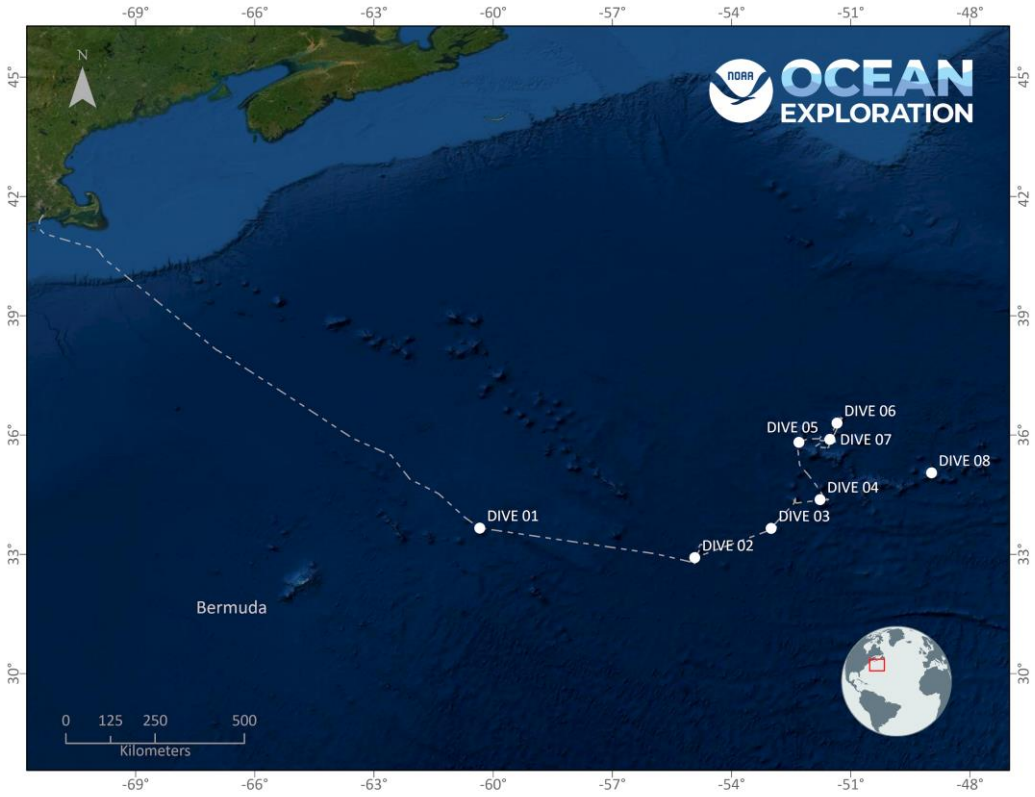
ROV Dive Summary, EX-21-04, Dive 08, July 11, 2021

General Location Map



Dive Information

Site Name	MacGregor Seamount
General Area Descriptor	Large seamount within the Eastern portion of the Corner Rise Seamount Complex
Science Team Leads	Rhian Waller, Kira Mizell
Expedition Coordinator	Kasey Cantwell, Kimberly Galvez (Expedition Coordinator in Training)
ROV Dive Supervisor	Chris Ritter
Mapping Lead	Shannon Hoy
Dive Purpose	Explore an unexplored seamount

