ROV Dive Summary, EX-22-05, Dive 01
July 20, 2022

General Location Map

Dive Information

Site Name	MARNA shallow
General Area Descriptor	Mid-Atlantic Ridge
Science Team Leads	Dr. Scott France (Biology), Dr. Ashton Flinders (Geology)
Expedition Coordinator	Dr. Derek Sowers

ROV Dive Supervisor	Christopher Ritter
Sample Data Manager	Dr. Arvind Shantharam
Mapping Lead	Shannon Hoy
Dive Purpose	To explore and characterize the habitat and benthic communities that inhabit the upper margins of a relatively shallow seamount on this segment of the Mid-Atlantic Ridge.
Was the dive restricted for Underwater Cultural Heritage?	No
ROV Dive Summary Data	Dive Summary: EX2205_DIVE01 ^^ Dive Type: Normal In Water: 2022-07-20T10:27:22.822118 43.95266839470011 ; -28.526233183515657 On Bottom: 2022-07-20T11:31:40.614414 43.95351403925191 ; -28.52509305754654 Off Bottom: 2022-07-20T18:17:54.682441 43.95399512711128 ; -28.529826975111 Out Water: 2022-07-20T18:42:00.489464 43.95420780392995 ; -28.53251080392994 Dive Duration: 8:14:37 Bottom Time: 6:46:14 Max Vehicle Depth: 833.2 m Min Seafloor Depth: 419.9 m Distance Traveled: 429.8 m

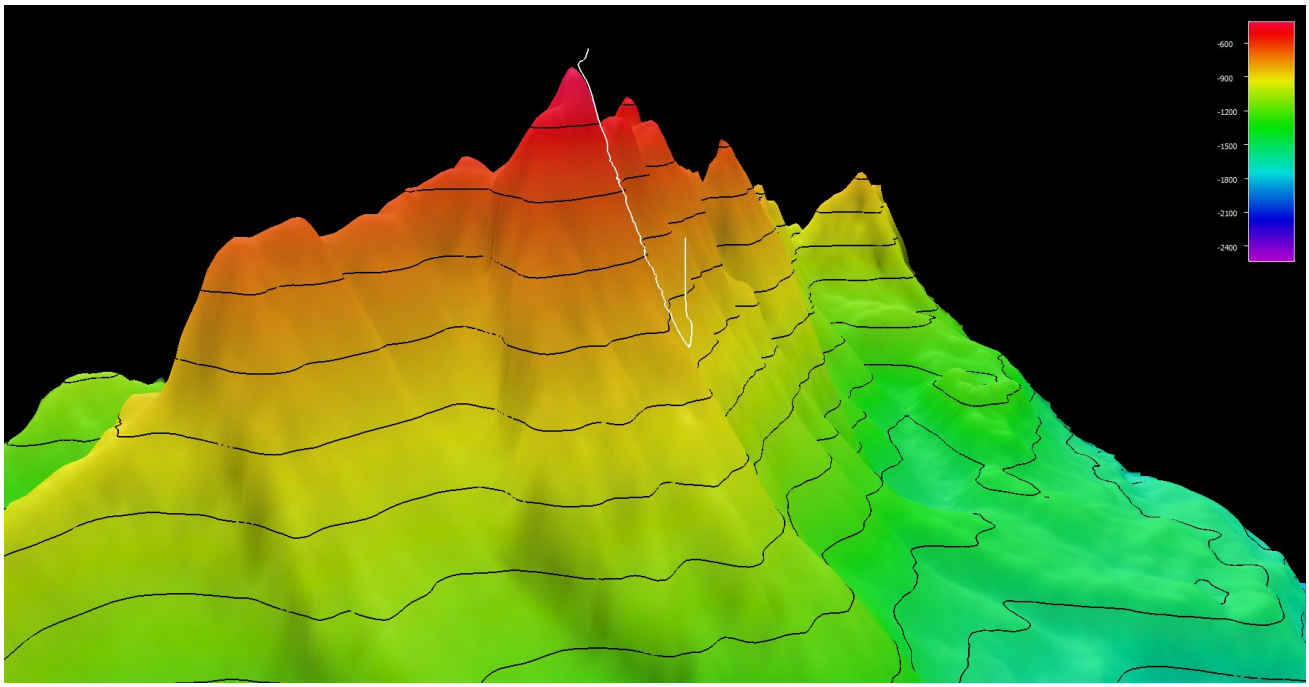
Dive Description	*Biology* Initial view of the bottom at 833 m showed coral rubble and loose biogenic sediment with several alfonsinos (*Beryx decadactylus*) in the area and scattered sponges, hydrocoral, and *Madrepora*/*Lophelia* colonies in low abundance on the seafloor. For most of the dive, climbing the steep eastern-facing footwall we observed coral rubble (based on observations upslope, likely *Eguchipsammia*), often in thick piles. Corals and sponges were seen in patches, including at least 5 different species of black coral (Antipatharia), with the tightly coiled *Stichopathes gravieri* particularly abundant, cup corals, fewer numbers of octocorals (though *Pseudoanthomastus* were common), cidaroid urchins, crinoids, and several *Forskalia* siphonophores swimming near the seafloor; on a flat area of seafloor we observed a spiraling egg mass, likely from a gastropod. Small patches of coral rubble gave way to larger chutes of deep piles of coral rubble and higher up the slope (beginning between 551-525 m) to a magnificent and extensive field of bright yellow live *Eguchipsammia* (Scleractinia) crowning the rubble. Mixed in with the live coral were sponges, abundant Aphanipathidae black corals, and carrier crabs; occasionally we observed discarded fishing gear. This field covered much of the upper slope but at the pinnacle was back to mostly dead skeletal rubble. We were treated to many fish sightings, from a couple of dealfish, to many *Polyprion* wreckfishes, grenadiers, oreos, blackbelly rosefishes, and more, and a goosefish (*Lophiodes* sp) to send us off. *Geology* The dive started approximately 400 m below the uppermost edge on the eastern facing footwall of the eastern-most horst, west of the AVR. While transecting upwards we observed occasional cross sections of large pillow basalts with repeated transitions to possible hyloclastite deposits grading into possibly non-volcanically (precipitant?) cemented talus piles. We observed no easily removable rock samples that were not also heavily altered (red-brown outer pillow basalt rims), and no geologic samples were taken. There did not appear to be any significant manganese precipitation or crust visible - vesiculation was still observable on post exposed pillow surfaces. Cross-sections of pillow outcrops were primarily exposed during the middle 200 meters of the ~400 meter ascent, along high-dip surfaces. Flat areas and valleys were dominated by coral skeletons as was the summit of the normal fault.
Notable Observations	Extensive field of live *Eguchipsammia* coral extending from 551 to ≈412 m depth.
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)	Seamount / Slope / Ridge
SeaTube Link (science annotation system)	https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&resourceId=2563

