ANNUAL REPORT

OF THE SOUTHEAST AREA MONITORING AND ASSESSMENT PROGRAM (SEAMAP)

OCTOBER 1, 2010 - SEPTEMBER 30, 2011

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

Number 199 **December 2011**

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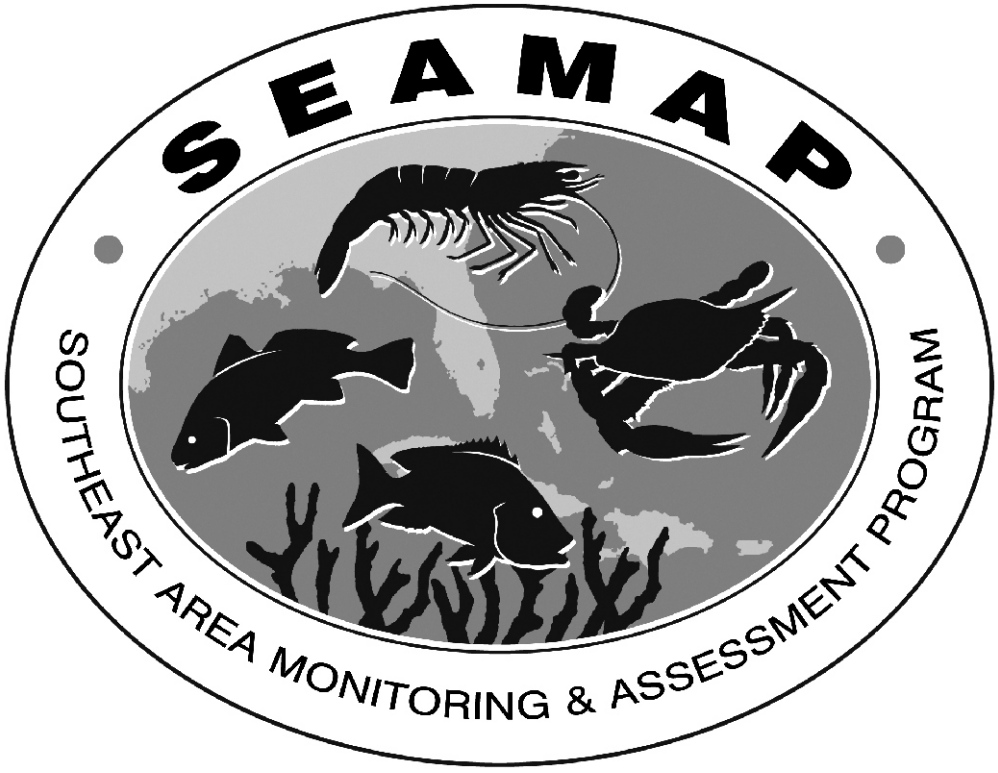

Gulf States Marine Fisheries Commission

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SEAMAP is a State/Federal program administered by the Southeast Regional Office, National Marine Fisheries Service. This project was supported in part by the National Oceanic and Atmospheric Administration, National Marine Fisheries Service, under State/Federal Project Number NA11NMF4350028.

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ANNUAL REPORT
of the
Southeast Area Monitoring and Assessment Program
October 1, 2010 - September 30, 2011

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 SEAMAP are shown in Table 1.

Federal programmatic funding for SEAMAP activities and administration was appropriated in Federal Fiscal Years 1985-2011. Funding allocations to participants for FY1985-FY2011 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 FY2011 and proposed activities for FY2012.

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, 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 Department of Planning and Natural Resources, 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-South Atlantic Data Management System (DMS), SEAMAP Archiving Center, SEAMAP Invertebrate Plankton Archiving Center (SIPAC), and the Southeast Regional Taxonomic Center (SERTC).

SEAMAP-Gulf of Mexico

Major SEAMAP-Gulf Subcommittee meetings were held in October 2010 and March 2011 in conjunction with the Annual Meeting of the GSMFC. All meetings included participation by various work group leaders, the Coordinator, the Program Monitor, and other GSMFC staff. Representatives from the Gulf program also met with the South Atlantic and Caribbean representatives in August 2011 to discuss respective program needs and priorities for FY2012.

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 2011. 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.

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/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 U.S. Fish and Wildlife Service 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

SEAMAP-South Atlantic

Two committee meetings and several conference calls were coordinated and documented in FY2011. Additional tasks included fulfilling data requests, preparation of annual program reports and State/Federal Cooperative Agreements, and distribution of publications.

The SEAMAP-South Atlantic Committee also held a meeting October 25-26, 2010 in Charleston, South Carolina to discuss the development of the 2011 budget and SEAMAP 2011-2015 Management Plan.

The SEAMAP-South Atlantic Committee held their annual meeting in conjunction with the joint annual meeting held August 8-9, 2011 in Key West, Florida. The meeting included participation by the work group leaders and coordinator. The Committee developed the SEAMAP-South Atlantic budget and research program priorities for FY2012. The Committee also reviewed progress by the Crustacean, Data Management, Bottom Mapping, Fish Habitat Characterization and Assessment Work Group, and Coastal Survey work groups and provided direction where necessary. The major discussions centered on development of the SEAMAP-South Atlantic web-accessible database and preliminary presentations of the data output and mapped via ArcGIS.

SEAMAP-Caribbean

The University of Puerto Rico Sea Grant College Program has been coordinating SEAMAP-Caribbean activities. Liaison activities include effective and efficient data collection during surveys, and management and dissemination of fishery-independent data. Five SEAMAP-Caribbean committee meetings were coordinated and documented in FY2011. The meetings took place alternately on Puerto Rico or the U.S. Virgin Islands (USVI) to review programmatic surveys carried out in Puerto Rico and the USVI concerning conch, lobster, and reef fish populations. In addition, the Caribbean-SEAMAP chairing members participated in the SEAMAP Joint Annual Meeting held in August 2011.

A one-day training workshop was organized in St. Croix for the Virgin Islands SEAMAP-Caribbean reef fish working group to support reproductive studies, and to learn gonad preservation techniques and how to visually identify stages during maturation. Techniques for otolith extraction, and age and growth studies were also included during the training workshop. Two special educational/outreach SEAMAP-Caribbean workshops were organized for the fishers from the St. Croix and St. Thomas Islands on May 25 and September 29, 2011.

As part of the coordination section efforts, two SEAMAP-Caribbean posters and educational brochures on conch, whelk, lobster, and reef fish were produced and distributed as outreach materials. The color posters entitled "SEAMAP-Caribbean in Puerto Rico" and "SEAMAP-Caribbean in the Virgin Islands," summarized the main studies performed by the Caribbean program in each region. The posters have been used during several fisheries workshops for fishermen and other targeted groups in Puerto Rico, and also has been given as handouts to the general public during coastal and shore visits.

