



Okeanos Explorer ROV Dive Summary

Dive Information

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|--------------------------------|--|
| <p>General Location Map</p> | |
| <p>General Area Descriptor</p> | <p>U.S. Southeast , Blake Plateau</p> |
| <p>Site Name</p> | <p>Stetson Mesa Potential Seep</p> |
| <p>Science Team Leads</p> | <p>Amy Wagner (CSUS) and Alexis Weinnig (Temple)</p> |
| <p>Expedition Coordinator</p> | <p>Kasey Cantwell (NOAA-OER)</p> |
| <p>ROV Dive Supervisor</p> | <p>Chris Ritter (GFOE)</p> |
| <p>Mapping Lead</p> | <p>Shannon Hoy (NOAA-OER)</p> |

ROV Dive Name

| | |
|--------------------|-----------------|
| <p>Cruise</p> | <p>EX1903L2</p> |
| <p>Dive Number</p> | <p>DIVE 06</p> |

Scientists Involved (provide name, affiliation, email)

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| Dive Purpose | Bathymetric data was collected around this region of the Blake Plateau by the Okeanos Explorer during 2014. Adam Skarke's Lab at Mississippi State University was able to analyze the EM302 water column data and assign a relatively high confidence (2 out of 5) that a cold seep could be in the area. There were two potential seep sites identified and the more northern site, with more topographic variability, was selected to increase the likelihood of encountering benthic communities that have settled on or around the authigenic carbonate. This dive will give us the opportunity to investigate a potential cold seep, which are known to provide resources and habitat for a wide variety of life forms and significantly impact ocean chemistry in the surrounding water. On the ROV ascent, |
|--------------|---|

