

ANNUAL REPORT

OF THE SOUTHEAST AREA MONITORING AND ASSESSMENT PROGRAM (SEAMAP)

OCTOBER 1, 2003 - SEPTEMBER 30, 2004

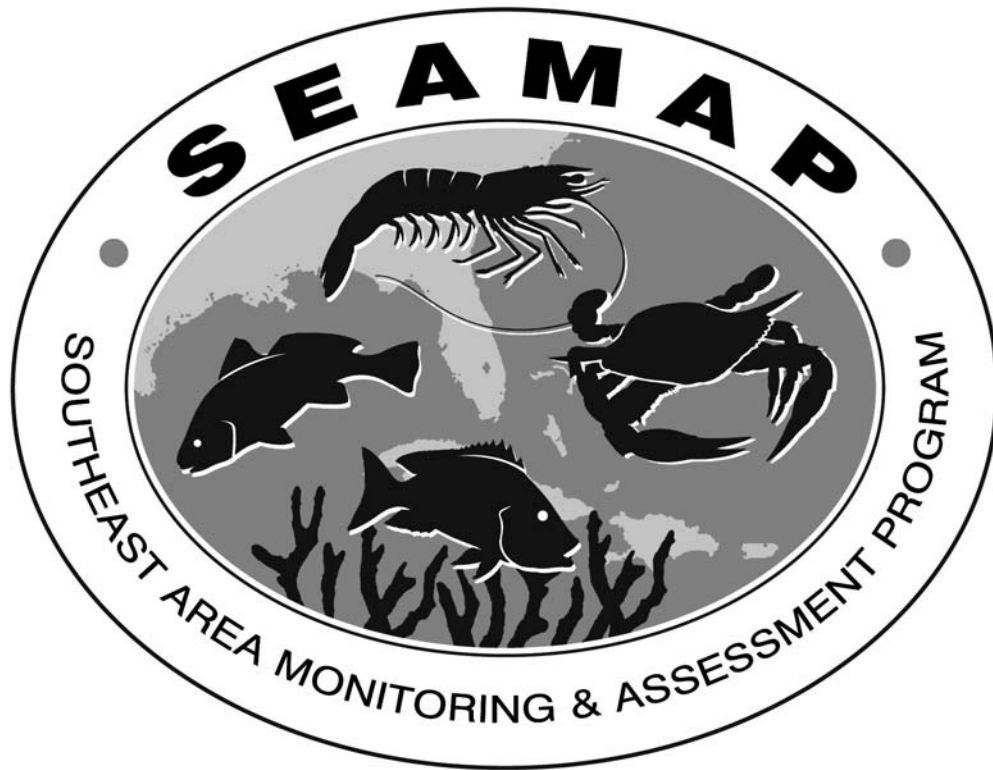
SEAMAP - Gulf of Mexico
Gulf States Marine Fisheries Commission

SEAMAP - South Atlantic
Atlantic States Marine Fisheries Commission

SEAMAP - Caribbean
Puerto Rico Sea Grant College Program

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ANNUAL REPORT

of the

Southeast Area Monitoring and Assessment Program

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INTRODUCTION

The Southeast Area Monitoring and Assessment Program (SEAMAP) is a State/Federal/university program for the collection, management and dissemination of fishery-independent data and information in the southeastern United States. The program presently consists of three operational components: SEAMAP-Gulf of Mexico, which began in 1981; SEAMAP-South Atlantic, implemented in 1983; and SEAMAP-Caribbean, formed in 1988.

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 SEAMAP are shown in Table 1.

Federal programmatic funding for SEAMAP activities and administration was appropriated in Federal Fiscal Years 1985-2004. Funding allocations to participants for FY1985-FY2004 were handled through State/Federal cooperative agreements, administered by SERO and the Southeast Fisheries Science Center (SEFSC), National Marine Fisheries Service (NMFS).

This report provides an overview of the SEAMAP Gulf, South Atlantic and Caribbean programs. It outlines the program management, resource survey operations, information services activities, and publications for FY2004 and proposed activities for FY2005.

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 (GSMFC) Technical Coordinating Committee, the SEAMAP-South Atlantic Committee of the Atlantic States Marine Fisheries Commission's South Atlantic State-Federal Fisheries Management Board, and the SEAMAP-Caribbean Committee of the University of Puerto Rico Sea Grant College Program. The Gulf and South Atlantic committees consist of designated representatives from each member state and NMFS and the Gulf of Mexico and South Atlantic Fishery Management Councils. In

addition, the SEAMAP-South Atlantic committee includes a representative from the Atlantic States Marine Fisheries Commission (ASMFC). The Caribbean component consists of members from the Puerto Rico Department of Natural and Environmental Resources, Virgin Islands Division of Fish and Wildlife, Puerto Rico Sea Grant College Program, NMFS, U.S. Fish and Wildlife Service, and Caribbean Fishery Management Council. Each committee meets 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 Puerto Rico Sea Grant College Program and personnel associated with the SEAMAP Information System, SEAMAP Archiving Center and SEAMAP Invertebrate Plankton Archiving Center (SIPAC).

SEAMAP - Gulf of Mexico

Major SEAMAP-Gulf Subcommittee meetings were held in October 2003 and March 2004, in conjunction with the Annual Fall and Spring Meetings of the GSMFC. All meetings included participation by various work group leaders, Coordinator, Data Manager, Program Manager, and the GSMFC Executive Director. Representatives from the Gulf program also met with the South Atlantic and Caribbean representatives in August 2004 to discuss respective program needs and priorities for FY2005.

Coordination of program surveys and distribution of quick-report summaries of a Gulf-wide survey to management agencies and industry were major functions of SEAMAP management in FY2004. 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

One committee meeting, one work group meeting, several conference calls, and a workshop were coordinated and documented in FY2004. Additional

TABLE 1.

SEAMAP ORGANIZATION

Program	Administering Organization	Participating Agencies
SEAMAP-Gulf of Mexico	Gulf States Marine Fisheries Commission	Alabama Department of Conservation and Natural Resources Florida Fish and Wildlife Conservation Commission Louisiana Department of Wildlife and Fisheries Mississippi Department of Marine Resources/USM/COST/Gulf Coast Research Laboratory Texas Parks and Wildlife Department National Marine Fisheries Service/Southeast Fisheries Science Center Gulf of Mexico Fishery Management Council
SEAMAP-South Atlantic	Atlantic States Marine Fisheries Commission	Florida Fish and Wildlife Conservation Commission Georgia Department of Natural Resources North Carolina Department of Environment and Natural Resources South Carolina Department of Natural Resources National Marine Fisheries Service/Southeast Fisheries Science Center South Atlantic Fishery Management Council Atlantic States Marine Fisheries Commission
SEAMAP-Caribbean	Puerto Rico Sea Grant College Program	Puerto Rico Department of Natural and Environmental Resources Puerto Rico Sea Grant College Program Virgin Islands Division of Fish and Wildlife National Marine Fisheries Service/Southeast Fisheries Science Center U.S. Fish and Wildlife Service Caribbean Fishery Management Council

tasks included fulfilling data requests, preparation of annual program reports and State/Federal Cooperative Agreements, and distribution of publications.