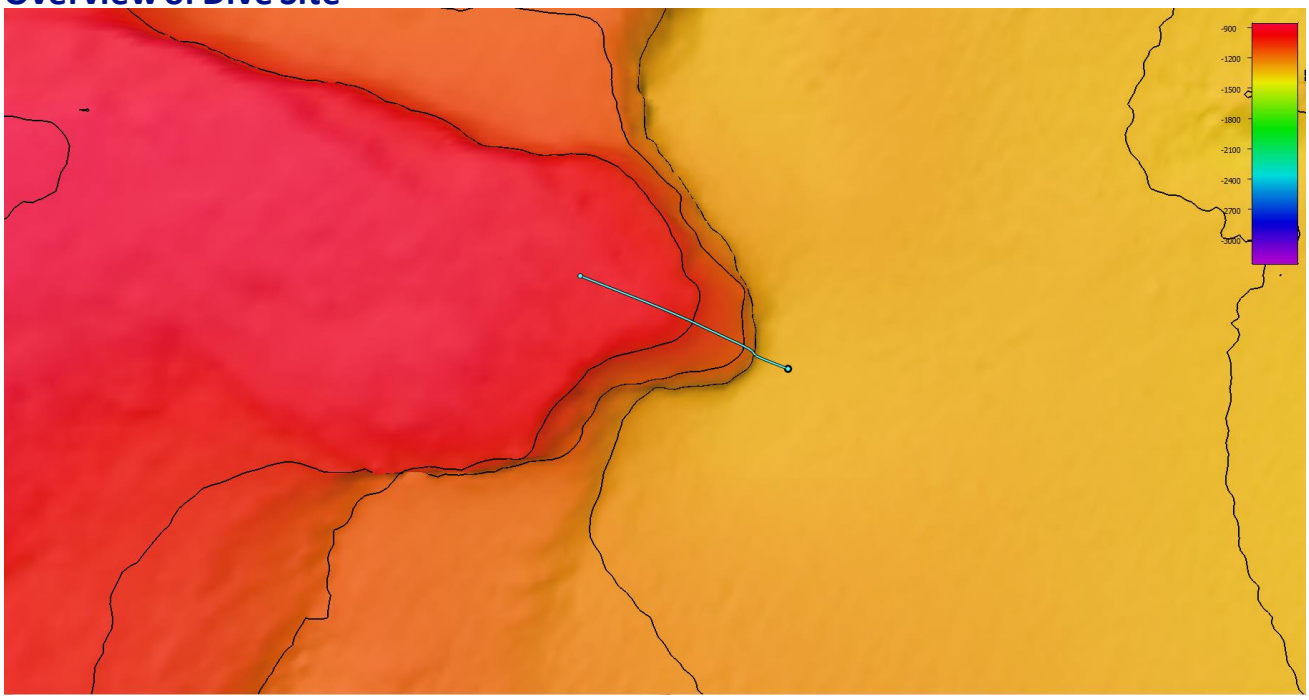
Was the dive restricted for Underwater Cultural Heritage?	No
ROV Dive Summary Data	Dive Summary: EX2104_DIVE08 ^^ Dive Type: Normal In Water: 2021-07-11T12:51:07.451963 35.05109146024471 ; -48.96995322508091 On Bottom: 2021-07-11T15:10:01.418752 35.05256833920357 ; -48.97057087117727 Off Bottom: 2021-07-11T19:59:58.638476 35.05524673781747 ; -48.97631211725885 Out Water: 2021-07-11T20:41:00.382526 35.05532134855998 ; -48.97566259495293 Dive Duration: 7:49:52 Bottom Time: 4:49:57 Max Vehicle Depth: 1272.1 m Min Seafloor Depth: 939.2 m Distance Travelled: 735.3 m
Dive Description	The ROV landed on coarse sediments near the base of a very steep near-vertical wall. As the ROV approached the wall, large-scale ripples were observed in the sediments. At the base of the wall, where the slope was steepening, sedimentary rocks were exposed that appeared to be carbonate conglomerate with ferromanganese patina. A loose sample of this carbonate material was sampled. Soon after the rock collection, the ROV encountered the very steep wall which was very continuous and smooth (not rugged or platy like the carbonates observed at the base). Zooms on the rock texture revealed many holes/void-spaces that may be boreholes and/ or part of the complicated small-scale texture that is indicative of a paleo reef. The geology of this large carbonate platform was similar as the ROV continued up the cliff. After leaving the wall for technical issues, the ROV was set down a second time near Waypoint 2 of the suggested dive track, which was at the flat upper surface of the platform. The top of the feature had a thin layer of sediment with sporadic exposure of rocks. The thin sediment cover indicates that there has been sustained strong currents preventing accumulation that might be expected for a feature of this age. The ROV attempted to collect a sample of the visible rocks, but most were solidly attached. Eventually a cobble was collected that appeared smoothed/rounded with a very thin ferromanganese patina; the rock type was obscured by a very large attached sponge. Large erratic cobbles and small boulders were also observed as the ROV traversed the flat summit. Thin fractures were observed along the top of the platform that ran for 10s of meters in a grid-like pattern that may be the result of pressure stress or movement of the platform feature during subsidence. At the very end of the dive, an erosional lip was observed that appeared reminiscent of a paleo-shoreline.

	Biological communities were diverse in different areas of the dive. Initially the soft coral Acanella arbuscula was present within the sediment ROV landing zone. Fish were also present - dogfish and rat tails, as well as a Holoridae. Oreo fish (false boarfish) were seen throughout the dive, though were denser at our shallower locations. Once the dive moved to the carbonate wall there was more diversity of deep sea corals. Dense patches of Chyrsogorgia and exceptionally large Thourella colonies dotted the wall, with interspersed Iridiogorgia and an unknown plexaurid branch was collected. Once we came back down onto the flat top of the seamount Acanthagorgia armata, potentially paragorgia (encrusting type), large corallium and Narella were seen, as well as the black corals Leiopathes and Anthipathes. Scleractinians were also observed during this dive on the top of the wall, Caryophyllia cup corals, unconfirmed *Lophelia pertusa* and *Madrepora oculata* (CITES port exemption has not arrived, so we could not collect to confirm ID). Though sponges were represented on the sediment and wall in mostly small numbers and sizes, at the top of the feature we encountered a large sponge garden, with innumerable diversity and high densities. Associates were present throughout the dive as well, particularly echinoderms (pencil urchins, brittle stars, cookie stars).
Notable Observations	Large, multi species sponge garden at shallowest depths Scleractinian reef building corals
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 (coarse unconsolidated)
SeaTube Link (science annotation system)	https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&resourceId=2313

