

ROV Dive Summary, EX-22-05, Dive 09, July 28, 2022

General Location Map



Dive Information

Site Name	Cachalote Guyot
General Area Descriptor	52 km west of Flores, on 13.4 My seafloor, on a guyot.
Science Team Leads	Dr. Scott France (Biology), Dr. Ashton Flinders (Geology)
Expedition Coordinator	Dr. Derek Sowers

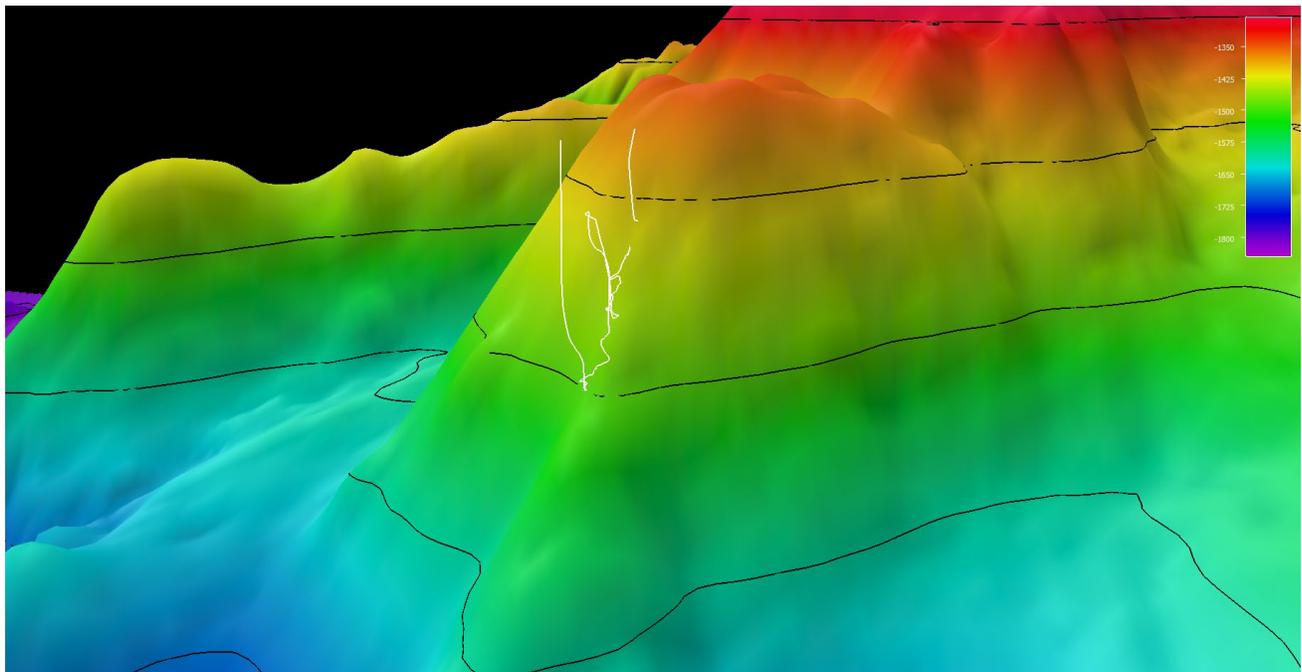
Dive Description	<p><i>Biological</i></p> <p>The dive track had us climbing a ridge-like feature on the flank of the guyot. The ROV landed in a sediment-covered area with an aggregation of sublinear tracks of "mystery holes" that had been previously observed on Dive 04 and that have generated much discussion. Suction samples from the fresher looking holes yielded only biogenic ooze and a couple of long-dead coral fragments (one with 2 sponges on it) but no fauna capable of digging a burrow. At a second site of sublinear tracks of holes we took a water sample to be processed for eDNA. Similar sublinear tracks of holes were observed at two additional sediment patches during the dive.</p> <p>Coral-sponge communities were common throughout the dive track, though patchily distributed on local topographic highs with intervening sedimented areas. Aggregations of coral skeletons, both colonial and cup corals, provided evidence for past communities that may have been dominated by scleractinians; many of these were coated in ferro-manganese suggesting they had been in place a very long time. In many places these were the primary available hard substrate, though the stability is questionable and may explain why mostly smaller sessile coral colonies were observed growing on them (vs much larger colonies that require long-term stability of the substrate to support growth).</p> <p><i>Candidella</i> octocorals and <i>Leiopathes</i> black corals were particularly common, but the diversity of corals on hard substrates included <i>Metallogorgia</i>, <i>Chrysogorgia</i>, <i>Iridogorgia</i>, <i>Acanella</i>, <i>Jasonisis</i>, bramble bamboos, purple unbranched plexaurids, <i>Placogorgia</i>, <i>Acanthogorgia</i>, <i>Swiftia</i>, stoloniferous and cornulariid ribbon-like taxa, <i>Victorgorgia</i>, <i>Anthomastus</i>, <i>Enallopsammia</i>, cup corals, and <i>Bathypathes</i>. At least two species of sea pens were observed in the flatter sediment-covered areas. Sponge diversity included <i>Hertwigia</i>, <i>Lefroyella</i> with zoanthid associates, <i>Hexadella</i> (encrusting), <i>Geodia</i>, carnivorous sponge "sticks" <i>Asbestopluma</i>, and species of glass sponges in the families Farreidae, Euretidae, and Rossellidae.</p> <p>Observations of less commonly seen fauna included several gastropods, platyctenid ctenophores and a stalked crinoid species whose stalks were consistently overgrown by a colonial <i>Hydractinia</i>, suggesting perhaps a close relationship; one of these was collected. Among the several gastropods observed were two opisthobranchs: a pleurobranch "sea slug" and a nudibranch, the latter associated with a bryozoan colony that was sampled. Among the asteroid seastars were our first observations on the expedition of suspension-feeding brisingids, unusual in that brisingids are among the more common fauna observed associating with deep sessile communities. Other assorted fauna included hydroids (solitary and colonial), giant file clam (<i>Acesta</i>), pycnogonid sea spiders, munnopsid isopods, thread-legged shrimp, hermit crabs, corallimorpharian, and multiple tunicate species.</p> <p>Fish abundance was relatively low and included lantern shark <i>Etmopterus</i>, cusk eel (Ophidiidae), oreo, <i>Ventrifossa</i> rattail, <i>Laemonema</i> codling, and a rarely observed cutthroat eel <i>Atractodenchelys phrix</i>. It was noted that one of the surprises of the expedition so far has been the almost total absence of halosaurs and synbranchid eels, two normally dominant fish taxa, but both were observed on today's dive.</p> <p><i>Geology</i></p> <p>Significant sedimentation, very fine and unconsolidated. On close inspection of the "mystery holes" the sediment looked to be made of microscale detritus with <5% macroscale contribution (pteropod shells, etc). Sediment is occasionally interrupted with outcrops of concrete carbonate that have dark black coating likely from decay of organic material and ferromanganese precipitation.</p>
Notable Observations	<p>Multiple sublinear tracks of holes in sediments</p> <p>Rarely imaged cutthroat eel, <i>Atractodenchelys phrix</i></p>

