HAWAI'I UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT
DIVE: RCV-303

MISSION STATUS

Location: South Oahu, Dive Site #1.5

Latitude: 21° 15.8300 **Longitude:** 158° 04.8300

Mission Date: 13 Dec 2004 **Duration:** 3 hours 58 mins

Maximum Depth: 66 m

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

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Pilot 1: Dan Greeson

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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 100 m depths to determine their composition, densities, and spatial distribution. We were particularly interested in determining the distribution of the meadow-forming green alga *Udotea* sp. and the invasive green alga *Avrainvillea amadelpha* in South Oahu. Recent submersible surveys have revealed dense assemblages of both species in deep water in South Oahu, and baseline data on their current distribution is needed to establish future monitoring and experimental sites.

From 28 to 66 m depths, immense meadows hundreds of meters wide of both *Udotea* sp. and *A. amadelpha* were found covering up to 100% of the substrate over soft sediments and in areas of gently sloping cobble and carbonate reef. *Udotea* sp. meadows and *A. amadelpha* beds were generally monospecific with some red algal epiphyte loading

occurring in shallower depths. *Caulerpa* sp. (~8 cm height) was observed covering up to ~20% of the substrate in open, soft sediment areas at all depths, with infrequent patches of a *Halimeda* sp. over hard substrate. Occasional mixed assemblages of *Udotea* sp. , *A. amadelpha*. and *Caulerpa* sp. occurred, as well as isolated ~1-3 m^2 patches of *Udotea* sp. surrounded by dense beds of the invasive *A. amadelpha*. This is the shallowest record of these expansive assemblages and the highest densities of the invasive alga *A. amadelpha* ever recorded in deep water. Fish and invertebrates were identified by Frank Parrish.

Observations, findings, etc:
Large (hundreds of meters), dense meadows of *Udotea* sp. and the invasive alga *Avrainvillea amadelpha*, occasional patches of *Caulerpa* sp.

Species list:
A gross tentative species list of macroalgae includes:

Udotea sp.
Avrainvillea amadelpha
Caulerpa sp.
Halimeda sp.
Filamentous red algae

Fish seen included:

Arothon hispidus
Lutjanus kasmira
Fistularia petimba
Canthigaster coronata
Heniochus diphreutes
Diodon sp.
Naso brevirostris
Lactoria fornasini
Parupeneus multifasciatus
Acanthurus blochii
Sargocentron ensiferum
Selar crumenophthalmus
Decapterus macarellus
Mictophid
Caranx ignobilis
Parupeneus sp.

Macroinvertebrates seen:

Cassis cornuta
Conus leopardus
Stichopus sp.?
Holothuria atra
Culcita novaeguineae
Pentaceraster cumingi
Parthenope sp.

MISSION EVALUATION:

Limitations, failures, or operational problems noted:

Flashing alarm for high oil temperatures

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.

This was a tremendously successful mission. We were able to quantitatively document expansive meadows of deep water algae, invertebrates, and fishes.

List specimens or samples collected on the mission.

No collections

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