

Okeanos Explorer ROV Dive Summary

Dive Information	
Dive Map	
Site Name	South East Guyot Ridge – “Keli” Ridge
ROV Lead(s)	Dan Rogers
Expedition Coordinator(s) / Mapping Lead	Kelley Elliott / Mashkoor 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	14
Equipment Deployed	
ROV	Deep Discoverer (D2)
Camera Platform	Seirios
ROV Measurements	<input checked="" type="checkbox"/> CTD <input checked="" type="checkbox"/> Depth <input checked="" type="checkbox"/> Altitude <input checked="" type="checkbox"/> Scanning Sonar <input checked="" type="checkbox"/> USBL Position <input checked="" type="checkbox"/> Heading

Purpose of the Dive

This is a presumed Mn-crusting rift zone ridge extending SE from a guyot located in JAU as well as the PCZ. These ridges are a CAPSTONE priority because previous surveys have found large scale, high density communities of deep water corals and sponges on this type of topography as well as the many other animals they support. Ridges act as barriers to bottom current flow and their crests are locations where currents accelerated, which is where the corals and sponges are most heavily aggregated. Ridges are also sites where basalt can be found and are therefore desirable locations for obtaining rocks for dating seamounts.

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.



Description of the Dive

Benthic Dive details

The D2 was deployed at 8:30AM and reached bottom at approximately 10AM at a starting depth of 2470 m. The bottom was rocky composed of a solid, cemented surface, including boulders and rocks. As the D2 progressed up the slope, the bottom became increasingly steep with large blocks and boulders and craters.

Porifera

Porifera were the dominant taxon observed during today's dive. Several large and moderate to small sized glass sponges were observed during the former half of the transit. These include commonly encountered taxa such as *Bolosoma* and *Caulophacus* as well as smaller vase sponges such as *Atlantisella*. An unusual glass sponge similar to *Walteria* was observed and collected.

The latter half of the dive is denoted by the sudden appearance of a huge abundance of narrow, needle-like carnivorous sponges (*Cladorhizidae?*). These covered numerous rocky surfaces in dense but evenly spaced aggregations along the survey line, especially on large boulders and cliffs where currents ran over the edges. Abundance varied across the distance surveyed with dense aggregations present near areas of high current flow with less abundant populations present on rock away from these areas. In one area near the end of the dive, we observed these *cladorhizids* as part of a widespread community with bryozoans and zoanthids.

Cnidaria

Among the most notable of cnidarians observed during the dive was a red/orange benthic siphonophore present in a concavity on the underside of a large basalt boulder. Numerous colonial octocorals and hexacorals were also observed. Among the octocorals observed frequently during today's dive were in the family *Chrysogorgiidae* (e.g., *Chrysogorgia* and *Pleuorgorgia*), *Primnoidae* (*Narella* and 3 undescribed genera), *Isididae* (including *Jasonis*, *Lepidisis* and several unbranched forms and whips) and several precious corals (*Hemicorallium*).

Hexacorals included two genera of black corals (*Antipatharia*), including *Alternatipathes* and *Umbellapathes*. A scleractinian cup coral (*Polymyces*), zoantids and sea anemones were also observed.

Various tubulariid hydroids were also observed.

Echinodermata

Among the asteroids observed today were a new brown morph of the pterasterid *Hymenaster*, a large *Lophaster* sp. (10 cm diameter) which has previously been observed preying upon feather stars, a 16 armed brisingid, tentatively identified as *Hymenodiscus*, and a new genus/species of goniasterid which was observed feeding on a branch with *Pleuogorgia* and some sponges. A small white urchin which was tentatively classified as being an "irregular urchin" (i.e within the *Irregularia*) was observed. The purple crinoid *Cytocrinus* was observed in addition to several feather stars observed on perches throughout the dive. Several ophiacanthids were observed as commensals on corals and sponges.

Crustacea: Crustaceans observed today included numerous dead barnacles present in unusual wave-shaped forms on the rock edges. Also frequently encountered were shrimps in the genus *Nematocarcinus* and multiple squat lobster commensals on different octocoral colonies.