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)	Guyot, slope
SeaTube Link (science annotation system)	https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&resourceId=2643

Equipment Deployed

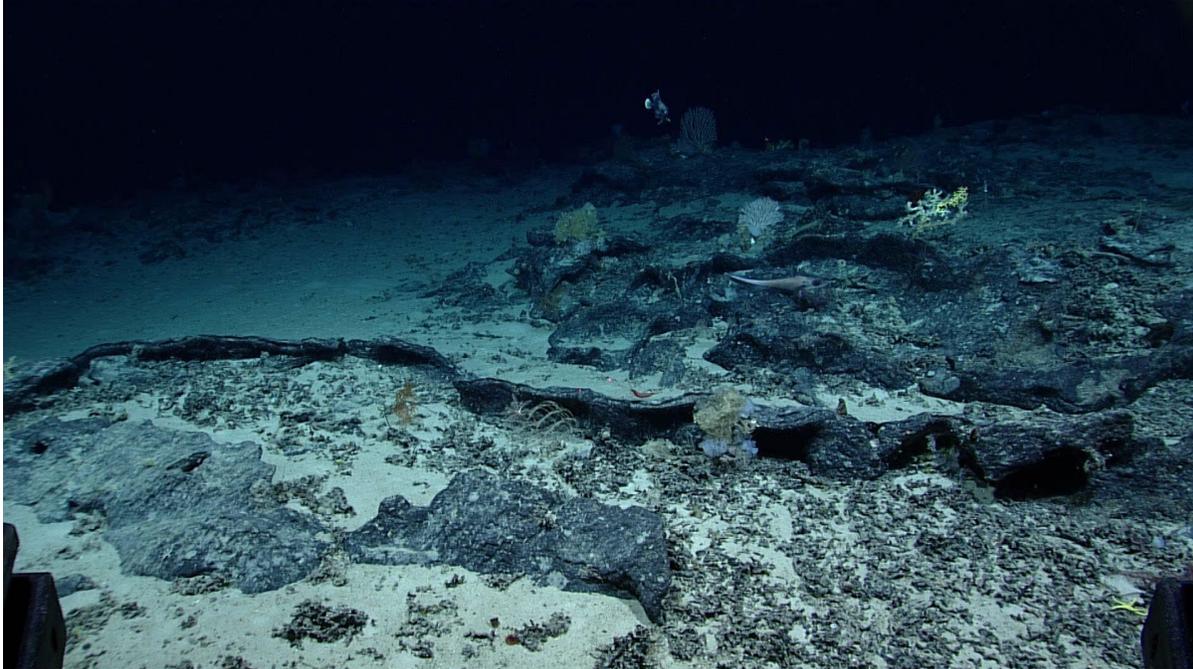
ROV	<i>Deep Discoverer</i>
Camera Platform	<i>Seirios</i>
ROV Measurements	The following ROV measurements, data streams and equipment are used on each ROV deployment: CTD, depth, scanning sonar, USBL position, altitude, heading, attitude, high-resolution cameras, low resolution cameras, manipulator arms, suction sampler, sample drawers and thrusters. The section below notes if any of these sensors were malfunctioning or not operational.
Equipment Malfunctions	

