

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 93-03 (205)
06/18-07/21/93

INTRODUCTION

The NOAA Ship OREGON II departed Pascagoula, MS on June 18, 1993 for the eleventh annual Southeast Area Monitoring and Assessment Program (SEAMAP) 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 returned to Pascagoula, MS on July 21, 1993, terminating the cruise. All major survey objectives were met.

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 trawl samples in the vicinity of the US Army Corps of Engineers berm site containing dredge spoil material from the Mobile ship channel.
- 7) Collect samples of flounder, Paralichthys lethostigma, for Texas A&M University.

- 8) Collect large cutlassfish for the Panama City Laboratory.

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 were randomly selected. Sample sites encompassed 1 to 3 fm depth strata between 5 and 25 fm and 5 fm depth strata between 30 and 60 fm. Tows were perpendicular to depth contours for 10 to 60 minutes. 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.

Ten sample sites were randomly selected for day and night replicate sampling around the U.S. Army Corps of Engineers berm site off Mobile Bay, AL. Ten-minute tows were made at each site using the same 40-ft shrimp trawl as was used during Gulfwide survey and a 65-ft two seam fish trawl with six 10-in floats and 8-ft X 40-in wooden chain doors.

CTD casts were made at each station to collect salinity, temperature, depth, dissolved oxygen (DO) and turbidity data. Water samples were obtained daily to validate the CTD salinity readings. Surface DO samples were also determined at each station using a YSI meter. Surface chlorophyll samples (three replicates) were taken at each station, filtered with a GF/C filter, fixed with magnesium carbonate and frozen for later analysis at the Mississippi Laboratories, Pascagoula station. All chlorophyll samples were taken from the surface waters, except at stations less than 20 fm deep off Louisiana, where bottom samples were also collected.

Bongo (61 cm, 0.333 mm mesh) and neuston (1 X 2 X 6 m) 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 three 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 but in some cases a second station was taken in a cell to avoid some obstruction or two stations were so close together that after the second trawl haul was completed both stations were in 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 Tables 2 and 3 with bumper Chloroscombrus chrysurus being most abundant by number and croaker Micropogonias undulatus by weight. 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 over the entire Gulf, with the best catches being in the south Texas area from Aransas Pass to Port Isabel (Fig. 4). Size frequencies of brown shrimp Penaeus aztecus can be found in Fig. 5.

A total of twenty double rigged trawl samples were collected around the berm site off Mobile Bay, AL; results were not available for incorporation in this cruise report.

Forty 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 .1 ppm to a high of 2.0 ppm (Fig. 7).

ACKNOWLEDGEMENTS

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

CRUISE PARTICIPANTS

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NAME	TITLE	ORGANIZATION
Nathaniel Sanders, Jr.	Field Party Chief	NMFS Pascagoula, Miss.
Perry Thompson, Jr.	Watch Leader	NMFS Pascagoula, Miss.
Gladys Reese	Watch Leader	NMFS Pascagoula, Miss.
Chris Williams	Student Trainee	NMFS Pascagoula, Miss.
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Table 1. Distribution of sampling effort by strata for NOAA Ship OREGON II cruise 93-03 (205). 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	1	1
6-7	.	1	1	1	1	.	1	1	1	1
7-8	.	1	1	1	1	.	1	1	1	1
8-9	.	1	1	1	1	.	1	1	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
14-15	.	1	.	1	1	.	1	1	1	1
15-16	1	1	1	1	1	.	1	1	1	.
16-17	.	1	.	1	1	.	1	1	1	1
17-18	1	1	2	1	1	.	1	1	1	.
18-19	1	.	1	1	2	.	1	1	1	1
19-20	.	2	1	1	1	.	1	1	1	1
20-22	.	1	1	1	1	1	1	1	1	1
22-25	.	1	1	1	1	1	1	.	1	1
25-30	1	1	1	1	1	.	1	1	1	1
30-35	1	1	.	1	1	1	1	1	1	1
35-40	1	1	1	.	1	1	1	.	1	1
40-45	1	1	1	1	1	.	1	1	.	1

Table 2. 40-Ft shrimp net catch rates (number and weight per hour) and per cent frequency. The twenty most numerous species caught plus red snapper are listed in descending order number. Total number of stations, 233.

