U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Center
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GULF STATES MARINE
JUN 07
FISHERIES COMMISSION

NOAA Ship Oregon II Cruise 237 (OT-99-06)
10/13-11/22/99

INTRODUCTION

The *NOAA Ship Oregon II* departed Pascagoula, Miss. on October 13th, 1999 for the Southeast Area Monitoring and Assessment Program's (SEAMAP) twenty-eighth annual fall resource assessment survey in the northwestern and northcentral Gulf of Mexico. SEAMAP is a cooperative state-federal-university program for the collection, management and dissemination of fishery independent data. The pimary goal of the survey is to study the abundance and distribution of demersal organisms occurring in the study area.

No survey days were lost due to bad weather or equipment breakdown and the weather was, in general, unusually good. Two port calls were made to exchange scientific personnel; one in Galveston, Tex. on October 27th and another in Pascagoula on November 13th.

OBJECTIVES

1) Sample the demersal fauna of the northcentral and northwestern Gulf of Mexico in depths of 5 to 60 fathoms.

2) 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 and fluorometry.

5) Obtain length measurements to estimate size structures of sampled populations.

6) Conduct paired comparison towing with *NOAA Ship Gordon Gunter*.

7) Collect fish and invertebrate samples as requested by staff members of the Institute of Marine Sciences, Gulf Coast Research Laboratory (GCRL).

8) Collect juvenile red snapper (*Lutjanus campechanus*) for Louisiana State University.

MATERIALS AND METHODS

The sampling gear consisted of 40-ft shrimp nets with 8-ft by 40-in chain bracketed wooden doors. A standard free tickler chain cut 42 inches shorter than the footrope was used to stimulate benthic organisms into the path of the oncoming net. Towing speed varied from 2.50 to 2.75 knots. Sample sites were randomly selected within area, depth and diel strata. Area strata consisted of gulf coast shrimp statistical zones 11-12 (88°00'-89°00' w long), 13-15 (89°00'-92°00' w long), 16-17 (92°00'-94°00' w long), 18-19 (west of 94°00' w long and north of 28°00' n lat), and 20-21 (26°00'-28°00' n lat). Depth strata consisted of 1-fm intervals from 5 to 20 fms, a 2-fm interval from 20 to 22 fms, a 3-fm interval from 22 to 25 fms, 5-fm intervals from 25 to 50 fms and a 10-fm interval from 50 to 60 fms. Diel strata consisted of day and night, and were delimited by sunrise and sunset. Minimum and maximum tow durations were 10 and 55 minutes respectively, depending on the time required to transect the respective depth strata. If a stratum was not completed in 55 minutes then additional tows were made until it was covered. Tow direction was determined as the shortest distance between strata boundaries (generally perpendicular to depth contours).

NOAA Ship Gordon Gunter accompanied *NOAA Ship Oregon II* throughout the cruise track and conducted paired comparison towing with 40-ft shrimp trawls and 90-ft fish trawls.

Ichthyoplankton samples (bongo and neuston) were collected at half-degree intervals of latitude and longitude within the defined survey area. Plankton sampling sites were occasionally relocated to the nearest trawling sample site to optimize survey time. Bongo tows were made with two conical 61-centimeter nets with 0.333 mm mesh netting. Digital flowmeters were suspended in each side of the frame to measure the amount of water filtered. Nets were towed at 1.5-2.0 knots to maintain a 45° wire angle of towing warp, and were fished to within two meters of bottom. Neuston sampling gear consisted of a 0.947 mm mesh net mounted on a 1 by 2 meter frame. The net was towed for 10 minutes 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 48 hours later.

Temperature, salinity, dissolved oxygen, and fluorometer readings were recorded at the surface, mid, and maximum depths with a Seabird SBE 911 CTD unit (complete profiles were archived for later analyses). Forel-ule water color, secchi disc, and percent cloud cover observations were also taken during daylight hours.

RESULTS

One hundred ninety six of two hundred thirty strata (85%) were successfully sampled by *NOAA Ship Oregon II* (Table 1). An additional 30 strata were sampled by state vessels (22 by *R/V Tommy Munro* of Mississippi and 8 by *R/V A. E. Verrill* of Alabama). Four strata were not sampled because nets were torn due to bottom obstructions.

