

Okeanos Explorer ROV Dive Summary

Dive Information	
General Location	<p>Fracture zone "Whaley" Seamount "Keli'ihanani" Seamount Jarvis Island Jarvis Island</p> <p><small>Jarvis Island (United States), NOAA, U.S. Navy, NGA, GEBCO</small></p>
General Area Descriptor	Jarvis Island Unit of PRIMNM
Site Name	Keli'ihanani seamount (proposed name)
Science Team Leads	Scott France/ Del Bohnenstiehl
Expedition Coordinator	Kasey Cantwell
ROV Dive Supervisor	Bobby Mohr
Mapping Lead	Mike White
ROV Dive Name	
Cruise	EX1705
Leg	-
Dive Number	DIVE 06
Equipment Deployed	
ROV	Deep Discoverer
Camera Platform	Seirios

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Purpose of the Dive	This dive will investigate the distribution and abundance of benthic and water column fauna, map substrate composition in order to evaluate the relationship between faunal communities and substrate type, collect rock and crust samples to determine their geological and geochemical properties.		
Dive Summary	<p>Keli'ihananui seamount is a volcanic edifice with a flat topped summit at a depth of ~1100 m. The eastern flank has a back tilted block near its base that may indicate a mass-wasting (landsliding) event. Backscatter data shows sediment pooled behind this block, suggesting that this event is not recent. The dive targeted the northern ridge of the seamount, along the margins of this potential slide. The ROV traversed between a depth of 1950 and 1750 meters.</p> <p>The seafloor in this area has light-colored biogenic sediments interspersed with out-crops of Mn-encrusted rocks having botryoidal textures. Symmetric</p>		



ripples were developed in some areas, and in places small amounts of darker sedimentary material were pooled on top of the lighter colored sediments. These sediments may represent more organic rich material recently deposited from the upper water column. Despite the Mn crust covering the rocks, they appeared to be largely in place with morphologies consistent with submarine volcanic flows. Only one rock sample was collected (D2_DIVE06_SPEC02GEO); it has a Fe-Mn Crust and a mass of ~10 kg.

We settled on a sedimented bottom that appeared to be fairly heavily covered in possible phytodetritus (light, olive-colored material accumulating in depressions). As we traversed upslope we began to see rock outcrops and fauna associated with them. Overall, the sessile fauna were sparse, but octocorals and sponges were seen in places throughout the dive track.

Several different species of octocoral were host to large (relative to coral size) asteroschematid ophiuroids: *Callogorgia*, *Paragorgia*, and corallids (both *Hemicorallium* and *Pleurocorallium*); most of these also suffered from overgrowing zoanthids. Other octocorals observed during the dive included an isidid whip with a chirostylid; a sparse-branching *Keratoisis*; *Metallogorgia melanotrichos*; a purple ribbon *Clavularia*; and Acanthogorgiidae;. No scleractinian or antipatharian corals were seen.

A number of sponges were seen, including an unrecognized vase-shaped glass sponge (Rossellidae?), which was collected, a *Polyopogon*-like morph, and euptectellids *Bolosoma*, *Dictyaulus*, *Regadrella*, and an unknown multi-stalked morph, which was seen multiple times, though all were dead skeletons.

