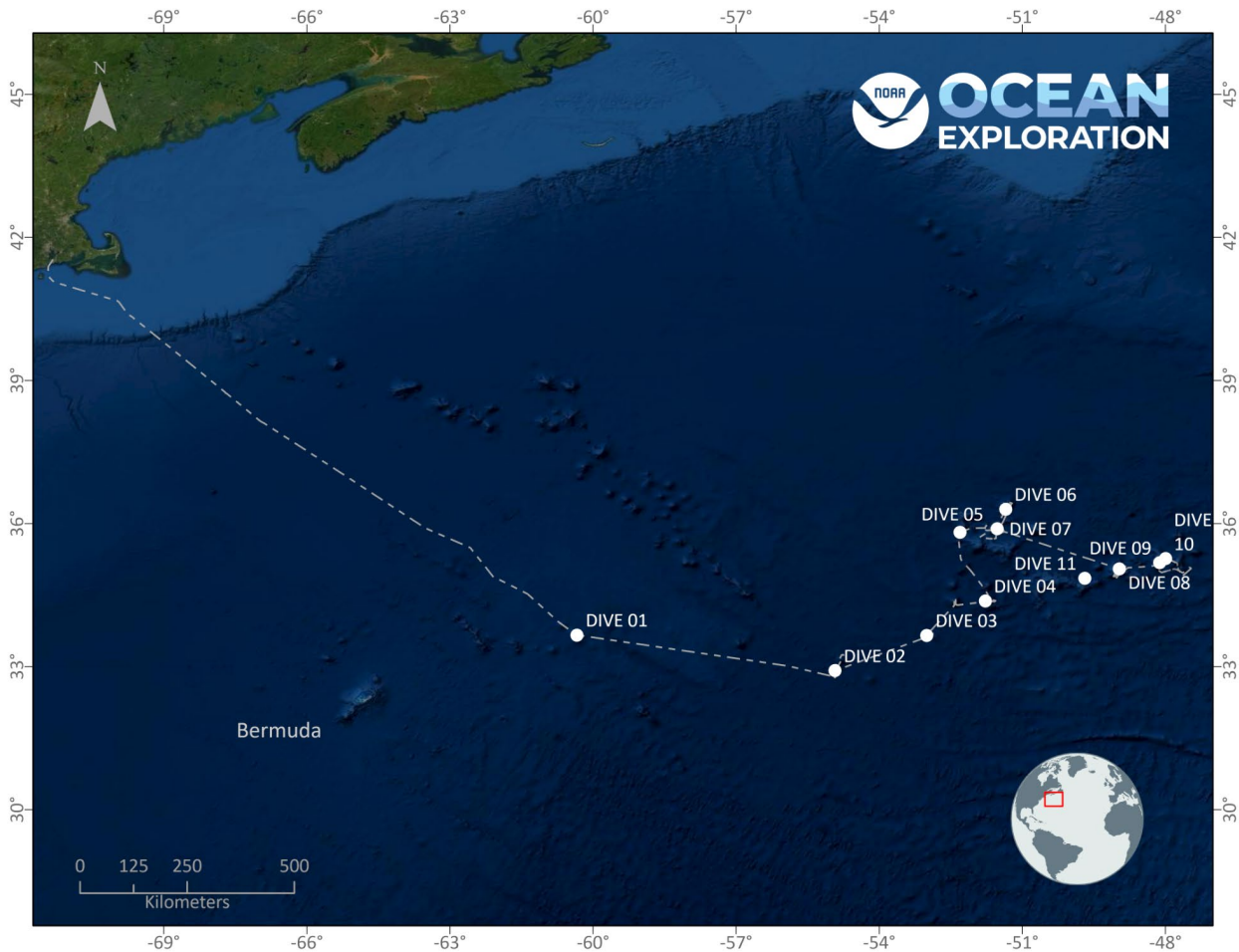


ROV Dive Summary, EX-21-04, Dive 11, July 14, 2021

General Location Map



Dive Information

| | |
|-------------------------|--|
| Site Name | Caloosahatchee Seamount |
| General Area Descriptor | Large seamount near the center of the Corner Rise Seamount Complex |
| Science Team Leads | Rhian Waller, Kira Mizell |
| Expedition Coordinator | Kasey Cantwell, Kimberly Galvez (Expedition Coordinator in Training) |