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.

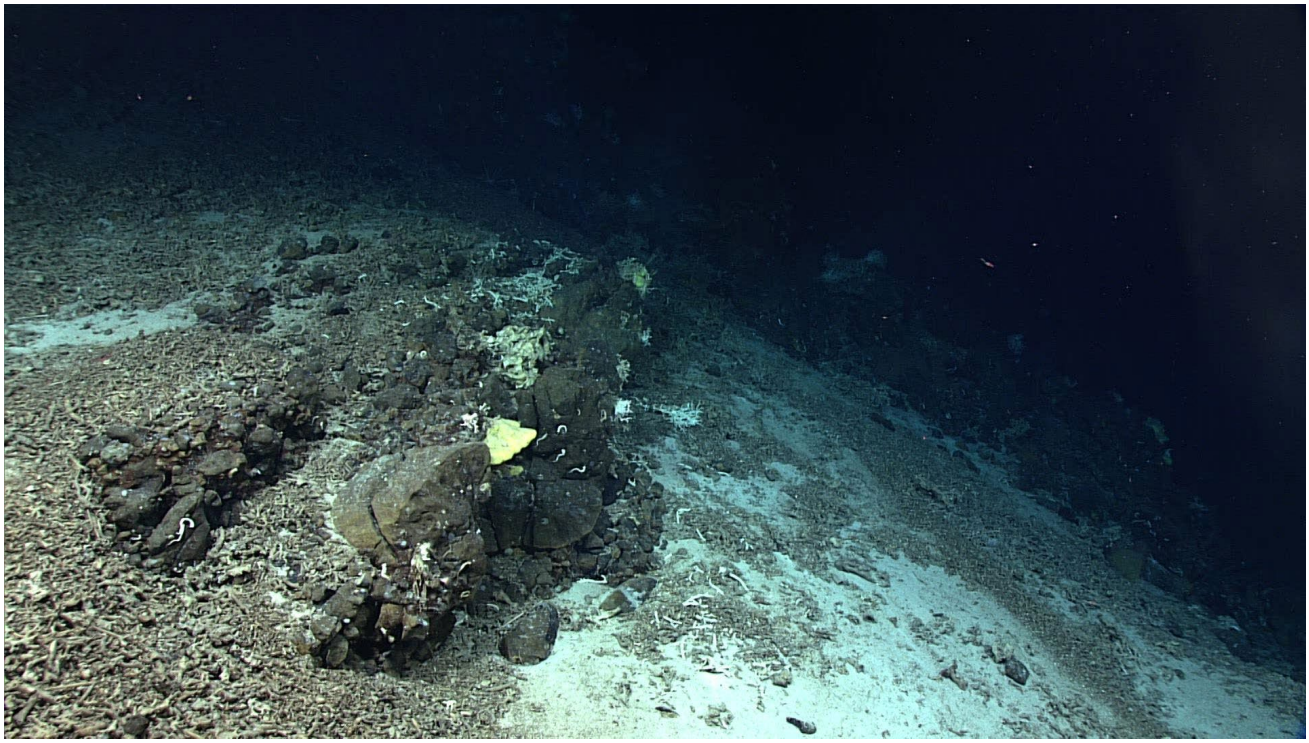
Equipment Malfunctions	

Close-up Map of Main Dive Site



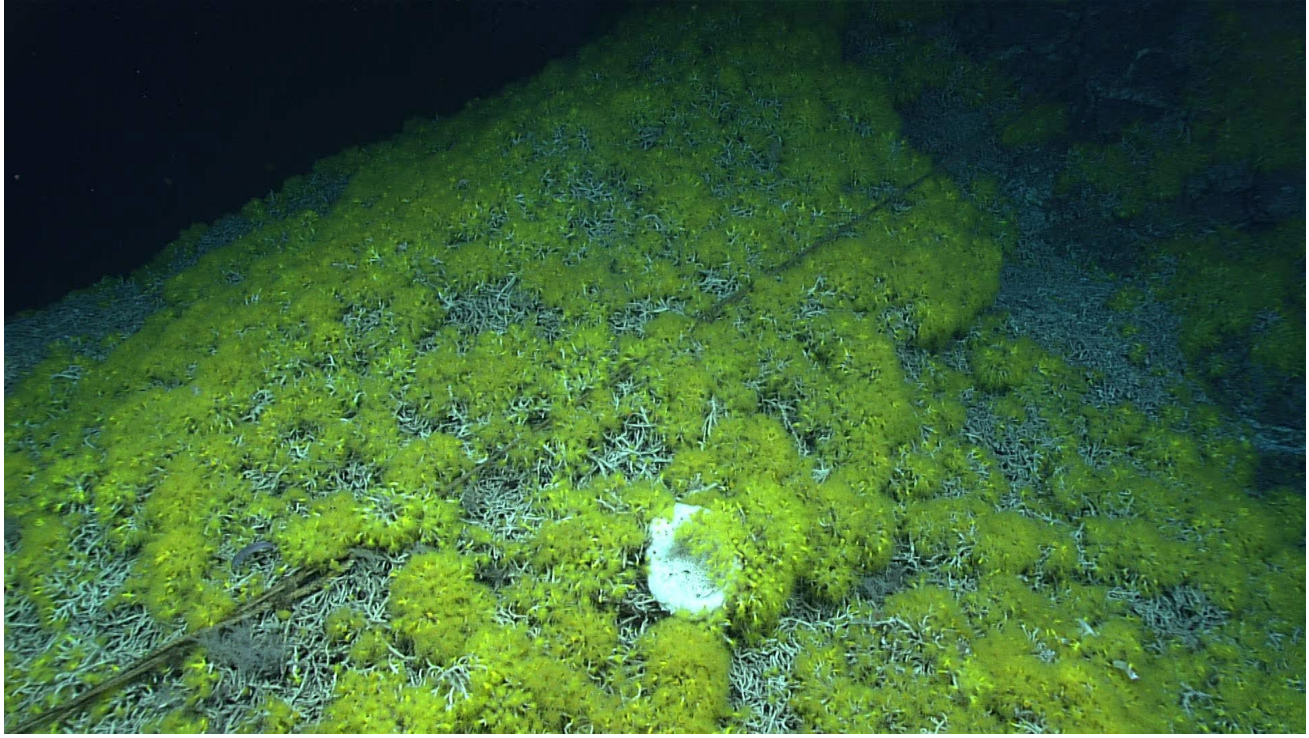
Smoothed ROV dive track in white on 25x25 cell size bathymetry, 3x vertical exaggeration, depth in meters, 10 meter contours.

Representative Photos of the Dive



Coral skeleton and fragmented pillow basalt (left) and heavy marine calcareous sediment (right).

