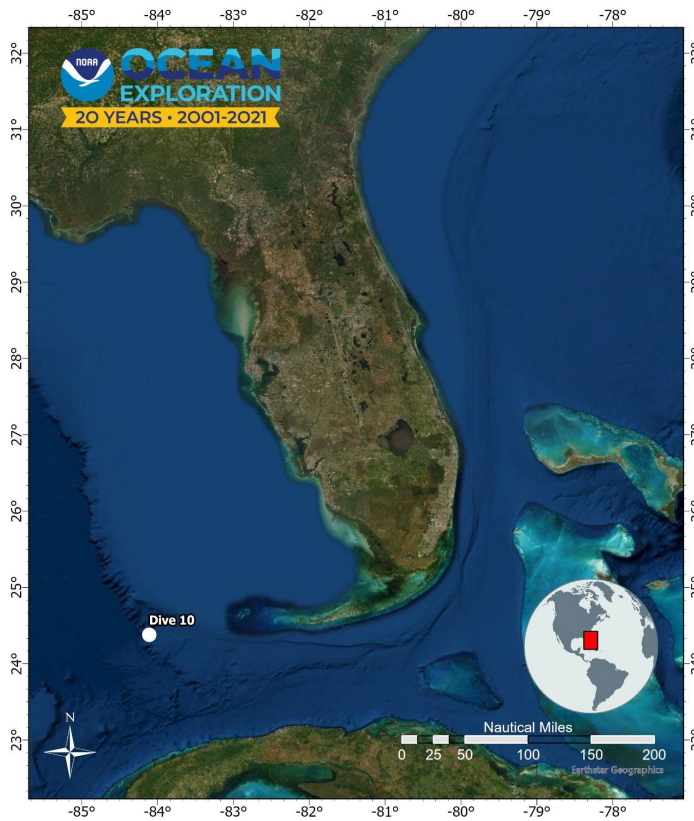


ROV Dive Summary, EX-21-07, Dive 10, November 09, 2021

General Location Map



Dive Information

Site Name	Shark Fin
General Area Descriptor	Steep ridge
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 and collections
Was the dive restricted for Underwater Cultural Heritage?	No
ROV Dive Summary Data	<p>Dive Summary: EX2107_DIVE10 ^^ Dive Type: Normal</p> <p>In Water: 2021-11-09T13:31:27.906901 24.379782404344787 ; -84.11144163536557</p> <p>On Bottom: 2021-11-09T15:15:01.011822 24.380385494056807 ; -84.11126634015203</p> <p>Off Bottom: 2021-11-09T20:10:42.842219 24.38068344343115 ; -84.10873824908738</p> <p>Out Water: 2021-11-09T21:38:42.697361 24.38006273794291 ; -84.10863170324444</p> <p>Dive Duration: 8:07:14 Bottom Time: 4:55:41 Max Vehicle Depth: 2456.6 m Min Seafloor Depth: 2349.5 m Distance Travelled: 323.3 m</p>
Dive Description	<p>During the dive, five water samples were taken for eDNA processing: EX2107_D10_01W at 500 m during descent; EX2107_D10_02W at 2461 m after achieving bottom; EX2107_D10_04W at 2419 about 1.5 hours into the transect after ascending ridge about 40 meters; EX2107_D010_08W at 2365 m near diverse coral spot on edge of ridge; and EX2107_D10_10W at 2356 m at the end of our bottom time.</p> <p>At the bottom, we landed D2 near WP 1 targeted for being on a flatter area of a thin ridge. We observed 100% sediment substrate with bioturbated mounds and burrows, including a number of feeding tracks. The first organisms encountered were a transparent purple holothurian and an odd looking fish <i>Ipnops</i>, a relative of tripod fish. Throughout our ascent of the ridge, the ridge top was heavily sedimented and hosted different organisms than those inhabiting occasionally encountered rocks in the sand, and the rocky sides of the ridges.</p> <p>Within the silty, sandy parts of our transect, up the spine of the ridge, encountered megafauna included two species of Synallactidae (1: the transparent purple cucumber and 2: pink “tongue” cucumber), the decorator holothurian <i>Oloughlinus</i>, red <i>Nematocarcinus</i> shrimp, short stalked <i>Hyalonema</i> glass sponges, <i>Pheronema</i> glass sponges anchored to the sand by abundant long thick basal spicules, Ceriantharia tube anemone, and a tripod fish <i>Bathypterois grallator</i> with a piscicolid leech parasite.</p> <p>Where the silty sandy slope of the ridge increased (up to a slope of about 45°), small patches of sharp edged rocks and small boulders, sometimes covered with a black FeMG crust, increased in abundance. These rocks provided habitat for cup corals, many encrusting demosponges, a</p>



