



ANNUAL REPORT

OF THE SOUTHEAST AREA MONITORING AND ASSESSMENT PROGRAM (SEAMAP)

OCTOBER 1, 1986 - SEPTEMBER 30, 1987

SEAMAP - Gulf of Mexico
Gulf States Marine Fisheries Commission

SEAMAP - South Atlantic
Atlantic States Marine Fisheries Commission

DECEMBER 1987

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ANNUAL REPORT
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Southeast Area Monitoring and Assessment Program
(SEAMAP)

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FY1987 Program Highlights:

- **Sixth year of Summer Gulf Shrimp/Groundfish Survey completed**
- **SEAMAP/Puerto Rico Sea Grant Passive Gear Assessment Workshop**
- **Third SEAMAP Mackerel Larvae Survey completed in Gulf**
- **External program review completed**
- **Gulf-wide Fall Shrimp/Groundfish Survey in second year**
- **South Atlantic Bottom Mapping Study completed**
- **Cooperative Red Drum Research Program Workshop held in New Orleans**
- **1982-1986 survey data available**
- **SEAMAP Information System design study completed**

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 through 1988 (October 1 to September 30). State and Marine Fisheries Commissions allocations were handled through State-Federal cooperative agreements, administered by SERO and the Southeast Fisheries Center (SEFC), National Marine Fisheries Service (NMFS).

Joint annual reports of the two active SEAMAP programs were published in October 1985 and 1986, covering activities of FY1985 and FY1986 (Gulf States Marine Fisheries Commission, Atlantic States Marine Fisheries Commission). In March 1987 the programs approved publication of a cooperative FY1987 annual program report, here presented as a summary of SEAMAP operations, administrative activities and publications for FY1987 and proposed activities for FY1988.

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 the Gulf of Mexico and South Atlantic Fishery Management Councils. 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 Conservation (MDWC)/Gulf Coast Research Laboratory Texas Parks and Wildlife Department (TPWD) National Marine Fisheries Service - Southeast Fisheries Center (NMFS-SEFC) Gulf of Mexico Fishery Management Council (GMFMC)
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 1986 and March 1987, 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 1987; all meetings included participation by the several work group leaders, Coordinator, Data Manager, curators, and the GSMFC Executive Director.

More than 75 researchers and others interested in the status of the red drum effort attended a State-Federal Cooperative Red Drum Conference, hosted by GSMFC on October 14, 1986 in New Orleans, Louisiana. SEAMAP-Gulf Red Drum Work Group members and other presenters from state agencies, universities and NMFS summarized red drum research within areas of stock identification, age and growth, stock assessment and fishery-independent assessment development.

An annual joint meeting of the two programs was held in March 1987, in Biloxi, Mississippi with representatives from all participating agencies attending. A second Red Drum Research Conference presented status reports on research projects to the GSMFC Commissioners, SEAMAP-Gulf Red Drum Work Group and the general public. Representatives from the Gulf program also met with the South Atlantic representatives in August 1987 to discuss respective program needs and priorities for FY1988.

The August joint meeting was held in Mayaguez, Puerto Rico, in conjunction with a SEAMAP/Puerto Rico Sea Grant Passive Gear Assessment Workshop. Both components of the SEAMAP Program, which conducts most of its current monitoring and assessment activities with trawl gear, had determined in 1986 to sponsor a workshop that would address the feasibility of using longlines, traps, visual techniques and other passive methodologies to achieve program objectives. Leading experts in the field were invited to present formal papers, which will be published as a joint SEAMAP/Puerto Rico Sea Grant proceedings.

Presenters included: Robert J. Miller, Government of Canada; Joseph Kimmel, CODREMAR (Puerto Rico); James Bohnsack, Walter Nelson, Andrew Kemmerer and John Merriner, SEFC; Karen Foote, Louisiana Department of Wildlife and Fisheries; Charles Barans, South Carolina Wildlife and Marine Resources Department; Richard Appeldoorn, University of Puerto Rico; Charles Wilson, Louisiana State University; and G.P. Patil, Pennsylvania State University.