The SEAMAP-SA Committee held their annual meeting in conjunction with the joint annual meeting held August 2-5, 2004 in Rincón, Puerto Rico. The meeting included participation by the work group leaders and coordinator. The Committee developed the 2005 SEAMAP-SA budget and Operations Plan. The Committee also reviewed progress by the Crustacean, Data Management, and Trawl work groups and provided direction where necessary. Topics discussed included fisheries independent data collection/storage standards, and NMFS data management activities. The committee also developed a recommendation to the South Atlantic Board for project funding in FY2005.

The South Atlantic Board met on August 18, 2004 to review recommendations from the SEAMAP-SA

Committee. The Board approved the 2005 budget.

The SEAMAP Data Management Work Group had a conference call on September 16, 2004. The work group discussed current data structures in both South Carolina and the central NMFS system (Pascagoula) and developed a plan to update the NMFS data structures to contain the full extent of data collected by the trawl survey. The Work Group also began planning a November 2004 meeting to continue the effort to get SEAMAP-SA data into the NMFS system.

The SEAMAP Cooperative Winter Offshore Tagging Cruise was conducted from January 15-25, 2004 aboard the R/V CAPE HATTERAS. Atlantic States Marine Fisheries Commission personnel participated as crew on the cruise. This was the seventeenth year of the cooperative project, initiated in 1988 at the request of SEAMAP-South Atlantic. Adult striped bass over-wintering in the area between False Cape, Virginia

and Cape Lookout, North Carolina, were tagged for assessment of the population structure and exploitation rates. Other species tagged included Atlantic sturgeon, spiny dogfish, and red drum.

A report entitled "The Status of the Blue Crab (*Callinectes sapidus*) on the Atlantic Coast" was produced. This document is a report of a Blue Crab Symposium convened by the Crustacean Society, June 1-5, 2003 in Williamsburg, Virginia and a Blue Crab Workshop convened by the Atlantic States Marine Fisheries Commission's SEAMAP Crustacean Work Group, November 6-7, 2003 in Baltimore, Maryland.

The Bottom Mapping Work Group finalized a three-phase approach to compile existing deepwater (200-2000m depth) bottom characterization data from existing data sets, and appointed a subcommittee to develop the protocols for data transformation. The Bottom Mapping Work Group had a conference call on August 8, 2003. They reviewed the Phase I draft protocols report and discussed four possible pilot projects to test the deepwater protocols. Another conference call was held on July 8, 2004 to determine the process for the administration and distribution of the ESDIM funding, and to update the work group on contracted project on Digitizing and Translating Existing Bottom Character Maps for Deepwater Marine Habitat off the Southeastern U.S. Margin. An update was also given on the Arc IMS and habitat activities of the SAFMC and how SEAMAP data is being used in that process.

The Bottom Mapping Deepwater Subcommittee held a conference call on December 15, 2003 to review and approve the Phase I protocols and to discuss the completion report from the pilot study for the video capture protocols.

SEAMAP - Caribbean

The SEAMAP-Caribbean Administrative and Working Group components held three meetings during FY2004, on January 23, April 30, and August 4. During the three SEAMAP-Caribbean meetings the SEAMAP-Caribbean committee overviewed and followed up several main topics, the Puerto Rico FY2003 (pueruli and juveniles) lobster project was finished and the reports submitted. Additional study proposals or amendments to actual projects were submitted for supplemental funding by all three Caribbean components. The proposed "Virgin Islands Reef Fish Data Analysis Study" directed by the Caribbean coordinator for the evaluation and quality control of the Virgin Island data was finished. A final report was submitted to the Pascagoula archive center, and to Puerto Rico and Virgin Island components, with

all problems identified within the data set. Fieldwork was completed on the 2003-2004 whelk surveys, and personnel are working on the final reports. During FY2004, the Caribbean started a new reef fish study cycle. Although the Virgin Islands are still waiting for local release of funds, Puerto Rico began sampling in April.

RESOURCE SURVEYS

In FY2004, collection of resource survey information continued for the twenty-third 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 all three regions. For instance, the South Atlantic program's Bottom Mapping 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 database. 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

Fall Plankton Survey

The first fall ichthyoplankton survey to assess abundance and distribution of king mackerel eggs and larvae occurred in August 1984. No sampling survey was conducted in 1985; however, expanded surveys in 1986-2002 covered Gulf waters from Florida Bay to Brownsville, Texas. The Fall Plankton cruise took place from August 28, 2003 through September 29, 2003. NMFS and Louisiana sampled 150 stations on the west Florida shelf and northern Gulf of Mexico. The objective of this survey is to collect ichthyoplankton samples with bongo and neuston gear for the purpose of estimating abundance and defining the distribution of eggs, larvae, and small juveniles of Gulf of Mexico fishes, particularly king and Spanish mackerel, lutjanids and sciaenids.

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. Tows were oblique, surface to near bottom (or 200 m) and back to surface. Wire angle was maintained at 45 degrees. Neuston samples were taken with .947-micron mesh nets on 1 x 2-meter frames towed at the surface for ten minutes. Right bongo and neuston samples were initially preserved in 10% buffered formalin and after 48 hours were transferred to 95% ethyl alcohol for final preservation. Left bongo

samples were preserved via an ethanol/ethanol transfer to aid in preservation of larval otoliths. In addition, hydrographic data (surface chlorophylls, salinity, temperature and dissolved oxygen from surface, midwater and near bottom, and Forel-ule color) were collected at all stations.

Right bongo and neuston samples collected from SEAMAP stations will be transshipped to the Polish Sorting and Identification Center. Left bongo samples will be archived at the SEAMAP Invertebrate Plankton Archiving Center (SIPAC).

Fall Shrimp/Groundfish Survey

The Fall Shrimp/Groundfish Survey was conducted from October 8 - December 19, 2003, from off Mobile, Alabama to the U.S.-Mexican border. Vessels sampled waters out to 60 fm, covering 407 trawl stations, in addition to plankton and environmental sampling.

Sampling design was similar to the Summer Shrimp/Groundfish Survey. The objectives of the survey were to:

- (1) sample the northern Gulf of Mexico to determine abundance and distribution of demersal organisms from inshore waters to 60 fm;
- (2) obtain length-frequency measurements for major finfish and shrimp species to determine population size structures;
- (3) collect environmental data to investigate potential relationships between abundance and distribution of organisms and environmental parameters; and
- (4) collect ichthyoplankton samples to determine relative abundance and distribution of eggs and larvae of commercially and recreationally important fish species.

NMFS, Mississippi, Alabama, and Louisiana vessels collected ichthyoplankton data at sample sites occurring nearest to half-degree intervals of latitude/longitude. A total of 61 stations was sampled with bongo and/or neuston nets, as encountered along cruise tracks. NMFS completed 54 ichthyoplankton stations and Louisiana completed 7 stations. The Polish Sorting and Identification Center will sort the samples. Once sorted, the specimens and data will be archived at the SEAMAP Archiving Center.

Spring Plankton Survey

The SEAMAP Spring Plankton Survey took place from

May 4 through May 31, 2004. One hundred three stations were sampled from the west Florida shelf to the Louisiana/Texas border. NMFS completed 98 ichthyoplankton stations and Mississippi completed 5 stations. This was the twenty-third year for the survey. The objectives of the survey were to collect ichthyoplankton samples for estimates of the abundance and distribution of Atlantic bluefin tuna larvae and collect environmental data at all ichthyoplankton stations.

