



# ANNUAL REPORT

## OF THE SOUTHEAST AREA MONITORING AND ASSESSMENT PROGRAM (SEAMAP)

OCTOBER 1, 2015 - SEPTEMBER 30, 2016

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

# **JOINT ANNUAL REPORT**

## **of the**

### **Southeast Area Monitoring and Assessment Program**

#### **October 1, 2015 - September 30, 2016**

#### **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 1985-2016. Funding allocations to participants for FY1985-FY2016 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 FY2016 and proposed activities for FY2017.

#### **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 November 2015 and March 2016 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 July 2016 to discuss respective program needs and priorities for FY2017.

**TABLE 1.**

<b>SEAMAP ORGANIZATION</b>		
<b>Program</b>	<b>Administering Organization</b>	<b>Participating Agencies</b>
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

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 2016. 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**

Two committee meetings and several conference calls were held in FY2016. 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 held their annual meeting July 25-26th, 2016, prior to the joint annual meeting. The meeting included participation by the work group leaders and coordinator. The Committee developed the SEAMAP-South Atlantic (SEAMAP-SA) budget and research program priorities for FY2017. The Committee also reviewed progress by the Crustacean, Data Management, Bottom Mapping, Coastal Survey, and Fish Habitat Characterization and Assessment Work Groups and provided direction where necessary. The major discussions centered on the development of the 2016-2020 Management Plan and budget constraints moving forward.

## **SEAMAP-Caribbean**

During FY2016, liaison activities included data collection, management, and dissemination of fishery-independent data. Five SEAMAP-Caribbean (SEAMAP-C) committee meetings were coordinated alternately in Puerto Rico and the US Virgin Islands (USVI). The purpose of these meetings was to review programmatic surveys carried out in Puerto Rico and the USVI concerning conch, lobster, reef fish, and deepwater snapper populations. The five committee meetings were held on the following dates: December 18, 2015 in Puerto Rico, March 11, 2016 in St. Thomas, June 10, 2016 in Puerto Rico, July 26, 2016 at St. Simons Island, Georgia and on August 19, 2016 in St. Thomas. In addition, the SEAMAP-C committee members participated in the SEAMAP joint annual meeting held on July 27, 2016 in Georgia.

As part of the coordination section efforts, two SEAMAP-C posters and educational brochures on conch, whelk, lobster, and reef fish were distributed as outreach materials. The color posters entitled “SEAMAP-Caribbean in Puerto Rico” and “SEAMAP-Caribbean in the Virgin Islands”, summarized the main studies of SEAMAP in each region. These posters have been used during several fisheries workshops for fishermen and other targeted groups in Puerto Rico. They also have been distributed to the general public during visits to coastal communities. The outreach material has been updated to include the most recent results obtained from the surveys, and was recently reprinted.

During this reporting period, a PhD graduate student was contracted to continue updating the Caribbean sampling protocols and to summarize the information from all projects conducted by the Caribbean program. All SEAMAP-C study reports, including the Caribbean sampling protocols and related information has been made available for public dissemination at the blog site <http://prsgfisheriesoutreach.wordpress.com>. The main goal was to have a clear and uniform sampling protocol and to make the information accessible for dissemination and outreach.

## **RESOURCE SURVEYS**

In FY2016, collection of resource survey information continued for the thirty-fifth consecutive year. Surveys by each program component reflect distinct regional needs and priorities; however, survey operations in one geographic area often provide information useful to researchers in all three regions. Because of the diverse scope and target species involved in the SEAMAP 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 October 8 to November 20, 2015 from off southwest Florida to the U.S.-Mexican border. One hundred seventy-four trawl stations were sampled during the survey. Vessels sampled waters out to 60 fm with trawls in addition to environmental sampling. While not funded by SEAMAP, Florida did participate in the Fall Shrimp/Groundfish Survey and collected data at one hundred forty-two trawl stations. 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.

### **Spring Plankton Survey**

The SEAMAP Spring Plankton Survey was conducted by NOAA Fisheries from April 29 through May 31, 2016. One hundred nineteen stations were sampled during the survey. This was the thirty-fifth year for the survey. The objectives of the survey were to assess, using neuston and bongo nets, the occurrence, abundance and geographical distribution of the early life stages of spring spawning fishes, especially Atlantic Bluefin Tuna, from mid-continental shelf to offshore Gulf of Mexico waters in support of annual stock assessments 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<sup>3</sup> but is typically 30 to 40 m<sup>3</sup> at the shallowest stations and 300 to 400 m<sup>3</sup> 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).

## **Bottom Longline Survey**

The SEAMAP Bottom Longline Survey is a nearshore survey that complements an existing long-term fisheries independent longline survey currently being conducted by NOAA Fisheries, by targeting shark and finfish species within the shallow waters of the Gulf of Mexico. The objectives of the survey are to collect information on shark and finfish abundances and distribution with a 1-mile longline and to collect environmental data.

The Bottom Longline Survey samples during three seasons Spring (April-May), Summer (June-July), and Fall (August-September). Sampling is conducted in waters defined by the 3-10m depth contour. NMFS Statistical Zones are used as guides to ensure effective distribution of sampling effort. Stations are proportionally allocated and randomly distributed within the 3-10m depth contour in each statistical zone based on the proportion of those depths present. Since the 3-10m depth strata is smaller in some statistical zones relative to other statistical zones, each statistical zone is allocated at least two stations during each season in order to ensure adequate sampling coverage. Texas, Louisiana, Mississippi, and Alabama all sampled 146 stations from April through September, 2016 in waters off their coasts in 3-10m.

