U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
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September 9, 1998 F/SWC2:FAP:FLF
KA9806-2.FAP

CRUISE REPORT

VESSEL: *Ka'imimoana*, Cruise KA-98-06

CRUISE PERIOD: 21 August-1 September 1998

AREA OF OPERATION: Northwestern Hawaiian Islands (Fig. 1)

TYPE OF OPERATION: Personnel from the Southwest Fisheries Science Center (SWFSC) Honolulu Laboratory (HL), National Marine Fisheries Service (NMFS), NOAA surveyed habitat, and fish abundance to support the continuing study of monk seal forage base. Fish censuses were done in waters around French Frigate Shoals (FFS) and an oceanographic mooring was deployed at S.E. Brooks Banks.

ITINERARY:

21 August	Ray Boland, Russell Brainard, Edward DeMartini, Frank Parrish, Mike Sawyer, Terrance Tysall, Paul Schadow, Walter Schubert, and Larry Denny embarked the ship and departed Pearl Harbor at 1100.
23 August	Arrived FFS. Began deep water surveys using real-time remote camera and deployed divers to count fish within the atoll.
24-27 August	Divers conducted fish census both in the lagoon and on the deep slopes of the atoll. Departed FFS on 27 August for S.E Brooks Banks.
28-29 August	Deployed an oceanographic mooring on the summit of S.E. Brooks Banks and then inspected it with divers. Departed S.E. Brooks for Honolulu on 29 August.
30 Aug-1 Sept	Transited to Honolulu. Arrived Pearl Harbor 0900 1 September. All personnel disembarked.

MISSIONS AND RESULTS:

A. Visual census of reef fish assemblages at fixed historical transect stations.

Nine stations were surveyed at FFS by divers who counted and estimated the sizes of all non-cryptic fish species. Fixed transects represented both patch reef and barrier reef habitats. Patch reefs (~50 m diameter) were surveyed in their entirety and barrier reef habitats were surveyed with 50-m belt transects. Fish on each transect were counted by two divers and their sizes estimated by a third diver. Counts from these surveys will be compared with counts made at the same locations in previous years.

B. Census of fish assemblages by divers in the 50-60 m habitat in which seals forage.

Eight ~100 m drift transects (20 min bottom time) were done to census fish assemblages on the slope of FFS. The transects were done in four areas outside of the atoll's barrier with a census at 50 m and one at 60 m. The four areas were north of Trig Island, Tern Island, Shark Island, and west of Shark Island. Technical diving was required to work in these depths, and trimix was used as a breathing media. Fish diversity and variability from the deep surveys will be compared with data from the shallow surveys time series to consider the suitability of the annual census to measure changes in the grounds adults forage.

C. Remote camera surveys at the eight deep transects surveyed by divers.

A remote camera was deployed for a 20 min drift over the habitat surveyed by divers. The real-time link between the camera and the ship permitted the images to be collected in a forward looking orientation and close to the bottom as a survey diver would travel. Counts of fish seen on these videos will be compared with counts from the divers' surveys of the same habitat to determine if remote video surveys can be used in place of survey divers to do annual monitoring.

D. Deployment of an oceanographic mooring at S.E. Brooks Banks.

A thermistor string was deployed on the 70 m slope of S.E. Brooks. A separately buoyed, upward looking acoustic Doppler profiler (ADCP) was placed within a 100 m distance of the thermistor string. The Doppler array was also equipped with a wave height gage. Proper deployment was ensured by inspection of array using divers. The array will archive data or a period of 1 year prior to its retrieval in 1999.

E. General observations and miscellaneous activities.

Standard weather observations were made at 0000, 0600, 1200, and 1800 (G.m.t.) by the ship's officers and crew.

SCIENTIFIC PERSONNEL:

Frank Parrish, Chief Scientist, National Marine Fisheries Service (NMFS), Southwest Fisheries Science Center (SWFSC), Honolulu Laboratory (HL)
Raymond Boland, Cooperating Scientist, Joint Institute of Marine and Atmospheric Research (JIMAR), University of Hawaii (UH)
Russell Brainard, Fishery Oceanographer, NMFS, SWFSC, HL
Edward DeMartini, Fishery Biologist, NMFS, SWFSC, HL
Michael Sawyer, JIMAR, UH
Terrance Tysall, Cooperating Scientist, Office of NOAA Corps Operations, National Oceanic Atmospheric Administration
Paul Schadow, Cooperating Scientist, Mobile Diving Salvage Unit 1 (MDSU1), U.S. Navy (USN)
Walter Schubert, Cooperating Scientist, MDSU1, USN
Larry Denny, Cooperating Scientist, MDSU1, USN

