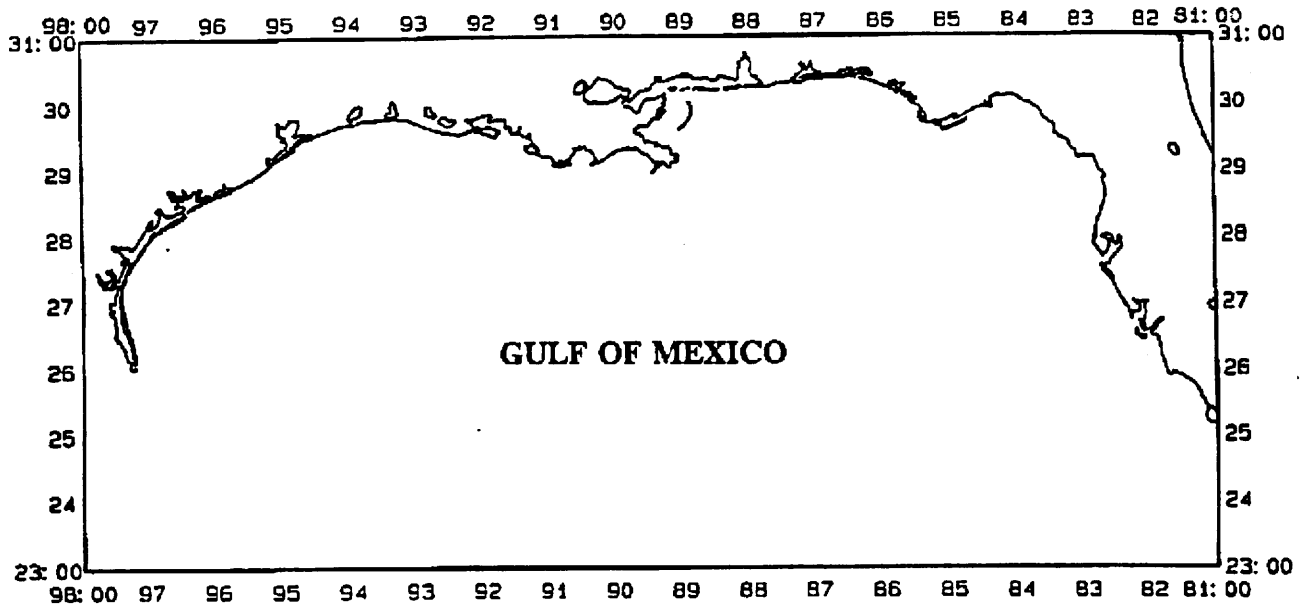


# CRUISE RESULTS

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

NOAA Ship OREGON II Cruise OT-94-02 (210)  
06/16 - 07/18/94



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  
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OREGON II Cruise 94-02 (210)  
06/16-07/18/94

INTRODUCTION

The NOAA Ship OREGON II departed Pascagoula, MS on June 16, 1994 for the twelfth 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 returned to Pascagoula, MS on July 18, 1994, 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 samples of flounder, Paralichthys sp. for the National Seafood and Inspection Lab, Pascagoula, MS.
- 8) Collect unsulfited shrimp for the Northwest Fisheries Center, Seattle, WA.

## 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.

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 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 Facility. 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 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 forty eight 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 or third 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 Tables 2 and 3 with longspine porgy Stenotomus caprinus being most abundant by number and 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 occurring 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.

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 0.1 ppm to a high of 2.0 ppm (Fig. 7).

#### ACKNOWLEDGEMENTS

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

#### CRUISE PARTICIPANTS

6/16-06/20/94

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.
Terry Henwood	Res. Fish. Bio.	NMFS, Pascagoula, Miss.
Charlie Roithmayr	Res. Fish. Bio.	NMFS, Pascagoula, Miss.
Connie McGee	Co-op student	NMFS, Pascagoula, Miss.
Tammy Bonney	Co-op Student	NMFS, Pascagoula, Miss.
Theresa Lutz	Teacher	Resurrection High School, Pascagoula, Miss.
Gregory Fulling	Teacher	Resurrection High School, Pascagoula, Miss.
Rick O'Conner	Teacher	Washington High School, Pensacola, Fla.
Allison Weihing	Student Coop.	Pascagoula, Miss.
Roger Torstenson	Cooperator	NOAA/NESDIS/NODC, Washington, D.C.

