



# Okeanos Explorer ROV Dive Summary

## Dive Information

<p>General Location Map</p>	
<p>General Area Descriptor</p>	<p>U.S. and Canadian Atlantic Continental Margin</p>
<p>Site Name</p>	<p>Veatch Canyon</p>
<p>Science Team Leads</p>	<p>Meagan Putts (UH) Jeff Obelcz (USNRL)</p>
<p>Expedition Coordinator</p>	<p>Daniel Wagner (NOAA-OER)</p>
<p>ROV Dive Supervisor</p>	<p>Sean Kennison (GFOE)</p>
<p>Mapping Lead</p>	<p>Michael White (NOAA-OER)</p>

## ROV Dive Name

<p>Cruise</p>	<p>EX1905L2</p>
<p>Dive Number</p>	<p>DIVE11</p>

## Equipment Deployed

ROV	<i>Deep Discoverer</i>		
Camera Platform	<i>Seirios</i>		
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	N/A		
ROV Dive Summary Data (from Processed ROV)	In Water:	2019-09-12T12:33:18.653628 39°, 51.279' N ; 69°, 32.972' W	
	On Bottom:	2019-09-12T14:08:05.776046 39°, 50.919' N ; 69°, 33.216' W	
	Off Bottom:	2019-09-12T19:55:01.672908 39°, 51.004' N ; 69°, 33.016' W	
	Out Water:	2019-09-12T20:41:47.642864 39°, 51.12' N ; 69°, 33.321' W	
	Dive duration:	8:8:28	
	Bottom Time:	5:46:55	
	Max. depth:	1342.0 m	
Special Notes	A squall came through that caused the vehicles to lift off bottom for approximately 30 minutes while the ship worked to maintain position.		

## Scientists Involved

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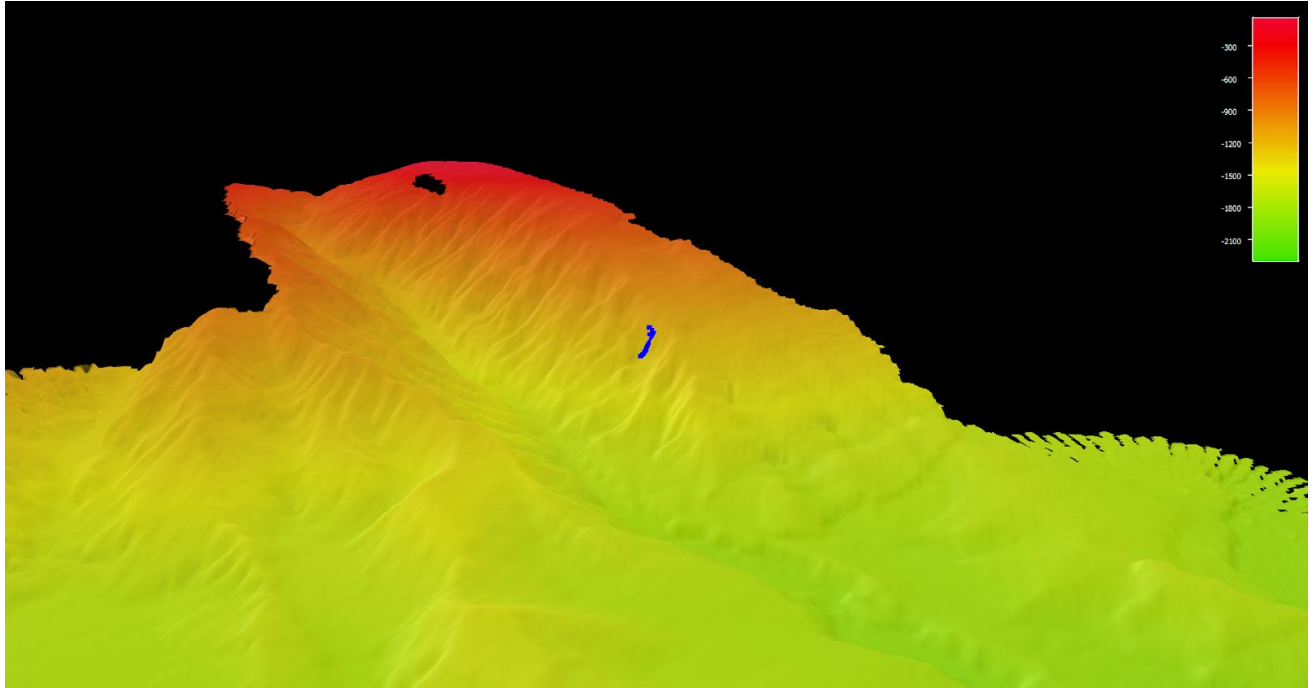


