

ANNUAL REPORT
OF THE
SOUTHEAST AREA MONITORING
AND ASSESSMENT PROGRAM
(SEAMAP)

OCTOBER 1, 1985 - SEPTEMBER 30, 1986

SEAMAP - Gulf of Mexico
Gulf States Marine Fisheries Commission

SEAMAP - South Atlantic
Atlantic States Marine Fisheries Commission

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ANNUAL REPORT of the Southeast Area Monitoring and Assessment Program (SEAMAP)

October 1, 1985 — September 30, 1986

FY1986 PROGRAM HIGHLIGHTS:

- **Fall Shrimp/Groundfish Survey added to yearly Gulf activities**
- **Cooperate Gulf Red Drum Research Program implemented**
- **Joint meeting with Mexico held on king mackerel, red drum**
- **1984-1985 survey data made available through SEAMAP Information System**
- **Trawl calibrations completed in South Atlantic**
- **1983, 1984 SEAMAP Gulf of Mexico Atlases published**
- **South Atlantic Bottom Mapping Project implemented**
- **Second year of butterfly fishery development survey completed**
- **Invertebrate plankton collections added to ichthyoplankton archiving**
- **King mackerel larvae surveyed cooperatively in Gulf, South Atlantic and Mexican waters**

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. The history, conceptual framework and program organization, goals, and activities of the Gulf and South Atlantic components are detailed in each program's five-year Operations Plan and Operations Plan Executive Summary.

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). Agencies and organizations directly involved with the Program are shown on Table 1.

Federal programmatic funding for SEAMAP activities and administration were appropriated for Fiscal Years 1985 and 1986 (October 1 to September 30). State and Marine Fisheries Commission allocations were handled through State-Federal cooperative agreements, administered by SERO and the Southeast Fisheries Center (SEFC), National Marine Fisheries Service (NMFS). Program allocations for FY1986 are shown in Figure 1.

The first joint annual report of the two active SEAMAP programs was published in October 1985, covering activities of FY1985 (Gulf States Marine Fisheries Commission, Atlantic States Marine Fisheries Commission). The programs approved, in March 1986, publication of a cooperative FY1986 annual program report, here presented as a summary of SEAMAP operations, administrative activities and publications for FY1986 and proposed activities for FY1987.

PROGRAM MANAGEMENT

Activities and operations of each SEAMAP component are wholly defined by the respective managing units: the SEAMAP-Gulf Subcommittee of the Gulf States Marine Fisheries Commission's Technical Coordinating Committee, and the SEAMAP-South Atlantic Committee of the Atlantic States Marine Fisheries Commission's South Atlantic Board. These committees consist of designated representatives from each member State and the National Marine Fisheries Service (Mississippi Laboratories), and in the case of the South Atlantic program, the South Atlantic Fishery Management Council. They meet several times yearly to review operations, examine priorities and plan future activities. Daily operations are carried out by the respective SEAMAP Coordinators, assisted by staffs of the two commissions, and personnel associated with the SEAMAP Information System, SEAMAP Archiving Center, and SEAMAP Invertebrate Plankton Archiving Center.

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**TABLE 1.
SEAMAP ORGANIZATION**

| Program | Administering Organization | Participating Agencies |
|-----------------------|---|---|
| SEAMAP-Gulf of Mexico | Gulf States Marine Fisheries Commission (GSMFC) | Alabama Department of Conservation and Natural Resources (ADCNR) Florida Department of Natural Resources (FDNR) Louisiana Department of Wildlife and Fisheries (LDWF) Mississippi Department of Wildlife (MDWC) Texas Parks and Wildlife Department (TPWD) National Marine Fisheries Service - Southeast Fisheries Center (NMFS-SEFC) |
| SEAMAP-South Atlantic | Atlantic States Marine Fisheries Commission (ASMFC) | Florida Department of Natural Resources (FDNR) Georgia Department of Natural Resources (GDNR) South Carolina Wildlife and Marine Resources Department (SCWMRD) North Carolina Department of Natural Resources and Community Development (NCDNRCD) National Marine Fisheries Service - Southeast Fisheries Center (NMFS-SEFC) South Atlantic Fishery Management Council (SAFMC) |
| SEAMAP-Caribbean | | Commonwealth of Puerto Rico United States Virgin Islands Territory |

SEAMAP - Gulf of Mexico

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.

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).

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 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.

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 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.

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.

