HAWAI'I UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT
DIVE: P5-564

MISSION STATUS

Location: North Penguin Bank, Dive Site #2

Latitude: N 21 ° 06.75 **Longitude:** W 157 ° 36.50

Mission Date: 5 September 2004 **Duration:** 7 hours 40 mins

Maximum Depth: 371 m

Project Title: Exploration of Deepwater Macroalgal Meadows in the Main Hawaiian Islands

Principal Investigator: Heather Spalding (for Celia Smith)

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Observer 1: Kimberly Peyton
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Observer 2: none
Address:

Pilot 1: Terry Kerby **Pilot 2:** Steve Price

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

Objectives:
The objectives were to survey macroalgal assemblages from 50 to 200 m depths to determine the composition, densities, lower depth limits, and breadth of deepwater macroalgae and macroalgal meadows. Deepwater macroalgae were surveyed using 4 lasers for percent cover and density estimates, and collected with the suction sampler and manipulator arm. Submersible laser calibrations were inspected the morning of the submersible dive to ensure proper calibration. Nongeniculate coralline algae were the deepest occurring algae at 159 m, occurring on hard substrate in areas that appear to be dominated by sand disturbance. The deepest occurring (109 m) and most abundant fleshy alga was *Ulva* sp. *Halimeda* sediment was found throughout the dive, with a rock-dwelling *Halimeda* sp. found at 100 m depth. Macroalgal diversity and abundance appeared to increase at depths less than 100 m, with a distinct zonation in invertebrate and macroalgae with depth. Further processing of samples at the University of Hawaii will provide additional data on species identifications.

Observations, findings, etc:
Numerous macroalgal species at specific depths and environments; distinct zonation of invertebrates including “skunk” urchins, black pipe sponges, and plate corals; many new records of deepwater macroalgae

Species list:
Macroalgae and invertebrates were preserved for identification at the University of Hawaii. A gross tentative species list of macroalgae includes:

Halimeda sp.
Ulva sp.
Caulerpa sp.
Codium sp.
Dictyopteris sp.
Filamentous red algae
Large red, brown, and green macroalgae
Calcareous macroalgae (crusts)

MISSION EVALUATION:

Limitations, failures, or operational problems noted:

Only one science observer was allowed because this was a training dive for the submersible pilot. Some research time was lost as the pilot-in-training adjusted to submersible operations and cooperating with scientists at the same time (a difficult task). However, we respect the need for new pilots to be trained, and were still able to meet our objectives.

Macroalgae (*Halimeda*) clogged the suction sampler, and 20 minutes were spent unclogging the sampler.

Video was distorted and color was difficult to discern at depths < 100 m

No ROV operations

Recommendations for corrective action or improvement:
Perhaps *Halimeda* should be collected with the manipulator arm and placed in a basket, versus collecting with the suction sampler. Additional lighting or placing the video camera closer to the brightest light source might increase visibility of algae at shallower depths. Alternatively, a digital camera with strobes could be used for sampling with the lasers in addition to the video camera. The ROV needs to be operational to achieve the scientific objectives

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

Essentially, yes, we achieved our main objectives. However, without ROV operations, approximately half of the research could not be accomplished. Fish surveys, larger scale mapping of macroalgal meadows, scouting new dive locations for future cruises, and rapid assessments of the target habitats were not carried out as a result. However, we were tremendously successful with the submersible dive in collecting numerous specimens and surveying macroalgal populations at multiple depths over a variety of habitats.

List specimens or samples collected on the mission.
Algae and associated invertebrates were collected in 8 suction sample buckets (jars.) Five live rocks and 3 algal species were placed in the covered crate.

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