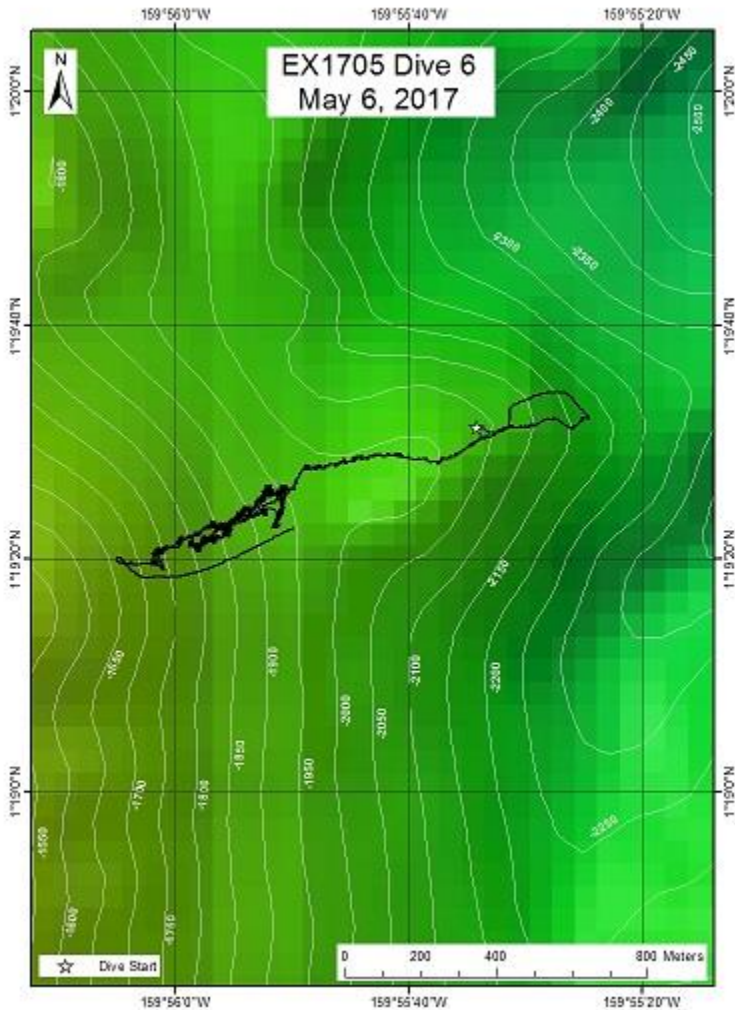
Only 6 individual fish were seen on the benthic portion of the dive, all cusk eels in the genus *Bassozetus*. Fish seen in the midwater include hatchetfish, myctophids (lanternfish), and gonostomatids (bristlemouths).

Other fauna seen included pagurid crab with anemone, pycnogonid sea spider (*Collossendeis*), octacnemid tunicate, urchins (*Plesiodiadema*), synallactid holothurians, brisingids, a myxasterid slime star (*Asthenactis*), several crinoids (*Glyptometra*, *Pentrametrocrinus*, *Proisocrinus rubberimus*), an aplacophoran feeding on a solitary hydroid (Tubulariidae), a velutinid snail, and a murex snail.

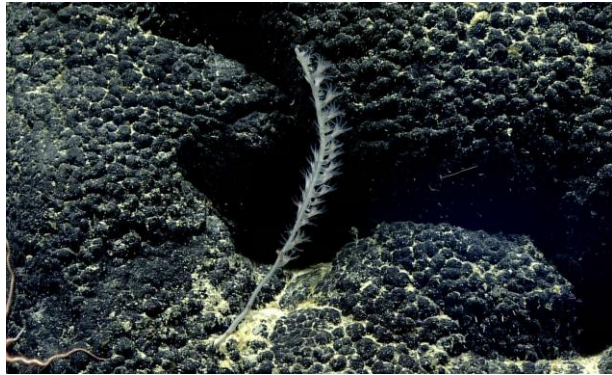
Following the seafloor exploration, we conducted our second series of midwater transects of this expedition. We spent ten minutes at each of six different depths from 1400 to 300 m. At the deepest layer, we got excellent imaging of a pelagothurian (pelagic sea cucumber), which has been one of the more abundant pelagic species we've seen on this cruise. This one had an amphipod on it, though we were not able to determine if it was food, a parasite, or a symbiont (non-harmful "hitchhiker"). We also saw a cydippid

