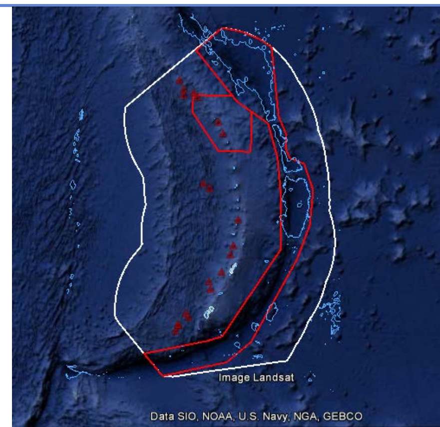
OKEANOS EXPLORER ROV DIVE SUMMARY

Site Name	Twin Peaks		
ROV Lead/Expedition Coordinators	Jim Newman/ Kasey Cantwell		
Science Team Leads	Shirley Pomponi (HBOI-FAU, CIOERT) Patty Fryer (UH)		
General Area Descriptor	Areas in and around the Marianas Trench Marine National Monument		
ROV Dive Name	Cruise	Leg	Dive Number
	EX1605	3	DIVE13
Equipment Deployed	ROV:	Deep Discoverer	
	Camera Platform:	Seirios	
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 2
Equipment Malfunctions			
ROV Dive Summary (From processed ROV data)	Dive Summary: EX1605L3_DIVE13 ^^ In Water: 2016-06-29T20:27:00.761000 21°, 25.062' N ; 145°, 53.416' E Out Water: 2016-06-30T06:35:14.241000 21°, 25.548' N ; 145°, 53.573' E Off Bottom: 2016-06-30T03:58:55.233000 21°, 25.209' N ; 145°, 53.552' E On Bottom: 2016-06-29T23:10:33.941000 21°, 25.011' N ; 145°, 53.586' E Dive duration: 10:8:13 Bottom Time: 4:48:21 Max. depth: 4839.9 m		
Special Notes			
Scientists Involved			

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Purpose of the Dive

To investigate a sonar target that is potentially a serpentinite mud volcano based on its morphology and its position with respect to the trench and fault lineaments on the forearc in this area (the serpentine mud volcanoes always form along fault lineaments). This feature is previously unknown and was discovered by Leg 2 mapping. If the feature is a mud volcano, it would be expected to show different lithology of rock clasts erupted, different types of chimney structures (if present) both in terms of morphology and composition and thus likely different assemblages of vent fauna.

Description of the Dive:

ROV *Deep Discover* set down on a nearly featureless sedimented bottom made of very small, pale-brown particles. From the response of the ROV as it set down on the seafloor and easily slid along the surface, the sediment was very clay-like. There were many fewer of the tiny white "tests" (shells) of the foraminifera (one-celled pelagic organisms) here than on yesterday's dive, as the dive is well below the depth at which the shells of these animals dissolve in the cold water. The carbonate compensation depth in the Western Pacific is around 4,000 m and today's dive was greater than 4,800 m.

The dive track was nearly due north, over slabby exposures of rock a few centimeters to tens of centimeters above the sediment that were aligned in linear rows parallel to one another. The rocks were mantled with a black (likely MnO) coating, but at the base of some of the slabs there was an exposure of a pale-tan to yellow-orange surface with a rough, rubbly texture. There were also occasional large boulders of similar material associated with the linear outcrops. SPEC02GEO was collected at the base of a nearly 1-m tall linear outcropping. It was a piece of medium-brown, loosely consolidated sediment, as was the second rock (SPEC03GEO), which we recovered near the end of the dive on the summit of the seamount.

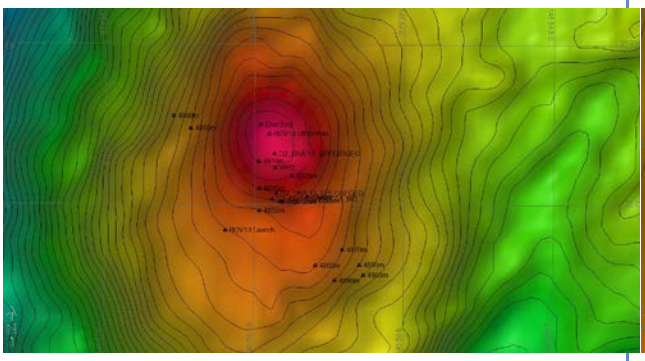
The seafloor throughout most of the dive, particularly at the top of the seamount, was thickly sedimented. The 9" fingers of the manipulator easily penetrated it fully, and when the ROV set down, the frame easily "bulldozed" the sediment. The props of the ROV frequently stirred up clouds of sediment when it maneuvered for a close video of fauna. Based on the prevalence of the small outcroppings of sedimentary rocks throughout the dive it is unlikely that it is a serpentinite mud volcano. Rather, it appears to be a fault block of forearc sedimentary sequence with interesting encrusting biology.

