

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

GULF STATES MARINE
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FISHERIES COMMISSION

NOAA Ship Oregon II Cruise 248 (OT-01-05)
10/12-11/20/01

INTRODUCTION

The NOAA Ship Oregon II departed Pascagoula, Miss. on October 12th at 2200 hours for the Southeast Area Monitoring and Assessment Program's (SEAMAP) 30th 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 26th 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, fluorometry and percent light transmission.
- 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 the Louisiana State University.
- 10) Collect sharks (*Mustelus* sp.), yellowedge grouper (*Epinephelus flavolimbatus*),

rough scad (*Trachurus lathamii*), round scad (*Decapterus punctatus*) and bigeye scad (*Selar crumenophthalmus*) for age, growth and distributional studies.

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). NOAA Ship Gordon Gunter accompanied NOAA Ship Oregon II to conduct paired comparison towing with 40-ft shrimp trawls.

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

One hundred ninety six of two hundred thirty strata (85%) were successfully

sampled by *NOAA Ship Oregon II* (Table 1). An additional 32 strata were sampled by state vessels; 23 by *R/V Tommy Munro* of Mississippi and 9 by *R/V A. E. Verrill* of Alabama. Two strata were not sampled because nets were torn on bottom obstructions.

Two hundred fifty 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 75.1 kilograms per hour fished (kg/hr), a 35% increase in relative abundance as compared to 2000 and almost equal to the five year mean for 1996-2000 (75.6 kg/hr). The estimate of relative abundance for the East Delta was 69% lower than last years but the West Delta and Texas areas were 46% and 64% greater. Sciaenidae was again the most abundant family caught with Atlantic croaker (*Micropogonias undulatus*) making the greatest contribution (Table 3).

Five bongo and neuston tows were accomplished by *NOAA Ship Oregon II* after which plankton operations were shifted to *NOAA Ship Gordon Gunter* to optimize survey time (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-eight paired comparison tows were conducted with *NOAA Ship Gordon Gunter*, one hundred ninety-two with the *Gunter* using a 40-ft trawl and thirty six with a 90-ft trawl.

One hundred ninety-nine CTD casts, seventeen cloud cover, twenty water color and thirty seven 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 snapper samples were forwarded to the Louisiana State University.

CRUISE PARTICIPANTS

10/12-26/01

NAME

Gilmore Pellegrin, Jr.	Field Party Chief	NMFS Pascagoula, Miss.
Kevin Rademacher	Watch Leader	NMFS Pascagoula, Miss.
Rex Herron	Watch Leader	NMFS Stennis Space Center
James Barbour	Fish. Gear Spec.	NMFS Pascagoula, Miss.
Katie Barker	Fisheries Biologist I	Johnson Controls
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10/27-11/13/01

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11/14-20/01

Gilmore Pellegrin, Jr.	Field Party Chief	NMFS Pascagoula, Miss.
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Melissa Bahnick	Watch Leader	NMFS Pascagoula, Miss.
Rex Herron	Research Fish. Bio.	NMFS Stennis Space Center
Mark McDuff	Computer Specialist	NMFS Pascagoula, Miss.
Andy Bentley	Ich. Collections Mgr.	U of Kansas Nat. Hist. Museum
Elizabeth Brooks	Post Doc. Assoc.	U of Miami, CIMAS-RSMAS

