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SEAMAP ENVIRONMENTAL AND BIOLOGICAL ATLAS OF THE GULF OF MEXICO, 2015

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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 (information collected without direct reliance on statistics reported by commercial or recreational fishermen) in United States waters of the Gulf of Mexico (Eldridge 1988). A major SEAMAP objective is to provide a large, standardized database needed by management agencies, industry, and scientists to make sound management decisions and further develop fishery resources in a cost-efficient manner. To accomplish this goal, survey data must be disseminated in a useful format to SEAMAP participants, cooperators, and other interested organizations.

The SEAMAP Program began in March 1981 when the National Marine Fisheries Service (NMFS), Southeast Fisheries Science Center (SEFSC), presented a SEAMAP Strategic Plan (1981) to the Gulf States Marine Fisheries Commission (GSMFC). This strategic plan outlined the proposed program organization (goals, objectives, procedures, resource requirements, etc.). A SEAMAP Subcommittee was then formed within the existing framework of the GSMFC. The Subcommittee consists of one representative from each state fishery management agency [Florida Fish and Wildlife Conservation Commission (FWC); Alabama Department of Conservation and Natural Resources (ADCNR); Mississippi Department of Marine Resources (MDMR) represented by the University of Southern Mississippi, Gulf Coast Research Laboratory (USM/GCRL); Louisiana Department of Wildlife and Fisheries (LDWF); and Texas Parks and Wildlife Department (TPWD)], one from NMFS SEFSC and a non-voting member representing the Gulf of Mexico Fishery Management Council (GMFMC). The Subcommittee has organized and successfully coordinated numerous resource surveys from 1982 through 2014 (Table 1). The resultant data are published in atlases for the surveys in 1982 (Stuntz et al. 1985); 1983 (Thompson and Bane 1986a); 1984 (Thompson and Bane 1986b); 1985 (Thompson et al. 1988); 1986 (Sanders et al. 1990a); 1987 (Sanders et al. 1990b); 1988 (Sanders et al. 1991a); 1989 (Sanders et al. 1991b); 1990 (Sanders et al. 1992); 1991 (Donaldson et al. 1993); 1992 (Donaldson et al. 1994); 1993 (Donaldson et al. 1996); 1994 (Donaldson et al. 1997a); 1995 (Donaldson et al. 1997b); 1996 (Donaldson et al. 1998); 1997 (Rester et al. 1999); 1998 (Rester et al. 2000); 1999 (Rester et al. 2001); 2000 (Rester et al. 2002); 2001 (Rester et al. 2004); 2002 (Rester et al. 2008); 2003 (Rester et al. 2009); 2004 (Rester 2009); 2005 (Rester 2010); 2006 (Rester 2010); 2007 (Rester 2010); 2008 (Rester 2011); 2009 (Rester 2011); 2010 (Rester 2012); 2011 (Rester 2014); 2012 (Rester 2014), 2013 (Rester 2015), and 2014 (Rester 2017). Environmental assessment activities that occurred with each of the surveys can be found in Table 1. All data are available to researchers or interested individuals. Details about how to obtain SEAMAP data can be found in the Data Request section of this document.

In early 2015, the SEAMAP Subcommittee identified and began to plan the year's SEAMAP survey activities for the Gulf of Mexico. In keeping with the program goal of establishing a coordinated long-term resource database, it was decided to continue the same types of survey activities conducted in 1982 through 2014. Overall survey objectives in 1982 to 2015 were to assess the distribution and abundance of recreational and commercial organisms collected by plankton, trap/video, bottom longlines, hook and line, and trawl gears, and document environmental factors that might affect their distribution and abundance. Data from plankton surveys are used for detection and assessment of fishery resources; in the determination of spawning seasons and areas; in investigations of early survival and recruitment mechanisms; and in estimation of the abundance of a stock based on its spawning production (Sherman et al. 1983). Assessment of the Texas Closure (Nichols 1982, 1984; Nichols and Poffenberger 1987) was the

rationale for the establishment of the trawl surveys and to establish a seasonal database to assess the abundance and distribution of the shrimp and groundfish stocks across the northern Gulf of Mexico. The Reef Fish Survey is designed to determine the relative abundance of reef fish populations and habitat using a fish trap/video recording system (Russell, unpublished report).