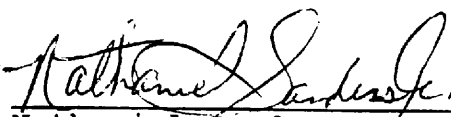
06/21-07/03/94 12

NAME	TITLE	ORGANIZATION
Nathaniel Sanders, Jr.	Field Party Chief	NMFS, Pascagoula, Miss.
Robert Ford, Jr.	Watch Leader	NMFS, Pascagoula, Miss.
Harriet Perry	Watch Leader	NMFS, Pascagoula, Miss.
Eva Kargard	Watch Leader	NMFS, Pascagoula, Miss.
Bennie Rohr	Res. Fish. Bio.	NMFS, Pascagoula, Miss.
Connie McGee	Co-op Student	NMFS, Pascagoula, Miss.
Colleen Goodfellow	Student Coop.	Bowling Green University
Gregory Fulling	Teacher	Resurrection High School, Pascagoula, Miss.
Jennifer Groom	Student Coop.	Kansas State University
Jess Golden	Student Coop.	Kansas State University
Martha Martinez	Student Coop.	University of Texas, Panamerica

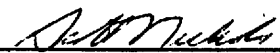
07/04-07/18/94 15

NAME	TITLE	ORGANIZATION
Nathaniel Sanders, Jr.	Field Party Chief	NMFS, Pascagoula, Miss.
Gilmore Pellegrin, Jr.	Watch Leader	NMFS, Pascagoula, Miss.
Gladys Reese	Watch Leader	NMFS, Pascagoula, Miss.
Alonzo Hamilton	Watch Leader	NMFS, Pascagoula, Miss.
Adrienne McInturff	Biological Tech.	NMFS, Galveston, Tex.
Martha Martinez	Student Coop.	University Of Texas, Panamerica
Philip St Jean	Student Coop.	Uni. Of U.S. V.I.
Demetrius Jordan	Student Coop.	Memphis, Tenn.
Verneda Mason	Teacher	John Hopkins Elementary School, Jackson, Miss.
Theresa Christian	Student Coop.	University of D.C.
Stuart Toler	Student Coop.	Murfreesboro, Tenn.
Scott Hjelm	Student Coop.	University Of Wisconsin, Steven Point, Wis.

Submitted By:

  
 Nathaniel Sanders, Jr.  
 Field Party Chief

Approved By:

  
 Scott Nichols, Director  
 Mississippi Laboratories

  
 Bradford E. Brown, Director  
 Southeast Science & Research

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	.	2
6-7	.	1	1	1	1	.	1	1	1	1
7-8	.	.	1	.	2	.	1	1	1	1
8-9	.	1	.	1	1	.	1	1	1	1
9-10	.	1	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	2	1	1
12-13	.	1	.	1	1	.	1	.	.	1
13-14	1	1	1	1	.	.	1	1	1	1
14-15	1	1	1	.	1	1	2	1	1	1
15-16	1	1	1	1	1	.	1	1	1	1
16-17	.	.	1	1	1	1	1	1	1	1
17-18	.	2	2	1 1	1	1	1	1	1	1
18-19	1	1	1	1	1	.	2	.	1	1
19-20	1	1	1	1	1	1	.	1	1	1
20-22	1	1	.	1	1	1	.	1	3	1
22-25	1	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	1
35-40	1	1	1	1	1	1	1	1	1	1
40-45	1	1	1	1	.	1	1	1	1	1
45-50	1	1	1	1	1	1	1	1	1	2
50-60	1	1	.	1	1	1	1	1	1	.

Table 2. Catch rates (number and weight per hour) and per cent frequency of occurrence for the twenty most numerous species caught (plus red snapper) in 40-ft shrimp net hauls during the 1994 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>	125,093	5,047.30	187
	<u>Micropogonias undulatus</u>	82,491	3,293.30	108
	<u>Peprilus burti</u>	79,516	2,066.70	167
	<u>Chloroscombrus chrysurus</u>	57,415	1,022.40	57
	<u>Penaeus aztecus</u>	54,930	752.50	187
	<u>Loligo pleii</u>	48,172	631.1	134
	<u>Trachypeneus similis</u>	21,724	87.9	66
	<u>Squilla empusa</u>	20,060	174.3	111
	<u>Sicyonia brevirostris</u>	20,057	253.4	108
	<u>Leiostomus xanthurus</u>	14,154	986.6	57
	<u>Callinectes similis</u>	12,212	142.0	146
	<u>Lagodon rhomboides</u>	11,876	684.7	101
	<u>Loligo pealei</u>	11,363	229.8	116
	<u>Trachurus lathami</u>	11,195	260.5	115
	<u>Cynoscion nothus</u>	9,984	408.9	36
	<u>Prionotus stearnsi</u>	8,304	54.2	86
	<u>Portunus spinicarpus</u>	8,244	54.9	84
	<u>Prionotus longispinosus</u>	7,865	168.4	111
	<u>Centropristis philadelphica</u>	7,435	304.3	129
	<u>Upeneus parvus</u>	6,745	131.8	111
	<u>Lutjanus campechanus</u>	1,524	135.7	89
Total		752,433	21,483.60	236

Table 3. Catch rates (number and weight per hour) and per cent frequency of occurrence for the twenty most numerous species caught (plus red snapper) in 40-ft shrimp net hauls during the 1994 SEAMAP summer shrimp and bottomfish survey. They are listed in descending order by weight. Total number of stations = 236.