During this reporting period, two graduate students received assistantships to continue updating the SEAMAP-Caribbean sampling protocols, and to summarize the information of all projects conducted by the Caribbean program. The main goals were to have a uniform sampling protocol, have the information accessible for dissemination, and making them available for outreach. The educational material was made available to fishermen and targeted groups during workshops and routine coastal and shore visits. The students were also contracted to rescue and restore old SEAMAP-Caribbean data stored on the PR-DNER Marine Laboratory depositories. Data stored on 3 ½ and 5 ¼ inch floppy disks and other sources were transferred to new storage devices, catalogued by themes, and configured in updated formats. In addition, a PhD fisheries student was contracted to conduct a quality control and preliminary evaluation of lobster data collected by SEAMAP-Caribbean from Puerto Rico.

A SEABOTIX-Remote Operated Vehicle (ROV) received an upgrade with the acquisition of a manual tether reel. With the use of the ROV, SEAMAP-Caribbean will expand their surveys during 2011-2013 to verify, describe, and characterize spawning aggregation sites previously identified during an extensive interview-based survey. Potential spawning sites are located around the Puerto Rico Archipelago, including the islands of Mona, Desecheo, Culebra and Vieques. Initial studies are being concentrated on the east coast of Puerto Rico to verify past known spawning aggregation sites and identify potential new aggregation areas. A total of 27 known past spawning aggregation areas and 93 present potential (non-overlapping) spawning aggregation sites were identified using fishers' traditional knowledge. Of the potential spawning aggregation sites, 71 were identified as supporting multiple species spawning throughout the year.

Two new bottom acoustic receivers' data loggers were acquired for fish spawning aggregation identification and dynamic population evaluation. A training workshop will be conducted in November 2011.

RESOURCE SURVEYS

In FY2011, collection of resource survey information continued for the thirtieth 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 Shrimp/Groundfish Survey

The Fall Shrimp/Groundfish Survey was conducted from September 22 to November 20, 2010, from off Tampa, Florida to the U.S.-Mexican border. Four hundred six stations were sampled during the survey. Vessels sampled waters out to 60 fm with trawls and plankton nets in addition to environmental sampling. The objectives of the survey were to sample the northern Gulf of Mexico to determine abundance and distribution of demersal organisms from inshore waters to 60 fm; obtain length-frequency measurements for major finfish and shrimp species to determine population size structures; collect environmental data to investigate potential relationships between abundance and distribution of organisms and environmental parameters; and collect ichthyoplankton samples to determine relative abundance and distribution of eggs and larvae of commercially and recreationally important fish species.

NMFS and Louisiana vessels collected ichthyoplankton data at 80 stations with bongo and/or neuston nets at sample sites occurring nearest to half-degree intervals of latitude/longitude. The Polish Sorting and Identification Center will sort the samples.

Once sorted, the specimens and data will be archived at the SEAMAP Archiving Center.

Winter Shrimp/Groundfish Survey

The Winter Shrimp/Groundfish Survey took place from February 8-23, 2011. Eighty-six stations were sampled by Alabama and Texas during the survey that used protocols similar to the other shrimp/groundfish surveys.

Spring Plankton Survey

The SEAMAP Spring Plankton Survey took place from March 24 to May 28, 2011. NMFS collected ichthyoplankton samples at 229 SEAMAP stations. This was the thirtieth 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. A mechanical flowmeter is mounted off-center in the mouth of each bongo net to record the volume of water filtered. Volume filtered ranges from approximately 20 to 600 m^3 but is typically 30 to 40 m^3 at the shallowest stations and 300 to 400 m^3 at the deepest stations. A single or double 2x1 m pipe frame neuston net fitted with 0.947 mm mesh netting is towed at the surface with the frame half-submerged for 10 minutes. Samples are taken upon arrival on station regardless of time of day. At each station either a bongo and/or neuston tow are made depending on the specific survey. Preservation protocol called for the right bongo samples to be preserved in 10% formalin and then transferred to fresh 95% ethanol after 36 hours. The original standard SEAMAP method of initial preservation in 10% formalin for 48 hours was changed to 36 hours in order to improve long term storage for genetic analysis. The left bongo and neuston samples are initially preserved in 95% ethanol and then transferred to fresh 95% ethanol after 24 hours. 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).

Inshore Longline Survey

This nearshore survey complements an existing long-term fisheries independent survey currently being conducted by NMFS, by targeting shark species within the shallow waters of the north central Gulf of Mexico. The objectives of the survey are to collect information on coastal shark abundances and distribution with a 1-mile longline and to collect environmental data. Mississippi sampled 57 stations in FY2011. Texas sampled 16 stations from June through September 2011, while Alabama sampled 16 stations during the same period.

Vertical Longline Survey

In FY2011, Louisiana joined Alabama in conducting vertical longline sampling for reef fish. In Alabama, a total of 12 grids are fished per survey. Two structure and two non-structure areas are randomly chosen and equally allocated across three depth strata. Vertical longline reels are randomly baited with either Atlantic mackerel or squid. Soak time is five minutes. Fish may be retained and processed for age and fecundity. All fish are sacrificed for otoliths at stations deeper than 60 m. In water depth less than 60 m, stations may be assigned as tag and release or collection sites. Fifty sets were completed in May 2011 off Alabama.

In Louisiana, the sampling frame is subdivided into 3 sampling blocks based on depth between 89 degrees longitude and 91 degrees longitude, with the water depth ranging from 60 to 360 feet. Each block is sampled quarterly in a rotation. Within these sampling blocks there is a possibility of randomly selecting 40 different corridors within the block. The actual sites are randomly selected within the corridor boundary and sampled at the chief scientist's discretion. The sites roughly consist of artificial reefs, natural bottom, and petroleum production platforms. During FY2011, Louisiana sampled 38 stations in August and September.

Reef Fish Survey

The primary purpose of this survey was to assess relative abundance and compute population estimates of reef fish found on natural reef fish habitat in the Gulf of Mexico. Video stereo cameras were used during the survey since they enabled the measurement of length frequencies. Each stereo camera contained paired black-and-white Video stereo still cameras along with a color mpeg camera in a cylindrical pressure housing. Four of these were mounted in a camera array and were positioned orthogonally with the center of the camera mounted 51 cm above the bottom of the array. A chevron fish trap, that measured 1.83 x 1.83 x 0.75 meters with 3.81-cm mesh, was used to capture fish for ageing and other life

history studies. Both the fish trap and camera array were baited with squid. The camera array was allowed to soak on the bottom for 30 minutes, and the fish trap soaked for one hour. In July 2011, Florida sampled 54 stations on the west Florida shelf. NMFS conducted reef fish sampling in March through June 2011.

Summer Shrimp/Groundfish Survey

The overall sampling strategy during the 2010 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. The Survey was conducted from June 1 to July 31, 2011. Florida, Alabama, Mississippi, Louisiana, Texas, and NMFS sampled 409 trawl stations during the survey. This was the thirtieth year for the survey. Objectives of the survey were to monitor size and distribution of penaeid shrimp during or prior to migration of brown shrimp from bays to the open Gulf; aid in evaluating the "Texas Closure" management measure of the Gulf Council's Shrimp Fishery Management Plan; and provide information on shrimp and groundfish stocks across the northern Gulf of Mexico from inshore waters to 50 fm.