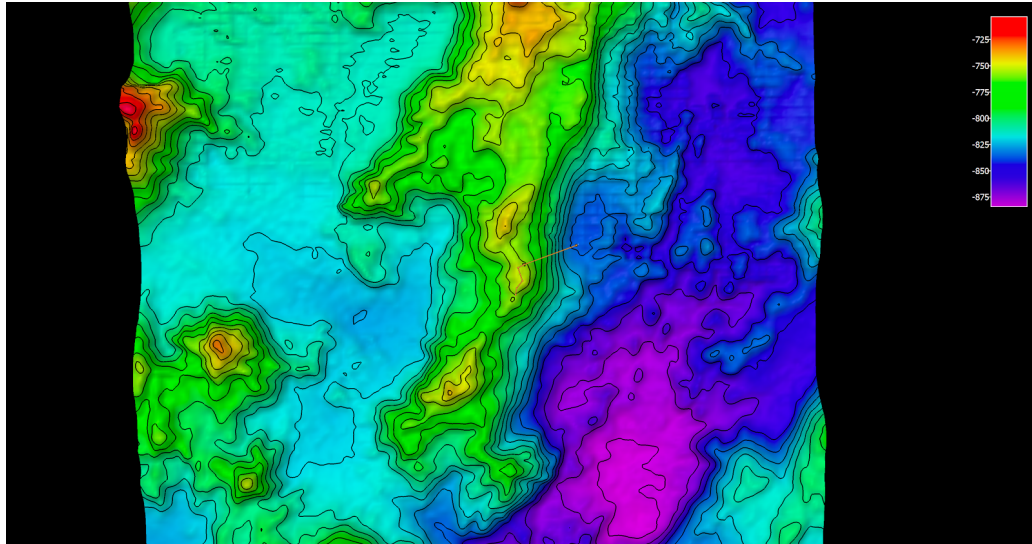


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| | we will be doing several mid-water transects (700 m, 500 m, and 300 m) to observe and collect the biota in the vastly unexplored water column. |
| Dive Description | <p>The ROV launched at 13:11 UTC and reached the bottom (depth of 839 m) at 14:14 UTC on a soft, sandy bottom on the northeastern side of the target. As we approached bottom, we first observed rubble on soft sediment and a few carbonate outcrops. Our dive track was designed to work our way up the feature to investigate a potential methane seep target that was identified in 2014 EM302 water column data. Throughout the dive we were keeping our eyes open for signs of present or past methane seepage, which could include authigenic carbonate, bacterial mats, methane bubble plumes, or other seep associated fauna. As we continued up the feature, we continued to see coral rubble which increased in density as we approached the local high. There were rich biological communities living among the coral rubble including bamboo corals, chrysogorgia octocorals, black corals, <i>Enallopsammia profunda</i>, <i>Lophelia pertusa</i>, plexaurid octocorals, alcyonacean octocorals, <i>Madrepora</i> sp., goniastroid seastars, hexactanilid and demosponges. There was also a number of fish species noted throughout the dive track including synphobranchid eels, a duckbill eel, a congrid eel, a Pluto ray, hake fish, <i>Nezumia</i> rat tails, and a few chimaera. We observed a few large coral bases and colonies (including a <i>Leiopathes</i> black coral) that indicate that they had been growing on that substrate for a very long time (potentially hundreds to thousands of years). We did not see any further signs of active or passive seepage after the potential authigenic carbonate observed towards the base of the feature. The geology in the area was also quite interesting, while we did see exposed carbonate-like rock (with rubble mixed in) around the base of the feature we saw more dark colored exposed rock thought to be ferromanganese crust. Some of the darker rock was collected and the ferromanganese was at least 5 cms thick (no underlying rock collected) indicating that it had been exposed to seawater for a very long time. Four biological and one geological samples were collected on the benthic portion of the dive. The benthic portion of the dive ended at 17:58 UTC and the ROV reached the surface at 18:40 UTC.</p> <p>After the benthic portion of the dive we then performed three midwater transects within the water column at 700, 500, and 300 meters. The suction sampler was successfully used to collect a Narcomedusan jelly in the genus <i>Solmissus</i>, that was observed prior to collection to have a full gut, useful in subsequent laboratory analyses for ecology. During our 500m transect, a very dense layer of mesopelagic fishes from the genus <i>Cyclothone</i> were observed.</p> |
| Notable Observations | No seep discovered. Observed an abundance of corals and sponges. |
| Community Presence/Absence (community is defined as more than two species) | <ul style="list-style-type: none"> ✓ Corals and Sponges ✓ Chemosynthetic Community ✓ High biodiversity Community ✓ Active Seep or Vent ✓ Extinct Seep or Vent ✓ Hydrates |

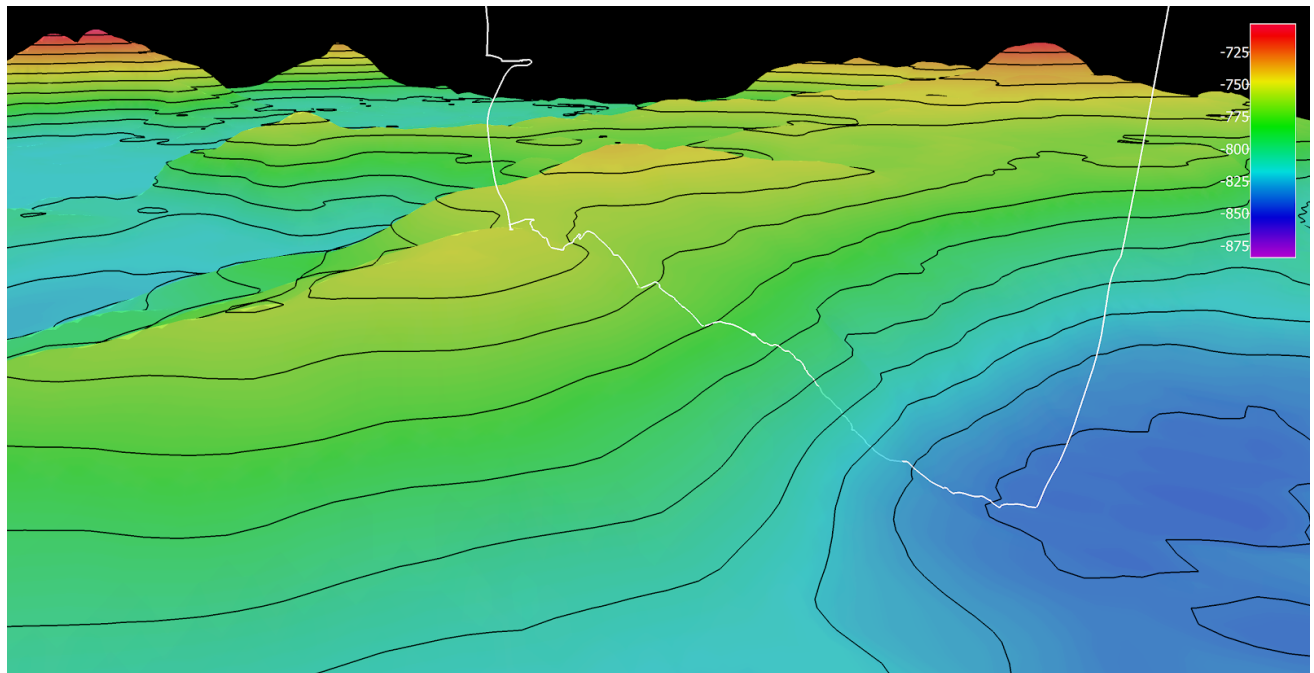


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|--|---|
| Feature Type | Colonized Deepwater/Coldwater Reef |
| SeaTube (annotations program) link | https://data.oceannetworks.ca/SeaTubeV2?resourceTypeId=1000&resourceId=23621&divId=2420 |

