



ANNUAL REPORT

OF THE SOUTHEAST AREA MONITORING AND ASSESSMENT PROGRAM (SEAMAP)

OCTOBER 1, 2016 - SEPTEMBER 30, 2017

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

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INTRODUCTION

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

Each SEAMAP component operates independently, planning and conducting surveys and information dissemination in accordance with administrative policies and guidelines of the National Marine Fisheries Service's Southeast Regional Office (SERO). Agencies and organizations directly involved with SEAMAP are shown in Table 1.

Federal programmatic funding for SEAMAP activities and administration was appropriated in Federal Fiscal Years 1985-2017. Funding allocations to participants for FY1985-FY2017 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 FY2017 and proposed activities for FY2018.

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 2016 and March 2017 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 2017 to discuss respective program needs and priorities for FY2018.

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

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 2017. Other important management activities included coordinating data provision and specimen loans, preparing publications and documents, and assisting in the preparation of State/Federal cooperative agreements, including amendments to permit extension of activities previously not detailed in the agreements.

SEAMAP-South Atlantic

The SEAMAP-South Atlantic (SEAMAP-SA) Data Management Work Group met in November 2016. In April 2017, ASMFC released the SEAMAP 5-Year Management Plan. Additional tasks included fulfilling data requests, preparation of annual program reports and State/Federal Cooperative Agreements, and distribution of publications.

The SEAMAP-SA Committee held their annual meeting July 25-26, 2017, prior to the Joint Annual Meeting. In addition to Committee members, participants included the ASMFC Science Director, the SEAMAP-SA coordinator, SEAMAP staff, and representatives from the Data Management Work Group. The Committee developed the SEAMAP-SA budget and research program priorities for FY2018. The Committee also reviewed progress by the SEAMAP-SA work groups and provided direction where necessary. The major discussions centered on the implications of budget constraints moving forward and on resolving SEAMAP database extraction issues.

SEAMAP-Caribbean

During FY2017, 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 U.S. 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: October 21, 2016 in Puerto Rico; January 13, 2017 in St. Thomas; May 5, 2017 in Puerto Rico; July 25, 2017 in St. Croix and on September 15, 2017 in Puerto Rico. In addition, the SEAMAP-C committee members participated in a conference call on April 6, 2017, and had a longline and camera sampling workshop on July 27-28 in St. Croix, after participating in the SEAMAP Joint Annual Meeting held on July 25, 2017.

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.

During this reporting period, a master student thesis using SEAMAP-C conch data titled “Fishery Independent Surveys of the queen conch stock in western Puerto Rico, with an assessment of historical trends and management effectiveness”, was partially funded for publication in the American Fisheries Society Journal, and a master student from the Department of Marine Sciences received an assistantship to conduct the quality control and preliminary analysis of the data downloaded from three hydro-acoustic bottom data-loggers deployed at the Marine Conservation District and Grammanik Bank sites in St. Thomas, and Lang Bank in St. Croix. In addition, a 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 have been made available for public dissemination at the PR-Sea Grant College 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 FY2017, collection of resource survey information continued for the thirty-sixth consecutive year. Surveys by each program component reflect distinct regional needs and priorities; however, survey operations in one geographic area often provide information useful to researchers in 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 3 to November 21, 2016 from off southwest Florida to the U.S.-Mexican border. Two hundred eighteen trawl stations were sampled during the survey. Plankton samples are no longer being collected during this 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; and collect environmental data to investigate potential relationships between abundance and distribution of organisms and environmental parameters.

Spring Plankton Survey

The SEAMAP Spring Plankton Survey was conducted from April 28 - May 30, 2017. Eighty-eight stations were sampled during 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 fish, 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 m³ but is typically 30 to 40 m³ at the shallowest stations and 300 to 400 m³ 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 sampled 160 stations from April through September, 2017 in waters off their coasts in 3-10m.

