

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

NOAA Ship *Oregon II* Cruise 289 (R2-09-05)
10/07-11/20/2009

INTRODUCTION

NOAA Ship *Oregon II* departed Pascagoula, Mississippi on October 7, 2009 for the thirty-eighth annual Fall Southeast Area Monitoring and Assessment Program (SEAMAP) Shrimp/Bottom fish 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 the survey is to study the abundance and distribution of demersal organisms occurring in the northern Gulf of Mexico in 5 to 60 fm and to provide additional biological and catch rate information on demersal organisms occurring in the study area.

Twenty-six hours were lost due to transporting crew ashore for personal reasons. Eighty-one hours were lost due to weather and mechanical issues aboard NOAA Ship *Oregon II*. There were two scheduled port calls to exchange scientific personnel (Galveston, Texas October 22 to 24 and Pascagoula, Mississippi November 13 to 20). The ship returned to Pascagoula, Mississippi on November 20, 2009.

OBJECTIVES

- 1) Sample demersal fauna of the north-central and north-western Gulf of Mexico in depths of 5 to 60 fm with SEAMAP standard sampling gear to determine the abundance and distribution of benthic fauna.
- 2) Obtain length measurements to estimate size structures of sampled populations.
- 3) Collect ichthyoplankton samples to determine the relative abundance and distribution of eggs and larvae of commercially and recreationally important fish species.
- 4) Conduct CTD casts to profile water temperature, salinity, dissolved oxygen, fluorometry and percent light transmission.

- 5) Collect fish and invertebrate samples as requested by staff members of the Center for Fisheries Research and Development, Gulf Coast Research Laboratory (GCRL), The University of Southern Mississippi.
- 6) Collect batfish (*Ogcocephalus* sp.); Atlantic croaker (*Micropogonias undulatus*), grouper (*Epinephelus* sp. and *Mycteroperca* sp.); sharks, dogfish (*Mustelus* sp.), skates and rays (Elasmobranchii); red snapper (*Lutjanus campechanus*); vermilion snapper (*Rhomboplites aurorubens*); and tilefish (Malacanthidae) for age, growth, abundance and distributional studies.

MATERIALS AND METHODS

The sampling design used in this survey was altered from that used in previous years by making 3 major changes. Day/night stratification and depth stratification were eliminated and tow duration was limited to 30 min. These changes resulted in an increased efficiency of the survey and an increase in the number of stations that could be occupied. Additional stations resulted in improvement in precision of catch per unit effort (CPUE) estimates for a number of species.

Trawl catch data were electronically recorded at-sea with the Fishery Scientific Computing System (FSCS), version 1.6, developed by NOAA's System Development Branch of the Office of Marine & Aviation Operations. For FSCS to be operational, the Scientific Computing System (SCS) version 4.2.3 was used to collect metadata, including position, depth, date, time and meteorological data. SCS was also used to collect metadata for ichthyoplankton stations and CTD stations. Catches were either processed in their entirety or subsampled, depending on the total catch weight. If catches exceeded 50 lbs, then at least 10% was taken as a subsample. Catches (or subsamples) were sorted by species which were then enumerated and weighed. Additional data taken for specimens identified down to species level, included length measurements, sex, and gonad condition. Specimens that could not be identified to species level were frozen and brought back to the laboratory for identification.

Ichthyoplankton samples (conducted with bongo and neuston samplers) were collected at half-degree intervals of latitude and longitude within the defined survey area. Plankton sample sites were occasionally relocated to the nearest trawl sample site to optimize survey time. Bongo tows were made with 2 conical 61-cm nets with 0.333 mm mesh netting. General Oceanic flowmeters were suspended in each side of the frame to measure the amount of water filtered. Single oblique tows were made. Nets were towed at 1.5 to 2.0 kt to maintain a 45° wire angle of towing warp, and were fished to a maximum depth of 200 m or within 2 m of bottom in depths less than 200 m. Neuston sampling gear consisted of a 0.947 mm mesh net mounted on a 1 by 2 m frame. The net was towed for 10 min with the frame half submerged at the surface. Bongo and neuston samples were initially preserved in 10% buffered formalin and then transferred to 95% ethyl alcohol 36 hours later.

