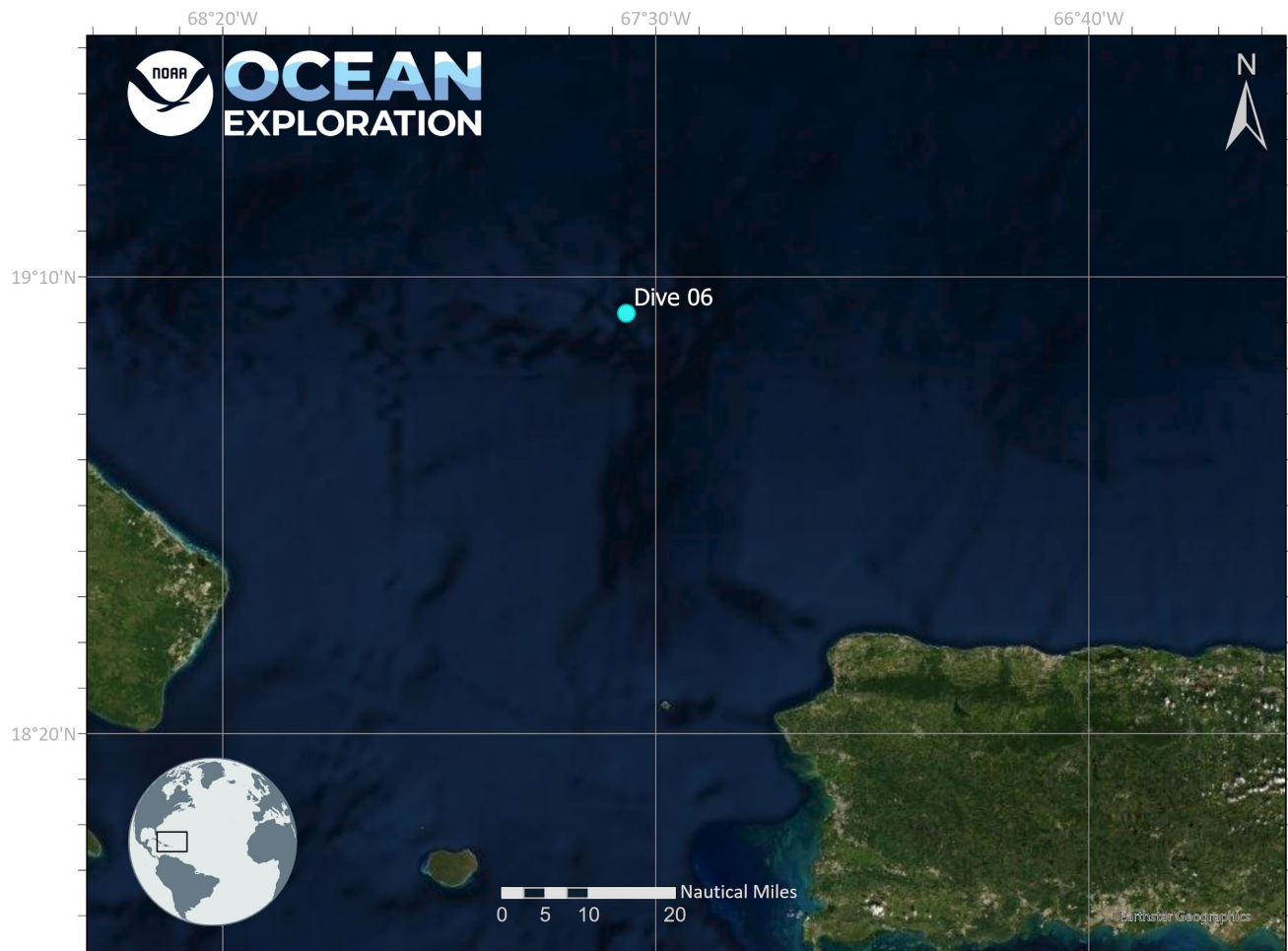


# ROV Dive Summary, EX-22-06, Dive 06 August 26, 2022

## General Location Map



## Dive Information

Site Name	Dive 06 - Mona Block
General Area Descriptor	Puerto Rico and the USVI
Science Team Leads	Joana Xavier (Biology), Deb Glickson (Geology)
Expedition Coordinator	Sam Candio



