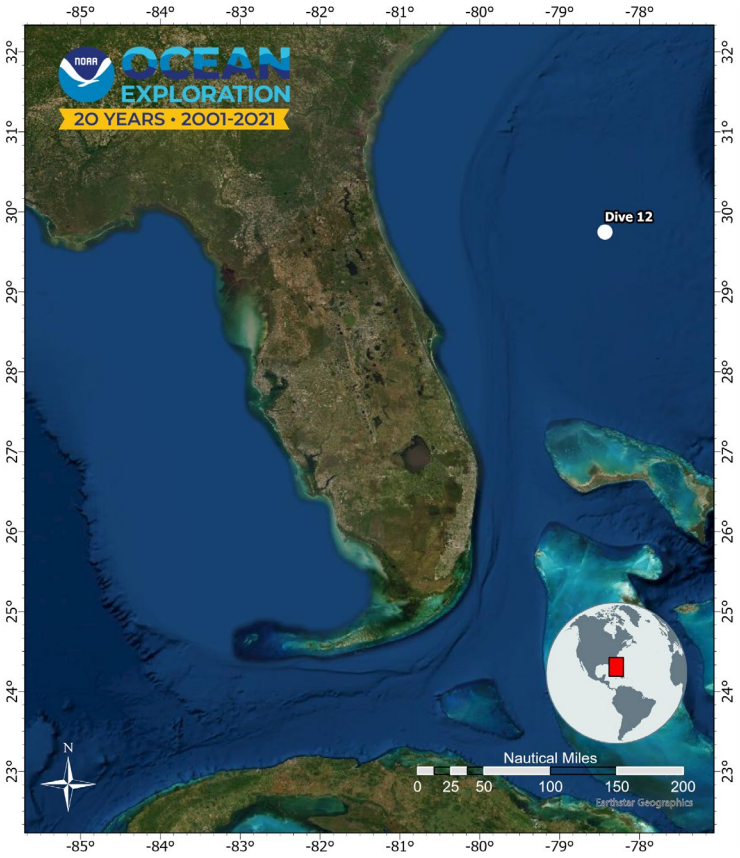
ROV Dive Summary, EX-21-07, Dive 12, November 12, 2021

General Location Map



Dive Information

Site Name	Knolls North
General Area Descriptor	Coral Mounds
Science Team Leads	Stephanie Farrington, Allen Collins
Expedition Coordinator	Matt Dornback
Sample Data Manager	Matt Grossi
ROV Dive Supervisor	Chris Ritter