Two hundred forty two tows were required to sample the selected strata (Figure 1). For summary purposes, data were grouped into three 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 six depth intervals; 5-9, 10-19, 20-29, 30-39, 40-49, and 50-60 fms (Table 2). The mean total catch rate for the entire survey was 65.8 kilograms per hour fished (kg/hr), a 25% decrease in relative abundance as compared to 1998 and 32% below the five year mean for 1994-1998. Low estimates of relative abundance were encountered throughout the study area. Abundance estimates for East and West Delta areas were 30% less than 1998 estimates while Texas was 16% less. Sciaenidae was the most abundant family caught with Atlantic croaker (*Micropogonias undulatus*) making the greatest contribution (Table 3).

Forty five bongo and neuston tows were accomplished (Figure 2). Samples were returned to Pascagoula for processing and subsequent shipment to the Polish Sorting Center and SEAMAP Invertebrate Plankton Archiving Center.

Two hundred twenty three CTD casts, twenty nine cloud cover, and sixty four water color and secchi disc measurements were collected (Table 4).

Numerous fish and invertebrate samples were frozen and returned to staff members of the Institute of Marine Sciences, GCRL; and red snapper samples were forwarded to the Louisiana State University.

My thanks are extended to the scientific and vessel crew members whose cooperative efforts contributed to a successful survey. Special thanks are extended to the Mississippi State University which provided five scientists (two faculty and three students) for the final leg. Their efforts contributed significantly towards accomplishing NMFS goals.

CRUISE PARTICIPANTS

10/13-27/99

NAME		
Nathaniel Sanders, Jr.	Field Party Chief	NMFS Pascagoula, Miss.
Melissa Bahnick	Watch Leader	NMFS Pascagoula, Miss.
André Debose	Watch Leader	NMFS Pascagoula, Miss.
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10/28-11/13/99

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William Monroe	Staff Biologist	Miss. State Univ.
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Submitted By:

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Table 1. Distribution of sampling effort by strata for *NOAA Ship Oregon II* Cruise 237 (OT-99-06). Numbers in table body indicate number of times strata were sampled. "Ala." and "Miss." indicate strata sampled by the respective states, and "tore net" indicates strata which were unsuccessfully sampled due to bottom obstructions.

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	Miss.	1	1	1	1	Miss.	1	1	1	1
6-7	Ala.	1	1	1	1	Ala.	1	1	1	1
7-8	Miss.	1	1	1	1	Miss.	1	1	1	1
8-9	Ala.	1	1	1	1	Ala.	1	1	1	1
9-10	Miss.	1	1	1	1	Miss.	1	1	1	1
10-11	Miss.	1	1	1	1	Ala.	1	1	1	1
11-12	Miss.	1	1	1	1	Miss.	1	1	1	1
12-13	Miss.	1	1	1	1	Miss.	1	1	1	1
13-14	Miss.	1	1	1	1	Miss.	1	1	1	1
14-15	Miss.	1	1	1	1	Ala.	1	1	1	1
15-16	Miss.	1	1	1	1	Miss.	1	1	1	1
16-17	Ala.	1	1	1	1	Miss.	1	1	1	1
17-18	Ala.	1	1	1	1	1	1	1	1	1
18-19	Miss.	1	1	1	1	Miss.	1	1	1	1
19-20	1	1	1	1	1	1	1	1	1	1
20-22	Miss.	1	1	1	1	1	1	1	1	1
22-25	Miss.	1	1	1	1	1	1	1	1	Tore net
25-30	1	1	1	1	1	Miss.	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	Tore net	1	1	1	1	1	1	1	1
45-50	Tore net	1	1	1	1	1	1	1	1	1
50-60	Tore net	1	1	1	1	1	1	1	1	1

Table 2. Mean catch rates (kg/hr) of five abundant finfish species and three shrimp species caught during *NOAA Ship Oregon II* Cruise 237 (OT-99-06) by area, depth and diel strata.

