*Okeanos Explorer* ROV Dive Summary

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Dive Information | | | | | |
| General Location | |  | | | |
| General Area Descriptor | | Gulf of Mexico | | | |
| Site Name | | Penchant Basin (GC276) | | | |
| Science Team Leads | | Diva Amon and Charles Messing | | | |
| Expedition Coordinator | | Brian Kennedy | | | |
| ROV Dive Supervisor | | Dan Rogers | | | |
| Mapping Lead | | Mike White | | | |
| ROV Dive Name | | | | | |
| Cruise | | EX1711 | | | |
| Leg | | - | | | |
| Dive Number | | DIVE14 | | | |
| Equipment Deployed | | | | | |
| ROV | | Deep Discoverer | | | |
| 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 |
| Equipment Malfunctions | | none | | | |
| ROV Dive Summary (from processed ROV data) | | Dive Summary: EX1711\_DIVE14  ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^  In Water: 2017-12-17T16:07:04.722000  27°, 39.987' N ; 091°, 20.620' W  Out Water: 2017-12-17T22:52:33.485000  27°, 39.472' N ; 091°, 20.671' W  Off Bottom: 2017-12-17T21:56:53.224000  27°, 39.804' N ; 091°, 21.054' W  On Bottom: 2017-12-17T16:49:17.825000  27°, 39.899' N ; 091°, 20.624' W  Dive duration: 6:45:28  Bottom Time: 5:7:35  Max. depth: 805.4 m | | | |
| Special Notes | | none | | | |
| Scientists Involved  (please provide name, location, affiliation, email) | | |  |  |  | | --- | --- | --- | | **Name** | **Affiliation** | **Email** | | Alexandra Avila | Oregon State University / Nancy Foster Scholar (ONMS) | alexandra.m.avila@gmail.com | | Andrea Quattrini | Harvey Mudd College | aquattrini@g.hmc.edu | | Andrew Shuler | NOAA/JHT, inc. | andrew.shuler@noaa.gov | | Asako Matsumoto | Planetary Exploration Research Center, Chiba Institute of Technology | amatsu@gorgonian.jp | | Carolyn Ruppel | US Geological Survey | cruppel@usgs.gov | | Charles Messing | Nova Southeastern University | messingc@nova.edu | | Dhugal Lindsay | JAMSTEC | dhugal@jamstec.go.jp | | Diva Amon | Natural History Museum, London | divaamon@gmail.com | | Erik Cordes | Temple University | ecordes@temple.edu | | Kenneth Sulak | USGS | ksulak@usgs.gov | | Kristopher Benson | NOAA Restoration Center | kristopher.benson@noaa.gov | | Lauren Jackson | NCEI-Stennis | Lauren.Jackson@noaa.gov | | Les Watling | University of Hawaii at Manoa | watling@hawaii.edu | | Megan Cromwell | NCEI | megan.cromwell@noaa.gov | | Megan McCuller | Southern Maine Community College | mccullermi@gmail.com | | Robert Carney | Oceanography and Marine Sciences, LSU | rcarne1@lsu.edu | | Scott France | University of Louisiana at Lafayette | france@louisiana.edu | | Tara Harmer Luke | Stockton University | luket@stockton.edu | | Tina Molodtsova | Shirshov Institute of Oceanology RAS | tina@ocean.ru | | William Shedd | BOEM | william.shedd@boem.gov | | Kody Kramer | BOEM | kody.kramer@boem.gov | | Mark Benfield | Louisiana State University | mbenfie@lsu.edu | | | | |
| Purpose of the Dive | | The dive site was located in a geologically active area where a number of BOEM seismic anomalies were detected, including oil and seeps. Additionally, surveys by the NOAA Ship *Okeanos Explorer* in 2012 and 2014 detected a number of gas plumes, indicative of possible chemosynthetic habitats. The primary objective for this dive was to acquire baseline information on the distribution and abundance of benthic fauna, in particular at chemosynthetic habitats and for corals. This aided in gaining insight into the diversity, biogeography, and connectivity of these communities, which has management implications. Improving the geological understanding of the composition and origin of the area was also of importance. | | | |
