

U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Marine Fisheries Service  
Southeast Fisheries Center  
Pascagoula Facility  
P. O. Drawer 1207  
Pascagoula, MS 39567-0112

NOAA Ship OREGON II Cruise 154  
7/29-8/28/85

### INTRODUCTION

The NOAA Ship OREGON II departed Pascagoula, MS at 1600 hours on 29 July 1985 on a cruise designed to map squid and butterfish distributions in the northern Gulf of Mexico. The cruise was a SEAMAP effort and in addition to the OREGON II, the R/V TOMMY MUNRO also sampled stations in the overall effort.

### OBJECTIVES

1. Determine species composition, relative abundance and distribution of squid and butterfish in the northern Gulf of Mexico.
2. Determine relative abundance and distributional patterns of associated species of fishes and invertebrates.
3. Obtain environmental measurements for correlation with squid and butterfish distributions.
4. Sample ichthyoplankton in the northern Gulf of Mexico.

### METHODS

#### Survey Area

The survey area extended from the Florida shelf to the south Texas shelf in depths of 20 to 270 fathoms. See Figures 1, 2, and 3 for locations of samples.

#### Survey Design

Ten stations were sampled along each transect. The effort was divided between the OREGON II and the TOMMY MUNRO. The sample depths are given in Table 1. Trawl tows were made during daylight hours along the depth contours. Tows made in depths of greater than 100 fathoms were of 60 minutes duration. In depths of less than 100 fathoms tows were 30 minutes in duration. Environmental data were collected at each trawl station.

Ichthyoplankton samples were collected before dawn at the location of the beginning trawl station for the day and again at night at the location of the last trawl station for the day. When time allowed, another ichthyoplankton station was made midway between successive transects. An XBT and hydrocast was taken at each station. During transects in deep water there was insufficient time to allow us to take hydrocasts at all stations and still complete the trawling during daylight hours. In that situation hydrocasts were made at the beginning and end of the days-transect.

## Sampling Gear

### Trawls

Two trawls were used during the cruise. The first was an 80 foot, 2 seam fish trawl. The net was spread with a pair of  $3m^2$  steel "v" doors. The bridles used were 50 fathoms in length. Warp length was generally 3:1 except at the shallowest stations where a 4:1 ratio was used. Towing speed was 3 knots.

The second trawl used was a 60 foot, 2 seam fish trawl. This net was only intended as backup for the 80 foot trawls, but it became necessary to use the 60 foot trawls when the 80 foot nets were lost and/or damaged beyond our ability to repair them at sea. The 60 foot trawl was spread using  $2.6m^2$  steel "v" doors. The bridles were 50 fathoms in length. Warp lengths were the same as for the 80 foot trawls.

### Environmental Gear

Temperature was measured using a Sippican XBT system. XBT measurements were transmitted via satellite back to shore stations and a hardcopy printout of the data was attached to each environmental data sheet. The hardcopy included a plot and listing of inflection points in the temperature profile. In addition to temperature, water samples were collected at the surface, mid-water and bottom at most stations. From these samples, salinity samples were collected, chlorophyll samples were filtered and dissolved oxygen was measured.

## RESULTS

Catch rates of gulf butterfish, *Peprilus burti* were low throughout the cruise. Butterfish catches were confined to tows in depths of 110 fathoms or less. Figures 4, 5, and 6 show the catch rates for butterfish over the area sampled. The maximum catch of butterfish by the OREGON II was 312 lbs/hour, using the 80 foot trawl. This catch was made in 85 fathoms of water on the 88° W transect. Bottom temperature at that station was 14.3° C. The R/V TOMMY MUNRO

had catches larger than that on two occasions. The first was 532 lbs/hour in 25 fathoms on the 88°30 W transect, bottom temperature 21.9° C, and the other was in 26 fathoms of water on the 91° transect, bottom temperature 22.5° C.

Common squid, Loligo peali, and arrow squid, Doryteuthis plei, were caught from 205 fathoms, inshore to 25 fathoms. Because these two species are very often caught together and are difficult to separate in the field I have combined them in the figures. Catch rates of combined common squid and arrow squid are shown in Figures 7, 8, and 9.

The largest catch of these animals by the OREGON II was 77 lbs/hour for an 80 foot trawl. This catch occurred in 65 fathoms of water on the 88° W transect. Another reasonably large catch of 60 lbs/hour was made at 91° W in 108 fathoms of water.

The other squid species of interest was the shortfinned squid, Illex spp. Shortfinned squid were never very abundant and were restricted to depths greater than 130 fathoms. Figures 10, 11, and 12 show the distribution of catches of shortfinned squid. The largest single catch of shortfinned squid was 11 lbs/hour in 220 fathoms of water along the 86° W transect. A catch of 10 lbs/hour was made in 205 fathoms of water on the 91° W transect.

#### Latent Resources

Several species other than butterflyfish and squid were caught in numbers large enough to be of potential interest as latent resources. The species were often the dominant species in the catch.

Throughout the area sampled, in depths of 115 to 235 fathoms, the beardfish, Polymixia lowei, was caught. Beardfish were about 10 to 15 cm in length. This species dominated in 15% of the total trawl catches. The largest single catch of beardfish was 156 lbs/hour taken in 145 fathoms of water along the 87° W transect.

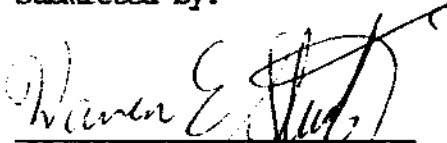
Another common and quite abundant species was the off-shore hake, Merluccius albidus. Offshore hake dominated in 5% of the catches. Two other hakes, both in the genus Urophycis, were important components of the catch. These are U. floridanus and U. cirratus. These animals are found over a very broad depth range. U. cirratus was the dominant species in 11% of the trawl tows. U. floridanus was never dominant but was normally present in the catches.

A very important species in catches off Texas was the wenchman snapper, Pristipomoides aquilonaris. Wenchmen dominated in 15% of the total catches. They ranged in size from 100 g to 200 g and were caught in depths of 65 to 115 fathoms. The largest catch was 150 lbs/hour taken in 85 fathoms along the 96° W transect.


CRUISE PARTICIPANTS

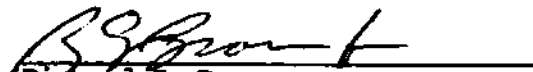
Joseph Benigno, Fishery Biologist, 7/29-8/13/85, NMFS, Pascagoula, Miss.  
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Warren Stuntz, Field Party Chief, 7/29-8/28/85, NMFS, Pascagoula, Miss.  
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Thomas Hansknecht, Cooperator, 8/13-8/28/85, Univ. of West Florida  
Robert Shuford, Cooperator, 7/29-8/13/85, Fort Valley State

Submitted by:

  
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Approved by:

  
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Richard J. Berry  
Center Director

7/29-8/13  
8/14-28

Table 1. Sample depths for cruise 154. Sampling alternated between the two depth tables at each degree of longitude.

Transect Station No.

