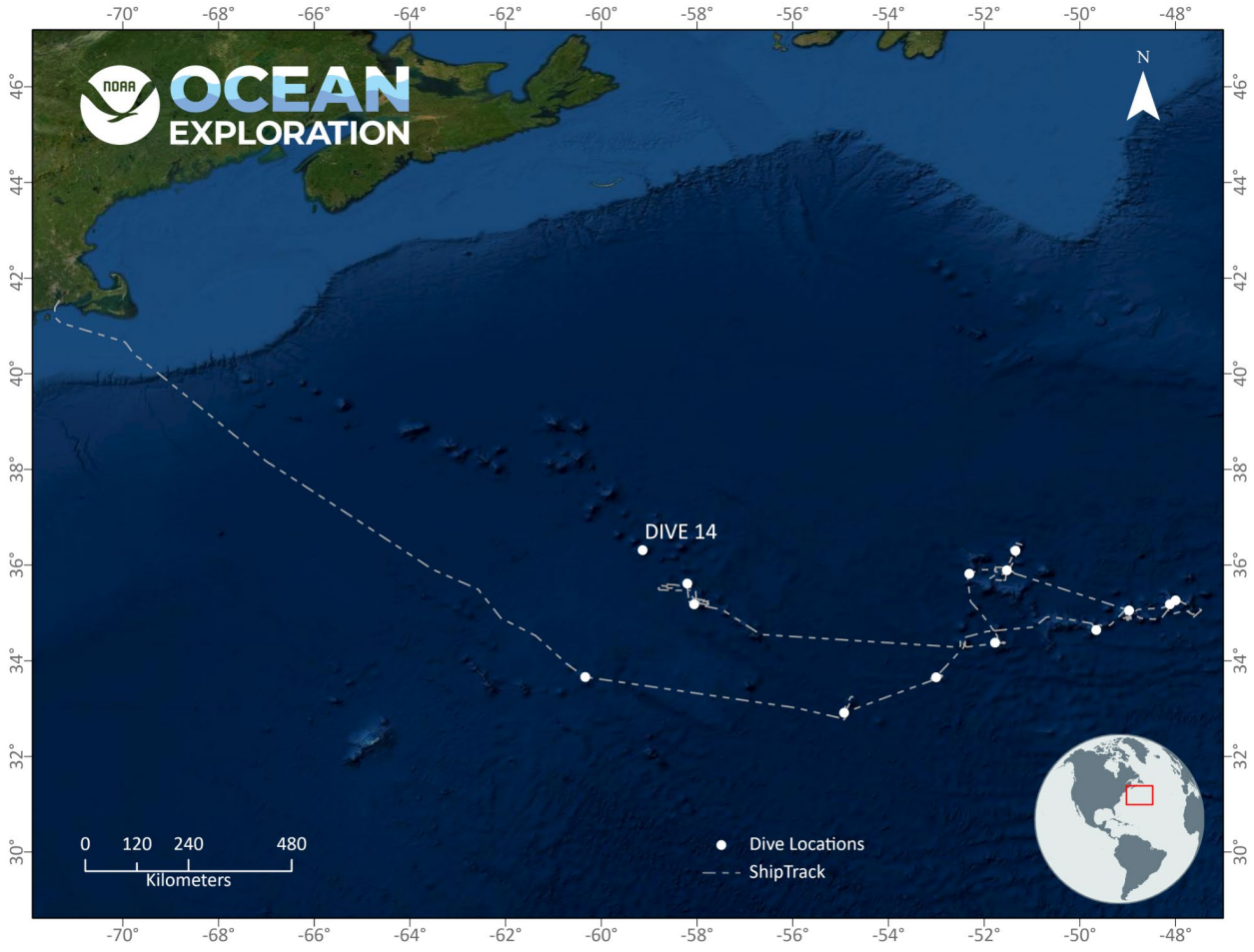
ROV Dive Summary, EX-21-04, Dive 14, July 19, 2021

General Location Map



Dive Information

Site Name	"Seven" Seamount (formally "Baby")
General Area Descriptor	Mid area of the New England Seamounts
Science Team Leads	Rhian Waller, Jason Chaytor
Expedition Coordinator	Kasey Cantwell, Kimberly Galvez (Expedition Coordinator in Training)

ROV Dive Supervisor	Chris Ritter
Mapping Lead	Shannon Hoy
Dive Purpose	Exploration of an unmapped and unnamed seamount
Was the dive restricted for Underwater Cultural Heritage?	No
ROV Dive Summary Data	Dive Summary: EX2104_DIVE14 ^^ Dive Type: Normal In Water: 2021-07-19T12:20:23.594391 36.3488560802139 ; -59.11979834759358 On Bottom: 2021-07-19T13:47:40.020600 36.34806186809456 ; -59.118588644682426 Off Bottom: 2021-07-19T19:23:48.912744 36.346972 ; -59.11781106353329 Out Water: 2021-07-19T20:38:05.829347 36.351177 ; -59.118809 Dive Duration: 8:17:42 Bottom Time: 5:36:8 Max Vehicle Depth: 2143.9 m Min Seafloor Depth: 1992.6 m Distance Travelled: 275.1 m

