*Okeanos Explorer* ROV Dive Summary

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| --- | --- | --- | --- | --- | --- |
| Dive Information | | | | | |
| General Location | |  | | | |
| General Area Descriptor | | Gulf of Mexico | | | |
| Site Name | | Okeanos Ridge | | | |
| 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 | | DIVE03 | | | |
| 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\_DIVE03  ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^  In Water: 2017-12-02T13:32:11.913000  25°, 40.790' N ; 084°, 37.331' W  Out Water: 2017-12-02T21:28:00.870000  N/A ; N/A  Off Bottom: 2017-12-02T21:03:14.983000  25°, 40.845' N ; 084°, 36.919' W  On Bottom: 2017-12-02T14:12:06.393000  25°, 40.779' N ; 084°, 37.226' W  Dive duration: 7:55:48  Bottom Time: 6:51:8  Max. depth: 741.2 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 | | Anna Ling | University of Miami | a.ling@rsmas.miami.edu | | Asako Matsumoto | Planetary Exploration Research Center, Chiba Institute of Technology | amatsu@gorgonian.jp | | Charles Messing | Nova Southeastern University | messingc@nova.edu | | Christopher Mah | Dept of Invertebrate Zoology, NMNH Smithsonian | brisinga@gmail.com | | Christopher Kelley | University of Hawaii | ckelley@hawaii.edu | | Daniel Wagner | NOAA | daniel.wagner@noaa.gov | | Diva Amon | Natural History Museum, London | divaamon@gmail.com | | Jaymes Awbrey | University of Louisiana - Lafayette | jawbrey@louisiana.edu | | John Reed | Harbor Branch Oceanographic Institute | jreed12@fau.edu | | Kevin Rademacher | NOAA/NMFS/MS Labs | kevin.r.rademacher@noaa.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 McCuller | Southern Maine Community College | mccullermi@gmail.com | | Nolan Barrett | Harbor Branch Oceanographic Institute at Florida Atlantic University | barrettnh@g.cofc.edu | | Robert Carney | Oceanography and Marine Sciences, LSU | rcarne1@lsu.edu | | Sandra Brooke | Florida State University | sbrooke@fsu.edu | | Scott France | University of Louisiana at Lafayette | france@louisiana.edu | | Tina Molodtsova | Shirshov Institute of Oceanology RAS | tina@ocean.ru | | William Kiene | NOAA Office of National Marine Sanctuaries | William.Kiene@noaa.gov | | | | |
| Purpose of the Dive | | The dive targeted an area proposed by the Gulf of Mexico Fishery Management Council as a new Habitat Area of Particular Concern (HAPC). The area showed high habitat suitability for deep-sea corals in models. Therefore, the primary objective of this dive was to acquire baseline information on the distribution and abundance of benthic fauna, in particular corals and sponges. By climbing two areas of the escarpment and crossing the exposed top edge between, the dive encountered a variety of benthic habitats. This dive generated information on the distribution, diversity, and habitat use of these communities, which has management implications. | | | |
| Description of the Dive | | EX1711 Dive 3 was at ‘Okeanos Ridge’ located west of Florida. The ROV descended to the sedimented canyon floor at 740 m. Several crustaceans (*Nematocarcinus* sp., Aristeidae sp., *Chaceon quinquedens* and *Acanthacaris caeca*) and fish species (*Nezumia aequalis*, *Chaunax* sp., *Bathypterois* sp. tripod fish, Sternoptychinae sp. hatchetfish, Myxinidae sp. hagfish, and a juvenile *Steindachneria argentia*) were observed during transit to the base of the escarpment.  The benthic communities appeared to increase in density and diversity as the ROV progressed up the escarpment wall, with the largest coral colonies observed close to the escarpment crest. However, small areas of sediment on the escarpment had much less fauna. The antipatharian escarpment community included *Stichopathes* sp., *Bathypathes* sp., *Alternatipathes* sp., *Elatopathes* sp. with polychaete worms, and *Sibopathes* cf. *macrospina*. Other anthozoan species included *Chrysogorgia* sp., *Acanthogorgia* sp., *Pseudoanthomastus* sp., Isididae sp., Zoanthidae sp., *Madrepora oculata*,and a handful of plexaurids including *Paramuricea* sp. Both dead and live colonies of *Lophelia pertusa* were observed, as well as several species of featherstars, hexactinellid sponges and purple demosponges, *Bathynomus* *giganteus*, and decorator crab (Majoidea). Fishes included *Sladenia shaefersi* and many Congridae sp.  