NOAA OCEAN EXPLORATION



Extensive field of *Eguchipsammia* coral growing on coral rubble; note the fishing line extending across the bottom from lower left to upper right.

Coiled black coral *Stichopathes gravieri* were abundant, seen here with cup corals and a file clam.

A spiraling egg mass on the seafloor, likely from a gastropod.

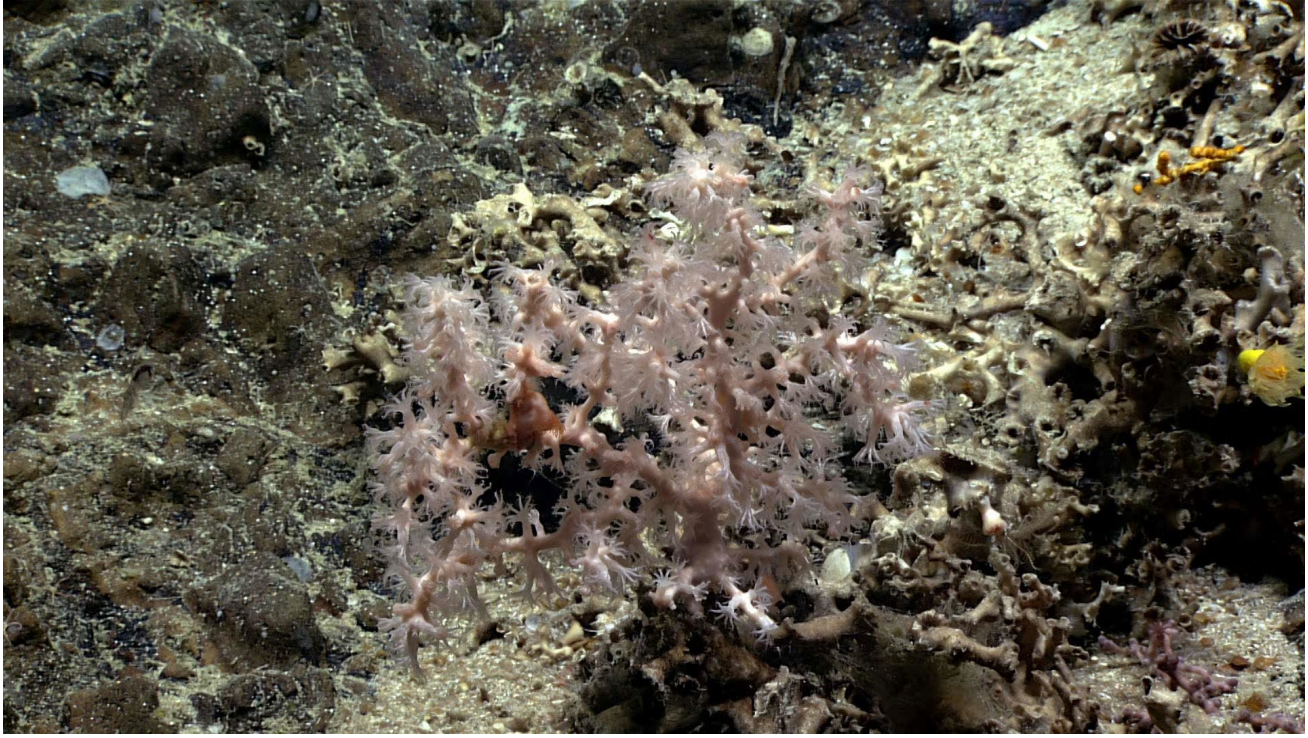
A homolid carrier crab carrying a branch of an octocoral colony.