Close-up Map of Main Dive Site

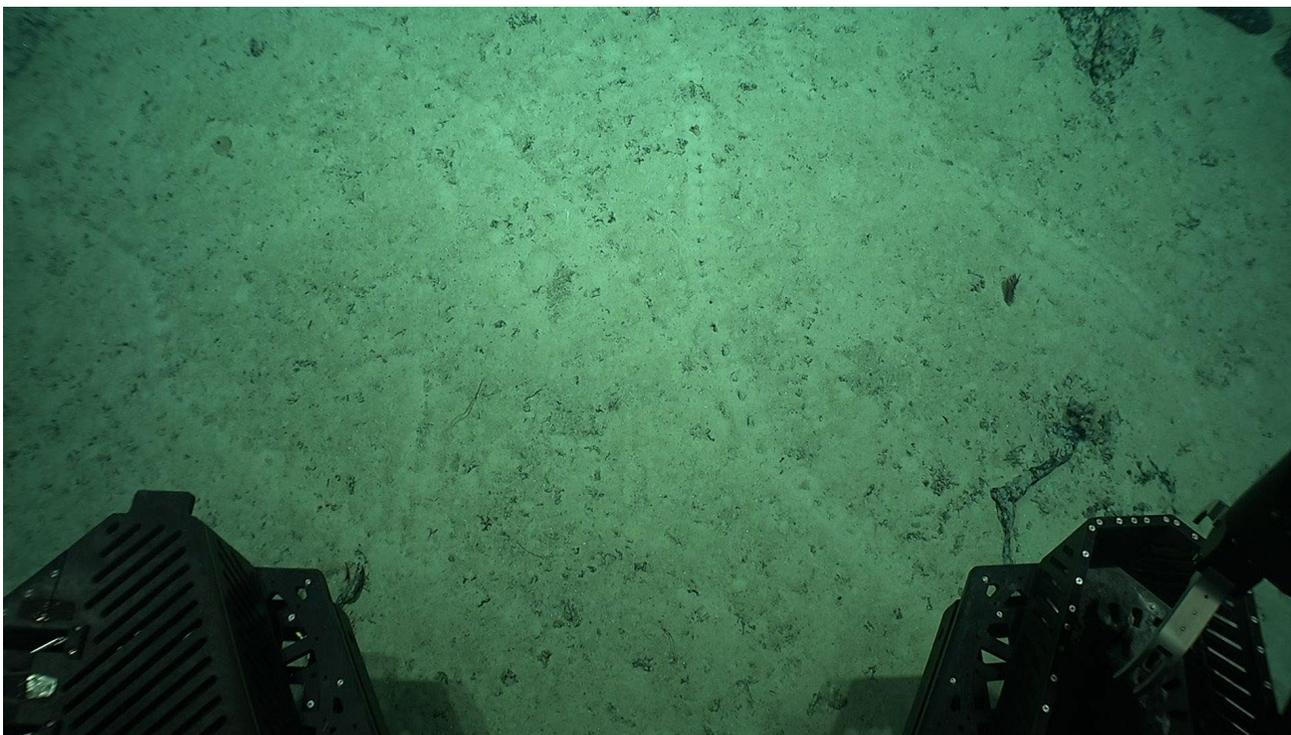


Smoothed ROV dive track in white on 25x25 cell size bathymetry, 3x vertical exaggeration, depth in meters, 10 meter contours.