A major purpose of SEAMAP is to provide resource survey data to State and Federal management agencies and universities participating in SEAMAP activities. This thirty-fourth in a series of SEAMAP environmental and biological atlases presents such data, in a summarized form, collected during the 2015 SEAMAP surveys.

MATERIALS AND METHODS

Methodology for the 2015 SEAMAP surveys is similar to that of the 1982 through 2014 surveys. Sampling was conducted within the U.S. Exclusive Economic Zone (EEZ) and state territorial waters. The NOAA Ship GORDON GUNTER collected plankton and environmental data during the Winter Plankton Survey from March 4 – April 1. The NOAA Ship OREGON II collected plankton and environmental data during the Spring Plankton Survey from May 2-30, while the USM/GCRL vessel TOMMY MUNRO sampled from May 2-4, and the Louisiana vessel POINT SUR sampled from May 21-22. Vessels that participated in collecting plankton and environmental data during the Fall Plankton Survey included the NOAA Ship PISCES (August 27 - September 10), the Alabama vessel ALABAMA DISCOVERY (September 10), and USM/GCRL vessel TOMMY MUNRO (September 9-11).

Vessels that participated in the Summer Shrimp/Groundfish Survey and concurrently sampled plankton and environmental data included the USM/GCRL vessel TOMMY MUNRO (May 30 – June 2)), Florida using the TOMMY MUNRO (June 8-30), Louisiana using the POINT SUR (June 18-22), and the NOAA Ship OREGON II (June 9 – July 16). The Alabama vessel ALABAMA DISCOVERY (June 29) did not sample plankton in conjunction with the summer survey.

The NOAA ship PISCES participated in the Reef Fish Survey from May 16 – June 7 while the SOUTHERN JOURNEY sampled from August 24 – September 9. Florida made eight sampling trips aboard the R/V GULF MARINER from June 1 – August 27, two trips onboard the R/V BELLOWS from July 17-23 and August 7-11, and nine day trips on the R/V NO FRILLS from August 24 – October 2.

Vessels that participated in the Fall Shrimp/Groundfish Survey and collected environmental data included the NOAA Ships OREGON II (October 10 – November 20), the USM/GCRL vessel TOMMY MUNRO (November 5-6), the Louisiana vessel PELICAN (October 19-20 and November 9-10), Florida using the TOMMY MUNRO (October 8-30), and the Alabama vessel ALABAMA DISCOVERY (November 4).

Alabama, Mississippi, Louisiana, and Texas conducted bottom longline sampling monthly from April to October as part of the Bottom Longline Survey.

Alabama sampled reef fish over artificial and natural reefs during the Vertical Line Survey from May through September. Louisiana sampled reef fish over artificial reefs, oil and gas platforms, and natural habitat from May through September. Texas sampled reef fish from August through October.

PLANKTON SURVEYS

Since 1982, SEAMAP resource surveys have been conducted by the National Marine Fisheries Service in cooperation with the states of Florida, Alabama, Mississippi, Louisiana, and Texas. Plankton sampling is carried out during these surveys at predetermined SEAMAP stations arranged in a fixed, systematic grid pattern across the entire Gulf of Mexico. Most but not all SEAMAP stations (designated by a unique SEAMAP number) are located at ~56 km or ½-degree intervals along this grid. Some SEAMAP stations are located at < 56 km intervals especially along the continental shelf edge, while others have been moved to avoid obstructions, navigational hazards, or shallow water. Most SEAMAP plankton samples are taken during either dedicated plankton or shrimp/bottomfish (trawl) surveys, but over the years additional samples were taken using SEAMAP gear and collection methods at locations other than designated SEAMAP stations and/or outside established SEAMAP surveys, e.g. during Louisiana seasonal trawl surveys, SEAMAP Squid/Butterfish survey; and other serendipitous or special projects.