Depth Ranges

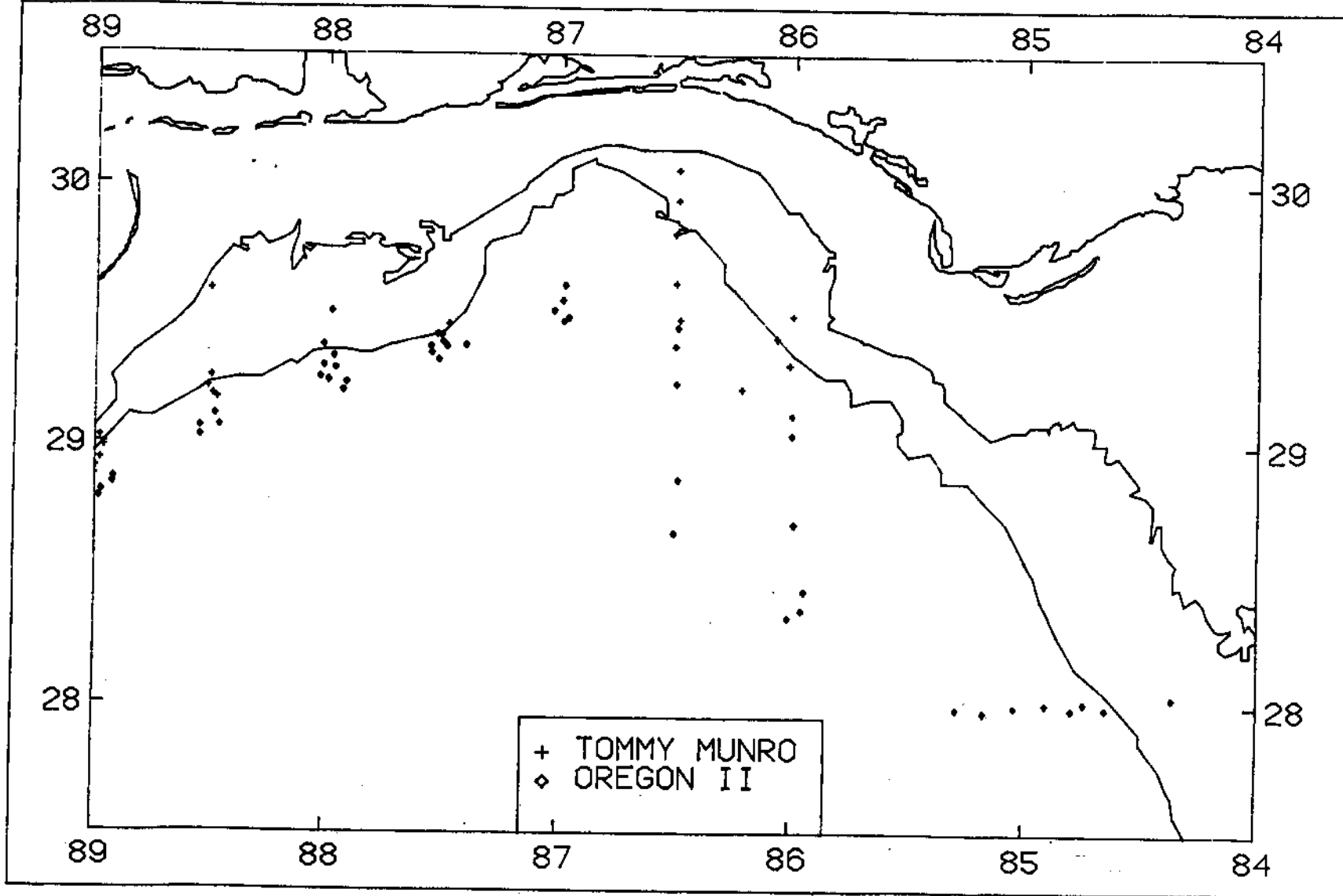
	<u>Fathoms</u>
1	20- 29
2	40- 49
3	60- 69
4	80- 89
5	95-104
6	125-134
7	155-164
8	185-194
9	215-225
10	245-255

Transect Station No.

Depth Ranges

	<u>Fathoms</u>
1	30- 39
2	50- 59
3	70- 79
4	90- 99
5	111-119
6	141-149
7	171-179
8	201-209
9	231-239
10	261-269

