U. S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Center
Pascagoula Facility
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Pascagoula, Miss. 39568-1207

NOAA Ship OREGON II Cruise 169
9/2-30/87

INTRODUCTION

The NOAA Ship OREGON II departed Pascagoula, Miss. on September 2, 1987 to study the abundance and distribution of eggs and larvae of king mackerel, clupeid and sciaenid fish species. The first leg (9 days) was a joint cruise for Panama City, Fla. and Beaufort, NC laboratories. This leg consisted of ichthyoplankton studies of the Mississippi River plume fronts. The second leg (20 days) consisted of predetermined stations in the northern Gulf of Mexico (83°00' to 97°00' W. long. and 26°00' to 30°30'N. lat.). One port call was made on September 10 in Pascagoula, Miss. The cruise terminated in Pascagoula on September 30, 1987.

OBJECTIVES

Primary objectives of this cruise were to:

a) Collect ichthyoplankton samples with bongo nets, neuston nets, and tucker trawls for the studies of abundance and distribution of the eggs and larvae of king mackerel, clupeid and sciaenid fish species.

b) Collect CTD data and water samples from surface, mid and maximum depth (not to exceed 200 meters) for: 1) chlorophyll concentrations; 2) dissolved oxygen concentrations; 3) salinity determinations.

c) Conduct a series of Mississippi River plume frontal interface studies by: 1) observing and collecting debris associated with the frontal interface; 2) estimating the rate of frontal interface convergence.

d) Man a sea turtle and marine mammal watch during daylight hours in the plume area.

MATERIALS AND METHODS

Leg 1:

The first leg of the ichthyoplankton survey started at the Mississippi River plume front September 2. Once the plume front was located by visual observation, a twelve mile transect was established (six miles on either

side of the front) with stations every two miles. There were twelve of these transects (see Fig. 1). At each station a CTD cast was made and water samples for dissolved oxygen were taken at surface, mid and maximum depth. At selected stations surface chlorophyll samples were taken. At each station a three net tucker trawl (each net 1 sq. m. with 0.303 mm mesh) was fished for three minutes at maximum, mid-depths and the surface. The net was opened at the selected depth with a messenger. A 10 minute neuston tow was made at the surface after each tucker trawl tow using a 1 X 2 m net with 0.947 mm mesh.

At six selected stations the rate of frontal convergence was estimated. To accomplish this, surface drifters (data cards) were dispensed from the deck of the OREGON II or from a launch, along a short transect normal to the frontal interface. The rate of convergence was determined by observing their trajectory with a hand held range finder. After each of these exercises, a series of CTD, hydro casts, tucker trawls, and neuston tows were made on both sides of the frontal interface.

Existing amounts of floating debris associated with frontal interfaces were determined with surface tows of the neuston net and by visual observation. The macro-debris was processed and recorded on the vessel. The tucker trawl was towed throughout the water column to determine the distribution and abundance of small plastic particles associated with the plume fronts. Samples were also taken from non plume areas adjacent to the plume to provide "control" samples for comparison.

Leg 2:

The NOAA Ship OREGON II departed Pascagoula, Miss. on September 11, 1987 to begin a king mackerel and red drum egg and larvae survey along a predetermined cruise track (Fig. 2). Station selection was made on a systematic grid pattern of 30 minutes latitude and longitude and between 5 and 100 fathoms from Florida to Brownsville, Tex.

The ship stopped at each station for a CTD cast, and water for dissolved oxygen samples was taken at surface, mid and maximum depth. At three stations the CTD was inoperative; therefore XBT and water bottle casts were taken. Three replicate samples of surface chlorophyll were taken at each station.

One bongo and one neuston tow was made at each preselected station. Bongo tows were single oblique, surface to near bottom or 200 m, paid out at the rate of 50 m per minute and retrieved at 20 m per minute, using 0.333 mm mesh nets. Using an electronic inclinometer, vessel speed was adjusted during tows to maintain a 45° wire angle. A neuston tow was made after each bongo tow using a 1 X 2 m net with 0.947 mm mesh. The neuston net was towed at the surface for 10 minutes at 1.5 knots off the side of the vessel.

