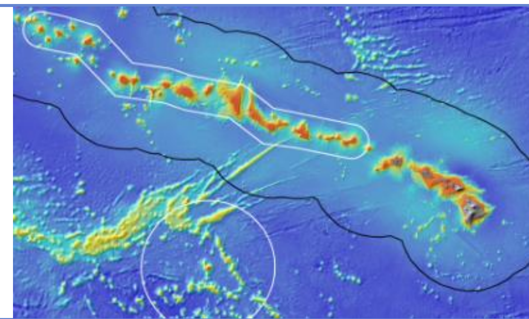
Okeanos Explorer ROV Dive Summary



Site Name	Southeast Pearl & Hermes Ridge		
ROV Lead/Expedition Coordinator	Karl McLetchie Kelley Elliott		
Science Team Leads	Chris Kelley (Biology) Daniel Wagner (Biology)		
General Area Descriptor	Northwestern Hawaiian Islands		
ROV Dive Name	Cruise Season	Leg	Dive Number
	EX1504	2	DIVE12
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	There was no video streamed to shore during the vast majority of the dive and the conference line was dropped on several occasions.		
ROV Dive Summary (From processed ROV data)	Dive Summary: EX1504L2_DIVE12 ^^ In Water at: 2015-08-13T18:14:44.875000 27°, 30.951' N ; 175°, 27.496' W Out Water at: 2015-08-14T04:21:09.468000 27°, 31.114' N ; 175°, 26.825' W Off Bottom at: 2015-08-14T01:33:31.406000 27°, 31.159' N ; 175°, 27.729' W On Bottom at: 2015-08-13T19:46:47.921000 27°, 31.013' N ; 175°, 27.563' W Dive duration: 10:6:24 Bottom Time: 5:46:43 Max. depth: 2800.1 m		
Special Notes			
Scientists Involved *(please provide name / location / affiliation / email)*	Amanda Ziegler, UH, UH, aziegler802@gmail.com Amy Baco-Taylor, HBOI ECC, FSU, abacotaylor@fsu.edu Asako Matsumoto, Tokyo, PERC/CIT, amatsu@gorgonian.jp Bruce Mundy, IRC, NMFS, bruce.mundy@noaa.gov Chris Kelley, EX, UH, ckelley@hawaii.edu Daniel Wagner, EX, PMNM, daniel.wagner@noaa.gov Jeff Drazen, UH, UH, jdrazen@hawaii.edu John R Smith, UH, UH, jrsmith@hawaii.edu Jonathan Tree, UH, UH, jtree@hawaii.edu Les Watling, Maine, UH, watling@hawaii.edu Liz Shea, Delaware, DMNH, eshea@delmnh.org Mike Ford, SS ECC, NMFS, Michael.ford@noaa.gov Michael Parke, IRC, NMFS, Michael.Parke@noaa.gov Scott France, ULL, ULL, france@louisiana.edu Tina Molodtsova, Washington, DC, PPSIO, tina@ocean.ru		

Purpose of the Dive

This dive was located along the western edge of a rift zone ridge extending southeast from Pearl & Hermes Atoll. The objectives of the dive were to explore for high density communities of deep-sea corals and sponges along the edge of the ridge crest, where there might be a local area of topographically induced upwelling. Additionally, as this dive explored a deeper depth than many of the previous dives

of the expedition, it sought to obtain information on the lower depth range of these communities. The target start point of the dive was a relatively flat surface just above the break in slope at a depth of 2806m. The plan was to survey up the ridge along the western edge toward a final depth of 2751m.

In addition to the surveying the seafloor, this dive would also include the first mid-water transects of the expedition, which would be carried out during the ROV's ascent towards the surface. The objective of the mid-water transects was to explore depths between 800-1200 m in order to examine the potential prey field for deep-diving toothed whales, as well as documenting other nekton and gelatinous megaplankton. The mid-water transects were planned to begin after the ROV came up from the seafloor and ascended to 1200m. A total of five mid-water transects were planned, each conducted for 10 minutes at 100m depth increments between 1200 and 800m (10-minute transect at 1200m, 1100m, 1000m, 900m, and 800m). During each transect, the ROV would be below and in sight of Seirios, moving at ~0.5 knots or less. If any large object were to be encountered during the transect, the ROV would stop to image it.

