



# Okeanos Explorer ROV Dive Summary

Dive Information	
Dive Map	
<b>Site Name</b>	Pao Pao
<b>Expedition Coordinator(s)</b>	Brian RC Kennedy, Nick Pawlenko
<b>ROV Lead(s)</b>	Karl McLetchie
<b>Science Team Lead(s)</b>	Amanda Demopoulos and Steven Auscavitch
<b>General Area Descriptor</b>	Tokelau Seamount Chain inside the Tokelau EEZ
<b>ROV Dive Name</b>	
<b>Cruise</b>	EX-17-03

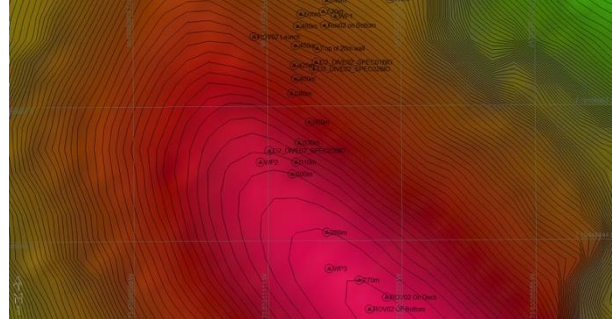
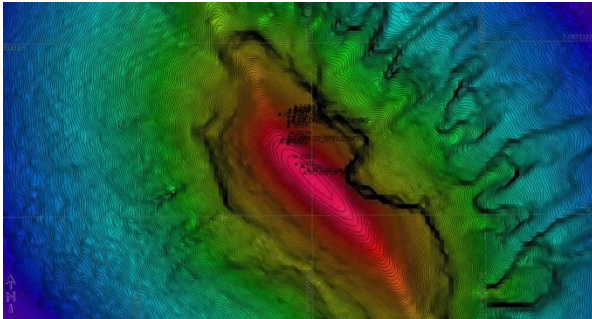


	Netburn		
	Andrea Quattrini	Harvey Mudd College	aquattrini@g.hmc.edu
	Asako Matsumoto	Chiba Institute of Technology (Chitech),	amatsu@gorgonian.jp
	Benjamin Frable	Scripps Institution of Oceanography	bfrable@ucsd.edu
	Bruce Mundy	NOAA NMFS Pacific Islands Fisheries Science Center	bruce.mundy@noaa.gov
	Chris Mah	Dept. of Invertebrate Zoology, NMNH Smithsonian Institution	brisinga@gmail.com
	Christopher Kelley	University of Hawaii	ckelley@hawaii.edu
	Erik Cordes	Temple University	ecordes@temple.edu
	Jill Bourque	US Geological Survey Wetland and Aquatic Research Center	jbouque@usgs.gov
	John Smith	University of Hawaii/SOEST	jrsmith@hawaii.edu
	Les Watling	University of Hawaii at Manoa	watling@hawaii.edu
	Malcolm Clark	NIWA New Zealand	malcolm.clark@niwa.co.nz
	Michael Parke	NOAA PIFSC	michael.parke@noaa.gov
	Natalie Summers	University of Hawaii at Manoa	nsummers@hawaii.edu
	Peter Auster	Mystic Aquarium & UConn	peter.auster@uconn.edu
	Randi Rotjan	Boston University	rrotjan@bu.edu
	Santiago Herrera	Lehigh University	sherrera@alum.mit.edu

	Scott France	University of Louisiana at Lafayette	france@louisiana.edu	
	Sonia Rowley	University of Hawai'i at Manoa	srowley@hawaii.edu	
	Steve Auscavitch	Temple University	steven.auscavitch@temple.edu	
	Tara Harmer Luke	Stockton University	luket@stockton.edu	
	Taylor Heyl	WHOI	theyl@whoi.edu	
	Timothy Shank	Woods Hole Oceanographic Institution	tshank@whoi.edu	
	Tina Molodtsova	P.P.Shirshov Institute of Oceanology RAS	tina.molodtsova@gmail.com	
<b>Purpose of the Dive</b>	The goal of this dive is to acquire baseline information on deep sea habitats, seafloor geology, and biological communities at Pao Pao Seamount in the Tokelau Seamount Chain. This feature has a summit depth of 300m, with the base at almost 6000 m. The seamount has had some rock dredging, but as far as is known, there has been no dedicated biological survey or sampling.			
<b>Description of the Dive</b>	Today's dive on Pao Pao Seamount revealed exciting insights into the fish and invertebrate communities within the Tokelau seamount chain. The dive started at ~ 544 m, heading SW up a steep slope along the NE side of the seamount. The substrate was composed of exposed hard rock with some areas of thick sediment drape. Numerous pteropod shells were found within the sediments. As we headed upslope, there were several species of fish, including epigonids, scorpaenids, 2 types of sharks [ <i>Hexanchus</i> sp. and <i>Echinorhinus cookei</i> ], spike fish (triacanthodids), green spotted duck fish ( <i>Chrionema chryseres</i> ), groppo ( <i>Grammotonotus</i> ), zeniontids, boar fish ( <i>Antigonia</i> sp.), Randall's snapper ( <i>Randallichthys filamentosus</i> ), and unknown black and white-striped fish. The slope was populated with several coral species, including scleractinians ( <i>Enallopsammia?</i> , <i>Madrepora</i> , cup corals), octocorals (plexaurids, isidids, primnoids, acanthogorgiids, stoloniferans) and antipatharians ( <i>Stichopathes</i> sp. and cf. <i>Dendropathes</i> ). Polyps of the bamboo whip ( <i>Cladarisis</i> sp.?) were loaded with eggs, located throughout the colony. There were several large plexaurid and			

