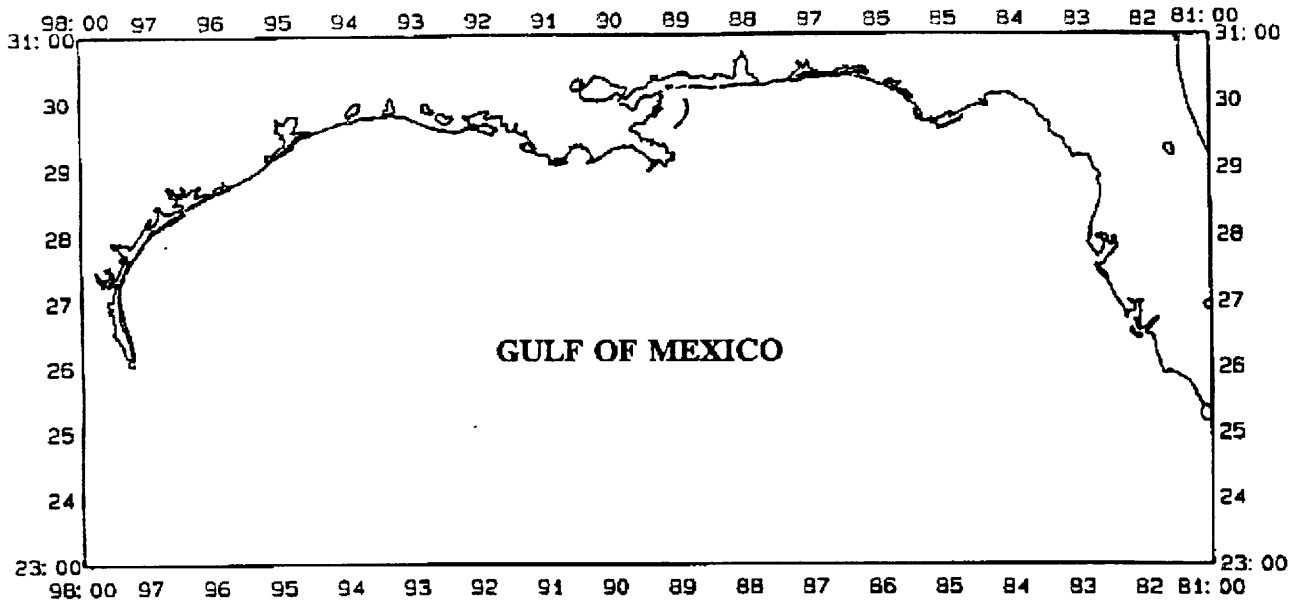


CRUISE RESULTS

Southeast Area Monitoring and Assessment Program (SEAMAP) Summer Shrimp and Bottomfish Survey

NOAA Ship OREGON II Cruise OT-96-03 (221)
06/14-07/17/96



U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
Mississippi Laboratories
Pascagoula Facility
P.O. Drawer 1207
Pascagoula, MS 39568-1207

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

OREGON II Cruise 96-03 (221)
06/14-07/17/96

INTRODUCTION

The NOAA Ship OREGON II departed Pascagoula, MS on June 14, 1996 for the fourteenth annual Southeast Area Monitoring and Assessment Program (SEAMAP) summer shrimp and bottomfish survey in the northern and western U.S. Gulf of Mexico. SEAMAP is a state/Federal/university program for the collection, management and dissemination of fishery-independent data.

The primary goal of this survey has been to monitor size composition and spatial distribution of penaeid shrimp stocks across the northern Gulf of Mexico in 5 to 60 fathoms (fm) and to provide additional biological and catch rate information on groundfish in the same area.

The NOAA Ship OREGON II lost one sea day, due to mechanical problems. The cruise terminated in Pascagoula, MS on July 17, 1996.

SPECIFIC CRUISE OBJECTIVES

- 1) Determine size distribution of penaeid shrimp by depth across the U.S. northern and western Gulf of Mexico.
- 2) Obtain samples of brown, pink and white shrimp to determine length-weight relationships.
- 3) Collect finfish catch and effort data.
- 4) Collect hydrographic and environmental data at each station.
- 5) Collect ichthyoplankton samples throughout the survey area.
- 6) Collect samples of flatfish for Louisiana Department of Wildlife and Fisheries.

SURVEY METHODOLOGY

The shrimp assessment survey samples were taken with a 40-ft shrimp trawl with mud rollers and 8-ft X 40-in wooden chain doors. Sample sites between Mobile Bay, AL and the Texas-Mexico border in 5 to 60 fm strata were randomly selected. Sample sites encompassed 1 to 3 fm depth strata between 5 and 25 fm and 5 fm depth strata between 25 and 50 fm and a 10 fm depth strata between 50 and 60 fm. Tows were perpendicular to depth contours for 10 to 60 minute duration. Several stations required multiple tows to sample the entire depth strata.

Total weight of each catch was recorded, after which all Penaeus shrimp, other invertebrates and finfish were separated. Weight and number of each species were then recorded. A random sample of 200 shrimp of each species (when available) was removed to extract data on sex, maturation, and length frequency.

CTD casts were made at each station to collect transmissivity, salinity, temperature, depth, dissolved oxygen (DO), and chlorophyll data. Water samples were obtained daily to validate the CTD salinity readings. One chlorophyll sample per day as calibration for transmissometer.

