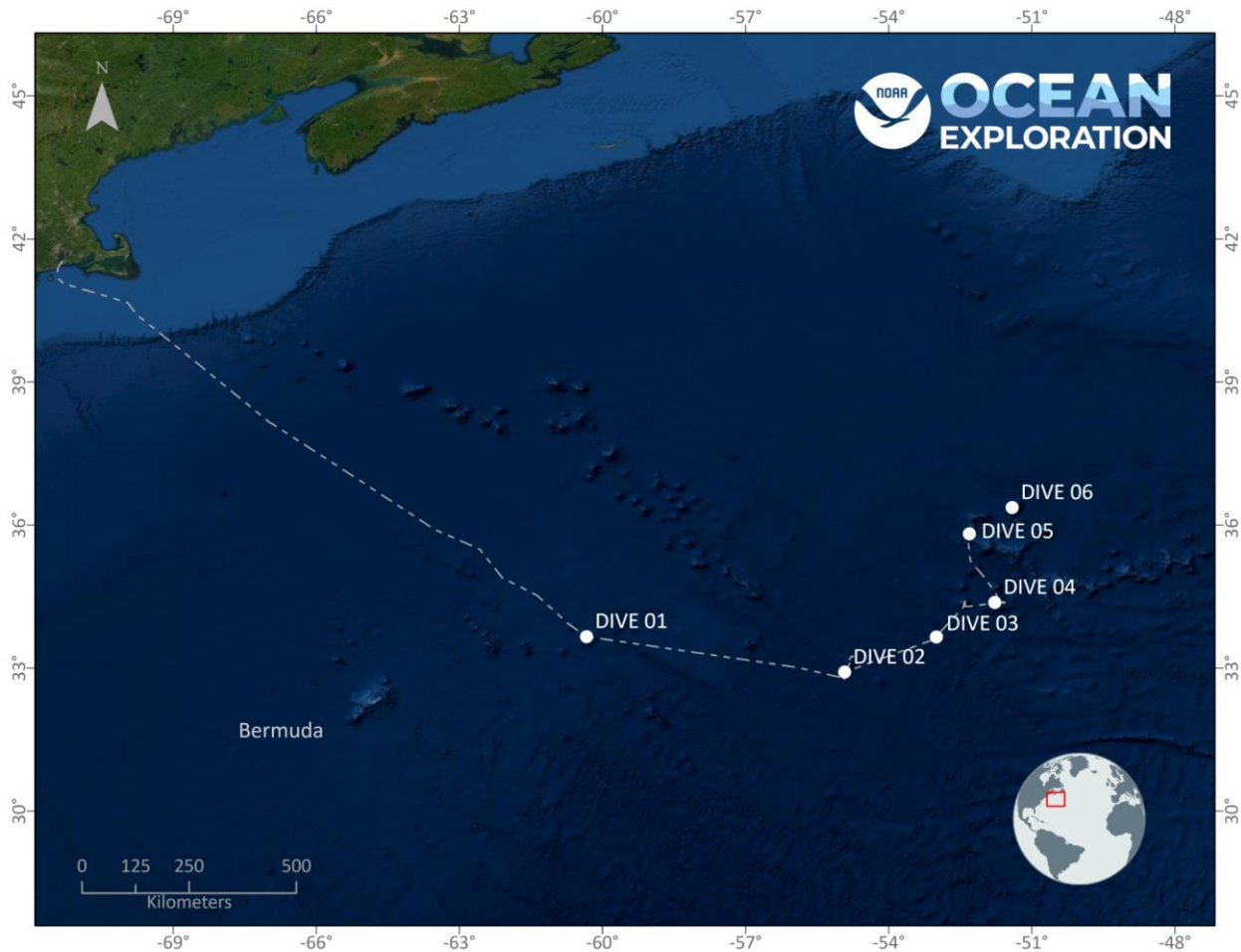


# ROV Dive Summary, EX-21-04, Dive 6, July 09, 2021

## General Location Map



## Dive Information

Site Name	Castle Rock
General Area Descriptor	Most northern seamount in the Corner Rise Seamount chain.
Science Team Leads	Rhian Waller, Jason Chaytor
Expedition Coordinator	Kasey Cantwell, Kimberly Galvez (Expedition Coordinator in Training)
ROV Dive Supervisor	Chris Ritter