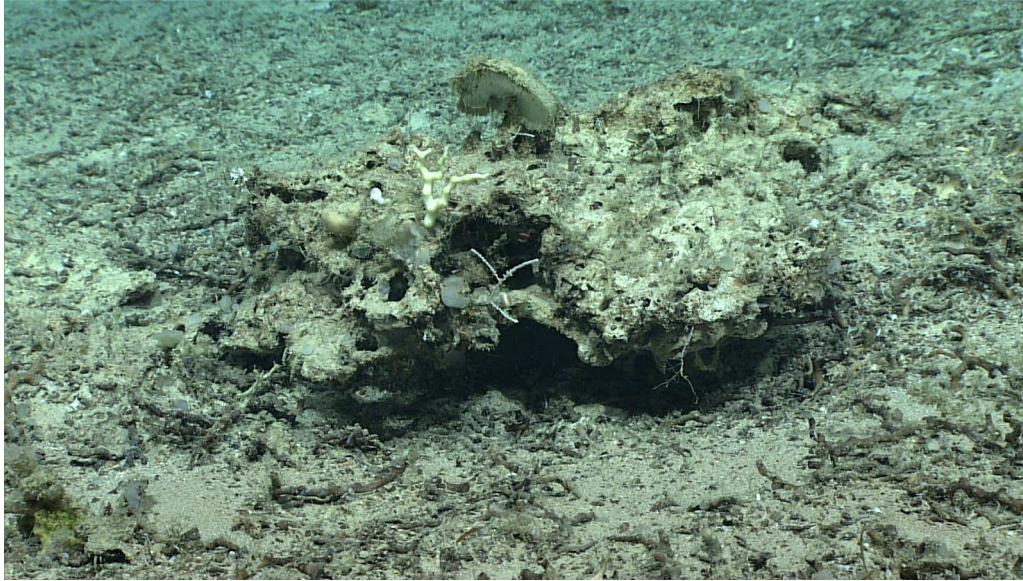
Overall Map of the ROV Dive Area



Close-up Map of Main Dive Site



Representative Photos of the Dive

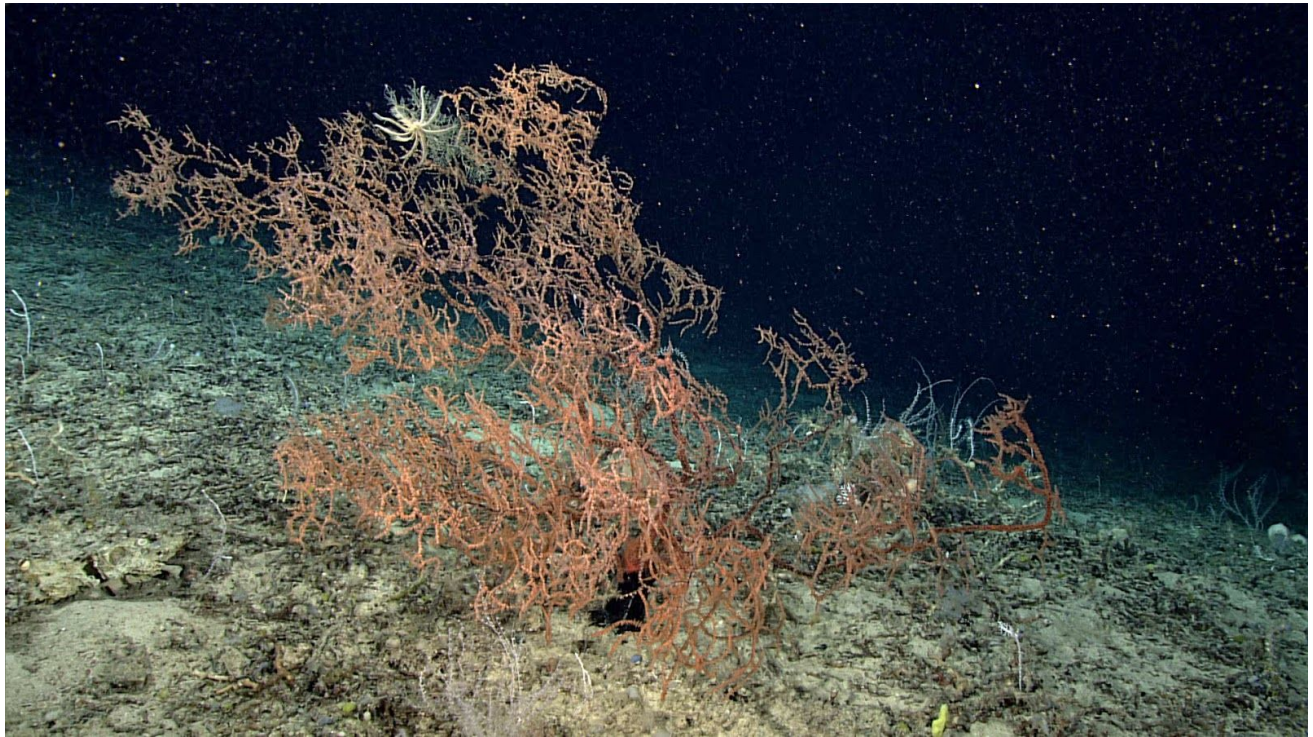


Carbonate-like rock observed at the beginning