HAWAI'I UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT
DIVE: P5-565

MISSION STATUS

Location: West Maui, Dive Site # 6

Latitude: N 20 ° 56.526 **Longitude:** W 156 ° 46.14

Mission Date: 6 September 2004 **Duration:** 7 hours 55 mins

Maximum Depth: 211 m

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

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Observer 2: Brian Greene
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Pilot 1: Terry Kerby **Pilot 2:** none

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

Objectives:
There were 3 main objectives on this dive: 1) 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, 2) survey fish outside, on the edge, and inside algal meadows to determine any possible fish-algal associations, and 3) deploy a new prototype of the sediment pore water sampler, collecting pore water from 3 discrete depths. 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. The submersible CTD and a Niskin bottle were used for collecting water column data. *Cladophora sericea* was the most abundant and deepest occurring (212 m) alga, covering over 100 % of the substrate in some areas. *C. sericea* was also observed covering dead black coral, and was snagged on most upright organisms, such as sea pens and coral. Large expanses of *Halimeda* sediment was observed throughout the dive. A

dense rock-dwelling *Halimeda* meadow was observed in association with plate corals, eventually being replaced with sand-dwelling *Halimeda incrassata* meadows. Many small fish appeared to occur in association with *Halimeda* sp./plate coral community. However, limited time at the shallower depths restricted quantitative fish surveys in the algal meadows. New species of gobies and wrasses were discovered in rocky outcrops. A new species of *Caulerpa* occurring in the *Halimeda* sediment was collected at the end of the dive. The sediment pore water sampler was deployed at 205 m depth, but success was varied in pore water collection due to deployment in inappropriate sediment type and insufficient sampling time in the sediment (valve needed to be opened from 2 to 5 minutes, versus 30 seconds.)

Observations, findings, etc:
A new rock-dwelling *Halimeda* and plate coral community was reported for the first time in deepwater, tentative new species or new Hawaiian record of the green alga *Caulerpa* and fish were discovered, numerous black coral covered with the invasive *Carijoa*,

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

Halimeda incrassata
Halimeda sp.
Ulva sp.
Caulerpa sp.
Codium sp.
Unknown Dictyotales
Kallymenia sp.
Filamentous red algae
Large red, brown, and green macroalgae
Calcareous macroalgae (crusts)

MISSION EVALUATION:

Limitations, failures, or operational problems noted:

There was bad visibility (2-3 m) for first 2 hours of dive. The suction sampler clogged with clumps of *Cladophora*, limiting some of the algal collections. The suction sampler was later "unclogged" with the sediment probe, and algal collecting resumed.

There was some difficulty keeping the macroalgae in the covered basket.

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

No ROV operations.

Recommendations for corrective action or improvement:

Perhaps large clumps of *Cladophora* should not be collected 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.

For the covered basket, we might need to develop another type of basket with a smaller size mesh and individual compartments with lids for collecting macroalgae.

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. Nonetheless, 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.

Seven suctions sample buckets of macroalgae, and 6 collections of macroalgae and rocks in the covered basket.

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