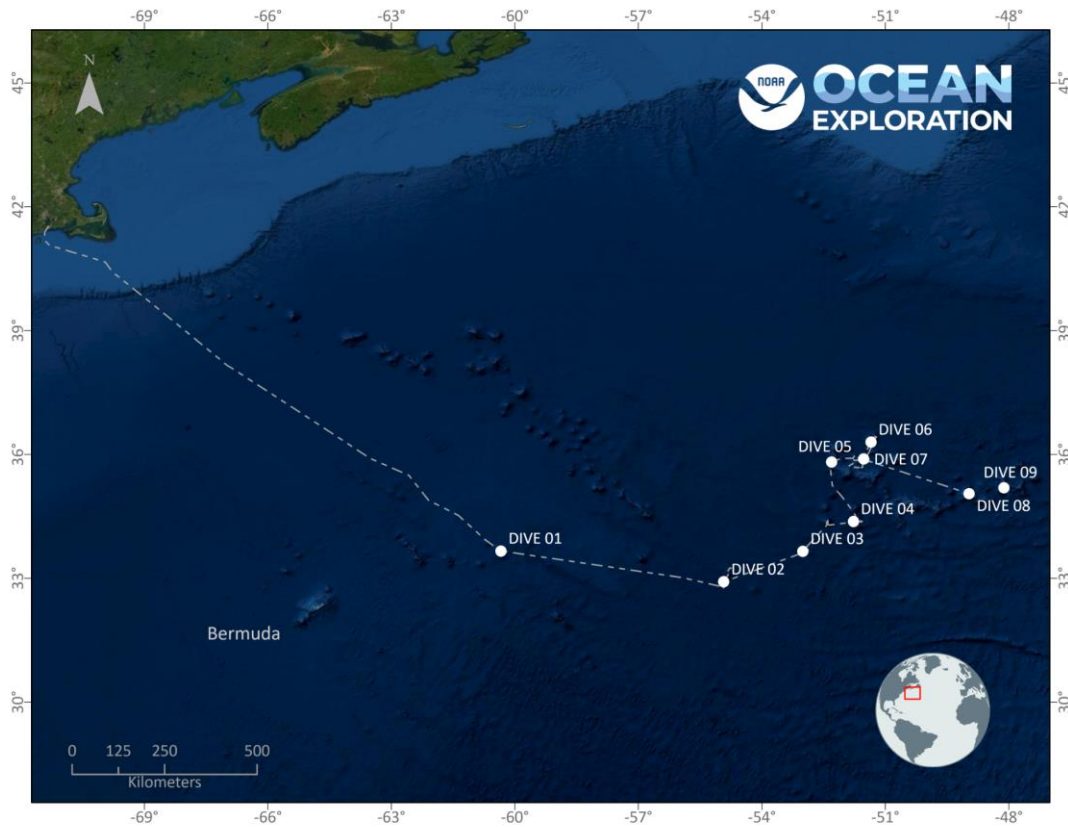


ROV Dive Summary, EX-21-04, Dive 09, July 12, 2021

General Location Map



Dive Information

Site Name	Yakutat Seamount - Shallow
General Area Descriptor	Large seamount near the Eastern margin 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 region of a large seamount

Was the dive restricted for Underwater Cultural Heritage?	No
ROV Dive Summary Data	<p>Dive Summary: EX2104_DIVE09 ^^</p> <p>Dive Type: Normal</p> <p>In Water: 2021-07-12T12:37:31.599814 35.177791511139525 ; -48.11670581739976</p> <p>On Bottom: 2021-07-12T13:58:09.067434 35.18092604631547 ; -48.11662393311627</p> <p>Off Bottom: 2021-07-12T19:51:31.188727 35.178299478038255 ; -48.117529120871886</p> <p>Out Water: 2021-07-12T20:44:12.596254 35.179912 ; -48.116809</p> <p>Dive Duration: 8:6:40</p> <p>Bottom Time: 5:53:22</p> <p>Max Vehicle Depth: 1365.6 m</p> <p>Min Seafloor Depth: 1192.8 m</p> <p>Distance Travelled: 404.2 m</p>