SEAMAP - South Atlantic

The main FY1986 SEAMAP-South Atlantic Committee meetings were held in October 1985 and February 1986. Additional meetings to review projects, and

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plan future activities were held jointly with SEAMAP-Gulf representatives in March and August 1986.

SEAMAP-South Atlantic work groups also met in February, July, and September. The Bottom Mapping Work Group (February) recommended approval of the work plan developed by Duke University for the Bottom Mapping Project. The Shallow Water Trawl Work Group met in July to design and coordinate the fall schedule of surveys in nearshore waters. The Data Management Work Group provided user requirements to the contractor of the data management design study.

Additionally, SEAMAP-South Atlantic personnel participated in the SEFC/SEAMAP King Mackerel Research Needs Workshop (January 1986), in order to assist in the development of a research plan for king mackerel in the southeast, and took part in the March 1986 SEAMAP-Gulf Red Drum Work Group meeting, assisting in the evaluation of the joint Red Drum Stock Identification Study findings. In June 1986, the Committee Chairman briefed ASMFC Commissioners and Advisory Committee on the current status of SEAMAP-South Atlantic.

In addition to program planning, major management functions of SEAMAP-South Atlantic this year included distribution of the SEAMAP FY1985 Joint Annual Report and the SEAMAP Comparative

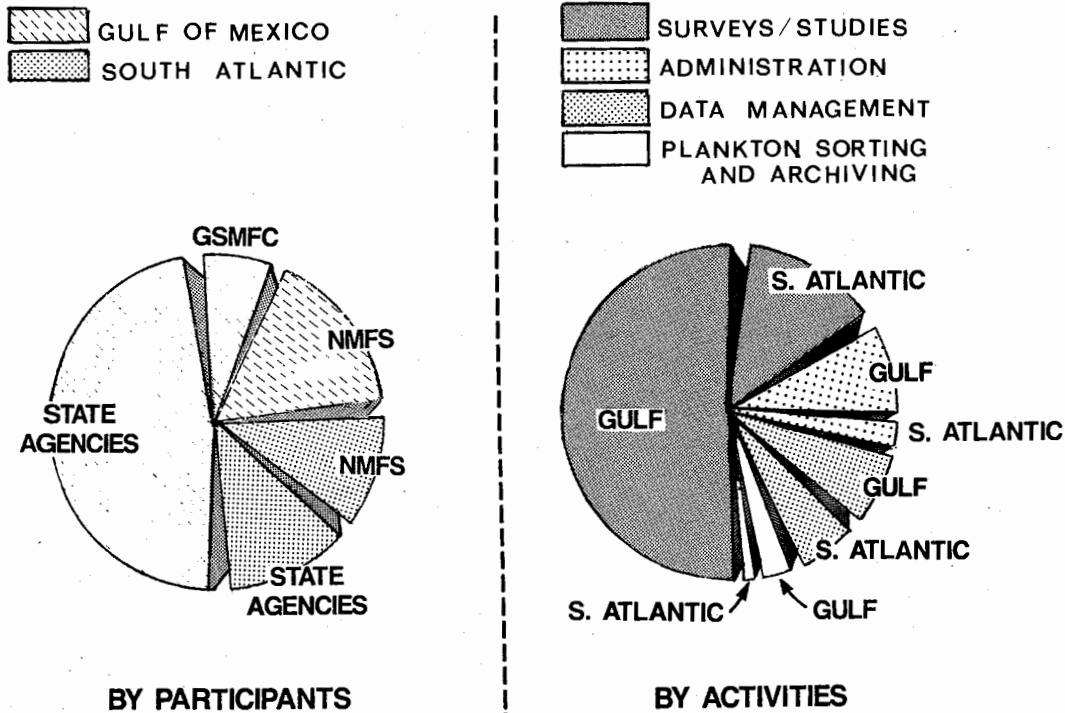
Shrimp Trawling Study, 1985. Guidance was also provided to the work groups for preparing project requirements and assisting in the development of State-Federal cooperative agreements.

RESOURCE SURVEYS

In FY1986, collection of resource survey information continued for the fifth consecutive year. Surveys by each program component reflect distinct regional needs and priorities; however, survey operations in one geographic area often provide information useful to researchers in both regions. For instance, the South Atlantic program's completed Comparative Shrimp Trawling Study will be useful in SEAMAP-Gulf gear calibration efforts, while plankton and environmental surveys in the Gulf program have set the standards for the entire region's much-needed long-term data base. The past year also marked the full integration of the two programs, by adding to the already ongoing joint planning and special studies the first region-wide SEAMAP plankton survey. Because of the diverse scope and target species involved in the SEAMAP's survey operations, activities are discussed here by geographic region.