Bongo (61 cm, 0.333 mm mesh) and neuston (1 X 2 m, 0.947 mm mesh) samples were taken at preselected stations integrated into the cruise track. Samples were fixed in 10% buffered formalin for 48 hours, then drained and placed in 95% ethanol for final preservation.

REAL TIME DATA

A data telecommunication terminal aboard the NOAA Ship OREGON II was used to transmit environmental data and catch rates via cellular phone to the Mississippi Laboratories. These transmissions provided information for a weekly report on shrimp and finfish catch rates and location that was made available to shrimpers and other segments of the fishing industry.

OBSERVATIONS AND RESULTS

Two hundred and thirty-six individual trawl samples were collected (Fig. 1) in shrimp statistical zones 11 through 21. Distribution of effort within statistical zones by depth strata can be found in Table 1. In general, each zone - depth strata combination was sampled only once. In some cases, a second station was taken in a cell to avoid some obstruction or two stations were located so close together that after the second trawl haul was completed both stations fell into the same statistical zone. Unoccupied cells were due to lost gear or represent stations that were occupied by state SEAMAP participants.

Dominant faunal components are listed in Table 2 with longspine porgy Stenotomus caprinus being most abundant by weight and number. Finfish catch rates expressed in kilograms per hour can be found in Fig. 2 and size frequencies of croaker for the entire sampling area in Fig. 3.

Shrimp catches were low in the southern Texas area, probably due to very high salinity in shallow water (35 ppm on the surface in 5 fm). In other parts of the Gulf catches were light to moderate (Fig. 4). Size frequencies of brown shrimp, Penaeus aztecus, can be found in Fig. 5.

Twenty two bongo and neuston stations were occupied during the cruise (Fig. 6). Right bongo and neuston samples are processed at the NMFS, Mississippi Laboratory and shipped to Polish Sorting Center for sorting and identification according to standard SEAMAP protocol. Left bongo samples were sent to the Gulf Coast Research Laboratory for storage.

Areas of hypoxia were again found off the coast of Louisiana, with the presence of little or no bottom dwelling organisms. Bottom dissolved oxygen in this area ranged from a low of 0.0 ppm to a high of 2.0 ppm (Fig. 7).

ACKNOWLEDGEMENTS

I would like to thank the members of the scientific party and the crew of the OREGON II for a job well done.

CRUISE PARTICIPANTS

6/13-6/17/96

| NAME | TITLE | ORGANIZATION |
|------------------------|-------------------|--|
| Nathaniel Sanders, Jr. | Field Party Chief | NMFS, Pascagoula, Miss. |
| Perry Thompson, Jr. | Watch Leader | NMFS, Pascagoula, Miss. |
| Gilmore Pellegrin, Jr. | Watch Leader | NMFS, Pascagoula, Miss. |
| Connie McGee | Co-op Student | NMFS, Pascagoula, Miss. |
| Warren Stuntz | Watch Leader | NMFS, Pascagoula, Miss. |
| Leyte Windfield | Cooperator | New Orleans, La. |
| Shane Townsend | Cooperator | Pascagoula, Miss |
| Matthew Thomas | Cooperator | Morehead State Univ., Morehead, Ky. |
| Tracie Tingle | Cooperator | Tuscaloosa, Ala. |
| Todd Tarrant | Teacher | Beaverton High School, Beaverton, Mich. |

CRUISE PARTICIPANTS (Cont'd)

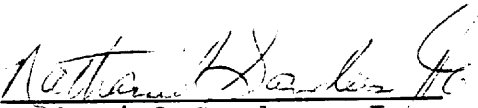
06/19-07/02/96

| NAME | TITLE | ORGANIZATION |
|------------------------|-------------------|--|
| Nathaniel Sanders, Jr. | Field Party Chief | NMFS, Pascagoula, Miss. |
| Perry Thompson, Jr. | Watch Leader | NMFS, Pascagoula, Miss. |
| Alonzo Hamilton, Jr. | Watch Leader | NMFS, Pascagoula, Miss. |
| Connie McGee | Co-op Student | NMFS, Pascagoula, Miss. |
| Harriet Perry | Watch Leader | NMFS, Pascagoula, Miss. |
| Danielle Raha | Cooperator | Spring Lake, Mich. |
| Mark Tervilliger | Cooperator | Virginia Institute of Marine Science |
| Scott Fleischmans | Teacher | West Bend High School, West Bend, WI |
| Shirley McKenzie | Cooperator | Lamar Uni., Beaumont, Tex. |
| Antoinette Robinson | Cooperator | Miss. Valley State Uni., Itta Bena, Miss. |
| Aljus Lindsey | Cooperator | Miss. Valley State Uni., Itta Bena, Miss. |

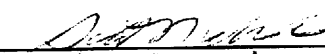
07/03-07/17/96

| NAME | TITLE | ORGANIZATION |
|------------------------|-------------------|--|
| Nathaniel Sanders, Jr. | Field Party Chief | NMFS, Pascagoula, Miss. |
| Gilmore Pellegrin, Jr. | Watch Leader | NMFS, Pascagoula, Miss. |
| Alonzo Hamilton, Jr. | Watch Leader | NMFS, Pascagoula, Miss. |
| Dominy Hataway | Watch Leader | NMFS, Pascagoula, Miss. |
| Nelson May | Fish. Biolo. | NMFS, Pascagoula, Miss. |
| Kendall Falana | Cooperator | NMFS, Pascagoula, Miss. |
| Jeff Auvinen | Teacher | NMFS, Pascagoula, Miss. |
| Mark Van Hoose | Cooperator | Ala. DNR, Dauphin Island, Ala. |
| Gina Ennis | Cooperator | Savannah State College, Savannah, Ga. |
| Robert Johnson | Cooperator | Savannah State College Savannah, Ga. |