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. Tows were oblique, surface to near bottom (or 200 m) and back to surface. Wire angle was maintained at 45 degrees. Neuston samples were taken with .947-micron mesh nets on 1 x 2-meter frames towed at the surface for ten minutes. Right bongo and neuston samples were initially preserved in 10% buffered formalin and after 48 hours were transferred to 95% ethyl alcohol for final preservation. Left bongo samples were preserved via an ethanol/ethanol transfer to aid in preservation of larval otoliths. In addition, hydrographic data (surface chlorophylls, salinity, temperature and dissolved oxygen from surface, midwater and near bottom, and Forel-ule color) were collected at all stations.

Right bongo and neuston samples collected from SEAMAP stations were transshipped to the Polish Sorting and Identification Center. Left bongo samples were archived at the SEAMAP Invertebrate Plankton Archiving Center (SIPAC).

Reeffish Survey

The primary purpose of this survey is to assess relative abundance and compute population estimates of reef fishes found on natural reef fish habitat in the Gulf of Mexico. Two types of gear are used to deploy video cameras: 1) a single-funnel fish trap (2.13 m long by 0.76 m square) with the camera mounted at a height of 25 cm above the bottom of the trap; or 2) a 4 camera array with 4 cameras mounted orthogonal to each other at a height of 25 cm above the bottom. Both gears are baited with squid before deployment. The resultant video recordings (typically of one hour duration) are processed back at the laboratory where fishes are identified and counted independently by two tape readers. Final counts are entered into the SEAMAP reef fish database along with additional observations on habitat and fish activity. NMFS conducted reeffish sampling from April 2 through June 23, 2004. Video cameras were deployed at 202 sites and the chevron trap at 12 sites. Alabama conducted sampling on October 7 through October 24, 2004, sampling seven

sites with trap videos.

Summer Shrimp/Groundfish Survey

During the spring of 2004, there was communication between the Shrimp/Groundfish Work Group members to examine the design for the Summer Shrimp/Groundfish Survey and determine the random station locations for each participant.

Objectives of the survey were to:

- (1) monitor size and distribution of penaeid shrimp during or prior to migration of brown shrimp from bays to the open Gulf;
- (2) aid in evaluating the "Texas Closure" management measure of the Gulf Council's Shrimp Fishery Management Plan; and
- (3) provide information on shrimp and groundfish stocks across the northern Gulf of Mexico from inshore waters to 50 fm.

The overall sampling strategy during the 2004 SEAMAP summer survey was to work from the eastern Gulf to the Texas/Mexico border, in order to sample during or prior to migration of brown shrimp from bays to the open Gulf area. This was the twenty-third year for the survey. The entire survey occurred from June 2 through July 16, 2004 and 381 trawl stations were sampled during the survey. In addition, NMFS, Mississippi, and Louisiana vessels collected ichthyoplankton data. A total of 56 stations was sampled with bongo and/or neuston nets, as encountered along cruise tracks.

During the survey, the NOAA Ship OREGON II and R/V TOMMY MUNRO sampled offshore and inshore Gulf waters with 40-ft trawls. Alabama's R/V VERRILL sampled offshore Alabama waters with 40-ft trawls, the R/V PELICAN sampled both Louisiana state waters and offshore waters with 40-ft trawls, and Texas vessels sampled Texas state waters and offshore waters with 20-ft trawls. All vessels took environmental data, including temperature, salinity, oxygen, and chlorophyll at each station.

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, plankton tows were piggybacked on the NMFS and state vessels, sampling

randomly generated trawl stations within the standard 30-minute SEAMAP grids.

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, mid-depth and bottom waters, and chlorophyll from surface and bottom waters) were collected during the shrimp/groundfish surveys. Wind direction, wind speed and wave height were taken at all trawl stations.

Samples from the right side of the bongo nets and neuston samples were shipped to the NMFS-Pascagoula Laboratory for shipment to the Polish Sorting and Identification Center, where they will be sorted to the family level (both ichthyoplankton and selected crustacean and molluscan species). The left bongo sample from each station is retained as a back up in the event of damage or loss of the specimens and maintained at the SIPAC.

Chlorophyll samples were filtered at each station using GF/C filters. 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.

SEAMAP - South Atlantic

Shallow Water Trawl Survey

The major SEAMAP-South Atlantic survey in FY2004 was the continuing Shallow Water Trawl Survey conducted by the South Carolina Department of Natural Resources (SCDNR). Initiated as a pilot project in 1986, this is a fishery-independent study designed to monitor the distribution and abundance of coastal species in the South Atlantic Bight and to measure associated environmental parameters in nearshore coastal waters. Sampling was standardized in 1990, and a 10-year trawl report was completed in December 2000 summarizing species composition, regional species assemblages, and trends in distribution and abundance of 27 priority species. In January 2001, the sampling design was changed based on the results of an external program review. Offshore strata were discontinued, and additional stations were added to inshore strata for all three cruises to reduce variability in the abundance estimates for target species. The overall goal is to obtain a long-term database to facilitate management of stocks in the South Atlantic Bight.

The objectives of the survey are to:

- (1) collect data on size, abundance, distribution, and seasonality of target finfish and decapod crustaceans;
- (2) record species composition, biomass, and abundance in order to assess latitudinal and seasonal fluctuations; and
- (3) collect data on size, sex, and gonadal condition of white, pink, and brown shrimp and attempt to locate spawning grounds.

Three multi-legged seasonal cruises were conducted between Cape Hatteras, North Carolina, and Cape Canaveral, Florida during FY2004: Fall 2003 (October 1 - October 22), Spring 2004 (April 15 - May 6), and Summer 2004 (July 12 - July 30). Inshore strata (4.6 to 9.2m depths) were sampled during each cruise. All samples were collected during daylight hours to maximize the opportunities for collecting juvenile mackerels.

The fall 2003 cruise completed the fourteenth full year of standardized sampling under a stratified random survey design. Sampling was conducted between October 1 - October 22 and all of the 102 inshore stations allocated to 24 shallow coastal strata in the South Atlantic Bight were sampled. A total of 140 species or genera were identified in fall trawls. *Micropogonias undulatus*, the Atlantic croaker, was the most abundant species, constituting 17% of total abundance, followed by the spot, *Leiostomus xanthurus* (10%), the Atlantic moonfish, *Selene setapinnis* (10%), the Atlantic bumper, *Chloroscombrus chrysurus* (8%), and the pinfish, *Lagodon rhomboides* (6%). Both abundance of individuals, excluding cannonball jellies, (n=113,825 individuals, x/tow=1116 individuals) and the miscellaneous invertebrate biomass, including cannonball jellies, (n=11,386 kg, x/tow= 111.6 kg) in 2003 were slightly greater than the levels of abundance and biomass observed in Fall 2002. Overall abundance was greatest in Long Bay (n=15,386 individuals, x/tow=1,399 individuals), whereas miscellaneous invertebrate biomass was greatest in Onslow Bay (n=1,279 kg, x/tow= 75.2 kg). More than 38% of the miscellaneous invertebrate biomass was composed of the cannonball jelly, compared to 65% in spring 2003 and 5% in summer 2003. Atlantic croaker, *Micropogonias undulatus*, (n=19,465 individuals, x/tow=190.8 individuals) ranked first in abundance overall, and the spot, *Leiostomus xanthurus*, (n=11,300 individuals, x/tow=110.8 individuals), was the second most numerous species collected. *Cynoscion regalis*, the weakfish, (n=1,722 individuals, x/tow=16.9 individuals) and the southern kingfish, *Menticirrhus americanus*, (n=3,472 individuals, x/tow=34.0