FIGURE 1

FY1986 SEAMAP APPROPRIATED FUNDS



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

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SEAMAP - Gulf of Mexico

• Shrimp/Groundfish Surveys

As designed by the Shrimp/Groundfish Work Group, 196 stations were sampled from June 10-July 18, 1986 in this fifth consecutive year of the Summer Shrimp/Groundfish Trawl Survey. State vessels sampled nearshore waters from Perdido Bay, Alabama to Brownsville, Texas while a NOAA vessel surveyed offshore waters to 50 fm (300 ft) in the northern Gulf. Catch rates and length-frequencies of penaeid shrimp and finfish, standardized to a 40-ft shrimp trawl, were determined for each station. Five sets of weekly quick-report (near real-time) data summaries and catch rate plots were distributed to management agencies and more than 240 fishermen, processors and researchers.

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. 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.

Seasonal trawling surveys were also conducted by Louisiana to provide comparative information on shrimp and groundfish resources in Louisiana and adjacent Fishery Conservation Zone (FCZ) waters, through day and night sampling, to 15 fm (90 ft). Plankton samples and environmental data were collected at all stations during these surveys.

• Winter Coastal Herring Survey

A second winter SEAMAP survey to locate trawlable concentrations of coastal herrings and other latent resources (anchovies, sardines, chub mackerel, scad, butterfish, etc.) was conducted in the northeastern Gulf from January 21-February 4, 1986. Depths from 25-250 fm were sampled by a NOAA vessel using two gear types: (1) a high-opening bottom trawl, used on 36 stations; and (2) a Shuman trawl, used on 17 stations. The Shuman trawl proved to be the more efficient of the two nets, with the largest catch 5,029 lb of fish in a 30-min tow; of the areas surveyed, that of southwest Florida was the most productive. As in 1985, concomitant acoustic recordings were made during the survey to assess behavior patterns of target species.

• 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, completing 145 bongo and/or neuston stations and associated environmental data. Specimens were sent to the Plankton Sorting Center at Szececin, Poland for identification and will be returned to the SEAMAP Archiving Center in St. Petersburg, Florida. Data resulting from the survey will be used to determine the abundance and distribution of bluefin eggs and larvae within the U.S. FCZ in the Gulf of Mexico.

