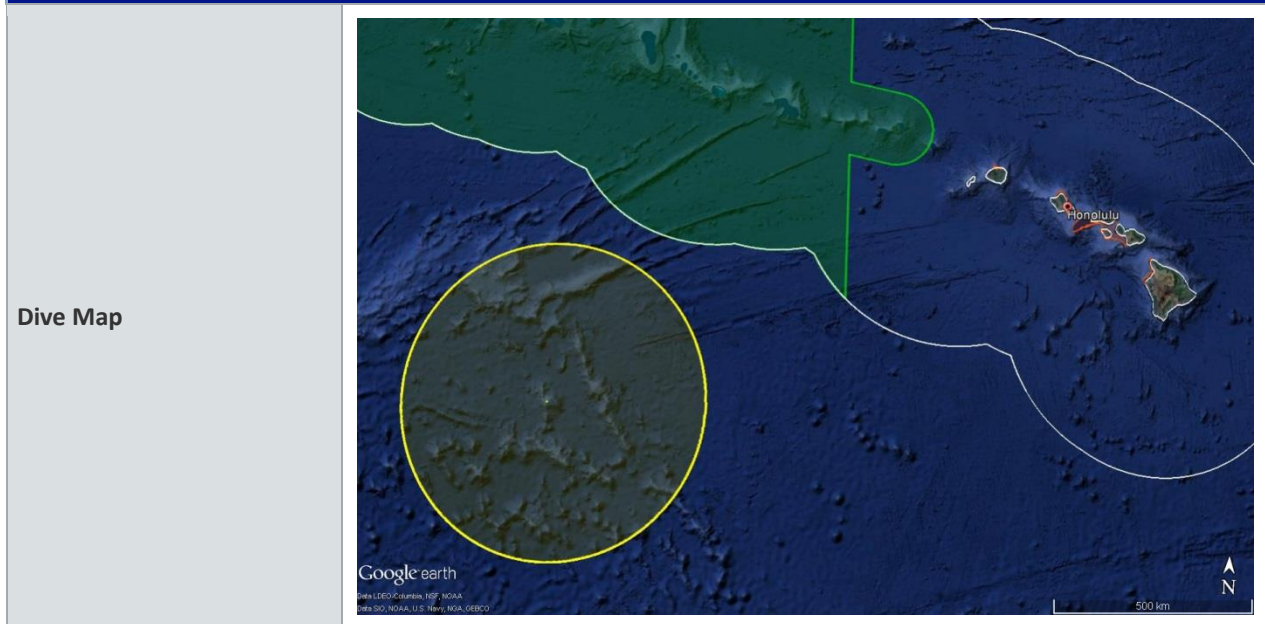




Okeanos Explorer ROV Dive Summary

Dive Information



Site Name	"Pierpont" Seamount
ROV Lead(s)	Dan Rogers
Expedition Coordinator(s) / Mapping Lead	Kelley Elliott / Mashkooor Malik
Science Team Lead(s)	Chris Kelley & Chris Mah
General Area Descriptor	Johnston Atoll Unit of PRIMNM

