HAWAI'I UNDERSEA RESEARCH LABORATORY
QUICK LOOK REPORT
DIVE: Pisces V 655

MISSION STATUS

Location: Kingman Reef

Latitude: ***Begin*** 6° 26.0'S **Longitude:** ***Begin*** 162° 26.8'W

Mission Date: 31 July 05 **Duration:** 8hrs 20 min

Maximum Depth (m): 1068 m

Project Title: Past Decadal-Centennial Climate Variability Revealed by Deep Sea Corals from the Central North Pacific Gyre

Principal Investigator: Robert B. Dunbar
Department of Geological and Environmental Sciences
Stanford University
Stanford, CA 94305-2115

Phone: 650-725-6830 (wk) 650-725-0979 (fax)

Observer 1: B. Roark **Observer 2:** J. Smith
Address: Department of Geological and Environmental Sciences
Stanford University
Stanford, CA 94305-2115
HURL

Pilot 1: Terry Kerby **Pilot 2:**

Scientific Data Acquired:
Video record of distribution and abundance of deep-sea corals along a vertical transect on northwestern side of Kingman Reef. Selected fossil, sub-fossil, and living deep-sea macrofauna were sampled using the Pisces V and returned to the surface in a coral collection basket.

Objectives: Acquire direct observation (e.g., video and notes) of the i) vertical and horizontal distribution of deep-sea invertebrate macrofauna with an emphasis on deep-sea corals and related genera; ii) substrate/topography with a view towards establishing the relationship with benthic community properties. A primary mission goal is to collect fossil, sub-fossil, and live specimens of deep-sea corals across a range of depths and habitats. This dive was focused on the collection of sub-fossil Gerardia and cup coral along the face of the major cliff around the Pinnacles region found during a previous dive

(P4-147). In addition this was a two sub dive so an additional goal was to obtain good video and pictures of each sub working.

Observations, findings, etc: (Also see Appended Dive Log)

We dove along a ridge that is part of the northwest facing pedestal of Kingman Reef. From depths of 1068 to 300 m, the terrain covered consisted of limestones, mostly well-bedded, some massively bedded and some finely bedded. We encountered nodular-appearing limestones as well as some limestone conglomerates or breccias. Relatively little sediment was observed. Some of the limestone units were coated with manganese – others had a yellowish chalky appearance. Above 600 meters, the terrain became nearly vertical, with many features of dissolution apparent in the cliff faces, ranging from small dissolution pits to large-scale cavernous features. The terrains between 600 and 300 meters also included a number of limestone pinnacles and spires that were separated from the cliff ace or other pinnacles by characteristic distances of 10 to 20 meters. Some pinnacles appeared to be as much as 50 meters high and 20 to 30 meters in diameter. Horizontal transects were done at the base of the cliff in order to find sub-fossil Gerardia samples that had fallen from the cliff. Only one deep sea coral debris field was found and sub-fossil samples collected. A verticle transect up the cliff face was done to find live samples. Only one living Gerardia was found. A horizontal transect at the depth (~320 m) Gerardia was found at the pinnacles site revealed no other Gerardia samples and no other pinnacle type features. A large number of cup corals and mollusk were present under overhangs. We suspect such locations are the only area free of falling sediment which would likely hinder the growth of these filter feeders. We also suspect similar reasons explain the fact that Gerardia has only found in the Pinnacle regions to date. The Pinnacle region is the only area that is free of falling sediment and is exposed to relatively strong currents, that we have found in our all be it limit survey area. Living cup corals and additional sub-fossil Gerardia samples were collected from the area around the Pinnacle regions.

Species List: (not meant to be completely inclusive)

Deep sea corals/gorgonians/sea fans/whips observed: *Acanella* sp., *Corallium* sp., *Dendrophyllia sp*. (abundant), *Gerardia sp., Paramuricia sp., Iridogorgia superba, Bathypathes sp., Narella sp.*

Echinoderms: *Cidarid urchins, Caliderma spp.,* Brisingid sea star, crinoids, *Histocidaris variabilis*

Other: rat tails, Cusk eel (Brotula), *Coryphaenoides sp., Caelorinchus sp. (cf. tokianus), Sladenia sp.*

MISSION EVALUATION:

A. Limitations, failures, or operational problems noted:

Sampling along the cliff may have been easier with 2 pilots, none the less Terry did an excellent job of getting all the types of samples we asked for.

B. Recommendations for corrective action or improvement:

none

C. In your opinion, did the mission essentially achieve its purpose?

YES.

D. Compare actual work accomplished with the work that was expected to be accomplished. All expected work was accomplished.

E. List specimens or samples collected on the mission. (See Sample List Below):

Dive PIV-146

Sample Number	Time (L)	Latitude Min/decM	Longitude Min/decM	Depth(m)	Comments
P5-655-1-7	1025			512 m	Fossil Gerardia
P5-655-8	1117			379 m	Fossil Gerardia
P5-655-9	1155			320 m	Species UNK took small branch for ID
P5-655-10-11	1213			320 m	Cup corals
P5-655-12	1242			327 m	Live Gerardia branch, broken in last dive
P5-655-13-15	1309			320 m	Fossil Gerardia
P5-655-16-17	1404			290 m	1 Dead and 1 live cup coral
P5-655-18-20	1509			321 m	Live and partially live Gerardia, all from broken Samples during last dive
P5-655-21-24	1445			320 m	Fossil Gerardia