• Spring Squid/Butterfish Survey

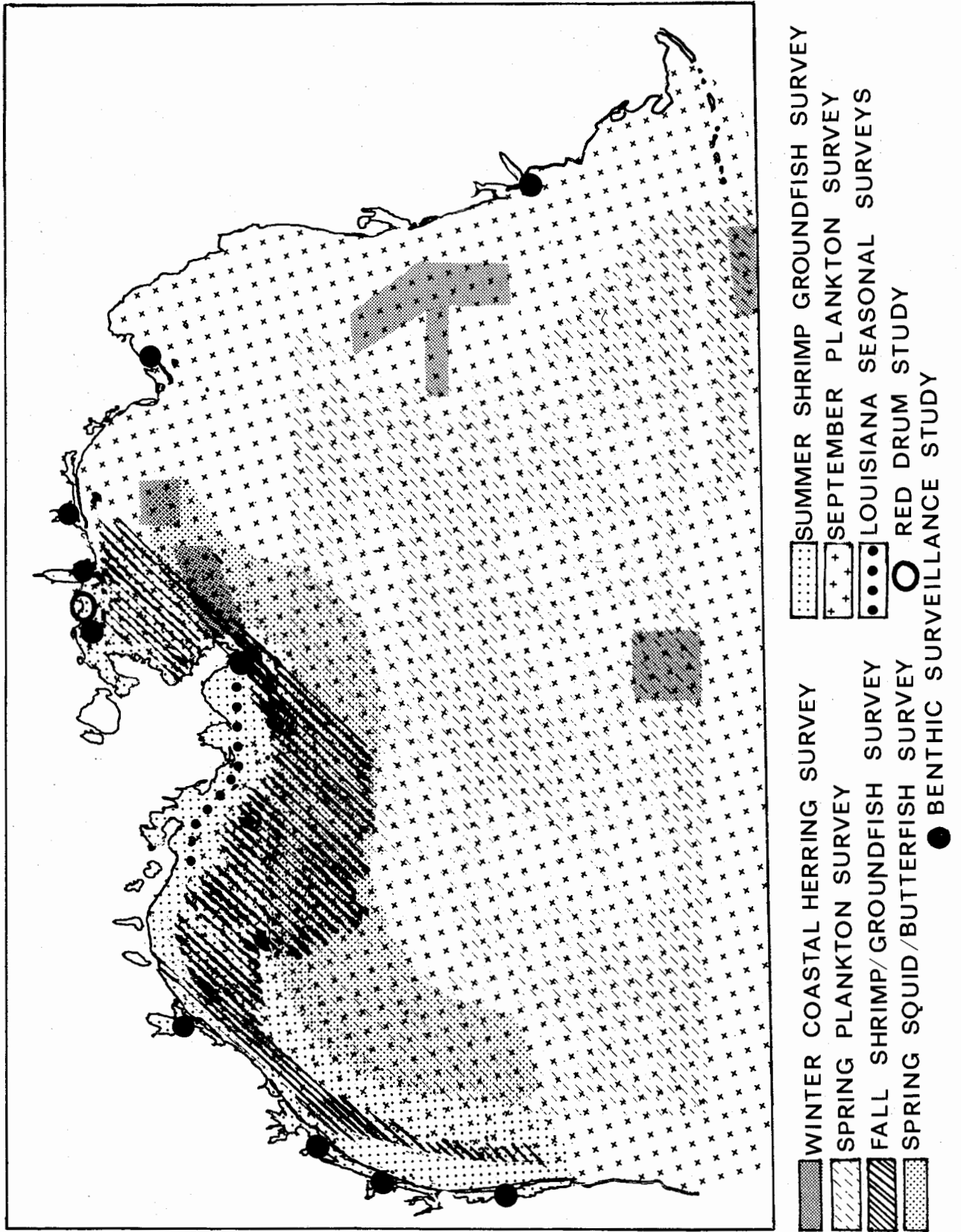
Another 1986 latent resources survey was conducted by the Gulf program, the Spring Squid/Butterfish Trawl Survey. The first such survey was implemented in Summer 1985 as part of a regional thrust to assess potentially exploitable stocks of squid and butterfish. Sampling for 1986 was set for mid-spring to validate earlier Spring 1984 catches by the joint U.S.-Japan exploratory survey. As in 1985, special 80-ft high-opening bottom trawls were used, with 1/2-ton steel "V" doors, at depths from 22-190 fm. Sampling was conducted from May 6-June 3 in the northern Gulf off Alabama, Mississippi, Louisiana and Texas by a NOAA ship and a chartered Gulf Coast Research Laboratory vessel. A total of 134 stations was completed during the survey, with weekly summaries of catch data provided to management agencies and the industry.

Subsequent analysis of the resulting survey data and sampling design and procedures has indicated a need for development of a standard, appropriate strategy to reduce sampling variability and provide accurate stock assessment capability. Activities for program latent resource assessment in FY1987 will therefore be directed to comparative survey strategies and gear evaluation.

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

FIGURE 2
FY86 SEAMAP SURVEYS - Gulf of Mexico



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- Associated Plankton and Environmental Data Surveys

For the fifth year, plankton samples and environmental data were collected routinely during SEAMAP surveys. During the Summer Shrimp/Groundfish Survey, 57 plankton tows were piggybacked on the vessels, sampling randomly-generated stations across the northern and western Gulf. Samples were taken with a 60-cm bongo array and standard NMFS neuston net. A similar series of bongo and neuston tows was also made during the Squid/Butterfish Survey. Samples from one side of all bongo tows were shipped to the NMFS Miami Laboratory for transshipment to Poland, where they will be sorted to the family level at the Polish Sorting Center; 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.

Several environmental parameters were measured at each SEAMAP station: temperature, salinity, and oxygen levels from surface, middepth and bottom waters; wind direction and speed. Measurements were made with a variety of instruments: expendable bathythermographs, conductivity-temperature-depth meters, dissolved oxygen meters and salinometers. Additional water samples were filtered and stored onboard the vessels for later laboratory analysis of chlorophyll *a* by NMFS, FDNR, and LDWF.

SEAMAP - South Atlantic

- Bottom Mapping Survey

In February 1986, the Bottom Mapping Work Group and the SEAMAP-South Atlantic Committee approved the results of a survey which defined the user needs of resource management agencies in the South Atlantic region. Preliminary approval was also given for the types of physical and biological information that should be included in the data base to describe hard bottom resources. The Onslow Bay area of North Carolina was selected as the site to test the proposed system. Duke University is presently compiling available data for the site, developing criteria and procedures for data storage, and designing samples of output for management agencies. The project is scheduled for completion in January 1987.

