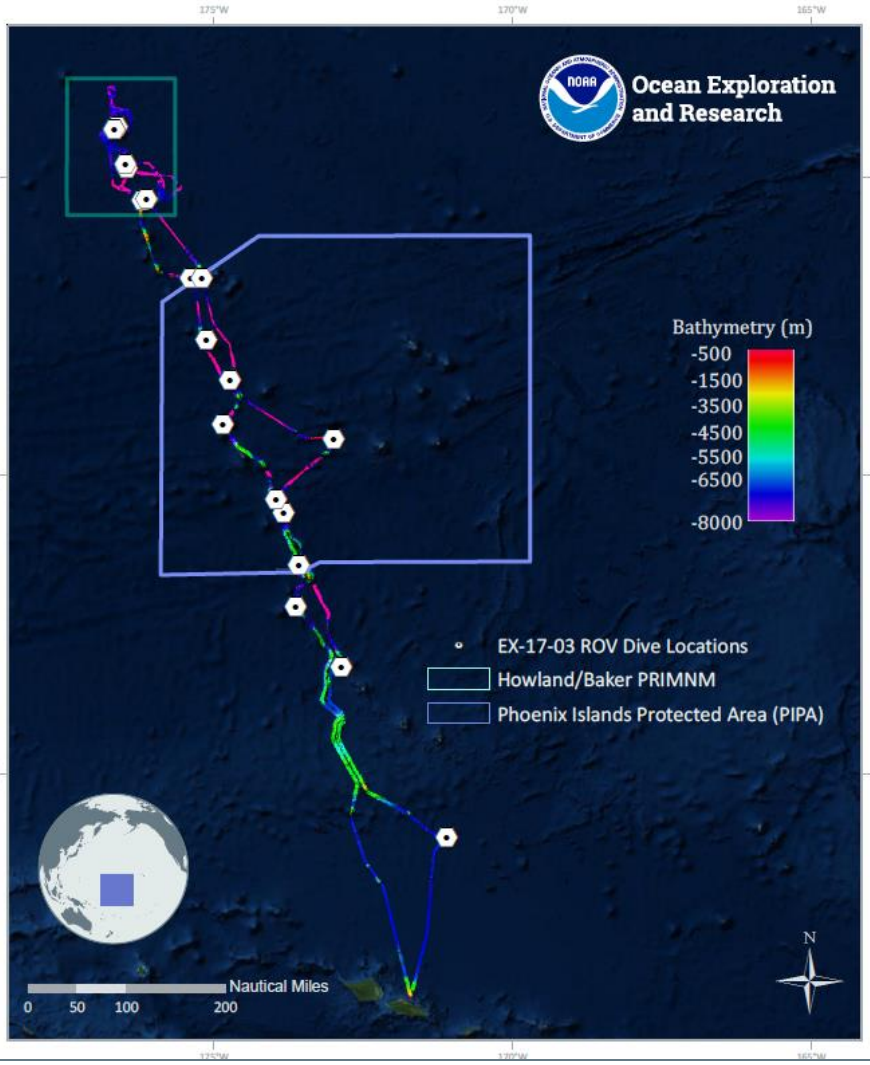
Ocean Exploration and Research

Okeanos Explorer ROV Dive Summary

Dive Information	
Dive Map	
Site Name	Polo Seamount
Expedition Coordinator(s)	Brian RC Kennedy, Nick Pawlenko
ROV Lead(s)	Karl McLetchie
Science Team Lead(s)	Amanda Demopoulos and Steven Auscavitch
General Area Descriptor	Phoenix Islands Protected Area
ROV Dive Name	
Cruise	EX-17-03

Leg	0
Dive Number	05
Equipment Deployed	
ROV	Deep Discoverer (D2)
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 5
Equipment Malfunctions	
ROV Dive Summary (from processed ROV data)	Dive Summary: EX1703_DIVE05 ^^ In Water: 2017-03-12T18:29:00.845000 02°, 43.722' S ; 175°, 07.995' W Out Water: 2017-03-13T02:45:52.390000 02°, 43.811' S ; 175°, 07.607' W Off Bottom: 2017-03-13T01:29:47.965000 02°, 43.804' S ; 175°, 07.596' W On Bottom: 2017-03-12T19:45:29.869000 02°, 43.683' S ; 175°, 07.864' W Dive duration: 8:16:51 Bottom Time: 5:44:18 Max. depth: 2140.7 m
Special Notes	
Scientists Involved (please provide name, location, affiliation, email)	see table below