The sampling gear and methodology used to collect SEAMAP plankton samples are similar to those recommended by Kramer et al. (1972), Smith and Richardson (1977) and Posgay and Marak (1980). A 61 cm bongo net fitted with 0.333 (0.335)¹ mm mesh netting is fished in an oblique tow path from a maximum depth of 200 m or to 2-5 m off the bottom at depths less than 200 m. 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 ~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 (0.950)¹ mm mesh netting is towed at the surface with the frame half-submerged for 10 minutes. Samples are taken upon arrival on station regardless of time of day. At each station either a bongo and/or neuston tow are made depending on the specific survey. Samples are routinely preserved in 5 to 10% formalin and later transferred after 48 hours to 95% ethanol for long-term storage. During some surveys, selected samples are preserved initially in 95% ethanol and later transferred to fresh ethanol.

Initial processing of one bongo sample and one neuston sample from each SEAMAP station was accomplished at the Sea Fisheries Institute, Plankton Sorting and Identification Center (ZSIOP), in Szczecin, Poland, under a Joint Studies Agreement with NMFS. Wet plankton volumes of bongo net samples were measured by displacement to estimate net-caught zooplankton biomass (Smith and Richardson 1977). Fish eggs and larvae were removed from bongo net samples, and fish larvae only from neuston net samples. Fish eggs were not identified further, but larvae were identified to the lowest possible taxon (to family in most cases). Body length (either notochord or standard length) was measured.

Sorted ichthyoplankton specimens from ZSIOP were sent to the SEAMAP Archiving Center, managed in conjunction with the FWC, for long-term storage under museum conditions. Sorted ichthyoplankton samples from 1982 through 2013 are available for loan to researchers throughout the country. The alternate bongo and neuston samples from each station are retained at USM/GCRL as a backup for those samples transshipped to ZSIOP in case of loss or damage during transit. These backup unsorted plankton samples are curated and housed at the SEAMAP Invertebrate Plankton Archiving Center, managed in conjunction with USM/GCRL, and are available for use by researchers.

¹ Mesh size change in database does not represent an actual change in gear but only a change in the accuracy at which plankton mesh aperture size can be measured by the manufacturer.

See the SEAMAP Operations Manual for a more detailed description of sampling methods and protocols. You can also refer to the vessel cruise reports for more specific information on the individual SEAMAP Plankton Surveys conducted during 2015.

ENVIRONMENTAL DATA

Standardized methodology was used although the actual parameters measured varied among vessels participating in each survey. These parameters were measured based on equipment availability. The following parameters were recorded:

Vessel: Vessel code for each vessel.

Station: Station identifiers varied by state and vessel.

Cruise: Cruise numbers varied by state and vessels.

Date: Month/Day/Year.

Time: Local time and time zone, recorded at the start of sampling.

Latitude/longitude: Recorded to seconds.

Barometric pressure: Recorded in millibars.

Wave height: Estimated visually in meters.

Wind speed and direction: Recorded in knots with direction recorded in compass degrees from which the wind was blowing.

Air temperature: Recorded in degrees Celsius.

Cloud cover: Estimated visually in percent cloud cover.

Secchi depth: Secchi depth in meters, estimated at each daylight station. Standard oceanographic 30-cm white discs were lowered until no longer visible, and then raised until visible. If different depths were recorded, an average was used.

Water Color: Gross water color data were recorded.

The following parameters were measured at the surface, mid-depth, and bottom; for bottom depths greater than 200 m, samples were taken at surface, 100 m and 200 m:

Water temperature: Temperatures were measured by a hand-held thermometer or by in situ electronic sensors onboard ship. No attempt was made to intercalibrate the various instruments used on individual vessels although several vessels did sample together to calibrate other sampling gear. Some error can be expected.

Salinity: Salinity samples were collected by Niskin bottles and stored for laboratory analysis with a salinometer. Conductivity probes or refractometers were used on some vessels. Salinity samples were also measured with in situ electronic sensors.

Chlorophyll: Chlorophyll samples were collected and frozen for later laboratory analysis. The general procedure for shipboard collection of chlorophyll was to collect more than 9 liters of water from the surface. This was kept stirred by bubbling air through it while filtration was being done. Three samples, to each of which a 1 ml, 1% (W/V), suspension of MgCO₃ was added, of up to 3 liters of water from the 9 liter sample were filtered through GF/C filters. The three filters were placed individually in Petri dishes, wrapped in opaque material and frozen until analysis. Each of the three samples was analyzed separately in the laboratory.