- Shallow Trawling Calibration Project

The Trawl Calibration Project was conducted in Charleston Harbor, South Carolina in November 1985, with vessels from Georgia, South Carolina, and North Carolina participating. NMFS provided mensuration gear and personnel to insure that gear were properly characterized while under tow. Data were analyzed statistically and are presented in the publication, SEAMAP Comparative Shrimp Trawling Study, 1985.

- Shallow Trawling Pilot Project

In July 1986, the Shallow Trawl Work Group developed a protocol to conduct a shallow trawling survey in offshore waters of Georgia,

South Carolina and North Carolina. The protocol will be used in Fall 1986 by research vessels from Georgia, South Carolina and North Carolina in this pilot study to standardize shallow trawling procedures among the fishery management agencies of the three states, so that information from future surveys can be exchanged to develop and monitor regional and interstate fishery management plans. It is also planned to examine catches of juvenile king and Spanish mackerels during the study, to determine if recruitment indices for these important species can be developed for resource management by the South Atlantic and Gulf of Mexico Fishery Management Councils.

- Geryon Crab Project

SEAMAP is providing funds to augment a research effort cooperatively funded by the Gulf and South Atlantic Fisheries Development Foundation, Inc., the South Carolina Wildlife and Marine Resources Department, the South Carolina Sea Grant Consortium and the Marquette Foundation to determine the distribution and abundance of *Geryon fenneri* and other decapod species of the continental slope. Specific research objectives include: (1) definition of the bathymetric distribution of *G. fenneri* in the South Atlantic Bight; (2) determination of the density, size and sex composition of *G. fenneri*; (3) evaluation of traps, soak time and gear performance, in an effort to optimize fishing technique; (4) cooperation with commercial processors and seafood marketing experts on handling, processing and marketing of *G. fenneri*; (5) determination of aspects of *Geryon* adult life history, such as substrate preference, reproductive biology and growth rate; and (6) assessment of other crustacean resources that co-occur with *G. fenneri*. First-year results indicated that maximum catches occurred in the 458-549-m strata, with catches largest on bottom sediments of silt-clay and foraminiferan tests. Additional information is given in Exploration for Golden Crab, *Geryon fenneri*, in the South Atlantic Bight: Distribution, Population Structure, and Gear Assessment.

