

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

Cruise Report

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Cruise Dates: -

Submitted by:
Field Party Chief

Date:

Approved by:
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Date:

Approved by:
Dr. Cisco Werner, Acting
Director, SEFSC

Date:

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Pascagoula, MS 39568-1207

NOAA Ship Oregon II Cruise 325 (R2-17-05)
10/10/2017 – 11/21/2017

INTRODUCTION

NOAA ship Oregon II departed Pascagoula, MS on October 10th, 2017 for the 41st Fall Shrimp/Bottom Fish Survey, 38 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, 2017). Due to Hurricane Nate, the survey was not able to depart Pascagoula until October 10th. There were 104 hours lost due to weather and mechanical issues. The ship returned to Pascagoula, MS on November 21st. There were two scheduled port calls to exchange scientific personnel (Galveston, TX October 22 and Pascagoula, MS November 6); although, due to mechanical issues, we ported in Galveston, TX on October 20th.

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 structure
3. Record profiles through the water column of temperature, salinity, fluorescence,
4. dissolved oxygen and turbidity using a Conductivity/Temperature/Depth (CTD) profiler at all stations.
5. Transmit processed CTD profiles to NOAA National Center for Environmental Information (NCEI) at Stennis Space Center, Mississippi.
6. Collect echologger data from select stations to monitor the efficiency of the trawl net.
7. Conduct bottom assessments with Side Scan Sonar to determine trawlable habitat on all East Delta Stations in depths less than 50 m.
8. Collect select specimens for genetic, trophic, 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 (352) were randomly selected between 5 and 60 fm within GOM shrimp statistical reporting zones 1-21. Bathymetric data were obtained from NOAA's Environmental Satellite, Data, and Information Service (NESDIS) website. 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 determined by depth contour, when possible. 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 and Ichthystick electronic measuring boards. A maximum of 20 individuals per species of snapper, grouper, triggerfish, and lionfish were selected for individual size measurements, weight, and sex. For every other species, a maximum of 20 individuals were selected for size measurements and weight and sex were collected on every fifth individual in that series of 20.

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.

CTD profiles were transmitted to a file transfer protocol website hosted by the NCEI.

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 prior to selecting the trawl stations. After selecting the 352 stations, any that intersected a 1.5 nm buffer of any geofom were then identified. Any stations

that intersected a geoform 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, an Edgetech 4125 dual frequency side scan sonar and a Real Time SCS program and Global Positioning System to help identify and avoid any habitat or obstructions along the sea floor. Every station in depths less than 50 fm 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 following transects were conducted within the parameter of the SEAMAP Station location. 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 two stations were planned for NOAA Ship *Oregon II*. Of the 202 stations, nine stations were dropped for lack of time during the survey to make sure all stations satisfied the proportional allocations in each statistical zone and depth strata. A total of 175 stations were completed (three stations were duplicated). Of the 202 stations planned, 14 have an operational code, which means the trawl was not fishing correctly, and seven were dropped by the WL or FPC using the coral/sponge mitigation measures at sea (Table 3).

The total catch weight from all successful trawls was 159,306 kg. There were approximately 33,248 measurements; 10,794 individual weights; and 6,078 sex determinations of 425 species.

For summary purposes, NOAA ship *Oregon II* operated in three 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=58,471),

brown shrimp, *Farfantepenaeus aztecus* (n=11,698), and spot croaker, *Leiostomus xanthurus* (n=2,885). These three species represent 54.5% of the 134,069 total specimens caught in the West Delta (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 red goatfish, *Mullus auratus* (n=7,148), the dusky flounder, *Syacium papillosum* (n=2,883) and the pinfish, *Lagodon rhomboides* (n=1,880). These three species comprise 47.2% of the 25,237 total specimens caught in the East Delta (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 University, and Tulane University.

QUALITY CONTROL

One of each species that were taken down to the lowest taxonomic level on opposite days by day/night watch were frozen and brought back to Mississippi Laboratories in Pascagoula, MS to verify their identity.

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 10 – 20, 2017

Name	Title	Organization
Andre Debose	Field Party Chief/Watch Leader	NMFS
Alonzo Hamilton	Watch Leader	NMFS
Kevin Rademacher	Watch Leader	NMFS
John Moser	Watch Stander	NMFS
Walter Ingram	Watch Stander	NMFS
Kenny Wilkinson	Watch Stander	NMFS
Randy Fink	Watch Stander	Volunteer
Brondum Krebs	Watch Stander	Volunteer

Leg II: October 24 – November 6, 2017

Name	Title	Organization
Andre Debose	Field Party Chief/Watch Leader	NMFS
Alonzo Hamilton	Watch Leader	NMFS
Michael Hendon	Watch Leader	NMFS
John Moser	Watch Stander	NMFS
Mark Grace	Watch Stander	NMFS
Kendall Falana	Watch Stander	NMFS
Emma Shultz	Watch Stander	Volunteer
Randy Fink	Watch Stander	Volunteer

