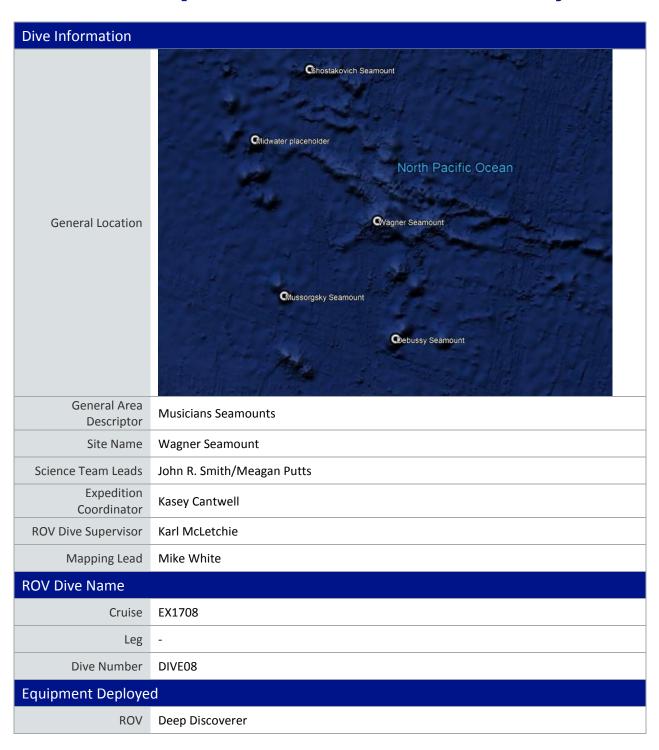


Okeanos Explorer ROV Dive Summary



Camera Platform	Seirios		
ROV Measurements	⊠ CTD	□ Depth	Altitude
	Scanning Sonar	USBL Position	Heading
	Nitch	⊠ 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			
	Dive Summary: EX1708_DIVE08		
	In Water:	2017-09-14T18:22:42.102000	
		31°, 50.962' N; 162°, 53.742'	W
	Out Water:	2017-09-15T02:30:02.602000)
		N/A ; N/A	
ROV Dive Summary	Off Bottom:	2017-09-15T01:17:08.427000	
(from processed ROV data)		31°, 51.067' N ; 162°, 53.947'	W
,	On Bottom:	2017-09-14T19:50:16.248000	
		31°, 51.118' N ; 162°, 53.688'	W
	Dive duration:	8:7:20	
	Bottom Time:	5:26:52	
	Max. depth:	2432.4 m	
Special Notes			
			Planetary Exploration
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		JF	NOAA NMFS Pacific
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Purpose of the Dive

One of the main objectives of this dive was to collect representative rock samples of the feature for geochemical analysis and isotopic dating so as to examine the interaction of hot spot and mid-ocean ridge interactions. The other objective for this dive is to characterize the distribution and abundance of benthic fauna, in particular corals, to examine the diversity, biogeography, and connectivity of corals living the northern seamount group compared to those observed in the southern seamount group and to the rest of the sites visited during this expedition. A comparison of the diversity and distribution of coral and sponge communities across the seamounts to the north and to the Hawaiian Ridge and the broader North Pacific will help describe the biogeography and connectivity of communities in the Pacific. The dive satisfies the CAPSTONE science themes to "investigate the geologic history of Pacific seamounts" and to "identify and map vulnerable marine habitats — particularly high-density deep-sea coral and sponge communities."

Description of the Dive

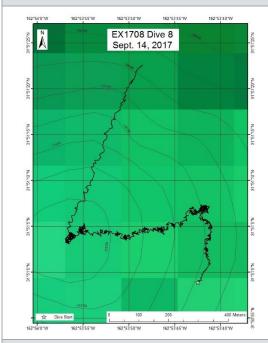
The ROV Deep Discoverer (D2) arrived on bottom near the base of a volcanic pillow cone at a water depth of 2428 m. The seafloor here was composed of talus of various sizes including large boulders and some intact lava flow outcrops. Soon after, contact was made with an extensive sheet flow unit ~one-meter-thick at 2430 m that persisted upslope. An in place rock sample was obtained from the flow edge and does appear to be basalt with a broken edge showing alteration. Regarding biology, the dive started slow with some low density communities. As we transected up the slope of the cone feature, the community increased in density with Chrysogorgid coral, *Anthomastus* sp. mushroom coral, and a diversity of Antipatharians, black coral, along the way. The slope increased to 30-40° at 2024 m and a mix of sheet flow and pillow outcrops with talus were presented. A unique white sea star, likely *Zorroaster* sp., with a single row of upward facing spines was observed at time stamp 20:46 and a depth of 2415 m. Large, isolated boulders with abundant corals were seen atop mostly barren sheet flows at 2235 m on slopes of 40-50°. The slope again steepened at 2310 m to possibly 50-60°