	<p>primnoid colonies that were covered with various associates and we collected a piece of each one for analysis. In addition, a large <i>Madrepora</i> bush-shaped colony was observed attached to a dead “black” coral skeleton. The dead skeleton’s age was estimated at 1200 years old, based on the 10 cm diameter of the base. Other invertebrates observed included seastars (cf. <i>Lophaster</i>, goniasterids), sponges (demospongiae [<i>Corallistes?</i>, large barrel form], chirostylids, and crinoids (both comatulids and stalked forms).</p> <p>When we reached WP2, we headed up a gradual slope to the summit, which corresponded to a dramatic change in the substrate type and fauna encountered. The steep rock ledges and sedimented slope transitioned to a relatively flat carbonate pavement, interspersed with pits and caves filled with sediments. Patches of several individual sea stars (<i>Tremaster mirabilis</i>), <i>Swiftia</i> (plexaurid) colonies, and pencil urchins (cidaroids) characterized the transition area. A pencil urchin was observed feeding on a <i>Narella?</i> octocoral, and several <i>Narella?</i> colonies had visible bare skeleton on the branches, indicating recent predation. We collected some <i>Narella?</i> tissue with associates for identification. We noted several hermit crabs with gastropod shell homes, but also observed one with an anemone house. Multiple large and small boarfish (<i>Antigonia</i> sp.) were associated with the pits and depressions. The current was notably stronger in this zone, thus, these fish maybe using the pits as refuges from the swift currents. Other fish encountered on the way to the summit included 8 barred grouper (<i>Hyporthodus octofasciatus</i>), deep-water snappers (<i>Etelis</i> sp., <i>Pristipomoides</i> sp.), amberjack (<i>Seriola dumerili</i>), deep-water sting ray, yellow eels (<i>Myrocongridae?</i>), <i>Pontinus</i> sp. (scorpionfish), groppo (<i>Grammatonotus</i> sp.), hogfish/wrasses (<i>Polylepion russelli</i>), and left-eye flounder (Bothidae). The 8 barred groupers, amberjacks, and snappers represent important commercial fishes for the region. In addition to the multiple fish species, we saw some different invertebrates at the summit, including an octopus, quill worms, brachiopods, and yellow scleractinians (<i>Eguchipsammia?</i>). At the summit, we saw some fishing line, which represented the first trash observed on the dives thus far. Throughout the dive, there was an obvious lack of precious corals present, in contrast to previous CAPSTONE dives within NW Hawaiian Islands.</p>
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Overall Map of the ROV Dive Area	Close-up Map of Main Dive Site
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**Representative Photos of the Dive**



A male and female pair of six gill sharks

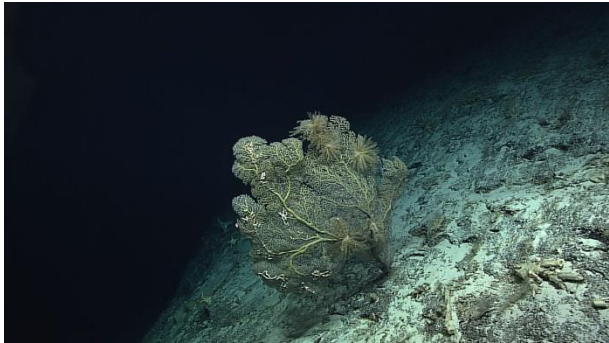
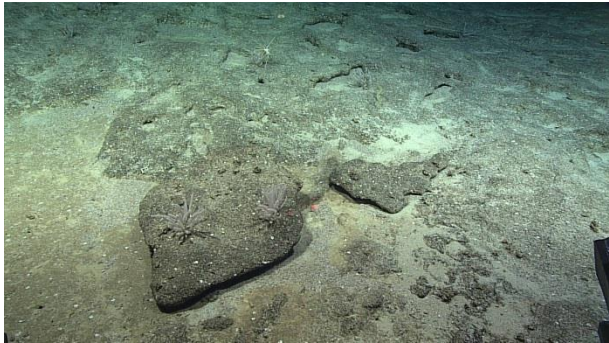
colony of Madrepora (stony coral) perched on old coral stalk

**Samples Collected**

**Sample**

<b>Sample ID</b>	EX1703_20170309T211255_D2_DIVE02_SPEC01BIO
<b>Date (UTC)</b>	20170309
<b>Time (UTC)</b>	21:12:55
<b>Depth (m)</b>	464.3595
<b>Temperature (°C)</b>	8.22081
<b>Field ID(s)</b>	Primnoidae



<b>Comments</b>		
<b>Sample</b>		
<b>Sample ID</b>	EX1703_20170309T215423_D2_DIVE02_SPEC02BIO	
<b>Date (UTC)</b>	20170309	
<b>Time (UTC)</b>	21:54:23	
<b>Depth (m)</b>	449.2919	
<b>Temperature (°C)</b>	8.84476	
<b>Field ID(s)</b>	Plexauridae	
<b>Comments</b>	With ophiuroids	
<b>Sample</b>		
<b>Sample ID</b>	EX1703_20170309T233130_D2_DIVE02_SPEC03BIO	
<b>Date (UTC)</b>	20170309	
<b>Time (UTC)</b>	23:31:30	
<b>Depth (m)</b>	327.0098	
<b>Temperature (°C)</b>	12.13801	
<b>Field ID(s)</b>	Narella sp.	
<b>Comments</b>		

**Please direct inquiries to:**

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