Fall Plankton Survey

The Fall Plankton cruise took place from August 23 through September 29, 2011. NMFS sampled 152 stations and Mississippi sampled seven stations. The objective of this survey was 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 fish, 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. A mechanical flowmeter is mounted off-center in the mouth of each bongo net to record the volume of water filtered. Volume filtered ranges from approximately 20 to 600 m^3 but is typically 30 to 40 m^3 at the shallowest stations and 300 to 400 m^3 at the deepest stations. A single or double 2x1 m pipe frame neuston net fitted with 0.947 mm mesh netting is towed at the surface with the frame half-submerged for 10 minutes. Samples are taken upon arrival on station regardless of time of day. At each station either a bongo and/or neuston tow are made depending on the specific survey. Samples are routinely preserved in 5 to 10% formalin and later transferred after 36 hours to 95% ethanol for long-term storage. During some surveys, selected samples are preserved initially in 95% ethanol and later transferred to fresh ethanol. 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).

SEAMAP-South Atlantic

Coastal Survey

The Coastal Survey, conducted by the South Carolina Department of Natural Resources (SCDNR), continued as the long-standing core component of SEAMAP-South Atlantic survey research in FY2011. However, its budget now only obligates 32% of South Atlantic funding. The overall goal of this survey is to continue to build a long-term database to facilitate management of stocks in the South Atlantic Bight. 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 near-shore 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 (spring, summer and fall) cruises to reduce variability in the abundance estimates for priority species.

The objectives of the survey are to collect data on annual, seasonal, and latitudinal distribution, abundance, and biomass of most species encountered; collect additional size data on priority finfish, sharks, decapod crustaceans, xiphosurans, and sea turtles; collect additional data on sex and gonad development of white, pink, and brown shrimp and blue crabs; and collect otolith, gonad, and stomach samples from selected finfish species for additional life history and diet data.

Three multi-legged seasonal cruises were conducted between Cape Hatteras, North Carolina, and Cape Canaveral, Florida, during FY2011: Fall 2010; Spring 2011; and Summer 2011. A near-shore band (4.6 to 9.2 m depths) of latitudinal strata was sampled during each cruise. All samples were collected during daylight hours for comparability with previous data. The decision to focus on daylight sampling was made

in 1989 to maximize the opportunities for collecting juvenile mackerels, which had been shown to be captured more frequently during the day, based on 1987 and 1988 datasets.

The fall 2010 cruise completed the twenty-first full year of standardized sampling under a stratified random survey design. Sampling was conducted from October 5 to November 12, 2010. A total of 136 species or genera were identified in fall trawls. Spot, *Leiostomus xanthurus* was the most abundant species, constituting 23% of total abundance, followed by Atlantic croaker, *Micropogonias undulatus* (16%); white shrimp, *Litopenaeus setiferus* (9%); Atlantic bumper, *Chloroscombrus chrysurus* (7%), pinfish, *Lagodon rhomboides* (7%), and the Atlantic moonfish, *Selene setapinnis* (6%). Abundance of individuals collected (n=284,013 individuals, mean number/tow= 2,536 individuals) in fall 2010 was slightly lower than the abundance of fall 2009 (n=292,991 individuals, mean number/tow=2,616 individuals), and was the lowest fall abundance since 2006. Catches off Raleigh Bay yielded the most individuals. Cnidarians, ctenophores, echinoderms, non-cephalopod mollusks, worms, and sponges were lumped and recorded as miscellaneous invertebrate biomass. Miscellaneous invertebrate biomass (n=15,586 kg, mean biomass/tow=139 kg) increased in fall 2010 from the previous fall (n=4,607 kg, mean biomass/tow=41.4 kg). The cannonball jelly, *Stomolophus meleagris*, constituted 86% of miscellaneous invertebrate biomass (n=63,326 individuals, 13,361 kg), and occurred in 77% of tows. It was a good fall for sciaenids, with Atlantic croaker, spot, and weakfish all experiencing near record numbers for fall; mostly driven by catches in Raleigh and Onslow Bays. Catches were low for Spanish and king mackerel. White shrimp abundance increased from fall 2009, which also was an above average year. Brown and pink shrimp numbers were both low and even or trailing the previous fall.

The 2011 spring cruise for the SEAMAP Coastal Survey began on April 12 and was completed on May 12, 2011. A total of 128 species or genera were identified in spring trawls. Atlantic croaker, *Micropogonias undulatus* was the most abundant species, constituting 34% of total abundance, followed by spot, *Leiostomus xanthurus* (27%); and Atlantic bumper, *Chloroscombrus chrysurus* (14%). Abundance of individuals collected (n=438,770 individuals, mean number/tow=3,918 individuals) in spring 2011 was much higher than spring 2010, but was lower than the record abundance of spring 2009. Catches off Onslow Bay yielded the most individuals (n=124,697, mean number/tow=6,563). Miscellaneous invertebrate biomass (n=24,911 kg, mean biomass/tow=222 kg), calculated separately from abundance of individuals, increased substantially in spring 2011 from 4,886 kg in spring 2010. The cannonball jelly, *Stomolophus meleagris*, constituted 96% of miscellaneous invertebrate biomass. The vast majority of the cannonball jellies were collected off Georgia (67%) and South Carolina (28%). Atlantic croaker experienced a record spring, while spot were captured in near record numbers. Southern kingfish and weakfish, on the other hand, were found to be at medium and low abundance respectively. Only a single king mackerel was collected, marking the fifth consecutive year of low spring abundance. This was also a poor spring for Spanish mackerel, though it was a slight improvement over spring 2010. It was a moderate spring for bluefish, driven primarily by catches in Raleigh Bay. White shrimp abundance was very low, but better than the record low of spring 2010.

The summer cruise for the SEAMAP Coastal Survey began on July 19 and was completed on August 10, 2011. A total of 124 species or genera were identified in summer trawls. Atlantic croaker, *Micropogonias undulatus*, was the most abundant species, constituting 32% of total abundance; followed by Atlantic bumper, *Chloroscombrus chrysurus* (14%); and Spot, *Leiostomus xanthurus* (10%). Total abundance of individuals collected (n=369,303 individuals, mean number/tow=3,297.3 individuals) in summer 2011 was the highest in the history of the summer cruise. Catches off Florida yielded the most individuals (n=111,264 individuals, mean number/tow=5,057.5 individuals), followed closely by Onslow Bay (n=90,844 individuals, mean number/tow=4,781.3 individuals). Miscellaneous invertebrate biomass (n=9,140 kg, mean biomass/tow=81.6 kg) increased in summer 2011 from only 2,786 kg in summer 2010 and 1,864 kg in summer 2009. Miscellaneous invertebrate biomass appeared to consist primarily of jellies of the class Cubozoa, the box jelly, noted on 77% of summer tows. The cannonball jelly constituted only 6.8% of miscellaneous invertebrate biomass, down from 20.6% in summer 2010. The 2011 summer cruise saw record levels of abundance for three of the four numerically dominant sciaenids of interest. Atlantic croaker, southern kingfish, and weakfish all experienced record summer catches. While the abundance of spot did not rank as a record summer for them, it did place them as the third highest contributor to summer abundance, after croaker and Atlantic bumper. Abundance of king and Spanish mackerels dropped to record summer lows. Brown and white shrimp, however, experienced record catches. For white shrimp, this was promising, following the poor numbers seen during the spring cruise.

