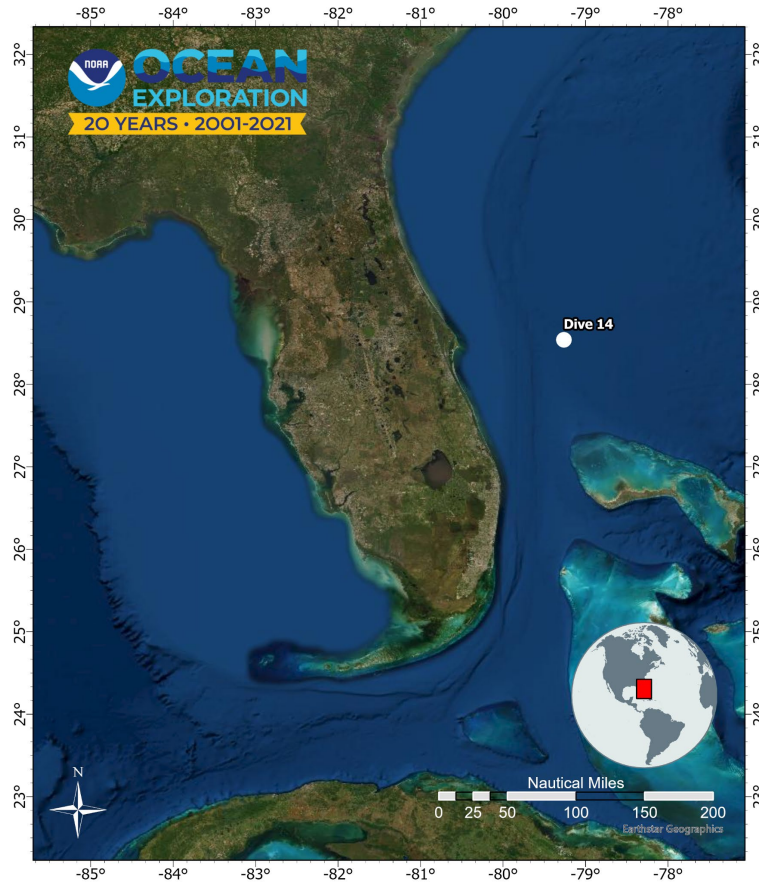


ROV Dive Summary, EX-21-07, Dive 14, November 14, 2021

General Location Map



Site Name	Million Mounds South
General Area Descriptor	Inside the Stetson-Miami HAPC
Science Team Leads	Stephanie Farrington, Allen Collins
Expedition Coordinator	Matt Dornback
Sample Data Manager	Matt Grossi
ROV Dive Supervisor	Chris Ritter
Mapping Lead	Derek Sowers
Dive Purpose	Exploration/Collections