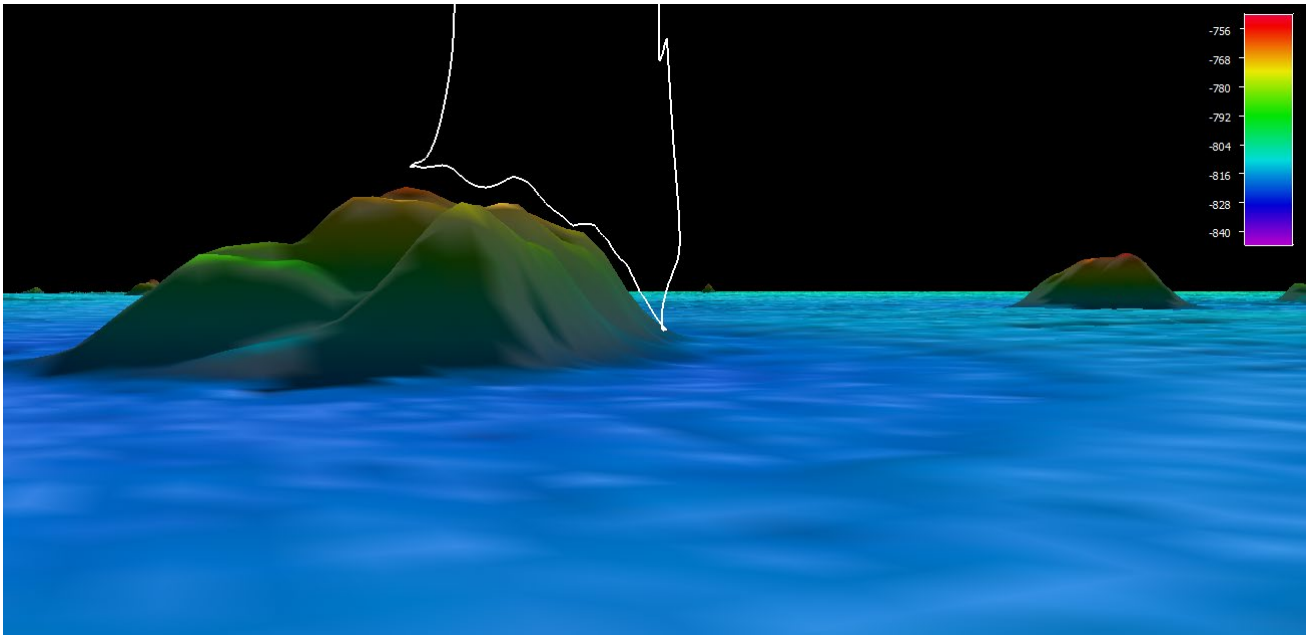
Mapping Lead	Derek Sowers
Dive Purpose	Coral Exploration
Was the dive restricted for Underwater Cultural Heritage?	No
ROV Dive Summary Data	Dive Summary: EX2107_DIVE12 ^^ In Water: 2021-11-12T17:53:59.589479 29.747580793919376 ; -78.43721347354054 On Bottom: 2021-11-12T18:45:20.371419 29.74694479672912 ; -78.43335947429873 Off Bottom: 2021-11-12T21:03:45.359627 29.74530838677925 ; -78.43513012256417 Out Water: 2021-11-12T21:39:01.284484 29.74187 ; -78.431333 Dive Duration: 3:45:01 Bottom Time: 2:18:24 Max Vehicle Depth: 815.2 m Min Seafloor Depth: 749.9 m Distance Travelled: 299.5 m
Dive Description	During the dive, five water samples were taken for eDNA processing: **EX2107_D12_01W** at 500 m during descent; **EX2107_D12_02W** at 816 m after achieving bottom; **EX2107_D12_03W** at 765 m about 1.25 hours into the transect after ascending the mound to the top of a knob about 50 meters; **EX2107_D012_04W** at 751 m nearing the overall top of the mound; and **EX2107_D12_05W** at 752 m at the end of our transect before leaving bottom at the top of the highest knob of this mound. The last two samples were near replicates, separated in time by 10 minutes and by depth of 1 meter. When we dropped to the bottom, we landed on a mild slope (10-20^{o}) completely covered by dead coral rubble of *Lophelia pertusa* (=*Desmophyllum pertusum*), affirming that this mound is a bioherm. The rubble throughout most of the dive was dead (ofen with a light FeMn crust and calyces destroyed). For the middle part of the transect, the slope increased to ~45^{o} but continued to have a bottom made up of *Lophelia* rubble. When we achieved both a local high (on top of a knob) and the overall high of the mound, both mildly rounded, there were very few instances of standing dead or living *Lophelia* corals. The bottom continued to be 100% rubble made up of dead coral skeletons, with many smaller organisms living on and within the rubble. We observed three or four living *Lophelia* colonies (10-15 cm), and collected part of one for ASPIRE connectivity studies (**EX2107_D12_06B**). This coral bioherm was an attractive habitat for several different kinds of fishes, including the viperfish *Chauliodus sloani*, the cutthroat eel *Synaphobranchus affinis*, *Nezumia*, the duckbill or sorcerer eel *Nettastoma melanura*, and the pink frogmouth *Chaunax pictus*. We also observed the benthopelagic trachyline medusa *Ptychogastria*. Throughout the transect, many small gorgonians were observed growing on and among the rubble. The small white