## **Vertical Line Survey**

In FY2016, Texas, Louisiana, and Alabama conducted vertical line sampling for reef fish. A total of 148 stations were sampled from May through September. The Vertical Line Survey uses three bandit reels that are outfitted with ten circle hooks (8/0, 11/0 or 15/0). Each has only one hook size. The bandit reels deploy the gear simultaneously on or near a reef structure and, once locked in at depth, are allowed to fish for 5 minutes. All bandit reels then retrieve the lines simultaneously. Catch data are collected once the lines are onboard. Environmental data is collected upon completion of fishing at each station.

The Vertical Line Survey design was standardized in 2016. The SEAMAP Subcommittee decided to divide the Gulf offshore waters between 10 and 150m into 150x150m grid blocks. Unknown habitat, known natural reef (hard bottom), presumed reef either natural or artificial, oil/gas platforms, and artificial reefs were the five habitat classifications developed by the SEAMAP Subcommittee. Each 150x150m grid block is assigned a habitat classification based upon several different datasets used to develop the sampling universe. A grid block can be classified as more than one habitat type if it has more than one habitat located within it.

For the station selection process, the total amount of habitat within the three depth zones is computed. The percentage of area covered by each depth zone determines the percentage of the total stations that will be sampled within each depth zone (i.e. if a depth zone contains 40% of the total area, 40% of the total stations will be assigned to that depth zone). The total area of each habitat classification is calculated within each depth stratum. The total of each habitat classification, excluding unknown habitat, is then used to calculate the percentage of habitats within the depth zone. This percentage is used to determine how many stations are assigned to each habitat type within the depth zone. Stations are randomly selected based upon the habitat classification percentages within each depth zone.

## **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 habitats 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 1.76m x 1.52m x 0.61m; 28cm throat diameter; 3.81cm vinyl-clad 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. Florida sampled 105 stations on the west Florida shelf from May to August while NOAA Fisheries sampled 391 stations around the Gulf of Mexico from April through August.

### **Summer Shrimp/Groundfish Survey**

The SEAMAP Summer Shrimp/Groundfish Survey was conducted from May 30 to July 19, 2016. Three hundred forty-nine trawl stations were completed in this year's survey. Plankton sampling was also conducted during the Summer Shrimp/Groundfish Survey. This was the thirty-fifth 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 60 fm.

### **Fall Plankton Survey**

The Fall Plankton cruise took place from September 2 to October 1, 2016 with NOAA Fisheries, Alabama, Mississippi, and Louisiana participating. One hundred thirty-nine stations were sampled this year. 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 fishes, particularly king and Spanish mackerel, lutjanids and sciaenids.

Gear and methods used during the Fall Plankton Survey are the same as those used in the Spring Plankton Survey.

### **SEAMAP-South Atlantic**

#### **Coastal Trawl Survey**

The Coastal Trawl Survey, conducted by the South Carolina Department of Natural Resources (SCDNR), continued as the long-standing core component of SEAMAP-SA survey activity. The overall goal of this survey is to continue to build a long-term database to provide data for stock assessments and to aid in management of stocks off the coast of the southeastern U.S. Initiated as a pilot project in 1986, this fishery-independent study was designed to monitor the distribution, abundance, and life history aspects of coastal species in the South Atlantic Bight, and to measure associated environmental parameters in nearshore coastal waters. Sampling was standardized in 1990 and 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. In 2009 through 2012 the seasonal effort was increased again by 10%. However, as of spring 2013, seasonal effort was reduced to pre-2009 levels as a result of funding. Note that as

a result of cumulative cost savings the seasonal effort increased to 2009-2012 levels (112 stations per season) for the calendar years of 2015 and 2016.

The objectives of the survey were 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 otoliths and gonad tissues from selected finfish specimens.

Three multi-legged seasonal cruises were conducted between Cape Hatteras, North Carolina, and Cape Canaveral, Florida, during this reporting period (fall 2015, spring 2016, and summer 2016). A total of 108 stations in nearshore latitudinal strata (4.6 to 9.2 m depths) were sampled during fall 2015, and 112 stations were sampled during the 2016 spring and summer cruises. All samples were collected during daylight hours, a decision made in 1989 to maximize the collection of juvenile mackerels.

The fall 2015 cruise constituted the completion of the 26th full year of standardized sampling under a stratified random survey design. Sampling was conducted from October 5 to November 13, 2015. Although it was determined that available funds made it possible to return to 112 stations per season for 2015 and 2016, only 108 of the 112 stations could be completed before the available sampling window closed. A total of 157 taxa were identified in fall trawls. The Atlantic Croaker, *Micropogonias undulatus*, was the most abundant species, representing 18.9% of the total catch. The Pinfish, *Lagodon rhomboides*, was the second most abundant species (10.5%), followed by species in the genus *Anchoa* (10.2%), Star Drum, *Stellifer lanceolatus* (9.5%), and Spot, *Leiostomus xanthurus* (8.3%).

The 2016 spring cruise for the SEAMAP-South Atlantic Coastal Survey began on April 11 and was completed on May 18, 2016. A total of 153 taxa were identified in spring trawls. The Northern Searobin, *Prionotus carolinus*, was the most abundant species, constituting 16.5% of the total catch. Atlantic Croaker was the second most abundant species (12.2%), followed by Pinfish (9.9%), Spot (9.8%), and Star Drum (6.7%).