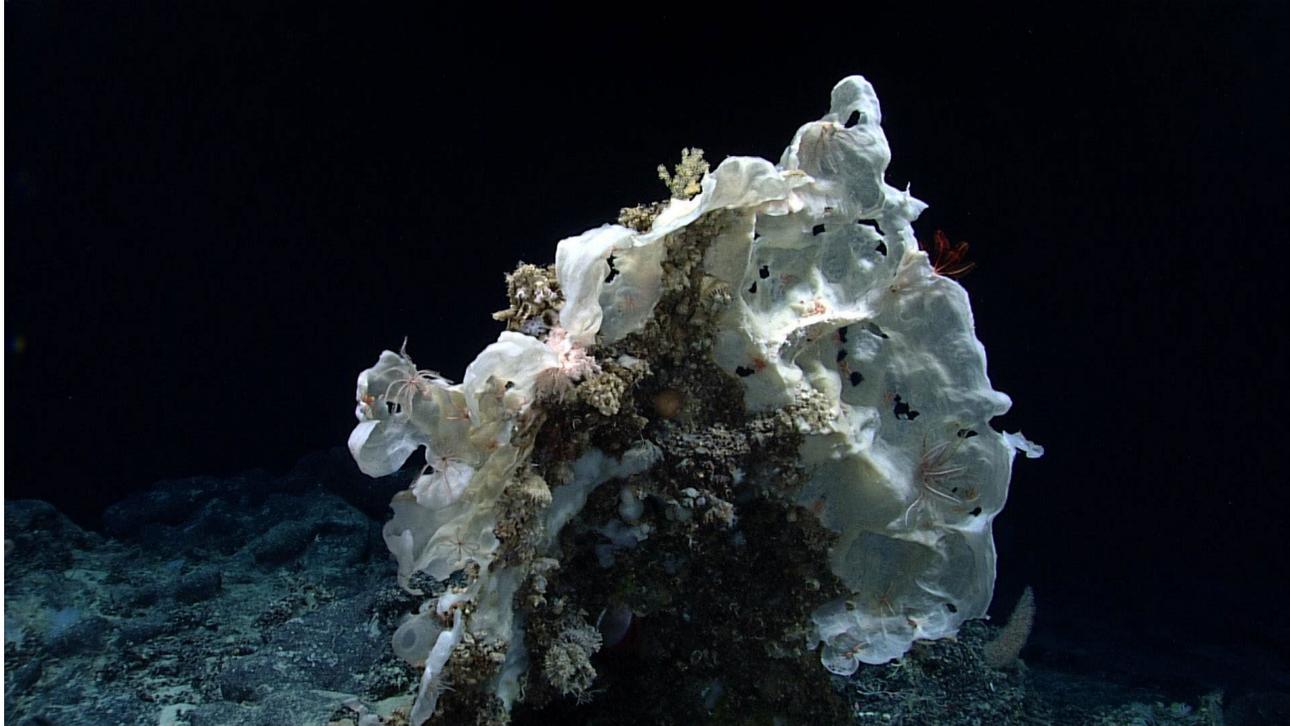
Representative Photos of the Dive



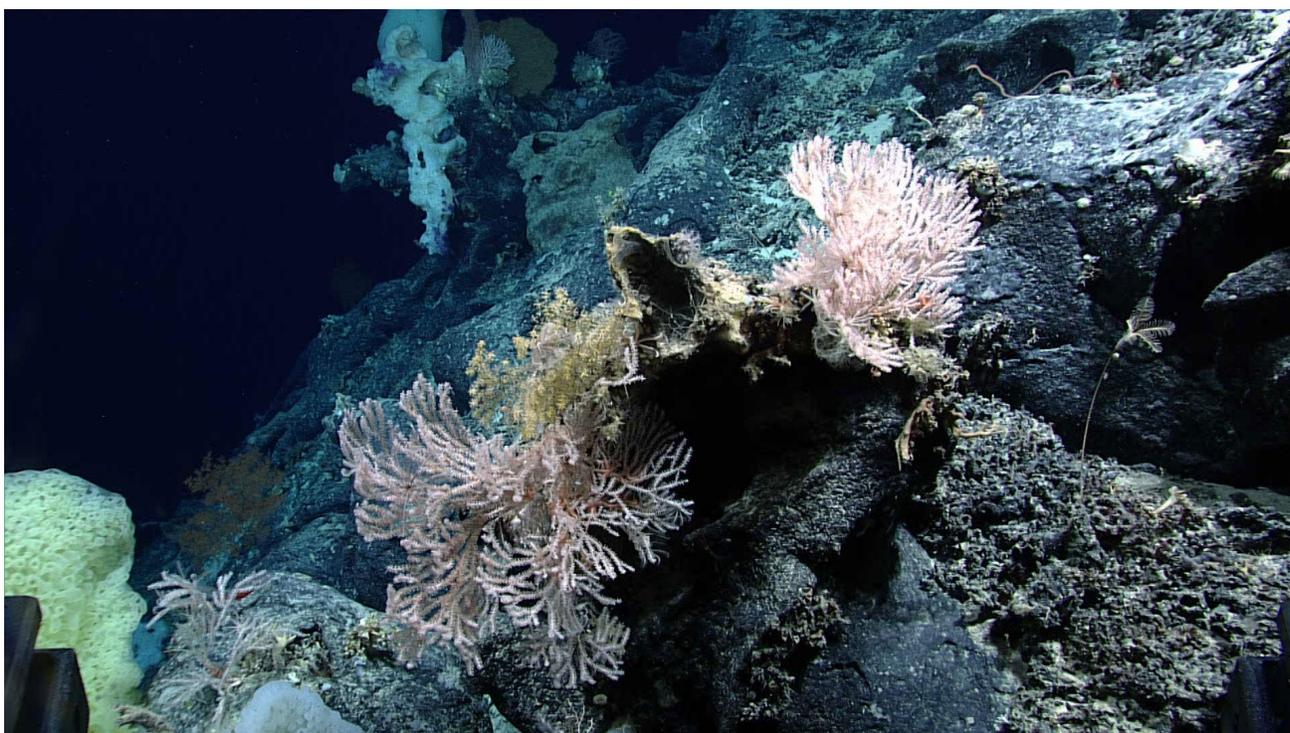
Coral and carbonate exposures, covered in precipitation, with heavy sediment.



