *Lefroyella* hexactinellid sponge of the face of mound 1.

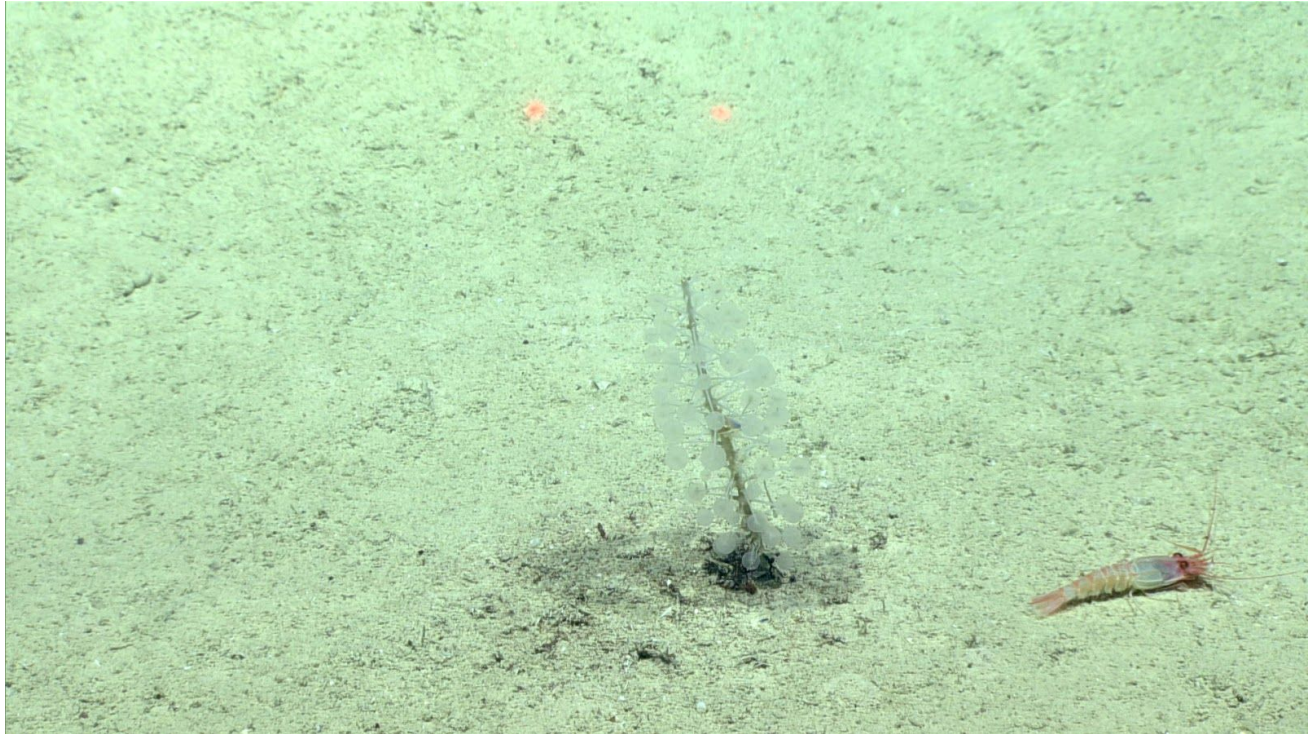


Typical face of the mounds showing sparse octocorals.



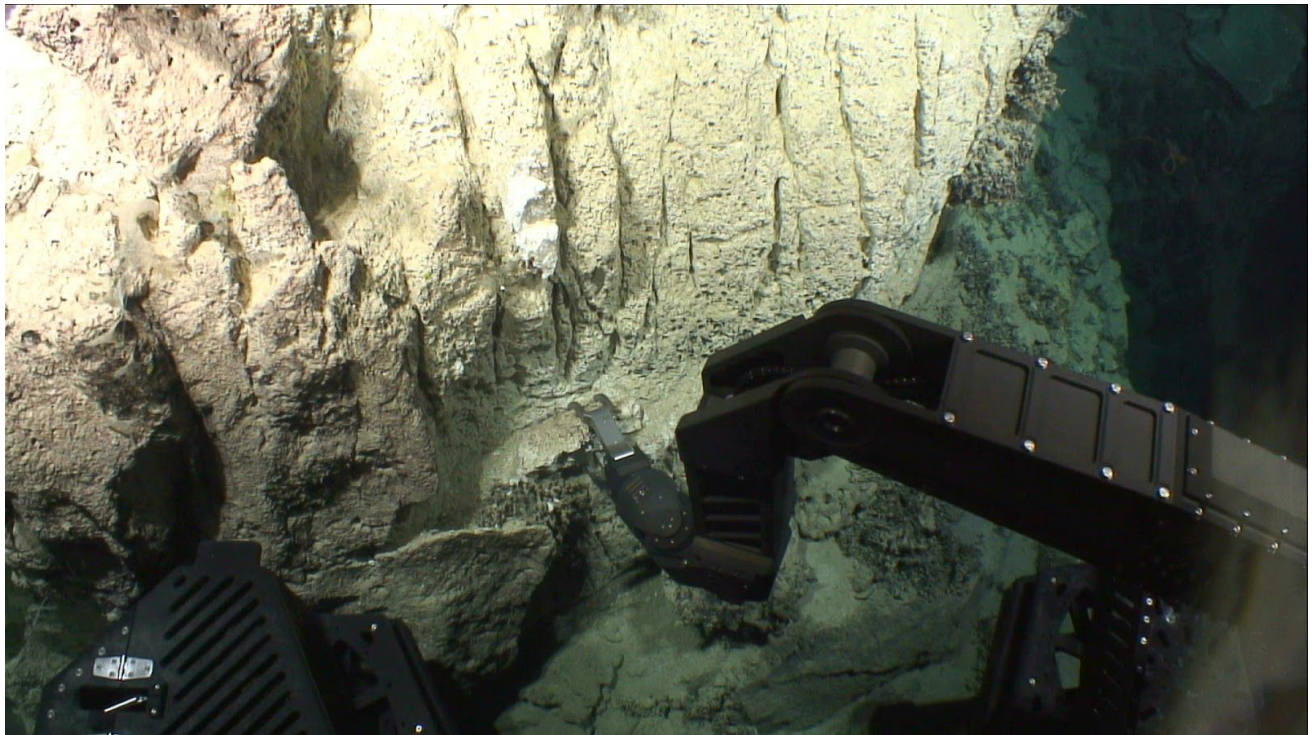
Bathynomus hanging on to its food as it swims away from the ROV.

