

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

OREGON II CRUISE 88-04(174)
6/13-7/15/88

INTRODUCTION

The NOAA Ship OREGON II departed Pascagoula, MS on 13 June, 1988 to conduct a 33-day Southeast Area Monitoring and Assessment Program (SEAMAP) Survey in the northern and U. S. western Gulf of Mexico. The survey included additional inshore sampling by Florida, Alabama, Mississippi, Louisiana and Texas. The primary objective was to monitor size and distribution of penaeid shrimp and provide information on stocks of shrimp and groundfish across the northern Gulf of Mexico.

Thirty seven (37) stations along the Louisiana coast were not completed due to insufficient time. The NOAA Ship OREGON II returned to Pascagoula, MS on 15 July 1988, terminating the cruise.

OBJECTIVES

1. Determine size distribution of penaeid shrimp by depth across the northern and U. S. western Gulf of Mexico.
2. Obtain samples of brown, pink and white shrimp to determine length-weight relationships.
3. Collect finfish catch data.
4. Collect hydrographic and environmental data.
5. Collect ichthyoplankton samples throughout the survey area.
6. Compare catch rates between a 65-ft fish trawl and a 40-ft shrimp trawl.

SURVEY METHODOLOGY

Two hundred and fourteen randomly selected trawl sites from Perdido Bay to the Texas-Mexico border in 5 to 60 fm were identified for day and night sampling. Sample trawls used were a 40-ft shrimp trawl with mud rollers and 8'x40" wooden chain doors and a 65-ft 2 seam fish trawl with six 11-in floats and 8'x40" wooden chain doors. Sample sites encompassed 1 or 2 fm depth strata between 5 and 30 fm and 5 fm depth strata between 30 and 60 fm. Tows were perpendicular to depth contours with tow duration from 10 to 60 minutes. Several stations required multiple tows to sample the entire depth strata.

Total weight of each catch was recorded, after which all Penaeus and other predefined invertebrates and finfish were separated. Weight and number of each species was then recorded from each sample. A random selection of 200 shrimp of each species (when available) was removed for data on sex, maturation, and length frequency.

All OREGON II stations were double rigged using a 65-ft fish trawl and a 40-ft shrimp trawl. Each catch was worked separately.

HYDROGRAPHIC AND ENVIRONMENTAL DATA

Selected hydrographic data were taken before the start of each station. A conductivity, temperature and depth (CTD) unit was used to collect salinity and temperature data. An XBT probe was dropped once a day (more when the CTD was inoperable) and water samples from surface, mid, and maximum depths were saved for analysis at the Pascagoula laboratory. These data will be used to validate CTD readings. Water for dissolved oxygen was collected from surface, mid and maximum depths. All day stations included secchi disk and water color readings. Chlorophyll samples (3 replicates) were taken at each station and filtered with a GF/C filter. All samples were from surface waters except those stations less than 20 fm off Louisiana, which included bottom samples. Chlorophyll samples were frozen in petri dishes for analysis at the Pascagoula laboratory.

ICHTHYOPLANKTON

Bongo and neuston samples were taken at preselected stations integrated into the cruise track. Samples were initially held in buffered formalin for 24 hours. Formalin was then removed and samples were preserved in 95% ethanol.

VESSEL SATELLITE COMMUNICATION SYSTEM

A data communication terminal aboard the NOAA Ship OREGON II was used to transmit environmental data and catch rates to the Mississippi Laboratories. Satellite transmission provided information for a weekly report on shrimp and finfish catch rates and location.

OBSERVATIONS AND RESULTS

A total of 389 shrimp and bottomfish tows (Figure 1) were completed. Total finfish and shrimp catch rates for the 40-ft shrimp trawl are east of the Mississippi River are shown on Figures 2 and 3. The largest catch of finfish east of the Delta was 1786 lbs south of Mobile Bay in 50 fm. The most abundant species in this catch was longspine porgy (Stenotomus caprinus), which comprised 25.9% of the catch. Finfish and shrimp catch rates, for the 40-ft shrimp trawl, west of the Delta are shown in Figures 4 and 5. The largest catch of finfish was 648 lbs south of Trinity Shoal in 8 to 9 fm. Atlantic croaker (Micropogonias undulatus) were most abundant in this catch, constituting 28.1% of the catch. Finfish and shrimp catch rates for the 40-ft shrimp trawl along the Texas coast are shown in Figures 6 and

7. The largest catch of finfish was 953 lbs off Aransas Pass in 12 to 13 fm. Spot (Leiostomus xanthurus) were most abundant, and constituted 28.9% of the catch.