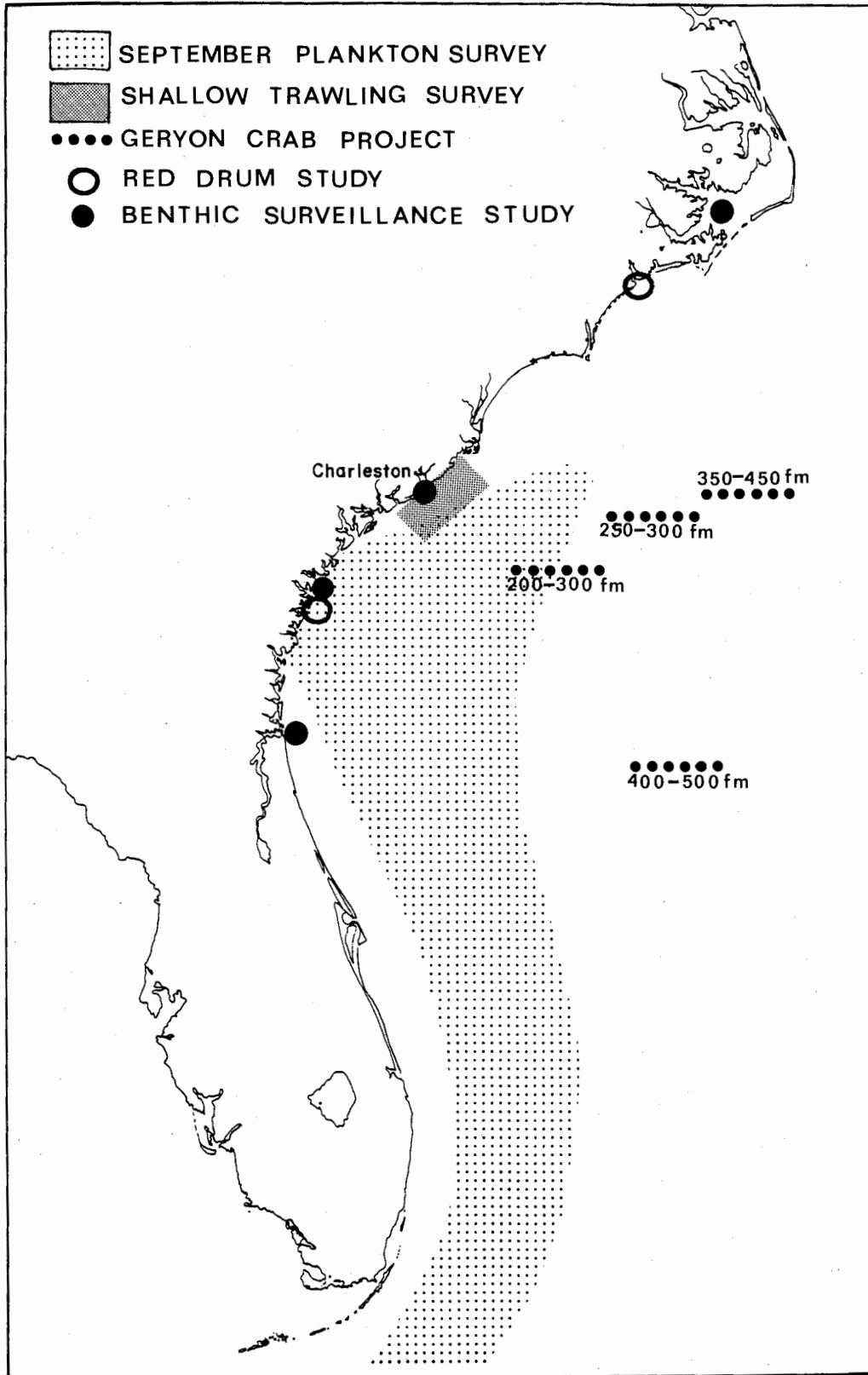
- September Plankton Survey

In conjunction with the SEAMAP-Gulf September Plankton Survey, SEAMAP-South Atlantic conducted a king mackerel eggs and larvae survey from Key West, Florida to South Carolina in mid-September. Neuston and bongo tows were taken at each station, as well as collection of selected environmental data according to standard SEAMAP protocols. A NOAA vessel sampled offshore waters in the region, with small vessels from Georgia and Florida sampling state waters.

- Stock Identification Project

The newly-formed Stock Identification Work Group was charged by the Committee to begin planning stock identification studies on finfish important to the South Atlantic states. The specific objectives are to review and evaluate stock identification techniques for applicability to selected species, such as the mackerels and red drum. A plan noting key

FIGURE 3
FY86 SEAMAP SURVEYS - South Atlantic



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species and procedures will be prepared and distributed throughout the region, with an emphasis on coordination with the SEAMAP-Gulf efforts to identify stocks of red drum.

SPECIAL STUDIES

In addition to cooperative resource surveys, SEAMAP continued in 1986 its involvement with special resource and environmental studies important to the region. Two such studies incorporated both SEAMAP components in FY1986, while a special weight variance study was conducted by the Gulf program.

- Red Drum Stock Identification Study

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 performance liquid chromatography.

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. The first program review is planned for October 1986, to introduce projects accepted for funding and present preliminary findings and future research needs.

- Status and Trends Benthic Surveillance Study

For the third consecutive 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 Program. Both SEAMAP programs supplied personnel from state management agencies to provide guidance in locating concentrations of the target species, Atlantic croaker and spot. Sampling is ongoing at 14 Gulf and South Atlantic sites from August-October 1986, with a NOAA vessel serving as the primary sampling platform. Analyses of trace metals, organics, chlorinated hydrocarbons and other contaminants, as well as histological examinations, are being conducted by the NMFS Beaufort and Charleston laboratories. Preliminary results of the 1984 and 1985 cooperative sampling efforts were presented at the March 1986 joint SEAMAP meeting, with later distribution (May 1986) of the report, "Preliminary Results of 1984 National Benthic Surveillance Project in the Southeast: Report to SEAMAP". Two major project components were summarized. Organic contaminants in fish stomach contents, livers, and bile, from selected locations in the southeast, were detailed and report levels of aromatic hydrocarbons and chlorinated compounds, by estuarine system; all analyses were performed by the NMFS Charleston Laboratory. At the same time, scientists at the NMFS Beaufort Laboratory analyzed levels of copper, lead, chromium, cadmium and mercury in sediments from the study sites.

