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

NOAA Ship Oregon II Cruise 97-03 (226)
06/13-07/17/97

INTRODUCTION

The *NOAA Ship Oregon II* departed Pascagoula, Miss. on June 13, 1997 for the fifteenth annual Southeast Area Monitoring and Assessment Program (SEAMAP) summer shrimp and bottomfish survey in the northern and western 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 is to monitor the 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.

Two survey days were lost due to approaching Hurricane Danny. The cruise terminated in Pascagoula on July 17.

OBJECTIVES

1) Determine the 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 red snapper (*Lutjanus campechanus*) for the University of South Alabama.

METHODS

The shrimp assessment survey samples were taken with a 40-ft shrimp trawl with mud rollers and 8-ft by 40-in chain bracketed wooden doors. Sample sites were randomly selected between Mobile Bay, Ala. and the Texas-Mexico border in 5 to 60 fm. Sample sites encompassed 1 to 3 fm depth strata between 5 and 25 fm, 5 fm strata between 25 and 50 fm, and a 10 fm 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 was 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 fluorometer data. Water samples were obtained daily to validate the CTD data.

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

CC:mail was used to transmit environmental and catch data via cellular phone to the Mississippi Laboratory. These transmissions provided information for a weekly report on shrimp and finfish catch rates and locations, which was distributed to shrimpers and other segments of the fishing industry.

RESULTS AND DISCUSSIONS

Two hundred eighteen trawling stations were required to sample one hundred seventy two of two hundred thirty strata (Figure 1, Table 1). *RV Tommy Munro* of the state of Mississippi sampled 27 strata and *RV A. E. Verrill* of Alabama sampled 8. Four strata were unsuccessfully sampled because of gear fouling or bottom obstructions, and nineteen strata were not sampled because the survey was terminated two days early due to Hurricane Danny.

Dominant faunal components are listed in Table 2 with Atlantic croaker, *Micropogonias undulatus*, being the most abundant species in terms of both number and weight. Finfish catch rates (kg/hr) are summarized in Figure 2 and size frequencies of Atlantic croaker in Figure 3.

Brown shrimp, *Penaeus aztecus*, was the most abundant Penaeus shrimp species, followed by pinks, *P. duorarum*, and whites, *P. setiferus*. Browns were most abundant off Texas in 10-19 fm (Figure 4). Size frequencies of brown shrimp are shown in Figure 5.

Forty seven bongo and neuston stations were accomplished (Figure 6). Neuston and right side bongo samples were returned to Pascagoula for subsequent shipment to the Polish Sorting Center for sorting and identification according to standard SEAMAP protocol. Left side bongo samples were sent to the SEAMAP plankton archiving center at the Institute of Marine Science's Gulf Coast Research Laboratory in Ocean Springs, Miss.

Once again, hypoxic areas (dissolved oxygen readings ≤ 2.0 milligrams per liter) were encountered off the Louisiana coast. Hypoxia generally occurred west of the Mississippi River delta inshore of 20 fm (Figure 7).

On behalf of the scientific party I'd like to thank the commanding officer and crew of *NOAA Ship Oregon II* for their efforts during a successful survey.

CRUISE PARTICIPANTS

6/13-17/97

Name	Title	Organization
Gilmore Pellegrin, Jr.	Field Party Chief	NMFS, Pasc., Miss.
Perry Thompson, Jr.	Watch Leader	NMFS, Pasc., Miss.
Alonzo Hamilton	Watch Leader	NMFS, Pasc., Miss.
Lisa Jones	Fish. Bio.	NMFS, Pasc., Miss.
Connie McGee	Co-op Student	NMFS, Pasc., Miss.
Carol Roden	Fish. Bio.	NMFS, Pasc., Miss.
Bennie Rohr	Fish. Bio.	NMFS, Pasc., Miss.
Andre Debose	Gen. Bio.	Johnson Controls
Laura Lojko	Teacher	Springfield, Mo.
Clifford Hollins	Co-operator	Rust College

6/18-7/2/97

Gilmore Pellegrin, Jr.	Field Party Chief	NMFS, Pasc., Miss.
Perry Thompson, Jr.	Watch Leader	NMFS, Pasc., Miss.
Ian Workman	Watch Leader	NMFS, Pasc., Miss.
Harriet Perry	Watch Leader	NMFS, Pasc., Miss.
Andre Debose	Gen. Bio.	Johnson Controls
Kirsten Larsen	Co-operator	Gulf Coast Res. Lab.
Jennifer Parker	Co-operator	Miss. Univ. Women
Lexie Yancey	Teacher	Springfield, Mo.