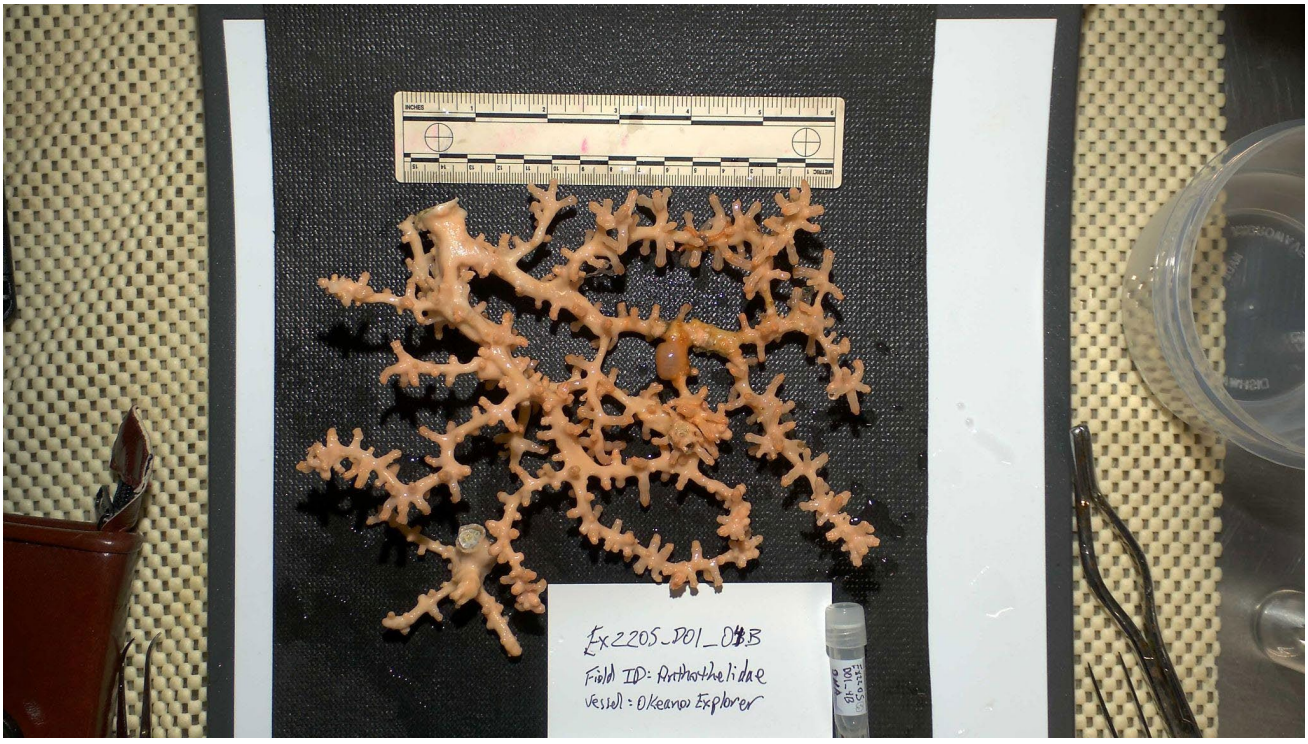
Samples Collected -

Sample ID	EX2205_D01_03B
Date (UTC)	20220720
Time (UTC)	12:04:38
Depth (m)	822.8
Latitude (decimal degrees)	43.9530

Longitude (decimal degrees)	-28.5250
Temp. (°C)	8.64
Field ID(s)	White Plexauridae
Comments	Octocoral

Associates Sample ID	Field Identification	Count
EX2205_D01_03B_A01	Crinoidea	2
EX2205_D01_03B_A02	Aplacophora	2