Shrimp catches were generally light across the entire Gulf. The highest catch (131 lbs/hr) was taken off Port Mansfield, Texas in 14 fm of water.

All data results are from the 40-ft shrimp trawls, as data from the 65-ft fish trawls are not yet available for analysis.

ICHTHYOPLANKTON

Eighteen bongo and neuston samples were obtained during the cruise. Right bongo samples were sent to the NMFS, Miami Laboratory for processing with left bongo and neuston samples sent to the Gulf Coast Research Laboratory for storage. Some ichthyoplankton stations were dropped to provide more time for trawling efforts.

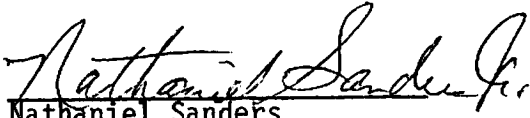
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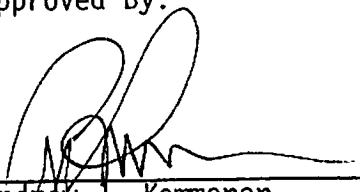
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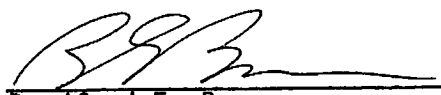


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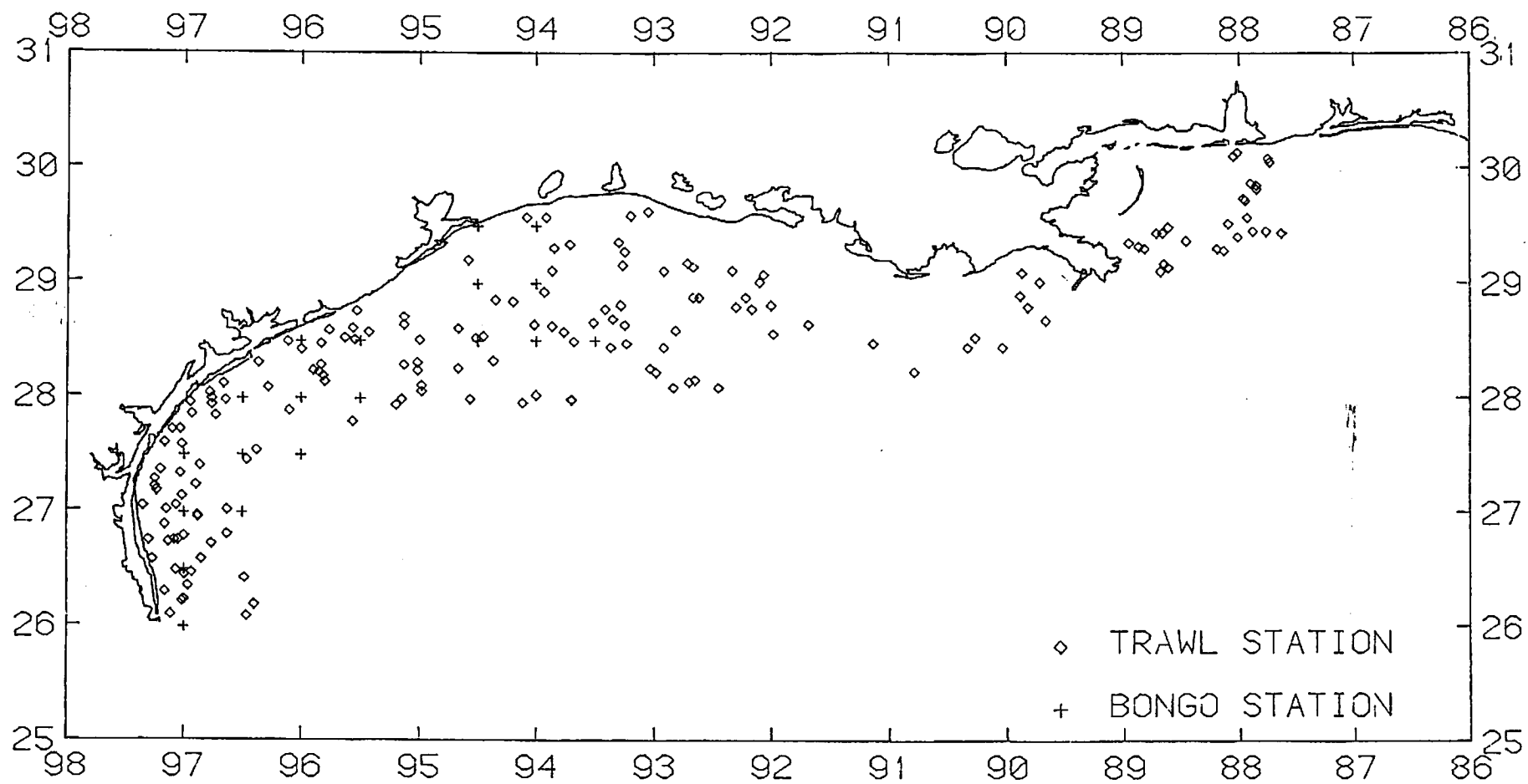