Area	Depth (fms)						Diurnal Period		Total
	5 - 9	10-19	20-29	30-39	40-49	50-60	Day	Night	
Atlantic croaker									
East Delta	.	7.3	2.7	1.3	3.9	1.6	0.4	4.7	3.1
West Delta	20.5	41.5	13.7	3.7	0.2	0.0	8.4	34.3	22.0
Texas	0.9	3.5	1.2	0.9	0.0	0.0	1.1	2.5	1.8
All Areas	11.2	21.8	6.8	2.2	0.6	0.1	4.4	17.6	11.3
Longspine porgy									
East Delta	.	55.9	9.9	11.9	14.4	20.4	11.3	25.0	19.7
West Delta	1.6	7.6	5.1	4.5	8.9	7.2	6.4	5.1	5.7
Texas	0.0	0.2	1.4	7.2	5.6	7.0	2.0	2.1	2.0
All Areas	0.9	5.7	3.7	7.0	8.2	8.0	4.5	5.5	5.0
Atlantic bumper									
East Delta	.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
West Delta	16.7	12.9	0.2	0.2	0.0	0.0	14.6	2.1	8.0
Texas	46.4	14.7	5.6	0.6	0.2	0.0	27.7	2.2	14.9
All Areas	30.8	13.3	2.7	0.3	0.1	0.0	20.1	2.0	10.6
Silver seatrout									
East Delta	.	0.0	0.5	0.1	0.0	0.0	0.0	0.2	0.1
West Delta	2.1	3.8	0.6	0.1	0.0	0.0	2.3	1.5	1.9
Texas	2.3	1.2	0.2	0.0	0.0	0.0	1.3	0.5	0.9
All Areas	2.2	2.4	0.4	0.0	0.0	0.0	1.7	1.0	1.3

Table 2. (continued)

Area	Depth (fms)						Diurnal Period		Total
	5 - 9	10-19	20-29	30-39	40-49	50-60	Day	Night	
Gulf butterfish									
East Delta	.	0.0	0.0	6.5	15.6	0.0	12.4	0.5	5.1
West Delta	1.9	3.7	10.5	0.4	2.1	0.3	7.4	0.5	3.8
Texas	1.9	1.3	1.9	0.9	0.7	2.3	2.9	0.1	1.5
All Areas	1.9	2.4	5.4	1.9	3.3	1.3	5.5	0.3	2.8
Brown shrimp									
East Delta	.	0.0	0.6	2.0	3.5	4.7	0.2	2.8	1.8
West Delta	0.8	2.1	1.9	3.8	2.3	0.8	1.1	2.8	2.0
Texas	0.2	1.5	1.2	1.7	1.9	0.5	0.5	1.9	1.2
All Areas	0.5	1.8	1.5	2.6	2.3	0.9	0.7	2.4	1.6
White shrimp									
East Delta	.	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
West Delta	0.7	0.2	0.1	0.0	0.0	0.0	0.2	0.3	0.2
Texas	1.0	0.3	0.0	0.0	0.0	0.0	0.2	0.4	0.3
All Areas	0.9	0.3	0.0	0.0	0.0	0.0	0.2	0.3	0.3
Pink shrimp									
East Delta	.	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
West Delta	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Texas	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1
All Areas	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0

Table 2. continued

Area	Depth (fms)						Diurnal Period		Total
	5 - 9	10-19	20-29	30-39	40-49	50-60	Day	Night	
Crustacea									
East Delta	.	1.7	3.6	4.1	5.4	6.0	0.5	6.1	3.9
West Delta	2.7	4.7	3.4	5.5	3.3	4.3	1.7	6.1	4.0
Texas	2.2	3.2	2.7	3.0	2.4	1.9	1.4	4.2	2.8
All Areas	2.5	3.9	3.1	4.3	3.2	3.2	1.5	5.2	3.4
Finfish									
East Delta	.	116.5	37.4	58.1	111.5	150.8	50.3	94.4	77.3
West Delta	69.8	90.7	49.4	39.0	32.3	61.6	59.4	72.6	66.4
Texas	71.0	30.9	22.0	23.6	39.2	55.6	50.1	25.7	37.9
All Areas	70.4	62.4	35.2	37.5	45.6	65.0	54.4	53.6	54.0
Total Catch									
East Delta	.	118.2	44.2	62.6	117.5	156.8	51.1	102.0	82.2
West Delta	73.8	102.1	53.1	45.4	37.5	66.7	62.1	83.7	73.5
Texas	145.9	37.6	25.2	27.4	43.3	20.2	71.5	39.4	55.4
All Areas	108.1	71.2	39.0	42.5	50.5	69.9	66.0	65.6	65.8
Sampling Distribution (number of tows)									
East Delta	.	3	4	7	3	1	7	11	18
West Delta	22	41	19	14	10	6	53	59	112
Texas	20	42	21	12	10	7	56	56	112
All Areas	42	86	44	33	23	14	116	126	242

Table 3. Organisms caught during *NOAA Ship Oregon II* Cruise 237 (OT-99-06) which comprised at least 1.0% of the total catch in terms of numbers and kilograms caught per hour fished (n=242).