Equipment Deployed

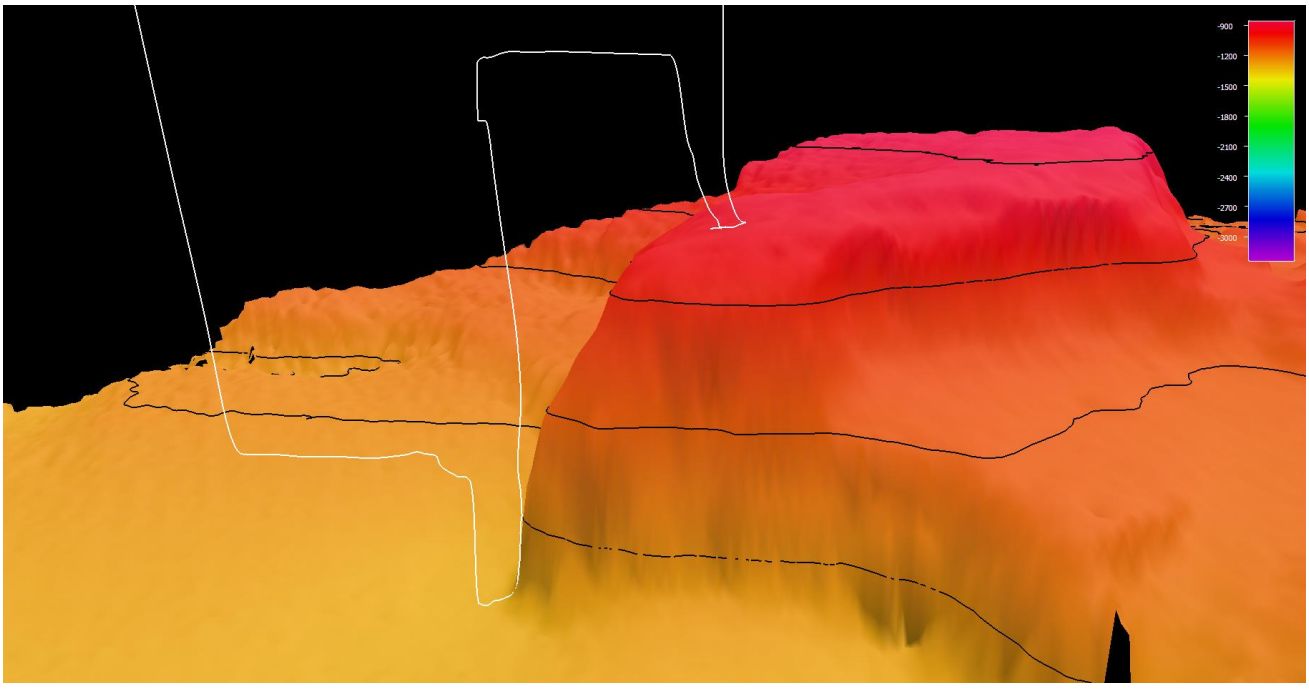
ROV	*Deep Discoverer*
Camera Platform	*Seirios*
ROV Measurements	The following ROV measurements, data streams and equipment are used on each ROV deployment: CTD, depth, scanning sonar, USBL position, altitude, heading, attitude, high-resolution cameras, low resolution cameras, manipulator arms, suction sampler, sample drawers and thrusters. The section below notes if any of these sensors were malfunctioning or not operational
Equipment Malfunctions	Ship's bow-thruster experienced a failure, repaired and dive resumed.