Figure 1. Trawl and ichthyoplankton sample sites.

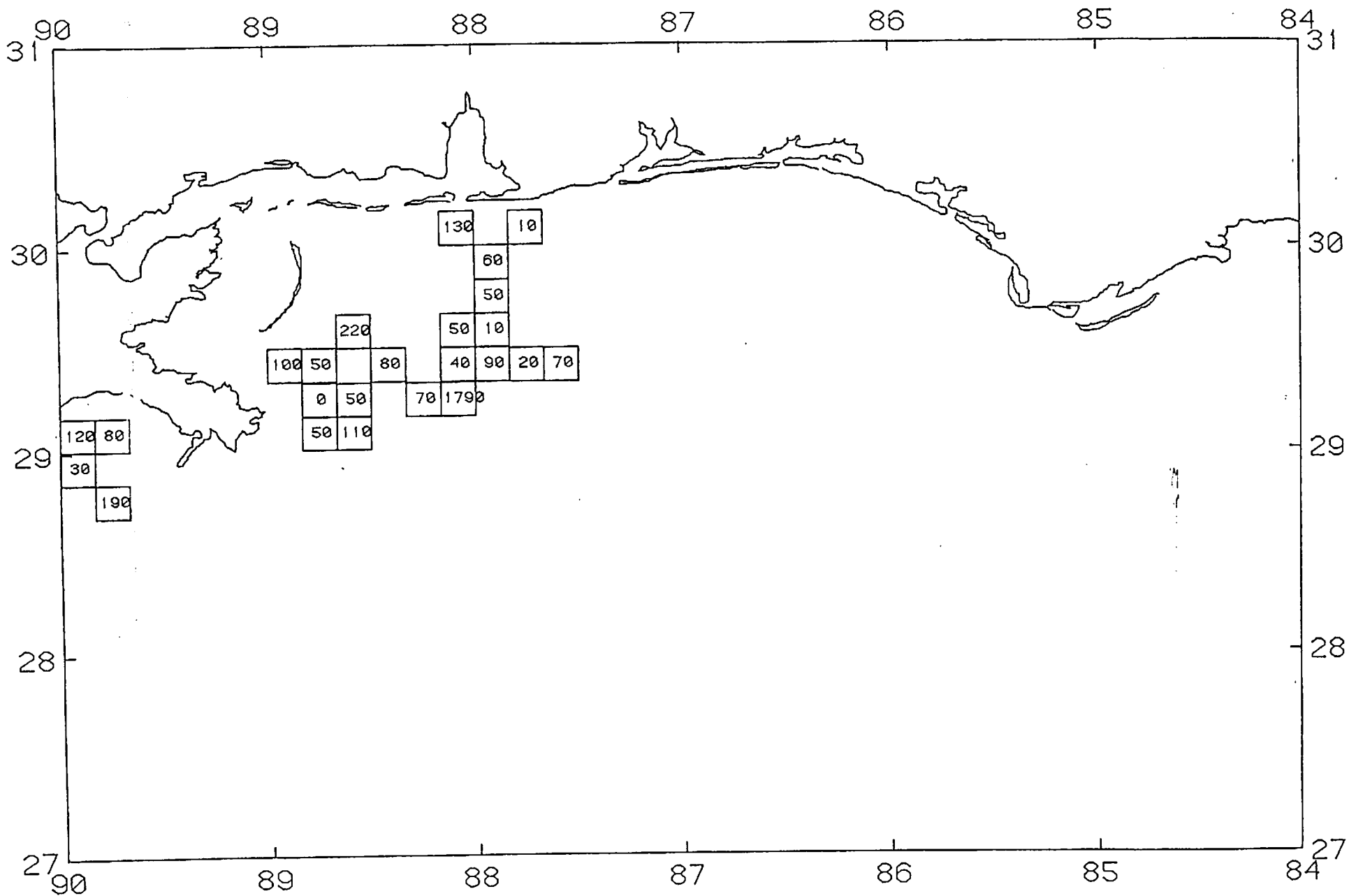


Figure 2. Finfish total weights in the Gulf of Mexico east of the Mississippi River. Numbers are expressed in pounds per hour for a 40-ft. shrimp trawl.