| Description of the Dive | | The ROV touched down on the sedimented seafloor at 800 m in ‘Penchant Basin’, where there was an abundance of bentho-pelagic fauna. This included many fish species, as well as several *Bathocyroe* sp. and *Benthocodon* sp. This trend continued throughout the dive with many (>10) *Periphylla periphylla* and a pink siphonophore observed actively swimming into the seafloor. This was suggested to be a response to the bright lights of the ROV; these individuals attempted to move into deeper waters away from the light. A Rhodaliidae sp. benthic siphonophore was also observed attached the seafloor, as well as an *Apolemia rubriversa* or an undescribed *Apolemia* species in the water column towards the end of the dive.  Moving upslope, the seafloor was covered with many burrows and mounds. Arthropod species observed within burrows and sediment were *Trichopeltarion* sp., *Bathynomus giganteus*, *Neolithodes*? sp., *Nephropsis* sp., *Acanthacaris* *caeca*, *Glyphocrangon* sp., and Paguroidea with colonial Zoanthidae sp. growing in place or on top of the shell.  There were also small areas of reduced sediments observed in shallow depressions. These were inhabited by bacterial mats, empty vesicomyid shells, two species of live gastropods (*Kanoia meroglypta* and *Phymorhynchus* sp.), *Siboglinum* sp. and *Monomitopus* sp. The ROV also came across a dead or moulted *Chaceon quinquedens* scavenged by >10 *Phymorhynchus* sp. with a small *Lycenchelys* *paxillus*? underneath the carcass.  Towards the summit of the slope, two straight-edged elongated carbonate ridges were observed. The first was colonized by hundreds of brachiopods, Zoanthidae sp., one *Acesta* sp., several *Rochinia crassa*, and encrusting demosponges, The second outcrop observed at the top of the feature had a light purple Plexauridae sp., solitary cup corals, a yellow *Paramuricea* sp. with commensal *Ophiocreas* sp. and aplacophorans, a purple/yellow *Paramuricea* sp. with commensal Asteroschematidae sp., a *Swiftia koreni*, a *Sibopathes macrospina*, *Acanthogorgia* sp., *Acesta* sp. bivalves, encrusting demosponges and brachiopods (although not as many as before). One of the most interesting observations for the dive was >20 elasmobranch egg cases (hatched, unhatched and only attachment threads) attached to the above octocorals and antipatharians, indicating that these corals are a nursery for elasmobranchs in the area. Many of the egg cases had been overgrown by coral tissue with polyps.  Fish observed throughout the dive included *Pseudophichthyes perturbator*, *Dicrolene kanazawai*, *Synaphobranchus affinis*, *Bathypterois viridensis* with parasites, *Coryphaenoides mexicanus*, two juvenile *Hydrolagus alberti*, *Argentina striata*, *Synaphobranchus brevidorsalis*, *Nezumia aequalis*, *Notacanthus bonapartei*, *Epigonus pandionus*, *Gadomus arcuatus* and *G. longifilis*.  Notable observations including many that were firsts for this expedition were a Polychelidae sp., the first dark red pteropod, a possible Edwardsiidae sp. and a tumbling *Gaza* sp. | | | |
| Overall Map of the ROV Dive Area | | | Close-up Map of Main Dive Site | | |
|  | | | ../HypackScreenGrabs/DIVE14_Hypack_zoom.JPG | | |
| Representative Photos of the Dive | | | | | |
|  | | |  | | |
| Juvenile Gulf Chimaera, *Hydrolagus alberti*, at a depth of 793 m. | | | A narrow, tilted carbonate rock outcrop with numerous rhynchonelliform brachiopods anchored on an overhanging face (left foreground). Depth: 785 m. | | |
|  | | |  | | |
| *Phymorhynchus* sp. snails (Rachitomidae) feast on the molted exoskeleton of a deep-sea red crab, *Chaceon quinquidens*, which also hosts numerous small scalpellid gooseneck barnacles. Depth: 767 m. | | | An empty elasmobranch egg case overgrown with polyps of the *Paramuricea* sp. octocoral to which it anchored. The pink snake-like structure is the arm of an asteroschematid snake star coiled on the octocoral. Depth: 761 m. | | |
|  | | |  | | |
| Samples Collected | | | | | |
| Sample | | | | | |
| Sample ID | EX1711\_20171217T200237\_D2\_DIVE14\_SPEC01GEO | | C:\EX_SODA\dive14\EX1711_IMG_20171217T200040Z_ROVHD.jpg | | |
| Date (UTC) | 20171217 | |  | | |
| Time (UTC) | 200237 | |  | | |
| Depth (m) | 785.22 | |  | | |
| Temperature (°C) | 5.83 | |  | | |
| Field ID(s) | Carbonate Rock | |  | | |
| Commensal ID and Field Identification | Brachiopoda A N=2  Porifera N=1  Brachiopoda B N=3 | | | | |
| Comments |  | | | | |
| **Sample** | | | | | |
| Sample ID | EX1711\_20171217T210642\_D2\_DIVE14\_SPEC02BIO | | C:\EX_SODA\dive14\EX1711_IMG_20171217T210024Z_ROVHD.jpg | | |
| Date (UTC) | 20171217 | |  | | |
| Time (UTC) | 210642 | |  | | |
| Depth (m) | 761.25 | |  | | |
| Temperature (°C) | 5.91 | |  | | |
| Field ID(s) | Plexauridae | |  | | |
| Commensal ID and Field Identification | Amphipoda N=1 | | | | |
| 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