Vertical Line Survey

In FY2017, Texas, Louisiana, and Alabama conducted vertical line sampling for reef fish. Approximately 200 stations were sampled from April through October. 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. The camera array was 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 167 stations on the west Florida shelf from May 2 to July 14 while NOAA Fisheries sampled 455 stations around the Gulf of Mexico from April 11 through June 15, 2017. Florida also completed 10 side scan sonar mapping cruises (50 sampling days) from January 1 through April 13, 2017 where they mapped bottom type for future reef fish sampling.

Summer Shrimp/Groundfish Survey

The SEAMAP Summer Shrimp/Groundfish Survey was conducted from May 30 to July 19, 2017. Three hundred thirty-one trawl stations were completed in this year's survey. Due to funding constraints, plankton sampling was not conducted during this year's survey. This was the thirty-sixth 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 4 to September 30, 2017 with NOAA Fisheries and Louisiana participating. Sampling effort was hampered by Hurricane Irma. Eighty-two 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 fish, 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. 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. In response to a reduction in funding, the 2017 seasonal effort was reduced to 102 stations per season.

Due to SEAMAP-SA funding stagnation and reductions, the Coastal Trawl Survey was faced with a potential reduction of the number of sea days in 2017 and beyond. A minimum reduction of 10 days, from 60 (required for sampling all proposed stations) to 50 was anticipated for 2017. This reduction would have resulted in partial sampling of our regular station universe during one of the three annual sampling seasons, which was expected to have a significant impact on the long-term monitoring data. A possible strategy to address this was discussed by the SEAMAP-SA Committee at the 2017 Annual Meeting. The Committee recommended conducting a survey amongst data users and an analysis of potential impacts of various sampling reduction strategies on data use. After review of the results, the decision was made to move forward with our original plan to significantly cut back on sea days and drop an alternating sampling season until funding is restored. This strategy was deemed to have the least impact on the use of the data for assessments and management. This decision was based on result of the survey and analyses, and extensive discussions within the SEAMAP-SA Committee and in consultation with the Technical Monitors of the program. However, before we had to implement this new sampling strategy, supplemental funding was received in 2017 through the ASMFC. This was used to fund 10 sea days for the fall 2017 cruise, alleviating the necessity to drop one of the three annual sampling seasons in 2017.

Three multi-legged seasonal cruises were conducted between Cape Hatteras, North Carolina, and Cape Canaveral, Florida, during this reporting period (fall 2016, spring 2017, and summer 2017). A total of 310 stations in nearshore latitudinal strata (4.6 to 9.2 m depths) were sampled (107 stations in fall, 101 stations in spring, and 102 stations in summer). All samples were collected during daylight hours, a decision made in 1989 to maximize the collection of juvenile mackerels.

The fall 2016 cruise for the SEAMAP-South Atlantic Coastal Trawl Survey constituted the completion of the 27th full year of standardized sampling under a stratified random survey design. Sampling was conducted from October 3 to November 18, 2016. Although it was determined that available funds made it possible to return to 112 stations per season for 2016, only 107 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 17.1% of the total catch based on numerical abundance. Species in the genus *Anchoa* were the second most abundant (11.3%), followed by White Shrimp, *Litopenaeus setiferus* (11.1%), Star Drum, *Stellifer lanceolatus* (9.0%), and Spot, *Leiostomus xanthurus* (7.4%). An estimated 400,294 individuals were taken in fall trawls with a mean catch per unit effort (CPUE) of 3,741.1 individuals per tow. Otolith samples were collected from several species for on-going life-history research. Gonad samples were collected from Spanish Mackerel (n=117) and Bluefish (n=56).

The 2017 spring cruise for the SEAMAP-South Atlantic Coastal Trawl Survey began on April 10 and was completed on May 10, 2017. A total of 153 taxa were identified in spring trawls. The Atlantic Croaker was the most abundant species, representing approximately 26.8% of the total catch. Southern Kingfish was the second most abundant species (8.7%), followed by Spot (8.5%), Atlantic Bumper, *Chloroscombrus chrysurus* (6.6%), and Pinfish, *Lagodon rhomboides* (5.7%). In

total, 258,706 individuals were taken in spring trawls with a CPUE of 2,561. An estimated 200,227 individuals were caught during the spring cruise with a CPUE of 3,394 individuals per tow. Otolith samples were collected from Atlantic Croaker (n=194), Southern Kingfish (n=581), Weakfish (n=164), King Mackerel (n=39), Spanish Mackerel (n=125), and Bluefish (n=46). Gonad samples were collected from Spanish Mackerel (n=86) and Bluefish (n=36).

