HAWAI'I UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT
DIVE: P5-755

MISSION STATUS

Location: Au'au Channel

Latitude: 20° 46.800N **Longitude:** 156° 481W

Mission Date: 28 February 2011 **Duration: 8** hours 31 mins

Maximum Depth: 123 m

Project Title: CRES 2007: Investigating Deep (50-100 m) Coral Reefs in Hawai'i

Principal Investigator: Richard Pyle

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Pilot 1: M. Cremer **Pilot 2:**

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

Our objectives entailed collecting coral (*Leptoseris hawaiiensis*) and various macroalgae at mesophotic depths for physiological measurements in the laboratory. We were interested in documenting changes in coral fluorescence, pigmentation, symbiont size and density, electron transport rates, etc. with increasing depth. We also deployed a marker buoy for technical divers at the beginning of the dive, then proceeded with sampling in other areas.

Techniques: Large black collection box, diver marker buoy, fluorescence filters set-up on HMI light and ROS camera, with an additional NightSea light mounted starboard

Observations, findings, etc: We dropped down at 85 m in an area with a high abundance of large macroalgae. Visibility was ~20 m with a low current, thus making sediment clouds an issue when maneuvering the submersible. We proceeded to the coral staining site and deployed the marker buoy in an area ~ 10 m upslope of the staining dome. After the divers descended and were a safe distance away from the submersible, we returned to

the drop site and collected various macroalgae in an area with low Leptoseris cover, but near an area with a high % cover of Leptoseris. After macroalgal sampling was completed, we continued to a site with a dense Leptoseris reef at 100 m depth that was SE of our current location. While in transit, we encountered a very dense Leptoseris reef at 85 m depth with a high diversity and abundance of reef and pelagic fish. The Leptoseris in this area were large and well-developed. By 12:15 pm, we arrived at the 100 m site and collected six Leptoseris colony fragments from 96 – 99 m depths. Our next desired depth was a site at 123 m depth about 1300 m to the SW. We continued along the 115-123 m contour and transited through areas dominated by soft sediments and Halimeda sand, with little or no *Leptoseris*. At 14:27, discovered a site at 123 m that was closer than the targeted site. The coverage of Leptoseris at this reef was about 30-50%, with flat, medium-sized, thin colonies. Colonies were loosely attached to the substrate, and easily broke into pieces when collected with the manipulator arm. We were able to collect 6 small Leptoseris colony fragments at this depth. Battery power was beginning too get low, so we ended the dive.

Fluorescence Findings: With the current fluorescence camera and light set-up, coral fluorescence was only visible from the starboard porthole within 2 m of the substrate. However, coral fluorescence was visible in ambient light, suggesting that making observations under ambient lighting conditions at shallower depths (95 m or shallower) may be appropriate. Coral fluorescence was difficult to see with ambient lighting at the deepest (121-123 m) site.

Observed Species list:

Coral:
Leptoseris hawaiiensis reefs

Macroalgae:
Umbraulva sp.
Brown algal blades (*Lobophora variegata* or *Distromium flabellata*)
Halimeda sp.
Halimeda kanaloana
Caulerpa mexicana
Codium mamillosum
Large red algal blades

Other:
Various reef fish
Various sponges
Octopus (each sighted in Leptoseris reefs)
Hawaiian sting ray
Wire coral

MISSION EVALUATION:

Limitations, failures, or operational problems noted:

Everything went great!

Recommendations for corrective action or improvement:

None

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

Yes – we were able to make collections of macroalgae and corals from 85 to 123 m depths

List specimens or samples collected on the mission.

Leptoseris hawaiiensis (n = 17) – 96 to 123 m depths
Umbraulva sp. (n = 5) – 85 m
Brown algal blades (n = ~20) – 85 m
Halimeda sp. (n = 5) – 85 m

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