## Dive Purpose and Description

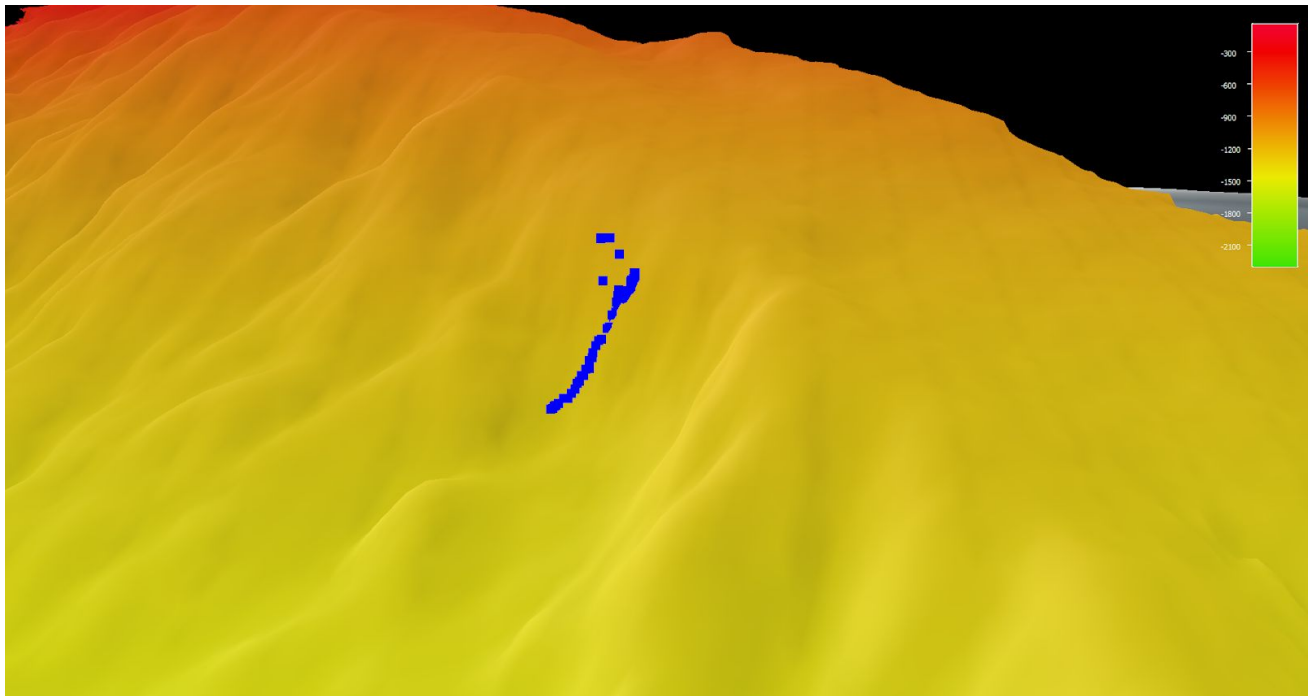
Dive Purpose	The purpose of this dive was to explore the eastern wall of Veatch Canyon in a region that has not yet been surveyed by deep-sea submersibles. Habitat suitability models predicted that this area contained suitable habitat for deep-sea corals.
Dive Description	The ROV reached the seafloor at 1430 UTC in soft sediments characteristic of most canyon axes at this relatively deep depth (1300 m). Bottom fauna were typical for substrate, including hake (Moridae), halosaurs (Halosauridae), cut throat eels (Synphobranchidae), xenophyophores, deep-sea red crabs ( <i>Chaceon</i> sp.), and pancake urchin ( <i>Phorosoma placenta</i> ) with an associated juvenile cusk eel ( <i>Baratherites</i> sp.). Clasts and boulders of carbonate rocks with encrusting organisms were also observed on the canyon floor, with increasing density as the foot of the slope was reached. Slopes dramatically increased a short distance up the canyon wall, and interbedded (1-2 m) packages of sandstones and carbonates were observed with one thin mudstone layer. This lithology transitioned into one single massive carbonate sequence of > 100 m thickness that was sparsely encrusted with primnoid corals ( <i>Calyptrophora antilla</i> and <i>Thouarella grasshoffi</i> ), cup corals ( <i>Desmophyllum</i> sp.), and encrusting demosponges. The dive was halted for ~30 minutes due to surface weather conditions, during which the ROVs were suspended > 100 m above the seafloor. Once the ROVs were set back down on the seafloor, two samples were collected, a bamboo coral (Keratoisidinae) and a plexaurid coral ( <i>Swiffia</i> sp.). As the dive concluded, a very dense assemblage of black corals ( <i>Parantipathes larix</i> ), cup corals ( <i>Desmophyllum</i> sp.), hard corals ( <i>Lophelia pertusa</i> ) and purple stoloniferous corals ( <i>Clavularia</i> sp.) was observed.
Notable Observations	<ul style="list-style-type: none"> <li>- Vertical uniform carbonate walls &gt; 100 m tall</li> <li>- Deep-sea corals and sponges</li> <li>- Dense coral and sponge community observed during the dive</li> </ul>
Community Presence/ Absence (community is defined as more than two species)	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Corals and Sponges</li> <li><input type="checkbox"/> Chemosynthetic Community</li> <li><input checked="" type="checkbox"/> High-biodiversity Community</li> <li><input type="checkbox"/> Active Seep or Vent</li> <li><input type="checkbox"/> Extinct Seep or Vent</li> <li><input type="checkbox"/> Hydrates</li> </ul>