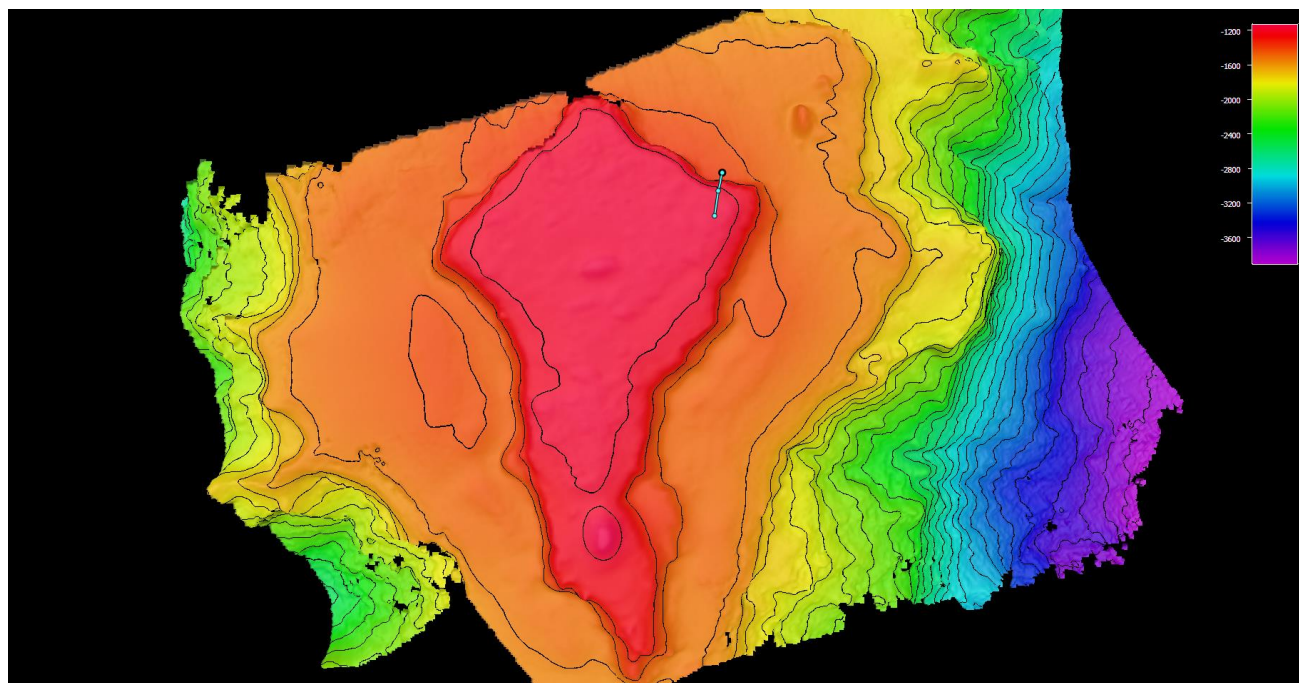
Dive Description	<p>The ROV landed on coarse sediments near the base of a near-vertical face of an elongated platform feature at the top of the southwestern arm of Yakutat Seamount. As the ROV traversed the lower terrace to approach the wall, ancient coral rubble, undercut carbonate outcrops, and erratic dropstones were observed. A sample of carbonate with a very thin ferromanganese coating was collected by the ROV after breaking from a thin undercut outcrop. The steep wall of the platform was largely continuous and smooth, which may be the result of wave action when this seamount was shallower. Zooms on the rock texture revealed many holes/void-spaces that may be boreholes and part of the bumpy, complicated texture that is indicative of a paleo reef. As the ROV continued up the cliff, some varied carbonate morphologies were observed, depending on how steep the slope was. More rugged coral rubble was present when flatter, and smoother, denser carbonate faces were observed when the slope was steeper. A thick <i>in situ</i> sample of carbonate (with the smoother, eroded surface texture) was collected from a fractured outcrop. The rock sample revealed thin ferromanganese coating at the surface of the rock, iron staining near the water-rock interface, and white carbonate at the bottom. Although very coarse biogenic sediments were observed throughout the dive, there were no thick accumulations, likely due to the strong currents in the region. As the ROV reached the upper portions of the platform, similar morphologies to the base were observed, primarily thin sediment patches interrupted by rugged coral rubble.</p> <p>Biological observations were more spread out than previous dives, though a good representation of species was noted. More scleractinian corals were observed along this dive track - the solitary cup coral <i>Desmophyllum dianthus</i> and <i>Enallopsammia rostrata</i> were observed at the lower reaches of the dive, but were not seen above 1200m depth. An unusual purple plexuarid was observed, along with at least 5 species of black corals, <i>Acanella bambou</i> coral and two other species of octocoral. Sponge fauna appeared poorer than previous dives, but still well represented, including a sample of an unknown finger sponge that was seen in high densities in patches. A large number of fish were seen during this dive in comparison to previous dives, black dogfish (with parasites), Oreo, Zooarcid, Grenadier, Halosuar and cyclothene. Other observations include echinothurid and cidarid urchins, hymenaster and a collection of an unusual cushion star. We also observed a Homolidae Carry Crab carrying a sponge, a nemertean ribbon worm and an Aphrodite polychaete.</p>
Notable Observations	ancient carbonate reef platform
Community and habitat observations	<p>Corals and Sponges - (Present) Chemosynthetic Community - (Absent) High biodiversity Community - (Absent) Active Seep or Vent - (Absent) Extinct Seep or Vent - (Absent) Hydrates - (Absent)</p>
CMECS Feature Type(s)	Rock, Sediment (coarse unconsolidated)
SeaTube Link (science annotation system)	https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&resourceId=2323