fans seemed to be dominated by species of two types, Primnoidae and *Acanthogorgia*. But throughout the dive we encountered many other Octocorallia, including *Paragorgia* bamboo corals (a couple instances of freshly overturned colonies), bamboo coral of *Keratoisis*-type morphology, nephtheid soft corals, *Anthomastus*-like corals, plexaurids, *Chrysogorgia* with associated *Uroptychus* squat lobsters, and precious corals (Coraliidae).

	Other cnidarians observed included corallimorpharians, flytrap anemones, solitary cup corals, and a relatively large solitary hydroid (*Corymorpha*). As usual, sponges were a dominant component of the fauna. Close ups revealed many small demosponges, but there were also larger chimney sponges (order Haplosclerida, perhaps Petrosiidae) and *Polymastia* among the demosponge fauna. One glass sponge was particularly common at this locality, a *Euplectella*-like hexactinellid (Corbitellinae). One of these sponges was observed closely and we were able to see a pair of commensal shrimp within. We also observed an associate moving within a euretid glass sponge, but were never able to get a close enough look at the associate to identify it. We also saw some small individuals of *Aphrocallistes beatrix*. One brachiopod was visible (near *Polymastia* noted above) living among the rubble, and we captured some terrific footage of a homolodromiid crab carrying around a sponge hat using its back legs. Echinoderms of many sorts were observed on this bioherm, including venomous sea urchins (*Araeosoma*) and two cideroids (*Cidaris*, *Stylocidaris*). The latter was seen feeding on a variety of organisms, including the crinoid *Endoxocrinus*, a bamboo coral, and one of the abundant white plexaurids. Brittle stars (Ophiomyxidae) were common among the larger organisms observed. And we observed a tiny asteroid (*Lophaster*) next to comatulid crinoids (that we surmised were likely to be fed upon by the former), two kinds of latter.
Notable Observations	• We documented a Lophelia bioherm with very little living Lophelia left; but the site still was rich in biodiversity • We captured terrific footage of a homolodromiid crab carrying around a sponge over its body using its back legs
Community and habitat observations	Corals and Sponges - Present Chemosynthetic Community - Absent High biodiversity Community - Absent Active Seep or Vent - Absent Extinct Seep or Vent - Absent Hydrates - Absent
CMECS Feature Type(s)	Mounds
SeaTube Link (science annotation system)	https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&resourceId-2533