Genus	Species	Number	Weight (kg)	Frequency of occurrence
	<u>Stenotomus caprinus</u>	125,093	5,047.3	187
	<u>Micropogonias undulatus</u>	82,491	3,293.3	108
	<u>Peprilus burti</u>	79,516	2,066.7	167
	<u>Chloroscombrus chrysurus</u>	57,415	1,022.4	57
	<u>Leiostomus xanthurus</u>	14,154	986.6	57
	<u>Penaeus aztecus</u>	54,930	752.5	187
	<u>Arius felis</u>	4,762	714.8	25
	<u>Laqodon rhomboides</u>	11,876	684.7	101
	<u>Loligo pleii</u>	48,172	631.1	134
	<u>Synodus foetens</u>	5,215	591.8	171
	<u>Cynoscion nothus</u>	9,984	408.9	36
	<u>Cynoscion arenarius</u>	6,685	385.6	87
	<u>Peprilus alepidotus</u>	6,713	377.5	9
	<u>Centropristis philadelphica</u>	7,435	304.3	129
	<u>Trachurus lathami</u>	11,195	260.5	115
	<u>Sicyonia brevirostris</u>	20,057	253.4	108
	<u>Pristipomoides aquilonaris</u>	4,129	232.7	108
	<u>Loligo pealei</u>	11,363	229.8	116
	<u>Squilla empusa</u>	20,060	174.3	111
	<u>Prionotus longispinosus</u>	7,865	168.4	111
	<u>Lutjanus campechanus</u>	1,524	135.7	89
<b>Total</b>		<b>752,433</b>	<b>21,483.6</b>	<b>236</b>



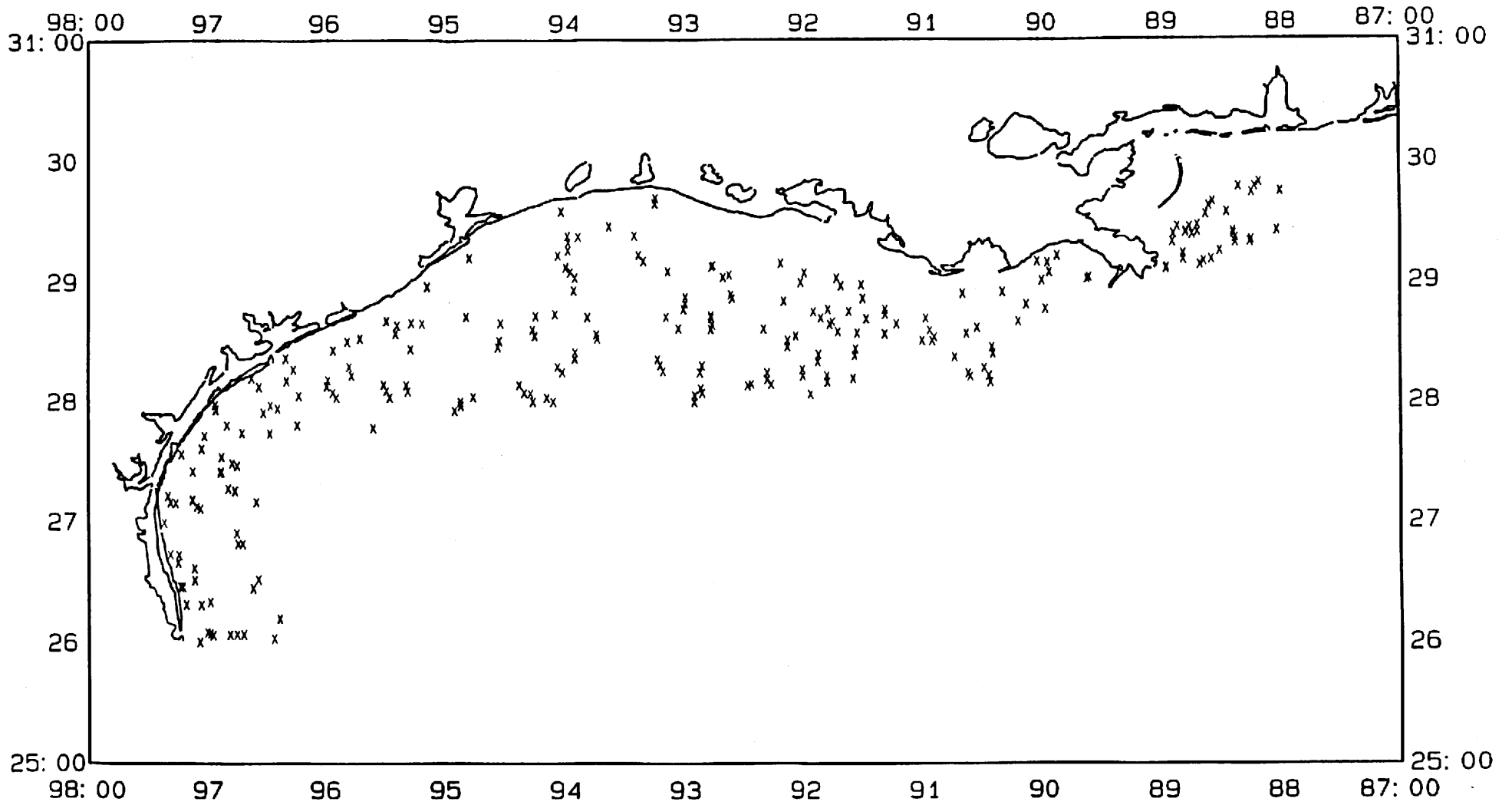


Figure 1. Map of the area sampled showing location of trawl sample sites.