Equipment Deployed

ROV	<i>Deep Discoverer</i>
Camera Platform	<i>Seirios</i>

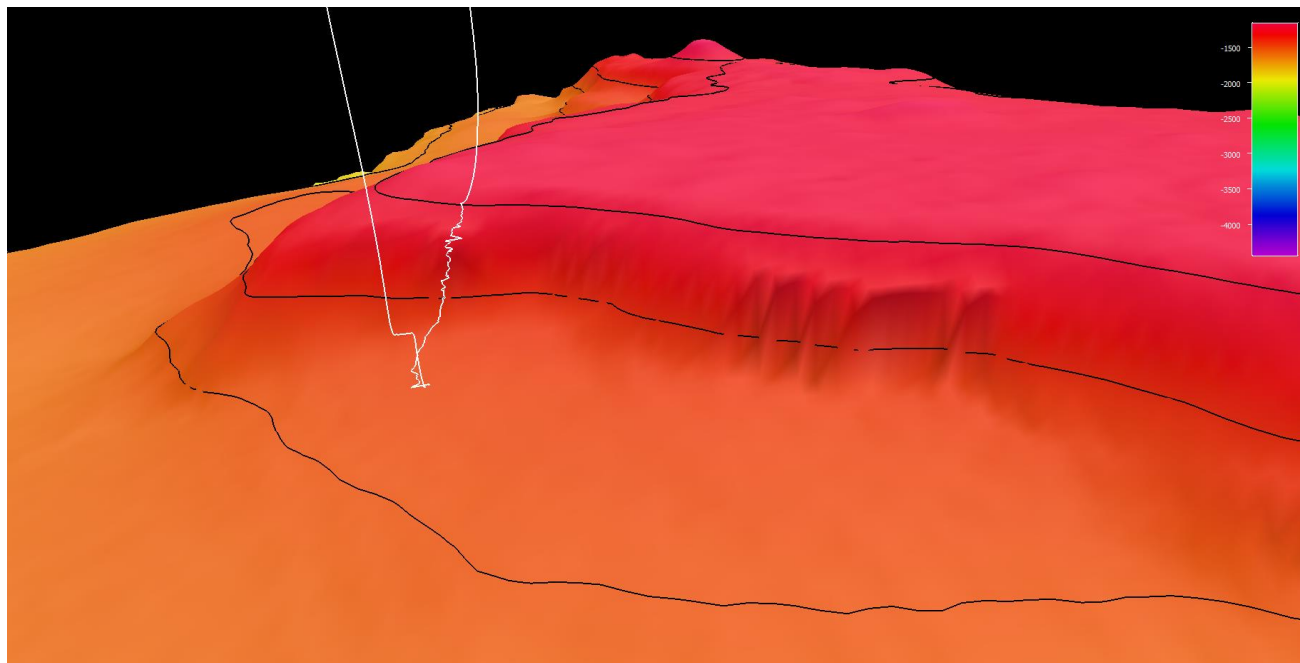
ROV Measurements	The following ROV measurements, data streams and equipment are used on each ROV deployment: CTD, depth, scanning sonar, USBL position, altitude, heading, attitude, high-resolution cameras, low resolution cameras, manipulator arms, suction sampler, sample drawers and thrusters. The section below notes if any of these sensors were malfunctioning or not operational
Equipment Malfunctions	none

