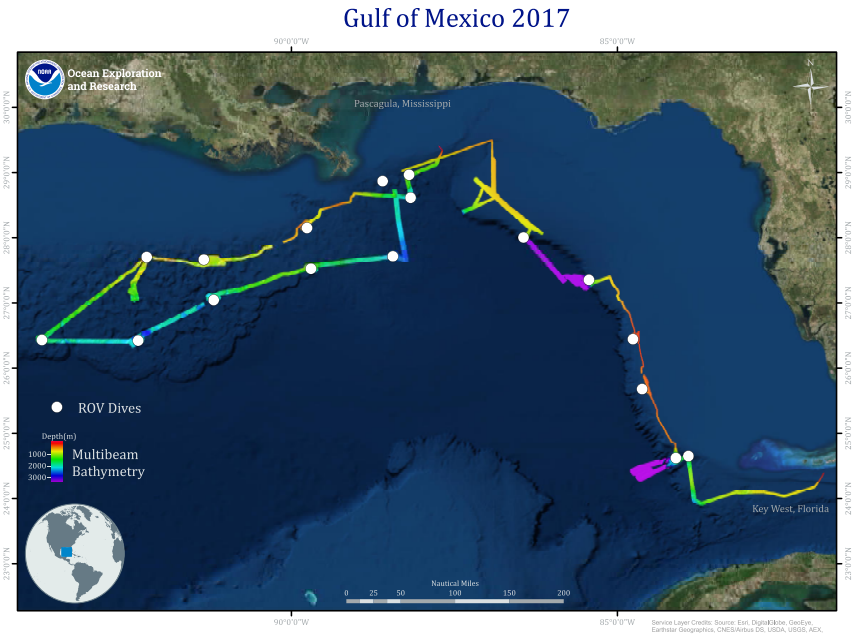
Ocean Exploration and Research

Okeanos Explorer ROV Dive Summary

Dive Information	
General Location	
General Area Descriptor	Gulf of Mexico
Site Name	Penchant Basin (MC796)
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	DIVE15
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_DIVE15

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In Water:	2017-12-18T14:26:49.658000
	28°, 09.005' N ; 089°, 45.740' W
Out Water:	2017-12-18T22:26:11.830000
	28°, 09.308' N ; 089°, 46.041' W
Off Bottom:	2017-12-18T21:14:59.266000
	28°, 09.401' N ; 089°, 46.134' W
On Bottom:	2017-12-18T14:51:20.911000
	28°, 09.036' N ; 089°, 45.685' W
Dive duration:	7:59:22
Bottom Time:	6:23:38
Max. depth:	618.0 m

Special Notes

Scientists Involved (please provide name, location, affiliation, email)

