

# ROV Dive Summary, EX-21-04, Dive 10, July 13, 2021

## General Location Map



*Dive 10 at the same location as Dive 09 indicated in the photo above*

## Dive Information

Site Name	Yakutat Seamount - Deep
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



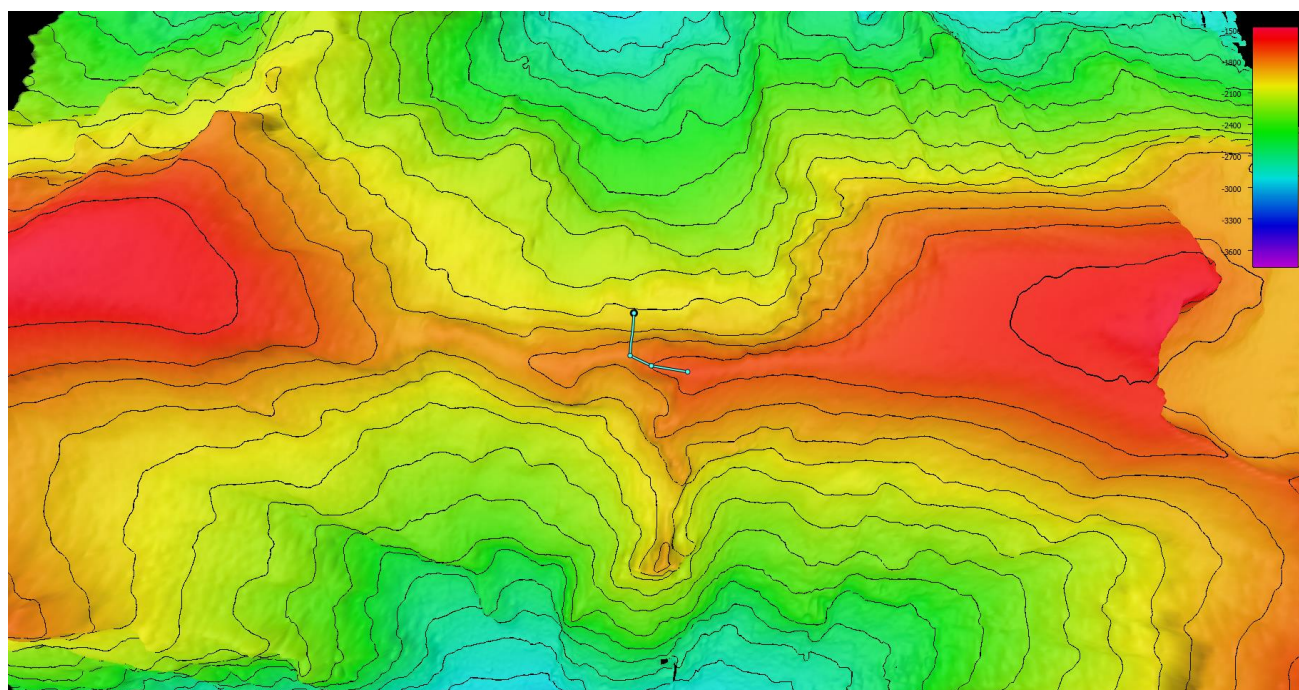
Dive Description	<p>The dive began on a slope feature below the ridge of a small saddle between two bathymetric highs along the large central ridge of Yakutat seamount. The terrain where the ROV landed was a smooth pavement of rock that looked to be igneous sheet flows. Thin patches of coarse biogenic sediments and ancient coral rubble were also present. As the dive progressed, large igneous outcrops were observed including large collapsed pillows of basalt providing habitat for numerous fauna. A rock sample was collected at the base of what appeared to be an outcropping ledge of igneous material but may have been carbonate. Large portions of the mid-range depths of the dive showed expanses of dead coral rubble coated in a thin layer of ferromanganese oxides. During the collection of a sea star, the ROV pilots attempted to disturb the coral rubble, which was easily moved by the ROV arm, shown to be less than 10 cm thick, and covering very coarse grained biogenic sediments. As the dive progressed upslope, many linear tracks were observed in the coral rubble fields that resembled dredge or trawl tracks, some with distinct exposed sediments. A steeper wall feature was then traversed that appeared to be a large block of carbonate rock that was weathered and eroded in places, creating a varied topography and showing abraded channels and down-slope sediment flows. In order to explore some shallower features, the ROV then left the sloped and moved through the water column to the top of the saddle ridge (~1800 m). Here, smooth pavement surfaces were observed again, likely carbonate smoothed by the strong currents here, though some outcrops may have been igneous. A carbonate conglomerate of coral rubble and a rounded dropstone were also collected near the end of the dive.</p> <p>Biology was sparse on this dive, and large megafauna were notably absent from the beginning of the dive until we reached the wall feature, likely owing to the mobile rubble not being conducive to larval settling, and the potential trawling/dredging of unknown vintage. A lone and damaged Paramuricea about midway to the cliff face was the first notable megafauna. As we approached the wall and started to observe larger boulders other coral and sponge species started to appear including rosselid vase sponges, black corals (bathypathes and stauropathes), Acanella and Crysogorgia and anthomastus and the squat cup coral Vaughnella and reef builder Enalllopsammia rostrata. We also collected a potentially new species of Lophaster seastar. As we climbed the wall the diversity was still low, especially compared to Dive 9, with sparse sponge colonies and almost absent of corals, though a Orniteuthis squid and some grenadiers were observed. Once we jumped onto the ridge the landscape biota changed considerably - large colonies of Hertwigia sponges, anemones and seastars became more abundant (though still well spread) and we observed very large colonies of Candidella imbricata, with numerous associated brittle stars. We also observed parantiopathes, healthier Paramuricea (with associated astroschema brittle stars) and potentially Narella. Though the biological diversity overall was low, this was an interesting dive in terms of overall species (many not recorded until today) and diversity.</p>
Notable Observations	expansive fields of ancient coral rubble, tracks that appear anthropogenic (trawl/dredge) in the coral rubble and coarse sediments along the slope that were well imaged by the BlueView Sonar.
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)	Rock, Sediment (coarse unconsolidated)
SeaTube Link (science)	<a href="https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&amp;resourceId=2333">https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&amp;resourceId=2333</a>

