



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center Honolulu Laboratory
2570 Dole St. • Honolulu, Hawaii 96822-2396

August 7, 1990

CRUISE REPORT

VESSEL: *Townsend Cromwell*, Cruise 90-05 (TC-153)

CRUISE PERIOD: June 22 - July 15, 1990

AREA OF OPERATION: Waters around the Northwestern Hawaiian Islands (NWHI) (Fig. 1).

TYPE OF OPERATION: Personnel from the Southwest Fisheries Center Honolulu Laboratory (HL) conducted trapping, diving, hook and line, and trawling operations. Supplies were delivered to field camps on Tern Island and Lisianski Island.

ITINERARY:

- 22 June - Start of cruise. On board were Ray Boland, Karl B. Bromwell, Mark A. Crossler, Edward E. DeMartini, Jean Kenyon, Kevin C. Landgraf, Teresa Martinelli, Robert B. Moffitt, Frank A. Parrish and Darryl T. Tagami. Departed Snug Harbor at 1300 and proceeded to waters around Necker Island.
- 24-30 - Necker Island. Arrived at Necker Island and commenced trawling, diving, trapping, and fishing operations.
- 1 July - French Frigate Shoals. Arrived at Tern Island and off-loaded supplies for the field camp. Proceeded to Maro Reef.
- 2-7 - Maro Reef. Arrived at Maro Reef and commenced trawling, diving, trapping, and fishing operations.
- 8-10 - Lisianski Island. Arrived at Lisianski Island, off-loaded supplies for the field camp and commenced trawling, diving, trapping, and fishing operations.
- 11-14 - In transit to Honolulu, Oahu.
- 15 - Arrived at Snug Harbor, Honolulu, Oahu, at 0645. End of cruise.



MISSION
AND
RESULTS:

- A. Conduct lobster fishing operations at selected sites in the NWHI using wire and plastic lobster traps.
1. A total of 3,142 spiny lobster, *Panulirus marginatus*, 730 slipper lobster, *Scyllarides squammosus*, and 22 ridge-back slipper lobster, *S. haanii*, were caught in 1,686 trap-nights of fishing. Of these, approximately 100 spiny lobster and 240 slipper lobster were retained for detailed examination. The remainder were released at sea. Overall catch rates were 1.86 and 0.43 lobster/trap-night for spiny and slipper lobster, respectively. These catch rates were lower than those obtained in 1987: 2.28 and 0.63 lobster/trap-night respectively.
 2. Standard California wire lobster traps were set at selected locations at Necker Island, Maro Reef, and Lisianski Island. At Necker Island, the mean catch rate of spiny lobster in these traps was 1.62 lobster/trap-night. This compares to catch rates of 1.87, 2.22, and 2.86 lobster/trap-night for traps set in the same locations in 1986, 1987, and 1988, respectively. At Maro Reef, the mean catch rate of spiny lobster in these traps was 0.48 lobster/trap-night, compared to 2.15, 3.17 and 3.49 lobster/trap-night for traps set in the same locations in 1986, 1987, and 1988, respectively. The catch rate of spiny lobster in wire traps at Lisianski Island was 0.00 from 144 trap-nights of effort.
 3. Standard plastic lobster traps were set at selected locations at Necker Island and Maro Reef. At Necker Island, mean catch rate of slipper lobster in these traps was 0.65 lobster/trap-night compared to 0.71, 0.99, and 0.74 lobster/trap-night for traps set in the same locations in 1986, 1987, and 1988, respectively. At Maro Reef, mean catch rate of slipper lobster in these traps was 1.21 lobster/trap-night compared to 0.90, 1.45, and 1.18 lobster/trap-night for traps set in the same locations in 1986, 1987, and 1988 respectively. The mean catch rate of slipper lobster in these traps at Lisianski Island was 0.37 lobster/trap-night.