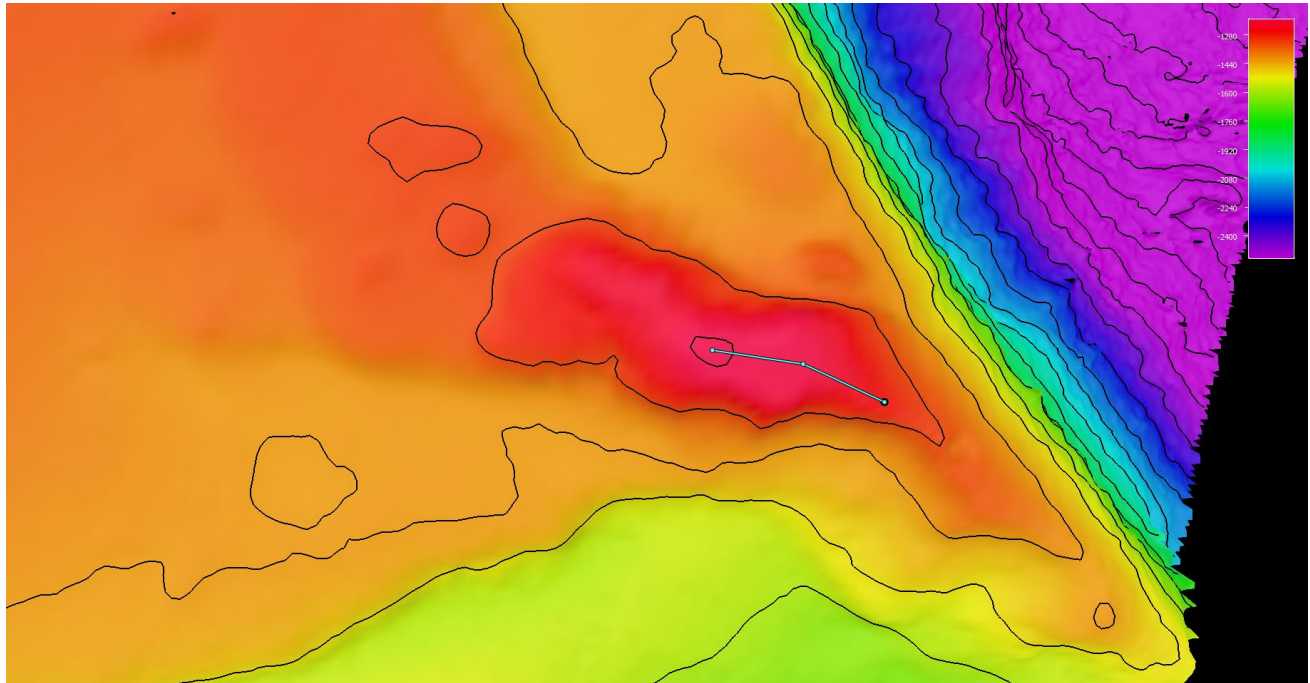
| | |
|--|--|
| Dive Description | <p>This dive explored a ridge feature at the top of Verrill Peak on the eastern portion of Caloosahatchee Seamount in the central portion of Corner Rise Seamounts, going from a water depth of ~1250 to ~1200 m. As the ROV reached the seafloor, large sediment ripples were observed where Fe-Mn stained coral rubble was built up on the leeward side of the strong current flow direction with white carbonate sediments in between the ripples, creating a dark and light striped pattern. The geology for the majority of the dive as the ROV climbed the ridge was dominated by coarse biogenic sediments often topped with a layer of coral rubble, as well as regions with smooth carbonate pavement. Near the end of the dive, in shallower depths, the carbonate substrate was variably eroded, creating some interesting ledges, fractures, and small platforms. Glacial dropstones of various sizes were also observed sporadically throughout the dive. Three rock samples were collected, one of dropstone and one chunk of consolidated coral rubble, both with biological associates, as well as one thin ferromanganese crust fragment broken for an overhanging ledge.</p> <p>There was surprising diversity and density amongst the sediment ripples, suggesting that the heavier paleo-coral fraction is not mobile. By the OSPAR definition of coral garden (single species >50 colonies/100m²; multispecies >100 colonies/100m²) we discovered a multispecies coral garden area during this dive, dominated by <i>Calyptophora clinata</i>, and dotted with <i>Bathypathes spp.</i>, <i>Thouraella sp.</i>, <i>Acanella sp.</i>, <i>Chrysogorgia sp.</i>, and <i>Parantipathes spp.</i>. Though these species were present on ripples, where we saw areas of pavement and platforms, even higher densities of these corals were present. Interspersed in harder bottom areas we observed <i>Enallopsammia rostrata</i>, and collected a specimen of <i>Desmophyllum dianthus</i> as part of the ASPIRE program, <i>Iridigorgia sp.</i> and the unknown purple plexaurid. Sponges were less dominant during this dive, though as we reached the end of the dive larger Hertwigia, barrel and white amphitheater type sponges were present. This dive was particularly abundant for fish species with multiple Oreo (including a juvenile), black dogfish (including one with a large isopod parasite), Codling, mictophids, snubnose spiny eel and at the very end of the dive a midwater viper fish.</p> <p>The biological environment changed drastically towards the end of the dive - where we moved from stable ripples and pavement to softer sediments with smaller fractions of broken paleo reef. Within this area we saw minimal large colonies of corals and sponges, but high densities of biological turnover of sediments. This whole area was pockmarked with circular patches of turned over sediments, and on closer inspection small worm tubes were observed, though no major players were identified. We also observed larger scar marks that were likely feeding holds for Chaceon crabs (two observed) and/or fish in the region.</p> |
| Notable Observations | <p>large sediment ridges High density <i>Calyptophora clinata</i> whip coral garden, with other coral species also present mid-water viper fish</p> |
| Community and habitat observations | <p>Corals and Sponges - (Present) Chemosynthetic Community - (Absent) High biodiversity Community - (Present - high density garden community) Active Seep or Vent - (Absent) Extinct Seep or Vent - (Absent) Hydrates - (Absent)</p> |
| CMECS Feature Type(s) | <p>Rock, Sediment (coarse unconsolidated)</p> |
| SeaTube Link (science annotation system) | <p>https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&resourceId=2343</p> |