	Name	Percent of Total Number Caught	Percent of Total Catch Weight	Percent Frequency of Capture	Weight Per Individual (gms)
1	Atlantic bumper (*Chloroscombrus chrysurus*)	40.0	16.2	48.3	11.8
2	Atlantic croaker (*Micropogonias undulatus*)	9.9	17.1	77.3	50.2
3	Longspine porgy (*Stenotomus caprinus*)	5.5	7.7	68.2	40.5
4	Brown shrimp (*Penaeus aztecus*)	3.7	2.4	86.4	19.4
5	Gulf butterfish (*Peprilus burti*)	1.8	4.3	47.9	70.2
6	Silver seatrout (*Cynoscion nothus*)	1.1	2.0	45.0	52.3
7	Moonjelly (*Aurelia aurita*)	1.1	9.8	14.5	266.6
8	Bigeye searobin (*Prionotus longispinosus*)	1.0	1.3	47.5	36.6
9	Rock sea bass (*Centropristis philadelphica*)	1.0	1.6	65.3	45.1
10	Rough scad (*Trachurus lathami*)	1.0	1.0	36.0	30.1
Totals		66.1	63.4		

Table 4. Summary of environmental samples and data collected during *NOAA Ship Oregon II* Cruise 237 (OT-99-06).

	Surface	Mid-depth	Maximum depth	Total
Temperature	223	223	223	646
Salinity	223	223	223	646
Dissolved oxygen	223	223	223	646
Secchi disk	--	--	--	64
Water color	--	--	--	64
Cloud cover	--	--	--	29
CTD	--	--	--	223
Shrimp trawl	--	--	--	279
Bongo	--	--	--	45
Neuston	--	--	--	45