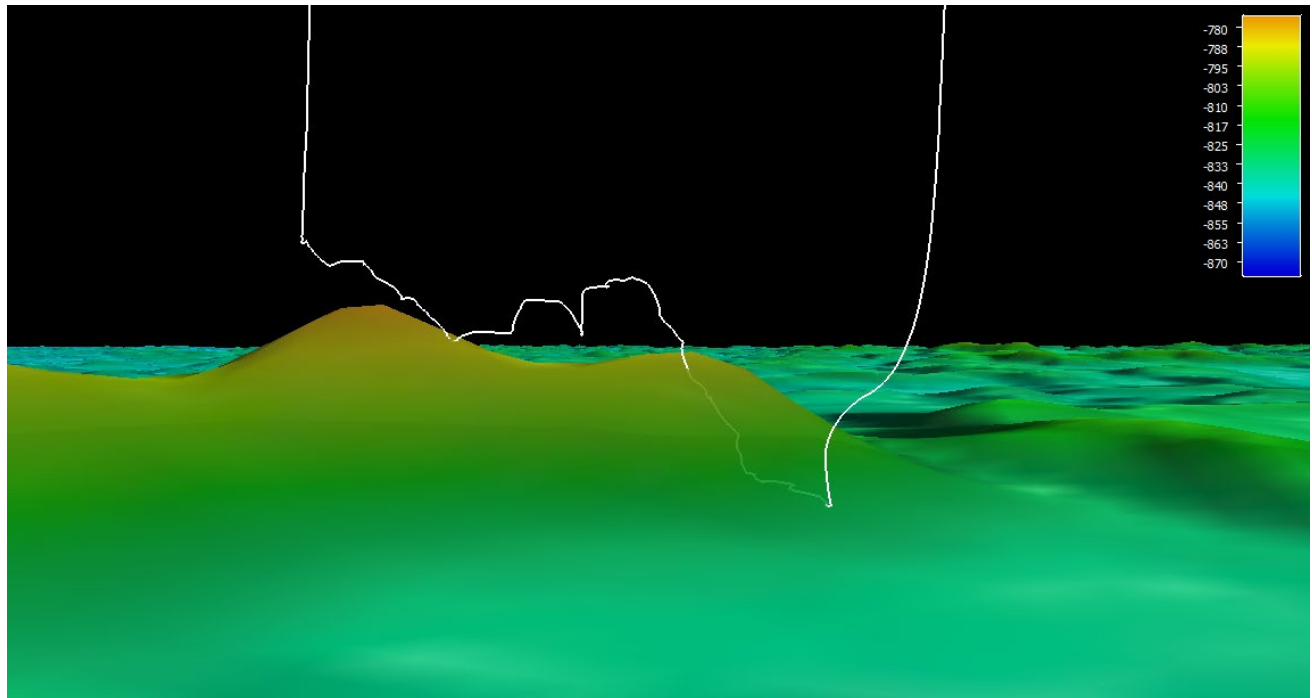
Was the dive restricted for Underwater Cultural Heritage?	No
ROV Dive Summary Data	<p>Dive Summary: EX2107_DIVE14 ^^^</p> <p>Dive Type: Normal</p> <p>In Water: 2021-11-14T13:27:15.410307 28.53962667882995 ; -79.26290600912247</p> <p>On Bottom: 2021-11-14T15:00:13.547967 28.539421560898734 ; -79.26335376842721</p> <p>Off Bottom: 2021-11-14T20:52:50.973317 28.539930720355255 ; -79.25989225531085</p> <p>Out Water: 2021-11-14T21:40:53.982368 28.542529540036544 ; -79.26619057285174</p> <p>Dive Duration: 8:13:38 Bottom Time: 5:52:37 Max Vehicle Depth: 824.2 m Min Seafloor Depth: 758.8 m Distance Travelled: 464.0 m</p>
Dive Description	<p>During the dive, five water samples were taken for eDNA processing: EX2107_D14_01W at 500 m during descent; EX2107_D14_02W at 825 m after achieving bottom; EX2107_D14_06W at 774 m about 5 hours into the transect after ascending the mound to the top of a knob (local high) about 50 meters; EX2107_D014_08W at 766 m nearing the overall top of the mound; and EX2107_D14_09W at 760 m at the end of our transect before leaving bottom not quite having achieved the highest knob of this mound.</p> <p>Once we reached bottom at 825 meters, at the base of the mound targeted for exploration, the substrate was greater than 90% <i>Lophelia</i> coral rubble, a few small sand patches, providing strong evidence that the mound represented a bioherm.</p> <p>Upon zooming in on the coral rubble, we were able to observe an abundance of spikey armed brittle stars, with pink and soft central discs (Ophiomyxidae) and collected one (EX2107_D14_03B). There were many white stylasterids, which were encountered throughout the dive (S. Cairns commented: "the stylasterids were 90% <i>Stylaster erubescens</i>"), the soft coral <i>Pseudodrifia</i>, and many thecate and athecate hydroids. Many sponges were present living on and within the rubble, including yellow demosponges tentatively identified as <i>Biemna</i>, purplish blue sponges reminiscent of the blue sponge earlier collected during EX2107 (Hymedesmiidae, Poecilosclerida), spiky ball-shaped cladorhizids, <i>Abyssocladia</i> (EX2107_D14_04B, with four associates accidentally collected by suction), tetractinellid sponges, glass sponges <i>Aphrocallistes beatrix</i> (with and without zoanthid associates), glass sponge vase sponges with sieve plates (Corbitellinae in family Euplectellidae). <i>Dendrophyra</i> forams, fuzzy tree-like, were observed growing off dead <i>Lophelia</i> skeletons. Among the mobile fauna we observed within the <i>Lophelia</i> were a long-legged isopod, urchins (<i>Cidaris abyssicola</i>, <i>Echinus tyloides</i>, <i>Araeosoma</i>), a goniasterid asteroid (<i>Plinthaster</i>, but possibly <i>Peltaster</i>), and a <i>Eumidia picta</i> (near apex of dive).</p> <p>As we traveled up-slope, the coral rubble turned to standing dead coral with the 1st living <i>Lophelia</i> appearing at 15:30 GMT. The slope eventually changed to standing dead coral with living <i>Lophelia pertusa</i> growing on top as the dominant species. The living coral increased in abundance the higher we ascended the slope, with the most living coral being on the rounded tops of each of the 4-5 local highs. After reaching the first local high, we went from one top to</p>

	<p>the next by doing a few blue water hops between. Other colonial scleractinians were limited to <i>Madrepora</i> (zig-zag, common) and <i>Ennalopsammia</i> (1 very large, mostly dead).</p> <p>Through the dive we observed similar communities of fauna, with component taxa usually increasing as we get closer and closer to the local highs. We made an additional collection of a hexactinellid seen just once during the dive (EX2107_D14_05B with 05B_A01, associated polynoid scale worm). We also observed a few 10-15 cm <i>Geodia</i> sponges (rare) and a cream-colored, hispid (spiney surface) hexactinellid from the family Rossellidae (EX2107_D14_07B, with three associates). The species may be undescribed. Plexauridae gorgonians and bamboo corals were common, as were <i>Pseudoanthomastus</i> (or <i>Anthomastus</i>), <i>Acanthogorgia</i> (yellow), <i>Chrysogorgia</i>, <i>Keratoisis</i>, other single stalked Isididae (bamboo corals), and small white primnoids. We came upon and imaged two large golden crabs, <i>Chaceon fenneri</i>, mating (10-12cm carapace on the large male on top).</p> <p>The fish sighted through this dive included: Synphobranchidae (cutthroat eels), Ophiidiidae (cusk-eels) including <i>Neobythites gilli</i> (twospot brotula), the rattail <i>Nezumia bairdii</i>, a juvenile <i>Chimaera monstrosa</i>, <i>Hoplostethus occidentalis</i>, <i>Laemonema</i> sp. (either <i>L. melanura</i> or <i>L. barbatula</i>), <i>Oncorhynchus clarkii</i> (cutthroat trout), <i>Gephyroberyx darwinii</i> (Darwin's Slimehead), and Beryciformes.</p> <p>During the brief blue water (~10m from bottom) hops across saddles toward higher knobs of mound, we observed a number of pelagic taxa, including <i>Solmissus</i> (common), <i>Halicreas minimum</i>, <i>Halitrephes</i>, a physonect siphonophore (probably <i>Apolemia</i>) displayed in a nice spiral feeding stance, <i>Atolla</i>, a second coronate medusa, dark red, that may have been <i>Periphyllopsis</i>, and a hatchet fish.</p>
Notable Observations	<ul style="list-style-type: none"> • We confirmed that another of the 60,000 or so mounds among the Million Mounds region was a <i>Lophelia</i> bioherm with living <i>Lophelia</i> • We collected a poorly documented spikey armed brittle star, with pink and soft central disc (Ophiomyxidae) • We collected what appears to be two undescribed species of hexactinellid glass sponges, along with their associates
Community and habitat observations	<p>Corals and Sponges - Present Chemosynthetic Community - Absent High biodiversity Community - Present Active Seep or Vent - Absent Extinct Seep or Vent - Absent Hydrates - Absent</p>
CMECS Feature Type(s)	Mounds
SeaTube Link (science annotation system)	https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&resourceId=2553