Samples Collected -

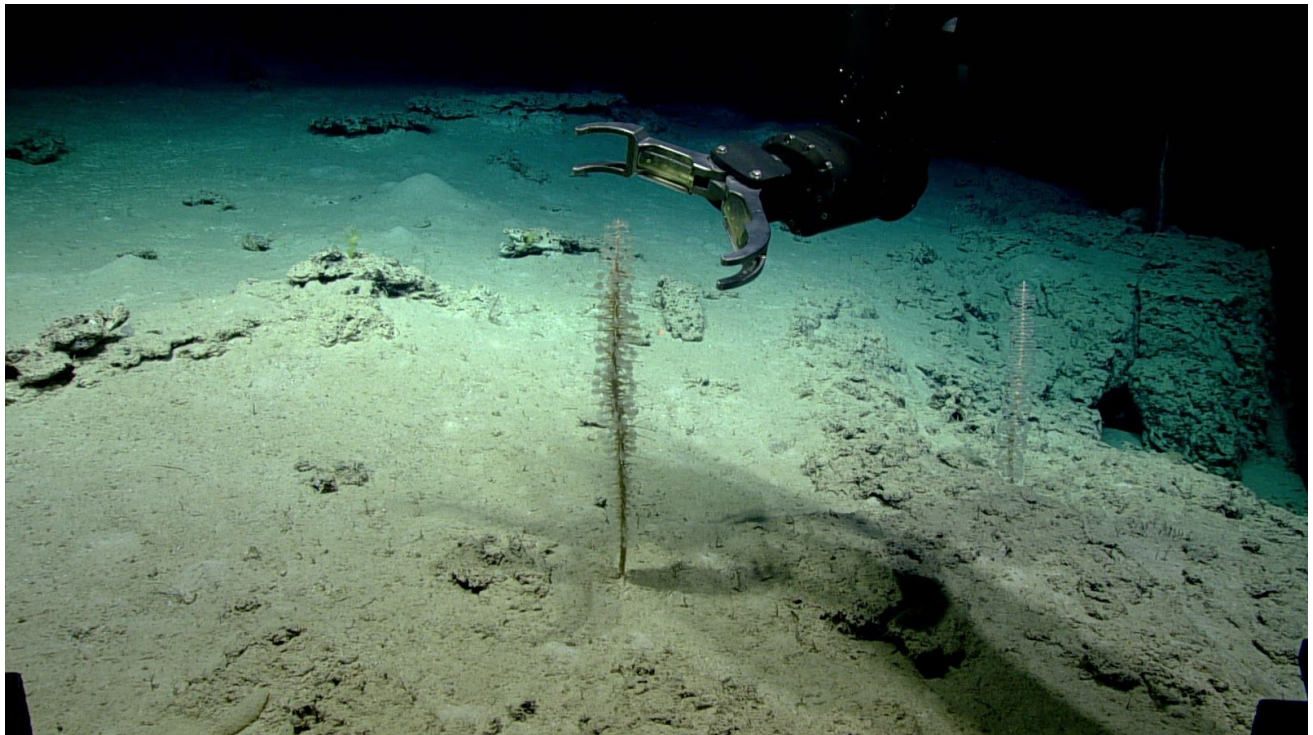


Sample ID	EX1907_D11_01B		
Date (UTC)	20191118		
Time (UTC)	14:53		
Depth (m)	1218		
Temp. (°C)	4.303		
Field ID(s)	Chondrocladia ID: 131894 [WORM]		
Associates	Associates Sample ID	Field Identification	Count
Comments	10 cm tall collected from base under sand getting the "roots"		

[INSERT IMAGE]



Sample ID	EX1907_D11_02G		
Date (UTC)	20191118		
Time (UTC)	15:22		
Depth (m)	1205		
Temp. (°C)	4.298		
Field ID(s)	rock		
Associates	Associates Sample ID	Field Identification	Count
Comments	Rock from the 1st wall		



Sample ID	EX1907_D11_03B		
Date (UTC)	20191118		
Time (UTC)	20:07		
Depth (m)	1169		
Temp. (°C)	4.316		
Field ID(s)	Geodia ID: 132005 [WORM]		
Associates	Associates Sample ID	Field Identification	Count
	EX1907_D11_04B_A01	limestone associate	
Comments	10 cm ball sponge; new species; with limestone associate		



Sample ID	EX1907_D11_04B		
Date (UTC)	20191118		
Time (UTC)	20:33		
Depth (m)	1140		
Temp. (°C)	4.333		
Field ID(s)	Chondrocladia ID: 131894 [WORM]		
Associates	Associates Sample ID	Field Identification	Count
	EX1907_D11_04B_A01	limestone rock	1
Comments	60 cm tall - took a piece		

Please direct inquiries to:

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