**HAWAI'I UNDERSEA RESEARCH LABORATORY**

**QUICK LOOK REPORT**
**DIVE: P5-700**

# MISSION STATUS

**Location: North French Frigate Shoals Seamount, NWHI**

**Latitude:** 24° 22.952 **Longitude:** 166° 3.609

**Mission Date:** 11/13/07 **Duration:** 1 hour on bottom and 4 hours during ascent and descent

**Maximum Depth:** 1423 m

**Project Title**: Megafauna of Deep Seamounts and Ridges in the NWHI Monument

**Principal Investigator:** Christopher Kelley

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**Observer 1:** Christopher Kelley
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**Observer 2:** Jane Culp
**Address:** HURL

**Pilot 1:** Max Cremer **Pilot 2:**

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

Objectives: The goal of this project is to census fish and invertebrate species in two under-surveyed but potentially high diversity habitat types: submarine ridges and seamounts, found inside the monument with the bathyal zone of 200-2000 m. The three ridge dives were conducted earlier in the cruise. This dive was the first to be conducted on our second study site, an un-named seamount located 25 miles north of French Frigate Shoals. HURL operations director, Terry Kerby, and the PIs of this project (Kelley and Smith) conducted a single exploratory dive (P5-464) on its north flank in 2001. The area covered during the dive was only a small strip of less than 1 km extending between 1100 and 1400 m. However, from that quick look, it was clear that this seamount is of consider geologic and biologic interest. The bedrock was coated in a thick manganese crust upon which a variety of cnidarians, sponges, echinoderms, crustaceans, and fishes were found. Similar to the ridge site, three submersible dives and up to six ROV dives were planned for the survey. For each submersible dive, a 200m wide by 3,000-4,000 m long sampling area will be selected that extends down from the top of the summit. Each dive will start at the bottom of the sampling area and end at the summit. The observers will attempt to identify and count all fish and invertebrates encountered. Two digital camera systems will record video as well as the audio records from each of the observers. A laser scale mounted on one of the cameras will provide the means by which to obtain size

data. Specimens of unusual species that are potentially new to science will be collected for laboratory identification. Aside from one narrow swath, this feature had not been previously mapped with multibeam sonar. Per our proposed plan, we arrived on the seamount the evening of 11/5/07 and conducted multibeam mapping operations until early morning. While the data could not be fully processed before the 4 planned dives, co-PI Smith was able to provide a good working image that we were able to use to select the dive sites. This particular dive was the third on the seamount and began at a depth of 1423 m on a rift zone ridge close to where the previous geology dive (P5-696) ended and where they found the beginning of a Corallium sp bed. The 4,000 m long sampling area extended up to the edge of the summit at approximately 800 m.

### Observations, findings, etc:

We landed right in the middle of an extensive coral and sponge bed which was undoubtedly the same bed located at the end of dive P5-696. A strong current coming out of the south southwest created some initial challenges for the pilot. However, he was able was to quickly adapt and before leaving the landing site, collected a specimen of a species of Corallium next to the sub. We then lifted off and initiated the survey. The bed consisted of a very dense population of Corallium spp mixed with less dense populations of Paragorgia regalis?, Calyptrophora clarki, other gorgonians, and sponges particularly Semperella sp 1, Caulophacus multi-puff, and Semperella schultzi. Approximately 1 hour into the dive, the sub had reached a depth of 1346 m and we landed for a position fix. While trying to obtain some closeup video, we discovered there was a problem with the utility hydraulics. Max Cremer, the pilot, conferred with Terry Kerby on the ship and a decision was reached to terminate the dive at that point. This was carried out and the submersible left the bottom. Our main finding from this short dive was that the bed encountered at the end of dive P5-696 was relatively large and extended along the ridge from at least 1477 m up to at least 1346 m.

### Species list:

Fishes: Synaphobranchus sp and a macrourid

Echinoderms: Hypasteria imperialis, comatulid black, ophiuroids

Arthropods: galatheid?

Cnidarians: Corallium sp new (Amy), Corallium kishinouyei?, C. abyssale , Calyptrophora clarki, C. agassizii, Anthothelia nuttingi, Calyptrophora sp 5, Narella sp, hormathiid, Anthomastus red, anemone orange, paramuriceid gold, Paragorgia dendroides, Acanthogorgia sp, Paragorgia regalis, Lepidisis red, branched isidid, Candidella gigantean, lyrate isidid?, single polyp scleractinian

Sponges: Walteria sp 2, Poliopogon sp 1 and 4 (maybe), pheronematid 1 and 2, Semperella schultzi, Semperella sp 1, Caulophacus multipuff, Caulophacus sp 3, Farrea occa, farreid skeletor, hexactinellid lip, chonelasmatinid leaf, Regadrella sp

Other:

## MISSION EVALUATION:

**Limitations, failures, or operational problems noted:**

A hydraulic failure caused the termination of the dive 1 hour after reaching the bottom.

**Recommendations for corrective action or improvement:**

None. The problem was fixed and the submersible dove the next day.

**In your opinion, did the mission essentially achieve its purpose? Compare actual work accomplished with the work that was expected to be accomplished.**

No. We only managed to complete a short segment of the intended survey to the summit. A decision was subsequently made to conduct our final dive the next day on this site where we left off, and therefore abandon plans to survey site 3 further to the east. This problem coupled with the inability to conduct ROV operations the same night due to weather conditions had an impact on the statistical design of the study. How significant an impact will be determined later when the audio data is extracted and analyzed.

**List specimens or samples collected on the mission.**

1 Corallium sp

## 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 P5-700 (Megafauna of Deep Seamounts and Ridges in the NWHI Monument)

held on 11/13/07 (date) in the following way:

a. CTD data by 11/13/09 (date)

b. video and images by 11/13/09 (date)

c. other 11/13/09 (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