Vertical profiles of temperature, conductivity, dissolved oxygen, percent light transmission and fluorometer values were recorded with a Seabird SBE 911. Forel-ule water color, and percent cloud cover observations were also taken during daylight hours. A Hach LDO™ HQ10 portable dissolved oxygen meter was also used at these stations to compare DO readings.

RESULTS AND DISCUSSIONS

Two hundred and seventy-eight stations were successfully sampled (Figure 1). For summary purposes, data were grouped into 3 geographic areas; East Delta (88°00'-89°15' W Long), West Delta (89°15'-94°00' W Long), and Texas (94°00'-98°00' W Long), and 6 depth intervals; 5-9, 10-19, 20-29, 30-39, 40-49, and 50-60 fm (Table 2). Table 1 lists the 5 most numerous species caught, plus pink and white shrimp, and red snapper. The mean total catch rate for the survey was 123.6 kg per hour fished (kg/hr), a 10% decrease in relative abundance as compared to 2008 (137.0 kg/hr) and a 25% increase relative to the 5 year mean for 2004-2008 (92.4 kg/hr) (Table 2). Sciaenidae was the most abundant family caught with the Atlantic croaker making the greatest contribution (Table 2). Brown shrimp, *Farfantepenaeus aztecus*, was the most abundant commercial shrimp species, followed by white shrimp, *Litopenaeus setiferus* and pink shrimp, *Farfantepenaeus duorarum*.

Thirty-seven bongo and 38 neuston stations were accomplished (Fig. 2). 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 bongo samples were sent to the SEAMAP Plankton Archiving Center at the GCRL in Ocean Springs, Mississippi.

Three hundred and one CTD casts, 146 cloud cover and 77 water color measurements were collected (Table 3). There were no secci disc measurements taken on this years fall survey.

Fish and invertebrate samples were frozen and returned to staff members at GCRL, skate samples were collected for Dr. James Sulikowski, batfish species were collected for Bronson Nagareda, croaker were collected for Brittany Palm and red snapper samples were shipped to the Texas A&M University, Corpus Christi.

ACKNOWLEDGMENTS

On behalf of Mississippi Laboratory and the scientific party I would like to thank the Commanding Officer and crew of NOAA Ship *Oregon II* for a job well done during the survey.

CRUISE PARTICIPANTS

October 7 – 22, 2009

NAME	TITLE	ORGANIZATION
Michael Hendon	Field Party Chief	IAP, Pascagoula, MS
Carrie Horton	Watch Leader	IAP, Pascagoula, MS
Christian Jones	Watch Leader	NMFS, Pascagoula, MS
Brittany Palm	Fisheries Biologist	IAP, Pascagoula, MS
Butch Sutton	Fish Meth. & Equip. Spec.	IAP, Pascagoula, MS
Michael Holley	Computer Specialist	IAP, Pascagoula, MS
Bronson Nagareda	Cooperator	Honolulu, HI
Sandra Coghlan	Cooperator	Ocean Springs, MS
Jeneane Davis	Electronic Engineer	Stennis Space Center, MS

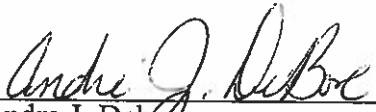
October 24 - November 9, 2009

NAME	TITLE	ORGANIZATION
Andre J. Debose	Field Party Chief	NMFS, Pascagoula, MS
Adam Pollack	Watch Leader	IAP, Pascagoula, MS
Carrie Horton	Watch Leader	IAP, Pascagoula, MS
Michael Felts	Fisheries Biologist	IAP, Pascagoula, MS
Nelson May	Remote Sensing Spec.	NMFS, Stennis Space Center
Brittany Palm	Fisheries Biologist	IAP, Pascagoula, MS
William Driggers	Fisheries Biologist	NMFS, Miami, FL
Sandra Coghlan	Cooperator	Ocean Springs, MS

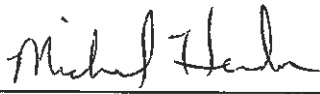
November 13 – November 20, 2009

NAME	TITLE	ORGANIZATION
Andre J. Debose	Field Party Chief	NMFS, Pascagoula, MS
Adam Pollack	Watch Leader	IAP, Pascagoula, MS
Paul Felts	Watch Leader	NMFS, Pascagoula, MS
Michael Felts	Fisheries Biologist	IAP, Pascagoula, MS
Brittany Palm	Fisheries Biologist	IAP, Pascagoula, MS
Elizabeth Coghlan	Cooperator	Ocean Springs, MS
Jessica Brantley	Cooperator	Brooklyn, AL
Bronson Nagareda	Cooperator	Honolulu, HI