of the dive - possibly authigenic carbonate. The only sign observed of potential past seepage.

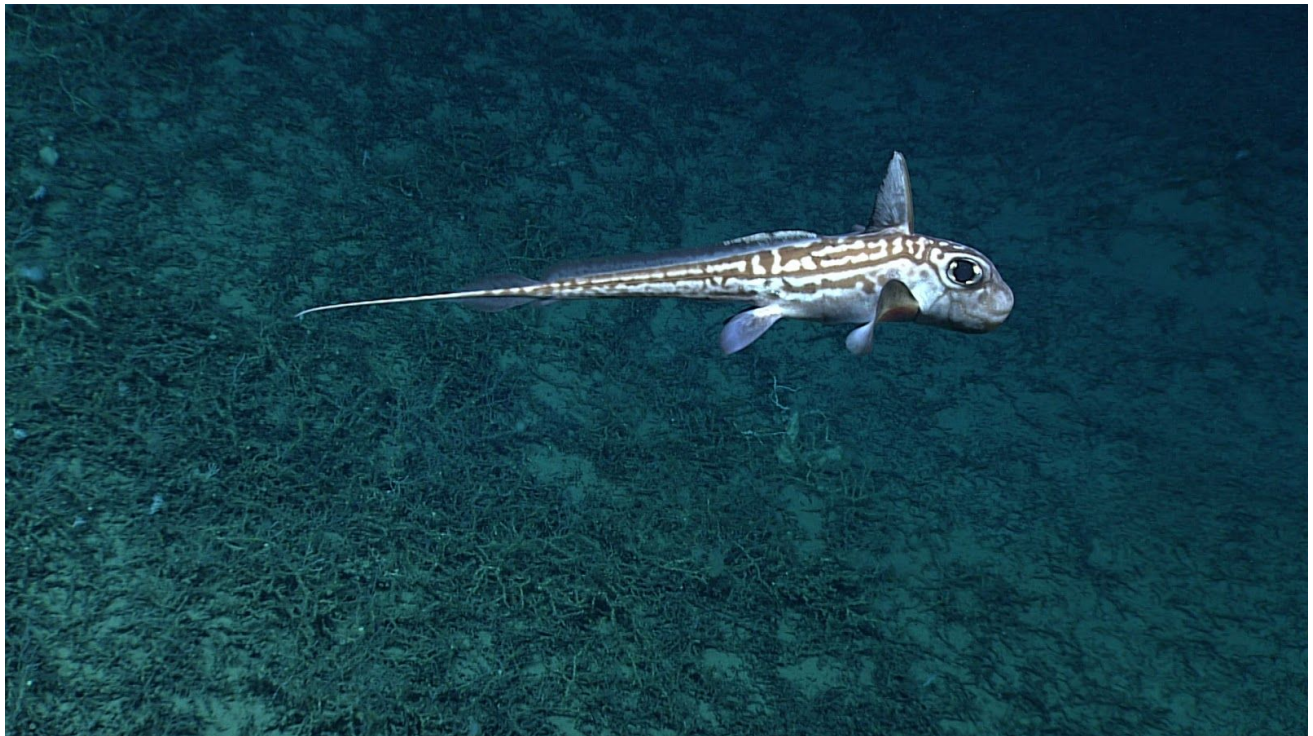


Goniatetrid seastars and a citaroid urchin feeding on potentially an astrophoroid sponge