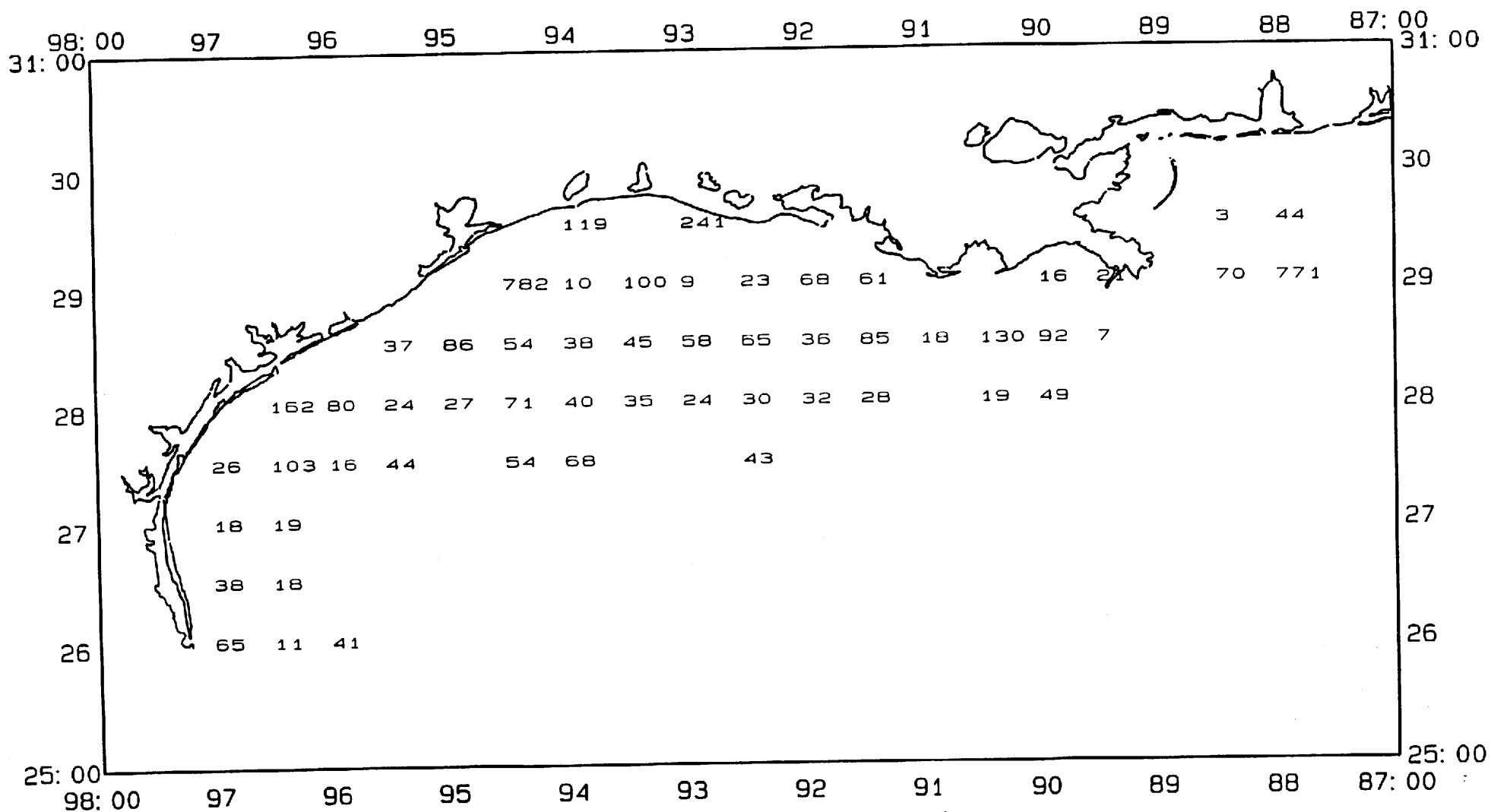


Figure 2. Map of the area sampled showing finfish catch rates Kg h<sup>-1</sup> (40-ft trawl) within each 30 x 30 minute block sampled.

