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

NOAA Ship Oregon II Cruise 256 (OT-03-05)
10/07-11/18/03

INTRODUCTION

The *NOAA Ship Oregon II* departed Pascagoula, Miss. on October 08th at 1800 hours for the Southeast Area Monitoring and Assessment Program's (SEAMAP) 32nd annual Fall Shrimp and Bottomfish 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 primary goal of the survey is to study the abundance and distribution of demersal organisms occurring in the study area.

Two port calls were made to exchange scientific personnel; one in Galveston, Tex. on October 22nd and another in Pascagoula on November 12th.

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, fluorometry and percent light transmission.

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

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

7) Collect sharks (*Mustelus* sp.), wenchmen (*Pristipomoides aquilonaris),* toad fish (*Opsanus beta),* anchor tilefish (*Caulolatilus intermedius),* pancake batfish (*Halieutichthys aculeatus),* batfish (*Ogcocephalus* sp.), yellowedge grouper (*Epinephelus flavolimbatus*), rough scad (*Trachurus lathami*), round scad (*Decapterus punctatus*) and bigeye scad (*Selar crumenophthalmus*) for age, growth and distributional studies.

8) Collect red porgies (*Pagrus pagrus)* for genetic studies by South Carolina Department of Marine Resources.

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 out of the substrate and into the path of the oncoming net. Towing speed was targeted at 2.50 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 astronomical 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).

Ichthyoplankton samples (conducted with bongo and neuston samplers) 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 a maximum depth of 200 meters or within two meters of bottom in depths less than 200 meters. 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, percent light transmission 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

Two hundred twenty two of two hundred thirty strata (96%) were successfully sampled by *NOAA Ship Oregon II* (Table 1). An additional 3 strata were sampled by

R/V Tommy Munro of Mississippi and one stratum was not sampled because the net was torn on bottom obstructions. Four strata were not sampled because tows were conducted in wrong depths.

Two hundred sixty-five 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 65.5 kilograms per hour fished (kg/hr), a 19% increase in relative abundance as compared to 2002 and almost equal to the five year mean for 1998-2002 (67.7 kg/hr). Sciaenidae was again the most abundant family caught with Atlantic croaker (*Micropogonias undulatus*) making the greatest contribution (Table 3).

Fifty four bongo and fifty four neuston tows were accomplished by *NOAA Ship Oregon II* (Figure 2). There was only one station that could not be completed due to weather. Samples were returned to Pascagoula for processing, and subsequent shipment to the Polish Sorting Center and SEAMAP Invertebrate Plankton Archiving Center.

Two hundred forty one CTD casts, one hundred one cloud cover, seventy one water color and sixty three secchi disc measurements were collected (Table 4).

Fish and invertebrate samples were frozen and returned to staff members of the Institute of Marine Sciences, GCRL; red porgy samples were collected and sent to the South Carolina Department of Marine Resources.

CRUISE PARTICIPANTS

10/07-22/03

NAME		
Andre Debose	Field Party Chief	NMFS Pascagoula, Miss.
Alonzo Hamilton	Watch Leader	NMFS Pascagoula, Miss.
Andrew Paul Felts	Watch Leader	NMFS Pascagoula, Miss.
Michael Hendon	Watch Leader	Johnson Controls
Michael Felts	Fisheries Biologist I	Johnson Controls
Butch Sutton	Fish. Gear Spec.	Johnson Controls
Keith Bates	Fish. Gear Spec.	Johnson Controls
Lanora Lang	Fisheries Biologist I	Johnson Controls
Bronson Nagareda	Cooperator	Fla. Inst. Tech.

10/23-11/07/03

Andre Debose	Field Party Chief	NMFS Pascagoula, Miss.
Lanora Lang	Watch Leader	Johnson Controls
Michael Hendon	Watch Leader	Johnson Controls
Carrie Horton	Fisheries Biologist I	Johnson Controls
Nelson May	Fisheries Biologist I	NMFS Stennis Space Center
Michael Felts	Fisheries Biologist I	Johnson Controls
Kirk Kilfoyle	Diver	Johnson Controls