SEAMAP SQUID/BUTTERFISH CRUISE  
SAMPLING DATES FROM 7/31/85 TO 8/9/85  
SAMPLING STATIONS



SEAMAP SQUID/BUTTERFISH CRUISE  
SAMPLING DATES FROM 8/10/85 TO 8/26/85  
SAMPLING STATIONS

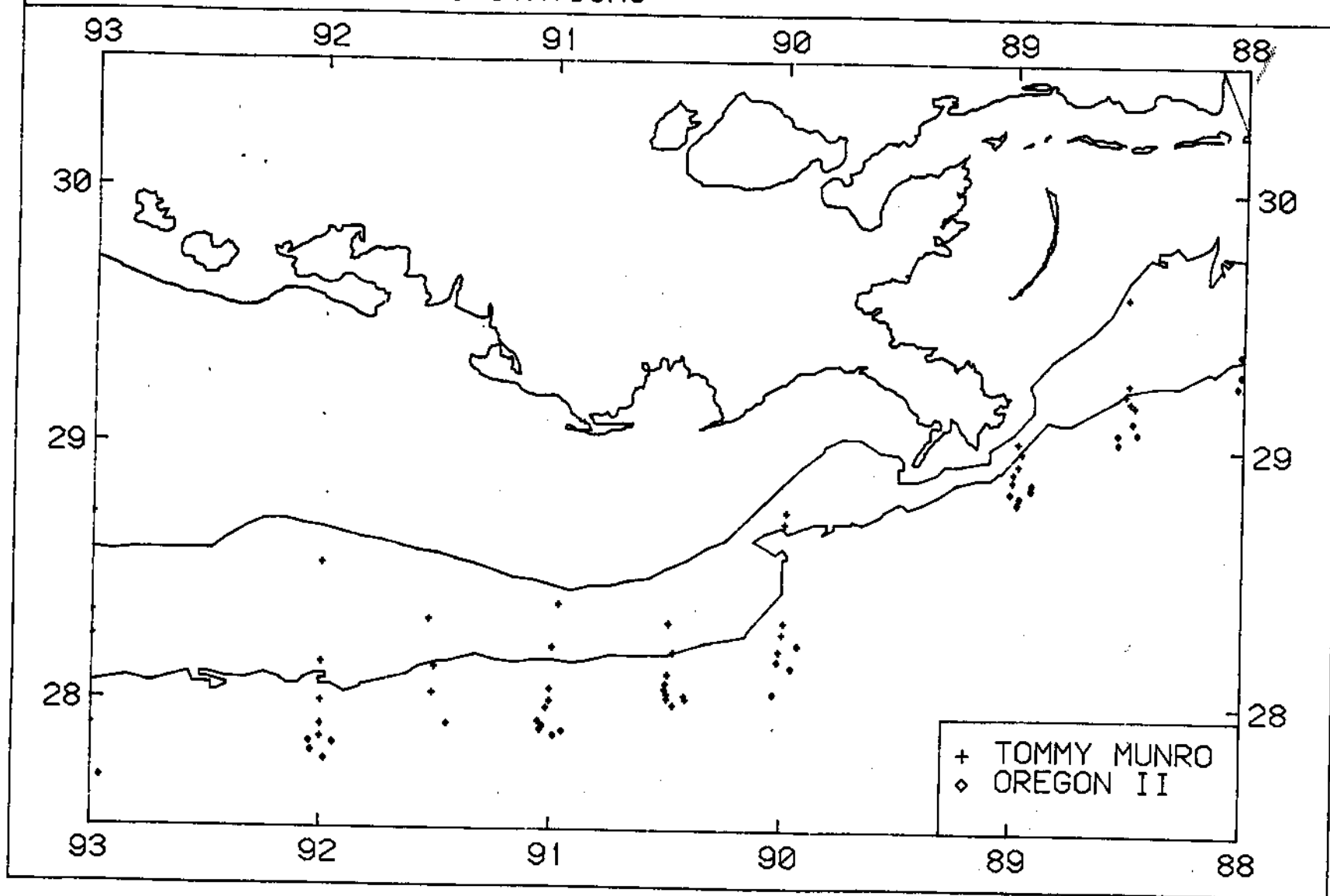


Figure 2

SEAMAP SQUID/BUTTERFISH CRUISE  
SAMPLING DATES FROM 8/18/85 TO 8/25/85  
SAMPLING STATIONS

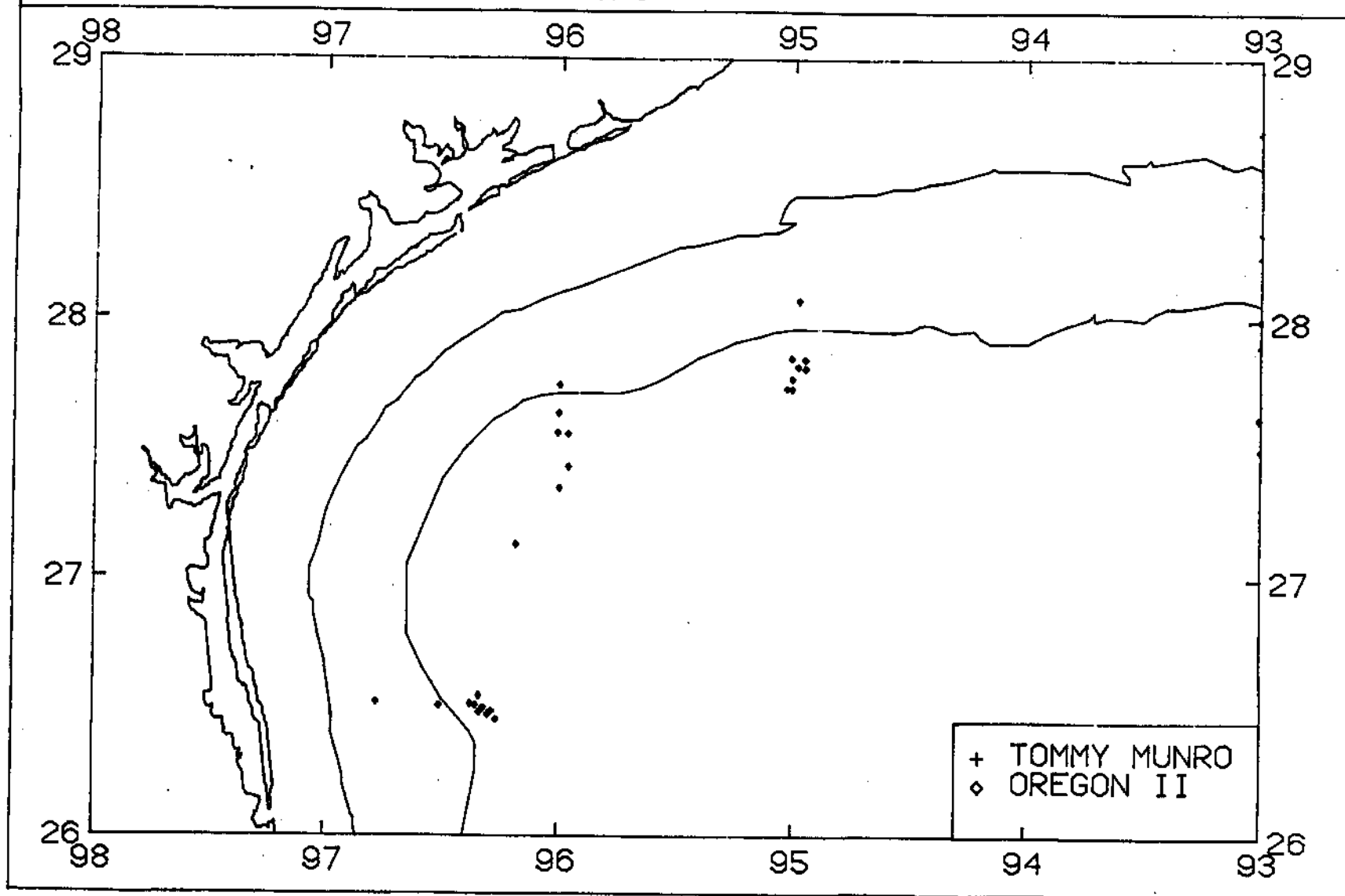


Figure 3.

