HAWAII UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT MISSION NO. P4-050

MISSION STATUS

Mission Date: 09-13-02

Location (island, bank, seamount, etc): Brooks Bank

Specific Site (NE side, summit, etc): NE corner
Position (start latitude & longitude): 24° 00.600'N/166° 40.406'W
Depth range: 327-146 m

Project Title: Impact of Bottomfishing in the NWHI Coral Reef Ecosystem Reserve

Principal Investigator: Christopher Kelley

Address: Hawaii Undersea Research Lab
1000 Pope Rd.
University of Hawaii, Honolulu, Hi. 96822

Phone: 956-7437

Observer 1: Sean Corson
Address: NOS, 6700 Kalanianaole Highway, Suite 215, Honolulu, HI 96825

Observer 2: Bruce Mundy
Address: NOAA Fisheries, 2570 Dole St., Honolulu, Hawai'I 96822

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

Materials & Methods:

The overall goal of this project is to obtain data on bottomfish populations and their habitat for use in evaluating the impacts of commercial fishing in the NWHI Coral Reef Ecosystem Reserve. This particular dive was conducted on Brooks Bank, one of two Reserve Preservation Areas (i.e., RPAs) completely closed to bottomfishing. Specific dive objectives were to assess bottomfish populations and survey the fish and invertebrate community at a known fishing site. To accomplish these objectives, a set of four thirty minute transects and two thirty minute bait stations were conducted within the depth range of 200-350 meters, where most species of bottomfish occur. The four transects were conducted at 300, 250, 210, and 150 meters. The two bait stations were conducted at 300 and 153 meters.

Scientific data acquired:

Four fish survey transects were completed at the locations planned. The first began very close (24°00.4717'N,166°44.4668'W) to the intended dive start position (24°00.4810'N,166°40.4290'W). Ehu (*Etelis carbunculus*) were seen in the vicinity of a large, high-relief rock outcrop near start of the transect.

The 300 m transect was conducted to the northwest to 24°00.851'N,166°40.919'W. The habitat was generally low-relief carbonate substrate with light sediment cover and carbonate pebbles. Habitat similar to the outcrop at the drop-down location was not encountered during the transect. Few cnidarians were seen at this depth, with the exception of *Corallium tortuosum* and some anemones. Crustaceans and echinoderms were few. A couple of small, tan sea stars were seen. The most abundant fishes on the transect were *Symphysanodon maunaloae*. *Seriola dumerilii* joined the submersible at the beginning of the dive and traveled with us until we left the bottom for the surface; these fed *ad libitum* during the transects and bait stations. Onaga (*Etelis coruscans*) were seen during the transect. Other fishes in the community at this depth included *Antigonia eos, Erythrocles scintillans, Chrionema chryseres, Pontinus macrocephalus,* and *Plectranthias kelloggi*.

The first bait station was set just above the end of the first transect, at 300 m near a rock outcrop. The *Seriola* dominated the station as the bait was set out, but onaga (*E. coruscans*) quickly appeared once the lights were turned out. A maximum of 18 onaga were present during the station.

The second, 250 m transect began above the bait station at 24°00.808'N,166°40.931'W and ran to the southeast. The habitat was a mixture of flat carbonate with sediment dusting, and deeper sediment with occasional low rocks and carbonate pebbles. Small (<1 ft tall) *Antipathes* were sparsely dispersed on the hard substrate. These were not identifiable but may have been young or damaged *A. intermedia*. The "twigs" seemed too small to support commensal organisms and none were noticed. Pennatulid sea pens and an unidentified anemone with a brown ring in the tentacular circle were seen in the sand. A few *Stylocidaris rufa* and *Paromola japonica* were seen. *Symphysanodon maunaloae* continued to be the most abundant fish and the other dominant fishes were the same as at 300 m, with the addition of *Parapercis roseoviridis, Gymnothorax berndti* and *G. nuttingi*.