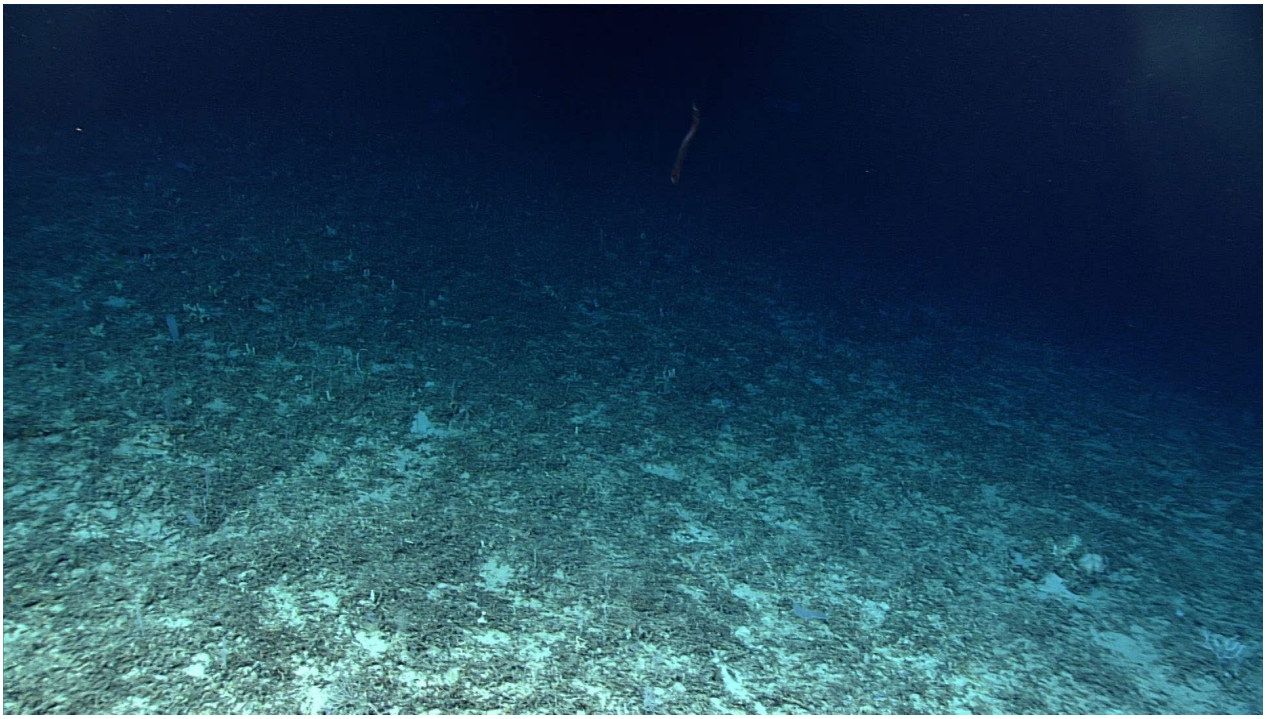
Equipment Deployed

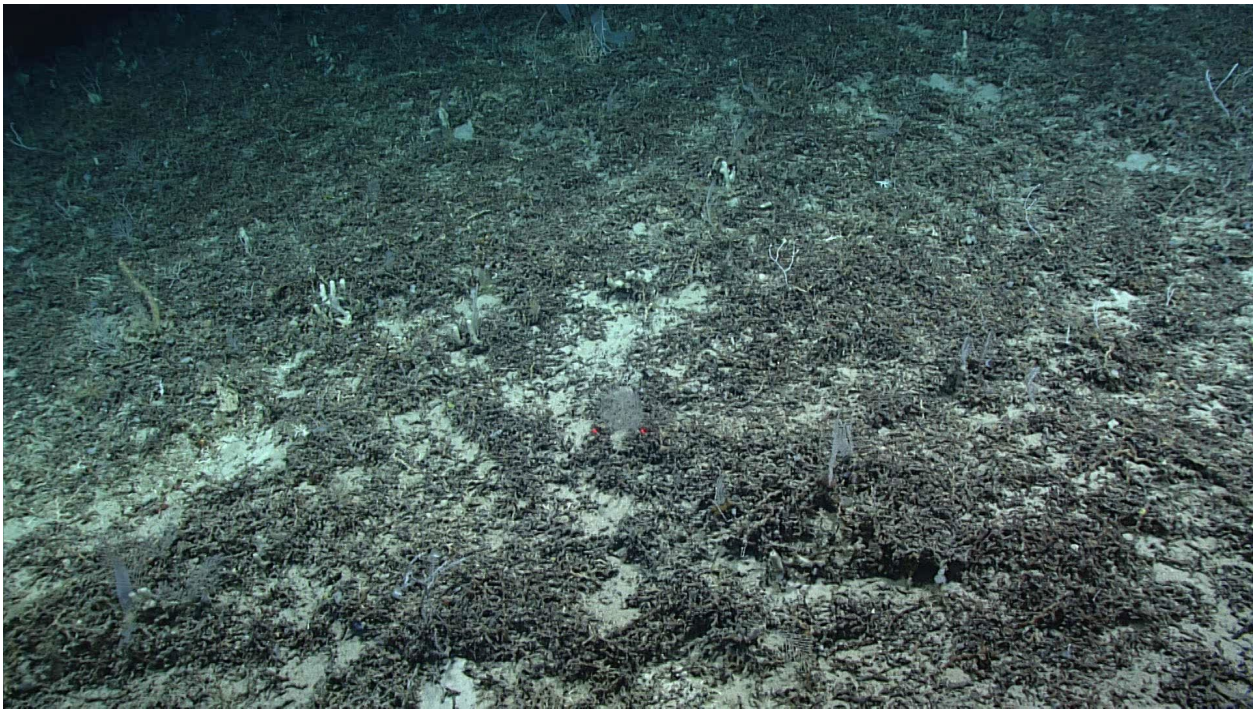
ROV	*Deep Discoverer*
Camera Platform	*Seirios*
ROV Measurements	The following ROV measurements, data streams and equipment are used on each ROV deployment: CTD, depth, scanning sonar, USBL position, altitude, heading, attitude, high-resolution cameras, low resolution cameras, manipulator arms, suction 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

