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Purpose of the Dive

This dive explored the northeast side of Pagan on a small ridge feature. The dive addresses the CAPSTONE priority of exploring for high-density communities of deep-sea corals, in this case precious corals that are under the management of NOAA Fisheries. While the precious coral fishery is listed as a managed fishery in Guam and CNMI, no precious coral beds had been identified prior to EX1605L1 and only anecdotal accounts have been published of

their presence in this region of the Pacific. This particular site was chosen to also survey bottom fish fishery habitat, which has also not been characterized in Guam/CNMI and determine if there is a depth and site overlap between the two fisheries.

Description of the Dive:

The geology of the dive site on the upper flank of Pagan Island was fascinating from the start and quite diverse. The seafloor that ROV *Deep Discoverer* (D2) landed on at was a steep knoll covered with subangular blocks of what appeared to be lava fragments. D2 collected rock that turned out to be a block of lava. A rough blocky surface was the dominant geologic feature on the lower part of this narrow ridge, although there were a few patches of small scoria (volcaniclastics) fields. The rock that was collected in this area was a piece of scoria (volcaniclastic). The loose scoria terrain transitioned into a combination of finer ash and blocks of scoriaceous lava, some of them very large boulders. There were also exposures of bedded volcaniclastics. Scoria and spatter were dominant toward the upper part of the ridge, but near the end of the dive the sea floor was covered with finer volcaniclastics.

At each transition from one bottom type to another, the biological communities also changed. D2 touched down on the lat/long numbers, but the depth was shallower than expected, most likely because there are a series of pinnacles and we were on one. The dive track took us up and down the pinnacles. Below are notes on the more common organisms found at each depth:

Depth: 374m. At this site, there were abundant stoloniferous octocorals, at least 3 species (white, pink, and yellow), thinly encrusting on the more than 75% of the rocks. At this depth were several spherical to irregularly massive demosponges (*Geodia* sp. and *Pachastrellidae*).

Depth: 366m. We observed one long-tailed red snapper (onaga, or *Etelis coruscans*), one of the more important commercial fish species. In the crevices were thinly encrusting yellow demosponges, as well as stoloniferous octocorals encrusting on the rocks. We also observed a live slit shell.

Depth: 370m. Thin encrusting yellow sponges with attached hydroids were very abundant. A brown pompom anemone (?*Liponema* sp.) was collected. Also observed were at least 2 different fish species (one pink and yellow, the other mottled white on red).

Depth: 355m. *Pachastrellid* demosponges were common—both tube shaped and massive species. A shark and an eel were also observed. There were numerous dead branches of octocorals. (Could they have been killed off during the volcanic activity in the 1980's?) There were also numerous live stony corals (*Enallopsammia* sp.)

Depth: 375m. More numerous (but not abundant) octocorals (primnoids—possibly *Narella muzikae*; *Chrysogorgia*) and black corals. Scorpaenid fish were observed.

Depth: 355m. An amazing sea star—*Coronaster* sp. was found in a crevice, its arms wrapped around itself. There were also yellow anemones, and several different species of hydroids, some fan-shaped.

Depth: 316m. Several scorpion fish were observed, and hydroids were common.

Depth: 295m. Two thinly encrusting demosponges were observed on the rocks. One was blue, conulose; the other was cream-colored. Both may be dendroceratid demosponges, but this would likely be a depth range extension.

Depth: 257m. Spherical sponges, similar to *Spongosorites siliquaria*, appeared to have vermetid snails and were abundant. This is an extreme range extension; the genus is only known from the Atlantic and Mediterranean; the species is only known from the tropical Western Atlantic and Gulf of Mexico. Bottlebrush black corals were