annotation system)	
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## Equipment Deployed

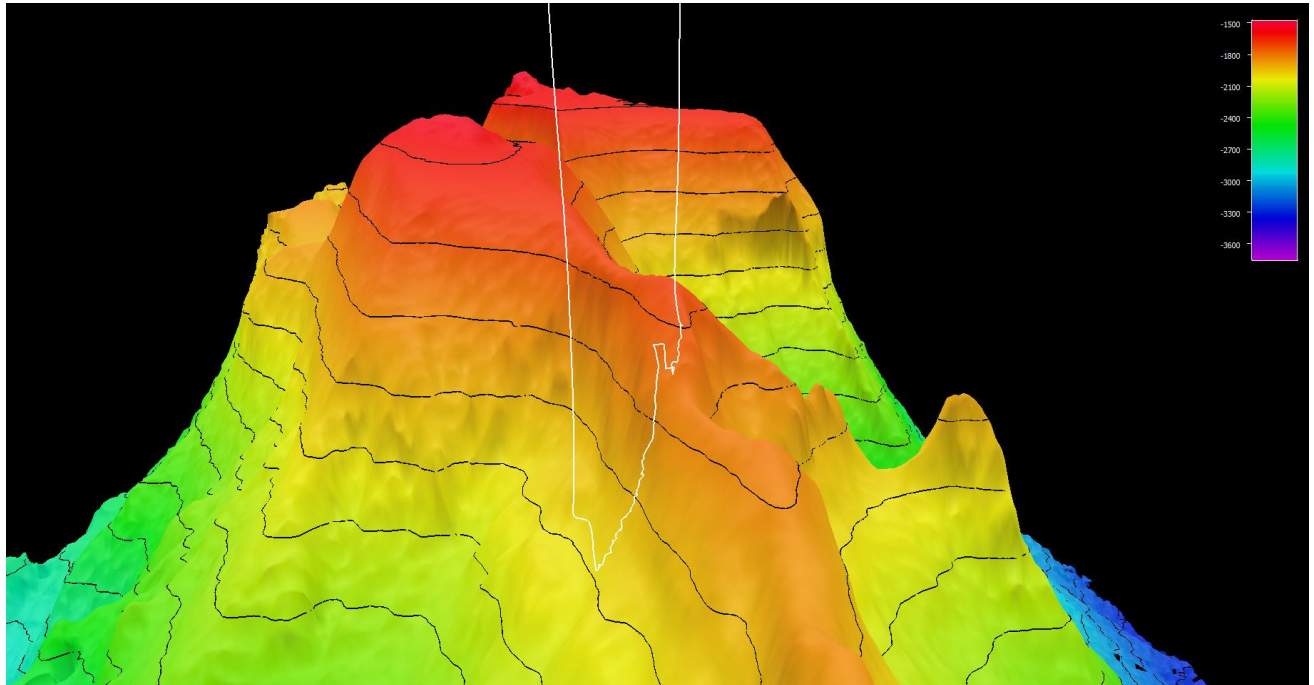
ROV	<i>Deep Discoverer</i>
Camera Platform	<i>Seirios</i>
ROV Measurements	The following ROV measurements, data streams and equipment are used on each ROV deployment: CTD, depth, scanning sonar, USBL position, altitude, heading, attitude, high-resolution cameras, low resolution cameras, manipulator arms, 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