SEAMAP SQUID/BUTTERFISH CRUISE  
SAMPLING DATES FROM 7/31/85 TO 8/9/85  
AVERAGE BUTTERFISH CATCH IN POUNDS/HOUR

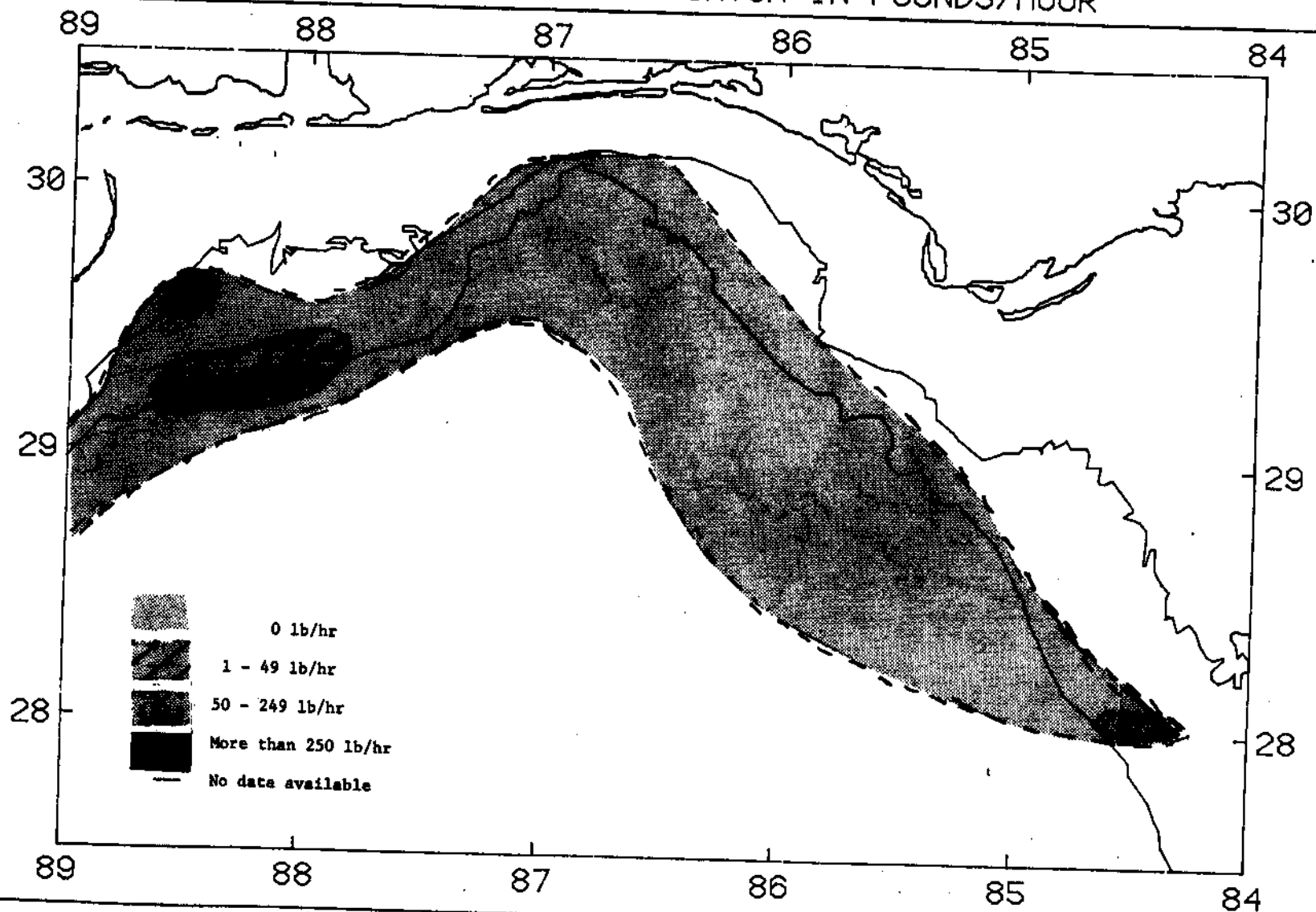


Figure 4

SEAMAP SQUID/BUTTERFISH CRUISE  
SAMPLING DATES FROM 8/10/85 TO 8/26/85  
AVERAGE BUTTERFISH CATCH IN POUNDS/HOUR

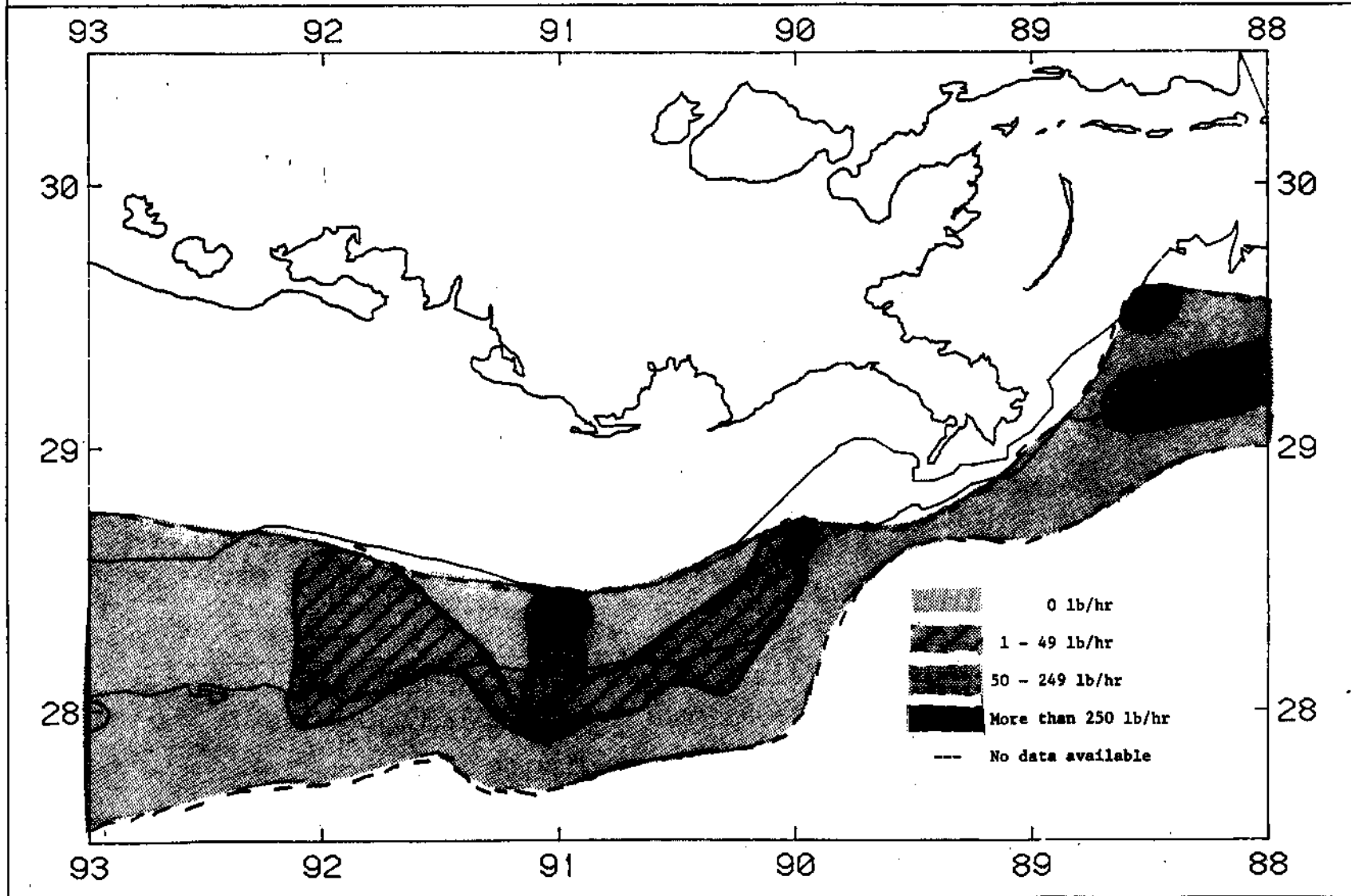