Clifford Hollins	Co-operator	Rust College
Mike Grabowski	Co-operator	Gulf Coast Res. Lab.
Jude LeDoux	Co-operator	Univ. Southw. La.
7/3-16/97		
Warren Stuntz	Field Party Chief	NMFS, Pasc., Miss.
Alonzo Hamilton	Watch Leader	NMFS, Pasc., Miss.
Dan Foster	Watch Leader	NMFS, Pasc., Miss.
Nelson May	Watch Leader	NMFS, Pasc., Miss.
Bennie Rohr	Res. Fish. Bio.	NMFS, Pasc., Miss.
Angela Morris	Gen. Bio.	Johnson Controls
Clifford Hollins	Co-operator	Rust College

Submitted by:

Gilmore Pellegrin, Jr.
Field Party Chief, 6/13-7/2/97

Warren E. Stuntz
Field Party Chief, 7/3-16/97

Approved by:

Scott Nichols, Director
Mississippi Laboratory

Bradford E. Brown, Director
Southeast Fisheries Science
Center Director

1. Distribution of sampling effort by strata for *NOAA Ship Oregon II* Cruise 97-03(226). Numbers in table body ate the number of times strata were sampled. "Ala." and "Miss." indicate strata sampled by the respective states, "Unsuc." indicates strata which were unsuccessfully sampled due to gear problems, and "." indicates strata which were not sampled because of Hurricane Danny.

Depth Strata (fm)	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	Miss.	1	1	1	1	Miss.	1	1	1	1
6-7	Miss.	.	1	1	1	Miss.	1	1	1	1
7-8	Ala.	.	.	1	1	Miss.	.	1	1	1
8-9	Ala.	1	1	1	1	Miss.	.	1	1	1
9-10	Miss.	.	1	1	1	Miss.	1	1	1	1
10-11	Ala.	1	1	1	1	Ala.	1	1	1	1
11-12	Miss.	.	1	1	1	Miss.	1	1	1	1
12-13	Ala.	.	1	1	1	Ala.	1	1	1	1
13-14	Miss.	1	1	1	1	Miss.	1	1	1	1
14-15	1	1	Unsuc.	1	1	Ala.	1	1	1	1
15-16	Miss.	1	1	1	1	Miss.	.	1	1	1
16-17	Miss.	.	1	1	1	Miss.	1	1	1	1
17-18	Miss.	1	1	1	1	Miss.	1	1	1	1
18-19	Ala.	.	1	1	1	1	.	1	1	1
19-20	1	1	1	1	1	Miss.	.	1	1	1
20-22	Miss.	.	1	1	1	Miss.	.	1	1	1
22-25	Miss.	1	1	1	1	Miss.	.	1	1	1
25-30	1	1	1	1	1	Miss.	.	1	1	1
30-35	1	1	1	1	1	Miss.	1	1	1	1
35-40	Miss.	1	1	1	1	1	.	1	1	1
40-45	1	1	1	1	Unsuc.	Miss.	.	1	1	1
45-50	1	1	1	1	1	Unsuc.	1	1	1	1
50-60	1	1	1	1	1	1	1	1	Unsuc.	1

Table 2. Twenty most abundant organisms caught (plus red snapper) in 40-ft shrimp trawls during *NOAA Ship Oregon II* cruise 226. Catches were adjusted to numbers and weights per hour fished, and species are listed in descending order of numbers caught. Catch frequency is the number of tows in which respective species were caught (n = 218).

Name	Number	Weight	Catch Frequency
Atlantic croaker *Micropogonias undulatus*	147,038	9,034.4	82
Longspine porgy *Stenotomus caprinus*	143,255	6,772.1	169
Roughback shrimp *Trachypaeneus similis*	83,030	931.5	89
Rough scad *Trachurus lathami*	76,057	3,484.4	139
Gulf butterfish *Peprilus burti*	65,806	4,379.6	147
Atlantic bumper *Chloroscombrus chrysurus*	62,503	1,986.4	61
Arrow squid *Loligo pleii*	31,372	1,204.0	128
Bigeye searobin *Prionotus longispinosus*	31,326	359.8	76
Brown shrimp *Penaeus aztecus*	26,037	766.9	162
Silver seatrout *Cynoscion nothus*	17,342	1,439.8	49
Lesser blue crab *Callinectes similis*	14,191	471.8	123
Roughneck shrimp *Trachypenaeus constrictus*	13,866	112.9	20
Longfin squid *Loligo pealei*	13,767	540.7	64
Brown rock shrimp *Sicyonia brevirostris*	12,578	264.9	78
Mantis shrimp *Squilla empusa*	10,574	268.3	94
Atlantic cutlassfish *Trichiurus lepturus*	10,513	1,271.8	82
Spot *Leiostomus xanthurus*	9,829	1,142.2	53
Rock sea bass *Centropristis philadelphica*	7,072	412.5	110
Starfish *Astropecten duplicatus*	6,745	21.2	57
Blackear sea bass *Serranus atrobranchus*	6,624	212.8	80
Red snapper *Lutjanus campechanus*	448	48.6	45