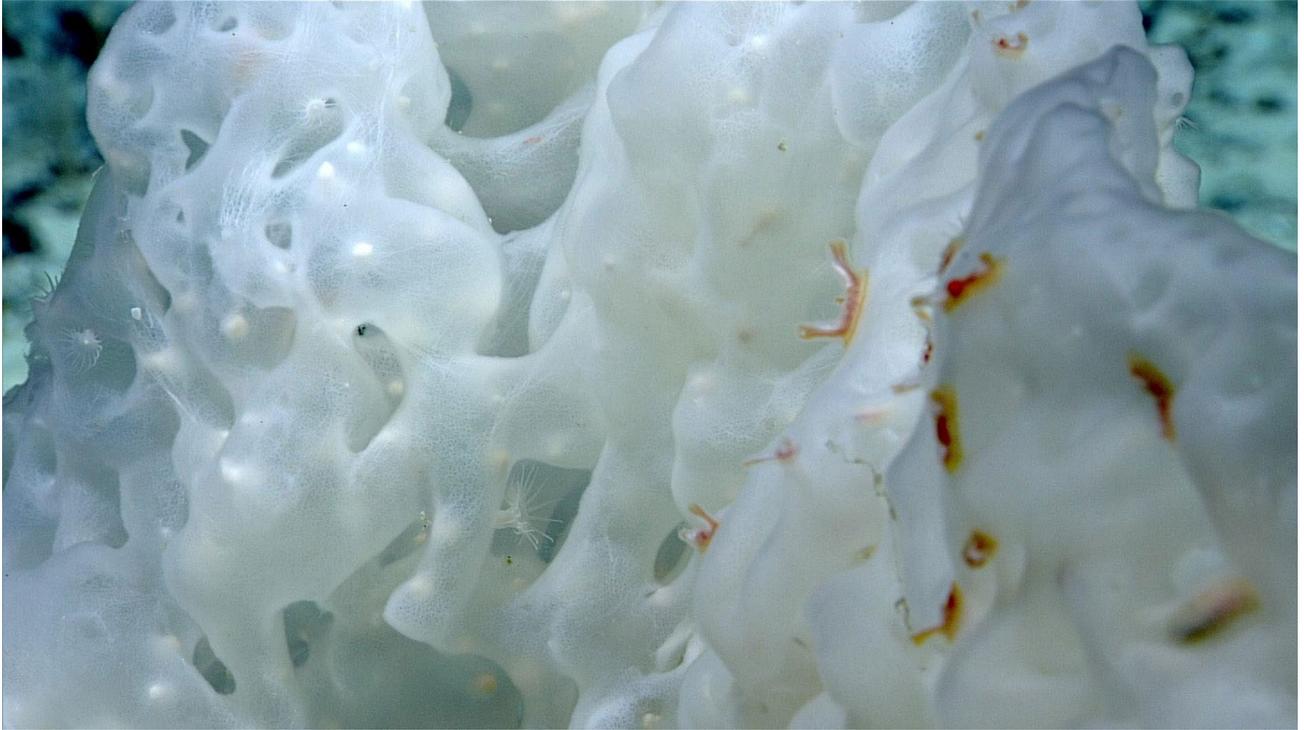
One of four aggregations of sublinear tracks of "mystery holes", this at the landing site at 1498 m depth.



A large flexible glass sponge overgrowing a scleractinian coral skeleton at 1494 m depth serves as habitat to a variety of associates, including a giant file clam (*Acesta*).



Local topographic highs supported a diversity of corals, sponges and other fauna. Here at 1459 m depth are pink *Candidella* and yellow *Acanthogorgia* octocoral colonies supporting hydroids, barnacles, brittle stars, brisingid asteroids, crinoids and more, with scattered black corals (*Leiopathes*) and demosponges on the surrounding seafloor.



Orange-and-red benthic ctenophores (Platyctenida) and white zoanthid polyps use a glass sponge as habitat.



Cusk eel (Ophidiidae) at 1495 m depth.

