

seamap annual report

to the
technical coordinating committee
gulf states marine fisheries commission

October 1, 1985 - September 30, 1986

SEAMAP subcommittee
walter tatum, chairman

October 16, 1986

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ANNUAL REPORT
TO THE
TECHNICAL COORDINATING COMMITTEE

GULF STATES MARINE FISHERIES COMMISSION

OCTOBER 1, 1985 to SEPTEMBER 30, 1986

SEAMAP SUBCOMMITTEE

WALTER M. TATUM, CHAIRMAN

OCTOBER 16, 1986

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GULF STATES MARINE FISHERIES COMMISSION

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INTRODUCTION

The Southeast Area Monitoring and Assessment Program (SEAMAP) is a State/Federal/university program for collection, management and dissemination of fishery-independent data and information in the southeastern United States. The program presently consists of two operational components, SEAMAP-Gulf of Mexico, which began in 1981, and SEAMAP-South Atlantic, implemented in 1983. A third component, SEAMAP-Caribbean, is in the planning phase.

Each SEAMAP component operates independently, planning and conducting surveys and information dissemination in accordance with administrative policies and guidelines of the National Marine Fisheries Service's Southeast Regional Office (SERO).

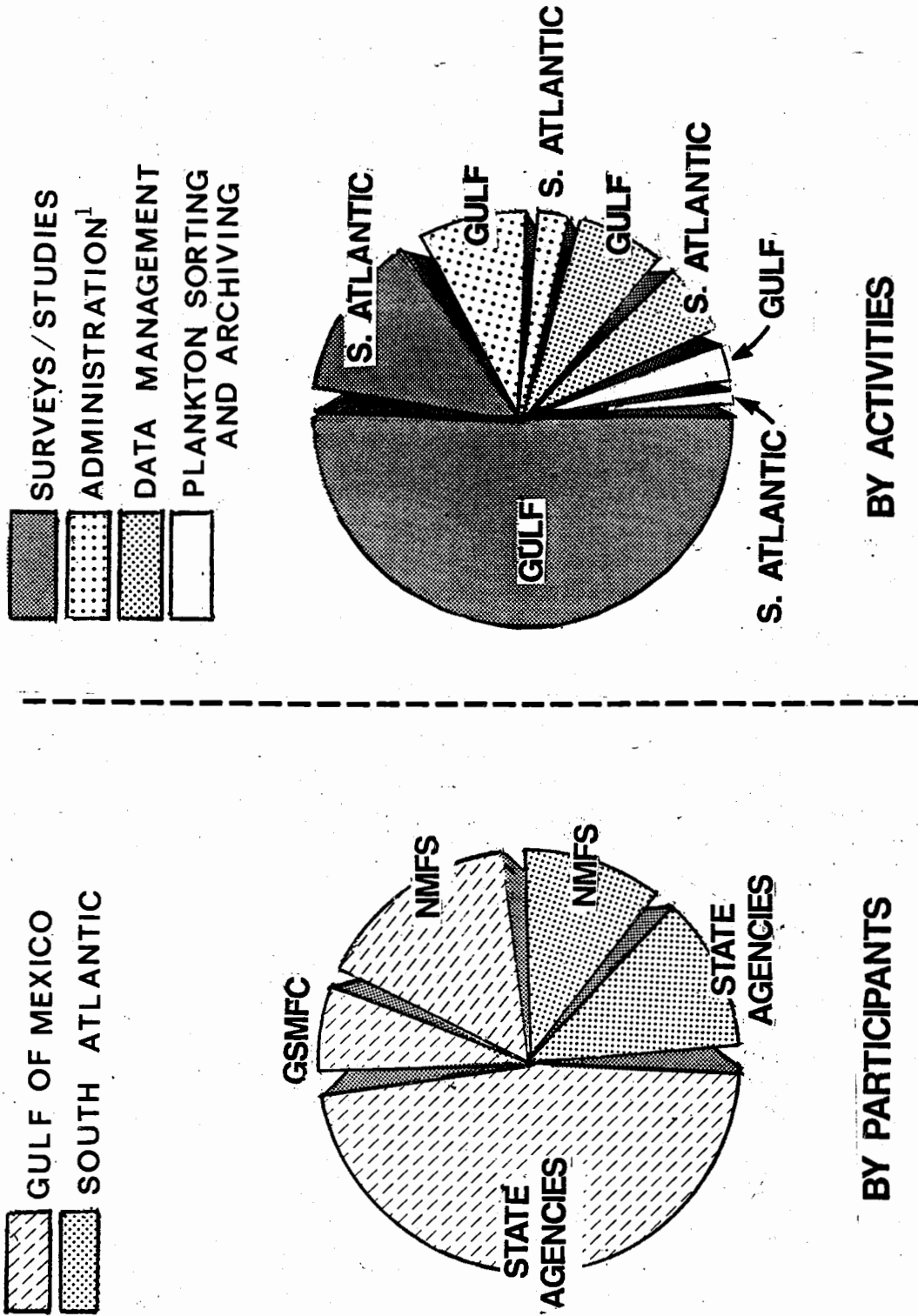
Federal programmatic funding for SEAMAP activities and administration was appropriated in Fiscal Years 1985 and 1986 (October 1, 1985 through September 30, 1986). State and commission funding allocations for FY1986 were handled through State-Federal cooperative agreements, administered by NMFS/SERO and NMFS/SEFC. Program allocations are shown in Figure 1.

In FY1986, SEAMAP operations continued for the fifth consecutive year. SEAMAP resource surveys included the Fall Shrimp/Groundfish Survey, Winter Coastal Herring Survey, Louisiana seasonal trawl surveys, Spring Plankton Survey, Spring Squid/Butterfish Trawl Survey, Summer Shrimp/Groundfish Trawl Survey, September King Mackerel Plankton Survey and plankton and environmental data surveys. Special projects for FY1986 consisted of the Status and Trends Benthic Surveillance Project, red drum studies, and the Shipboard Versus Laboratory Weight Variance Study. Other FY1986 activities included SEAMAP information services and program management. Resource surveys and studies in FY1986 are shown by survey area in Figure 2.

This report is the sixth in a series of annual SEAMAP Subcommittee reports to the Technical Coordinating Committee (TCC) of the Gulf States Marine Fisheries Commission. It is intended to inform the TCC of SEAMAP-Gulf of Mexico activities and accomplishments during FY1986, from October 1, 1985 through September 30, 1986, and proposed SEAMAP activities for FY87.

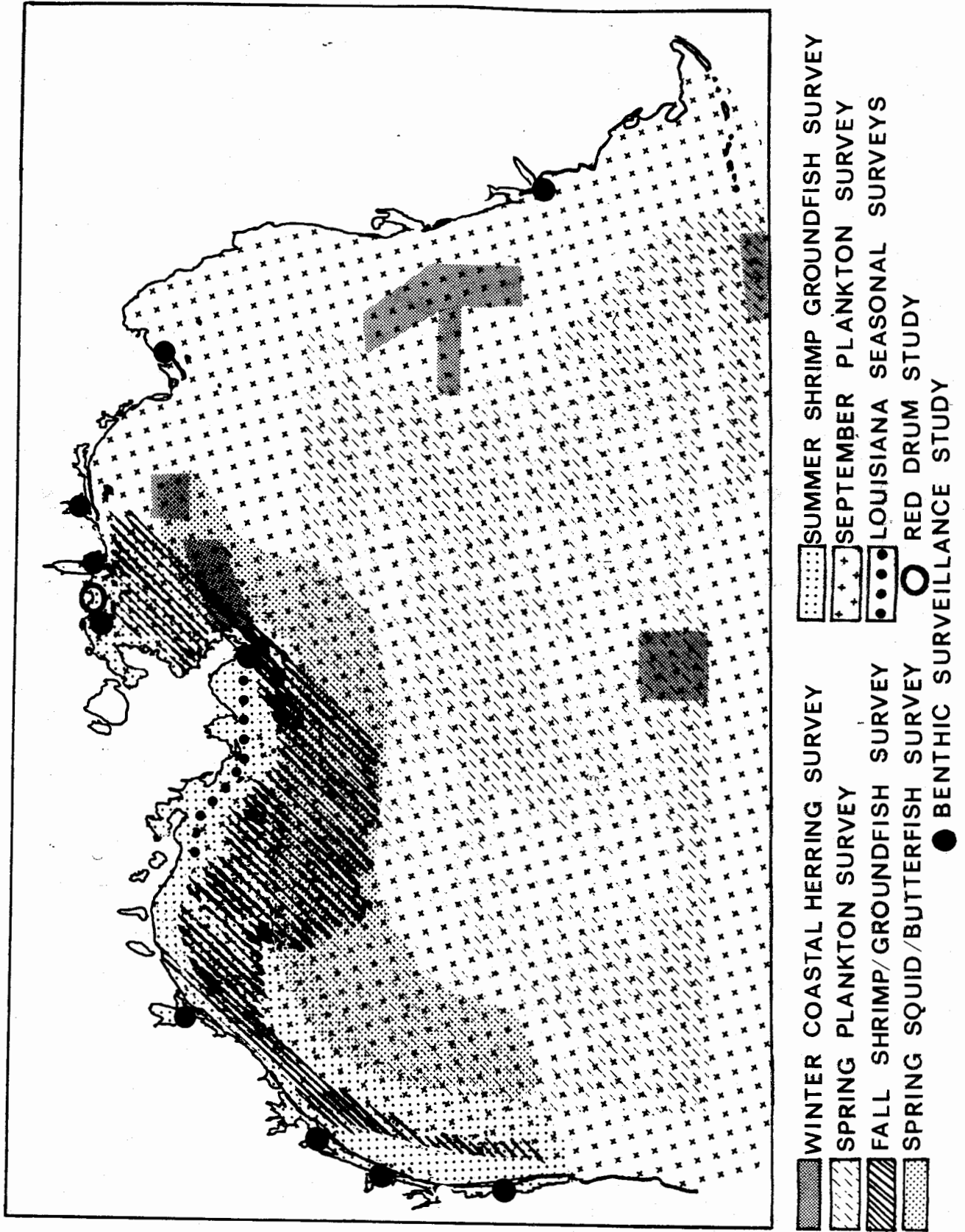
Appreciation is gratefully extended to the staff of the Gulf States Marine Fisheries Commission, and to the NMFS-Mississippi Laboratories, for their considerable assistance in the preparation of this document.

FIGURE 1
 FY1986 SEAMAP PROGRAM BUDGET ALLOCATIONS



¹INCLUDES TRAVEL (COMMITTEE, WORK GROUPS, ADMINISTRATION), PUBLICATIONS, PROGRAM COORDINATION.

FIGURE 2
FY86 SEAMAP SURVEYS - Gulf of Mexico



1986 SEAMAP RESOURCE SURVEYS

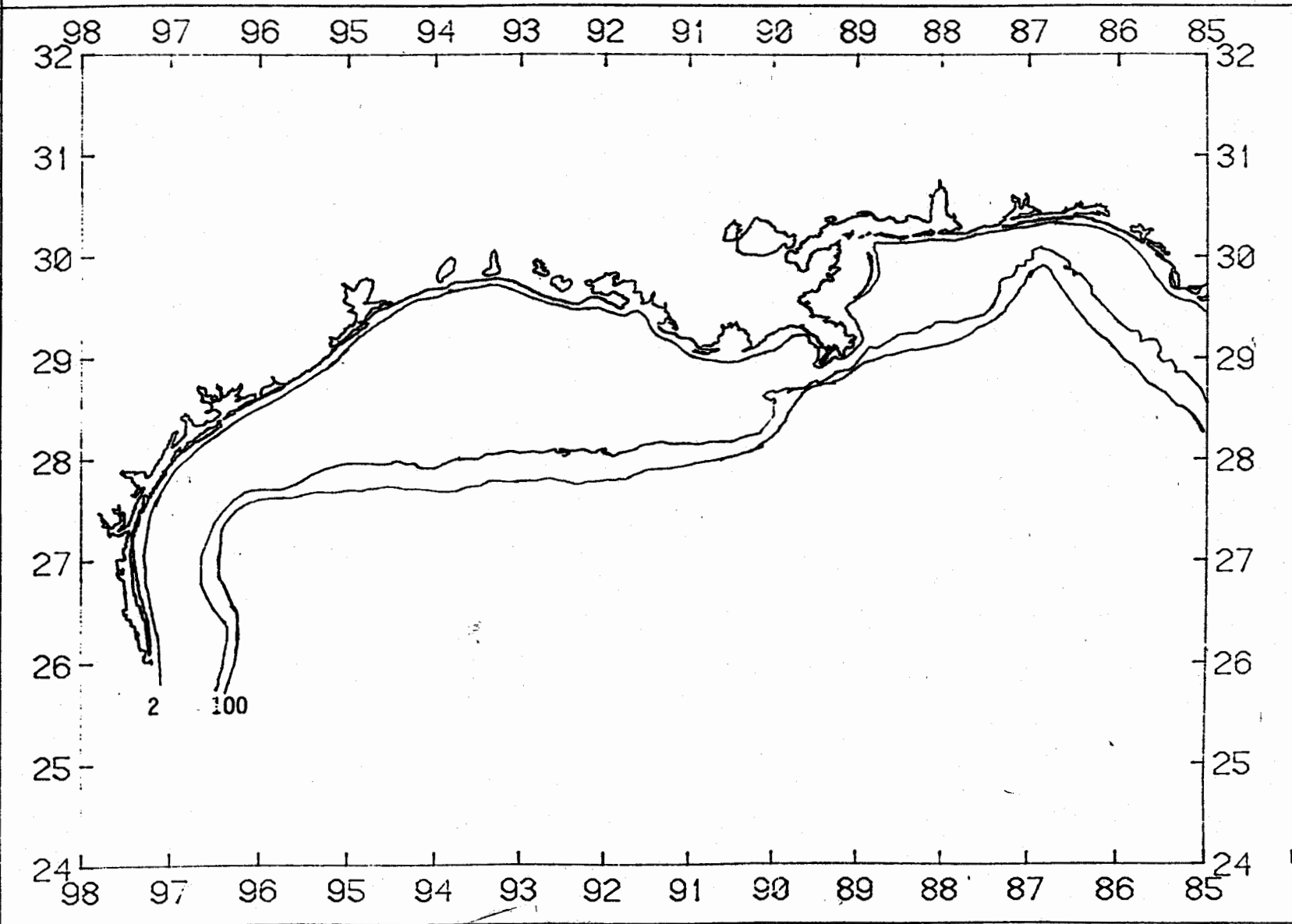
FALL SHRIMP/GROUNDFISH SURVEY

The past year inaugurated the first SEAMAP Fall Shrimp/Groundfish Survey. Two component activities were conducted, an expanded pilot trawl survey, and a comparative gear trial. The expanded survey was conducted from October 15-November 26, 1985 from Pensacola, Florida to the Louisiana-Texas border (Figure 3). Vessels from NMFS, Alabama, Mississippi and Louisiana sampled inshore and offshore waters to 50 fm, covering a total of 336 trawl stations, and including plankton and environmental sampling.

Following this survey, a comparative study of 40-ft versus 20-ft trawl nets, and nighttime versus daytime catches, was conducted jointly by NMFS and TPWD. During this study, the NOAA vessel conducted 38 day and 39 night stations, while Texas made 32 such comparative stations.

Analysis of the pilot expanded survey and the comparative gear and day/night studies is currently being completed by the NMFS Mississippi Laboratories. Preliminary findings will be presented at the October 1986 SEAMAP meeting, with final results to be considered prior to planning for the Fall 1986 Shrimp/Groundfish Survey.

FIGURE 3
FALL 1985 SEAMAP SHRIMP/GROUNDFISH SURVEY



WINTER COASTAL HERRING SURVEY

A survey to assess coastal herring fishing and surveying methods was conducted by the NOAA Ship CHAPMAN from January 21-February 20, 1986, with the primary purpose of continuing evaluations of latent resource surveying and sampling techniques.

Specific objectives included:

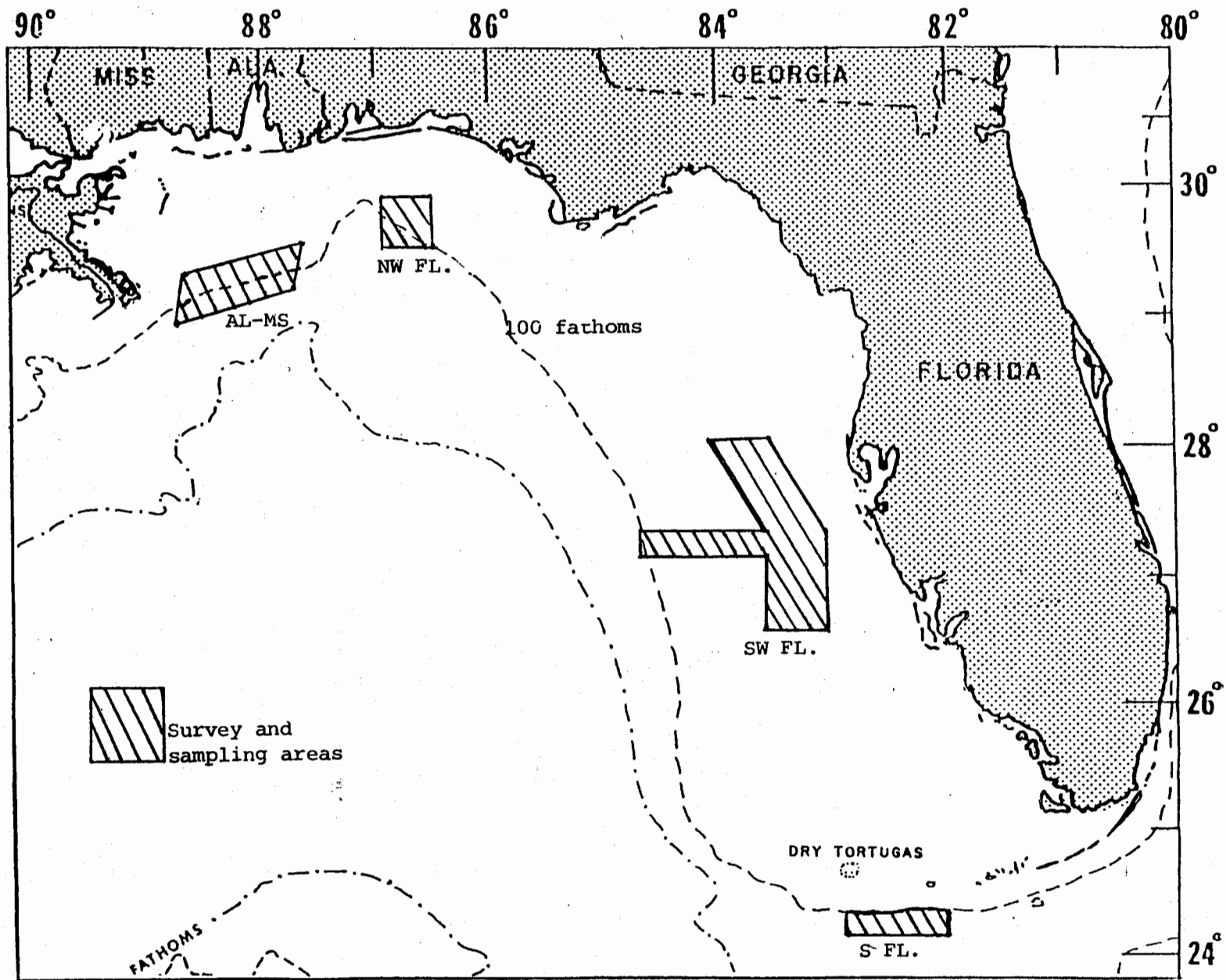
- (1) Survey areas identified as potential sites of concentration for latent resources in the eastern Gulf of Mexico.
- (2) Evaluate fishing characteristics of a midwater and a high-opening bottom trawl under varied fishing conditions.
- (3) Obtain catch samples to determine species composition, length frequency, and sexual maturity for selected species.
- (4) Collect associated hydrographic and environmental data.

SURVEY SUMMARY

Gear used on the cruise were modified from those used on earlier cruises for coastal herring gear evaluation. During the surveys, eight pairs of tows were made to comparatively evaluate the high-opening bottom trawl and Shuman squid-butterfish trawl. A netsonde was used during most of the tows to monitor trawl vertical opening. Catch rates were used to determine comparative trawl efficiency. Preliminary data indicate that the Shuman trawl was the more efficient of the two. Acoustic surveys were conducted off south Florida in 100 and 300 fm, southwest Florida in 25-109 fm, northwest Florida in 82-121 fm and Mississippi-Alabama in 45-145 fm of water. (Figure 4). Instrumentation used for surveying included a depth sounder and chromoscope for vertical readings and a sonar unit for horizontal (directional) readings. When signs of trawlable targets were indicated, the trawl was set. A hardwire netsonde attached to the trawl headrope was used to monitor fishing depth and to indicate if targets were entering the trawl.

Trawl catch weights were determined by weighing to the nearest 0.5 kg; catch subsamples were used to determine species composition, with selected species removed and measured to the nearest mm fork length. Water column temperatures were recorded at points along the acoustic transects and at successful trawl stations; additional surface temperatures were taken, and surface salinities measured.

Fifty-three trawl stations, 36 with the high-opening bottom trawl and 17 with the Shuman trawl, were completed. Southwest Florida was the most productive area, with the largest catch weighing 5029 lb made in a 30-min tow. The area surveyed off Alabama-Mississippi was the least productive, with a largest catch of 483 lb caught in a 30-min tow. Catch rates for target and dominant species are shown in Table 1.



1986 SEAMAP WINTER COASTAL HERRING SURVEY

FIGURE 4

TABLE 1

CATCH RATES FOR TARGET AND DOMINANT SPECIES, 1986 SEAMAP WINTER COASTAL HERRING SURVEY.