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

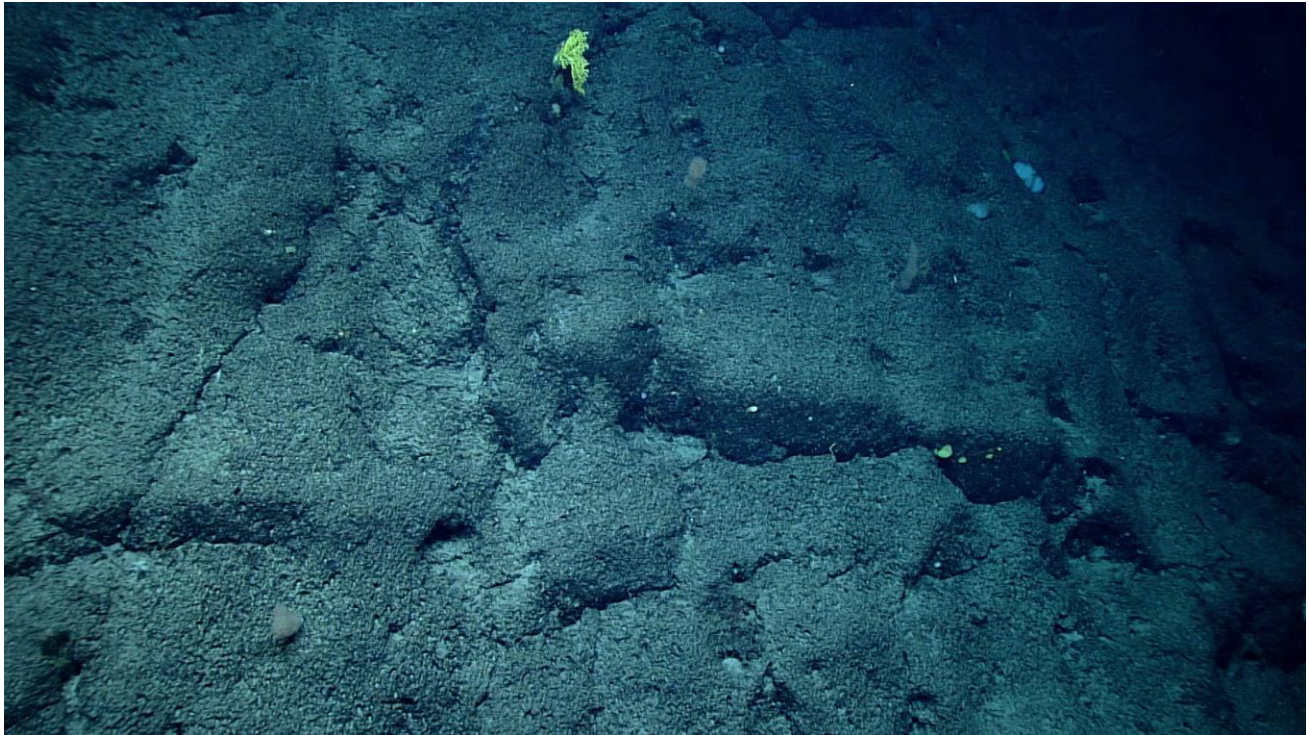


Smoothed ROV dive track in white on 25x25 cell size bathymetry, 3x vertical exaggeration, depth in meters, 100 meter contours.