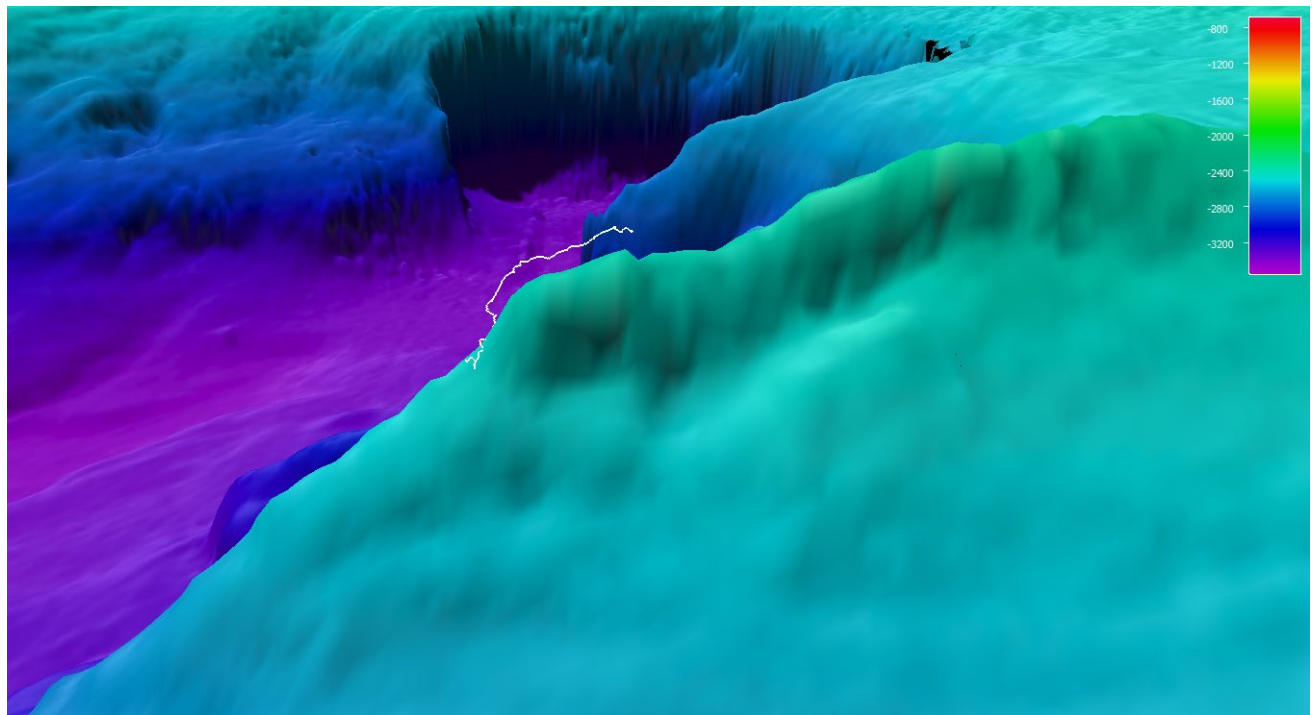
	<p>few glass sponges, many hydroids, barnacles, a few smaller colonies of Antipatharia and Octocorallia, and a limited number of mobile organisms (mostly squat lobsters).</p> <p>As we ascended the ridge, the southerly, current facing wall of the ridge had abundant, larger filter feeders, particularly just below the ridge top. The most abundant of these sessile organisms were gorgonians of many kinds, including multiple species of primnoids and bamboo corals. One commonly encountered delicate bamboo with tiny polyps with very long tentacles on one side of the branches was collected (EX2107_D10_03B). Colonies of yellow <i>Paramuricea</i> were also common, and one without an associated <i>Asteroschema</i> ophiuroid was collected (EX2107_D10_5B). One colony of stoloniferan Cornulariidae was observed in the early portion of the ridge wall. Various black corals, including <i>Heteropathes</i> (with thick flesh and a concentration of polyps on the central stalk) and <i>Bathypathes</i> (multiple spp.) were also encountered. Bryozoans of the family Bugulidae and various sponges including a glass sponge of family Farreidae (or possibly Euretidae) was collected (EX2107_D10_07B).</p> <p>We collected a loose rock that looked to have been recently eroded from the wall (EX2107_D10_6G).</p> <p>As we continued the latter portion of our transect up the ridge, the slopes down along the southern edge were near 90°, with rich rock outcrops supporting the densest development of coral gardens (mini forests) seen during the dive. In addition to the gorgonian and bamboo corals mentioned above, we saw large colonies of the precious coral <i>Hemicorallium</i> (Coralliidae, with ophiacanthids), two large colonies of <i>Iridogorgia magnispiralisi</i> (one perhaps 3 meter in height), two additional species of Cornularidae, a striking red colony of <i>Paragorgia</i>, additional farreid glass sponges, and stylasterids.</p> <p>The rich stands of upright octocorals supported a wide variety of other life, including the brisingid asteroid <i>Hymenodiscus</i> (12-armed, pink disk), the asteroid <i>Evoplosoma</i> feeding on a gorgonian, stalked crinoids. Of note, <i>Paramuricea</i> and other taxa that often associate with brittle stars were devoid of these associates earlier in the transect but not during the latter portions. One yellow <i>Paramuricea</i> with associated snake star <i>Asteroschema</i> was collected (EX2107_D10_09B and 09B_A01). Barnacles were nestled among the lower stalks of coral colonies. One colony of <i>Chrysogorgia</i> was host to several “dumbo” octopus eggs (some hatched) and <i>Bathypalaemonella</i> shrimp.</p> <p>Throughout this dive, very few fish were spotted. In addition to <i>Ipnope</i>s and Bathypterois grallator mentioned above, we also observed rat tails/grenadiers (Macrouridae) and cusk eels (Ophidiidae).</p> <p>Toward the end of the dive, the tips of the tentacles of a large squid were just visible by D2’s cameras. We followed the tentacles and were treated to a rare sighting of a large (~5 meter) <i>Magnapinna</i>, which has only been recorded about a dozen times in the literature (perhaps 20 times ever).</p> <p>Human debris was encountered during this dive (a panel that had been colonized by an anemone).</p>
Notable Observations	<ul style="list-style-type: none"> • We collected a glass sponge of family Farreidae (or possibly Euretidae) that is likely not yet described • We recorded a rare sighting of a large (~5 meter, perhaps more) <i>Magnapinna</i> squid, which has only been recorded about a dozen times in the literature
Community and habitat observations	<p>Corals and Sponges - Present</p> <p>Chemosynthetic Community - Absent</p> <p>High biodiversity Community - Present</p> <p>Active Seep or Vent - Absent</p> <p>Extinct Seep or Vent - Absent</p>