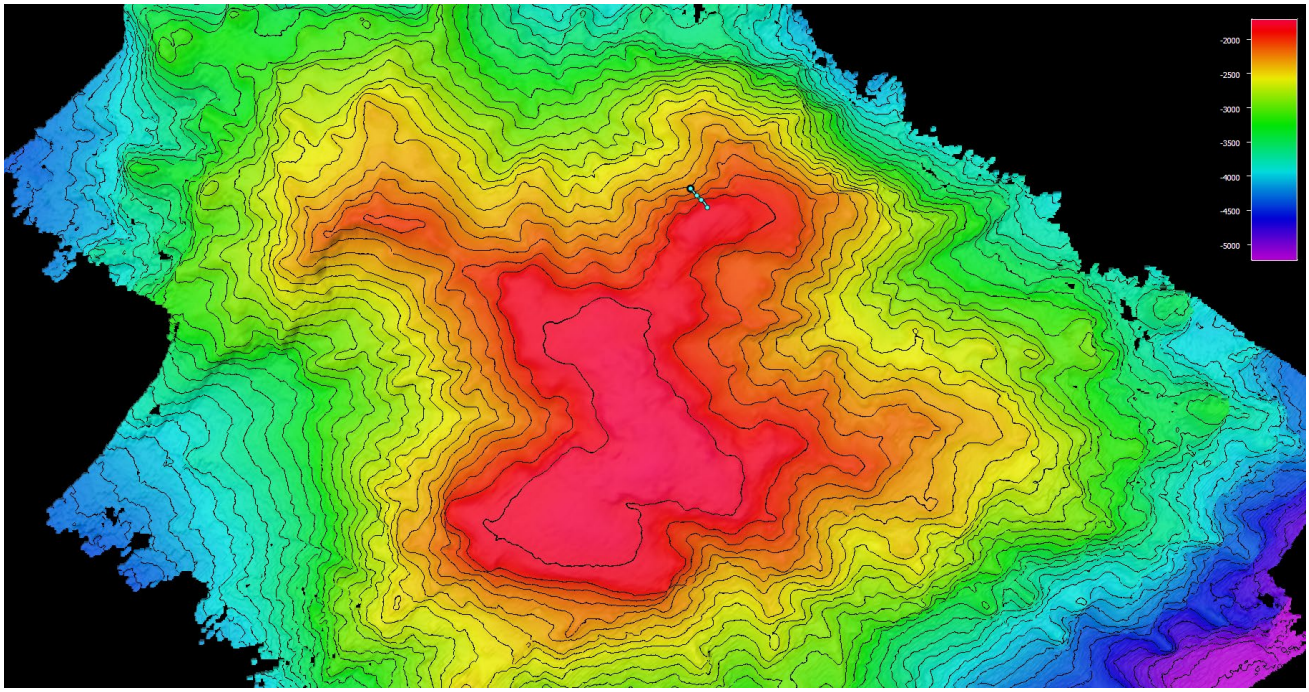
Dive Description	A low-relief FeMn-encrusted pavement with large botryoides and limited sediment cover was encountered at the beginning of the dive. The large botryoides initially appeared to be loose, individual nodules, which would have been unusual for the geologic setting and represented a drastic variation from previously encountered FeMn encrusted substrate. Failed attempts to move a number of the botryoides using the manipulator showed that they were indeed a part of the ferromanganese crust. Progressing upslope from the landing area, a sediment-filled collapsed pillow, which was one of just a few "outcrops" on the broad low-relief pavement, was encountered and yielded the only rock sample of the dive. As the dive continued, the pavement began to be interrupted by a number of lava-flow ridges (pillow morphologies) and debris aprons/chutes. As the slope gradient increased, the morphology of the seafloor changed to a series of steep (near vertical) walls and benches dominated by FeMn encrusted pillow lava and pervasive and thick deposits of coral debris and pelagic sediments in cracks and crevices, and on the narrow benches. Close examination of the coral debris showed numerous fossil coral skeletons with dark FeMn patinas, and structures suggestive of some level of cementation (perhaps by the FeMn). At the top of the ridge crossed towards the end of the dive, the morphology of the FeMn crust changed from botryoidal on the vertical faces of the outcrops to smooth on the top surfaces was suggestive of different current velocity regimes. Loose rocks were absent across the remainder of the transect. This dive was very biologically dominated, with abundant mobile and sessile fauna throughout the dive track. By far the most dominant species throughout the dive was a Euretidae sp. sponge, found growing on nearly all rock faces for the entire dive, as well as extensive skeletal remains. Other sponges were found throughout as well, including yellow *Hertwigia*, white *Aphrocallistes*, *Polymastia*, and other unknown species. Fish species were seen in abundance here, particularly several species of Halosaur (*Aldrovandia* spp.) and cusk eels. We observed several species of slime star, as well as collecting an unusual *Arbaciidae* urchin. Deep sea corals were also abundant, particularly bamboo corals including a candelabra type I4 bamboo, one of which was sampled as a potentially new morphotype. Paramuricea was seen in the later ⅔ of the dive, as were paragorgia (with encrusting parazoanthus), Iridigorgia, Metallogorgia and Lepidisis. Less abundant we also observed a live *Desmophyllum dianthus*, *Chrysogorgia*, and *stichopathes*. Overall this was a spectacular dive for overall abundance and diversity of organisms.
Notable Observations	Unusual Arbaciidae urchin
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)	low-relief FeMn-encrusted pavement with unconsolidated sediment on a seamount
SeaTube Link (science annotation system)	https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&resourceId=2373