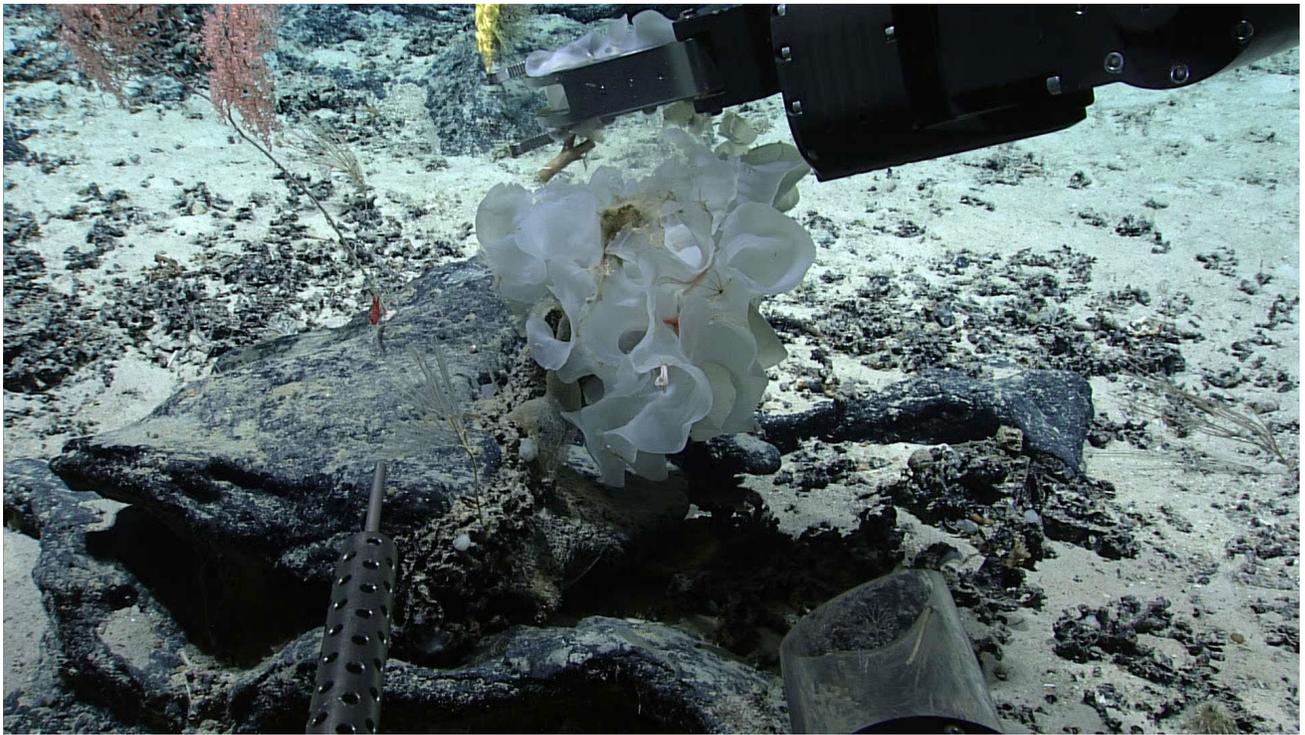
Samples Collected -



Sample ID	EX2205_D09_03G
Date (UTC)	20220728
Time (UTC)	12:07:43
Depth (m)	1499.4
Latitude (decimal degrees)	39.364
Longitude (decimal degrees)	-31.971
Temp. (°C)	4.581
Field ID(s)	Mystery hole suction sample

Comments	
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Associates Sample ID	Field Identification	Count
EX2205_D09_03G_A01	Porifera	2
EX2205_D09_03G_A02	Polychaeta	1



Sample ID	EX2205_D09_04B
Date (UTC)	20220728
Time (UTC)	12:22:35
Depth (m)	1498.5
Latitude (decimal degrees)	39.365
Longitude (decimal degrees)	-31.971

Temp. (°C)	4.642
Field ID(s)	Farreidae
Comments	

Associates Sample ID	Field Identification	Count
EX2205_D09_04B_A01	Ctenophora	1
EX2205_D09_04B_A02	Crinoidea	1

