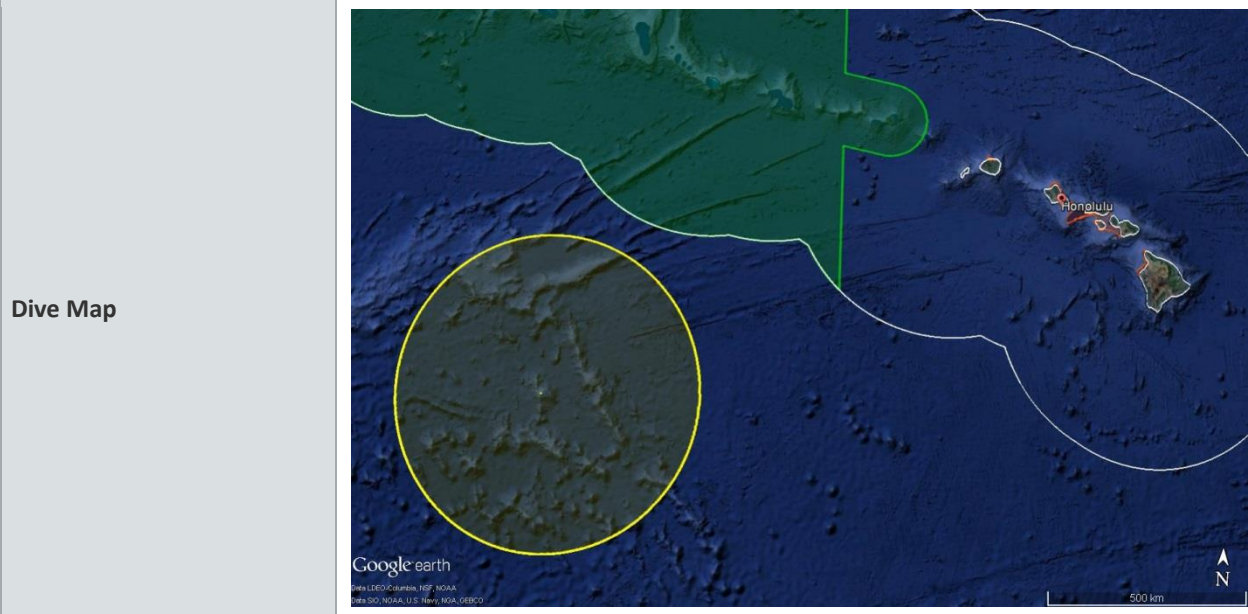




Okeanos Explorer ROV Dive Summary

Dive Information



| | |
|---|--|
| Site Name | Un-named Guyot north of Johnston Atoll |
| 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 | 3 |

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 |

| | |
|---|--|
| <p>Scientists Involved (please provide name, location, affiliation, email)</p> | <p>Amy Baco Taylor, Florida State University, abacotaylor@fsu.edu Asako Matsumoto, Planetary Exploration Research Center, Chiba Institute of Technology, Japan, amatsu@gorgonian.jp Chris Kelley, UH, ckelley@hawaii.edu Chris Mah, SI NMNH, brisinga@gmail.com Dhugal Lindsay, JAMSTEC, dhugal@jamstec.go.jp Donald Kobayashi, NOAA NMFS PIFSC, donald.kobayashi@noaa.gov Heather Judkins, University of South Florida St. Petersburg, Judkins@mail.usf.edu John Smith, University of Hawaii/SOEST, jrsmith@hawaii.edu Ken Sulak, U.S. Geological Survey, ksulak@usgs.gov Kevin Kocot, The University of Alabama , kmkocot@ua.edu Les Watling, University of Hawaii at Manoa, watling@hawaii.edu Michael Vecchione, NMFS, vecchiom@si.edu Mike Ford, NOAA Fisheries, michael.ford@noaa.gov Nikola Rodriguez, NOAA EPP, nikola.rodriguez@noaa.gov Nolan Barrett, FAU Harbor Branch Oceanographic Institute, barrettnh@g.cofc.edu Scott France, University of Louisiana at Lafayette, france@louisiana.edu Steven Auscavitch, Temple University, steven.auscavitch@temple.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 Tracey Sutton, Nova Southeastern University, tsutton1@nova.edu</p> |
| <p>Purpose of the Dive</p> | <p>This is a Mn-crusted guyot located in the PCZ. Guyot summit edges, cones, and rift zone ridges are also likely locations of deep water coral and sponge communities that could be impacted by crust extraction. This particular guyot was selected in part for logistical reasons since this is located within an overnight transit from the first site and is also within an overnight transit for the next site. The dive site is on a presumed Mn-crusted rift zone ridge extending south from the summit. 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.</p> |