Equipment Deployed

ROV	*Deep Discoverer*
Camera Platform	*Seirios*
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

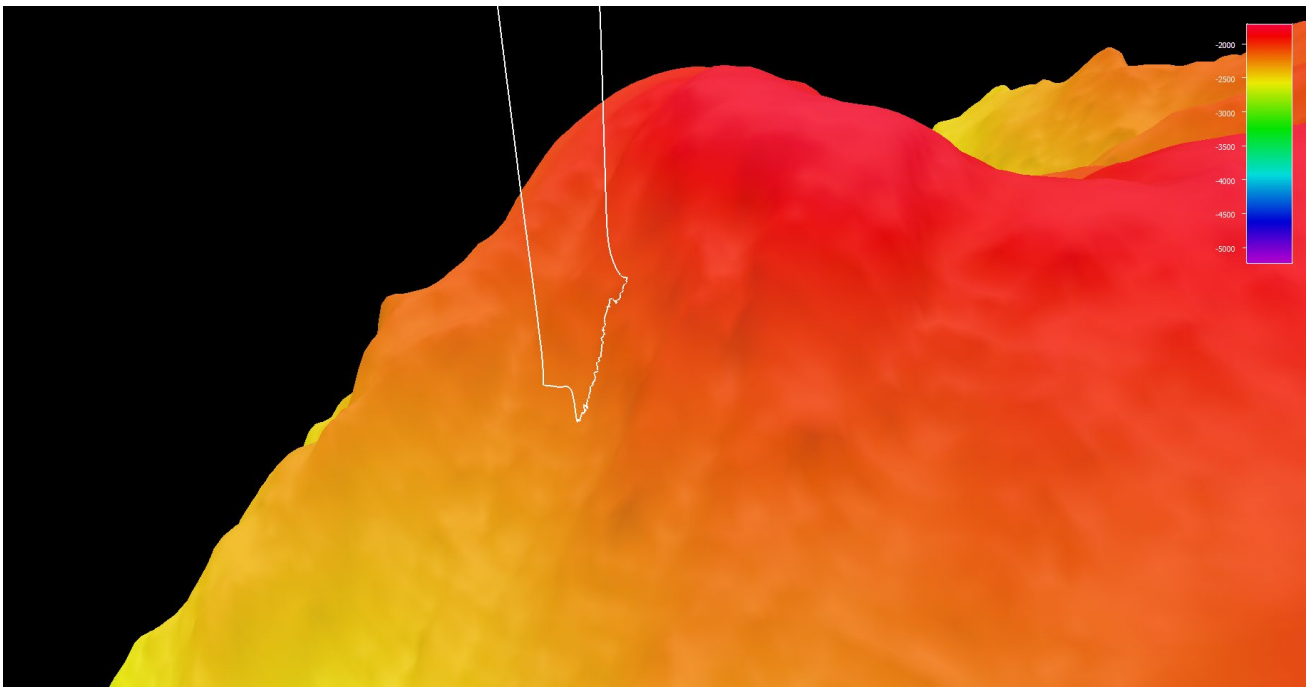
Equipment Malfunctions	none

Overview of Dive Site



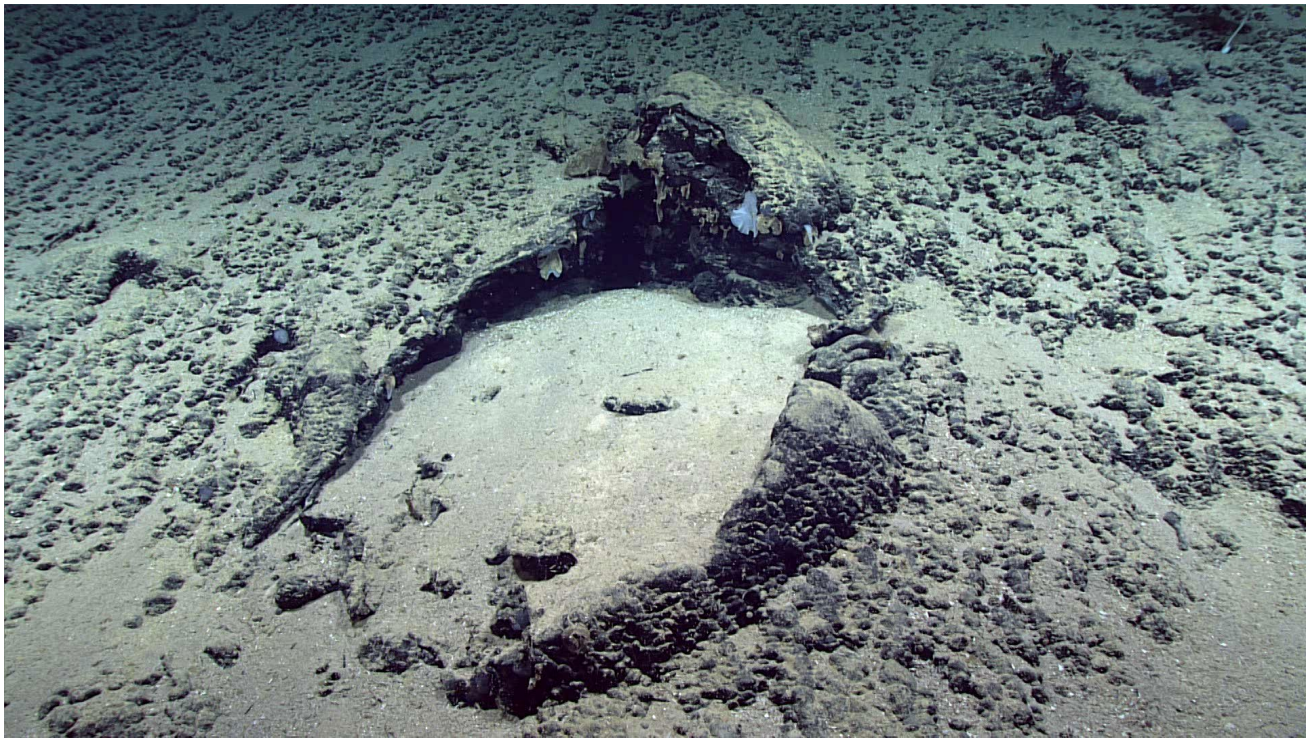
Smoothed ROV dive track (blue) on an overview bathymetry of the seamount, 3x vertical exaggeration.