Equipment Deployed

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

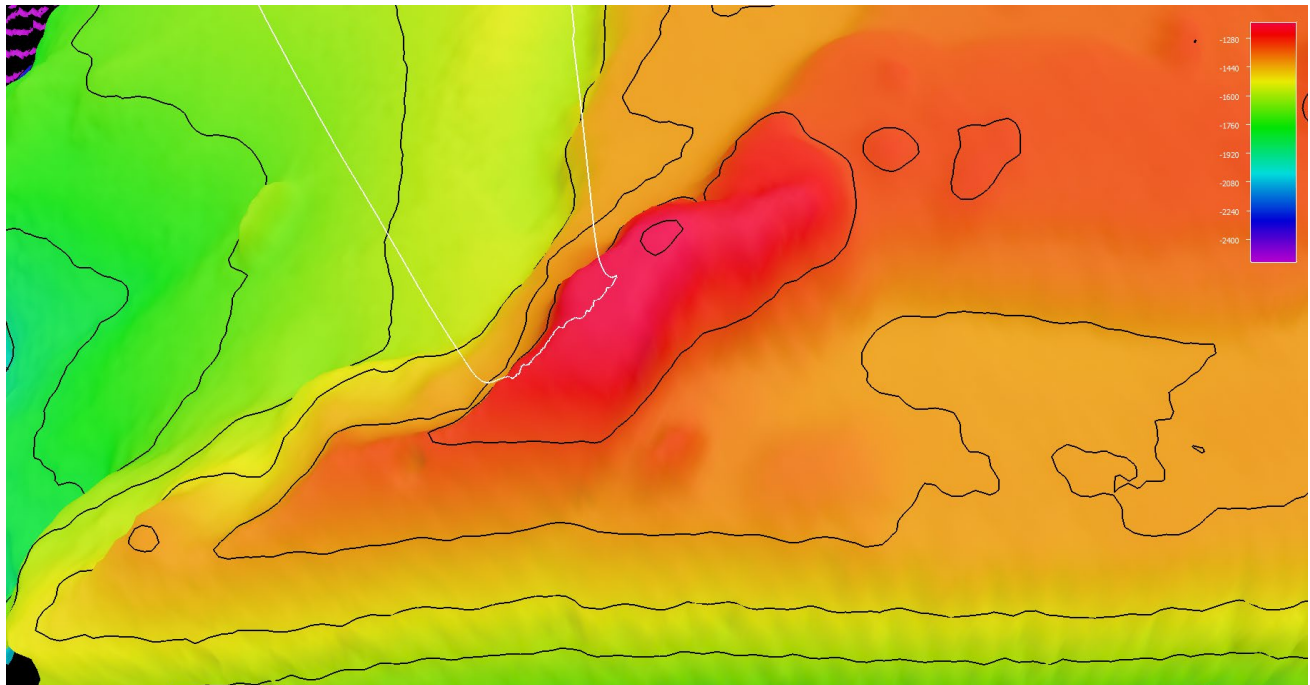
| | |
|------------------------|--|
| ROV Measurements | The following ROV measurements, data streams and equipment are used on each ROV deployment: CTD, depth, scanning sonar, USBL position, altitude, heading, attitude, high-resolution cameras, low resolution cameras, manipulator arms, suction sampler, 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