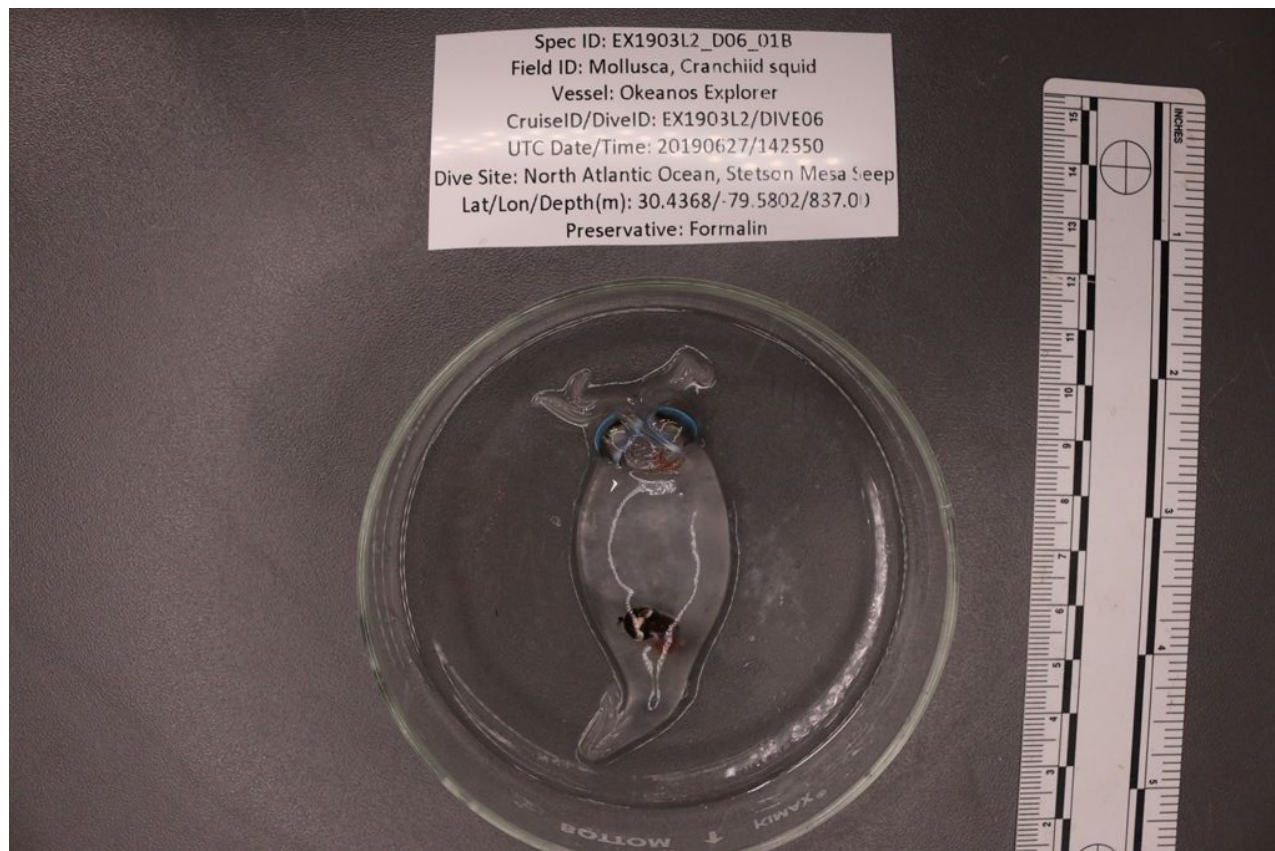
A large black coral (possibly *Lepidisis* sp.) with a very large base and sweeper tentacles around the base and at the portion branches being overgrown by hydroids