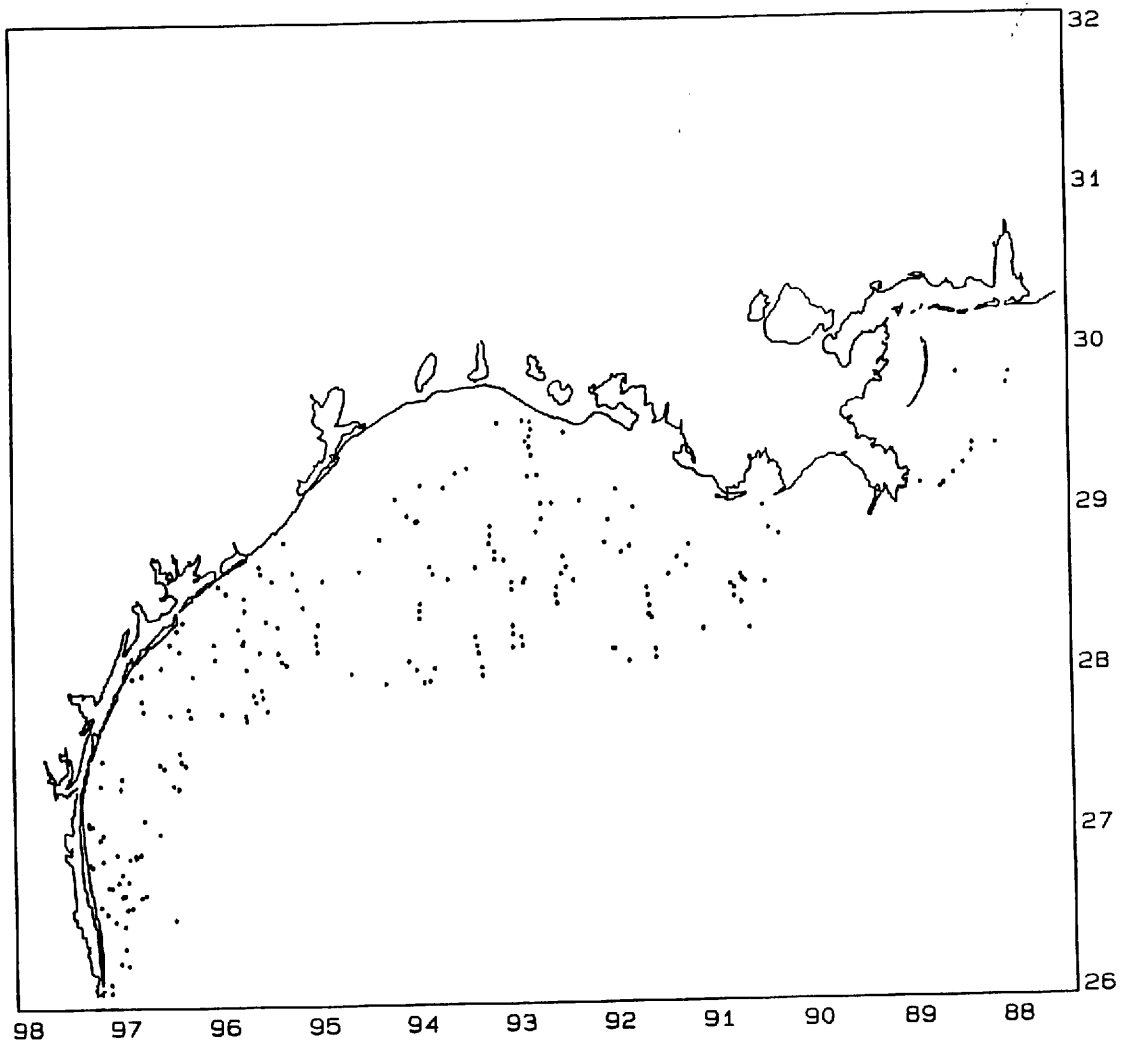

Figure 1. Locations of sampling stations accomplished during *NOAA Ship Oregon II* cruise 226 (OT-97-03).