The summer cruise season for the SEAMAP-South Atlantic Coastal Trawl Survey began on July 10 and was completed on August 11, 2017. A total of 138 taxa were identified in summer catches. The Atlantic Croaker was the most abundant species, constituting approximately 28.3% of the total catch. Spot was the second most abundant species (14.4%), followed by Brown Shrimp, *Farfantepenaeus aztecus* (5.7%), Banded Drum, *Larimus fasciatus* (5.7%), and White Shrimp (5.6%). An estimated 220,935 individuals were taken in trawls with a CPUE of 2,166 individuals per tow. Otolith samples were collected from Atlantic Croaker (n=380), Southern Kingfish (n=545), Weakfish (n=84), King Mackerel (n=36), Spanish Mackerel (n=151), and Bluefish (n=38). Gonad samples were collected from Spanish Mackerel (n=110) and Bluefish (n=28). Due to recent interest from ASMFC, otolith samples were also collected from Spot (n=269) beginning in late July.

Data from all 2017 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 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 2017 the North Carolina Division of Marine Fisheries (NCDMF) continued the ongoing Pamlico Sound Survey. Each cruise season the survey samples 54 stations that are randomly selected from seven strata based on depth and geographic location.

As usual, Spot and Atlantic Croaker dominated the catches throughout both cruise seasons. CPUE of Atlantic Croaker was the third highest in survey history. CPUE of spot was fifth highest in survey history. CPUE of shrimp species (Brown, Pink, and White) all had high CPUE's, with White Shrimp having the second highest CPUE in survey history.

Pamlico Sound Survey data is used in management of state species (Kingfish, Southern Flounder, and Blue Crab), and in ASMFC stock assessments and compliance (Atlantic Croaker, Spot, Weakfish, and Summer Flounder). Age structures are also taken to increase sample sizes for aging studies within the division. Specimens are collected for research groups outside the division, such as for a study at North Carolina State University on Southern Flounder sex determination. A completed North Carolina Blue Crab assessment used Pamlico Sound survey data, and found Blue

Crab were overfished and overfishing was occurring. In addition, 2017 was the final year PSS samples were collected for a study at North Carolina State University on Southern Flounder sex determination.

Bottom Mapping and Species Characterization

In FY2017, 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 (https://ocean.floridamarine.org/safmc_atlas/). The Atlas integrates multiple services including spatial presentation of SEAMAP and other fishery-independent data through https://ocean.floridamarine.org/SA_Fisheries/.

In addition to the web mapping applications above, FWRI created a new ArcGIS Online feature layer (<https://bit.ly/2RIbXcV>) to display Red Drum Abundance and Biomass for the Longline surveys. The SEAMAP-SA longline surveys were filtered to only display Red Drum abundance and biomass. The Longline Red Drum Abundance 2014 feature layer provides options to review the data in tabular or spatial formats. FWRI also created a 3D web scene (<https://bit.ly/2qC4nVy>) to display Red Drum Abundance and Biomass feature layer (described previously). This web scene was created to demonstrate the 3D capabilities of ArcGIS online to the SEAMAP-SA Data Management Workgroup. The bookmark slides (rectangles at bottom of map scene) allow users to easily navigate to estuaries and sounds along the southeast coast.

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 fish 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 2017, 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 on the R/V *Palmetto*, and the long bottom long line (LBLL) survey using the R/V *Lady Lisa*.

