HAWAII UNDERSEA RESEARCH LABORATORY

QUICK LOOK REPORT MISSION NO. P4-061

MISSION STATUS

Mission Date: 09-30-02

Location (island, bank, seamount, etc): East French Frigate Shoals Bank

Specific Site (NE side, summit, etc): West side
Position (start latitude & longitude): 23° 51.039'N/165° 47.127'W
Depth range: 171-329 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 East French Frigate Shoals 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 planned within the depth range of 200-350 meters, where most species of bottomfish occur. The four transects were conducted at 200, 210, 250, and 260 meters because fishermen at this bank target hapu‘u (*Epinephelus quernus*) in the 200-250 m depth range. Only one bait station was conducted, at 201 meters, because the hapu‘u at that station ripped open all four of the bait bags carried on this trip.

Scientific data acquired:

The dive began at 0840 at 254 m (14.6°; 23°51.039’N, 165°47.127’W), not far from the targeted drop-down site which was down-slope of an identified fishing area for hapu‘u (*Epenephelus quernus*). The first transect began almost immediately after moving upslope four meters to 250 m, and proceeded to the southwest. The substrate on this transect was mostly carbonate slope (ca. 20° grade) with a light covering of sediment and abundant pebbles and small rocks. Few and mostly small organisms were seen on this transect, with dominant species being orange pennatulid sea pens, small antipatharian bushes, pagurid crabs in gastropod shells, and a few cryptic sand-dwelling fishes. The transect ended at 250 m (15.1°C; 23°50.543’N, 165°47.627’W). An orange pennatulid and rock with a small antipatharian were collected at the end of the transect (the pennatulid specimen was lost during ascent).

The second transect started at 200 m (16.5°; 23°50.611’N, 165°47.705’W) and proceeded to the northeast. At 200 m the substrate was mostly sand with coral rubble and pebbles. Scattered areas of small rock were present during the third quarter of the transect, and these areas had many *Pseudanthias fucinus* and *Symphysanodon maunaloae*. A couple of gindai (*Pristipomoides zonatus*) and some hapu‘u were seen in that area. A low-relief rocky shelf was visible only 5 m upslope from the transect in that area. The transect ended at 201 m (16.2°; 23°50.938’N, 165°47.240’W).

After finishing the second transect, we moved upslope 5 m to the rocky shelf to investigate its habitat and fauna. Immediately upon reaching the shelf and stopping, several hapu‘u converged on the submersible and ripped open a bait bag. It was therefore “decided” to set the first bait station at that location. During the station, the fish tore open the remaining bait bags, thereby doubling the standard amount of bait at this station and eliminating the possibility of doing a second bait station during the dive. A total of 10 hapu‘u were seen at the station. The only other fish present at the station were eight kahala (*Seriola dumerili*). A mixed assemblage of smaller fish was present at the ledge itself, including *Chromis struhsakeri*, *Pseudanthias fucinus*, and *Roa excelsa*.

Following the bait station, we moved upslope to explore the habitat and biota toward the bank summit. Numerous sea urchins resembling *Stylocidaris rufa* and unidentified sea anemones were present. The dominant fish species was *Pseudanthias fucinus.* We stopped at 171 m where the bottom became featureless sand covered with gravel and coral rubble, like that seen from ROV tows at other NWHI bank tops. At this location (18.1°;

23°51.113'N, 165°47.310'W) a rock with two of the unidentified anemones was collected. A small *Plectranthias* (perhaps *helenae*) with red bars was also videotaped nearby.

The third transect began after moving back downslope to 210 m (17.2°; 23°51.086'N, 165°47.191'W) and proceeded further on to the northeast. The substrate during this transect was mostly sand with coral rubble and small, isolated rocks. In the first half of the transect, however, we passed over a low, rocky ridge with numerous larger fish, including a large school of *Naso* (perhaps *maculatus*), *Caprodon schlegeli, Symphysanodon typus,* and hapu'u. Several kahala were also following the submersible at this time and scared many other, smaller fishes into cover before they could be identified or counted. Otherwise, the fauna at the flatter substrate was similar to that in the second transect. The transect ended at 210 m (16.5°; 23°51.686'N, 165°47.181'W).