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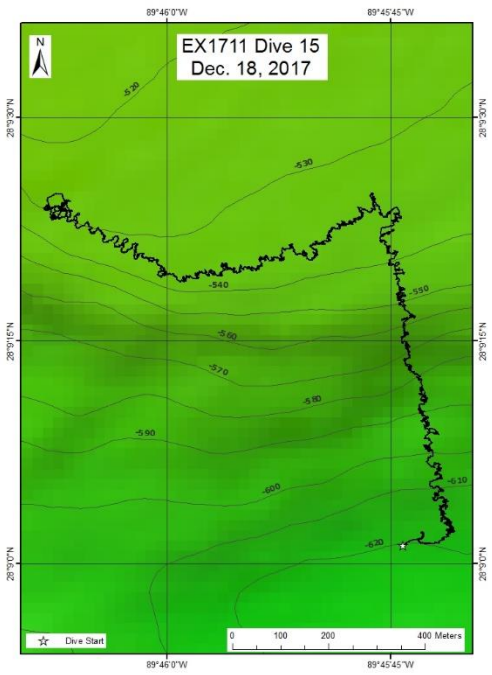
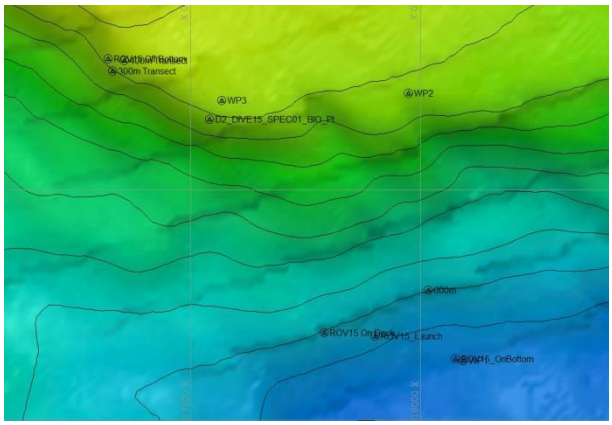
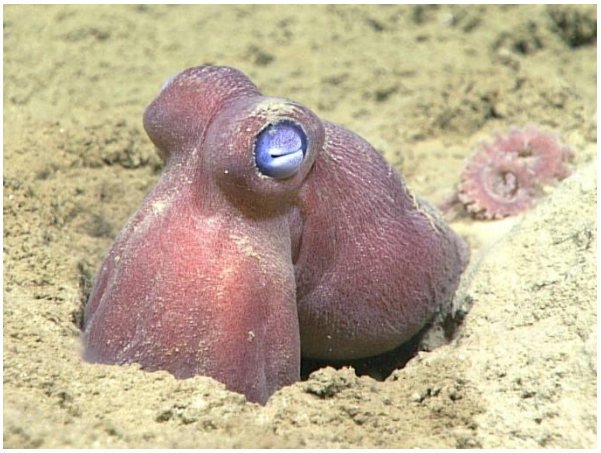
Purpose of the Dive	The dive target was within a proposed Flower Garden Banks National Marine Sanctuary expansion zone. The area showed high habitat suitability for deep-sea corals in models, so observations support goals of the Southeast Deep Coral Initiative (SEDCI). The primary objective for this dive was to acquire baseline information on the distribution and abundance of benthic fauna, including corals such as *Lophelia*. 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. Two exploratory 10-minute midwater transects were undertaken at 400 m and 300 m depths.

Description of the Dive	The ROV touched down on a heavily bioturbated sedimented seafloor at 615 m at the site, 'Gulfoil'. Only two areas of hard substrate (< 20 cm) were encountered throughout the entire dive. Many of the species observed were seen multiple times indicating an unvarying community, even as one ascended the slope. Arthropod species observed in burrows and depressions, as well as buried in the sediment included Galatheoidea sp., *Trichopeltarion* sp., *Bathynomus giganteus*, *Acanthacaris caeca* and *Rochina crassa*. At least two species of cerianthids were also abundant throughout the dive. Several deposit-feeding ophiuroids, asteroids and holothurians were also observed. Fish were the second most abundant group. Observations included multiple *Chauliodus* sp. viperfish, *Chaunax suttkusi*, Trichiuridae sp., Synaphobranchidae sp., Phycidae sp., *Dibranchus* sp., *Peristedion* sp., Scorpenaidae sp., Macrouridae sp., *Symphurus* sp., *Cyclothone* sp. and *Bembrops* sp. There were also the first sightings of an *Etmopterus spinax* and the squid, *Ornithoteuthis antillarum,* for this expedition. The two small pieces of hard substrate encountered were colonized by *Arcoscalpellum regium* and Hormathiidae sp. The lack of hard substrate resulted in actiniarians and zoanthids attaching to other species. These associations included *Sympagurus pictus* with *Adamsia obvolva*, *Parapagurus pilosimanus*, a *Bathynomus giganteus* with a commensal actiniarian, and a gastropod with actiniarians. Notable benthic observations including two pieces of marine debris, two *Muusoctopus* sp. including one in a burrow possibly hunting a shrimp, a swordfish (*Xiphias gladius*) consuming a fish, juvenile *Periphylla periphylla, Bathycyroe* sp., and a *Gaza* sp. with accompanying Polynoidae sp. There was also one *Funiculina* sp. pennatulid observed. As with previous dives during this expedition, a significant amount of sargassum and several freshwater hyacinths were also recorded on the deep seafloor. An opportunity was taken to conduct two midwater transects at the conclusion of the benthic tracks. Characterized by dense marine snow, the 300-m and 400-m depth levels featured abundant midwater life. While many observations were made, the Constellation fish, *Valenciennellus tripunctulatus*, was particularly exciting to the team. Two interesting ctenophores, a lobate from the genus *Kiyohimea* and another lobate from the genus *Thalassocalyce* were seen in the 400 m and 300 m transects, respectively. The midwater "background" of protists like Coelodendrid phaeodarians, and pelagic tunicates like appendicularians was dense, but consistent with other midwater excursions during EX1711.
Overall Map of the ROV Dive Area	Close-up Map of Main Dive Site