individuals) were less abundant than in Fall 2002. Historically, the southern kingfish has exhibited the highest frequency of occurrence of all priority species taken in SEAMAP-SA trawls and in Fall 2003 was taken in over 83% of all tows. Otoliths were collected from specimens of weakfish (n=216), Atlantic croaker (n=245), and southern kingfish (n=450). Additionally, gonad samples were collected for verification of onboard maturity assessments. The abundance of Spanish mackerel, *S. maculatus*, (n=118, x/tow=1.2) decreased in fall trawls in 2003 to the lowest level of fall abundance observed in SEAMAP-SA catches, reflecting a general decline in overall fall abundance. Spanish mackerel were taken from all regions. Abundance of *S. maculatus* was greatest in waters off Florida (n=33, x/tow=1.8). King mackerel, *Scomberomorus cavalla*, (n=225, x/tow=2.2) were most abundant in waters off South Carolina (n=87, x/tow=4.8) and off Florida (n=70, x/tow=3.9). The white shrimp, *Litopenaeus setiferus*, was the most abundant commercially important shrimp species (n=4,752, x/tow=66.1), ranking first in abundance among decapod crustaceans and eighth among all species collected during the fall cruise. *L. setiferus* were taken from strata in all regions, but the highest mean catch per tow was taken off Georgia (n=2552, x/tow=88.0). Over 99% of the females sampled had undeveloped gonads. Less than 1% (n=9) of the female specimens were found to be mated and none had ripe ovaries. Approximately 64% of the male white shrimp had developing spermatophores, but less than 1% had ripe spermatophores. The brown shrimp, *Farfantepenaeus aztecus*, was the second most abundant shrimp (n=1,013, x/tow=9.9) in fall collections. *F. aztecus* were absent from collections made in Long Bay. The greatest mean catch per tow was observed in Onslow Bay (n=558, x/tow=32.8). Approximately 85% of the females had undeveloped ovaries. Only one female *F. aztecus* specimen had ripe ovaries and only eleven female brown shrimp collected were mated. Approximately 75% of the male brown shrimp had developing spermatophores; however, only 12% had ripe spermatophores. The abundance of the pink shrimp, *Farfantepenaeus duorarum*, (n=69, x/tow=2.2) in Fall 2003 was greater than the level observed during the previous fall. As with brown shrimp, *F. duorarum* were absent from collections made in Long Bay and off Florida. Only one of the pink shrimp taken, a mated female, was found to have developing ovaries, and none of the males had developing spermatophores. Occurrence of black gill disease in commercially important penaeids was observed and recorded. Presence of black gill disease was not noted in any pink shrimp and was found in fewer than 1% of the brown shrimp. White shrimp, however, exhibited the greatest level of infestation, at approximately 13%. Infestation of white shrimp

occurred in the southern portion of the SAB, and was greatest in white shrimp taken off Florida.

The spring cruise for the SEAMAP-South Atlantic Shallow Water Trawl Survey began on April 15 and was completed on May 6, 2004. A total of one hundred and two stations were sampled in the twenty-four shallow coastal strata in the South Atlantic Bight. A total of 143 species or genera were identified in spring trawls. *Anchoa hepsetus*, the striped anchovy, was the most abundant species, constituting 25% of total abundance, followed by the spot, *Leiostomus xanthurus* (15%); the butterflyfish, *Peprilus triacanthus* (14%); the pinfish, *Lagodon rhomboids* (5%); and the weakfish *Cynoscion regalis* (5%). Abundance of individuals collected (n=263,560 individuals, x/tow=2,584 individuals) in Spring 2004 reached the greatest level of spring abundance recorded in the history of the survey, whereas the miscellaneous invertebrate biomass (n=1,021 kg, x/tow= 10.0 kg) was very low. Miscellaneous invertebrate biomass was near record low levels, with less than 2% comprising the cannonball jelly, *Stomolophus meleagris*. An increase in the number of sharks, primarily the smooth dogfish, *Mustelus canis*, taken in trawls was noted. This trend has been noted each spring since 2001. Patterns of abundance from SEAMAP trawls in the SAB generally reflect fluctuations in the abundance of the sciaenid family, especially Atlantic croaker and spot. In 2004, however, the spot, *Leiostomus xanthurus*, (n=40,790 individuals, x/tow=399.9 individuals) was the second most numerous species collected, whereas the Atlantic croaker, *Micropogonias undulatus*, (n=8,523 individuals, x/tow=83.6 individuals) ranked eighth overall. Other sciaenid species of interest include the weakfish and southern kingfish. The weakfish, *Cynoscion regalis*, (n=12,092 individuals, x/tow=118.5 individuals), ranked fifth in abundance, the greatest spring abundance of that species in SEAMAP history. The southern kingfish, *Menticirrhus americanus*, (n=9,743 individuals, x/tow=95.5 individuals), was the seventh most numerous species overall. Historically, the southern kingfish has exhibited the highest frequency of occurrence of all species taken in SEAMAP-SA trawls and in Spring 2004 was taken in over 91% of all tows. Otoliths were collected from specimens of weakfish (n=246), Atlantic croaker (n=138), and southern kingfish (n=618). Additionally, gonad samples were collected for verification of onboard maturity assessments. The abundance of Spanish mackerel, *S. maculatus*, (n=403, x/tow=4.0) increased slightly in Spring 2004. Spanish mackerel were absent from collections made in Raleigh and Long Bays. Abundance of *S. maculatus* was greatest in waters off Florida (n=313, x/tow=17.4). King mackerel, *Scomberomorus cavalla*, (n=119, x/tow=1.2) were taken only in the southern portion of the South

Atlantic Bight, in waters off South Carolina, Georgia, and Florida. Abundance of *S. cavalla* was also greatest in waters off Florida (n=96, x/tow=5.3). The white shrimp, *Litopenaeus setiferus*, was the most abundant commercially important shrimp species (n=3283, x/tow=32.2) collected during the spring cruise. *L. setiferus* were taken from strata in all regions, but the highest mean catch per tow was taken off Georgia (n=2,235, x/tow=86.0). Female white shrimp were found in all stages of development. Over 38% of the females sampled had ripe gonads. Approximately 7% of the female specimens were found to be mated, and most of those females also had ripe ovaries. Approximately 65% of the male white shrimp had ripe spermatophores. The spring abundance of the brown shrimp, *Farfantepenaeus aztecus*, was the second highest in the history of the survey (n=404, x/tow=4.0). *F. aztecus* were taken in all regions, but the greatest mean catch per tow was observed in waters off Florida (n=375, x/tow=20.8). Approximately 98% of the females had undeveloped ovaries. None of the female *F. aztecus* had ripe ovaries or were mated. Approximately 57% of the male brown shrimp had late developing spermatophores and only 2% had ripe spermatophores. The abundance of the pink shrimp, *Farfantepenaeus duorarum*, (n=20, x/tow=0.2) in Spring 2004 was very similar to the level observed during the previous spring. All of the female pink shrimp taken had undeveloped ovaries and no mated females were sampled. Approximately 80% of the males had developing spermatophores and none were found with ripe spermatophores.

