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

CHAPMAN Cruise 92-03 (48)
05/19-07/01/92

INTRODUCTION

The NOAA Ship CHAPMAN departed Pascagoula, Miss. on May 19, 1992 to conduct the fourth video/trap reef fish survey, which was also the first SEAMAP reef fish survey, in the Gulf of Mexico from 5 to 60 fathoms (Figure 1). During daylight hours one fish trap with a video camera mounted inside was deployed at 146 randomly selected sites. Video data collected during the cruise will be analyzed at the NMFS Pascagoula Laboratory for species composition and abundance. At 36 stations, during the third leg of the cruise a Fisheries Acoustics System (FAS) was used in conjunction with the trap/video (TV) system to measure biomass.

Unscheduled port calls were made May 25 at Galveston, Tex. to exchange a scientist and June 13, at St. Petersburg, Fla. for vessel maintenance. Scheduled port calls included Pascagoula May 3, and Key West, Fla. June 17 to exchange scientific crews. The vessel returned to Pascagoula July 1.

OBJECTIVES:

1. Assess relative abundance of reef fish populations and habitat using a fish trap/video recording system.

2. Determine if a Fisheries Acoustics System methodology can be applied to reef fish communities.

3. Collect environmental data at each stations.

4. Collect ichthyoplankton samples at selected reef sites.

METHODOLOGY:

Natural reef fish habitat from Brownsville, Tex. to the southern tip of Florida at 81000 W. longitude and 240391 N. latitude between five and 60 fathoms was inscribed on navigation charts. The area was then divided into east and west Gulf at 89020100 W. longitude. Both areas were again subdivided into 10 x 10 nautical mile blocks, and reef habitat within each block was divided into 100 meter square sample sites. Blocks to be surveyed were randomly selected with probabilities proportional to size (size being the number of sample sites in a block).

Within each selected block, 100 sample sites were randomly selected, and their positions placed into the ship's navigation plotter. Each selected block was occupied for one 24-hr period, where night hours were devoted to echo sounder surveys of selected sample sites and daytime hours to trap/video sampling. Echo sounder surveys required the ship to pass over the center of as many sample sites as was logistically possible. Sample sites possessing bottom type characteristics of reef fish habitat were listed, and eight sites were randomly selected for sampling. If no reef habitat was located, the vessel proceeded to the next randomly selected block and began an echo survey for reef habitat. Trap/video (TV) sampling normally began one hour after sunup and ended one hour before sundown, though some adjustments in set and recovery times occurred based on water depth, clarity and weather conditions. A Yashica KD-H1708 Hi 8 video camera in an Amphibico V801 Universal housing was mounted outside a single funnel fish trap (7 feet long by 30 inches square) to record habitat and fish activity. The trap/video system was baited with squid and soaked for one hour.

During the third leg the fisheries acoustic system "V" fin towed body containing a 38 kHz transducer was deployed, and a radius of 0.1 nautical miles around the sample site was insonified before and after TV placement. Acoustic data was recorded on digital Audio Tape for analyses at the Pascagoula Lab.

Ichthyoplankton collections consisted of two Tucker trawls and one 10-minute neuston trawl each morning prior to the start of TV surveys if time permitted. Due to use of the V fin during the third leg, one Tucker trawl was made in the evening after completion of survey activities. The 1 m (mouth opening dimension) Tucker trawl, fitted with 3, 0.335 mm mesh nets, sampled the water column in the following manner: net #1 was fished in an oblique path from surface to near-bottom; net #2 was opened at the near-bottom level, fished at that level for three minutes, and then was closed; net #3 was fished during trawl retrieval from near-bottom to the surface.

Ichthyoplankton data is stored at the Panama City Laboratory while disposition of samples will be the responsibility of the Pascagoula Laboratory.

Associated environmental data including salinity, temperature, chlorophyll, and dissolved oxygen, were collected at each survey site. For purposes of this report the Gulf was divided into three faunal areas: the west Gulf (Brownsville, TX to the Mississippi River 89°20'W. longitude); northeast Gulf (Mississippi River 89°20' W. longitude to Tampa, FL 27°30' N. latitude); east Gulf (Tampa, FL 27°30' N. to Key West, FL) (Figure 1).