The third transect was over habitat and had a fish community that differed from those in the two deeper transects. This transect began at 24°00436'N,166°40.588'W and proceeded back to the northwest along the 210 m depth contour. The habitat was largely sand or fine gravel with carbonate pebbles, but also had low-relief carbonate reefs with small undercut ledges. The small *Antipathes* species continued to be the most abundant cnidarian. *Munida brucei* were seen in holes of the small reefs and pagurid crabs, including *Parapagurus*

dolfleini, were observed on the sand. The most abundant fish were *Pseudanthias fucinus*, although *S. maunaloae* were also seen in large numbers. *Pristipomoides sieboldii* were seen swimming in open water away from the submersible and *P. zonatus* were over the low reefs singly or in pairs. Other fish species characteristic of this transect were *Grammatonotus* sp. 1, *Pseudocaranx dentex, Symphysanodon typus, Caprodon schlegeli, Holanthias elizabethae, Epinephelus quernus, Ostichthys* sp., *Myripristis chryseres, Suezichthys notatus, Priacanthus alalaua,* and *Chromis struhsakeri*

At the end of the third transect, we moved upslope and immediately encountered a huge rock escarpment ca. 40 m high. This high relief area was undercut near the bottom and provided shelter for larger fish. We did not explore this area, however, because we wanted to complete the planned transects and bait stations, and we did not have time to return to it at the end of the dive. Several hapu‘u (*Epinephelus quernus*) were encountered near the top of the wall and a couple followed the submersible up over the upper edge.

The final transect began at 24°00.621’N,166°40.908’W. Fortunately, the upper lip of the escarpment was almost exactly at the planned depth of the final transect. This transect was conducted along the 150 m contour to the southeast. Five or six hapu‘u were directly in front of the ports and collecting baskets of the submersible at the beginning of the transect. The habitat during the transect was again very different from that of the other three. At 150 m, it began on the hard rock upper lip of the escarpment, moved inward from the lip to areas with sand pockets, rock pinnacles, small carbonate reefs, and “amphitheaters” and large ledges with big undercut ledges and overhanging blocks. *Cirrhipathes spiralis* grew on the upper escarpment and lip, and *Munida brucei* were seen when the submersible drew close to the bottom. A small field of larger *Antipathes* was encountered about 2/3 of the way through the transect, just to the southwest of one of the high relief amphitheaters and not far from the escarpment lip. These were initially thought to be small *A. ulex* but more likely were larger, healthier *A. intermedia*. A specimen was collected near the end of the dive. This area had a high diversity of fish species. The dominant fish by far was *Luzonichthys earlei*, which formed huge, streaming schools of thousands of individuals on the escarpment face, up onto the lip’s edge, and over on to the bank’s top. A large school of *Pseudocaranx dentex* was observed at the *Antipathes* bed. Two large sharks appeared to be different species, *Carcharhinus galapagensis* and *C. plumbeus. Pristipomoides sieboldii* continued to appear in the water column out from the escarpment’s lip. Other fish species from this transect were characteristic of the “deep-reef” fauna: *Roa excelsa, Myripristis chryseres, Neoniphon aurolineatus, Bodianus sanguineus, Coris ballieui, Desmoholocanthus arcuatus, Genicanthus personatus, Holanthias fuscipinnis, Pseudanthias hawaiiensis,* perhaps *Pseudanthias thompsoni, Liopropoma aurora,* and *Symphysanodon typus. Epinephelus quernus* often approached the submersible.

We decided not to do the second bait station exactly at the end of the transect because there were several large *Seriola* and *Epinephelus* accumulated at the front of the submersible. We moved back to the *Antipathes* field, where we saw a school of over 30 *Pseudocaranx dentex* approaching the submersible, and on to a high-relief rock amphitheater about 1/3 of the way northwest on the transect (24°00.338’N,166°40.659’W). Even as we set the bait out here, the *Seriola* that had followed the submersible began to feed. *Epinephelus* and *Pseudocaranx* also arrived quickly. But as soon as the lights were turned off, large *Pristipomoides filamentosus* arrived. At the height of activity, there were about eight or nine *P. filamentosus,* seven *Seriola,* and over a dozen *Pseudocaranx* at the station.

