



# Okeanos Explorer ROV Dive Summary

Dive Information	
Dive Map	<p style="text-align: right;">Bathymetry (m)</p> <ul style="list-style-type: none"> <li>-500</li> <li>-1500</li> <li>-3500</li> <li>-4500</li> <li>-5500</li> <li>-6500</li> <li>-8000</li> </ul> <p> <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid white; margin-right: 5px;"></span> EX-17-03 ROV Dive Locations  <span style="display: inline-block; border: 1px solid white; width: 20px; height: 10px; margin-right: 5px;"></span> Howland/Baker PRIMNM  <span style="display: inline-block; border: 1px solid blue; width: 20px; height: 10px; margin-right: 5px;"></span> Phoenix Islands Protected Area (PIPA)         </p> <p style="text-align: center;">Nautical Miles 0 50 100 200</p>
<b>Site Name</b>	unnamed seamount "Te Kaitira"
<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>	Phoenix Islands Protected Area (PIPA)
<b>ROV Dive Name</b>	
<b>Cruise</b>	EX-17-03



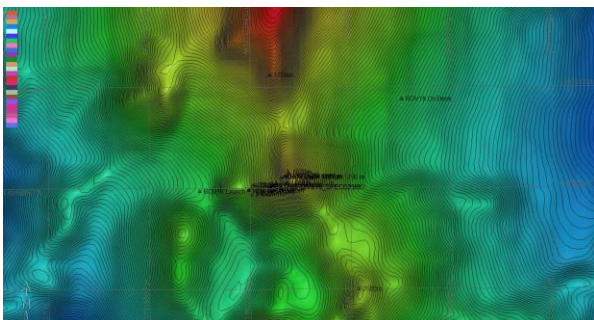
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<p><b>Purpose of the Dive</b></p>	<p>The general goal of this dive is to acquire baseline information on deep sea habitats, seafloor geology, and biological communities on features around an unnamed seamount (“Te Kaitira” in Gilbertese meaning “the last”) in the Phoenix Islands Protected Area (PIPA). Our dive will survey a feature south of the seamount proper on a small, deep knoll with a summit depth of 1800m. Deep-sea environments in this area are virtually unexplored leading to poor knowledge of biological resources protected within the boundaries of the protected area. This dive will provide some perspective on biological resources (e.g. fishes, biogenic habitat) as well as geological substrate (crust precipitates) of the seamount. Understanding deep-sea coral and sponge distribution, as well as bathyal fish assemblages, are of great importance to inform management in the PIPA. The age of this seamount is not known but nearby Matai Seamount to the south is aged around 61Ma.</p>
<p><b>Description of the Dive</b></p>	<p>EX1703 dive #18 was our last dive within PIPA on an unnamed seamount. The dive started at ~2103m at the base of a steep wall. The seafloor was composed of scattered boulders interspersed with sandy sediments. Fauna observed attached to the boulders included corals (bamboo, chrysogorgiids, cup corals [cf. <i>Desmophyllum</i>], black corals (whip [cf. <i>Stichopathes</i>] and branched forms [<i>Heteropathes</i>]), xenophyophores, euptectellid sponges, stalked crinoids (<i>Proisocrinus ruberrimus</i>), and a cusk eel (cf. Ophediidae: <i>Bassozetus</i>), and a purple holothurian. Coral associates included chirostyliid crabs, comatulid crinoids, and ophiuroids.</p> <p>As the dive track transitioned from a gentle slope to steep wall, there was a dramatic change in the seafloor geology. The wall was composed of linear plates of hard substrate with a botryoidal texture. Fauna observed primarily were encrusting and attached forms, including a variety of hexactinellid sponges (cf. <i>Periphragella</i> sp.), some very large on long stalks.</p> <p>Corals observed included several different chrysogorgiids (e.g., <i>Pleurogorgia</i> on vertical faces, <i>Chrysogorgia</i>), black corals (<i>Bathypathes</i> cf. <i>alternata</i>, <i>Heteropathes</i>, <i>Trissopathes</i>, <i>Stichopathes</i>, <i>Stauropathes</i>), bamboos (<i>Jasonisis</i> sp.), <i>Iridogorgia</i> spp., coralliids (e.g., <i>Hemicorallium</i>), <i>Anthomastus</i> spp., primnoids (cf. <i>Candidella gigantea</i>, <i>Narella</i> sp., <i>Paragorgia</i> cf. <i>coralloides</i> with zoanthids), and stoloniferans. Fish included multiple synphobranchids. Other invertebrates along the steep wall included the brisingid <i>Freyella</i>, several yellow comatulids, red</p>