The summer cruise season for the SEAMAP-South Atlantic Coastal Survey began on July 12 and was completed on August 5, 2016. A total of 129 taxa were identified in summer catches. Atlantic Croaker was the most abundant species, representing 28.6% of the total catch. Spot was the second most abundant species (18.8%), followed by Atlantic Bumper (5.9%), species in the genus *Stenotomus* (5.6%), and Pinfish (5.5%).

Data from all 2015 cruises have been added to the SEAMAP-SA data management system. Additional cruise information can be found in the cruise reports that are available via links at <http://www.seamap.org/CoastalSurvey.html>.

During the reporting period, SEAMAP-SA Coastal Trawl Survey staff provided data for the Menhaden and Bluefish Benchmark Stock Assessments conducted by the Atlantic States Marine Fisheries Commission (ASMFC). Trawls survey data were also provided for various compliance reports to the Commission, to academic institutions for research purposes, and to the South Atlantic Fisheries Management Council to aid in fisheries management.



## **Pamlico Sound Survey**

The Pamlico Sound survey provides a long-term fishery-independent database for the waters of the Pamlico Sound, and the lower Neuse, Pamlico, and Pungo rivers. Data collected from the survey provides juvenile abundance indices and long-term population parameters for interstate and statewide stock assessments of recreationally and commercially important fish stocks. Annually, 108 randomly selected stations are trawled for 20 minutes using double rigged demersal mongoose trawls. Sampling occurs over a two-week period in June and September each year. During FY2016, the North Carolina Division of Marine Fisheries (NCDMF) continued the ongoing Pamlico Sound Survey. The survey sampled 54 stations each in June (6th – 10th and 13th – 17th) and September (September 12th – 16th and September 19th – September 23rd) of 2016. The 2016 data are processed by NCDMF and will be made available to the SEAMAP-South Atlantic DMS by April 2017.

## **Bottom Mapping and Species Characterization**

In FY2016, the Florida Fish and Wildlife Research Institute (FWRI) provided technical support and infrastructure for maintaining and distributing GIS data products of habitat, species and fisheries including bottom habitats and fishery-independent surveys in the South Atlantic region. Online access of SEAMAP mapping products is available via the South Atlantic Habitat and Ecosystem Atlas ([http://ocean.floridamarine.org/safmc\\_atlas/](http://ocean.floridamarine.org/safmc_atlas/)). The Atlas integrates multiple services including spatial presentation of SEAMAP and other fishery-independent data through [http://ocean.floridamarine.org/SA\\_Fisheries/](http://ocean.floridamarine.org/SA_Fisheries/) and SEAMAP bottom mapping information through the SAFMC EFH service at [http://ocean.floridamarine.org/sa\\_efh/](http://ocean.floridamarine.org/sa_efh/).

In addition to the web mapping applications above, FWRI created a story map (<http://arcg.is/2awDcqi>) to highlight SEAMAP-SA programs. This format is an effective way to show where each survey samples and also provides a brief synopsis of the program. The map displays 2014 stations for all surveys, except for the Reef Fish Survey, which is 2012 data. The text panel may be updated in the future to include graphs, images, videos, etc.

FWRI also created a “Summary Viewer” web application to display the 2014 Coastal Survey Data (<http://myfwc.maps.arcgis.com/apps/SummaryViewer/index.html?appid=6b5576cecfb340a49e9b2522c1303893>). The Summary Viewer application summarizes the numeric attributes of features in the 2014 Coastal Survey Abundance operational layer that are within the visible map area. The summaries are configured to show the sum of total number of species and total weight. Users can filter the data based on species common names.

## **Fish Habitat Characterization and Assessment**

Reef fish sampling - In the summer of 2008, SEAMAP-SA 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 the Marine Resources Monitoring, Assessment, and Prediction program (MARMAP) by increasing sampling in underrepresented geographical regions of the sampled area. In addition, expanding the number of shallow (<20m) and deep (>90m) sampling sites through SEAMAP-SA 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-SA included regular monitoring of natural reef (live bottom) habitat identified in prior years, in addition to surveying for new areas with this habitat that have not been included in

the survey to date. In addition, the SEAMAP-SA Reef Fish Survey continued diet studies of selected snapper and grouper species. SEAMAP-SA Reef Fish Survey staff has been coordinating all efforts with MARMAP and the South East Fishery-Independent Survey (SEFIS at SEFSC) to accomplish a comprehensive fishery-independent sampling of reef fishes in the south east 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 32°N latitude using the R/V Savannah, while MARMAP and SEAMAP-SA were scheduled to sample all chevron trap stations north of roughly 32°N latitude and all short bottom long-line stations. All sampling has been well coordinated between programs to ensure data quality standards and continuity. In addition, exploration of new areas of reef habitat to be included in the sampling stations database was continued by both SEAMAP-SA and SEFIS. In 2013 the combined monitoring efforts were conducted under a new name: The South East Reef Fish Survey (or SERFS).