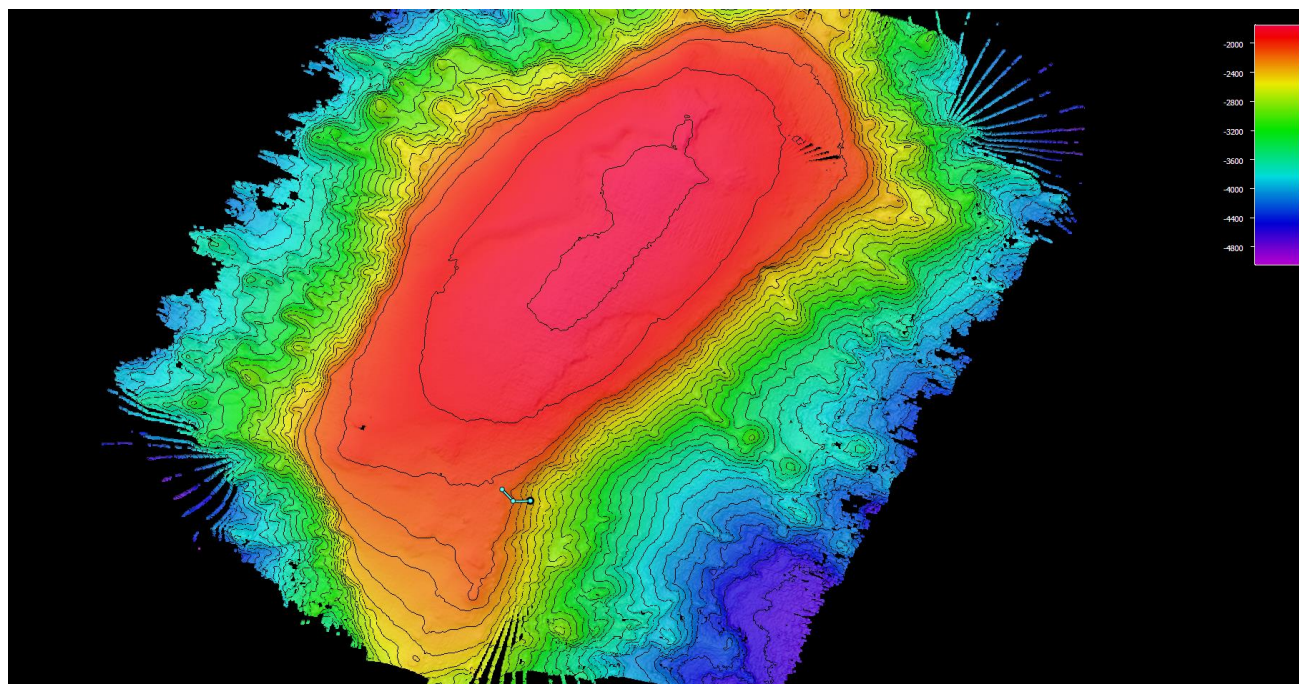
Dive Description	<p>A wide range of seafloor environments were encountered during the dive on Castle Rock Seamount, beginning with a mixed rock outcrop and sediment slope, which transitioned into a steep (&gt; 30 degree) section of exposed lava flow morphologies (including what appeared to be flow fronts or failed slope segments), and finally a series of alternating, low-relief rock and sedimented areas. At the end of the dive, the seamount slope transitioned to a region of thicker and more extensive sediment cover where some of the rock outcrops had a markedly different textural appearance (both primary and secondary FeMn textures), that may represent a change to carbonate lithologies. These potential carbonate rocks continued to be mixed with pillow and other volcanic flow textures, so further confirmation of their composition is required. Numerous open and elongated pillow-lavas were seen, with pillow-lavas and sheet flows the overall dominant morphologies. The sediment on the seamount appears to be primarily biogenic (with the coarse fraction dominated by preropod tests) mixed with coral debris, volcaniclastics and FeMn-fragments. Sampling of rocks continued to be a challenge, but two samples were collected during the dive, one at the landing location and another close to the summit area, both of which had FeMn-crusts.</p> <p>General biological diversity was higher during this dive than the previous 5 dives, though it was very much spread across the entire dive transect in lower density patches. By far echinoderms dominated, with red, yellow and white crinoids (stalked and unstalked) present in abundance for the whole dive. Goniaster sea stars and multiple species of brisingid and brittle stars were also observed, along with two species of sea cucumber (one swimming and one benthic). Two fish were also observed, one Halosaur and one unknown, and several polychaetes (Swima sp. and unknown benthic), alongside a chitin. In terms of deep sea corals, <i>Desmophyllum dianthus</i>, <i>Iridigorgia magnispiralis</i>, <i>Metallogorgia</i> (with associated ophiocreas), <i>Acanella</i>, <i>Paramuricea</i>, <i>Parantipathesa</i> and <i>Stauropathes</i> were observed for the first time this cruise, alongside <i>Bathypathes</i>, bramble bamboos, corallium, <i>Chrysogorgia</i> and several bamboo corals. Sponges seemed less abundant than Dive 5, but were still well represented, an unknown species of elkhorn sponge was collected (alongside two red crinoids), euplectellids were observed as well as several species of farreids. A collection of a fossil (<i>Desmophyllum dianthus</i>) was made to aid in dating coral life on this seamount.</p>
Notable Observations	High overall diversity of corals in this area, though species were spread throughout the dive Large density and diversity of crinoids
Community and habitat observations	Corals and Sponges - (Present) Chemosynthetic Community - (Absent) High biodiversity Community - (Present) Active Seep or Vent - (Absent) Extinct Seep or Vent - (Absent) Hydrates - (Absent)
CMECS Feature Type(s)	Rock, Sediment (Fine & coarse unconsolidated)
SeaTube Link (science annotation system)	<a href="https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&amp;resourceId=2293">https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&amp;resourceId=2293</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-