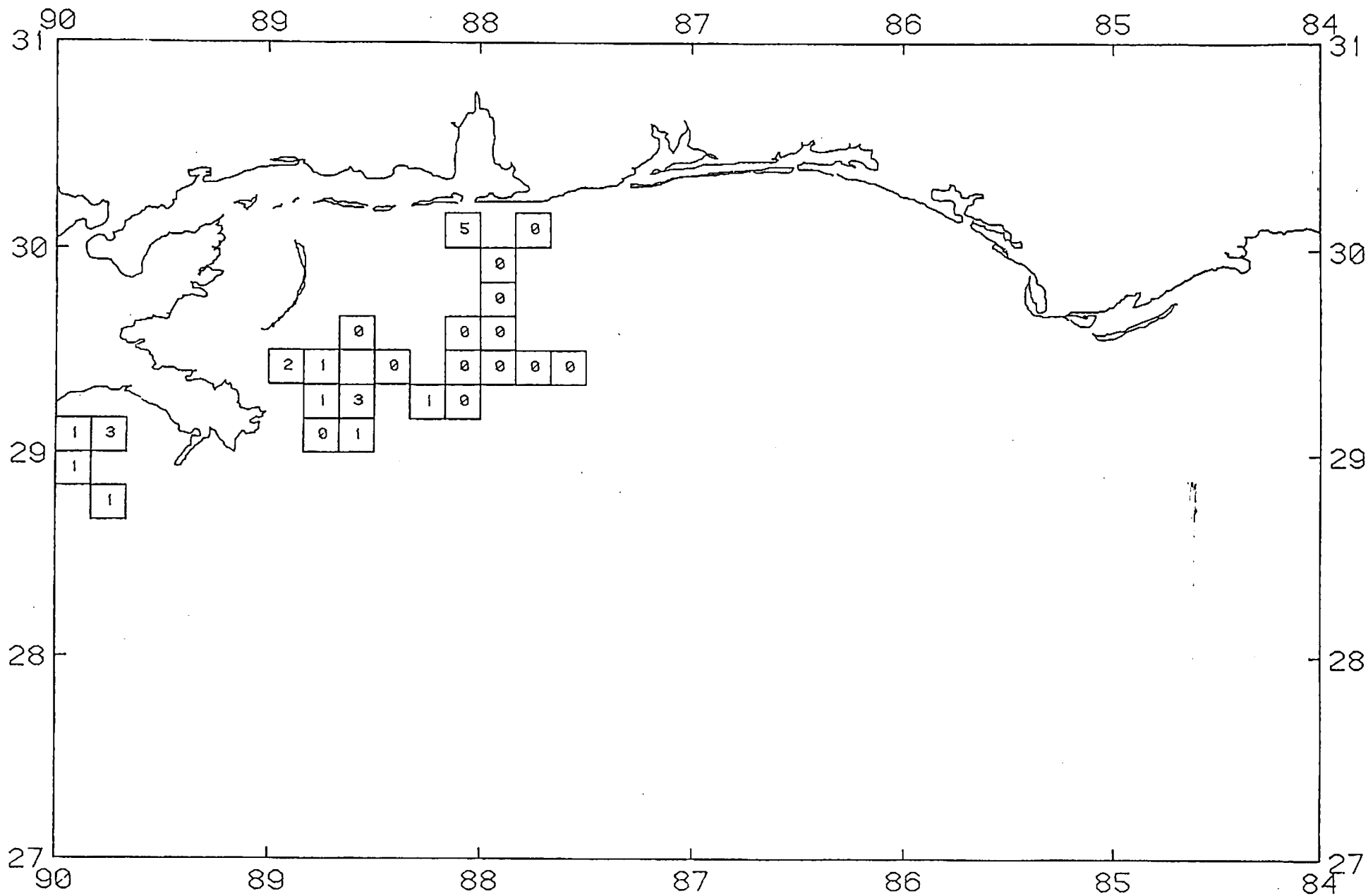


Figure 3. Total weights of Penaeid shrimp in the Gulf of Mexico, east of the Mississippi River. Numbers are expressed in pounds per hour for a 40-ft. shrimp trawl.

