



Okeanos Explorer ROV Dive Summary

| Dive Information | | | |
|--|----------------------------------|---------------|---------------|
| Dive Map | | | |
| Site Name | "Ridge" 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 | 11 | | |
| 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 |
| | LSS | ORP | |
| Equipment Malfunctions | None | | |
| ROV Dive Summary (from processed ROV data) | <p style="text-align: center;">Dive Summary: EX1706_DIVE11 ^-----^</p> <p>In Water: 2017-07-25T18:31:06.424000 14°, 28.568' N ; 170°, 51.551' W</p> <p>Out Water: 2017-07-26T01:59:38.680000 14°, 28.341' N ; 170°, 51.028' W</p> <p>Off Bottom: 2017-07-26T00:41:30.165000 14°, 28.330' N ; 170°, 51.298' W</p> <p>On Bottom: 2017-07-25T19:58:07.475000 14°, 28.462' N ; 170°, 51.435' W</p> <p>Dive duration: 7:28:32</p> <p>Bottom Time: 4:43:22</p> <p>Max. depth: 2441.1m</p> | | |
| Special Notes | | | |
| Scientists Involved (please provide name, location, affiliation, email) | <p style="text-align: center;">Amanda Netburn, FAU CIOERT/OER, amanda.netburn@noaa.gov Asako Matsumoto, Planetary Exploration Research Center, Chiba Institute of Technology, Japan, amatsu@gorgonian.jp Chris Kelley, UH, ckelly@hawaii.edu Chris Mah, SI NMNH, brisinga@gmail.com John Smith, University of Hawaii/SOEST, jrsmith@hawaii.edu Les Watling, University of Hawaii at Manoa, watling@hawaii.edu Nicole Morgan, Florida State University, nmorgan@fsu.edu Nolan Barrett, FAU Harbor Branch Oceanographic Institute, barrettnh@g.cofc.edu Scott France, University of Louisiana at Lafayette, france@louisiana.edu Tara Harmer-Luke, Stockton University, luket@stockton.edu Timothy Shank, Woods Hole Oceanographic Institution, tshank@whoi.edu Tina Molodtsova, P.P. Shirshov Institute of Oceanology RAS, tina.molodtsova@gmail.com Megan McCuller, Southern Maine Community College, mccullermi@gmail.com</p> | | |



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| <p>Purpose of the Dive</p> | <p>This dive was designed to be one of four placeholder sites for exploring seamounts in the southern part of the monument where no previous mapping or ROV surveys have been conducted. This area has a complex distribution of seamounts some of which may be guyots and others conical in shape based on satellite altimetry data. Rocks collected at these sites may help clarify the geologic history of this region of the monument. This seamount was mapped two nights ago and found to have a ridge shape running northwest to southeast. A pre-dive briefing was held at the end of dive 10 and the decision was made to dive just below its summit then coming on the crest and running along it in the hopes of finding a community of corals and sponges.</p> |
| <p>Description of the Dive</p> | <p>The Deep Discoverer was deployed at 8:30 AM and arrived at bottom at 9:55 AM. The bottom was characterized by large boulders, cemented basalt and rocks with a heavy manganese crust. A light dusting of sediment was observed.</p> <p>Today's dive was largely composed of a sustained community of porifera as well as other filter-feeding colonial octocorals and associated invertebrates. No fish were seen today. The dive began with a mixed assemblage of corals and sponges following arrival of the D2 at the sea bottom.</p> <p>This mixture of sponges and corals continued consistently as they began the upward slope until they reached a ridge where current changed and the sessile fauna changed to one composed almost exclusively of medium to large sized glass sponges. Diversity in that zone was also perceived as increasing. A subsequent region remained abundance-rich but faunal composition changed between these zones from glass sponges to octocorals.</p> <p>Porifera</p> <p>Glass sponges were observed as the dominant invertebrate taxon present on today's dive. Starting early in the dive they were present in relatively moderate abundance and diversity especially in balance to sessile octocorals but upon reaching the summit, glass sponge abundance and diversity increased dramatically becoming the overwhelmingly dominant taxon in the area with only minimal representation by corals and other metazoans. Dead glass sponge skeletons were also observed, in some cases with high abundance.</p> <p>During the initial period of the cruise, commonly encountered glass sponges included members of the Farreidae, the genus <i>Bolosoma</i>, and a high abundance of the genus <i>Poliopogon</i> growing on dead sponge bodies of the genus <i>Aspidoscopulia</i> at unusual angles relative to the axis of the latter. The <i>Poliopogon/Aspidoscopulia</i> were abundant and frequently encountered all throughout the cruise.</p> <p>Upon reaching the ridge the abundance and diversity of glass sponges increased dramatically, forming a strikingly dominated hexactinellid community. Some genera, such as <i>Poliopogon</i> and <i>Aspidoscopulia</i> attained unusually large sizes, with individuals reaching up to 5 feet tall and 2 to 5 feet wide. Multiple glass sponges in addition to <i>Poliopogon</i> and <i>Aspidoscopulia</i> were observed, including taxa belonging to the Farreidae, the Euplectellidae, a new genus in the Bolosominae, and further members of the Pheronematidae were present. Many of the observed sponges had their concave sides directed towards the current. A new sponge species in the genus <i>Poliopogon</i> was observed and collected.</p> <p>Cnidaria</p> <p>Colonial octocorals were the second most abundant group of organisms</p> |