The summer cruise for the SEAMAP-South Atlantic Shallow Water Trawl Survey began on July 12 and was completed on July 30, 2004. A total of one hundred and two stations were sampled in the twenty-four shallow coastal strata in the South Atlantic Bight. A total of 135 species or genera were identified in summer trawls. *Micropogonias undulatus* was the most abundant species, constituting 37% of total abundance, followed by *Leiostomus xanthurus* (10%), *Stenotomus sp.* (6%), and *Larimus fasciatus* (5%). Abundance of individuals collected (n=199,524 individuals, x/tow=1,956 individuals) decreased slightly from the level of abundance observed in Summer 2003, whereas the miscellaneous invertebrate biomass (n=828 kg, x/tow= 8.1 kg) in 2004 decreased to the lowest level observed since 1997. Patterns of abundance from SEAMAP trawls in the SAB generally reflect fluctuations in the abundance of two members of the sciaenid family, Atlantic croaker and spot. Atlantic croaker and spot were the numerically dominant target species and together constituted approximately 47% of all abundance. The Atlantic croaker, *Micropogonias undulatus*, (n=73,886 individuals, x/tow=724.4 individuals) ranked first in abundance overall, and the

spot, *Leiostomus xanthurus*, (n=20,780 individuals, x/tow=203.7 individuals) was the second most numerous species collected. Other sciaenid species of interest include the southern kingfish, *Menticirrhus americanus*, (n=5,781 individuals, x/tow=56.7 individuals) and the weakfish, *Cynoscion regalis*, (n=4,870 individuals, x/tow=47.8 individuals). Otoliths were collected from specimens of weakfish (n=141), Atlantic croaker (n=258), and southern kingfish (n=420). Additionally, gonad samples were collected for verification of onboard maturity assessments. The abundance of Spanish mackerel, *S. maculatus*, (n=232, x/tow=2.3) decreased in Summer 2004 trawls from levels observed in 2003, a trend noted since 2001. Spanish mackerel were absent from collections made in Raleigh Bay. Abundance of *S. maculatus* was greatest in waters off South Carolina (n=126, x/tow=7.0). The lowest abundance of king mackerel, *Scomberomorus cavalla*, (n=25, x/tow=0.25) taken in summer trawls were observed in Summer 2004, following record catches in Summer 2003. King mackerel were absent from collections made in Raleigh and Onslow Bays. Abundance of *S. cavalla* was greatest in waters off Florida (n=12, x/tow=0.7). The brown shrimp, *Farfantepenaeus aztecus*, was the most abundant commercially important shrimp species (n=8019, x/tow=78.6) collected during the summer cruise. *F. aztecus* were taken from strata in all regions, with the highest mean catches per tow taken in Raleigh Bay (n=3,380, x/tow=338.0). Over 98% of the females sampled had undeveloped gonads. None of the female specimens were found to be mated. Male white shrimp were found in all stages of development. Approximately 69% of the male brown shrimp had late developing spermatophores; however, less than 1% had ripe spermatophores. The white shrimp, *Litopenaeus setiferus*, was the second most abundant shrimp (n=1,628, x/tow=16.0) in summer collections. *L. setiferus* were taken from strata in all regions, but the greatest mean catch per tow was observed in waters off Florida (n=1,231, x/tow=68.4). Female white shrimp were found in all stages of development, with the majority (56%) with undeveloped ovaries. Less than 1% of female white shrimp collected were mated; however, those found to be mated also had ripe ovaries. Approximately 34% of the male white shrimp had ripe spermatophores. Catches of the pink shrimp, *Farfantepenaeus duorarum*, (n=38, x/tow=0.4) in Summer 2004 were low, decreasing from levels observed in Summer 2003. Pink shrimp were taken only in Raleigh Bay. All of the female pink shrimp taken had undeveloped ovaries and none were found to be mated. Approximately 33% of the male pink shrimp were found to have ripe spermatophores.

Data from the spring, summer, and fall 2003 cruises have been added to the SEAMAP Data Management

System (DMS). The results of the entire 2003 cruise season (Spring 2003, Summer 2003, and Fall 2003 cruises) are documented in the final 2003 project report, "Results of Trawling Efforts in the Coastal Habitat of the South Atlantic Bight, FY2003" by South Carolina Marine Resources Division.

Pamlico Sound Survey

During FY2004, the North Carolina Division of Marine Fisheries (NCDMF) continued the ongoing Pamlico Sound Survey. Cruises sample approximately 52 stations each in June and September. This seasonal trawl survey is designed to provide a long-term fishery-independent database on the distribution, relative abundance, and size composition of target species of estuarine fish and decapod crustaceans for the waters of Pamlico Sound. The data are processed by NCDMF and are made available to the SEAMAP DMS.

Bottom Mapping Project

In 1992, the SEAMAP-South Atlantic Bottom Mapping Work Group began an intensive effort to establish a regional database that includes the location and characteristics of hard bottom resources throughout the South Atlantic Bight. The importance of defining these areas has increased in the face of declining reefish resources and increased fishing pressure. In order to assess reefish populations and the effects of changes in fishing pressure, the amount of habitat available for priority species of fish must be quantified.

The primary objectives of the Work Group are to:

- (1) conduct an extensive search of existing databases to identify all known critical hard bottom reef habitats on the continental shelf of the South Atlantic Bight from Florida through North Carolina from the beach out to 200 m in depth; and
- (2) summarize the bottom type information into a flexible, easy to use database which will provide researchers and managers with pertinent information concerning the location and extent of these areas, types of data used in determining bottom type, and source of the data for the development of future habitat mapping systems on available PC hardware.

All accessible databases available from state and federal agencies and other sources that have sampled or surveyed bottom habitats in the region were investigated to obtain files for processing. The data available from these sources varies in information content and accuracy in pinpointing reef habitat

location. Treatment of each data type and gear is standardized, and the most accurate data for each gear type for each location are being compiled according to procedures developed by the Bottom Mapping Work Group. The database is designed for easy incorporation into Geographic Information System (GIS) or other PC mapping software programs.

By the end of FY1997, more than 65,700 records were compiled from databases obtained off North Carolina, South Carolina, Georgia, and Florida in three study phases. Reports summarizing the databases available for these areas were provided in three final reports submitted to the SEAMAP-SA Committee. From FY1998 through FY2001, the Florida Marine Research Institute (FMRI) reproduced and refined the three Bottom Mapping Reports into a single product on a CD-ROM readable on any desktop PC. The CD-ROM includes GIS software, data files, documentation, and maps covering the area from Florida to the North Carolina-Virginia border. Version 1.0 was completed in 1998, Version 1.1 was printed in 1999, and Version 1.2 was printed in 2001. The development of version 1.2 included a much-improved summary document, and several tools to help users view and analyze the data. All versions were distributed to libraries to maximize availability and utilization of the data. Copies of the Bottom Mapping CD version 1.2 and the summary document are available through the ASMFC.