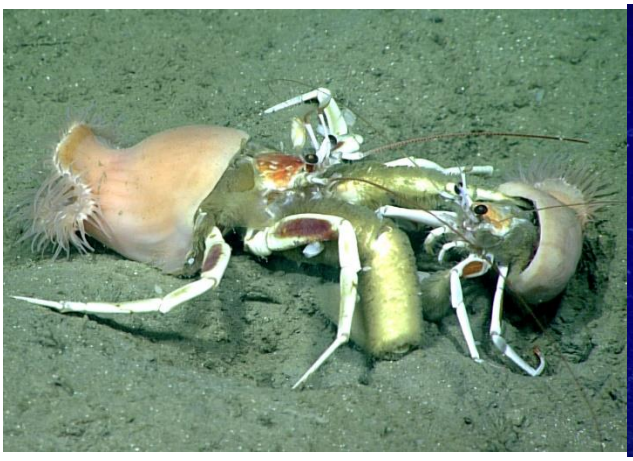


Representative Photos of the Dive



Muusoctopus januarii at the entrance to its burrow at a depth of 618 m.

A pair of sea anemones on a gastropod (?Buccinidae). The unusual face-down posture of the anemones was observed repeatedly during this dive, suggesting that it was not anomalous. Depth: 615 m.



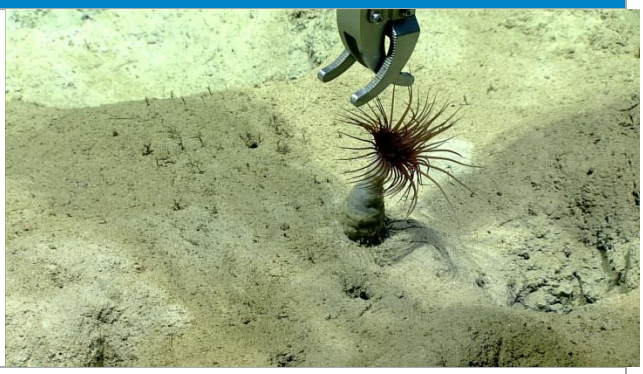
A face-off between a pair of hermit crabs, *Symopagurus pictus*. The interaction may be territorial or for courtship. The large pale yellow cylindrical objects are actually part of the hermits' claws, which are folded beneath. These hermits each carry a symbiotic sea anemone, which replaces the usual snail shell "house" and grows to conform to the shape of the hermit's abdomen. Depth: 538 m.

This swordfish (*Xiphias gladius*) had killed a small fish and was observed to bat it with its sword before consuming it. Depth: 532 m.

Samples Collected

Sample

Sample ID	EX1711_20171218T201847_D2_DIVE15_SPEC01BIO
Date (UTC)	20171218
Time (UTC)	201847
Depth (m)	534.83
Temperature (°C)	7.87
Field ID(s)	Ceriantharia sp
Commensal ID and Field Identification	None
Comments	The anemone must have gone farther down inside the tube which extends deep inside the sediment, so we only recovered an empty tube.



Please direct inquiries to:

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