	Hydrates - Absent
CMECS Feature Type(s)	Ridge
SeaTube Link (science annotation system)	https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&resourceId=2513

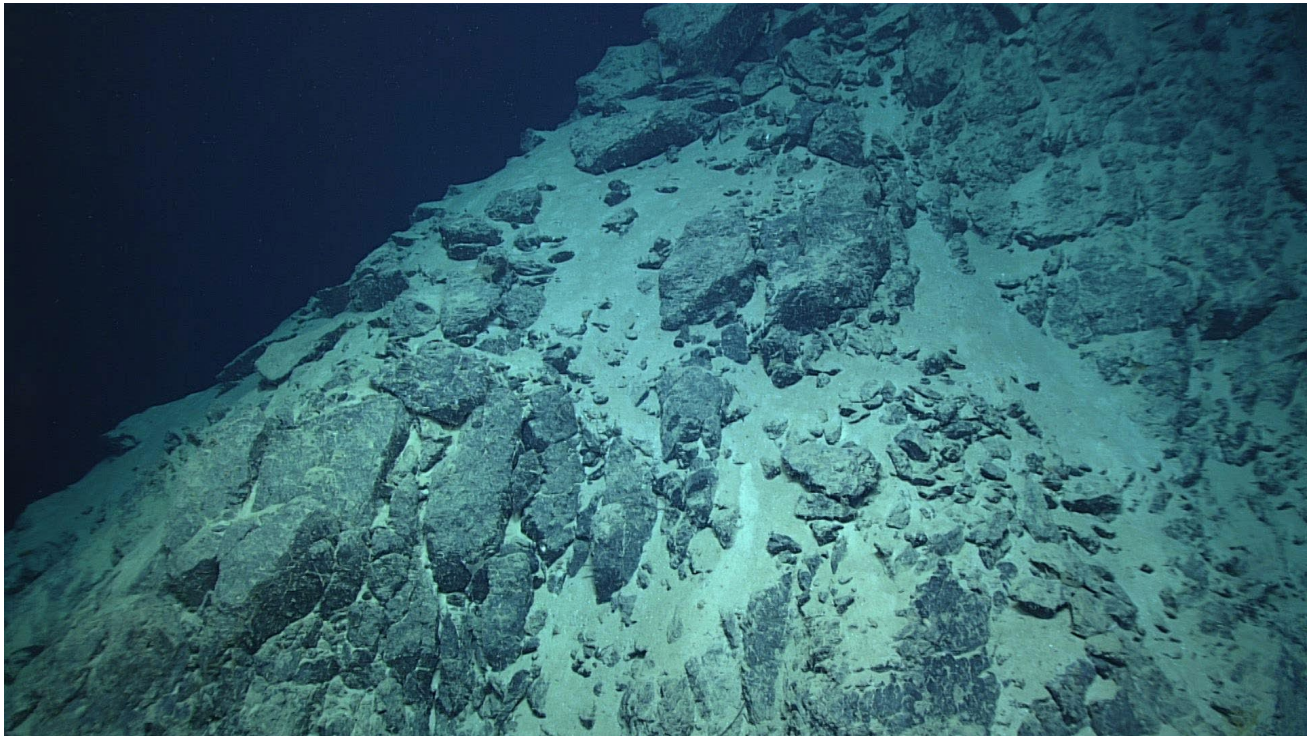
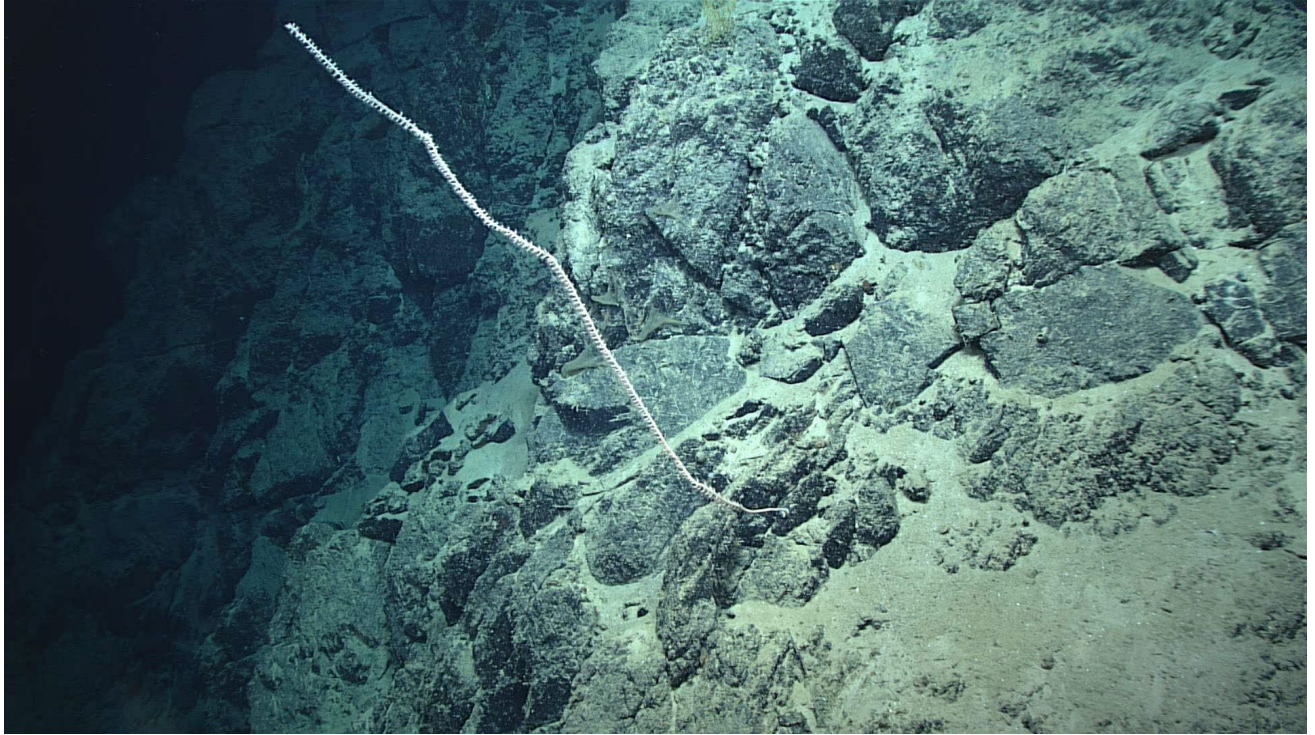
Equipment Deployed