Description of the Dive

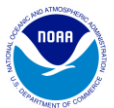
The D2 ROV landed at 2571 m on a flat bottom composed almost entirely of moderately large, Mn nodules covering a lighter-colored sediment. There were several places where the D2 ROV touched down clearly showing the nodules were loose and not consolidated. Megafauna were sparse dominance was primarily occupied by large hexactinellid sponges in the genus *Semperella*, approximately 0.5 to 1.0 meter tall sitting on convex sandy patches amidst the Mn nodules.

While traversing the Mn nodule field, notable invertebrate observations included a hermit crab (*Sympagurus cf. burkenroadi*.) with a zoanthid replaced shell as well as smaller “goblet” sponges in the family Hyalonematidae (genus *Hyalonema?*). One notable observation was that of an antipatharian, *Schizopathes*, which had “cleaned” the organic detritus off the Mn nodules in a circle around it using a circular brushing motion.

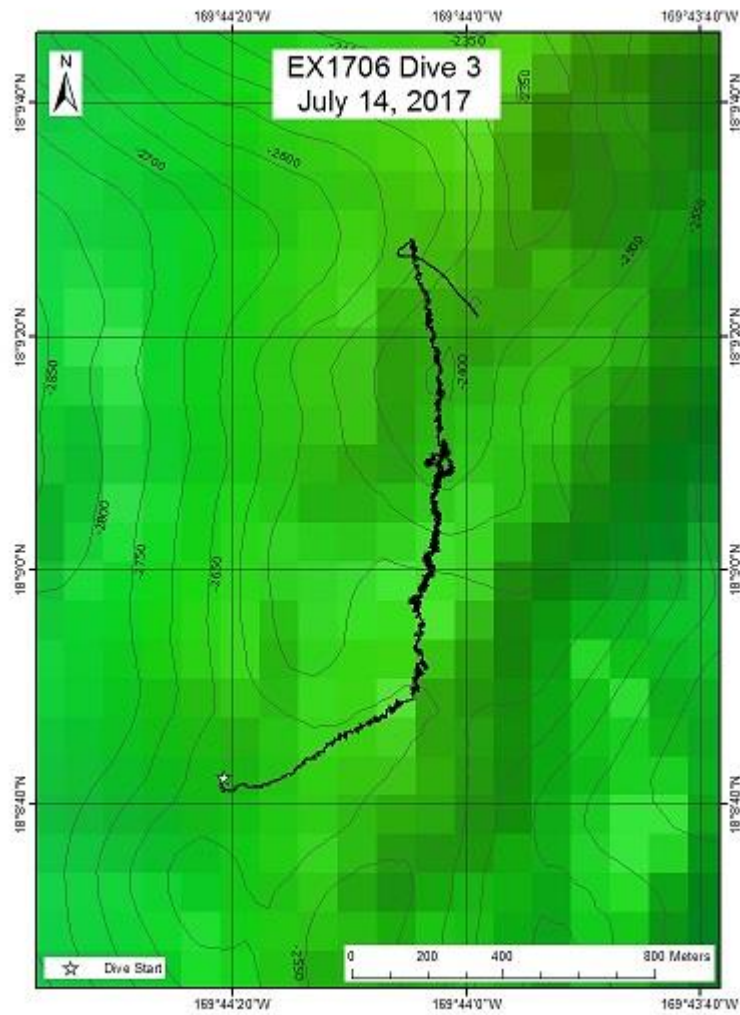
After a few hours travel (at about 10-11 am), the substrate transitioned from a Mn nodule covered sediment field to a steeper more consolidated rock that included Mn crusted basalt pillows, boulders, and cemented sediment. We collected two rock samples, one of which appeared to be Mn crusted sediment when a piece broke off in the lab. Megafauna abundance increased at this point further upslope where sea anemones and various corals including chrysogorgiids (*Pleurogorgia* sp and *Chrysogorgia* sp) were observed. A striking diversity of deep-sea animals and in some cases, their behavior and relationships was observed. Among the highlights included a stalked crinoid in the Bathycrinidae (*Bathycrinus*) which displayed a heavy cover of hydroids on its stalk as well as what appeared to be a small eulimid snail attached to the cup, possibly parasitizing on the crinoid. A second, stalked crinoid in the Hyocrinidae displayed only four arms with a fifth suffering a missing arm but with a eulimid snail attached onto the stump where the arm was originally present. Other animals included a swimming sea cucumber cf. *Amperrima* as well as several ophiacanthid ophiuroids. A potentially new synallactid sea cucumber with a translucent body wall was collected since its identification has been problematic. A new record of *Chrysogorgia* sp. which had been previously known from the East Pacific was also collected along with its associates that included a squat lobster, amphipods and several small polychaetes. A striking observation of what was perceived as swimming/escape behavior in a black cerianthid anemone which the D2 attempted to collect. The specimen moved out of the way of the manipulator arm and avoided placement within the Biology sample box.

