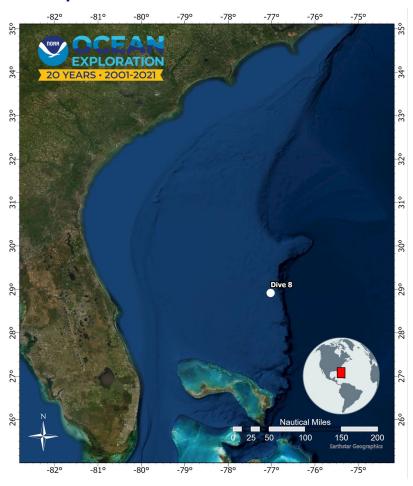


ROV Dive Summary, EX-21-07, Dive 08, November 05, 2021

General Location Map



Dive Information

Site Name	Sinkhole
General Area Descriptor	Sinkhole on the Blake Plateau
Science Team Leads	Stephanie Farrington, Allen Collins
Expedition Coordinator	Matt Dornback
Sample Data Manager	Jonathan Jackson

ROV Dive	Chris Ritter
Supervisor Mapping Lead	Derek Sowers
Dive Purpose	Explorations - geological samples
Was the dive restricted for Underwater	No
Cultural Heritage? ROV Dive	Dive Summary: EX2107 DIVE08
Summary Data	^^^^^^^
	Dive Type: Normal
	In Water: 2021-11-05T13:55:50.796441
	28.91545519370788 ; -77.02046463948636
	On Bottom: 2021-11-05T14:51:05.851297
	28.91700689973967 ; -77.02120492415392
	Off Datham, 2024, 44, 05T47,40,22,002224
	Off Bottom: 2021-11-05T17:49:33.992234 28.91587248875184 ; -77.02146672318248
	20.31307240073104, 77.02140072310240
	Out Water: 2021-11-05T18:40:58.471858
	28.91812804837315 ; -77.01728719586079
	Dive Duration: 4:45:07 Bottom Time: 2:58:28
	Max Vehicle Depth: 1203.5 m
	Min Seafloor Depth: 1140.7 m
	Distance Travelled: 147.6 m
Dive Description	During the dive, five water samples were taken for eDNA processing: EX2107_D08_01W at 500 m during descent; EX2107_D08_02W at 1205 m near bottom of sinkhole; EX2107_D08_05W at 1193 part way up the edge of the sinkhole; EX2107_D08_09W at 1154 m near the lip of the sinkhole; and EX2107_D08_10W at 1090 m near the bottom just outside the sinkhole.
	The base of the sinkhole, 1213 m, was flat, with rippled sand, 0° slope and a few white carbonate rocks (EX2107_D08_03G). When D2 touched the rock it was very soft and chalky. We grabbed the whitest/least eroded rock we could find. Sediment on zoom is made up of planktonic biogenetic shell hash (EX2107_D08_04B), mainly thecosome pteropod shells representing several species but also an argonaut eggcase.
	Very few animals were observed at the bottom of the sinkhole, but there was human debris (soccer ball) and dutrital <i>Sargassum</i> . In the water column was a <i>Cyclothone</i> , some shrimp, a small red hydromedusa (<i>Pandea rubra</i> ?) and a large alephocephalid (slickhead) <i>Conacara</i> .
	A small variety of fish were associated with this sinkhole including: <i>Synaphobranchus</i> (cutthroat eels), tripod fish (<i>Bathypterois viridensis</i>), <i>Dicrolene intronigra</i> , cusk eel (1 with a parasite), possible Birdbeak Dogfish- <i>Deania calcea</i> , similar to one seen on dive one, an eastern Atlantic species, rarely seen this far west or south, may mark a 2 nd record of a possible range extension this cruise. Of interest was the tripod fish <i>Bathypterois viridensis</i> because it was a juvenile, newly transformed from its pelagic post-larval stage and had not yet developed the typical black and white banding of adults.



The basal section of the wall of the sinkhole was steep, 90° in parts with visible geological layering. There were cliff faces with FeMg crusts and other cliff areas that were white after sections had more recently (on a geological timescale) broken off and tumbled down the slope. Parts of the walls had small caves or scintillation holes. Eight-armed crinoids and a parapagurid crab with an anemone/zoanthid hat were sighted while traversing the base of the wall. Corallimorphs and anemones were present but rare. In the water column, the euthecosome pteropod Clione limacina, a voracious predator of thecosome pteropods was spotted.

As we arrived at the upper portion of the sinkhole wall, the slop decreased, with less outcropping, and an increase in cobble sized rocks (<25 cm). This area of the sinkhole also exhibited a slight increase in biota with gorgonians (Crysogorgia, bamboos, Parantipathes, Aphanostichopathes, other Antipatharians, Anthomastus, Metalogorgia, and primnoids), a few yellow and blue demosponges, and solitary cup corals. Fauna remained sparse throughout the entire dive, although small demosponges were visible on most zooms, including encrusting forms, poecilosclerids, and Latruncula-like asterophids (possibly Asteropus).