Submitted By:


Nathaniel Sanders, Jr.
Field Party Chief

Approved By:


Scott Nichols, Director
Mississippi Laboratories

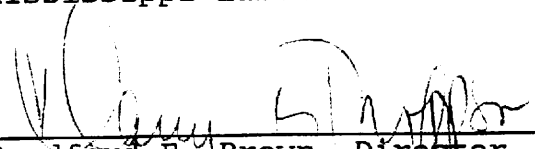

Bradford E. Brown, Director
Southeast Science & Research
Center

Table 1. Numbers in table body indicate number of times strata were sampled.

| DEPTH STRATA (FATHOMS) | DIURNAL STRATA | | | | | | | | | |
|------------------------|-------------------|-------|-------|-------|-------|-------------------|-------|-------|-------|-------|
| | DAY | | | | | NIGHT | | | | |
| | STATISTICAL ZONES | | | | | STATISTICAL ZONES | | | | |
| | 11-12 | 13-15 | 16-17 | 18-19 | 20-21 | 11-12 | 13-15 | 16-17 | 18-19 | 20-21 |
| 5-6 | | | 1 | 1 | 1 | | 1 | 1 | | 2 |
| 6-7 | | 1 | 1 | 1 | 1 | | | 1 | 1 | 1 |
| 7-8 | | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 |
| 8-9 | | 1 | 1 | 1 | 1 | | | 2 | 1 | 1 |
| 9-10 | | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 |
| 10-11 | | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 |
| 11-12 | | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 |
| 12-13 | | | 1 | 1 | 1 | | 1 | 1 | 1 | 1 |
| 13-14 | | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 |
| 14-15 | | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 |
| 15-16 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 16-17 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| 17-18 | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 18-19 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 |
| 19-20 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | |
| 20-22 | | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 1 | |
| 22-25 | 1 | 1 | 1 | | 1 | | 1 | 1 | 1 | 1 |
| 25-30 | 1 | 1 | 1 | 1 | 1 | | 1 | | | 2 |
| 30-35 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 | 1 |
| 35-40 | 1 | 1 | 1 | | 2 | | 1 | 1 | | 2 |
| 40-45 | 1 | 1 | | 1 | 1 | | 1 | | | 2 |
| 45-50 | | 1 | 1 | 1 | 1 | | 1 | | | 1 |
| 50-60 | | 1 | 1 | 1 | 1 | | 2 | | | 2 |

Table 2. Catch rates (number and weight per hour) and ratio of number of stations where the species occurred to the total number of stations for the twenty most numerous species caught (plus red snapper) in 40-ft shrimp net hauls during the 1996 SEAMAP summer shrimp and bottomfish survey. They are listed in descending order by number. Total number of stations = 236.

| Genus | Species | Number | Weight (kg) | Frequency of occurrence |
|-------|------------------------------------|---------|-------------|-------------------------|
| | <u>Stenotomus caprinus</u> | 188,641 | 2,739.5 | 176 |
| | <u>Peprilus burti</u> | 117,619 | 2,445.5 | 148 |
| | <u>Chloroscombrus chrysurus</u> | 82,803 | 1,310.7 | 81 |
| | <u>Micropogonias undulatus</u> | 72,736 | 1,872.7 | 68 |
| | <u>Trachypeneus similis</u> | 44,530 | 225.1 | 87 |
| | <u>Prionotus longispinosus</u> | 34,992 | 281.8 | 86 |
| | <u>Penaeus aztecus</u> | 31,992 | 418.2 | 170 |
| | <u>Portunus spinicarpus</u> | 30,740 | 167.1 | 99 |
| | <u>Loligo pleii</u> | 21,355 | 431.5 | 125 |
| | <u>Sicyonia brevirostris</u> | 24,112 | 257.5 | 89 |
| | <u>Loligo pealei</u> | 17,696 | 287.5 | 93 |
| | <u>Squilla empusa</u> | 14,617 | 129.7 | 108 |
| | <u>Callinectes similis</u> | 12,785 | 143.6 | 136 |
| | <u>Portunus gibbesii</u> | 11,123 | 53.5 | 93 |
| | <u>Centropristis philadelphica</u> | 11,054 | 201.0 | 126 |
| | <u>Trachurus lathami</u> | 10,505 | 211.7 | 103 |
| | <u>Serranus atrobranchus</u> | 9,662 | 127.3 | 90 |
| | <u>Etrumeus teres</u> | 6,681 | 31.7 | 22 |
| | <u>Cynoscion nothus</u> | 6,491 | 302.8 | 34 |
| | <u>Upeneus parvus</u> | 6,155 | 142.8 | 111 |
| | <u>Lutjanus campechanus</u> | 2,125 | 185.8 | 95 |
| Total | | 904,042 | 17,107.7 | 236 |