Leg III: November 11 – 21, 2017

Name	Title	Organization
Andre Debose	Field Party Chief/Watch Leader	NMFS
Alonzo Hamilton	Watch Leader	NMFS
Glenn Zapfe	Watch Leader	NMFS
Kenny Wilkinson	Watch Stander	NMFS
John Moser	Watch Stander	NMFS
Nick Hopkins	Watch Stander	NMFS
James Johnson	Watch Stander	NMFS
Randy Fink	Watch Stander	Volunteer

Table 1: The most abundant species caught at 132 stations in the West Delta which accounted for at least 1% of the total catch in number and weight on NOAA ship *Oregon II* R2-17-05.

ZONE	TAXON	Frequency	Percent Number Caught (%)	Percent Weight Caught (%)	Percent Occurrence (%)
WEST	<i>Micropogonias undulatus</i>	124	28.3	18.2	9.5
WEST	<i>Leiostomus xanthurus</i>	73	2.2	4.5	55.3
WEST	<i>Farfantepenaeus aztecus</i>	120	8.8	4.4	90.9
WEST	<i>Chloroscombrus chrysurus</i>	79	5.8	4.4	59.8
WEST	<i>Stenotomus caprinus</i>	87	3.2	3.5	65.9
WEST	<i>Peprilus burti</i>	75	1.9	3.04	56.8
WEST	<i>Cynoscion nothus</i>	81	2.1	3.1	61.4
WEST	<i>Trachurus lathami</i>	48	1.4	2.1	36.1.5
WEST	<i>Trichiurus lepturus</i>	60	1.3	1.8	45.5
WEST	<i>Larimus fasciatus</i>	55	1.0	1.3	41.7
WEST	<i>Amusium papyraceum</i>	54	4.1	1.2	40.1

Table 2: The most abundant species caught at 42 stations in the East Delta which accounted for at least 1% of the total catch in number and weight on NOAA ship *Oregon II* R2-17-05.

ZONE	TAXON	Frequency	Percent Number Caught (%)	Percent Weight Caught (%)	Percent Occurrence (%)
EAST	<i>Mullus auratus</i>	4	28.3	18.2	9.5
EAST	<i>Syacium papillosum</i>	41	11.4	7.5	97.6
EAST	<i>Lagodon rhomboides</i>	15	7.4	5.5	35.7
EAST	<i>Micropogonias undulatus</i>	5	4.5	3.4	11.9
EAST	<i>Leiostomus xanthurus</i>	8	3.2	3.2	19.0
EAST	<i>Diplectrum formosum</i>	37	1.8	2.0	88.1
EAST	<i>Synodus foetens</i>	30	1.1	1.4	71.4
EAST	<i>Trachinocephalus myops</i>	29	1.5	1.1	69.0
EAST	<i>Orthopristis chrysopterus</i>	11	1.2	1.1	26.2

Table 3: Stations that were surveyed and dropped due to untrawlable habitat in the East Delta (n=7) on NOAA ship *Oregon II* R2-17-05.

SEAMAP Station #	Transect 1	Transect 2	Transect 3	Transect 4
E0603/167	28.7947 N 83.5261 W 28.7727 N 83.5425 W	28.7668 N 83.5311 W 28.7911 N 83.5195 W	28.7935 N 83.5452 W 28.7705 N 83.5574 W	
E0619/174	28.52694 N 84.18611 W 28.58944 N 84.15417 W	28.42917 N 84.23917 W 28.48917 N 84.10389 W	28.43572 N 84.0529 W 28.41909 N 84.0511 W	
E0518/178	27.92389 N 83.71194 W 27.95222 N 83.70861 W	27.71461 N 83.7026 W 27.7265 N 83.7009 W	27.72653 N 83.6804 W 27.74552 N 83.6783 W	
E0522/179	27.67149 N 84.1275 W 27.6397 N 84.1321 W	27.63968 N 84.1472 W 27.67432 N 84.1471 W		
E0525/180	27.49972 N 84.24472 W 27.46444 N 84.34 W	27.465 N 84.39111 W 27.64083 N 84.475 W		
E0526/181	27.50472 N 84.36167 W 27.39444 N 84.35056 W	27.53194 N 84.30333 W 27.43722 N 84.48389 W		
E0621/189	28.83444 N 84.80361 W 28.92778 N 84.73056 W	28.92556 N 84.57667 W 29.02361 N 84.59472 W		

Figure 1: Trawl stations completed by NOAA ship *Oregon II* R2-17-05 (n=175). The areas where there are large gaps in sampling coverage are where SEAMAP state partners completed. See <http://seamap.gsmfc.org/listcruises.php> for further information.