Close-up Map of Main Dive Site



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

Representative Photos of the Dive



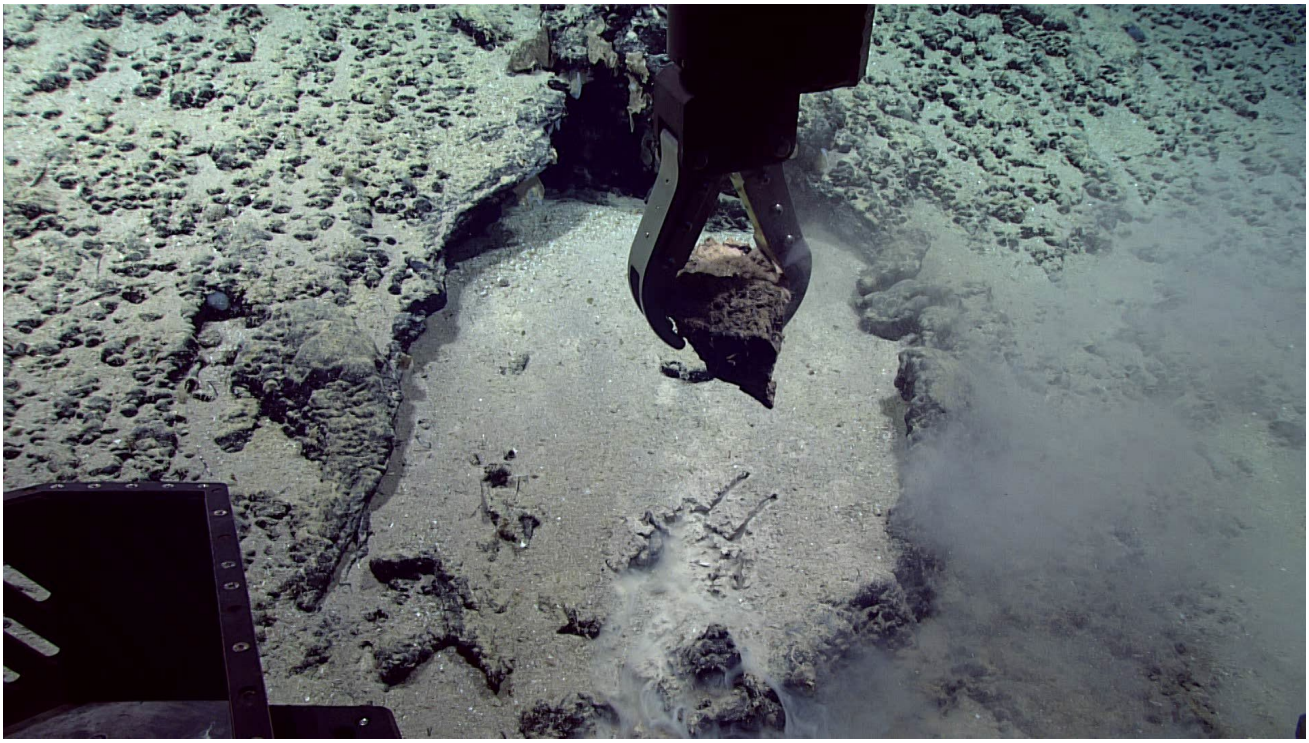
[A collapsed pillow, with thick biogenic/volcanoclastic sediment inside, where the rock sample was taken for this dive.]