All plankton samples were initially preserved in 10% buffered formalin and after 48 hours were transferred to 95% ethyl alcohol for final preservation.

RESULTS

A total of 191 stations were occupied. The following results were produced:

CTD cast	173
Tucker trawl	85
Neuston tows	191
XBT cast	27
Chlorophyll samples	573
Oxygen samples	519
Secchi disk	52
Forel-ule	52
1/2 m net casts	8
Frontal convergence studies (surface drift cards)	6

Three sea turtle sightings were made, one adult leatherback, one juvenile loggerhead and a dead "yearling size" Kemp's ridley was recovered and preserved for further study.

DISPOSITION OF SAMPLES

The left bongo samples were sent to the NMFS Miami Laboratory for shipment to the Polish Sorting Center, Szczecin, Poland for sorting and identification. The right bongo and neuston samples from leg 2 were sent to the Gulf Coast Research Laboratory, Ocean Springs, Miss. for storage. The right bongo and neuston samples from leg 1 were taken to the NMFS Beaufort and Panama City Laboratories for: 1) vertical and horizontal distribution studies; 2) gut analysis (mackerel); 3) growth studies (mackerel); 4) condition analysis (recent growth) employing biochemical techniques; and 5) aging validation.

A ROSCOP II form has been submitted to the National Oceanographic Data Center.

CRUISE PARTICIPANTS

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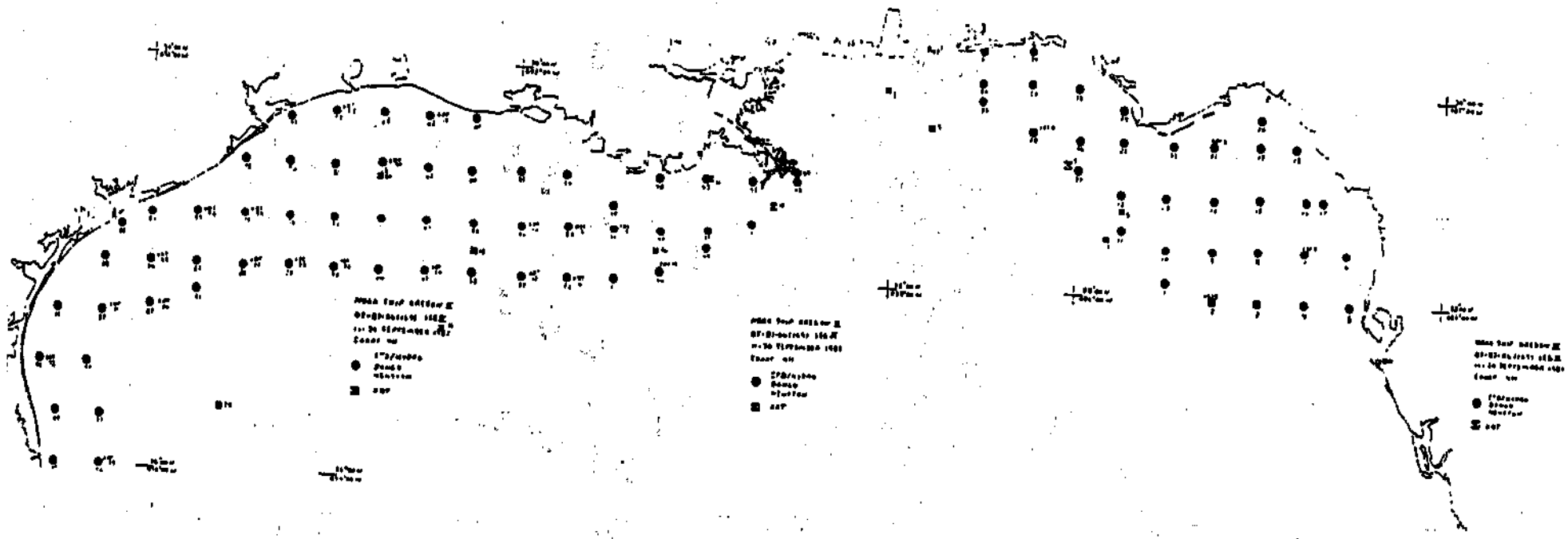

Figure 2. Preselected stations.