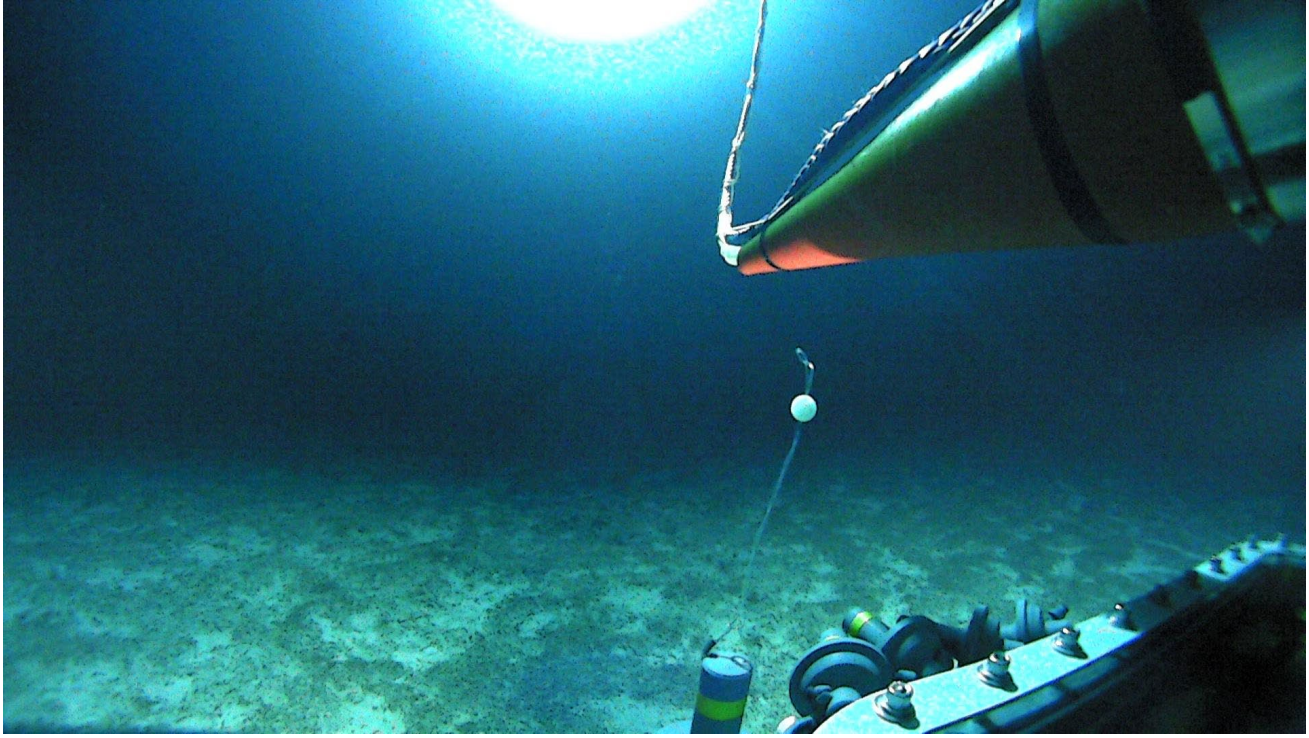




Samples Collected -

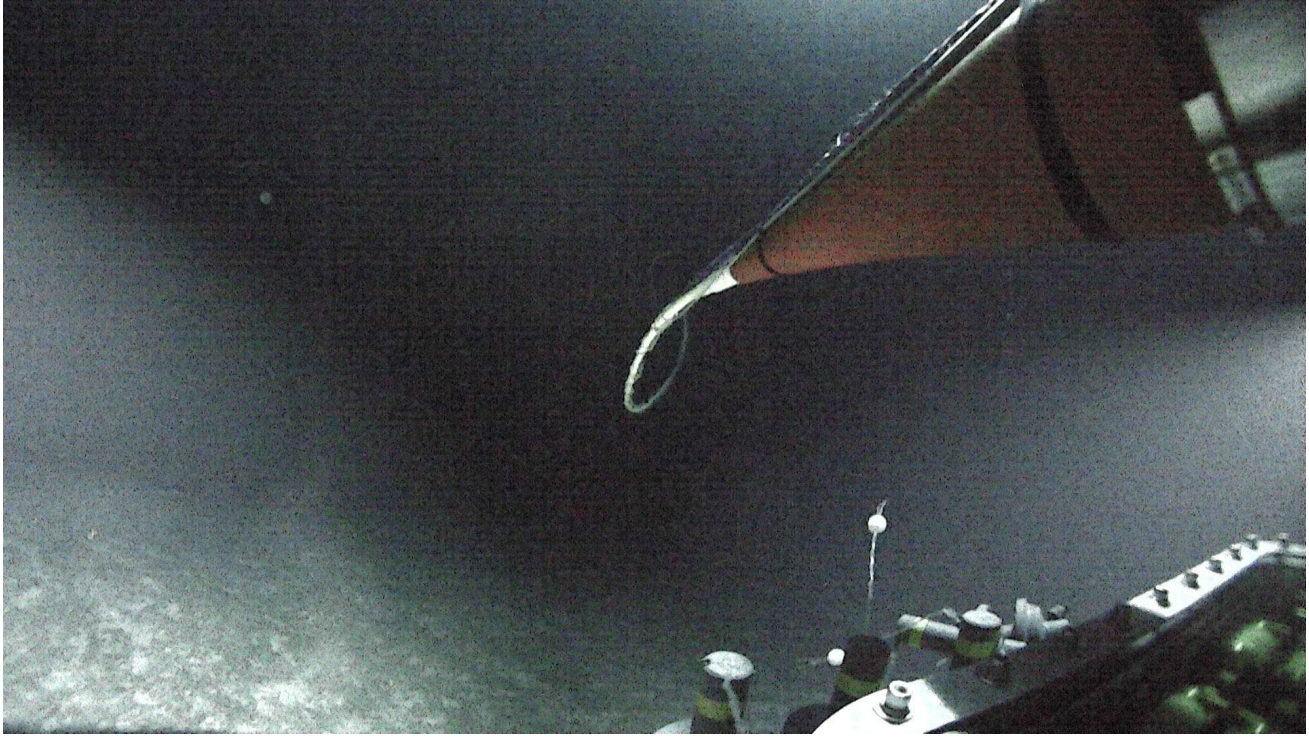
Sample ID	EX2107_D12_01W
Date (UTC)	20211112
Time (UTC)	181420
Depth (m)	502.342
Latitude (decimal degrees)	29.748220
Longitude (decimal degrees)	-78.43571
Temp. (°C)	16.345
Field ID(s)	Water sample
Comments	eDNA