After the third transect we moved down to 260 m (14.8°C; 23°51.759'N, 165°47.077'W). The substrate was thin sand overlaying featureless carbonate with scattered accumulations of gravel. This transect was notable for being really, really boring. It ended at 259 m (14.8°; 23°51.045'N, 165°47.118'W).

We next surveyed the area downslope, looking for other, higher-relief fishing sites. None were found. The bottom at ca. 300 m became an extremely featureless carbonate hardpan, resembling a pocked concrete parking lot. At 320 m, a geologically interesting feature was found - isolated, small, basalt "erratic" rocks on top of the carbonate, looking as if they had fallen there from above. Three onaga (*Etelis coruscans*) were seen at 325 m near several of these rocks. The submersible stopped at 329 m (12.4°; 23°50.561'N, 165°46.910'W), near the area where the onaga were seen. An juvenile ehu (*E. carbunculus*) was present as was a *Plectranthias kelloggi*. A rock with worm tubes and antipatharians, and two specimens of a cross-shaped alcyonacian were collected. A brown-banded cone shell was collected a few meters away. At this point (320 m; 12.5°; 23°50.479'N, 165°46.916'W), a decision was made to end the dive early ,at 1429, to maximize the time for ROV and mapping surveys during the few hours remaining in the cruise before having to return to Honolulu.

Few bottomfish except for hapu'u were observed during this dive. A bottle and a small piece of plastic were the only man-made objects seen. The dive was notable for the mostly featureless substrate and scarcity of organisms compared to most other banks surveyed during this cruise.

Table 1: Biological organisms observed during the dive.

FISHES	ECHINODERMS, CRUSTACEANS, & MOLLUSKS	CORALS, SPONGES & OTHER INVERTS
Naso sp. (perhaps *maculatus*)	Galatheids, unidentified	Alcyonacean "cross" (collected)
Ammodytoides pylei	Crinoid, unidentified	Anemone, banded (collected)
Glossanodon struhsakeri	*Cosmiometra crassicirra*	Anemone, brown
Parabothus coarctatus	*Holothuria cinerascens*	Anemone, orange
Grammatonotus sp. 1	Gastropods, unidentified	*Antipathes*, brown
Grammatonotus laysanus	*Conus* sp. (collected)	*Bathypathes conferta*
Callionymids, unidentified	*Octopus* sp.	*Cirrhipathes spiralis*
Antigonia eos	Pleurobranchid, black	Cerianthid, brown
Seriola dumerili	*Ciliopagurus hawaiiensis*	*Corallium tortuosum*
Carcharhinus galapagensis?	Paguridae, in gastropod shells	*Funiculina* sp. 2?
Roa excelsa	*Coronaster eclipse*	*Pennatula*, orange
Ariosoma marginatum	*Anseropoda insignis*	*Virgularia* sp.?
Myripritis chryseres	*Henricia robusta*	Caryophillid, unidentified
Neoniphon aurolineatus	*Psilasteropsis cigulata*	*Flabellum pavoninum*
Pristilepis oligolepis	*Tamaria triseriata*	*Javania insignis*

Bodianus sanguineus
Coris ballieui
Suezichthys notatus
Etelis carbunculus
Etelis coruscens

Pristipomoides sieboldii
Pristipomoides zonatus
Hymenocephalus sp.
Moridae, unidentified
Gymnothorax berndti
Gymnothorax ypsilon
Malthopsis jordani
Bembrops sp. 1
Parapercis roseoviridis
Chromis struhsakeri
Cookeolus japonicus
Priacanthus alalaua
Caprodon schlegeli
Epinephelus quernus
Holanthias elizabethae
Luzonichthys earlei
Plectranthias helenae?
Plectranthias kelloggi
Pseudanthias fucinus
Symphysanodon maunaloae
Symphysonodon typus
Squalus mitsukurii
Synodus sp.
Canthigaser rivulata

Pteraster obesus myonotus
Acanthocidaris hastigera
Stylocidaris callacantha
Stylocidaris rufa?
Diadematid, unidentified, long spines, reddish color

Lyrocteis 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.

All planned activities of the mission were completed except for the second bait station, which was not done for reasons beyond our control. The other work was completed well ahead of schedule, with ample time to collect and videotape unusual organisms. The completion of the work ahead of scheduled allowed the dive to finish early so that additional ROV and mapping surveys could be done at this location.

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

P4-061 held on 09-30-02.

a. CTD data by 09--04

b. video data by 09--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