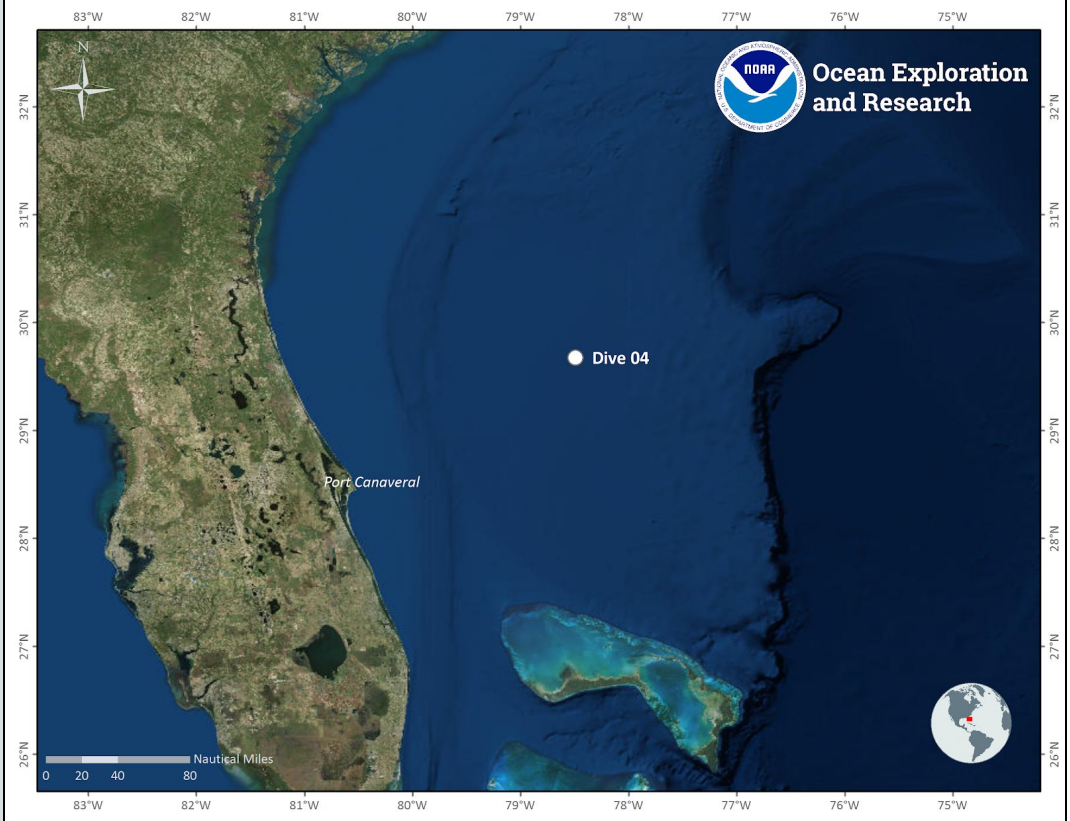
Ocean Exploration and Research

Okeanos Explorer ROV Dive Summary

Dive Information

General Location Map	
General Area Descriptor	U.S. Southeast
Site Name	Blake Plateau Knolls
Science Team Leads	Amy Wagner (CSUS) and Alexis Weinnig (Temple)
Expedition Coordinator	Kasey Cantwell (NOAA-OER)
ROV Dive Supervisor	Chris Ritter (GFOE)
Mapping Lead	Shannon Hoy (NOAA-OER)