Figure 5

SEAMAP SQUID/BUTTERFISH CRUISE  
SAMPLING DATES FROM 8/18/85 TO 8/25/85  
AVERAGE BUTTERFISH CATCH IN POUNDS/HOUR

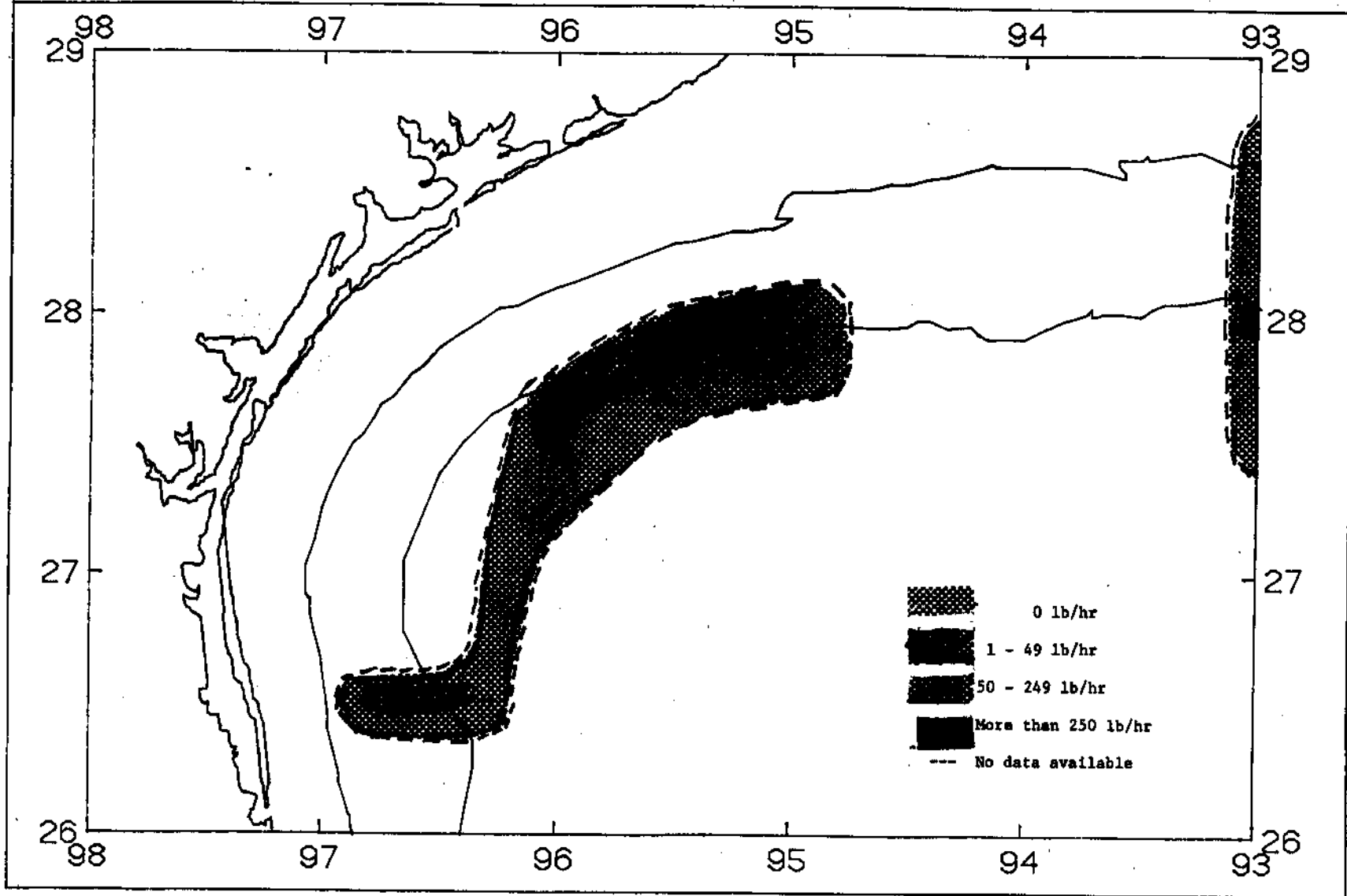


Figure 6

SEAMAP SQUID/BUTTERFISH CRUISE  
SAMPLING DATES FROM 7/31/85 TO 8/9/85  
AVERAGE COMMON SQUID CATCH IN POUNDS/HOUR