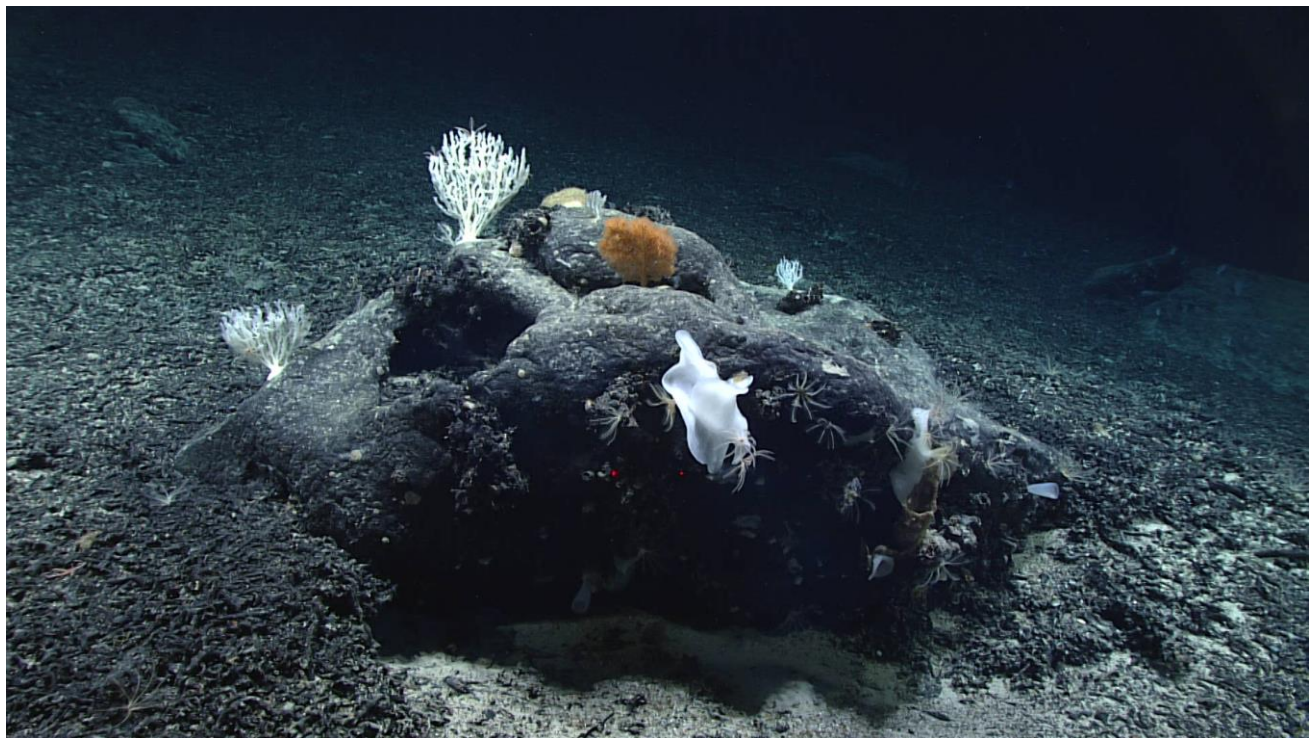
Smoothed ROV dive track (blue) on an overview bathymetry of the seamount, 3x vertical exaggeration.