In the 2017 season, SEAMAP-SA conducted sampling for the Reef Fish Survey from May 30 to September 29. We sampled 29.5 days on the R/V *Palmetto* and 1.5 days on the R/V *Lady Lisa*. Funding for 27 R/V *Palmetto* and 1.5 R/V *Lady Lisa* sea days was provided by the MARMAP program, whereas the SEAMAP-SA program provided funding for 2.5 R/V *Palmetto* sea days. This lopsided funding was due to the late availability of the SEAMAP-SA funding and the low number of sea days in August and September due to hurricanes. 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. Inclement weather, including five hurricanes that came through the area, and mechanical problems related to the R/V *Palmetto* renovation resulted in shortening or cancellation of several cruises. Due to a late return from the shipyard to complete the R/V *Palmetto* renovation all cruises in May had to be canceled. Weather was very cooperative in June and July, resulting in an average cruise length of 6 days for the first 4 cruises of the season in those months. Hurricanes and consistent strong winds and resulting high seas in the region between August 10 and mid-October resulted in only 2.5 sampling days in that period. In spite of the low total number of sea days, the number of video traps sampled was average. Due to funding, SEAMAP-SA did not conduct the long bottom longline survey on the R/V *Lady Lisa* in 2017. However, SEAMAP-SA did conduct a trial deploying short bottom longlines from the R/V *Lady Lisa* on August 28 and September 1.

During the 2017 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 (see section below). Limited surveys for new reef habitat were conducted using reconnaissance trap deployments (with cameras), and short bottom long-line deployments. Hook and line fishing efforts (54 deployments) were mostly conducted for diet studies and to collect supplemental life history studies. Hook and line and bathymetry efforts were conducted during both day and nighttime hours, while other sampling activities occurred during daytime hours only. A summary of the MARMAP and SEAMAP-SA Reef Fish Survey data indicated that sampling included 520 chevron trap deployments. During each trap deployment, a 60-90 minute video was recorded by two under-water 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.

The SBLL survey samples for species in deeper hard bottom habitat (>90m) with significant relief. In 2017, a total of 48 SBLL stations were sampled. No long bottom longline gear was deployed in 2017 due to funding. Note that the SBLL efforts were co-funded by MARMAP.

Following any collections, hydrographic data (water temperature, salinity, etc.) were recorded during 104 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.

Analysis of the 2017 sampling season data indicated that a total of 12,520 individual fish, representing 58 species, were captured by the MARMAP and SEAMAP-SA Reef Fish Survey (all gears combined). Just over 27% of the captured specimens (3,427) were retained for life-history work-up. The most abundant species in the catches were Tomtate (*Haemulon aurolineatum*, n=5,130), Black Sea Bass (*Centropristis striata*, n=1,886), Vermilion Snapper (*Rhomboplites aurorubens*, n=1,475), *Stenotomus* spp. (n=751), White Grunt (*Haemulon plumierii*, n=980), Red Porgy (*Pagrus pagrus*, n=712), Gray Triggerfish (*Balistes capriscus*, n=399), Spottail Pinfish (*Diplodus holbrookii*, n=264), Sand Perch (*Diplectrum formosum*, n=227), and Bank Sea Bass (*Centropristis ocyurus*, n=215). Other species were collected in numbers <100/species. The vast majority of the fish (98%) was caught in the chevron traps, but note that 32% of the Snowy Groupers and 26% of the Scamp were caught on the SBLL.

Diet studies

During the reporting period, targeted species for diet studies were Grouper/Hind species (family Serranidae). Although rarely encountered with standard survey gear, diet samples from Lionfish (*Pterois spp.*) were also collected opportunistically due to their growing ecological impact. Fish were primarily collected using hook and line fishing gear (Round Scad (*Decapterus punctatus*) and squid (*Illex sp.*) were used as bait) and chevron traps (baited with Atlantic Menhaden (*Brevoortia tyrannus*) aboard the R/V *Palmetto* and R/V *Savannah*. In total, 65 stomachs (59 Grouper/Hinds including 37 Scamp (*Mycteroperca phenax*), 4 Gag (*Mycteroperca microlepis*), 4 Red Grouper (*Epinephelus morio*), 8 Snowy Grouper (*Hyporthodus niveatus*), 2 Speckled Hind (*Epinephelus drummondhayi*), 2 Graysby (*Cephalopholis cruentata*), 1 Coney (*Cephalopholis fulva*), and 1 Rock Hind (*Epinephelus adscensionis*), and 6 Lionfish) were collected. Compared to previous years, scope of diet studies was more reduced during the reporting period due to availability of funding.