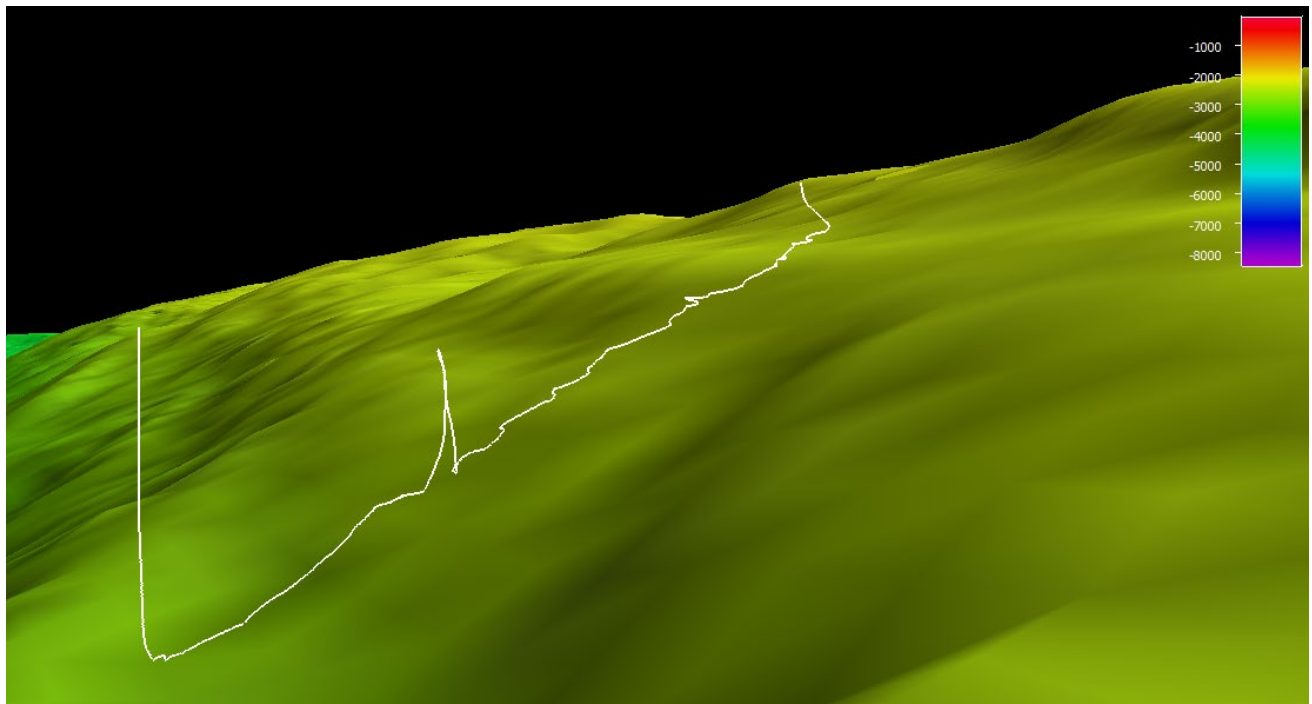
Dive Description	<p>Note: dive depths are approximate, as Deb was looking at Serios depth rather than D2 depth. All depths were adjusted downward by 10 m.</p> <p>Two niskin bottles (1 and 2) were triggered at 595 m at the beginning of the dive – this was meant to be in the deep scattering layer, but the first niskin did not trigger. When a second attempt was made with Niskin 2, both bottles triggered. The third Niskin was triggered when we reached bottom. However, it did not seal properly, so did not collect enough water to be processed for eDNA.</p> <p>The dive began on a low-slope, sedimented surface with some small, weathered rocks in view. At 1740 UTC, we found a large glass sponge in the genus <i>Hyalonema</i>. As we moved slowly upslope (1605 m), we encountered lots of weathered rocks with manganese (Mn) crusts. Many of them had biota colonizing them, including yellow sponges, hermit crabs, and a bryozoan. At 1818/1557 m, the rocks began to show obvious layering, even through the Mn crust. These rocks had 3 different types of sponges and other biota. We then collected a sponge with a stalk at 1836, 1552 m.</p> <p>About 10 minutes later, the ROV had to come 100 m off bottom to clear sargassum from the ship’s intake strainers. We reacquired the bottom at 1859 UTC into an area of large, platy outcrops that appear to be weathered and were coated in Mn crust. Some of the rocks were oriented almost vertically. We also saw a rattail and a halosaur in this area. As we proceeded, the blocks got larger and appeared to dipping downslope. At 1909 utc, 1531 m we found a cookie star, sponge spicules, and bryozoans. A few minutes later (1914, 1522 m), we encountered a very unusually shaped demosponge, of undetermined identity. The rocks became less continuous and more broken up, and hosted a bamboo coral. We then found a sponge that lives mostly underground, and a rock (or piece of wood) completely covered in tiny squat lobsters. At 1954/1475m, we collected an Mn crusted rock, then found more of the sponges that live underground and a slime star. At 2023/1435m we collected another Mn crusted rock, this one with more visible layering. These two rocks may be metamorphic, with a carbonate protolith. Soon after, we found a rock wall with very clear layering – perhaps some of those layers are more resistant to weathering – and more biota (<i>Metallogorgia</i>, <i>Asconema</i> sponge, branching white coral, <i>Farrea</i> sponge). We collected the <i>Asconema</i> sponge at 2037 UTC and a <i>Farrea</i> sponge at 2105 UTC. As we continued upslope, the rocks looked more platy and somewhat deformed.</p> <p>Overall, In terms of biological communities, we found the area to be particularly diverse in glass sponges, with possibly three different species of <i>Hyalonema</i> (one was collected), <i>Saccocalyx penduculatus</i>, the yellow morph of <i>Hertwigia falcifera</i> often found together with <i>Farrea</i> sp.. <i>Asconema</i> sp. and another species of <i>Farrea</i> (both collected) were also observed but in lower abundance. A few individuals of the sponge <i>Oceanapia</i>, as well as another unidentified demosponge were seen. Corals were not very diverse or abundant, and only a few colonies of the black coral <i>Aphanostichopathes</i>, the golden coral <i>Metallogorgia</i> and <i>Chrysogorgia</i> were observed. A few colonies of unbranched bamboo corals, and a primnoid coral were seen. We didn’t find living colonial scleractinian corals. However, coral rubble composed of what seemed to be <i>Madrepora</i> sp. was observed accumulating on sediment shoots. These had a dark Mn coating, suggesting they have been there for a considerable amount of time.</p>
Notable Observations	Several species of the glass sponge genus <i>Hyalonema</i> , weathered and Mn crusted rocks, many of which were layered and tilted.