Bryozoa: Multiple colonies of a frond-like bryozoan were identified during the dive



today, varying from very small to very large (deep to shallow). Lophophores were definitely identified on the colonies from the cladorhizid sponge community.

Chordata: The highlight of today's observed fishes was the observation of what seemed to be a likely new genus/species of snailfish (family Liparidae). Other fishes included several grenadiers in the genus *Kumba*, and at least two observations of cusk eels (Ophidiidae).

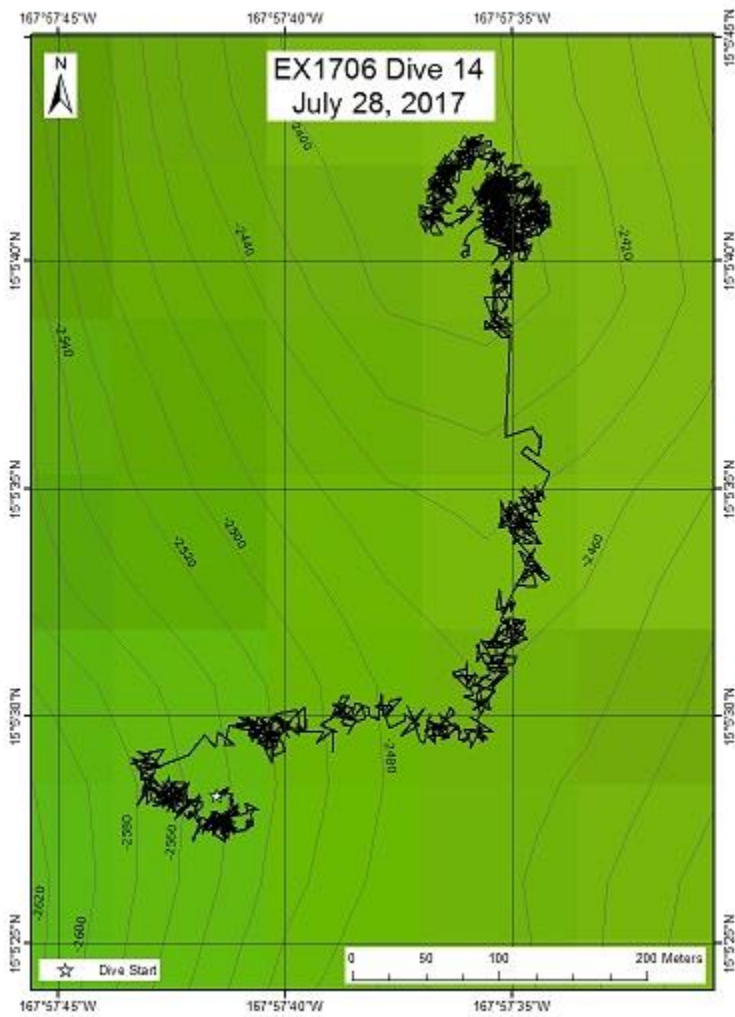
The protocol for the mid-water transect followed that of the one previously performed, starting at 800m and ascending to 200m. This transect involved additional personnel visiting from Karen Osborn's lab at the NMNH Dept. of Invertebrate Zoology.

Observations were dominated primarily by siphonophores. Larvaceans were also frequently observed. A diversity of pelagic were observed including comb jellies, medusozoans, alciopid worms (Polychaeta), shrimps, radiolarian colonies, and other protists. Chaetognaths (arrow worms) were also frequently observed.