Data from the fall FY2010 cruises have been added to the SEAMAP-South Atlantic DMS. For additional cruise information, please see the individual cruise reports available at www.asmfc.org under the Research & Statistics section of the website.

Pamlico Sound Survey

During FY2011, the North Carolina Division of Marine Fisheries (NCDMF) continued the ongoing Pamlico Sound Survey. Cruises sampled 54 stations each in June and September of 2011. 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-South Atlantic DMS.

Fifty-six species of finfish and invertebrates were captured during the June 13-23, 2011 cruise. The top five species in order that are considered economically important include spot, Atlantic croaker, pinfish, brown shrimp and blue crab. Interestingly, weakfish was sixth even with the concern for low abundance by the ASMFC. Seventy-five species of finfish and invertebrates were captured during the September 12-23, 2011 cruise. The top five species in order that are considered economically important were spot, pinfish, Atlantic croaker, pigfish, and weakfish.

Bottom Mapping Project

In FY2011, the Florida Fish and Wildlife Research Institute (FWRI) provided technical support and infrastructure for maintaining and distributing GIS data products of bottom habitats in the South Atlantic region. Online access of SEAMAP bottom mapping products is available via the South Atlantic Habitat and Ecosystem Internet Map Server at http://ocean.floridamarine.org/efh_coral/ims/viewer.htm.

Fish Habitat Characterization and Assessment

Reef fish sampling - In the summer of 2008, SEAMAP-South Atlantic received funding to complement and expand MARMAP reef fish sampling to address high priority needs for over-fished species in the snapper-grouper complex. The primary objective was to enhance the fishery-independent reef fish data collected by MARMAP by increasing sampling in underrepresented geographical regions of the sampled area. In addition, expansion of shallow (< 20m) and deep (> 90m) site sampling through SEAMAP would result in more complete coverage, and address identified shortfalls of the MARMAP sampling regime. Beginning in the 2011 sampling season, the Reef Fish Survey activities through SEAMAP-South Atlantic included regular monitoring of reef or live bottom habitat identified in prior years in addition to surveying for new habitat that has not been included in the survey to date. In addition, the SEAMAP-South Atlantic Reef Fish Survey continued diet studies of selected snapper and grouper species. SEAMAP-South Atlantic Reef Fish Survey staff has been coordinating all efforts with MARMAP and the South East Fishery Independent Survey (SEFIS) to accomplish a comprehensive fishery-independent sampling of reef fish in the region. Prior to the 2011 sampling season, it was decided in consultation with staff from all three reef fish surveys, that each program would sample a specific geographical area. As a result, SEFIS was scheduled to sample all chevron trap stations south of roughly 32º N latitude using the *R/V Savannah*, while MARMAP and SEAMAP-South Atlantic were scheduled to sample all chevron trap stations north of roughly 32º N latitude and all short bottom longline stations. All sampling has been well coordinated between programs to assure data quality and continuity. In addition, exploration of new reef habitat to be included in the sampling stations database continued by both SEAMAP-South Atlantic and SEFIS.

In this reporting period, sampling was conducted from May 2 - October 27, 2011 using the *R/V Palmetto* and a total of 36 sea days were realized for the SEAMAP-South Atlantic Reef Fish Survey. Approximately 14 of these days were used for surveying new bottom and capturing specimens for diet studies. The remaining 22 were used for regular monitoring. This number of realized sea days was as scheduled, despite the loss of three sampling weeks in April, when the *R/V Palmetto* was not available because of vessel maintenance issues. However, these lost sea days were made up by late August as a result of relatively good weather during that period. Inclement weather in September limited adding additional sea days. The loss of sampling days in April serves, once again, as a reminder that the age of the *R/V Palmetto* may affect the sampling efforts and efficiency of the fishery-independent monitoring of reef fish species in the region. However, the vessel crew made significant progress in updating the vessel during the 2011 yard period, which has improved sampling efficiency.

SEAMAP-South Atlantic researchers identified additional natural reef habitat, sampled Marine Protected Areas (MPAs), collected samples for diet analysis (see section below), and surveyed potential new sampling areas for red snapper. Surveys for new live bottom were conducted using bathymetry, reconnaissance trap deployments (with cameras on the traps), short bottom longline deployments, and hook and line fishing efforts. Sampling with chevron traps and short bottom longlines was conducted following standard procedures during daylight hours, while hook and line, bathymetric, and video collections were made during both day- and night-time hours. Surveys to identify live bottom habitat that can be added to the MARMAP database were done using a variety of sources and methods such as traps, hook and line,

bathymetry, and underwater video. The 2011 sampling season was the first in which all traps deployed by SEAMAP-South Atlantic, MARMAP, and SEFIS were equipped with an underwater video camera. During each deployment, a 60-90 minute video was recorded detailing habitat and fish populations near each trap. As per agreement with SEFIS, examination and analysis of these videos is performed by SEFIS staff in Beaufort, NC. In addition, traps deployed by the MARMAP/SEAMAP-South Atlantic Reef Fish Survey continued to have a still camera attached that takes a picture every 5 minutes. Images captured by these cameras have been examined and analyzed by MARMAP/SEAMAP-South Atlantic Reef Fish Survey staff.

Following any collections, hydrographic and meteorological data (air and water temperature, salinity, wind speed and direction, wave height, and barometric pressure) were recorded. Abundance, biomass, and length-frequency data of the collected fish were recorded on a computer utilizing electronic measuring boards, and specimens identified for life history work-up were kept on ice and processed later. Otoliths, gonad samples, stomach contents, and DNA samples were taken and stored for later processing. MARMAP and SEAMAP-South Atlantic Reef Fish Survey staff will process all life history samples collected by the three projects (MARMAP, SEAMAP-South Atlantic, and SEFIS). The cruise information and samples are currently being processed, analyzed, and entered in the Reef Fish Database system and will subsequently be available for entry in the SEAMAP-South Atlantic database.

Preliminary analysis of the data indicates that during the 2011 sampling season, a total of 20,006 individual fish, representing 74 species, were captured by the MARMAP and SEAMAP-South Atlantic Reef Fish Survey. Almost 20% of the captured specimens (3,792) were retained for life history work-up. The most abundant species in the catches were black sea bass (8,623), *Stenotomus* spp. (2,972), tomtate (2,725), vermilion snapper (1,435), bank sea bass (1,421), red porgy (935), gray triggerfish (429), sand perch (376), snowy grouper (213), golden tilefish (141), spottail pinfish (129), white grunt (103), and scamp (79). All other species were collected in numbers < 60.

Also during the reporting period, SEAMAP-South Atlantic Reef Fish staff provided data and participated in the SEDAR 25 standard stock assessment of black sea bass and golden tilefish. The SEDAR review of this stock assessment was recently completed and the stock assessment will be reviewed by the SSC in November, and presented to the SAFMC in December of 2011.