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For Nancy Thompson,
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Table 1. Distribution of sampling effort by strata for NOAA Ship Oregon II Cruise 248 (OT-01-05). 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)	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	Ala.	1	1	1	1	Miss.	1	1	1	1
6-7	Miss.	1	1	1	1	Miss.	1	1	1	1
7-8	Miss.	1	1	1	1	Ala.	1	1	1	1
8-9	Miss.	1	1	1	1	Miss.	1	1	1	1
9-10	Ala.	1	1	1	1	Ala.	1	1	1	1
10-11	Miss.	1	1	1	1	Miss.	1	1	1	1
11-12	Ala.	1	1	1	1	Miss.	1	1	1	1
12-13	Ala.	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	Miss.	1	1	1	1
15-16	Miss.	1	1	1	1	Ala.	1	1	1	1
16-17	Ala.	1	1	1	1	Miss.	1	1	1	1
17-18	Miss.	1	1	1	1	Ala.	1	1	1	1
18-19	1	1	1	1	1	Miss.	1	1	1	1
19-20	Miss.	1	1	1	1	1	1	1	1	1
20-22	Miss.	1	1	1	1	Miss.	1	1	1	1
22-25	1	1	1	1	1	Miss.	1	1	1	1
25-30	1	1	1	1	1	1	1	1	1	1
30-35	Miss.	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	Tore net	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 248 (OT-01-05) 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	
Atlantic croaker (<i>Micropogonias undulatus</i>)									
East Delta	.	0.6	0.7	2.3	0.5	0.0	0.2	1.8	0.9
West Delta	29.4	71.9	31.4	6.8	0.1	0.2	31.6	47.7	40.1
Texas	1.2	9.5	4.9	2.1	0.1	0.0	2.6	7.1	4.9
All Areas	15.7	42.3	14.2	4.3	0.2	0.1	15.6	26.4	21.1
Spot (<i>Leiostomus xanthurus</i>)									
East Delta	.	0.1	0.8	1.4	15.7	0.0	6.3	1.3	4.1
West Delta	2.0	10.2	24.0	10.3	0.1	0.1	4.7	14.4	9.8
Texas	0.3	1.8	1.4	0.1	0.0	0.0	0.7	1.3	1.0
All Areas	1.2	6.2	9.8	5.0	2.8	0.1	3.0	7.6	5.4
Longspine porgy (<i>Stenotomus caprinus</i>)									
East Delta	.	0.3	0.8	0.2	2.4	0.0	1.0	1.0	1.0
West Delta	0.0	9.1	9.7	3.9	6.8	6.6	8.3	5.1	6.6
Texas	0.0	0.4	2.6	6.0	8.2	3.8	3.1	1.5	2.3
All Areas	0.0	5.0	5.0	4.5	6.6	4.8	5.3	3.2	4.3
Atlantic bumper (<i>Chloroscombrus chrysurus</i>)									
East Delta	.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
West Delta	0.2	1.0	0.2	0.2	0.0	0.0	0.6	0.3	0.5
Texas	26.9	5.6	1.6	0.4	0.0	0.0	13.4	0.8	7.1
All Areas	13.2	3.1	0.8	0.2	0.0	0.0	6.5	0.5	3.5

Table 2. (continued)

Area	Depth (fms)						Diurnal Period		Total
	5 - 9	10-19	20-29	30-39	40-49	50-60	Day	Night	
Inshore lizardfish (<i>Synodus foetens</i>)									
East Delta	.	0.1	1.1	1.0	0.1	0.0	0.8	0.6	0.7
West Delta	0.0	2.5	2.9	2.5	4.3	3.1	3.3	1.4	2.3
Texas	0.2	1.3	2.5	3.7	10.0	7.9	4.5	1.0	2.7
All Areas	0.1	1.9	2.4	2.8	6.0	5.1	3.7	1.2	2.4
Brown shrimp (<i>Farfantepenaeus aztecus</i>)									
East Delta	.	0.0	0.0	0.1	5.1	0.2	1.8	0.4	1.2
West Delta	0.1	1.3	3.6	2.7	1.9	2.2	0.9	2.5	1.8
Texas	0.1	2.7	2.1	1.4	1.4	0.6	0.9	2.6	1.8
All Areas	0.1	2.0	2.3	1.9	2.3	1.3	1.0	2.4	1.7
White shrimp (<i>Litopenaeus setiferus</i>)									
East Delta	.	0.0	0.3	0.0	0.1	0.0	0.1	0.2	0.2
West Delta	1.3	0.6	0.1	0.0	0.0	0.0	0.5	0.5	0.5
Texas	1.5	0.7	0.0	0.0	0.0	0.0	0.5	0.5	0.5
All Areas	1.4	0.6	0.1	0.0	0.0	0.0	0.5	0.5	0.5
Pink shrimp (<i>Farfantepenaeus duorarum</i>)									
East Delta	.	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
West Delta	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Texas	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.3	0.2
All Areas	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.2	0.1