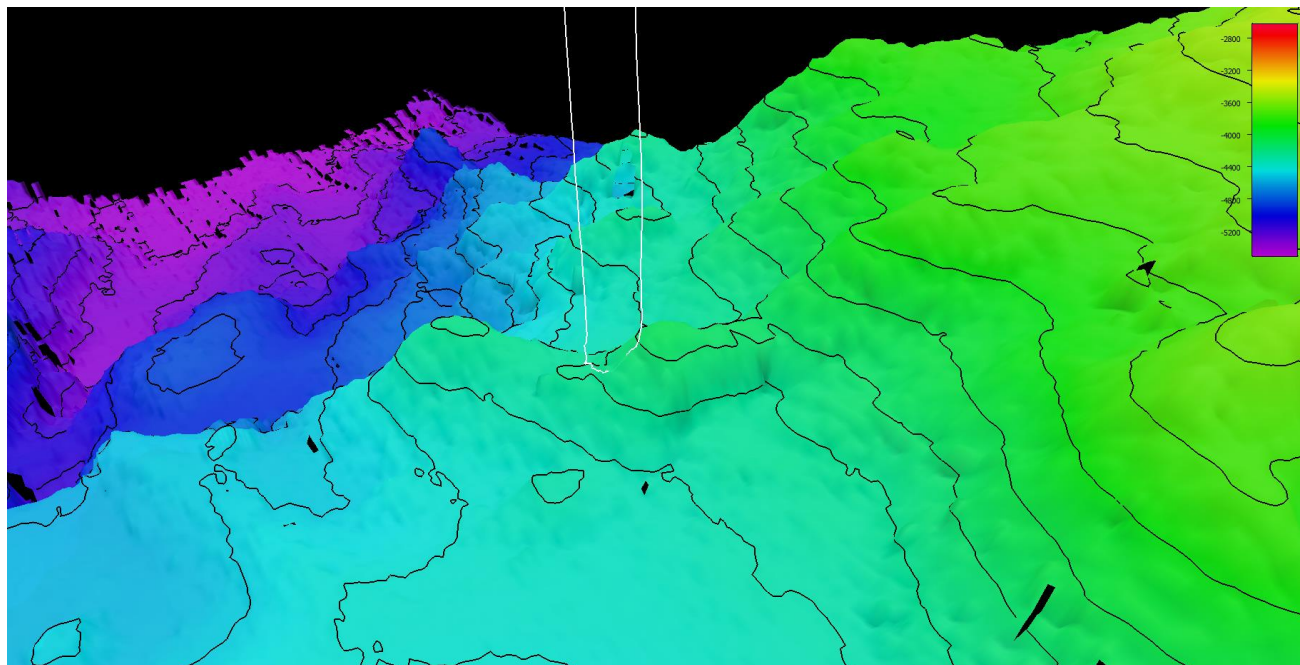
	resolution cameras, low resolution cameras, manipulator arms, suction sampler, sample drawers and thrusters. The section below notes if any of these sensors were malfunctioning or not operational
Equipment Malfunctions	The 1Hz output from the <i>Seirios</i> CTD stopped working. The cause was determined after the dive. The result of the loss of the data stream was no <i>Seirios</i> CTD data was sent to SeaTube. The full resolution data from the CTD was not affected.

## Overview of Dive Site



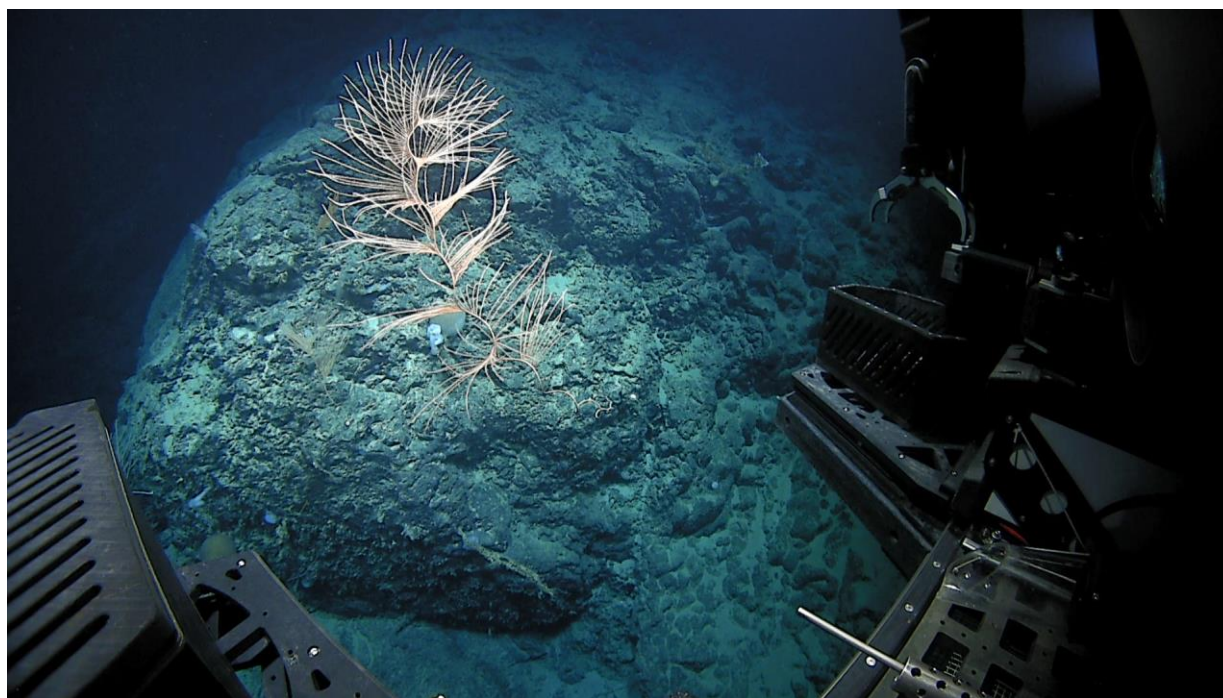
Smoothed ROV dive track (blue) on an overview bathymetry of the seamount, 3x vertical exaggeration.