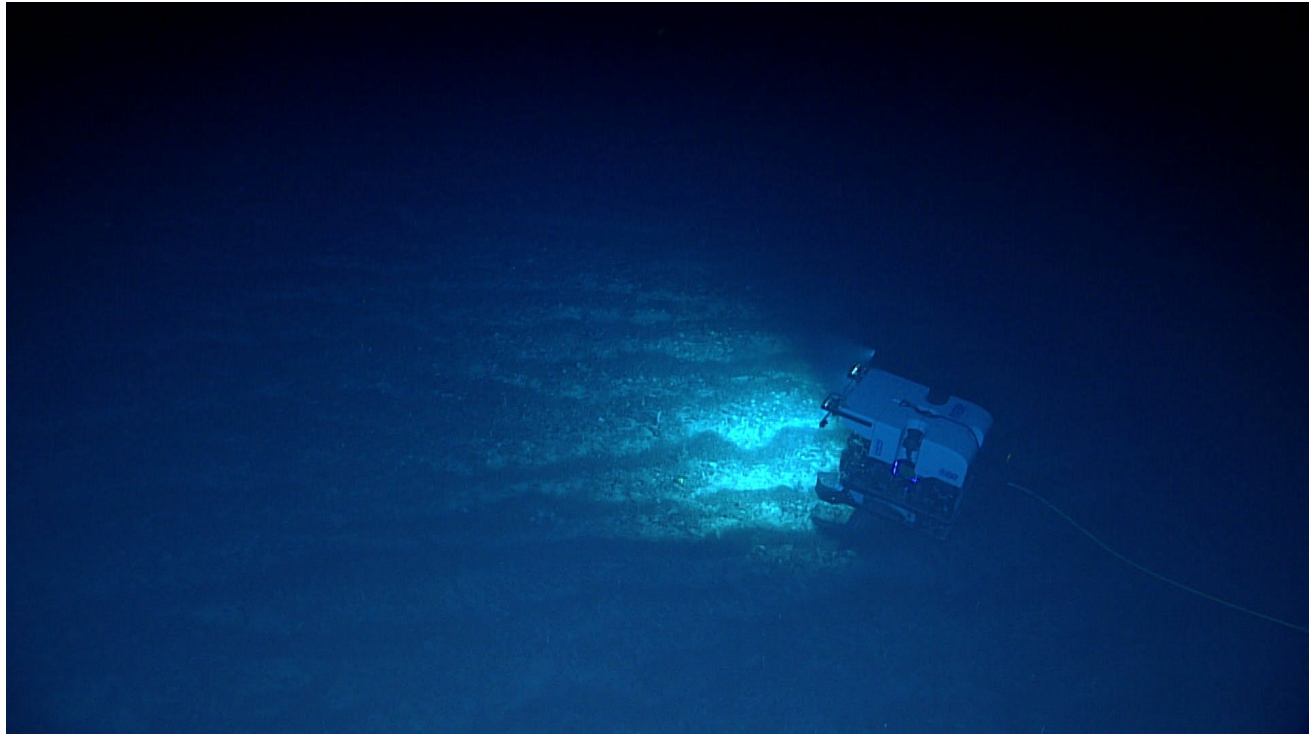


Smoothed ROV dive track (blue) on an overview bathymetry of the seamount, 3x vertical exaggeration.