Midwater Transect Highlights

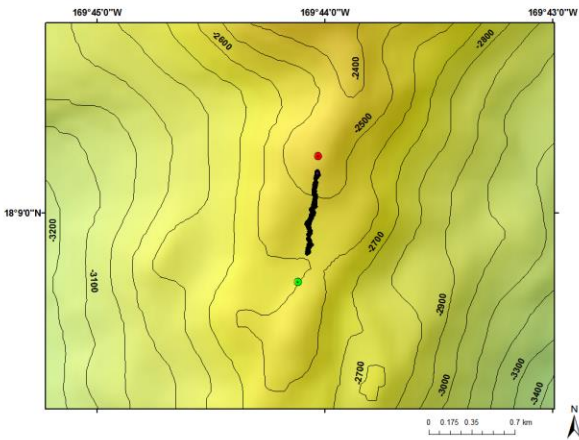
Following the end of the benthic segment of the dive we undertook a set of midwater transects beginning at 800 m. A total of six transect depths was undertaken at 100 m intervals, with additional transects at 700, 600, 500, 400 and 300 m. Highlights of these transects included observations of numerous larvacean houses, many with the original larvacean present as well as several narcomedusae (genus *Bathykorus*), several hydromedusae and an opaque reddish jellyfish in the genus *Periphyllopsis*. Fish diversity included a hatchet fish, bristlemouths (*Cyclothone*) and a striking observation of a Sawtooth eel, *Serravomer* sp.



Overall Map of the ROV Dive Area



Close-up Map of Main Dive Site



Representative Photos of the Dive



Glass sponge (*Semperella*) in Mn nodule field



Crinoids, corals, and sponges further upslope on rocky steeper substrate

Samples Collected

Sample

| | |
|------------------|-------------------------|
| Sample ID | D2_DIVE03_SPEC01BIO |
| Date (UTC) | 20170714 |
| Time (UTC) | 21:43:14 |
| Depth (m) | 2563 |
| Temperature (°C) | |
| Field ID(s) | <i>Chrysogorgia</i> sp. |
| Comments | |



Sample

| | |
|------------------|---------------------|
| Sample ID | D2_DIVE03_SPEC02GEO |
| Date (UTC) | 20170714 |
| Time (UTC) | 215108 |
| Depth (m) | 2562 |
| Temperature (°C) | |
| Field ID(s) | Mn crusted rock |
| Comments | |



| Sample | |
|------------------|---------------------|
| Sample ID | D2_DIVE03_SPEC03GEO |
| Date (UTC) | 20170714 |
| Time (UTC) | 215627 |
| Depth (m) | 2561 |
| Temperature (°C) | |
| Field ID(s) | Mn crusted rock |
| Comments | |



| Sample | |
|------------------|---------------------|
| Sample ID | D2_DIVE10_SPEC04BIO |
| Date (UTC) | 20170714 |
| Time (UTC) | 231001 |
| Depth (m) | 2501 |
| Temperature (°C) | |
| Field ID(s) | Laetmogonidae? |
| Comments | |



Please direct inquiries to:

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