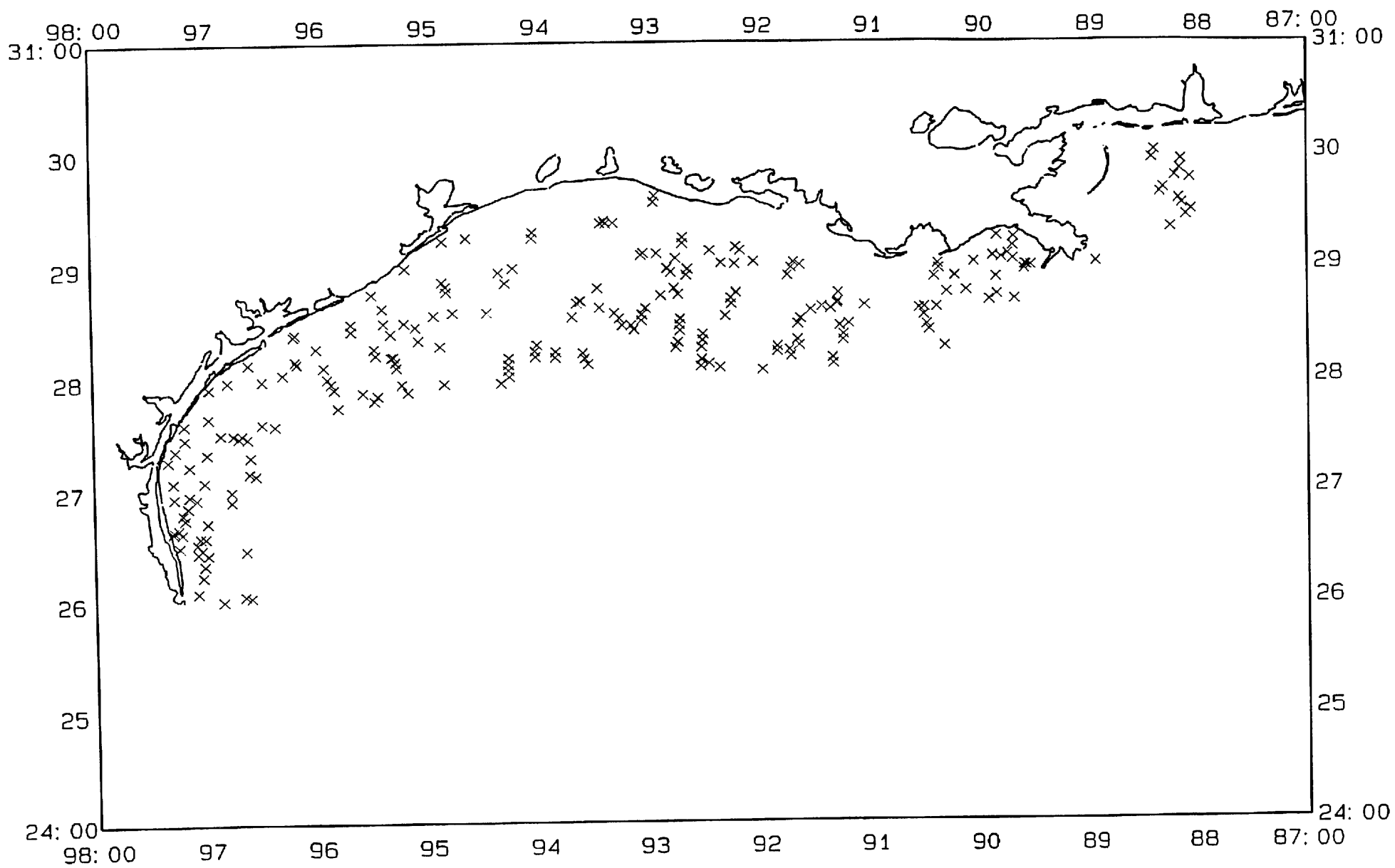


Figure 1. Map of the are sampled showing location of trawl sample sites.