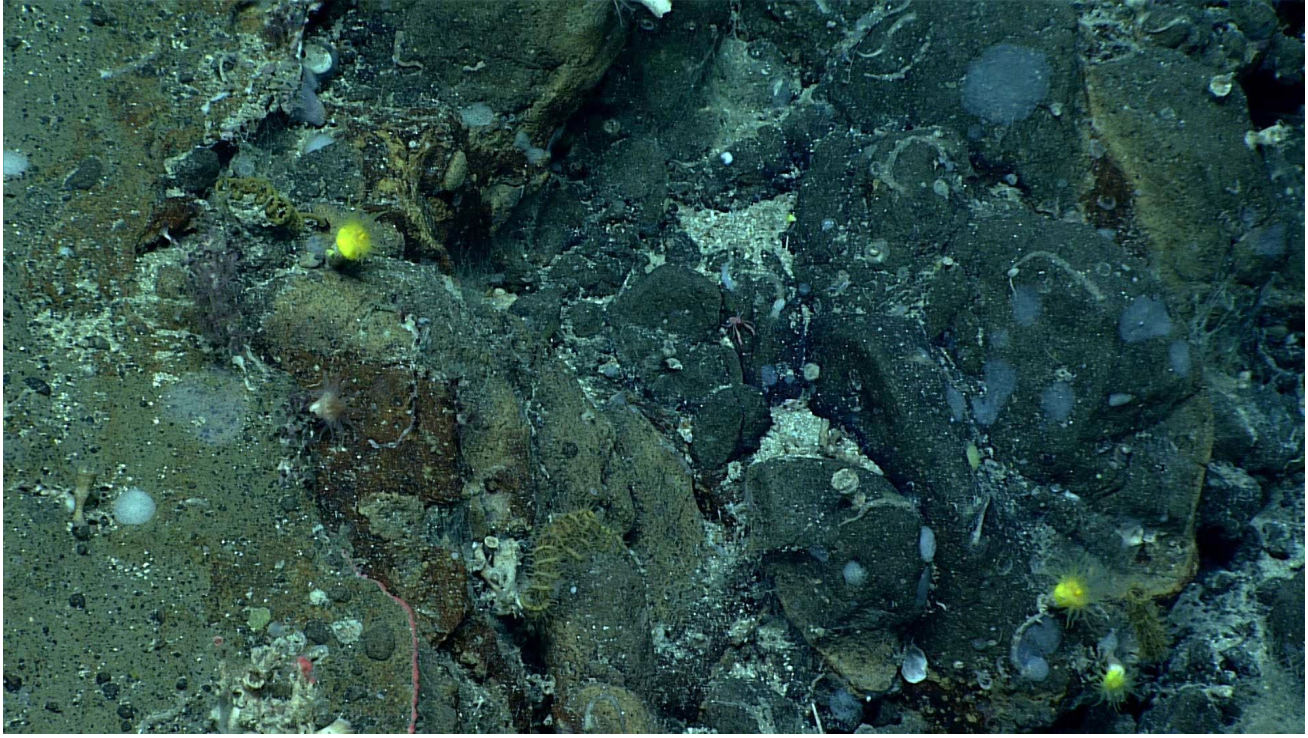




Sample ID	EX2205_D01_04B
Date (UTC)	20220720
Time (UTC)	13:44:10
Depth (m)	740.3
Latitude (decimal degrees)	43.9540
Longitude (decimal degrees)	-28.5270