## 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

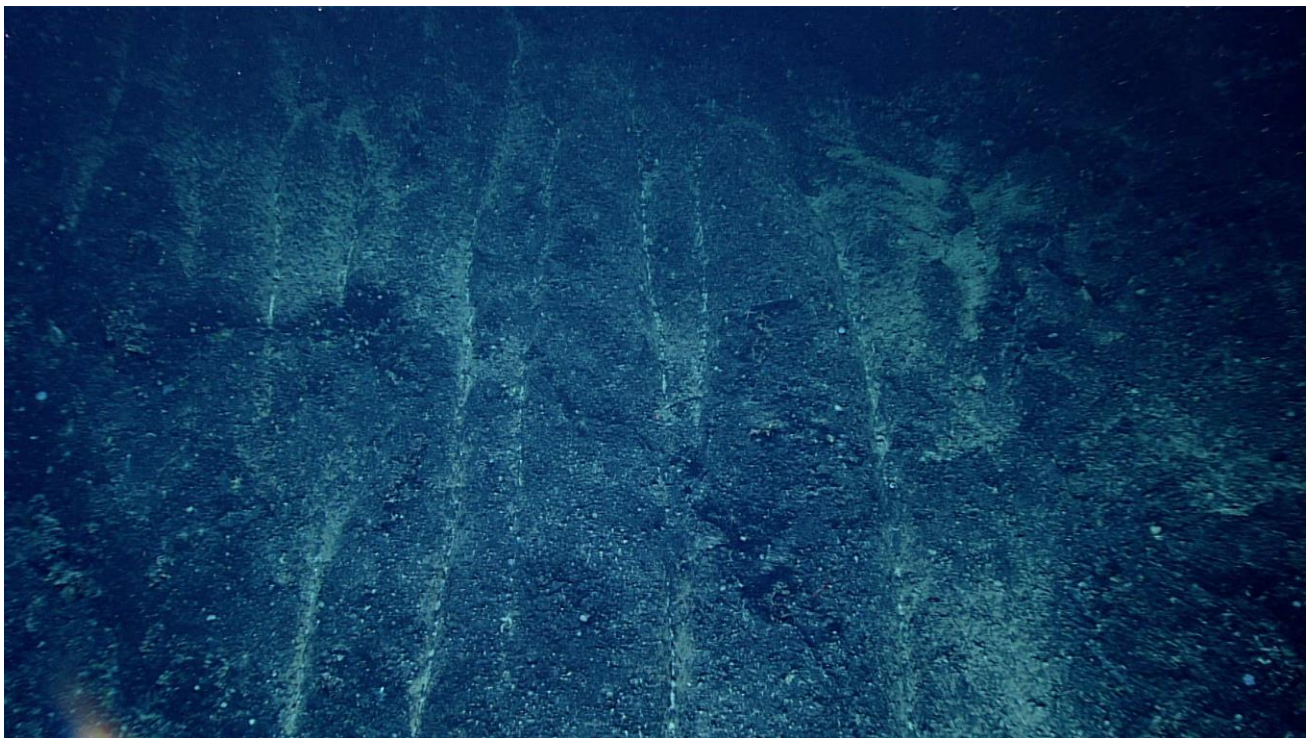
## Representative Photos of the Dive



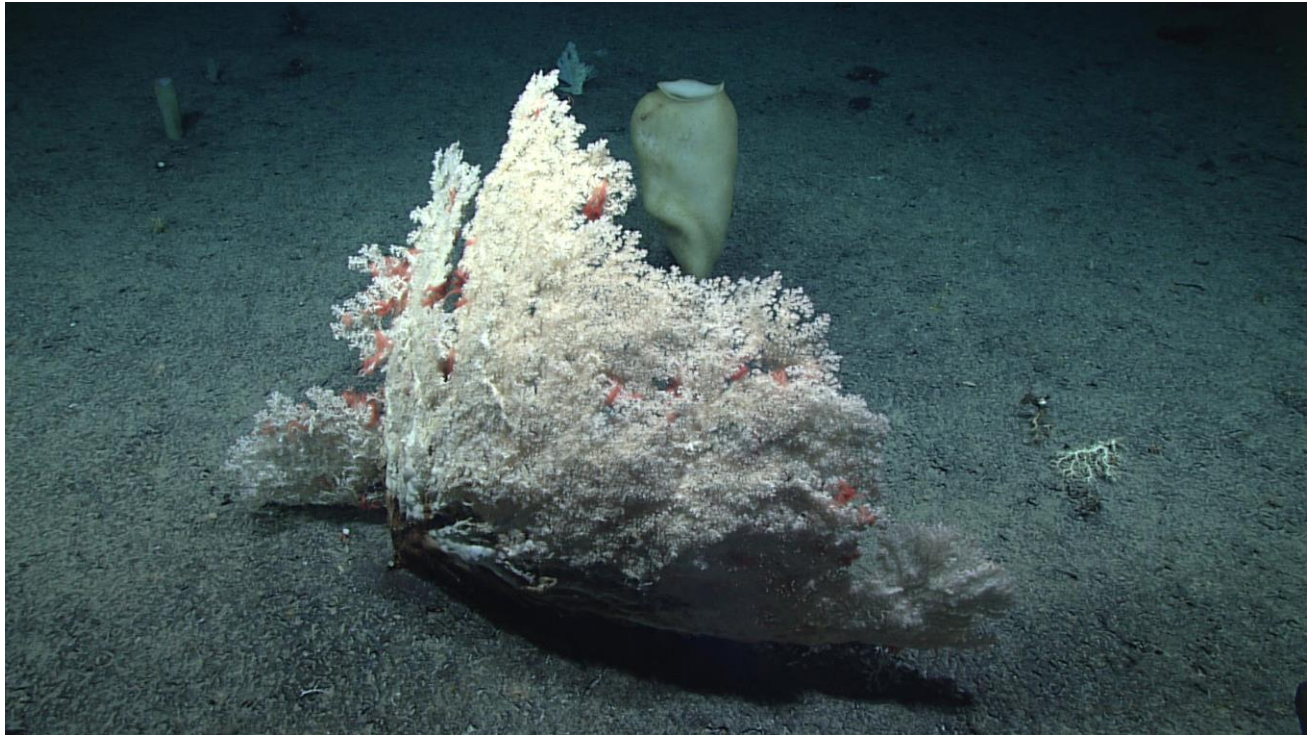
[A large rock outcrop amongst the fields of fossil coral rubble, encrusted with sponges, a black coral (*Staurophathes* sp.) and crinoids]