Submitted By:

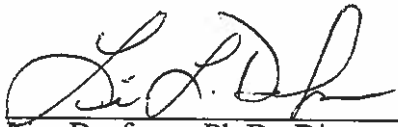

Andre J. Debose
Field Party Chief, Leg II & III

Date 1-19-2010

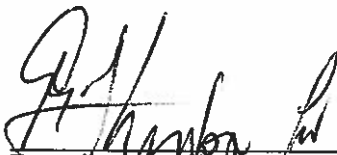

Michael Hendon
Field Party Chief, Leg I

Date 1/19/10

Approved By:


Lisa Desfosse, Ph.D., Director
Mississippi Laboratory

Date 2/9/10


Bonnie Ponwith, Ph.D., Director
Southeast Fisheries Science Center

Date _____

Table 1. Five most numerous organisms caught during NOAA Ship *Oregon II* Cruise 289 (R2-09-05) plus brown, white, and pink shrimp; and red snapper (n = 271). Species are sorted in descending order of numbers caught.

	Name	Percent of Total Number Caught	Percent of Total Catch Weight	Percent Frequency Of Capture	Average Weight Per Individual (gms)
1	Atlantic croaker (<i>Micropogonias undulatus</i>)	47.5	46.4	87.1	42
2	Brown shrimp (<i>Farfantepenaeus aztecus</i>)	6.5	3.9	86.7	26
3	Longspine porgy (<i>Stenotomus caprinus</i>)	5.4	4.6	74.5	37
4	Atlantic bumper (<i>Chloroscombrus chrysurus</i>)	4.0	2.3	45.4	25
5	Blackear sea bass (<i>Serranus atrobranchus</i>)	2.8	0.7	44.6	11
6	Lesser blue crab (<i>Callinectes similis</i>)	1.7	0.9	64.9	22
7	White shrimp (<i>Litopenaeus setiferus</i>)	1.0	0.9	39.1	36
8	Red snapper (<i>Lutjanus campechanus</i>)	1.3	1.0	76.8	33
9	Pink shrimp (<i>Farfantepenaeus duorarum</i>)	0.1	0.1	15.5	24

Table 2. Mean catch rates (kg/hr) of five abundant species, pink and white shrimp, red snapper, and total live catch for NOAA Ship Oregon II Cruise 289 (R2-09-05) by area, depth, and diurnal strata.