# ATLANTIC CROAKER

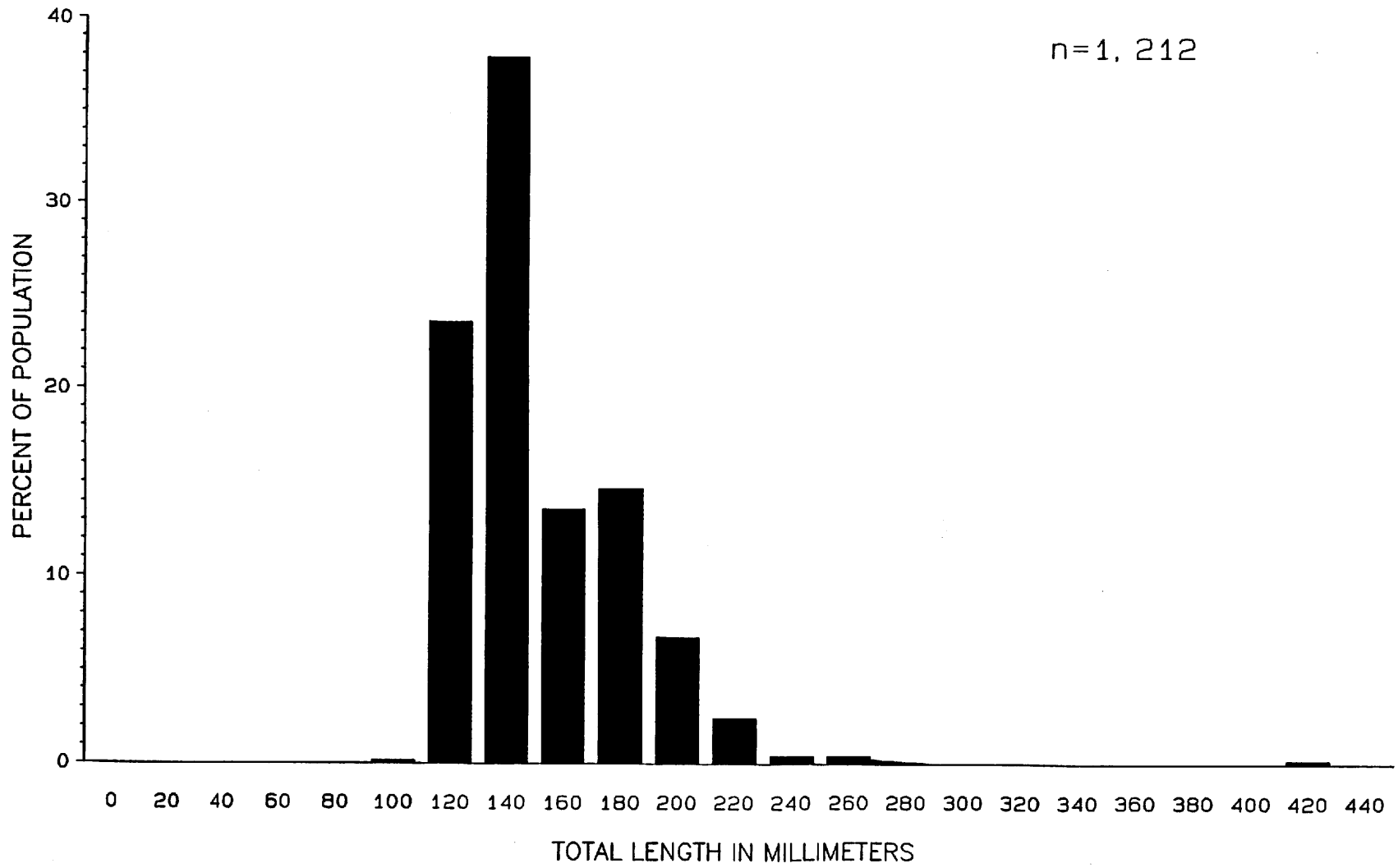


Figure 3. Croaker length frequency

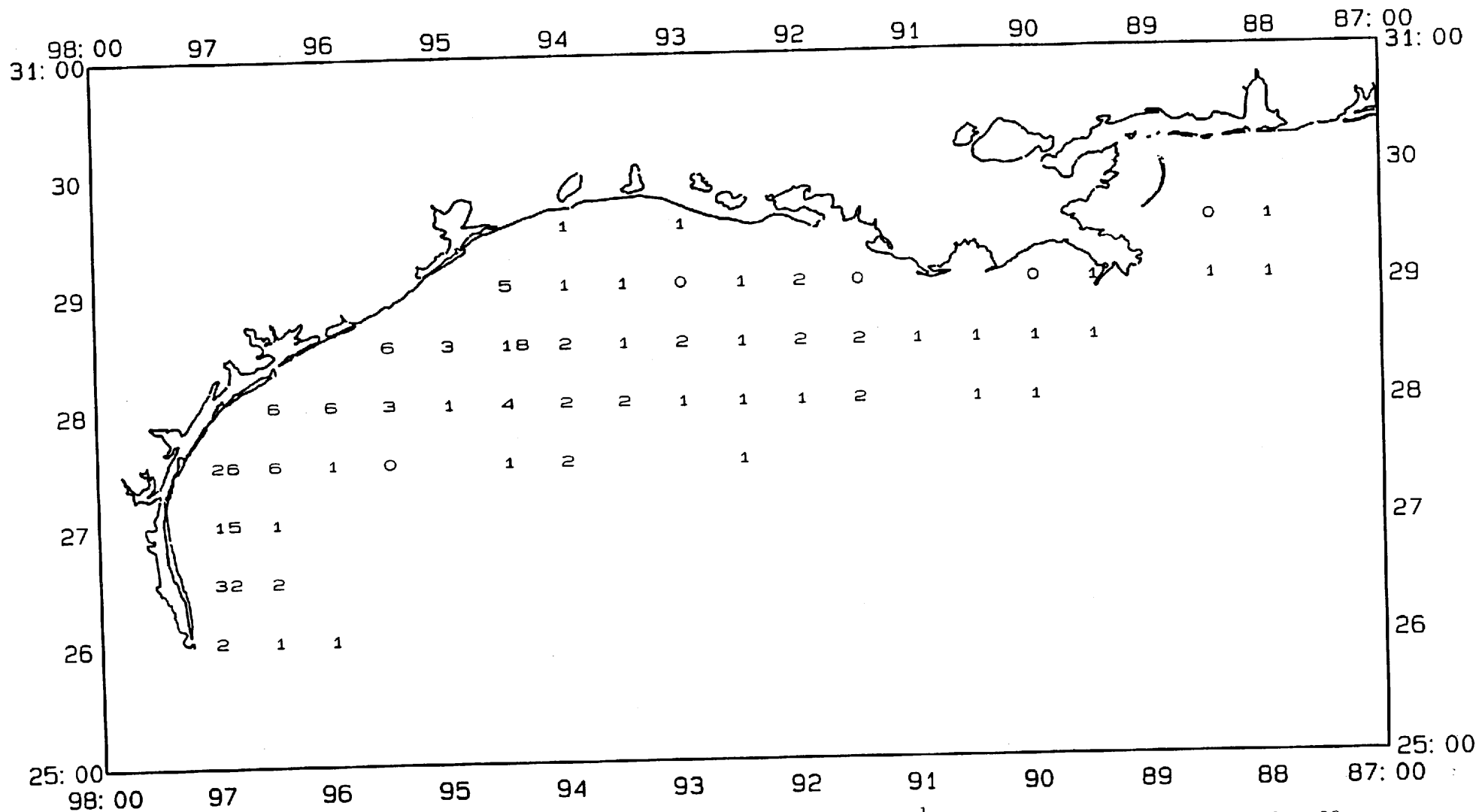


Figure 4. Map of the area sampled showing shrimp catch rates  $\text{Kg h}^{-1}$  (40-ft trawl) within each 30 X 30 block sampled.