Stomachs were excised from the posterior end of the esophagus (near the mouth) to the pyloric sphincter, and preserved in 10% Formalin. After 2 weeks, stomachs were rinsed with fresh water and contents of individual guts were removed and placed into separate containers and submerged in 70% ETOH. All contents from each stomach were then sorted, counted, measured (if whole), and weighed. Prey items were identified to the lowest possible taxon. Stomach samples for Grouper/Hind species, whose prey items have frequently been found in advanced stages of digestion, were frozen upon collection to facilitate genetic sequencing of prey items not identifiable by traditional visual methods. For each species, to quantify feeding habits, the relative contribution of food items to the total diet will be determined using percent frequency of occurrence, percent composition by number, and percent composition by weight. These measures will be used to calculate an index of relative importance. Once all prey items are identified for a particular species, more analyses will be completed (i.e., examining prey composition by predator size class, depth zone, latitude, and between species).

During the reporting period, approximately 100 diet samples were processed. Shrimp and small teleosts including Basslets (Serranidae) and Dragonets (Callionymidae) were observed in Lionfish diets.

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 were 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 subsamples 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 were to tag and measure small and large coastal sharks caught during longlining, for inclusion in the COASTSPAN (Cooperative Atlantic States Shark Popping and Nursery Survey) database and to respond to external requests for samples and/or data.

South Carolina – During the 2016/2017 sampling season, 353 longline sets were made in four strata along the coast of South Carolina. The season was separated into three periods designed to maximize catches of Red Drum (August 1 – September 15, September 16 - October 31, November 1 – December 15). In this report, for the 2016 sample season only the later part of time period II and the whole of time period III were considered (October through December); in 2017 only the first time period (August through mid-September) was considered. Each time period and stratum were sampled with equal effort. During sampling, 1,043 Red Drum were caught. Winyah Bay yielded the highest numbers of Red Drum (455), followed by Charleston Harbor (257), Saint Helena Sound (196) and Port Royal Sound (135). Eight hundred and fifty-one Red Drum were tagged and released, 28 were recaptured (11 project recaptures, 16 fish tagged by SCNDR Inshore Fisheries trammel net survey, and 1 angler recapture), 134 were sacrificed for age/growth and reproductive investigations, 9 were kept as broodstock for the SCDNR's mariculture program, 17 Red Drum were released without tags (fish that were lost at the boat or too stressed are released without tags to reduce mortality) and 4 were moribund or dead (gut hooked or predated upon). Fin clips were taken from 1,024 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, 299 sharks were tagged and released.

North Carolina – For 2017, 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.

Sampling occurred in July (n=12 sets), August (n=30 sets), September (n=24 sets), and October (n=6 sets) and yielded 337 Red Drum (22, 174, 140, and 1, respectively). Red Drum captured ranged in size from 31 to 48 inches fork length. Red Drum CPUE (# of fish per 100 hook set) in 2017 (4.7) was a 38 percent increase from 2016 (3.4) and a 5 percent decrease from the 2007-2016 survey CPUE average (4.9). Fifty-four Red Drum were sacrificed to determine age composition and for other biological investigations. Two-hundred seventy-one fish were tagged and released to track migration, stock ID, and growth rates. Sampling during this period resulted in five tag recaptures of Red Drum.

Shark species taken during the study included 18 Blacktip sharks, two Bull sharks and one Atlantic Sharpnose. Of the sharks captured, five Blacktip sharks and two Bull sharks were tagged upon release.

Results from the North Carolina Coastal Longline Survey are compiled annually and included in the annual North Carolina compliance report to ASMFC. Data from 2007 to 2013 were recently submitted and used in the 2017 ASMFC Red Drum Stock Assessment. In addition, data were recently used in a paper published this year by PLOS One titled “Delineation and mapping of coastal shark habitat within a shallow lagoonal estuary.”