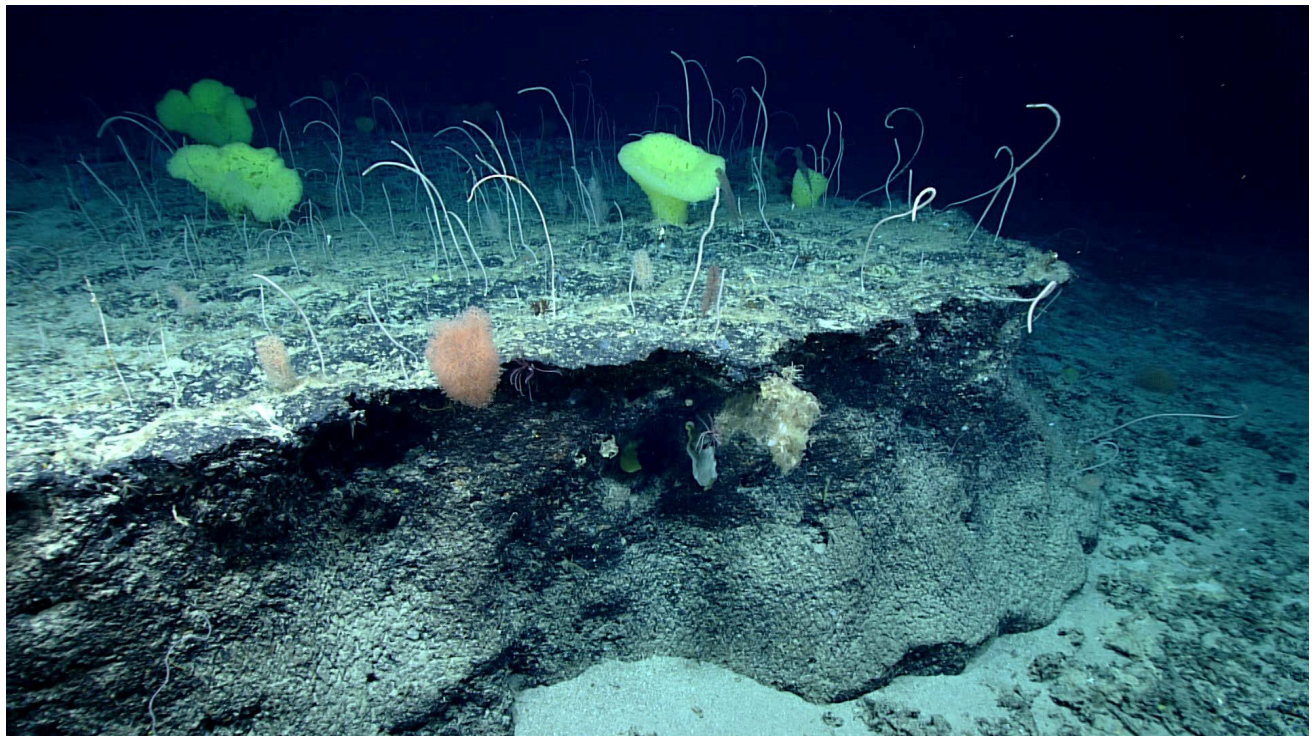
Close-up Map of Main Dive Site



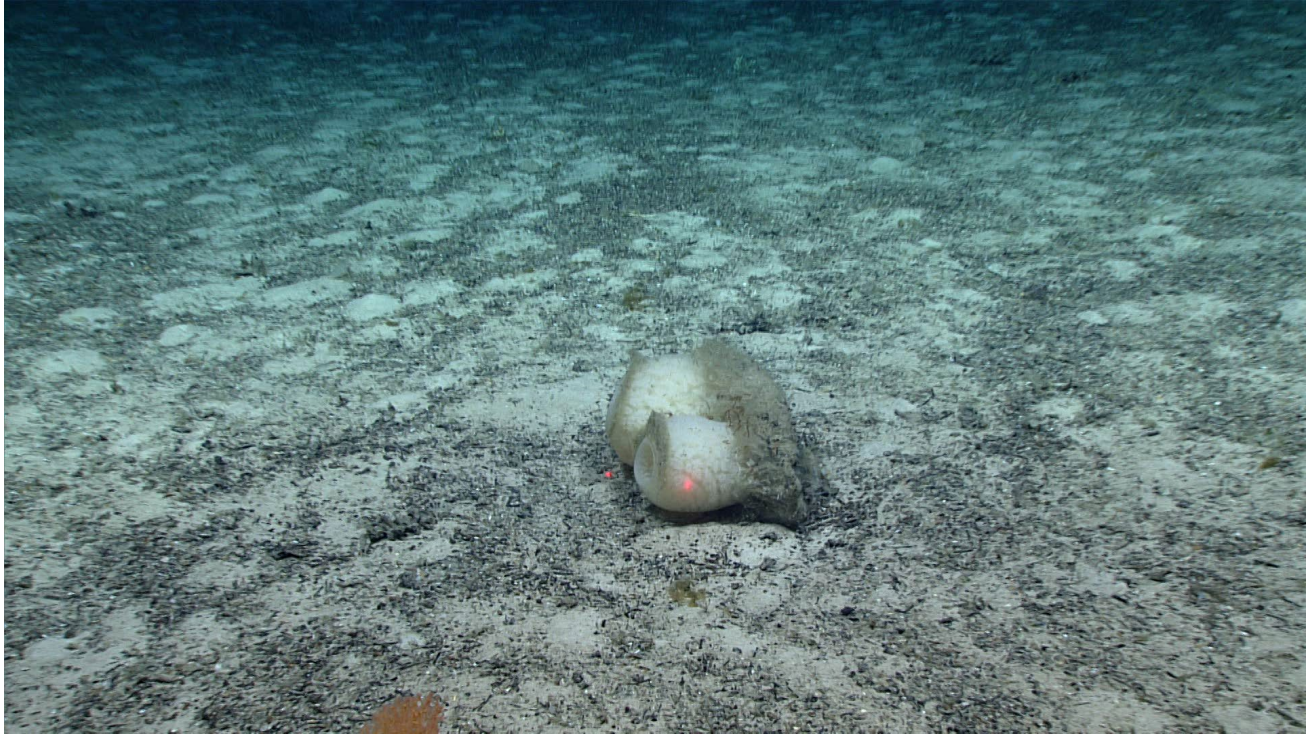
Representative Photos of the Dive



[Sediment and paleo-reef waves as seen from the Seirios camera at the beginning of this dive]



[Part of a large area of coral garden habitat on top of a ledge outcrop. High density *Calyptophora clinata* (whip coral) alongside other species such as *Acanella arbuscula* and *Hertwigia* sponges as shown in this image]



[At the end of the dive the bottom habitat was dominated by bioturbation, though the species responsible could not be identified. Also seen here, two barrel type sponges laying on their sides.]