Juvenile gag ingress - In this reporting period, collaborations with partners at GA-DNR and NC-DMF continued. Between March 12 and June 20, 2011, fifteen sites were sampled to monitor ingress of juveniles of winter spawning commercially and recreationally important fish species, in particular gag (*Mycteroperca microlepis*), in the vicinity of Swansboro, NC; Wilmington, NC; Georgetown, SC; Charleston, SC; Beaufort, SC; Savannah, GA; and Brunswick, GA. The study sites were selected for the high salinity with oyster shell habitat with an associated benthic community consisting of sponge and soft coral (*Leptogorgia* spp.). All of these sites were sampled from 1995-1997 with the exception of the Wilmington and Savannah sites, which were added during 2009, and Brunswick and Beaufort, NC, which were added during 2010. Due to some physical factors, the two sites in Beaufort, NC (that were sampled in 1997 and 2010) were relocated in 2011 to Swansboro, NC. This site has a more natural inlet that is only dredged and not maintained with a rock jetty as the Beaufort, NC sites. As a result, current sampling takes place in a more natural location that better reflects the smaller scale inlets that are scattered along the coastline. Additional sites in Georgetown, SC were established this year in an effort to gather specimens for a project being conducted by Katherine Allan, a PhD candidate. Ingress monitoring using Witham collectors was established in 1995 and continued until 1998. Monitoring resumed in 2005 until the present. At each site, four Witham collectors were deployed approximately 30 meters apart and sampled two to three times a week from mid-March to mid-June (when winter spawned reef fish no longer recruit to this gear type). Air and water temperature, salinity, wind velocity and direction, and tide stage were measured and recorded in each creek. Salinity and water temperature were measured using a handheld YSI (model 85). Bycatch species were identified to the lowest practical taxonomic level and recorded. Gag were brought back to the lab to confirm identification due to the possibility of confusion with black grouper (*Mycteroperca bonaci*). At all stations, salinity ranged from 25 to 38 with a mean of 32. Surface salinity remained consistent throughout the ingress season. Surface water temperatures expectedly ranged from 10º C to 31º C with a mean of 23º C. Catches in the Witham collectors were dominated by grass shrimp, *Palaemonetes* sp., and xanthid crabs. Several species of juvenile fish were caught including pinfish, pigfish, toadfish, mummichogs, and gobies. Gag were the 34th most abundant taxa, less abundant than in previous years (10^{th} and 15^{th} most abundant taxa in 2010 and 2009, respectively).

During 2011, a total of 1,708 collections (examination and identification of collected organisms of one Witham collector on a given date) were made. Seven gag were collected: 1 from the Swansboro, NC sites, 4

from the Wilmington sites, 1 from the Georgetown, SC sites and 1 from the Brunswick, GA sites. This is the first year that a gag has been captured at a Georgia site. Note that in 2010, a total of 2,366 collections were made while 144 gag were collected: 1 from the Beaufort, NC sites; 13 from the Wilmington sites; 117 from the Charleston sites; 10 from the Georgetown, SC sites and three from the Beaufort, SC sites. During 2009, a total of 1,577 collections were made and 42 gag were collected: 38 from the Wilmington, NC sites and four from the Charleston, SC sites.

Since gag become fully recruited to commercial fishing gear at age four or five, the data collected in the 1990's will be re-examined to determine if there is a link between juvenile abundance and the number of fish landed commercially. Then it can be established if the recruitment index has any predictive value.

Survival of gag during early life stages, and thus the variability in annual recruitment for gag and other fish is determined by many biotic and abiotic factors. The more important factors are considered to be food for first feeding larvae, predation, suitable environmental conditions for development (i.e. water temperature), and transport towards favorable nursery areas.

In an attempt to explain the high catch rates in NC during 2009 (38 gag) and the high catch rates at the Charleston sites during 2010 (117 gag), a preliminary examination of sea surface temperatures around and near shore of the Charleston Bump during these sampling seasons revealed warm water currents and eddies being deflected off the Charleston Bump and into the NC/SC border (just south of Wilmington) (Ocean Remote Sensing Group, Johns Hopkins University Applied Physics Laboratory, http://fermi.jhuapl.edu/index.html). These conditions could have influenced success of recruitment of post-larval gag to estuarine habitats in that region. More detailed analysis of the correlation of the sea surface temperature with recruitment may lead to better predictions of year class strength. Currently, logistical preparations are being made for the 2012 estuarine ingress sampling period. Under the current funding levels, no additional sites will be added to 2012 sampling season.

Diet studies – During the reporting period, samples were taken for diet studies targeting gray triggerfish, *Balistes capriscus*; red porgy, *Pagrus pagrus*; and vermilion snapper, *Rhomboplites aurorubens*. Fish were collected using hook and line fishing (cigar minnows and squid used as bait) aboard the *RV Palmetto* and *RV Savannah*. Fish from baited chevron traps were not included because fish caught with the traps often gorge themselves on bait, compromising processing and analysis of the stomach samples. Ten specimens of each species were targeted in each of 24 zones. Each zone consists of one of three depth zones (0-20m, 21-50m, and > 50m) and one of eight 1-degree latitudinal zones (from 27º N through 34º N). This means 240 specimens are needed per species to reach the collection goal. The entire digestive tract was collected from each specimen from the mouth to the anus. Contents of individual guts were sorted by taxa, counted, and weighed. Prey items were identified to the lowest possible taxon.

To quantify feeding habits, the relative contribution of food items to the total diet was determined using percentage frequency of occurrence (%F): %F = number of stomachs with prey taxon/number of stomachs with food x 100.

This season, 130 specimens (29 gray triggerfish, 36 red porgy, and 65 vermilion snapper) were collected. Including the 2009 and 2010 samples, a total of 303 specimens were collected (92 gray triggerfish, 146 red porgy, and 65 vermillion snapper). Although sampling occurred in the shallowest depth zone (0-20 m) no samples were collected. It is possible these species do not frequently occur in this depth zone. Eighty guts (collected in 2009) have been fully examined (prey identified) to date. The stomach contents of 18 gray triggerfish have been identified. Preliminary results reveal that gray triggerfish prey consists of molluscs and crustaceans, but they consumed at least 34 different prey taxa including barnacles, polychaetes, amphipods, crabs, echinoderms, and seahorses. A total of 107 prey taxa from 62 red porgy guts have been identified. Crustaceans, particularly crabs, were the most frequently consumed prey. Mollusks, bryozoans, and echinoderms also were eaten in high frequencies. Polychaetes, fish, and tunicates were consumed less regularly.

Starting in September 2011, staff aboard the *RV Palmetto* began collecting guts from all grouper species caught on hook and line. Additional grouper samples have been collected from commercial fishermen fishing bandit reels and from commercial divers using spear guns. To date 20 grouper guts have been collected. No identifiable prey have been found in the intestine of grouper collected thus far, therefore, only the stomach portion of the digestive tract will be collected in the future. Sampling for gray triggerfish and red porgy guts is complete. In the 2012 sampling season, depth and latitude gaps will be filled for vermilion snapper and staff will continue to collect grouper stomachs.