Three major sessions were held in the two-day workshop, encompassing shallow water, middepth and deepwater habitats. A discussion period followed each session, with a summary dialogue and statistical consideration section completing the event. An integral component of the activity was participation by the South Atlantic Committee's recently formed Passive Gear Work Group, which, along with the Gulf program's Subcommittee, will

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consider workshop findings to determine the feasibility of using passive gear for SEAMAP assessment activities.

Participants in the workshop also included representatives of Puerto Rico's fishery management agency (CODREMAR), the Virgin Islands Department of Fish and Wildlife, three regional Fishery Management Councils, the University of Puerto Rico at Mayaguez, and others interested in sampling and survey techniques.

All of the SEAMAP-Gulf work groups met this past year to provide recommendations to the Subcommittee for survey and data management needs. The Red Drum Work Group met in October 1986 and March 1987; the Plankton Work Group also in October and March; the Shrimp/Bottomfish Work Group in January, March and August; the Squid/Butterfish Work Group in February; the Environmental Data Work Group in May; and the Data Coordinating Work Group in February. Where additional discussion was needed, the Subcommittee and work groups also deliberated via telephone conference calls.

Coordinating program surveys and distributing quick-report summaries of the Gulf-wide Summer Shrimp/Bottomfish Survey to management agencies and industry were major functions of SEAMAP-Gulf management in FY1987. Other important management activities included coordinating data and specimen requests, preparing publications and documents, including monthly issues of Sciaenops (the Cooperative Red Drum Program bulletin), and assisting in the preparation of State-Federal cooperative agreements and amendments.

SEAMAP - SOUTH ATLANTIC

The major FY1987 SEAMAP-South Atlantic Committee meetings were held in October 1986 and August 1987. Additional meetings to review projects, and plan future activities were held jointly with SEAMAP-Gulf representatives in March and August.

SEAMAP-South Atlantic work groups also met in June and July. The Shallow Water Trawl Work Group met in June to evaluate results of the FY1987 survey and plan FY1988 activities. The Bottom Mapping Work Group met in July to review and approve the contracted hard-bottom survey model.

Following objectives outlined in its Five-year Operations Plan, the Committee established in FY1987 three new work groups to address resource monitoring and assessment: Passive Gear; Crustaceans; and Plankton; each group is scheduled to meet in FY1988. The Passive Gear Work Group took an active role in the August joint SEAMAP Passive Gear Workshop in Puerto Rico.

In addition to program planning, major management functions of SEAMAP-South Atlantic this year included distribution of the SEAMAP FY1986 Joint Annual Report; Final Report, Results of Trawling Efforts in the Coastal Habitat of the South Atlantic Bight, FY86-87; and Final Report,

Bottom Mapping Survey Design Project. Guidance was also provided to the work groups for preparing project requirements and assisting in the development of State-Federal cooperative agreements.

In conjunction with the Gulf Program, SEAMAP-South Atlantic participated in a summer 1987 Program Review. The South Atlantic group met in Charleston, South Carolina with the Review Panel and resource personnel; the activity is detailed in the "Special Studies" section of this report.

RESOURCE SURVEYS

In FY1987, collection of resource survey information continued for the sixth 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. Because of the diverse scope and target species involved in the SEAMAP's survey operations, activities are discussed here by geographic region.

SEAMAP - GULF OF MEXICO

• Shrimp/Groundfish Surveys

Per designed of the Shrimp/Bottomfish Work Group, a total of 375 trawl samples was taken from June 2-July 16, 1987, in the sixth consecutive Summer Shrimp/Groundfish Survey. The overall sampling scheme was to work from off Perdido Bay, Alabama to the Texas/Mexico border during or prior to migration of brown shrimp from bays to the open Gulf. Offshore waters east of the Mississippi River Delta were re-surveyed from July 10 to July 15 after emigration of brown shrimp from inshore waters. State vessels sampled nearshore waters while a NOAA ship surveyed offshore waters to 50 fm (300 ft). All vessels took environmental data, including temperature, salinity, oxygen, and chlorophyll samples, at each station. Catch rates and length-frequencies for brown, white and pink shrimp, and finfish, standardized to a 40-ft trawl, were determined for each station. Six sets of weekly, near real-time data summaries and catch rate plots were distributed to management agencies and more than 280 fishermen, processors, and researchers.