ctenophore (comb jelly), a copepod, an arrow worm, and a *Halicreatis* jellyfish. Moving up in the water column, at 1200 and 1000 m, we came across more comb jellies, several additional species of jellyfish, including *Halitrepes*, two types of siphonophores, and an unidentified Anthomedusa, and larvaceans (sea tadpoles). Larvaceans create a mucous feeding web (a larvacean “house”) that they can abandon when clogged, and we saw one larvacean just next to its recently abandoned “house.” At 750 m, we saw a new type of siphonophore, another pelagothurian, a *Haliscera* jellyfish, and a lobate ctenophore. Shallower than this, we came across a lot of current, making it difficult to hold position, but we saw a layer of fish ~600-700 m and a shallower layer of siphonophores as we worked our way up to the surface.

Overall Map of the ROV Dive Area
Map of the northern portion of the seamount.



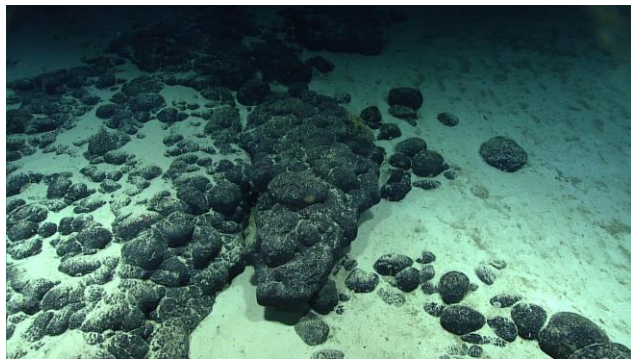
Representative Photos of the Dive



Mn-crust with botryoidal texture.



Unusual multi-stalk glass sponge



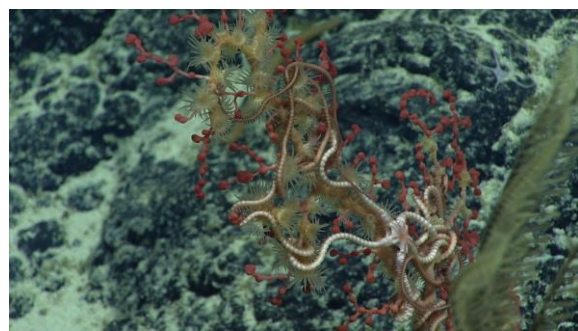
Out-cropping Mn-Crusted rock with lighter-colored sediments and darker sedimentary material pool on its surface



Aplacophoran feeding on a solitary hydroid; in the background a corallid with large asteroschematid ophiuroid and zoanthid overgrowth



Pelagothuria, a pelagic holothurian





Paragorgia with zoanthid overgrowth and asteroschematid ophiuroid

Samples Collected

Sample



Sample ID	EX1705_20170506T221650_D2_DIVE06_S PEC01BIO	
Date (UTC)	20170506	
Time (UTC)	221650	
Depth (m)	1912.39	
Temperature (°C)	2.37	
Field ID(s)	Glass sponge (Rosellidae?) with associates	
Commensal ID and Field Identification	EX1705_20170506T221650_D2_DIVE06_SPEC01BIO_A01 Crinoidea (single base with one intact arm) EX1705_20170506T221650_D2_DIVE06_SPEC01BIO_A02 Ophiuroidea EX1705_20170506T221650_D2_DIVE06_SPEC01BIO_A03 Crinoidea (2 bases and fragmented parts) EX1705_20170506T221650_D2_DIVE06_SPEC01BIO_A04 Aplacophara – Solenogastres EX1705_20170506T221650_D2_DIVE06_SPEC01BIO_A05 Amphipoda	
Comments		
Sample		
Sample ID	EX1705_20170506T233731_D2_DIVE06_S PEC02GEO	
Date (UTC)	20170506	
Time (UTC)	233731	
Depth (m)	1833.81	
Temperature (°C)	2.38	
Field ID(s)	Mn crusted rock	
Commensal ID and Field Identification		
Comments		
Comments		

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