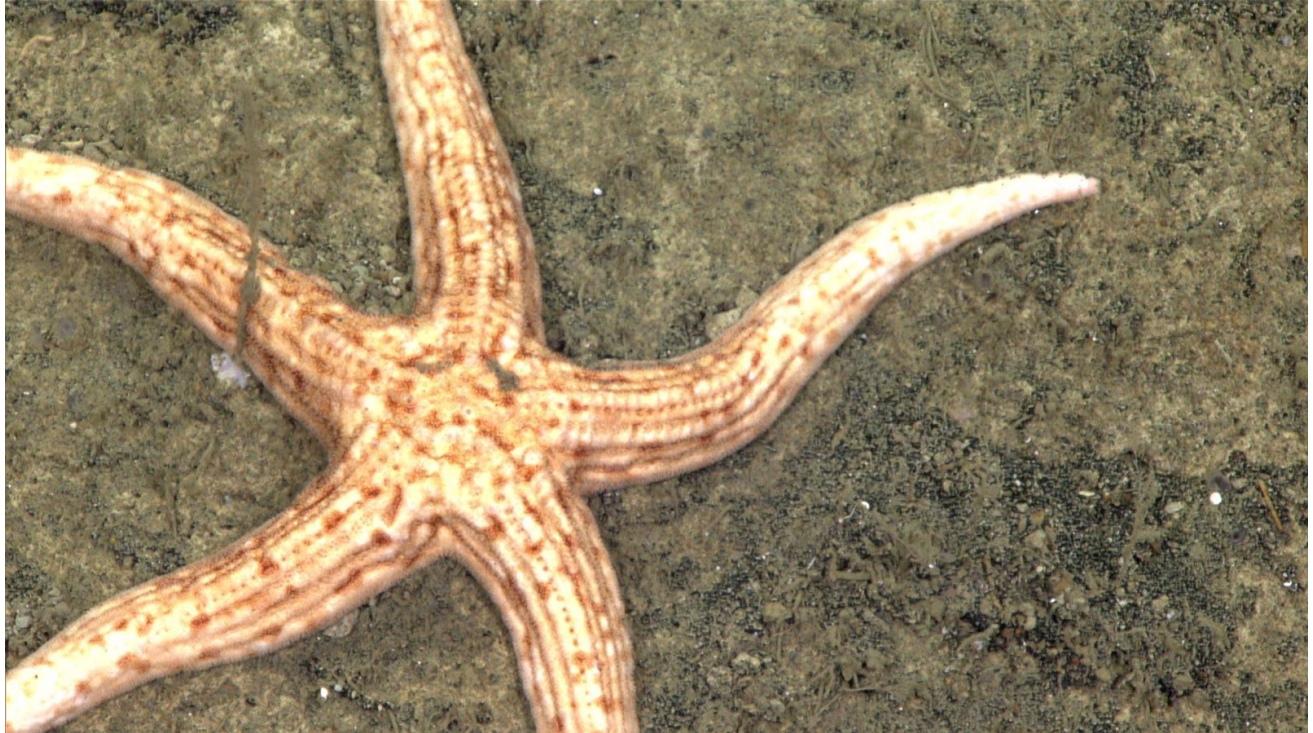
## Overall Map of the ROV Dive Area



## Close-up Map of Main Dive Site



## Representative Photos of the Dive