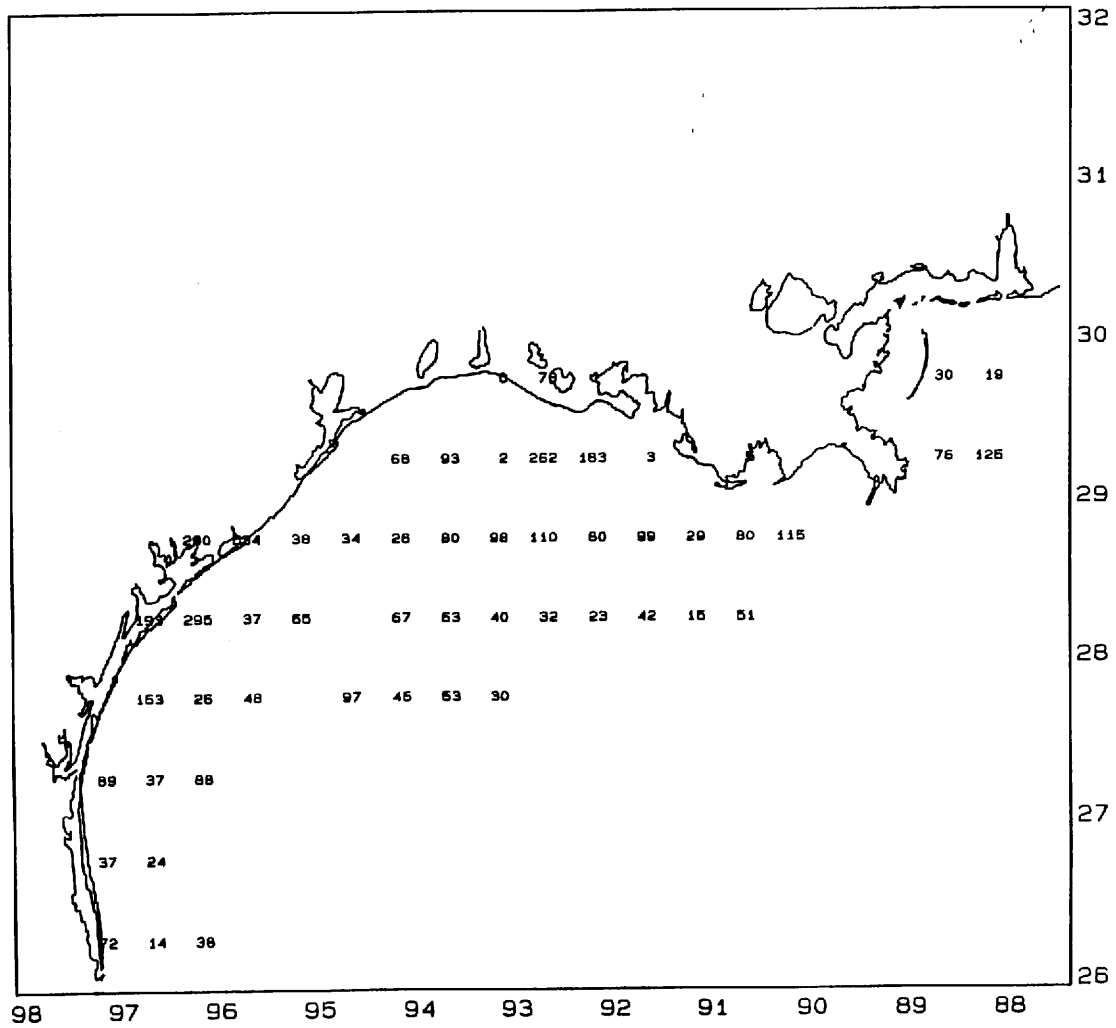

Figure 2. Average finfish catch rates in kilograms per hour within 30 minute blocks of latitude and longitude for *NOAA Ship Oregon II* cruise 226 (OT-97-03). Numbers which occur over land are results of nearshore sampling and the subsequent placement of averages in block centers.