Tow No.	Date	Position		Depth fm	Temperature °C		Salinity ‰ Surface	Gear Type	Catch Rate lb/hr	Dominant and target spp.	Percent Comp. by wt.
		N. Lat.	W. Long.		Surface	Bottom					
01	1/23/86	26°25.8'	83°06.7'	25	19.1	19.6	35.5	HOB	2	longfin squid pinfish	63 30
02	1/23/86	26°33.3'	83°33.5'	34	19.8	20.7	37.8	HOB	81	orange filefish longfin squid	96 1
03	1/23/86	26°31.8'	83°40.3'	37	21.1	20.8	36.3	HOB	3	orange filefish longfin squid	43 26
04	1/24/86	26°29.8'	84°03.3'	73	21.7	18.1	35.0	HOB	8	longfin squid	50
05	1/24/86	26°58.6'	84°21.2'	82	21.8	17.5	35.5	HOB	192	hammerhead shark driftfish rough scad longfin squid	90 4 4 2
06	1/25/86	26°57.6'	84°27.2'	90	21.2	16.6	36.3	HOB	4	red porgy longfin squid	60 20
07	1/25/86	26°58.2'	84°27.4'	91	21.0	16.6	36.3	HOB	3	longfin squid	17
08	1/25/86	26°55.5'	84°34.2'	107	21.7	14.0	37.2	HOB	4	pearlside	27
09	1/26/86	26°56.2'	84°35.0'	109	20.9	14.3	35.5	HOB	4	pearlside	59
10	1/29/86	26°45.9'	83°26.5'	30	17.1	20.0	35.0	HOB	116	round herring Spanish sardine round scad	60 21 12

TABLE 1 (CONT'D.)

Tow No.	Date	Position		Depth fm	Temperature °C		Salinity ‰ Surface	Gear Type	Catch Rate lb/hr	Dominant and target spp.	Percent Comp. by wt.
		N. Lat.	W. Long.		Surface	Bottom					
11	1/29/86	26°45.8'	83°26.6'	30	18.5	20.0	35.5	Shuman	10,058	Spanish sardine round herring vermilion snapper round scad	42 24 19 9
12	1/29/86	26°39.7'	83°28.3'	31	18.9	20.0	35.5	HOBT	5,511	round herring Spanish sardine round scad chub mackerel	48 37 5 trace
13	1/29/86	26°39.5'	83°27.9'	31	19.3	20.0	36.3	Shuman	1,211	round herring Spanish sardine vermilion snapper round scad longfin squid chub mackerel	33 33 25 2 trace trace
14	1/30/86	28°08.9'	84°19.1'	32	19.1	18.4	35.5	HOBT	4,642	Spanish sardine round scad round herring chub mackerel	78 10 8 trace
15	1/30/86	28°19.7'	84°43.4'	38	19.2	19.0	35.5	HOBT	60	black grouper	90
16	1/31/86	28°08.7'	84°18.7'	32	17.5	18.9	35.5	HOBT	1,726	Spanish sardine longfin squid	90 trace
17	1/31/86	28°08.9'	84°21.2'	33	19.0	18.7	—	Shuman	611	pinfish longfin squid	88 1

TABLE 1 (CONT'D.)

Tow No.	Date	Position		Depth fm	Temperature °C		Salinity ‰ Surface	Gear Type	Catch Rate lb/hr	Dominant and target spp.	Percent Comp. by wt.
		N. Lat.	W. Long.		Surface	Bottom					
18	2/1/86	29°14.6'	86°07.3'	116	19.2	13.1	35.0	HOB T	280	lanternfish	100
19	2/1/86	29°27.2'	86°20.5'	97	19.6	13.7	36.3	HOB T	78	lanternfish longfin squid butterfish	90 2 trace
20	2/2/86	29°37.4'	86°28.8'	82	19.8	13.9	36.3	HOB T	490	rough scad bigeye scad butterfish longfin squid chub mackerel round herring	86 11 1 trace trace trace
21	2/2/86	29°35.4'	86°28.9'	88	19.6	13.9	36.3	Shuman	1,793	rough scad butterfish chub mackerel driftfish longfin squid	71 11 3 1 trace
22	2/2/86	29°30.8'	86°33.2'	121	19.9	13.0	35.5	HOB T	94	lanternfish butterfish longfin squid	96 2 trace
23	2/3/86	29°46.7'	86°43.9'	84	19.4	15.5	35.5	HOB T	1,440	rough scad chub mackerel bigeye scad driftfish round herring longfin squid	52 34 9 4 1 trace

TABLE 1 (CONT'D.)

Tow No.	Date	Position		Depth fm	Temperature °C		Salinity ‰ Surface	Gear Type	Catch Rate lb/hr	Dominant and target spp.	Percent Comp. by wt.
		N. Lat.	W. Long.		Surface	Bottom					
24	2/3/86	29°48.5'	86°42.5'	85	19.6	15.5	35.5	Shuman	3,872	chub mackerel rough scad driftfish bigeye scad butterfish longfin squid	62 30 7 1 trace trace
25	2/3/86	29°55.9'	86°56.5'	86	19.4	14.5	35.0	HOB T	30	longfin squid butterfish	66 33
26	2/3/86	29°54.3'	86°54.0'	87	19.3	14.6	35.0	HOB T	18	rough scad longfin squid	89 11
27	2/9/86	24°16.1'	82°49.5'	249	23.8	8.5	36.3	HOB T	26	Pasiphaeid shrimp	85
28	2/9/86	24°15.8'	82°35.7'	222	24.5	8.7	36.1	HOB T	10	lanternfish	44
29	2/9/86	24°16.5'	82°30.4'	195	24.5	9.5	36.1	Shuman	0		
30	2/10/86	24°16.5'	82°28.6'	136	23.7	10.8	36.1	Shuman	956	driftfish longfin squid shortfin squid	90 9 trace
31	2/10/86	24°18.8'	82°30.2'	122	24.2	9.9	36.1	Shuman	3,445	driftfish round herring	50 48
32*	2/10/86	24°22.2'	82°31.2'	115	24.5	10.2	36.1	Shuman	264	round herring	100
33*	2/11/86	24°18.6'	82°14.6'	129	23.2	9.8	36.3	Shuman	0		

TABLE 1 (CONT'D.)

Tow No.	Date	Position		Depth fm	Temperature °C		Salinity ‰ Surface	Gear Type	Catch Rate lb/hr	Dominant and target spp.	Percent Comp. by wt.
		N. Lat.	W. Long.		Surface	Bottom					
34*	2/11/86	24°18.0'	82°29.2'	123	23.9	9.9	36.1	Shuman	0		
35	2/11/86	24°18.0'	82°26.9'	112	23.7	10.4	36.1	HOBT	578	driftfish longfin squid	97 3
36	2/13/86	24°14.2'	82°54.8'	146	21.4	10.8	34.2	Shuman	506	lanternfish longfin squid shortfin squid	97 2 trace
37	2/14/86	26°17.0'	83°30.7'	31	19.5	18.3	36.1	HOBT	1,682	round scad black grouper Spanish sardine bigeye scad round herring	50 27 16 trace trace
38	2/15/86	26°53.5'	83°31.5'	31	19.4	18.4	32.8	Shuman	3,986	Spanish sardine round scad round herring	84 10 trace
39	2/15/86	26°55.3'	83°30.9'	31	19.4	18.3	36.1	HOBT	1,256	Spanish sardine round scad vermilion snapper round herring chub mackerel	50 24 22 1 trace
40	2/15/86	26°51.1'	83°28.7'	30	19.5	18.2	36.0	Shuman	8	grey angelfish	100
41	2/15/86	26°52.2'	83°30.3'	31	19.6	18.3	35.3	HOBT	3,909	Spanish sardine round scad round herring	61 20 1

TABLE 1 (CONT'D.)

Tow No.	Date	Position		Depth fm	Temperature °C		Salinity ‰ Surface	Gear Type	Catch Rate lb/hr	Dominant and target spp.	Percent Comp. by wt.
		N. Lat.	W. Long.		Surface	Bottom					
42	2/15/86	26°51.1'	83°31.1'	31	19.5	-	36.3	Shuman	8,436	Spanish sardine round scad round herring	53 39 1
43	2/16/86	26°52.7'	83°18.6'	26	19.0	19.0	36.1	HOBT	1,581	round scad vermilion snapper Spanish sardine	48 25 10
44	2/16/86	26°54.9'	83°21.5'	26	18.6	18.6	36.0	Shuman	6,584	Spanish sardine round scad chub mackerel	50 26 6
45	2/16/86	27°00.8'	83°17.7'	25	18.7	18.5	36.0	HOBT	870	tomtate vermilion snapper round scad Spanish sardine	40 36 17 1
46	2/16/86	27°00.4'	83°17.2'	25	19.0	18.6	36.0	Shuman	6	round scad	100
47	2/16/86	26°55.5'	83°18.7'	26	19.0	18.9	35.5	HOBT	2,790	round scad Spanish sardine vermilion snapper chub mackerel	49 20 17 1
48	2/18/86	29°23.7'	87°36.2'	73	18.9	15.5	34.3	HOBT	966	driftfish rough scad	98 2
49	2/18/86	29°18.8'	87°52.8'	70	19.6	16.7	35.0	HOBT	144	seatrout rough scad driftfish	43 24 8

TABLE 1 (CONT'D.)

Tow No.	Date	Position		Depth fm	Temperature °C		Salinity ‰ Surface	Gear Type	Catch Rate lb/hr	Dominant and target spp.	Percent Comp. by wt.
		N. Lat.	W. Long.		Surface	Bottom					
50	2/18/86	29°17.7'	87°53.4'	94	19.9	16.0	34.2	HOB	38	rough scad	42
51	2/19/86	29°15.4'	88°10.2'	67	18.9	16.3	32.5	HOB	118	seatrout butterfish	71 2
52	2/19/86	29°19.4'	88°10.2'	48	18.9	16.8	29.7	HOB	472	croaker	35
53	2/19/86	29°12.7'	88°17.1'	94	20.0	-	28.8	HOB	484	luminous hake cutlassfish	51 48

*Midwater tow

Species composition in the trawl samples also changed with area surveyed (Table 2). Target species present off south Florida included round herring and driftfish with incidental numbers of longfin and shortfin squid. In the area surveyed off southwest Florida, Spanish sardine, round herring and round scad were the predominant target species with additional bigeye scad and chub mackerel. During the interval between the first and second leg of the cruise, a change in the size and percent composition of the target species caught off south Florida occurred. On the first leg, juvenile and adult Spanish sardine were present, and round herring was the second most abundant species in the catches. But on the second leg only adult Spanish sardine were caught, and round scad replaced round herring as second most abundant species. Round scad, chub mackerel, and butterfish were caught off northwest Florida, and driftfish, round scad and a small number of butterfish were present in some of the catches off Alabama-Mississippi.

TABLE 2. TARGET SPECIES LENGTH RANGES AND RANGES OF PERCENT COMPOSITION OF THE CATCH WEIGHTS BY AREA, 1986 SEAMAP WINTER COASTAL HERRING SURVEY.

<u>Area</u>	<u>Target Species</u>	<u>Fork Length Range (in.)</u>	<u>Mean Fork Length (in.)</u>	<u>Percent composition Range</u>
South Florida	Round herring	5.4-6.8	6.3	48-100
	Driftfish	5.8-7.4	6.5	50-97
	Longfin squid	3.2-10.2	6.4	2-9
	Shortfin squid	3.8-7.3	5.3	Trace
Southwest Florida (1/23-31/86)	Spanish sardine	3.1-7.1	3.9 & 6.7*	21-90
	Round herring	5.1-7.5	6.4	8-60
	Round scad	2.8-6.7	3.1 & 5.9*	
Southwest Florida (2/14-16/86)	Spanish sardine	3.6-7.2	5.2	16-84
	Round scad	3.4-7.2	5.7	10-50
	Round herring		No data	1
	Bigeye scad		No data	Trace
	Chub mackerel		No data	Trace
Northwest Florida	Rough scad	5.5-7.9	6.7	30-86
	Chub mackerel	7.5-9.4	8.5	3-62
	Butterfish	5.1-7.1	5.9	1-11
	Bigeye scad	5.1-9.1	7.5	9-11
Alabama-Mississippi	Driftfish	6.0-7.6	6.9	8-98
	Rough scad		No data	2-24
	Butterfish		No data	2

*Adult and juvenile age classes present.

LOUISIANA SEASONAL DAY/NIGHT TRAWL SURVEYS

The Louisiana Department of Wildlife and Fisheries is conducting seasonal day and night surveys as part of its continuing effort to provide comparative information on the abundance and distribution of critical life states of major Gulf species, especially shrimp, and associated environmental parameters. The sampling design for these surveys has changed little from similar day/night surveys in past years.

SURVEY SUMMARY

Sampling was conducted in May and June 1986 from the RV PELICAN. A stratified random station selection design was maintained, varying from the transects previously surveyed. A total of 48 stations was sampled (12 day and 12 night each in May and June), at depths to 15 fm. The June sampling was completed as part of the SEAMAP Summer Shrimp/Groundfish Survey.

All seasonal trawls were completed with the standard SEAMAP 40-ft net and doors. All organisms captured were identified, counted, measured and weighed; environmental data and plankton/neuston sampling were conducted at all trawl stations. The area sampled covered Louisiana territorial and FCZ waters both east and west of the Mississippi River.

Additionally, LDWF conducted separate, territorial sea shrimp/groundfish surveys to provide coastwide monitoring and assessment information on the abundance and distribution of shrimp and groundfish in this area. These were conducted in conjunction with NMFS summer and fall shrimp/groundfish trawling surveys in the FCZ, using, however, a 16-ft otter trawl on state vessels. Sampling was done along 7 transects (Figure 5), to depths of 5 fm. All organisms were identified, weighed and measured. Transects corresponded to seven coastal study areas sampled previously. Plankton and environmental sampling was conducted at all stations.

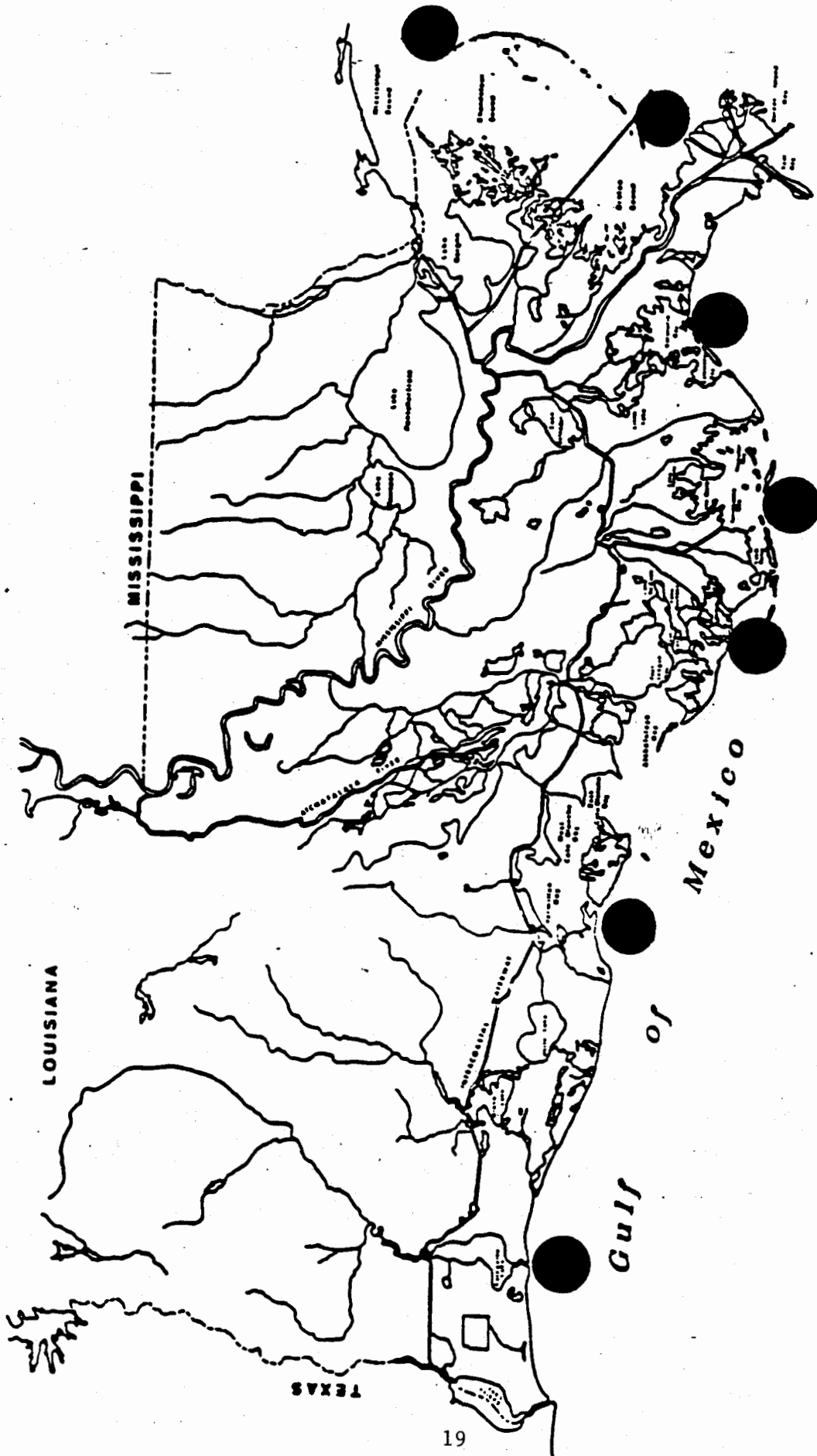


FIGURE 5. GENERAL LOCATION OF TERRITORIAL SEA TRANSECTS, 1986 LOUISIANA SEASONAL TRAWL SURVEYS.

SPRING PLANKTON SURVEY

As part of the program's commitment to assessing stocks of important ocean pelagics, a SEAMAP Spring Plankton Survey was conducted, primarily targeted to bluefin tuna eggs and larvae in offshore waters. For the fourth season since 1982, a NOAA vessel collected specimens from the Florida Keys to Brownsville, Texas. (Figures 6 and 7.)

Plankton samples were taken with standard SEAMAP bongo and neuston samplers. The bongo sampler consisted of two conical 61-cm nets with 333 micron mesh. Oblique tows were made with a towing speed between 1.5 and 2.0 knots. Bongo nets were set at 50 m per minute and retrieved at 20 m per minute. Sampling depth was between 106 and 200 m. A torpedo-shaped digital flowmeter was used to compute the amount of water filtered per tow. Neuston samples were taken with 947 and 707 micron mesh nets on 1 x 2 meter frames. Tows were of ten-minute duration with half of the frame submerged.

Ichthyoplankton samples were initially preserved in 10% Formalin except for the 707 neuston samples, which were preserved in 95% ethyl alcohol. After 24 hours, all samples were transferred to 95% ethyl alcohol for final preservation.

A CTD was used to obtain temperature and salinity profiles. To verify CTD data, a XBT probe was dropped and salinity samples from the CTD were returned to the Pascagoula Laboratory for analysis from the first station of each day. Dissolved oxygen measurements were taken with an oxygen meter and three surface chlorophylls were collected at every station. At all stations cloud cover, water color, secchi disc, barometric pressure, wave height, wind speed and direction were recorded; however, water color, cloud cover and secchi disc records could only be obtained at day stations.

One hundred and forty-five ichthyoplankton (bongo and/or neuston) stations were completed. Bongo and double-rigged neuston tows were completed at 69 stations and only double-rigged neuston tows at 76 stations. Due to a CTD malfunction, extra bottle casts were made. Environmental collections returned to Pascagoula for interpretation included: 84 cloud cover observations, 41 XBT drops, 57 CTD temperature salinity profiles, 26 secchi disc readings, 28 water color measurements, 12 Niskin bottle casts, 435 surface chlorophylls, 169 salinity samples, and 162 dissolved oxygen measurements.

Bongo samples were sent to Miami for shipment to the Polish Sorting Center. Neuston samples were sent to GCRL for archiving (947-micron net samples) and to the NMFS Panama City Laboratory for sorting and identification (707-micron net samples).