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	.	2.2	1.0	14.1	13.7	70.8	3.8	17.6	9.9
West Delta	2.6	4.7	6.2	5.9	2.9	5.0	2.8	6.3	4.6
Texas	4.0	9.6	12.1	6.4	3.3	4.9	4.4	11.5	8.0
All Areas	3.3	6.9	8.0	6.9	5.0	10.0	3.6	9.3	6.5
Finfish									
East Delta	.	39.5	15.1	22.3	46.1	79.4	23.7	33.7	28.1
West Delta	47.0	124.4	97.4	38.3	32.3	40.1	79.3	87.8	83.8
Texas	57.7	40.6	36.9	34.3	46.5	66.5	57.5	30.6	43.9
All Areas	52.3	84.8	56.0	35.1	40.9	55.3	64.7	58.5	61.5
Total Catch									
East Delta	.	41.7	16.4	36.4	60.1	150.2	27.8	51.4	38.3
West Delta	52.4	129.6	104.4	46.6	43.6	48.9	83.6	96.5	90.4
Texas	95.0	66.6	51.1	43.8	53.8	82.2	73.3	57.3	65.2
All Areas	73.2	99.6	65.3	44.4	50.9	72.1	74.3	76.0	75.1
Sampling Distribution (number of tows)									
East Delta	.	1	9	3	4	1	10	8	18
West Delta	21	47	20	15	9	6	57	62	119
Texas	20	41	24	14	10	6	57	58	115
All Areas	41	89	53	32	23	13	124	128	252

Table 3. Organisms caught during *NOAA Ship Oregon II* Cruise 248 (OT-01-05) which comprised at least 1.0% of the total catch in terms of numbers and kilograms caught per hour fished (n = 252).

	Name	Percent of Total Number Caught	Percent of Total Catch Weight	Percent Frequency of Capture	Weight Per Individual (gms)
1	Atlantic croaker (<i>Micropogonias undulatus</i>)	20.6	28.1	76.9	43.6
2	Atlantic bumper (<i>Chloroscombrus chrysurus</i>)	13.6	4.6	44.6	10.8
3	Longspine porgy (<i>Stenotomus caprinus</i>)	5.7	5.7	65.7	31.5
4	Lesser blue crab (<i>Callinectes similis</i>)	4.7	3.0	72.5	20.6
5	Brown shrimp (<i>Farfantepenaeus aztecus</i>)	3.7	2.3	84.9	19.5
6	Bigeye searobin (<i>Prionotus longispinosus</i>)	3.1	2.3	63.7	24.2
7	Spot (<i>Leiostomus xanthurus</i>)	2.9	7.1	53.4	77.6
8	Shoal flounder (<i>Syacium gunteri</i>)	2.7	1.5	70.1	17.6
9	Gulf butterfish (<i>Peprilus burti</i>)	1.9	3.3	50.2	55.4
10	Sand seatrout (<i>Cynoscion arenarius</i>)	1.6	1.6	48.6	32.1
11	Rough scad (<i>Trachurus lathamii</i>)	1.5	1.4	38.6	29.4
12	Moonjelly (<i>Aurelia aurita</i>)	1.4	6.7	26.3	152.2
13	Silver seatrout (<i>Cynoscion nothus</i>)	1.3	2.0	45.4	49.2
14	Atlantic cutlassfish (<i>Trichiurus lepturus</i>)	1.2	1.7	37.8	43.4
15	Dwarf goatfish (<i>Upeneus parvus</i>)	1.1	1.1	34.3	32.2
Totals		67.0	72.4		

Table 4. Summary of environmental samples and data collected during *NOAA Ship Oregon II* Cruise 248 (OT-01-05).

	Surface	Mid-depth	Maximum depth	Total
Temperature	199	199	199	597
Salinity	199	199	199	597
Dissolved oxygen	199	199	199	597
Light Transmission	199	199	198	596
Secchi disk	--	--	--	37
Water color	--	--	--	20
Cloud cover	--	--	--	17
CTD	--	--	--	199
Shrimp trawl*	--	--	--	293
Bongo	--	--	--	5
Neuston	--	--	--	5

* Shrimp trawl total consists of 252 successful SEAMAP trawls, 39 comparative trawls with *NOAA Ship Gordon Gunter* and 2 discarded trawls due to nets torn on bottom obstructions.