Description of the Dive:

The ROV landed close to a wall with well defined, Mn-crusted pillow basalts at 2790m. There were several stalked sponges and a strong current from the west towards the east. As the ROV moved towards the edge of the wall, there was a small aggregation of stalked sponges and corals. The ROV then moved along the edge of the wall towards the northwest, where the pillow basalts became distinctly round and covered with a high density of barnacles. At 2793m, the ROV collected the base of a dead sponge stalk, as well as a Mn-crusted basalt sample, the latter of which had small cladorhizid sponges attached to it. As the ROV continued moving along the edge of the wall, several narrow canyons, 1-2m in width, were observed. A bamboo coral sample was collected at 2775m. Close to the end of the dive, the ROV collected a second Mn-crusted basalt sample, which had a cladorhizid sponge on it, at 2780m. The ROV left the bottom at a depth of 2773m after a total bottom time of 5:45h, having covered a linear distance of 260m. Mid-water transects were conducted for 10 minutes each at 1200m, 1000m, 800m, 600m and 450m. A few animals were observed during the mid-water transects, including jellyfishes, ctenophores, siphonophores, shrimps, fishes, salps, and a squid.

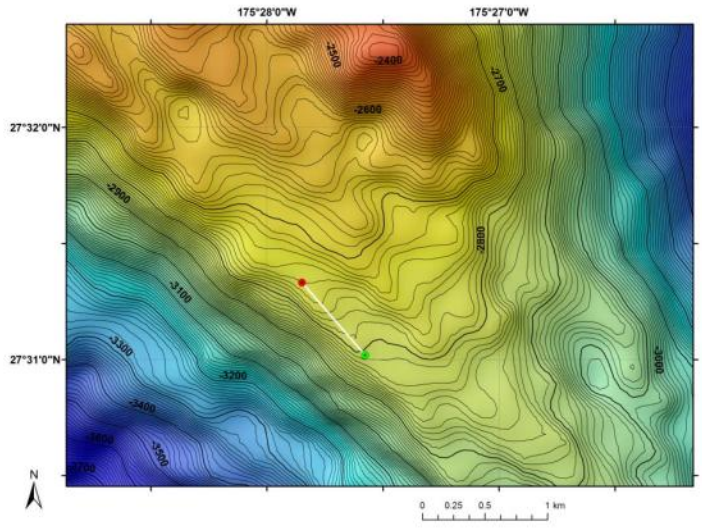
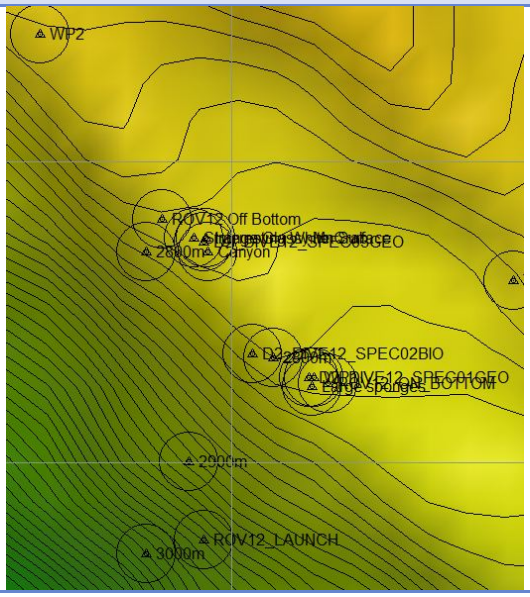
Animals observed during the bottom portion of the dive:

