HAWAI'I UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT (QLR) for *Pisces* and *RCV-150*

DIVE: P5-734

(*Extend length of sections as needed/appropriate*)

MISSION STATUS

Location: Offshore Olowalu, West Maui

Latitude: 20° 46.280 **Longitude:** 156° 40.193

Mission Date: 3 April 2009 **Duration: 8** hours 18 mins

Maximum Depth: 130 meters

Project Title: CRES: Investigating the Deep (50-100 m) Coral Reefs in Hawaii

Principal Investigator: John Rooney

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Observer 1: Heather Spalding

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Observer 2: Holly Bolick

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Pilot 1: Max Kremer

Pilot 2: Max Kremer

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

Objectives:

This broad-ranging but tightly integrated series of investigations on mesophotic deep coral-reef complex in the southern Au'au Channel will provide insights into: **Geophysical Habitat Characterization** (mapping and physical/ecological characteristics of deep reefs); **Biodiversity Inventory** (cataloging the basic diversity inhabiting these environments); **Population Structure and Dynamics** (comparing deep- and shallow-reef

communities, especially in terms of the deep-reef potential as refugia); **Broad Ecological and Physiological Characterization** (trophic dynamics and energy budget among predators, prey, and primary producers); **Spatially-based Predictive Modeling** (developing predictive models about the abundance and positions of deep-reef systems and the factors that shape them). The primary objectives for submersible dive P5-734 included:

1) Collect invertebrate and macroalgae associated with mesophotic coral reefs across a broad depth gradient
2) Conduct video surveys of mesophotic coral reefs
3) Find and document previously deployed moorings at 123 and 84 m depths

Observations, findings, etc:

We landed at 114 m in a sediment-dominated environment with a few small (~6 cm) *Leptoseris* growing on a slight incline. There was no current and good visibility. Collections were made immediately at this site, then we moved NW to locate the deep mooring at 123 m ("Frank's mooring"). Algae and invertebrate collections were made while in transit to Frank's mooring. The mooring was located at the designated location in a soft sediment environment with no *Leptoseris* in close proximity. The entire length of the mooring and its instrumentation was surveyed. A few *Carijoa* were observed towards the top of the mooring line. We then moved upslope to the N to find shallower *Leptoseris* reefs. At 111 m, occasional larger *Leptoseris* were observed on the slope. The edge of a continuous (100% cover) *Leptoseris* reef started at 106 m, and continued over a large distance to 84 m depth. Several algae and invertebrate collections were made outside, at the edge, and inside the reef, although there were less algae observed inside the reef. Large schools (several hundred individuals) of a high diversity of coral reef fish were observed around the reef at these depths. Colorful sponges (pink, orange, red, yellow, etc.) were collected throughout the reef, as well as large, deeply pigmented blades of an Ulvales and prostrate *Halimeda* sp. We then proceeded to the NW to find the mooring at 84 m ("John's mooring"). John's mooring was found due North of the designated location; searching for the mooring required an additional 15-20 min., and the new location was noted on the map. The entire length of the mooring and its instrumentation was surveyed. A few *Carijoa* were also observed towards the top of the this mooring line. Video surveys were made between collecting and mooring locations. Moving to the NW, the *Leptoseris* reefs became less abundant, and were interspersed with patches of bare sand and a prostrate *Halimeda* sp. Algae appeared to increase in these areas, or were more visible on the exposed substrate. The sand patches contained a solitary anemone and a large undescribed species of sea cucumber. A few caves were observed on the ridge of this area, and noted for future fish collecting dives. In the smaller of the two caves, a Palinurid lobster was observed. The most apparent algae and invertebrates were collected, and the dive ended at 92 m depth.

Novel findings from this dive included:

- Several (about 1 out of 10) *Leptoseris* appeared to have striations or nodules of yellowish iridescence on the surface of the plates.
- A ~ 0.5 m^2 patch of zoanthids were observed in the dense *Leptoseris* reef at 84 m, photographed, and collected.
- *Carijoa* (soft coral) was observed on both mooring lines of Frank's and John's moorings, but was not observed anywhere else during the dive.