Representative Photos of the Dive



[An unknown black coral grows out of smoothed, cemented reef material along the vertical wall of a carbonate platform]



[Fractures, divots, and outcrops of smoothed and cemented reef material along the vertical wall of a carbonate platform show the erosional history of this geologic feature that is likely a paleo reef]

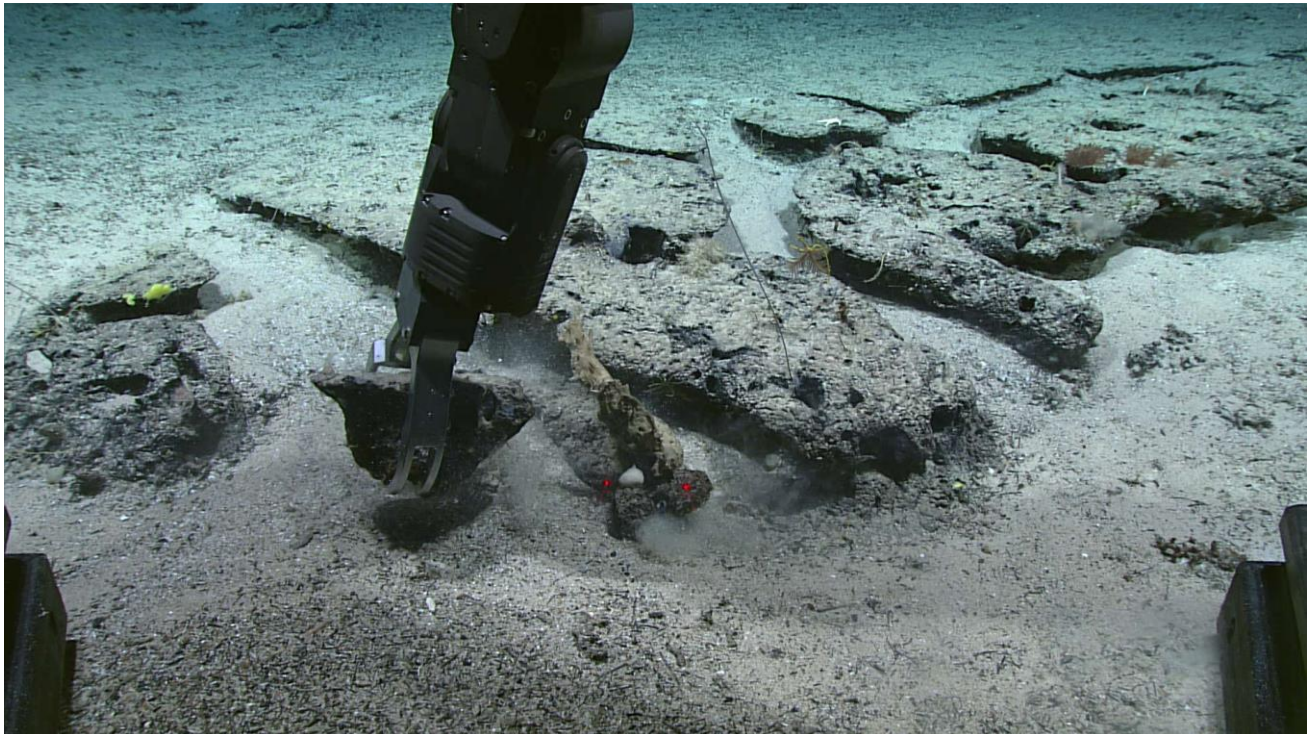


[An *Irridiogorgia fontanalís*, the second specimen ever observed, alongside an *Acanella arbuscula* at the upper summit of a carbonate platform towards the end of our dive track]



[An impressively thick sample of in-place carbonate rock is sampled by the ROV exposing a thin ferromanganese coating at the surface of the rock, iron staining near the water-rock interface, and white carbonate at the bottom. Finer carbonate sediment disturbed when the rock was removed creates a small smoke-like plume.]