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



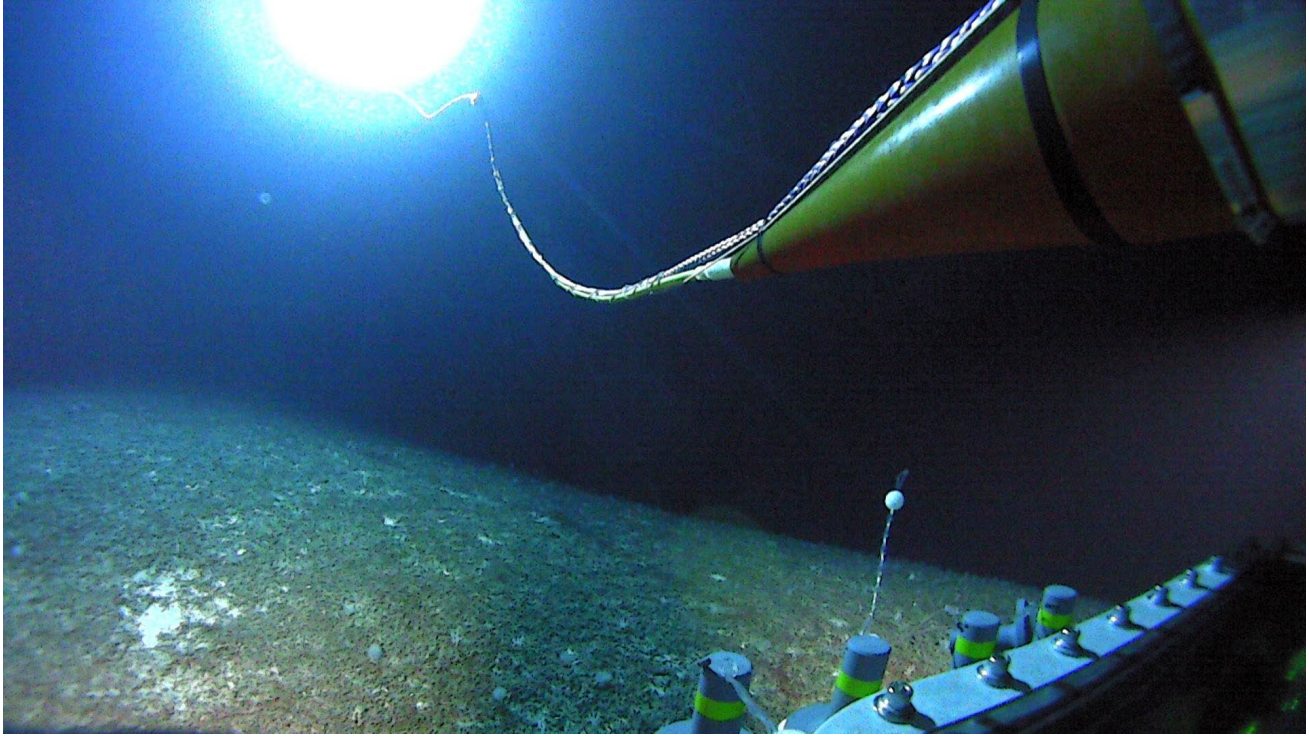
Sample ID	EX2107_D12_02W
Date (UTC)	20211112
Time (UTC)	184755
Depth (m)	816.329
Latitude (decimal degrees)	29.74693
Longitude (decimal degrees)	-78.433360
Temp. (˚C)	7.934
Field ID(s)	Water sample
Comments	eDNA