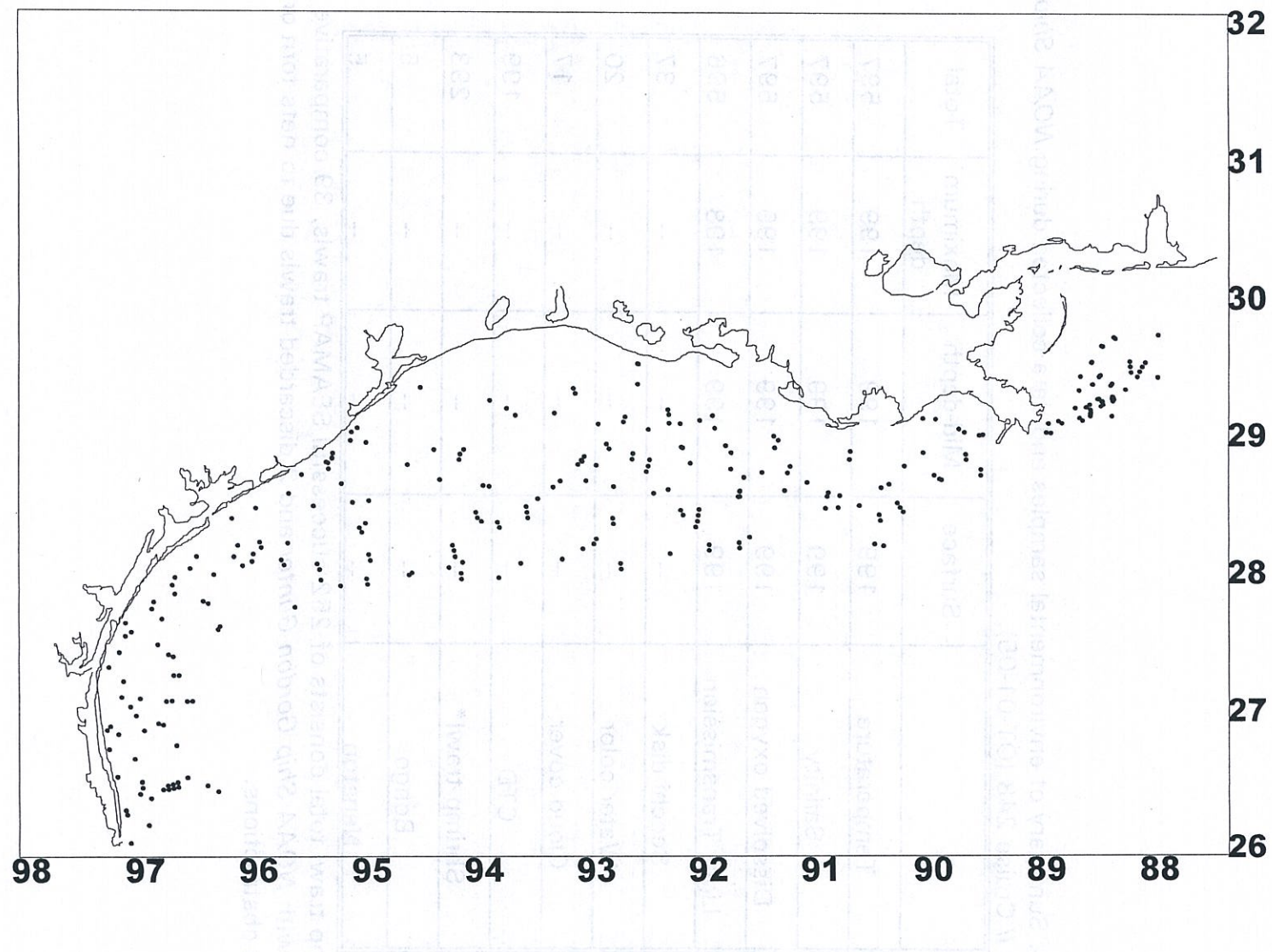


Figure 1. Shrimp trawl stations accomplished during *NOAA Ship Oregon II* Cruise 248 (OT-01-05).