11/12-18/03

Andre Debose	Field Party Chief	NMFS Pascagoula, Miss.
Dean Landi	Watch Leader	Johnson Controls
Lanora Lang	Watch Leader	Johnson Controls
Kevin Berry	Fisheries Biologist	Johnson Controls
Tammy Shiflett	Teacher At Sea	Ga. School Sys.
Don Jackson	Cooperator	MSU
Mary (Beth) Lavalley	Cooperator	MSU Student
Ali Legget	Cooperator	MSU Student
Ryan Jones	Cooperator	MSU Student
Nathan Maples	Cooperator	MSU Student
Dan O'Keefe	Cooperator	MSU Student
Jarrod Fogarty	Cooperator	MSU Student

Submitted By:

Andre J. Debose
Chief Scientist

Nancy Thompson,
Director,
Southeast Fisheries Science Center

Approved By:

Scott Nichols, Director,
Mississippi Laboratories

Table 1. Distribution of sampling effort by strata for *NOAA Ship Oregon II* Cruise 256 (OT-03-05). Numbers in table body indicate number of times strata were sampled. "Miss." indicates strata sampled by the state of Mississippi, and "tore net" indicates strata which were unsuccessfully sampled due to bottom obstructions. Periods indicate strata that were not sampled.

Depth Strata (fathoms)	Diel 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	.	Miss.	1	1	.	.
6-7	1	1	1	1	1	1	1	1	1	.
7-8	1	1	1	1	1	1	1	1	1	1
8-9	1	1	1	1	1	1	1	1	1	1
9-10	1	1	1	1	1	1	1	1	1	1
10-11	1	1	1	1	1	1	1	1	1	1
11-12	1	1	1	1	1	1	1	1	1	1
12-13	1	1	1	1	1	1	1	1	1	1
13-14	1	1	1	1	1	1	1	1	1	1
14-15	1	1	1	1	1	1	1	1	1	1
15-16	1	1	1	1	1	1	1	1	1	1
16-17	1	1	1	1	1	1	1	1	1	1
17-18	1	1	1	1	1	1	1	1	1	Torn net
18-19	Miss.	1	1	1	1	1	1	1	1	1
19-20	1	1	1	1	1	1	1	1	1	1
20-22	1	1	1	1	1	1	1	1	1	1
22-25	1	1	1	1	1	1	1	1	1	1
25-30	1	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	1
45-50	1	1	1	1	1	1	1	1	1	1
50-60	1	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 256 (OT-03-05) 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			
Total Catch																		
	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N	Mean
East Delta	9	27.5	18	30.4	9	80.5	4	65.6	4	59.8	2	81.2	21	49.0	25	46.1	46	47.4
West Delta	21	72.7	40	113.4	15	75.6	18	49.9	8	47.3	9	73.7	57	73.4	54	91.7	111	82.3
Texas	20	69.2	39	64.5	23	38.8	9	38.8	9	46.9	7	77.5	53	70.2	54	44.2	107	57.1
All Areas	50	63.2	97	78.4	47	58.6	31	48.7	21	49.5	18	76.0	131	68.2	133	63.9	264	66.0
Sampling Distribution (number of tows)																		
East Delta	9		18		9		4		4		2		21		25		46	
West Delta	21		40		15		18		8		9		57		54		111	
Texas	20		39		23		9		9		7		53		54		107	
All Areas	50		97		47		31		21		18		131		133		264	

Table 3. NOAA Ship Oregon II cruise 256 (OT-03-05), Fall 2003 catches Adjusted To 60- Min Tow Sorted in Descending Order of Number Caught.

	Name	Percent of Total Number Caught	Percent of Total Catch Weight	Percent Frequency of Capture	Weight Per Individual (gms)
1	Atlantic croaker (*Micropogonias undulatus*)	16.1	23.2	78.9	46.560
2	Longspine porgy (*Stenotomus caprinus*)	11.1	9.9	83.5	26.962
3	Atlantic bumper (*Chloroscombrus chrysurus*)	10.8	9.3	52.1	27.803
4	Brown shrimp (*Farfantepenaeus aztecus*)	3.9	2.8	86.2	22.785
5	Silver seatrout (*Cynoscion nothus*)	3.0	3.0	47.9	32.704
6	Spot (*Leiostomus xanthurus*)	2.7	6.8	51.0	82.884
7	Gulf butterfish (*Peprilus burti*)	2.7	4.6	58.2	54.989
8	Lesser blue crab (*Callinectes similus*)	2.6	1.2	66.7	14.624
9	Atlantic callico scallop (*Argopecen gibbus*)	2.3	1.4	1.9	19.775
10	Atlantic cutlassfish (*Trichiurus lepturus*)	1.3	1.5	42.1	37.236
11	Inshore lizardfish (*Synodus foetens*)	1.2	3.3	78.2	90.464
12	Dwarf goatfish (*Upeneus parvus*)	1.2	1.2	49.4	31.924
Totals		58.9	68.2		

Table 4. Summary of environmental samples and data collected during *NOAA Ship Oregon II* Cruise 256 (OT-03-05).