The ROV crested the escarpment and then followed the exposed edge eastward, which consisted chiefly of carbonate outcrops between sediment but also very interesting geology. Sections of the carbonate substrate differed in exposure as evidenced by varying levels of black ferromanganese crust, with older areas more heavily encrusted and supporting more abundant attached fauna. Areas of exposed white limestone included a large “amphitheater” above numerous calved slabs. Other carbonate structures included caves and pillars. The escarpment fauna closely resembled that of the crest. However, several different species observed in the water column included Scorpaenidae sp., cf. *Bassogigas* sp. and other ophidiids, several Bythitidae sp., *Lepidion* sp., and several groups of Darwin’s slimehead (*Gephyroberyx darwinii*) clustered among areas of karstic high relief. Additional benthic species on the crest included *Plumarella* sp. primnoids, *Aquaumbra* sp. soft coral, stoloniferans. actiniarians, hydrozoans, bryozoans, serpulids, ophiuroids, *Desmophyllum* sp. cup corals, *Enallopsammia rostrata*, Eumunididae sp., an *Acesta* bivalve, *Poecillastra* sp., and many of the small round cladorhizids and a *Chrondrocladia* sp. collected during Dive 1. All or some may also have been present on the escarpment  The ROV then made a midwater descent from the crest to the escarpment floor further east, where it encountered a talus field before re-ascending the escarpment. During this second ascent, the mostly ferromanganese-encrusted escarpment supported rather dense benthic communities similar to those already observed.  As on Dives 1 and 2, *Illex* sp. shortfin squid were observed, sometimes in large schools. Notable water-column observations included two swordfish, a swimming pycnogonid, a swimming munnopsid, a stunning siphonophore, which contrasted beautifully with a nearby ctenophore (one of three species), and two cutlass fish (*Benthodesmus tenius*). Notable benthic observations included two mating pairs of *Chaceon fenneri* crabs, a *Gracilechinus* urchin and *Circeaster* asteroid preying on octocorals, one Homolidae sp. crab carrying a large bryozoan and one with no luggage, a plastic bag, and a bored wood fall (potentially bamboo) with associated gastropods, shrimp and agglutinating foraminifera. | | | |
| Overall Map of the ROV Dive Area | | | Close-up Map of Main Dive Site | | |
|  | | | /Volumes/PublicData/cruises/EX1711/DiveSummaries/HypackScreenGrabs/DIVE03_Hypack_zoom.JPG | | |
| Representative Photos of the Dive | | | | | |
|  | | |  | | |
| A coffinfish, *Chaunax suttkusi,* with a color pattern suitable for the clown contingent in Barnum and Bailey’s Three-Ring Circus, on a sediment bottom in 740 m. | | | An unusual sight: a sea spider (Pycnogonida) swimming several meters above the seafloor at a depth of 715.5 m. Its slender legs are lined with numerous long fine setae to increase the surface area and stroke power. | | |
|  | | |  | | |
| Deeply eroded outcrops with several yellow *Paramuricea* sp. fans, *Eumunida picta* squat lobsters, small *Stichopathes* sp. corkscrew antipatharian (left), small pale primnoid octocoral (right of center), and sponges in 681 m. | | | Exposed, layered, white limestone ‘amphitheatre’ with calved slabs above a sediment slope in 690 m. | | |
|  | | |  | | |
| Samples Collected | | | | | |
| Sample | | | | | |
| Sample ID | EX1711\_20171202T181713\_D2\_DIVE03\_SPEC01BIO | | X:\EX1711\Imagery\EX1711_DIVE03_20171202\EX1711_IMG_20171202T180718Z_ROVHD.jpg | | |
| Date (UTC) | 20171202 | |  | | |
| Time (UTC) | 181713 | |  | | |
| Depth (m) | 701.18 | |  | | |
| Temperature (°C) | 6.26 | |  | | |
| Field ID(s) | Chrysogorgia sp | |  | | |
| Commensal ID and Field Identification | A pair of Chirostylidae legs (decapod legs) | | | | |
| Comments |  | | | | |
| **Sample** | | | | | |
| Sample ID | EX1711\_20171202T190451\_D2\_DIVE03\_SPEC02GEO | | X:\EX1711\Imagery\EX1711_DIVE03_20171202\EX1711_IMG_20171202T190211Z_ROVHD.jpg | | |
| Date (UTC) | 20171202 | |  | | |
| Time (UTC) | 190451 | |  | | |
| Depth (m) | 693.2 | |  | | |
| Temperature (°C) | 6.34 | |  | | |
| Field ID(s) | limestone carbonate | |  | | |
| Commensal ID and Field Identification | Polychaeta (bristle worm) N= 1  Acesta sp (bi-valve) N= 1  Encrusting Sponge N=1  Polychaeta (medusa worm) N=1  Bryozaon N=1 | | | | |
| Comments | Old tube worm tubes on rock. The rock is 2.63kg | | | | |
| **Sample** | | | | | |
| Sample ID | EX1711\_20171202T204110\_D2\_DIVE03\_SPEC03BIO | | X:\EX1711\Imagery\EX1711_DIVE03_20171202\EX1711_IMG_20171202T203222Z_ROVHD.jpg | | |
| Date (UTC) | 20171202 | |  | | |
| Time (UTC) | 204110 | |  | | |
| Depth (m) | 665.65 | |  | | |
| Temperature (°C) | 6.65 | |  | | |
| Field ID(s) | Plexauridae | |  | | |
| Commensal ID and Field Identification | none | | | | |
| Comments |  | | | | |

# Please direct inquiries to:

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