During 2001, the work group began discussing the development of protocols to capture deepwater (200 - 2000m) data on bottom type for funded action in 2002. The deepwater bottom type project will extend the depth range of the existing Bottom Mapping CD-ROM, and is progressing under a three-phase plan. Phase 1 and 2 occurred simultaneously in FY2002-2003. In Phase 1, protocols were developed to recover existing data and convert it into a standard format. During Phase 2, key information was gathered on existing data sources (availability, format, data contacts, number of records, geographical range, etc.) to help the Bottom Mapping Work group prioritize data sources to obtain for conversion. The Phase 2 report "Summary of Seafloor Mapping and Benthic Sampling Conducted in 200-2000m, from North Carolina through Florida" was completed in April of 2003 and is available via www.asmf.org. Phase 3, which began in 2004, involves using the protocols developed in Phase 1 to obtain and standardize the data identified in Phase 2. The first project of Phase III was digitizing and translating existing bottom character maps published by Popenoe for deepwater marine habitat off the Southeastern U.S. margin. Future priorities also include increased availability of summary data via the Internet in both a static and interactive mapping formats.

SEAMAP - Caribbean

In FY2004, SEAMAP-Caribbean supported a variety of activities in the U.S. Virgin Islands and Puerto Rico.

In the U.S. Virgin Islands, fielding for the 12-month lobster pueruli collector and juvenile lobster attractor project (FY2002 funds) on St. Thomas was completed in FY2003. The report was finalized in FY2004. Results were also presented at the Gulf and Caribbean Fisheries Institute's annual meeting in Tortola, British Virgin Islands (November 11, 2003). Fieldwork for the U.S. Virgin Islands-wide whelk survey (FY2003 funds) started in late FY2003 and was completed in late FY2004. By the end of FY2004, a draft report was written and was being reviewed. Funding for a SEAMAP-Caribbean USVI trap and line fisheries independent survey (FY2004 funds) was approved in mid-FY2004. Due to internal procedural issues, the grant was not opened locally until the end of FY2004. The R/V SARIMA was brought up from DFW/St. Croix to DFW/St. Thomas for this project. Some boat maintenance was completed on this vessel, but additional work is needed prior to starting field work. With the end of FY2004, all grant expenditures were stopped until FY2005 books opened. In FY2004, the University of Puerto Rico (FY2002 funds) completed a review of SEAMAP-Caribbean Virgin Islands reef fish trap and line data. In early FY2004, results were presented to the SEAMAP-Caribbean Committee during which time it became apparent that much of the data collected were not in the NOAA Fisheries database. DFW staff then inventoried hard copies of data and determined that about 60 percent of survey data was not in the NOAA Fisheries database. Additional supplemental SEAMAP funds were requested for: (1) completing the SEAMAP-Caribbean Virgin Islands trap and line data file, (2) completing a comparison between anchor and drift fishing on St. Thomas, and (3) analyzing and writing a report on previously collected St. Croix embayment conch data. By the end of FY2004, supplemental SEAMAP funds had been approved, but were not yet available locally.

In Puerto Rico, a whelk survey (FY2003) was undertaken for the first year of the next three-year cycle. There was a delay in the approval of the proposal, the grant approval arrived in June instead of April. Since little research was ever completed on this species, a variety of methodologies were reviewed and assessed before initiation of the actual field surveys.

Fielding of this survey was started in July and continued into FY2004. Thirty-seven visual censuses around the coasts of Puerto Rico, including Mona Island, Desecheo Island, and Caja de Muertos were conducted. A final report with data analysis will be

finished by March 2005. Reef fish monitoring surveys started on April 2004 and will continue into FY2005.

SPECIAL STUDIES

In addition to the regularly scheduled surveys, SEAMAP participates in a variety of other projects. The SEAMAP provides guidance, personnel and other contributions to these studies for enhancement and protection of the marine resources.

Winter Trawling and Fish Tagging Cruise

The SEAMAP Cooperative Winter Offshore Tagging Cruise was conducted from January 15 -25, 2004 aboard the R/V CAPE HATTERAS. Atlantic States Marine Fisheries Commission personnel participated as crew on the cruise. This was the seventeenth year of the cooperative project, initiated in 1988 at the request of SEAMAP-South Atlantic. Adult striped bass over-wintering in the area between False Cape, Virginia and Cape Lookout, North Carolina, were tagged for assessment of the population structure and exploitation rates. Other species tagged included Atlantic sturgeon, spiny dogfish, and red drum.

The cruise resulted in the tagging of 2,708 striped bass, 1 Atlantic sturgeon, 3,385 spiny dogfish, 7 red drum, and 2 horseshoe crabs. This year's cruise capture and tagging of migratory Atlantic striped bass exceeded the long-term average value for striped bass tagged (16-year average of 1,914). The new 17-year average striped bass number tagged is 1,961. The 2004 cruise ranks fourth overall in numbers of striped bass tagged and released. In addition to tagging 2,708 of the striped bass, random scale samples were taken for aging fish. Striped bass mortally injured during capture this year were sacrificed for aging and prey analysis.

Observations were taken regarding weakfish abundance and distribution. Several catches of large fish were observed this year. Samples of large weakfish encountered were measured and otoliths removed and retained for analysis by the NC Division of Marine Fisheries.

For the ninth consecutive year during this cruise, spiny dogfish were enumerated. Tagging has been conducted in seven of the nine years (no tags were available in 2000 and 2001). As observed in the previous years, the majority of the adult or immature fish encountered were females. This year's overall sex ratio for tagged fish was 2,353:1032, females to males (2.3:1 ratio). Summer flounder were not tagged this year, since the NC Division of Marine Fisheries has discontinued their tagging program; however, fish were measured and a

number of larger fish were captured. Overall numbers of summer flounder encountered on the cruise this year were down relative to numbers observed in previous years; however, effort was half the normal due to towing only one net. For the first time this year, skates in the catch were measured and their gender noted. At least three species were present in the catch: clearnose (*Raja eglanteria*); winter (*R. ocellata*) and little (*R. erinacea*). American shad, hickory shad, alewife and blueback herring were all documented to some degree this year for the first time. Efforts were made to note the presence of these species in tows positive for them, to begin delineating habitats they use offshore. Observations of humpback whales and fin whales occurred on one day, January 18, during the cruise this year.

Release data from the initial seventeen years (1988-2004) of the Cooperative Winter Tagging Cruise are annually maintained in databases by the U.S. Fish and Wildlife Service's Maryland Fisheries Resources Office, and by the Maryland Department of Natural Resources, Tidewater Administration, Fisheries Service, both located in Annapolis, MD. Recapture data are entered by the Maryland Fisheries Resources Office and are used annually by the ASMFC Striped Bass Tagging Subcommittee to derive estimates of mortality for various size classes of striped bass. The data from the first fifteen Cruise years were entered into a geographic information system (GIS) database at the U.S. Fish and Wildlife Service's Raleigh, NC, Ecological Services field office. Preliminary plots of Cruise tows and striped bass recapture localities were made; however, additional cleaning of the database must take place before final analysis can be conducted. In association with the Atlantic States Marine Fisheries Commission's Habitat Program and the National Marine Fisheries Service, striped bass data from previous years of the Cruise also have been entered into a GIS database at NMFS headquarters in Silver Spring, MD, and were analyzed by intern Jodi Marcus, and GIS Specialist Keith Bickers, to assess habitat use off North Carolina as well as patterns of travel and habitat use inferred from coast-wide tag returns. Preliminary GIS products were prepared for use by ASMFC. Atlantic sturgeon capture and tag return data from the Cruise were analyzed and a presentation given at the annual meeting of the American Fisheries Society in 2003. A peer-reviewed paper reporting those data is currently undergoing review. Summary reports for each annual Cruise are available through the South Atlantic Fisheries Resources Office.