The Fall Shrimp/Bottomfish Survey was conducted from October 16,-November 26, 1986 from off Apalachicola, Florida to the U.S.-Mexican border. Vessels from NMFS, Alabama, Mississippi,

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Louisiana and Texas sampled inshore and offshore waters to 100 fm (600 ft), taking 388 trawl samples in addition to plankton and environmental sampling. The sampling design was similar to the initial Fall 1985 Survey, with abundance and distribution of demersal organisms investigated as well as length-frequencies of finfish and penaeid shrimp species.

The Louisiana Department of Wildlife and Fisheries continued seasonal day/night surveys as part of an effort to provide comparative information on critical life stages of major Gulf species, especially shrimp, and associated environmental parameters in Louisiana and adjacent EEZ waters. Seasonal sampling in October and December 1986, and April and July 1987 took a total of 96 trawls (12 day and 12 night in each survey) to depths of 15 fm (90 ft). Plankton and neuston samples were collected at all stations.

• Squid Survey

As part of the program's commitment to assessing stocks of commercially important species, an exploratory survey to determine distribution of the shortfinned squid, Illex coindettii, was conducted in the southeastern Gulf of Mexico. From February 12-March 9, a NOAA vessel sampled near the Dry Tortugas with high-opening bottom trawls and the Shuman trawl. In addition to assessing distribution and collecting length-frequency data on squid, an acoustic survey of the area was conducted. Hydrographic and environmental data were taken at all trawl sites and entered into the SEAMAP Information System. Satellite infrared imagery, and charts depicting Loop Current boundaries, were obtained and plotted to examine correlation of thermal front circulation to distribution patterns of squid in the survey area.

• Spring Plankton Survey

For the fifth season since 1982, research on oceanic pelagic stocks in the Gulf was conducted, with the primary target bluefin tuna eggs and larvae. NOAA and Florida state vessels sampled offshore waters from the Florida Keys westward to 94° W. longitude from April 14-May 23. At irregular intervals during the survey, vessels departed from the scheduled cruise track to run a series of stations across ocean fronts as determined from satellite imagery processed by the NMFS Mississippi Laboratories, NSTL facility. Samples taken at these special stations, as well as at the scheduled stations, consisted of bongo and neuston net tows with associated chlorophyll and environmental data. A total of 240 stations was sampled; of these 156 were predetermined cruise track stations and 84 were special stations located on the 8 transects across current boundaries. Samples from predetermined stations were sent to the Plankton Sorting Center in Szczecin, Poland for identification and will be returned to the SEAMAP Archiving Center in St. Petersburg, Florida. Samples from special frontal

boundary stations were sorted at the NMFS Miami Laboratory. Data from the survey will be used to determine abundance and distribution of bluefin tuna eggs and larvae within the U.S. EEZ in the Gulf of Mexico.

• Squid/Butterfish Gear Evaluation

Analysis of the 1985 and 1986 Squid/Butterfish Surveys data indicated a need for development of a standard strategy to reduce sampling variability and provide for accurate latent resource stock assessment capability. A two-phase fishing experiment was conducted to define measurement errors introduced by differences in vessels, crews, gear and how the gear is fished. A comparative gear and vessel study between the NOAA Ship CHAPMAN and the chartered R/V TOMMY MUNRO was conducted from April 7-18, offshore Mobile Bay in waters 60-120 fm (360-720 ft). Nine stations, with three replicate, side-by-side tows at each station, were made by both vessels pulling 80-ft trawls with 3-square-meter "V" doors. During the second phase of the experiment, the NOAA vessel pulled a 123-ft Shuman trawl with 4-square-meter "Super V" doors.

SEAMAP - SOUTH ATLANTIC

• Bottom Mapping Survey

The final draft manuscript of the SEAMAP-South Atlantic Bottom Mapping Study was approved by the work group and Committee in February. The project, implemented in 1985, involved personnel from all four South Atlantic states, and resulted in a survey design that will be implemented in stages, beginning in 1988.