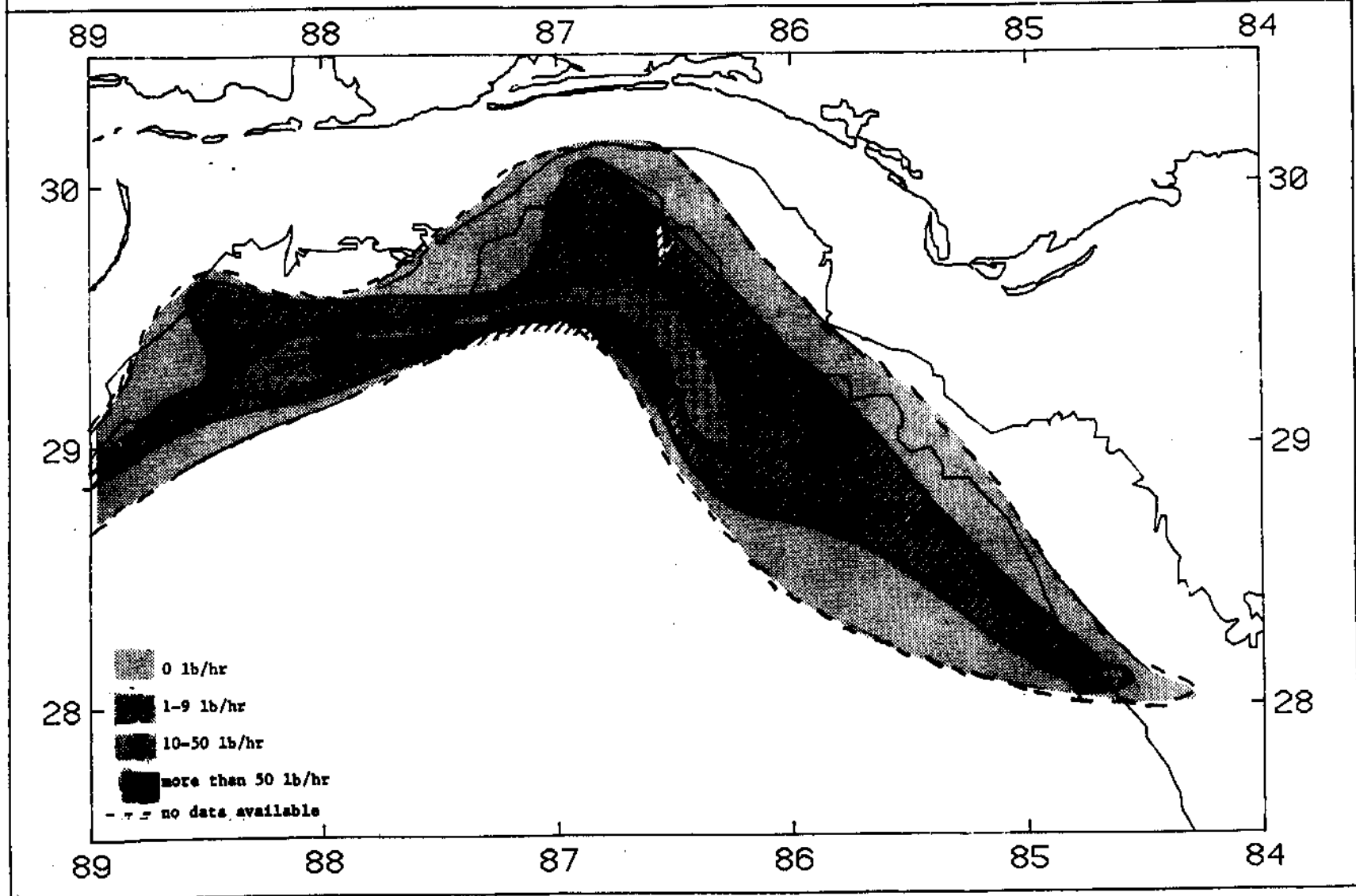


Figure 7

SEAMAP SQUID/BUTTERFISH CRUISE  
SAMPLING DATES FROM 8/10/85 TO 8/26/85  
AVERAGE COMMON SQUID CATCH IN POUNDS/HOUR

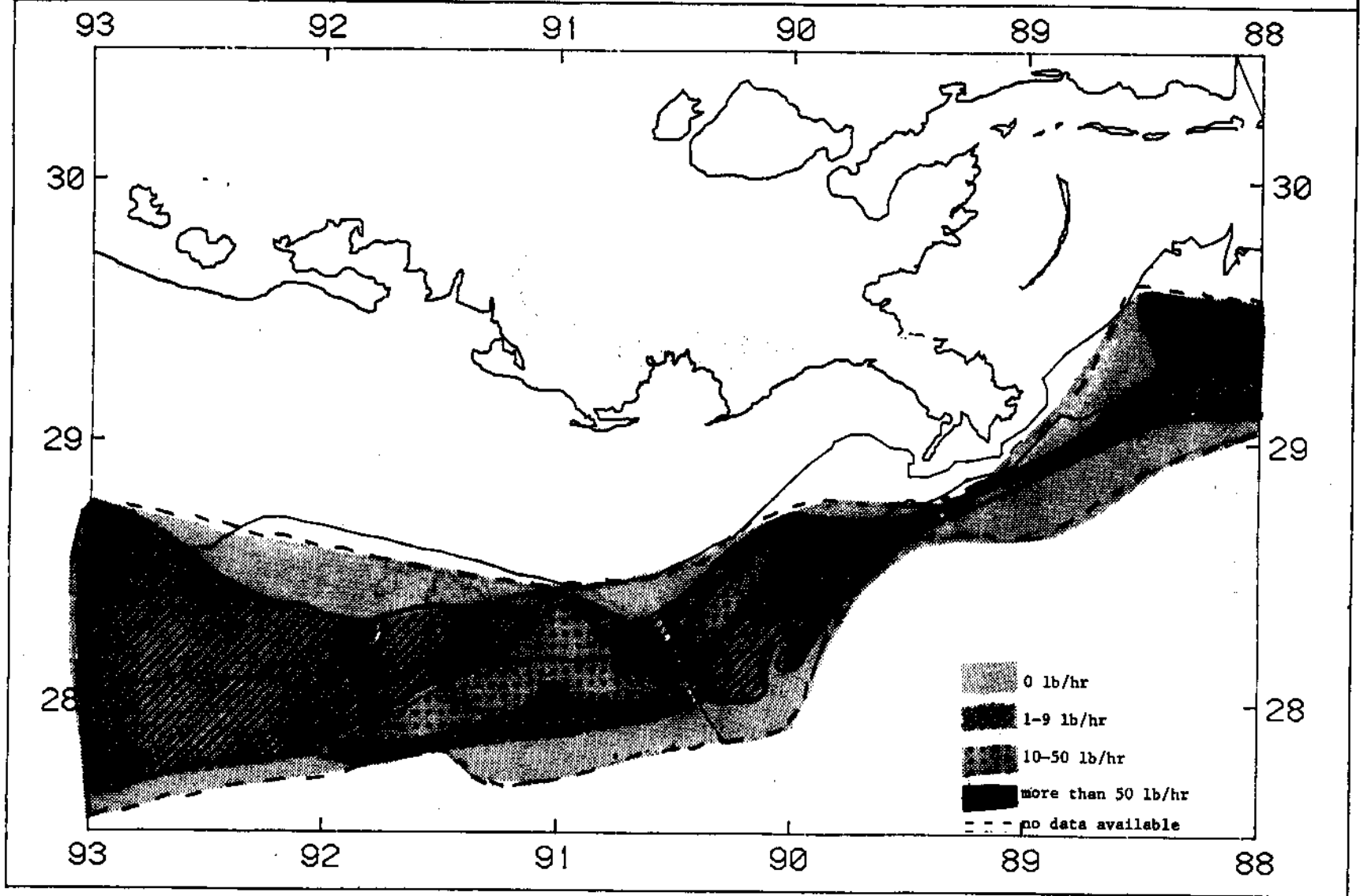


Figure 8

SEAMAP SQUID/BUTTERFISH CRUISE  
SAMPLING DATES FROM 8/18/85 TO 8/25/85  