[Candellabra I4 type bamboo coral that was seen throughout this dive, including an unknown type that branches were collected from.]

[*Iridigorgia magnispiralis* was seen in abundance near the top of our transect today. Also in this image are *paramuricea* and sponge spp. Smooth FeMn crust textures suggest a higher current flow regime at the top of this ridge.]

[This dive was dominated by sponges encrusting the sides of pillow lava rocks, both dead (brown) and live (white). These sponges occurred throughout the entire dive transect.]

Samples Collected -



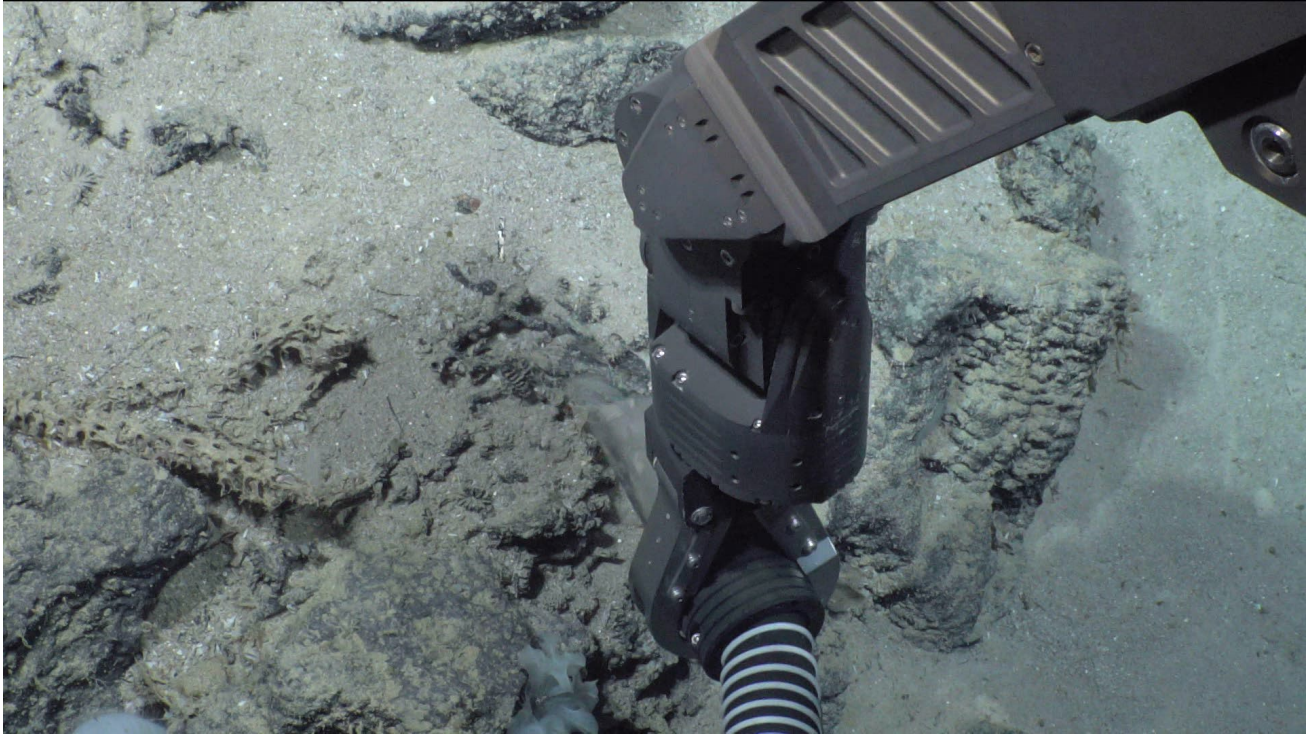
Sample ID	EX2104_D14_01G
Date (UTC)	20210719
Time (UTC)	141450