Overview of Dive Site



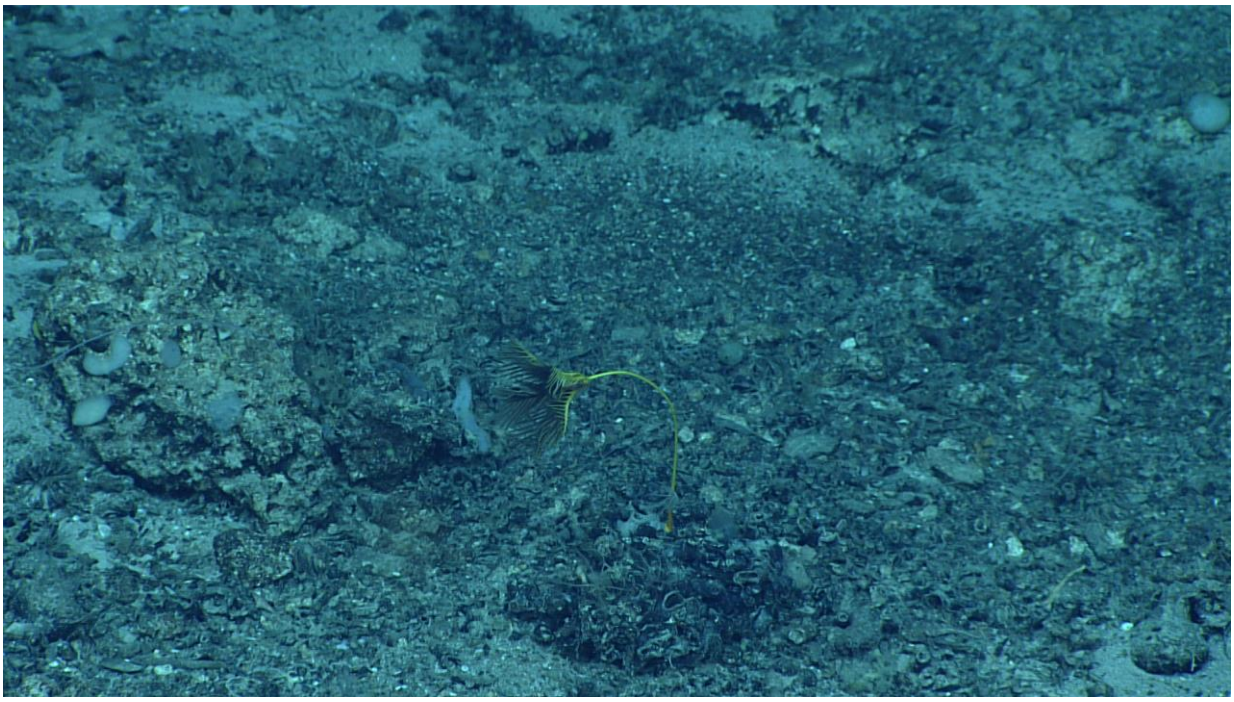
Smoothed ROV dive track (blue) on an overview bathymetry of the seamount, 3x vertical exaggeration.

Close-up Map of Main Dive Site

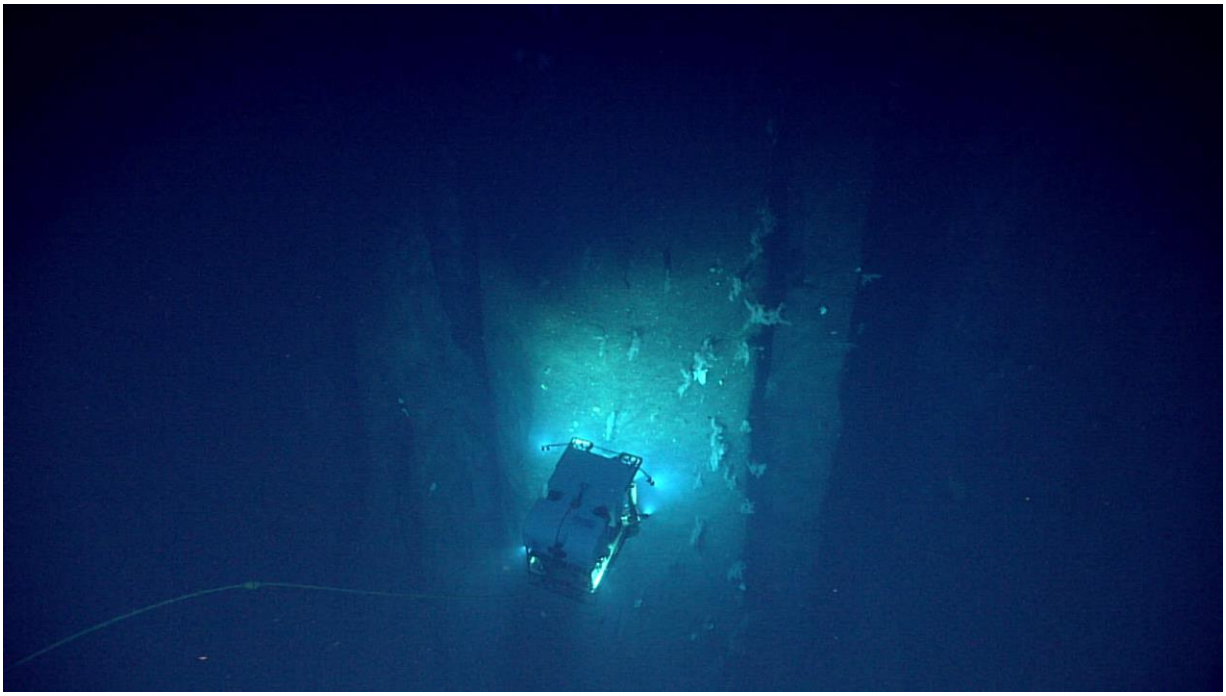


Smoothed ROV dive track in white on 25x25 cell size bathymetry, 3x vertical exaggeration, depth in meters.