AVERAGE COMMON SQUID CATCH IN POUNDS/HOUR

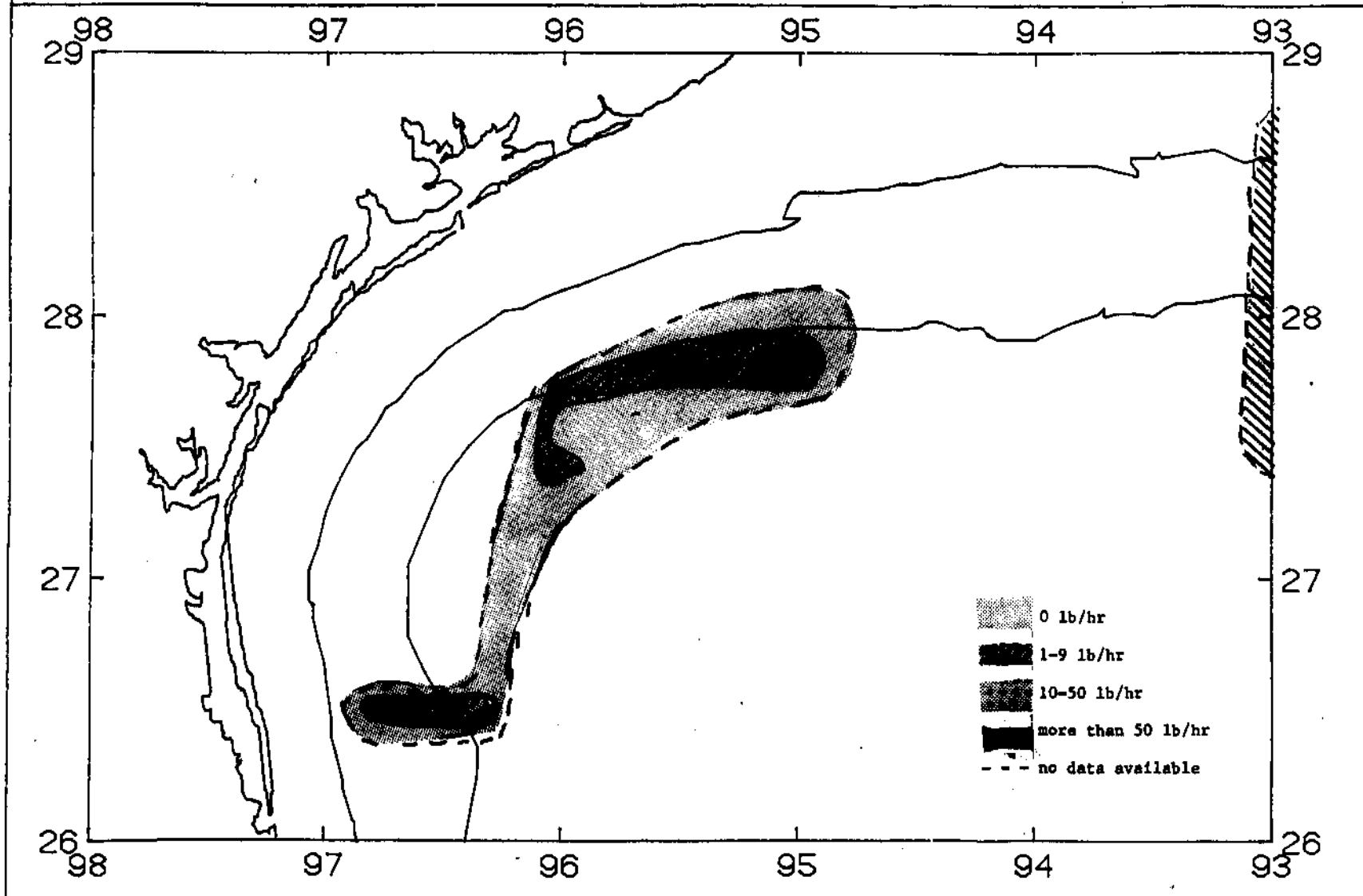


Figure 9

SEAMAP SQUID/BUTTERFISH CRUISE  
SAMPLING DATES FROM 7/31/85 TO 8/9/85  
AVERAGE SHORTFIN SQUID CATCH IN POUNDS/HOUR

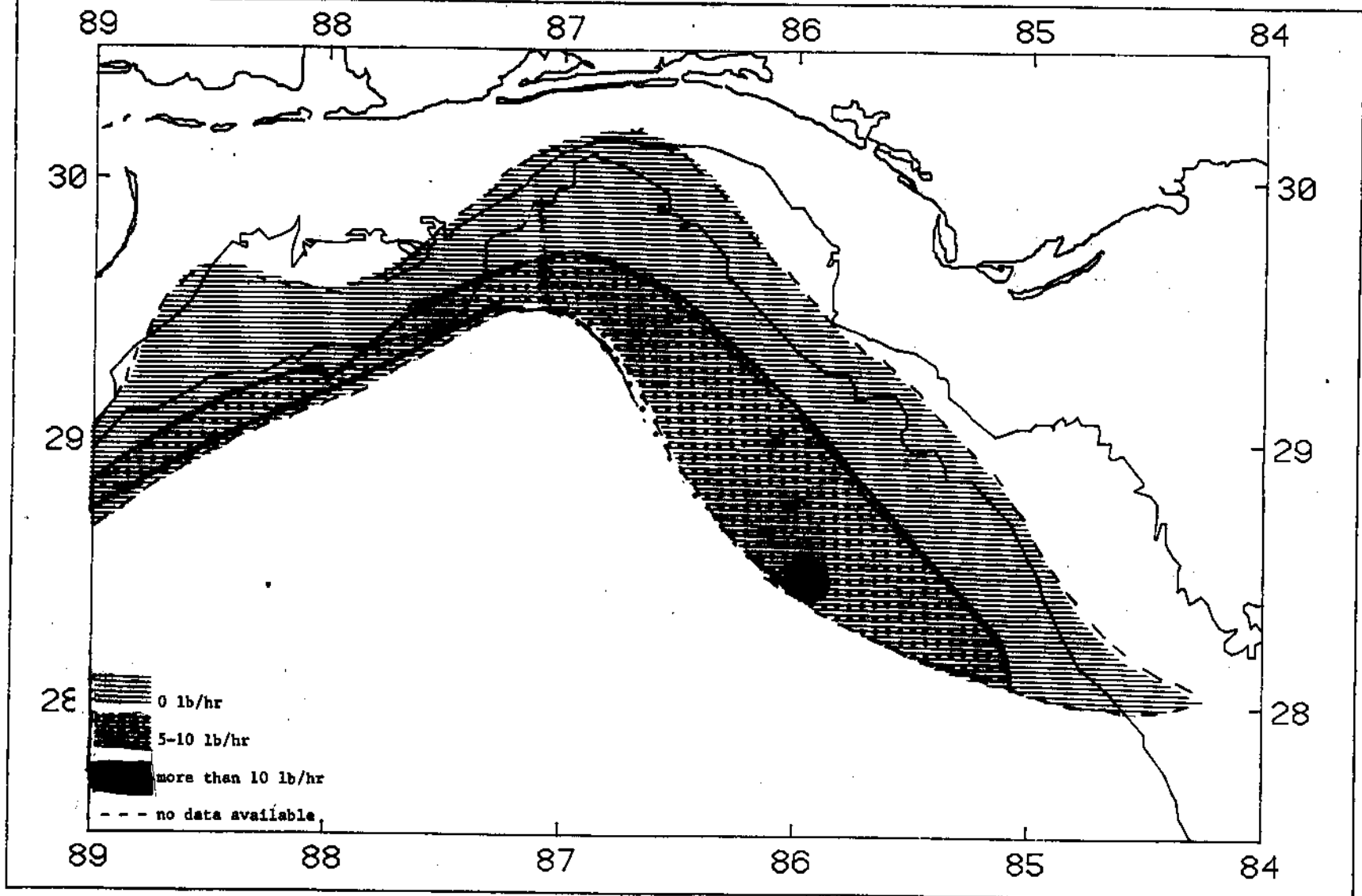


Figure 10

SEAMAP SQUID/BUTTERFISH CRUISE  