Phylum	Group	Species
Arthropod	Crab	Kiwaidae?
Arthropod	Crab	Unidentified crab
Arthropods	Barnacles	Alcockianum alcockianum
Arthropods	Barnacles	Balanoidae
Arthropods	Shrimp	Nematocarcinus tenuisrostris
Arthropods	Squat lobsters	Munidopsis sp.
Cnidarians	Actiniarians	Actinoscyphia sp.
Cnidarians	Actiniarians	Actinostolidae
Cnidarians	Actiniarians	Exocoelactis sp.
Cnidarians	Actiniarians	Hormathiidae
Cnidarians	Actiniarians	Unidentifed anemone
Cnidarians	Alcyonaceans	Anthomastus sp.
Cnidarians	Antipatharians	Bathypathes (not alternata)
Cnidarians	Antipatharians	Stauropathes
Cnidarians	Gorgonians	Calyptrophora? sp.
Cnidarians	Gorgonians	Chrysogorgia geniculata
Cnidarians	Gorgonians	Chrysogorgia sp.
Cnidarians	Gorgonians	Corallium sp.
Cnidarians	Gorgonians	Corallium ducale?
Cnidarians	Gorgonians	Corallium kishinouye
Cnidarians	Gorgonians	Keratoisis sp.
Cnidarians	Gorgonians	Lepidisis sp.
Cnidarians	Gorgonians	Narella sp.
Cnidarians	Hydrozoans	Solitary hydroid
Echinoderms	Asteroids	Evoplosoma? sp.
Echinoderms	Asteroids	Hymenodiscus sp.
Echinoderms	Asteroids	Pteraster reticulatus
Echinoderms	Asteroids	Unidentified brisingid

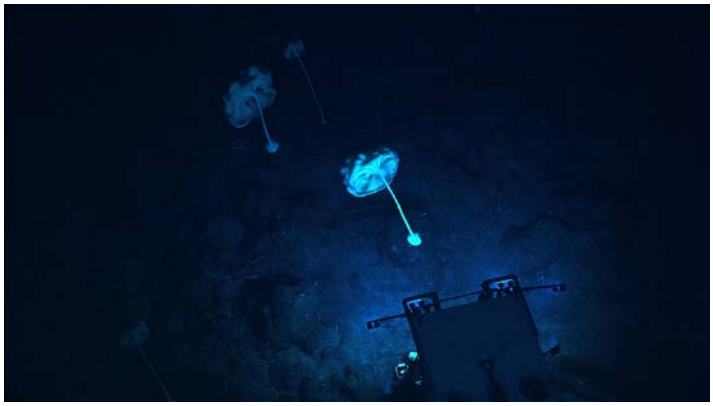
Echinoderms	Crinoids	Stalked crinoid
Echinoderms	Crinoids	Unidentified crinoid
Echinoderms	Holothuria	Deimatiidae
Echinoderms	Ophiuroids	Unidentified ophiuroids
Fishes	Eels	Synaptobranchid
Fishes	Macrourids	Coryphaenoides longicirrhus
Fishes	Ophidiids	Ophidiid
Mollusks	Aplocophoran	Aplocophoran
Sponges	Demosponges	Unidentified cladorhizid
Sponges	Hexactinellids	Bolosoma sp.
Sponges	Hexactinellids	Caulophacus (Oxydiscus) sp.

Animals observed during the mid-water transect:

Group	Species
Arthropod	Shrimp
Arthropod	Copepod
Arthropod	Unidentified larva
Chaetognaths	Unidentified chaetognaths
Cephalopods	Histioteuthidae
Ctenophore	Leucothea multicornis
Ctenophore	Leucothea pulchra
Fishes	Gonostomatidae
Fishes	Myctophidae
Fishes	Salp
Fishes	Cyclothone
Hydromedusae	Aeginopsis? sp.
Hydromedusae	Narcomedusae
Hydromedusae	Colobonema
Jellyfish	Unidentified jellyfishes
Siphonophore	Siphonophore

Overall Map of Dive Area	**Actual track of ROV dive**
	
Bathymetry data for the dive site. Planned dive start and end points are shown as green and red dots, respectively.	Hypack screen grab showing waypoints dropped during actual ROV dive.

Representative Photos of the Dive



Huge stalked sponges (Caulophacus sp) observed shortly after the ROV touched down.