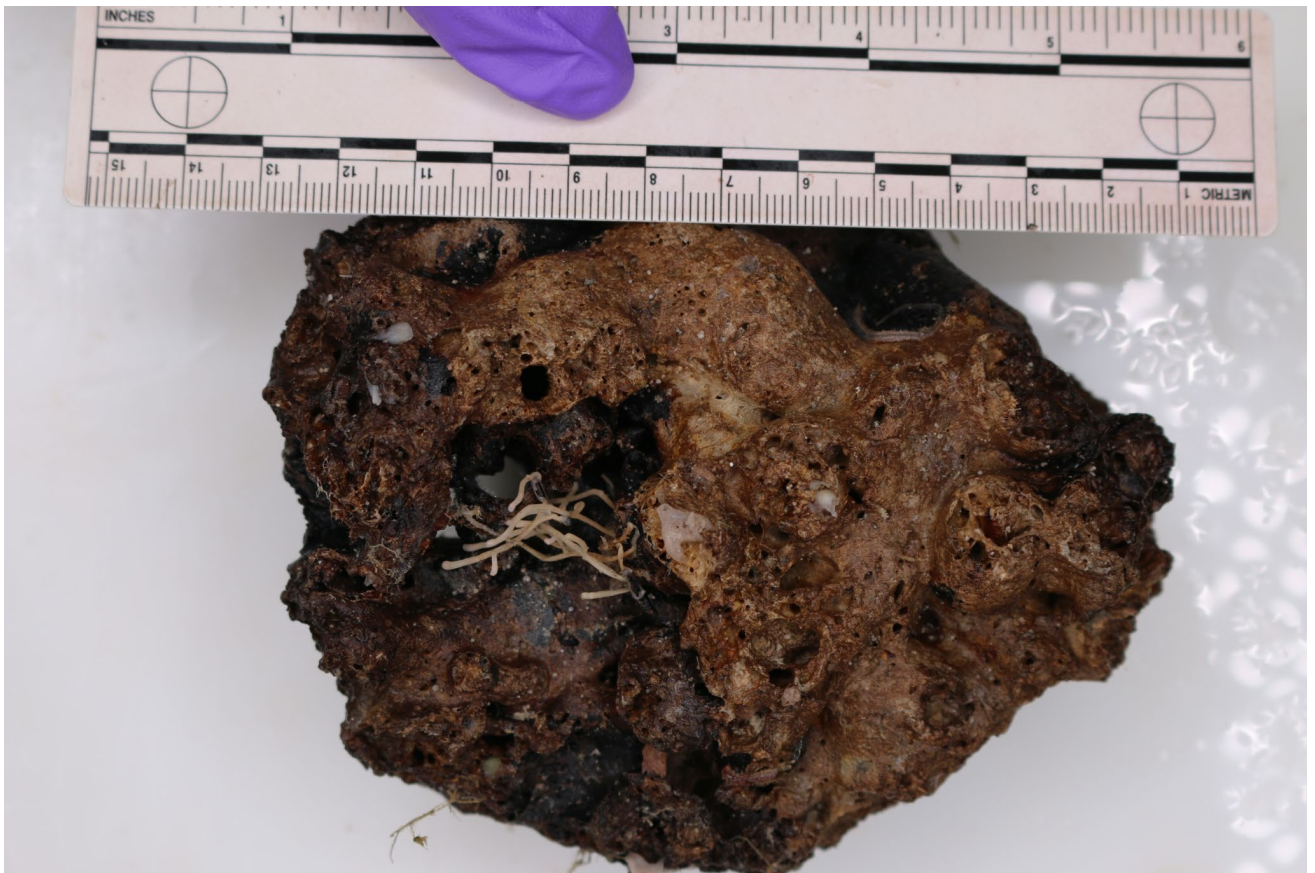
Samples Collected -





| | |
|-----------------------------|--|
| Sample ID | EX2104_D11_01B |
| Date (UTC) | 20210714 |
| Time (UTC) | 165452 |
| Depth (m) | 1242.642944 |
| Latitude (decimal degrees) | 34.65039063 |
| Longitude (decimal degrees) | -49.65135193 |
| Temp. (°C) | 4.679999828 |
| Field ID(s) | Scleractinia |
| Comments | Desmophylum dianthus, pink and white. Less than 3 cm. On coral rubble. |

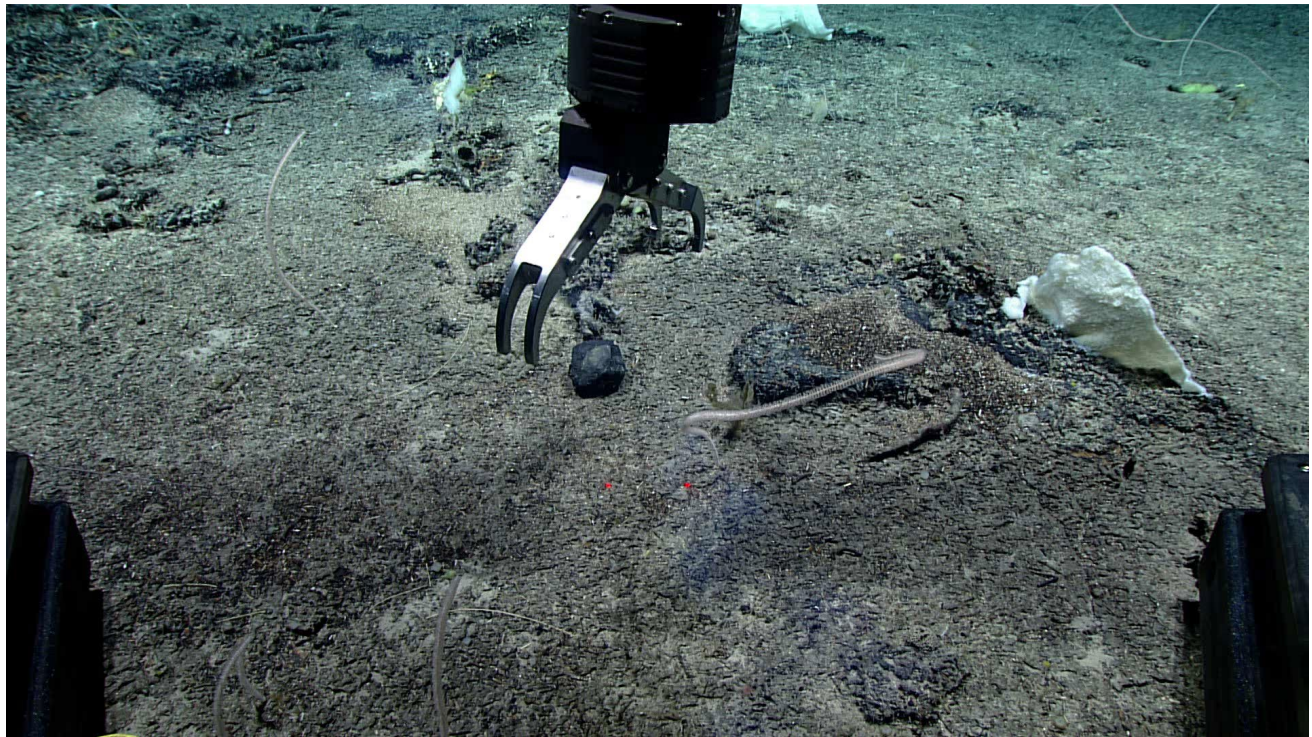
| Associates Sample ID | Field Identification | Count |
|----------------------|----------------------|-------|
| N/A | N/A | N/A |