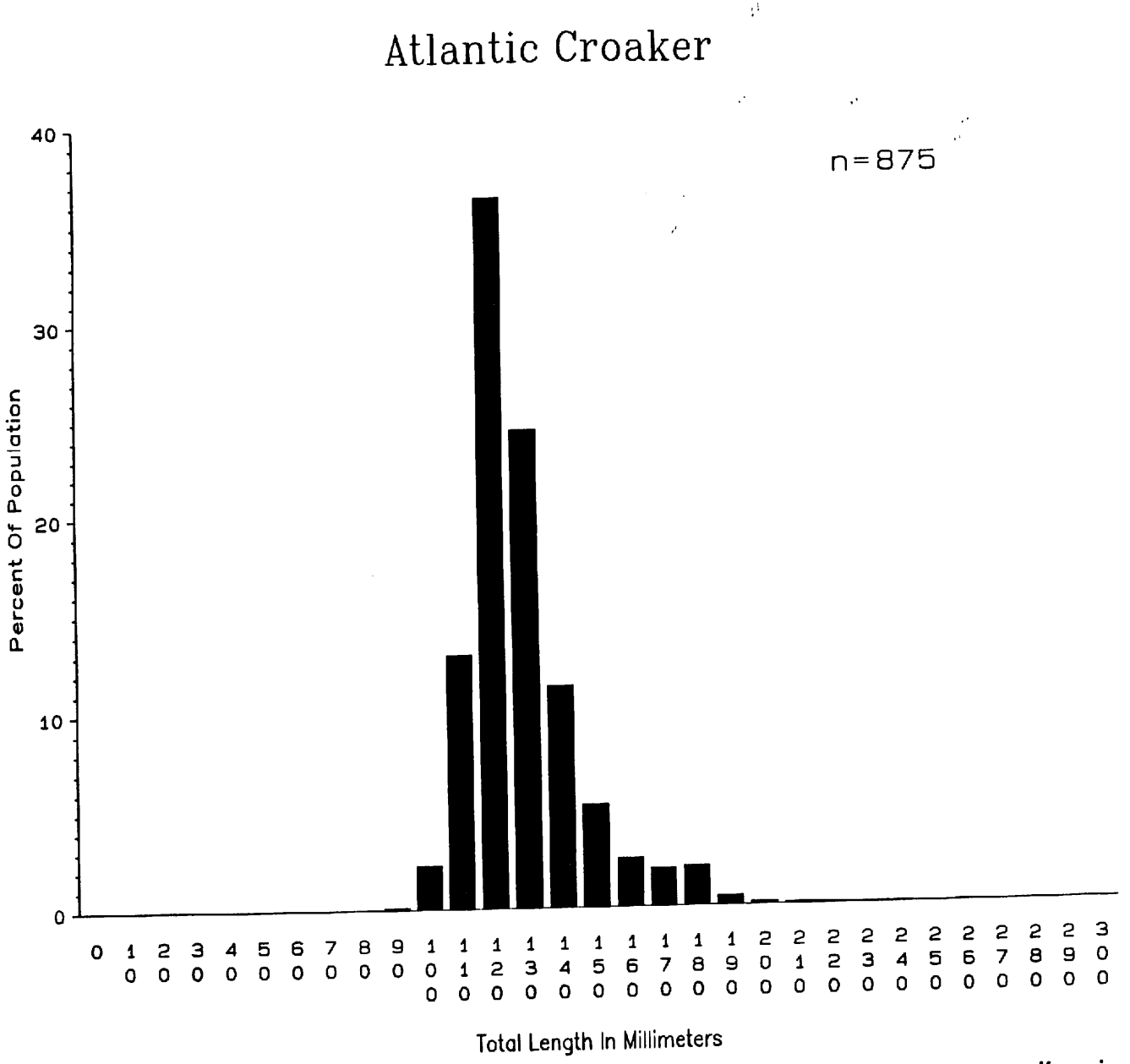

Figure 3. Size frequency distribution of Atlantic croaker measured during *NOAA Ship Oregon II* cruise 226 (OT-97-03).