ROV Dive Name

Cruise	EX1903L2
Dive Number	Dive 04

Equipment Deployed

ROV	*Deep Discoverer*		
Camera Platform	*Seirios*		
ROV Measurements	✔CTD	✔Depth	✔Altitude
	✔Scanning Sonar	✔USBL Position	✔Heading
	✔Pitch	✔Roll	✔HD Camera 1
	✔HD Camera 2	✔Low Res Cam 1	✔Low Res Cam 2
	✔Low Res Cam 3	✔Low Res Cam 4	✔Low Res Cam 5
Equipment Malfunctions	Shipboard Seatube system (annotations system) was not functional for the majority of the dive so sample annotations are largely in the chat log. ROV CTD was slightly off again today.		
ROV Dive Summary Data (from Processed ROV)	Dive Summary: EX1903L2_DIVE04 ^^ In Water: 2019-06-24T12:31:20.606719 29°, 39.147' N ; 78°, 26.988' W On Bottom: 2019-06-24T13:11:11.079233 29°, 39.058' N ; 78°, 27.007' W Off Bottom: 2019-06-24T20:04:20.066003 29°, 38.966' N ; 78°, 27.265' W Out Water: 2019-06-24T20:40:56.590954 29°, 39.088' N ; 78°, 27.429' W Dive duration: 8:9:35 Bottom Time: 6:53:8 Max. depth: 827.0 m		