The survey was initiated to evaluate data on the hard bottom resources in the Onslow Bay, North Carolina area and to determine agencies and organizations needing these data. Survey respondents concluded that habitat definitions and habitat-related data can be obtained economically and with reasonable accuracy. Geophysical profiling coupled with direct observation, analysis of fish catches from trawls and primary productivity analyses, are useful techniques for determining bottom composition, and they are the methods best represented in the large historical data bases. Refinements of the methods for analyzing fish trawl data are desirable, but present techniques are considered adequate for preliminary estimations of bottom type. Habitat definition analyses using other biological data may be less useful and will require additional treatment to develop habitat-relevant criteria, especially for invertebrates. Onslow Bay may exhibit different geological and biological characteristics than the rest of the South Atlantic Bight, and this must be considered before applying the analyses to the whole area. The treatment of the South Atlantic Bight data and analysis techniques represent an initial approach from which may evolve a SEAMAP habitat-related data system.

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A user survey determined that management and research agencies in the South Atlantic Bight are interested in the resources of offshore hard bottom habitats. They have expressed a need for a data base relevant to specific habitats, especially hard bottoms, that is compiled by, managed by, and available from one organization. Additional information is given in An Evaluation of Methods for Mapping Hard Bottoms in the South Atlantic Bight.

• Shallow Trawling Project

In July 1986, a pilot project was implemented to design a trawl survey of coastal waters off North Carolina, South Carolina and Georgia. Such a survey would serve as the basis for routine monitoring and assessment of shrimp, groundfish and other bottom organisms in the region. Combined with South Carolina's MARMAP (Marine Monitoring, Assessment and Prediction) Program, the pilot project was completed in spring 1987.

Relative abundance and latitudinal differences in the coastal habitats were determined using a stratified random sampling design. Three regions delineated by state boundaries were divided into nineteen strata with five primary sampling sites randomly chosen in each stratum. Sampling was carried out at sample sites by personnel from each state's marine research agency on board its own vessel.

Hydrographic data collected at each site included sampling depth, surface and bottom temperature, salinity, wave height, and light penetration. Atmospheric data, also collected at each site, included air temperature, cloud type and cover, barometric pressure, wind direction and velocity, and precipitation.

Neuston samples were taken by towing a 1-m x 2-m, .5 mm-mesh neuston net for 10 minutes, with the water level in the net at approximately 50 cm. Trawls used in sampling were 9.1 mongoose-type Falcon trawls. Nets were made by the same manufacturer for consistency in gear among the three states. Trawls were towed for 20 minutes and the contents were sorted and weighed by species to the nearest gram. Fishes, blue crab, commercially important penaeid shrimp, and squids were measured individually to the nearest centimeter.

Data collected by each state were sent on coded data sheets to SCWMRD for key entry, verification and analysis. A total of 118 species of fishes and 47 species of decapod crustaceans, comprising 85,252 and 10,716 individuals, respectively, was collected during the study. Large differences in numbers of species and individuals occurred among the three regions sampled. Additional information is given in Results of Trawling Efforts in the Coastal Habitat of the South Atlantic Bight, FY 86-87.

• Coastal Waters Surveys

Added to SEAMAP activities this year were summer/fall shallow trawl surveys of North Carolina's waters to 10 fm (60 ft). Stations were sampled from mid-August to mid-December, using 40-ft standard SEAMAP trawl nets. Station locations were determined jointly by personnel from the North Carolina Division of Marine Fisheries and NMFS. Standard SEAMAP environmental data sampling was also done at all stations. Trawling was conducted from state vessels. All penaeid shrimp were identified to species, counted, measured and sexed, and all finfish identified and counted, with selected species sexed and measured, and scales and otoliths taken for later analysis. The success of this survey led to incorporation of a quarterly nearshore trawling survey into North Carolina's FY1987 SEAMAP activities, focusing on the Albemarle-Pamlico Sound area.