## Close-up Map of Main Dive Site

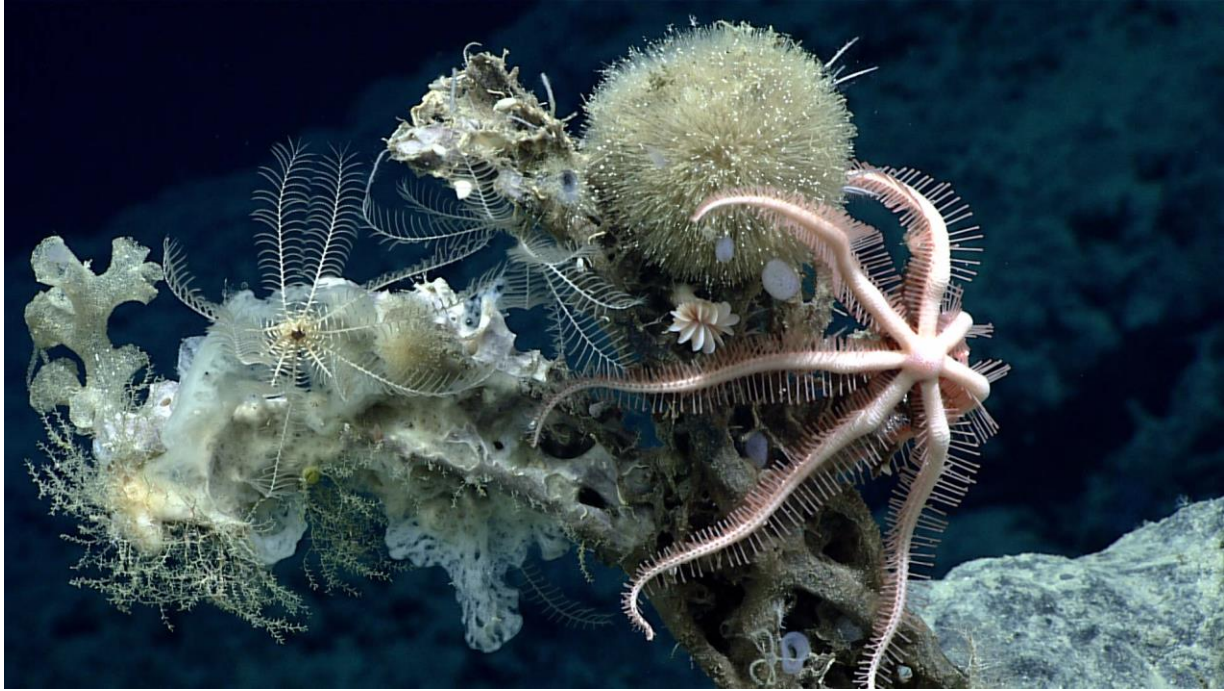


Smoothed ROV dive track in white on 25x25 cell size bathymetry, 3x vertical exaggeration, depth in meters, 100 meter contours