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

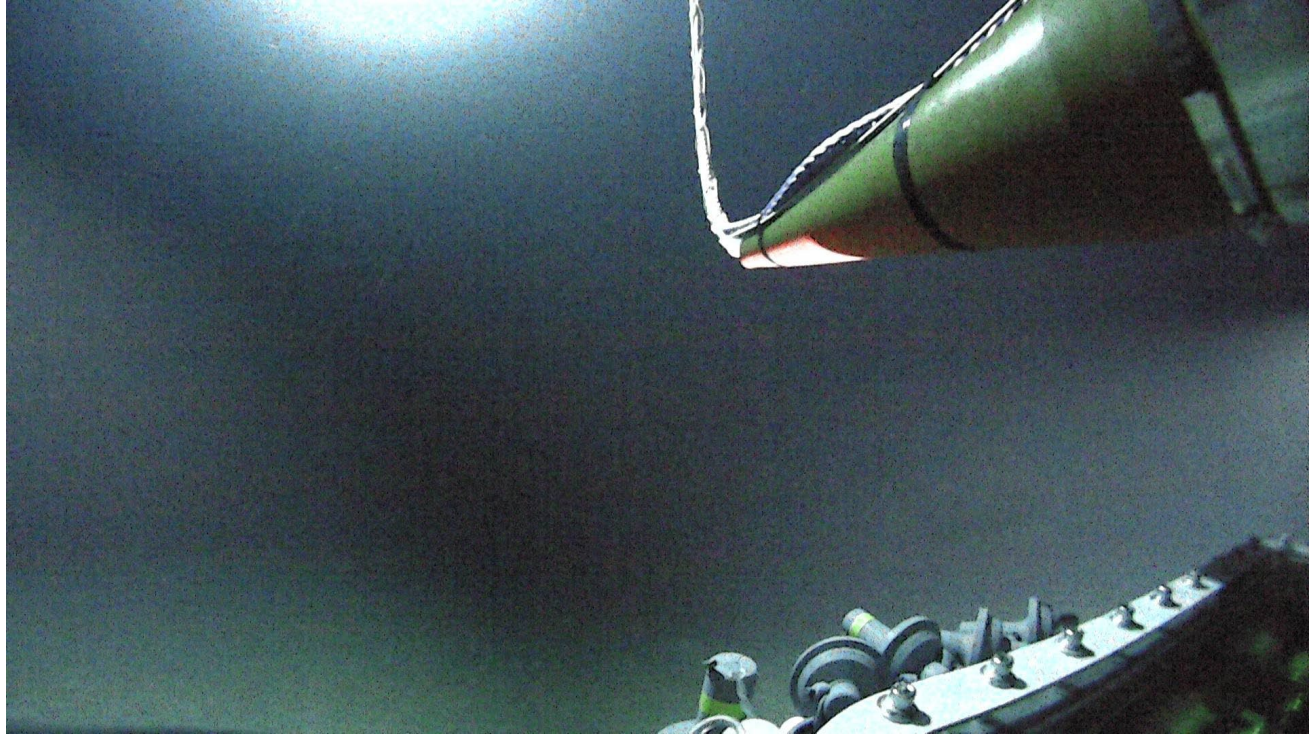


Samples Collected -



Sample ID	EX2107_D10_01W
Date (UTC)	20211109
Time (UTC)	135332
Depth (m)	504.008
Latitude (decimal degrees)	24.379900
Longitude (decimal degrees)	-84.112310
Temp. (°C)	8.308
Field ID(s)	Water sample
Comments	eDNA

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



Sample ID	EX2107_D10_02W
Date (UTC)	20211109
Time (UTC)	150619
Depth (m)	2461.364
Latitude (decimal degrees)	24.380240
Longitude (decimal degrees)	-84.111300
Temp. (°C)	4.328
Field ID(s)	Water sample
Comments	eDNA

