HAWAII UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT MISSION NO. P4-053

MISSION STATUS

Mission Date: 09/17/02

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

Specific Site (NE side, summit, etc): East side
Position (start latitude & longitude): 25° 30.2000/169° 23.5234
Depth range: 190-568 m

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

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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 Raita Bank, one of two Reserve Preservation Areas (i.e., RPAs) provisionally open 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 340, 290, 240, and 190 meters. The two bait stations were conducted at 343 and 207 meters.

Scientific data acquired:

At the beginning of the dive we dropped down on sand substrate at 461 m (25°30.200'N,169°23.523'W). Numerous myctophids were in the water column near the bottom. We moved upslope to 340 m for transect 1.
Transect 1 (start - 25°30.274'N,169°23.590'W) was conducted to the southwest. The substrate was carbonate slope dusted with sand, and occasional carbonate boulders. Dominant species in the fauna at this depth were *Lyrocteis* sp. and *Symphysanodon maunaloae.* Less abundant species were *Chrionema squamiceps, Parabothus coarctatus,* and *Pontinus macrocephalus,* Small ehu (*Etelis carbunculus*) and an onaga (*Etelis coruscans*) were seen at a couple of locations. The transect ended at 340.5 m (25°29.849'N,169°24.031'W).
Bait station 1 was set at 343 m adjacent to an eroded, slightly undercut carbonate outcropping.(25°29.857'N,169°24.022'W). Several ehu, several onaga, two *Squalus mitsukurii*, and one *Gymnothorax nuttingi* came to the bait.
Transect 2 was conducted to the northeast at 289-300 m, averaging 290 m (start – 25°29.920'N,169°24.051'W). The substrate was hard pavement with a covering of sand of varying depth with several spur-like, rounded carbonate outcroppings extending into the transect depth from above. This transect ended at 300 m (25°30.382'N, 169°23.509'W). The most abundant fish were *Symphysanodon maunaloae.* Small, twiglike cnidarians (*Antipathes* species?) about 15 cm high were sparsely scattered on the bottom. *Calyptrophora japonica* were seen on the rock outcroppings. A few *Liponema* anemones were observed on rocks. Pagurid crabs were occasionally seen.
Transect 3 was conducted to the southwest at 240 m (start – 25°30.429'N, 169°23.545'W). The substrate was hard pavement with a covering of sand of varying depths and occasional rounded carbonate spur outcroppings covered with sand (end - 25°30.060N,169°23.958'W). The fauna was similar to transect 2, although unidentified pagurid crabs, *Bembrops filifera, Suezichthys notatus,* and *Parapercis roseoviridis* were more abundant. Large swarms of ammodytids (tentatively identified as *Ammodytoides pylei)* were seen over sand. Gindai (*Pristipomoides zonatus*) were seen at several locations. A group of kalikali (*Pristipomoides seiboldii*) was observed once swimming by in water column.
Transect 4 was conducted back to the northeast at190 m (start – 25°30.506'N, 169°23.545'W). The substrate was steep carbonate slope (50° grade) with a dusting of sand, pocked with numerous shallow cavities but few undercut areas to shelter fish. There was no loose rock at this depth. The transect ended at 25°30.412N, 169°23.629'W). At this depth, the most numerous fish were *Pseudanthias fucinus*, and there were noticeably fewer *Symphysanodon maunaloae*. *Suezichthys notatus* were common and "deep-reef" species were seen (i.e., *Roa excelsa, Liopropoma aurora, Bodianus sanguineus).* Individual kalikali and gindai were seen at beginning of transect and another gindai was seen at ca. 5 minutes before end of transect. Kahala (*Seriola dumerilii*) began to follow the submersible at the beginning of the transect and fed on small fish throughout. *Cirrhipathes spiralis* were numerous on this slope.
Bait station 2 was set at 207 m, at about a five minute run southwest from northeast end of transect 4 (25°30.412'N,169°23.629'), where a gindai was observed. The substrate was the same as on the transect but next to small rock outcropping. No groups of bottomfish management species were seen at this depth and no sites of good potential for a bait station were observed, so a site of slightly greater relief than average, with a bottomfish in the vicinity, was chosen for the bait station. An old fishing line (the only man-made object observed during the dive) was present at this site and was taken as another indication that the location was suitable for a bait station. Few fish appeared during this station, however: only two hapu'u (*Epinephelus quernus*), four kahala (*Seriola dumerilii*), two butiguchi (*Pseudocaranx dentex*), and a *Gymnothorax steindachneri* (videotaped for verification of