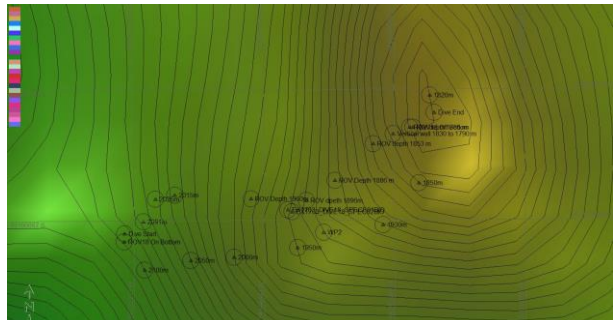
stalked crinoids (*Proisocrinus ruberrimus*), purple holothurian, tunicate, white squat lobsters (*Munidopsis* sp.), and sea urchins (aspidodiadematid with enlarged anal sac). During this portion of the dive, we encountered a large and deep crevice that was encrusted with mostly *Pleurogorgia* along with glass sponges and crinoids.

At around 1900 m, the terrain changed from a vertical face to a gentle ridge, and we observed a shift from *Pleurogorgia*-dominated coral communities to unknown primnoid colonies. Along this track, we observed a couple of cutthroat eels and one chimaera fish (*Hydrolagus* sp.). We also saw the largest colonies of *Paragorgia* (>1.5 m across), bamboo, the largest sponges, and chrysogorgiids (e.g., *Metallogorgia*). We sampled a *Paragorgia* and *Pleurogorgia* given of their high dominance, abundance, and their identification remains unresolved. Continuing up the ridge, we noticed another shift from coral-dominated to sponge-dominated benthic cover, including large *Poliopogon* (Pheronematidae), and overall reduction of current flow. We saw our second dumbo octopus (*Grimptoteuthis* sp.) for the expedition along this feature at ~ 1855 m. Throughout the remainder of the dive, we encountered a few large coral colonies, including *Iridogorgia* sp., bamboo (internodal brancher), and *Paragorgia*. We did not get to the summit of the feature, but reached a depth that was shallower (1786m) than our target off bottom depth (1806 m).

Overall Map of the ROV Dive Area



Close-up Map of Main Dive Site





**Representative Photos of the Dive**



D2 collected an bubblegum coral with encrusting zoanthid.

For the first time this expedition, a chimaera, or ghost fish, was observed around 1853 meters. These fish are distant relatives of sharks and have skeletons made out of cartilage.

**Samples Collected**

**Sample**

<b>Sample ID</b>	EX1703_20170325T232102_D2_DIVE18_SPEC01BIO	
<b>Date (UTC)</b>	20170325	
<b>Time (UTC)</b>	23:21:02	
<b>Depth (m)</b>	1902.028	
<b>Temperature (°C)</b>	2.31804	
<b>Field ID(s)</b>	Paragorgia sp.	
<b>Comments</b>		

**Sample**

<b>Sample ID</b>	EX1703_20170325T233700_D2_DIVE18_SPEC02BIO	
<b>Date (UTC)</b>	20170325	
<b>Time (UTC)</b>	23:37:00	
<b>Depth (m)</b>	1899.482	

<b>Temperature (°C)</b>	2.33125	
<b>Field ID(s)</b>	Primnoidae	
<b>Comments</b>		

**Please direct inquiries to:**

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