A little known urchin, Habrocidaris (EX2107_D08_07B) and an unusual stoloniferous octocoral with bases in tubes along the stalk = Cornulariidae (EX2107 D08 08B), along with associates (isopods, thecate hydroids, sabellid worms), were sampled. There were 2 areas where a bamboo coral and a primnoid were in close association on the wall.

When we had reached the top of the sinkhole, we spent some time investigating the nearby flats that were covered in sand and a few small rocks as expected. We observed the asteroid Circeaster feeding on a small, delicate chrysogorgiid colony. Near the end of our dive, out of the darkness drifted a stunning squid, Chiroteuthis sp. We followed it as it drifted in a headdown position trailing long tentacles that occasionally brushed the bottom (mostly retracted into sheaths) all the way to the edge of the sinkhole.

Human debris: rubber sheeting, yellow balloon ribbon, root beer can, paint can, and soccer ball.

Notable Observations

- We collected a rare and unusual echinoid urchin, Habrocidaris, which will be used to assess its apparent "ancient" looking morphology to answer whether this is an early diverging lineage or a more recent lineage that has converged on its ancient look
- We observed a soccer ball hundreds of kilometers from shore in the bottom of a sinkhole more than one kilometer deep

Community and habitat observations

Corals and Sponges - Present

Chemosynthetic Community - Absent High biodiversity Community - Absent

Active Seep or Vent - Absent Extinct Seep or Vent - Absent

Hydrates - Absent

CMECS Feature Type(s)

Hole/Pit

SeaTube Link (science annotation system)

https://data.oceannetworks.ca/SeaTubeV3?resourceTypeId=600&resourceId=249

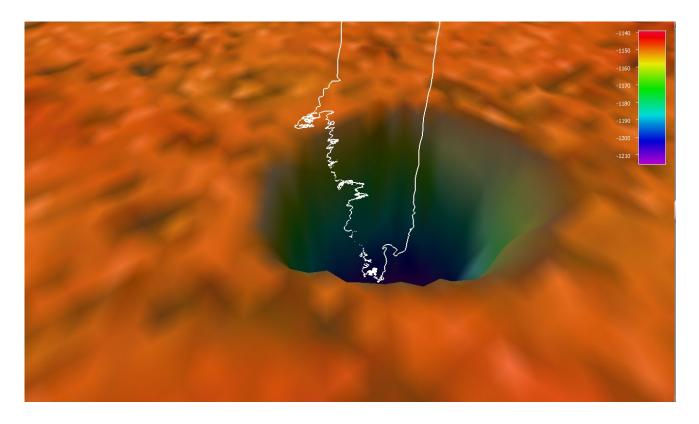
Equipment Deployed

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-	



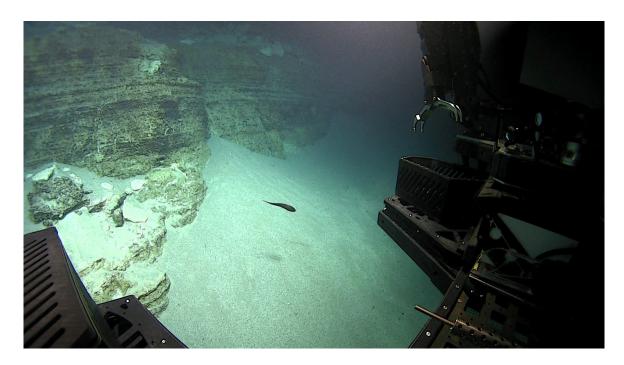
	resolution cameras, low resolution cameras, manipulator arms, suction sampler, sample drawers and thrusters. The section below notes if any of these sensors were malfunctioning or not operational
Equipment Malfunctions	

Close-up Map of Main Dive Site





Representative Photos of the Dive







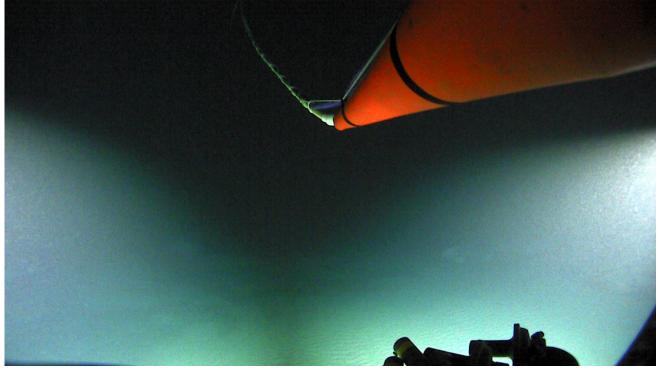
Samples Collected -



Sample ID	EX2107_D08_01W
Date (UTC)	20211105
Time (UTC)	142250
Depth (m)	508.783
Latitude (decimal degrees)	28.91623
Longitude (decimal degrees)	-77.02126
Temp. (°C)	12.444
Field ID(s)	Water Sample
Comments	eDNA