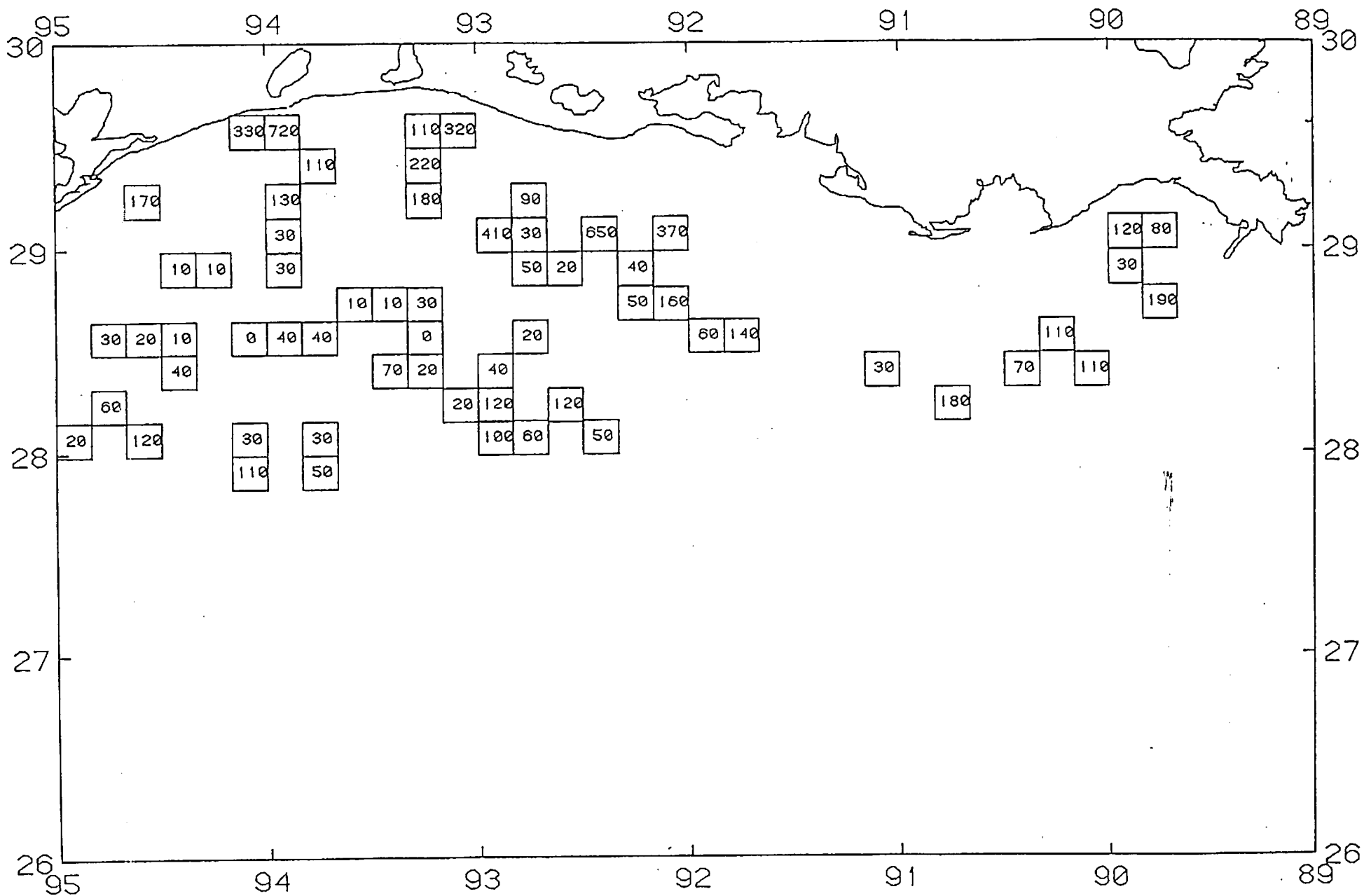


Figure 4. Finfish total in weights in the Gulf of Mexico, west of the Mississippi River. Numbers are expressed in pounds per hour for a 40-ft shrimp trawl.