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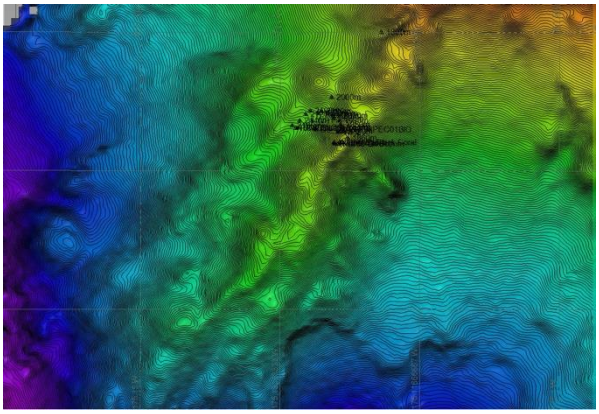
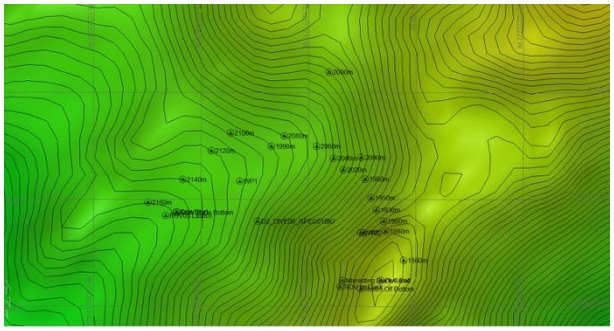
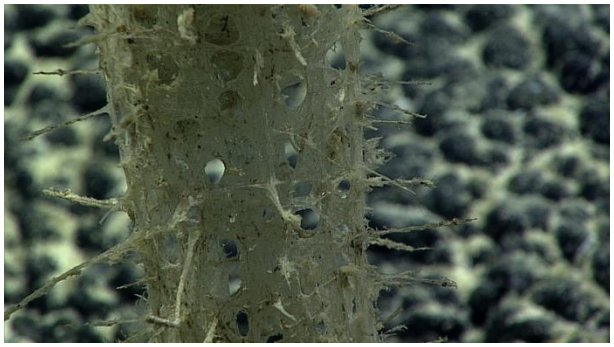
Purpose of the Dive	The goal of this dive is to acquire baseline information on deep sea habitats, seafloor geology, and biological communities on Polo Seamount in the Phoenix Islands Protected Area (PIPA). Deep-sea environments in PIPA are virtually unexplored leading to poor knowledge of biological resources protected by the MPA.
Description of the Dive	EX1703 dive 5 was on Polo Seamount in the Tokelau Seamount Chain, and our third dive within the Phoenix Islands Protected Area. This was our deepest dive for the expedition so far, starting at 2134m and ending at 1834m. We noticed a fair amount of particulate organic matter in the water column on the descent, which was also observed during previous dives at Carondelet Reef (dive 3) and the unnamed seamount (dive 4). The dive started within a sedimented canyon-like feature and transited up a low-grade slope. Along the sedimented seafloor, we observed sea urchins (aspidodiadematid, *Phrissocystis*), possible cup corals, xenophyophores, nematocarcinid shrimp, holothurians (>2 species), 2 tripod fish (*Bathypterois atricolor*, one with an aegid parasite), a bythidid (*Diplacanthopoma* sp.), 2 rattails (*Coryphaenoides* sp.), zoroasterid seastar, and a seapen with a purple polychaete. A few large boulders were encountered with several attached fauna (corallimorpharian, black coral [*Bathypathes*?], crinoid, and tunicates with polychaete and anemone associates). At approximately 2100m, the seafloor transitioned to steep exposed rock encrusted with manganese iron oxide. As we progressed up the rock face, additional corals were added to our observation list: *Chrysogorgia* spp., *Iridogorgia*, *Metallogorgia*, isidids (with nodal-branching [collected], internodal branching, and whip forms), coralliids (*Hemicorallium*?, other), *Paragorgia coralloides*, *Pleurogorgia*, primnoids (whips, *Narella*?, *Candidella gigantea*?, other), *Victorgorgia*, plexaurid (*Paramuricea*?), *Anthomastus* sp., and black corals (*Parantipathes*, *Bathypathes, Stichopathes*). Other invertebrates observed along the steep slope included coral associates (barnacles-*Glyptelasma* sp., crinoids, zoanthiids, chirostylids, amphipods), stalked crinoids (*Hyocrinida*, *Guillecrinus*, *Proisocrinus ruberrimus*?), tunicates, holothurians, seastars (brisingids, *Henricia*, *Cheiraster*, *Asthenactis*), hormathid anemones, and sponges (various hexactinellids). Almost every vertical rock face from 2002 to 1837 m was covered with high densities of corals, including mostly *Pleurogorgia*, and other unknown fan corals. Close to the summit of the knoll, we saw a large morid fish (*Lepidion* sp.)

	and halosaurid (*Aldrovandia* sp.). On the steep slope, pilots remarked that the current was variable and generally from the NE to the SW. We ended the dive within 15m from the top of the knoll, but the seafloor leading to the peak was covered with corals and sponges. It was interesting to note that taxa densities and diversity appeared to increase toward the summit, at the same depths where similar patterns were observed on Carondelet Reef (dive 3). While it is difficult to generalize these patterns based on only 2 dives, it will be useful to conduct dives at similar depth ranges on other seamounts to examine if this pattern holds true.

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

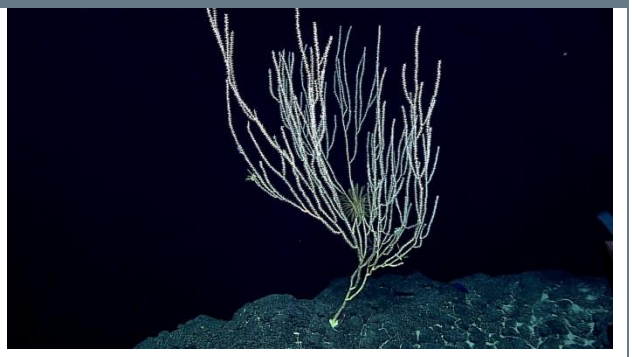
Representative Photos of the Dive	
	

Coral community seen near the end of the dive	Glass Sponge

Samples Collected

Sample

Sample ID	EX1703_20170312T222950_D2_DIVE05_SPEC01BIO
Date (UTC)	20170312
Time (UTC)	22:29:50
Depth (m)	2050.86
Temperature (°C)	2.2
Field ID(s)	Isididae - branching-unknown
Comments	



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