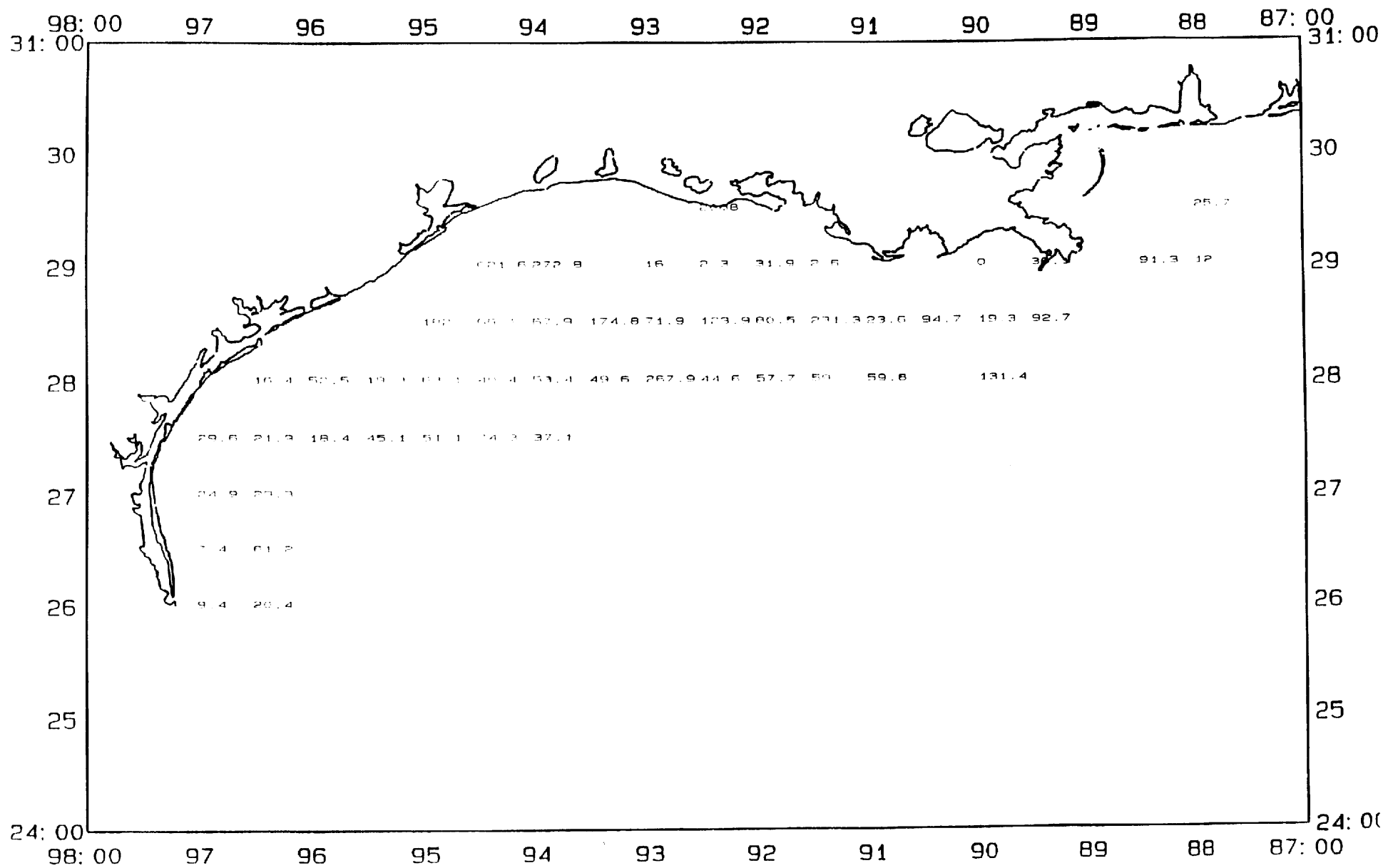


Figure 2. Map of the area sampled showing finfish catch rates Kg per hour (40-ft trawl) within each 30 x 30 minute block sampled

CROAKER

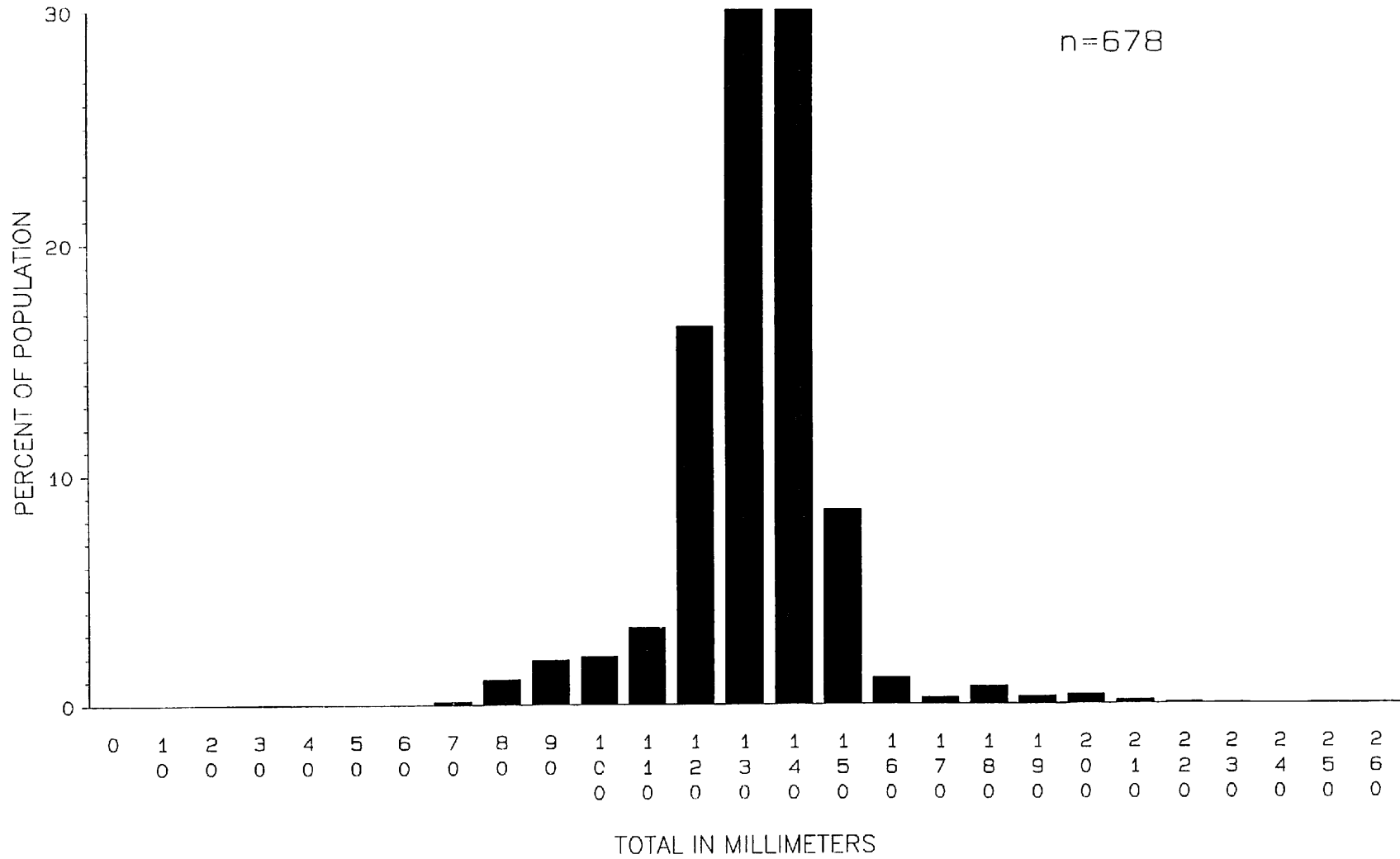


Figure 3. Croaker length frequency.