Temp. (°C)	9.76
Field ID(s)	Anthothelidae
Comments	Octocoral

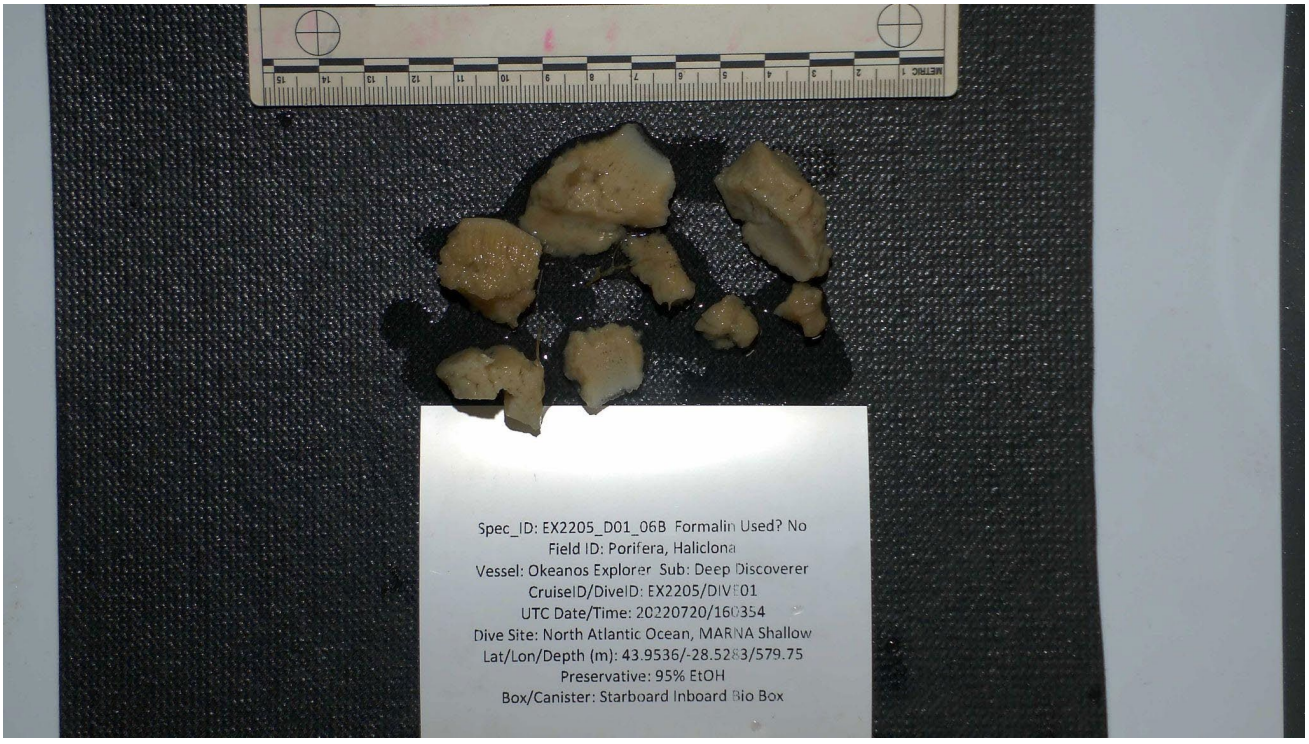
Associates Sample ID	Field Identification	Count
EX2205_D01_04B_A01	Ophiuroidea	1
EX2205_D01_04B_A02	Anemone	1
EX2205_D01_04B_A03	Decapoda	1
EX2205_D01_04B_A04	Polychaeta	1
EX2205_D01_04B_A05	Gastropoda	1
EX2205_D01_04B_A06	Amphipoda	3



Sample ID	EX2205_D01_05B
Date (UTC)	20220720
Time (UTC)	14:49:18
Depth (m)	689.2
Latitude (decimal degrees)	43.9540
Longitude (decimal degrees)	-28.5270

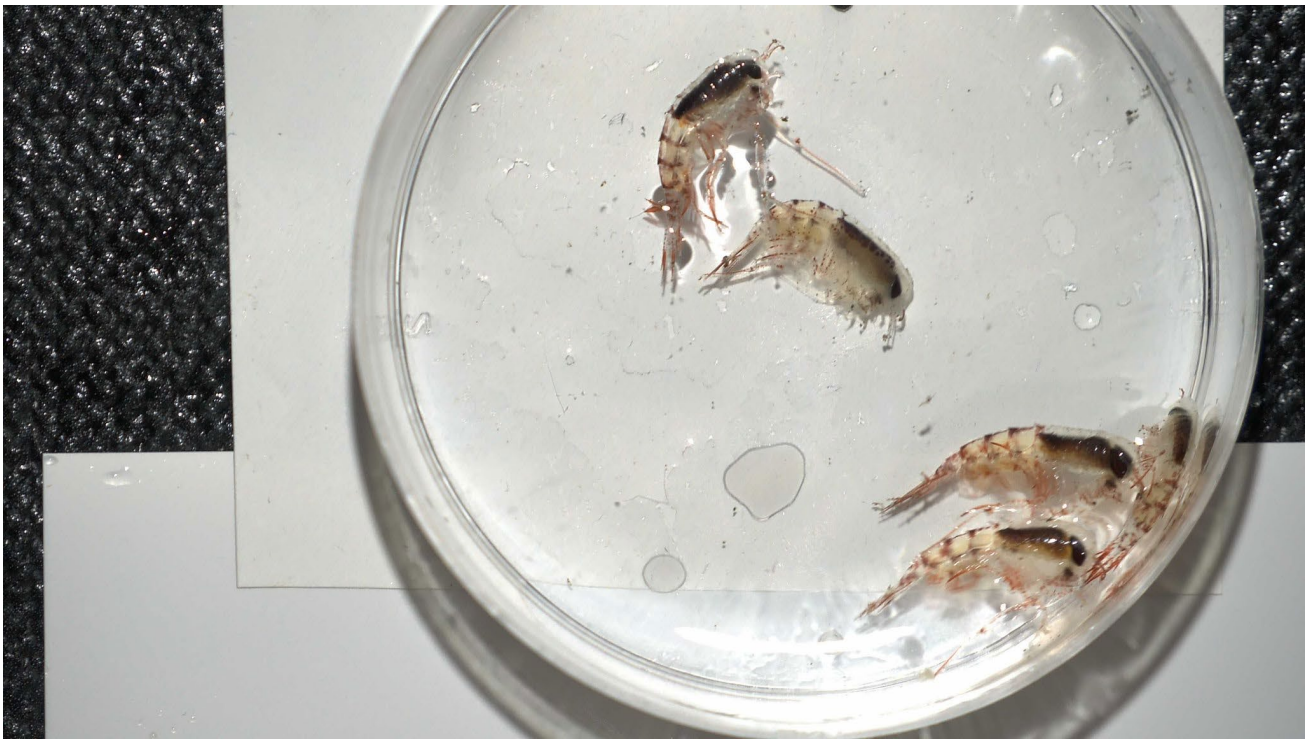
Temp. (°C)	9.74
Field ID(s)	Balanophyllia
Comments	