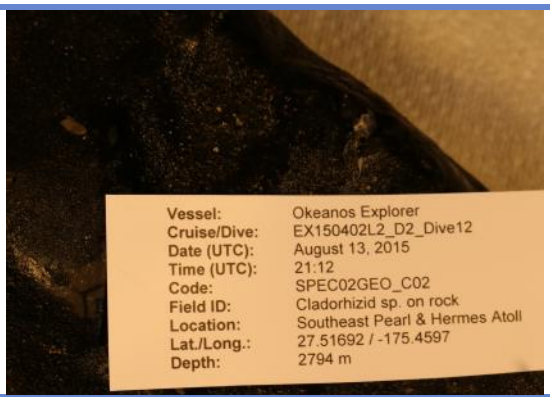
Very large pillow lava formations were observed throughout the dive.

Samples Collected

Sample ID	EX1504L2_20150813210919_D2_Dive12_SPEC01BIO
Date (UTC)	2015/08/13
Time (UTC)	21:09:19
Depth (m)	2793
Temperature (°C)	1.5147
Oxygen (mL/L)	3.78651
Field ID(s)	Dead Caulophacus sp. stalk
Comments	Sample consists of bottom and holdfast of a dead sponge stalk, which will be used for growth rate/age studies.

Sample ID	EX1504L2_20150813211239_D2_Dive12_SPEC02GEO
Date (UTC)	2015/08/13
Time (UTC)	21:12:39
Depth (m)	2794
Temperature (°C)	1.51401
Oxygen (mL/L)	3.85504
Field ID(s)	Mn-crusted basalt
Comments	Rock sample had barnacle plates and cladorhizid sponge on it.

Sample ID	EX1504L2_20150813211239_D2_Dive12_SPEC02GEO_C01
Date (UTC)	2015/08/13
Time (UTC)	21:12:39
Depth (m)	2794
Temperature (°C)	1.51401
Oxygen (mL/L)	3.85504
Field ID(s)	Cladorhizid sponge
Comments	Sponge was attached to rock sample.



Sample ID	EX1504L2_20150813221218_D2_Dive12_

	SPEC03BIO	
Date (UTC)	2015/08/13	
Time (UTC)	22:12:18	
Depth (m)	2775	
Temperature (°C)	1.5302	
Oxygen (mL/L)	3.75401	
Field ID(s)	Keratoisis? sp.	
Comments		
Sample ID	EX1504L2_20150814004431_D2_Dive12_SPEC04GEO	
Date (UTC)	2015/08/14	
Time (UTC)	00:44:31	
Depth (m)	2780	
Temperature (°C)	1.57622	
Oxygen (mL/L)	3.63667	
Field ID(s)	Mn-crusted basalt	
Comments	Rock sample had cladorhizid sponge on it.	
Sample ID	EX1504L2_20150814004431_D2_Dive12_SPEC04GEO_C01	
Date (UTC)	2015/08/14	
Time (UTC)	00:44:31	
Depth (m)	2780	
Temperature (°C)	1.57622	
Oxygen (mL/L)	3.63667	
Field ID(s)	Cladorhizid sponge	
Comments	Sponge attached to rock sample.	
Sample ID	EX1504L2_20150814013700_D2_Dive12_SPEC05BIO	
Date (UTC)	2015/08/14	
Time (UTC)	01:37:00	
Depth (m)	2780	
Temperature (°C)	1.57622	
Oxygen (mL/L)	3.63667	
Field ID(s)	Dead sponge stalk	
Comments	Sponge stalk with commensal ophiuroid came up attached to the bottom of the ROV. The position and time information is an estimate assuming that it was collected at the very end of the dive.	
Sample ID	EX1504L2_20150814013700_D2_Dive12_SPEC05BIO_C01	

Date (UTC)	2015/08/14
Time (UTC)	01:37:00
Depth (m)	2780
Temperature (°C)	1.57622
Oxygen (mL/L)	3.63667
Field ID(s)	Commensal ophiuroid

Comments	Ophioroid attached to sponge stalk that came up attached to the bottom of the ROV. The position and time information is an estimate assuming that it was collected at the very end of the dive u

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