South Carolina – During the 2010/2011 sampling season, 334 longline sets were made in four strata along the coast of South Carolina. The season was broken down into three periods, defined to maximize catches of red drum (August 1 – September 15, September 16 - October 31, November 1 – December

15). In this report, for the 2010 sample season only the later part of time period II and the whole of time period III are considered (October through December); in 2011 only the first time period is included in this summary (August through mid-September). Each time period and stratum were sampled equally. During sampling, 378 red drum were caught. Winyah Bay yielded the highest numbers of red drum (157) followed by Charleston Harbor (98), Port Royal Sound (71) and Saint Helena Sound (52). Two hundred and forty-four red drum were tagged and released, twenty were recaptured, eight were given to the Mariculture project at SCDNR for brood stock, and ninety-nine were sacrificed for age/growth and reproductive investigations. Fin clips were taken from all individuals for genetic investigations (determination of stocked fish, recaptured fish that have lost external and PIT tags, telomere research). Stomach samples were also collected for diet determination. Some red drum were also surveyed for parasite fauna. Most shark species are tagged and released, with the exception of Atlantic sharpnose, smooth dogfish, and large nurse sharks. During this reporting period, 261 sharks were tagged and released.

North Carolina - For sampling year 2011, North Carolina conducted sampling in Pamlico Sound from July through October. Sampling occurred as part of a standardized, stratified-random sample design that has occurred in North Carolina since 2007. This design divides a large portion of the Pamlico Sound estuary into 12 similarly sized regions. From July through October, samples were taken from randomly selected grids (1 square nautical mile) within each region during each of three four-week intervals. All samples were conducted with a 1,500 meter mainline, with gangions placed at 15 meter intervals (100 hooks/set) during nighttime hours starting at sunset. On average, four sets were made per night. Two samples were collected from each randomly chosen sample site.

Random sampling occurred in July (n=8 sets), August (n=28 sets), September (n=34 sets), and October (n=2 sets) and yielded 405 red drum (4, 240, 161 and 0 respectively). Red drum captured ranged in size from 616 to 1340 mm fork length. Seventy-three red drum were sacrificed to determine age composition and for other biological investigations. The remaining fish were tagged and released to track migration, stock ID and growth rates. Sampling during this period resulted in five recaptures of red drum.

Georgia – For the current reporting period, sampling occurred off southeast Georgia and northeast Florida during the fall months (October – December) of 2010 and the spring and summer months (May – September) of 2011. A total of 275 longline sets were deployed over the two seasons with 100 sets made during fall 2010 and 175 sets during the spring and summer of 2011. A total of 65 adult red drum were captured; 17 during fall 2010, 5 during May 2011 and the remaining 43 were caught after August 15, 2011. Red drum ranged in size from 767 to 1050 mm center length. All but 5 red drum were tagged with PIT tags prior to release. Two Kemp's Ridley and 1 loggerhead sea turtle were caught during the study period. All turtles were released in excellent condition with all hooks removed.

SEAMAP-Caribbean

Queen Conch Survey - Virgin Islands

The USVI Division of Fish and Wildlife, Department of Planning and Natural Resources completed all underwater conch surveys for the U.S. Virgin Islands. Approximately twenty trips for the territory were completed from November 2008 to October 2010. A total of 22 original survey sites and 2 new survey sites have been completed on St. Thomas/St. John from 2008 to 2009. On St. Croix a total of 24 original sites and 8 new sites were completed from 2009 to 2010. A total of 1,013 queen conch were observed of which greater than 50% were juveniles. Over 80% of the survey sites in the U.S. Virgin Islands contained conch. Overall average conch density for the territory was 231.4 (conch/ha). Mean conch density was higher around St. Thomas (583.4 conch/ha) compared to St. Croix (158.5 conch/ha) and St. John (73.7 conch/ha). These high densities are partly due to the inclusion of new survey sites on St. Thomas and St. Croix. Overall average density for the territory without the new sites was 124.1 conch/ha. St. Thomas and St. Croix had 156.9 conch/ha and 135.6 conch/ha, respectively.

The highest conch abundances and densities occurred in seagrass habitat. Seagrass was the preferred habitat for conch across all three islands; however, conch density in seagrass beds on St. Thomas was three times that of St. Croix and four times that of St. John. While St. Thomas and St. John had its highest juvenile densities (316.8 per ha and 150.6 per ha) in seagrass, St. Croix had its highest juvenile density in sand (261.5 per ha). Adult conch densities were highest in seagrass for all island groups. Overall, queen conch density by depth for transects surveyed in the U.S. Virgin Islands suggested high-density values at all depth strata, except the 19-24 m range. Analysis of conch density by depth and stage for the U.S. Virgin Islands combined, indicated that juvenile conch density declines with depth, but adult density increased with depth.

Maturity classifications indicated greater than 50% of the queen conch encountered on scooter transects were juveniles for all three island groups. St. Croix had the highest percent frequency (22%) of sexually mature adults, followed by St. John (16%) and St. Thomas

(14%). St. John had the greatest percentage of adult conchs that were old and very old.

Results of this survey were compared with previous studies for the U.S. Virgin Islands. For all island groups, estimated densities for common transects from previous studies were higher in 2008-2010 than all previous survey years. Statistical analyses for the district of St. Thomas/St. John indicate that there was a significant increase in conch density across survey years. For the district of St. Croix, however, there was no statistical increase in conch density between survey years.

Parrotfish Survey - Virgin Islands

A study was initiated in May 2009 to determine the reproductive cycle of stoplight (*Sparisoma viride*), redtail (*Sparisoma chrysopterum*) and redfin (*Sparisoma rubripinne*) parrotfish. Because redfin parrotfish can be difficult to obtain on St. Thomas, St. Thomas staff was also attempting to purchase red band parrotfish for the study. Samples of 25 fish of each of the three species are obtained monthly for biostatistical measurements, sex and gonad condition. The stages of gonad maturation, as recorded by visual observation of the gonads, was recorded as unknown (Stage 1), resting (Stage 2), developing (Stage 3), ripe (Stage 4) or spent (Stage 5), based on visual inspection. Since 2009, on St. Croix, a total of twelve samples have been obtained on St. Croix resulting in 297 stoplight, and 300 redtail parrotfish and 232 redfin parrotfish. In St. Thomas, 175 stoplight, 105 redtail parrotfish and 27 redfin have been sampled. The next cycle of this work began in this fiscal year.

Yellowtail Snapper and Reef fish Surveys - Virgin Islands

Due to lack of progress on these studies, USVI Division of Fish and Wildlife received a one year extension on both the yellowtail and reef fish hook and line surveys.

