

U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center

Cruise Report

Date Submitted:

Platform:

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Cruise Dates: -

Submitted by:
Field Party Chief

Date:

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Date:

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Director, SEFSC

Date:

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P O Drawer 1207
Pascagoula, MS 39568-1207

NOAA Ship *Oregon II* Cruise 320 (R2-16-05)
10/07/2016 – 11/21/2016

INTRODUCTION

NOAA ship *Oregon II* departed Pascagoula, MS on October 7, 2016 for the 45th Fall Shrimp/Bottom Fish Survey, 32 of which have been conducted under the auspices of the Southeast Area Monitoring and Assessment Program (SEAMAP). SEAMAP is a state-federal-university program for the collection, management and dissemination of fishery independent data.

The primary objectives of this survey are to monitor the relative abundance, spatial distribution, and size composition of penaeid shrimp stocks and other demersal organisms across the northern Gulf of Mexico (GOM) in water depths from 5 to 60 fm.

NOAA ship *Oregon II* was scheduled for 41 days at sea (October 7-November 21, 2016). There were 44 hours lost due to weather, medical issues, and completion of objectives. The ship returned to Pascagoula, MS on November 20, a day earlier than scheduled due to completion of all objectives. There were two scheduled port calls to exchange scientific personnel (Galveston, TX October 20 and Pascagoula, MS November 6).

Summary of Objectives:

1. Sample the northern GOM with SEAMAP standard trawl sampling gear to determine the abundance and distribution of benthic fauna.
2. Collect size measurements to determine population size structures.
3. Record profiles through the water column of temperature, salinity, fluorescence, dissolved oxygen and turbidity using a Conductivity/Temperature/Depth (CTD) unit at all stations.
4. Collect echologger data from select stations to monitor the efficiency of the trawl net and the contact with the sea floor.
5. Conduct bottom mapping using Olex software to determine trawlable habitat on all East Delta Stations.
6. Collect select specimens for genetic, age, growth, abundance and/or distributional studies.

MATERIALS AND METHODS

The sampling gear consisted of 12-m (40 ft) shrimp nets with 2-m by 1-m chain bracketed wooden doors towed with 54-m bridles and a single warp. A standard free tickler chain cut 106 cm shorter than the footrope was used to stimulate organisms out of the substrate and into the path of the oncoming net. Sample sites (250) were randomly selected between 5 and 60 fm within Gulf Coast shrimp statistical reporting zones 1-21. Bathymetric data were obtained from NOAA's Environmental Satellite, Data, and Information Service (NESDIS) web site. Sampling sites were proportionally allocated according to surface area of statistical zones and two depth allocation units, 5-20 and 21-60 fm. Tow durations were 30 min at a targeted speed of 2.5 kt with tow direction left to the discretion of the bridge watch. At stations deemed suitable for use, a Precision Autonomous Hydroacoustic Altimeter (Echologger, model AA400) was installed in the trawl net to monitor the trawl's contact with the bottom during fishing.

Catch data were electronically recorded at-sea with the Fishery Scientific Computing System (FSCS), version 1.6, developed by NOAA's Systems Development Branch of the Office of Marine & Aviation Operations. The FSCS was used in conjunction with the Scientific Computing System (SCS version 4.2.3) which recorded position, depth, date, time, and meteorological data. Catches were either processed in their entirety or subsampled, depending on the total catch weight. If catches exceeded 22.7 kg (50 lb), then at least 10% was taken as a subsample. Catches (or subsamples) were sorted to the lowest taxonomic level possible then enumerated and weighed. Taxa that were not identified to species level were returned to the laboratory for additional taxonomic resolution. Weights were collected using Marel motion compensating M1100 scales. Large capacity scales (30 kg max, 10 gm resolution) were used to weigh total catch weights and small capacity scales (6 kg max, 1 gm resolution) for individual species weights. Scales were calibrated before every station. Lengths were recorded using Limnoterra Limited electronic measuring boards. A maximum of 20 individuals per species were selected for size measurements. Individual weight, sex, and sexual stage were collected from every fifth individual in the series of 20. All snapper and lionfish were measured, weighed, and sexed.