observed during the dive today and were among the most notable, This included members of the Chrysogorgiidae (esp. in Chrysogorgia, Pleurogorgia), the Primnoidae (esp. *Narella* and *Calyptophora*), Corallidae (genus *Hemicorallium*) and the Isididae. Approximately five or six species of bamboo corals (Isididae) were observed today including species from *Eknomisis*, the Keratoisidinae as well as new members from the B1 clade.

Notable among the observations that members of the Isididae have been among the tallest known isidid “whip” forms recorded during this expedition with two individuals reaching over 4.0 and 4.7 meters respectively.

A minority of hexacorallian cnidarians were observed today including the black coral *Parantipathes*, a “stoloniferous” zoanthid, and at least two species of sea anemones including several small individuals repeatedly covering a primnoid coral and several belonging to the Actinoscyphidae.

Other notable cnidarians included numerous small epizoid hydroids, small benthic ctenophore present on a glass sponge, a 4 armed narco medusae and a small jellyfish, similar to the genus *Halicreas*, discovered adhering to the underside of a rock and a small benthic comb jelly with elongate tentacles extended.

Echinodermata

Relatively few observations of echinoderms were made during this dive. Among the most noteworthy was a single observation of a stalked crinoids in the genus *Bathycrinus*, which displayed epizoid hydroids present on the stalk. Numerous other feather stars (comatulid crinoids) were observed perched on rocks, corals and sponges. We observed one feather star with eulimid snails, which had parasitized the arms of one observed comatulid. Two individuals of the solasterid sea star, *Lophaster* were observed as well as one filter-feeding brisingid. The only sea urchin observed today was an echinothuriid in the genus *Tromikosoma*. Numerous ophiuroid commensals on corals were observed, some belonging to the family Asteroschematidae displayed closer obligate relationships with their hosts (e.g. on *Hemicorallium*), whereas some ophiacanthids (*Ophioplinthaca*?) were present on numerous octocorals, such as those in the Chrysogorgiidae. One exceptional ophiuroid, *Astrophiura* sp., which shows small arms and a well-developed flush disk was observed. At least two species of deposit feeding sea cucumbers were observed, one completely transparent species in the family Elpidiidae and another purple, translucent species in the Synallactidae, possibly *Hansenothuria*.

