

## Okeanos Explorer ROV Dive Summary

Dive Information	
General Location	
General Area Descriptor	Hawaiian Islands
Site Name	"Tropic of Cancer" Seamount
Science Team Leads	John R. Smith/Meagan Putts
Expedition Coordinator	Kasey Cantwell
ROV Dive Supervisor	Karl McLetchie
Mapping Lead	Mike White
ROV Dive Name	
Cruise	EX1708
Leg	-
Dive Number	DIVE01
Equipment Deployed	
ROV	Deep Discoverer
Camera Platform	Seirios

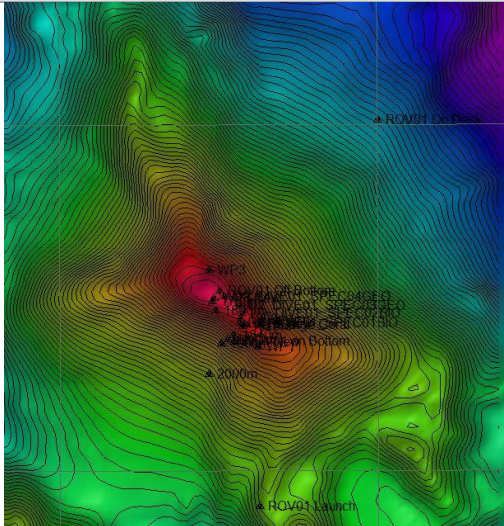


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Purpose of the Dive	<p>The main purpose of this dive was to validate predictive habitat suitability models for deep sea coral and sponge communities developed by NOAA's National Centers for Coastal Ocean Science. While no previous ROV or HOV dives have ever been conducted at this seamount, "Tropic of Cancer" seamount had high predicted habitat suitability for several deep coral genera, including: Antipatharia, Paragorgiidae, Isididae, Scleraxonia, Calcaxonia, Holaxonia, and Pennatulacea. This dive targeted high slopes and the summit ridge crest where suitability was predicted to be the highest. The first priority was to complete a photographic survey along the full transect. Secondly, sample collections took place for unusual sightings or rare/novel species, along with rock samples to be used for age dating and geochemical study.</p>		
Description of the Dive	<p>The dive began at a water depth of 1855 m in a high slope portion of the upper edifice flank and proceeded uphill perpendicular to the summit ridge. Once the base of the summit ridge was achieved, a ship move was carried out and D2 changed course 90° then headed toward the summit of the seamount. The D2 vehicle arrived on bottom in the midst of a fairly dense biological community primarily consisting of a variety of deep-sea corals, including various species from the families Isididae, Chrysogorgiidae, Paragorgiidae, and Primnoidae. Sponges, cusk eels, grenadiers, sea cucumbers, anemones were also observed, along with commensals such as brittle stars, crinoids, and shrimp residing on the corals. The initial substrate looked to be volcanic in origin with a polymetallic (Mn) crust coating and sediment patches in between the numerous cobbles covering the slope. Some large outcrops on the scale of meters were observed dotting the flank, which appears to have been stable for some time, given that there were numerous observations of large coral trees attached to some of the rock exposures. The first rock collection attempt led to some surprise. What appeared to be a solid rock with an Mn-crust coating crumbled under moderate pressure from the manipulator claw, exposing a yellow matrix that looked to be some type of marine conglomerate. A small piece of this friable material was collected along with biological specimen 01, <i>Stichopathes</i> sp. A second biological specimen was collected of <i>Acanthogorgia</i> sp. Two additional rocks were collected and both</p>		

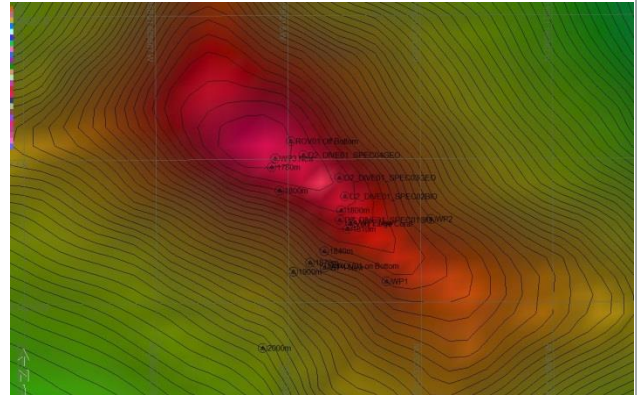


appear to be Mn-coated and volcanic in origin, based on the heft, or density, of the samples. The seamount summit was reached at 1773 m where the final rock sample was collected.