[The large anthropogenic marks in the fossil coral rubble with D2 for scale. These marks were also observed in the sonar scans from the BlueView]



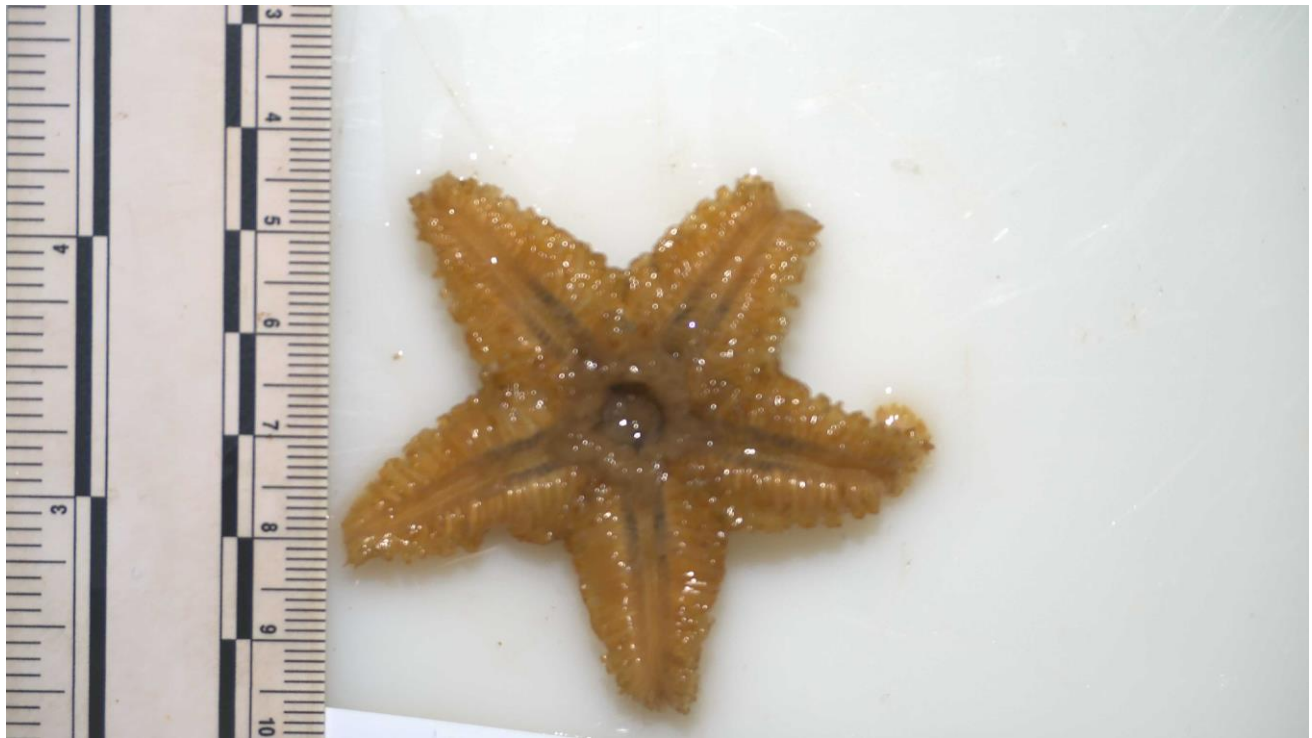
[Scar marks in the wall thought to be due to a mix of water and sediment cascading downslope, creating abraded channels]