Associates Sample ID	Field Identification	Count
EX2205_D01_05B_A01	Amphipoda	12
EX2205_D01_05B_A02	Amphipoda	40



Sample ID	EX2205_D01_06B
Date (UTC)	20220720
Time (UTC)	16:03:54
Depth (m)	579.7
Latitude (decimal degrees)	43.9540
Longitude (decimal degrees)	-28.5280

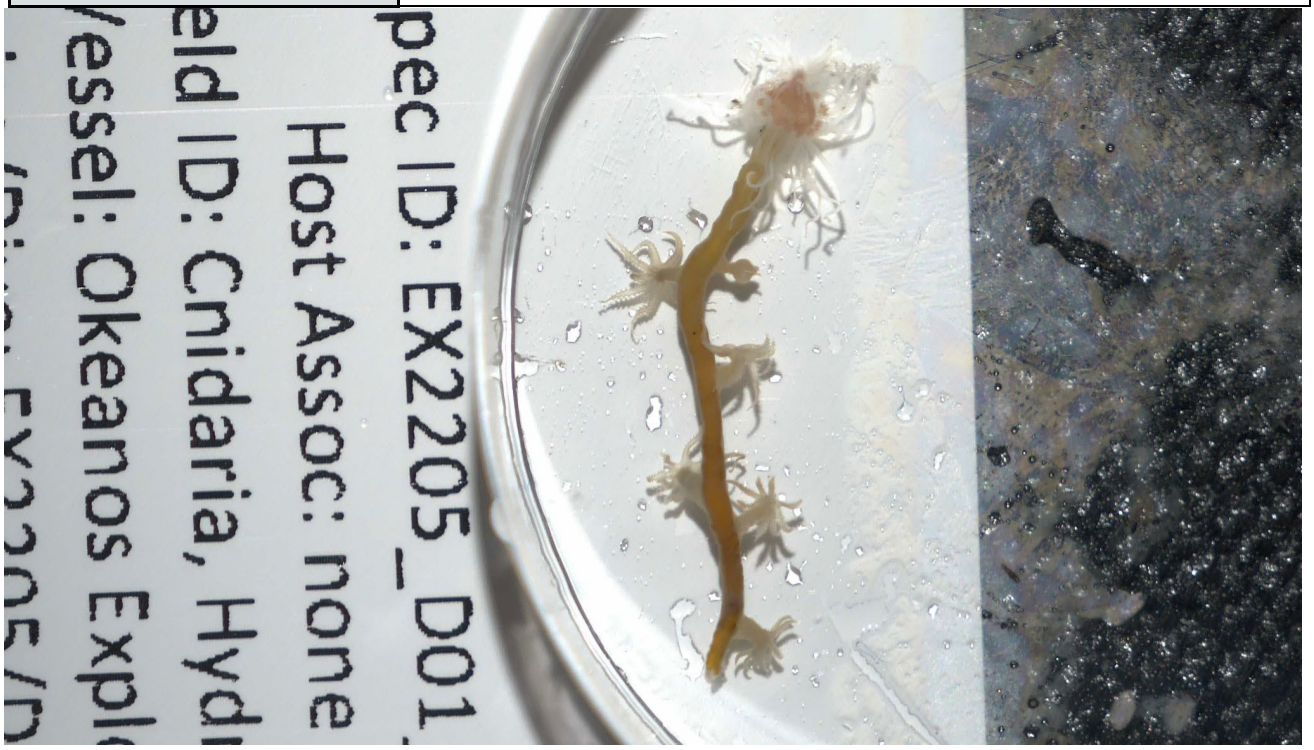
Temp. (°C)	10.71
Field ID(s)	*Haliclona*
Comments	