In 2016, priorities agreed upon by the various parties involved in the Reef Fish Survey were aimed at continuing the chevron trap survey and the short bottom long line (SBLL) survey, which was resumed in July 2014 and resuming the long bottom long line (LBLL) survey. The halting of the SBLL survey for 2012, 2013, and the first half of the 2014 sampling season mostly affected data collection for snowy grouper and several other deep water species. In addition, it significantly restricted data collection in areas of high vertical relief and Marine Protected Areas. Note that the MARMAP program provided partial funding for the short and long bottom long line survey.

In the 2016 season, we conducted sampling for the Reef Fish Survey from May 25 to October 20. A total of 50 sea days were realized in the 2016 sampling season. Between May 18 and July 1, 2016, we completed 19 sampling days on the SRVx Sand Tiger. From July 29 through the end of the sampling season on October 20, 31 sea days were realized using the R/V Palmetto, 19 of which were supported by SEAMAP. A total of 25.5 sea days were realized for the SEAMAP-SA Reef Fish Survey, with the vast majority of these sea days used for reef fish monitoring, capturing specimens for diet studies, and short bottom long line efforts, with very limited effort towards investigating new reef habitat.

During the 2016 sampling season, SEAMAP-SA researchers collected data for the annual reef fish monitoring, identified a few additional areas with natural reef habitat, collected samples for diet analysis. Limited surveys for new reef habitat were conducted using fathometry, reconnaissance trap deployments (with cameras), and short bottom long-line deployments. Hook and line fishing efforts (87 deployments) were mostly conducted for diet and bycatch mortality studies. Hook and line and bathymetry efforts were conducted during both day- and night-time hours, while other sampling activities occurred during day-time hours only. Preliminary summary of the MARMAP and SEAMAP-SA Reef Fish Survey data indicated that sampling included 528 chevron trap deployments. During each trap deployment, a 60-90 minute video was recorded by two underwater cameras detailing habitat and fish populations near each trap. The chevron traps were equipped with one to four Go-Pro video cameras and recordings were shipped to SEFIS staff for examination and analysis as per agreement with SEFIS.

As a result of additional SEAMAP-SA funding (starting in the July 2014), the Reef Fish Survey resumed SBLL sampling for species in deeper hard bottom habitat (>90m) with significant relief. In 2016, a total of 78 SBLL stations were sampled. Between 22 August and 29 September we also deployed 30 LBLL, sampling all LBLLB blocks in the region.

Following any collections, hydrographic data (water temperature, salinity, etc.) were recorded during 139 CTD deployments (MARMAP and SEAMAP-SA combined). 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-SA Reef Fish Survey staff will process all life-history samples collected by all SERFS projects (MARMAP, SEAMAP-SA, and SEFIS). The cruise information and samples are currently being processed, analyzed, and entered into the Reef Fish Database system and will subsequently be available for entry in the SEAMAP-SA database.

### **Assessment of Adult Red Drum Populations on the Southeast Atlantic Coast**

In 2008, SEAMAP-South Atlantic initiated support for a project to sample the adult Red Drum population from North Carolina to Florida to develop a better understanding of abundance, distribution and age composition of the stock. These surveys contribute to the understanding of adult Red Drum populations along the southeastern Atlantic coast by expanding the currently available data, thereby allowing for more effective and responsible management of the stock. Information derived from these surveys can also be used for coastal shark assessments in the South Atlantic.

The primary objectives of the survey are to conduct fishery-independent longline sampling on adult Red Drum to develop information on catch per unit effort (CPUE); collect biological information (size, sex, etc.) and samples (otoliths, gonads, muscle, fin clips, etc.) from random sub-samples of the Red Drum catch in order to determine size at age, recruitment to the spawning population, mercury contamination, and genetic composition of the stock; tag adult Red Drum for the collection of migratory and stock identification data; disseminate accomplishments and results to the ASMFC and NMFS for inclusion in stock assessments; and produce an annual summary report. Secondary objectives are to tag and measure small and large coastal sharks caught during longlining, for inclusion in the COASTSPAN (Cooperative Atlantic States Shark Pupping and Nursery Survey) database and to respond to external requests for samples and/or data.

South Carolina – During the 2015/2016 sampling season, 332 longline sets were made in four strata along the coast of South Carolina. The season was separated 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 2015 sample season only the later part of time period II and the whole of time period III are considered (October through December); in 2016 only the first time period (August through mid-September) is considered. Each time period and stratum were sampled with equal effort with the exception of Period II. Historic flooding prevented the sampling of Winyah Bay during period II. During sampling, 808 Red Drum were caught. Saint Helena Sound yielded the highest numbers of Red Drum (251) followed by Charleston Harbor (203), Port Royal Sound (187), and Winyah Bay (167). Six hundred and thirty-five Red Drum were tagged and released, 12 were recaptured, 113 were sacrificed for age/growth and reproductive investigations, 7 were kept as broodstock for the SCDNR's mariculture program, and 30 Red Drum were released without tags (fish that were lost at the boat or too stressed are released without tags to reduce mortality). Fin clips were taken from all individuals for genetic investigations (e.g. determination of stocked fish, recaptured fish that have lost external and PIT tags). Most shark species were tagged and released, with the exception of Atlantic Sharpnose and large Nurse Sharks. During this reporting period, 376 sharks were tagged and released. Red Drum data from the longline survey were an important component to the stock assessment for Atlantic Red Drum (SEDAR 44). Data used included catch per unit effort, size and age structure, reproductive data, tagging data and genetic data.