Special Notes	D2 reached the end point of the track and looped back for the last hour of the dive, at a slightly lower elevation on the feature than previously explored.		

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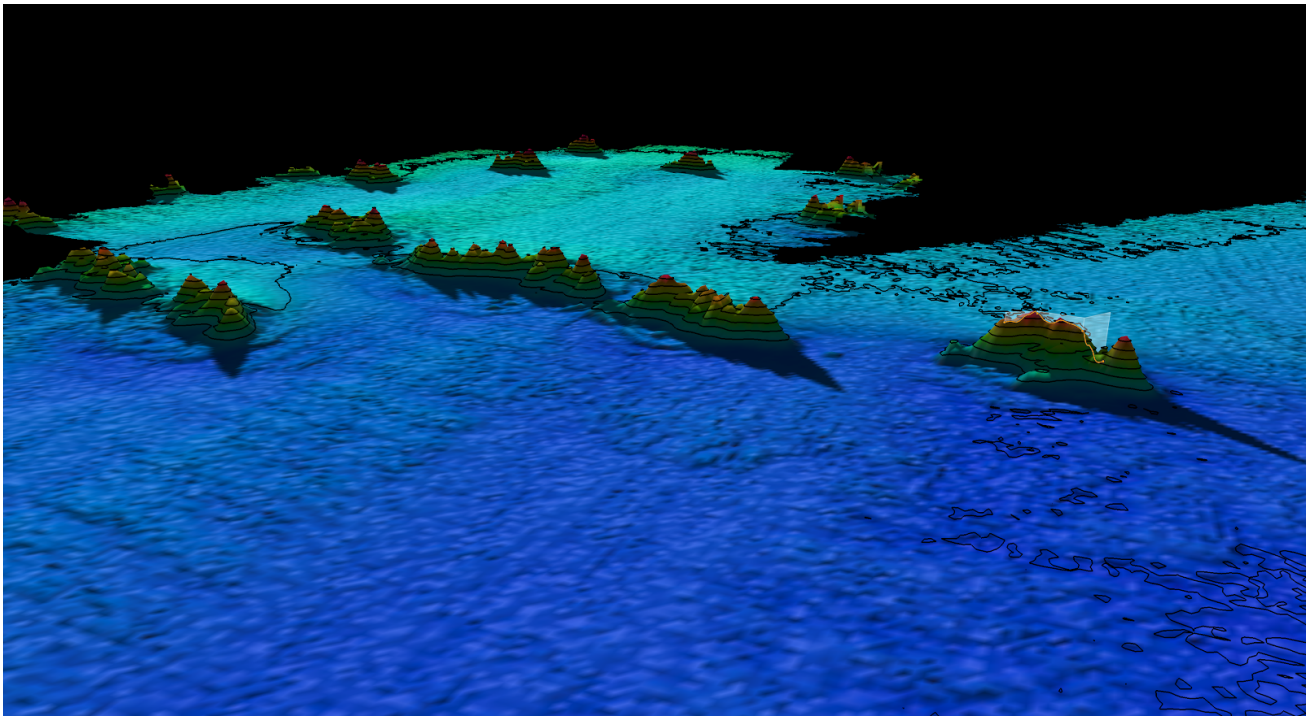
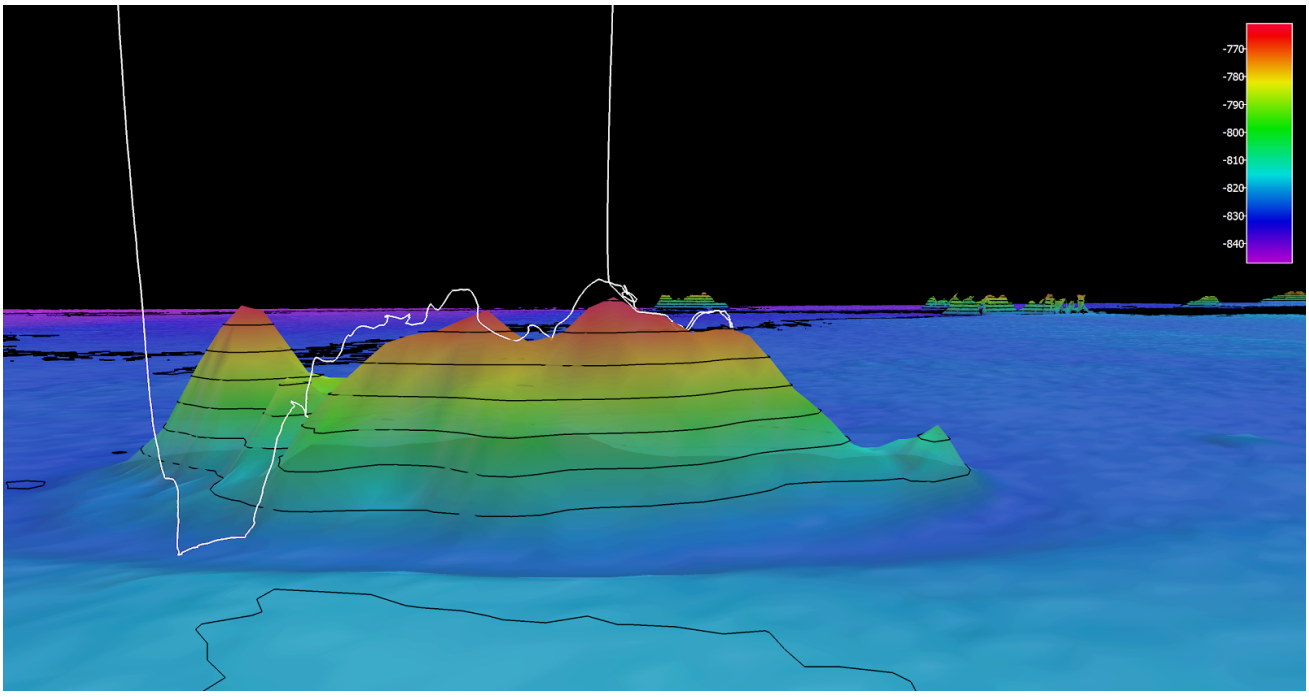
Dive Purpose	This dive was conducted at a knoll feature on the Blake Plateau. This region of the Blake Plateau was first identified and mapped on the EX1806 Windows to the Deep 2018 Expedition. They planned on doing an EX1903 ROV dive on one of these knolls but were operationally unable, so this dive became a priority for this expedition. The mapping conducted on EX1806 revealed multiple knolls that were isolated from each other by a few hundred meters. Based on the bathymetry there was likelihood this feature could be a cold-water coral mound and was worth investigating further through an ROV dive.