One of four chimeras seen swimming throughout the dive



Samples Collected

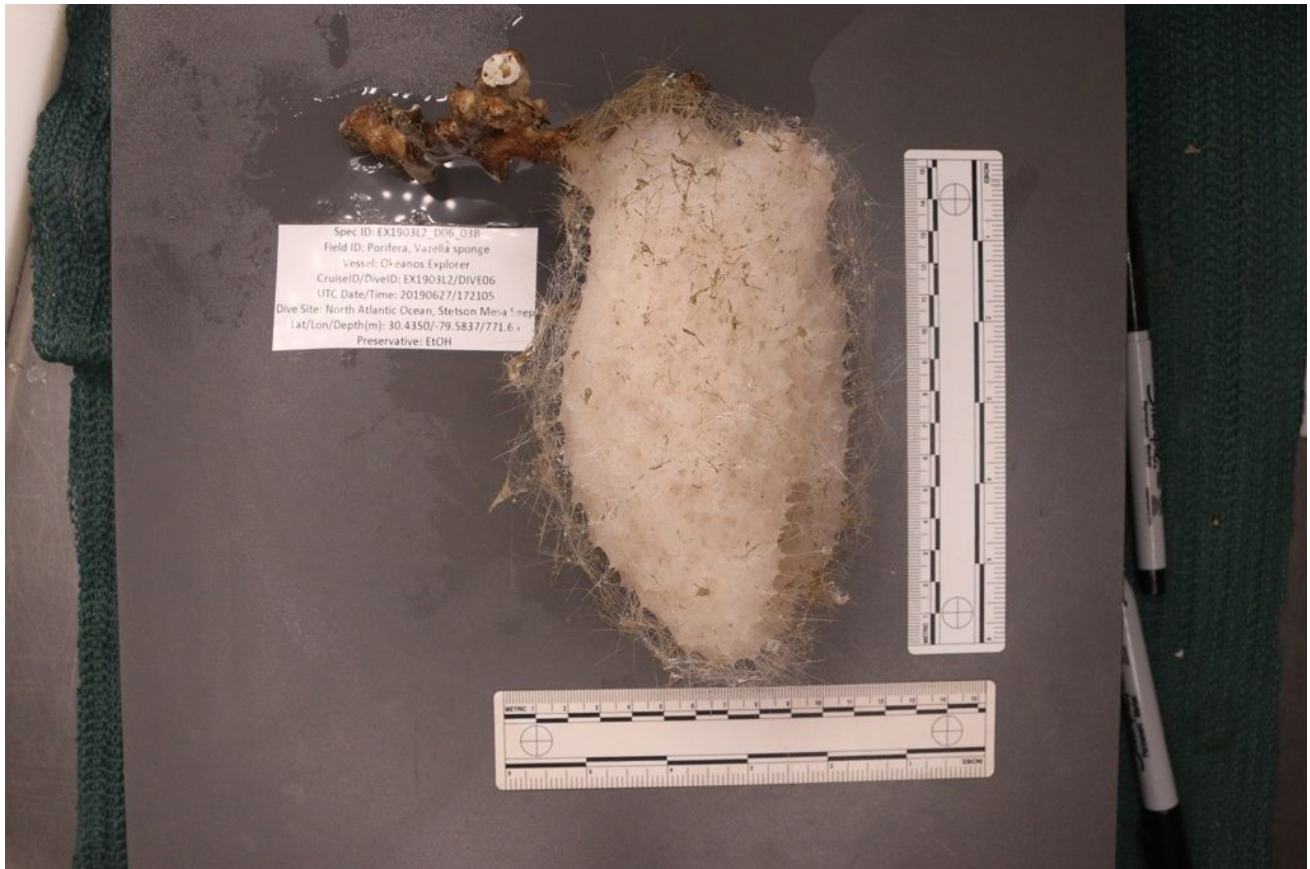


| | | |
|-------------|----------------------|----------------------|
| Sample ID | EX1903L2_D06_01B | |
| Date (UTC) | 20190627 | |
| Time (UTC) | 142550 | |
| Depth (m) | 837.0 | |
| Temp. (°C) | 7.466 | |
| Field ID(s) | Cranchiidae | |
| Associates | Associates Sample ID | Field Identification |
| | No Associates | |
| | | |
| Comments | | |





