

August 25, 2000

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CRUISE REPORT

VESSEL: *Townsend Cromwell*, Cruise TC-91-06

CRUISE PERIOD: 3-27 August, 1991

AREA OF OPERATION: North Pacific Transition Zone (NPTZ) (Fig. 1).

TYPE OF OPERATION: Personnel from the Honolulu Laboratory (HL), Southwest Fisheries Science Center (SWFSC) and Taiwan Fisheries Research Institute (TFRI) conducted fishing and oceanographic operations within waters of the NPTZ. Operations included micronekton sampling with surface and midwater trawls, trolling and squid jigging. Environmental data were collected with expendable bathythermograph (XBT) and conductivity-temperature-depth (CTD) casts, the acoustic Doppler current profiler (ADCP), and surface thermosalinograph.

ITINERARY:

- 3 August - Departed Midway Island at 1300 for first scheduled station at lat. 37°N, long. 179°30'W. On board were Keith A. Bigelow, Donald R. Hawn, Jubal T. Jones, Chia-Lin Lee, and Julie Rivers.
- 5 August - Arrived at lat. 37°N, long. 179°30'W and commenced fishing and oceanographic operations. Cobb and IKMT trawls for micronekton, trolling, XBT and CTD casts, and squid jigging stations were conducted.
- 6-15 August - Conducted fishing and oceanographic operations along 179°30'W meridian between 37 and 46°N.
- 16-17 August - Departed 46°N, 179°30'W and traveled to 45°N, 174°30'W.
- 18 August - Arrived at 45°N, 174°30'W and resumed fishing and oceanographic operations.

- 19-24 August - Conducted fishing and oceanographic operations along 174°30'W meridian between 39 and 45°N. Drift buoy with vertical longline fishing was conducted as time permitted at some stations.
- 25 August - Departed 39°N, 174°30'W for Midway Island.
- 27 August - Arrived Midway Island. Disembarked Bigelow, Hawn, Jones, Lee, and Rivers. End of cruise.

MISSIONS

AND RESULTS:

- A. Survey epipelagic waters of the NPTZ near the Subarctic Boundary using midwater trawls and fishing lines equipped with hooks and jigs.

A total of 39 cobb trawl and 29 Isaacs-Kidd Midwater Trawl (IKMT) tows were conducted to survey the distribution of micronekton in the vicinity of the Subarctic Boundary. Thirty-one of the cobb trawls were conducted at night. These tows, approximately 1 hr in duration, targeted a depth of 100 m and were conducted in an oblique fashion. The remaining 8 cobb trawls were conducted during the day, targeting a depth of 600 m. Of the 29 IKMT trawls, 16 oblique 0-100 m night tows and 13 surface tows at dusk were conducted. IKMT tows were approximately 40 min in duration. All IKMT samples were fixed in 10% formalin, while approximately 70% of the cobb samples were fixed in 10% formalin, and the remaining samples were frozen. Samples were returned to HL for sorting and analysis.

While traveling between stations, we trolled for adult coryphaenids, scombrids, and salmonids for a total of 108 hr. Three mahimahi, *Coryphaena hippurus*, one albacore tuna, *Thunnus alalunga*, and four Laysan albatrosses, *Diomedea immutabilis*, were caught. Standard fork length measurements were recorded for all fishes caught. Otoliths were removed from the albacore for ongoing age and growth studies. All Laysan albatrosses were released alive.

Squid jigging occurred at night for approximately 31 hr during the cruise. A total of 550 neon-flying squid, *Ommastrephes bartramii*, 1 luminous-flying squid, *Eucleoteuthis luminosa*, and 10 boreal clubhook

squid, *Onychoteuthis borealijaponica*, were captured by rod and reel or handline. Dorsal mantle length measurements were taken for most of the specimens, and statoliths were removed for ongoing age and growth studies.

In an attempt to capture nektonic fishes, a vertical line with fishing hooks attached to a drift buoy was fished on three occasions. A 32-m line with 16 hooks attached every 1.5 m was baited with squid and allowed to fish overnight. No marine organisms were captured, although the hooks were often stripped of their bait.

- B. Describe the physical environment through routine CTD and XBT casts and continuous ADCP measurements.

Sixty-two CTD and 54 XBT casts were conducted during the cruise. CTD stations were spaced 15 nmi apart along the meridional transects (174°30'W and 179°30'W). CTD casts were made to 1000 m depths, and water samples were collected at the surface and 1000 m. XBT casts were typically made at 0500, 1100, 1700 and 2300, G.m.t. Continuous ADCP and thermo-salinograph data were collected throughout the cruise.

**SCIENTIFIC
PERSONNEL:**

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Submitted by:

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Attachment