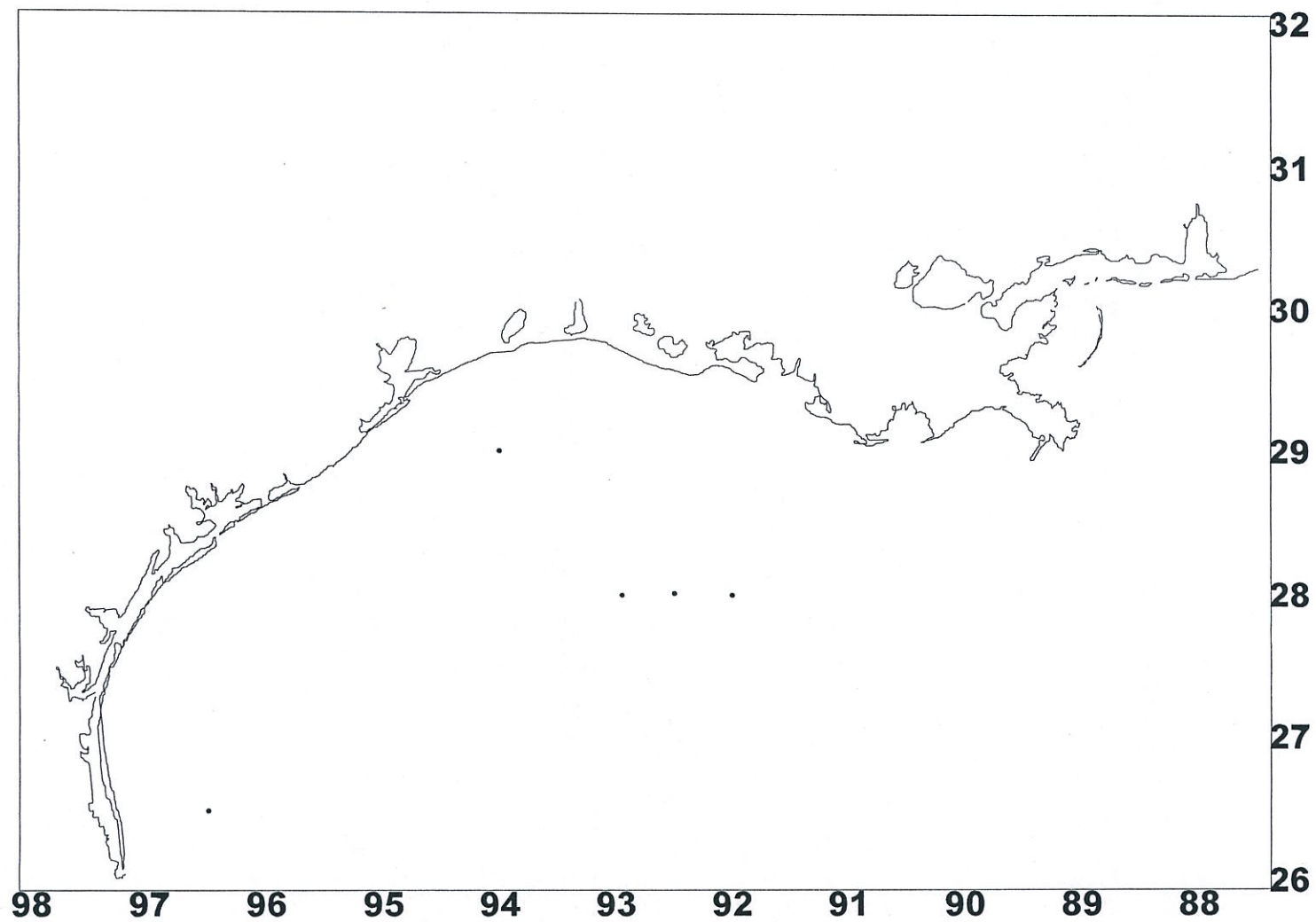


Figure 2. Ichthyoplankton sampling stations completed during *NOAA Ship Oregon II* Cruise 248 (OT-01-05).