Submitted by: _____
Frank Parrish
Chief Scientist

Approved by: _____
R. Michael Laurs
Director, Honolulu Laboratory

Attachment

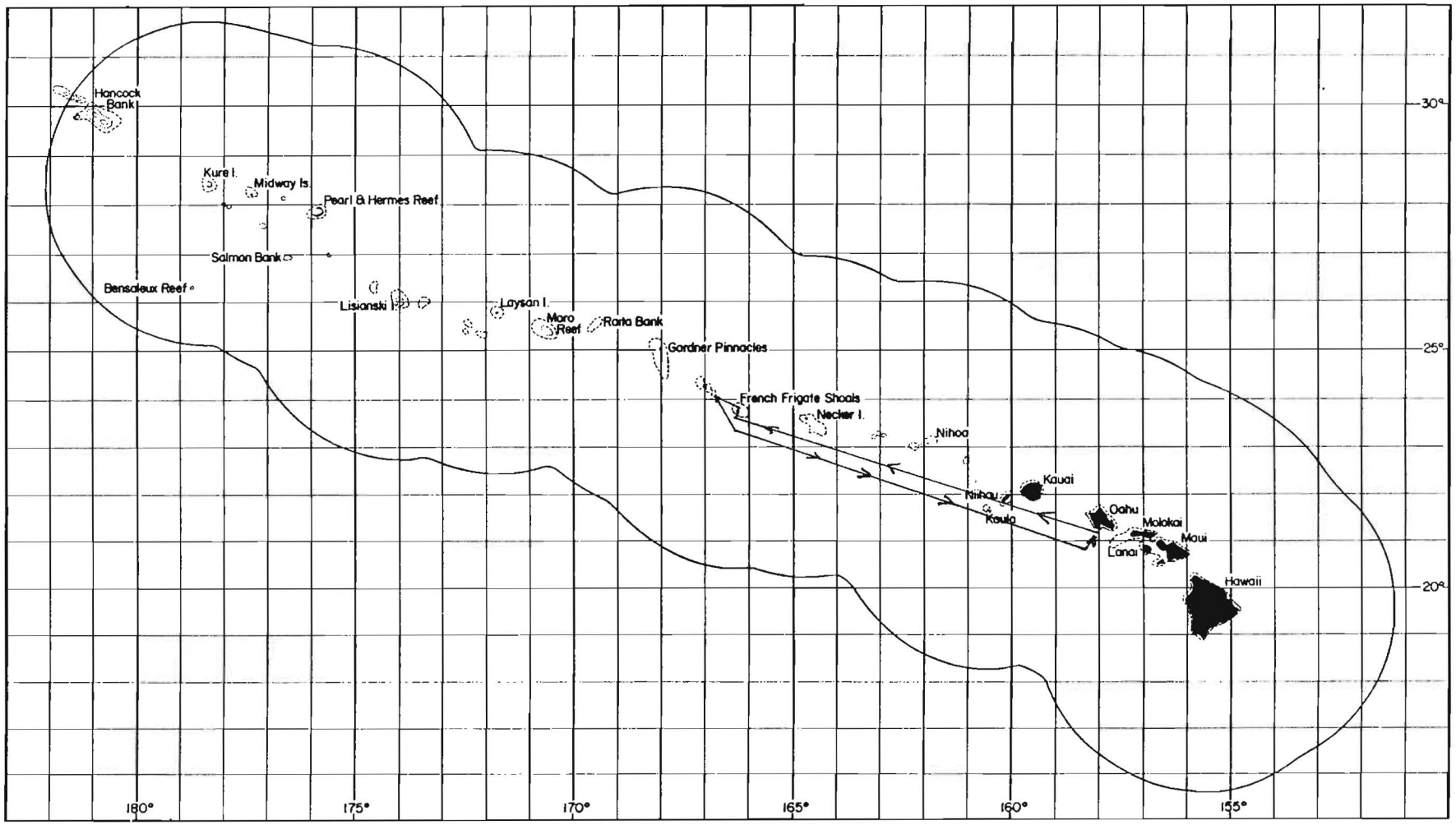

Figure 1. - Track of the Ka'imimoana cruise KA-98-06, August 21 - September 1.