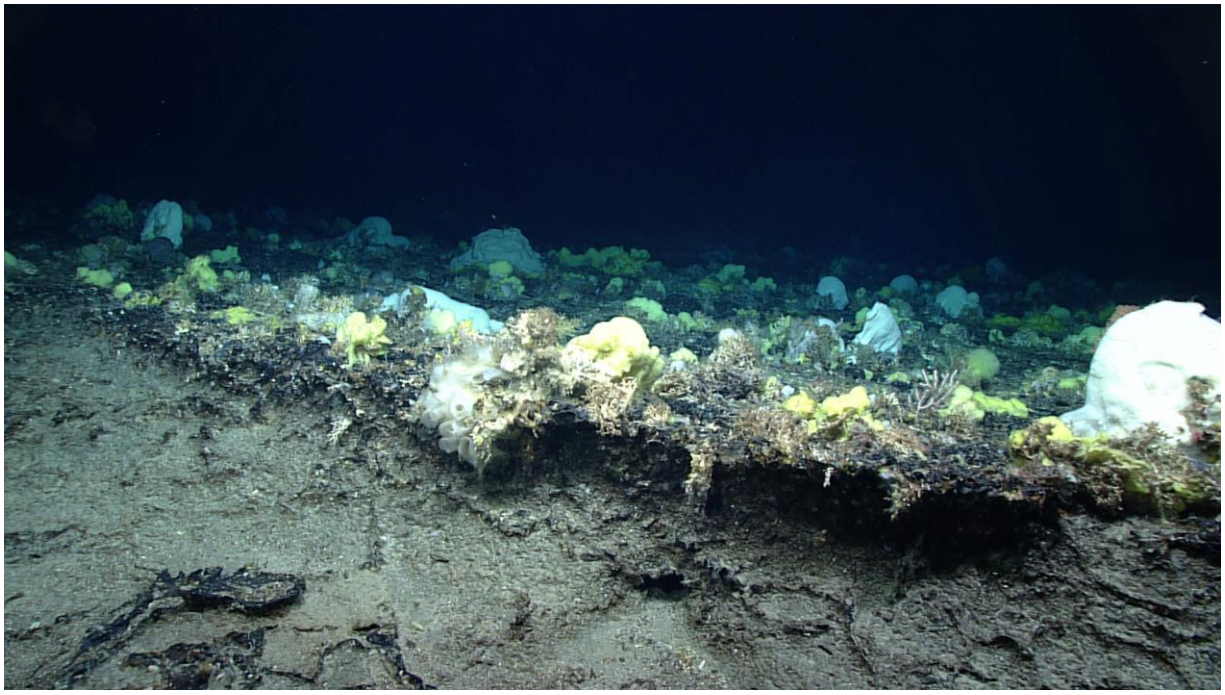
Representative Photos of the Dive



Start of the dive showed coarse sediments and loosely consolidated material, as well as high currents. Here a crinoid is shown bending in the current.