# BROWN SHRIMP

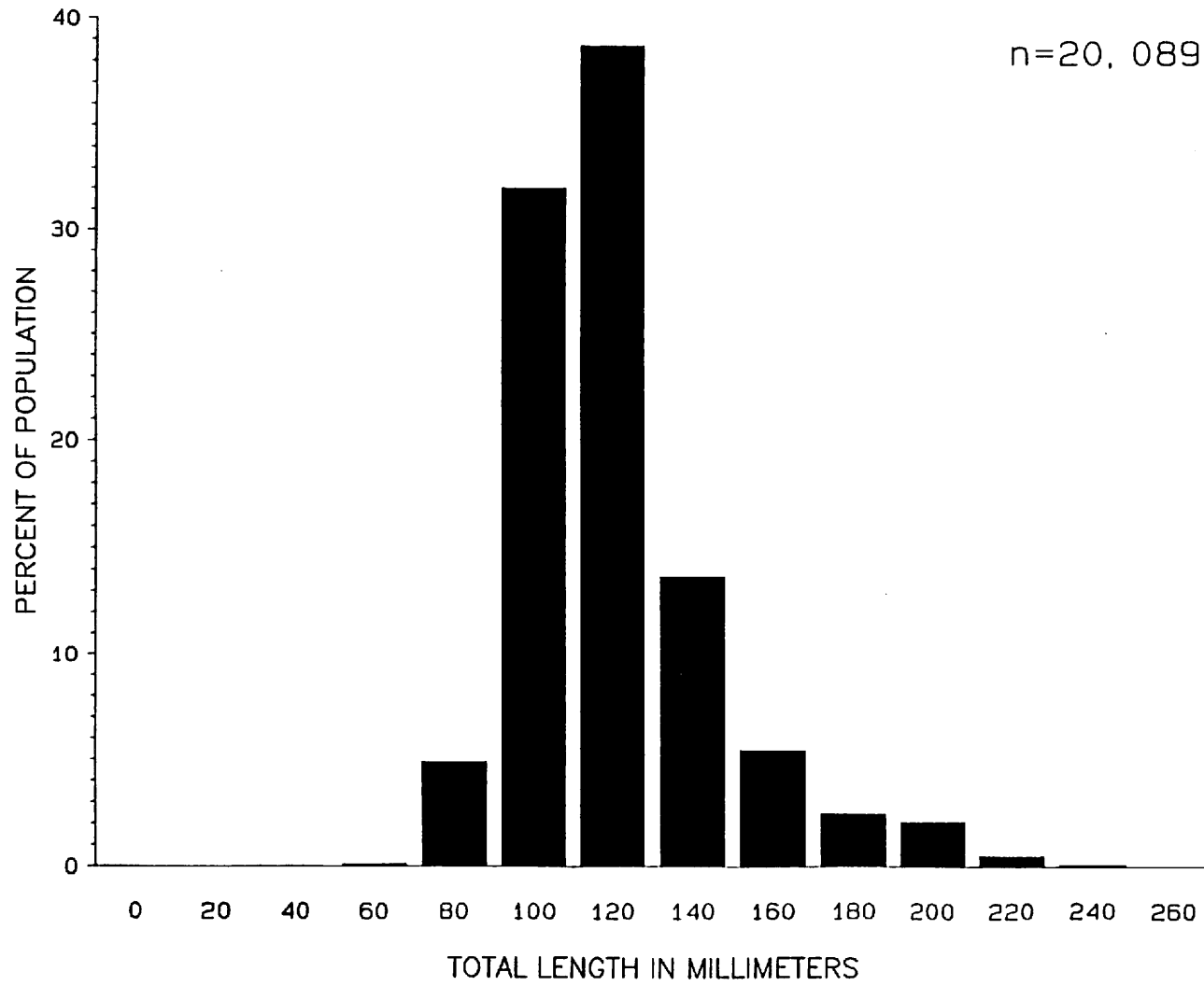


Figure 5. Brown shrimp length frequency.