Miscellaneous taxa

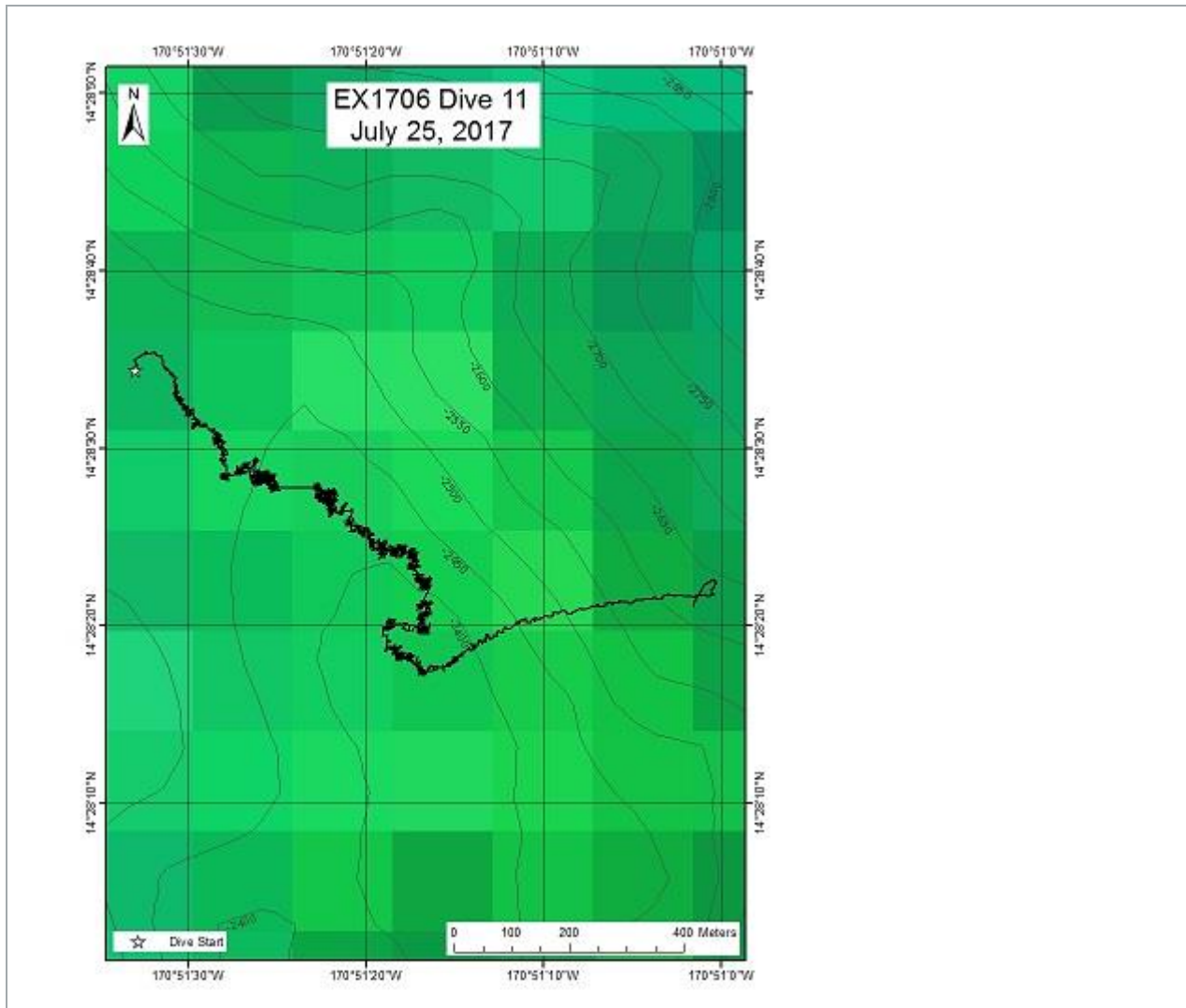
Other organisms observed today include several shrimps (genus *Nematocarcinus*) as well as several squat lobsters in the family Munidae which were present as associates on sponges and Chrysogorgiidae

Various small swimming polychaetes and other worms of unknown affinity were seen on coral surfaces as commensals.

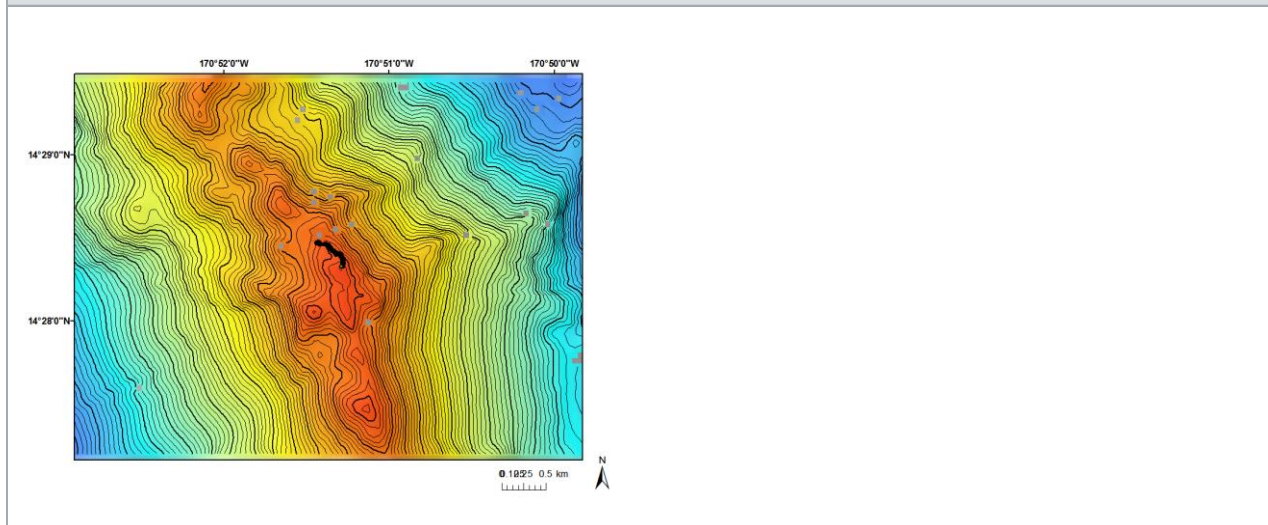
Also observed in some abundance were many more small lyrate shaped organisms which were not identified.