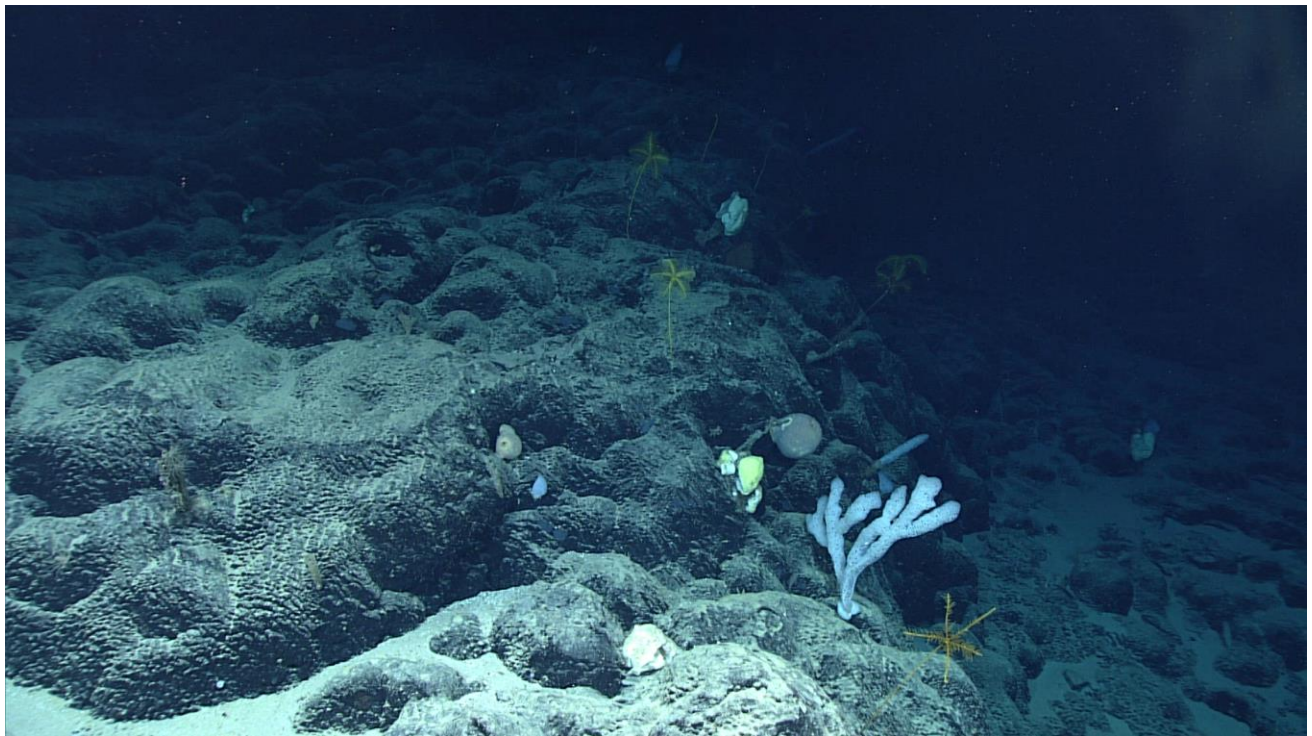
## Representative Photos of the Dive



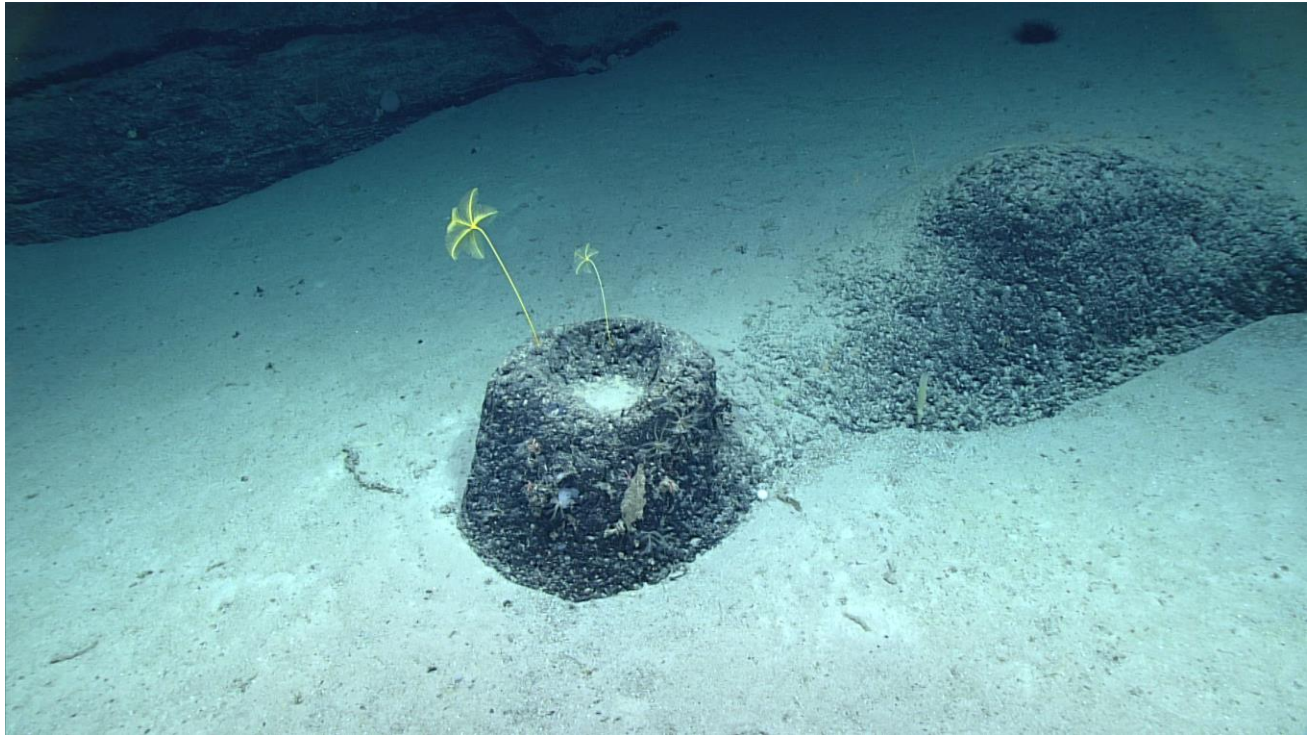
[Iridiogorgia magnispiralis atop a pillow lava substrate]



[A conglomeration of organisms living on a dead sponge framework - brisingids, crinoids, scleractinian *Desmophyllum dianthus*]



[Pillow lavas with sediment ponds were abundant on this dive, and frequently covered in fields of stalked crinoids]



[Rock outcrop observed toward the end of the dive with a morphology not seen previously. Rocks in this area had a distinctly different texture than elsewhere traversed and could possibly be sedimentary (carbonate) rather than volcanic in origin.]