Georgia – For the current reporting period, sampling occurred off southeast Georgia and northeast Florida during the fall months (October – December) of 2016 and the spring and summer months (May – September) of 2017. A total of 208 longline sets were deployed over the two seasons with 92 sets made during fall 2016 and 116 sets during the spring and summer of 2017. A total of 178 adult Red Drum were captured; 146 during fall 2016, and 32 during the spring and summer of 2017. Red Drum ranged in size from 679 to 1,042 mm center length. Prior to release, 168 Red Drum were tagged with both conventional dart tags and PIT tags.

A total of 569 sharks, representing nine species were captured. The top four species being Atlantic Sharpnose shark, Blacknose shark, Bonnethead, and Sandbar shark. During fall 2016, 72 Atlantic Sharpnose shark, 30 Blacknose shark, 24 Bonnethead, and 14 Sandbar shark were captured. During the spring and summer of 2017, 273 Atlantic Sharpnose shark, 83 Blacknose shark, 16 Bonnethead, and 10 Sandbar sharks were captured.

SEAMAP-Caribbean

Puerto Rico

Reef Fish Pilot Survey West Coast

The Reef Fish Survey was conducted from December 19, 2016, to February 14, 2017 on the West coast. Thirty random quadrants were sampled at least two times for a total of 60 trips. A total of 981 fish weighing over 294 kg were caught. Stations closer to the platform edge recorded higher numbers and higher CPUE. Habitat information for sampled stations is limited to shallow areas close to shore (aerial photos, hyperspectral and bathymetric technology). For those stations at the shelf edge, data have been collected in some areas of the platform, but does not include all the sampled areas. Data were collected to develop a correction factor to correlate catches from historic sampling surveys that were conducted fishing while drifting with current anchored fishing and using different hook sizes.

CPUE by fisher ranged from 0.800 to 2.356 kg per trip hours. A one sample t-test yielded no statistically significant results for the fisher CPUE. One fisher caught 45.87% of the total fish caught at the west coast. Catch by moon phase was evaluated and moon phase CPUE yielded statistically significant results. The higher CPUE was recorded during the last quarter moon, which represented the moon phase in which a higher number of trips were taken during the sampling period.

Sampled species catch with the different sampling methods was summarized by hook sizes and their position within the fishing line. Statistically significant results were reported among different levels of species versus hook size and among different levels of hook size. Comparison of species versus

sampling method reported no statistically significant results among different levels of method, but among different levels of species, there were statistically significant results. Finally, there were statistically significant results for species versus position of the hooks on the line among different levels by effect of position and of hook position by effect of species.

There were eight species that dominated the west coast catch: Coney (*Cephalopholis fulva*), Blue Runner (*Caranx crysos*), Lane Snapper (*Lutjanus synagris*), Sand Tilefish (*Malacanthus plumieri*), Red Hind (*Epinephelus guttatus*), Longspine Squirrelfish (*Holocentrus rufus*), Graysby (*C. cruentata*) and Pluma Porgy (*Calamus pennatula*). Of these species, only Blue Runner and Lane Snapper were caught in higher number while anchored fishing.

Reef Fish Pilot Survey East Coast

The east coast sampling took place from October 4, 2016 to March 29, 2017. A total of 30 stations were sampled three times off the east coast. A total of 1,744 individuals of 49 species weighing 577 kg were collected. Two groups of fish constituted most of the catch, the Groupers with 42% and the Snappers with 23% of total catch by number. Other groups that constitute an important part of the catch were the Jacks (10%) and the Grunts (7%).

Eleven stations produced most of the catch by number (58%) and weight (57%). Seven of those stations are close to the insular platform. Six are at the north coast edge and one off the south coast of Vieques Island. For most stations sampled off the east coast there are no habitat maps available that can be displayed as for those off the west coast. Nonetheless, bathymetry information was collected in 2011 for the northeast area from Culebra Island and the north coast of St. Thomas of the USVI. There is a current effort to integrate the information available for these stations to be merged in a GIS format with habitat information.