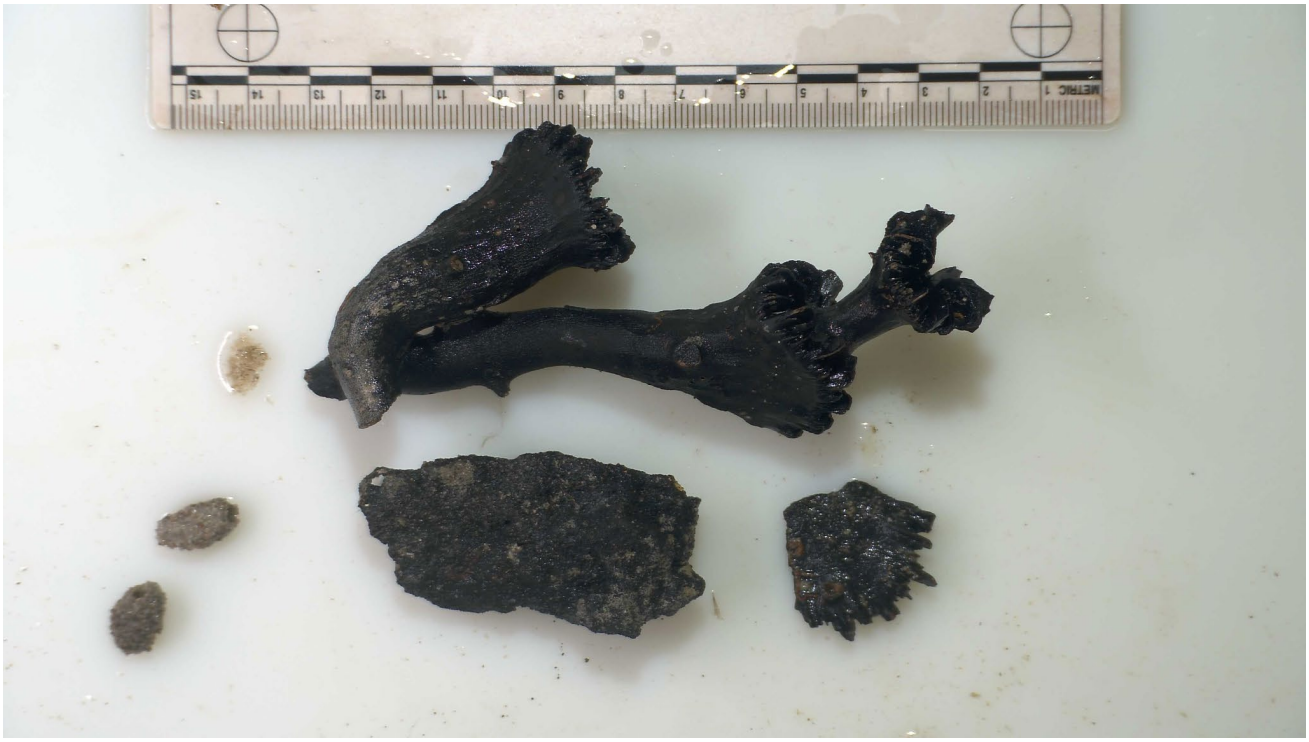
Depth (m)	2143.205078
Latitude (decimal degrees)	36.34801483
Longitude (decimal degrees)	-59.11863327
Temp. (˚C)	3.369999886
Field ID(s)	FeMn Covered Rock
Comments	crusty but angular. A few pieces broke off original sample. 17cm long x 11cm wide x 7cm tall.

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

Sample ID	EX2104_D14_02B
Date (UTC)	20210719
Time (UTC)	150211
Depth (m)	2127.178955
Latitude (decimal degrees)	36.34781647
Longitude (decimal degrees)	-59.11880112
Temp. (˚C)	3.463999987
Field ID(s)	Urchin
Comments	small; flat top. No DNA, too small.