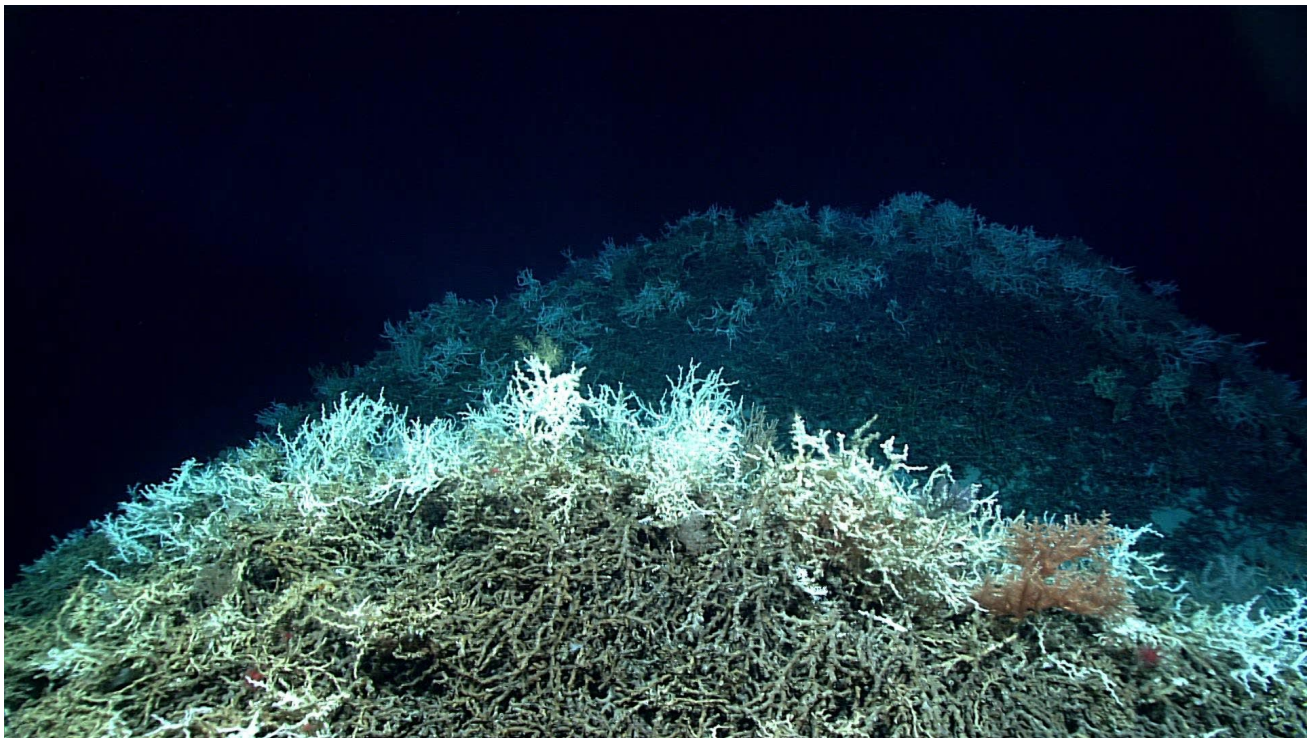
Equipment Deployed

ROV	<i>Deep Discoverer</i>
Camera Platform	<i>Seirios</i>
ROV Measurements	The following ROV measurements, data streams and equipment are used on each ROV deployment: CTD, depth, scanning sonar, USBL position, altitude, heading, attitude, high-resolution cameras, low resolution cameras, manipulator arms, suction sampler, sample drawers and thrusters. The section below notes if any of these sensors were malfunctioning or not operational
Equipment Malfunctions	