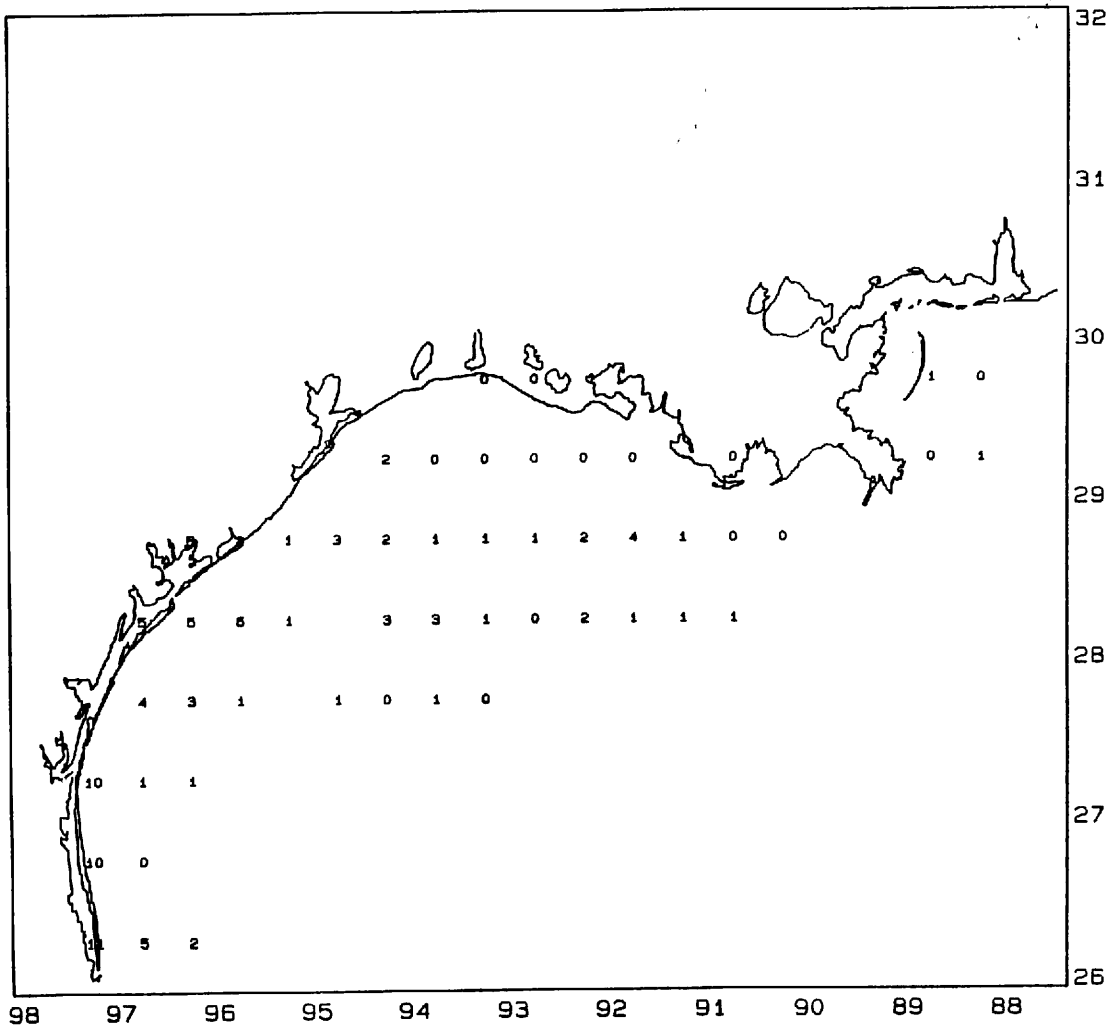

Figure 4. Average brown shrimp catch rates in kilograms per hour within 30 minute blocks of latitude and longitude for *NOAA Ship Oregon II* cruise 226 (OT-97-03). Numbers which occur over land are results of nearshore sampling and the subsequent placement of averages in block centers.