North Carolina – For 2016, North Carolina conducted sampling in Pamlico Sound from July through September. 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 September, 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=12 sets), August (n=32 sets), and September (n=28 sets) and yielded 245 Red Drum (18, 134, and 93 respectively). Red Drum captured ranged in size from 27 to 47 inches fork length. Forty-six Red Drum were sacrificed to determine age composition and for other biological investigations. One-hundred and eighty-eight fish were tagged and released to track migration, stock ID and growth rates. Sampling during this period resulted in two recaptures of Red Drum previously tagged from this study.

Shark species included two blacktip sharks and one bonnethead shark. Of the sharks captured, the two blacktip sharks were tagged upon release.

Georgia – For the current reporting period, sampling occurred off southeast Georgia and northeast Florida during the fall months (October – December) of 2015 and the spring and summer months (of May – September) 2016. A total of 172 longline sets were deployed over the two seasons with 38 sets made during fall 2015 and 134 sets during the spring and summer of 2016. A total of 69 adult red drum were captured; 33 during fall 2015, and 36 during the spring and summer of 2016. Red Drum ranged in size from 800 to 1,036 mm center length. Prior to release, 67 Red Drum were tagged with both conventional dart tags and PIT tags.

## **SEAMAP-Caribbean**

### **Acoustic Hydrophones**

Data from three hydro-acoustic bottom data-loggers was downloaded from the Marine Conservation District and Grammanik Bank sites in St. Thomas, and Lang Bank in St. Croix. The hydro-acoustic bottom data-logger from St. Croix was deployed in two locations; first, on December 15, 2015, at the Red Hind (*Epinephelus guttatus*) fish spawning aggregation (FSA) site, until February 23, 2016, when it was retrieved and redeployed on the same day at the Nassau Grouper (*E. striatus*) FSA site. The original SD cards were sent to Puerto Rico for data processing and analysis. The data-loggers are expected to be redeployed at these locations for the next spawning aggregation season.

### **Virgin Islands**

#### **Parrotfish Reproductive Cycle**

Sample collection was originally intended to occur for a one year duration, however, the approved 12-month no-cost extension only allows for nine months of sample collection ending in March 2017. All vendors for the purchase of parrotfish samples were created through the Government of the Virgin Islands' respective process. A one-day workshop in May 2016 was held at the University of the Virgin Islands in St. Thomas training six DFW staff on how to fix gonadal tissue for histology. Sample collection began June 2016 in the St. Thomas/St. John district, and September 2016 in the St. Croix district. In August 2016, 109 samples of fixed parrotfish gonadal tissue were sent to the

Fishery Research Laboratory in Puerto Rico for histology.

Monthly sample sizes for Redband (*Sparisoma aurofrenatum*) and Redfin (*Sparisoma rubripinne*) parrotfish species have not been met due to sample collection difficulties attributed to these species shallow water distribution, and rapid movement. Commercial fishers of the St. Thomas/St. John district typically harvest parrotfish species with fish traps. This gear type is typically not deployed in shallow water because of significant water movement that can cause excessive gear wear and tear by interacting with coral reefs. Likewise, net gears may be used to harvest these species in shallow water, but is uncommon due to gear entanglement and loss. Commercial fishers of the St. Croix district commonly use spear guns to harvest parrotfishes. However, the collection of Redfin parrotfish has been difficult due to their preferred habitat of shallow water coral reefs, and quick movements.

### **Reef Fish Hook-and-Line Survey**

Ten surveys were completed in the St. Thomas/St. John district. Five surveys remain to be completed by the end of the no-cost extension period in March 2017. Three surveys were completed in the St. Croix district. Seven surveys remain to be completed by the end of the no-cost extension period in March 2017. Four hooks of two different hook sizes are being fishing on a handline, whereby, hook size placement is random. This is being conducted to create a correction factor, since in past years hook size differed between the two districts, St. Thomas/St. John and St. Croix, respectively.

### **Deepwater Snapper Survey**

Three surveys were completed in the St. Thomas/St. John district. Three surveys remain to be completed by the end of the no-cost extension period in March 2017. Four surveys were completed in the St. Croix district. Four surveys remain to be completed by the end of the 12-month no-cost extension period in March 2017.

## **Puerto Rico**

### **Juvenile Spiny Lobster Survey**

Post larvae (pueruli) and juvenile settlement is used to assess Spiny Lobster population abundance on the west coast of Puerto Rico. Six sets of ten artificial shelters or “casitas” are made of concrete blocks and deployed at six sites off the west coast that includes Boquerón, Bramadero, El Negro, El Ron, Fanduca, and Punta Aguila. Twenty-four modified Witham collectors are used as artificial habitat for pueruli settlement at six stations. Collector station consisted of PVC float artificial habitats perpendicular to the direction of the mean water flow.

Monitoring for juvenile lobsters was conducted from December 8 2014 to December 12 2015. A total of 483 individuals ranged in size from 0.25” to 3” in carapace length (CL). Most of the juveniles recorded (95.9%) were collected between 0.5” – 2.5” of CL. The only size that was not collected was 2.75 inches. Fanduca reported the lowest number of juveniles with 26 individuals. El Negro reported the highest number of juveniles with 134 individuals.

The distribution by month of sampled juvenile showed a peak in recruitment from September to December 2015. In December 2015, the highest number of juveniles in a single casita (46 individuals) was recorded at El Negro.