Laboratory analyses for chlorophyll a and phaeophytin a (chlorophyll degradation product) were conducted by fluorometry and spectrophotometry. The general extraction procedures prior to measurement were similar. Samples analyzed by spectrophotometer included other chlorophyllous products, but these have not been included as data in this report. The

methodology used is described in Strickland and Parsons (1972) and Jeffrey and Humphrey (1975). Some of the values have been deleted from the database because of analytical errors. In addition, chlorophyll samples data were also collected using a CTD. This method only obtains measures of chlorophyll a and is a measure of fluorescence (FL).

Dissolved oxygen: Dissolved oxygen values were measured by electronic probes or by the Winkler titration method. No attempts were made to intercalibrate the methods. When oxygen was measured in samples collected from a Niskin sampler, the oxygen bottles were allowed to overflow a minimum of 10 seconds to eliminate oxygen contamination. The tubing which delivered the water sample was inserted to the bottom of the bottle and withdrawn while the sample was still flowing. The oxygen bottles were sealed with a ground-glass stopper and analyzed onboard the vessels.

Turbidity: Turbidity values were measured by electronic probes when equipment was available.

TRAWL SURVEYS

Summer Shrimp/Groundfish Survey

In the fall of 2008, NMFS changed their method of selecting sampling sites. The states adopted this change beginning in 2010. Diurnal stratifications were dropped in the selection process, and geographic strata (which were mostly 2 to 3 statistical zone groupings) were changed to single statistical zones (Figure 1). Both station selection methods, the old and the new, are probability based designs. With probability sampling, each unit in the survey population has a known, positive probability of selection. This property of probability sampling avoids selection bias and enables one to use statistical theory to make valid inferences from the sample to the survey population. More specifically, the new method employs probability proportional to size sampling. In this type of sampling, a unit's selection probability is proportional to its size measure which in this case is geographical surface area. For example, if Unit A has twice the surface area of Unit B, then Unit A will have twice the probability of having a sample selected from it than B. The end result is that Unit A will have about twice the number of samples as B. Even though diurnal strata were dropped in the sampling site selection process, this information is not lost since samples can be post-stratified. Following is an example of how sampling sites are now selected.

Bathymetry data were downloaded from the National Geophysical Data Center (NGDC) web site (Divins, D.L., and D. Metzger, NGDC Coastal Relief Model, <http://www.ngdc.noaa.gov/mgg/coastal/coastal.html>). Because of the magnitude of data, they were downloaded by single NMFS Shrimp Statistical Zones (Figure 1). The download process allows for the definition of a desired data block through user supplied latitude and longitude boundaries. Since the data definition process is controlled by latitude and longitude only, some undesired depths were included in downloads (i.e., for NMFS, depths less than five or greater than sixty fathoms). These records were deleted later through a Statistical Analysis System (SAS) program. Each bathymetric record represents a 3 arc-second element of data (≈ 0.05 -by- 0.05 minutes of latitude and longitude); therefore, the number of data records was used as a measure of size for each respective statistical zone. The bathymetry data were then used as input to a SAS program which performed three functions; defined the sampling universe, determined the sampling proportions according to sizes of statistical zones, and randomly selected the sample sites according to the defined proportions.

Thirty minutes was selected as a tow time standard that was long enough to obtain a good sample, but short enough to maintain the efficiency of the surveys. Therefore all SEAMAP vessels now use a standard tow time of 30 minutes.

All *Litopenaeus setiferus*, *Farfantepenaeus aztecus*, and *Farfantepenaeus duorarum* were separated from the trawl catch at each station. Total count and weight by species were recorded for each station. A sample of up to 200 shrimp of each species from every trawl was sexed and measured to obtain length-frequency information. Estimated total numbers were derived from the total weights of those processed. Other species of fishes and invertebrates were identified, enumerated, and weighed. Weights and individual measurements on selected species, other than commercial shrimp, were also recorded.

Fall Shrimp/Groundfish Survey

The design of the Fall Survey was similar to the Summer Shrimp/Groundfish Survey. During the Fall Survey trawl stations were made with the standard 42-ft SEAMAP nets and covered NMFS shrimp statistical zones 2 through 21 (Figure 1). Catch rates on all the vessels sampling were treated in the same manner as the Summer Shrimp/Groundfish Survey, with the exception to shrimp catches, where only 20 shrimp of each species from every trawl were measured, although Louisiana measures a minimum of 50 shrimp.