In the time remaining after the bait station, we collected sediment and biological samples. The sediment sample was taken a short distance away from the bait station, half-way between the station and the *Antipathes* bed, in deeper sand (24°00.313’N,166°40.480’W). A specimen of the *Antipathes* from the bed was collected. We then moved over the edge of the escarpment lip with the intent of collecting one of the smaller *Antipathes* and exploring the lower escarpment. As we moved out beyond the lip, a small group of *Caprodon schlegeli* was seen in the water column, and just beyond that we observed a remarkable

group of 18 *Randallichthys filamentosus*. Our movements had taken us to the southeast of the shear wall, however, and we descended on a more gentle slope to a carbonate bottom with sand at 232 m. Here we found another patch of the larger, more full *Antipathes* that had been collected above and decided to collect one of the red-brown crinoids living on the corals at this deeper site. An *Ariosoma marginatum* was observed burrowing into a sand patch adjacent to the coral bed. The time available for the dive was gone when we collected the crinoid, so we ascended to the surface at that point.

Manmade objects recorded during the surveys were one large, old anchor, a bottle, and a small piece of cloth or plastic. Another unexpected object at this location was a forked, wooden branch ca. 3 ft. long.

List specimens observed on the mission.

FISHES	ECHINODERMS, CRUSTACEANS, & MOLLUSKS	CORALS, SPONGES, & OTHER INVERTS
Naso species	Unidentified galatheids	*Anthomastus fisheri*
Grammatonotus sp. 1	*Munida brucei*	Anemone, star
Grammatonotus laysanus	*Paramunida hawaiiensis*	Anemone, brownringed
Unidentified Callionymidae	*Paromola alcocki*	Cerianthid, long brown
Antigonia eos	*Dardanus brachyops*?	*Nemanthus* sp.?
Pseudocaranx dentex	*Parapagurus dolfleini*	*Antipathes* brown?
Seriola dumerilii	Unidentified crinoids	*Antipathes intermedia*?
Carcharhinus galapagensis	Comatulid brown?	*Cirrhipathes anguina*
Carcharhinus plumbeus	*Stichopus horrens*?	*Cirrhipathes spiralis*
Roa excelsa	*Tonna melanostoma*	*Corallium tortuosum*
Ariosoma marginatum	*Octopus* sp.	*Narella megalepis*
Erythrocles scintillans	Unidentified Paguridae in mollusk shell	Paramuricid blue?
Neoniphon aurolineatus	*Henricia robusta*?	Hydrozoan feather
Myripristis chryseres	*Tamaria triseriata*	Pennatulid
Osteichthys sp.	Unid Pandalidae	*Lyrocteis* sp.
Pristilepis oligolepis	*Stylocidaris rufa*	
Bodianus sanguineus		
Coris ballieui		
Suezichthys notatus		
Etelis carbunculus		
Etelis coruscans		
Pristipomoides filamentosus		
Pristipomoides sieboldii		
Pristipomoides zonatus		
Randallichthys filamentosus		
Parupeneus chrysonemus		
Gymnothorax berndti		
Gymnothorax nuttingi		
Gymnothorax steindachneri		
Malthopsis jordani		
Chrionema chryseres		
Chrionema squamiceps		
Parapercis roseoviridis		
Desmoholacanthus arcuatus		
Genicanthus personatus		
Chromis struhsakeri		
Chromis verater		

Priacanthus alalaua
Priacanthus meeki
Pontinus macrocephalus
Unid Scorpaenidae
Caprodon schlegeli
Epinephelus quernus
Holanthias elizabethae
Holanthias fuscipinnis
Liopropoma aurora
Luzonichthys earlei
Plectranthias kelloggi
Pseudanthias fucinus
Pseudanthias hawaiiensis
Pseudanthias thompsoni?
Symphysanodon maunaloae
Symphysanodon typus
Canthigaster rivulata?

MISSION EVALUATION:

Limitations, failures, or operational problems noted:

None of significance. A lanyard on a sediment sampler broke during sample collection, but the sample was obtained and the broken lanyard retrieved because of the proficiency of the submersible pilot.

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.

The mission was a complete success. We completed all transects and bait stations exactly as planned, collected a sediment sample for Frank Parrish (NOAA Fisheries), and collected two biological specimens (an *Antipathes* species and a crinoid). All objectives were met, plus additional collections were obtained.

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

P4-050 held on 09-13-02.

a. CTD data by 09-13-04

b. video data by 09-13-04

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