Dive Description	The ROV launched at 1230 UTC and reached the bottom around 1311 UTC at a depth of 826 meters. We approached bottom off of the northeastern side of the knoll which was mostly a soft sediment with some coral rubble. As we approached the base of the knoll the amount of coral rubble increased and we observed small white plexaurid and primnoid octocorals growing abundantly amongst the coral rubble at about 800 meters. As we continued up the slope of the knoll we encountered a dense community associated with the coral rubble including crinoids (stalked and unstalked), hexactinellid sponges, ophiuroidea brittle stars, octocorals (Isididae, Plexauridae, Primnoidae, Paragorgidae), fish (*Nezumia bairdii, Synaphobranchus,* viper fish). Throughout our ascent up the knoll it became apparent that the knoll was comprised of multiple hills that were not previously visible in the 25 meter grid bathymetry data. As we reached the local high (755 meters) on the north east of one of the hills of the knoll we encountered a high percentage of live *Lophelia pertusa* coverage with large colonies with long branches. There were also patches of *Madrepora sp.* intermixed amongst the Lophelia and we even observed the two different scleractinian corals growing together, with tissue from the *Madrepora* growing on to the *Lophelia* skeleton. In the areas of highest coverage there was almost 100% live coral coverage. We observed many organisms amongst the live *Lophelia pertusa* coverage, including numerus *Aphrocallistes beatrix* sponges and *Euminida picta* squat lobsters. We also observed a few *Alphonsino* fish (commercially fished) around the areas with live coral coverage. The dive track continued southwest and as we moved away from the local high of a few hills the live Lophelia coveragrage dropped back to almost 0%, with 100% coral rubble coverage. We encountered a large “black tar sponge” of the genus *Derictus*, which was sampled on the EX1806 Windows to the Deep 2018 expedtion. As we continued west on the feature we continued to observe coral rubble and associated communities including varieties of plexaurid and primnoid octocorals. An interesting observation made during the dive was that the high density of live Lophelia coverage was actually on the north/northeast portion of the feature, when a majority of these similar coral mounds have live coverage on the south side of the mound. This might be due to a different current working through the area - potentially an eddy off of the gulf stream. It is also notable that there was temperature variability throughout the dive ranging from 10 C to 12 C. Five biological samples were collected throughout the dive including an Aphrocallistes sponge, a Periphylla jellyfish that was hovering close to the seafloor, an Endoxocrinus crinoid, white plexaurid octocoral and a siphonophore that was wrapped around a small octocoral. ROV left bottom and recovery started around 2000 UTC.
Notable Observations	Dense live *Lophelia pertusa* colonies on the northwest side of the feature - large “black tar sponge” of the genus *Derictus* -
Community Presence/ Absence (community is defined as more than two species)	X Corals and Sponges ✔ Chemosynthetic Community X High biodiversity Community ✔ Active Seep or Vent ✔ Extinct Seep or Vent ✔ Hydrates
Feature Type	Cold-water stoney coral reef (Cold-water coral mounds)
SeaTube (annotations program) link	https://data.oceannetworks.ca/SeaTubeV2?resourceTypeId=1000&resourceId=23621&diveId=984