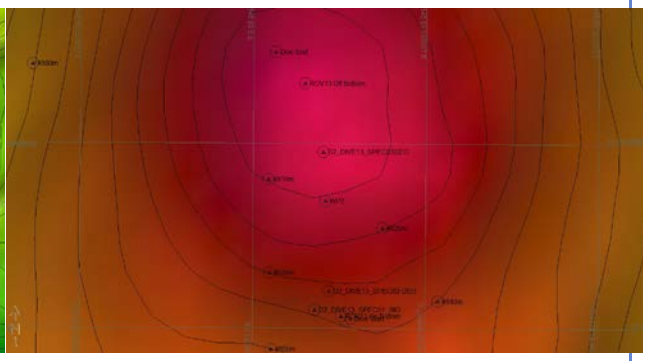
Biologic observations during the dive included: "swimming" holothurians; an unusual stylodactylid shrimp with modified pincers for suspension feeding and "hairy" legs that formed a delicate net; a number of long-legged isopods; crabs with commensal anemones; and once again, there were many observations of "pregnant" mysids attached to the stalks of glass sponges (Caulophacidae).

One of the more obvious and common features in the sediment were the large spiral tracks made by acorn worms. Both live organisms and several tracks were noted throughout the dive. In terms of sessile fauna, there were at least 4 different species of carnivorous sponges. We collected one (SPEC01BIO) that is very similar to the candelabra-shaped "harp" sponge (*Chondrocladia lyra*), first discovered off the coast of California in Monterrey Bay.

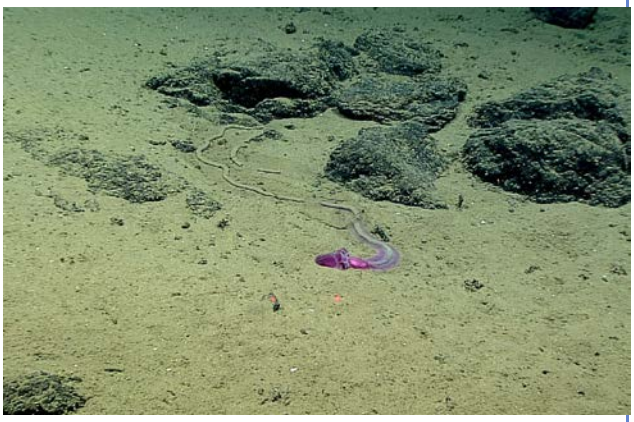
And for the first time (at least, on this leg of the expedition), we saw several deep-sea lizard fish (*Bathysaurus* cf *molis* resting on the bottom, waiting for its prey. It has functional eyes, and the flaps on the snout funnel scent into the nostrils to increase olfactory sensitivity, but it mostly senses motion in the water and then lunges forward to capture its prey! Lizard fish have not been reported to feed on animals that live on or in the sediment, so those acorn worms are not likely to be prey for *Bathysaurus*.

Overall Map of ROV Dive Area	**Close-up Map of Main Dive Site**





Representative Photos of the Dive



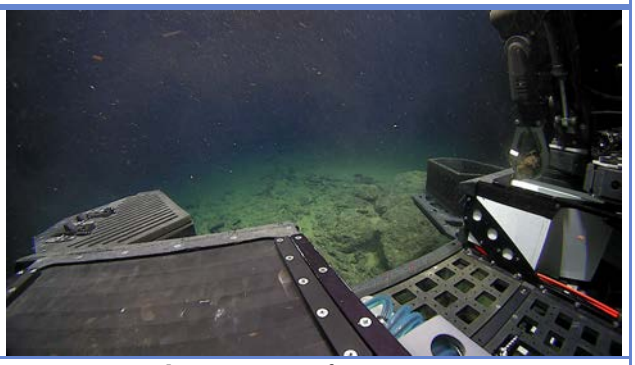
This dive was characterized by a generally sedimented surface with a few, low, linear outcroppings of rocks, such as shown here. The sediment is sandy to silty and seems to provide an ample feast for this acorn worm.

This holothurian raised its head, pushed off the bottom, and began swimming with its fused tube feet.

Samples Collected

Sample ID	SPEC01BIO
Date (UTC)	20160630
Time (UTC)	002015
Depth (m)	4833.71
Temperature (°C)	1.48
Field ID(s)	CHONDROCLADIA CF LYRA
Comments	Candelabra shaped, at least two nodes of engulfed prey. Branches have knobbed ends. May have been attached to some rubble.
Sample ID	SPEC02GEO

Date (UTC)	20160630	
Time (UTC)	005434	
Depth (m)	4827.93	
Temperature (ºC)	1.49	
Field ID(s)	ROCK; POSSIBLY SEDIMENTARY	
Comments	19x8x8cm, sedimentary rock coated with manganese on the upper surface. Located near summit region of large forearc fault block.	

Sample ID	SPEC03GEO	
Date (UTC)	20160630	
Time (UTC)	031404	
Depth (m)	4795.02	
Temperature (ºC)	1.47	
Field ID(s)	ROCK; SEDIMENTARY	
Comments	14x9x7, sedimentary rock coated with manganese oxide on upper surface.	

Please direct inquiries to:	NOAA Office of Ocean Exploration & Research 1315 East-West Highway (SSMC3 10th Floor) Silver Spring, MD 20910 (301) 734-1014