Juvenile lobsters were collected at all sampled months, although not all sites reported recruitment at all months. Only one site recorded juveniles at all months, El Negro. This was also the site in which the highest number of individuals was reported, for instance in December 2015, 46 juveniles were sampled in a single casita. At the other five sites, at least one month recorded zero catch with catches per site ranging from 0 to 56.

### **Larvae Collector Survey**

Larvae collectors were deployed at mid-water and close to the bottom and sampled from April 2015 through March 2016. The collectors caught 1,337 individuals, of which 1,068 were larvae while 269 juvenile lobster were caught. Collectors deployed in deeper water caught a higher number of larvae (1,002), while shallow water collectors recorded 335 larvae.

Larvae were collected in all months at all sites. June was the most productive month with 344 individuals and October the least productive with 40 individuals. Transparent pigmented was the only stage that was not collected in all months. During February and March this stage was not recorded at any site.

October was the month in which the total lowest number of larvae were recorded per station followed by August. Individual stages recorded lowest number of individuals at different months. Pueruli and juveniles recorded the lowest number in October, transparent stage during February and transparent pigment February-March with zero catches.

The highest pulse of recruitment was recorded from April to June followed by a drop of recruitment from July to October. A second pulse of high recruitment occurred from November to February with a decrease in March. The only month in which collectors were not sampled was during January due to weather conditions.

### **Reef Fish Survey**

At the 2014 joint annual meeting, the SEAMAP Program Manager presented the need to increase the number of stations sampled in the Caribbean. The SEAMAP Caribbean Committee developed a new sampling methodology. The Reef Fish Survey was revamped and expanded to include video and bottom longline sampling to complement the hook and line gear. To develop a correction factor for historic data samples collected while drifting, the current sampling period includes hook and line fishing anchored and drifting.

Site selection includes a two-factor random stratified sampling design based on depth and benthic habitat type within the 50 fm contour of Puerto Rico. Depth stratification is based on three zones (0-10, 11-20 and 21-50 fm). Habitat classification was grouped in five major types: coral reef, seagrass, macroalgae, sand/mud and unknown. The largest type by far is the unknown classification. A total of 200 stations will be conducted by Puerto Rico, 100 off the east and west coast. When possible, a drop-down camera will be deployed to ground truth the area.

Sample collection is conducted using three sample gear types at each station: video camera (a two camera array), a 300-ft bottom longline (100 #9 circle hooks) and a 4-hook handline (two #9 circle and two #6 circle hooks). Each sample gear is deployed at the same station area, but at least 50 m apart, so that there is no interaction with the different gear types. For all samples, all pertinent station data is collected. In addition, fish length, sex, and gonadal condition is determined from each specimen collected.

In all the reef fish surveys, data on sexual maturation of all individuals is recorded, which is being used to determine spawning season and size of 50% population maturation. Samples are also provided for the reproduction program established at the Fisheries Research Laboratory for some of the species under study by this program. Data are also being used to determine the precision of sex determination between macroscopic or microscopic/histological sexing. All individuals are macroscopically sexed and gonads are photographed, removed, and preserved for histological sexual determination. Comparison between macroscopic and microscopic sex is performed. This information is used as a guide to determine the sexual maturation for different species to increase the precision on sexing the individuals.

During this reporting period, a single station was sampled off the east coast. This trip was done before implementing the new methodology for the reef fish survey. During this a trip total of 12 species representing 6 families weighing 14 kg were collected. Two groups of fish constituted most of the catch, the groupers with 74% and the snappers 10% of the total catch by number.

## **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, 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, 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 1982-2015 have been entered into the system and data from 2016 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 2016:

- 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 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; and
- Compiling the 2016 SEAMAP Environmental and Biological Atlas.

## **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 GSMFC for inclusion. 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 2016 Summer Shrimp/Groundfish Survey. Seven 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-SA data management system goal is a web based information system that facilitates data capture, error checking, data extraction, and dissemination of fishery-independent data and information for all ongoing SEAMAP-SA surveys and special studies. The SEAMAP-SA Data Management work group has met its goal of providing public access on the Web to the ASMFC maintained at the [www.seamap.org](http://www.seamap.org) site and the SCDNR maintained based Oracle relational database ([www.dnr.sc.gov/seamap](http://www.dnr.sc.gov/seamap)). The SEAMAP.org website is where general links, information, and documents (surveys, reports, metadata, special studies) for SEAMAP-SA are presented. The Oracle database is constructed to provide access to “normalized data” for a number of fishery-independent programs including, but not limited to, SEAMAP-South Atlantic Coastal Trawl Survey, the NCDMF Pamlico Sound trawl survey, the Coastal Longline Surveys, the Reef Fish Survey, and eventually the SEAMAP Cooperative Winter tagging cruises. Spatial presentations of SEAMAP and other South Atlantic fishery-independent data are available through a regional GIS service managed by the Florida Fish and Wildlife Research Institute for the South Atlantic Fishery Management Council (SAFMC Fisheries Viewer: [http://ocean.floridamarine.org/sa\\_fisheries/](http://ocean.floridamarine.org/sa_fisheries/)). This application was developed for the SAFMC with ArcGis Viewer for Flex. The custom GIS Web mapping application supports data display, interactive querying, geocoding and printing. Users may download GIS shapefiles and associated metadata.