identification). At end of bait station, one onaga (*Etelis coruscans*) and three Hawaiian pigfish (*Bodianus* cf. *vulpinus*; 2 females, 1 male) appeared.
After the bait station, we moved southwest to 352 m to collect a sand sample for Frank Parrish, in area of deeper sand on carbonate (25°30.153'N,169°23.673'N).
We then moved down-slope to survey deeper living organisms. The substrate was initially similar to that on the transects, until ca. 450 m, when barren carbonate outcroppings with undercut areas began to appear. At ca. 500 m, we encountered canyon-like areas between carbonate spurs. Gorgonians were absent from the spurs at first, but increased in abundance and diversity as we descended. One *Corallium secundum* was seen. We stopped at a canyon at 530 m with a colony of *Callogorgia gilberti* and other gorgonians. There (25°29.652,169°23.862'W) we collected a gorgonian that superficially resembled *Ellisella* sp.(this specimen was lost in the surge when the submersible was retrieved by the ship). For the final part of the dive, we proceeded down-slope to other undercut areas at 568 m (25°29.597'N, 169°23.866'W). Noteworthy fishes in the deeper areas were *Ijimaia plicatellus, Hoplostethus crassispinis, Polymixia japonicus, Epigonus glossodontus, E. apogonoides, Grammicolepis brachiusculus,* and an unusually large *Cyttomimus stelgis* (ca. 10 cm). A predatory tunicate on one of the canyon walls was videotaped but could not be collected because of the narrow space between the walls. The dive ended as the submersible left the bottom from 568 m at 15:45.

Table 1: Biological organisms observed during the dive.

FISHES	ECHINODERMS, CRUSTACEANS, & MOLLUSKS	CORALS, SPONGES & OTHER INVERTS
Synagrops argyrea	Mursia hawaiiensis	Anthomastus fisheri
Ammodytoides pylei	Munida brucei	anemone brown
Glossanodon struhsakeri	Paramunida hawaiiensis	Hormathiid
Ijimaia plicatellus	Paromola sp.	Liponema brevicornis
Chascanopsetta prorigera	Randallia sp.	Antipathes sp.
Parabothus coarctatus	Crinoid	Bathypathes conferta
Grammatonotus sp1	comatulid brown	Cirrhipathes spiralis
Grammatonotus laysanus	thalassometrid yellow	cerianthid brown
Callionymus sp.	Fucinus sp.	Ellisella sp.
Pseudocaranx dentex	mollusk	Corallium secundum
Seriola dumerili	Phalium bulla	Corallium tortuosum
Roa excelsa	Pinna muricata	Acanella dispar
Epigonus atherinoides	Pagurid sp.	Callogorgia gilberti
Epigonus glossodontus	Astropecten productus	Calyptrophora japonica
Grammicolepis brachiusculus	Henricia pauperrima	Narella megalepis
Ostichthys sp.	Henricia robusta	Hydrozoan feather
Pristilepis oligolepis	Plesionika sp.	Pennatulid
Bodianus sanguineus	Pandalid sp.	Lyrocteis sp
Bodianus vulpinus	Stereocidaris hawaiiensis	Corallistes sp.
Suezichthys notatus	Stylocidaris calacantha	Dictyaulus sp.
Lophiodes miacanthus	Stylocidaris rufa	Pyrosome
Etelis carbunculus	Micropyga tuberculata	Tunicate, predatory
Etelis coruscans	Mediaster ornata	
Pristipomoides sieboldii	Unidentified squid	1 old fishing line
Pristipomoides zonatus	Ranina sp. (carapaces only)	
Macrourid sp.		
Laemonema rhodochir		
Physiculus rhodopinnis		

Parupeneus chrysonemus
Gymnothorax berndti
Gymnothorax nuttingi
Gymnothorax steindachneri
myctophid sp.
Malthopsis jordani
Bembrops filifera
Bembrops sp. 1
Chrionema chryseres
Chrionema squamiceps
Parapercis roseoviridis
Polymixia japonica
Priacanthus alalaua
Priacanthus meeki
Pontinus macrocephalus
Setarches guentheri
Caprodon schlegeli
Epinephelus quernus
Holanthias elizabethae
Liopropoma aurora
Plectranthias kelloggi
Pseudanthias fucinus
Symphysanodon maunaloae
Squalus mitsukurii
Canthigaster inframacula
Hoplostethus crassispinus
Cyttomimus stelgis

MISSION EVALUATION:

Limitations, failures, or operational problems noted:
Loss of sample at end of dive

Recommendations for corrective action or improvement:
Arm set across top of collection bin before ascending

In your opinion, did the mission essentially achieve its purpose? Compare actual work accomplished with the work that was expected to be accomplished.
Mission achieved more than expected. All transects and bait stations were completed before time, allowing for an excursion to deeper depths. Thus more observations were accomplished, and at deeper depths. The specimen collected was at a deeper depth and not essential to the mission objective, but would have been a nice addition.

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

P4-053 held on 09/17/02.

a. CTD data by 09-17-04

b. video data by 09-17-04

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