Genus	Species	Number	Weight (kg)	Frequency of occurrence
<u>Chloroscombrus</u>	<u>chrysurus</u>	199,521	1,853.6	67
<u>Micropogonias</u>	<u>undulatus</u>	141,129	3,998.4	102
<u>Trachypeneus</u>	<u>similis</u>	89,737	303.7	77
<u>Stenotomus</u>	<u>caprinus</u>	84,139	1,754.0	163
<u>Callinectes</u>	<u>similis</u>	61,876	560.3	168
<u>Peprilus</u>	<u>burti</u>	61,800	2,046.7	151
<u>Penaeus</u>	<u>aztecus</u>	28,726	384.9	174
<u>Sicyonia</u>	<u>brevirostris</u>	25,108	240.5	85
<u>Prionotus</u>	<u>longispinosus</u>	23,304	294.1	105
<u>Squilla</u>	<u>empusa</u>	16,569	194.7	111
<u>Portunus</u>	<u>spinicarpus</u>	16,011	108.3	71
<u>Loligo</u>	<u>sp.</u>	14,838	354.7	94
<u>Steindachneri</u>	<u>argentea</u>	11,739	61.5	9
<u>Leiostomus</u>	<u>xanthurus</u>	10,544	703.1	45
<u>Serranus</u>	<u>atrobranchus</u>	10,391	119.5	63
<u>Trichiurus</u>	<u>lepturus</u>	10,087	401.3	80
<u>Parapenaeus</u>	<u>politus</u>	9,155	21.3	10
<u>Centropristis</u>	<u>philadelphica</u>	8,390	210.4	112
<u>Loligo</u>	<u>pleii</u>	6,825	125.8	52
<u>Anchoa</u>	<u>hepsetus</u>	6,636	111.2	54
<u>Lutjanus</u>	<u>campechanus</u>	1,124	67.8	72
Total		983,957	18,851.0	233

Table 3. 40-Ft shrimp net catch rates (number and weight per hour and per cent frequency. The twenty most numerous species caught plus red snapper are listed in descending order by weight. Total number of stations, 233.

Genus	Species	Number	Weight (kg)	Frequency of occurrence
	<u>Micropogonias undulatus</u>	141,129	3,998.4	102
	<u>Peprilus burti</u>	61,800	2,046.7	151
	<u>Chloroscombrus chrysurus</u>	199,521	1,853.6	67
	<u>Stenotomus caprinus</u>	84,139	1,754.0	163
	<u>Leiostomus xanthurus</u>	10,544	703.1	45
	<u>Callinectes similis</u>	61,876	560.3	168
	<u>Cynoscion arenarius</u>	5,529	508.5	74
	<u>Synodus foetens</u>	4,737	447.0	132
	<u>Arius felis</u>	2,136	403.7	24
	<u>Trichiurus lepturus</u>	10,087	401.3	80
	<u>Penaeus aztecus</u>	28,726	384.9	174
	<u>Loligo sp.</u>	14,838	354.7	94
	<u>Trachypeneus similis</u>	89,737	303.7	77
	<u>Prionotus longispinosus</u>	23,304	294.1	105
	<u>Pristipomoides aquilonaris</u>	4,363	291.6	100
	<u>Sicyonia brevirostris</u>	25,108	240.5	85
	<u>Centropristis philadelphica</u>	8,390	210.4	112
	<u>Squilla empusa</u>	16,569	194.7	111
	<u>Cynoscion nothus</u>	3,498	171.8	34
	<u>Lagodon rhomboides</u>	3,921	166.2	100
	<u>Lutjanus campechanus</u>	1,124	67.8	72
Total		983,957	18,851.0	233