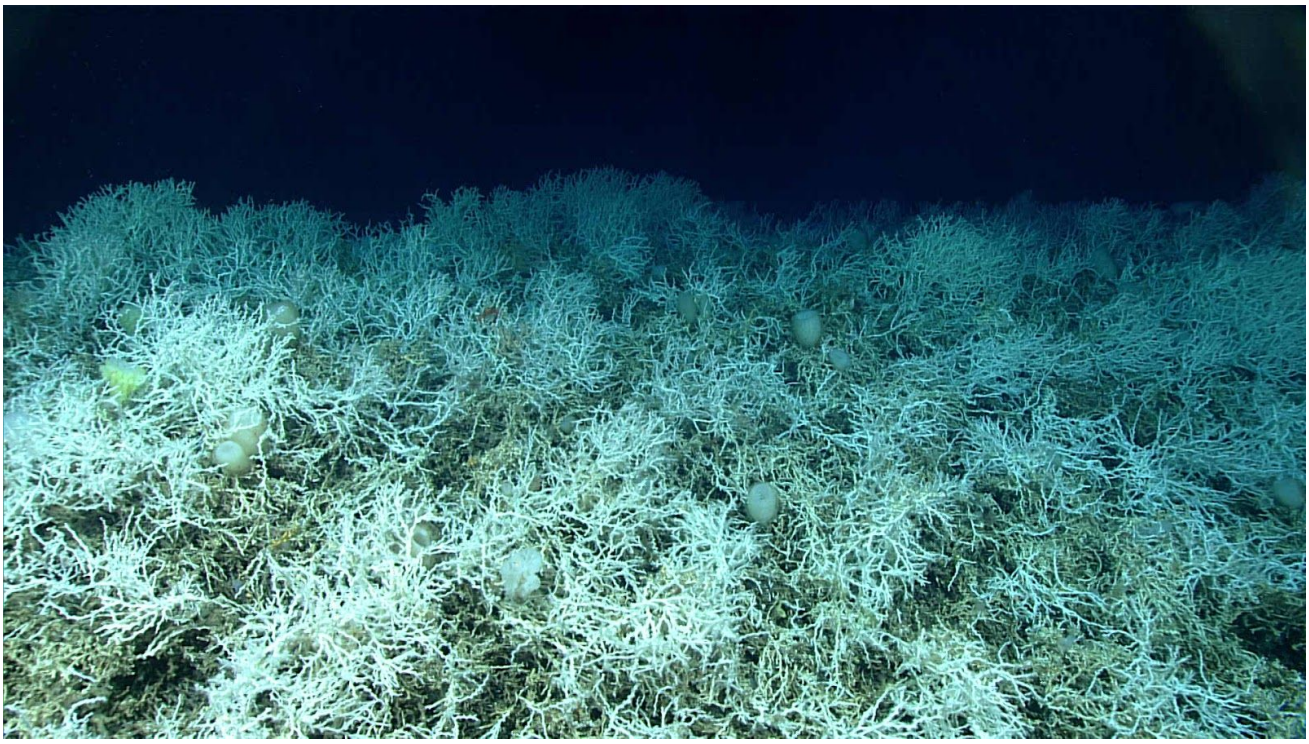
Overall Map of the ROV Dive Area



Close-up Map of Main Dive Site

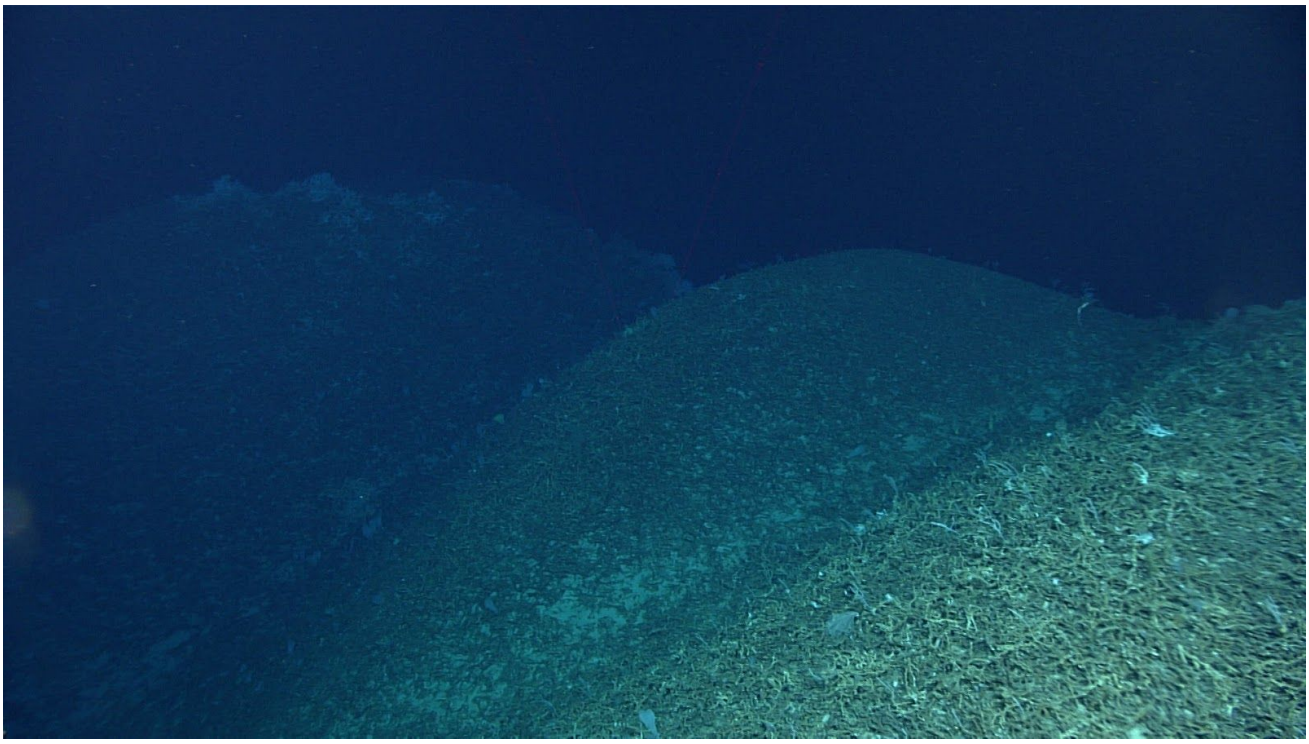


Representative Photos of the Dive