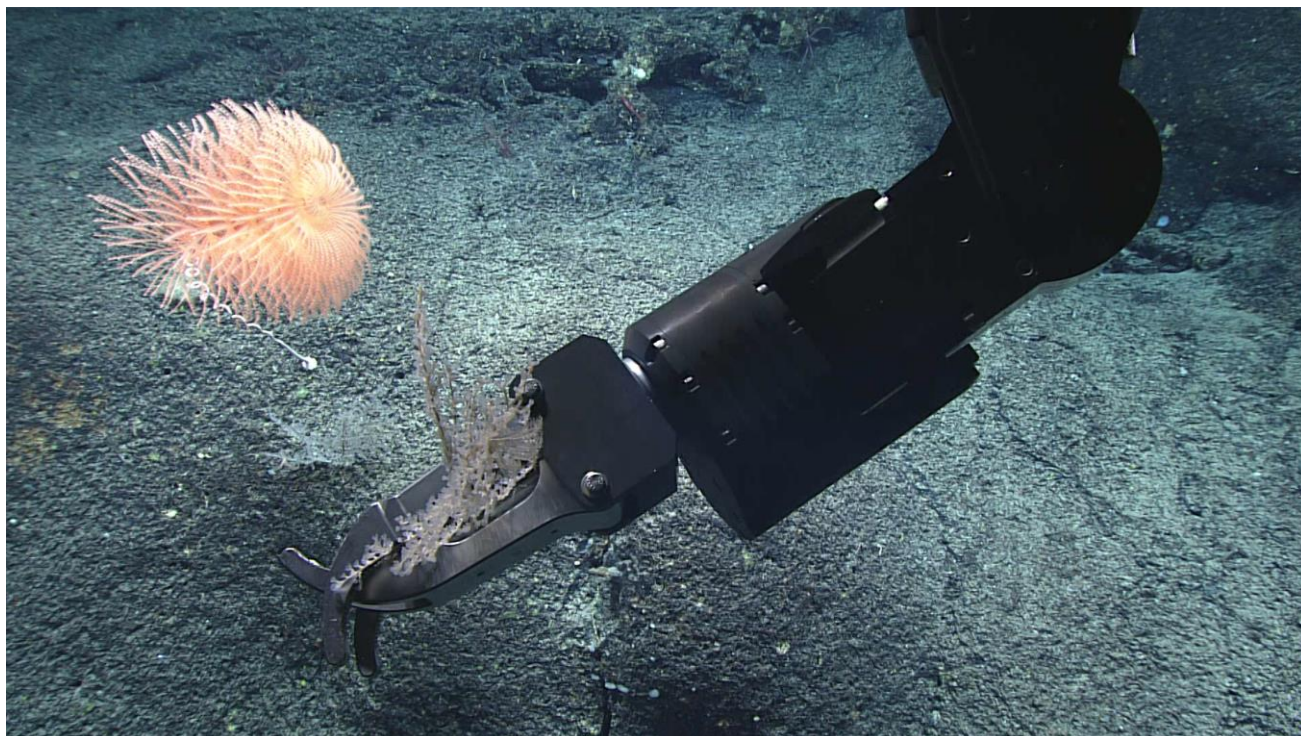
Samples Collected -





Sample ID	EX2104_D09_01G
Date (UTC)	20210712
Time (UTC)	142443
Depth (m)	1364.859009
Latitude (decimal degrees)	35.18091583
Longitude (decimal degrees)	-48.11672974
Temp. (°C)	4.477000237
Field ID(s)	Carbonate sample
Comments	Carbonate rock with partial precipitation of FeMn and large dead and live sponge on top, 37cm long 13 cm wide 7.5 cm tall

Associates SampleID	Field Identification	Count
N/A	N/A	N/A



Sample ID	EX2104_D09_02B
Date (UTC)	20210712
Time (UTC)	165726
Depth (m)	1254.44397

Latitude (decimal degrees)	35.17882156
Longitude (decimal degrees)	-48.11699677
Temp. (°C)	4.31099987
Field ID(s)	Plexauridae
Comments	White, possible plexauridae, over 20 cm

Associates Sample ID	Field Identification	Count
EX2104_D09_02B_A01	Crinoidea	1





Sample ID	EX2104_D09_03B
Date (UTC)	20210712
Time (UTC)	172417
Depth (m)	1242.219971
Latitude (decimal degrees)	35.17876434
Longitude (decimal degrees)	-48.11707306
Temp. (°C)	4.302000046
Field ID(s)	Demospongiae
Comments	yellow and white sponge, over 20 cm