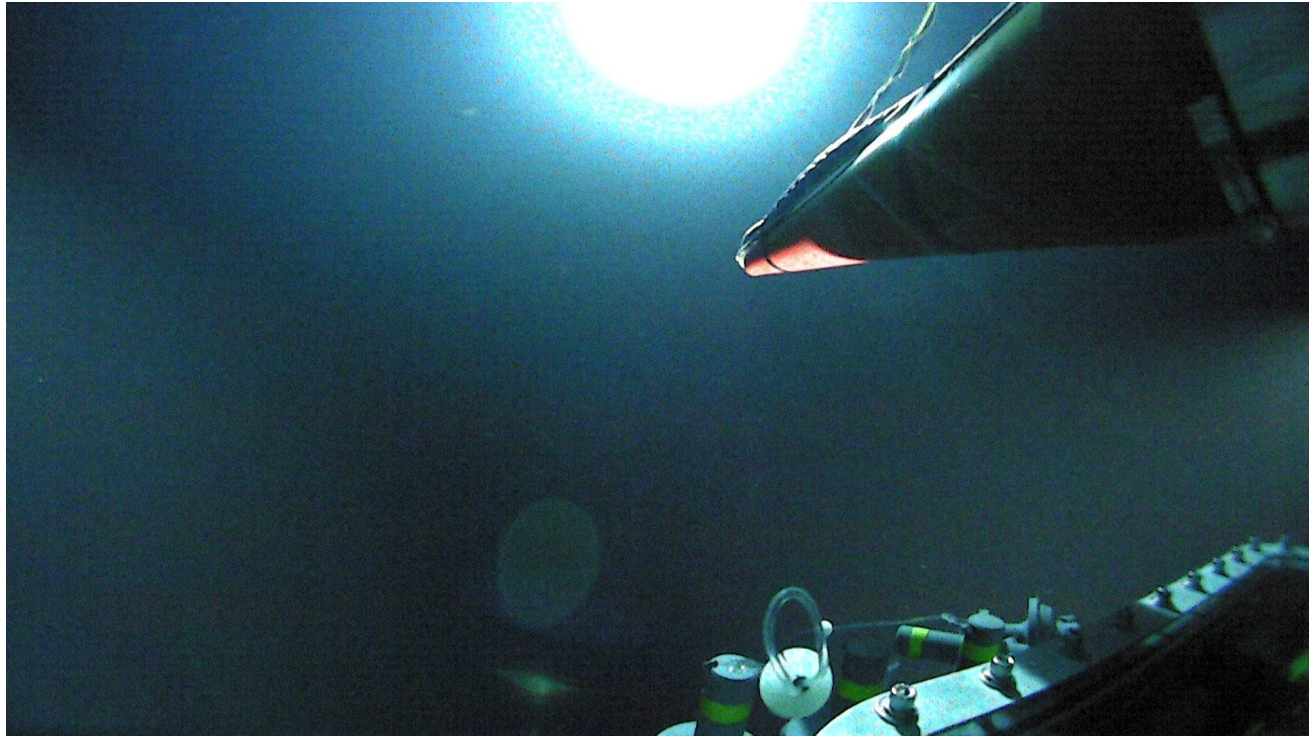
Associates Sample ID	Field Identification	Count
N/A	N/A	N/A



Sample ID	EX2107_D10_03B
Date (UTC)	20211109
Time (UTC)	161723
Depth (m)	2425.425049
Latitude (decimal degrees)	24.3807106
Longitude (decimal degrees)	-84.11088562
Temp. (°C)	4.326000214

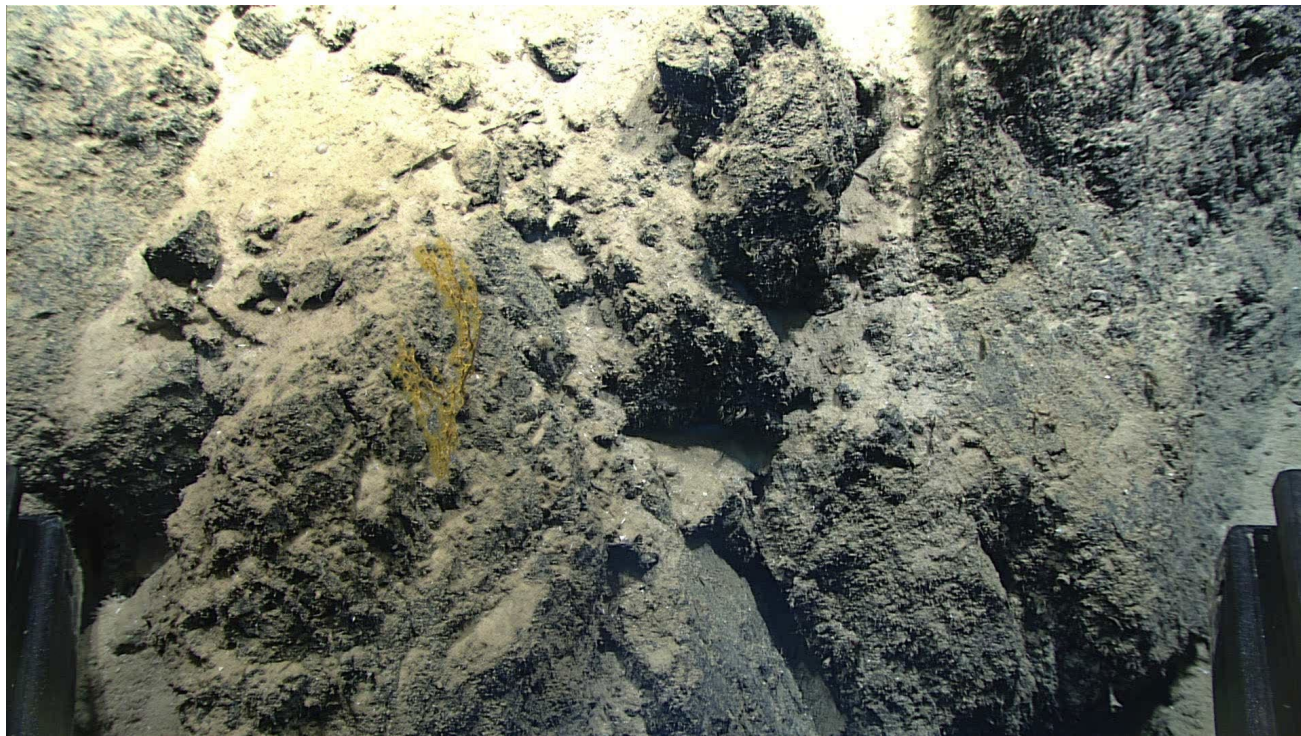
Field ID(s)	Keratoisididae
Comments	Extremely slimey; nodes present; broken up, not fully intact