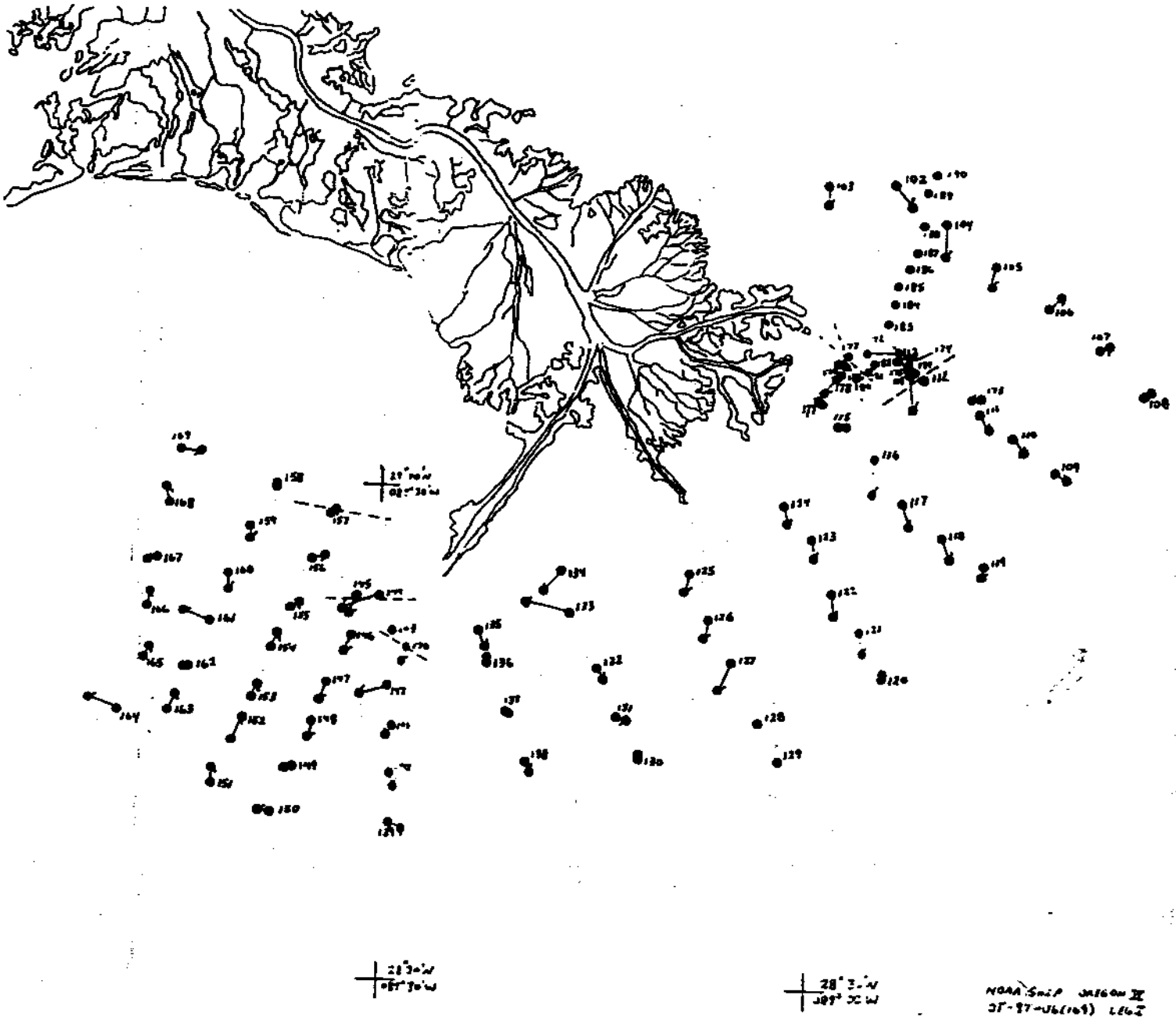

Figure 1. Mississippi River plume survey.