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

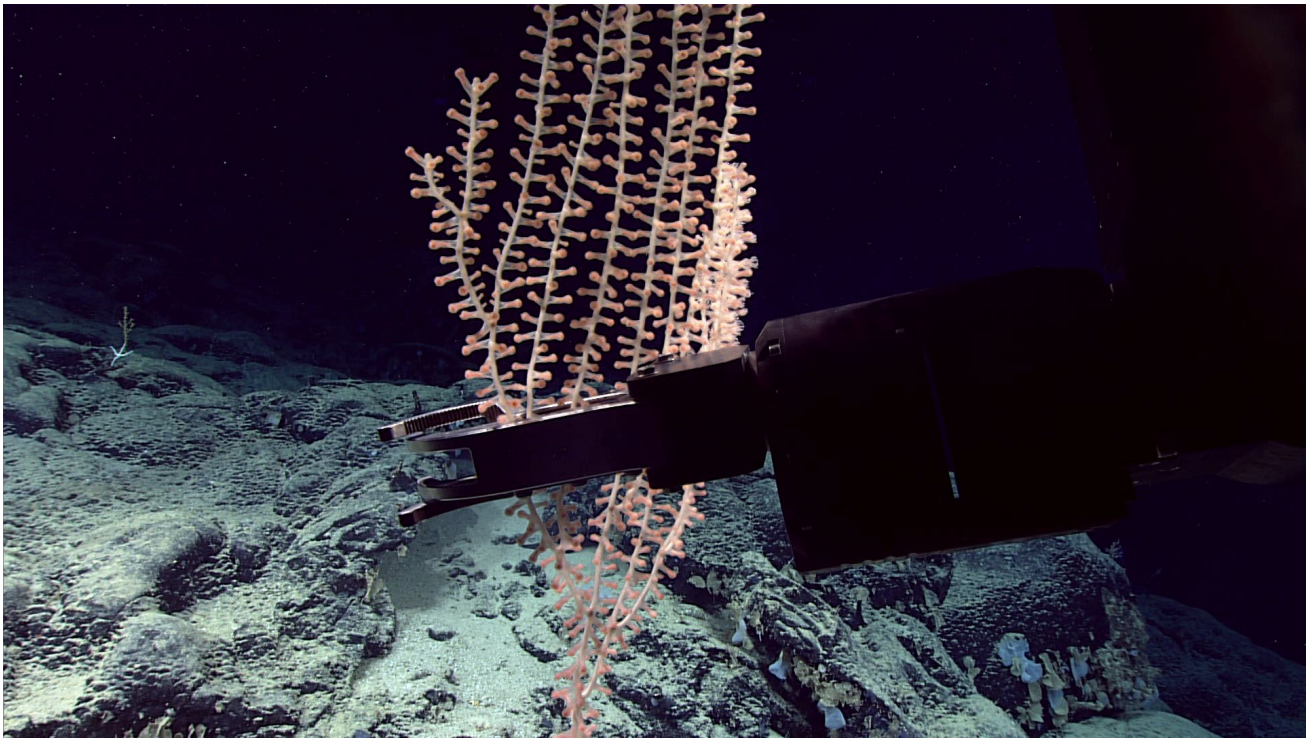


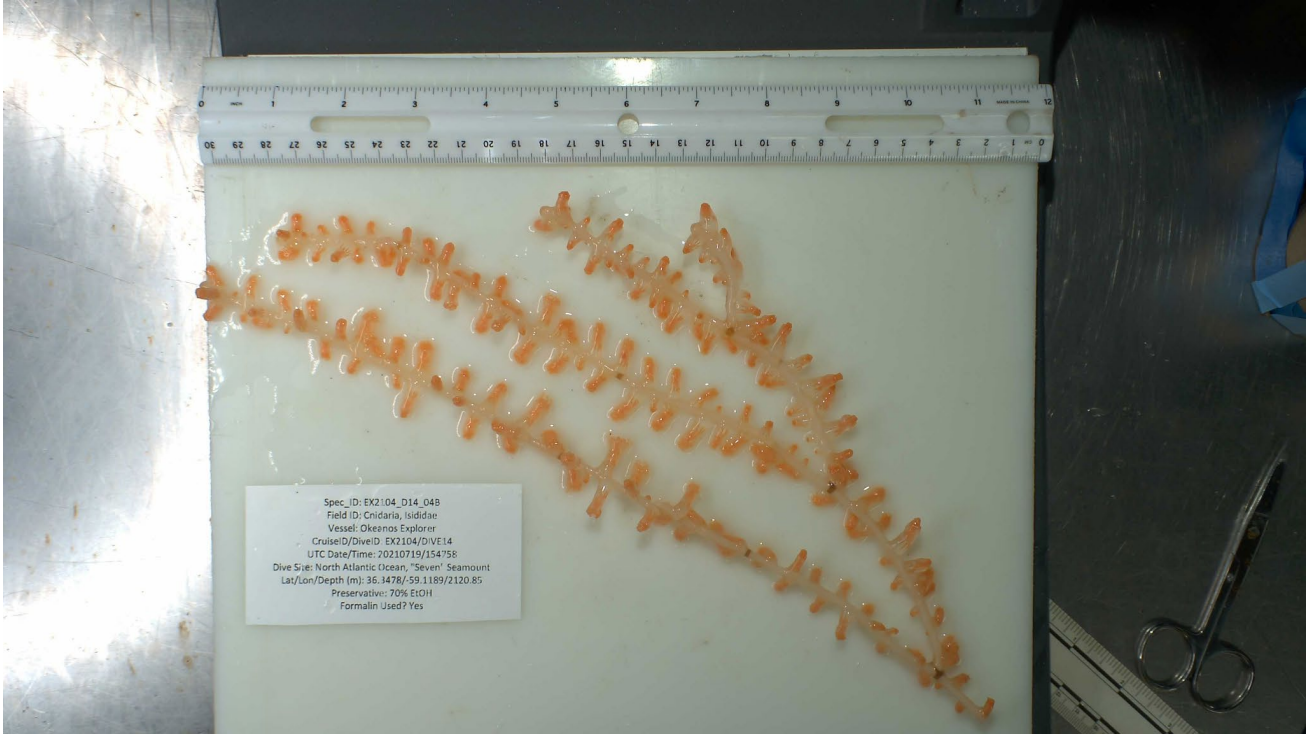


Sample ID	EX2104_D14_03G
Date (UTC)	20210719
Time (UTC)	150826
Depth (m)	2126.883057
Latitude (decimal degrees)	36.34784317
Longitude (decimal degrees)	-59.11880875
Temp. (˚C)	3.492000103