INFORMATION SERVICES

Information from the SEAMAP activities is provided to user groups through the program administration and

three complementary systems: the SEAMAP Information System, SEAMAP Archiving Center and SIPAC. Products resulting from SEAMAP activities can be grouped into two major categories: data sets (including broadly, digital data and collected specimens) managed by the SEAMAP Information System, SEAMAP Archiving Center 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-SEFSC. Raw data are edited by the collecting agency and verified by the SEAMAP Data Manager prior to entry into the system. Verified, non-confidential SEAMAP data are available conditionally to all requesters, although the highest priority is assigned to SEAMAP participants. A total of 286 SEAMAP data requests have been received. In most instances, requests were filled promptly. To date, 283 requests have been completed. During this reporting period, 21 requests were received.

The requirements report for an integrated data system, Data Management System Design Study for Gulf and South Atlantic, 1987, was completed in March 1987. The document identifies the high-level design specifications and recommended implementation plan for a module-based SEAMAP Data Management System (DMS). The design is based on information contained in the SEAMAP Gulf and South Atlantic DMS Requirements Document 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) a modular implementation plan which includes costs and schedule.

Work was completed during FY1990 on the new distributed SEAMAP DMS. New modules completed include those for data entry, edit, upload, data query and download. All of the Gulf States are now equipped with the necessary computer hardware and software.

The system is decentralized, i.e., distributed. Thus, the SEAMAP users are able to locally, and directly, enter and retrieve data. Software for the system has been distributed to participants for trial runs of data input.

This system decreases the time necessary to enter and

retrieve data and provides powerful and flexible local data analysis and display capabilities. Under the system, each SEAMAP site enters, verifies and edits their data, eliminating the mail-oriented loop necessary to enter/edit/verify data. Secondly, each site has the capability of locally accessing SEAMAP data, utilizing a user-friendly system. Local data retrieval allows the data to be accessed in a timely manner with a minimum amount of effort and programming skills.

Under the system, outside users (e.g., Minerals Management Service, U.S. Army Corps of Engineers, etc.) may request special data sets for research or study. The outside users submit the request to the SEAMAP Subcommittee through the SEAMAP-Gulf Coordinator for approval to proceed. Once the request is approved, the information is provided by the Data Manager and staff members through a priority-based, mail-oriented system. Also, SEAMAP participants may use the Special Request mechanism for data sets too large for economical downloading. 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 2004:

- 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;
- Evaluating and plotting the size of the hypoxic (Dead Zone) area off of Louisiana;
- Assessing shrimp and groundfish abundance and distribution and their relationship to such environmental parameters as temperature, salinity, and dissolved oxygen;

- Identifying environmental parameters associated with concentrations of larval finfish;
- Compiling the 2004 SEAMAP Environmental and Biological Atlas;
- Comparing catches of shrimp and groundfish captured by 40-ft versus 20-ft trawl nets;
- Historical and current shark abundance in the South Atlantic Bight for SCDNR, NMFS Highly Migratory Species;
- Horseshoe crab data for stock assessment by ASMFC;
- Commercial penaeid shrimp seasonal CPUE data used to determine when penaeid species are overfished or undergoing overfishing for the Shrimp Amendment 6 to the Fishery Management Plan for the Shrimp Fishery of the South Atlantic Region;
- Genetic stock identification studies on rock sea bass, gulf kingfish, northern kingfish, and southern kingfish;
- Stock identification study on Atlantic croaker based on parasite load;
- Life history studies (age/growth, reproduction) on weakfish, gulf kingfish, northern kingfish, southern kingfish, sand perch, tomate, bluefish, bank sea bass, Atlantic croaker;
- Specimens of fish and invertebrate species for catalogue of voucher specimens for Southeastern Regional Taxonomic Center at MRRI and the College of Charleston;
- Data collected off Canaveral National Seashore (2003) provided to the National Park Service;
- Catch and tow data for prey resources available to marine mammals (SEFSC, Miami);
- Historical and current shark abundance in the South Atlantic Bight for SCDNR, NMFS Highly Migratory Species (Silver Spring), and NMFS Narragansett Laboratory;
- Marine turtle capture data for the NMFS Cooperative Marine Turtle Tagging database, NOAA SEFSC, Florida FWC Endangered Species Division, Georgia DNR, and the South Carolina DNR sea turtle project;
- Marine turtle capture data (1989-2003) for the Sea Turtle Expert Working Group;
- Catch and tow data for development of Spatial Dynamic Biophysical Fishery Model;
- Cannonball jelly abundance data for correlation with Leatherback sea turtle sightings for the SCDNR- Endangered Species Office;
- Plankton tow for capture of live crab megalopae used to describe developmental stages;
- Iridescent swimming crab specimens for description of size differences among sexes;
- Penaeid shrimp specimens exhibiting signs of black gill disease for verification of the presence of the disease in shrimp stocks and for general disease analysis;
- Squid, star drum, and striped anchovy for fatty acid analysis for fish diet study;
- Atlantic cutlassfish specimens for global species verification;
- Distribution and abundance data on larval blue marlin, white marlin and sailfish;
- Sharks and rays data for an ICUN assessment;
- Catch data for angel shark, *Squatina dumeril*;
- Data for use in an assessment of biological diversity in Coastal Florida by the Nature Conservancy;
- The South Atlantic Fishery Management Council, in cooperation with the Florida Fish and Wildlife Research Institute, put SEAMAP data into an Internet Map Server (IMS) to provide access to GIS data, imagery, and documents related to EFH, EFH-HAPCs, and coral and benthic habitats across the South Atlantic Region; and
- South Atlantic Bottom mapping data was distributed to a variety of interested parties, including consulting and engineering firms, NOAA, and academic institutions;

Real-time Data

A major function of the SEAMAP Information System is the processing of catch data from the Summer Shrimp/Groundfish Survey as near-real-time data. Data were transmitted weekly to the NMFS Mississippi Laboratories 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 Mississippi Laboratories, and processed by GSMFC for weekly distribution to management agencies, fishermen, processors and researchers. SEAMAP real-time data plots were produced during the 2004 Summer Shrimp/Groundfish Survey. Seven weekly mailings were produced and distributed to approximately 220 interested individuals. These plots were also available through the SEAMAP home page. Management agencies also received comprehensive data listings showing penaeid shrimp length frequencies, sampling parameters and environmental conditions.

SEAMAP Archiving Center

Larval fish and fish egg samples sorted to the lowest taxa level possible by the Polish Sorting and Identification Center are returned to the SEAMAP Archiving Center for archiving and loan to researchers. To date in 2004, 5,247 samples were returned from the Polish Sorting and Identification Center. Data entry for sorted samples has been completed in the new SEAMAP Access data entry system. The 32,350 samples cataloged this year represent 18 orders, 126 families, 235 genera and 245 species.