Since last year’s annual meeting, the Data Management Workgroup worked primarily to refine the web design and data extraction queries. Errors in the report extraction process were identified and efforts were made to correct the coding errors in the data download application. To assist in this effort the group worked with SCDNR Information Technology Department in Columbia, SC, to continue to develop, maintain, and troubleshoot the Oracle database and web interface system. Most of the coding errors were identified and corrected. However, access to data downloads has been restricted for the Pamlico Sound Survey and the Reef Fish Survey while solutions to issues with the report extraction applications continue to be implemented. The SEAMAP-SA database for other projects is available via the web interface.

## **Southeast Regional Taxonomic Center (SERTC)**

As a result of reduced funding compared to previous years, SERTC activities were mostly limited to maintaining the collections and completing the diet guides. However, during the reporting period, two prey identification guides were created to assist with the gut content analyses for finfish species collected during the Coastal Trawl Survey. The SEAMAP-SA Nearshore prey identification guide has been completed, and authors and/or publishers have been contacted to secure necessary permissions and any copyright requirements for all figures and images used. The intention is to publish the guide to enable more researchers to use it as a reference. The SEAMAP-SA Reef Fish



prey identification guide is nearly complete. Percent frequency data has been obtained and added to the guide for seven species. In addition to providing assistance to SEAMAP diet study personnel, SERTC continues to provide taxonomic expertise, image and specimen loans, photographic assistance, and general information to members of the public, as well as to researchers both internally at the SCDNR and at external collaborating institutions. A total of 576 educational posters and 90 South Carolina Beachcomber's Guides have been distributed to educators and the general public during the current reporting period. Ten specimens have been loaned to researchers both at the SCDNR and at the Florida Fish and Wildlife Research Institute in St. Petersburg, FL. Additionally, 424 copies of the "Guide to the Salt Marshes and Tidal Creeks of the Southeastern United States", a guide produced by the SCDNR Environmental Research Section, have been distributed to educators and the general public.

## **Program Documents**

The following documents were published and distributed by the SEAMAP program in FY2016 or based on data collected by SEAMAP:

Arnott, S.A. and L. Paramore. 2015. Sizes of tag recaptured red drum that were released alive by recreational anglers. SEDAR44-DW05.

Arnott, S.A. 2015. Red Drum Maturity Analysis. SEDAR44-DW02.

Ballenger, J.C. 2015. The 2015 ASMFC Atlantic Menhaden Compliance Report for SCDNR.

Ballenger, J.C. 2015. SERFS chevron trap Red Snapper index of abundance: an investigation of the utility of historical (1990-2009) chevron trap catch data. SEDAR41-DW51 (MARMAP/SEAMAP-SA Reef Fish Survey Technical Report # 2015-009). SEDAR, North Charleston, SC. 39 pp.

Ballenger J.C. and T.I. Smart. 2015. Gray Triggerfish fishery-independent index of abundance in US South Atlantic waters based on a chevron trap survey (1990-2014). SEDAR41-DW52 (MARMAP/SEAMAP-SA Reef Fish Survey Technical Report # 2015-010). SEDAR, North Charleston, SC. 45 pp.

Ballenger J.C. and T.I. Smart. 2015. Red Snapper fishery-independent index of abundance in US South Atlantic waters based on a chevron trap survey (2005-2014). SEDAR41-DW53 (MARMAP/SEAMAP-SA Reef Fish Survey Technical Report # 2015-011). SEDAR, North Charleston, SC. 39 pp.

Ballenger J.C. and T.I. Smart. 2015. Red Snapper fishery-independent index of abundance in US South Atlantic waters based on a chevron trap survey (2010-2014). SEDAR41-DW53 (MARMAP/SEAMAP-SA Reef Fish Survey Technical Report # 2015-012). SEDAR, North Charleston, SC. 36 pp.

Ballenger, J.C. and T.I. Smart. 2016. Modifications to the Southeast Reef Fish Survey chevron trap age compositions for Red Snapper and Gray Triggerfish. SEDAR 41-RW07 (MARMAP/SEAMAP-SA Reef Fish Survey Technical Report # 2016-005). SEDAR, North Charleston, SC. 13 pp.