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



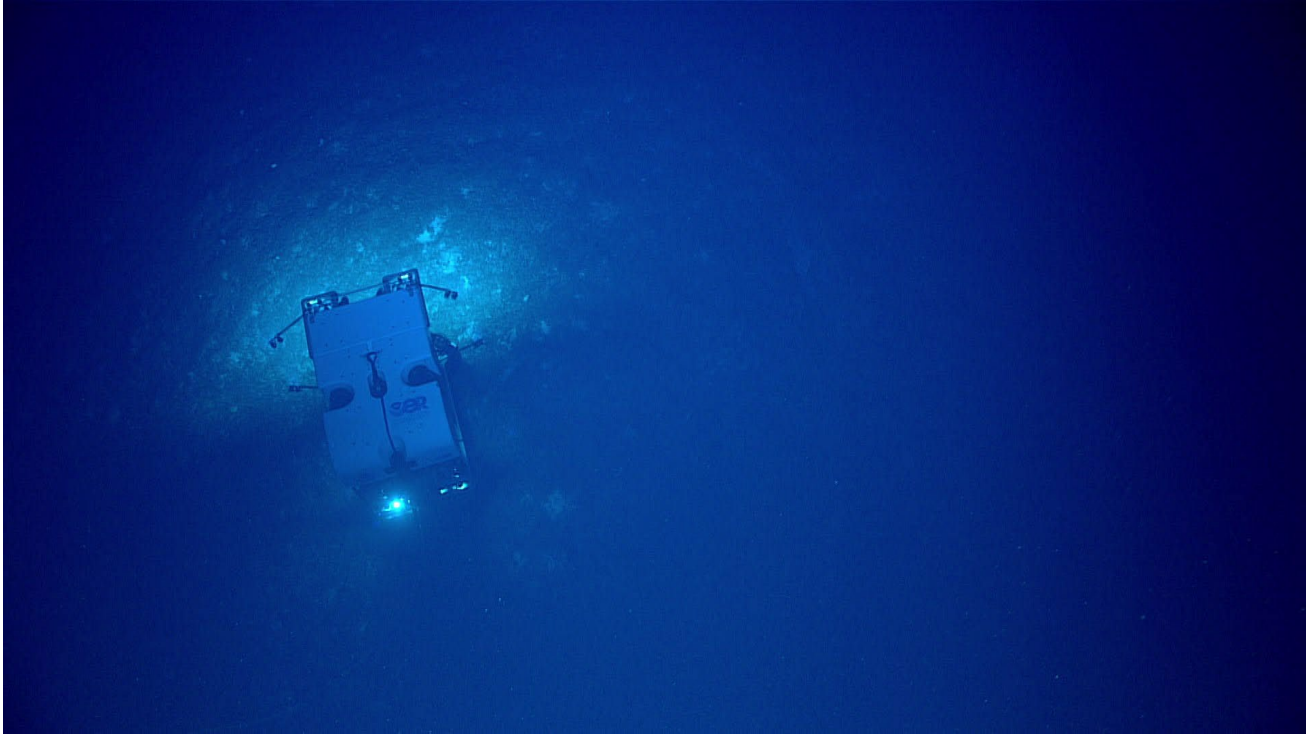
Sample ID	EX2107_D12_03W
Date (UTC)	20211112
Time (UTC)	200011
Depth (m)	764.964
Latitude (decimal degrees)	29.74591
Longitude (decimal degrees)	-78.434160
Temp. (°C)	9.888
Field ID(s)	Water sample
Comments	eDNA

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



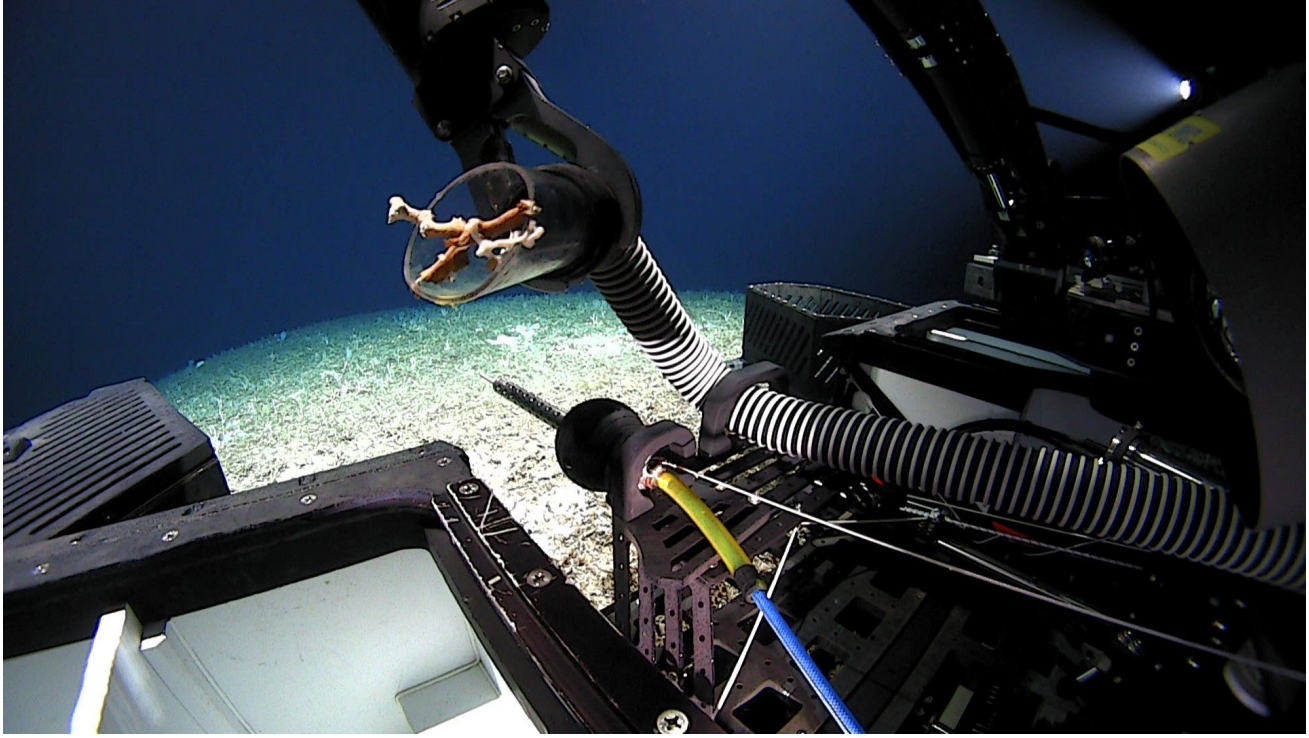
Sample ID	EX2107_D12_04W
Date (UTC)	20211112
Time (UTC)	204221
Depth (m)	751.147
Latitude (decimal degrees)	29.74481
Longitude (decimal degrees)	-78.435050
Temp. (˚C)	9.861
Field ID(s)	Water sample
Comments	eDNA