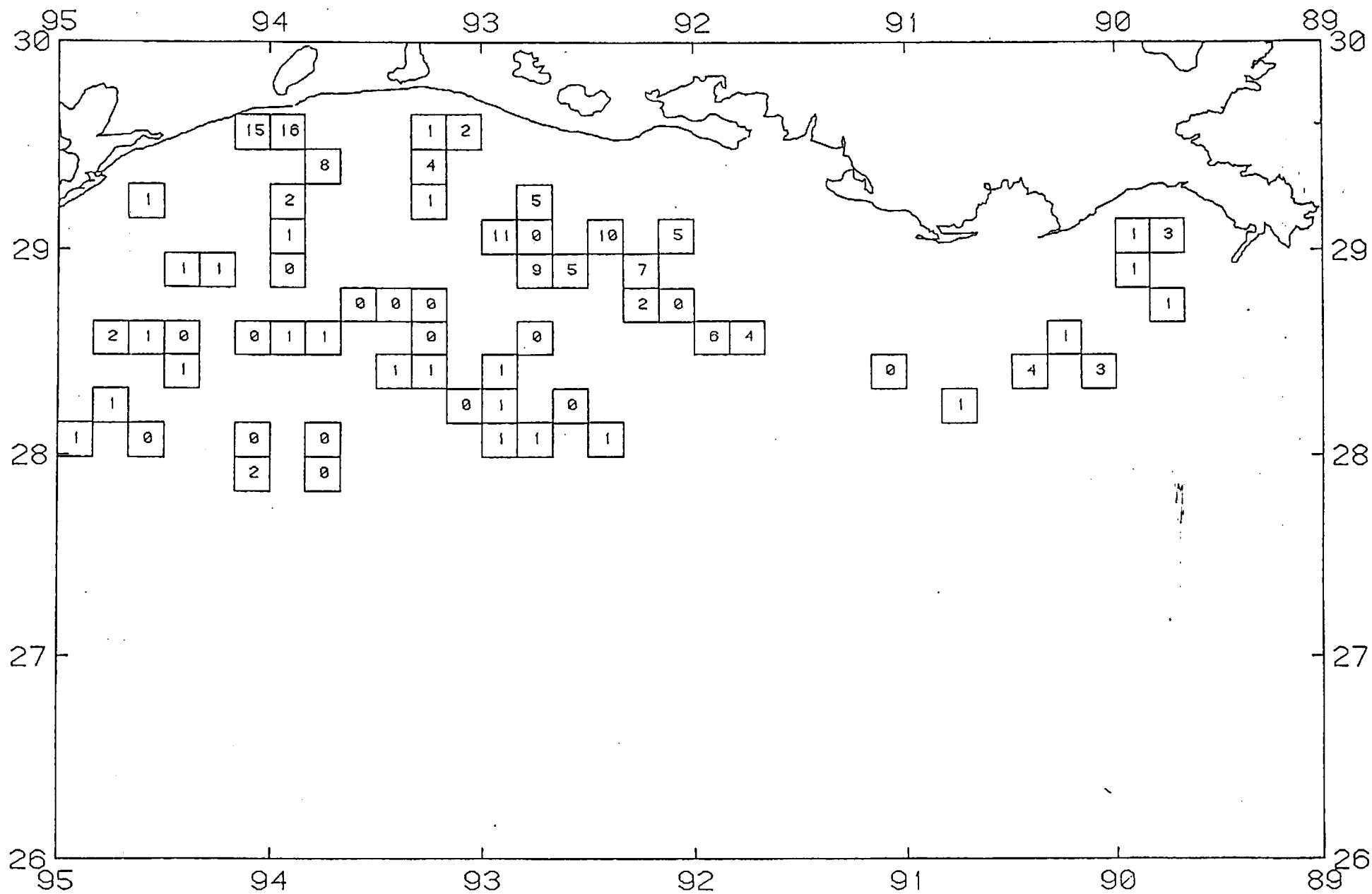


Figure 5. Total weights of Penaeid shrimp in the Gulf of Mexico, west of the Mississippi River. Numbers are expressed in pounds per hour for a 40-ft. shrimp trawl.