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)	Outcrop/Rock Outcrop Scarp/Wall Slope
SeaTube Link (science annotation system)	<a href="https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&amp;resourceId=2703">https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&amp;resourceId=2703</a>

## 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	At our original dive site (White Cliffs of Mona), the ship engines became overheated due to <i>Sargassum</i> clogging the sea strainers. We delayed for 30 minutes to see if it could be fixed. It could not, so we moved to a new location at Mona Bank to get out of the <i>Sargassum</i> . This same issue of engines overheating also led to short interruption in our dive at Mona Bank.

## Close-up Map of Main Dive Site



Smoothed ROV dive track in white on a 50 m resolution bathymetric grid, 1x vertical exaggeration, depth in meters.



## Representative Photos of the Dive

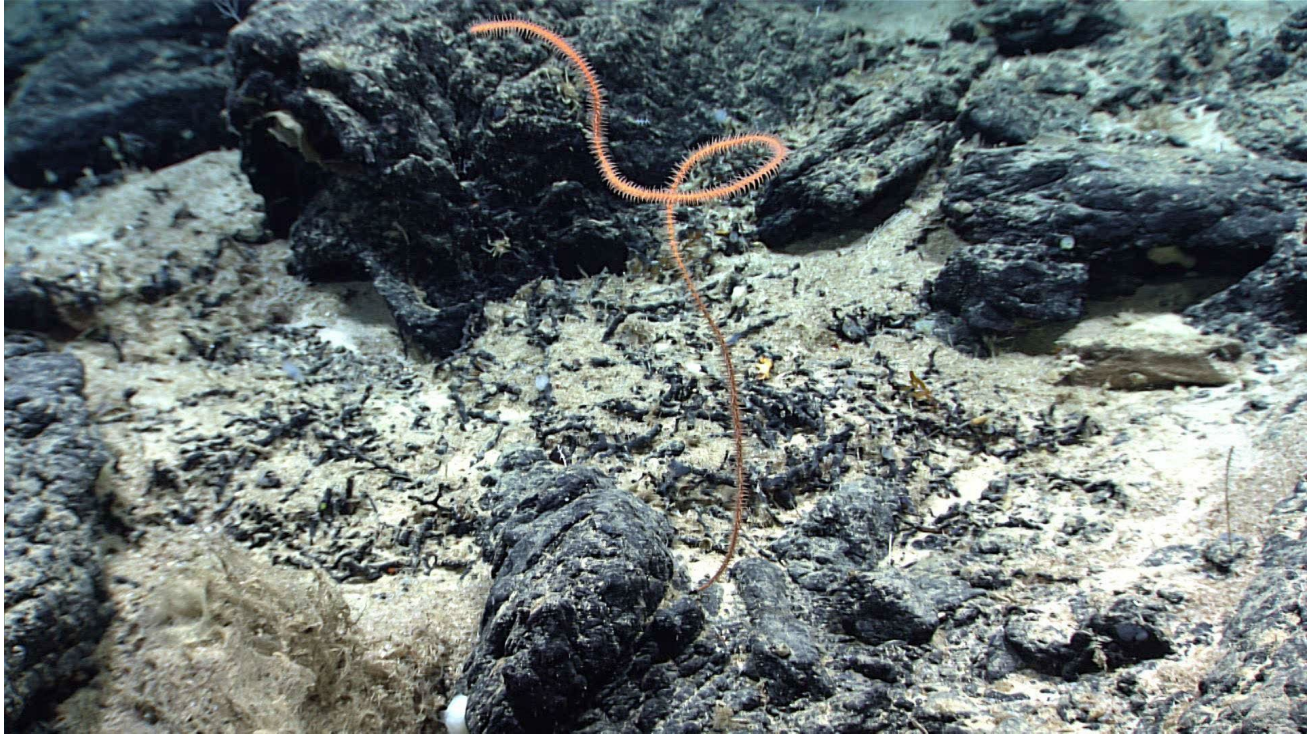


Rattail with seafloor representative of dive - sedimented areas (much of it biogenic - pteropod shells, sponge spicules and mats, etc) with isolated blocks of weathered, Mn crusted rocks.

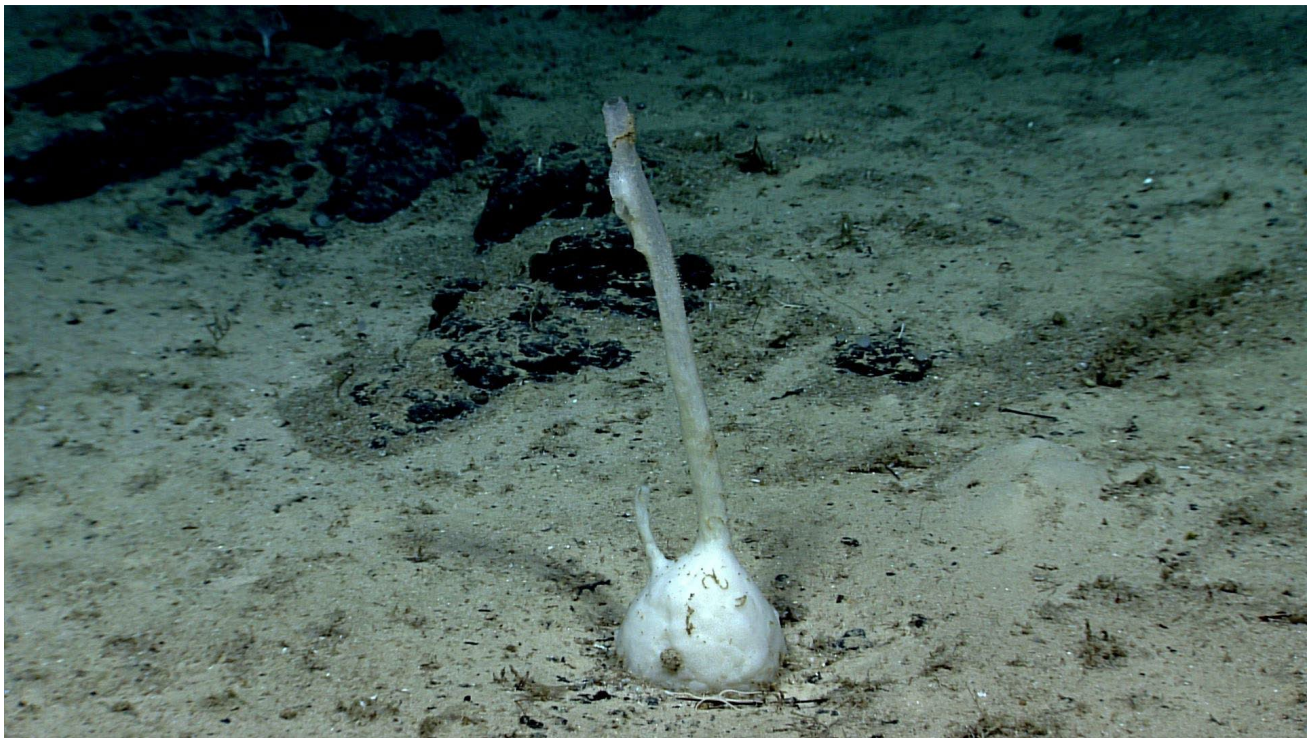


Many of the rocks were layered but appeared to be tilted or dipping. Some were sub-vertical like this one, others were gently dipping downslope.





Black coral, possibly in the genus *Aphanostichopathes*, surrounded by Mn-coated coral debris.



A sponge of the genus *Oceanapia*. Usually the main bulbous body is buried in the sediment, but here it was fully exposed.