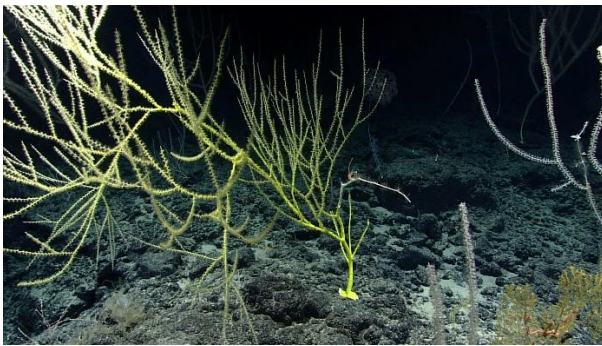
Overall Map of the ROV Dive Area



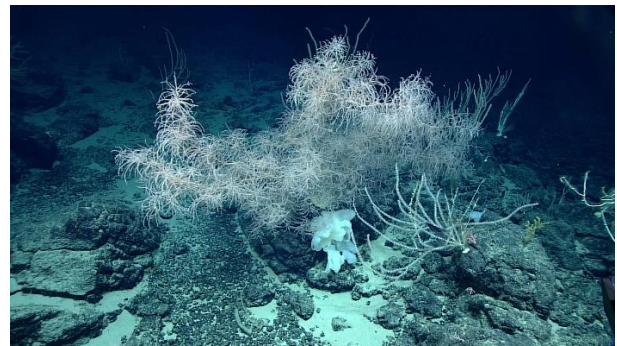
Close-up Map of Main Dive Site



Representative Photos of the Dive



Unusual Keratosidinae, bamboo coral (yellow), with one branch devoid of tissue (white, near center) and commensal Galatheid squat lobster, all surrounded by typical substrate for this dive.



Massive *Iridogorgia* sp. coral on a volcanic rock outcrop amidst a cobble and sediment covered area, the typical substrate mix observed on this dive.



Dense community of bamboo coral attached to a massive volcanic rock outcrop.

Crinoids and ophiuroids covering a glass sponge, *Periphragella* sp. in the family Euretidae, attached to volcanic pillowed landforms.



### Samples Collected

#### Sample

Sample ID	EX1708-DIVE01_SPEC01BIO	
Date (UTC)	9/7/2017	
Time (UTC)	21:45	
Depth (m)	1802.3	
Temperature (°C)	2.4	
Field ID(s)	<i>Stichopathes</i> sp.	
Commensal ID and Field Identification	EX1708-DIVE01_SPEC01BIO_A01 Rock; small piece of friable marine conglomerate with thin Mn-crust coating	
Comments		

#### Sample

Sample ID	EX1708-DIVE01_SPEC02BIO	
Date (UTC)	9/7/2017	
Time (UTC)	22:23	
Depth (m)	1790.7	
Temperature (°C)	2.4	
Field ID(s)	<i>Acanthogorgia</i> sp.	
Commensal ID and Field Identification		

Comments		
<b>Sample</b>		
Sample ID	EX1708-DIVE01_SPEC03GEO	
Date (UTC)	9/7/2017	
Time (UTC)	22:47	
Depth (m)	1779.6	
Temperature ( ° C)	2.3	
Field ID(s)	Manganese encrusted rock, probably basalt	
Commensal ID and Field Identification	EX1708-DIVE01_SPEC03GEO_A01 Unknown	
Comments		
<b>Sample</b>		
Sample ID	EX1708_DIVE01_SPEC04GEO	
Date (UTC)	9/7/2017	
Time (UTC)	23:25	
Depth (m)	1773.5	
Temperature ( ° C)	2.3	
Field ID(s)	Manganese encrusted rock, probably basalt	
Commensal ID and Field Identification	EX1708_DIVE01_SPEC04GEO_A01 <i>Umbellapathes</i> sp.? EX1708_DIVE01_SPEC04GEO_A02 <i>Stichopathes</i> sp.?	
Comments	Commensals appear devoid of tissue	

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