During the current survey, habitat data were collected using a drop camera at 90% of the sampling stations. There were some instances in which the camera was not deployed since it was too deep. Description of the habitats within the videos recorded for each of the stations (approximately 350 videos). No program was used (e.g. coral count) to identify, classify the habitat, or calculate percent coverage. A group of students from the UPR Humacao Campus is doing an evaluation of the videos to do habitat characterization using the coral count program and put all the data in a GIS format.

Reducing the data to a single most dominant type within the video or image taken produced 9 dominant habitats: sand, coral, algae, sponge, grass, gravel, mud, rock and rubble. Sand is by far the most dominant habitat in which the highest number of individuals were recorded, followed by coral, algae, sponge and grass. Total individuals recorded in these six habitats comprised 95.6% of the total catch. Sand alone represented 36.8% of the total.

The dominant species collected at the east coast were Coney, Red Hind, Graysby, Lane Snapper, Vermillion Snapper, Yellowtail Snapper, Blue Runner, White Grunt, Sand Tilefish, and the Longspine Squirrelfish. For the Groupers, they all differ in which habitat they prefer. The Graysby does not exhibit a preference for any habitat and that might be due to sample size. Red Hinds were collected in almost the same numbers in algae, coral and sponges. Coneys were caught in higher numbers in coral habitat, but they were also caught in high numbers in algae, sand and sponges. Snappers showed a similar trend as those of Groupers, except the Vermillion Snapper. Vermillion Snapper were almost exclusively caught in sand. The Lane Snapper was recorded in high numbers in sand and mud. Yellowtail Snapper were reported in high numbers in coral and in sand.

Anchor fishing was most efficient in catching more individuals than drifting. Nonetheless differences among anchor and drift fishing were not statistically significant.

Catch by moon phase values ranged from 0.231 to 0.336 kg/hook hours and from 5.380 to 8.071 kg/trips. The lowest CPUE was recorded during the last quarter moon and the maximum during the new moon. CPUE in terms of kg/hook hrs was significantly different.

Puerto Rico Lane Snapper Survey

A total of 350 finfish weighing over 230 kg were sampled in 60 trips between February 15 and March 28, 2017 during the west coast lane snapper survey. The catch represented 33 species from 20 families. The most abundant species was the Blue Runner with a total of 71 individuals representing 20% of the total number and 15% of the total catch by weight. A total of 55 Lane Snapper were captured, weighing over 12 kg, representing the second most abundant species (16% of total number and 5% by weight).

CPUE ranged from 0.184 to 4.895 kg/set/trip. CPUE per kg/set trip hours ranged from 0.123 to 3.263 kg/set hours. The largest catches were caught during the last quarter moon followed by the new moon. Sampling during the full moon produced the lowest number of individuals. Lane snappers were recorded in higher numbers during the last quarter moon, followed by the full moon in terms of number. In terms of weight the last quarter moon reported the highest catch.

There are three families that make a significant contribution to the species composition that are not well represented in other surveys. Those were the stingray (*Dasyatidae*), the sharksuckers (*Echeneidae*) and the sharks (*Carcharhinidae*). Their greatest contribution was in terms of weight. The stingrays were represented by a single species (*Dasyatis americana*), as well as the sharksuckers (*Echeneis naucrates*). Sharks on the other hand, were represented by five species of three genera: *Carcharhinus*, *Rhizoprionodon*, and *Ginglymostoma*. The *Rhizoprionodon* are represented by two species, but still we need to clarify if *Rhizoprionodon terranovae* is present in our waters and were correctly identified. Samples were collected to do a genetic identification of the species.

Virgin Islands

Reef Fish Pilot Survey

Sample collection was concluded in March 2017. In April 2017, an additional 83 samples of fixed parrotfish gonadal tissue were sent to the Fishery Research Laboratory in Puerto Rico for histology. A total of 206 gonadal tissue samples were acquired and processed by DPNR-DFW and sent for analysis.