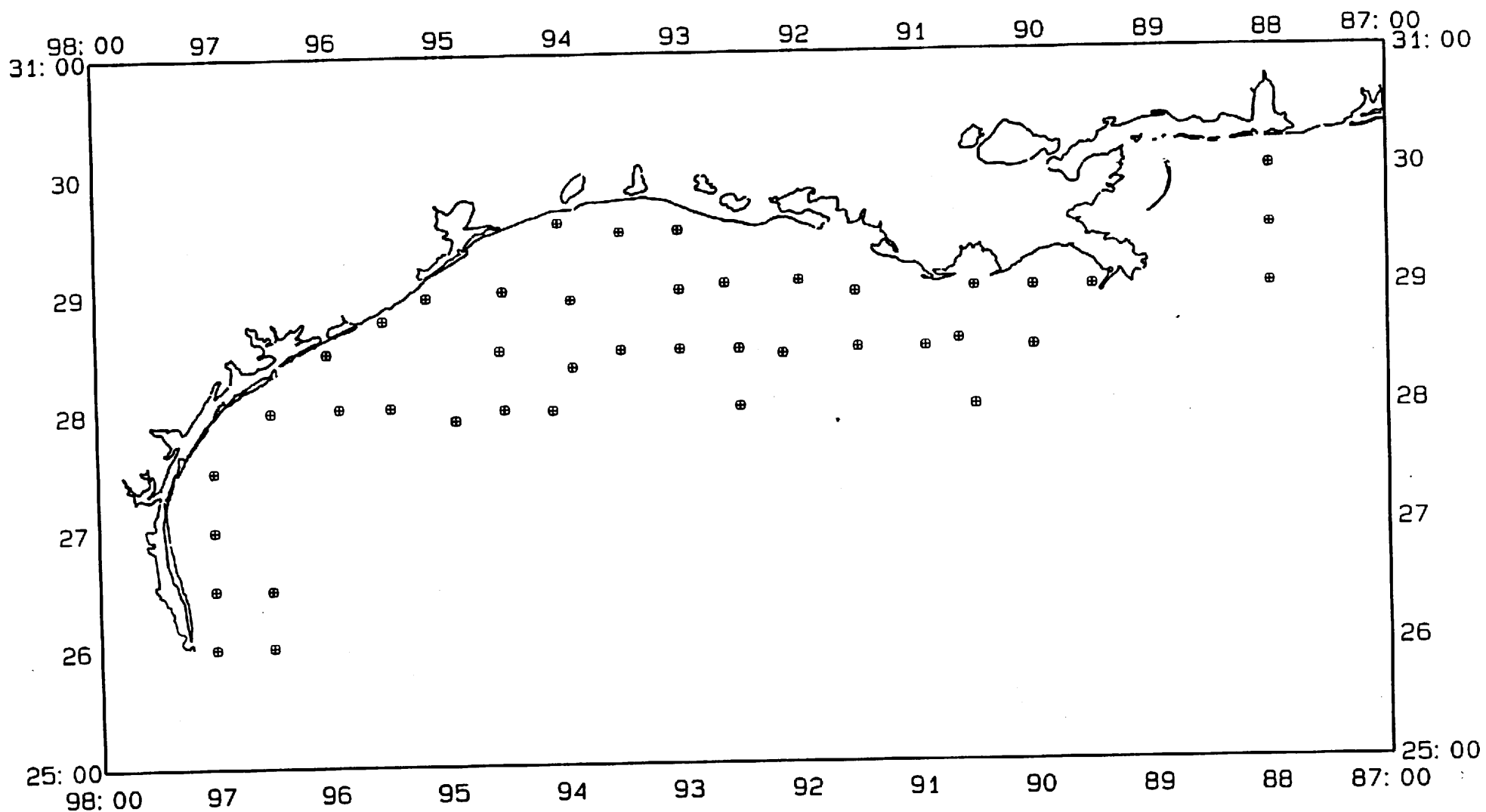


Figure 6. Map of the area sampled showing locations of ichthyoplankton sample size.

