HAWAI'I UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT
DIVE: PV-577

MISSION STATUS

Location: Penguin Bank, Hawaii

Latitude: 20° 55.922 **Longitude: 157**° 32.091

Mission Date: 9-19-04 **Duration: 7** hours 50 mins

Maximum Depth: 204 m

Project Title: Deep Seaweed Photosynthesis Research

Principal Investigator: Karla McDermid

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Observer 1: John Runcie
Address: University of Technology
Sydney, Australia

Observer 2: Josh Valdez
Address: Marine Science Dept.
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Pilot 1: Terry Kirby

Pilot 2: none

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

Objectives:

- Collect macroalgal specimens.
- Measure light attenuation with depth.
- Measure ambient light levels (photosynthetically active radiation PAR) at collection sites.
- Measure photosynthetic rate of seaweeds at various depths.
- Recovery of PAM and data logger for over night measurement of photosynthetic activity of seaweeds.

Observations, findings, etc:

The primary objective of this dive was to recover the data logger placed overnight at a depth of 101m, and to collect macroalgal specimens from varying depths. We initially descended to a depth of 84 m, taking ambient light readings at 5m increments, to the position 20º 55.922 N, 157º 32.091 W, settling on a sandy substrate. We proceeding to the NW where we began collecting samples of Halimeda, Caulerpa, and Dictyopteris at a depth of 83m, latitude 20º 55.910 N, longitude 157º 32.115 W. The water temperature at this depth was 23.8º Celsius. Upon completion we proceeded to the northwest and ascended to 75m where more collection of algal specimens was conducted, including a long red blade, Halymenia, and a brown alga. We also observed some unicorn fish, a gray reef shark, and a blue colored sea star (possible video footage), at this depth. Our position was 20º 55.977 N, 157º32.147 at 0900 hours. We then descended to a depth of 100m and began contouring to the east, before moving down a steep slope to the north to a depth of 169m. At this position, 20º 56.191 N, 157º 32.097 W, we began conducting experiments with the onboard PAM data logger at 0954. At this depth we observed another shark, this time in the sand, again there might be video footage. The water temperature at this depth was recorded as 19.3º Celsius and we experienced a slight eastern current. The experiment was completed at 1026 hours and we again proceeded down slope to the north to a depth of 200m. Water temperature at this depth was 17.5º Celsius. We conducted more photosynthetic experiments on a crustose alga located on a small rock found in a depression in the sand with the onboard PAM data logger and collected a sample of this rock for further analysis. We also observed a sleepy sponge crab at this site. Our position was recorded as 20º 56.170 N, 157º 32.228 W. Experiments at this site were completed at 1217 hours, at this time we proceeded to the east to a depth of 204m. Again we conducted photosynthetic experiments with the onboard data logger, and the water temperature at this depth was recorded as 16.3º Celsius. We collected samples off of this rock and began contouring to the east. At 1316 hours we began our ascent from 202m to our goal of 100m following a rocky slide area, and passing the base of a carbonate wall at 150m. At 103m we observed some small schooling fish, a large Kahala, and some yellow fin tuna. We encountered a strong eastern current close to the wall pulling the sub back down the slope. At 1345 hours, at a depth of 104m, we began contouring to the west from the position 20º 56.161 N, 157º 31.827 W, trying to locate the data logger that was left overnight. We located the data logger at 1406 hours at a depth of 101m and observed many species of fish aggregating around the marker we had placed the day before. Upon recovery we noticed that the logger had flooded with seawater but the data might still be available once back in the lab. Water temperature at this site was 24.2º Celsius. At 1420 hours we began a descent to 140m where we again conducted some photosynthetic experiments using the onboard Pam data logger. Our position was 20º 56.153 N, 157º 32.080 W, with a water temperature of 22.1º Celsius. Upon completion we began our ascent to 84m, and contoured to the east in search of a previously visited site containing large quantities of Spattoglossum. While contouring we observed numerous reef species including sea cucumbers, unicorn fish, bore fish and butterfly fish. We located a plot of Spattoglossum at 86m, in 23.8º Celsius water and began collecting specimens. Our position was 20º 56.167 N, 157º 31.502 W, and the dive objectives were complete. All

times and depths were taken from onboard clocks and sensors, and positions were relayed from the KOK.

Species list:

ALGAE

Halimeda
Red crusts
Red blades
Dasya
Caulerpa
Dictyopteris
Ceramiaceae filamentous red
Delesseriaceae red blade
Halymenia
Peysonnelia
Cryptonemia
Distromium
Herposiphonia
Spattoglossum

ECHINODERMS
Holothuria sp.
Holothuria sp.
Leiaster leachi ?

FISH
Various gobies
Various wrasses
Various triggerfish
Chaetodon ornatissimus?
Desmoholacanthus arcuatus?
Henichus diphreutes?
Chromis verater?
Gymnothorax flavimarginatus
Epinephelus sp.
Elagatis bipinnulatus
Caranx sexfasciatus
Seriola dumerili
Canthigaster coronata
Carcharhinus sp.
Lutjanus kasmira
Naso hexacanthus
Naso unicornis

BRYZOANS
Various erect species

CNIDARIA
Hydroids
Porites sp.
Fungia sp.

SPONGES
Red
Yellow
Blue

CRUSTACEANS
Dromia dormia

MISSION EVALUATION:

Limitations, failures, or operational problems noted:

The data logger placed overnight leaked and became flooded with seawater, while the onboard data logger performed as expected to depths of 204 meters.
Sony camera does not have a good view of the titanium manipulator arm, possible relocation of the camera forward or on the port side may solve this.

Recommendations for corrective action or improvement:

Relocate the Sony camera forward or on port side on the vessel.

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.

ALGAE

Halimeda
Red crusts
Red blades
Dasya
Caulerpa
Dictyopteris
Ceramiaceae filamentous red
Delesseriaceae red blade
Halymenia
Peysonnelia
Cryptonemia
Distromium
Herposiphonia
Spattoglossum

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 9-19-04 (date) in the following way:

a. CTD data by 9-19-06 (date)

b. video and images by 9-19-06 (date)

c. other Licor Light meter, PAM 9-19-06 (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