Area	Depth																		Diurnal Period						Total	
	5-9			10-19			20-29			30-39			40-49			50-60			Day			Night			N	Mean
	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N		
Atlantic croaker	1	3.2	9	125.4	10	75.8	2	17.4	6	92.2	16	85.8	22	87.5	22	60.4	113	49.9	271	57.3		
East Delta	22	63.4	42	104.2	16	52.5	17	10.2	12	3.3	4	1.0	51	53.6	62	66.0	113	60.4	136	49.9	271	57.3				
West Delta	22	90.5	61	76.9	23	3.5	21	0.9	6	0.1	3	0.0	64	48.2	72	51.4	136	49.9	271	57.3	271	57.3				
Texas	45	75.3	112	91.0	49	34.3	40	5.7	18	2.2	7	0.6	121	52.7	150	61.1	271	57.3	271	57.3	271	57.3				
Areas Combined	45	75.3	112	91.0	49	34.3	40	5.7	18	2.2	7	0.6	121	52.7	150	61.1	271	57.3	271	57.3	271	57.3				
Brown shrimp	1	0.4	9	1.0	10	8.3	2	11.0	6	1.1	16	6.8	22	5.2	22	4.5	113	5.1	271	4.8		
East Delta	22	0.0	42	1.5	16	6.4	17	11.2	12	10.1	4	7.1	51	4.7	62	4.3	113	4.5	136	5.1	271	4.8				
West Delta	22	0.1	61	5.7	23	6.8	21	7.1	6	4.8	3	2.2	64	5.2	72	5.0	136	5.1	271	4.8	271	4.8				
Texas	45	0.1	112	3.7	49	7.0	40	9.1	18	8.3	7	5.0	121	4.8	150	4.9	271	4.8	271	4.8	271	4.8				
Areas Combined	45	0.1	112	3.7	49	7.0	40	9.1	18	8.3	7	5.0	121	4.8	150	4.9	271	4.8	271	4.8	271	4.8				
Longspine porgy	1	0.0	9	0.0	10	20.1	2	17.1	6	0.0	16	14.7	22	10.7	22	6.1	113	4.5	271	5.6		
East Delta	22	1.3	42	3.0	16	13.6	17	11.0	12	6.4	4	11.8	51	7.3	62	5.1	113	6.1	136	4.5	271	5.6				
West Delta	22	0.1	61	2.6	23	7.0	21	8.2	6	8.6	3	20.5	64	3.2	72	5.6	136	4.5	271	5.6	271	5.6				
Texas	45	0.7	112	2.6	49	11.8	40	9.8	18	7.1	7	15.5	121	4.8	150	6.3	271	5.6	271	5.6	271	5.6				
Areas Combined	45	0.7	112	2.6	49	11.8	40	9.8	18	7.1	7	15.5	121	4.8	150	6.3	271	5.6	271	5.6	271	5.6				
Atlantic bumper	1	0.6	9	1.4	10	0.9	2	0.0	6	1.8	16	0.7	22	1.0	22	0.9	113	4.7	271	2.8		
East Delta	22	0.2	42	2.1	16	0.4	17	0.0	12	0.0	4	0.0	51	1.6	62	0.3	113	0.9	136	4.7	271	2.8				
West Delta	22	4.9	61	7.4	23	3.7	21	0.1	6	0.0	3	0.0	64	5.0	72	4.5	136	4.7	271	2.8	271	2.8				
Texas	45	2.5	112	4.9	49	2.0	40	0.0	18	0.0	7	0.0	121	3.4	150	2.4	271	2.8	271	2.8	271	2.8				
Areas Combined	45	2.5	112	4.9	49	2.0	40	0.0	18	0.0	7	0.0	121	3.4	150	2.4	271	2.8	271	2.8	271	2.8				

Table 2 continued.

Blackear sea bass

Area	Depth																		Diurnal Period						Total	
	5-9			10-19			20-29			30-39			40-49			50-60			Day			Night			N	Mean
	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean			
East Delta	1	0.0	9	0.0	0.0	10	0.2	2	0.1	2	0.4	12	1.5	4	1.6	51	0.3	62	0.3	113	0.3	22	0.1			
West Delta	22	0.0	42	0.0	0.0	16	0.3	17	0.4	12	0.4	12	1.5	4	1.6	64	1.5	72	1.5	136	1.5	271	0.9			
Texas	22	0.0	61	0.5	1.9	23	1.9	21	5.1	6	2.2	3	1.7	7	1.7	121	0.9	150	0.8	271	0.8	271	0.9			
Areas Combined	45	0.0	112	0.3	1.0	49	1.0	40	2.9	18	1.7	7	1.7	7	1.7	121	0.9	150	0.8	271	0.8	271	0.9			

Lesser blue crab

Area	Depth																		Diurnal Period						Total	
	5-9			10-19			20-29			30-39			40-49			50-60			Day			Night			N	Mean
	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean			
East Delta	1	0.1	9	0.3	1.2	2	0.4	2	0.4	12	0.3	4	0.0	51	0.6	62	0.5	113	0.5	136	0.5	22	0.7			
West Delta	22	0.1	42	0.6	1.2	17	0.5	12	1.7	6	0.1	3	0.0	64	1.6	72	1.4	136	1.4	271	1.4	271	1.1			
Texas	22	0.2	61	1.5	3.2	21	1.7	6	1.7	18	0.2	7	0.0	121	1.1	150	1.0	271	1.0	271	1.0	271	1.1			
Areas Combined	45	0.2	112	1.1	2.2	40	1.2	40	1.2	18	0.2	7	0.0	121	1.1	150	1.0	271	1.0	271	1.0	271	1.1			