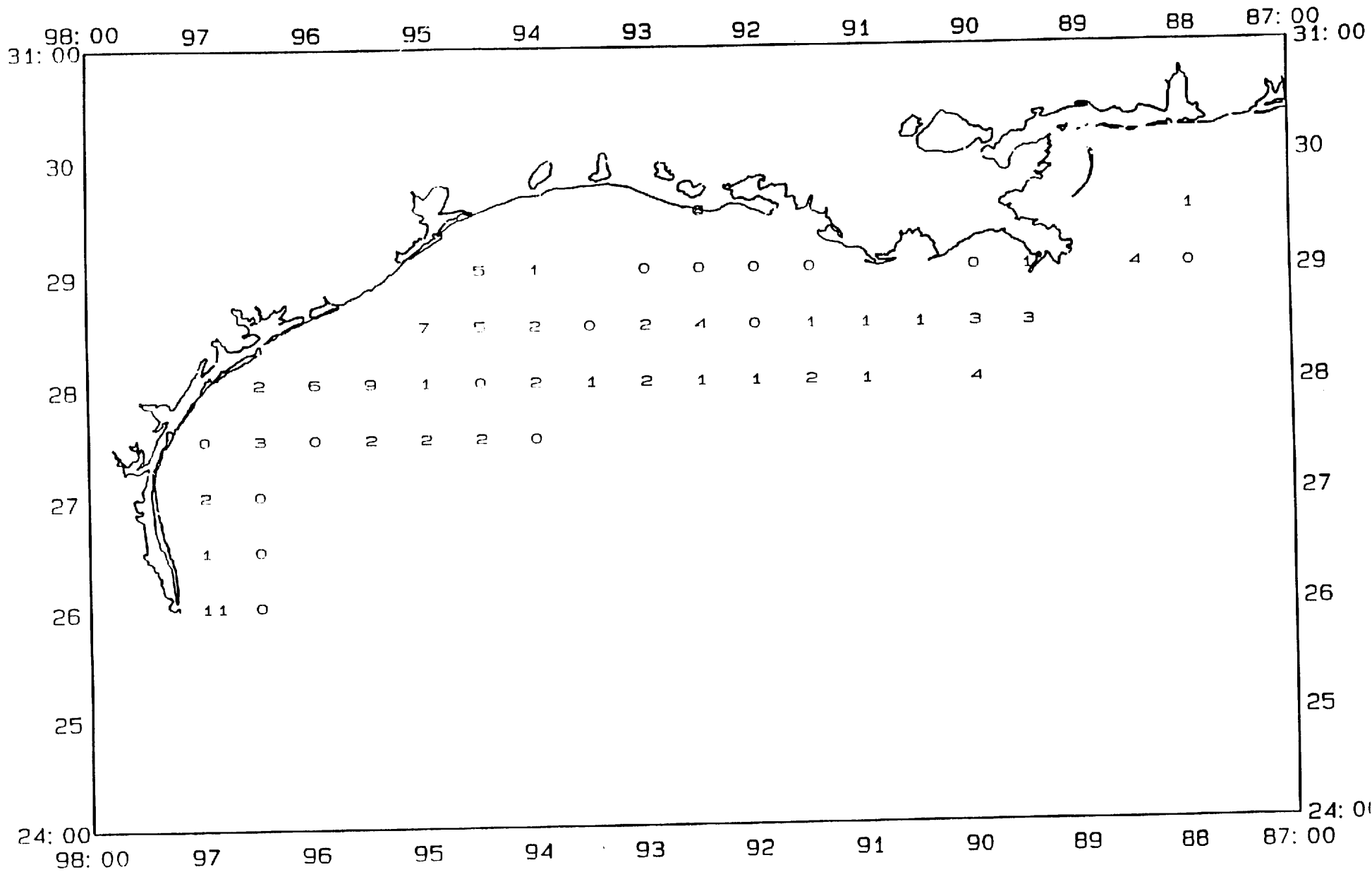


Figure 4. Map of the area sampled showing shrimp catch rates Kg per hour (40-ft trawl) within 30 x 30 block sampled.