Sampling for the yellowtail snapper survey includes fishing at three sites classified by commercial fishers. These site classifications are traditional commercial yellowtail fishing grounds, sites where yellowtail production is unknown, and sites identified as non-yellowtail producing. This study looks at fishing during the four season of the year to determine seasonal variations. On St. Thomas, 28 combined yellowtail trips and reef fish trips have been completed. Thus far, on St. Croix, 4 yellowtail trips and 2 reef fish trips have been completed. The reef fish and yellowtail snapper sampling should end by March 2012.

Administrative/Staff Issues - Virgin Islands

There have been several changes to the administrative staff of USVI Division of Fish and Wildlife. Ms. Beulah Dalmida-Smith left the position of Director of the Division of Fish and Wildlife in December 2010. Dr. Jed Brown was appointed as Acting Director in addition to his other titles of Assistant Director and Chief of Fisheries. Dr. Brown left the Division of Fish and Wildlife in late September 2011. Roy Pemberton Jr. was appointed as Director of the Division of Fish and Wildlife in September 2011 and is based on St Thomas, but travels regularly to the office on St Croix. One Fisheries Biologist III retired on St. Croix, two Environmental Specialists retired from St. Croix and one Environmental Specialist III was transferred from St. Thomas. All of this activity happened in December 2010. USVI Division of Fish and Wildlife has hired two Fishery Biologists II, one for St. Thomas and one for St. Croix. In addition, USVI Division of Fish and Wildlife is in the process of hiring a replacement Fishery Biologist, and Environmental Specialists on St. Croix.

Training - Virgin Islands

Six fisheries staff from St. Thomas and St. Croix attended training to learn how to better stage gonads. This training was provided by Aida Rosario and Edgardo Ojeda. The purpose of this one-day training was to learn the techniques of gonads preservation for reproduction studies, and the identification of maturity stage using visual examination. Techniques on otolith extraction for age and growth studies were also included during the training workshop.

Reef Fish Survey (2010-11) - Puerto Rico

The Reef Fish Survey was conducted on the West coast, in 30 quadrants chosen randomly; each quadrant was sampled two times for a total of 60 trips. Data from each trip was recorded. The Reef Fish Survey on the east coast was conducted from October 2009 until March 2011. A total of 689 fish were collected during the sampling period. Each fish was measured and weighted. The gonads were photographed and removed for histological analysis.

Catch composition was dominated by groupers, followed by snappers on both coasts. Coneys were the most captured species on both coasts, followed by red hinds. On the east coast, coneys represented 51.7% of the catch, and 20.6% for the west coast. Red hinds, on the other hand, represented 14.5% of the west coast catches and only 11.9% for the east coast. Graysby accounted for 8.4% and 4.4% of the west and east coasts catches' respectively. No big grouper were caught in these surveys.

Snappers were represented by five species. For the west coast, the catch was dominated by lane snappers (6.3%), while the vermillion snappers dominated the east coast catch representing 7% of the total catch. Other species that represented some significant part of the catch in terms of number for both coasts were the squirrelfish and the jacks. Two species of squirrelfish represented 11.8% and 5.2% of total catch for the west and east coast respectively. The blue runner represented 8% and 4.5% of total finfish catch for the west and east coast respectively.

Yellowtail Snapper Survey - Puerto Rico

Sampling started in May 2010 off the west coast. A total of 60 trips were made by March 2011. Sampling included fishing at traditional commercial yellowtail fishing grounds and at other places identified by fishers as not good yellowtail fishing sites.

A total of 747 fish weighing 3,806 kg were collected in the west coast yellowtail survey, with 25 species represented. Of these 25 species, six were snappers (red, dog, schoolmaster, gray, lane, and yellowtail). Other species included three groupers (4.9%), two species of squirrelfish (12.8%), haemulids (6.3%), jacks (3%) and several species of sharks. A total of 413 yellowtails were captured representing 55.29% of the total catch by number of individuals sampled. The second most abundant species of sampled snappers corresponded to the schoolmaster representing 6.43% of the total catch. East coast sampling will be starting in the near future.

Lane Snapper Survey - Puerto Rico

The objective of this survey is to collect data on the lane snapper fisheries needed for a meaningful assessment of their population. A fisher survey will be conducted among identified fishers that target this species to collect information on traditional fishing grounds. With this information, the stations to be sampled were selected. The contract to undertake this survey is in the process to be signed at DNER.

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

While the long running Cooperative Winter Tagging Cruise was not able to conduct a full research vessel, trawl-based cruise in 2011 due to lack of funding, it was able to conduct striped bass tagging operations with the help of its state and federal partners. Historically funded by NOAA Fisheries (through use of one of its survey vessels, or provision of charter funds) and supported with in-kind contributions from the U.S. Fish and Wildlife (USFWS), the Atlantic States Marine Fisheries Commission (ASMFC), Maryland DNR-Fisheries Service, NC Division of Marine Fisheries (NC DMF) and numerous additional state fishery agencies and universities, the Tagging Cruise provides important data for the striped bass stock assessment, as well as other ASMFC species. In order to keep the striped bass time series intact, all the partners worked together, with the assistance of additional partners to implement a cruise in 2011. Thanks to NCDMF, USFWS was able to charter a sportfishing vessel, the *F/V Midnight Sun,* for one day to conduct tagging operations using hook and line. A total of 108 striped bass were tagged on the first day alone. An additional trip was scheduled for March 7, but was aborted due to adverse weather.

Tagging Cruise partners are working to secure future long-term funding to continue conducting the cruise using a federal research vessel and the traditional trawl gear. Use of this gear has proven not only efficient, but also enables the collection of data on multiple Commission-managed species, including Atlantic sturgeon, spiny dogfish weakfish, summer flounder and alosine species, such as shad and river herring. Collection of the fish via hook and line provides data only for striped bass.

INFORMATION SERVICES

Information from the SEAMAP activities is provided to user groups through the program administration and complementary systems: the SEAMAP Information System, SEAMAP-South Atlantic Data Management System, SEAMAP Archiving Center, SIPAC, and SERTC. 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-South Atlantic Data Management System, SEAMAP Archiving Center, SIPAC, and SERTC; 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-Gulf surveys are included in the SEAMAP Information System, managed by GSMFC and NMFS-SEFSC. 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-Gulf surveys

during 1982-2010 have been entered into the system and data from 2011 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 requesters.

Requested SEAMAP data were used for a multitude of purposes in 2011:

- 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 the impact of the BP Deepwater Horizon oil spill on the Gulf of Mexico ecosystem;
- 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;
- Assessing the potential impact of liquefied natural gas facilities on marine fish stocks;
- Assessing the potential impact of the Deepwater Horizon oil spill on marine fish stocks;
- Compiling the 2011 SEAMAP Environmental and Biological Atlas; and
- Comparing catches of shrimp and groundfish captured by 40-ft versus 20-ft trawl nets.

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 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, edited, and processed by GSMFC for weekly distribution to management agencies, fishermen, processors and researchers. SEAMAP real-time data plots were produced during the 2011 Summer Shrimp/Groundfish Survey. Six weekly mailings were produced and distributed to approximately 125 interested individuals. These plots were also available through the SEAMAP web page.