FIGURE 6
SURVEY STATIONS, 1986 SPRING PLANKTON SURVEY
APRIL 22 - MAY 7

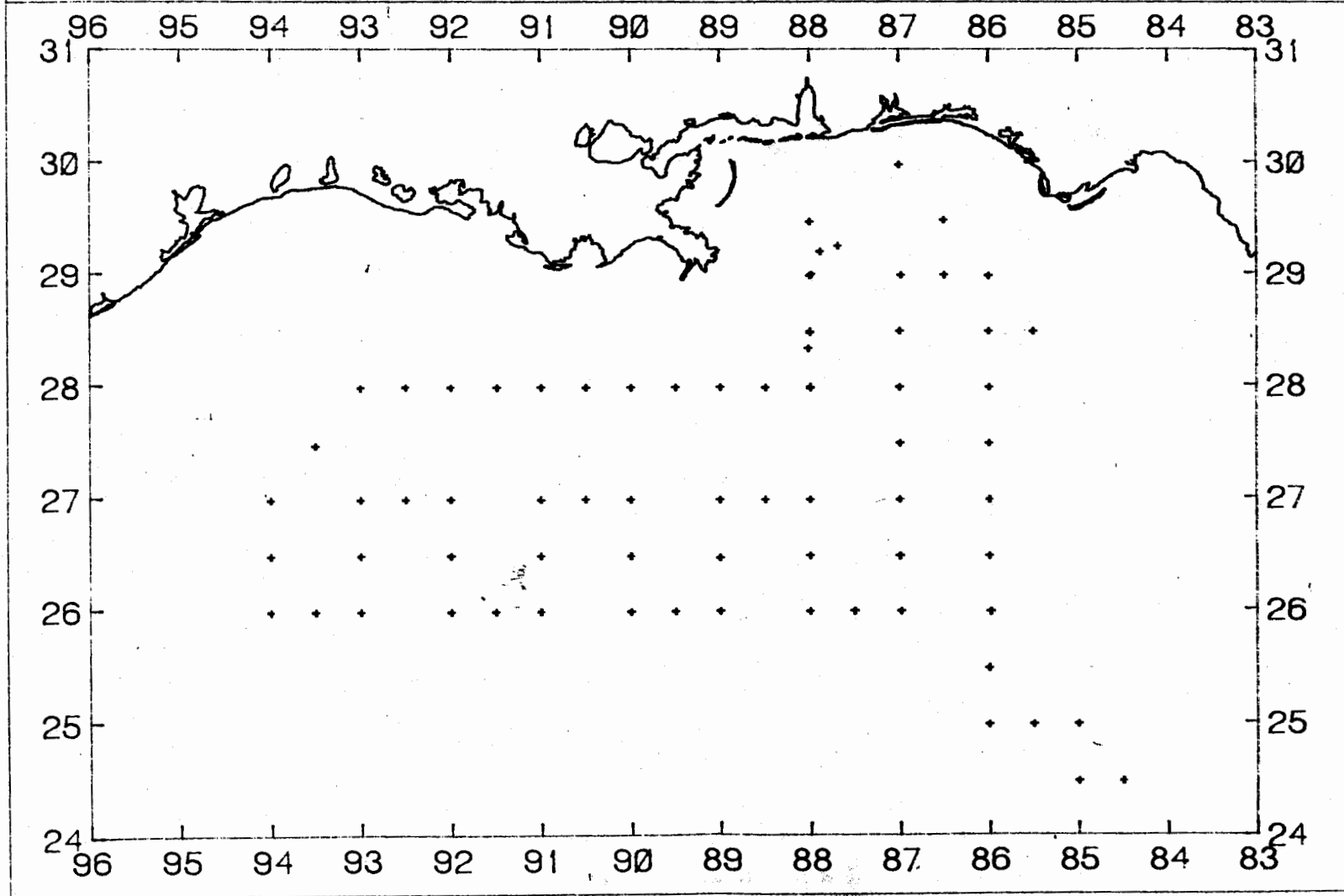
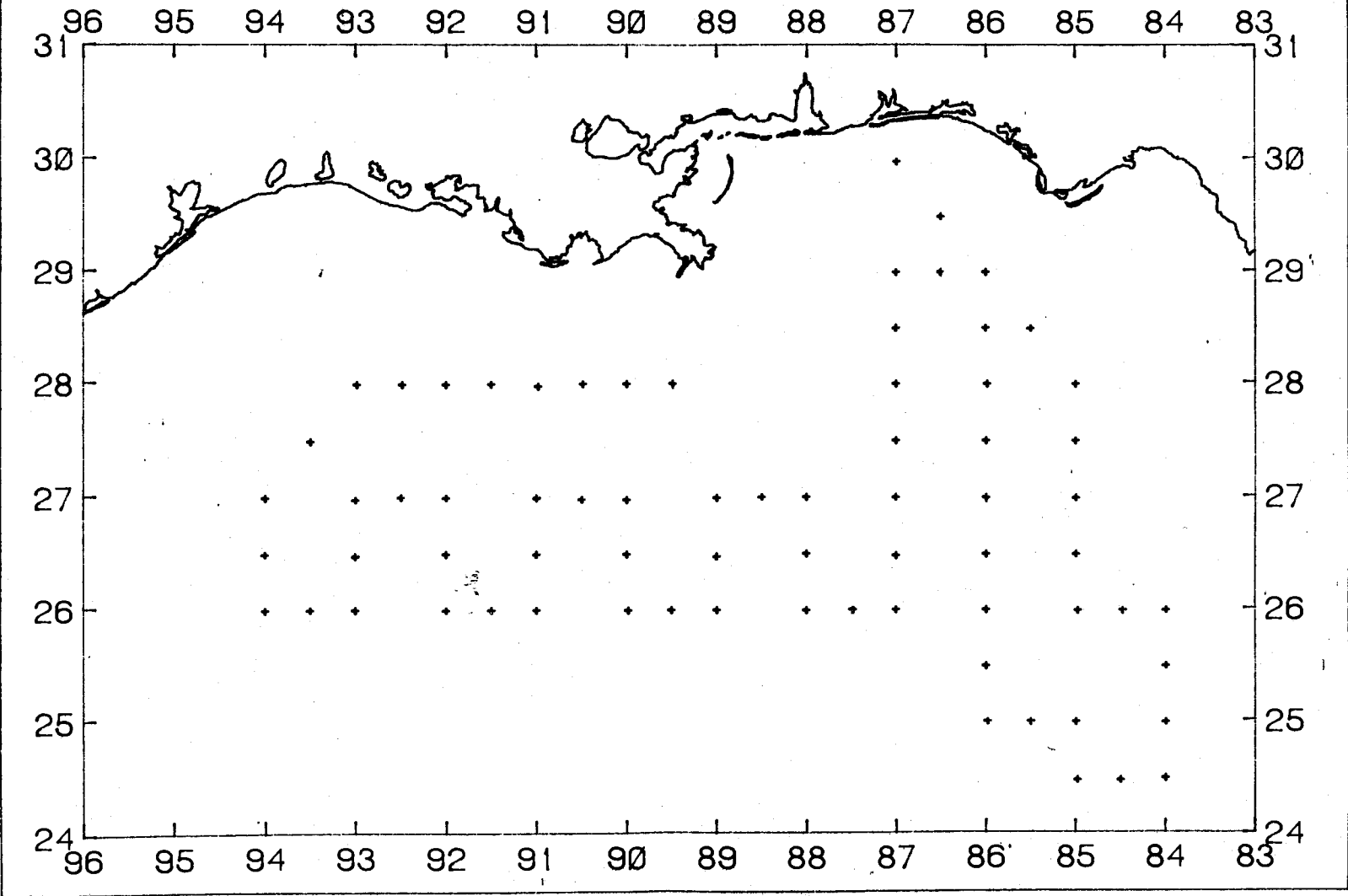


FIGURE 7
SURVEY STATIONS, 1986 SPRING PLANKTON SURVEY
MAY 8 - MAY 23



SPRING SQUID/BUTTERFISH TRAWL SURVEY

The 1986 Spring Squid/Butterfish Trawl Survey incorporated waters from off the Florida Panhandle to Brownsville, Texas from May 6-June 3, 1986. Primary objectives of the survey were to determine spatial distributions and length-weight data for several squid species and Peprilus spp. butterflyfish across the northern Gulf of Mexico. A random sampling design was used to select stations within seven depth strata, 20-170 fm for five subareas (Figure 8).

SURVEY SUMMARY

During the survey, the NOAA Ship OREGON II sampled offshore waters across the entire northern Gulf, with the RV TOMMY MUNRO chartered by the states of Alabama, Mississippi and Louisiana to sample waters offshore those states. The OREGON II completed 97 trawl stations, 93 at preselected stations and 4 exploratory tows on favorable fathometer traces; the TOMMY MUNRO sampled 37 trawl stations. The original cruise tracks were altered due to coral/rock formations off Texas and bottom obstructions off Alabama.

Overall catch rates of butterflyfish were generally low throughout the survey area. The majority of the butterflyfish were found inside the 100-fm curve. The largest single catch of butterflyfish, 1968 lb/hr, was found in 44 fm, south of Destin, Florida; the second largest catch was 1216 lb/hr in 31 fm, south of Marsh Island, Louisiana. Survey summaries from near-real-time data are found in Appendix A.

Butterfish catches over the entire study area were separated by depth strata. Highest catches by weight occurred in the 40-80 fm range, while the largest number of individuals/tow was encountered in the 20-40 fm range. The average weight of individuals was less than 0.1 lb in depth strata below 60 fm, and these small fish are of limited commercial value. For the eastern Gulf (Apalachicola to Pensacola), a sampling area of 5,118 square nautical miles, a total biomass of 42,162 metric tons was estimated; mean catch for this area was 323.0 lb/hr.

In the north central Gulf, the 8,725-square-nautical-mile area sampled (Pensacola to the Atchafalaya), butterflyfish biomass was estimated at 27,188 metric tons, with a mean catch of 120.0 lb/hr.

For the western Gulf (western Louisiana to Brownsville), a sampled area of 13,147 square nautical miles, butterflyfish biomass was estimated at 64,860 metric tons, with a mean catch of 193.4 lb/hr.

A total of five New England trawlers operated in the Gulf during May and June. Three converted shrimp trawlers were also fishing for butterflyfish this year. These vessels worked in the same general areas surveyed by the squid/butterfish cruises. Approximately 2 million pounds of butterflyfish were landed, with a maximum of 70,000 lb/tow; however catches were erratic.

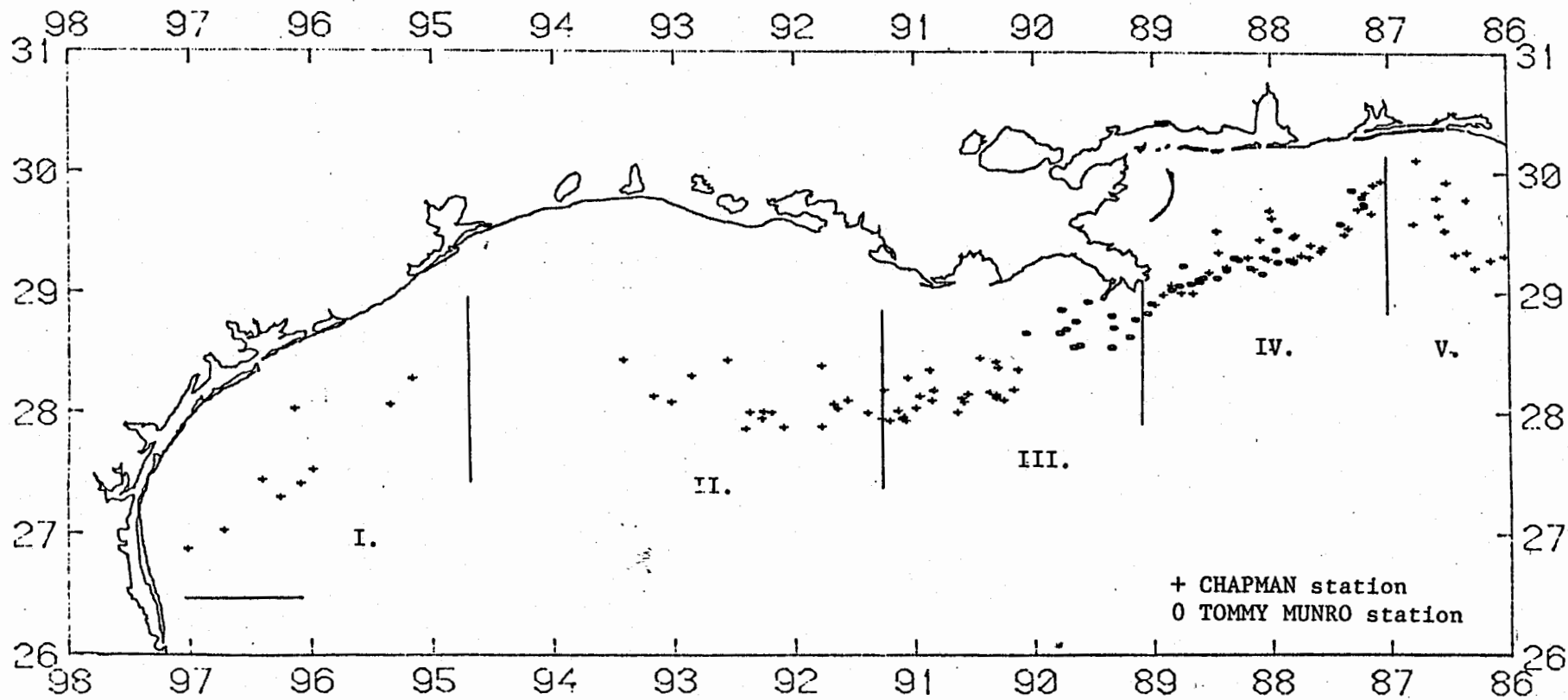


FIGURE 8. LOCATIONS OF SQUID/BUTTERFISH SAMPLING EFFORT BY SUBAREAS.

Squid catches were low over all depths, ranging from a mean of 29 lb/tow in the 80-100 fm strata to 4 lb/tow in the 140-170 fm strata. The common squid, Loligo pealei, was the dominant species. Finfish catches were found in moderate concentrations throughout the survey area. Longspine porgy, rough scad and wenchman snapper dominated the finfish catches.

SUMMER SHRIMP/GROUNDFISH TRAWL SURVEY

The 1986 Summer Shrimp/Groundfish Trawl Survey was recommended by the Shrimp/Groundfish Work Group to the Subcommittee in March 1986 and subsequently approved. The sampling design was basically the same as in 1985. Objectives of the survey were:

- (1) Monitor size and distribution of penaeid shrimp.
- (2) Aid in evaluating the Texas Closure.
- (3) Provide information on shrimp and groundfish stocks across the northern Gulf of Mexico in depths from 5-50 fm.

SURVEY SUMMARY

The overall sampling strategy during the SEAMAP survey was to work from the eastern Gulf to west Texas to sample during or prior to migration of brown shrimp from bays to the open Gulf area. This sampling occurred from June 10-July 3, 1986. During the week of July 6-12, the NOAA Ship OREGON II conducted a transboundary shrimp migratory study off west Texas. Additional SEAMAP sampling was conducted east of the Mississippi River, from July 15-18, to re-survey eastern areas after emigration of brown shrimp from inshore waters.

During the survey, the NOAA Ship OREGON II sampled offshore waters and inshore Louisiana and Texas state waters. The R/V TOMMY MUNRO sampled inshore Mississippi and offshore waters. The R/V PELICAN sampled both Louisiana state waters and offshore. The R/V VERRILL sampled inshore Alabama waters. Texas vessels sampled Texas state waters.

A total of 196 trawl samples was taken from coastal and offshore waters out to 50 fm from Perdido Bay, Alabama to Brownsville, Texas. Of these, NMFS completed 120 stations; Mississippi, 24; Alabama, 12; Louisiana, 12; and Texas 32. Additional trawl stations were completed by Louisiana during this time period as part of its SEAMAP day/night survey (see Seasonal Day/Night Survey). Trawl stations are indicated on Figures 9-12.

Approximately 57 plankton tows were also piggybacked during the survey by NOAA, Alabama, Mississippi and Louisiana vessels. All vessels took environmental data, including temperature, salinity, oxygen and chlorophyll, at each station.

Catch rates of brown shrimp east of the river were low, with small catches (less than 17 lb/hr, averaging 43-count per pound) from June 10 to June 16, and larger catches (up to 27 lb/hr, averaging 29-count) from July 15 to July 18. The largest pink shrimp (24 lb/hr of 23-count) catch during the entire survey was in this area on June 11 off Mobile Bay; other pink shrimp catches in all three survey areas were low, 12 lb/hr or less. White shrimp catches east of the river were all less than 5 lb/hr. Finfish catch rates east of the river were generally low to moderate, with the largest catch on July 16 (485 lb/hr of longspine

porgy, off Mobile Bay). Overall, finfish catches were larger on the second half of the eastern survey, with longspine porgy the dominant species.

West of the river (Louisiana), brown shrimp catches were moderate; the largest catch rate was 41 lb/hr off Atchafalaya Bay in 11 fm; the average count was 38 per pound. Catches of pink shrimp were very low, less than 4 lb/hr, while white shrimp catches were low, except for one catch of 13 lb/hr of 17-count shrimp. Finfish catch rates were generally lower than the same period last year, with the largest catch, 213 lb/hr of Atlantic croaker. Overall, longspine porgy dominated finfish catches in this area.

Moderate catches of brown shrimp were made off Texas from June 22 to July 5. The largest catches were offshore between Matagorda Bay and Brownsville, at 86 lb/hr of 66-count shrimp off upper Laguna Madre and 61 lb/hr of 85-count shrimp off Brownsville. The average brown shrimp count was 65 per pound. Catch rates for pink shrimp were low off Texas; the largest catch was 9 lb/hr of 29-count shrimp off Galveston; all other catches were less than 5 lb/hr. White shrimp catches were somewhat larger, with the majority caught nearshore, and the largest catch, 27 lb/hr of 20-count shrimp off Galveston. Finfish catch rates were moderate to large, with croaker dominating the catch off Texas. The largest catch of finfish was 1,380 lb/hr off Galveston, of which 836 lb/hr were croaker. Several catches averaged 500 lb/hr of croaker.

No extensive areas of hypoxia (less than 3 ppm oxygen) were found during the survey, but moderate areas of low oxygen were identified offshore Louisiana, from 4 to 12 fm in the area from 28°30' to 29°10' N. lat. and 89°40' to 90°40' W. long.