Observed Species list:

Invertebrates:

- At least 10 species of Porifera (various colors, shapes, and textures)
- Small pink hydrozoa growing on *Halimeda* (but possibly foram)
- Feather hydroids attached to live and dead *Leptoseris* coral plates
- Lots of *Leptoseris* along 90m ridge
- *Cariojoa* on mooring line of both moorings
- Large patch of blue branching soft coral (unidentified)
- Scleractina branching lacy coral

- Yellow anemone in sand patch (possibly *Cerianthus* sp.)
- Marine worms Eunicidae, Serpulidae)
    a. Amphinomidae
    b. Eunicidae- *Eunice* sp.
    c. Serpulidae- *Salmacina dysteri* and *Lomia medusae*
- Pink unidentified bryozoan (resembles *Reteporellina*)
- At least 2 species of brittle stars from sponges (*Ophiactis* sp.)
- Small red sea star (probably juvenile Oreasteridae)
- Large sea cucumber (*Bohadschia paradoxa*)
- Snapping shrimp (*Alpheus* sp.)
- Clear shrimp (from sponge or coral)
- Red shrimp (from sponge or coral)
- Colonial tunicates *Didemnum* sp. (found in a variety of colors and patterns)
- Small black coral sprigs (Antipatharians) found in sandy rubble area attached to small rocks
- Small wire corals in sand (*Cirripathes*)

Algae:

- Ulvales
- *Halimeda* sp.
- Brown blades (likely *Distromium flabellatum*)
- Misc. algal epiphytes
- *Acanthophora pacifica*
- *Valonia* sp. or *Derbesia* sp. (Halicystis phase)
- Nongeniculate coralline algae
- *Peysonnellia* sp.
- *Phyllodictyon* sp.
- *Dictyota* sp.
- *Codium mamillosum*
- *Amansia* sp.
- *Cladophora* sp.

MISSION EVALUATION:

Limitations, failures, or operational problems noted:

None

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:

Yes – we were able to find, collect and survey mesophotic reefs from 85 to 130 m depths.

List specimens or samples collected on the mission:

Collection #	Box	Depth	Sample Type	GPS
1	B8	116m	small *Leptoseris*, yellow sponge, rubble	20 46.280N, 156 40.193W
2	B7	130m	yellow sponge, small *Leptoseris*	20 46.303N, 156 40.245W
3	B9	103m	rubble: red tunicate, yellow sponge, diseased *Leptoseris*, algae	20 46.345N, 156 40.228W
4	Xbox	106m	sand/rubble sample: rubble and algae (#20)	20.46.435N, 156 40.286W
5	S1	90m	Ulvales (green algae)	20 46.531N, 156 40.277W
6	S2	86m	hydroids, general inverts, pink tunicate, algae	20 46.657N, 156 40.414W
6	S3	86m	coral rubble, bleached *Leptoseris*	20 46.657N, 156 40.414W
7	B2	86m	orange sponge, peach sponge (growing on *Leptoseris*)	20 46.657N, 156 40.414W
8	B5	86m	red sponge	20 46.657N, 156 40.414W
9	S6 & 9	84m	soft coral/colonial anemone	20 46.682N, 156 40.411W
10	S6	84m	hydroid on *Leptoseris* plate	20 46.682N, 156 40.411W
11	S4	89m	solitary anemone	20 46.787N, 156 40.472W
12	Xbox	89m	sand/rubble sample: rubble and algae (# 55)	20 46.787N, 156 40.472W
13	S8	92m	purple sponge, Ulvales, *Halimeda*	20 46.849N, 156 40.533W
14	B10	92m	white sponge, dirty yellow sponge	20 46.849N, 156 40.533W
15	B12	92m	pink lacy bryozoan on *Leptoseris* plate	20 46.849N, 156 40.533W
16	B11	93m	filamentous green algae, misc. algae, sponge	20 46.911N, 156 40.591W
17	S13	92m	*Codium mamillosum*, sponge	20 46.511N, 156 40.883W
18	S15	92m	various inverts from rubble, fragile lacy coral	20 46.511N, 156 40.883W

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).

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Principal Investigator