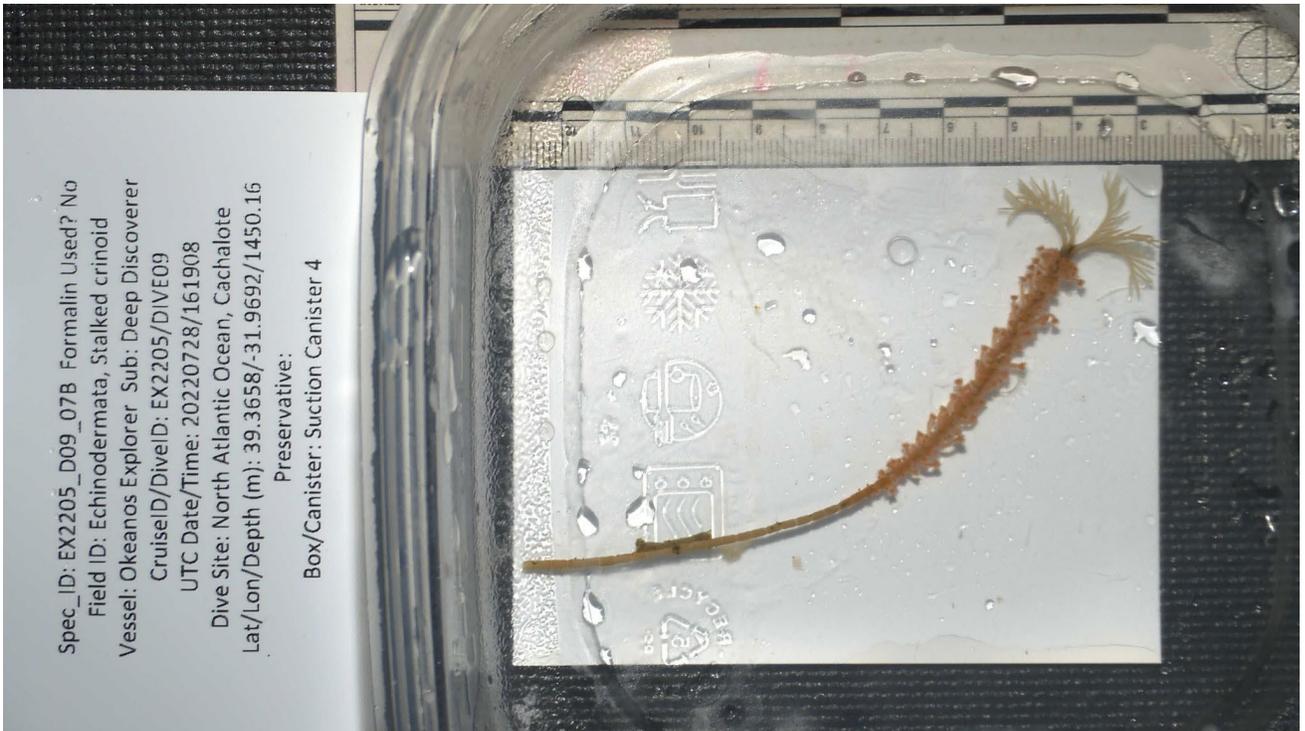


Spec_ID: EX2205_D09_05B Formalin Used? No
 Field ID: Cnidaria, Acanthogorgia
 Vessel: Okeanos Explorer Sub: Deep Discoverer
 CruiseID/DivID: EX2205/DIVE09
 UTC Date/Time: 20220728/123705
 Dive Site: North Atlantic Ocean, Cachalote
 Lat/Lon/Depth (m): 39.3645/-31.9705/1497.11
 Preservative:
 Box/Canister: Port Inboard Bio Box

Sample ID	EX2205_D09_05B
Date (UTC)	20220728
Time (UTC)	12:37:05
Depth (m)	1497.1
Latitude (decimal degrees)	39.365
Longitude (decimal degrees)	-31.971
Temp. (°C)	4.656

Field ID(s)	<i>Acanthogorgia</i>
Comments	

Associates Sample ID	Field Identification	Count
EX2205_D09_05B_A01	Crinoidea	1
EX2205_D09_05B_A02	<i>Candidella</i>	1
EX2205_D09_05B_A03	<i>Acanella</i>	1
EX2205_D09_05B_A04	Polynoidea	3
EX2205_D09_05B_A05	Porifera	1
EX2205_D09_05B_A06	Hydrozoa	1
EX2205_D09_05B_A07	Polychaeta	2
EX2205_D09_05B_A08	Eunicidae	1
EX2205_D09_05B_A10	Chrysogorgiidae	1