SEAMAP-South Atlantic Data Management System

The SEAMAP-South Atlantic Data Management Workgroup has developed a data scheme and data management guidance plan during this reporting period. The database management responsibilities for SEAMAP-South Atlantic shifted from NMFS Pascagoula, MS to a relational database housed at SCDNR in Charleston. The database will include data from the SEAMAP-South Atlantic Coastal Survey, Pamlico Sound Survey, Red Drum Longline Surveys (NC, SC, and GA), the SEAMAP-South Atlantic Reef Fish Survey, and the Cooperative Winter Tagging Cruise. The completed ACCESS database has been populated with data from the Coastal Survey, the Pamlico Sound Survey, and the Red Drum Longline Surveys. SEAMAP-South Atlantic data from the SEAMAP Reef Fish Survey will easily be moved into the system as MARMAP's database was used as a basis for developing the SEAMAP-South Atlantic database. The ACCESS database is being migrated to Oracle and queries developed for a web-accessible database. All the data will be converted from Microsoft ACCESS to Oracle by South Carolina Department of Natural Resources, Information Technology Services (SC DNR), who will also be hosting the data. SC DNR will create an interface for accessing the data via the web for SEDAR and other partners, and will ultimately interact with the IMS database and be accessible in ArcServer. A website was created by the South Carolina Department of Natural Resources, Information Technology Services for the SEAMAP-South Atlantic Data Management System. The website provides information about the data available and the projects involved in the SEAMAP-South Atlantic Data Management System. The website is currently undergoing revision, and protocols for data access are being developed. A demonstration version of the web accessible Oracle database and queries were created and presented at the 2011 Joint Annual SEAMAP Meeting.

Southeast Regional Taxonomic Center (SERTC)

Substantial progress was made on SERTC objectives in FY2011. SERTC staff added approximately 150 specimens to the collection from recent Coastal Survey cruises. All of the required paperwork for accession into the collection has been done, but SERTC is waiting for the updated Specify software to put these data into the computerized system. The SERTC web page was also updated and a new photographic gallery of finfish and invertebrates obtained from recent cruises was added. About 55 images were added to this gallery. Finally, fin clips for use in genetic differentiation of species were taken from all new species collected during recent cruises. This collection will be important for genetic differentiation of the species collected by the Coastal Survey. The taxonomic library was overhauled this year to move from ProCite to the more popular and widely used Endnote and an additional 150 bibliographic entries were added to the database on references and literature.

SERTC staff continued to provide significant information, training, and expertise to assist the Coastal Survey and the Reef Fish Survey with the examination and analysis of stomach content. The SERTC facilities continue to serve as a sample processing facility for collections generated by SEAMAP components. SERTC staff also provided taxonomic expertise and literature regarding Portunid crabs to Stony Brook University in New York. Staff continue to promote and distribute SERTC literature and are investigating ways to reprint some of the posters that are no longer available.

Program Documents

The following documents were published and distributed by the SEAMAP program in FY2011:

Gulf States Marine Fisheries Commission. 2011. SEAMAP Marine Directory. Gulf States Marine Fisheries Commission, Ocean Springs. 1 p. + appendices.

Hendrix, C. and J. Boylan. 2011. SEAMAP-SA: Results of trawling efforts in the coastal habitat of the South Atlantic Bight, 2010. ASMFC, Washington, DC.

Hendrix, C. and J. Boylan. 2011. SEAMAP-SA: Results of trawling efforts in the coastal habitat of the South Atlantic Bight, 2009. ASMFC, Washington, DC.

Reichert, M.J.M., J.A. Stephen, D.M. Wyanski, D.J. Machowski, and J.C. Ballenger. 2011. Summary of MARMAP reef fish data, Southeast United States, 1983-2010. MARMAP/SA-SEAMAP Reef Fish Survey Report, September 2011. 85 pp.

Rester, J.K., M. Paine, and E. Ojeda Serrano. 2010. Annual Report of the Southeast Area Monitoring and Assessment Program (SEAMAP), October 1, 2009 to September 30, 2010. Gulf States Marine Fisheries Commission, Atlantic States Marine Fisheries Commission, Puerto Rico Sea Grant College Program. No. 189, GSMFC, Ocean Springs, MS. 21pp.

Rester, J.K. 2011. SEAMAP Environmental and Biological Atlas of the Gulf of Mexico, 2008. Gulf States Marine Fisheries Commission, No. 191, GSMFC, Ocean Springs, MS.

Stephen, J.A., P.J. Harris, and M.J.M. Reichert. 2011. Comparison of life history parameters for landed and discarded fish captured off the southeastern United States. Fishery Bulletin, 109:292-304.

Ziskin, G. L., P. J. Harris, D.M. Wyanski, and M.J.M. Reichert. 2011. Indications of continued overexploitation of speckled hind along the Atlantic coast of the Southeastern United States. Transactions of the American Fisheries Society 140: 384-398.

PROPOSED SEAMAP ACTIVITIES, FY2012

Last year, total program allocations for all three SEAMAP components, Gulf, South Atlantic and Caribbean, was approximately $5.09 million. At the August 2011 meeting, the SEAMAP components based their allocations for 2011 on level funding of $5.09 million. Proposed FY2012 activities for all participants are shown in Table 2.

Table 2.

PROPOSED SEAMAP ACTIVITIES, FY2012

	Fall	Winter	Spring	Summer
Gulf of Mexico Activities				
Resource Surveys:				
Spring Plankton Survey			X	
Reef Fish Survey			X	X
Summer Shrimp/Groundfish Surveys				X
Fall Shrimp/Groundfish Surveys	X			
Fall Plankton Survey	X			
Winter Plankton Survey		X		
Plankton and Environmental Data Surveys			X	X
Inshore Longline Surveys	X		X	X
Vertical Longline Survey			X	X
Information Operations:				
Biological and Environmental Atlas		X		
2012 Marine Directory			X	
FY2012 Joint Annual Report		X		
Real-time Data Summaries		X		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:				
Coastal Survey	X		X	X
Pamlico Sound Survey	X			X
Winter Trawling and Fish Tagging Cruise		X		
Bottom Mapping Project	X	X	X	X
Fish Habitat Characterization and Assessment	X	X	X	X
Adult Red Drum Longline Survey	X		X	X
Information Operations:				
Data Input and Request Processing	X	X	X	X
Data Analysis and Utilization	X	X	X	X
Program Administration	X	X	X	X
Joint Planning Activities	X	X	X	X
Caribbean Activities				
Resource Surveys:				
Conch Survey (Puerto Rico)	X	X	X	X
Spiny Lobster Survey (Puerto Rico)	X	X	X	X
Parrotfish Survey (Virgin Islands)	X	X	X	X
Information Operations:				
Coordination with Caribbean Countries				
Preliminary Data Analysis and Quality Control	X	X	X	X
Research Programs	X	X	X	X
Program Administration				
Joint Planning Activities	X	X	X	X

SEAMAP-Gulf of Mexico Representatives

Read Hendon, Chairperson
Mississippi Department of Marine Resources
USM/Gulf Coast Research Laboratory

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John Mareska
Alabama Department of Conservation
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