[A large *Candidella imbrucata* colony on the ridge at the top of the dive]

## Samples Collected -

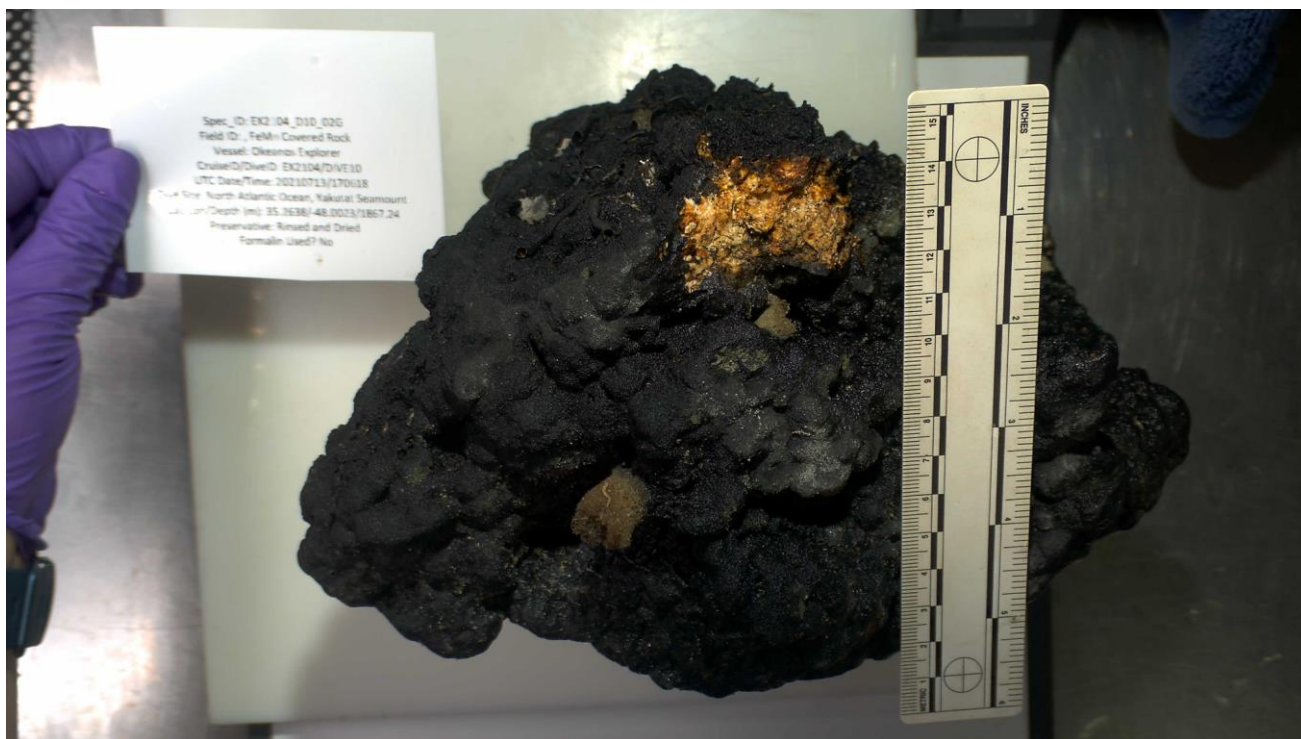
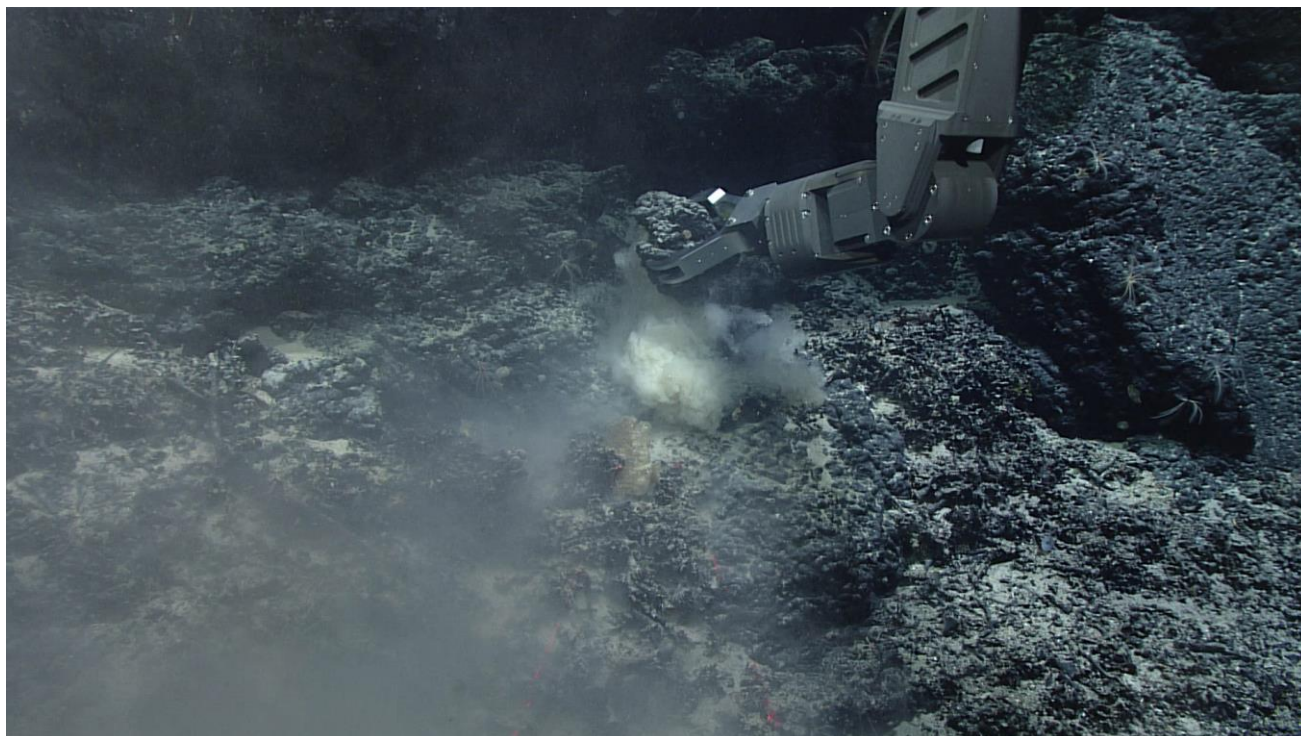