Adding to historical seasonal surveys of its territorial waters, the South Carolina Marine Resources Division conducted SEAMAP trawl surveys from August to December along coastal South Carolina and Georgia waters with calibrated SEAMAP trawl nets. Stations were selected by state and NMFS personnel, with sampling to 10 fm (60 ft). Standard environmental data were taken at all stations and neuston samples taken at selected stations. As with North Carolina, organisms were identified and counted, with emphasis on penaeid shrimp, groundfish, bluefish, and juvenile mackerel.

• Geryon Crab Project

SEAMAP provided funds to augment a cooperatively funded research effort initiated in March 1985 by the Gulf and South Atlantic Fishery Development Foundation, the South Carolina Wildlife and Marine Resources Department, South Carolina Sea Grant Consortium and the Marquette Foundation. The primary goal of this two-year project was to determine the distribution and abundance of Geryon fenneri and other decapod species of the continental shelf. Specific research objectives of the project were: (1) to define the bathymetric distribution of Geryon fenneri in the South Atlantic Bight; (2) to determine the species' density, size and sex composition in the Bight; and (3) to cooperate with commercial processors and marketing experts on handling, processing and marketing G. fenneri. First-year results showed maximum abundance of golden crab occurred between 200-300 fm (1200-1800 ft) on globigerina ooze. The only other numerically important species caught was the jonah crab, Cancer borealis. Of the two trap types fished, catches were significantly higher in the top-entry Florida trap. Male golden crab were more numerous than females in all strata except the deepest, 367-412 fm (2200-2470 ft). Most of the golden crabs caught exceeded 114 mm in carapace width, which is the minimum legal limit for red crab, G. quinquegens. The second-year

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results provided additional information on the distribution and life history of golden crab and jonah crab as well as trap saturation and performance. Additional information is given in Exploration for Golden Crab, *Geryon fenneri*, in the South Atlantic Bight: Distribution, Population Structure, and Gear Assessment.

SPECIAL STUDIES

PROGRAM REVIEW

A major FY1987 event in SEAMAP was the Program Review, a comprehensive external evaluation of the program relative to goals and objectives outlined in the two Operations Plans. The review was endorsed by both programs at the March joint meeting, and a preliminary work plan developed to define review objectives, events and schedules. Subsequent to modifications by the Committee and Subcommittee, a final project plan was approved and a four-member Review Panel designated to conduct the activity. The panel members, distinguished leaders in science program management and evaluation were: Dr. Howard Clonts, Auburn University (Panel Chairman); Mr. William G. Gordon, Executive Vice-Chairman of the New Jersey Marine Science Consortium, and former NOAA Assistant Administrator for Fisheries; Mr. Robert Shepard, Associate Director, National Sea Grant College Program; and Mr. Richard C. Hennemuth, Chief of Research Planning, NMFS Northeast Fisheries Center.

The Panel met with each of the two program sections, assisted by the program Coordinators and resource personnel from the Gulf of Mexico Fishery Management Council, NMFS Southeast Regional Office, and program associates, to examine functions, components, procedures, policies and events of SEAMAP administrative and operational aspects. The overall review mission was to provide specific recommendations on those organizational and functional aspects of the program which should be maintained or modified to ensure achievement of program goals and objectives.

Progress of the review was reported at the joint August SEAMAP meeting, with a preliminary report of findings to be prepared for program participants' review in October. A report of findings and recommendations was presented at the joint Fall 1987 Gulf States/Atlantic States Marine Fisheries Commissions meeting in Key West. The printed report is available upon request.

DATA MANAGEMENT

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. Data from all SEAMAP surveys, 1982 through 1986, have been entered into the system and data from 1987 surveys are in the process of being 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 1987, more than 12 requests were received and processed. In some instances, requests were filled promptly; in some cases, however, a substantial lag occurred because of the extremely large amount of data in 1987 over that of past years.

The requirements report for an integrated data system, Data Management System Design Study for Gulf and South Atlantic, 1987, was completed in March. The document identifies the high-level design specifications and a recommended implementation plan for a module-based SEAMAP Data Management System (DMS). The recommended implementation schedule is shown in Figure 1. The design is based on information contained in the SEAMAP Gulf and South Atlantic DMS Requirements Document, dated September 1986, developed through a cooperative effort between NMFS and other SEAMAP participants. The document has five sections: (1) background and brief descriptions of current centralized and proposed distributed systems; (2) summary of the Requirements Survey; (3) overview of the system's architecture; (4) description of developmental modules constituting the DMS design; and (5) modular implementation plan, which includes costs and schedule.