- Shipboard Versus Laboratory Weight Variance Study

A preliminary evaluation of the accuracy of shipboard weighing procedures was conducted in 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.

The SEAMAP Subcommittee subsequently endorsed continuing the study to collect additional data on samples over 21 pounds and determine whether the described relationship extends over the entire range of weights, and, additionally, to collect data points below 21 pounds to cross-validate the relationship in the fitted model.

Sampling in 1986 was performed in June and July during the Summer Shrimp/Groundfish

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Survey. Samples were collected in prescribed weight categories to over 40 pounds. These samples were frozen after weighing, as in 1985, and transported to the NMFS Pascagoula Laboratory for laboratory weighing. 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.

verified, edited and entered for storage and retrieval.

Verified, non-confidential SEAMAP data are available conditionally to all requestors, although the highest priority is assigned to SEAMAP participants. During 1986, more than 20 requests were received and processed. In some instances, requests were filled promptly; in many cases, however, a substantial lag occurred because of the extremely large amount of data being collected on an increased number of surveys over those of past years.

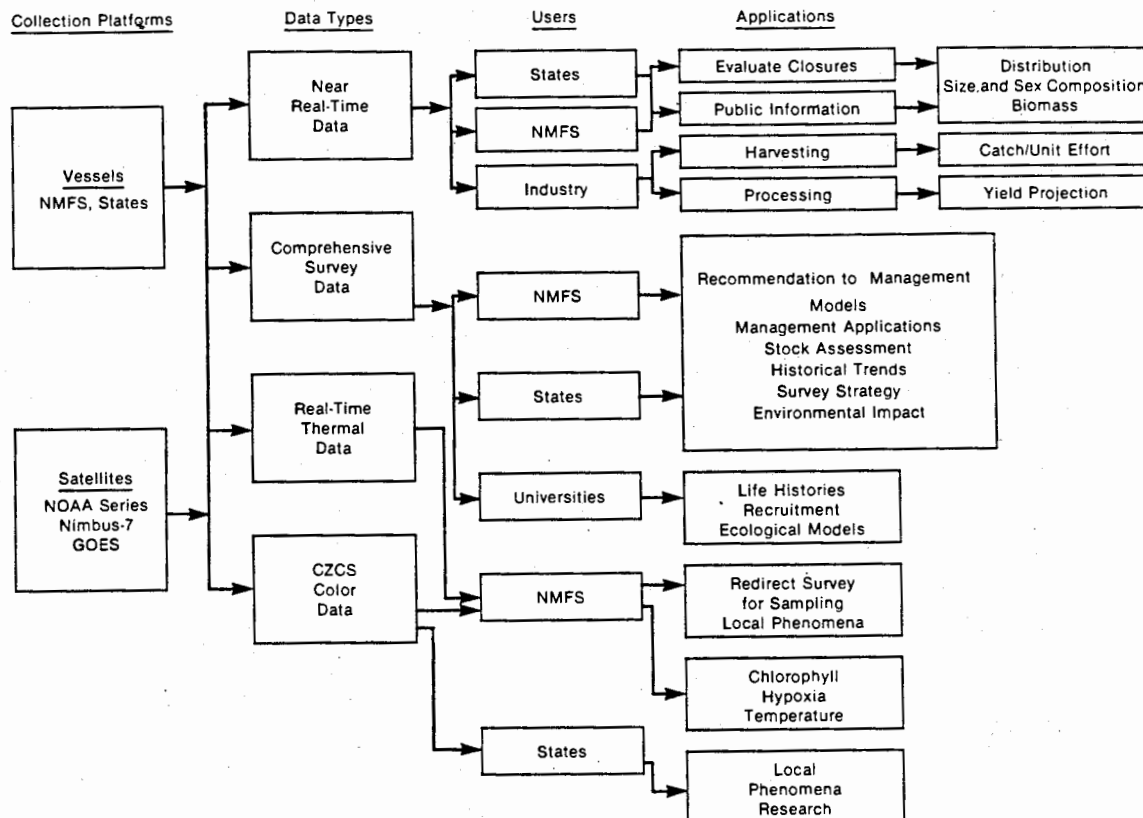
The urgent need for design and development of an integrated data system to satisfy a diversity of user needs led to joint authorization by both SEAMAP programs to develop a comprehensive information system design. A contract was approved for development of the system design, and a system requirements survey form, identifying user needs, protocols, hard- and software, and scenarios, was completed by all SEAMAP participants. The final requirements report will be presented to the programs in early 1987, with work to develop the approved system expected to begin immediately thereafter. System development and daily data management are supervised by the SEAMAP Data Manager in accordance to policies and protocols set by both SEAMAP programs.