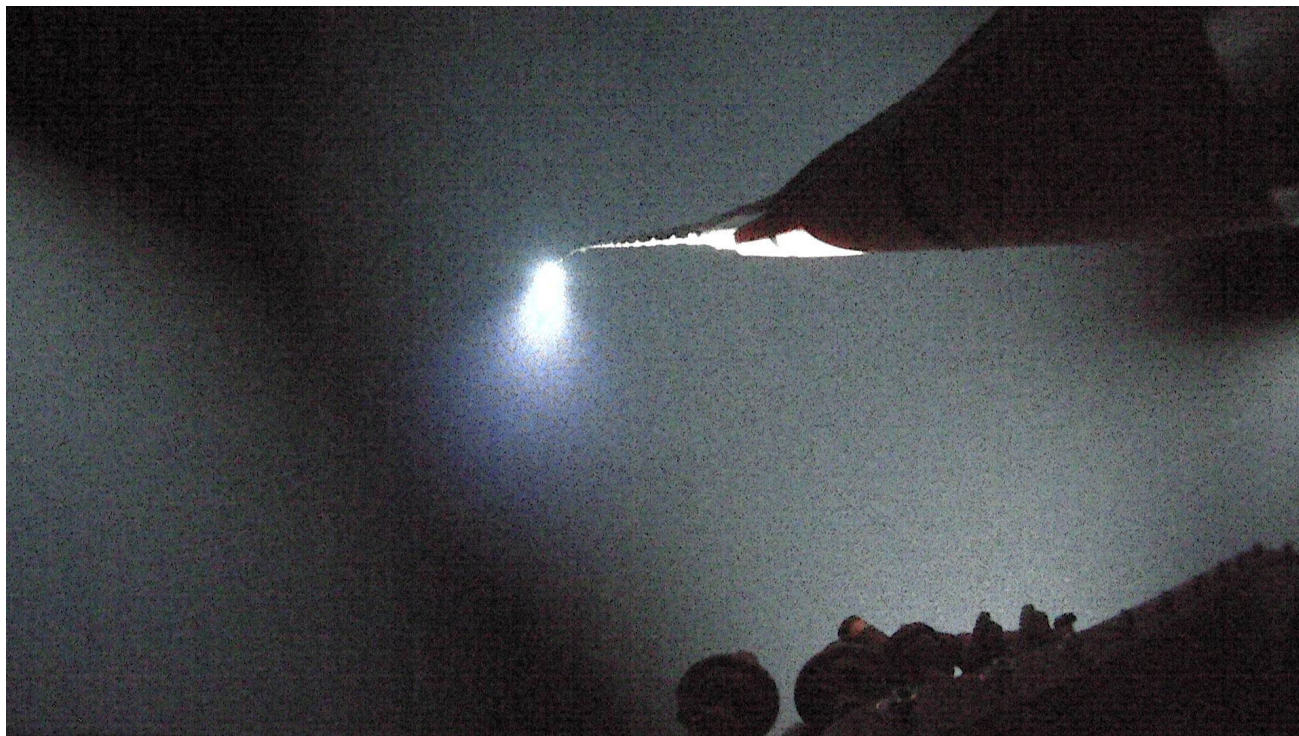
Close-up Map of Main Dive Site



Representative Photos of the Dive

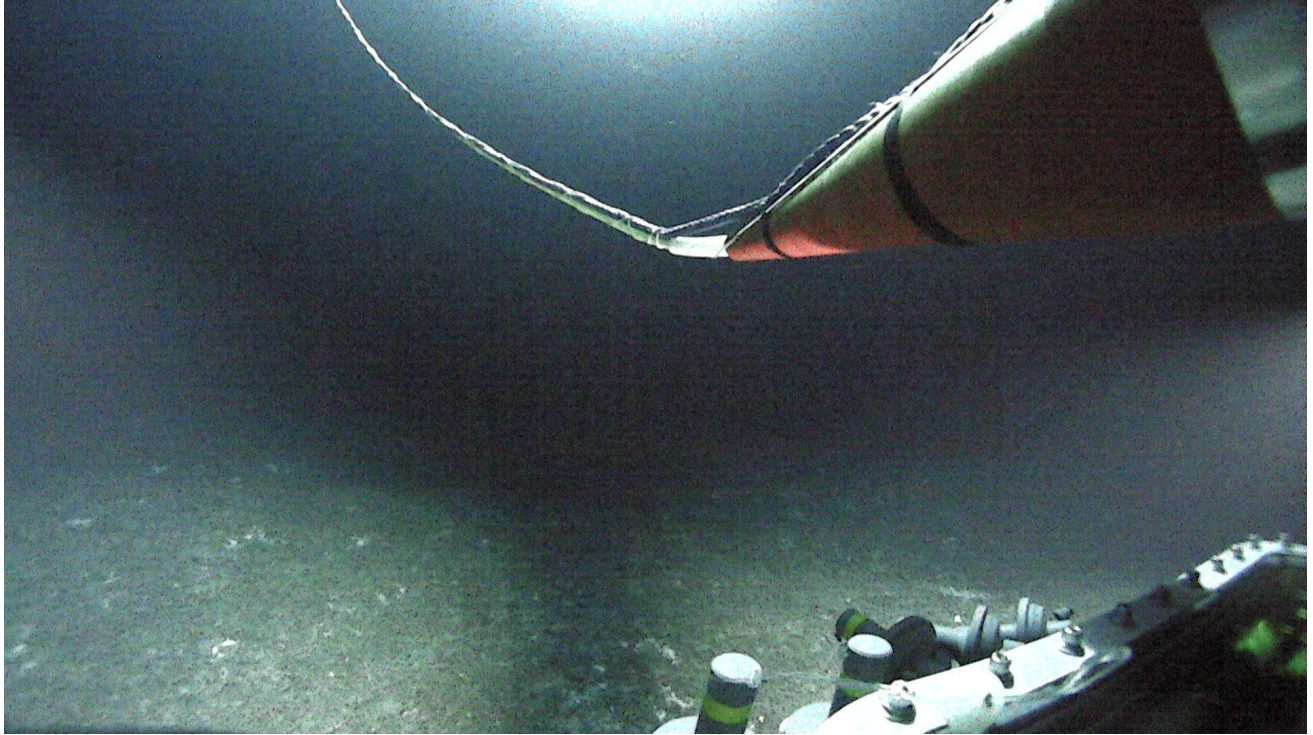


Samples Collected -



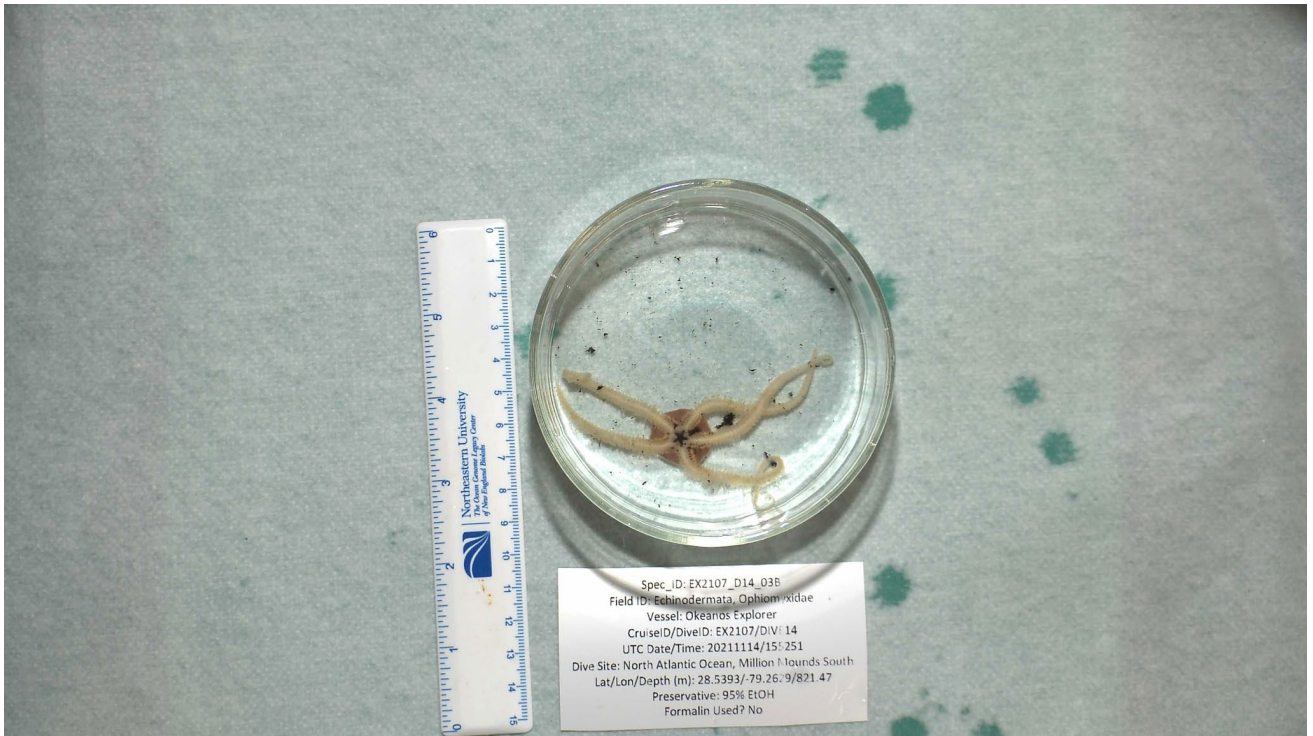
Sample ID	EX2107_D14_01W
Date (UTC)	20211114
Time (UTC)	140746
Depth (m)	501.859
Latitude (decimal degrees)	28.54256
Longitude (decimal degrees)	-79.265090
Temp. (°C)	15.63
Field ID(s)	Water sample
Comments	eDNA

Associates Sample ID	Field Identification	Count
N/A	N/A	N/A



Sample ID	EX2107_D14_02W
Date (UTC)	20211114
Time (UTC)	150327
Depth (m)	825.298
Latitude (decimal degrees)	28.539440
Longitude (decimal degrees)	-79.26337
Temp. (°C)	6.722
Field ID(s)	Water sample
Comments	eDNA

Associates Sample ID	Field Identification	Count
N/A	N/A	N/A



Sample ID	EX2107_D14_03B
Date (UTC)	20211114
Time (UTC)	155251
Depth (m)	821.473999
Latitude (decimal degrees)	28.53925896
Longitude (decimal degrees)	-79.26293945
Temp. (°C)	7.183000088

Field ID(s)	Ophiomyxidae
Comments	Pink center, white arms, five arms, soft dermal membrane, expelled sediment from anus