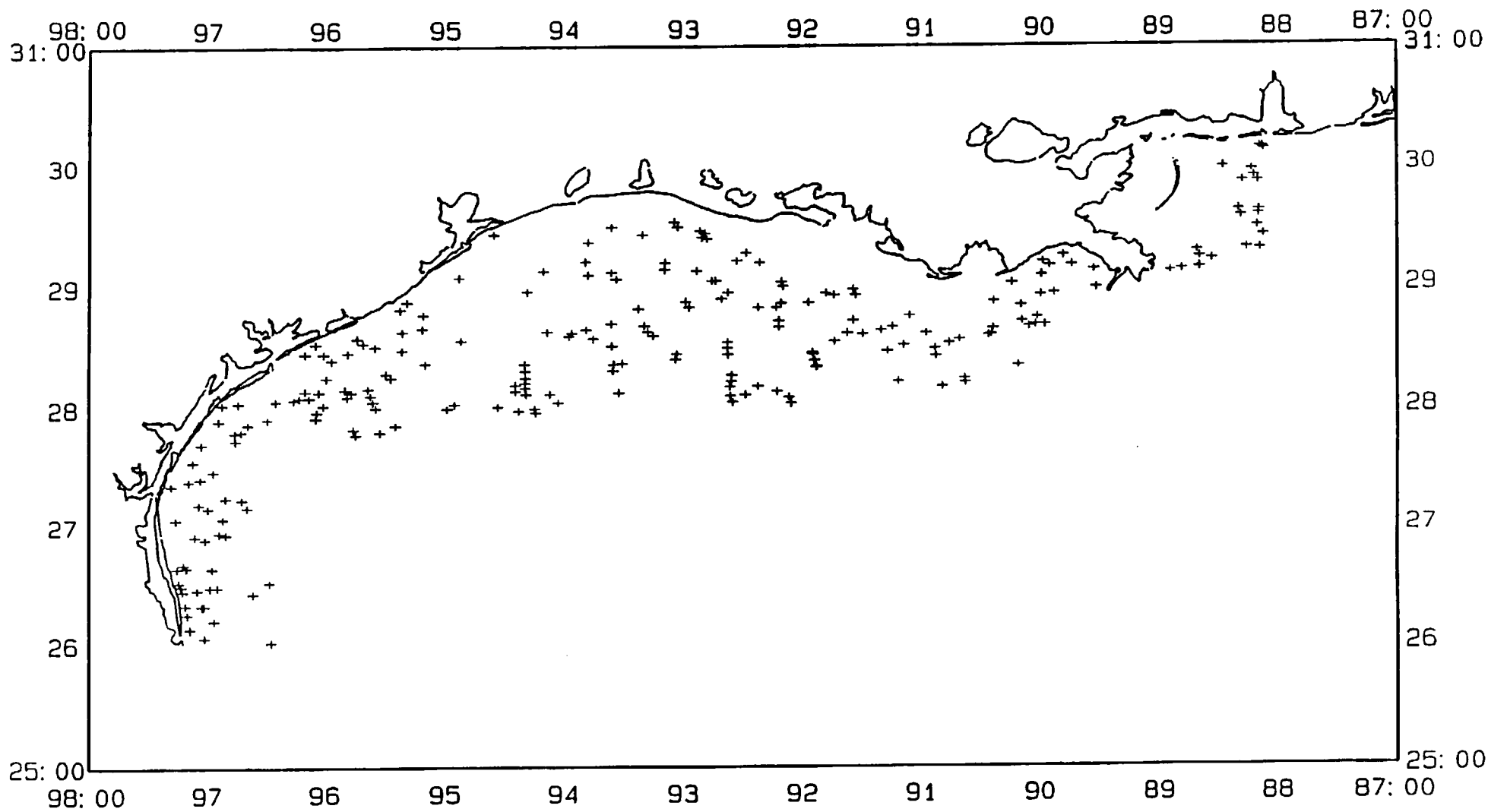


Figure 1. Map of the area sampled showing location of trawl sample sites.