- Bubley, W.J., J.C. Ballenger, T.I. Smart, and M.J. Reichert. 2016. Trends in relative abundance of reef fishes in fishery-independent surveys of waters off the SE US - Delta-GLM Standardized CPUE Based on the Southeast Reef Fish Survey Chevron Trap (1990-2015) and the MARMAP/SEAMAP-SA Short-Bottom Longline (1996-2011 and 2013-2015) and Long-Bottom Longline Surveys (1996-2011 and 2015). MARMAP/SEAMAP-SA Reef Fish Survey Technical Report 2016-003. 98 pp.
- Carmichael, J., M.J. Duval, M.J.M Reichert, N. Bacheler, and T. Kellison. 2015. Workshop to determine optimal approaches for surveying the deep-water species complex off the southeastern U.S. Atlantic coast – 7-9 April, 2015, NOAA Beaufort Laboratory, Beaufort, NC. NOAA Technical Memorandum NMFS-SEFSC-685. 23 pp. Published December, 2015
- Goldman, Sarah F., Glasgow, D.M., and M.M. Falk, 2015. Feeding habits of 2 reef-associated fishes, *Pagrus pagrus* and *Balistes caprisicus*, off the southeastern United States. Fishery Bulletin, 114(3): 317-329.
- Jamison, M. 2015. Range determination of (*Cynoscion arenarius*) and characterization of (*Cynoscion* spp.) hybridization in nearshore habitats along the southeastern U.S. Atlantic coast with implications for management of (*Cynoscion regalis*). M.S. thesis, College of Charleston, SC. 42 pp.
- Kolmos, K.J., T. Smart, D. Wyanski, and M.J. Reichert. 2015. Report on life history of south Atlantic Gray Triggerfish, *Balistes caprisicus*, from fishery-independent sources. SEDAR 41-DW16-B (MARMAP/SEAMAP-SA Reef Fish Survey Technical Report 2015-007). SEDAR, North Charleston, SC. 36 pp.
- Kolmos K. J., D. Wyanski, T. Smart, and M.J. Reichert. 2016. Addendum to SEDAR 41-DW16: Report on life history of south Atlantic Gray Triggerfish, *Balistes caprisicus*, from fishery-independent sources: UPDATE on analyses of maturity, spawning fraction, and sex ratio. SEDAR 41-RW01 (MARMAP Technical Report # 2016-003). SEDAR, North Charleston, SC. 17 pp.
- Reichert, M.J., T.I. Smart, M. Willis, and D.B. White. 2015. MARMAP/SEAMAP-SA Reef Fish Monitoring Cruise Report for 2015. MARMAP/SEAMAP-SA Reef Fish Technical Report 2016-001 (v.1). 81 pp.
- Rester, J.K., S. Madsen, and E. Ojeda Serrano. 2016. Annual Report of the Southeast Area Monitoring and Assessment Program (SEAMAP), October 1, 2014 to September 30, 2015. Gulf States Marine Fisheries Commission, Atlantic States Marine Fisheries Commission, Puerto Rico Sea Grant College Program. No. 259, GSMFC, Ocean Springs, MS. 22 pp.
- Rester, J.K. 2016. SEAMAP Annual Report to the Technical Coordinating Committee. Gulf States Marine Fisheries Commission, No. 257, GSMFC, Ocean Springs, MS.
- SEAMAP-SA Coastal Survey, Cruise Report, Fall 2014.
- SEAMAP-SA Coastal Survey, Cruise Report, Spring 2015.
- SEAMAP-SA Coastal Survey, Cruise Report, Summer 2015.

- SEDAR. 2015. SEDAR Procedural Workshop 7: Data Best Practices. SEDAR, North Charleston, SC. 151 pp. Available online at: <http://sedarweb.org/pw-07>.
- SEDAR. 2015. SEDAR 41- South Atlantic Gray Triggerfish. SECTION II: Data Workshop Report, September 15, 2015. 217 pp.
- SEDAR. 2015. SEDAR 41- South Atlantic Red Snapper. SECTION II: Data Workshop Report, September 12, 2015. 276 pp.
- Smart, Tracey I., Adam R. Lytton, and Amanda M. Kelly-Stormer. 2015. Spatiotemporal trends in abundance and life history of Gray Triggerfish *Balistes capricus* off the Southeast U.S. Atlantic coast. Submitted to Marine Ecology Progress Series.
- Spanik K.R., J. Gartland, and S.K. Gaichas. 2015. Food habits of Bluefish, *Pomatomus saltatrix*. Working Paper for the Bluefish Benchmark Stock Assessment. Submitted to ASMFC.
- Wyanski, D., D. B. White, T. Smart, K. Kolmos, and M. J. Reichert. 2015. Marine Resources Monitoring, Assessment and Prediction Program: Report on Atlantic Red Snapper, *Lutjanus campechanus*, life history for the SEDAR 41 Data Workshop. SEDAR 41-DW35 (MARMAP/SEAMAP-SA Reef Fish Survey Technical Report 2015-008. SEDAR. Charleston, SC. 41 pp.
- Willis, C.M., J. Richardson, T. Smart, J. Cowan, and P. Biondo. 2015. Diet composition, feeding strategy, and diet overlap of three sciaenids along the southeastern United States. Fisheries Bulletin. Vol. 113:290-301.

#### **PROPOSED SEAMAP ACTIVITIES, FY2016**

Last year, total program allocations for all three SEAMAP components, Gulf, South Atlantic and Caribbean, was approximately \$4.31 million. At the July meeting, the SEAMAP components based their allocations for 2017 on level funding. Proposed FY2017 activities for all SEAMAP participants are shown in Table 2.

**Table 2.**

<b>PROPOSED SEAMAP ACTIVITIES, FY2017</b>					
	Fall	Winter	Spring	Summer	
<b>Gulf of Mexico Activities</b>					
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	
Bottom Longline Survey	X		X	X	
Vertical Line Survey			X	X	
Information Operations:					
Biological and Environmental Atlas		X			
FY2015 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	
<b>South Atlantic Activities</b>					
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	
<b>Caribbean Activities</b>					
Resource Surveys:					
Parrotfish Reproductive Cycle Survey (VI)	X	X			
Deep Water Snapper H&L Survey (VI)	X	X			
Reef Fish H&L Pilot Study (PR & VI)	X	X			
Reef Fish Bottom Longline Survey (PR & VI)	X	X	X	X	
Reef Fish Camera Monitoring (PR & VI)	X	X	X	X	
Information Operations:					
Preliminary Data Analysis and Quality Control	X	X	X	X	
Information Dissemination	X	X	X	X	
Program Administration					
Joint Planning Activities	X	X	X	X	

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