REEF FISH SURVEY

The primary purpose of this survey is to assess relative abundance and compute population estimates of reef fish found on natural reef fish habitat in the Gulf of Mexico. For the NMFS portion of the Reef Fish Survey, a two-stage procedure was used to select sample sites. Sample blocks were first selected using stratified random sampling, with strata defined by region of the GOM and size. Reef sites within each block were then selected randomly from previously collected bathymetric data. Video gear was used to assess relative abundance and length frequencies and consisted of paired black-and-white Videre stereo cameras along with a color mpeg camera housed in cylindrical pressure housings. The camera array consisted of four housings positioned orthogonally and center mounted 51 cm above the bottom of the array. The camera array was baited with squid and was retrieved 40 minutes after deployment.

For the Florida portion of the survey, a survey of bottom habitat was conducted using side-scan sonar that covered a distance of 1 nm east and west of each randomly-selected sampling site. Side-scan sonar data were analyzed to determine the quantity of reef habitat and number of targets where gear could be set within each 0.1 nm x 0.3 nm sampling unit. A target was defined as identified reef fish habitat with minimum of 100 m spacing between targets. Within each survey, a random selection procedure was followed to select transects from all transects containing at least two targets. Sampling occurred at a minimum for the first selected transect followed by other transects (alternates) if time allowed. All gears were separated from any other deployed gear by approximately 100 m. All traps and camera arrays were freshly baited with Atlantic mackerel prior to deployment. Chevron traps were built to standardized specifications (1.76m x 1.52m x 0.61m; 28cm throat diameter; 3.81cm vinyl-clad mesh). All traps were equipped with a blow-out panel fastened with magnesium timed-releases to minimize the potential of ghost fishing should traps be lost. Each chevron trap soaked at the bottom for a minimum of 90 minutes prior to retrieval. The stationary video camera array was equipped with a pair of underwater camera units positioned at an angle of 180° from one another to maximize the total field of view. Each camera unit consisted of an underwater housing that contains both a digital camcorder to record video and a pair of stereo cameras to capture still images. The stationary video camera array was allowed to soak at the bottom for a minimum of forty-five minutes to assure that twenty minutes of continuous video and stereo images were recorded.

All fish collected were identified, enumerated, and measured (standard length for non-exploited reef fishes and both standard and total lengths for all exploited reef fishes). Those individuals that could not be satisfactorily identified in the field were brought back to the laboratory for confirmation of identification. A subsample of collected individuals was sacrificed to provide biological material for the determination of age, sex, reproductive condition, diet, and mercury concentration. Additionally, any individual with evidence of gross external abnormalities was retained for a full fish health workup.

Associated environmental data collected at each site usually includes profiles of salinity, temperature, and surface chlorophyll; and may include profiles of dissolved oxygen, light transmittance, and fluorescence. Additional environmental and meteorological observations taken on stations follow standard SEAMAP methodology.

BOTTOM LONGLINE SURVEY

Until 2014 each partner randomly selected stations off their coast independent of other states. There were discrepancies among the partners regarding number of stations sampled, the frequency of sampling, the size of the sampling universe, and the depth strata targeted. In an effort to make the bottom longline data as useful as possible in federal and state stock assessments, the SEAMAP Subcommittee began an effort in 2014 to develop a standardized protocol for station selection procedures. This effort sought to better standardize the sampling effort among the partners and develop a more uniform design and resultant data set. At the March 2015 SEAMAP Subcommittee meeting, firm station selection protocols were established.

Sampling now occurs 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 (Figure 1) 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. Partners usually survey the stations that occur off their state boundaries for each season. When seasonal effort cannot be accomplished due to weather or mechanical problems the partners should decrease effort proportionally across their area. The Gulf States Marine Fisheries Commission selects all stations for all seasons and annually distributes them to the partners.