FIGURE 9
1986 SUMMER SHRIMP/GROUNDFISH SURVEY STATIONS
JUNE 10 - JUNE 15

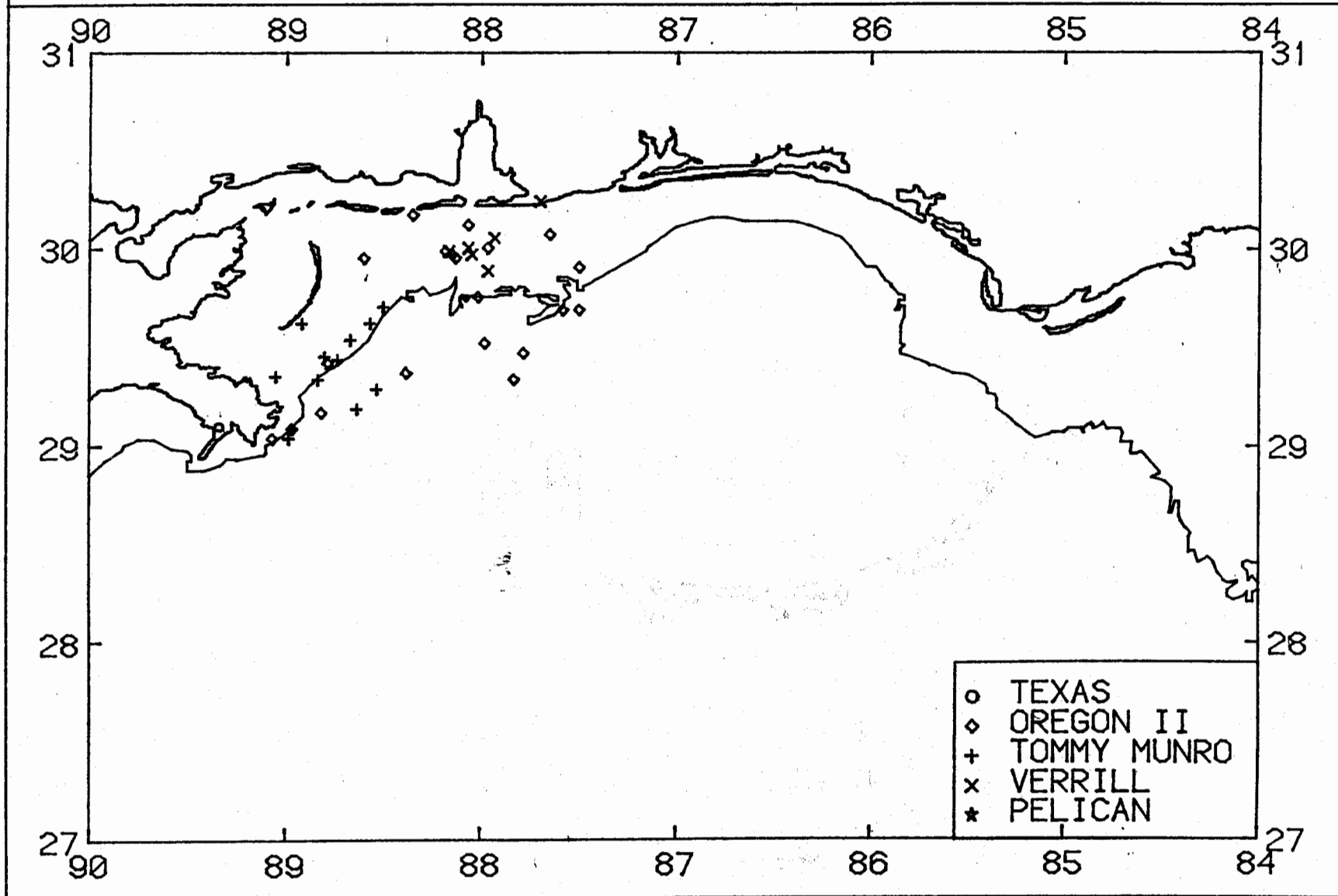


FIGURE 10
1986 SUMMER SHRIMP/GROUNDFISH SURVEY STATIONS
JUNE 15 - JUNE 24

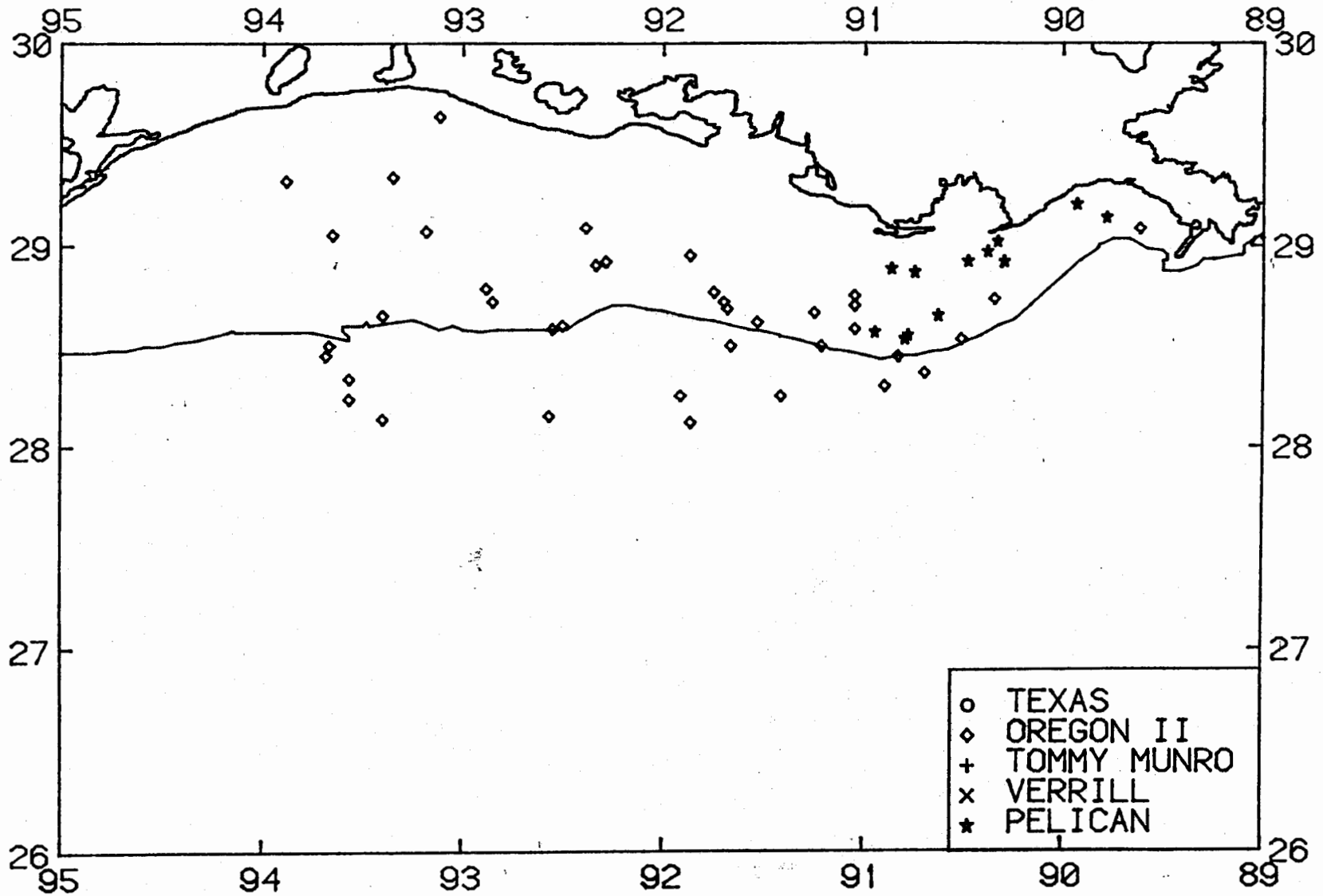


FIGURE 11
1986 SHRIMP/GROUNDFISH SURVEY STATIONS
JUNE 22 - JULY 6

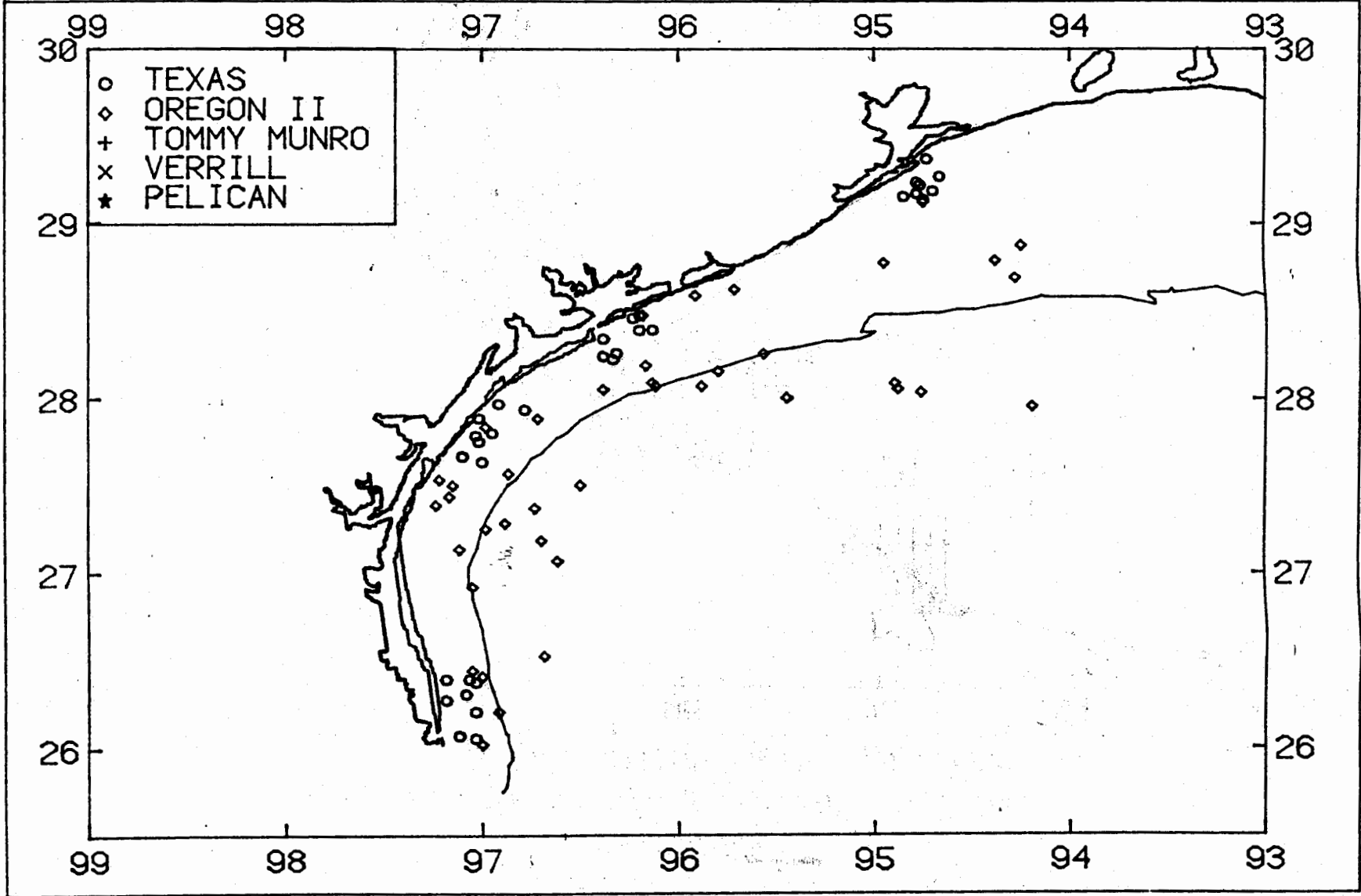
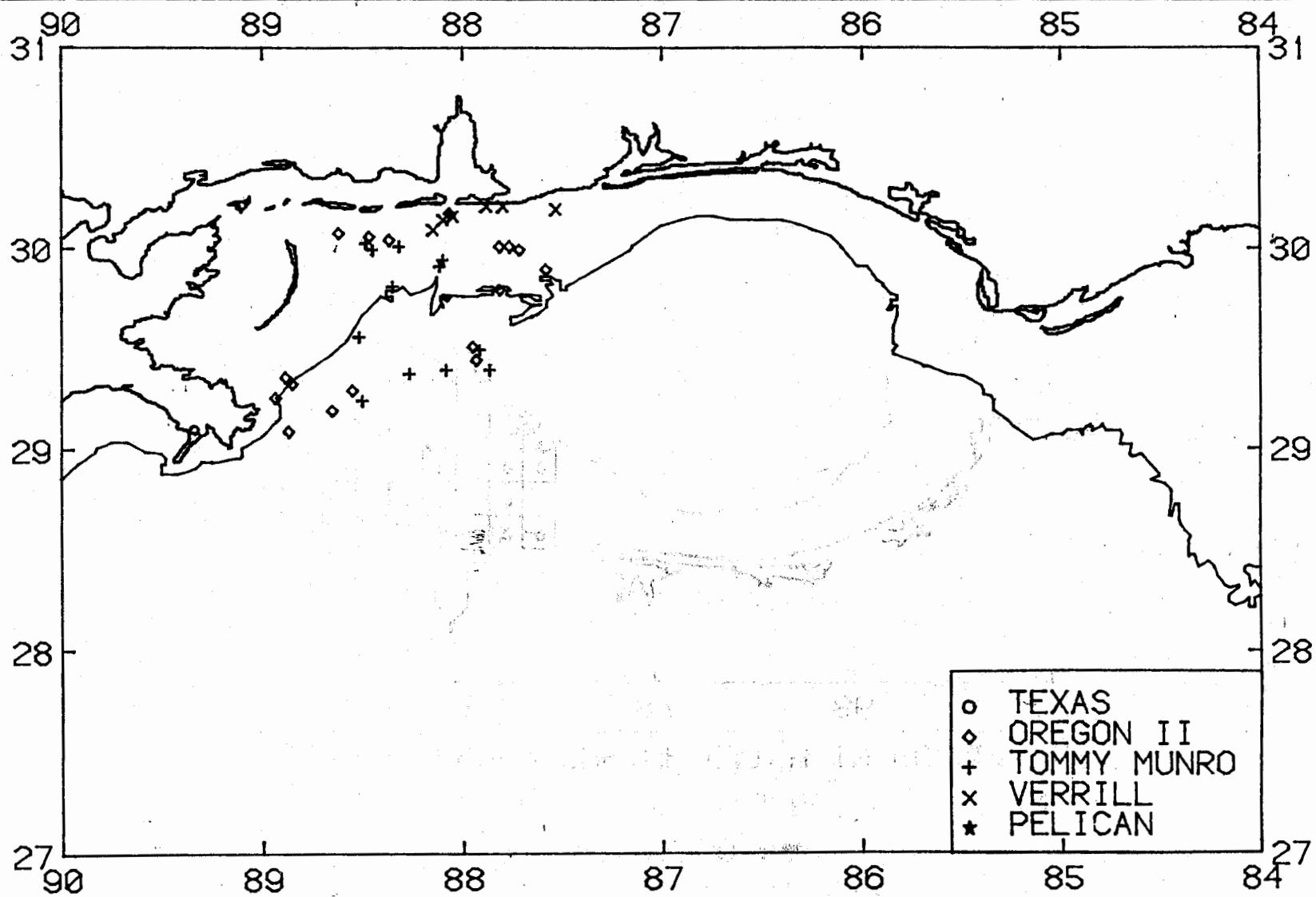


FIGURE 12
1986 SHRIMP/GROUNDFISH SURVEY STATIONS
JULY 15 - JULY 18



SEPTEMBER KING MACKEREL PLANKTON SURVEY

The increasing concern for the health of king mackerel stocks in the southeast led to approval of a second SEAMAP survey to assess the abundance and distribution of king mackerel eggs and larvae throughout the region; the first such survey was completed in August 1984. Coverage for the 1986 survey was much broader, extending along the southeast U.S. coast and including almost the entire Gulf of Mexico from the Florida Keys west to Brownsville, Texas, and throughout Mexican Gulf waters. Vessels from the Gulf states of Florida, Alabama and Mississippi, and from NMFS and the Mexican National Fisheries Institute, surveyed from September 2-27, 1986 using the standard bongo array and neuston nets. Sampling procedures and station development were coordinated with INP, which had placed a plankton scientist onboard the Spring Plankton Survey; final survey plans were reviewed at the August SEAMAP-INP meeting in Mexico City.

In the Gulf of Mexico portion of the survey, participants completed a total of 175 stations. The NOAA Ship CHAPMAN sampled 65 stations from the Southwest Pass of the Mississippi River to Brownsville, at depths from 5 to 100 fm; 10 of these were stations on transects at the entrance to Matagorda Bay, Texas. The NOAA Ship OREGON II sampled 61 stations east of the river to the Tortugas, and subsequently, 32 stations along the Atlantic coast from Miami to Brunswick, Georgia. Florida's R/V HERNAN CORTEZ sampled 29 stations from Apalachicola to Key West, inside the 20-fm curve. Mississippi's R/V TOMMY MUNRO sampled four offshore Mississippi Sound stations, and Alabama vessels sampled 16 stations round Mobile Bay, on transects inside, at the mouth, and outside the bay. (Figure 13.)

All stations were sampled with a standard SEAMAP 60-cm bongo array, 1 x 2-m neuston net, and standard SEAMAP environmental data procedures (salinity, temperatures, chlorophyll and dissolved oxygen levels). Bongo specimens were fixed in 10% Formalin and subsequently transferred to 95% ethanol for later transshipment to the Polish Sorting Center. Neuston samples, to be stored at the SEAMAP Invertebrate Plankton Archiving Center, were also fixed in Formalin and transferred to ethanol for possible future sorting in Poland. Duplicate neuston samples were taken at many stations and fixed immediately in ethanol to preserve forming otoliths for age and growth studies of larval mackerel at the NMFS-Panama City Laboratory.

Additionally, personnel from the Panama City laboratory aboard the OREGON II collected 33 neuston samples in the Mississippi River plume for immediate examination of specimens; as well, Panama City Laboratory personnel onboard the CHAPMAN also collected extra neuston samples for immediate examination.

Protocols have been developed to jointly manage sorted plankton samples and associated data resulting from the survey.

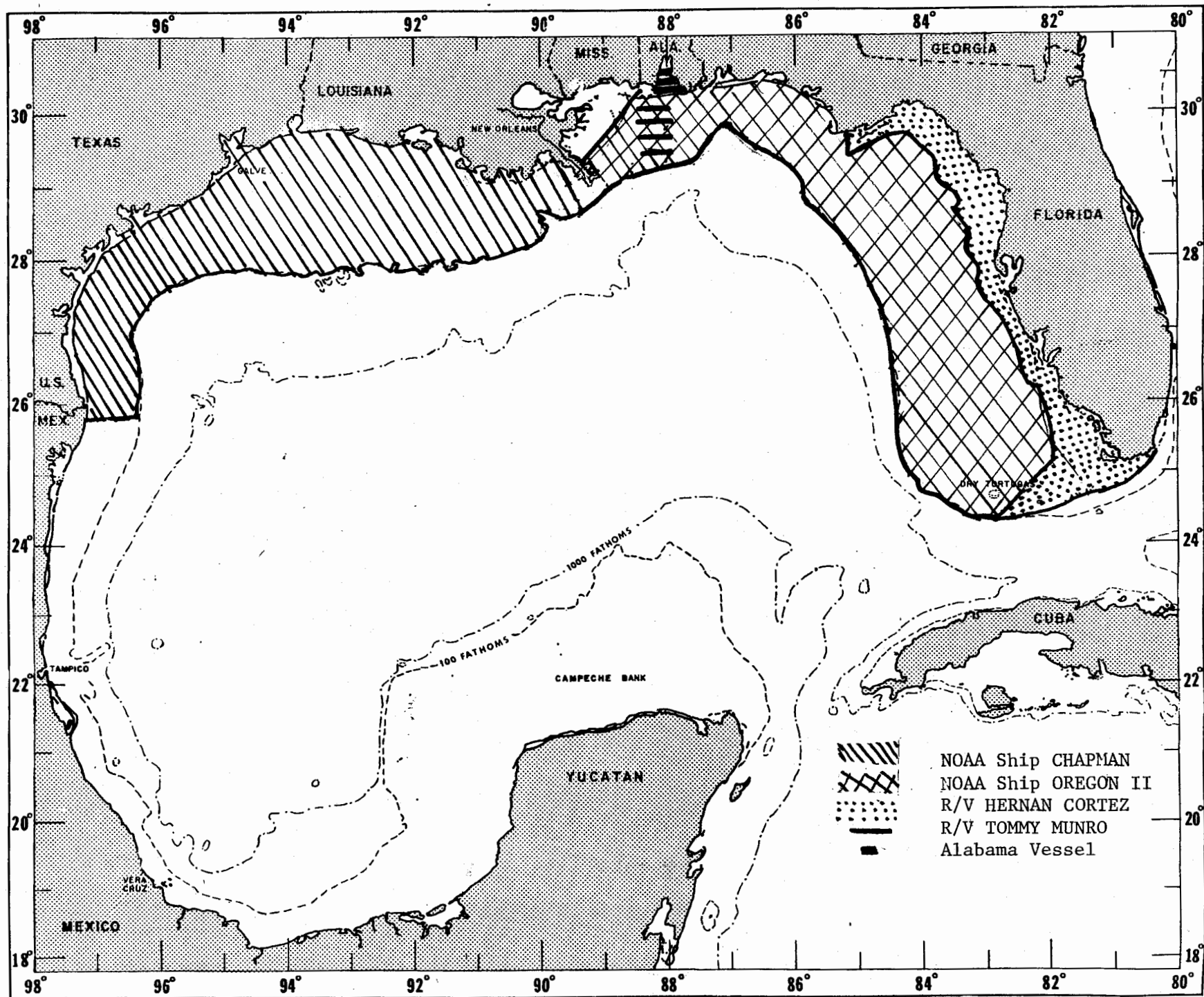


FIGURE. 13
 SEPTEMBER 1986 KING MACKEREL PLANKTON SURVEY. GULF OF MEXICO STATIONS

PLANKTON AND ENVIRONMENTAL DATA SURVEYS

As in previous years, plankton samples and environmental data were collected routinely during most SEAMAP trawling surveys. During the Summer Shrimp/Groundfish Survey, 57 plankton tows were piggybacked on the Federal and state vessels, sampling randomly-generated stations within the standard 30-min SEAMAP grids. Plankton and environmental data were also taken by Louisiana at all of its Seasonal Day/Night Survey stations. Samples were taken by all participants except Texas with a 60-cm bongo net and a standard NMFS neuston net. This gear was also used during the Spring Squid/Butterfish Survey, with samples taken at dusk and dawn of each day. No plankton stations were made during the Winter Coastal Herring Survey.

Objectives of these piggybacked surveys were: (1) to collect plankton samples throughout the survey area; and (2) to collect associated hydrographic and environmental data at each plankton station. Additionally, environmental data (salinity, temperature, and oxygen from surface, middepth and bottom waters, and chlorophyll from surface and bottom waters) were collected during the shrimp/groundfish surveys; salinity, temperature, and oxygen were taken at the surface, middepth and bottom; chlorophyll was taken from the surface only during the Squid/Butterfish survey. Wind direction and speed and wave height were taken at all trawl stations.

Samples from one side of the bongo tows were shipped to the NMFS-Miami Laboratory for transshipment to Poland, where they will be sorted to the family level (both ichthyoplankton and selected crustacean and molluscan species). The other sample from each station is retained as a back-up in the event of damage or loss of the specimens sent to Poland, and maintained at the Gulf Coast Research Laboratory.

Chlorophyll samples were filtered at each station using GF/C filters on the shrimp/groundfish surveys, and the Squid/Butterfish Survey. All filters were put in petri disks and wrapped in foil for onboard storage in the freezer. Chlorophyll analysis will be completed ashore. Preservation of plankton samples was in buffered Formalin prior to transfer to ethanol.

In addition to these piggybacked surveys, two major SEAMAP plankton surveys were conducted in FY1986, detailed earlier.

1986 SEAMAP SPECIAL PROJECTS

STATUS AND TRENDS BENTHIC SURVEILLANCE PROJECT

For the third year, the SEAMAP Program actively participated in the nationwide sampling for contaminants in coastal fishes and sediments, as part of the NOAA National Status and Trends Benthic Surveillance Project. Both SEAMAP components (Gulf of Mexico and South Atlantic) supplied personnel from state fishery management agencies to provide guidance in locating concentrations of the target species, Atlantic croaker and spot. Sampling sites for the Gulf are shown in Figure 14.

SURVEY SUMMARY

Sampling methodologies in the 1986 Benthic Surveillance Project were the same as in the previous year; however three Gulf sites (Tampa Bay, Round Island-Mississippi Sound and Barataria Bay) were omitted. New sampling sites were established in Pensacola-Escambia Bay and in Biscayne Bay.

Sampling in the Gulf of Mexico began on August 28 and was completed by October 8, 1986, with the NOAA Ship FERREL serving as the primary platform. Ongoing analyses of trace metals, aromatic and chlorinated hydrocarbons and other contaminants in fish tissues and sediments are being conducted by the NMFS Beaufort and Charleston laboratories, while the Oxford Laboratory performs histopathological studies on collected spot and croaker from the Gulf.

Preliminary results of the 1984 and 1985 cooperative sampling efforts were presented at the March 1986 joint SEAMAP-Gulf and South Atlantic meeting with a later distribution of the report "Preliminary Results of 1984 National Benthic Surveillance Project in the Southeast: Report to SEAMAP" in May. This report along with similar reports from other regions of the United States, was submitted to the Ocean Assessment Division of NOAA for inclusion in a national summary. Components of the preliminary results include:

° Interim Report on Organic Contaminants in Fish Stomach Contents, Livers, and Bile, and Sediments from Selected Locations in the Southeast - Charleston Laboratory.

Stomach and bile data are complete; liver tissue data are approximately 75% complete; and sediment data are 10% complete. Though no DDT was detected in stomach content samples, parent DDT compounds were found in liver tissues, indicating the value of liver measurements in detecting long term accumulation of this pesticide presumably transported into U.S. waters from distant sources.

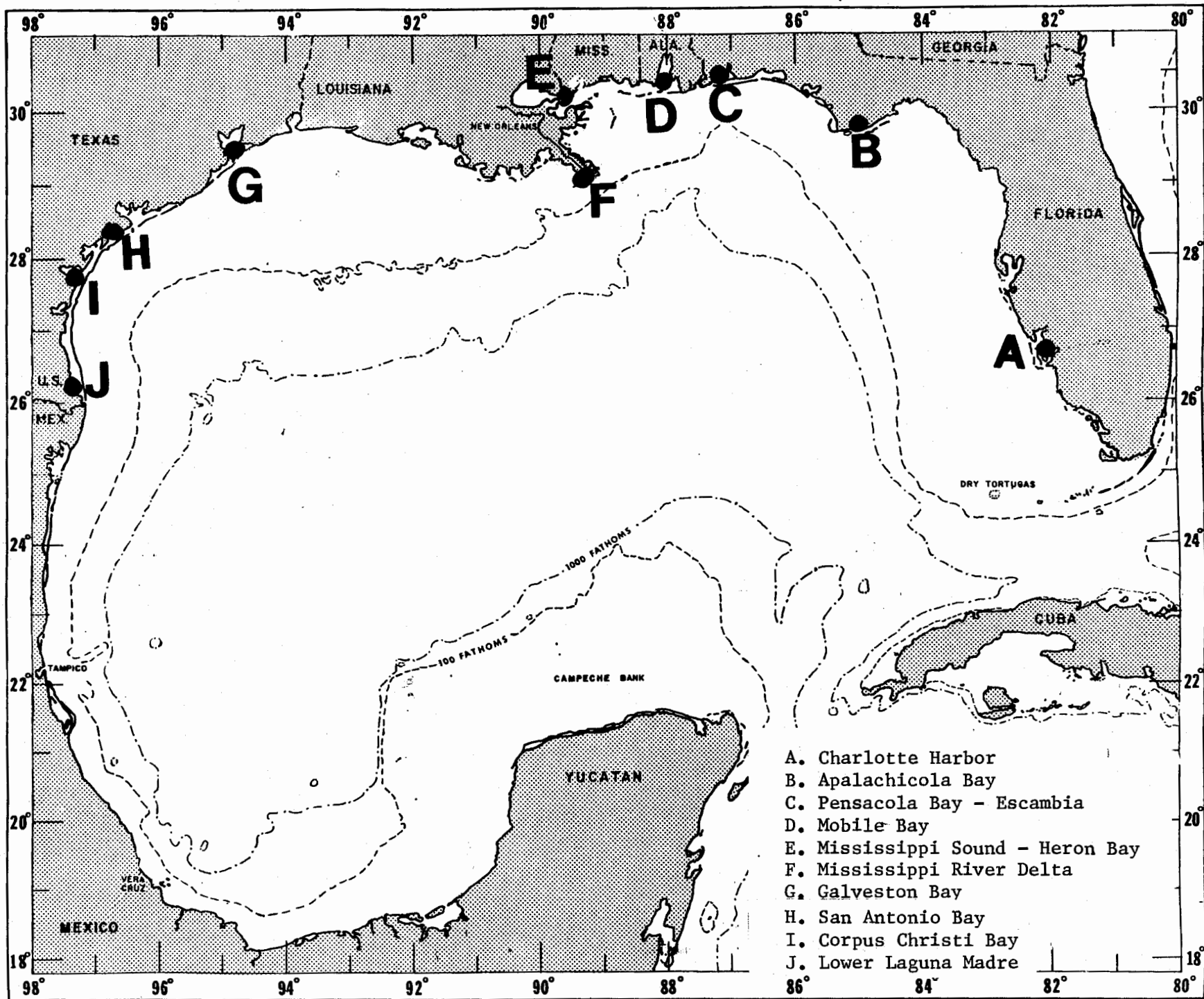


FIGURE 14. 1986 STATUS AND TRENDS BENTHIC SURVEILLANCE PROJECT SAMPLING SITES IN THE GULF OF MEXICO

- Copper, Lead, Chromium, Cadmium and Mercury in 1984 Benthic Surveillance Sediments from the Southeast Atlantic and Gulf of Mexico Coasts - Beaufort Laboratory.