### **Samples Collected -**

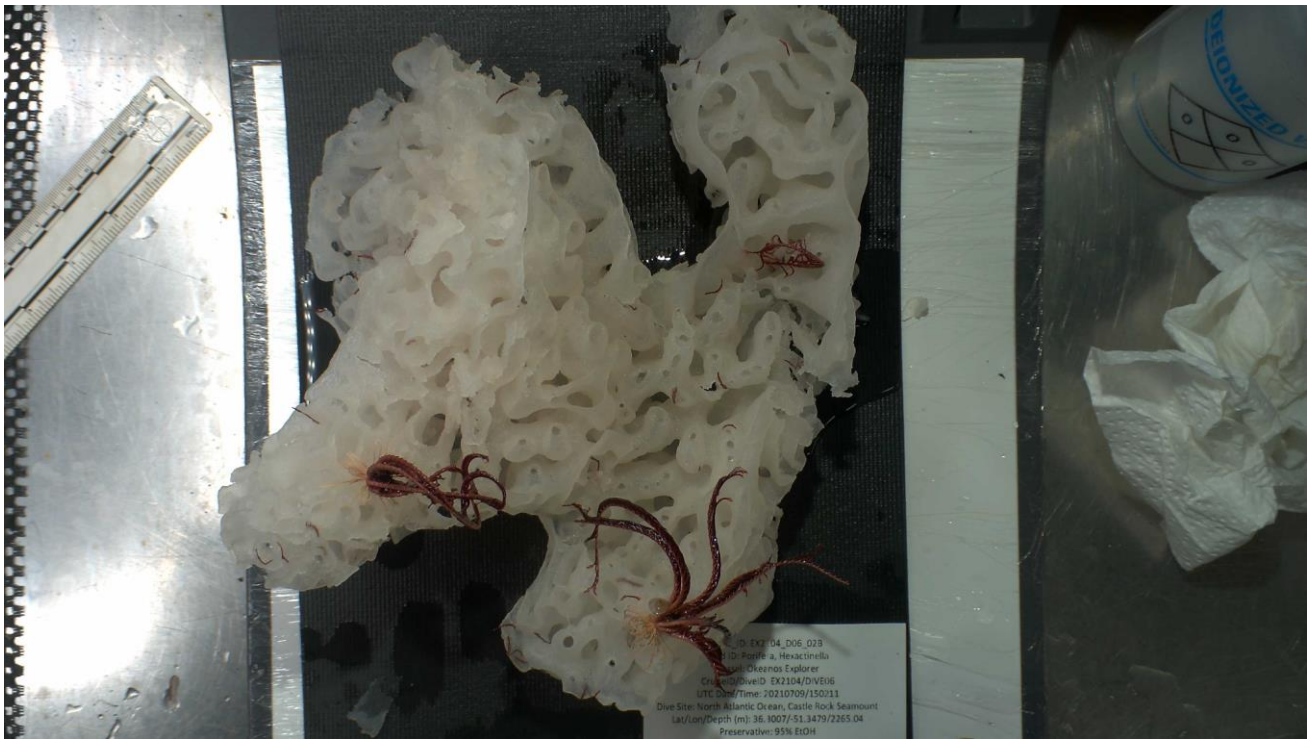
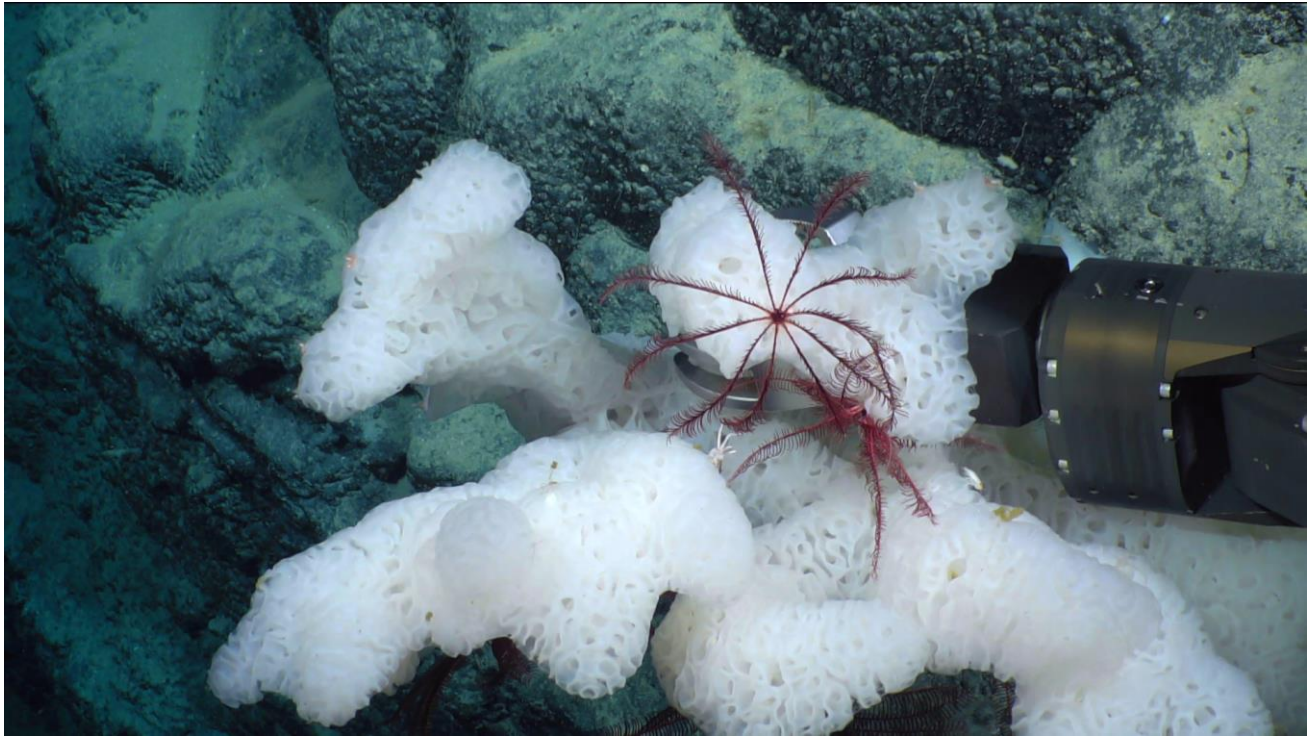