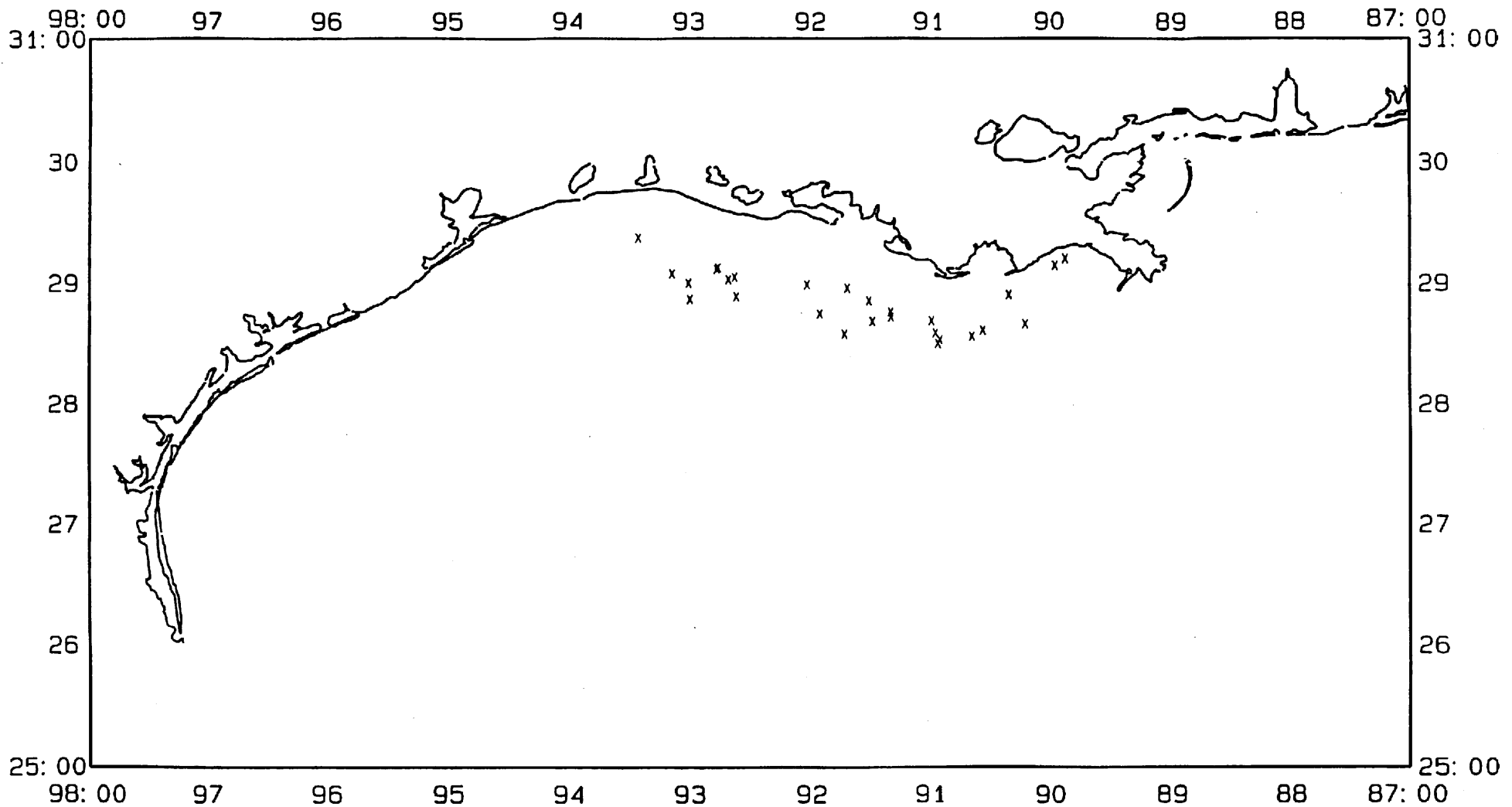


Figure 7. Map of the area sampled showing trawl sample sites where bottom dissolved oxygen was less than 2.0 ppm.