A centralized data management system is presently being used by NMFS for the SEAMAP-Gulf Program. This system operates on a Burroughs 7811 computer located in Seattle, Washington, and depends on skilled programmers and computer operators for data entry, retrieval and display. SEAMAP participants submit their data to the SEAMAP Data Manager who then assures the entry of data to the Burroughs. To verify the data, printed listings of newly entered data are produced and returned to the SEAMAP participant. Entry errors are corrected on the listing and the data are resubmitted. This mail-oriented loop iterates until all data are verified.

To retrieve data, SEAMAP participants must submit a Data Request and Use Agreement Form to the Data Manager. The Data Manager approves the request, and ensures that data are retrieved from the system by skilled programmers.

Outside users (e.g., Minerals Management Service, U.S. Army Corps of Engineers, etc.) may request listings of particular data sets. The information provided is used for such efforts as environmental impact statements, life histories studies, oceanographic processes research, and long-term ecological trends strategy evaluation. Outside users, unlike the SEAMAP participants, submit their request to the SEAMAP Subcommittee, through the SEAMAP-Gulf Coordinator, for approval. Once the request is approved, information is

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FIGURE 1.

RECOMMENDED IMPLEMENTATION SCHEDULE

Module	FY87				FY88				FY89				FY90				FY91				
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
Hardware Procurement																					(9/88)
OTS Software Procurement																					(9/88)
Burroughs Applications Software																					(6/89)
PC Applications Software																					
Central Operations																					
Communications																					
Training																					(6/89)
Plankton																					(9/91)
Atlas																					(3/90)
Plotting																					(3/90)
Near Real Time																					
Satellite Remote Sensing																					

provided by the Data Manager and staff members through a priority-based, mail-oriented system.

The proposed system is decentralized, i.e., distributed. Thus, the SEAMAP users will be able to locally, and directly, enter and retrieve data. This proposed system will overcome current deficiencies (i.e., the time necessary to enter and retrieve data) and will provide powerful and flexible local data analysis and display capabilities. Under the proposed system, each SEAMAP site will enter, verify and edit its data, eliminating the existing mail-oriented loop. Each site can locally access SEAMAP data, utilizing a user-friendly system. Local data retrieval will allow data access in a timely manner with minimal effort and programming skills.

Under the proposed system, outside users may continue to request special data sets for research or study. Also, SEAMAP participants may use a special request mechanism for data sets too large for economical downloading by telephone. These requests will be handled by a central operations staff in the same priority-based, mail-oriented manner as noted above.

Requested SEAMAP data were used for a multitude of purposes in FY1987:

- 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 1985 SEAMAP Biological and Environmental Atlas.
- Compiling the 1984 SEAMAP Ichthyoplankton Atlas.
- Optimizing experimental designs for butterfly gear comparison studies.

REAL-TIME DATA

A major function of the SEAMAP Information System in FY1987 was the processing of catch data from the Summer Shrimp/Groundfish Survey 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,

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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 (PSC) are returned to the SEAMAP Archiving Center (SAC) for archiving and loan to researchers. Data entry for most of the returned sorted samples is 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 25,800 specimen lots (more than 125 families), 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 FY1988 will greatly facilitate managing the environmental data, presently a cumbersome manual procedure. Gulf collections in 1986 were extensive and were further expanded in 1987. Plans call for 631 SEAMAP samples (+ 25% quality control) to be sorted for ichthyoplankton during the PSC contract period of September 1987 through August 1988. Priorities for sorting these samples from the backlog at PSC have been 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. More than 1,000 specimen lots of fish larvae have been loaned, most of them species of commercial and recreational importance: mackerels, snappers, tunas, butterfish, 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, a total of 1,061 unsorted SEAMAP zooplankton samples have been cataloged and archived at SIPAC. Additional shipments of approximately 700 samples have been received from 1987 surveys and are presently being cataloged.

