U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Center
P O Drawer 1207
Pascagoula, MS 39568-1207

DELAWARE II Cruise 88-13
11/15-12/21/88

INTRODUCTION

The DELAWARE II departed Woods Hole, Mass. on November 15, 1988 for Mayaguez, Puerto Rico to conduct a cooperative cruise with the Caribbean Fishery Management Council, CODREMAR, University of Puerto Rico-Mayaguez, Government of the Virgin Islands, and NMFS. The first leg, November 24 to December 6, was an ichthyoplankton survey of the south coast of Puerto Rico, St. Thomas and St. Croix (Figure 1). An unscheduled port call was made in St. Thomas (Nov. 30-Dec. 2) for emergency medical treatment to the vessel Captain and to obtain his replacement. The vessel again returned to St. Thomas (Dec 6-9) for a scheduled port call to exchange members of the scientific party for the second leg. The vessel also stopped briefly in St. Croix to board two additional scientists. The second leg (Dec. 9-12) surveyed yellowfin tuna stocks near St. Croix using pelagic longlines.

OBJECTIVES

1) Collect ichthyoplankton samples with standard bongo, neuston and opening/closing bongo nets to assess recruitment patterns on reefs in the US Virgin Islands and Puerto Rico.

2) Collect hydrographic data from the surface to 290 m using an STD, and collect surface chlorophylls at each sample site.

3) Assess yellowfin tuna populations in waters off St. Croix.

4) Record marine trash within the survey area.

MATERIALS AND METHODS

The ichthyoplankton survey began at the south end of Mona Passage and proceeded eastward along a preselected cruise track of offshore and inshore stations. Offshore stations were 12 miles apart with inshore stations usually

not more than 3 miles apart; these stations were intended to bracket the 100 fathom curve i.e, two sample sites on the shelf and two off the shelf. Inshore one additional station was permitted when space allowed. Sampling effort was concentrated in three general areas: 1) south end of Mona Passage to Point Verraco, 2) south of St. Croix and 3) the south end of Virgin Passage (Figure 1).

Offshore STD casts were made to 290 meters, but, in depths less than 200 meters they were made to within 5 meters of the bottom. After completion of the STD cast, a single oblique bongo tow was made using 61 cm bongos and .333 mm mesh nets. Simultaneously, a 1 x 2 meter neuston with a .947 mm net was towed on the surface for 10 minutes. Bongo and neuston samples were initially preserved in 10% formalin for 48 hours then changed to 95% ethanol. Surface chlorophyll samples were collected at all but one station and frozen for processing at the Pascagoula Laboratory. XBT's were dropped at selected sites to verify STD recordings.

Three 24 hour stations were occupied to assess changes in species complexity and density. Site one was south of Point Tuna, Puerto Rico and site two was north of Christiansted, St. Croix. At these stations an opening and closing bongo was towed every 4 hours for five minutes at 100, 60, 30, and 10 meter depths. During the 100 meter bongo tow a 10 minute neuston tow was made. All samples, from 24 hour stations, were preserved in 95% ethanol. The alcohol was changed after 48 hours.

The pelagic longline consisted of 9 miles of braided 3/8" nylon mainline. Hooks, on 40 foot gangions, were placed 200 feet apart. Drops were attached to bullet floats every third hook. Drops were initially 100 feet long but were increased to 160 feet. A high flyer (tall buoy) was attached along the mainline ever three miles. Herring and squid were used for bait.

Sets were made in the evening and required about one and a half hours to complete. Haulback began at 7:00am local time and required six to seven and a half hours to complete.

RESULTS

A total of 104 ichthyoplankton stations were occupied with the following samples obtained: bongo tows (86), neuston tows (104), opening and closing tows (68), STD casts (103), XBT casts (14), and chlorophyll samples (103).

Three pelagic longline sets were completed with the following fish caught: swordfish - Xiphias gladius (4), white marlin - Tetrapturus albidus (1), dolphin - Coryphaena hippurus (8), oil fish - Ruvettus pretiosus (2), blue shark - Prionace glauca (1), and unidentified ray - Dasyatidae (2).

Swordfish caught during longlining averaged 65 pounds total weight and the white marlin weighed about 90 pounds.