- B. Obtain length-frequency data on spiny and slipper lobsters to compare with previous years and to refine estimates of growth and mortality.
 - 1. Head length and tail width were measured and recorded for all lobster species. Sex and reproductive condition were also recorded. The digestive gland and first walking leg were collected from each of the 100 slipper lobster at both Necker Island and Maro Reef. These samples were labeled and frozen and will be used in electrophoretic analysis.
- C. Describe lobster habitats to compare habitat type with lobster abundance.
 - 1. A total of 32 drop dives and 13 towed sled dives were conducted at 14 sites, 6 at Necker Island, 5 at Maro Reef and 3 at Lisianski Island. Divers observed and recorded bottom type, relief, and biotic community and took video and photographic records when appropriate. Dives were conducted in close proximity to the traps to enable comparison of bottom type with trap-catch rates, both current and historical. Sand and algal samples were also collected for further analysis in the laboratory.
- D. Search for and describe condition of derelict gear on the lobster fishing grounds.
 - 1. On the 45 dives mentioned in the preceding section, divers searched for derelict gear. Only two derelict traps were seen, both on a single towed sled dive at Necker Island. These traps were not thoroughly examined, however, the diver reported that they were considerably torn and empty.
- E. Collect lobster larvae to add to information regarding phyllosome distribution within the Hawaiian Archipelago.
 - 1. A total of 6 two-hour Cobb trawls were conducted at distances of 15-60 nmi. from Necker Island, Maro Reef and Lisianski Island on the north-south axis. These tows were conducted at night between 2100 and 0200 hours with the net fishing at a depth of 10-20 m. This was the first time this net was used, and catches were

disappointingly small with very few phyllosomes observed during sample preservation. These samples will be thoroughly examined in the laboratory.

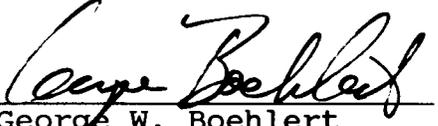
- F. Locate juvenile snapper grounds, and evaluate size-frequency distributions and habitat parameters.
 - 1. A total of 10 rod and reel fishing stations were conducted, targeting juvenile snappers. No snappers were caught. The wrasse, *Coris ballieui*, was the most abundant component in the catch.
- G. Return 20 living spiny lobster and 20 living slipper lobster to the laboratory for tank and field studies.
 - 1. A total of 20 spiny and 35 slipper lobsters were returned to the laboratory for tank and field ghost fishing studies.
 - 2. Two juvenile hapuupuu, *Epinephelus quernus*, with newly settled coloration were obtained from lobster traps and returned to the laboratory for growth study.
- H. Deliver supplies to field camps.
 - 1. Supplies were delivered to Tern Island and Lisianski field camps.
- I. General observations and miscellaneous activities.
 - 1. Bird flock, fish school, and marine mammal sightings were recorded by the ship's officers and crew during daylight hours when possible.
 - 2. Standard weather observations were made at 0000, 0600, 1200, and 1800 (G.M.T.) by the ship's officers and crew.

SCIENTIFIC
PERSONNEL:

Robert B. Moffitt, Chief Scientist, NMFS, SWFC, HL
 Ray Boland, Research Assistant, NMFS, SWFC, HL
 Karl B. Bromwell, Research Assistant, NMFS, SWFC, HL
 Mark A. Crossler, Research Assistant, NMFS, SWFC, HL

Edward E. DeMartini, Fishery Biologist, NMFS, SWFC, HL
Jean Kenyon, Research Assistant, NMFS, SWFC, HL
Kevin C. Landgraf, Research Assistant, NMFS, SWFC, HL
Teresa Martinelli, Research Assistant, NMFS, SWFC, HL
Frank A. Parrish, Research Assistant, NMFS, SWFC, HL
Darryl T. Tagami, Operation Research Analyst, NMFS, SWFC, HL

Submitted by: 
Robert B. Moffitt
Chief Scientist

Approved by: 
George W. Boehlert
Director, Honolulu
Laboratory

Attachment