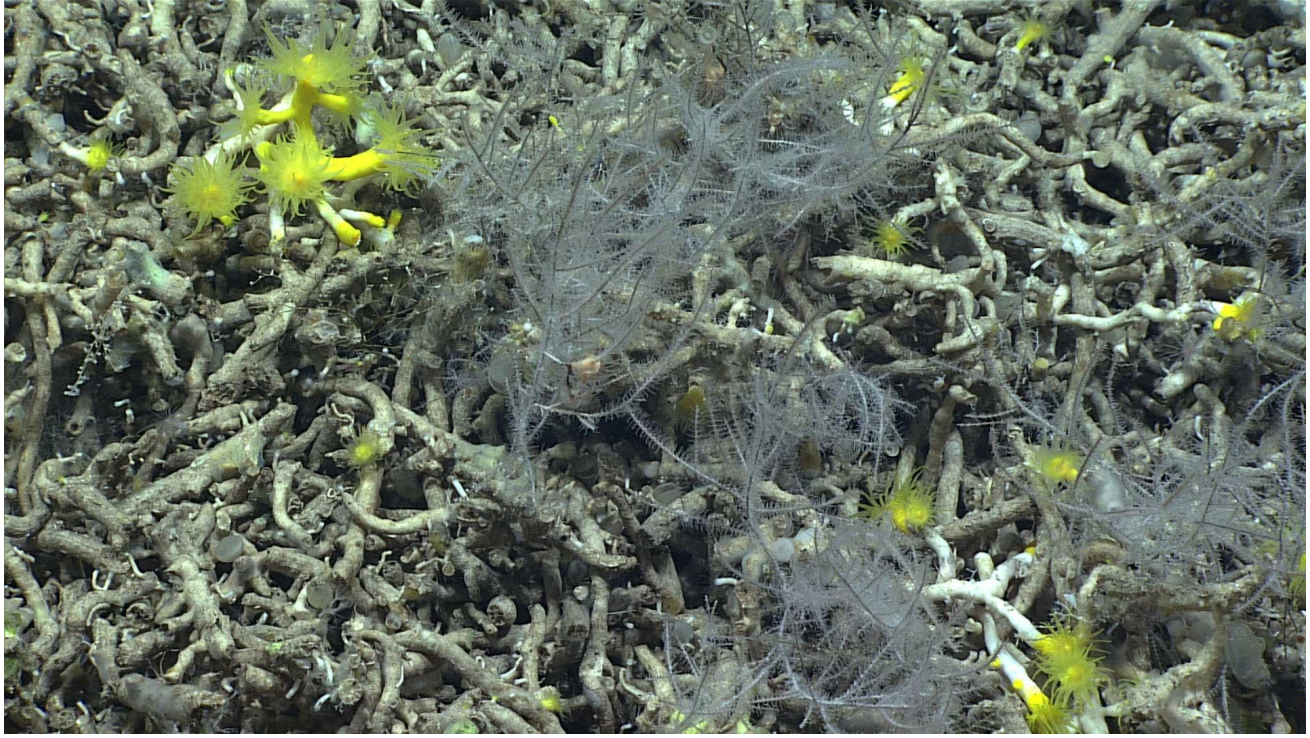
Associates Sample ID	Field Identification	Count
EX2205_D01_06B_A01	Amphipoda	5

Sample ID	EX2205_D01_07B
Date (UTC)	20220720
Time (UTC)	16:24:27
Depth (m)	577.0
Latitude (decimal degrees)	43.9540
Longitude (decimal degrees)	-28.5280

Temp. (°C)	11.02
Field ID(s)	Chrysogorgia
Comments	Octocoral



Associates Sample ID	Field Identification	Count
EX2205_D01_07B_A01	Amphipoda	1
EX2205_D01_07B_A02	Hydroida	1



Sample ID	EX2205_D01_08B
Date (UTC)	20220720
Time (UTC)	17:05:42
Depth (m)	551.5
Latitude (decimal degrees)	43.954
Longitude (decimal degrees)	-28.529

Temp. (°C)	11.34
Field ID(s)	Aphanipathidae
Comments	

Associates Sample ID	Field Identification	Count
EX2205_D01_08B_A01	Hydroida	1
EX2205_D01_08B_A02	Caprellida	1
EX2205_D01_08B_A03	Caprellida	1

Sample ID	EX2205_20220720T170542_D2_DIVE01_SPEC12BIO
Date (UTC)	20220720
Time (UTC)	17:05:00
Depth (m)	
Latitude (decimal degrees)	
Longitude (decimal degrees)	
Temp. (°C)	
Field ID(s)	

Comments	Unintentional, suction canister 5

Niskin Sampling Summary

Sample ID	EX2205_D01_01W
Date (UTC)	20220720
Time (UTC)	10:55:50
Depth (m)	508.7
Latitude (decimal degrees)	43.953
Longitude (decimal degrees)	-28.527
Bottle number	NISKIN 1
Temperature (°C)	11.44
Dissolved Oxygen (ml/L)	5.50
Treatment	eDNA

Sample ID	EX2205_D01_02W
Date (UTC)	20220720
Time (UTC)	11:50:20
Depth (m)	830.7
Latitude (decimal degrees)	43.954
Longitude (decimal degrees)	-28.525
Bottle number	NISKIN 2
Temperature (°C)	8.74
Dissolved Oxygen (ml/L)	5.78
Treatment	eDNA

Sample ID	EX2205_D01_09W
Date (UTC)	20220720
Time (UTC)	17:16:56
Depth (m)	531.5

Latitude (decimal degrees)	43.954
Longitude (decimal degrees)	-28.529
Bottle number	NISKIN 3
Temperature (°C)	11.46
Dissolved Oxygen (ml/L)	5.47
Treatment	eDNA

Sample ID	EX2205_D01_10W
Date (UTC)	20220720
Time (UTC)	18:09:55
Depth (m)	410.5
Latitude (decimal degrees)	43.954
Longitude (decimal degrees)	-28.530
Bottle number	NISKIN 4
Temperature (°C)	12.28
Dissolved Oxygen (ml/L)	5.48
Treatment	eDNA

Sample ID	EX2205_D01_11W
Date (UTC)	20220720
Time (UTC)	18:21:48
Depth (m)	323.6
Latitude (decimal degrees)	43.954
Longitude (decimal degrees)	-28.530
Bottle number	NISKIN 5
Temperature (°C)	13.50
Dissolved Oxygen (ml/L)	5.56
Treatment	eDNA

Scientists Involved

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