White shrimp

Area	Depth																		Diurnal Period						Total	
	5-9			10-19			20-29			30-39			40-49			50-60			Day			Night			N	Mean
	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean			
East Delta	1	1.1	9	1.3	1.0	2	0.0	2	0.0	12	0.0	4	0.1	51	1.0	62	1.6	113	1.4	136	0.9	22	0.6			
West Delta	22	3.7	42	1.7	0.1	17	0.0	21	0.0	6	0.0	3	0.0	64	1.0	72	0.8	136	0.9	271	0.9	271	1.1			
Texas	22	4.2	61	0.4	0.0	23	0.0	40	0.0	18	0.0	7	0.0	121	1.0	150	1.1	271	1.1	271	1.1	271	1.1			
Areas Combined	45	3.9	112	1.0	0.0	49	0.0	40	0.0	18	0.0	7	0.0	121	1.0	150	1.1	271	1.1	271	1.1	271	1.1			

Red snapper

Area	Depth																		Diurnal Period						Total	
	5-9			10-19			20-29			30-39			40-49			50-60			Day			Night			N	Mean
	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean	N	N	Mean			
East Delta	1	0.2	9	0.3	2.1	2	2.1	2	2.1	12	1.7	4	2.7	4	2.7	51	1.1	62	0.6	113	0.8	22	1.3			
West Delta	22	0.0	42	0.4	1.5	17	1.1	12	1.6	6	0.1	3	4.0	64	1.9	72	1.3	136	1.5	271	1.5	271	1.2			
Texas	22	0.2	61	1.8	2.2	21	1.6	6	1.4	18	1.2	7	3.2	121	1.5	150	1.0	271	1.0	271	1.0	271	1.2			
Areas Combined	45	0.1	112	1.1	2.0	40	1.4	40	1.4	18	1.2	7	3.2	121	1.5	150	1.0	271	1.0	271	1.0	271	1.2			

Table 2 continued.

Pink shrimp

Area	Depth												Diurnal Period				Total	
	5-9		10-19		20-29		30-39		40-49		50-60		Day		Night		N	Mean
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean		
East Delta	1	0.1	9	0.1	10	0.0	2	0.0	.	.	.	.	6	0.0	16	0.0	22	0.0
West Delta	22	0.0	42	0.1	16	0.0	17	0.0	12	0.0	4	0.0	51	0.1	62	0.0	113	0.1
Texas	22	0.3	61	0.1	23	0.0	21	0.0	6	0.0	3	0.0	64	0.0	72	0.2	136	0.1
Areas Combined	45	0.1	112	0.1	49	0.0	40	0.0	18	0.0	7	0.0	121	0.1	150	0.1	271	0.0

Finfish

Area	Depth												Diurnal Period				Total	
	5-9		10-19		20-29		30-39		40-49		50-60		Day		Night		N	Mean
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean		
East Delta	1	62.9	9	154.8	10	167.7	2	74.6	.	.	.	.	6	119.5	16	160.3	22	149.2
West Delta	22	78.3	42	150.5	16	118.7	17	56.7	12	39.3	4	67.1	51	95.7	62	109.1	113	103.1
Texas	22	131.8	61	125.6	23	37.3	21	56.2	6	46.8	3	66.3	64	95.7	72	96.5	136	96.2
Areas Combined	45	104.1	112	137.3	49	90.5	40	57.3	18	41.8	7	66.8	121	96.9	150	108.5	271	103.3

Crustacea

Area	Depth												Diurnal Period				Total	
	5-9		10-19		20-29		30-39		40-49		50-60		Day		Night		N	Mean
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean		
East Delta	1	2.3	9	3.2	10	10.4	2	14.0	.	.	.	.	6	2.8	16	9.1	22	7.4
West Delta	22	4.4	42	4.3	16	8.8	17	12.7	12	11.4	4	9.3	51	7.3	62	7.0	113	7.1
Texas	22	5.5	61	9.2	23	11.6	21	11.8	6	6.1	3	3.8	64	9.3	72	9.0	136	9.1
Areas Combined	45	4.9	112	6.9	49	10.4	40	12.3	18	9.6	7	6.9	121	8.1	150	8.2	271	8.2

Total catch

Area	Depth												Diurnal Period				Total	
	5-9		10-19		20-29		30-39		40-49		50-60		Day		Night		N	Mean
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean		
East Delta	1	70.8	9	223.6	10	215.1	2	88.6	.	.	.	.	6	220.1	16	193.2	22	200.5
West Delta	22	106.4	42	156.5	16	131.9	17	71.5	12	53.4	4	80.2	51	107.4	62	124.6	113	116.8
Texas	22	192.8	61	138.2	23	49.8	21	69.9	6	61.7	3	75.1	64	114.5	72	118.8	136	116.8
Areas Combined	45	147.8	112	151.9	49	110.4	40	71.5	18	56.2	7	78.0	121	116.7	150	129.1	271	123.6

Table 3. Tally of scientific observations acquired during NOAA Ship *Oregon II* Cruise 289 (R2-09-05).