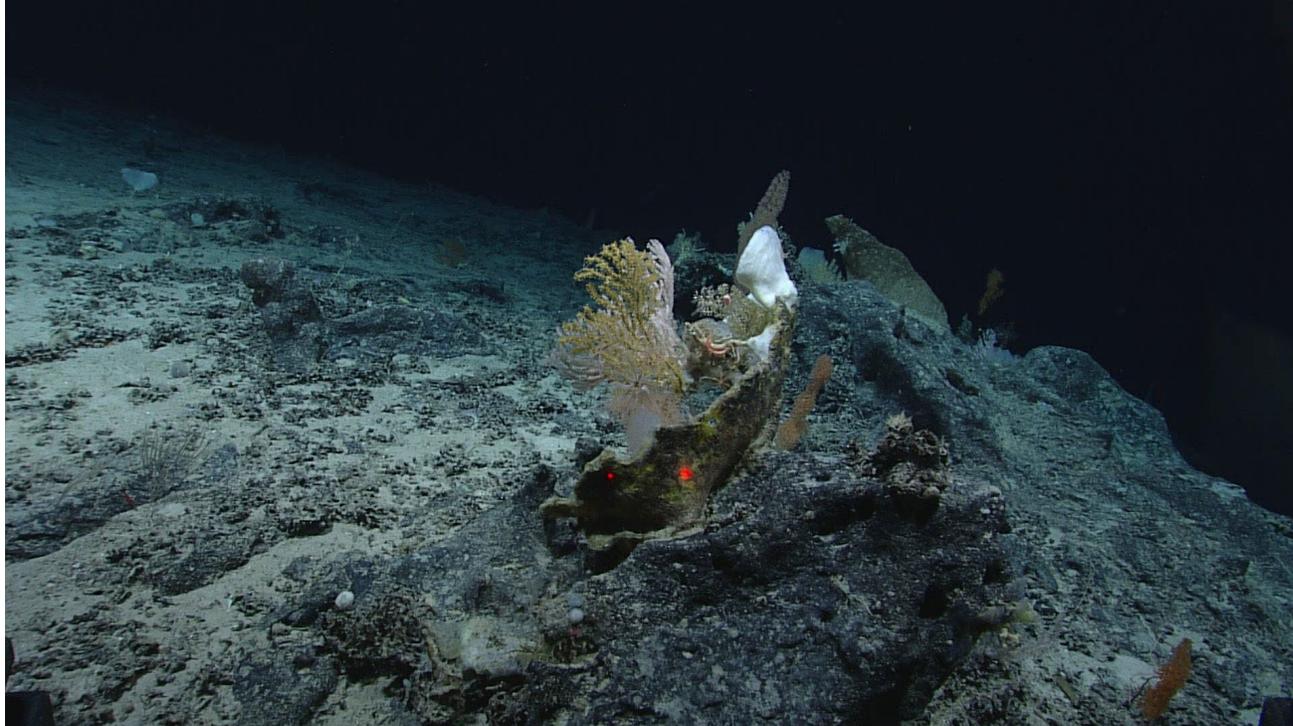


Spec_ID: EX2205_D09_07B Formalin Used? No
 Field ID: Echinodermata, Stalked crinoid
 Vessel: Okeanos Explorer Sub: Deep Discoverer
 CruiseID/DiveID: EX2205/DIVE09
 UTC Date/Time: 20220728/161908
 Dive Site: North Atlantic Ocean, Cachalote
 Lat/Lon/Depth (m): 39.3658/-31.9692/1450.16
 Preservative:
 Box/Camister: Suction Camister 4

Sample ID	EX2205_D09_07B
Date (UTC)	20220728
Time (UTC)	16:19:08
Depth (m)	1450.2
Latitude (decimal degrees)	39.366
Longitude (decimal degrees)	-31.969
Temp. (°C)	4.907

Field ID(s)	Stalked crinoid
Comments	

Associates Sample ID	Field Identification	Count
EX2205_D09_07B_A01	Cumacea	1
EX2205_D09_07B_A02	Hydrozoa	1
EX2205_D09_07B_A03	Bryozoa	1
EX2205_D09_07B_A04	Porifera	1



Sample ID	EX2205_D09_08B
Date (UTC)	20220728
Time (UTC)	16:49:36
Depth (m)	1440.2
Latitude (decimal degrees)	39.366
Longitude (decimal degrees)	-31.969
Temp. (°C)	4.930

Field ID(s)	Yellow sponge
Comments	

Associates Sample ID	Field Identification	Count
EX2205_D09_08B_A01	Tunicata	1
EX2205_D09_08B_A02	Polychaeta	1





Sample ID	EX2205_D09_010B
Date (UTC)	20220728
Time (UTC)	17:17:35
Depth (m)	1433.3
Latitude (decimal degrees)	39.366
Longitude (decimal degrees)	-31.969
Temp. (°C)	4.986
Field ID(s)	Bryozoa
Comments	

Associates Sample ID	Field Identification	Count
EX2205_D09_010B_A01	Polychaeta	2
EX2205_D09_010B_A02	Tunicata	1
EX2205_D09_010B_A03	Nudibranchia	1
EX2205_D09_010B_A04	Amphipoda	3

Niskin Sampling Summary

Sample ID	EX2205_D09_01W
Date (UTC)	20220728
Time (UTC)	10:53:42
Depth (m)	522.20
Latitude (decimal degrees)	39.3653
Longitude (decimal degrees)	-31.9700
Bottle number	Niskin Bottle 1
Temperature (°C)	12.11
Dissolved Oxygen (ml/L)	6.60
Treatment	eDNA

Sample ID	EX2205_D09_02W
Date (UTC)	20220728
Time (UTC)	11:48:03
Depth (m)	1498.20
Latitude (decimal degrees)	39.3645
Longitude (decimal degrees)	-31.9706
Bottle number	Niskin Bottle 2
Temperature (°C)	4.55
Dissolved Oxygen (ml/L)	7.97
Treatment	eDNA

Sample ID	EX2205_D09_06W
Date (UTC)	20220728
Time (UTC)	14:47:31
Depth (m)	1464.70
Latitude (decimal degrees)	39.3653
Longitude (decimal degrees)	-31.9698
Bottle number	Niskin Bottle 3

Temperature (°C)	4.82
Dissolved Oxygen (ml/L)	7.75
Treatment	eDNA

Sample ID	EX2205_D09_09W
Date (UTC)	20220728
Time (UTC)	16:56:56
Depth (m)	1434.90
Latitude (decimal degrees)	39.3660
Longitude (decimal degrees)	-31.9689
Bottle number	Niskin Bottle 4
Temperature (°C)	4.94
Dissolved Oxygen (ml/L)	7.65
Treatment	eDNA

Sample ID	EX2205_D09_11W
Date (UTC)	20220728
Time (UTC)	18:13:05
Depth (m)	552.50
Latitude (decimal degrees)	39.3656
Longitude (decimal degrees)	-31.9690
Bottle number	Niskin Bottle 5
Temperature (°C)	11.86
Dissolved Oxygen (ml/L)	6.46
Treatment	eDNA

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