Field ID(s)	Fossil Desmophyllum dianthus
Comments	coral rubble, 11cm long, fragment pieces. FeMn patina

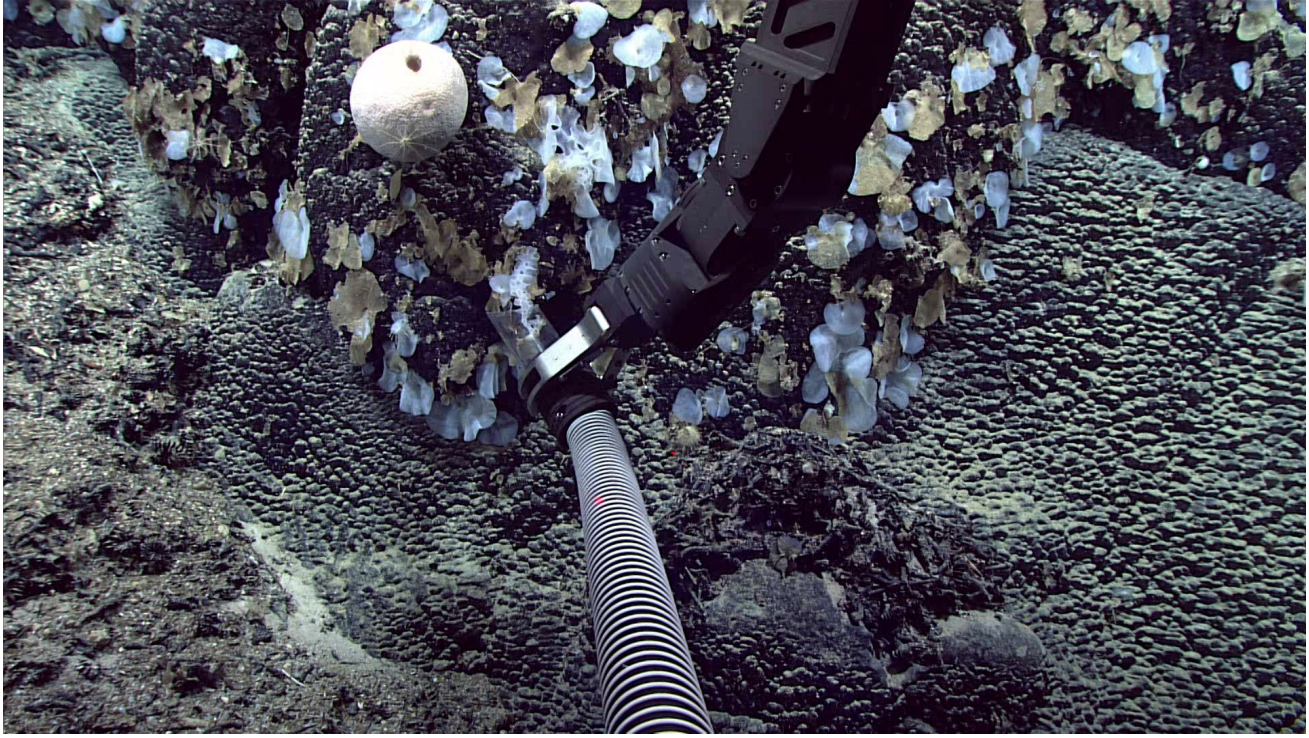
Associates Sample ID	Field Identification	Count
N/A	N/A	N/A





Sample ID	EX2104_D14_04B
Date (UTC)	20210719
Time (UTC)	154758
Depth (m)	2120.852051
Latitude (decimal degrees)	36.3477478
Longitude (decimal degrees)	-59.11885834
Temp. (˚C)	3.54399991
Field ID(s)	Isididae
Comments	odd branching. Candelabra. ~35cm.

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



Sample ID	EX2104_D14_05B
Date (UTC)	20210719
Time (UTC)	173513
Depth (m)	2043.487061
Latitude (decimal degrees)	36.34717941
Longitude (decimal degrees)	-59.11824417
Temp. (˚C)	3.500999928

Field ID(s)	Euretidae
Comments	over 20 pieces. Each segment is <10cm. With some partially dead sponge.

Associates Sample ID	Field Identification	Count
EX2104_D14_05B_A01	Hexactinella	1

Scientists Involved (provide name, email, affiliation)

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