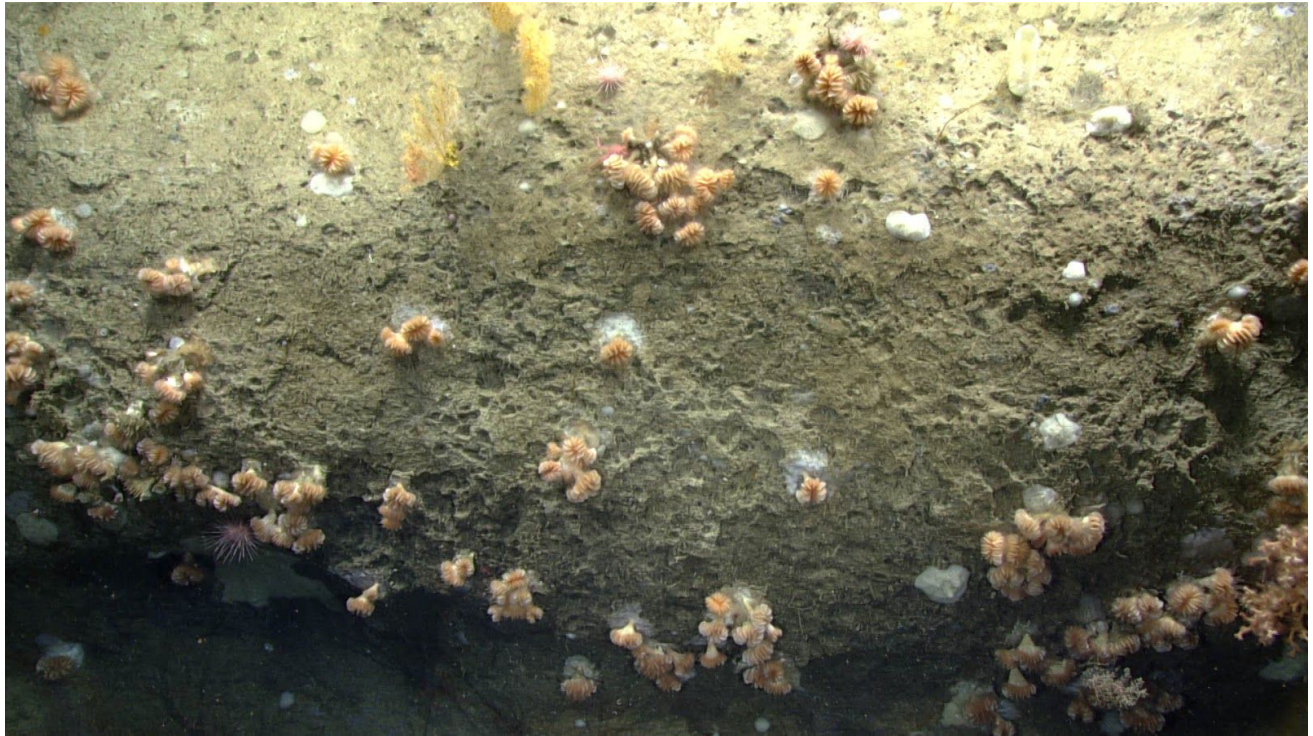


This sea star, *Neomorphaster foricpatus*, was a common sight during the dive and its ancestors are also well known in the fossil record.