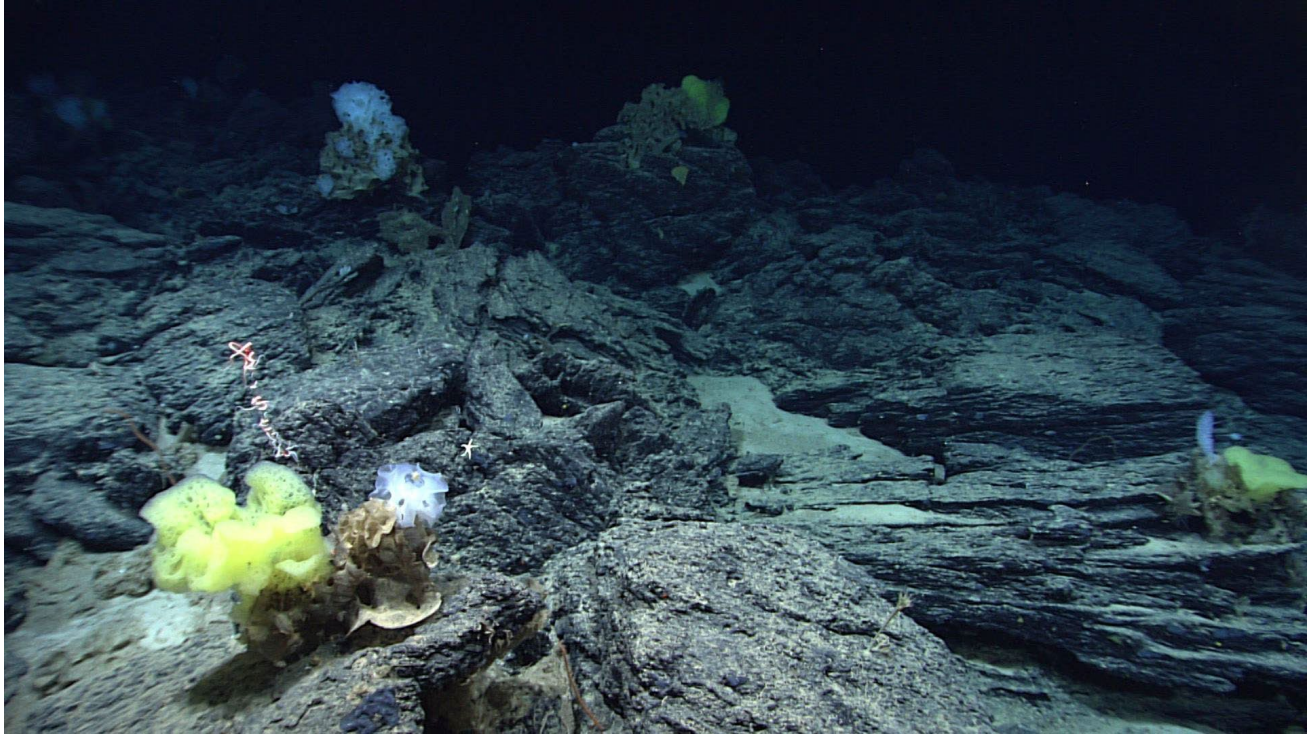


A slime star, genus *Pteraster*, seen at approximately 1470 m depth.