Sediment values at three Gulf sites (Tampa Bay, Mississippi River Delta and Corpus Christi Bay) indicate the possibility of cadmium enrichment (i.e., contamination). Chromium and mercury values are near average for crustal material at most sites.

- Summary of Results of Histopathology Studies, Year 1, Benthic Surveillance Project.

In general, inflammatory lesions are not necessarily related to degraded environments. They are often related to parasitic organisms, which may be more prevalent in unadulterated environments, or infectious microorganisms which reach elevated levels in abnormal concentrations of a fish species.

RED DRUM STUDIES

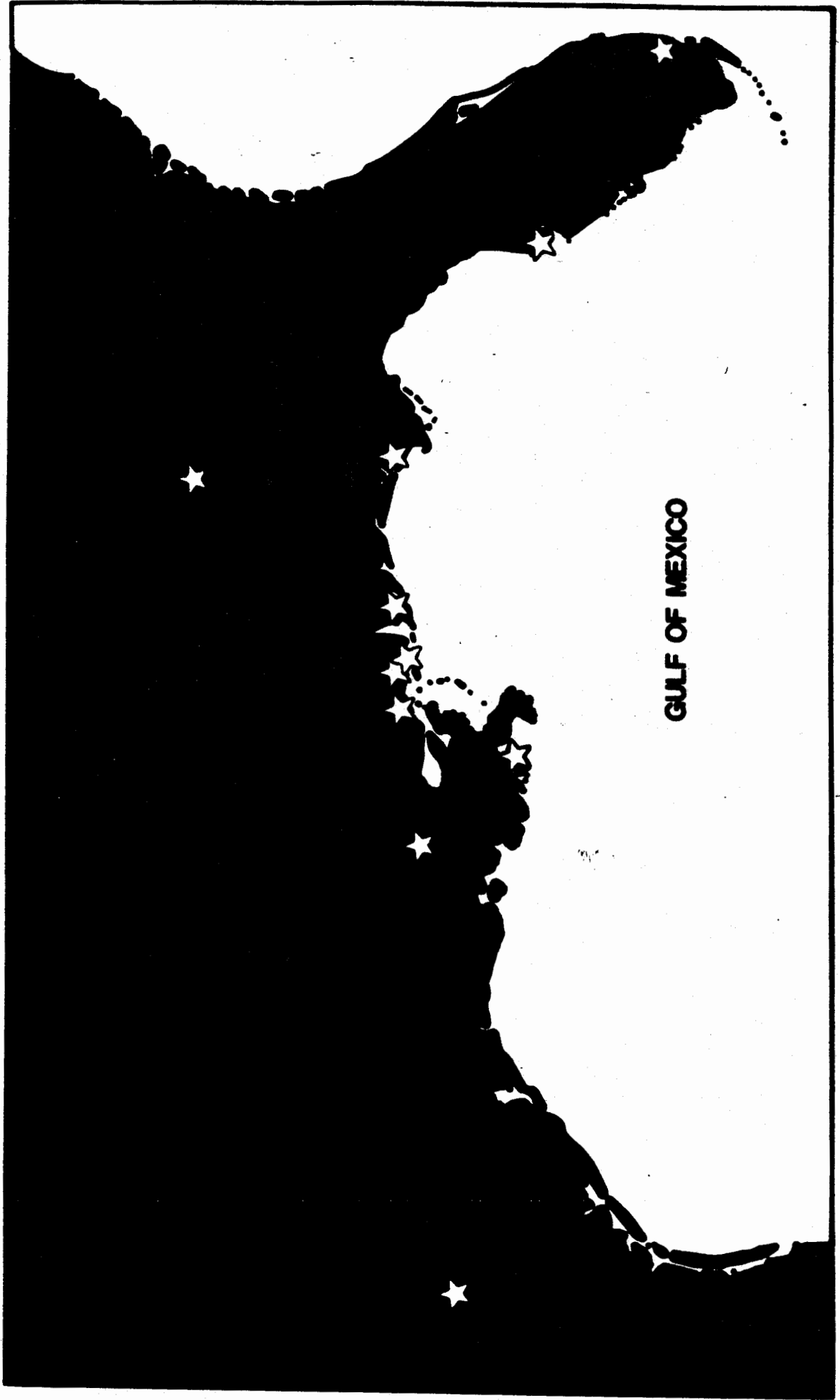
Recommendations made by the SEAMAP-Gulf Red Drum Work Group in November 1984 and approved by the Subcommittee directed participants to collect in 1985 and 1986 young red drum for analysis of possible inshore stock differences. Specimens of young-of-the-year inshore red drum were collected from discrete estuarine systems by all Gulf States, North and South Carolina, Georgia and in eastern Florida. Specimens were frozen whole and transported to the Coastal Fisheries Institute at Louisiana State University, for analysis of tissues by electrophoresis and high pressure liquid chromatography.

Most of the specimens analyzed were collected in 1985; however, some specimens were provided in 1986 by SEAMAP-South Atlantic participants, and samples from Mississippi are currently being provided. A first report on the analyses was presented by LSU's Coastal Fisheries Institute at the October 1985 SEAMAP Subcommittee meeting, with additional information presented in a February 1986 report by G. Bane and D. Nieland, Nuclear Eye Lens Proteins of Red Drum, *Sciaenops ocellatus*, Revealed by High Pressure Liquid chromatography: Preliminary Investigations (LSU-CFI-86-06), and in March 1986 at the Red Drum Work Group meeting.

Preliminary analyses corroborate those performed through electrophoresis at Louisiana Technical University, also cooperating in the study, and suggest that overall, specimens from the Gulf estuaries are not genetically distinguishable, while differences were noted between Gulf and South Atlantic groups. Further studies to refine these and other methodologies were encouraged by both programs as red drum take on a pivotal position in critically needed fishery research and management.

In response to the rapidly growing red drum fishery, and the urgent need for scientific information on the size and identification of the offshore Gulf red drum resource, as well as the species' age/growth and migration patterns, the Gulf Subcommittee in May 1986 charged the Red Drum Work Group with developing a plan to provide this information. Scientists from the entire region collaborated to produce in June the State-Federal Cooperative Program for Red Drum Research in the Gulf of Mexico: A Three-Year Plan, a cost-effective program designed specifically to address these questions. Many of the projects in the plan, funded through the cooperative, State-Federal Marine Fisheries Initiative (MARFIN), were implemented immediately, even before funding, and have yielded valuable data on age and growth, and stock size. Overall reporting of the cooperative program's results and progress, and program planning and evaluation are being managed through the SEAMAP-Gulf Program. Study sites for the program are shown in Figure 15.

The first program review was planned to coincide with formal implementation of the cooperative program. A Fall Conference, scheduled for October 14, 1986 at the Fall GSMFC Meeting in New Orleans, will feature presentation on project objectives and preliminary research



GULF OF MEXICO

FIGURE 15. 1986-87 STUDY SITES, COOPERATIVE RED DRUM RESEARCH PROGRAM

results by all participants in the Cooperative program, a Red Drum Work Group meeting is scheduled to follow the conference to review program progress and study findings. The Conference Chairman is Corky Perret, Assistant Secretary for Fisheries, Louisiana Department of Wildlife and Fisheries. As well, the first issue of SCIAENOPS, newsletter of the cooperative program, was developed and sent to more than 550 interested persons and will be available at the conference.

SHIPBOARD VERSUS LABORATORY WEIGHT VARIANCE STUDY

A preliminary evaluation of the accuracy of shipboard weighing procedures was conducted cooperatively by SEAMAP and NMFS 1985 to determine if problems exist when trawl-caught species are weighed onboard research vessels. Data for the study were collected on the NOAA Ship OREGON II in June, 1985 on specimens weighed both onboard and at the NMFS Pascagoula Laboratory.

The results of the evaluation were analyzed by Dr. Arvind Shah of the University of South Alabama, working with the NMFS Mississippi Laboratories. Dr. Shah applied a linear regression model, using lab weight as a dependent variable and ship weight as an independent variable. A coefficient of determination of 98.86 percent was found, indicating a strong linear relationship between the ship weight and lab weight; however, the model was found to be appropriate only for the range of weights within 21 pounds, as no samples over that weight were obtained. Of the 497 samples taken at 20 stations in the offshore area east of the Mississippi River, only one had a weight greater than 20 lb.

The SEAMAP Subcommittee subsequently endorsed continuing the study in 1986 to collect additional data on samples over 20 pounds and determine whether the described relationship extends over the entire range of weights usually obtained on SEAMAP surveys, and, additionally, to collect data points below 20 pounds to cross-validate the relationship in the fitted model.

Sampling in 1986 was performed in June and July, mostly during the Summer Shrimp/Groundfish Survey. Samples from 0.25 to 55.0 lb (ship weight) were collected in prescribed weight categories to over 40 pounds. A total of 97 samples was collected at 44 stations by NMFS personnel. Most of these stations were west of the river; 10 of the samples were taken during the NMFS transboundary shrimp tagging survey in July. Stations for 1986 are shown in Figure 16. These samples were frozen after weighing, as in 1985, and transported to the NMFS Pascagoula Laboratory for laboratory weighing by NMFS personnel. The data, analyzed by Dr. Shah, indicated a lab weight 94 percent of the shipboard weight plus or minus the scale calibration factor (approximately 6 percent). These findings suggest that for all shipboard samples normally weighed in the course of SEAMAP monitoring and assessment, the average weight difference between shipboard and laboratory weights is no more than 6 percent, and is probably an acceptable level of variance for the purposes of SEAMAP surveys.

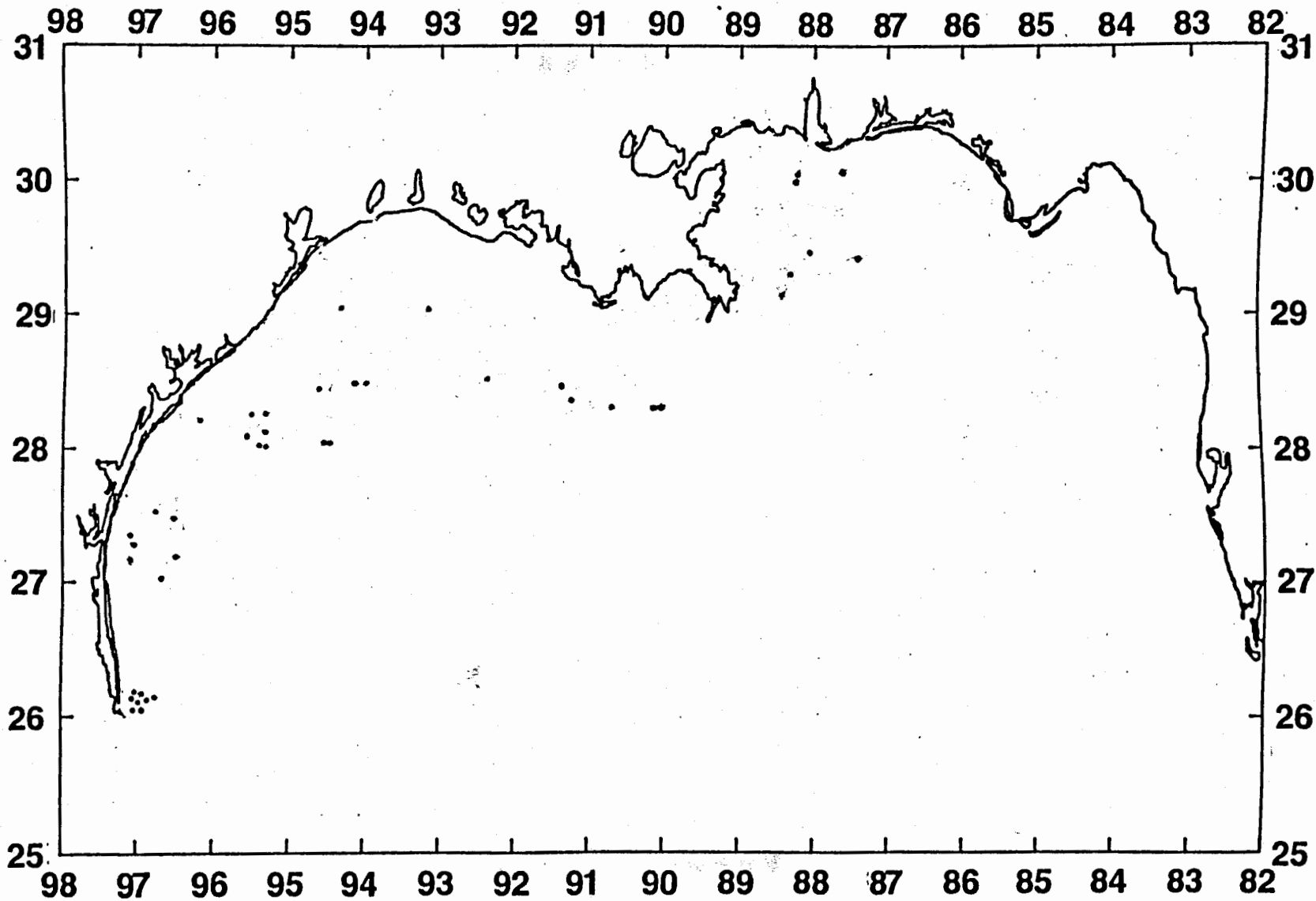


FIGURE 16. STATIONS WHERE SAMPLES WERE TAKEN IN JUNE-JULY 1986 DURING THE SEAMAP SHIPBOARD VERSUS LABORATORY WEIGHT VARIANCE STUDY.

INFORMATION SERVICES

INFORMATION SERVICES

Information from SEAMAP activities is provided to user groups through the program administration and three complementary systems: the SEAMAP Information System (SIS), SEAMAP Archiving Center, for ichthyoplankton (SAC), and SEAMAP Invertebrate Plankton Archiving Center (SIPAC). Products resulting from FY85 SEAMAP activities can be grouped into two major categories, data sets (including, broadly, digital data and collected specimens) managed by SIS, SAC and SIPAC, and program information. Program information is discussed in the Program Management section of this report.

SEAMAP INFORMATION SYSTEM

Biological and environmental data from all SEAMAP surveys are included in the SEAMAP Information System, managed in conjunction with NMFS/SEFC. Raw data are edited by the collecting agency and verified by the SEAMAP Data Manager prior to entry into the system. With final verification of environmental data complete for 1984, all SEAMAP surveys in 1982 through 1984 have been entered into the system. Data from 1985 surveys are in the process of being verified, while data entry and edit continues for 1986 surveys. Verified, non-confidential SEAMAP data are available conditionally to all requestors, although the highest priority is assigned to SEAMAP participants. During FY86, 16 requests were received and processed (13 from participants, 3 from others). All but five requests have been filled.

Requested SEAMAP data were used for a multitude of purposes:

- ° Evaluating the abundance and size distribution of penaeid shrimp in Federal and state waters to assist in determining opening and closing dates for commercial fisheries.
- ° Assessing shrimp and groundfish abundance and distribution and their relationship to such environmental parameters as temperature, salinity and oxygen.
- ° Identifying environmental parameters associated with concentrations of larval finfish.
- ° Compiling the 1983 and 1984 SEAMAP Biological and Environmental atlases.
- ° Comparing catches of shrimp and groundfish captured by 40-ft versus 20-ft trawl nets, and daytime versus nighttime sampling.
- ° Assessing the variance of shipboard versus shoreside weights of trawl-caught organisms.
- ° Compiling the 1984 SEAMAP Ichthyoplankton Atlas.
- ° Identifying optimized survey designs for squid and butterfish.

DATA MANAGEMENT SYSTEM SURVEY

The urgent need for design and development of an integrated data system to satisfy a diversity of user needs led to a joint authorization by the SEAMAP-Gulf and South Atlantic programs to develop a comprehensive information system design. A contract was approved for development of the system design, and a system requirements survey form identifying user needs, protocols, hard- and software and scenarios was completed by 13 SEAMAP participants in June. A draft of the Requirements Document for SEAMAP Gulf and South Atlantic Data Management System is undergoing review, with the final report to be presented in early 1987.

From the compiled survey responses, it was determined that environmental, groundfish, ichthyoplankton and shrimp data will be accessed most frequently, and these active data files will be maintained on disks while the remainder of the data will reside on tapes. SEAMAP respondents noted a need to locally enter/edit SEAMAP data and a means to directly retrieve data for local statistical analysis, report generation and graphics output with appropriate software capabilities. However, to maintain data file integrity, SEAMAP data must be accessed only in the read-only mode to prevent inadvertent modification.

According to survey responses, a variety of communications software and modems are in use, and the SEAMAP data management system should utilize these communications tools where feasible. System development will be supervised by the SEAMAP Data Manager in accordance to policies and protocols set by SEAMAP-Gulf and South Atlantic programs.

REAL-TIME DATA

A major function of the SEAMAP Information System in FY86 was the processing of catch data from the Summer Shrimp/Groundfish and Spring Squid Butterfish surveys as near-real-time data. Data were transmitted daily via satellite to the NMFS/NSTL facility from the NOAA vessel, while the states' data were entered into the system weekly. Weekly plots of station locations and catch rates of shrimp, squid and dominant finfish species were prepared and edited at the NMFS Pascagoula Laboratory and processed and distributed by GSMFC to management agencies, fishermen, processors and researchers. Management agencies also received comprehensive data listings showing penaeid shrimp length-frequencies, sampling parameters and environmental conditions. Representative listings are shown in Figures 17 and 18.

During the Summer Squid/Butterfish Survey, 139 requestors received the four weekly real-time catch data summaries showing pounds per hour of butterfish and squid, and dominant size of butterfish captured. (Appendix A).