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



Sample ID	EX2107_D10_04W
Date (UTC)	20211109
Time (UTC)	162948
Depth (m)	2419.187
Latitude (decimal degrees)	24.38074
Longitude (decimal degrees)	-84.11102
Temp. (°C)	4.322
Field ID(s)	Water sample
Comments	eDNA

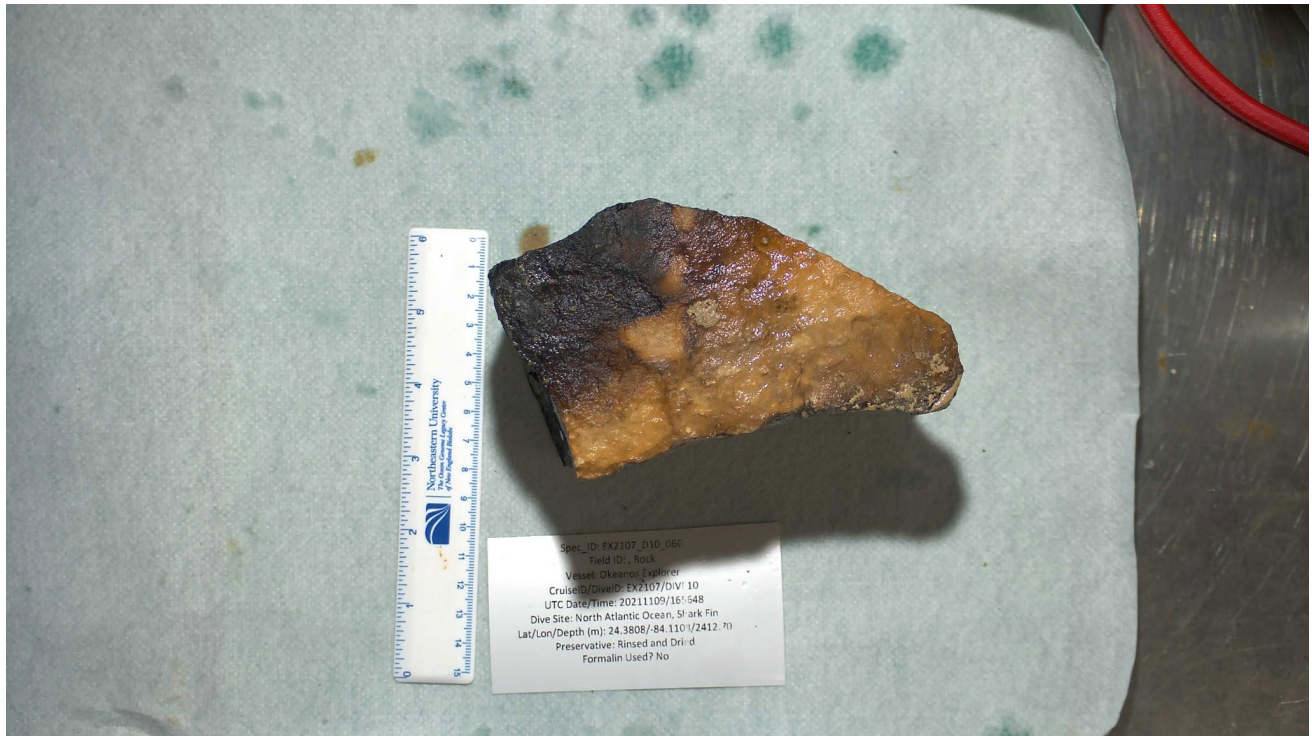
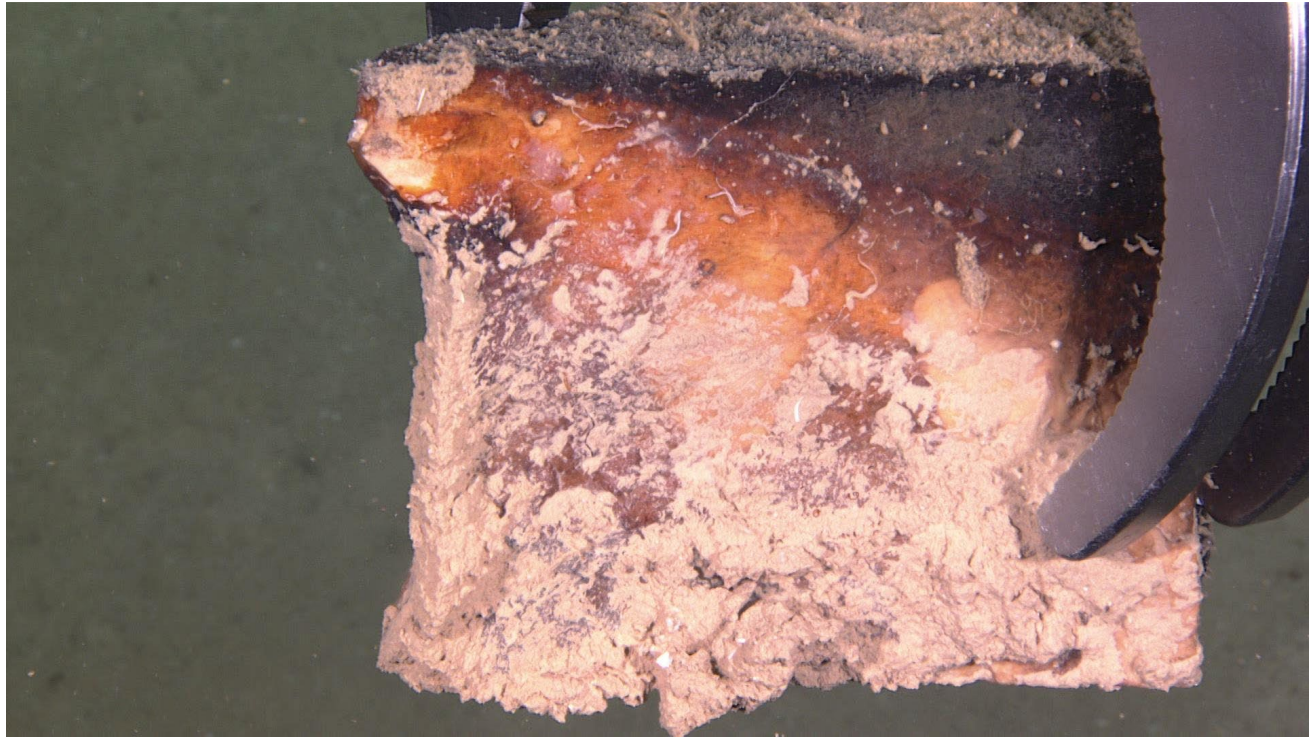
Associates Sample ID	Field Identification	Count
N/A	N/A	N/A