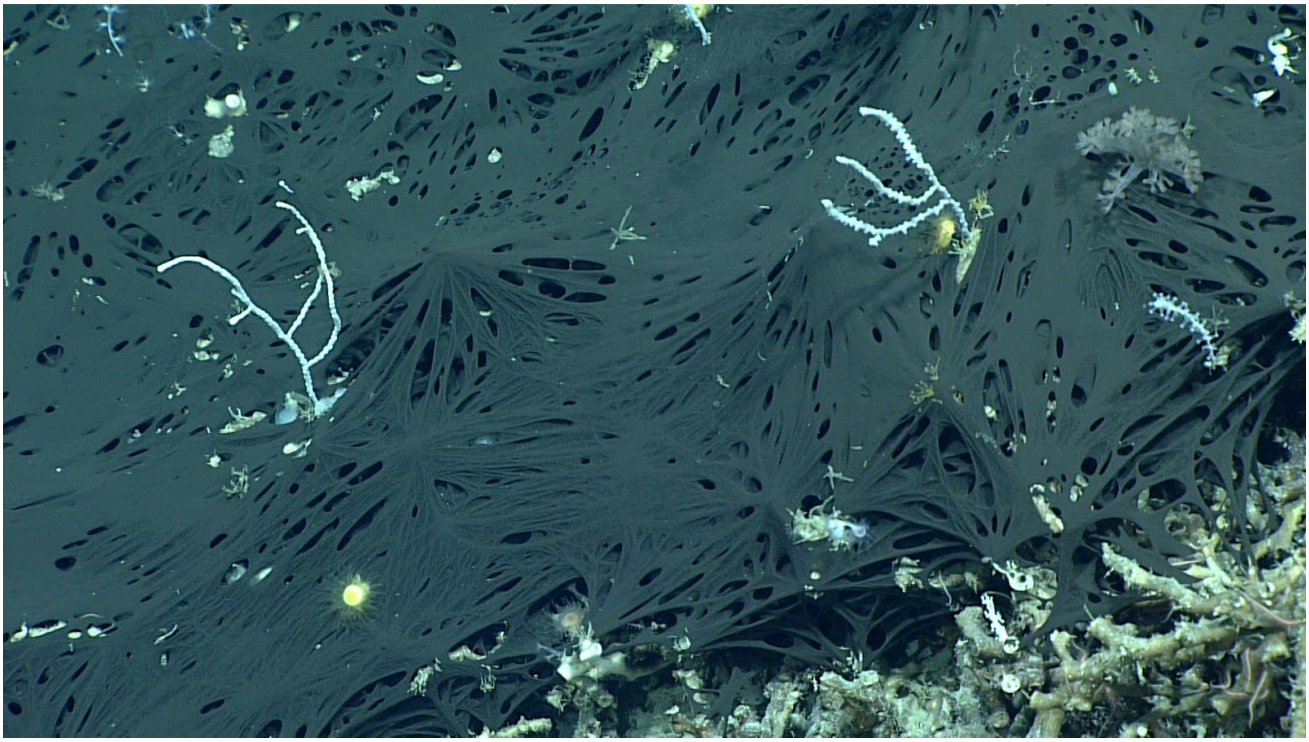


Thick live *Lophelia pertusa* coverage at the top of the knoll feature

Eumunida picta squat lobster perched on top of live *Lophelia pertusa* and *Madrepora sp.*