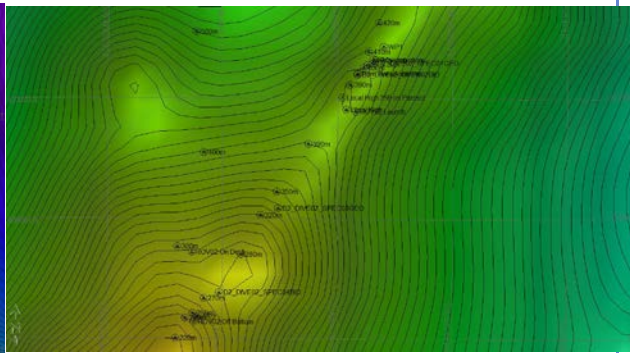
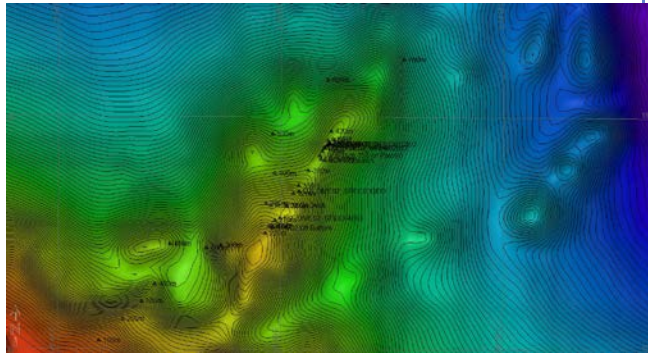
common, as were yellow plexaurid octocorals.

Depth: 288m. Common yellow Dendrophyllidae corals.

Depth: 260 m: Common octocorals: *Callogorgia*, *Narella*, *?Paracalyptrophora*; also black corals. The most abundant organism was a solitary ascidian, covered with epibionts. This was by far the most dominant species observed at this depth and habitat. Amberjacks were also observed.

Overall Map of ROV Dive Area

Close-up Map of Main Dive Site



Representative Photos of the Dive

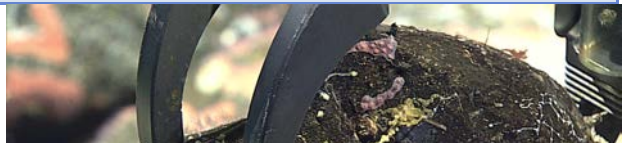


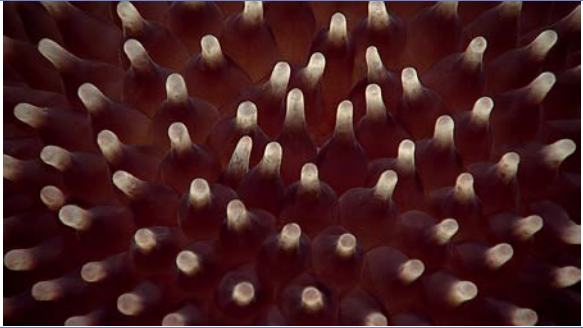


The multiarmed seastar, *Coronaster* sp., hunkers down in a crevice, using its pedicellariae to defend against predators and to capture small prey. As a last resort, it can shed an arm to escape.

In contrast to its seastar relative, basket stars attach to sea fans, and spread their arms to capture prey from the water column—especially in areas where there are strong currents.

Samples Collected

Sample ID	SPEC01GEO
Date (UTC)	20160618
Depth (m)	372.01



Field ID(s)	ROCK WITH ENCRUSTING CORAL	
Time (UTC)	234428	
Temperature (°C)	10.74	
Comments	15x9x13	
Sample ID	SPEC02BIO	
Date (UTC)	20160619	
Depth (m)	367.92	
Field ID(s)	POMPOM ANEMONE	
Time (UTC)	010904	
Temperature (°C)	12.68	
Comments	The pompom anemone, <i>Liponema</i> sp., is also known as the tentacle-shedding anemone. Unlike other anemones, <i>Liponema</i> doesn't attach itself to hard substrates—it can roll along the bottom, and scavenge for food.	
Sample ID	SPEC03GEO	
Date (UTC)	20160619	
Depth (m)	332.94	
Field ID(s)	SCORIA (RED ROCK)	
Time (UTC)	034805	
Temperature (°C)	13.75	
Comments	10x4x3cm, probable pillow fragment that is most like basalt or basaltic adesite.	
Sample ID	SPEC04BIO	
Date (UTC)	20160619	
Depth (m)	287.81	
Field ID(s)	CORAL ATTACHED TO ROCK	
Time (UTC)	053825	
Temperature (°C)	14.5	

Comments	Dendrophyllia
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