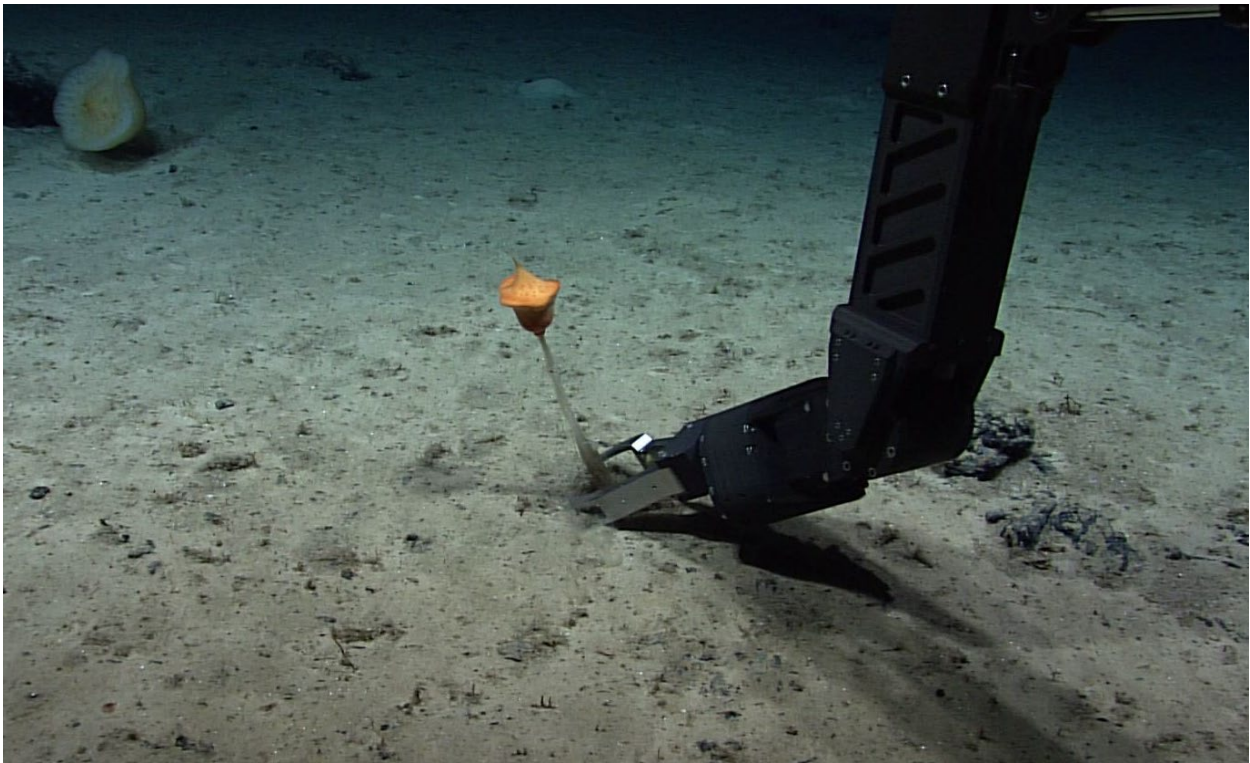
Detail of a golden coral, *Metallogorgia melanotrichos* with its associate the brittle star *Ophiocreas oedipus*.





A large rocky outcrop with layered, platy rocks dipping in multiple directions, with many glass sponges and other biota.

# Samples Collected

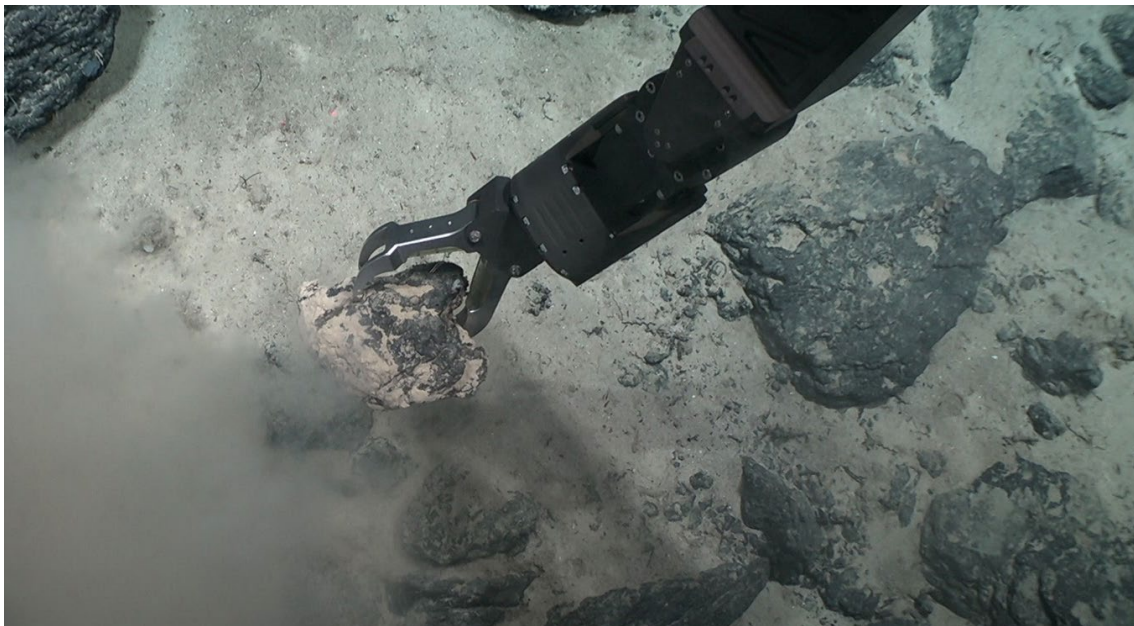


Sample ID	EX2206_D06_04B
Date (UTC)	20220826



Time (UTC)	183510
Depth (m)	1557.695
Latitude (decimal degrees)	19.041610
Longitude (decimal degrees)	-67.568940
Temp. ( °C)	4.233
Field ID(s)	Hyalonema
Comments	Velvet texture, funnel shaped, orange tulip glass sponge. Long stalk made of twisted spicule bundle which goes through sponge portion. Oscules not visible.