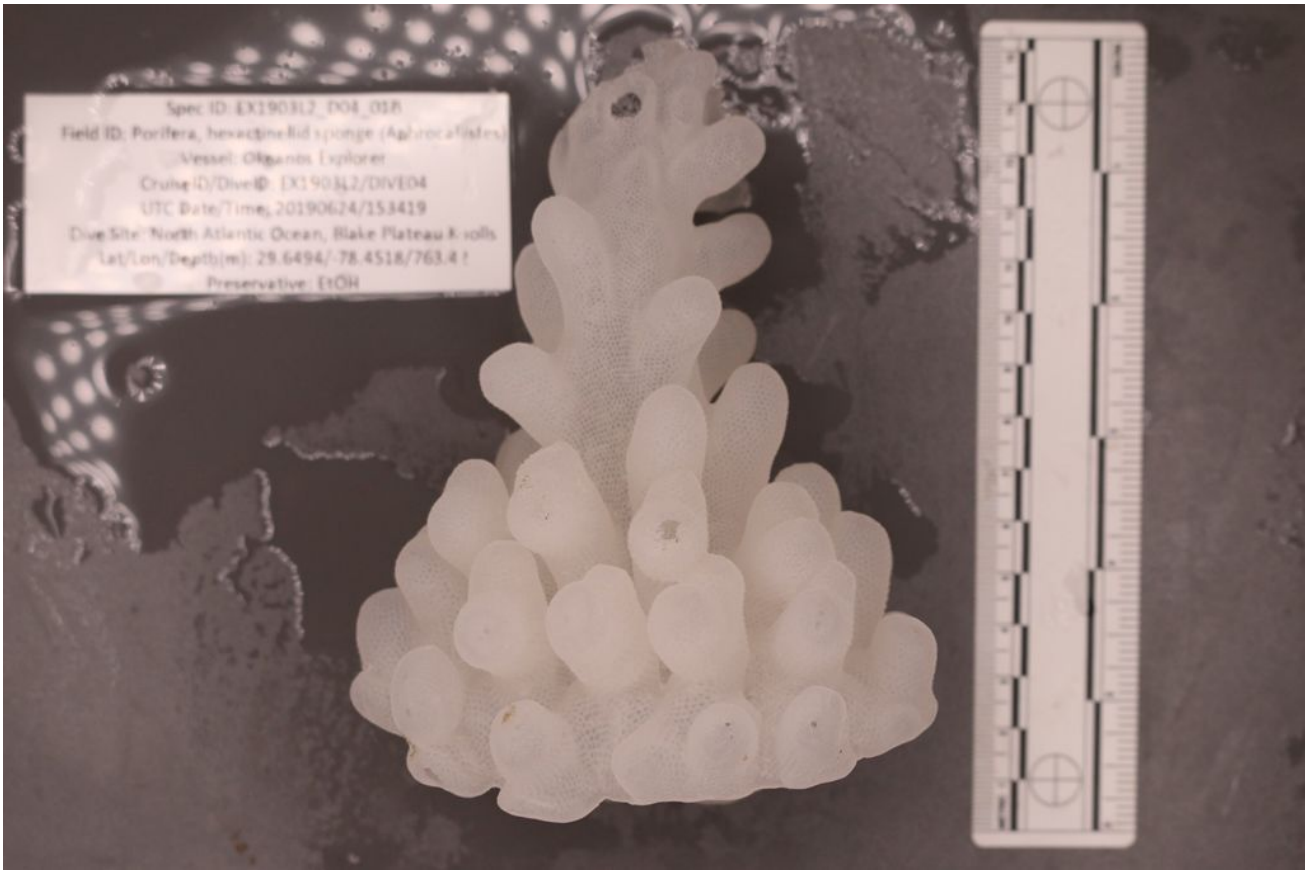


View of multiple hills along the knoll populated with scleractinian coral rubble.



Close up view of the “black tar sponge” of the genus *Derictus* growing over coral rubble and around octocorals. A sample of this sponge was collected during EX1806 at a different location on the Blake Plateau.