Sample ID	EX2104_D06_01G
Date (UTC)	20210709
Time (UTC)	140219
Depth (m)	2325.071045
Latitude (decimal degrees)	36.30093765
Longitude (decimal degrees)	-51.34750366
Temp. (°C)	3.679
Field ID(s)	Angular rock
Comments	19cm long by 15cm wide by 9.5 cm tall

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

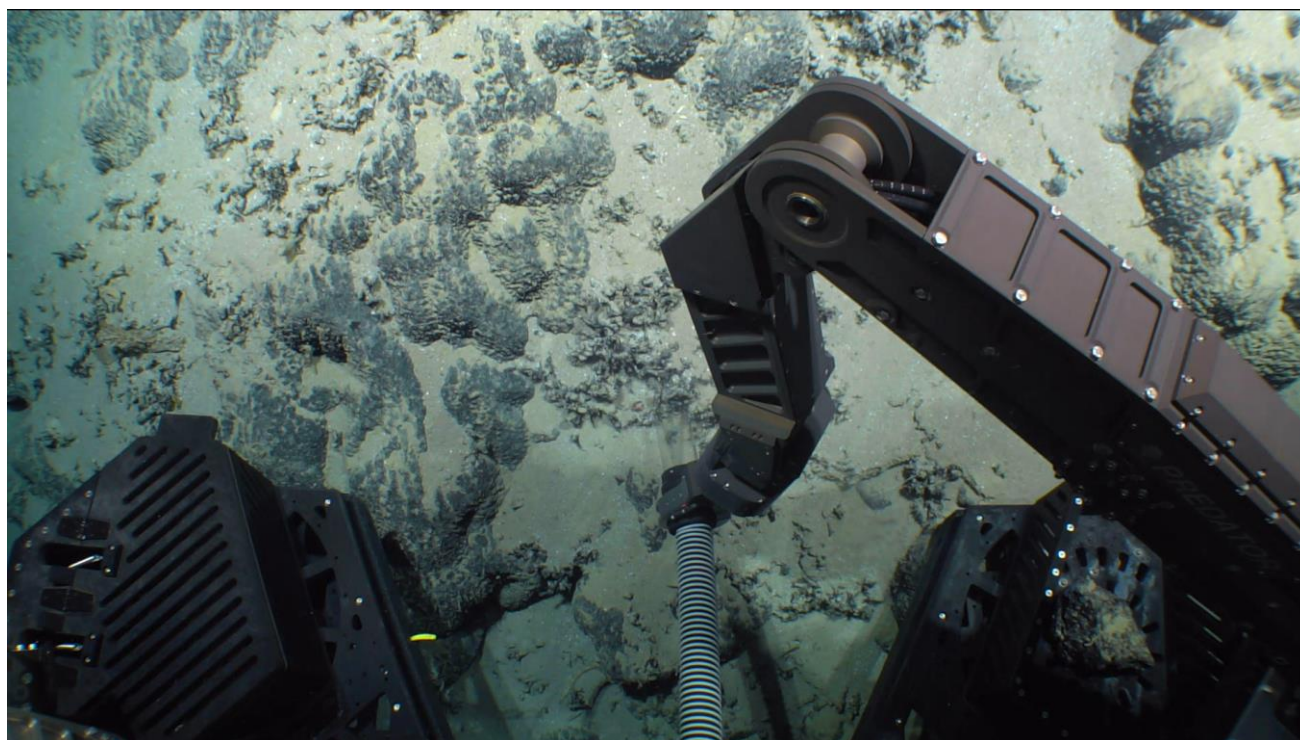




Sample ID	EX2104_D06_02B
Date (UTC)	20210709
Time (UTC)	150211

Depth (m)	2265.042969
Latitude (decimal degrees)	36.30069733
Longitude (decimal degrees)	-51.34791183
Temp. (°C)	3.612999916
Field ID(s)	Hexactinellida
Comments	2 associates