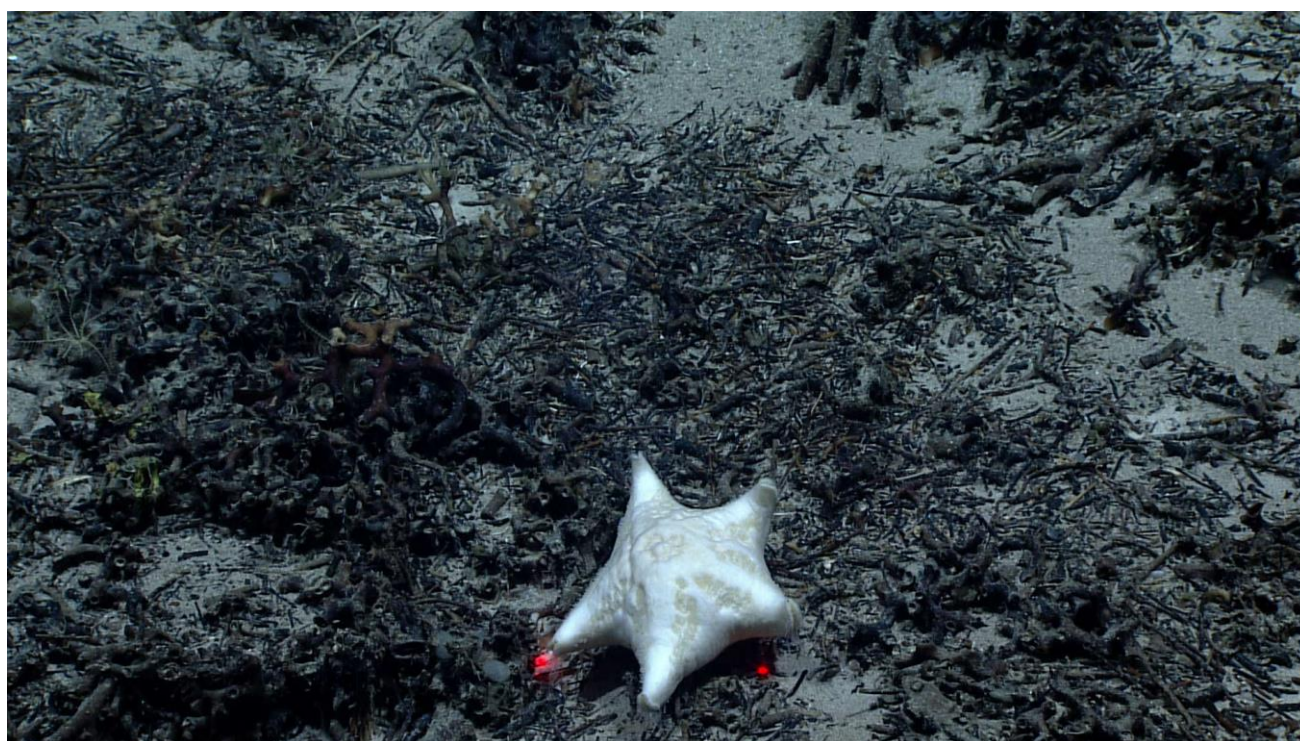
Associates SampleID	Field Identification	Count
EX2104_D09_03B_A01	Ophiurida	4