ROV Dive Name

Cruise	EX1706
Leg	
Dive Number	8

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

<p>Purpose of the Dive</p>	<p>Piermont Seamount is a Mn-crust geyot located in the JAU of the PRIMNM as well as in the PCZ. The edge of the summits of these types of flat-topped seamounts will be the first targeted by future deep sea mining efforts to extract Mn crusts because they are generally free of sediment, flat, and therefore can be relatively easily extracted by mining equipment. Geyot summit edges are also likely locations of deep water coral and sponge communities that could be impacted by crust extraction. This particular site is on a potential “pancake volcano” created by secondary volcanism that should yield valuable rocks for geologic aging. The site is also along the edge of the summit that was likely a Cretaceous reef. Backscatter data shows a hard substrate suitable for deep sea corals and sponges.</p> <p>Mid-Water: The water column is one of the most underexplored environments on the planet. Basic information is lacking on the distributions and abundances of midwater organisms in most parts of the globe, and the vicinity of Johnston Atoll remains a poorly explored region. ROV visual surveys provide crucial data on the distributions, abundances, and behaviors of a variety of midwater animals. ROV surveys are especially well-suited to observe the understudied gelatinous fauna, which commonly fall apart using traditional net sampling methods. Collecting acoustic backscatter data (Simrad EK60) throughout the cruise - including during ROV transects – will complement the ROV surveys by providing critical information on the depth and extent of deep scattering layers, diel vertical migrations, and ROV avoidance behavior.</p>
<p>Description of the Dive</p>	<p>The Deep Discoverer was deployed at 8:20AM and reached bottom depth (1600m) at 9:20 AM. Habitat today was hard bottom mostly covered by Mn crust with light to heavy sediment cover. Fauna was relatively sparse throughout the dive with sessile octocoral taxa perhaps being the dominant fauna. Among the most frequently seen were chrysogorgiids, including <i>Chrysogorgia</i> and <i>Metallogorgia</i> (with ophiuroid commensal), several species of bamboo corals, several members of the primnoid genera <i>Narella</i>, at least one and potentially 2 species of bubblegum corals (<i>Paragorgia</i>), all but one of which was overgrown with a yellow zoanthid. Two other octocorals observed were the distinctive purple <i>Victogorgia nuttingi</i> and a yellow plexaurid, possibly in the genus <i>Paramuricea</i>. One of the bamboo corals (<i>Keratoisis</i> sp?) and the yellow plexaurid were collected.</p> <p>Black corals included <i>Bathypathes</i>, <i>Stauropathes</i>, <i>Trissopathes</i>, <i>Alternatipathes</i>, and a potential record of a juvenile unidentified schizopathid that was small and unbranched. Several “soft corals” such as the mushroom coral <i>Anthomastus</i> as well as several sea pens (<i>Umbellula</i> and <i>Halipteris</i> sp), rock pens (<i>Anthoptilum</i>) and sea anemones of different sizes were also observed. An unusual benthic, predatory hydromedusae (jellyfish), <i>Aegina citraea</i> was observed on the underside of the branches on a moderately sized bamboo coral. Polyps adjacent to the jellyfish appeared damaged or withdrawn.</p> <p>Other benthic animals included several predatory tunicates (similar to those in the genus <i>Megalodicopia</i>), stalked glass sponges in the genera <i>Bolosoma</i> and <i>Caulophacus</i>, <i>Poliopogon</i> and possibly <i>Dictyocalyx</i>. Perhaps the most noteworthy observations from today’s dive were those of the echinoderms. Numerous observations of the stalked crinoid <i>Proisocrinus ruberrimus</i> were made as well as one yellow stalked hyocrinid. Predation by seastars was perhaps the highlight of the dive with numerous observations of <i>Evoplosoma</i> and <i>Circeaster</i> feeding on</p>



Iridigorgia, an unidentified primnoid coral (probably *Narella*), and *Chrysogorgia*. One goniasterid, tentatively identified as *Evoplosoma* (“*Calliaster*” in the video log/database) was not observed feeding but was in close proximity to a rock pen (*Anthoptilum*). Related sea pen species are well known as prey for hippasterine goniasterids such as *Evoplosoma* and *Hippasteria*. One very novel observation was that of a goniasterid, possibly *Ceramaster*, feeding on the stalk of calyx-less stalked crinoid *Proisocrinus ruberrimus*. It’s unclear if the asteroid fed directly upon the crinoid or if it was scavenging upon it. Other asteroids seen on the substrate were a possibly new, red pedicellasterid, and several individuals of *Zoroaster* sp., brisingids and a few other goniasterids. Arthropods were not particularly abundant but those observed included large pedunculate (i.e. stalked) barnacles, a homolid crab (*Lomoha longirostris*), shrimps, and several squat lobster commensals associated with octocorals. The arthropod highlight was a large sea spider (Collossendeidae). The only fishes observed were a few cutthroat eels (Synphobranchidae) and halosaurs (*Aldovandria* sp).

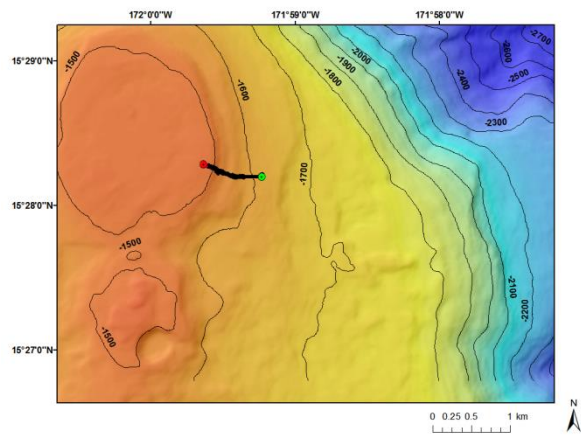
The benthic component of today’s dive ended at approximately 15:30 HST with a series of midwater transects beginning at 16:00 HST at a depth 800 m. Transects continued at 100 m increments until a final depth of between 200-300m.