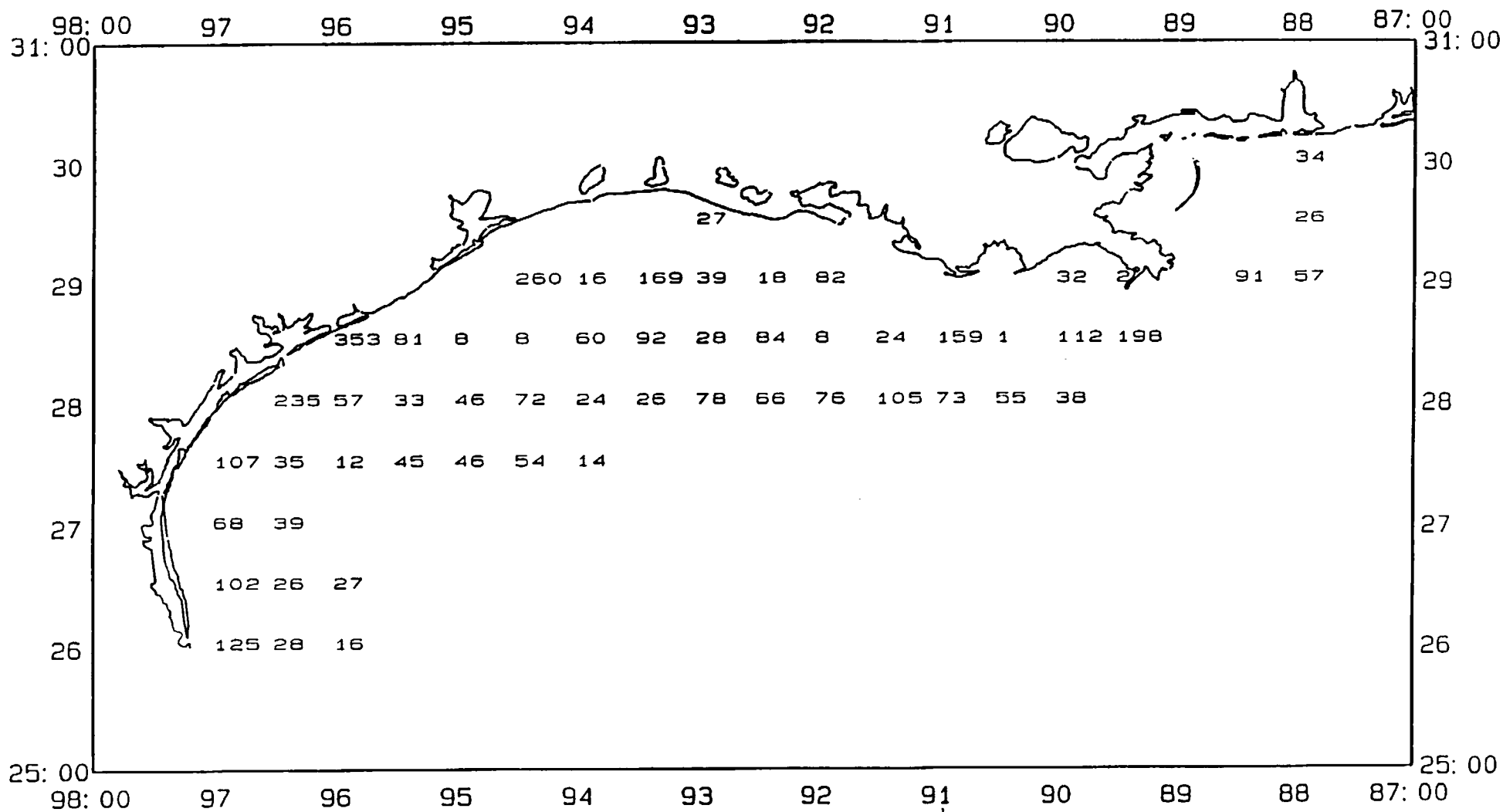


Figure 2. Map of the area sampled showing finfish catch rates kg^{-1} (40-ft trawl) within a 30 X 30 minute block.