Observation	Number
Shrimp trawl *	278
Bongo	37
Neuston	38
CTD profile	301
Water color	77
Cloud cover	146

* Includes seven tows that were torn due to bottom obstructions.

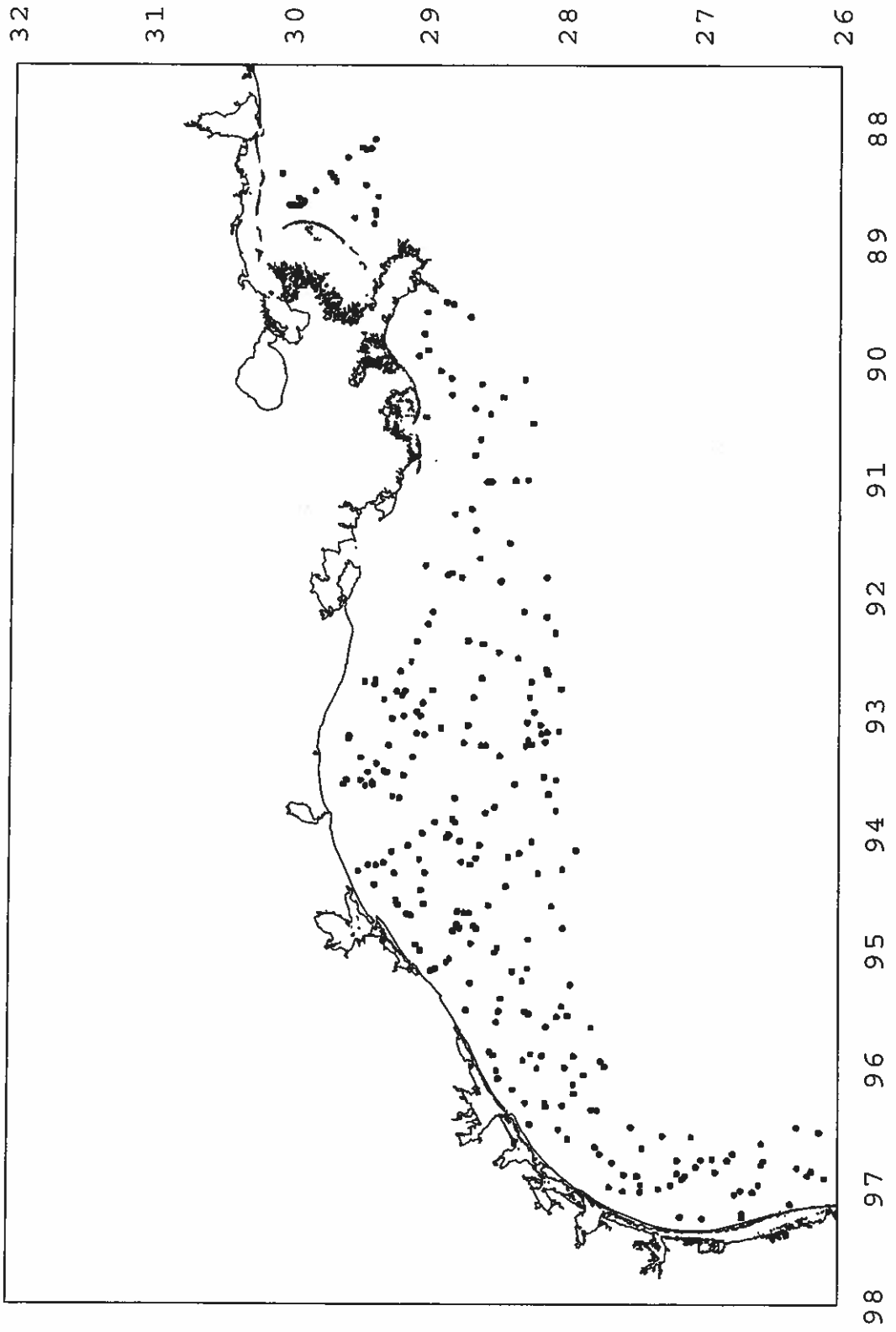


Figure 1. Shrimp trawl stations accomplished during NOAA Ship Oregon II Cruise 289 (R2-09-05).