The SEAMAP Archiving Center, which is managed in conjunction with Florida Fish and Wildlife Conservation Commission (FWC) in St. Petersburg, Florida, processes specimen loans, requests for associated plankton survey data, and requests for data clarification. Forty-four requests have been accommodated this year to fifteen different researchers at both the state and federal level.

SEAMAP Invertebrate Plankton Archiving Center

The SIPAC is in its twentieth year of operation. Sara LeCroy at the USM/COST/GCRL currently serves as the SIPAC curator. The overall mission of the SIPAC, to archive and manage the large collection of plankton samples acquired during SEAMAP cruises and to obtain specimens and/or data on selected invertebrate larval stages from those samples, continued during the year, but at a reduced level of activity. The SIPAC

continues to provide unsorted plankton samples and data or specimens of larval invertebrates to qualified researchers upon request.

The student assistant employed during the past year currently aids the curator with the cataloging of new samples, and the maintenance and curation of the collection. Activities during the year were limited to the maintenance and curation of the existing collection, as well as the cataloging of 287 additional bongo net samples (33 from year 2000 plankton cruises; 3 from year 2002 plankton cruises; 206 from year 2003 plankton cruises; 45 from year 2004 plankton cruises). In addition, 16 neuston samples were received and cataloged (all from year 2000 plankton cruises). The number of samples currently catalogued in the SIPAC collections is 8,889, with 326 samples currently on loan.

In an effort to keep the space required to house the SIPAC collection of unsorted plankton samples to a minimum, samples that have been in the collection for over 10 years and duplicate samples sorted and received from the Polish Sorting and Identification Center, are aliquoted to 1/4 their original volume and placed into 100 ml vials, as necessary. When possible, the remaining 3/4 aliquots are donated to educational institutions for use as teaching materials. If the remaining sample must be discarded, sample jars are cleaned and returned to NMFS-Pascagoula for reuse. To date, approximately 2,264 samples collected from 1982-1988 have been aliquoted and prepared for long-term storage. Due in part to the removal of approximately 180 samples to the NMFS, Pascagoula, in 2002, there is presently sufficient space available for additional samples to be deposited into the SIPAC archives without continuing the aliquoting of 1988-1994 SEAMAP samples.

During the next year, the SIPAC will continue to manage SEAMAP plankton collections, accession samples, and provide unsorted samples, sorted specimens and data from the collection to qualified researchers as requested. Efforts with sorted materials will concentrate on curation and analysis of current holdings and publication of distribution patterns of selected taxa by cruise.

Program Documents

The following documents were published and distributed by the SEAMAP program in FY2004:

ASMFC. 2004. SEAMAP Deep water (200 - 2,000 meters) Bottom Mapping Protocols to Capture and Transform Data into Standardized Database. 22 pp.

ASMFC. 2004. Status of the Blue Crab (*Callinectes sapidus*) on the Atlantic Coast. Special Report No.

80. Washington, D.C. 53pp.

Gulf States Marine Fisheries Commission. 2004. SEAMAP Marine Directory. Gulf States Marine Fisheries Commission, Ocean Springs. 1 p. + appendices.

Rester, J.K., C. Van Mareen, and E. Ojeda Serrano. 2003. Annual Report of the Southeast Area Monitoring and Assessment Program (SEAMAP), October 1, 2002 to September 30, 2003. Gulf States Marine Fisheries Commission, Atlantic States Marine Fisheries Commission, Puerto Rico Sea Grant College Program. 10 pp.

Rester, J.K. 2003. SEAMAP Annual Report to the Technical Coordinating Committee (October 1, 2003 to September 30, 2004). No. 117. Gulf States Marine Fisheries Commission, Ocean Springs. 16 pp. + appendices.

Rester, J.K., D. Hanisko, N. Sanders, Jr., and B. Pellegrin. 2003. SEAMAP environmental and biological atlas of the Gulf of Mexico, 2001. Gulf States Marine Fisheries Commission, No. 118, GSMFC, Ocean Springs, MS.

South Carolina Marine Resources Division. 2003. 2003 Fall SEAMAP Cruise Report. South Carolina Department of Natural Resources. Charleston, SC. 11 pp.

South Carolina Marine Resources Division. 2004. 2004 Spring SEAMAP Cruise Report. South Carolina Department of Natural Resources. Charleston, SC. 9 pp.

South Carolina Marine Resources Division. 2004. 2004 Summer SEAMAP Cruise Report. South Carolina Department of Natural Resources. Charleston, SC., 9 pp.

South Carolina Marine Resources Division. 2004. Results of Trawling Efforts in the Coastal Habitat of the South Atlantic Bight, FY2003. South Carolina Department of Natural Resources, Charleston, SC. 97 pp.

South Carolina Marine Resources Division. 2004. Deep-Water (200-2000m) Benthic Sampling by SC Department of Natural Resources, Marine Resources Division (1973 - 2002) - Summary Report of Pilot Study to Capture Datasets.

PROPOSED SEAMAP ACTIVITIES, FY2005

Annual program allocations for the SEAMAP

programs, Gulf, South Atlantic and Caribbean total approximately \$1.75 million. Proposed FY2005 activities for all participants are shown in Table 2.

Table 2.

PROPOSED SEAMAP ACTIVITIES, FY2005				
	Fall	Winter	Spring	Summer
Gulf of Mexico Activities				
Resource Surveys:				
Spring Plankton Survey			X	
Reef Fish Survey			X	X
Summer Shrimp/Groundfish Surveys				X
Louisiana Seasonal Surveys	X	X	X	X
Fall Shrimp/Groundfish Surveys	X			
Fall Plankton Survey	X			
Plankton and Environmental Data Surveys	X		X	X
Information Operations:				
2002 Biological and Environmental Atlas		X		
2005 Marine Directory			X	
FY2005 Joint Annual Report		X		
Real-time Data Summaries				X
Data Input and Request Processing	X	X	X	X
Specimen Archiving and Loan	X	X	X	X
Program Administration	X	X	X	X
Joint Planning Activities	X	X	X	X
South Atlantic Activities				
Resource Surveys:				
Shallow Water Trawl Survey	X		X	X
Pamlico Sound Survey	X			X
Winter Trawling and Fish Tagging Cruise		X		
Bottom Mapping Project	X	X	X	X
Information Operations:				
Data Input and Request Processing	X	X	X	X
2004 South Atlantic Annual Report		X		
Data Analysis and Utilization	X	X	X	X
Program Administration	X	X	X	X
Joint Planning Activities	X	X	X	X
2006-2010 Joint Operations Plan		X	X	X
Caribbean Activities				
Resource Surveys				
	X	X	X	X
Information Operations:				
Coordination with Caribbean Countries				
Research Programs		X	X	
Program Administration	X	X	X	X
Joint Planning Activities	X	X	X	X

SEAMAP-Gulf of Mexico Representatives

Jim Hanifen, Chairperson
Louisiana Department of Wildlife and Fisheries

Steve Heath, Vice Chairperson
Alabama Department of Conservation and Natural Resources

Paul Choucair
Texas Parks and Wildlife Department

Mark Leiby
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Aida Rosario
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Manuel Valdés Pizzini
Puerto Rico Sea Grant College Program

Richard Appeldoorn
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U.S. Virgin Islands Division of Fish and Wildlife

William Tobias
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