ATLANTIC CROAKER—1993

SUMMER

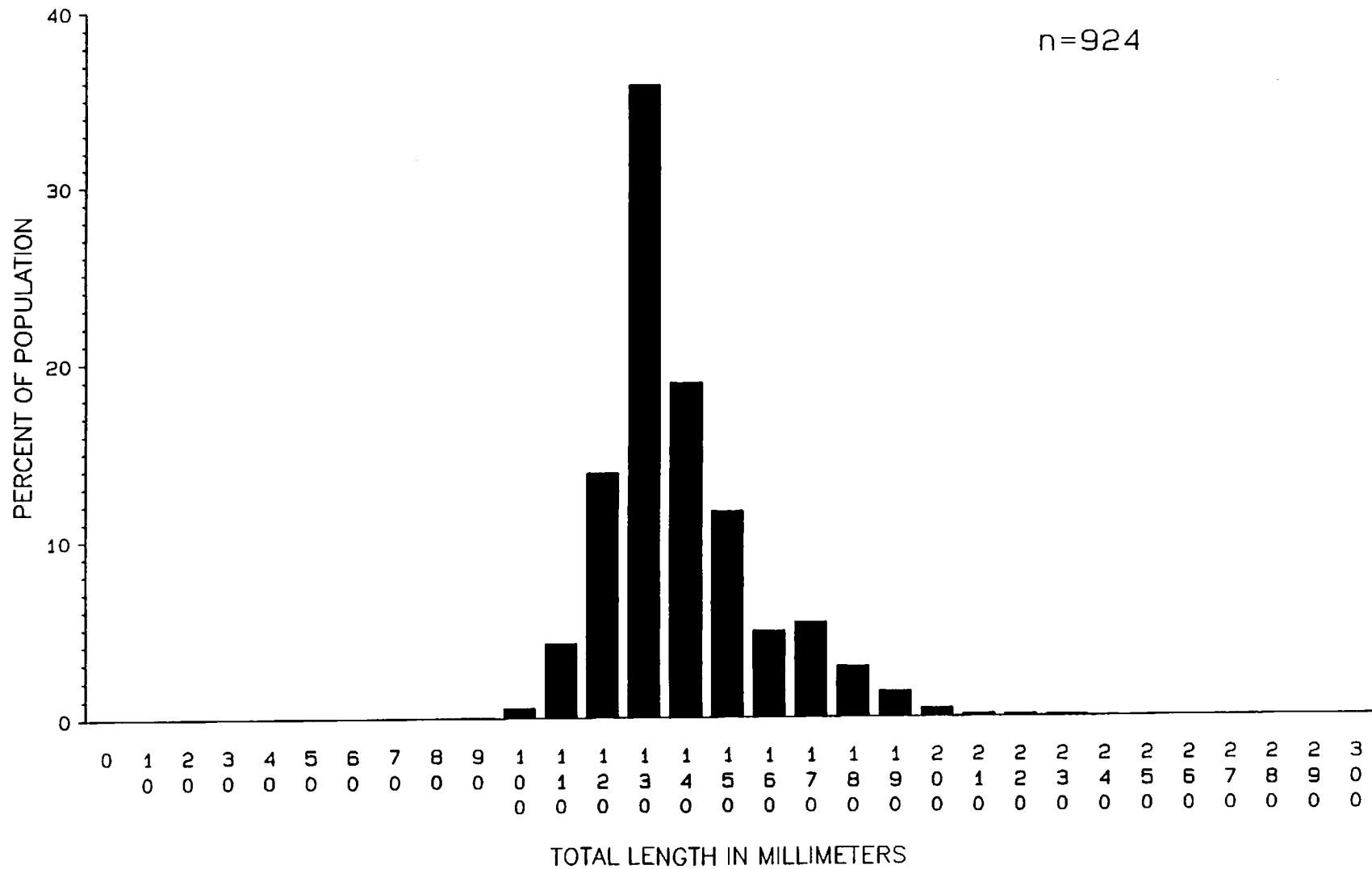


Figure 3. Croaker length frequency.