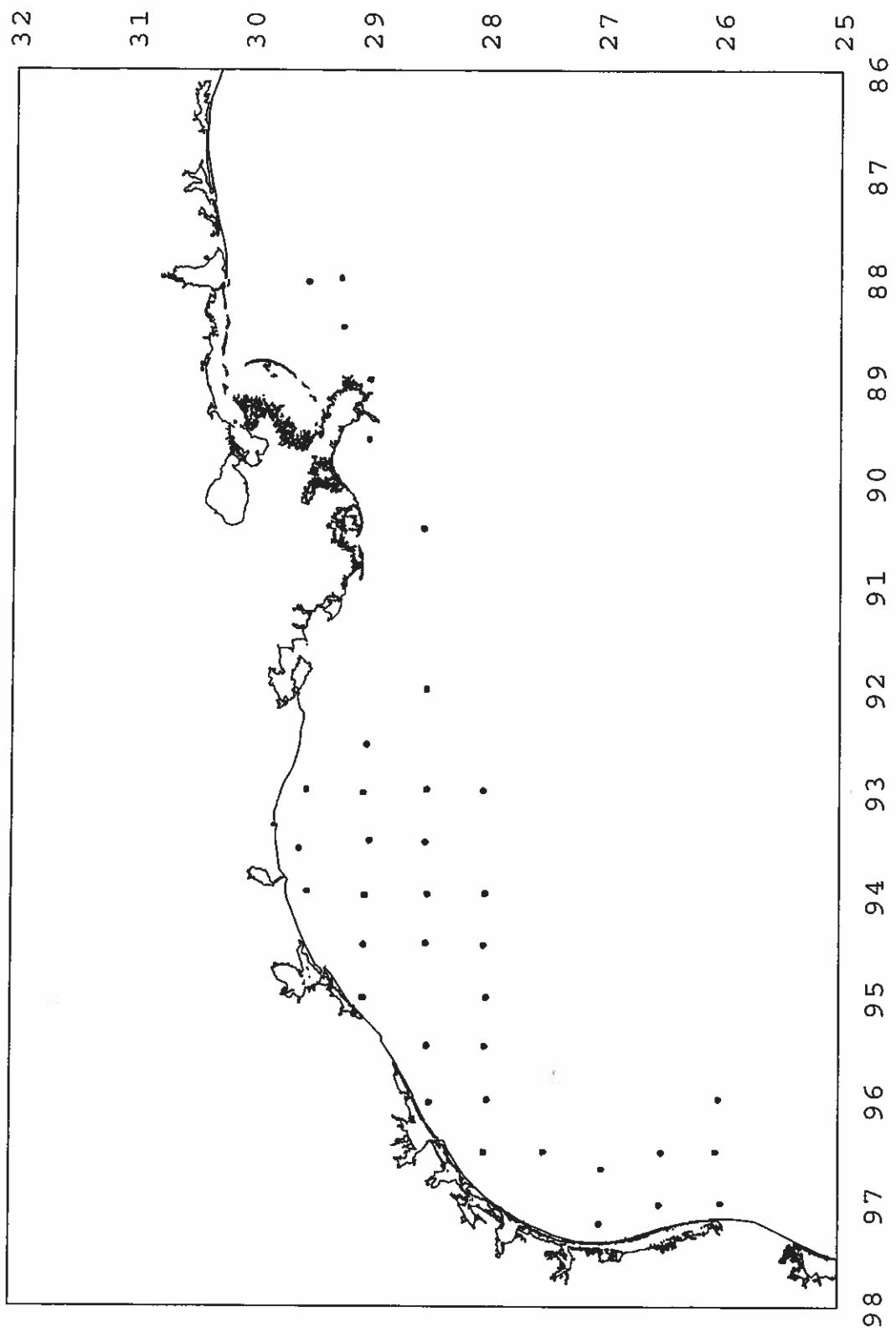


Figure 2. Ichthyoplankton sampling stations completed during NOAA Ship Oregon II Cruise 289 (R2-09-05).