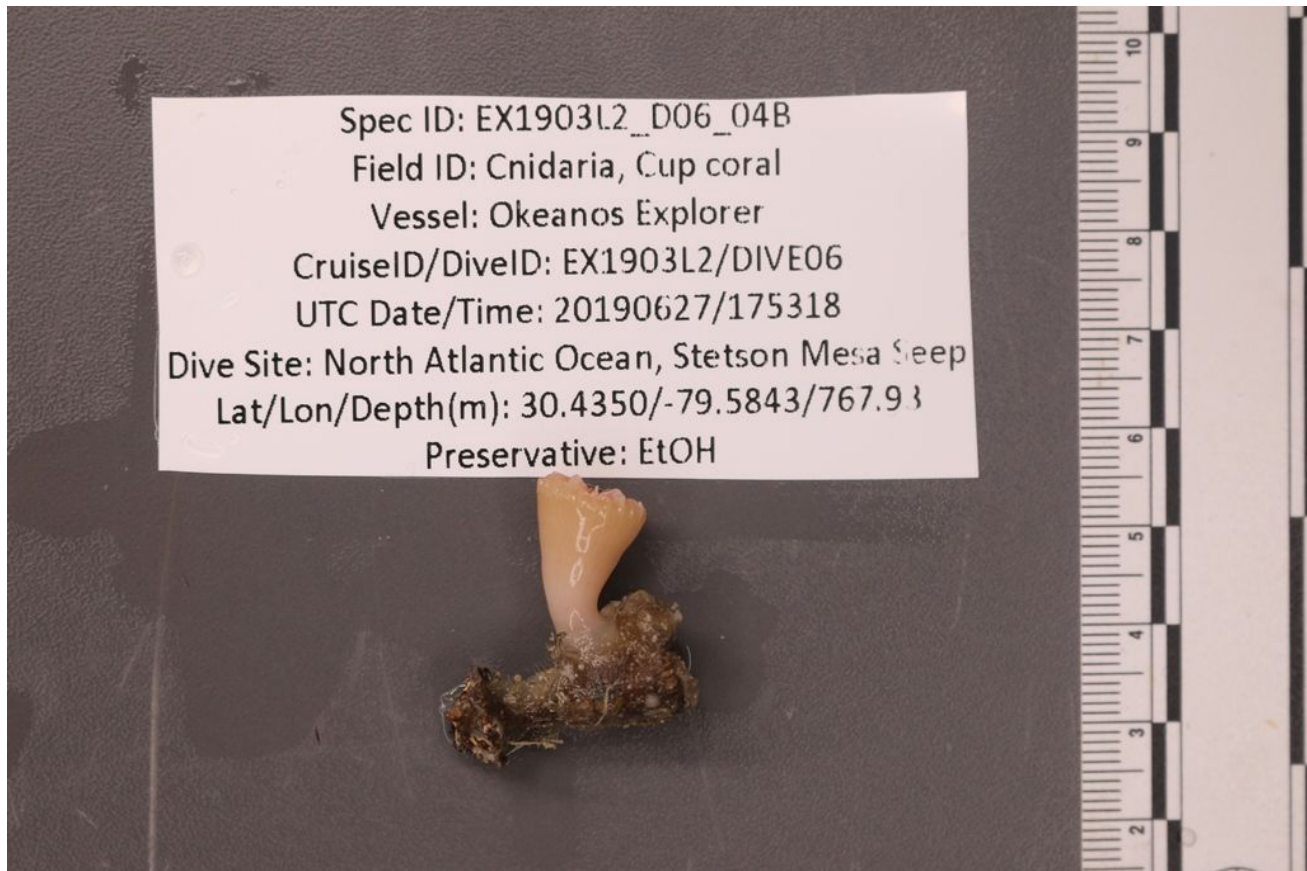
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|-------------|--|-----------------------|
| Sample ID | EX1903L2_D06_02G | |
| Date (UTC) | 20190627 | |
| Time (UTC) | 153021 | |
| Depth (m) | 821.8 | |
| Temp. (°C) | 7.449 | |
| Field ID(s) | Ferromanganese oxide encrusted carbonate (potentially) | |
| Associates | Associates Sample ID | Field Identification |
| | EX1903L2_D06_02G_A01 | Ophiuroidea |
| | EX1903L2_D06_02G_A02 | Scleractinia skeleton |
| Comments | | |



Spec ID: EX1903L2_D06_03B
 Field ID: Porifera, Vazella sponge
 Vessel: Okeanos Explorer
 CruiseID/DivID: EX1903L2/DIVE06
 UTC Date/Time: 20190627/172105
 Dive Site: North Atlantic Ocean, Stetson Mesa
 Lat/Lon/Depth(m): 30.4350/-79.5837/771.6
 Preservative: ETOH

| | | |
|-------------|----------------------|------------------------|
| Sample ID | EX1903L2_D06_03B | |
| Date (UTC) | 20190627 | |
| Time (UTC) | 172105 | |
| Depth (m) | 771.6 | |
| Temp. (°C) | 7.445 | |
| Field ID(s) | Vazella sponge | |
| Associates | Associates Sample ID | Field Identification |
| | EX1903L2_D06_03B_A01 | Ophiuroidea |
| | EX1903L2_D06_03B_A02 | Crinoidea |
| | EX1903L2_D06_03B_A03 | Stylasteridae skeleton |
| | EX1903L2_D06_03B_A04 | Plexauridae |
| Comments | | |