Sample ID	EX2107_D10_05B
Date (UTC)	20211109
Time (UTC)	164500
Depth (m)	2416.552979
Latitude (decimal degrees)	24.3807106
Longitude (decimal degrees)	-84.11099243
Temp. (°C)	4.321000099

Field ID(s)	Paramuricea
Comments	Yellow planar, polyps exert, turned grey in EtOH

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



Sample ID	EX2107_D10_06G
Date (UTC)	20211109
Time (UTC)	165648
Depth (m)	2412.699951
Latitude (decimal degrees)	24.38078499
Longitude (decimal degrees)	-84.11079407
Temp. (°C)	4.321000099
Field ID(s)	Rock
Comments	FeMn, crust on half

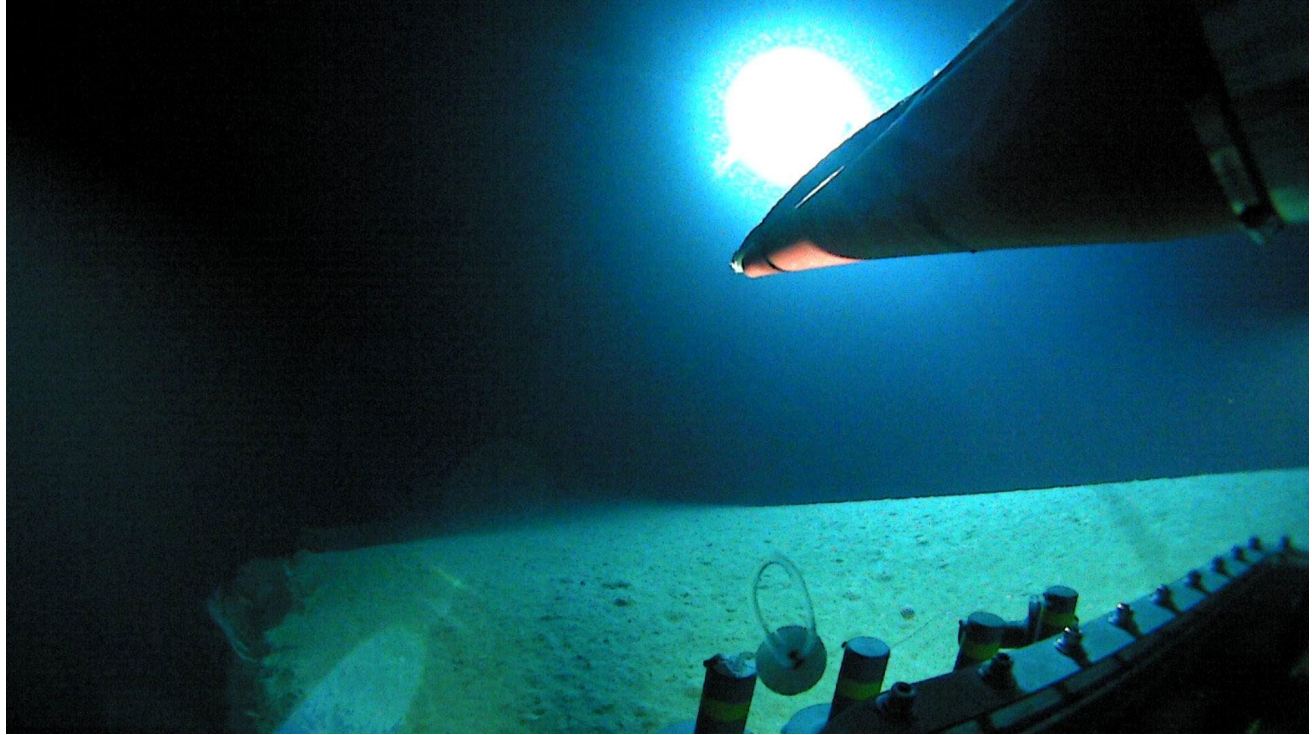
Associates Sample ID	Field Identification	Count
N/A	N/A	N/A





Sample ID	EX2107_D10_07B
Date (UTC)	20211109
Time (UTC)	171705
Depth (m)	2411.038086
Latitude (decimal degrees)	24.38069916
Longitude (decimal degrees)	-84.11083221
Temp. (°C)	4.322999954
Field ID(s)	Farreidae
Comments	Tubes fluted; very thin, fine, breakable

Associates Sample ID	Field Identification	Count
EX2107_D10_07B_A01	Keratoisis	1
EX2107_D10_07B_A02	Polychaeta	1
EX2107_D10_07B_A03	Amphipoda	1