BROWN SHRIMP

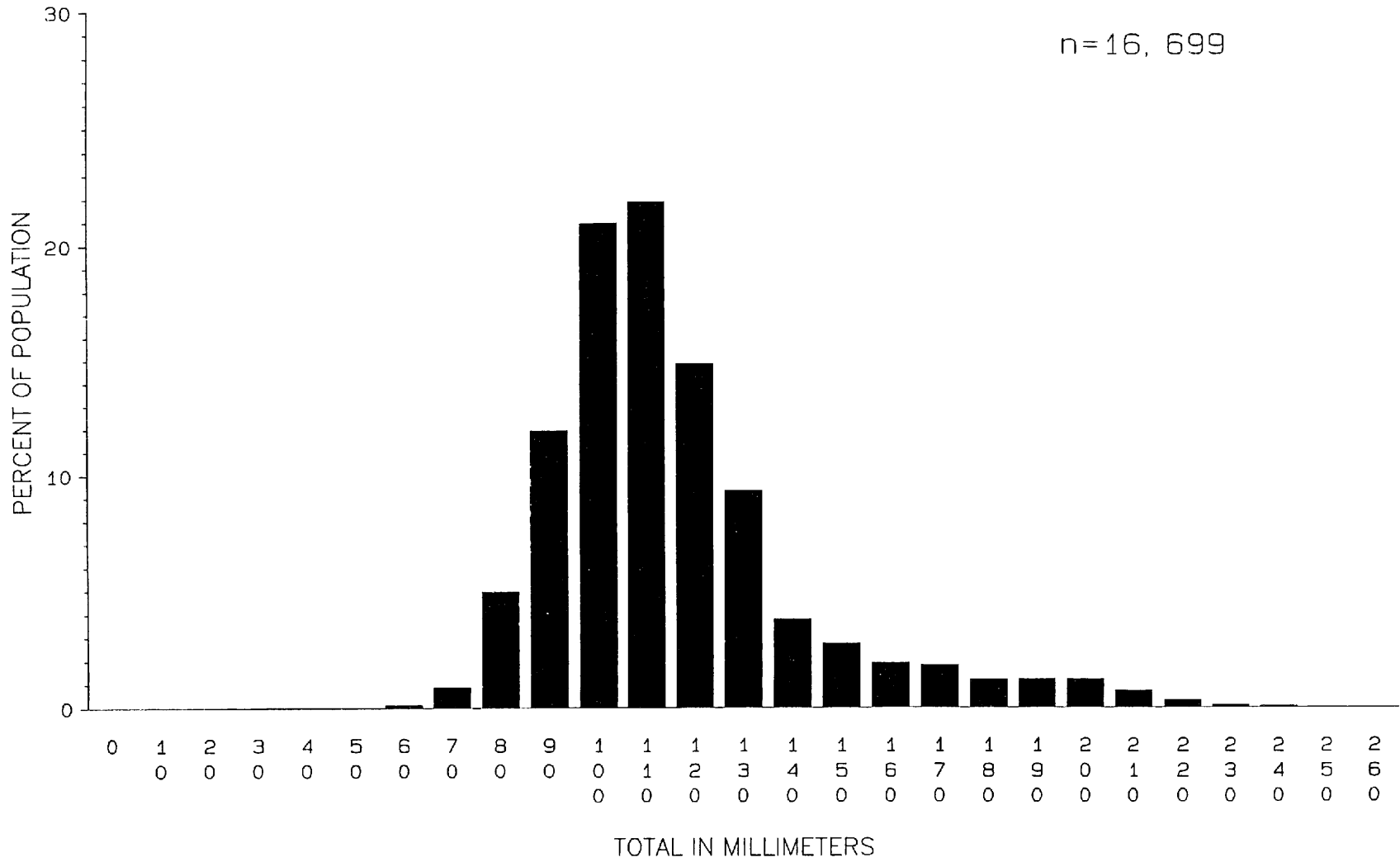


Figure 5. Brown shrimp length frequency.