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





Sample ID	EX2107_D08_02W
Date (UTC)	20211105
Time (UTC)	145520
Depth (m)	1205.336
Latitude (decimal degrees)	28.91688
Longitude (decimal degrees)	-77.02116
Temp. (°C)	4.392
Field ID(s)	Water
Comments	eDNA

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







Sample ID	EX2107_D08_03G
Date (UTC)	20211105
Time (UTC)	151642
Depth (m)	1204.814941
Latitude (decimal degrees)	28.91686058



Longitude (decimal degrees)	-77.02116394
Temp. (°C)	4.382999897
Field ID(s)	Rock
Comments	Consolidated clay, light tan color, fine texture, multiple pieces

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



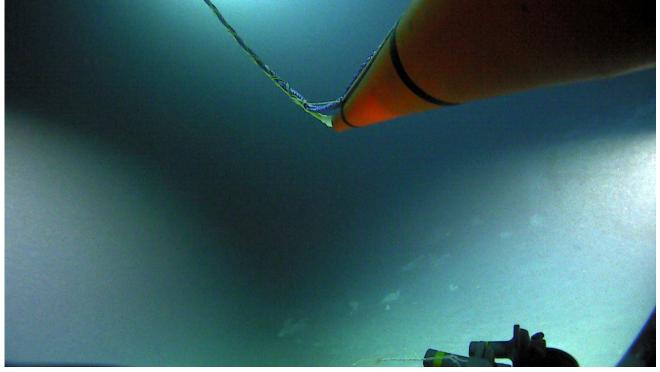




Sample ID	EX2107_D08_04B (on collect was labeled as 4G - was changed in lab based on contents of the sediment)
Date (UTC)	20211105
Time (UTC)	152118
Depth (m)	1205.646973
Latitude (decimal degrees)	28.91684341
Longitude (decimal degrees)	-77.02116394
Temp. (°C)	4.382999897
Field ID(s)	Gastropoda
Comments	0 to 1 cm mostly pteropod shells, multiple species, cream in color

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





Sample ID	EX2107_D08_05W
Date (UTC)	20211105
Time (UTC)	154313
Depth (m)	1192.868
Latitude (decimal degrees)	28.91651
Longitude (decimal degrees)	-77.021230
Temp. (°C)	4.389
Field ID(s)	Water Sample
Comments	eDNA

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







Sample ID	EX2107_D08_06G
Date (UTC)	20211105
Time (UTC)	155026
Depth (m)	1193.154
Latitude (decimal degrees)	28.91649



Longitude (decimal degrees)	-77.0212
Temp. (°C)	4.382
Field ID(s)	Rock
Comments	black crust on half probably FeMg, sabellidae tubes, hard slightly crumbly, cream color on unexposed area

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







Sample ID	EX2107_D08_07B
Date (UTC)	20211105
Time (UTC)	160552
Depth (m)	1192.453003
Latitude (decimal degrees)	28.91649055
Longitude (decimal degrees)	-77.02124023
Temp. (°C)	4.388999939
Field ID(s)	Habrocidaris
Comments	long spines on the side, light pink and little translucent in color, orange gut,

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





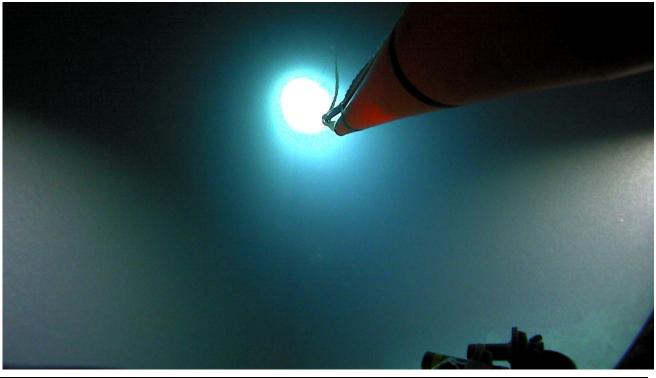


Sample ID	EX2107_D08_08B
Date (UTC)	20211105
Time (UTC)	170549
Depth (m)	1162.203003
Latitude (decimal degrees)	28.91615677



Longitude (decimal degrees)	-77.02116394
Temp. (°C)	4.377999783
Field ID(s)	Cornulariidae
Comments	cream color, 2 cm tubes with polyps inside, black stalk,

Associates Sample ID	Field Identification	Count
EX2107_D08_08B_A01	Isopoda	1
EX2107_D08_08B_A02	Thecata	1
EX2107_D08_08B_A03	Sabellidae	1



Sample ID	EX2107_D08_09W
Date (UTC)	20211105
Time (UTC)	171511
Depth (m)	1154.157
Latitude (decimal degrees)	28.91612
Longitude (decimal degrees)	-77.021140
Temp. (°C)	4.382



Field ID(s)	Water Sample
Comments	eDNA

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



Sample ID	EX2107_D08_10W
Date (UTC)	20211105
Time (UTC)	175105
Depth (m)	1090.466
Latitude (decimal degrees)	28.91594
Longitude (decimal degrees)	-77.021500
Temp. (°C)	4.54
Field ID(s)	Water Sample
Comments	eDNA

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



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