RESULTS:

Thirty-one blocks were selected for the survey, 12 in the west Gulf, 13 in the northeast Gulf and six in the east Gulf. One block in the west and three in the northeast Gulf had no reef sites, and the TV system was not deployed. Blocks adjacent to the Florida Keys were too shallow for vessel operations and were rejected for survey whenever they were randomly selected. Severe weather during the third leg prevented the survey of two blocks in the eastern Gulf.

The low profiles of many reefs in the eastern Gulf were difficult to identify; however, a good relationship was noted between the FURUNO color echo sounder and video recordings of bottom habitat.

Species identifications for both large and small fish from video records were good. Greatest certainty was noted for those fish nearest to the video recorder, and for larger species.

Preliminary analysis of catch data indicates catch-per-set in the eastern Gulf was highest in numbers of fish but lowest in total weight-per-set. The northeast Gulf, on the other hand, ranked highest in weight-per-set and fell between the west Gulf and east Gulf for numbers of fish taken per set.

Species composition of trap catches in the eastern Gulf were dominated by tomtate (Haemulon aurolineatum), while in the northeast Gulf red porgy (Pagrus pagrus) dominated. Red snapper (Lutjanus campechanus) was the most abundant species collected in the west Gulf. This is the first time red snapper have represented a significant portion of the catch during trap/video surveys. The yellowmouth grouper (Mycteroperca interstitials) was seen primarily in the northeast Gulf where eight specimens were collected. One yellowmouth and one marbled grouper (Epinephelus inermis) were taken in the western Gulf. A single red grouper (Epinephelus morio) was the only grouper collected in the eastern Gulf. Commercial snappers other than red snapper caught during the cruise included vermilion snapper (Rhomboplites aurorubens) taken Gulf wide and lane snapper (Lutjanus synagris) and yellowtail snapper (Ocyurus chrysurus) seen only in the eastern Gulf.

SCIENTIFIC PERSONNEL

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Table 1. Species composition of trap catches for northeast, east and west Gulf of Mexico, including numbers and weights in kilograms.

		No.	Wt.
Western Gulf of Mexico			
Balistes capriscus	(gray triggerfish)	31	24.9
Calamus leucosteus	(whitebone porgy)	1	0.1
Caulolatilus chrysops	(goldface tilefish)	1	1.3
Chaetodon sedentarius	(reef butterflyfish)	4	0.04
Diplectrum bivittatum	(dwarf sand perch)	1	0.1
Epinephelus inermis	(marbled grouper)	1	2.7
Gymnothorax moringa	(spotted moray)	1	1.1
Haemulon aurolineatum	(tomatate)	32	4.2
Lutjanus campechanus	(red snapper)	80	42.0
Mycteroperca interstitialis	(yellowmouth grouper)	1	1.9
Pagrus pagrus	(red porgy)	4	3.0
Pristipomoides aquilonaris	(wenchman)	7	2.8
Rhomboplites aurorubens	(vermilion snapper)	61	28.8
Stenotomus caprinus	(longspine porgy)	3	0.4
Northeast Gulf of Mexico			
Balistes capriscus	(gray triggerfish)	11	13.55
Bodianus pulchellus	(spotfin hogfish)	2	0.2
Calamus bajonade	(jolthead porgy)	3	2.8
Calamus nodosus	(knobbed porgy)	5	2.5
Diplectrum bivittatum	(dwarf sand perch)	15	0.8
Diplectrum formosum	(sand perch)	9	0.85
Epinephelus morio	(red grouper)	11	13.55
Mycteroperca interstitialis	(yellowmouth grouper)	8	3.45
Pagrus pagrus	(red porgy)	128	44.15
Pomacentrus variabilis	(cocoa damselfish)	1	0.1
Rhomboplites aurorubens	(vermilion snapper)	87	29.05
Serranus phoebe	(tattler)	2	0.2
Other			
Euryalae	(basket star)	1	0.1
Eastern Gulf			
Balistes capriscus	(gray triggerfish)	5	3.9
Calamus nodosus	(knobbed porgy)	1	0.2
Calamus proridens	(littlehead porgy)	6	0.4
Diplectrum formosum	(sand perch)	4	0.2
Epinephelus morio	(red grouper)	1	2.4
Haemulon aurolineatum	(tomatate)	55	5.3
Haemulon plumieri	(white grunt)	30	3.7
Lutjanus synagris	(lane snapper)	25	3.4
Monacanthus ciliatus	(fringed filefish)	7	0.6
Ocyurus chrysurus	(yellowtail snapper)	1	0.3
Pagrus pagrus	(red porgy)	9	3.2
Rhomboplites aurorubens	(vermilion snapper)	2	0.8