	Surface	Mid-depth	Maximum depth	Total
Temperature	241	241	241	723
Salinity	241	241	241	723
Dissolved oxygen	241	241	241	723
Light Transmission	241	241	241	723
Secchi disk	--	--	--	63
Water color	--	--	--	71
Cloud cover	--	--	--	101
CTD	--	--	--	241
Shrimp trawl*	--	--	--	265
Bongo	--	--	--	54
Neuston	--	--	--	54

* Shrimp trawl total consists of 264 successful SEAMAP trawls and 1 discarded trawl due a torn net on bottom obstructions.

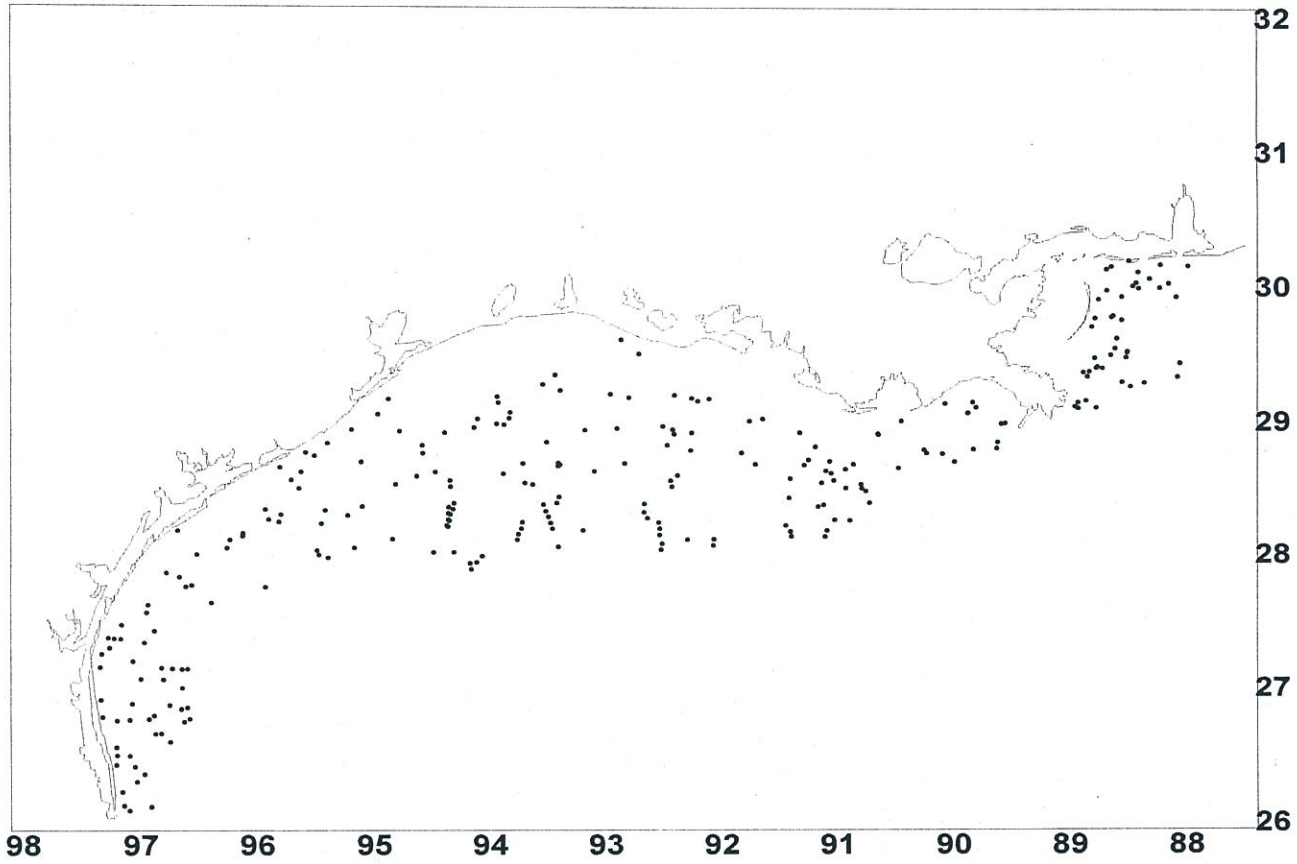

Figure 1. Shrimp trawl stations accomplished during *NOAA Ship Oregon II* Cruise 256 (OT-03-05).