| | |
|----------------------------|----------------|
| Sample ID | EX2104_D11_02G |
| Date (UTC) | 20210714 |
| Time (UTC) | 172404 |
| Depth (m) | 1233.677979 |
| Latitude (decimal degrees) | 34.65068817 |

| | |
|-----------------------------|---|
| Longitude (decimal degrees) | -49.65182877 |
| Temp. (°C) | 4.717000008 |
| Field ID(s) | Carbonate Conglomerate |
| Comments | coral rubble with FeMn patina and many associates. 13cm long x 11.5cm wide x 6.5cm tall. Very orange which looks to be iron staining. |

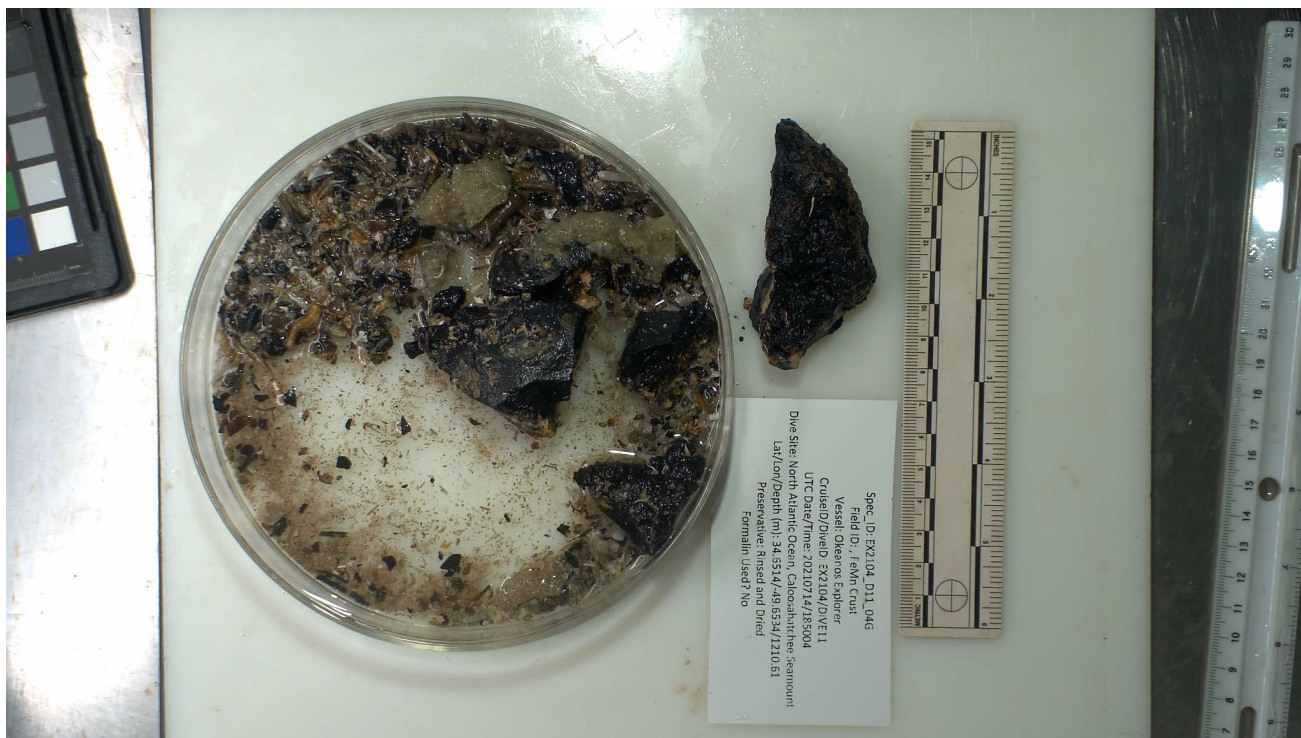
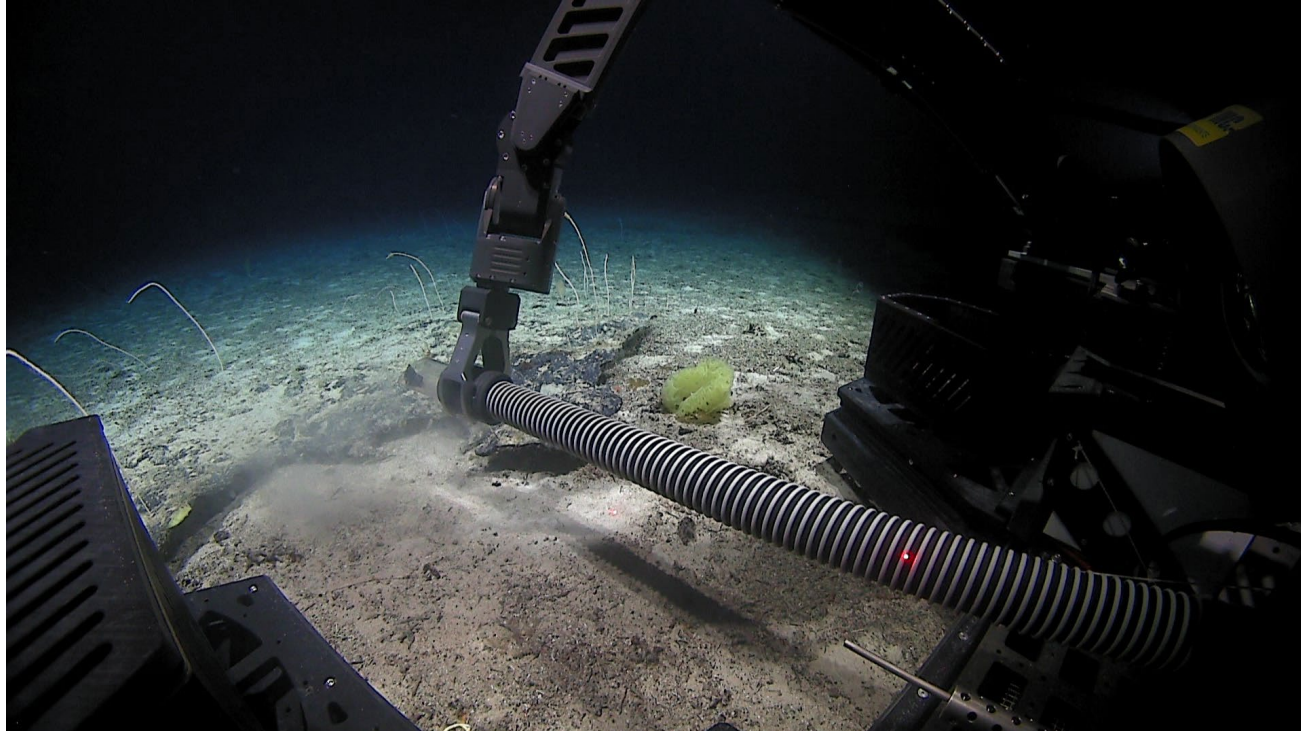
| Associates Sample ID | Field Identification | Count |
|----------------------|----------------------|-------|
| N/A | N/A | N/A |





| | |
|-----------------------------|---|
| Sample ID | EX2104_D11_03G |
| Date (UTC) | 20210714 |
| Time (UTC) | 172948 |
| Depth (m) | 1231.519043 |
| Latitude (decimal degrees) | 34.65076447 |
| Longitude (decimal degrees) | -49.65185928 |
| Temp. (°C) | 4.71600008 |
| Field ID(s) | Rock with carnivorous tunicate |
| Comments | dropstone coated in FeMn with carnivorous tunicate; 6 cm tall x 7 cm wide x 8 cm long |

| Associates Sample ID | Field Identification | Count |
|----------------------|----------------------|-------|
| EX2104_D11_03G_A01 | Tunicata | 1 |



| | |
|-----------------------------|----------------|
| Sample ID | EX2104_D11_04G |
| Date (UTC) | 20210714 |
| Time (UTC) | 185004 |
| Depth (m) | 1210.605957 |
| Latitude (decimal degrees) | 34.65143585 |
| Longitude (decimal degrees) | -49.65343857 |
| Temp. (°C) | 5.070000172 |

| | |
|-------------|---|
| Field ID(s) | FeMn Crust |
| Comments | broken from thin outcropping ledge. FeMn crust that has replaced carbonate and maybe phosphatized. Collected in pieces. Largest piece 7cm long x 3.5cm wide x 2cm tall. Weight is of largest piece. Various organisms attached along with sediment (FeMn crust and carbonate material). |

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

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