Vertical profiles of temperature, conductivity, dissolved oxygen, percent light transmission and fluorometer values were recorded with a Seabird SBE 911. Water color and percent cloud cover observations were also taken during daylight hours. Environmental data were transmitted to a file transfer protocol website hosted by the National Coastal Data Development Center (NCDDC).

Due to the high occurrence of live bottom (sponges and corals) in the East Delta, mitigation measures were used prior to and during the survey to avoid these areas.

Prior to leaving the dock:

A station that fell completely within a 2.0 nautical mile (nm) buffer of previously known untrawlable habitat was dropped from the 250 pre-selected trawl stations (n=9). Of the remaining stations (n=241), any that intersected a 1.5 nm buffer of any geofom were then identified. Any stations that intersected a geofom not classified as "Flat Hard Bottom" had a recommended tow

direction to avoid the geoform. Geoforms classified as “Flat Hard Bottom” were deemed trawlable habitat and no effort was made to avoid these areas.

Any station that fell within any of the West Florida Shelf Marine Protected Areas were moved 0.25 nm out of the area and a tow direction was chosen to avoid them. Snags, wrecks, artificial reefs, hydrophones, seagrass, or Panama City Laboratory Reef Sites were given a 0.25 nm buffer to avoid the habitat/obstruction. Stations that were 0.25 nm within a “Non-Flat Hard Bottom” geoform were moved 1.0 nm in a direction that avoided that habitat. Any movement of a station had to maintain the targeted starting depth of the original station and shrimp statistical zone before being moved.

At Sea:

The Olex System, a bottom mapping software, was installed and used along with the EK-60 bottom depth sounder, a Real Time SCS program and Global Positioning System to help identify and avoid any habitat or obstructions along the sea floor. Every station was surveyed at least once at a target speed of 5.0 kt. All three methods were used in combination to provide and assist the Watch Leaders (WL) and Field Party Chief (FPC) in designating whether a station was trawlable. If a transect was deemed untrawlable, the next transect was run 0.25 nm parallel from the last. A maximum of three transects were conducted at each station. If all transects were deemed untrawlable, the station was dropped at the discretion of the WL or FPC. In some cases, when time was available, the FPC opted to run one to two additional transects in an effort to find trawlable bottom. When a transect was deemed trawlable, a CTD and a trawl were completed.

RESULTS AND DISCUSSIONS

Two hundred and twenty-eight stations were planned for NOAA ship *Oregon II* to complete (state partners completed 22 stations). Of the 228 stations, 9 stations were dropped prior to departing for the first leg of the survey for coral mitigation measures. A total of 173 stations were completed successfully. Of the 46 unsuccessful stations, 23 that were conducted have an operational code, which means the trawl was not fishing correctly, and 23 were dropped by the WL or FPC using the coral/sponge mitigation measures at sea (Table 3). Some of the stations that have an operational code were unsuccessful due to the amount of sponge in the net (Figure 1). If sponge weight exceeded 50 kg, the tow was considered unsuccessful due to the excessive weight potentially affecting the efficiency of the sampling gear.

The total catch weight from all successful trawls was 8413.2 kg. There were approximately 36,564 measurements; 12,400 individual weights, 11,989 sex determinations; and 9,680 sex stages recorded from 366 species (sex determinations and stages include instances where organisms were inspected but sex or stage could not be discerned).

For summary purposes, NOAA ship *Oregon II* operated in 3 geographic areas; East Delta (81°00’-89°15’ W Long), West Delta (89°15’-94°00’ W Long) and Texas (94°00’-98°00’ W Long). The West Delta and Texas regions were grouped together for this data summary for similar species composition.

