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CRUISE REPORT

VESSEL: *Townsend Cromwell*, Cruise 92-03 (TC-171)

CRUISE PERIOD: 13 April - 7 May 1992

AREA OF OPERATION: Southern area of Musician Seamounts and Tern Island, French Frigate Shoals (Fig. 1).

TYPE OF OPERATION: Personnel from the Honolulu Laboratory, Southwest Fisheries Science Center (SWFSC), National Marine Fisheries Service (NMFS); Centro de Investigación Científica y de Educación Superior de Ensenada (CICESE), Baja California, Organismo Descentralizado de Interes Publico, Mexico; and the Department of Marine and Wildlife Resources (DMWR), American Samoa Government, conducted longline fishing operations to collect biological and habitat utilization information on swordfish. Environmental and habitat utilization data were also collected using hook timers, time-depth-temperature recorders (TDTRs), XBT probes, a CTD instrument, and an acoustic Doppler current profiler (ADCP).

ITINERARY:

13 April - Departed Snug Harbor. On board; Robert A. Skillman, Christofer H. Boggs, Daniel L. Curran, Oscar Sosa-Nishizaki, James H. Uchiyama, Nathaniel Raring, and Felesolau T. Tuilagi. Trial deployment of main line conducted north of Oahu. Continued north toward research area in the Musician Seamounts.

14-15 April - Changed course, south from fishing grounds, to intercept a longline vessel carrying an injured fisherman. Received injured fisherman and departed for Oahu. Coast Guard helicopter picked up fisherman. Departed again for research area.

15-21 April - Conducted longline fishing operations by setting longline gear in the evening and hauling the next morning. XBT or CTD casts were taken either after setting or hauling.

21-24 April - Returned to Snug Harbor to borrow a replacement uniblock for the longline reel. Departed for fishing grounds.

24 April - Conducted longline fishing operations.

4 May - Concluded fishing operations. Arrived at Tern Island, French Frigate Shoals.

5 May - Embarked James R. Mahoney and 4 Hawaiian monk seals. Departed Tern Island for Snug Harbor.

7 May - Arrived Snug Harbor at 1730. Disembarked scientists. End of cruise.

MISSIONS AND RESULTS:

A. Collect select biological samples (otoliths and fin spines for ageing, gonads for reproductive biology, heart and skeletal muscle for genetics, gills and gill arches for parasites, and stomach contents for food chain linkages) from swordfish, other billfishes, mahimahi and sharks.

    1. Biological samples were collected from 44 swordfish, 46 mahimahi, 15 blue shark, 1 wahoo, 1 striped marlin, 1 sandbar shark, 14 snake mackerel, and 6 lancet fish.

B. Take and record biological measurements and determinations from longline-caught swordfish (fork length, various morphological measurements, photograph specimen for later morphometric analysis, gonad weights, somatic and dressed weights, sex), other billfishes and sharks (fork length, various morphological measurements, pup counts and length measurements), and all fishes (fork length).

    1. For swordfish, 44 morphometric and weight conversion measurements were taken.

    2. Morphometric measures were taken from 1 striped marlin, 15 blue shark, and 1 sandbar shark.

    3. Length measurements were taken from 136 unborn blue shark pups.

4. Fork length measurements were taken from all whole fishes landed (128).

C. Collect environmental data in association with swordfish longline operations: temperature-depth (XBT) and temperature-salinity-depth profiles (CTD), temperature-salinity surface distribution (thermosalinograph), and currents (plots of longline drift, ADCP).

1. CTD or XBT casts were made either after setting or after hauling each of the 16 longline sets.

2. Thermosalinograph data were collected throughout the cruise except for occasional down times particularly early in the cruise.

3. Track charts of the setting and hauling of the longline gear were made for each of the 16 stations. At two stations, toward the end of hauling the longline gear, the GPS failed when too few satellites could be tracked. Data from the ADCP were recorded throughout the period of longline fishing.

D. Determine the depth of the longline hooks and depth at which swordfish take the baited hooks (TDTRs and hook timers).

1. Hook timers were used on every hook set with times recorded for each fish caught and when a timer was set off but no fish was caught.

2. TDTRs (2-4) were placed on each set and all but one TDTR, on one cast, collected usable data.

E. Collect fish catch and effort data for the longline fishing operation.

1. Detailed, hook by hook records were kept for each set made: species of catch, whether alive or dead; whether retained, tagged and released; and hook timer and landing time.

F. Tag, mark, and release viable swordfish and other selected pelagic species.

1. Ten swordfish were injected with oxytetracycline, tagged, and released. Seven mahimahi were tagged and released.

G. Tether viable swordfish to determine whether they remain viable until after all the longline gear has been hauled. Conduct acoustic tracking experiments if tethering works, as time allows.

1. None of the old radio beacons were functional when tested prior to the cruise. The two new radio beacons apparently worked, but the receiver on the ship could not determine their location. We constructed a radar reflector out of aluminum cans in an attempt to find a replacement for the radio beacons. The reflector could not be separated from waves beyond 1/4 nm. Without a means for finding a fish tethered, we could not conduct the trials.

H. Conduct study of shrinkage experiment (morphometric measures) with bigeye and yellowfin tuna.

1. No tuna were caught.

SCIENTIFIC PERSONNEL:

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Submitted by: _____
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Attachments