Sample ID	EX2107_D10_08W
Date (UTC)	20211109
Time (UTC)	184324
Depth (m)	2365.007
Latitude (decimal degrees)	24.38044
Longitude (decimal degrees)	-84.109570
Temp. (°C)	4.315
Field ID(s)	Water sample
Comments	eDNA

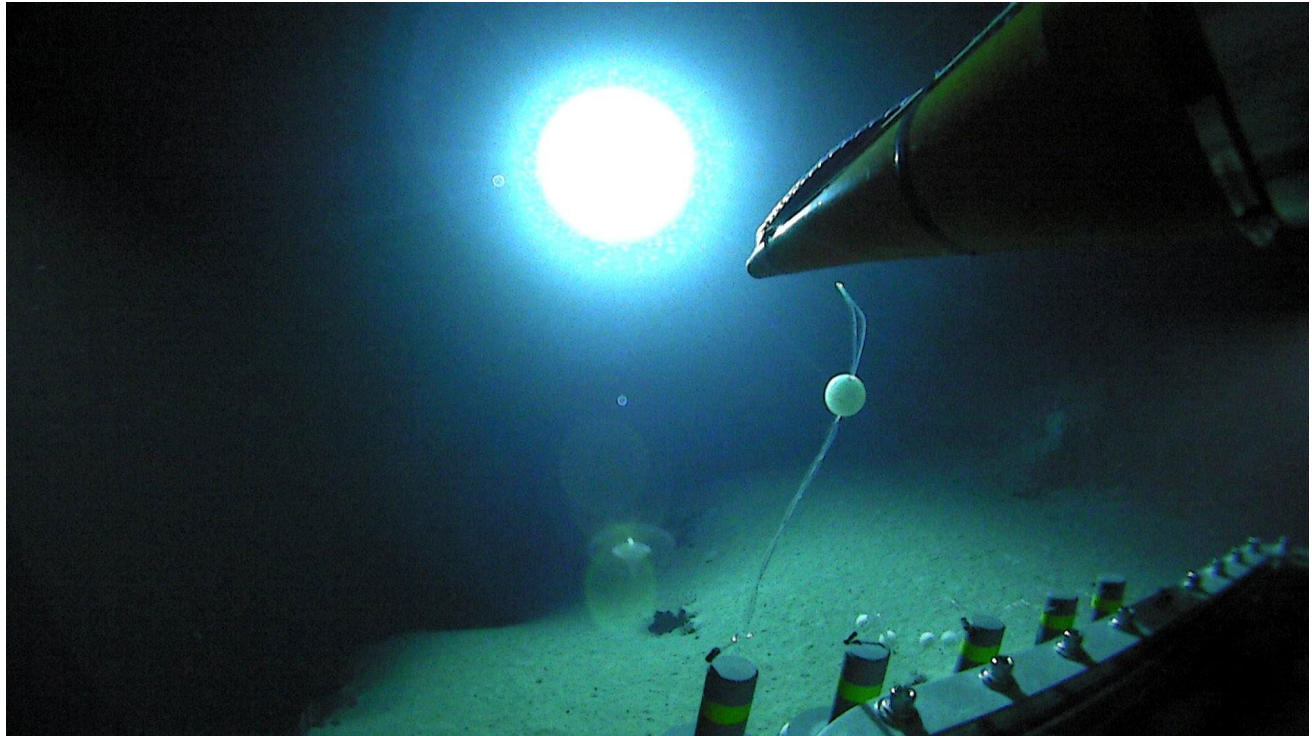
Associates Sample ID	Field Identification	Count
N/A	N/A	N/A



Sample ID	EX2107_D10_09B
Date (UTC)	20211109
Time (UTC)	190518
Depth (m)	2361.904053
Latitude (decimal degrees)	24.38064766
Longitude (decimal degrees)	-84.109375
Temp. (°C)	4.315000057

Field ID(s)	Paramuricea
Comments	Planar, yellow, polyps exert, smells, turned grey in EtOH

Associates Sample ID	Field Identification	Count
EX2107_D10_09B_A01	Asteroschema	1



Sample ID	EX2107_D10_10W
Date (UTC)	20211109
Time (UTC)	201017
Depth (m)	2357.594
Latitude (decimal degrees)	24.38067
Longitude (decimal degrees)	-84.108700
Temp. (°C)	4.319
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)

First Name	Last Name	Email	Affiliation
Steve	Auscavitch	steven.auscavitch@temple.edu	Boston University
Nolan	Barrett	barrettnh56@gatech.edu	Georgia Institute of Technology
Cristiana	Castello Branco	cristianacbranco@gmail.com	National Museum of Natural History
Roger	Flood	Roger.flood@stonybrook.edu	Stony Brook University
Santiago	Herrera	santiago.herrera@lehigh.edu	Lehigh University
Heather	Judkins	Judkins@usf.edu	USF St. Petersburg
Chris	Mah	brisinga@gmail.com	National Museum of Natural History
Asako	Matsumoto	amatsu@gorgonian.jp	Chiba Institute of Technology
Megan	McCuller	megan.mcculler@naturalsciences.org	NC Museum of Natural Sciences
Kevin	Rademacher	kevin.r.rademacher@noaa.gov	NOAA/NMFS
Mike	Vecchione	vecchiom@si.edu	NMFS and NMNH
Steve	Auscavitch	steven.auscavitch@temple.edu	Boston University
Upasana	Ganguly	upasana.ganguly1@louisiana.edu	University of Louisiana at Lafayette
Kelsey	Viator	ksviator2000@gmail.com	University of Louisiana at Lafayette

Please direct inquiries to:

NOAA Office of Ocean Exploration & Research
1315 East-West Highway, SSMC3 RM 10210
Silver Spring, MD 20910
oceanexplorer@noaa.gov