HAWAI'I UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT
DIVE: P5-778

MISSION STATUS

Location: Kealakekua Bay, Big Island

Latitude: N 19° 28.678' **Longitude:** W 155° 57.432'

Mission Date: 9/28/2011 **Duration:** 08:35-16:13

Maximum Depth: 552m

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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Observer 1: Dr. Sam Kahng
Address:

Observer 2: Dr. Frank Trusdell
Address:

Pilot 1: Max Cremer

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 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:

Survey conducted at Kealakekua comparing older submarine lava flow (1000-2000 years old) to newer historic flow (1877). Initial constant depth contour at 450m. Older flow had scattered corals, some of large size, mostly *Corallium* sp. and some bamboo (*Acanella*) corals. Areas of hard substrate (small rocks to large boulders) patchy. 1877 flow had fresh hard substrate (debris cones consisting of rocks and boulders) with little sedimentation. Abundant juvenile *Corallium* colonies (1-4 cm in height). Boundary of 1877 debris cone, well defined and easily visible. Second transect at 400m mostly devoid of megabenthic sessile fauna. 1877 flow fresh boulders with very little sedimentation. Older flow much more sedimentation with large sediment chutes. Only a few *Corallium* medium sized colonies.

Excursion to mesophotic depths 127m, scattered *Leptoseris* corals common on hard substrata.

Confirmation of *Corallium* species IDs pending taxonomic analyses.

Species list:

Corallium secundum
Acanella sp.
Leptoseris hawaiiensis
Ellisellidae
Other gorgonians
Black corals
Wire corals
Solitary scleractinian corals (Carophyllids?)
Glass sponges

Cook shark
Kahala
Snappers
Anemone crabs
Galatheids
Sea stars
Brittle stars
Basket stars
crinoids

MISSION EVALUATION:

Limitations, failures, or operational problems noted:

A functioning ROV would greatly increase value and productivity.

Recommendations for corrective action or improvement:

Use GPS tracking data from Sea Beam Lab and not the bridge when recording waypoints.

In your opinion, did the mission essentially achieve its purpose? Compare actual work accomplished with the work that was expected to be accomplished.

Yes

List specimens or samples collected on the mission.

Corallium spp
Bamboo coral
Leptoseris sp.
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