HAWAI'I UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT
DIVE: P5-779

MISSION STATUS

Location: Hookena, Hawaii Island

Latitude: 19° 16.527 **Longitude:** 155° 54.046

Mission Date: 29 September 2011 **Duration:** **7** hours 31 mins

Maximum Depth: 502 meters

Project Title: Recolonization and community succession of deep-water coral communities in response to disturbance

Principal Investigator: Dr. Samuel E. Kahng

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Phone: 808-236-3562

Observer 1: Dr. Samuel E. Kahng
Address: Same as above

Observer 2: Kristen Pylman
Address: Same as above

Pilot 1: Terry Kerby

Pilot 2:

Scientific Data Acquired: Prepare an abstract outlining your objectives, techniques, findings, etc.

Objectives:

Explore and characterize the poorly known, deep-water benthic communities including the unique photosynthetic communities in the lower photic zone, commercially valuable precious corals, and cold water corals at extreme depths. Examine the ecological dynamics of slow growing, long-lived benthic organisms in response to episodic disturbance and the recovery processes recorded across multi-decadal and multi-century time-scales by using the well documented historic and prehistoric lava flows on the Big Island of Hawaii.

Multiple stations will be surveyed on successively older lava flows to enable a view back in time to the birth of deep water coral communities on newly formed volcanic island substrata. Coral community structure on a lava flow of known age can be compared to adjacent, "undisturbed" habitat of much older age. At each station (i.e., lava flow) surveys

will be conducted at strategic, fixed depth contours (e.g., 400 m and 450 m for precious corals) to reveal how rates of community development changes with depth. Constant depth contour transects will be surveyed, and video data analysis will be used to characterize community ecology (i.e., species richness, species diversity, % live benthic cover, density, and size-frequency distribution of a key organism at each depth contour).

Observations, findings, etc:

Dropped to the bottom at 503 m on the Northern boundary of the 1950 Kaapuna flow and began the transect to our northernmost point of the Kipahoehoe flow debris cone. Stopped at 499 m to collect a rock sample with *Corallium spp* attached. Continued South to 450 m to begin the 402 year old flow contour with substrate consisting on unconsolidated rocks and chunks of carbonate intermixed with small *Corallium spp* observed and *Corallium spp* and basalt rock sampled at 450 m. Contoured up to 400 m on the 402 year Kipahoehoe flow and began transect to the South, basalt rubble and sediment observed. Collected *Corallium spp* at 402 m on large basalt rock. Continued South to the 1950 Kaapuna flow at 400 m, basalt rock sampled within Kaapuna flow at 402 m. Within the Kaapuna flow we observed dead *Corallium spp* to be locally abundant and stopped at 402 m to collect a dead sample. The substrate appeared to be consistent with observations of new flows with basalt pavement. Continued South to the Northern boundary of the Southern Kipahoehoe flow at 400 m where the substrate contained carbonate chunks intermixed with basalt as observed in the Northern Kipahoehoe flow. Descended to 450 m to finish the contour to the North collected rock sample at 451 m and *Corallium spp* at 455 m. Continued to North to Kaapuna Southern Boundary and sampled two *Corallium spp* within the Kaapuna flow.

Species list:
Antipatherians
Aristeidae
Aspidodiadematidae
Coralline algae
Corallium spp.
Euplectellidae
Euplectellidae sp 1
Galatheidae
Goniasteridae
Gorgonacephalidae
Octopididae
Sympagurus dofleini

MISSION EVALUATION:

Limitations, failures, or operational problems noted:
No limitations, failures, or operational problems.

Recommendations for corrective action or improvement:

In your opinion, did the mission essentially achieve its purpose? Compare actual work accomplished with the work that was expected to be accomplished.
Yes, the mission essentially achieved its purpose and we collected more useful samples than expected. We noticed large *Corallium spp* on the relatively early flow, so more analysis is needed on samples to determine reasoning for this observation.

List specimens or samples collected on the mission.
Corallium spp
Basalt rocks

DATA RELEASE

Data may be retained by the project leader for up to 2 years after the mission date with the following exception. NOAA may request to use photos for publication or publicity purposes at any time.

Fill in the appropriate statement below and sign this form.

I hereby release the data archived by HURL for public consumption following mission (project title)

held on_____(date) in the following way:

a. CTD data by_____(date)

b. video and images by_____(date)

c. other_____(date)

d. I will give my written consent to individuals wishing to use these data prior to the above dates depending on the nature of the request(s).

_____Principal Investigator