INFORMATION DISSEMINATION

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

- Results of Trawling Efforts in the Coastal Habitat of the South Atlantic Bight, FY 86-87 (E.L. Wenner, H.R. Beatty and D. Stephan); report of a pilot project implemented to design a trawl survey of coastal waters off North Carolina, South Carolina and Georgia.
- Data Management System Requirements Document for Gulf and South Atlantic, 1987; a report containing a comprehensive set of requirements for the SEAMAP Data Management System based on information supplied by SEAMAP participants.
- Data Management System Design Study for Gulf and South Atlantic, 1987; a description of the high-level design specifications and recommended implementation plan for the modularized SEAMAP Data Management System.
- 1987 Annual Report of the SEAMAP Program - October 1, 1986 to September 30, 1987; a summary of 1987 activities and proposed 1988 events for both SEAMAP programs.
- 1987 SEAMAP Marine Directory; fifth 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.
- An Evaluation of Methods for Mapping Hard Bottoms in the South Atlantic Bight. (S.W. Ross, E.K. Barber, R.B. Searles and S.R. Riggs); a summary of the evaluation of data on the hard bottom resources in the Onslow Bay, North Carolina area and the determination of who would be interested in these data.
- Exploration for Golden Crab, *Geryon fenneri*, in the South Atlantic Bight: Distribution, Population Structure, and Gear Assessment. (E. L. Wenner and G. Ulrich); final report of a two-year project to determine the distribution and abundance of *Geryon fenneri* and other decapod species of the continental shelf.
- Summary of Exploratory Trapping for Golden Crab, *Geryon fenneri*, off North Carolina. (E.L. Wenner and H.R. Beatty); report of a two-year study begun in 1985 to determine the bathymetric distribution, size and sex composition of the population, and fishing and handling techniques of golden crab.

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PROPOSED SEAMAP ACTIVITIES, FY1988

Total program allocations for both SEAMAP programs, Gulf and South Atlantic, total \$1 million. However, anticipated reductions for the deficit spending reduction and NMFS surcharges will reduce the available funds. Of this, the share to be allocated for all NMFS and Gulf State

activities (including GSMFC) is approximately \$775,000.

Proposed FY1988 activities for SEAMAP participants are shown in Table 2. It should be noted that the SEAMAP fiscal year begins on January 1, unlike the GSMFC/TCC fiscal years; thus, fall activities for FY1988 will be conducted from October-December, 1988.

TABLE 2.

PROPOSED SEAMAP ACTIVITIES, FY1988

SEAMAP - Gulf of Mexico

Activity	Fall	Winter	Season	
			Spring	Summer
Resource Surveys:				
Spring Plankton Survey			X	
Shrimp/Groundfish Trawling Surveys	X			X
Louisiana Seasonal Surveys	X	X	X	X
Plankton Survey	X			
Plankton and Environmental Data Surveys	X	X	X	X
Information Operations:				
1985 Biological and Environmental Atlas		X		
1986 Biological and Environmental Atlas				X
1988 Marine Directory			X	
1988 Annual Report	X			
Data Management System Implementation	X	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
Passive Gear Workshop Proceedings				X
Joint Newsletter		X	X	
1989-1994 Five Year Management Plan	X			
Program Administration	X	X	X	X

SEAMAP - South Atlantic

Activity	Fall	Winter	Season	
			Spring	Summer
Resource Surveys:				
Shallow Trawl Survey	X			
Seasonal Pamlico-Albemarle Trawl Survey	X	X	X	X
North Carolina Calico Scallop Survey	X		X	
Egg and Larvae Survey		X		
Hard Bottom Mapping - North Florida Region				X
Information Operations:				
Data Management System Implementation	X	X	X	X
Pilot Data Processing				X
Specimen Archiving and Loan	X	X	X	X
1988 Annual Report	X			
Joint Newsletter		X	X	
1987 Passive Gear Workshop Proceedings				X
1989-1994 Five Year Management Plan	X			
Program Administration	X	X	X	X

SEAMAP ANNUAL REPORT, FY1987

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