Associates Sample ID	Field Identification	Count
EX2206_D06_04B_A01	Brittle star	1





Sample ID	EX2206_D06_06G
Date (UTC)	20220826
Time (UTC)	202323
Depth (m)	1443.863
Latitude (decimal degrees)	19.043700
Longitude (decimal degrees)	-67.568930
Temp. (°C)	4.288
Field ID(s)	Layered Mn crusted carbonate
Comments	Low grade metamorphic, probably schist. Original protolith probably carbonate. Layered, green-gray tint on parts, clear or white platy crystals. Friable.

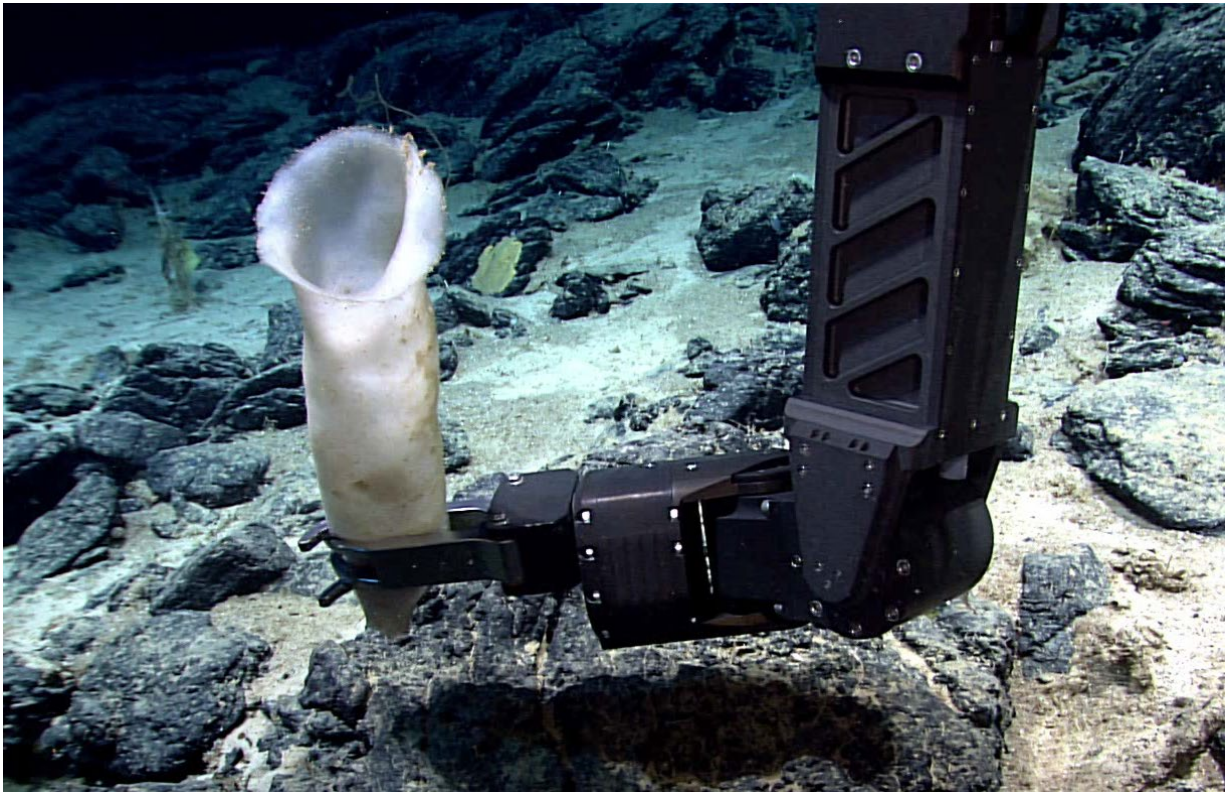




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Depth (m)	202323
Latitude (decimal degrees)	19.043700
Longitude (decimal degrees)	-67.568930
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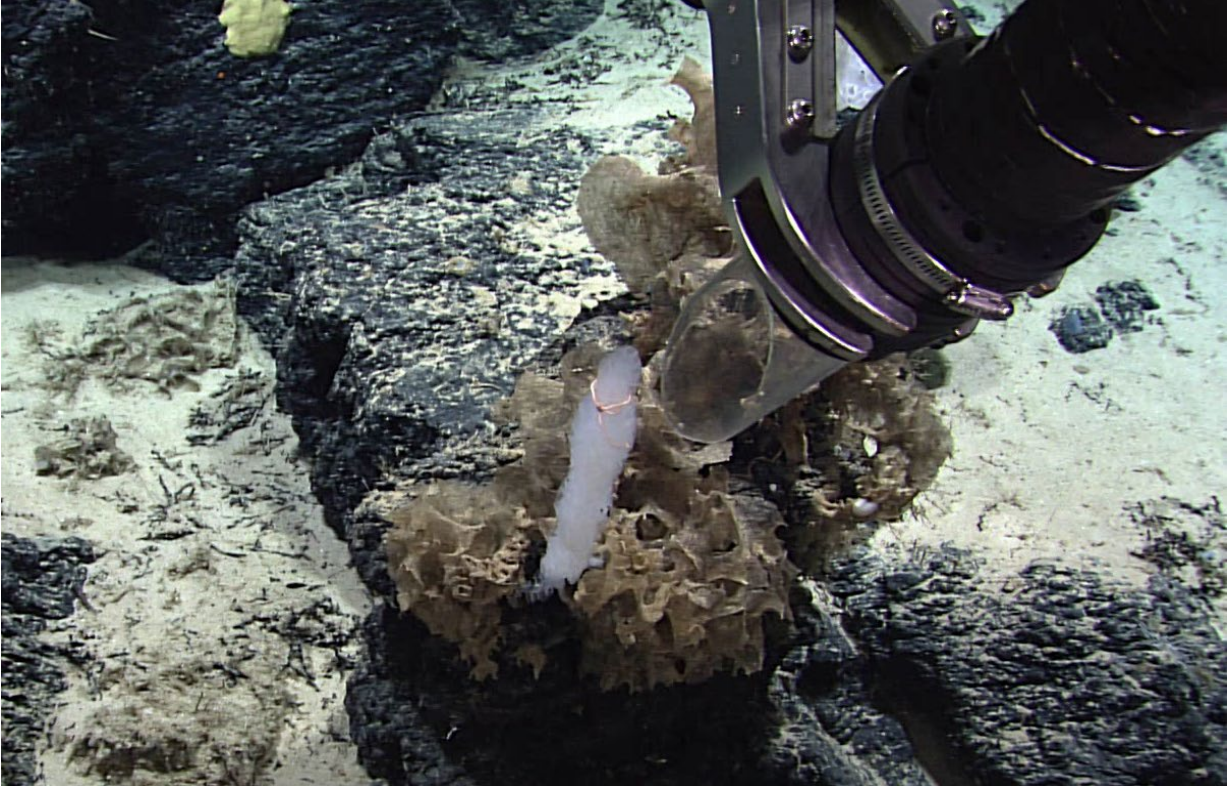
Associates Sample ID	Field Identification	Count
EX2206_D06_06G_A01	Encrusting sponges	2
EX2206_D06_06G_A02	Hydroids	2
EX2206_D06_06G_A03	Mixed lot rock biology	







Sample ID	EX2206_D06_07B
Date (UTC)	20220826
Time (UTC)	203957
Depth (m)	1431.63
Latitude (decimal degrees)	19.04394
Longitude (decimal degrees)	-67.568930
Temp. (°C)	4.299
Field ID(s)	Asconema
Comments	Off white, vase shaped, thin walled flaring at the top glass sponge with the consistency of wool and 3 attachment points on a thicker base.