A total of 780 fish from 28 species of reef fish were sampled during this project, with 416 from the St. Thomas district and 364 from St. Croix. Preliminary results include indications of a lower diversity of sampled fish on St. Croix. A diversity index of 1.59 was calculated for St. Croix and an index of 2.13 for St. Thomas.

Reef Fish Hook-and-Line Survey

All remaining surveys were completed by the end of the no-cost extension period in March 2017. Four hooks of two different hook sizes were deployed 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.

Preliminary analysis of the St. Thomas and St. Croix data has been conducted. An ANOVA comparison of mean total length by hook placement (how far off the bottom the hook was positioned on the line) yielded significant results with larger fish being caught in the upper two positions. Hook placement also had a significant effect on the number of fish caught, comparison of the mean number of fish caught showed that more fish are caught on the lower two hook positions. Hook size however did not show any significant effect on the size of fish sampled. Our comparison of the number of fish caught on each hook size showed that significantly more fish were caught using the smaller hooks.

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 1982-2016 have been entered into the system and data from 2017 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 2017:

- 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 2017 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 2017 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 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 www.seamap.org site and the SCDNR maintained based Oracle relational database (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). 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 format were identified and efforts were made to correct formatting errors in the data download application. To assist in this effort, the group worked with the SCDNR Information Technology Department to continue to develop, maintain, and troubleshoot the Oracle database and web interface system. The Length-Frequency extraction for the Pamlico Sound Survey continues to be unavailable. All existing Pamlico Sound Survey data will be deleted from the Oracle database. A complete re-upload of aggregated Pamlico Sound Survey data will provide a solution to the Length-Frequency extraction issues for that project. The SEAMAP-SA database for all projects is available via the web interface.

Southeast Regional Taxonomic Center (SERTC)

As a result of reduced funding compared to previous years, SERTC activities are currently focused on maintaining the collection, distributing educational materials, and assisting with simple species identifications. All SERTC taxonomic specimens continue to be stored in a collection room, which also houses microscope mounted photography equipment. The photography equipment was used to assist the Diadromous Section by photographing sturgeon eggs.

Multiple educational materials have been distributed to teachers, museums, science centers, and the general public. During the reporting period, a total of 317 educational posters, 116 South Carolina Beachcomber’s Guides, and 13 copies of the Guide to the Salt Marshes and Tidal Creeks of the Southeastern United States have been distributed. Additionally, SERTC provided 43 image loans to various institutions, including the Virginia Institute of Marine Science, the University of Georgia, Manchester Metropolitan University, the New Jersey Department of the Environment, the North

Carolina Aquarium on Roanoke Island, and the Leonard J. Raker Nature Center Discovery Lab in Myrtle Beach, South Carolina.

In addition to the distribution of education materials and images, SERTC provides specimen loans when requested. A voucher specimen of slit shell *Perotrochus quoyanus* was provided to Dr. Jerry Harasewych of the National Museum of Natural History in Washington, D.C. The specimen was collected during a NOAA Ocean Explorer research cruise in August 2003 at a depth of 1,870 ft. It was originally misidentified as *Perotrochus maureri*, but based on the shell morphology, the specimen appears to be within the *Perotrochus quoyanus* species complex, which is previously unreported from U.S. waters and evidence for a significant range expansion. Dr. Harasewych plans to sequence DNA and examine the radula to determine subspecies.

Program Documents

The following documents were published and distributed by the SEAMAP program in FY2017 or based on data collected by SEAMAP:

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PROPOSED SEAMAP ACTIVITIES, FY2018

Last year, total program allocations for all three SEAMAP components, Gulf, South Atlantic and Caribbean, was approximately \$4.28 million. At the July meeting, the SEAMAP components based their allocations for 2018 on level funding. Proposed FY2018 activities for all SEAMAP participants are shown in Table 2.

Table 2.

PROPOSED SEAMAP ACTIVITIES, FY2018				
	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
Bottom Longline Survey	X		X	X
Vertical Line Survey			X	X
Information Operations:				
Biological and Environmental Atlas		X		
FY2017 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
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:				
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	X	X	X	X

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