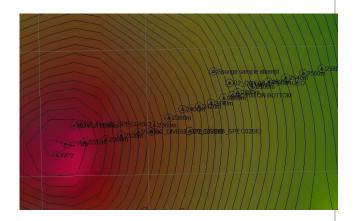


where mostly sheet flows were observed and little else. Following a collection of a glass sponge that may be an undescribed species at 2293 m, a contact from a ledge feature to more talus and decreasing slope was observed approximately 200 m laterally from the summit. A contact with a thick ledge of lava outcrop was observed at 2258 m just prior to reaching the summit area. Upon reaching the summit of the cone, we were surrounded by a bamboo coral forest at 2248 m. The high density community was made up of large bamboo colonies all around with numerous black coral, chrysogorgid coral, Swiftia sp., paragorgids, glass sponges, and more organisms interspersed between. We were able to collect a new species of Goniasteridae sea star predating upon a Umbellapathes sp., a new species of glass sponge, and Stoloniferan coral and Hydrozoans overgrowing a bamboo skeleton. Another contact with a thick flow unit was observed at 2338 m. After completing the planned track, it was realized that we were on a false summit and decided to pursue the real summit based on the Seirios scanning sonar. This area, a local high, was nearly flat with variable rock types and depth of 2232 m. A second rock was collected at 2230 m that turned out to be crumbly and friable and a mix of material including small black phenocrysts that may be basalt amongst a jumbled matrix of yellowish material resembling scrambled eggs, possibly being the remnants of a pyroclastic flow. There was also an attempt to collect the same type of rock occurred on Dive #01 at "Tropic of Cancer" Seamount. Two crabs were seen locking in what was determined as a mating embrace at time stamp 00:30 and 2230 m. ROV D2 moved into a depression at 2234 m that included talus, low relief outcrops, and much less biologic density with smaller organisms. A lobate outcrop with high density coral colonies was observed at 2233 m. A final coral was collected from this depth and ROV D2 left bottom from a depth of 2235 m shortly thereafter.

Overall Map of the ROV Dive Area

Close-up Map of Main Dive Site





Representative Photos of the Dive







Nearly barren of life, this lava sheet flow with broken downslope edge at the beginning of the dive is a source of talus

Corals densely populating an isolated boulder resting on a smooth sheet flow unit





Two crabs (*Paralomis* sp.) locked in a loving embrace, crustacean style

Dense coral community, with some sponges, on the summit of the pillow cone

Samples Collected

Sample		
Sample ID	EX1708_D2_DIVE08_SPEC01GEO	
Date (UTC)	9/14/2017	
Time (UTC)	20:29	
Depth (m)	2425.12	
Temperature (°C)	1.7	
Field ID(s)	Manganese encrusted rock in place sheet flow	
Commensal ID and Field Identification		
Comments		



Commis			
Sample	-		
Sample ID	EX1708_D2_DIVE08_SPEC02BIO	一种一种一种一种	
Date (UTC)	9/14/2017		
Time (UTC)	22:33		
Depth (m)	2352.5		
Temperature (°C)	1.8		
Field ID(s)	Umbellapathes sp.		
Commensal ID	EX1708_D2_DIVE08_SPEC02BIO_A01 N	Manganese encrusted rock	
and Field	EX1708_D2_DIVE08_SPEC02BIO_A02 H	lydrozoa	
Identification	EX1708_D2_DIVE08_SPEC02BIO_A03 G	Goniasteridae	
Comments			
Sample			
Sample ID	EX1708_D2_DIVE08_SPEC03BIO		
Date (UTC)	9/14/2017		
Time (UTC)	23:21		
Depth (m)	2292.1		
Temperature (°C)	1.8		
Field ID(s)	Euplectellidae		
Commensal ID	EX1708_D2_DIVE08_SPEC03BIO_A01 G	Gastropoda	
and Field	I 	tolonifera	
Identification	I ——————————————	Polychaeta	
		Amphipoda	
Comments	Portion of dead sponge was collected wi	ith specimens	
Sample			
Sample ID	EX1708_D2_DIVE08_SPEC04GE0		
Date (UTC)	9/15/2017		
Time (UTC)	00:04		
Depth (m)	2230.5		
Temperature (°C)	1.8		
Field ID(s)	Manganese encrusted rock		
Commensal ID and Field			



Identification			
Comments	Associate corals were lost between collection and ROV recovery; no associates were collected with the rock sample		
Sample			
Sample ID	EX1708_D2_DIVE08_SPEC05BIO	* NW	
Date (UTC)	9/15/2017	the distance of the second sec	
Time (UTC)	01:07		
Depth (m)	2233.2		
Temperature (°C)	1.8		
Field ID(s)	Stolonifera on bamboo		
Commensal ID	EX1708_D2_DIVE08_SPEC05BIO_A01 Hydrozoa		
and Field Identification	EX1708_D2_DIVE08_SPEC05BIO_AC	2 Isididae skeleton	
	EX1708_D2_DIVE08_SPEC05BIO_AC	3 Polychaeta?	
Comments			

Please direct inquiries to:

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