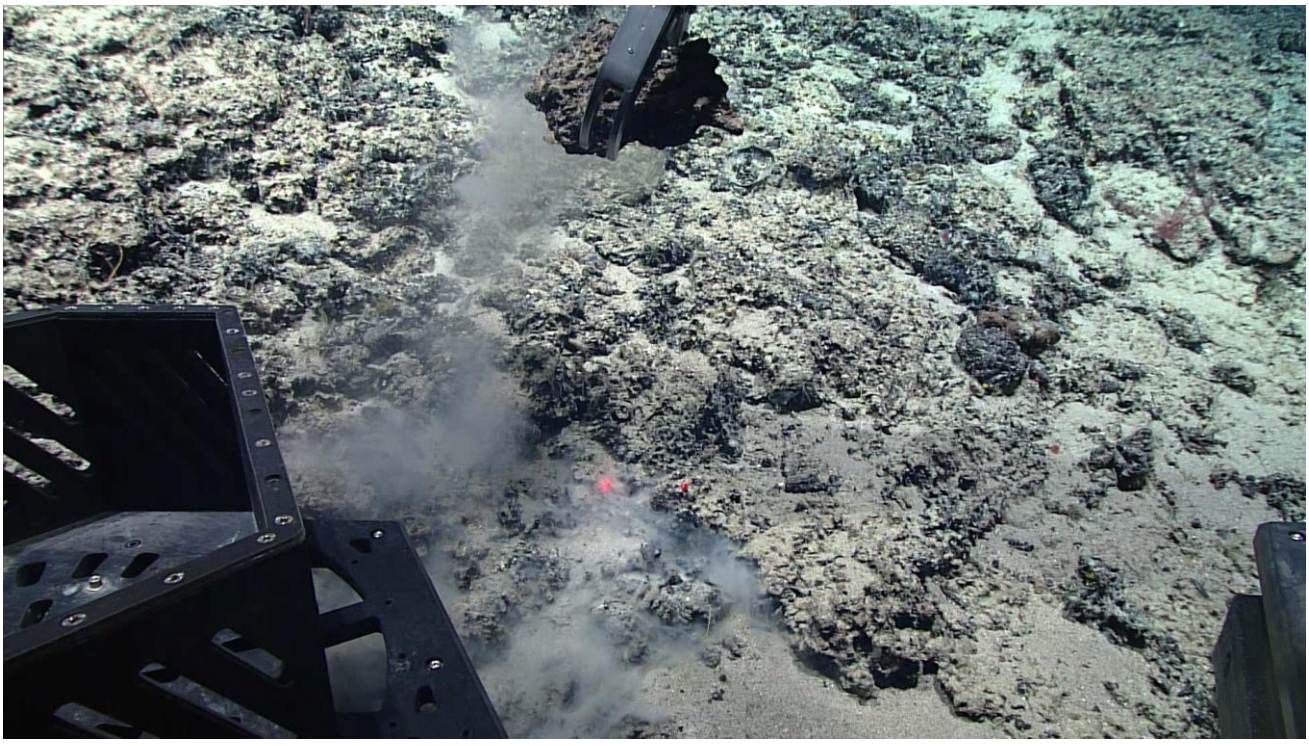


The ROV traverses the steep wall of a paleo-reef structure taken from Seirios with large Thourella sp. colonies



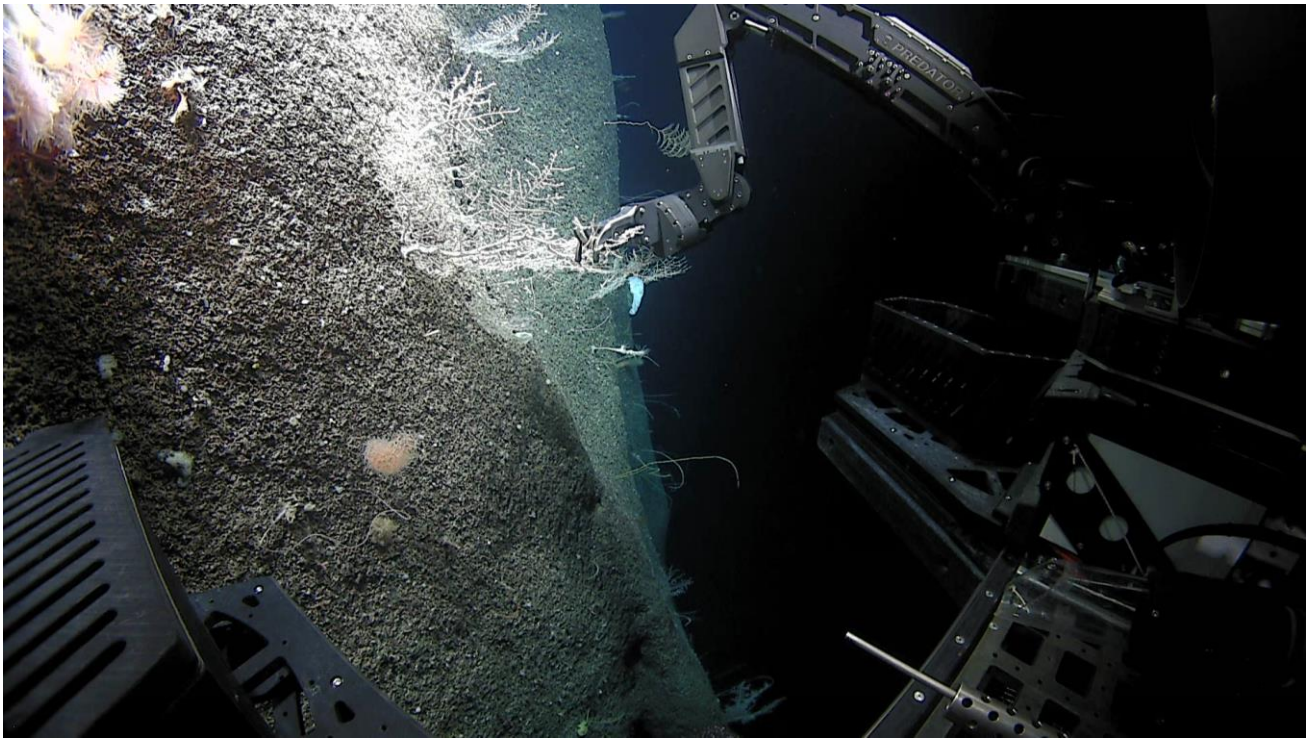
A large and extensive sponge garden was observed at the top of the carbonate reef platform, alongside reef-building hard corals and associated fauna. Shown here is an erosional ledge feature that may have once been a shoreline.