The three most abundant species that accounted for at least 1% of the total catch in number and weight from the West Delta included the Atlantic croaker, *Micropogonias undulatus* (n=71,382), Atlantic bumper, *Chloroscombrus chrysurus* (n=19,026) and the Longspine porgy, *Stenotomus caprinus* (n=7,425). These three species represent 62.4% of the 156,765 total specimens caught in that region (Table 1).

In the East Delta, the three most abundant species that accounted for at least 1 % of the total catch in number and weight included the Dusky flounder, *Syacium papillosum* (n=4,376), the Moon jelly, *Aurelia aurita* (n=303) and the Vermillion snapper, *Rhomboplites aurorubens* (n=529). These three species comprise 19.4% of the 26,804 total specimens caught in that region (Table 2).

Fish and invertebrate samples were frozen and returned to staff members at NOAA Fisheries Pascagoula, MS and Panama City, FL; University of Southern Mississippi-GCRL, Texas A&M, and Mississippi Gulf Coast Community College.

QUALITY CONTROL

One of each species that were taken down to the lowest taxonomic level on each day/night watch were frozen and brought back to the National Marine Science Center in Pascagoula, MS to verify their accuracy.

ACKNOWLEDGMENTS

On behalf of the Mississippi Laboratory and the scientific party, we would like to thank the Commanding Officer and crew of NOAA ship *Oregon II* for a job well done throughout the survey.

CRUISE PARTICIPANTS

Leg I: October 7 – 20, 2016

NAME	TITLE	ORGANIZATION
Taniya Wallace	Field Party Chief	Riverside, Pascagoula, MS
Andre Debose	Watch Leader	NMFS, Pascagoula, MS
Chrissy Stepongzi	Watch Leader	Riverside, Pascagoula, MS
Warren Brown	FMES	Riverside, Pascagoula, MS
Sarah Pedigo	NGI Intern	NMFS, Pascagoula, MS
Jaymie Reneker	Fisheries Biologist	Riverside, Pascagoula, MS
Denice Drass	Fisheries Biologist	NMFS, Pascagoula, MS
Rafael Ortiz	Program Support Specialist	NMFS, Pascagoula, MS
Madeleine Kenton	Volunteer	Smithsonian Institute

Leg II: October 23 – November 6, 2016

NAME	TITLE	ORGANIZATION
Chrissy Stepongzi	Field Party Chief	Riverside, Pascagoula, MS
Taniya Wallace	Watch Leader	Riverside, Pascagoula, MS
Joey Salisbury	Watch Leader	Riverside, Pascagoula, MS
Glenn Zapfe	Fisheries Biologist	NMFS, Pascagoula, MS
Warren Brown	FMES	Riverside, Pascagoula, MS
Madeleine Kenton	Volunteer	Smithsonian Institute
Megumi Oshima	Graduate Student	GCRL, Ocean Springs, MS
Dustin Cooley	Undergraduate Student	MGCCC, Gautier, MS
Celeste Morris	Volunteer	

Leg III: November 11 – November 20, 2016

NAME	TITLE	ORGANIZATION
Andre Debose	Field Party Chief	NMFS, Pascagoula, MS
Kristin Hannan	Watch Leader	Riverside, Pascagoula, MS
Joey Salisbury	Watch Leader	Riverside, Pascagoula, MS
Eric Hoffmayer	Fisheries Biologist	NMFS, Pascagoula, MS
Andy Millett	Fisheries Biologist	Riverside, Pascagoula, MS
Brandi Noble	Fisheries Biologist	NMFS, Pascagoula, MS
Kendall Falana	FMES	NMFS, Pascagoula, MS
Caleb Taylor	Volunteer	GCRL, Ocean Springs, MS
Corbin Bennetts	Volunteer	GCRL, Ocean Springs, MS

Table 1: The most abundant species caught at 110 stations in the West Delta which accounted for 1% of the total catch in number and weight on NOAA ship *Oregon II* R2-16-05.