Sample ID	EX2206_D06_08B
Date (UTC)	2022082
Time (UTC)	211055
Depth (m)	1400.499
Latitude (decimal degrees)	19.04461
Longitude (decimal degrees)	-67.568870
Temp. (°C)	4.347



Field ID(s)	Farrea sp.
Comments	Ruffles around a central (possibly 2) axis

Associates Sample ID	Field Identification	Count
EX2206_D06_08B_A01	Amphipoda	4
EX2206_D06_08B_A02	Crustacea	1
EX2206_D06_08B_A03	Brittle star	1

## Niskin Sampling Summary

Sample ID	EX2206_D06_01W
Date (UTC)	20220826
Time (UTC)	165323
Depth (m)	554.118
Latitude (decimal degrees)	19.039990
Longitude (decimal degrees)	-67.568160
Bottle number	NISKIN 1
Temperature (°C)	12.932
Dissolved Oxygen (ml/L)	3.841
Treatment	eDNA

Sample ID	EX2206_D06_02W
Date (UTC)	20220826
Time (UTC)	165556
Depth (m)	631.486
Latitude (decimal degrees)	19.04017
Longitude (decimal degrees)	-67.568300
Bottle number	NISKIN 2
Temperature (°C)	11.354
Dissolved Oxygen (ml/L)	3.638
Treatment	eDNA

Sample ID	EX2206_D06_03W
Date (UTC)	20220826
Time (UTC)	174115
Depth (m)	1628.018
Latitude (decimal degrees)	19.04031
Longitude (decimal degrees)	-67.56886



Bottle number	NISKIN 3
Temperature (°C)	3.955
Dissolved Oxygen (ml/L)	5.984
Treatment	eDNA

## Scientists Involved

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