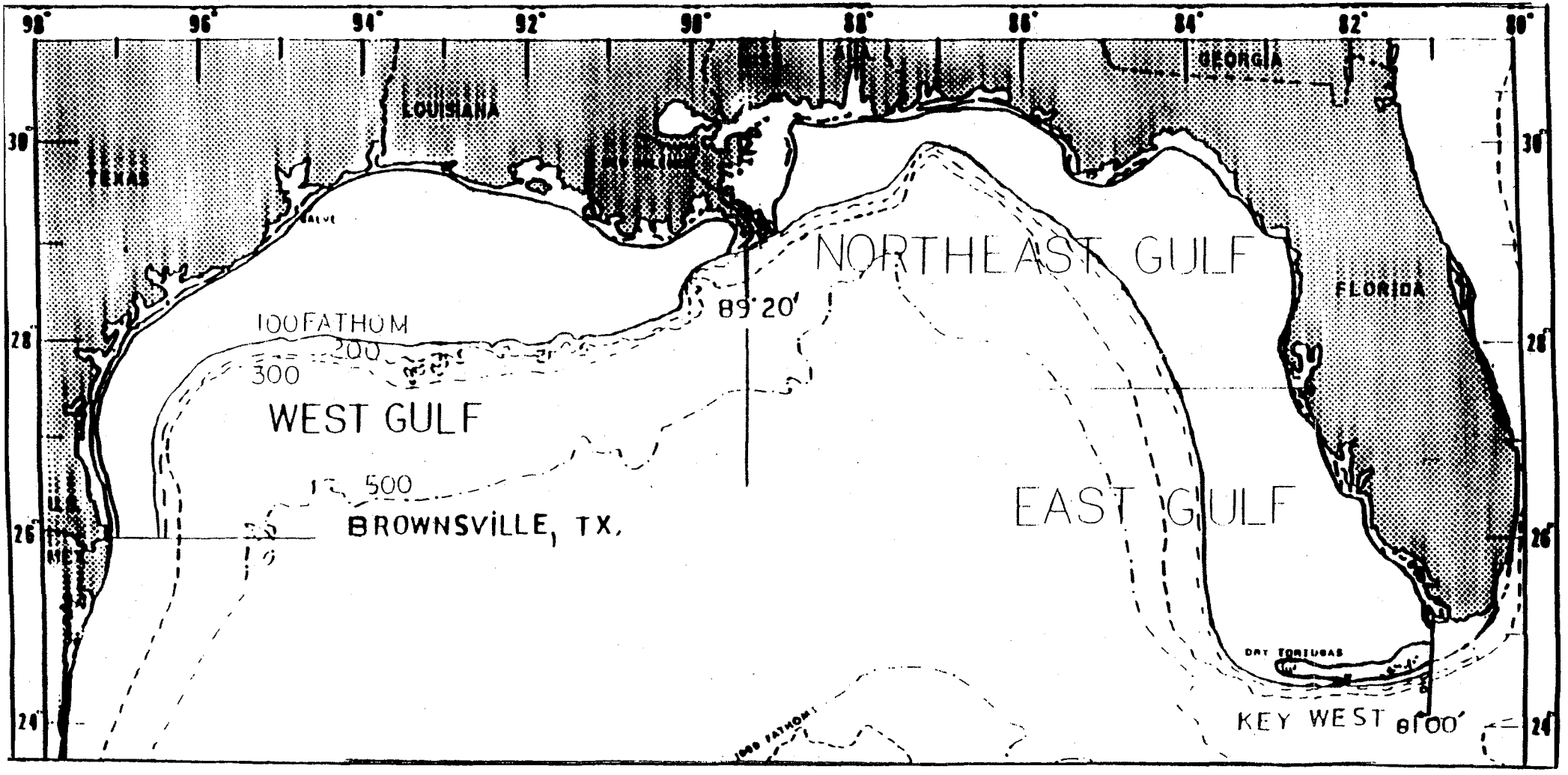

Fig. 1 Survey area includes the area from Brownsville, Tex. to Key West, Fla. and from 5 to 60 fathoms