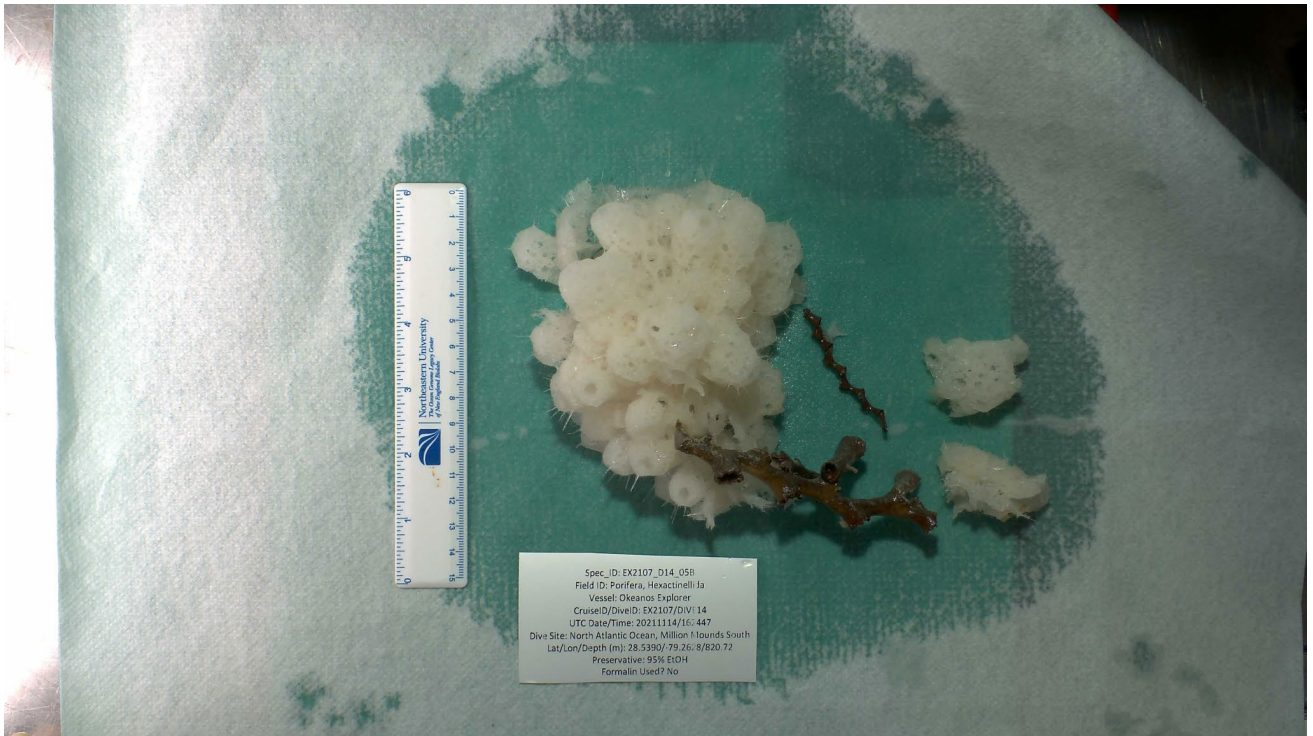
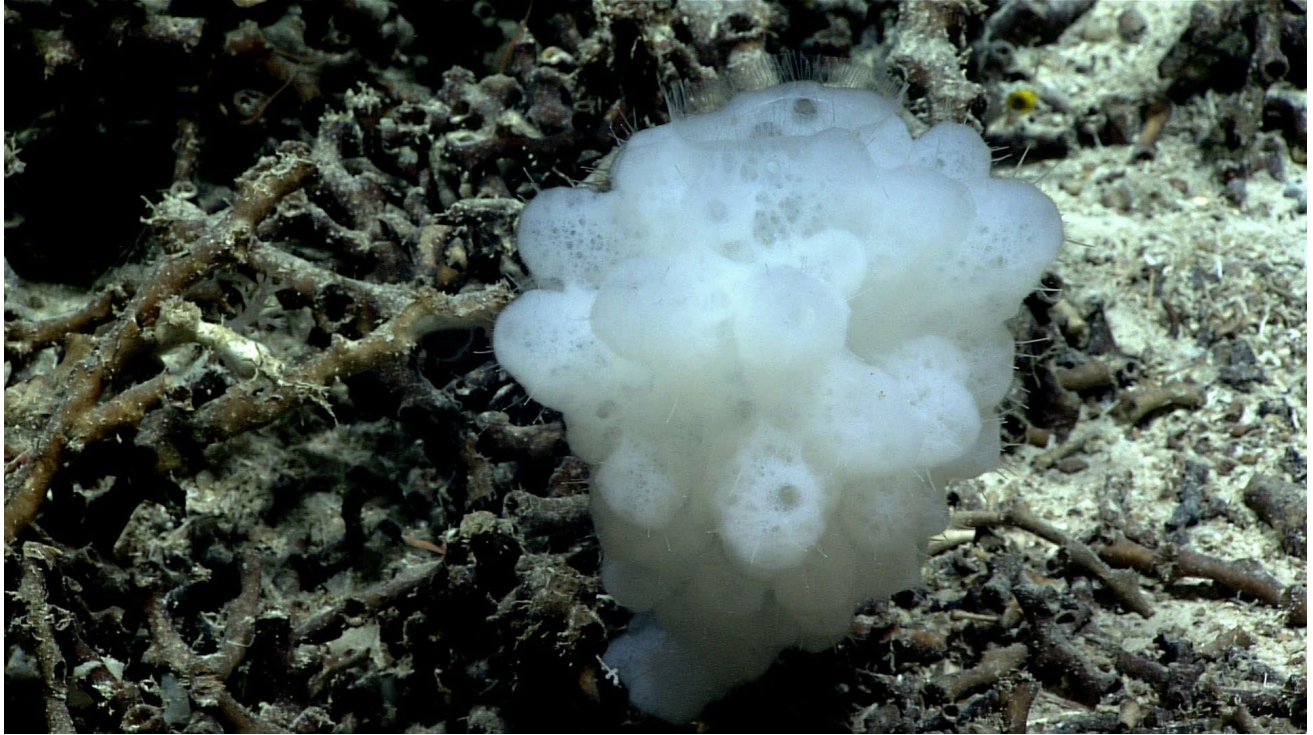
Associates Sample ID	Field Identification	Count
N/A	N/A	N/A





Sample ID	EX2107_D14_04B
Date (UTC)	20211114
Time (UTC)	160243
Depth (m)	821.5430298
Latitude (decimal degrees)	28.53925133
Longitude (decimal degrees)	-79.26296997
Temp. (°C)	7.050000191
Field ID(s)	Abyssocladia
Comments	Small, spikey, short stalk