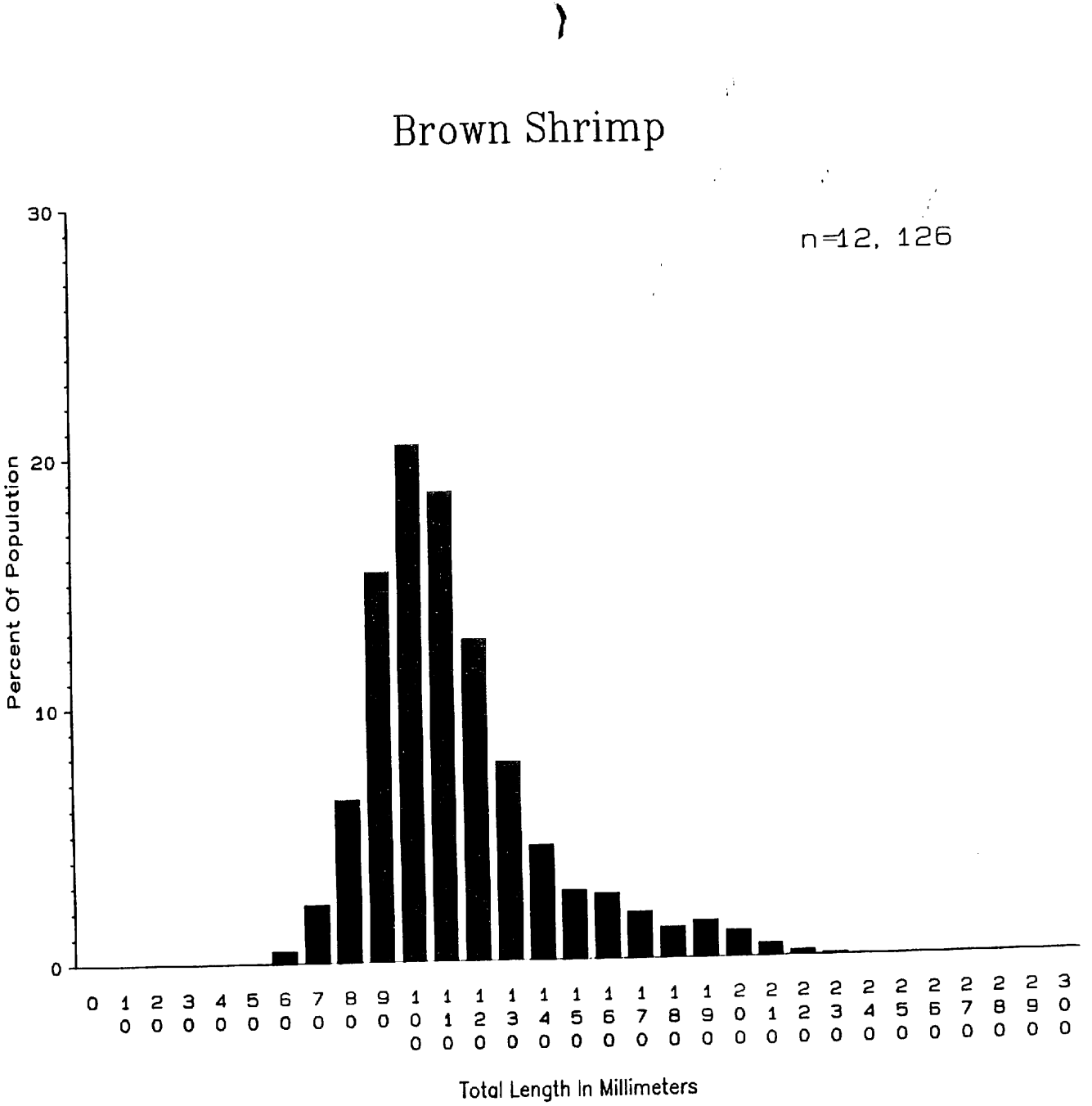

Figure 5. Size frequency distribution of brown shrimp measured during *NOAA Ship Oregon II* cruise 226 (OT-97-03).

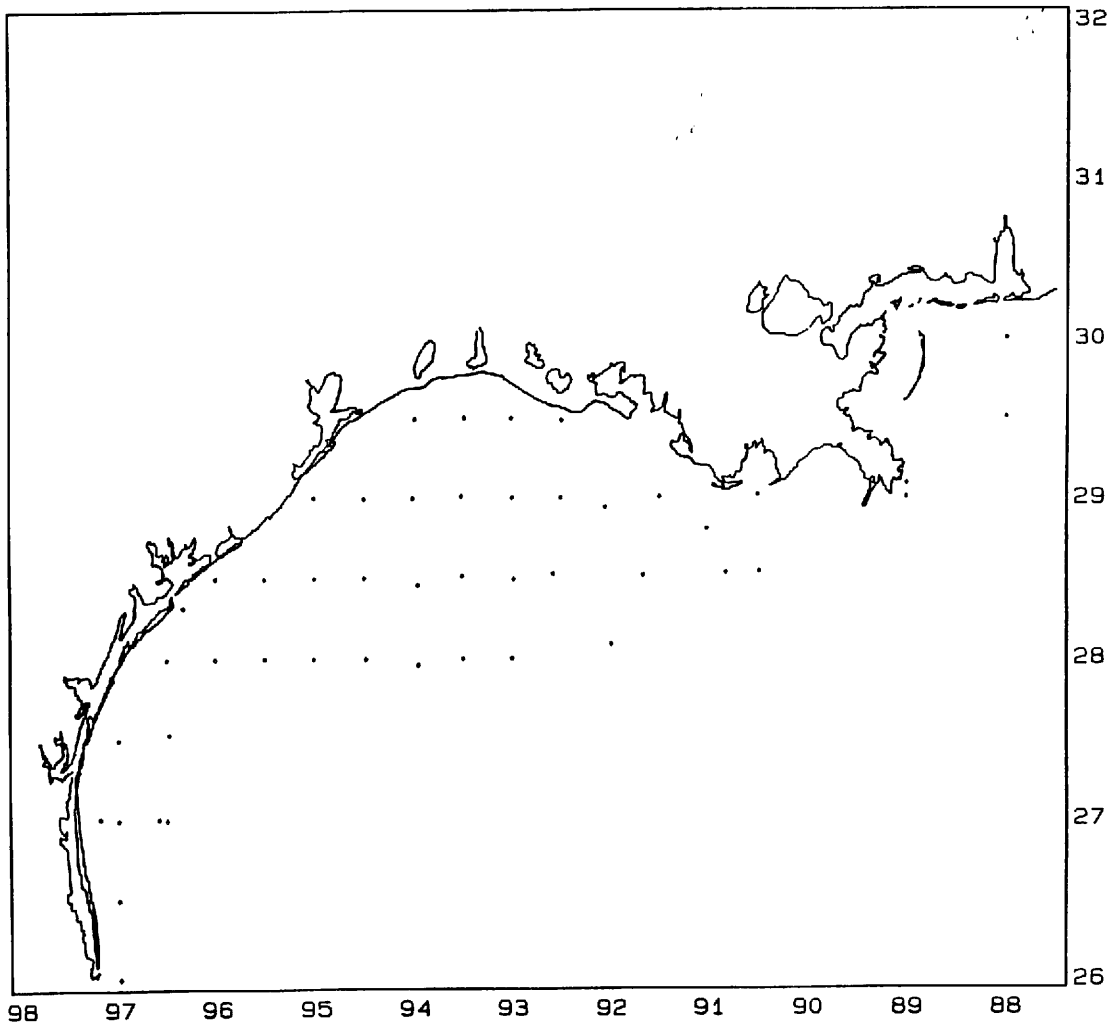

Figure 6. Locations of ichthyoplankton stations accomplished during *NOAA Ship Oregon II* cruise 226 (OT-97-03).