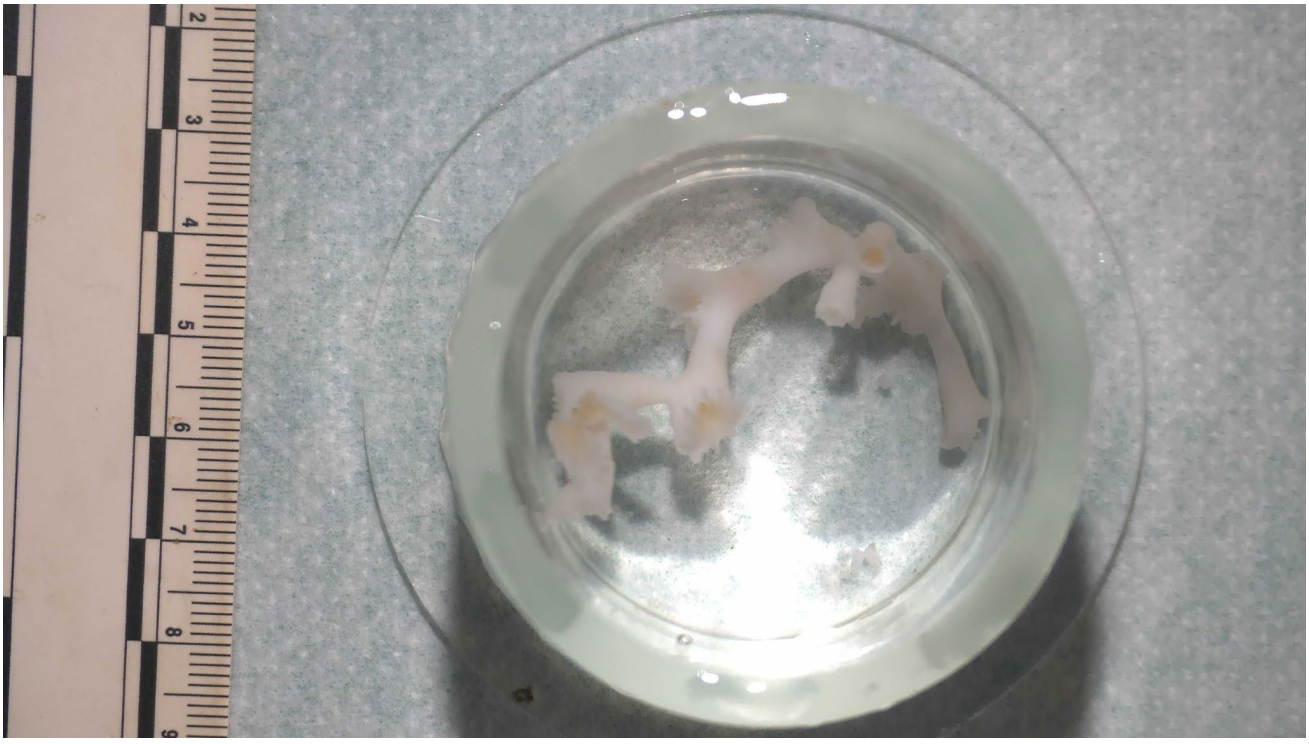
Associates Sample ID	Field Identification	Count
N/A	N/A	N/A



Sample ID	EX2107_D12_05W
Date (UTC)	20211112
Time (UTC)	205250
Depth (m)	752.347
Latitude (decimal degrees)	29.7448
Longitude (decimal degrees)	-78.43497
Temp. (°C)	9.85
Field ID(s)	Water sample
Comments	eDNA

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





Sample ID	EX2107_D12_06B
Date (UTC)	20211112
Time (UTC)	205554
Depth (m)	752.1929932
Latitude (decimal degrees)	29.74478912
Longitude (decimal degrees)	-78.43498993

Temp. (˚C)	9.854000092
Field ID(s)	*Lophelia pertusa*
Comments	For ASPIRE. One of three living colony on the mound, small piece of 10 cm

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

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