ZONE	TAXON	Frequency	Percent Number Caught (%)	Percent Weight Caught (%)	Percent Occurrence (%)
WEST	<i>Micropogonias undulatus</i>	98	45.5	48.5	89.1
WEST	<i>Chloroscombrus chrysurus</i>	77	12.1	6.5	70.0
WEST	<i>Stenotomus caprinus</i>	78	4.7	4.8	70.9
WEST	<i>Peprilus burti</i>	80	2.8	3.9	72.7
WEST	<i>Leiostomus xanthurus</i>	60	1.7	3.5	54.5
WEST	<i>Penaeus aztecus</i>	95	4.3	3.0	86.4
WEST	<i>Lutjanus campechanus</i>	71	1.1	2.9	64.5
WEST	<i>Cynoscion nothus</i>	68	1.6	2.4	61.8
WEST	<i>Prionotus longispinosus</i>	96	2.2	1.4	87.3
WEST	<i>Amusium papyraceum</i>	48	3.5	1.2	43.6
WEST	<i>Centropristis philadelphicus</i>	87	1.2	1.1	79.1

Table 2: The most abundant species caught at 63 stations in the East Delta which accounted for 1% of the total catch in number and weight on NOAA ship *Oregon II* R2-16-05.

ZONE	TAXON	Frequen cy	Percent Number Caught (%)	Percent Weight Caught (%)	Percent Occurrence (%)
EAST	<i>Syacium papillosum</i>	61	16.3	8.9	96.8
EAST	<i>Aurelia aurita</i>	22	1.1	3.2	34.9
EAST	<i>Rhomboplites aurorubens</i>	14	2.0	2.9	22.2
EAST	<i>Diplectrum formosum</i>	56	2.6	2.3	88.9
EAST	<i>Haemulon aurolineatum</i>	31	2.1	2.1	49.2
EAST	<i>Synodus foetens</i>	50	1.4	2.1	79.4
EAST	<i>Lutjanus synagris</i>	22	1.4	2.1	34.9
EAST	<i>Trachinocephalus myops</i>	43	2.3	2.0	68.3
EAST	<i>Synodus macrostigmus</i>	35	1.6	1.4	55.6
EAST	<i>Sicyonia brevirostris</i>	37	7.2	1.3	58.7
EAST	<i>Scorpaena calcarata</i>	33	5.1	1.0	52.4

Table 3: Stations that were surveyed and dropped due to untrawlable habitat in the East Delta (n=23) on NOAA ship *Oregon II* R2-16-05.