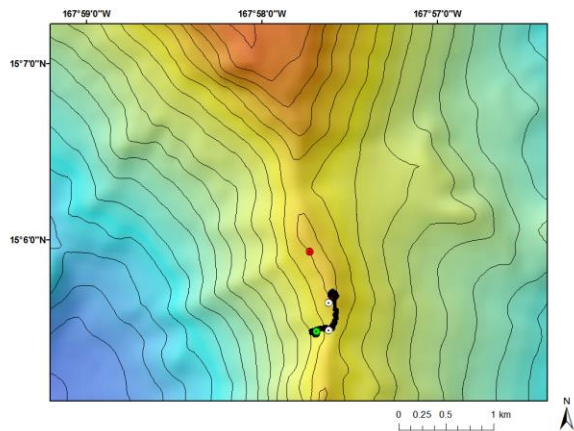
Several fish, including leptocephalus larvae (juvenile eels) and bristle mouths (Cyclothone) were observed. Surprisingly, few to any members of the genus *Serrovomer* were observed.



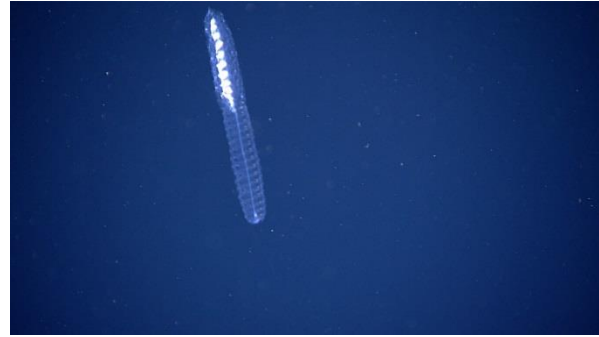
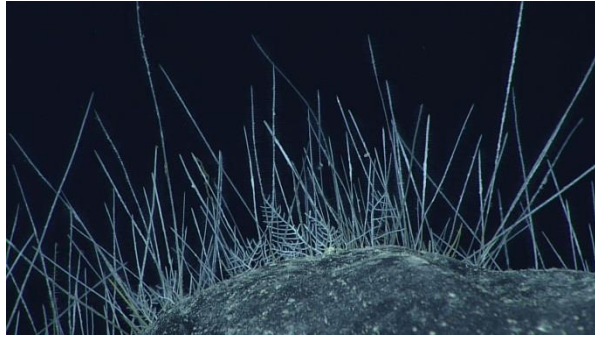
Overall Map of the ROV Dive Area



Close-up Map of Main Dive Site



Representative Photos of the Dive



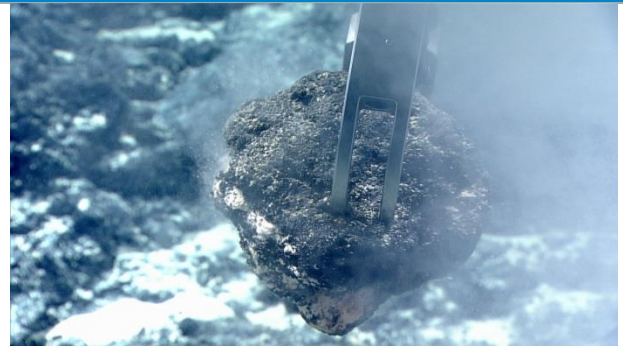
Cladorhizid demosponge bed with apparent bryozoan colonies

Siphonophore imaged during the midwater portion of the dive

Samples Collected

Sample

Sample ID	D2_DIVE14_SPEC01GEO
Date (UTC)	20170728
Time (UTC)	202356
Depth (m)	2546
Temperature (°C)	
Field ID(s)	Mn crusted rock



Comments

Sample

Sample ID	D2_DIVE_SPEC02GEO
Date (UTC)	20170728
Time (UTC)	225754
Depth (m)	2431
Temperature (°C)	
Field ID(s)	Mn crusted rock



Comments

Sample

Sample ID	D2_DIVE14_SPEC03BIO
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Date (UTC)	20170728
Time (UTC)	230719
Depth (m)	2430
Temperature (°C)	
Field ID(s)	Hexactinellida?
Comments	
Sample	
Sample ID	D2_DIVE14_SPEC04BIO
Date (UTC)	201707
Time (UTC)	010425
Depth (m)	2367
Temperature (°C)	
Field ID(s)	Bryozoa
Comments	Also collected two cladorhizid sponges with the grab



Please direct inquiries to:

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