

September 23, 1999 F/SWC2:FAP:FLF
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CRUISE REPORT

VESSEL: *Townsend Cromwell*, Cruise 99-09 Leg I (TC-247)

**CRUISE
PERIOD:** 13-29 August 1999

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

**TYPE OF
OPERATION:** Supported mixed gas and conventional scuba diving operations at French Frigate Shoals (FFS), S. E. Brooks Bank, Kaula Rock, and at Waianae, Oahu. Divers conducted surveys of reef fish communities as part of the annual assessment of monk seal forage base by revisiting sites monitored since the early 1990s. Specimens of reef fish and invertebrates were collected for analysis of fatty acid signatures to provide a reference data base to evaluate seal forage composition.

ITINERARY:

13 August Start of cruise. Embarked Ray Boland, Rusty Brainard, Edward DeMartini, Frank Parrish, Mike Sawyer, and Navy divers Bill Crider, Everette Hairston, and Ron Henning. Departed Snug Harbor at 1000 and proceeded to FFS.

15 August Arrived FFS. Set lobster traps and off-loaded supplies for Tern Island. Conducted diver emergency drills with Navy decompression chamber staff.

16 August Transited to S. E. Brooks Bank to conduct remote camera search for oceanographic mooring and do mixed gas dives.

- 17 August Recovered mooring and transited to FFS. Spent the next 7 days doing mixed gas dives on the deep slope, making reef fish counts in shallows of the atoll, and collecting fish and inverts with traps and divers for fatty acid analysis.
- 24 August Conducted a series of camera drops on the north and east sides of the FFS barrier and then transited in the evening to Necker.
- 25 August Made camera drops at Necker Bank and then transited to FFS to set traps in the evening.
- 26 August Divers collected specimens. Departed FFS for Kaula Rock in the evening.
- 28 August Divers conducted a survey of a 5-fathom pinnacle at Kaula Bank and then transited to Waianae, Oahu.
- 29 August Made remote camera surveys followed by mixed gas diving to survey and recover two derelict gill nets from the steep contours off Waianae, Oahu. Arrived Snug harbor at 2000. Disembarked Crider, Hairston, Henning, DeMartini and off-loaded Navy decompression chamber.

MISSIONS AND RESULTS:

- A. Revisit and collect data on reef fish abundance at fixed standardized stations at FFS.

All nine of the fixed stations were resurveyed by Boland, DeMartini, and Parrish. 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. An archival temperature recorder was deployed at one of the stations to collect temperature data during seasonal changes throughout the year following.

- B. Survey deep slope forage habitat of endangered Hawaiian monk seal at FFS.

Twelve mixed gas dives were used to conduct a cumulative of 5 hours survey at depths between 50 and 60 meters on the atoll's northern deep slope area, which is known to be frequented by foraging monk seals. Divers recorded the mean size of talus fragments and any evidence of movement (by seals) and fauna associated with deep slope talus fragments at eight locations. At two of the locations, groups of "electric rocks" were placed on the bottom, which were

similar in appearance to natural talus fragments. These devices will record movement and should provide some insight to seasonal visitation and use of the deep slope by monk seals.

- C. Recover oceanographic mooring from S. E. Brooks Bank.

Two moorings were recovered from S. E. Brooks Bank. Instruments recovered included an upward looking acoustic doppler current profiler (ADCP), wave recorder, water column thermistor string, and a number of fish positioning archival tags.

- D. Make a collection of specimens for fatty acid analysis for monk seal forage studies.

Specimens of reef fish and invertebrates were collected using traps and divers. Priority collections were to obtain specimens of *Panulirus marginatus*. A total of 95 traps were set between 10 and 50 m together with 6 days of diving resulting in the collection of five *P. marginatus*. Four of the lobsters were collected by divers. Collections obtained nine other species of invertebrates and 44 species of reef fish.

- E. Survey for derelict net on the deep slopes of Waianae, Oahu.

A remote camera was used to survey an underwater drop-off (150-230 ft) along the Waianae coast where a large derelict gill net had been found 8 weeks earlier. The survey indicated much of the net was missing but two large panels were found entangled at 200 ft along the underwater cliff face. Mixed gas divers were used to free the debris and attach lift bags to send it to the surface.

SCIENTIFIC

PERSONNEL:

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Attachment