DATA MANAGEMENT

Biological and environmental data from all SEAMAP surveys are included in the SEAMAP Information System (Figure 4), 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. Data from all SEAMAP surveys in 1982 through 1985 have been entered into the system and data from 1986 surveys are in the process of being

FIGURE 4

SEAMAP INFORMATION SYSTEM OVERVIEW



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Requested SEAMAP data were used for a multitude of purposes in FY1986:

- 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 1984 SEAMAP Biological and Environmental Atlas.
- 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 butterflyfish.

Real-Time Data

A major function of the SEAMAP Information System in FY1986 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. 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 by GSMFC for weekly distribution to management agencies, fishermen, processors and researchers. Management agencies also received comprehensive data listings showing penaeid shrimp length-frequencies, sampling parameters and environmental conditions.

SPECIMEN ARCHIVING

SEAMAP Archiving Center

Larval fish and fish egg samples sorted to the family level by the Polish Sorting Center 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.

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 unsorted station samples from surveys in 1982-1986 have been archived at SIPAC. 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.

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.

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INFORMATION DISSEMINATION

SEAMAP - Gulf of Mexico

Products resulting from SEAMAP-Gulf activities are grouped into two categories, data sets and program information. Data sets (digital data and specimen collections) are discussed elsewhere in this report; program information published in 1986 included:

- 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 GSMFC Technical Coordinating Committee; a detailed summary of program accomplishments, emphasizing survey design, materials collected, data dissemination, budget information and future survey activities.

SEAMAP - South Atlantic

Information from SEAMAP-South Atlantic program activities is provided in the following publications:

- 1986 Report to the South Atlantic State/Federal Fishery Management Board of the Atlantic States Marine Fisheries Commission; a detailed summary of program activities and accomplishments for FY1986.
- SEAMAP Comparative Shrimp Trawling Study, 1985 (R.A. Low and J.D. Whitaker); a South Carolina Marine Resources Center contribution detailing results of the South Atlantic program's 1985-1986 study.
- 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.
- Exploration for Golden Crab, Geryon Fenneri, in the South Atlantic Bight: Distribution, Population Structure, and Gear Assessment. (E. Wenner and G. Ulrich); report to the Gulf and South Atlantic Fisheries Development Foundation, Inc.

SEAMAP Annual Report, FY1986

PROPOSED SEAMAP ACTIVITIES, FY1987

The following activities are expected to be approved for FY1987 and special studies may be added as necessary:

SEAMAP - Gulf of Mexico

| Activity | <u>Season</u> | | | |
|--|---------------|--------|--------|--------|
| | Fall | Winter | Spring | Summer |
| Resource Surveys: | | | | |
| Shrimp/Groundfish Trawling Surveys | X | | | X |
| Squid/Butterfish Sampling Strategies Study | | | X | |
| Associated Plankton and Environmental Data Surveys | X | X | X | X |
| Coastal Herring Survey | | X | | |
| Spring Plankton Survey | | | X | |
| Seasonal Louisiana Surveys | X | X | X | 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 | X | X |
| Data Input and Request Processing | X | X | X | X |
| Specimen Archiving and Loan | X | X | X | X |
| Real-time Data Summaries | | | | X |
| Cooperative Red Drum Research Program Coordination | X | X | X | X |
| Program Administration | X | X | X | X |

SEAMAP - South Atlantic

| Activity | <u>Season</u> | | | |
|--|---------------|--------|--------|--------|
| | Fall | Winter | Spring | Summer |
| Resource Surveys: | | | | |
| Bottom Mapping Surveys | X | X | X | X |
| Shallow Trawling Survey | X | | | |
| Passive Gear (Geryon-Trapping) Survey | X | | | |
| Associated Plankton and Environmental Data Surveys | X | | | |
| Passive Gear Workshop | | | X | |
| Information Operations: | | | | |
| Data Management System Implementation | | X | X | X |
| Data Input and Request Processing | X | X | X | X |
| Specimen Archiving and Loan | X | X | X | X |
| 1987 Annual Report | | | | X |
| Program Administration | X | X | X | X |

SEAMAP Annual Report, FY1986

SEAMAP-Gulf of Mexico Representatives

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Alabama Department of Conservation
and Natural Resources

Gary Matlock, Vice Chairman
Texas Parks and Wildlife Department

Barney Barrett
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