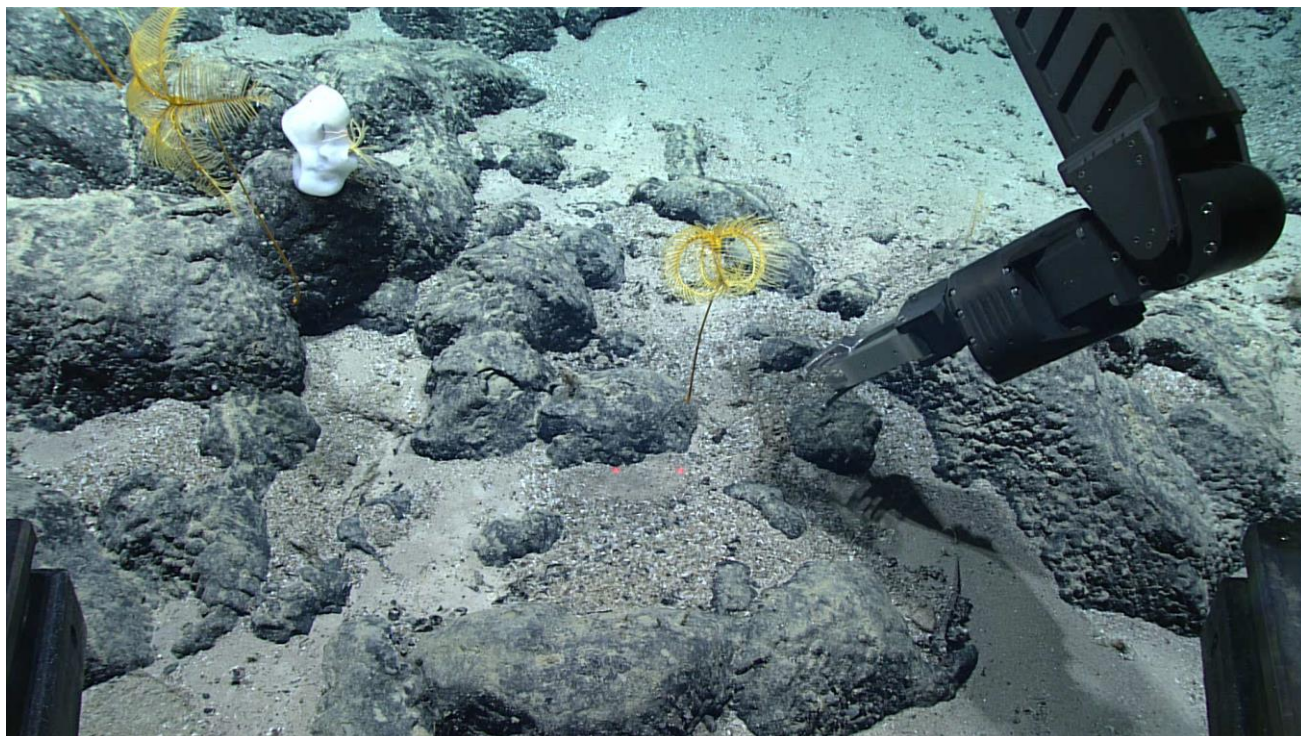
Associates SampleID	Field Identification	Count
EX2104_D06_02B_A01	Crinoidea	1
EX2104_D06_02B_A02	Crinoidea	1





Sample ID	EX2104_D06_03G
Date (UTC)	20210709
Time (UTC)	165649
Depth (m)	2182.822998
Latitude (decimal degrees)	36.30088806
Longitude (decimal degrees)	-51.3494072
Temp. (°C)	3.729
Field ID(s)	Coral Rubble and Sediment
Comments	sediment subsample and various coral fragments

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



Sample ID	EX2104_D06_04B
Date (UTC)	20210709
Time (UTC)	180553
Depth (m)	2137.674072

Latitude (decimal degrees)	36.30096054
Longitude (decimal degrees)	-51.35019684
Temp. ( °C)	3.765000105
Field ID(s)	crinoidea
Comments	24cm long by 18cm tall, 1 broken arm so only 3 arms, abundant in area

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





Sample ID	EX2104_D06_05G
Date (UTC)	20210709
Time (UTC)	182010
Depth (m)	2126.311035
Latitude (decimal degrees)	36.30081558
Longitude (decimal degrees)	-51.35053253
Temp. (°C)	3.745
Field ID(s)	Rock with FeMn crust
Comments	24cm long by 18cm wide and 13cm tall

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

## Scientists Involved (provide name, email, affiliation)

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