HAWAI'I UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT
DIVE: P4-133

MISSION STATUS

Location: Penguin Bank, Site #4

Latitude: 21° 01.683 **Longitude:** 157° 17.159

Mission Date: 17 Dec 2004 **Duration:** 7 hours 22 mins

Maximum Depth: 164 m

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

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Pilot 1: Max Cremer **Pilot 2:** none

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

The objectives were to survey deep water macroalgal assemblages and associated organisms from 50 to 150 m depths to determine the composition, densities, lower depth limits, and breadth of deepwater macroalgae and macroalgal meadows. These data will be compared with surveys done in Sept. 2004 to test for any seasonal differences in the macrophyte assemblage. We were particularly interested in the abundance of *Halimeda incrassata* meadows and their spatial distribution. A sediment pore water sample, water column sample, and sediment sample (#3) were collected at 79 m depth in a densely vegetated *H. incrassata* meadow. Deepwater macroalgae were surveyed using 4 lasers for percent cover and density estimates, and collected with the manipulator arm. Lasers were calibrated prior to the cruise date.

The deepest occurring fleshy macroalgae were psammophytic flabellate brown blades (i.e. *Lobophora/Distromium*) at 160 m depth, in addition to scattered nongeniculate corallines covering dead *Halimeda* segments and mollusk shells. These brown blades were the most conspicuous macroalgae from 160 to 90 m depths, with densities up to ~1/m^2. Throughout the dive, numerous algae such as fleshy reds, *Caulerpa mexicana,* Ulvales, *Dictyopteris* sp., and brown blades were observed drifting downslope into deeper water. Numerous reef fish were observed along a rocky slope from 111 to 164 m depth. Two large black coral trees and *Carijoa* were observed at 111 m. The first attached *Caulerpa mexicana* and *Codium* sp. were found at 90 m, with an overall increase in the % cover of red, brown, and green algae occurring at 85 m. The first *Halimeda incrassata* was found at 89 m, with dense meadows starting at 82 m depth. Expansive, dense meadows occurred to ~67 m depth, the shallowest depth surveyed, and appeared to continue into shallower water. From two water depths, 79 and 69 m, three representative *H. incrassata* plants were collected for canopy height, segment number, and epiphyte measurements. A large octopus was observed at the end of the dive at 69 m depth. The invasive fish tappe were observed aggregating around marine debris (tractor tire) within the *Halimeda* meadow. Further processing of samples at the University of Hawaii will provide additional data on species identifications. Fish data from the submersible video will be provided by Frank Parrish. Associated invertebrates are being processed and identified by Pakki Reath.

Observations, findings, etc:
A deep water assemblage of psammophytic flabellate brown blades (gross morphology is similar to *Lobophora* or *Distromium,* however our collections may be a new species) from 160 to 90 m depths, expansive *H. incrassata* meadows from 82 to < 67 m depths, high diversity of red, brown, and green algae.

Species list:
Macroalgae and invertebrates were preserved for identification at the University of Hawaii. Fish will be identified at a later date. A gross tentative species list of macroalgae includes:

Flabellate brown blades
Halimeda incrassata
Dictyopteris sp.
Codium sp.
Caulerpa mexicana
Ulva sp.
Dictyota sp.
Filamentous and fleshy red algae
Nongeniculate coralline algae

MISSION EVALUATION:

Limitations, failures, or operational problems noted:

Battery power on the submersible limited both the survey time at depth and the number of collections that could be made.

Recommendations for corrective action or improvement:

Improve the longevity of battery power on the Pisces IV.

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

We were tremendously successful with the submersible dive in collecting numerous species and surveying macroalgal populations at multiple depths. A sediment pore water, water column, and 1 sediment sample were successfully collected in the desired locations.

List specimens or samples collected on the mission.
Algae and associated invertebrates were collected in 11 containers in the new collecting box. A sediment pore water, water column and sediment collection was made at 79 m depth. CTD data was taken throughout the dive.

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