Samples Collected -



Sample ID	EX2104_D08_01G
Date (UTC)	20210711
Time (UTC)	155808
Depth (m)	1269.371948
Latitude (decimal degrees)	35.05280304
Longitude (decimal degrees)	-48.97148132
Temp. (°C)	4.489999771
Field ID(s)	Carbonate Conglomerate Rock
Comments	FeMn patina, stalked crinoid and other attached biota, 26 cm long 15 cm wide 7 tall, fossilized coral cemented in rock and fragments

Associates Sample ID	Field Identification	Count
EX2104_D08_01G_A01	Carbonate Conglomerate Rock	1



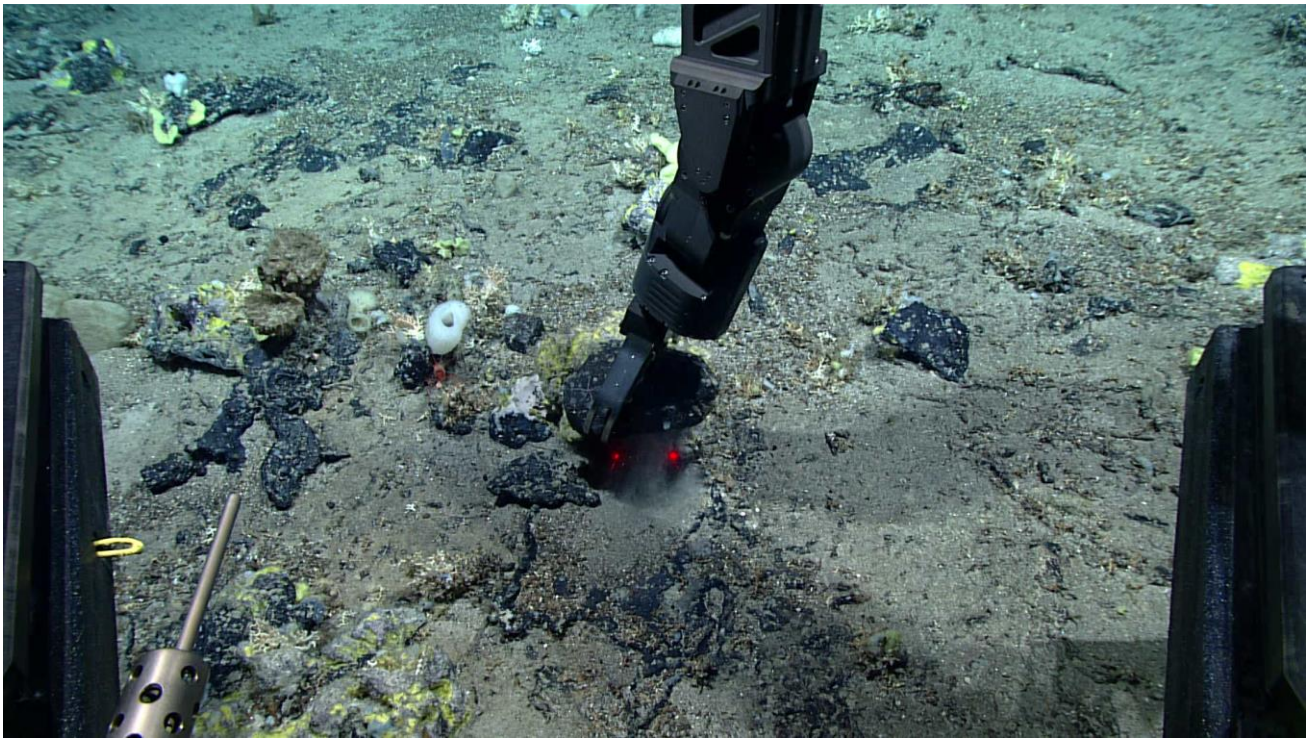
Sample ID	EX2104_D08_02B
Date (UTC)	20210711
Time (UTC)	171451
Depth (m)	851.2769775