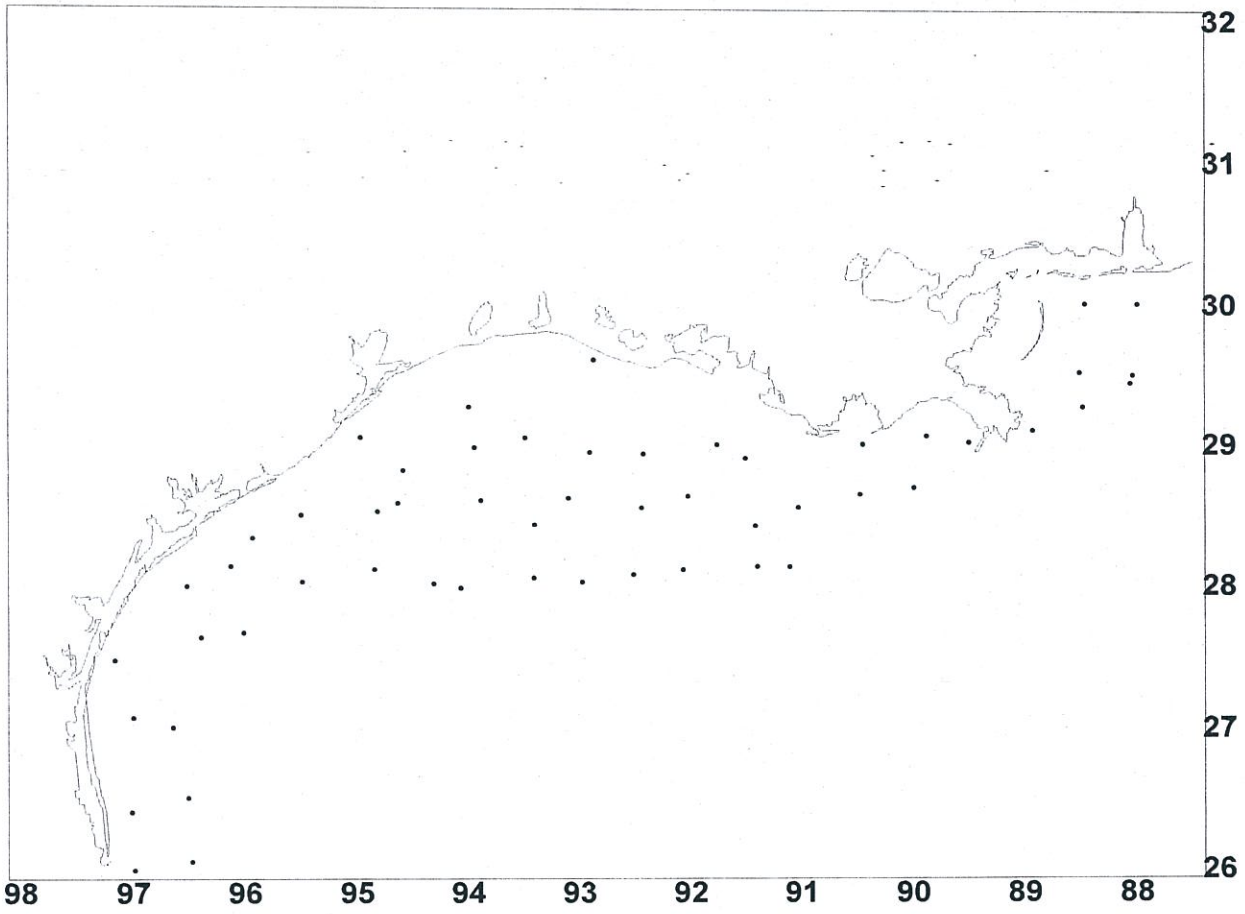

Figure 2. Ichthyoplankton sampling stations completed during *NOAA Ship Oregon II* Cruise 256 (OT-03-05).