Samples Collected



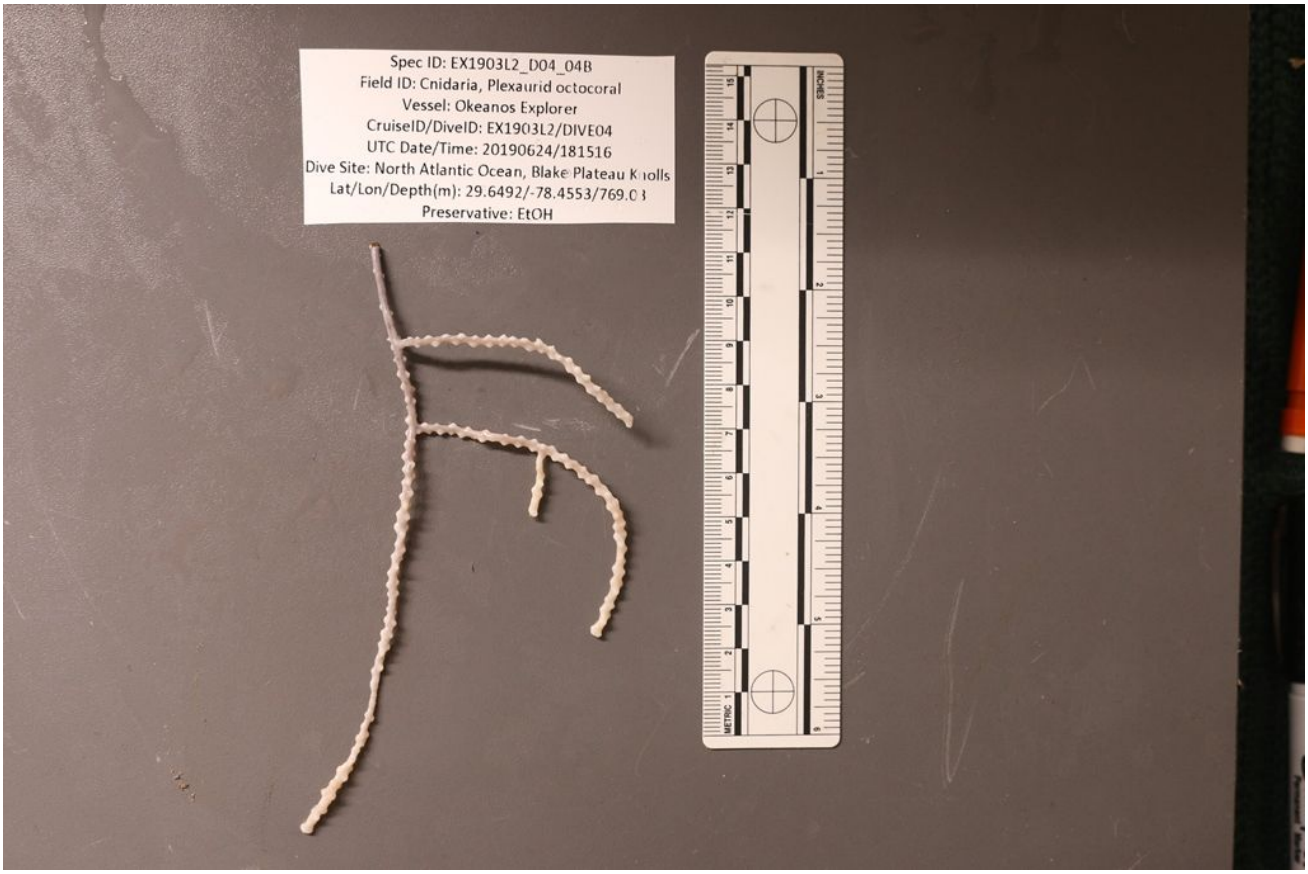
Sample ID	EX1903L2_D04_01B
Date (UTC)	20190624
Time (UTC)	153419
Depth (m)	763.4
Temp. (˚C)	10.170
Field ID(s)	Hexactinellid sponge (*Aphrocallistes sp.*)
Associates	Associates Sample ID: No associates; Field Identification:
Comments	

Sample ID	EX1903L2_D04_02B
Date (UTC)	20190624
Time (UTC)	155532
Depth (m)	765.5
Temp. (°C)	10.281
Field ID(s)	Periphylla
Associates	

Associates Sample ID	Field Identification
EX1903L2_D04_02B_A01	Amphipoda
EX1903L2_D04_02B_A02	Decapoda

Comments	

Sample ID	EX1903L2_D04_03B
Date (UTC)	20190624
Time (UTC)	181102
Depth (m)	769.1
Temp. (˚C)	10.767
Field ID(s)	Crinoid, stalked
Associates	Associates Sample ID: No associates; Field Identification:
Comments	



Sample ID	EX1903L2_20190624T181516_D2_DIVE04_SPEC04BIO
Date (UTC)	20190624
Time (UTC)	181516
Depth (m)	769.0
Temp. (°C)	10.928
Field ID(s)	Plexauridae
Associates	

Associates Sample ID	Field Identification
No associates	

Comments	

Sample ID	EX1903L2_D04_05B
Date (UTC)	20190624
Time (UTC)	193431
Depth (m)	764.9
Temp. (°C)	10.858
Field ID(s)	Siphonophorae
Associates	

Associates Sample ID	Field Identification	Count
No associates		

Comments	

Please direct inquiries to:

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