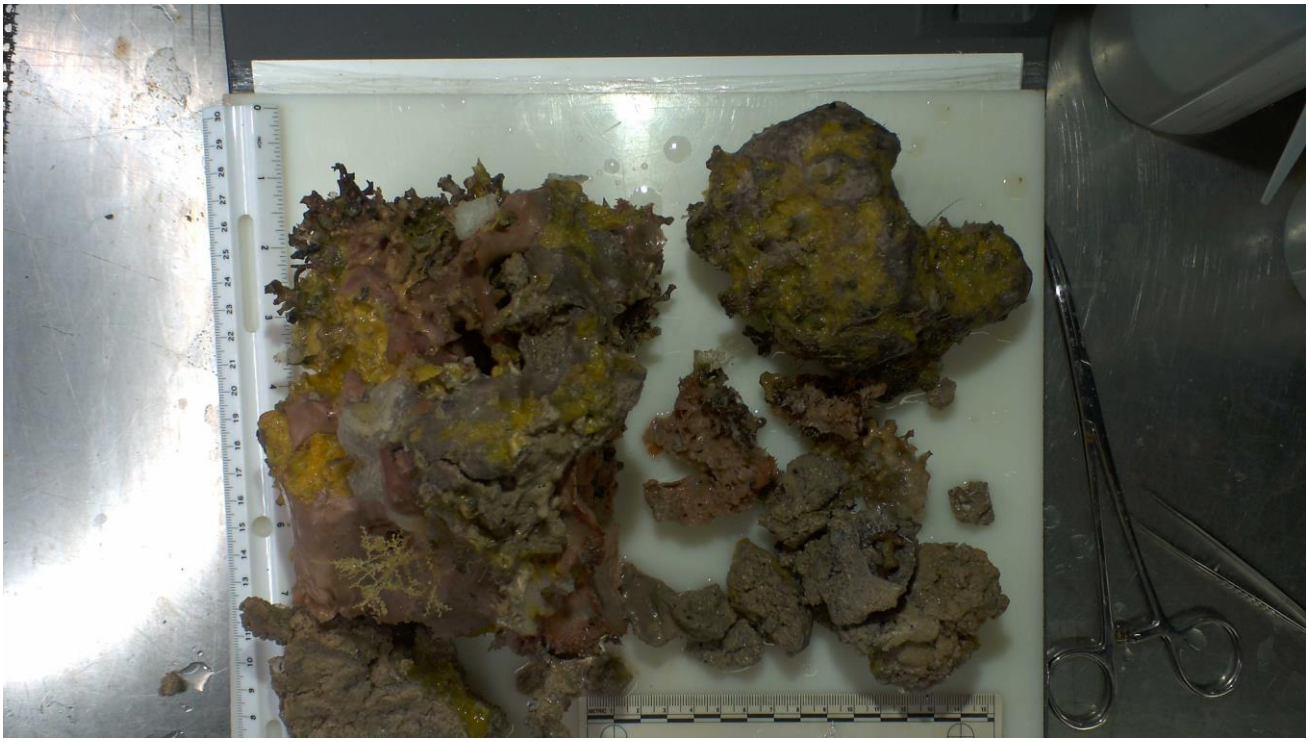
Latitude (decimal degrees)	35.05252075
Longitude (decimal degrees)	-48.97143173
Temp. (°C)	5.236999989
Field ID(s)	Plexauridae
Comments	Ship move between begin and end sampling times, sample was in claw during move, tan skeleton, over 20 cm total

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

Sample ID	EX2104_D08_03B
Date (UTC)	20210711
Time (UTC)	185309
Depth (m)	947.9000244
Latitude (decimal degrees)	35.05496216
Longitude (decimal degrees)	-48.97657776
Temp. (°C)	5.092999935
Field ID(s)	Plexauridae
Comments	White, found in sponge garden, over 20 cm

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





Sample ID	EX2104_D08_04G
Date (UTC)	20210711
Time (UTC)	190105
Depth (m)	947.9359741

Latitude (decimal degrees)	35.05492783
Longitude (decimal degrees)	-48.97666168
Temp. (°C)	5.084000111
Field ID(s)	Basalt Rock
Comments	FeMn thin patina, large sponge attached , roundness may suggest metamorphic rock, lots of worm tubes, 28 cm long 19 cm wide 15 cm tall, various encrusting organisms

Associates Sample ID	Field Identification	Count
EX2104_D08_04G_A01	Yellow Porifera	1
EX2104_D08_04G_A02	Pink Porifera	1
EX2104_D08_04G_A03	Brown Porifera	1
EX2104_D08_04G_A04	Hydrozoa	1

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