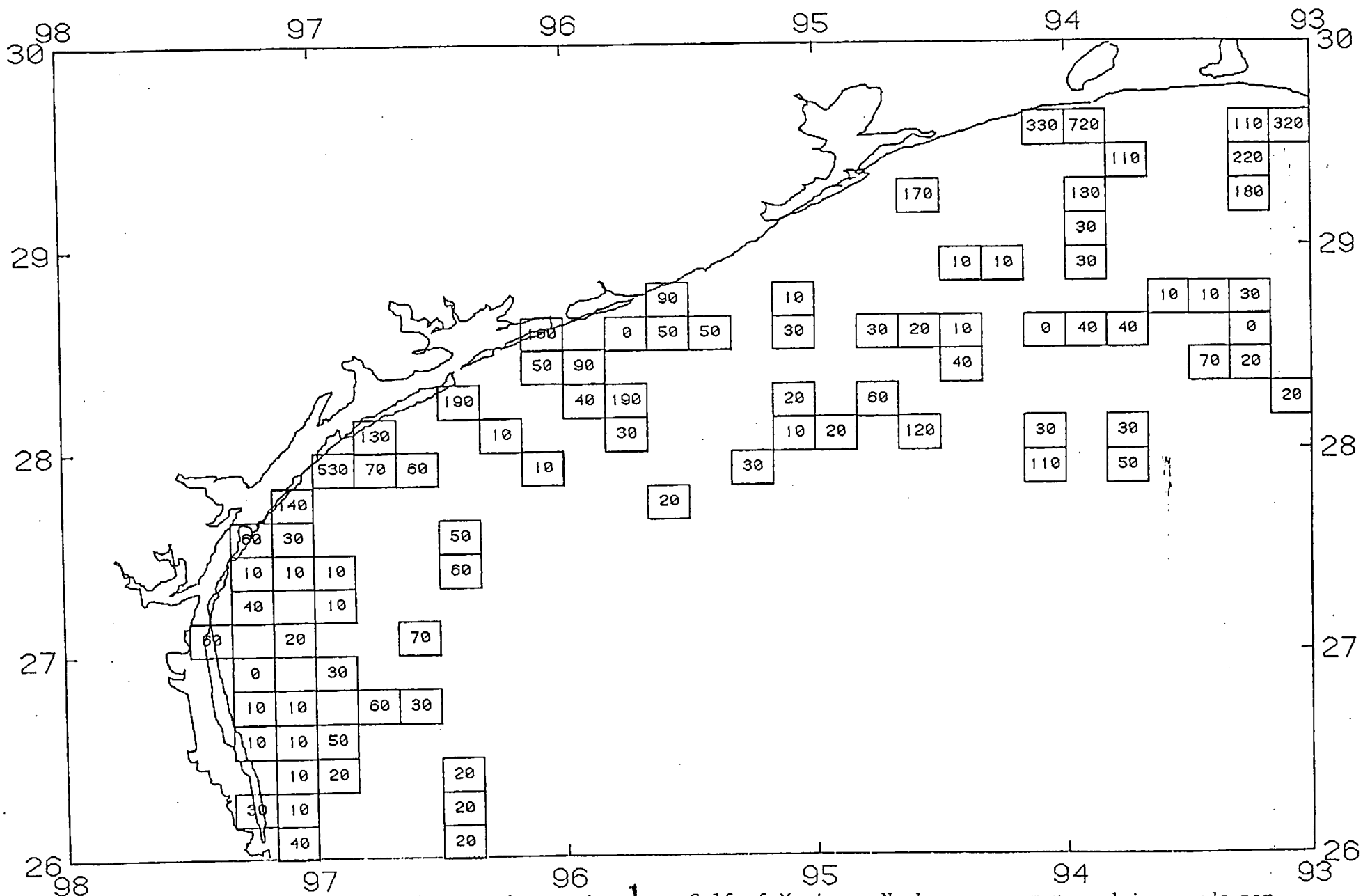


Figure 6. Finfish total weights in the northwestern Gulf of Mexico. Numbers are expressed in pounds per hour for a 40-ft. shrimp trawl.