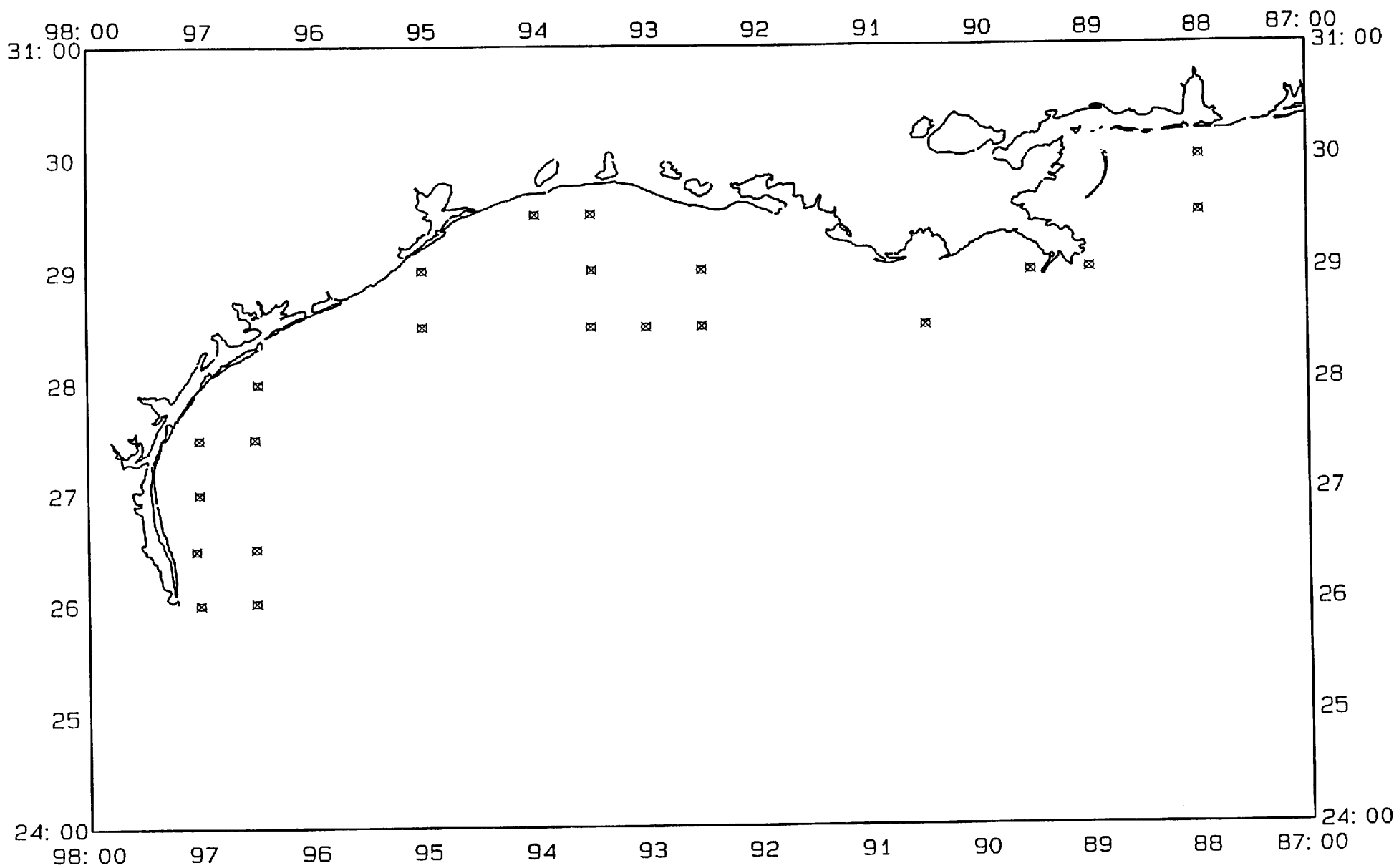


Figure 6. Map of the area sampled showing locations of ichthyoplankton sample size.

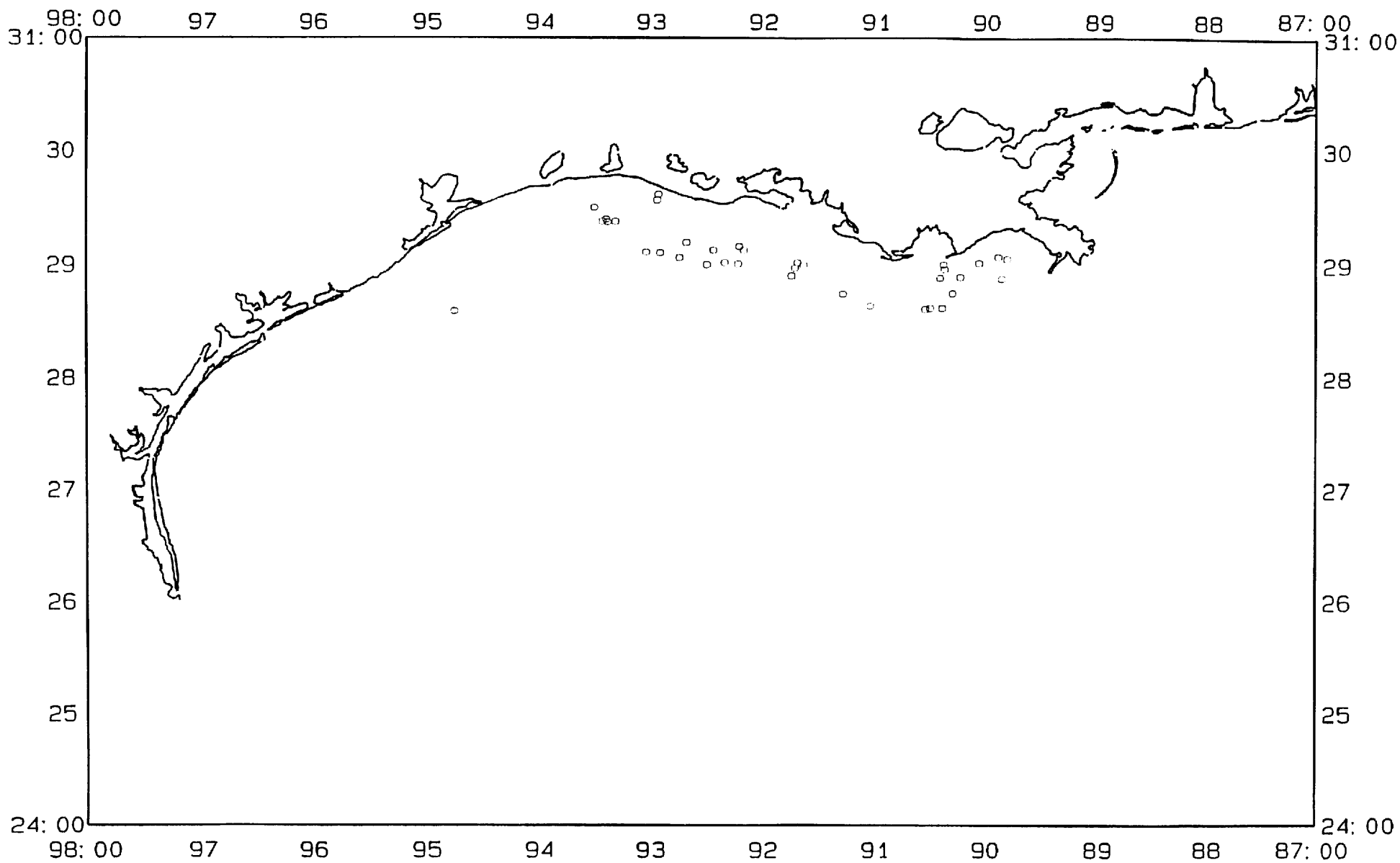


Figure 7. Map of the area sampled showing trawl sample sites where bottom dissolved oxygen was less than 2.0 ppm.