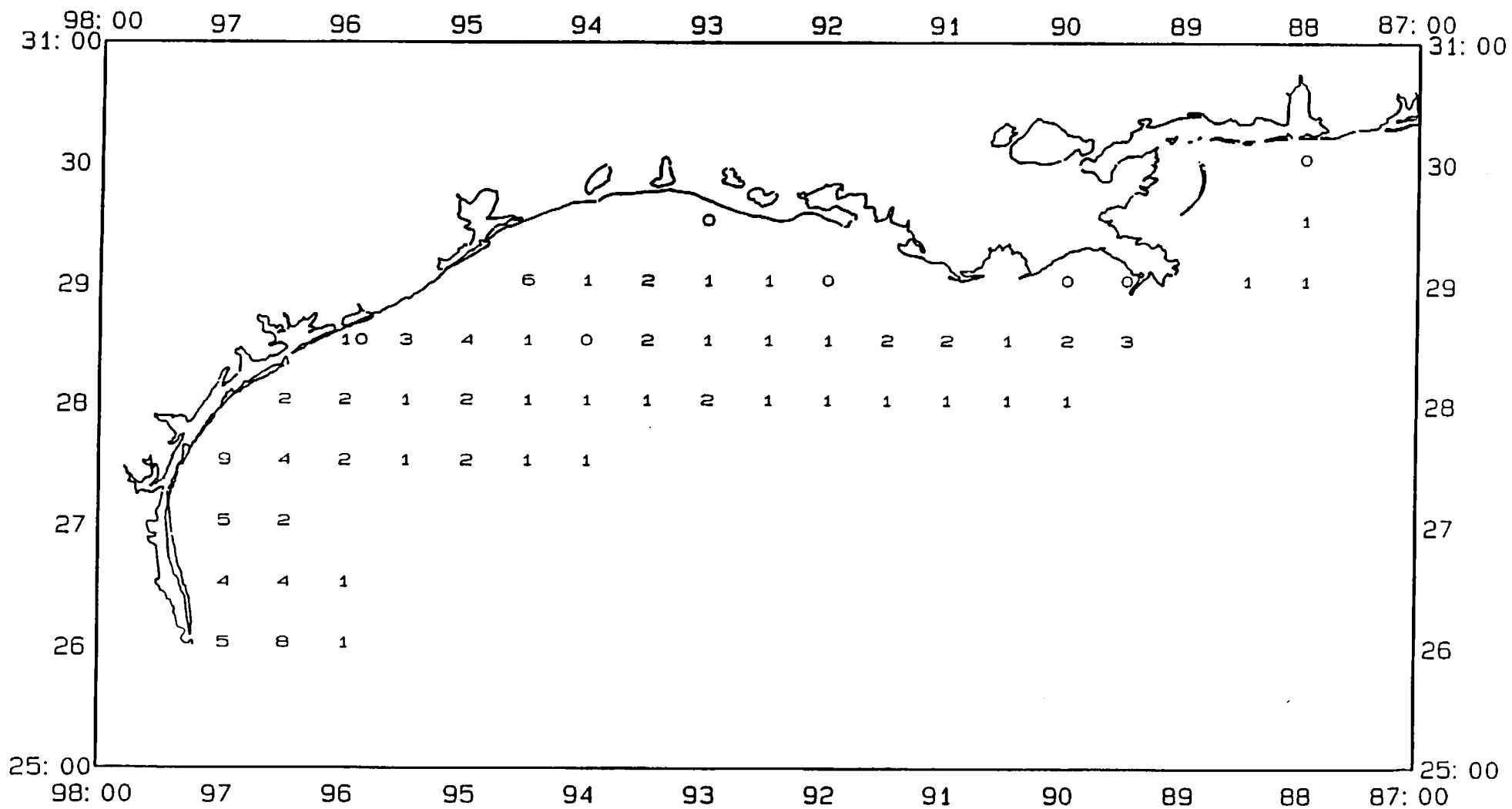


Figure 4. Map of the area sampled showing shrimp catch rates kg^{-1} (40-ft trawl within a 30 X 30 minute block).