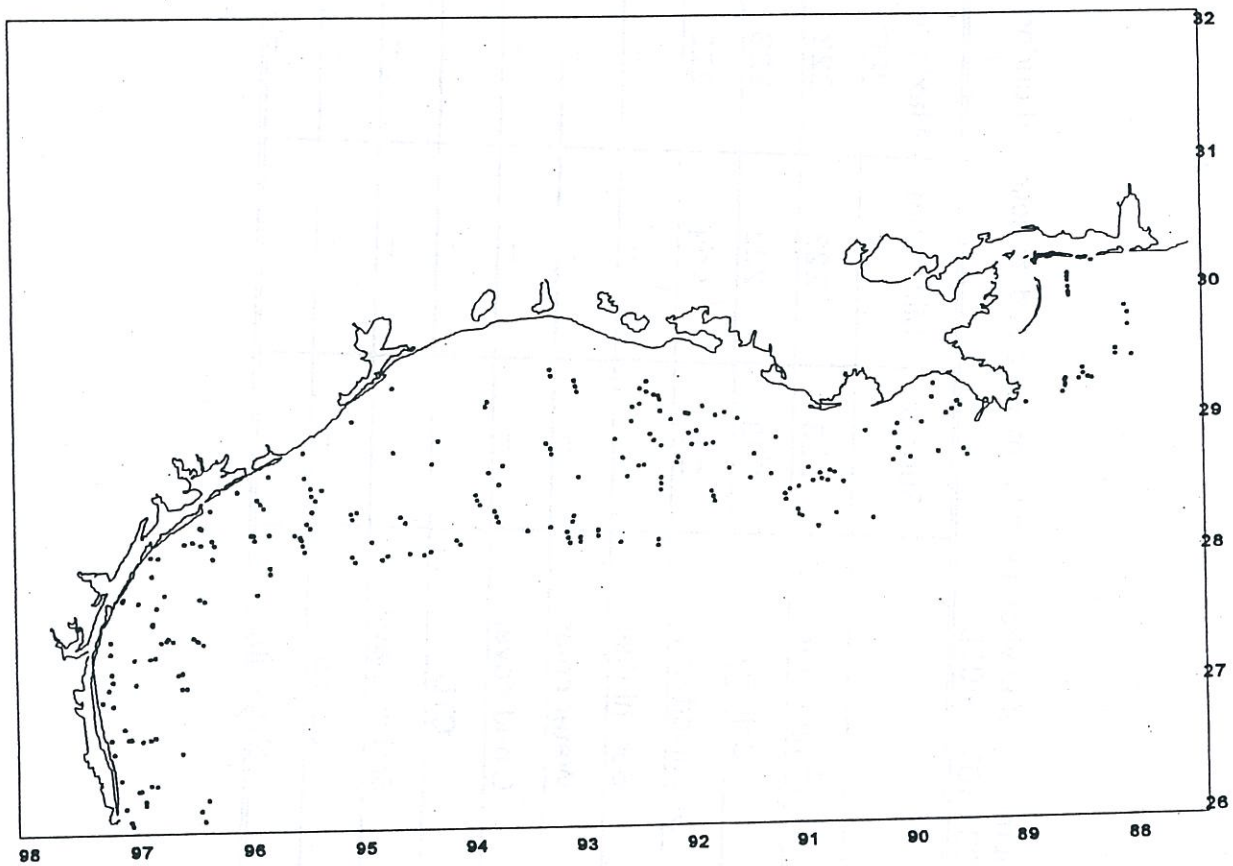

Figure 1. Shrimp trawl sampling stations completed during *NOAA Ship Oregon II* Cruise 237 (OT-99-06).

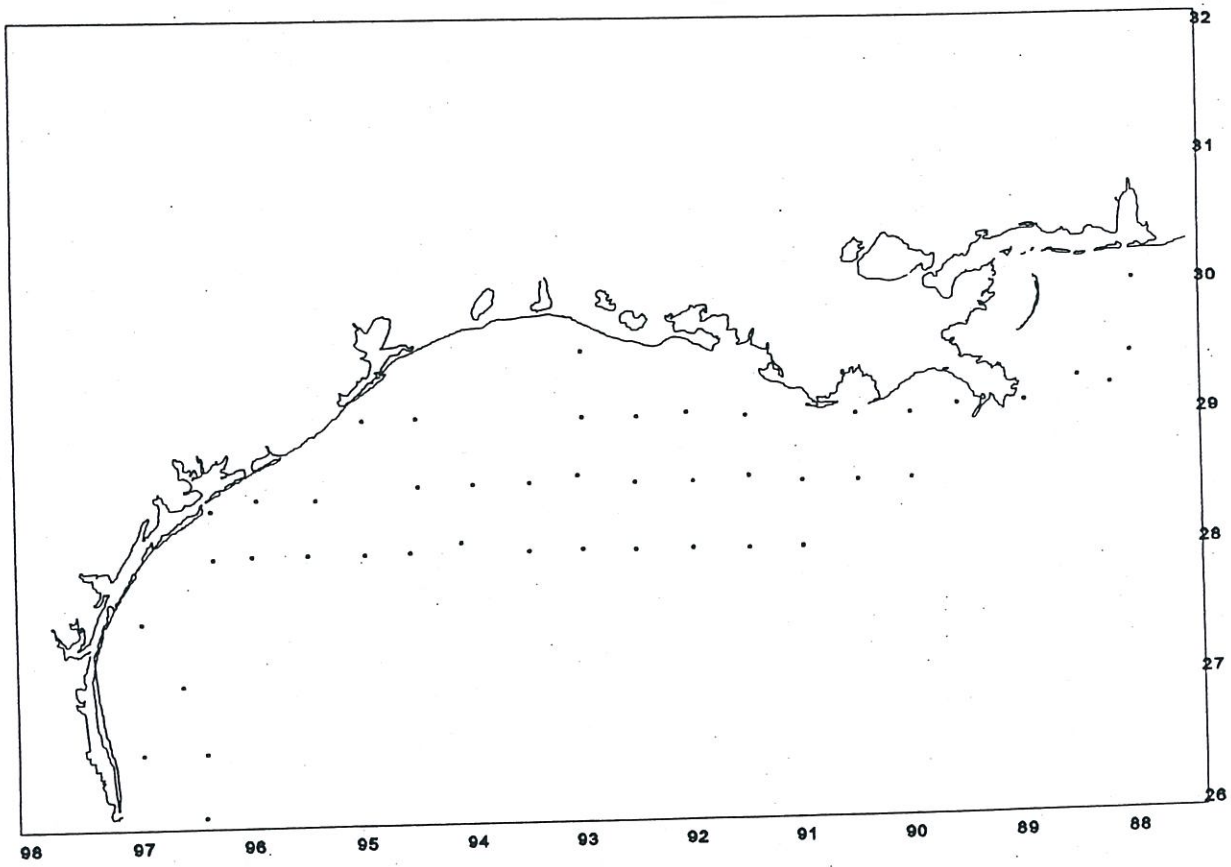

Figure 2. Ichthyoplankton sampling stations completed during *NOAA Ship Oregon II* Cruise 237 (OT-99-06).