Sample ID	EX2104_D10_01B
Date (UTC)	20210713
Time (UTC)	162611
Depth (m)	1893.041016
Latitude (decimal degrees)	35.2638588
Longitude (decimal degrees)	-48.00228119
Temp. (°C)	3.903000116
Field ID(s)	Lophaster
Comments	Potential Undescribed Species, yellow seastar

Associates SampleID	Field Identification	Count
EX2104_D10_01B_A01	fossilized coral	5
EX2104_D10_01B_A02	shell pieces	many





Sample ID	EX2104_D10_02G
Date (UTC)	20210713
Time (UTC)	170618
Depth (m)	1867.23999
Latitude (decimal degrees)	35.26377106

Longitude (decimal degrees)	-48.00227356
Temp. ( °C)	3.924999952
Field ID(s)	FeMn Covered Rock
Comments	from base of cliff. Feels crumbly. FeMn coat. Rugged texture. Piece broke off, looks orange inside and has a lot of grains. Main sample is 24cmx17cmx12cm. Fresh worm grooves and some grooves in the FeMn crust.

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

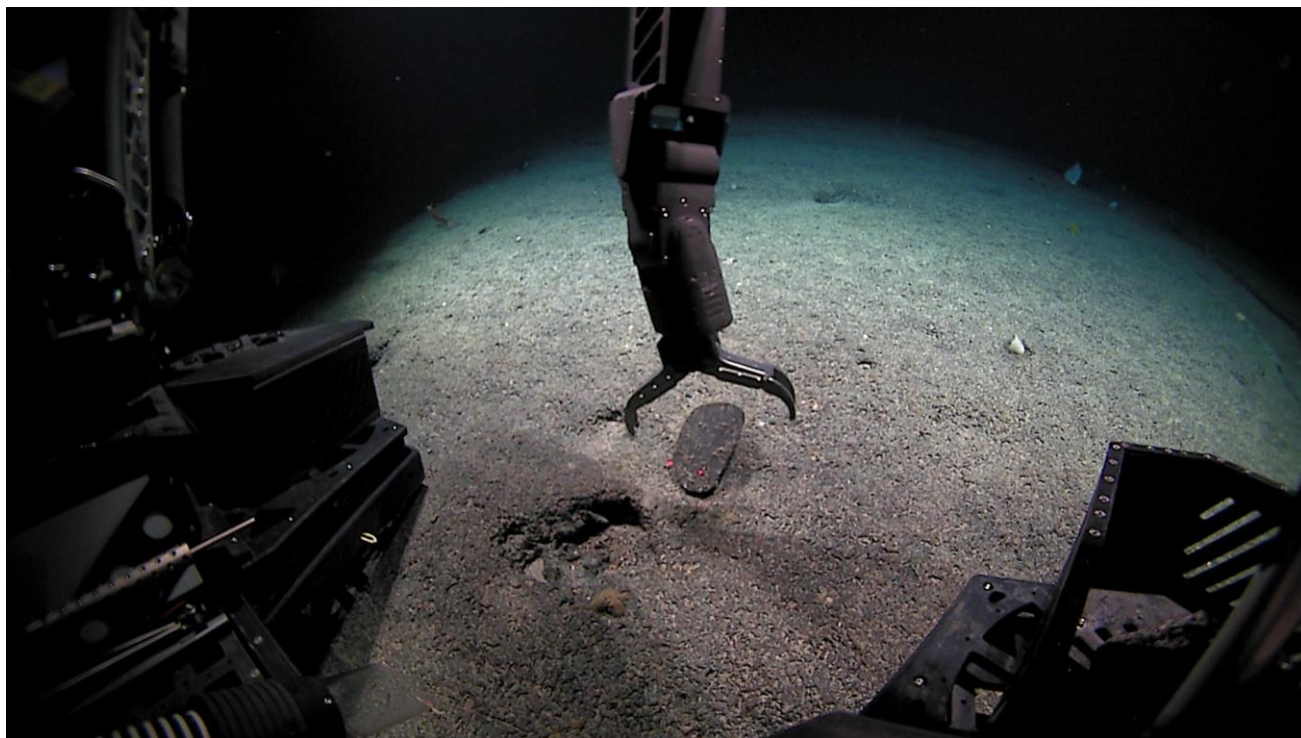




Spec\_ID: EX2104\_D10\_03G  
 Field ID: Carbonate Fock with Coral rubble  
 Vessel: Okeanos Explorer  
 CruiseID/DiveID: EX2104/DIVE10  
 UTC Date/Time: 20210713/190648  
 Dive Site: North Atlantic Ocean, Yakutat Seamount  
 Lat/Lon/Depth (m): 35.2623/-48.0017/1723.52  
 Preservative: Rinsed and Dried  
 Formalin Used? No

Sample ID	EX2104_D10_03G
Date (UTC)	20210713
Time (UTC)	190648
Depth (m)	1723.520874
Latitude (decimal degrees)	35.26225281
Longitude (decimal degrees)	-48.00170898
Temp. ( °C)	3.933079958
Field ID(s)	Coral rubble
Comments	and many attached biota

Associates SampleID	Field Identification	Count
EX2104_D10_03G_A01	Ophiuroidea	3



Sample ID	EX2104_D10_04G
Date (UTC)	20210713
Time (UTC)	192958
Depth (m)	1699.118042
Latitude (decimal degrees)	35.26202774

Longitude (decimal degrees)	-48.00107956
Temp. ( °C)	3.98803997
Field ID(s)	rounded dropstone
Comments	totally hard, rounded basalt cobble with one cleaved edge. 23cm long x 12cm wide x 15cm high.

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

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

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