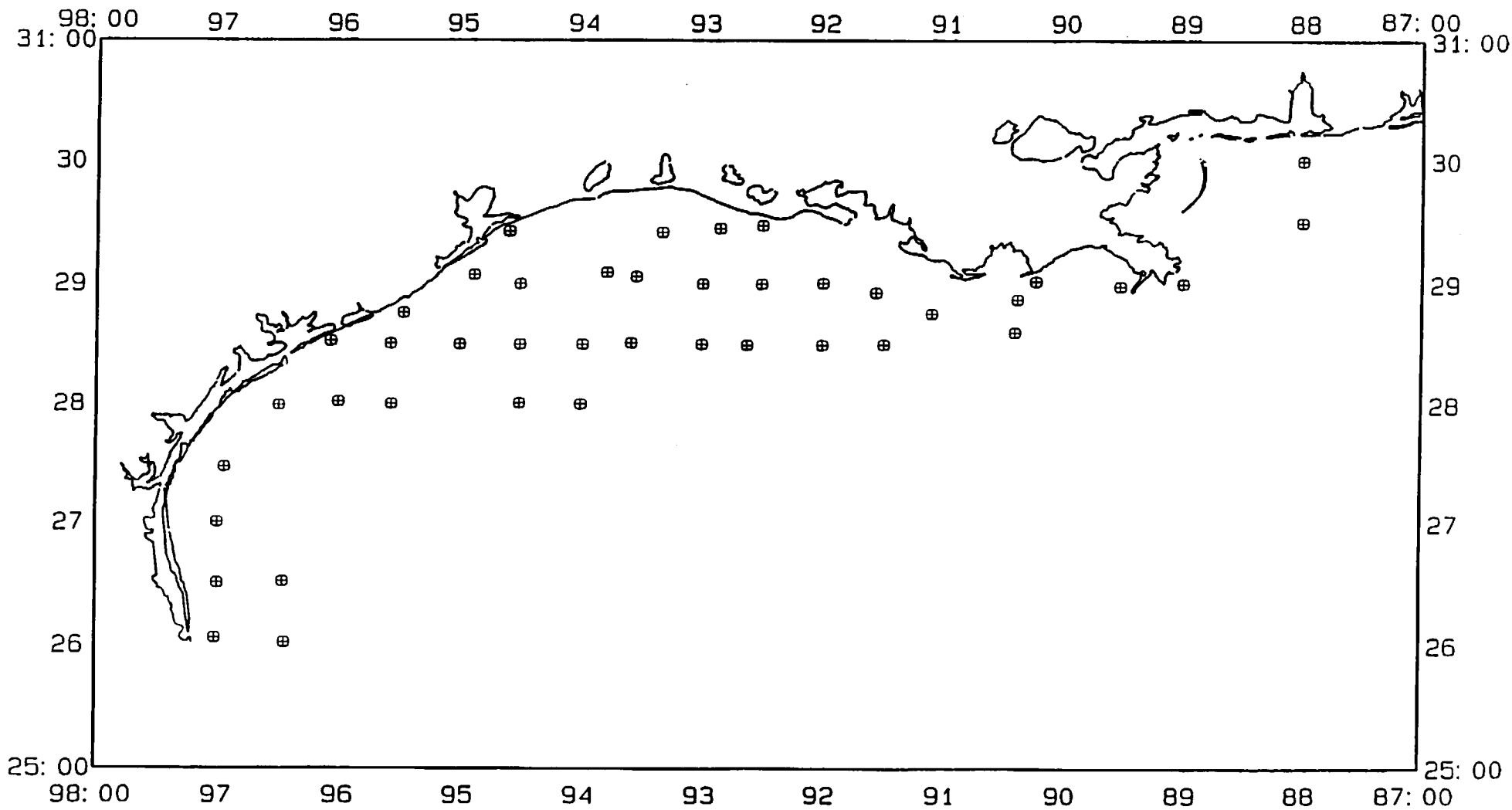
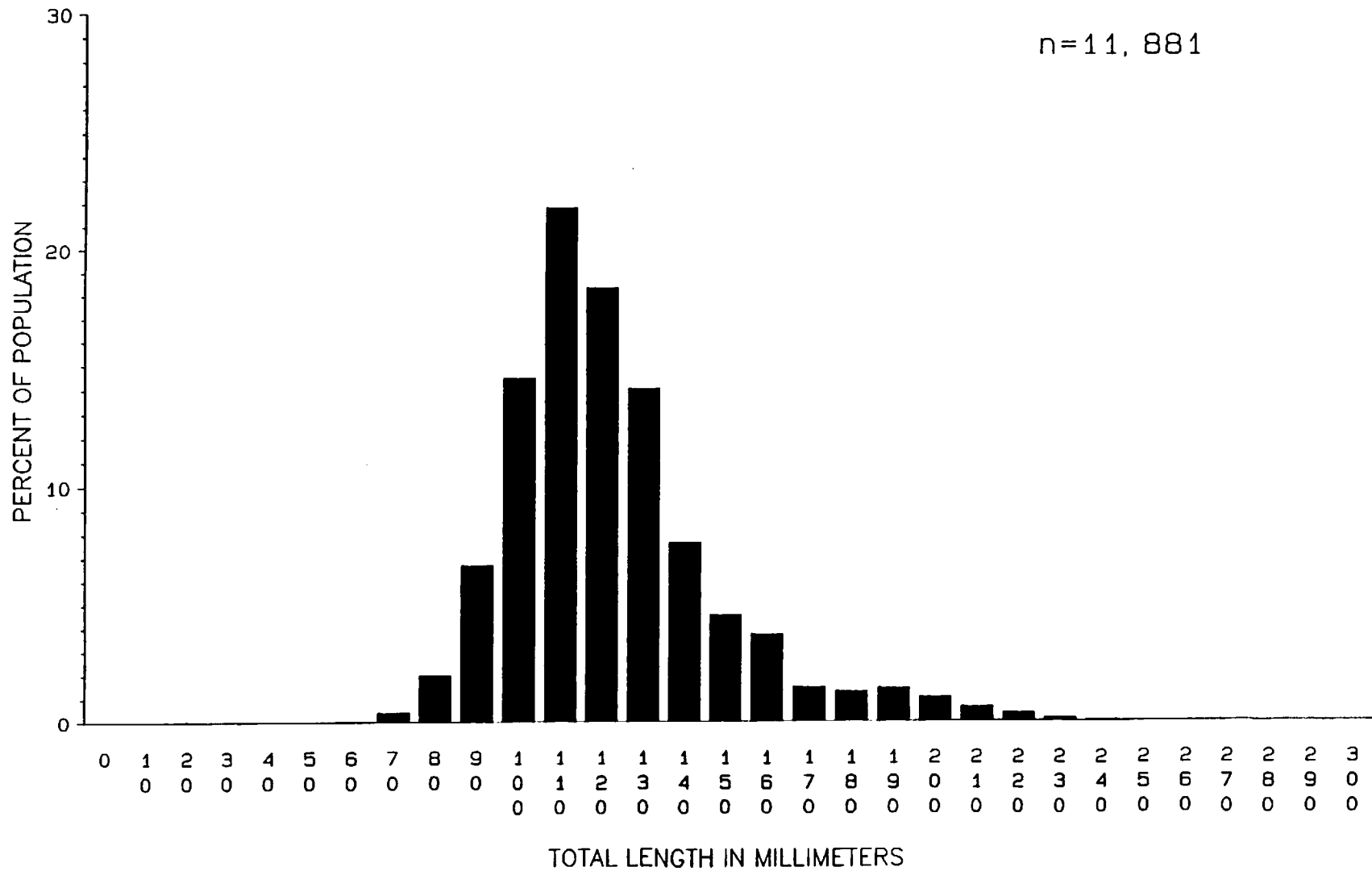


Figure 6. Map of the area sampled showing locations of ichthyoplankton sample sites.