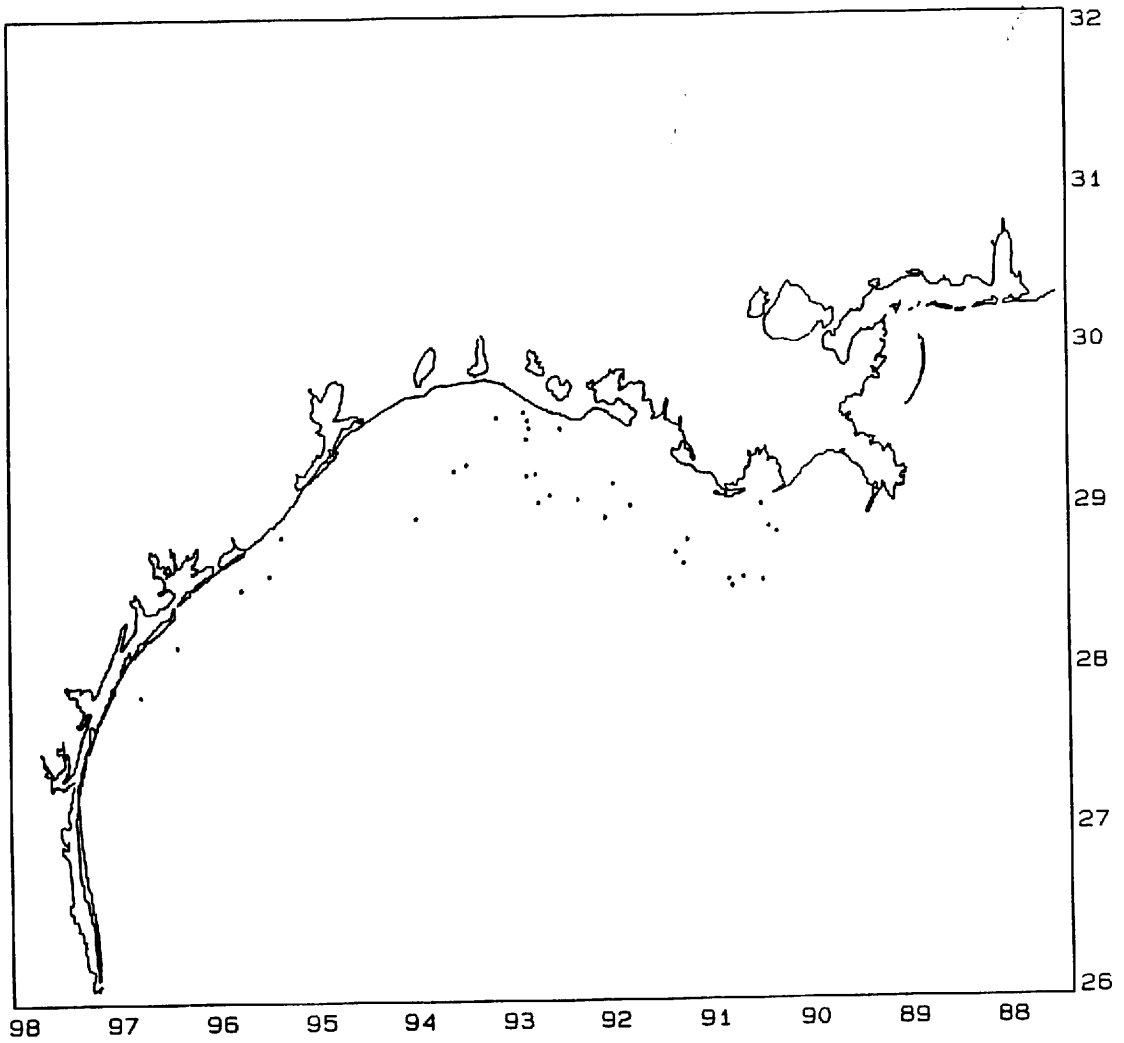

Figure 7. Locations where hypoxic conditions (bottom dissolved oxygen measurements ≤ 2.0 milligrams per liter) were encountered during *NOAA Ship Oregon II* cruise 226 (OT-97-03).