Overall Map of the ROV Dive Area



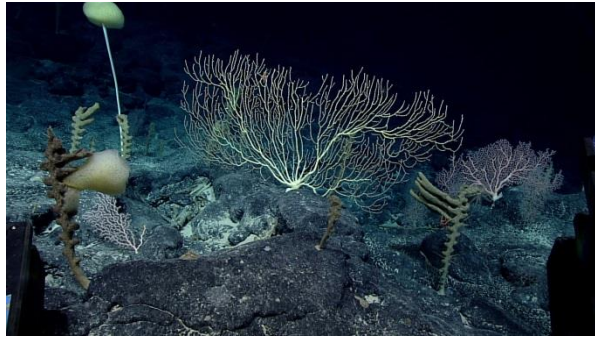


Close-up Map of Main Dive Site

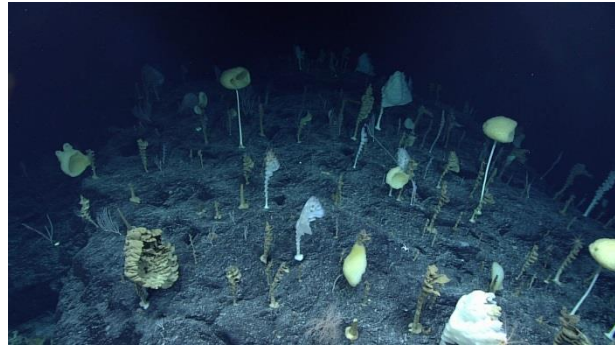


Representative Photos of the Dive





The moderate community of corals and sponges encountered shortly after arriving on bottom



The amazing sponge-dominated community encountered on the ridge crest just below the summit.

Samples Collected

Sample

| | |
|------------------|-------------------|
| Sample ID | D2_DIVE_SPEC01GEO |
| Date (UTC) | 20170725 |
| Time (UTC) | 202518 |
| Depth (m) | 2439 |
| Temperature (°C) | 1.8 |
| Field ID(s) | Mn crusted rock |
| Comments | |

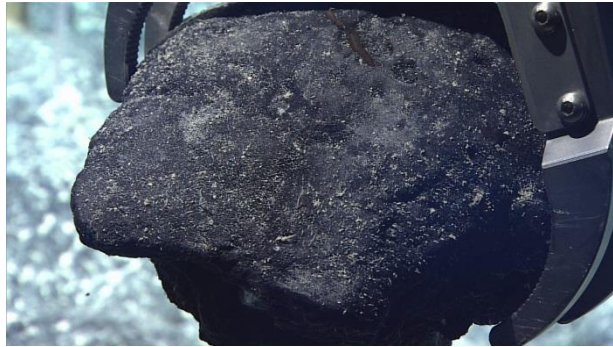


Sample

| | |
|------------------|---|
| Sample ID | D2_DIVE_SPEC02BIO |
| Date (UTC) | 20170725 |
| Time (UTC) | 210909 |
| Depth (m) | 2405 |
| Temperature (°C) | 1.8 |
| Field ID(s) | Unidentified octocoral (<i>Paragorgia</i> sp or Anthothelidae) |
| Comments | |



| Sample | |
|------------------|-------------------|
| Sample ID | D2_DIVE_SPEC03GEO |
| Date (UTC) | 20170725 |
| Time (UTC) | 220315 |
| Depth (m) | 2403 |
| Temperature (°C) | 1.8 |
| Field ID(s) | Mn crusted rock |
| Comments | |



| Sample | |
|------------------|-----------------------------|
| Sample ID | D2_DIVE_SPEC04BIO |
| Date (UTC) | 20170725 |
| Time (UTC) | 233450 |
| Depth (m) | 2375 |
| Temperature (°C) | 1.8 |
| Field ID(s) | <i>Poliopogon</i> sp yellow |
| Comments | |



Please direct inquiries to:

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