Midwater fauna observed included both pelagic metazoans and protists. Among the most abundant were siphonophores (e.g., *Praya*), colonial gelatinous hydrozoans, numerous medusae, comb jellies, and salps (both single and in chains). Many of the lobate comb jellies show very distinctive morphologies. Larvaceans and their mucous houses were observed with some frequency. Distinctive along with strikingly colored arrow worms (chaetognaths). Perhaps most striking among the deep-water organisms were protists, including a very striking “starburst” colored, shimmering radiolarian as well as a coelodendrid phaeodarian that possessed four bizarre glassine tentacles. Midwater fishes included the vertical inhabiting *Serrivomer*, as well as *Gonostoma gracile*, and *Sternoptyx* (hatchet fish)

Overall Map of the ROV Dive Area







Representative Photos of the Dive



Flat sediment covered hard pan substrate seen most of the dive, with this image showing a stalked red crinoid (*Proisocrinus* sp) and a stalked sponge (*Caulophacus* sp).



A seastar apparently predated on a stalked crinoid at a gently sloping terrace where Mn crusted pillow lavas were found.

Samples Collected

Sample

Sample ID	D2_DIVE_SPEC01BIO
Date (UTC)	20170722
Time (UTC)	203742
Depth (m)	1603



Temperature (°C)	3.0	
Field ID(s)	Calliaster sp?	

Comments

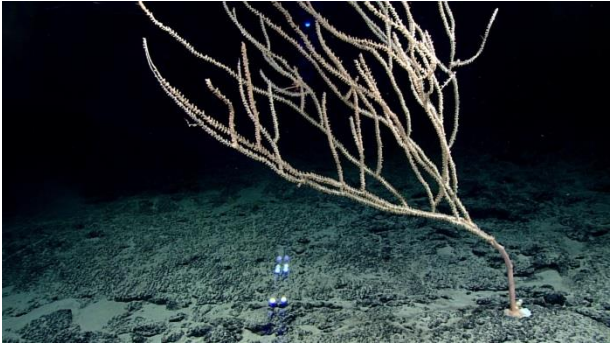
Sample

Sample ID	D2_DIVE_SPEC02GEO	
Date (UTC)	20170722	
Time (UTC)	223653	
Depth (m)	1554	
Temperature (°C)		
Field ID(s)	Mn crusted rock	
Comments		

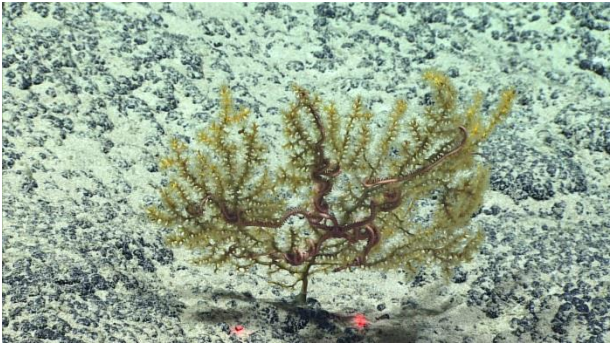

Sample

Sample ID	D2_DIVE_SPEC03GEO	
Date (UTC)	20170722	
Time (UTC)	234210	
Depth (m)	1528	
Temperature (°C)		
Field ID(s)	Mn crusted rock	
Comments		

Sample

Sample ID	D2_DIVE_SPEC04BIO	
Date (UTC)	20170723	
Time (UTC)	002039	
Depth (m)	1523	
Temperature (°C)	2.9	
Field ID(s)	Keratoisis sp	
Comments		



Comments		
Sample		
Sample ID	D2_DIVE_SPEC05BIO	
Date (UTC)	20170723	
Time (UTC)	005407	
Depth (m)	1509	
Temperature (°C)	2.9	
Field ID(s)	Plexauridae	
Comments		
Sample		
Sample ID	D2_DIVE_SPEC05BIO_A01	
Date (UTC)	20170723	
Time (UTC)	005407	
Depth (m)	1509	
Temperature (°C)	2.9	
Field ID(s)	Asteroschematidae	
Comments		

Please direct inquiries to:

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