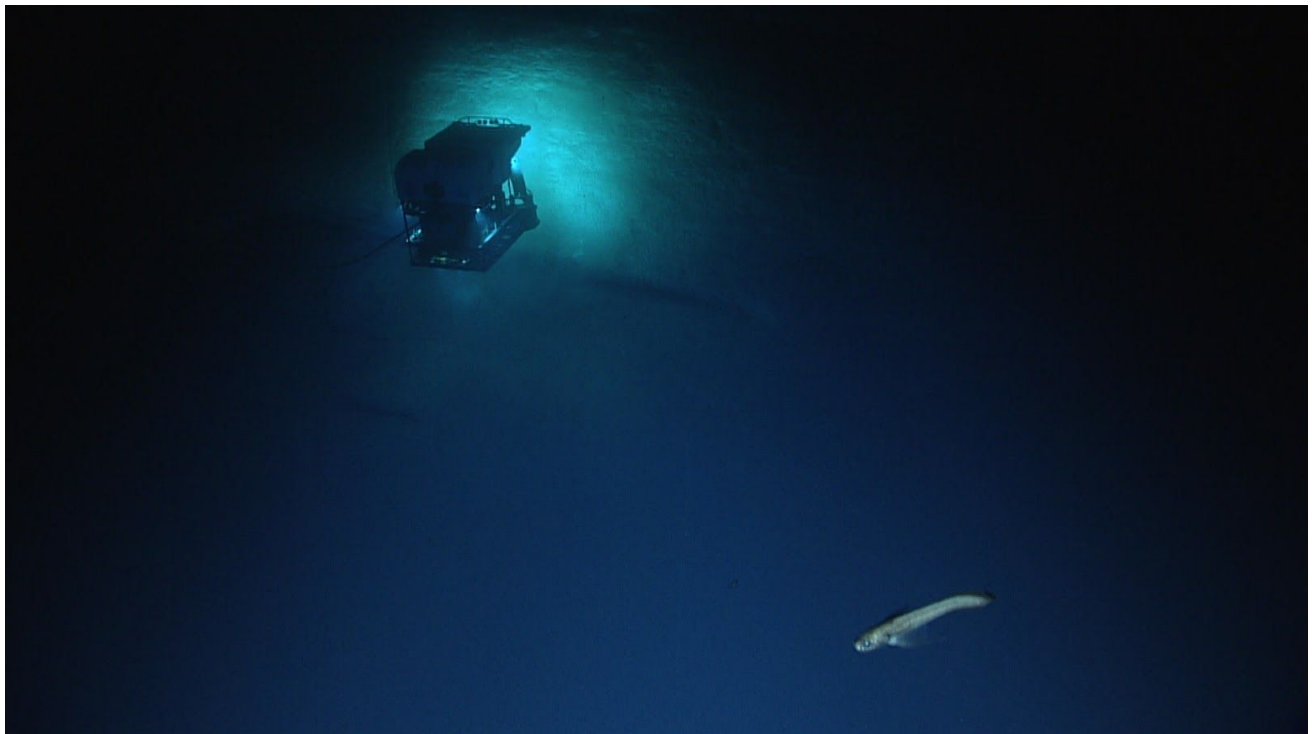


*Calyptrophora antilla*, a lyrate branching primnoid coral growing on the vertical wall of Veatch Canyon.





Community of corals and sponges on the final wall of the dive at Veatch Canyon featuring cupcorals, *Acanthogorgia* sp. yellow coral, and *Lophelia pertusa* hard coral.



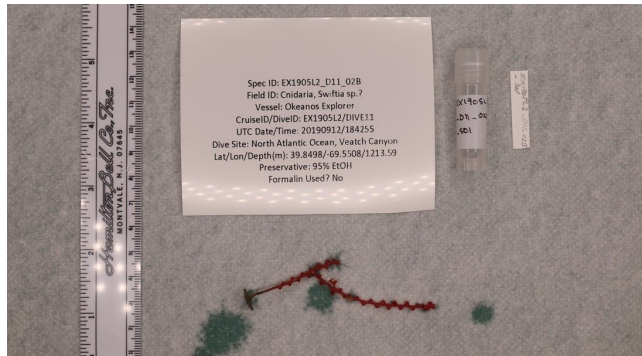
*Deep Discoverer* surveying the stunning near vertical > 100 m thick unbroken sequence of carbonate rock wall of Veatch Canyon.



## Samples Collected



Sample ID	EX1905L2_D11_01B
Date (UTC)	20190912
Time (UTC)	181331
Latitude	39.84980
Longitude	-69.55080
Depth (m)	1221.1
Temp. (°C)	4.249
Field ID(s)	Keratoisidinae
Commensals	No commensals
Comments	N/A



Sample ID	EX1905L2_D11_02B
Date (UTC)	20190912
Time (UTC)	184255
Latitude	39.84980
Longitude	-69.55080
Depth (m)	1213.6
Temp. (°C)	8.188
Field ID(s)	<i>Swiftia</i> sp.?
Commensals	No commensals
Comments	N/A



**Please direct inquiries to:**

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