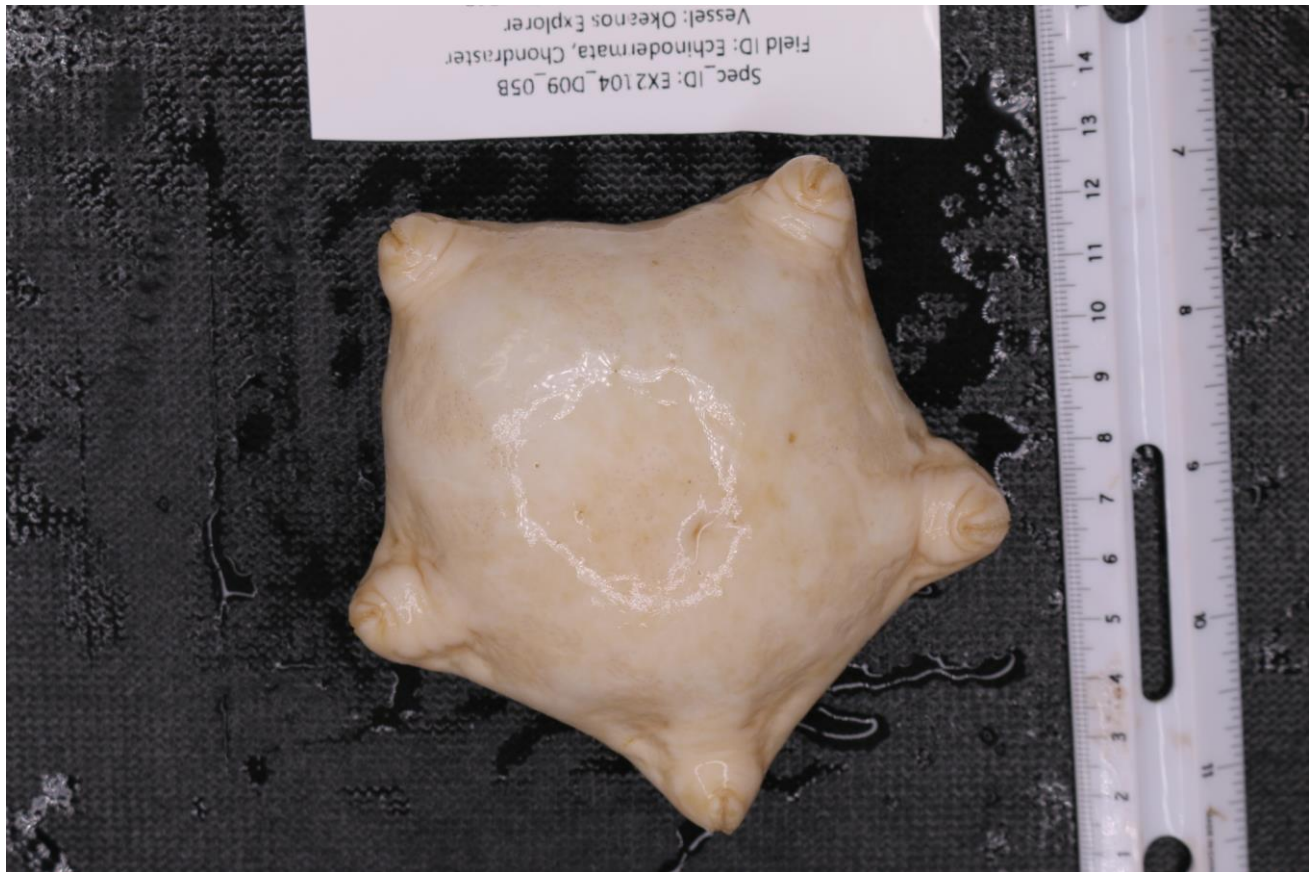


Sample ID	EX2104_D09_04G
Date (UTC)	20210712
Time (UTC)	180813
Depth (m)	1233.386963

Latitude (decimal degrees)	35.17869186
Longitude (decimal degrees)	-48.11701584
Temp. (°C)	4.274000168
Field ID(s)	Carbonate rock slab
Comments	Loosely consolidated carbonate from paleo reef platform, upper surface with FeMn precipitation (upper 2cm), iron staining in middle section and white carbonate below, 23cm long 16 cm wide 15 cm tall

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





Sample ID	EX2104_D09_05B
Date (UTC)	20210712
Time (UTC)	185358
Depth (m)	1224.61499
Latitude (decimal degrees)	35.17853928
Longitude (decimal degrees)	-48.11698151
Temp. (°C)	4.275000095
Field ID(s)	Chondraster
Comments	White-tan, 10 cm

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



Sample ID	EX2104_D09_06B
Date (UTC)	20210712
Time (UTC)	195100
Depth (m)	1192.800049
Latitude (decimal degrees)	35.17829895
Longitude (decimal degrees)	-48.11753082
Temp. (°C)	Unknown
Field ID(s)	Polychaeta
Comments	This sample came up on the ROV but was not associated with a sample. The parameters listed for this sample are from the last depth and lat/long taken before the ROV ascended. There are no ROV images or videos of this sample.

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