BROWN SHRIMP - 1993

SUMMER

n=11,881



) Figure 5. Brown shrimp length frequency.)

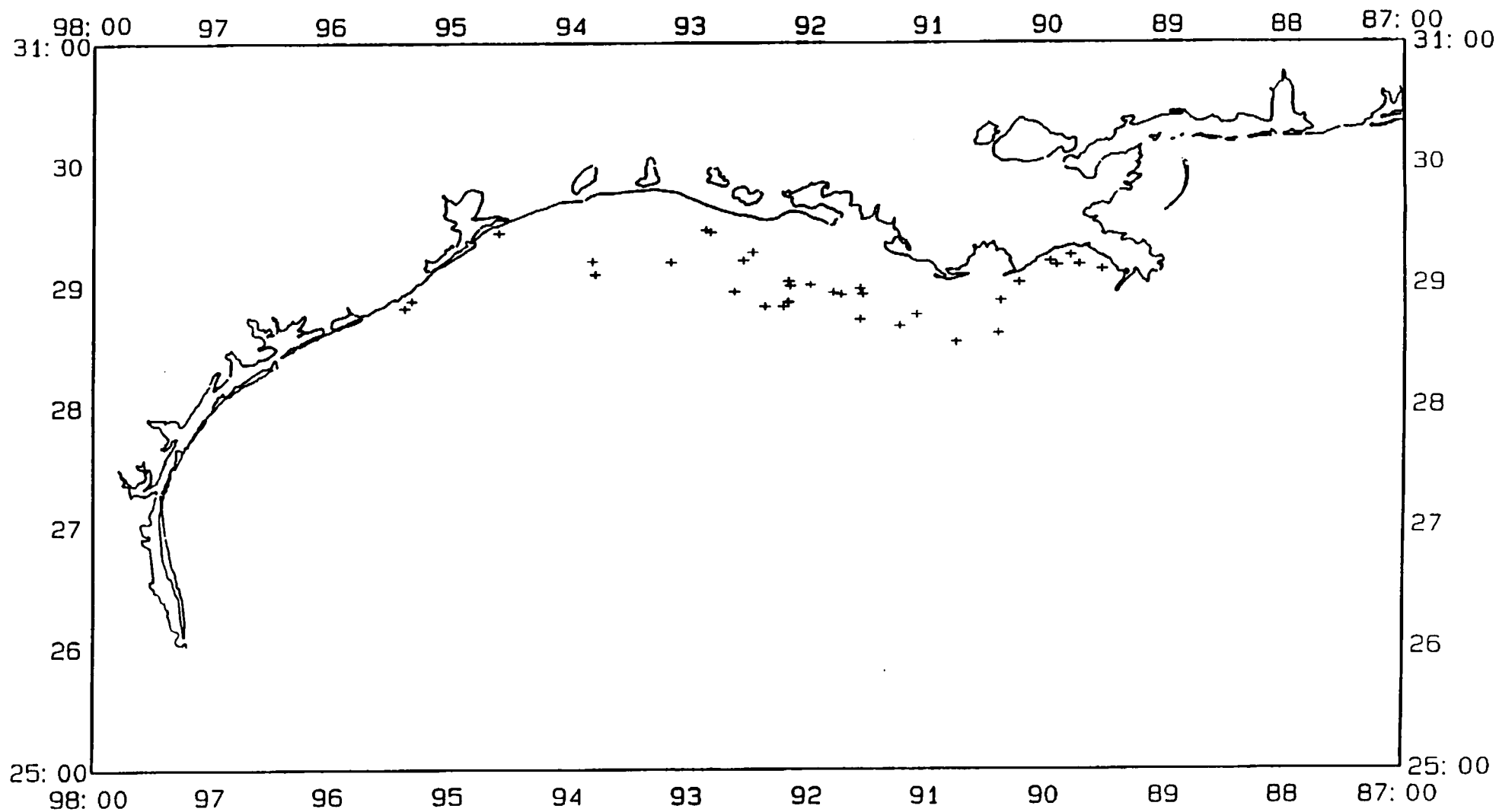


Figure 7. Map of the area sampled showing trawl sample sites where bottom dissolved oxygen was less than 2.0 ppm.