FIGURE 17

REPRESENTATIVE REAL-TIME DATA LISTING, 1986 SHRIMP/GROUNDFISH SURVEY

PLAT	STATION	DATE	LAT	LONG	TIME	FMS	SUR	BOT	MG/M3	BDO	TYPE	FISH	TOWS	SHRIMP	FINFISH	CRK	SPT	TRT	CAT	OTHER	LE
1	E006	6/10/86	29-57.8	88-36.7	22	12	29.4	23.9		5.1	ST	14	1	2.9	9	0	0	1	0	022	3

SPECIES:BROWN WEIGHT: 2.3 NUMBER: 82 MODE:115/ 6
 LEN(MM)/FREQ. 80/ 2 90/ 7 100/ 20 110/ 28 120/ 15 130/ 8 140/ 1 150/ 1

SPECIES:PINK WEIGHT: 0.6 NUMBER: 3 MODE: 0/ 0
 LEN(MM)/FREQ. 120/ 1 150/ 1 160/ 1

PLAT	STATION	DATE	LAT	LONG	TIME	FMS	SUR	BOT	MG/M3	BDO	TYPE	FISH	TOWS	SHRIMP	FINFISH	CRK	SPT	TRT	CAT	OTHER	LBS
1	E002	6/11/86	30-10.5	88-21.2	01	7	28.9	25.7		4.1	ST	30	1	3.3	33	1	0	0	0	071	39

SPECIES:BROWN WEIGHT: 1.1 NUMBER: 37 MODE: 0/ 0
 LEN(MM)/FREQ. 100/ 4 110/ 6 120/ 13 130/ 9 140/ 3 150/ 1

SPECIES:WHITE WEIGHT: 1.4 NUMBER: 17 MODE: 0/ 0
 LEN(MM)/FREQ. 150/ 6 160/ 5 170/ 5

SPECIES:PINK WEIGHT: 0.8 NUMBER: 12 MODE: 0/ 0
 LEN(MM)/FREQ. 120/ 1 130/ 3 140/ 4 150/ 1 160/ 2 170/ 1

PLAT	STATION	DATE	LAT	LONG	TIME	FMS	SUR	BOT	MG/M3	BDO	TYPE	FISH	TOWS	SHRIMP	FINFISH	CHK	SPT	TRT	CAT	OTHER	LBS
1	E003	6/11/86	30-07.8	88-04.2	04	9	27.8	25.1		4.5	ST	16	1	3.9	25	0	0	0	0	071	32

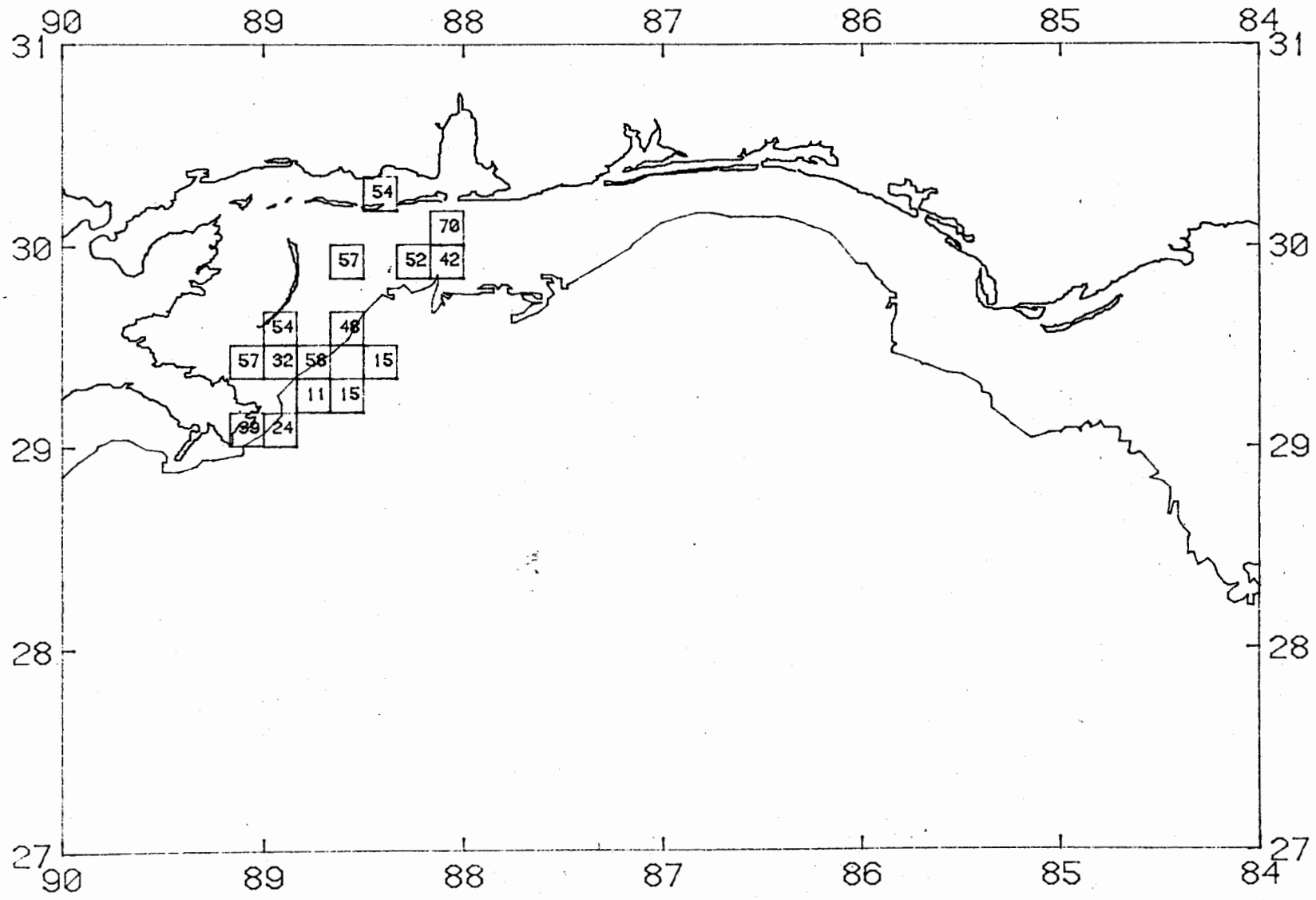
SPECIES:BROWN WEIGHT: 3.4 NUMBER: 147 MODE: 97/ 10
 LEN(MM)/FREQ. 80/ 3 90/ 45 100/ 44 110/ 31 120/ 14 130/ 3 140/ 2

SPECIES:WHITE WEIGHT: 0.2 NUMBER: 2 MODE: 0/ 0
 LEN(MM)/FREQ. 160/ 1 170/ 1

SPECIES:PINK WEIGHT: 0.3 NUMBER: 5 MODE: 0/ 0
 LEN(MM)/FREQ. 130/ 2 140/ 2 170/ 1

PLAT	STATION	DATE	LAT	LONG	TIME	FMS	SUR	BOT	MG/M3	BDO	TYPE	FISH	TOWS	SHRIMP	FINFISH	CRK	SPT	TRT	CAT	OTHER	LBS
1	E005	6/11/86	30-00.1	87-58.4	05	11	28.5	23.2		6.2	ST	20	1	0.0	13	0	0	0	0	070	38

FIGURE 18
 REPRESENTATIVE REAL-TIME CATCH PLOTS, 1986
 SHRIMP/GROUNDFISH SURVEY



SEAMAP ARCHIVING CENTER

Larval fish and fish egg samples sorted to the family level by the Polish Sorting Center (PSC) are returned to the SEAMAP Archiving Center (SAC) for archiving and loan to researchers. In 1986, data entry for most of the returned sorted samples was completed in an improved and simplified information management system. All data are now managed by a dual microcomputer/mainframe program which eliminates coding errors and facilitates faster data entry. Comprehensive data listings are now available for survey specimens from 1982-1984, consisting of approximately 19,500 specimen lots (more than 300,000 larvae), as well as many fish eggs and unsorted fish larvae.

The Center is managed in conjunction with FDNR in St. Petersburg, and processes both specimen loans and requests for associated plankton survey environmental data; merging of these files within the SEAMAP Information System in FY1987 will greatly facilitate managing the environmental data, presently a cumbersome manual procedure. Plans also call for a greater level of coordination and interaction with respect to materials collected and managed by Mexican scientists. Gulf collections in 1986 were extensive and will be further expanded in 1987 with the return of the SEAMAP-South Atlantic's first sorted survey collection. Plans call for 750 SEAMAP samples (+ 25% quality control) to be sorted for ichthyoplankton during the PSC contract period of May 1986 through April 1987. Priorities for sorting these samples from the backlog at PSC will be determined.

Loan of SEAMAP specimens, and development of the system and its protocols, are supervised by SAC's curator, following policies outlined in the SEAMAP-Gulf Operations Plan. In FY1986, more than 1,000 specimen lots of fish larvae were loaned, most of them species of commercial and recreational importance: mackerels, snappers, tunas, butterflyfish, bluefish, red drum, jacks, herrings, grunts and others; many other loan requests are presently being processed.

SEAMAP INVERTEBRATE PLANKTON ARCHIVING CENTER

With the determination in 1985 by SEAMAP-Gulf that the retained "back-up" bongo collections also contain valuable research materials, the SEAMAP Invertebrate Plankton Archiving Center (SIPAC) was established, managed in conjunction with Gulf Coast Research Laboratory in Biloxi, Mississippi.

To date, 961 station samples from surveys in 1982-1986 have been archived at SIPAC. Of the 961 samples, 674 have been entered into the computer. A microcomputer information system, similar to that used at SAC for the ichthyoplankton curating, is used to identify and catalogue the samples. Associated cruise data (collection date, station number, depth, location and environmental parameters) are also maintained, and loans of materials for research have begun. A loan of 144 lots containing 505 larval cephalopods has been made to researchers at Louisiana State University.

The recent decision by SEAMAP-Gulf to request Polish sorting of larval penaeid shrimp, blue crab, stone crab, lobsters and squid will lead to future archiving at SIPAC of these sorted specimens, as well as unsorted fractions of invertebrates remaining after the fish eggs and larvae have been removed. A major element of planning for invertebrate sorting is provision by SEAMAP-Gulf of expertise to the Polish Sorting Center. In June-July 1986, the SIPAC Curator traveled to Poland to train sorters and review procedures and protocols associated with all SEAMAP specimen sorting. Findings from that trip are currently being reviewed by the SEAMAP Program to improve the quality and quantity of both fish and invertebrate plankton sorting.

PROGRAM MANAGEMENT

PROGRAM MANAGEMENT

The SEAMAP Program is administered by the SEAMAP Subcommittee of the Technical Coordinating Committee through the SEAMAP Coordinator, who is under the technical direction of the Subcommittee Chairman and administrative supervision of the Gulf States Marine Fisheries Commission's Executive Director.

Personnel associated with program management include the Coordinator, SEAMAP Data Manager, SEAMAP Archiving Center Curator, SEAMAP Invertebrate Plankton Archiving Center Curator, and the NMFS-SEFC Mississippi Laboratories Director, serving as Contracting Office Technical Representative.

SEAMAP management activities are designated in this report as either Administration or Information Dissemination.

ADMINISTRATION

PLANNING

Major SEAMAP-Gulf Subcommittee meetings were held in October 1985 and March 1986, in conjunction with the Annual Fall and Spring Meetings of the Gulf States Marine Fisheries Commission (GSMFC). Resource survey planning meetings of the Subcommittee were held in January and August 1986; all meetings included participation by the several work group leaders, Coordinator, Data Manager, curators, and the GSMFC Executive Director. Subcommittee members and proxies are listed in Table 3.

The January meeting was also the occasion for a Gulf-wide workshop, sponsored by the SEFC and hosted by SEAMAP, to identify king mackerel research needs in the Southeast. Representatives from all eight southeastern states, NMFS, the management Councils and Fisheries Commissions participated in this two-day conference, which resulted in the formulation of the Cooperative Research Plan for King Mackerel in the Gulf of Mexico (SEFC, March 1986; Appendix B).

The annual joint meeting of the two programs was held in March 1986, in Brownsville, Texas with representatives from all participating agencies attending. Representatives from the Gulf program also met with the South Atlantic representatives in August 1986 to discuss respective program needs and priorities for FY1987.

The August Subcommittee meeting inaugurated the program's entry into international activities. At the invitation of the Mexican National Institute of Fisheries (INP), SEAMAP representatives from both programs were invited to meet with personnel from INP to identify common fishery-independent research needs on king mackerel, red drum and plankton/environmental data. This historic meeting, attended by more

TABLE 3.
SEAMAP REPRESENTATIVES 1986

Walter M. Tatum, Chairman
Alabama Department of Conservation and Natural Resources

Gary Matlock, Vice Chairman
Texas Parks and Wildlife Department

Barney Barrett
Louisiana Department of Wildlife and Fisheries

C.E. Bryan*
Texas Parks and Wildlife Department

Karen Jo Foote*
Louisiana Department of Wildlife and Fisheries

Stevens Heath*
Alabama Department of Conservation and Natural Resources

J. Alan Huff
Florida Department of Natural Resources

Andrew J. Kemmerer
National Marine Fisheries Service
Southeast Fisheries Center

Mark Leiby*
Florida Department of Natural Resources

Thomas McIlwain*
Mississippi Department of Wildlife Conservation
Gulf Coast Research Laboratory

Walter R. Nelson
National Marine Fisheries Service
Southeast Fisheries Center

Richard Waller
Mississippi Department of Wildlife Conservation
Gulf Coast Research Laboratory

*Designated proxy

than 40 scientists from the U.S. and Mexico, resulted in the formulation of joint findings to be presented to MEXUS-Gulf, the U.S.-Mexico program that monitors Gulf of Mexico research needs and cooperative activities, for evaluation and approval. (A summary of the meeting is attached as Appendix C).

Most of the SEAMAP-Gulf work groups also met this past year, charged specifically with providing recommendations to the Subcommittee for survey and data management plans. The Red Drum Work Group met in March and May 1986; the Plankton Work Group in March; the Squid/Butterfish Work Group in February; and the Data Coordinating Work Group in December 1985. Where additional discussion was needed, the Subcommittee and work groups also deliberated plans and needs via telephone conference calls. Work group members are listed in Table 4.

Coordinating program surveys and distributing quick-report summaries of two Gulf-wide surveys to management agencies and industry were major functions of SEAMAP-Gulf management in FY1986. Other important management activities included coordinating data provision and specimen loans, preparing publications and documents, and assisting in the preparation of State-Federal cooperative agreements, including amendments to permit extension of activities previously not detailed in the agreements.

PROPOSED FY1987 ACTIVITIES

Preliminary FY1987 SEAMAP-Gulf budget allocations are shown on Table 5. Total program allocations for both SEAMAP programs, Gulf and South Atlantic, total \$1 million. However, anticipated reductions for the Gramm-Rudman-Hollings Deficit Spending Reduction, and NMFS surcharges (total \$55,600) will reduce the available funds to \$944,400. Of this, the share to be allocated for all NMFS and Gulf State activities (including GSMFC) is \$783,500.

Proposed FY1987 activities for all Gulf participants are shown in Table 6. It should be noted that the SEAMAP fiscal year begins on January 1, unlike the GSMFC/TCC fiscal years; thus, fall activities for FY1987 will be conducted from October-December, 1987.

Proposed FY1987 activities for all Gulf participants are shown on Table 7.

TABLE 4,
SEAMAP WORK GROUPS MEMBERS, 1986.

PLANKTON WORK GROUP

William Richards, Leader
National Marine Fisheries Service
Southeast Fisheries Center - Miami Laboratory

Jim Ditty
Louisiana Department of Wildlife
and Fisheries

Harriet Perry
Mississippi Department of Wildlife
Conservation
Gulf Coast Research Laboratory

Jack Gartner
Curator, SEAMAP Archiving Center
Florida Department of Natural Resources

Richard Shaw
Louisiana State University

Mark Leiby
Florida Department of Natural Resources

Joanne Shultz
Mississippi Department of Wildlife
Conservation
Gulf Coast Research Laboratory

Ken Stuck
Curator, SEAMAP Invertebrate Plankton Archiving Center
Mississippi Department of Wildlife Conservation
Gulf Coast Research Laboratory

SHRIMP/GROUNDFISH WORK GROUP

C.E. Bryan, Leader
Texas Parks and Wildlife Department

Philip Bowman
Louisiana Department of Wildlife and
Fisheries

Stevens Heath
Alabama Department of Conservation and
Natural Resources

Elmer Gutherz
National Marine Fisheries Service
Southeast Fisheries Center
Mississippi Laboratories

Edward Klima
National Marine Fisheries Service
Southeast Fisheries Center
Galveston Laboratory

Scott Nichols
National Marine Fisheries Service
Southeast Fisheries Center
Miami Laboratory

ENVIRONMENTAL DATA WORK GROUP

Warren Stuntz, Leader
National Marine Fisheries Service
Southeast Fisheries Center
Mississippi Laboratories

Charles Eleuterius
Mississippi Department of Wildlife
Conservation
Gulf Coast Research Laboratory

Ken Haddad
Florida Department of Natural Resources

Ron Gouguet
Louisiana Department of Wildlife and
Fisheries

Thomas Leming
National Marine Fisheries Service
Southeast Fisheries Center
Mississippi Laboratories

TABLE 4 (CONT'D.)

RED DRUM WORK GROUP

Thomas McIlwain, Leader
Mississippi Department of Wildlife Conservation
Gulf Coast Research Laboratory

Larry McEachron
Texas Parks and Wildlife Department

Eugene Nakamura
National Marine Fisheries Service
Southeast Fisheries Center
Panama City Laboratory

Michael Murphy
Florida Department of Natural Resources

Joseph Shepard
Louisiana Department of Wildlife and
Fisheries

Mark Van Hoose
Alabama Department of Conservation and Natural Resources

DATA COORDINATING WORK GROUP

Kenneth Savastano, Leader
National Marine Fisheries Service
Southeast Fisheries Center
Mississippi Laboratories
SEAMAP Data Manager

C.E. Bryan
Texas Parks and Wildlife Department
Shrimp/Groundfish Work Group

Warren Stuntz
National Marine Fisheries Service
Southeast Fisheries Center
Environmental Data Work Group

Thomas McIlwain
Mississippi Department of Wildlife
Conservation
Gulf Coast Research Laboratory
Red Drum Work Group

Frederick "Buck" Sutter
Mississippi Department of Wildlife
Conservation
Gulf Coast Research Laboratory
Squid/Butterfish Work Group

William Richards
National Marine Fisheries Service
Southeast Fisheries Center
Plankton Work Group

Walter M. Tatum
Alabama Department of Conservation and
Natural Resources
Chairman, SEAMAP Subcommittee

SQUID/BUTTERFISH WORK GROUP

Frederick "Buck" Sutter, Leader
Mississippi Department of Wildlife and Conservation
Gulf Coast Research Laboratory

Gilbert Bane
Louisiana State University

Michael Murphy
Florida Department of Natural Resources

Andrew J. Kemmerer/Chris Gledhill
National Marine Fisheries Service
Southeast Fisheries Center
Mississippi Laboratories

Walter M. Tatum/Mark Van Hoose
Alabama Department of Conservation and
Natural Resources

TABLE 5.
PRELIMINARY FY1987 PROGRAMMATIC BUDGET

GSMFC	\$ 91,500
TPWD	46,000
LDWF	118,000
MDWC/GCRL	114,000
ADCNR	75,000
FDNR	77,000
 TOTAL	 \$521,500
 NMFS	 \$262,000

Other budget allocations from FY86 funds:

SEAMAP-SA Program	\$ 160,900
Estimated NOAA, NMFS surcharge, and Gramm-Rudman-Hollings reduction	\$ 55,600

TOTAL SEAMAP BUDGET \$1,000,000

TABLE 6.
PROPOSED SEAMAP-GULF ACTIVITIES, FY1987

Activity	Fall	Winter	Spring	Summer
Resource Surveys:				
Spring Bluefin Tuna Plankton Survey			X	
Shrimp/Groundfish Trawling Surveys	X			X
Squid/Butterfish Gear Evaluation Study			X	
Louisiana Seasonal Surveys	X	X	X	X
Squid Resources Survey			X	
Butterfish Resources Survey			X	
King Mackerel Plankton Survey				X
Plankton and Environmental Data Surveys	X	X	X	X
Coastal Herring Survey		X		
Information Operations:				
1985 Biological and Environmental Atlas	X			
1984 Ichthyoplankton Atlas		X		
1987 Marine Directory			X	
1987 Annual Report				X
Data Management System Implementation		X		
Data Input and Request Processing	X	X	X	X
Specimen Archiving and Loan	X	X	X	X
Real-time Data Summaries			X	X
Joint Programs Passive Gear Workshop	X			
Program Administration	X	X	X	X

TABLE 7.
PROPOSED SEAMAP-GULF FY1987 ACTIVITIES, BY PARTICIPANTS

<u>PARTICIPANTS</u>	<u>REQUESTED S-F FUNDS</u>	<u>SHRIMP/GROUNDFISH SURVEYS</u>	<u>PLANKTON/ ENVIRONMENTAL SURVEYS</u>	<u>OTHER SURVEYS</u>	<u>DATA MANAGEMENT</u>	<u>SPECIMEN ARCHIVING</u>	<u>PROGRAM ADMINISTRATION</u>
Florida Dept. Natural Resources	\$ 77,000		Spring, Summer surveys		All survey data to SIS	All plankton to NMFS-PSC and SIPAC; operate SAC	Subcommittee, work group meetings
Alabama Dept. Conservation & Natural Resources	\$ 75,000	Summer, Fall Shrimp/Groundfish Surveys	Piggybacked, summer, fall spring	Spring Squid/ Butterfish Study	All survey data to SIS	All plankton to NMFS-PSC and SIPAC	Subcommittee, work group meetings
Mississippi Dept. Wildlife Conservation/Gulf Coast Research Laboratory	\$144,000	Summer, Fall Shrimp/Groundfish Surveys	Piggybacked, summer, fall, spring	Spring Squid/ Butterfish Study	All survey data to SIS	All plankton to NMFS-PSC and SIPAC; operate SIPAC	Subcommittee, work group meetings
Louisiana Dept. Wildlife and Fisheries	\$118,000	Seasonal Shrimp/ Groundfish surveys Summer, Fall Shrimp/Groundfish Surveys	Piggybacked, on shrimp/ groundfish, Squid/Butterfish Surveys	Spring Squid/ Butterfish Study	All survey data to SIS	All plankton to NMFS-PSC and SIPAC	Subcommittee, work group meetings
Texas Parks and Wildlife Dept.	\$ 46,000	Summer, Fall Shrimp/Groundfish Surveys	Environmental data summer, fall (piggybacked)		All survey data to SIS		Subcommittee, work group meetings
National Marine Fisheries Service	\$262,000 ¹	Summer, Fall Shrimp/Groundfish Surveys	Piggybacked on all surveys; special plankton surveys	Spring Squid/ Butterfish Survey; Gear Evaluation Study; Coastal Herring Survey	All survey data to SIS; operate SIS	All plankton to PSC; 1987 paired plankton to SIPAC; 1985 sorted plankton to SAC	Subcommittee, work group meetings contract for administration
Gulf States Marine Fisheries Commission	\$ 91,500	Coordinate surveys; coordinate real-time data mailouts	Coordinate surveys	Coordinate surveys; studies	Coordinate requests	Coordinate requests	Administer program; publications; coordinate cooperative red drum program

Note: ¹Includes NMFS-SA program activities

COORDINATION

The position of SEAMAP-Gulf Coordinator was contracted by the GSMFC to the Center for Wetland Resources, Louisiana State University, with funds provided by NMFS-SERO/GSMFC State-Federal Cooperative Agreement SM-14.

Formal presentations on the SEAMAP Program presented by the Coordinator in FY86 included:

- ° January 1986 - Southeast Fisheries Center, National Marine Fisheries Service, Miami, FL
 - Southeast Regional Office, National Marine Fisheries Service, St. Petersburg, FL
 - National Marine Fisheries Service, Washington, DC
- ° March 1986 - State-Federal Grant-In-Aid Workshop, Brownsville, TX
- ° April 1986 - Florida Department of Natural Resources, St. Petersburg, FL
- ° May 1986 - Fisheries Delegation, Thailand Department of Fisheries, Gulf Coast Research Laboratory, Ocean Springs, MS

The following scientific papers dealing with the SEAMAP Program and its results were developed in FY86:

- ° Bane, Nikki and P. Eldridge. Optimizing fishery-independent data collection, management and dissemination through the experimental, cooperative State-Federal SEAMAP Program. Proc. 38th Ann. Meet., Gulf and Carib. Fish. Inst., November 5, Martinique (paper presented by R. Juhl, NMFS).
- ° Savastano, Kenneth and N. Bane. SEAMAP data management system and products. Proc. Marine Data Systems Conference, May 1, New Orleans, LA (paper presented by K. Savastano, NMFS).
- ° Bane, Nikki. State-Federal cooperative fisheries program: integrating management and development needs with research objectives. Louisiana Chapter, American Fisheries Society, October 10, 1986. Cocodrie, LA (paper presented by N. Bane, GSMFC/LSU).
- ° Kemmerer, Andrew, A. Jones and N. Bane. State-Federal cooperative fisheries programs: solving management and development needs in the southeastern U.S. Paper accepted for presentation at Coastal Zone 87 Fifth Symposium and Proceedings, May 1987, Seattle, WA

FY1986 FINANCIAL REPORT

Total allocations for FY86 program administration were \$93,100. An additional \$7,000 was supplied through an amendment to the State-Federal Cooperative Agreement in September, to provide reimbursement for travel expenses to Gulf and South Atlantic participants in the Status and Trends Benthic Surveillance Project. As of September 30, total expenditures and encumbrances were: \$73,637. The remaining balance of \$26,463 must be used to provide administration through December 31, 1986.