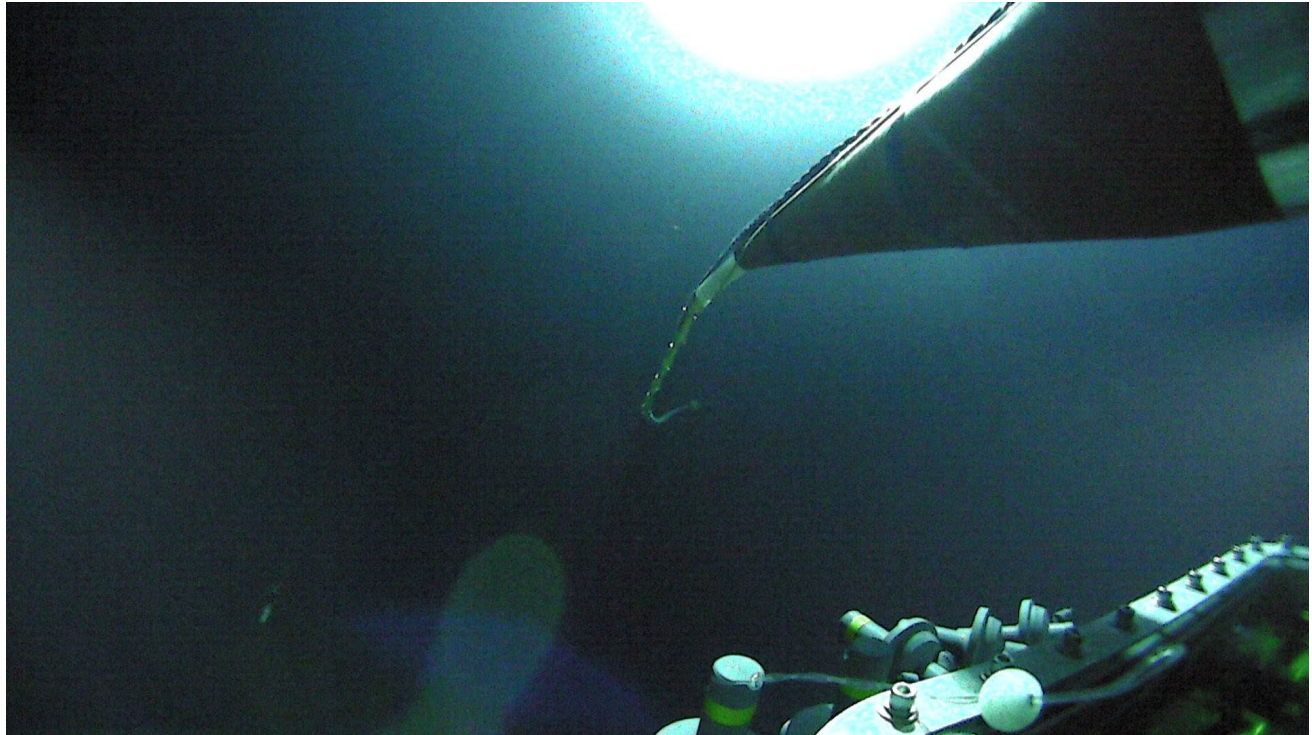
Associates Sample ID	Field Identification	Count
EX2107_D14_04B_A01	Lophelia pertusa	1
EX2107_D14_04B_A02	Cladorhiza	3
EX2107_D14_04B_A03	Ophiuroidea	1
EX2107_D14_04B_A04	Polychaeta	1



Sample ID	EX2107_D14_05B
Date (UTC)	20211114
Time (UTC)	162447
Depth (m)	820.7219849
Latitude (decimal degrees)	28.53900146
Longitude (decimal degrees)	-79.26279449
Temp. (°C)	6.989999771

Field ID(s)	Hexactinellida
Comments	Soft, resilient; large sharp spicules; dropped on floor, got crushed; tube; growing on piece of dead lophelia and madrepora; ring of sharp spicules 1 cm long around oscule

Associates Sample ID	Field Identification	Count
EX2107_D14_05B_A01	Polynoidae	1



Sample ID	EX2107_D14_06W
Date (UTC)	20211114
Time (UTC)	174338
Depth (m)	774.076
Latitude (decimal degrees)	28.5385
Longitude (decimal degrees)	-79.262050
Temp. (°C)	7.901
Field ID(s)	Water sample
Comments	eDNA

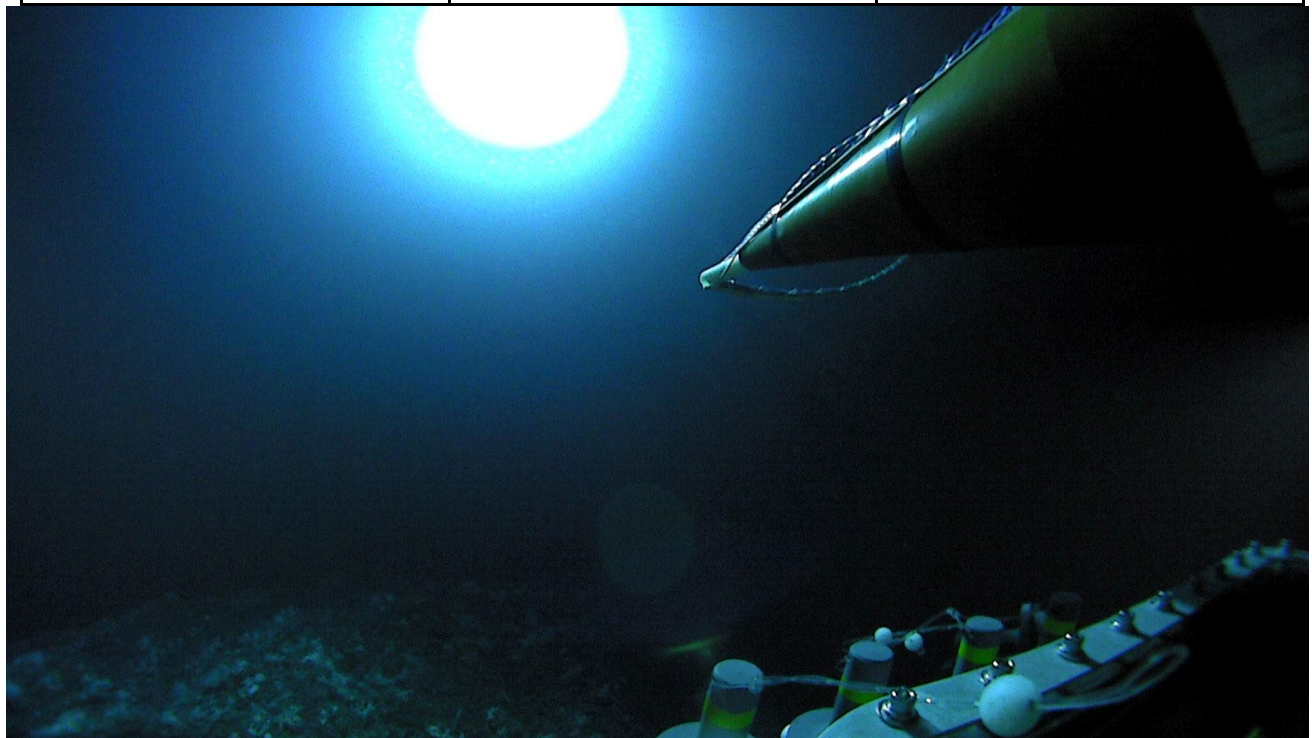
Associates Sample ID	Field Identification	Count
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Sample ID	EX2107_D14_07B
Date (UTC)	20211114
Time (UTC)	201640
Depth (m)	766.440979
Latitude (decimal degrees)	28.53961945