Three trash watches were set, however, little trash was observed.

DISPOSITION OF SAMPLES

Left bongo samples were sent to the NMFS Miami Laboratory, and the right bongo, opening and closing bongo, and neuston samples to NMFS Beaufort, NC, Laboratory for sorting select species and storage. Chlorophyll samples were sent to NMFS Pascagoula, Miss., for processing.

CRUISE PARTICIPANTS

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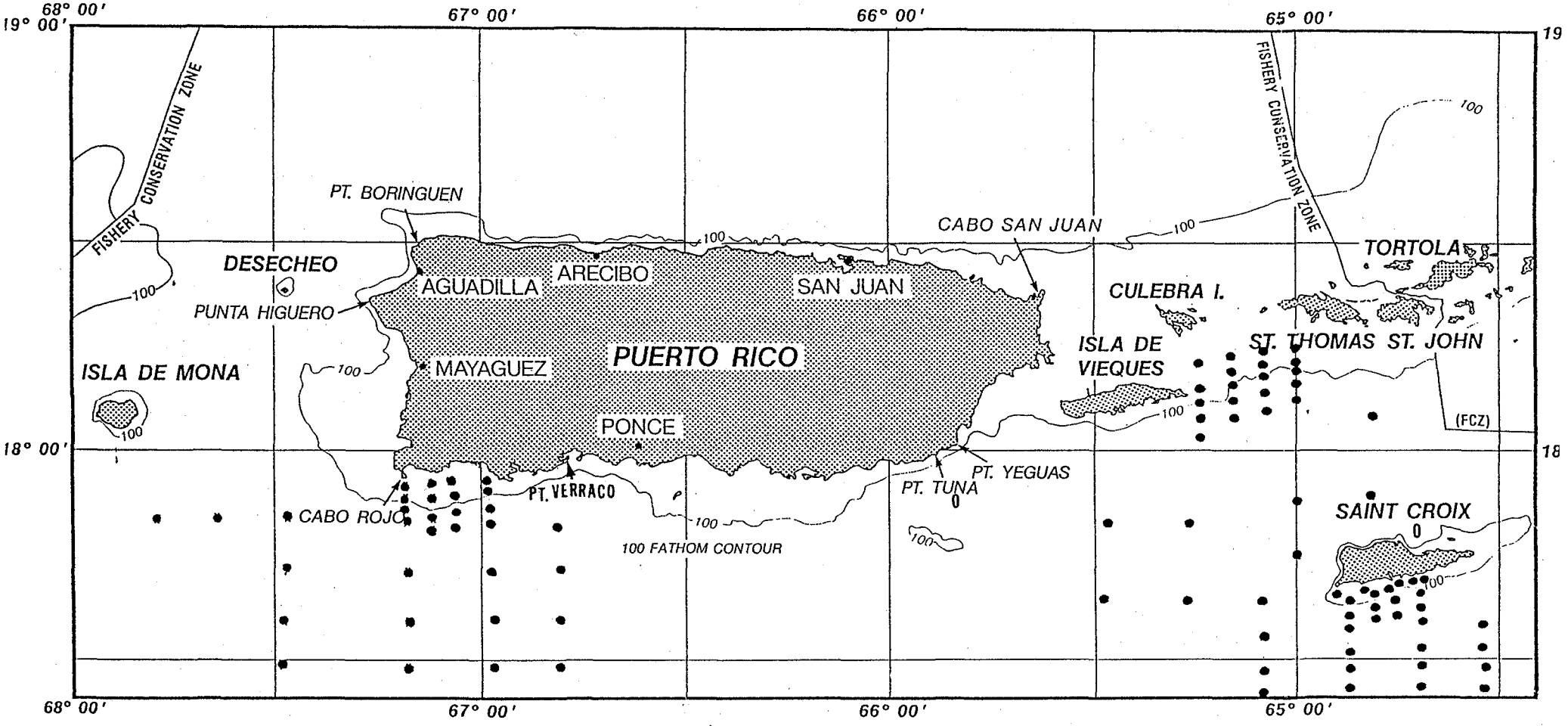

Figure 1. Standard ichthyoplankton stations are indicated by a "•" and 24 hour stations a "0."