SEAMAP Station #	Transect 1	Transect 2	Transect 3	Transect 4	Transect 5
E0709	29.7186N, -84.3628W 29.7193N, -84.3924W	29.7335N, -84.4245W 29.7069N, -84.4197W	29.7035N, -84.4171W 29.7164N, -84.4047W		
E0718	29.3203N, -84.4406W 29.2897N, -84.4347W	29.2855N, -84.4275W 29.3491N, -84.4328W	29.3202N, -84.4326W 29.3202N, -84.5137W		
E0613	28.9376N, -84.0394W 28.9377N, -84.062W	28.9394N, -84.0635W 28.9488N, -84.0632W	28.9513N, -84.0640W 28.9606N, -84.0739W	28.9650N, -84.0657W 28.9758N, -84.0780W	28.9774N, -84.0778W 28.9772N, -84.0640W
E0611	28.3923N, -83.4821W 28.4054N, -83.4918W	28.4071N, -83.4989W 28.4155N, -83.5060W	28.4167N, -83.5134W 28.4268N, -83.5218W		
E0610	28.2462N, -83.3347W 28.2467N, -83.3410W	28.2411N, -83.3421W 28.2412N, -83.3519W	28.2358N, -83.3543W 28.2360N, -83.3622W		
E0606	28.3554N, -83.0359W 28.3735N, -83.0353W	28.3435N, -83.069W 28.3477N, -83.0858W	28.3496N, -83.0910W 28.3680N, -83.0905W	28.4028N, -83.0945W 28.3803N, -83.0733W	
E0605	28.0601N, -83.0463W 28.0623 N, -83.0579W	28.0682N, -83.0629W 28.0695N, -83.0696W	28.0763N, -83.0758W 28.0787N, -83.0882W		
E0604	28.0308N, -83.0233W 28.0321N, -83.0323W	28.0365N, -83.0368W 28.0379N, -83.0464W	28.0434N, -83.0497W 28.0449N, -83.0583W		
E0509	27.4216N, -83.1549W 27.4375N, -83.1489W	27.4342N, -83.1591W 27.4404N, -83.1570W	27.4126N, -83.1507W		
E0506	27.4265N, -82.9191W 27.4506N, -82.9146W	27.4496N, -82.9196W 27.4402N, -82.9219W	27.4370N, -82.9295W 27.4555N, -82.9246W		
E0505	27.2116N, -82.6998W 27.2328N, -82.6958W	27.2438N, -82.6993W 27.2316N, -82.7055W	27.2311N, -82.6651W 27.2421N, -82.6653W		
E0406	26.5349N, -82.4716W 26.5435N, -82.4518W	26.5586N, -82.4363W 26.5507N, -82.4550W	26.5094N, -82.4226W 26.5156N, -82.3997W		
E0410	26.4273N, -82.5849W	26.4332N, -82.5843W 26.4342N, -82.6074W	26.4371N, -82.5846W 26.4370N, -82.6249W		
E0413	26.0662N, -82.7605W 26.0486N, -82.7682W	26.0532N, -82.7705W 26.0644N, -82.7654W	26.0625N, -82.7762W 26.0796N, -82.7646W		
E0332	25.6827N, -83.7082W	25.6685N, -83.7504W 25.6824N, -83.7234W	25.6867N, -83.7276W 25.6825N, -83.7423W		

E0331	25.4687N, -83.6733W 25.4406N, -83.6636W	25.4395N, -83.6656W 25.4378N, -83.6735W	25.4285N, -83.6445W 25.4685N, -83.6609W		
E0318	25.2307N, -82.6742W 25.2187N, -82.6741W	25.2311N, -82.6675W 25.2165N, -82.6672W	25.2098N, -82.6613W 25.1981N, -82.6613W		
E0317	25.1829N, -82.5982W 25.1784N, -82.5986W	25.1838N, -82.5918W 25.1671N, -82.5918W	25.1827N, -82.5706W 25.1636N, -82.5707W		
E0320	25.0117N, -82.7510W 25.0116N, -82.7337W	25.0186N, -82.7552W 25.0186N, -82.7379W	25.0241N, -82.7558W 25.0240N, -82.7304W		
E0313	25.5155N, -82.5532W 25.5071N, -82.5586W	25.4993N, -82.5567W 25.4939N, -82.5609W	25.4868N, -82.5984W 25.5060N, -82.5983W		
E0311	25.5232N, -82.2724W 25.5336N, -82.2866W	25.5310N, -82.2918W 25.5252N, -82.2853W	25.5235N, -82.2890W 25.5383N, -82.3109W		
E0306	25.4832N, -81.9849W 25.4788N, -81.9900W	25.4838N, -81.9937W 25.4750N, -82.0043W	25.4734N, -82.0136W 25.4794N, -82.0062W		
E0302	25.7242N, -81.9699W 25.7366N, -81.9616W	25.7402N, -81.9652W 25.7526N, -81.9572W	25.7512N, -81.9688W 25.7778N, -81.9512W	25.7498N, -81.9700W 25.7449N, -81.9732W	

Figure 1: Trawl stations completed by NOAA ship *Oregon II* R2-16-05. The areas where there are large gaps in sampling coverage are where SEAMAP state partners completed stations (n=22). See <http://seamap.gsmfc.org/listcruises.php> for further information.