Longitude (decimal degrees)	-79.26016998
Temp. (°C)	7.380000114
Field ID(s)	Rossellidae
Comments	Cluster of hollow tubes; large portion will be dry; portion will be put into EtOH, portion put into Formalin; network of dermal spicules outside the main body

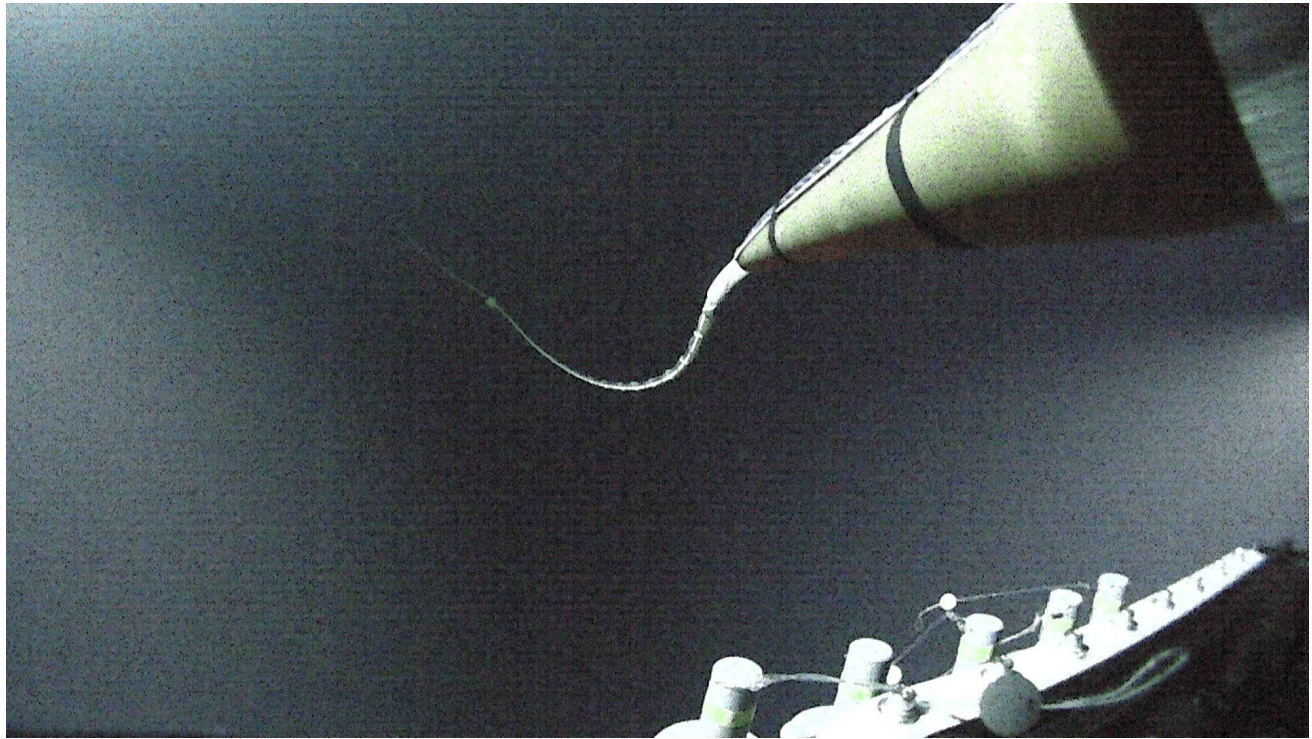
Associates Sample ID	Field Identification	Count
EX2107_D14_07B_A01	Amphipoda	10
EX2107_D14_07B_A02	Ophiuroidea	4
EX2107_D14_07B_A03	Ophiuroidea	4



Sample ID	EX2107_D14_08W
Date (UTC)	20211114
Time (UTC)	201918
Depth (m)	765.715
Latitude (decimal degrees)	28.539650
Longitude (decimal degrees)	-79.260190
Temp. (°C)	7.944
Field ID(s)	Water sample

Comments	eDNA
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Associates Sample ID	Field Identification	Count
N/A	N/A	N/A



Sample ID	EX2107_D14_09W
Date (UTC)	20211114
Time (UTC)	204152
Depth (m)	760.357
Latitude (decimal degrees)	28.53967
Longitude (decimal degrees)	-79.259720
Temp. (°C)	8.232
Field ID(s)	Water sample
Comments	eDNA

Associates Sample ID	Field Identification	Count
N/A	N/A	N/A

Scientists Involved (provide name, email, affiliation)

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