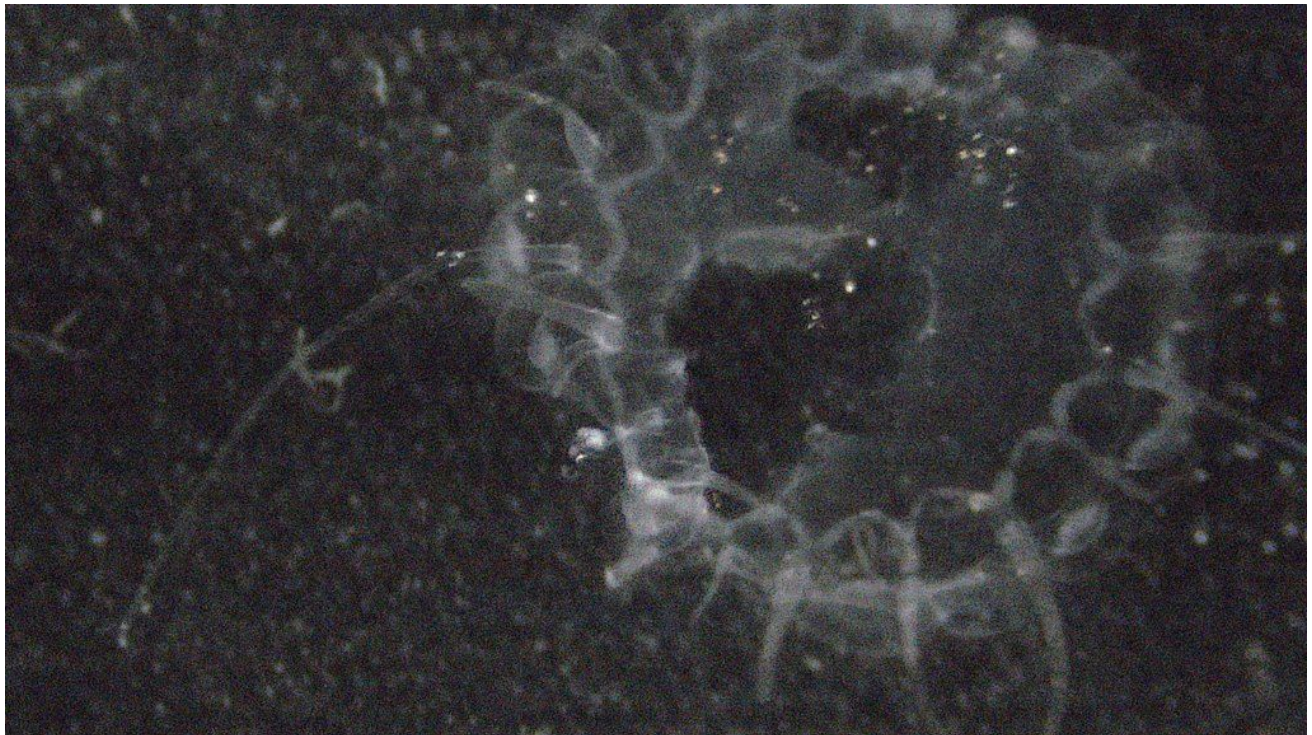


| Sample ID | EX1903L2_D06_04B | | | | | |
|-------------|---|----------------------|----------------------|----------------------|----------------------|--------------|
| Date (UTC) | 20190627 | | | | | |
| Time (UTC) | 175318 | | | | | |
| Depth (m) | 767.9 | | | | | |
| Temp. (°C) | 7.447 | | | | | |
| Field ID(s) | Caryophylliidae | | | | | |
| Associates | <table border="1"> <thead> <tr> <th>Associates Sample ID</th> <th>Field Identification</th> </tr> </thead> <tbody> <tr> <td>EX1903L2_D06_04B_A01</td> <td>microfossils</td> </tr> </tbody> </table> | | Associates Sample ID | Field Identification | EX1903L2_D06_04B_A01 | microfossils |
| | Associates Sample ID | Field Identification | | | | |
| | EX1903L2_D06_04B_A01 | microfossils | | | | |
| Comments | | | | | | |





| Sample ID | EX1903L2_D06_05B | | | | | |
|-------------|--|----------------------|----------------------|----------------------|----------------------|-------|
| Date (UTC) | 20190627 | | | | | |
| Time (UTC) | 200157 | | | | | |
| Depth (m) | 751.3 | | | | | |
| Temp. (°C) | 7.501 | | | | | |
| Field ID(s) | Ophiroidea | | | | | |
| Associates | <table border="1"> <thead> <tr> <th>Associates Sample ID</th> <th>Field Identification</th> </tr> </thead> <tbody> <tr> <td>EX1903L2_D06_05B_A01</td> <td>Coral</td> </tr> </tbody> </table> | | Associates Sample ID | Field Identification | EX1903L2_D06_05B_A01 | Coral |
| | Associates Sample ID | Field Identification | | | | |
| | EX1903L2_D06_05B_A01 | Coral | | | | |
| Comments | | | | | | |



| | | |
|-------------|----------------------|----------------------|
| Sample ID | EX1903L2_D06_06B | |
| Date (UTC) | 20190627 | |
| Time (UTC) | 203714 | |
| Depth (m) | 696.9 | |
| Temp. (°C) | 8.117 | |
| Field ID(s) | Hydrozoa (Jellyfish) | |
| Associates | Associates Sample ID | Field Identification |
| | No associates | |
| | | |
| Comments | | |

Please direct inquiries to:

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