PUBLICATIONS

The following publications were published and distributed in FY1986:

- 1983 SEAMAP Environmental and Biological Atlas; a compilation of information obtained from the 1983 SEAMAP surveys, including catch rates of shrimp and finfish, and environmental data.
- 1984 SEAMAP Environmental and Biological Atlas; a compilation of information obtained from the 1984 SEAMAP surveys, including catch rates of shrimp and finfish, and environmental data.
- State-Federal Cooperative Program for Red Drum Research in the Gulf of Mexico: A Three-Year Plan; a proposal for implementing red drum research, submitted for funding by the Marine Fisheries Initiative (MARFIN) Program.
- 1983 SEAMAP Ichthyoplankton Atlas; a NOAA Technical Memorandum showing the distribution and abundance of important Gulf finfish larvae taken during 1983 SEAMAP surveys.
- 1986 SEAMAP Marine Directory; fourth in the yearly inventories of State, Federal and university organizations conducting Gulf fishery-independent research, including information on types of vessels and gear used, annual sampling effort, and target species.
- 1986 Annual Report of the SEAMAP Program - October 1, 1985 to September 30, 1986; a summary of 1986 activities and proposed 1987 events for both SEAMAP programs.
- 1986 SEAMAP Subcommittee Report to the GSMEC Technical Coordinating Committee; a detailed summary of program accomplishments, emphasizing survey design, materials collected, data dissemination, budget information and future survey activities.
- Sciaenops, Newsletter of the State-Federal Cooperative Program for Red Drum Research in The Gulf of Mexico. Vol. 1, No. 1. First of 10 1986-87 program updates to be published and distributed to program participants and others interested in red drum research.

Gulf States Marine Fisheries Commission

MEMBER STATES
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SEAMAP SQUID BUTTERFISH SURVEY SUMMARY #1

P.O. BOX 726
OCEAN SPRINGS, MS.
39564
(601)875-5912

The Southeast Area Monitoring and Assessment Program (SEAMAP), a cooperative State-Federal effort, has completed the first week of its Spring Squid/Butterfish Survey in the Gulf of Mexico. The purpose of the survey is to locate concentrations of underutilized species, especially Gulf butterfish. Two research vessels are operating: the NOAA Ship CHAPMAN, which departed Pascagoula, MS on May 6, and the Gulf Coast Research Laboratory's TOMMY MUNRO, which departed Biloxi, MS on May 12, 1986. Both vessels are using an 80-ft high-opening bottom trawl with 3-meter steel "V" doors, rigged to tow double warp from the stern. Tows were made for 30 minutes during daylight hours only. This is the first of four weekly summaries intended to keep you informed of catches and conditions during the survey, and reports the results of the CHAPMAN only, for the period May 6 to May 12.

The CHAPMAN operated during the first week of the survey from off Pensacola, FL to off Timbalier Bay, LA (87° to 90°30' W. long.), at depths from 22 to 190 fm. Butterfish catches were moderate; of 17 stations east of the river, only two contained butterfish. Most of the butterfish caught were taken at 11 of 14 stations west of the river, at depths from 24 to 144 fathoms. Butterfish averaged 82 grams, with some smaller specimens nearshore at 13 grams and larger fish averaging more than 200 grams offshore. The largest butterfish (average size over 200 grams) were taken at 28°01' N. lat. and 90°34' W. long., at 54 fm; this catch was 73 lb/hr. The larger catches of butterfish were taken mostly where bottom temperatures were in the 18.8° to 20.0° C range. Noteworthy catches were:

Longitude	Latitude	lb/hr	% Butterfish	Average Wt.	Depth
28°22' N.	90°18' W.	1216 ¹ / ₁	76	82 gm	31 fm
29°54' N.	87°00' W.	1178 ² / ₂	38	110 gm	63 fm
29°18' N.	88°04' W.	51 ³ / ₃	15	100 gm	80 fm
28°00' N.	90°38' W.	748 ⁴ / ₄	50	92 gm	116 fm

¹ Total catch 1600 lb/hr, remainder scaled sardine.

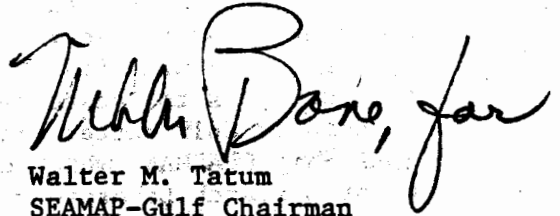
² Total catch 3100 lb/hr, with 930 lb/hr longspine porgy, 490 lb/hr spot.

³ Total catch 340 lb/hr, remainder mixed groundfish.

⁴ Total catch 1568 lb/hr, remainder mixed groundfish.

A large catch of Atlantic croaker (4485 lb/hr), spot (2633 lb/hr) and chub mackerel (878 lb/hr) was made at 29°19' N. lat. and 87°45' W. long., in 90 fm of water (total catch, 9750 lb/hr). A moderately large catch of silver eel (cutlassfish), 855 lb/hr, was taken at 28°09' N. lat. and 90°34' W. long. in 54 fm, from a total catch of 1820 lb/hr of mixed groundfish.

The second survey summary will be mailed May 21, 1986. For more information, contact Nikki Bane (601/875-5912) or Perry Thompson (601/762-4591).


Walter M. Tatum
SEAMAP-Gulf Chairman

Gulf States Marine Fisheries Commission

MEMBER STATES
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SEAMAP SQUID/BUTTERFISH SURVEY SUMMARY #2

P.O. BOX 726
OCEAN SPRINGS, MS.
39564
(601)875-5912

May 21, 1986

The Southeast Area Monitoring and Assessment Program (SEAMAP) has completed the second week of its Spring Squid/Butterfish Survey in the Gulf of Mexico. Two research vessels operated during this period. The NOAA Ship CHAPMAN surveyed offshore Louisiana and eastern Texas from May 13 to May 18, 1986. The Gulf Coast Research Laboratory research vessel TOMMY MUNRO surveyed off Alabama from May 12 to May 14, 1986. Both vessels are using an 80-ft high-opening bottom trawl with 3-meter steel "V" doors, double-warp rigged from the stern. All tows were for 30 minutes during daylight hours only. This report summarizes catches of both survey vessels.

NOAA Ship CHAPMAN

The CHAPMAN operated from 27°53' to 28°26' N. lat. and 90°50' to 92°33' W. long., at depths from 28 to 142 fm. Butterfish catches were relatively small; from a total of 22 stations, 11 contained butterfish. Butterfish from all catches averaged 86 gm, with a range of 13 to 182 gm; the smallest fish were from three nearshore stations. The largest butterfish (182 gm) were taken at 28°11' N. lat. and 91°15' W. long., at 47 fm; this catch was 74 lb/hr. The larger catches of butterfish were taken where bottom water temperatures were in the 16.9° to 19.4° C range. Noteworthy catches were:

Latitude	Longitude	Lb/Hr (Butterfish)	% of Total Catch (Butterfish)	Average Wt.	Depth
28°02' N.	91°38' W.	564 ¹ / ₁	48	82 gm	66 fm
27°57' N.	92°16' W.	496 ² / ₁	43	140 gm	92 fm
28°07' N.	91°33' W.	354 ³ / ₁	57	100 gm	55 fm

¹ Total catch 1176 lb/hr, remainder mostly rough scad (317 lb/hr) and longspine porgy (118 lb/hr).

² Total catch 1153 lb/hr, remainder mixed, with 334 lb/hr wenchman snapper.

³ Total catch 622 lb/hr, remainder mostly longspine porgy (75 lb/hr) and rough scad (62 lb/hr).

The largest catches of finfish other than butterfish were rough scad (486 lb/hr), from a total catch of 900 lb/hr at 28°08' N. lat. and 90°57' W. long., in 54 fm; and wenchman snapper (270 lb/hr), and rough scad (252 lb/hr), from a total catch of 900 lb/hr at 28°02' N. lat. and 90°59' W. long. in 57 fm.

A moderate squid catch (common squid) of 80 lb/hr from a total catch of 800 lb/hr was taken at 27°59' N. lat. and 91°23' W. long. in 87 fm.


R/V TOMMY MUNRO

The TOMMY MUNRO operated from 29°35' N. lat. and 87°13' W. long. to 29°51' N. lat. and 87°19' W. long., at depths from 29 to 100 fm. Butterfish were taken at only one of five stations made, at 29°45' N. lat. and 87°13' W. long., in 73 fm; 319 lb/hr of butterfish averaging 32 gm were taken from a total catch of 1596 lb/hr. This catch also contained 798 lb/hr of longspine porgy; bottom water temperature was 18.0° C.

A catch of 73 lb/hr of squid (common and arrow), from a total catch of 144 lb/hr, was made at 29°52' N. lat and 87°19' W. long., at a depth of 29 fm. A moderately large catch of longspine porgy (356 lb/hr from a total catch of 480 lb/hr) was taken at 20°48' N. lat. and 87°14' W. long., at a depth of 55 fm.

Surveying was discontinued from the TOMMY MUNRO on May 14 because of gear destruction over obstructions; on May 12, a Navy airplane was caught in one 80-ft net; expansive reef formations tore two other nets on May 14, necessitating an unscheduled port call for repairs.

The third survey summary will be mailed May 28, 1986. For more information, contact Perry Thompson (601/7620-4591) or Nikki Bane (601/875-5912).


Walter M. Tatum
SEAMAP-Gulf Chairman

Gulf States Marine Fisheries Commission

MEMBER STATES
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TEXAS

SEAMAP SQUID/BUTTERFISH SURVEY SUMMARY #3

P.O. BOX 726
OCEAN SPRINGS, MS.
39564
(601)875-5912

May 28, 1986

The Southeast Area Monitoring and Assessment Program (SEAMAP) has completed the third week of its Spring Squid/Butterfish Survey in the Gulf of Mexico. The NOAA Ship CHAPMAN surveyed offshore Texas during the period from May 21 to 26, 1986, while the Gulf Coast Research Laboratory R/V TOMMY MUNRO surveyed off Alabama and Mississippi from May 20 to 24, 1986. Both vessels were using an 80-ft high-opening bottom trawl with 3-meter steel "V" doors, double-warp rigged from the stern.

NOAA Ship CHAPMAN

The CHAPMAN surveyed from 26°53' to 28°26' N. lat. and 92°22' to 97°02' W. long., at depths from 22 to 134 fm. Butterfish catches were moderate but larger than the previous week. Butterfish from all catches averaged 59 gm; the smallest butterfish were from several large hauls at nearshore stations. The catch with the largest butterfish (averaging 95 gm) was taken at 28°04' N. lat. and 95°21' W. long., at 28 fm; this catch was 34 lb/hr. The two large catches of small butterfish (averaging 15-23 gm) were taken where bottom water temperatures were about 21.5° C. One moderate catch (455 lb/hr; average weight 92 gm) occurred where bottom water temperature was 17.9° C. Noteworthy catches were:

Latitude	Longitude	Lb/Hr (Butterfish)	% of Total Catch (Butterfish)	Average Wt.	Depth
28°17' N.	95°10' W.	808 $\frac{1}{}$	95	23 gm	23 fm
26°53' N.	97°02' W.	702 $\frac{2}{}$	90	15 gm	22 fm
28°05' N.	93°01' W.	473 $\frac{3}{}$	62	92 gm	49 fm
28°00' N.	92°22' W.	455 $\frac{4}{}$	66	92 gm	70 fm

1 Total catch 850 lb/hr.

2 Total catch 780 lb/hr.

3 Total catch 764 lb/hr, remainder rough scad (84 lb/hr) and longspine porgy (61 lb/hr).

4 Total catch 690 lb/hr, remainder 104 lb/hr rough scad and 69 lb/hr wenchman snapper.

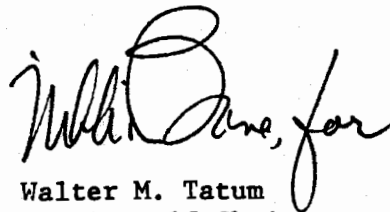
The largest catch of finfish other than butterflyfish was longspine porgy (248 lb/hr) and wenchman snapper (176 lb/hr) from a total catch of 652 lb/hr at 28°18' N. lat., and 92°51' W. long., at 31 fm. Another moderate catch was 208 lb/hr wenchman snapper (and 152 lb/hr butterflyfish) with 72 lb/hr rough scad from a total catch of 544 lb/hr at 27°27' N. lat. and 96°24' W. long., at 52 fm. No noteworthy catches of squid were taken.

R/V TOMMY MUNRO

Butterfish catches from the TOMMY MUNRO were small to moderate; the fish averaged 95.4 gm, with a range of 30 to 144 gm. The smallest butterflyfish (30 gm) were taken from the largest butterflyfish catch (717 lb/hr, total catch 2334 lb/hr), at 29°17' N. lat. and 88°17' W. long., at 46 fm; 1244 lb/hr longspine porgy were also taken at this station. Another large catch of butterflyfish (593 lb/hr of 105-gm average weight fish) was taken from a total catch of 1124 lb/hr at 29°02' N. lat. and 88°51' W. long., at 68 fm. Water bottom temperatures for these catches were 21.8° C and 19.5° C respectively.

The largest catch of finfish other than butterflyfish was longspine porgy (1617 lb/hr from a total catch of 1748 lb/hr) at 29°18' N. lat. and 88°19' W. long., at 36 fm. Small catches of squid were taken at several stations; the largest catch was 83 lb/hr at 29°22' N. lat. and 87°58' W. long., in 47 fm.

The next survey summary will be mailed on June 4, 1986. For more information, contact Perry Thompson (601/762-4591) or Nikki Bane (601/875-5912).



Walter M. Tatum
SEAMAP-Gulf Chairman

Gulf States Marine Fisheries Commission

MEMBER STATES
 ALABAMA
 FLORIDA
 LOUISIANA
 MISSISSIPPI
 TEXAS

S E A M A P SQUID/BUTTERFISH SURVEY SUMMARY #4

P.O. BOX 726
 OCEAN SPRINGS, MS.
 39564
 (601)875-5912

June 4, 1986

The Southeast Area Monitoring and Assessment Program (SEAMAP) has completed the fourth and final segment of its Spring Squid/Butterfish Survey in the Gulf of Mexico. The NOAA Ship CHAPMAN surveyed offshore Louisiana, Mississippi, and Alabama during the period from May 27 to June 3, 1986, while the Gulf Coast Research Laboratory R/V TOMMY MUNRO surveyed Louisiana from May 28 to 30, 1986. Both vessels were using an 80-ft high-opening bottom trawl with 3-meter steel "V" doors, double-warp rigged from the stern.

NOAA Ship CHAPMAN

The CHAPMAN surveyed from 27°59' to 29°56' N. lat. and 86°02' to 92°22' W. long., at depths from 27 to 162 fm. Butterfish were taken at 13 of 28 stations during this period.

Butterfish from all catches averaged 74.9 gm, with a range from 26 to 125 gm; the smallest butterfish were from the largest hauls, at depths from 44 to 75 fm.

Butterfish catches were generally somewhat larger than in the previous weeks. The largest catch of butterfish was 1968 lb/hr from a total catch of 2852 lb/hr, at 29°56' N. lat. and 86°31' W. long., in 44 fm; these fish averaged 33 gm. For the larger catches, bottom water temperatures ranged from 17.3° to 19.8° C. Noteworthy catches were:

Latitude	Longitude	Lb/Hr (Butterfish)	% of Total	Average Wt.	Depth
			Catch (Butterfish)		
29°56' N.	86°31' W.	1968 ¹ / ₄	69	33 gm	44 fm
29°39' N.	86°35' W.	1022 ² / ₄	61	65 gm	50 fm
29°19' N.	86°02' W.	352 ³ / ₄	40	30 gm	75 fm
29°32' N.	86°32' W.	284 ⁴ / ₄	58	120 gm	110 fm

¹ Total catch 2852 lb/hr, remainder mostly chub mackerel, 542 lb/hr.

² Total catch 1676 lb/hr, remainder mostly rough scad, 251 lb/hr.

³ Total catch 880 lb/hr, remainder mostly Loligo squid (158 lb/hr), and longspine porgy (97 lb/hr).

⁴ Total catch 490 lb/hr, including 44 lb/hr Loligo squid.

Other large catches of finfish other than butterfish were: 600 lb/hr longspine porgy, 318 lb/hr rough scad and 24 lb/hr Loligo squid, from a total catch of 1224 lb/hr at 29°47' N. lat. and 86°21' W. long., in 47 fm. Most other catches were mixed finfish in small amounts. However, two notable catches of silver rag were taken: 310 lb/hr, from a total catch of 706 lb/hr (including 120 lb/hr chub mackerel and 64 lb/hr Loligo squid) at 29°30' N. lat. and 87°23' W. long., in 128 fm; and 184 lb/hr, from the total catch of 1,676 lb/hr noted above.

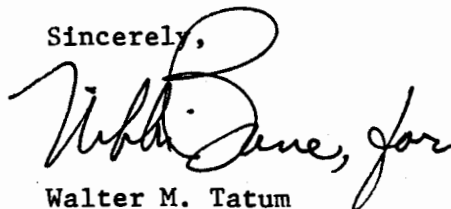
R/V TOMMY MUNRO

Butterfish catches sampled from the TOMMY MUNRO were small and caught at only 4 of 14 stations. Butterfish were small, averaging 30.5 gm, with a range of 37 to 40 gm. The largest catch of butterfish was 32 lb/hr from a total catch of 146 lb/hr taken at 28° 56' N. lat. and 89° 33' W. long., at a depth of 29 fm. The bottom water temperature was not available. The remainder of the catch was mostly silver eel and sand seatrout. No other sizeable catches of butterfish were taken.

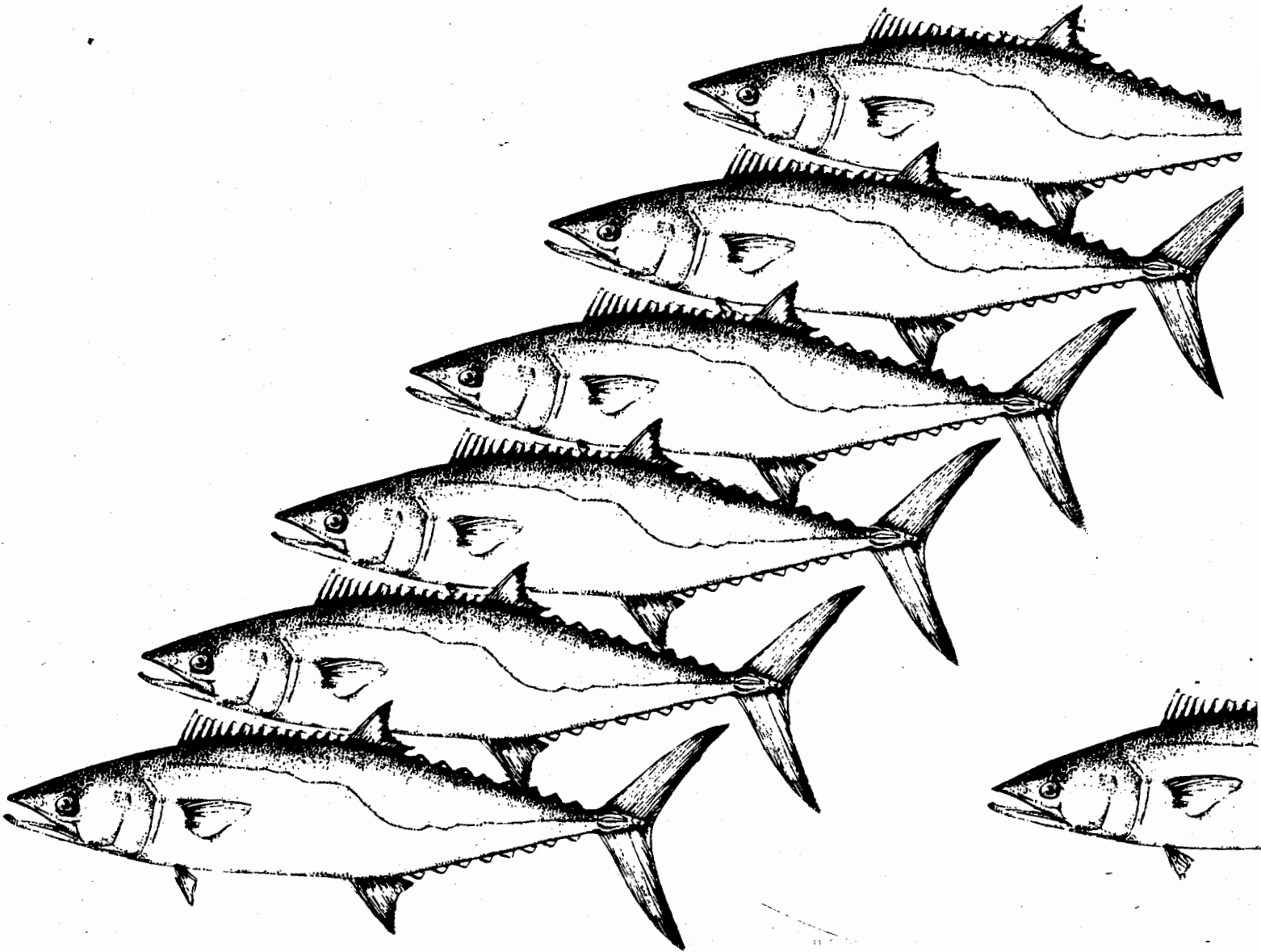
The largest catches of finfish other than butterfish were 124 lb/hr Atlantic croaker, from a total catch of 144 lb/hr at 28°42' N. lat. and 89°44' W. long., at a depth of 50 fm; and 112 lb/hr luminous hake, from a total catch of 864 lb/hr at 28°38' N. lat. and 89°12' W. long., at a depth of 30 fm. Small catches of Loligo squid were taken at several stations; the largest catch was 23 lb/hr at 28°33' N. lat. and 89°40' W. long., in 92 fm. A large haul of heart urchins ("sea biscuits" or "sea potatoes"), 2899 lb/hr from a total catch of 2940 lb/hr, was taken at 28°50' N. lat. and 89°03' W. long., at a depth of 120 fm.