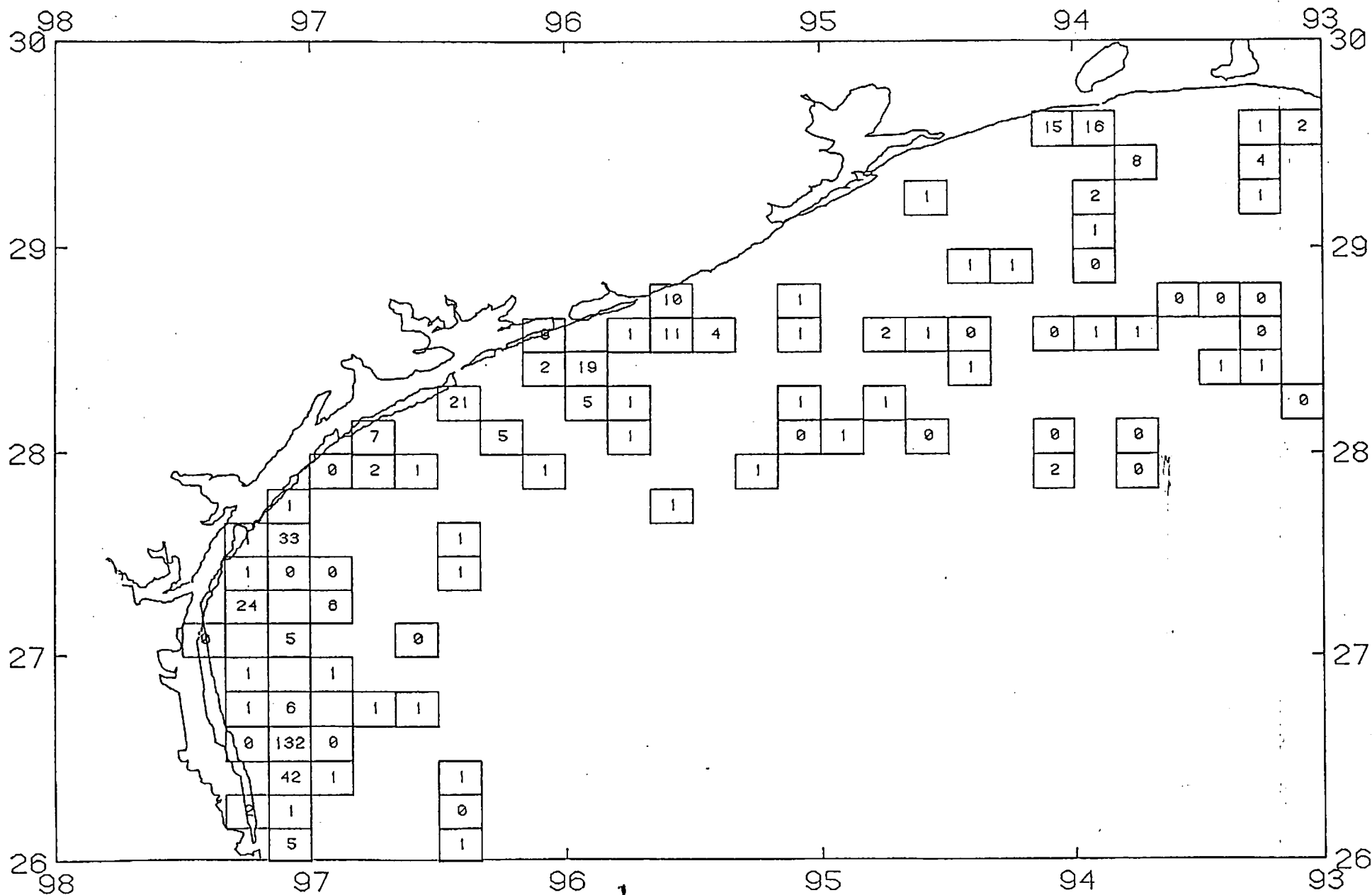


Figure 7. Total weights of Penaeid shrimp in the north western Gulf of Mexico. Numbers are expressed in pounds per hour for a 40-ft. shrimp trawl.