SAMPLING DATES FROM 8/10/85 TO 8/26/85  
AVERAGE SHORTFIN SQUID CATCH IN POUNDS/HOUR

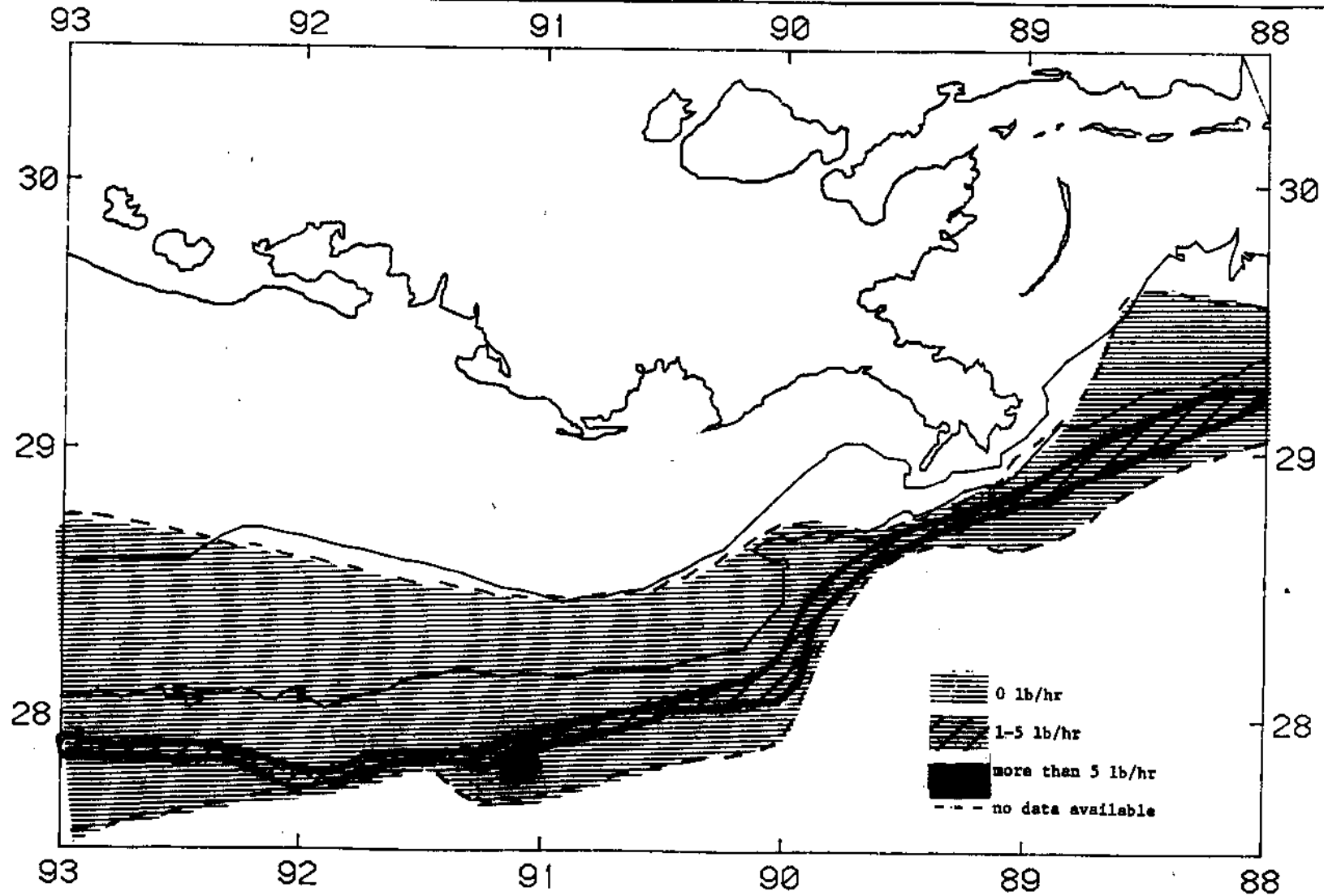


Figure 11

SEAMAP SQUID/BUTTERFISH CRUISE  
SAMPLING DATES FROM 8/18/85 TO 8/25/85  
AVERAGE SHORTFIN SQUID CATCH IN POUNDS/HOUR

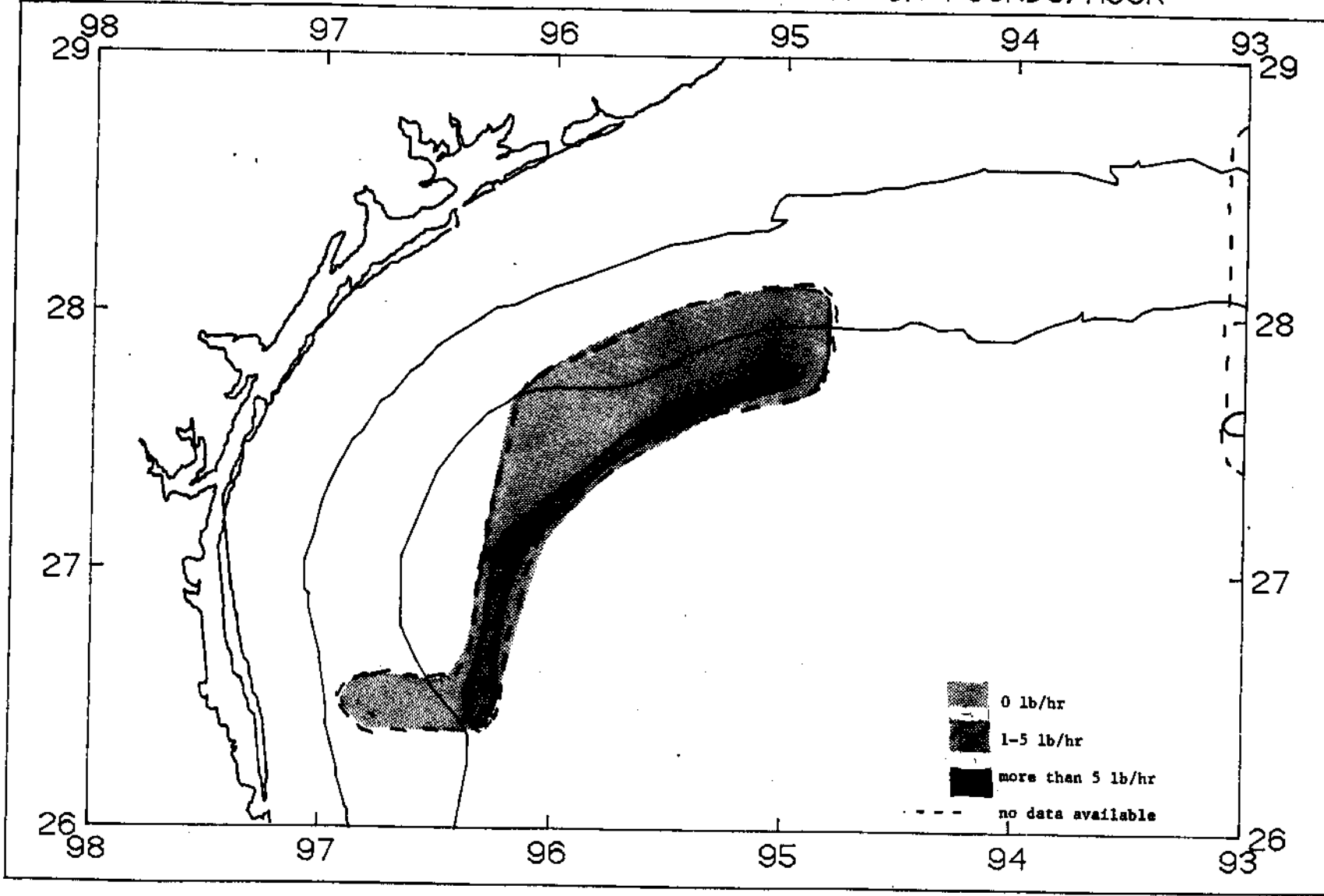


Figure 12