This report concludes the distribution of information on the SEAMAP Spring Squid/Butterfish Survey. For more information, contact Perry Thompson (601/762-4591) or Nikki Bane (601/875-5912).

Sincerely,



Walter M. Tatum
SEAMAP-Gulf Chairman



COOPERATIVE RESEARCH PLAN FOR KING MACKEREL IN THE GULF OF MEXICO

SOUTHEAST FISHERIES CENTER
NATIONAL MARINE FISHERIES SERVICE
MARCH 1986

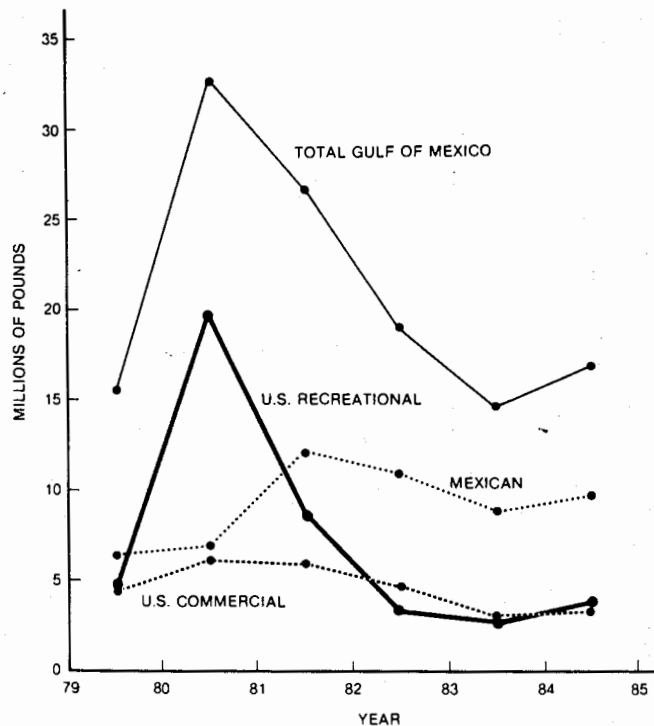
COOPERATIVE RESEARCH PLAN FOR KING MACKEREL IN THE GULF OF MEXICO

THE PROBLEM

King mackerel (*Scomberomorus cavalla*) is a highly sought saltwater game and commercial fish in the southeastern United States. It is caught by hook and line or by gill nets in the commercial fishery. Gill netters are often assisted by spotter planes. The species is also a staple of the region's large recreational charterboat industry and the focus of saltwater angling tournaments offering high cash stakes for the largest or most fish. King mackerel is fished by commercial fishermen in Mexico, Cuba, and other Caribbean countries as well.

This species is presently managed jointly by the South Atlantic and the Gulf of Mexico Fishery Management Councils. An Atlantic Migratory Group and a Gulf Migratory Group have been recognized and are managed separately because tagging information has given evidence of minimal overlap in ranges.

The well-being of the Gulf group appears to be seriously threatened as illustrated below.



Catch of king mackerel from the Gulf of Mexico migratory group by U.S. commercial, U.S. recreational, Mexican, and total Gulf of Mexico categories, 1979-1980 through 1984-1985 fishing seasons.

- The total catch of king mackerel declined from 32.8 million pounds in the 1980-1981 (July-June) fishing season to 16.9 million pounds in the 1984-1985 fishing season.
- The U.S. catch in the same years declined from 25.8 million pounds to 7.2 million pounds, with the recreational portion declining from 19.7 million pounds to 3.9 million pounds.
- The Mexican catch peaked at 12.2 million pounds in the 1981-1982 fishing season and declined to 8.8 million pounds by the 1983-1984 fishing season.

The recent decline in catches has led to widespread concern and controversy in both the commercial and recreational sectors of the fishery. State and Federal fishery management agencies face serious questions that can only be resolved through additional research.

- Is fishing by the U.S., Mexico, Cuba, and other nations contributing to the decline in U.S. catches of Gulf king mackerel (i.e., is there one group of fish that is being harvested by all)?
- What is the magnitude of the resource, and what constitutes an appropriate level of harvesting?
- How should the resource be allocated among competing users?
- What are the economic consequences of proposed regulations on these fishermen, and how effective will regulations be in restoring the resource to its former size?
- How do king mackerel respond to changes in their environment and to changes in the abundance of other species?

None of these issues can be addressed fully at present because of insufficient information. For management to be effective and the burden of regulations minimized, better and more complete information is needed from a variety of sources.

THE COOPERATIVE APPROACH

Because the king mackerel resource is important to each state in the southeast, and because the fish are migratory, frequenting both inshore (state) and offshore (Federal Fishery Conservation Zone, or FCZ) waters, the problem requires a cooperative research and management approach. A solid foundation for cooperation in fishery research exists in the southeast in the form of cooperative data collection activities: the National Marine Fisheries Service (NMFS) State-Federal Cooperative Fishery Statistics Program, which manages state and Federal catch data through a common information system accessible to all fishery managers; SEAMAP (Southeast Area Monitoring and Assessment Program), which provides for the collection and management of data and specimens on coordinated cruises at sea; NMFS-sponsored university research; and NMFS cooperative research activities with Mexico.

At the urging of Congressman John Breaux (LA), experts representing the Gulf of Mexico Fishery Management Council, Gulf States Marine Fisheries Commission, National Marine Fisheries Service and the eight southeastern states met on January 6, 1986 to identify critical deficiencies in king mackerel data and research and to construct cooperative plans to satisfy those needs. They identified several major categories of needed research and a large number of activities that could provide the required information, at a three-year supplemental cost of approximately \$1,300,000. Participants also noted where current research activities and programs could be expanded, enhanced, or modified for cost effectiveness. Through directed planning efforts, first-year costs were estimated at \$450,000 for the Gulf of Mexico.

Five major research problems were addressed in this cooperatively designed approach:

1. Does the Gulf migratory group consist of more than one management unit (i.e., do fish from various areas of the Gulf of Mexico mix with each other)?
2. How can information on mackerel abundance and the effects of fishing be made more precise?
3. Can trends in abundance be forecast?
4. What are the socioeconomic impacts of management options?
5. How do environmental and biological conditions affect the abundance and distribution of king mackerel?

THE PLAN

The five major problems have been restructured into research objectives and specific actions necessary to provide the required information.

Objective I. Determine the interchange of groups of king mackerel within the Gulf of Mexico.

Management considerations: Management to allow recovery of king mackerel populations to former levels with minimal impact on users will require improved understanding of mixing rates between geographic areas. Will heavy fishing of spawning fish in the western Gulf or capture of large numbers of maturing fish in the eastern Gulf affect other groups? If the Gulf migratory group is being fished by both U.S. and Mexican fishermen, unilateral U.S. actions to conserve and restore the resource will fail.

Research Action: Expand tagging operations and analyze tissue samples.

Tagging of king mackerel across the northern Gulf, in the Florida Keys, and in Mexico will be conducted as part of a coordinated state-Federal-university program to determine movements and migrations of king mackerel throughout the range of the recreational and commercial fisheries. Volunteer recreational anglers will also tag king mackerel, with information on all tagging and tag returns going into a common, permanent repository. Double tagging and maintenance of tagged fish in captivity will be undertaken to study tag loss and tagging mortality. Samples of skeletal muscles and eye lenses will be taken for biochemical stock identification studies.

Participants: States, NMFS, universities.

Objective II. Obtain vital statistics to improve estimates of year class strengths and harvest levels.

Management consideration: Catch levels could be adjusted to respond to changes in stock size and structure if more reliable estimates of catch, effort, and number-at-age were available.

Research Action 1: Expand the collection of catch and effort statistical data and determine the accuracy of statistical estimates of catch and effort.

Research Action 2: Increase the data on length, sex, and age frequencies from all fishing sectors.

The existing State-Federal Cooperative Fishery Statistics Program will be the vehicle for expanded collection of recreational and commercial fishery statistics on catch and effort by gear and location, and individual lengths and sexes. Current efforts will be enhanced by increasing the number of interviews. The extent of fish loss from commercial gill nets will be investigated.

Studies will be conducted to determine the age composition of king mackerel catches. Age data, in combination with length and weight relationships, enable researchers to estimate rates of growth and mortality and to determine specific impacts of the different components of the fishery on the resource.

Participants: States, NMFS.

Objective III: Develop methods to forecast trends in abundance.

Management considerations: Prediction of the relative number of young fish expected to enter the fishery allows managers to adjust regulations according to trends in recruitment. Estimates of stock abundance methods using fishery-independent data (information not directly supplied by the fisheries) will also provide information on stock recovery when harvests are low.

Research Action 1: Determine juvenile mackerel abundance.

The relative abundance of young king mackerel will be determined from two sources: (a) historic catch data from state and Federal resource surveys; and (b) the expansion of existing SEAMAP trawl surveys to permit more extensive sampling of territorial waters.

Research Action 2: Develop fishery-independent methodology to determine relative abundance.

Fishery-independent methods for assessing the size of the stock will be evaluated. Methods will include test fishing, to provide a comparison with catch/effort data obtained from the commercial and recreational fisheries. Aerial surveys will be conducted off south Florida, where

king mackerel are known to congregate in spring. Egg and larval surveys will be conducted to determine the feasibility of estimating the spawning biomass from egg and larval concentrations.

Objective IV. Determine the socioeconomic consequences of various options for regulating the commercial and recreational components of the industry.

Management consideration: An assessment of the value and risks of various management options to harvesters, processors, support industries, and consumers will assist the Regional Management Councils in reaching equitable decisions.

Research Action: Socioeconomic studies.

Studies will be conducted to determine factors affecting the commercial demand for king mackerel (e.g., who buys the fish, and possible replacement species), the relative demand for king mackerel fishing by angler group (namely, charter and private boats), regional differences in fishing demand patterns (e.g., seasonal demand for charter boat trips in Texas versus Florida), options for recreational and commercial fishermen relative to management regulations, and the impact of domestic fishing regulations on fishing in other countries (i.e., would a reduction in U.S. commercial fishing result in an increase in fishing effort by Mexico?).

Participants: States, NMFS, universities.

Objective V: Determine the impacts of changing biological and environmental conditions on king mackerel stocks.

Management considerations: Marine resources are influenced by environmental conditions which may vary markedly in time and space. Until a continuous data base with this information is available, trends in population abundance resulting from environmental changes cannot be predicted. Future management decisions will be improved by knowledge of migrations relative to variations in temperature, salinity, water mass movements, availability of prey species and other factors.

Research Action 1: Implement predator-prey studies.

The dependence of king mackerel on specific food organisms will be assessed through analysis of existing NMFS, state, and university data. This information will subsequently be correlated with king mackerel population levels (Objective II) to determine relationships.

Participants: States, NMFS, universities.

Research Action 2: Implement environmental effects studies.

The effects of such broad environmental conditions as climate, currents (e.g., the Gulf Loop and Gulf Stream currents), river discharges, etc., on the recruitment success, migrations, and distribution of king mackerel will be studied through analysis of existing environmental data bases coupled with information on the distribution and relative abundance of adult and larval fish.

No new funding is required for this work; rather, state, Federal, and university researchers throughout the region will be encouraged to address these issues through other funding sources.

FUNDING NEEDS

Most of the proposed research builds, wholly or in part, on current activities in the region and requires supplemental funding only to increase the scope of the studies to a level adequate to address king mackerel issues on a Gulf-wide basis. Such funding sources as SEAMAP, the Cooperative Fishery Statistics Program, Wallop-Breaux funds, and current state and Federal king mackerel research already contribute directly or indirectly to these research efforts, enabling a relatively modest annual supplemental need. Region-wide coordination of king mackerel research through the proposed plan is essential to ensure cost-effectiveness, standardization of data and techniques, and rapid implementation of well-designed and focused studies.

**Cooperative Plan Supplemental Funding Needs,
in Thousands of Dollars**

Research Objective	Year		
	1	2	3
Stock Identification	\$150	\$150	\$100
Vital Statistics	100	100	100
Forecasting Abundance	150	125	125
Socioeconomics	50	50	25
Total	\$450	\$425	\$350

SUMMARY

The Cooperative Research Plan for King Mackerel in the Gulf of Mexico presented here has been designed by fishery researchers and managers in response to an urgent need for sound fishery management information on the resource. Major research areas to be addressed are:

- Stock identification.
- Vital statistics for stock analysis.
- Recruitment to and forecasting for the fisheries.
- Socioeconomic impacts.
- Biological and environmental impacts.

Studies will be conducted in a cooperative, coordinated manner by the National Marine Fisheries Service, the eight southeastern states, and regional universities, building on current research activities and requiring only modest supplemental funding to yield the needed information.

**KEY FEATURES OF THE
KING MACKEREL RESEARCH
PLAN**

- Integrated state-Federal direction and coordination.
- Cost-effectiveness.
- Standardization of data and research techniques.
- Rapid implementation of needed studies.

This plan resulted from a meeting of representatives from the eight southeastern state fishery management agencies, National Marine Fisheries Service, Regional Fishery Management Councils, and Regional Fisheries Commissions. Sincere appreciation is extended to the Gulf States Marine Fisheries Commission for its extensive efforts in coordinating and hosting the meeting.

APPENDIX C

JOINT MEETING: SEAMAP-PESCA
August 27, 1986

MEETING SUMMARY

I. OPENING SESSION

Representatives from the SEAMAP Program of the Gulf States Marine Fisheries Commission and the Instituto Nacional de la Pesca, Secretaria de Pesca, met on August 27, 1986 to review fishery-independent research needs for king mackerel, red drum and plankton in the Gulf of Mexico. Following presentation of the SEAMAP participants to the Undersecretary of Pesca, Lic. Fernando Castro y Castro, by the SEAMAP Coordinator, Sr. Castro addressed the convocation and expressed his views on the need for joint international research to effect sound management of resources held in common by both countries. Following his remarks, SEAMAP-Gulf Chairman Walter Tatum presented opening statements on behalf of the SEAMAP Program and, with the SEAMAP Coordinator, outline the goals, objectives and proposed activities for the SEAMAP programs for FY1987.

Participants from both countries were introduced by their respective conference leaders, W. Tatum and Myrna Wong Rios, Director of Fishery Research, INP. A list of participants is attached.

Review of king mackerel research needs was presented in discussion by Javier Vasconcelos for Mexico, and Terry Leary, Gulf of Mexico Fishery Management Council, for SEAMAP.

Review of red drum research needs was presented in discussion by Tom McIlwain, Gulf Coast Research Laboratory, for SEAMAP, and Myrna Wong Rios, for Mexico.

Review of plankton research needs was presented in discussion by Jack Gartner, Florida Department of Natural Resources, for SEAMAP, and Rosa Maria Olvera Lima, for Mexico.

Review of environmental data research needs was presented by Myrna Wong Rios for Mexico, and Andrew Kemmerer, National Marine Fisheries Service, for SEAMAP.

A. Kemmerer then directed participants at the joint meeting to convene after the buffet lunch for the specific purpose of developing findings on needed fishery-independent research with respect to three areas: king mackerel, red drum, and plankton/environmental data. At his request, three study groups were formed to address these topics.

II. STUDY GROUP SESSION

All participants at the meeting, including two translators, worked from 2:00 until 4:15 to develop recommendations and conclusions as charged in the Opening Session. Groups met in separate sections of the meeting room, with between 10 and 15 participants in each group. Discussions were conducted primarily in English, with translators and the two meeting coordinators, N. Bane for SEAMAP, and Martha Palacios Fest for Pesca, assisting where necessary. Each group had appointed leaders.

III. GENERAL SESSION: REVIEW OF STUDY GROUP FINDINGS

Following a brief coffee break, all participants convened in general session to review findings and conclusions, reported to the entire session by one of the two co-leaders of the study groups. The following are those findings and recommendations.

- A. Red Drum Study Group. Co-leaders: SEAMAP- Tom McIlwain; Pesca- Mryna Wong Rios.
 1. Mexico will review the State-Federal Cooperative Red Drum Research Plan for the Gulf of Mexico (GSMFC, June 1986) to determine the level at which Pesca desires to participate.
 2. Identification should be made of species which make up (are identified as) the red drum catch in Mexican waters. Percentage by size, etc., should be determined, and these data analyzed.
 3. The U.S. should provide all published information and reports on red drum to Mexico, including, if feasible, copies of recent NMFS videotapes of aerial spotting and at-sea tagging operations of the commercial fishery.
 4. As a red drum fishery may develop in Mexican waters, Mexico will exchange information with the United States on the development of this fishery.
 5. Red drum should be a priority species in Mexican plankton samples sent to the Polish Sorting Center for sorting.
- B. King Mackerel Study Group. Co-leaders: SEAMAP - Terry Leary; Pesca - Javier Vasconcelos.
 1. Determine interchange of mackerel.
 - a. Make recommendations that will continue the emphasis on tagging various size fish and emphasize recaptures.
 - b. Continue the collection (and analysis) of tissues through HPLC, electrophoresis, and other similar biochemical analyses, and exchange resulting information.

- c. Analyze tag loss in king mackerel through double-tagging studies or other methods.
 - d. Consider (or conduct) tagging mortality studies; e.g., the effects of handling, and gear considerations.
 - e. Provide better dissemination of tagging information, in addition to supplying information on tag returns; i.e., exchange information on the tagging process itself.
2. Develop methods to forecast trends in abundance.
 - a. Develop methodology to sample for pre-recruits.
 - b. Determine juvenile abundance from plankton data.
 - c. Develop fishery-independent methodology to determine abundance of adult king mackerel (e.g., longlines, spotter planes, etc.).
 - d. Review existing environmental data (i.e., current patterns, temperature/salinity, river discharge, etc.) to determine possible correlations between these parameters and the distribution and abundance of mackerel.
 - e. Provide better distribution of data.
- C. Ichthyoplankton/Environmental Data Study Group. Co-leaders: SEAMAP - Jack Gartner; Pesca - Rosa Maria Olvera Lima.
- a. An American scientist should participate in the JUSTO SERRA (INP) September cruise and take up to 150 samples from the cruise to the U.S. for transshipment by NMFS to the Polish Sorting Center (PSC).
 - b. These Mexican samples should be sorted by the PSC to the family level for the following target groups: Scombridae, Sciaenidae, Carangidae; these samples should be returned to Mexico as soon as possible, with other families non-priority.
 - c. The PSC-sorted samples should be returned to Mexico but identified as "SEAMAP" specimens.
 - d. The sorted Mexican SEAMAP samples should be available to U.S. researchers on a loan basis.
 - e. There should be an exchange of curatorial staff between SEAMAP and Pesca, for purposes of improving data management and archiving methodologies.
 - f. There is a need for a meeting of plankton researchers from both countries after the September plankton survey materials have been returned from the PSC, to assess the data and specimens.

IV. CLOSING SESSION.

Representatives from both organizations were thanked by the SEAMAP-Gulf Chairman for their active and helpful participation in the meeting. The SEAMAP Program hosted a reception for all participants and their guests immediately following the meeting.

JOINT SEAMAP-PESCA MEETING PARTICIPANTS

SEAMAP PROGRAM

- * Walter M. Tatum, Alabama Department of Conservation and Natural Resources
Chairman, SEAMAP-Gulf of Mexico
 - * David Cupka, South Carolina Wildlife and Marine Resources Department
Chairman, SEAMAP-South Atlantic
 - Rolf Juhl, National Marine Fisheries Service, Southeast Fisheries Center
Coordinator, U.S. Mexus-Gulf program
 - Larry B. Simpson, Executive Director, Gulf States Marine Fisheries Commission
 - * James McCallum, Council Coordinator, Atlantic States Marine Fisheries
Commission
 - * Barney Barrett, Louisiana Department of Wildlife and Fisheries
 - * Karen Jo Foote, Louisiana Department of Wildlife and Fisheries
 - * Richard Waller, Gulf Coast Research Laboratory/Mississippi Department
of Wildlife Conservation
 - * Alan Huff, Florida Department of Natural Resources
 - * Andrew Kemmerer, National Marine Fisheries Service, Southeast Fisheries
Center
 - * Terry Leary, Gulf of Mexico Fishery Management Council
 - Kenneth Stuck, Gulf Coast Research Laboratory
Curator, SEAMAP Invertebrate Plankton Archiving Center
 - Jack Gartner, Florida Department of Natural Resources
Curator, SEAMAP Archiving Center
 - Frederick Sutter, Gulf Coast Research Laboratory
Leader, SEAMAP Squid/Butterfish Work Group
 - Thomas McIlwain, Gulf Coast Research Laboratory
Leader, SEAMAP Red Drum Work Group
 - Nikki Bane, Gulf States Marine Fisheries Commission/Louisiana State University
Coordinator, SEAMAP-Gulf of Mexico
 - J. Y. Christmas, Gulf Coast Research Laboratory
Chairman, GSMFC Technical Coordinating Committee
 - Eileen Benton, Gulf States Marine Fisheries Commission
Staff Assistant, GSMFC
- * SEAMAP Representative or Alternate

SECRETARIA DE PESCA/
INSTITUTO NACIONAL DE PESCA

Lic. Fernando Castro y Castro, Undersecretary of Fisheries

Myrna Wong Rios, Director, Fisheries Research

Martha Rosa Palacios Fest, Director, Aquaculture Research

Jose Manuel Grande-Vidal, Director, Gear Development

Rosa Maria Olvera Limas

Javier Vasconcelos

Patricia Hernandez

Lilia Shultz

Kimberly Smitt

Francisco Aguilar Salazar

Carlos Diaz Avalos

Pedro Saenz Martinez

Alejandro Cid del Prado

Martha Padilla

Arturo Sanchez Gonzales

Maria Concepcion Rodriguez de la Cruz

OTHERS

Dr. Edgardo Hicks, Office of the Fisheries Attache, U.S. Embassy,
U.S. Department of State