Given the limited number of samples that can be conducted during the Bottom Longline Survey, the large area of the statistical zones, and spatial autocorrelation of most fish species, station locations are buffered 4 nautical miles. Sampling effort by each partner must have a two week buffer between consecutive seasons. For example, if the last day of spring sampling was conducted on May 30th, summer sampling should not begin until June 15th.

The longline gear consisted of a 1.6 km (426 kg test monofilament) mainline with 100 gangions (3.66 m, 332 kg test monofilament) containing #15/0 circle hooks (0 offset) and baited with Atlantic mackerel, *Scomber scombrus*. The mainline was weighted down with a beginning, midpoint, and endpoint weight. Radar high-flyers with strobe bullet buoys were used to mark the longline locations. A hydraulic longline reel was used for setting and retrieving the mainline. The longline was fished for 1-hr and then retrieved.

VERTICAL LINE SURVEY

In 2010, Alabama started a new vertical line survey to sample reef fish over natural and artificial reefs and other areas. The sampling gear used a typical commercial bandit rig that holds approximately 500 feet of clear 300 lb test mainline. A 24-ft. backbone (leader) was attached to the terminal end of the mainline. An approximately ten pound weight was attached to the terminal end of the backbone. The backbone was rigged with ten 18-inch long gangions at intervals of two feet. In 2015, a total of eighteen grids were selected, across 36 stations and 3 non structure per depth strata inside the reef permit zone. Stations were randomly chosen and allocated proportionally across three depth strata: eighteen stations in 20-40 m, fourteen stations in 40-60 m and seven stations in 60-120 m. Across these 39 stations, two different treatments were applied, as follows:

Treatment 1 (n=24, all inside the reef permit zone): First ROV, then fish three drops. GoPro cameras were used at these stations.

Treatment 2 (n=12+3 no structure per strata, all inside the reef permit zone): Fish three drops. No ROV. GoPro cameras were used at these stations.

Louisiana started vertical line sampling in 2011. In Louisiana, the sampling was conducted monthly May through October. The sampling universe was divided into three equidistant longitudinal zones (eastern zone: -89.00° – -89.39° , central zone: -89.40° – -90.19° , and western zone: -90.20° – -91.00°) and each was sampled three times during the sampling season. Sampling stations were drawn from a pre-established station universe with predetermined depth ranges and structure types. For each sampling day, longitudinal coordinates were randomly selected within a longitudinal zone and stations that fell along the selected longitude (+/- three minutes) were sampled that day. The sites roughly consist of artificial reefs, natural bottom, and petroleum production platforms.

Texas started vertical line sampling in 2015 using the standardized sampling gear described above. Five research vessels stationed along the coast were outfitted with bandit reels. Stations were randomly selected by field party chiefs from known habitat in statistical zones 17-21 and within 10-40 m water depth. Habitat predominantly consisted of oil and gas platforms.

RESULTS

PLANKTON SURVEYS

Plankton stations for the Winter Plankton Survey are shown in Figure 2. Plankton stations for the Spring Plankton Survey are shown in Figure 3. Plankton stations for the Fall Plankton Survey are shown in Figure 4.

TRAWL SURVEYS

Summer Shrimp/Groundfish Survey

Shrimp and groundfish sampling was conducted in June and July from south Florida to Brownsville, Texas. Figure 5 shows station locations. The Summer Shrimp/Groundfish Survey

consisted primarily of biological trawl data and concomitant environmental and plankton data. A species composition listing from the 42-ft trawls is presented in Table 2, ranked in order of abundance, within the categories of finfish, crustaceans, and other invertebrates.

Fall Shrimp/Groundfish Survey

Shrimp and groundfish sampling was conducted from October through December from south Florida to Brownsville, Texas. Figure 6 shows the station locations. The Fall Shrimp/Groundfish Survey consisted of biological trawl data, concomitant environmental, and plankton data. A species composition listing from the 42-ft trawls is presented in Table 3, ranked in order of abundance, within the categories of finfish, crustaceans, and other invertebrates.

REAL-TIME DATA MANAGEMENT

The SEAMAP Subcommittee agreed it was imperative to the success of the SEAMAP Program to distribute data on a near real-time basis to the fishing industry and others interested in SEAMAP. Summarized data were distributed weekly to approximately 125 individuals during the Summer Shrimp/Groundfish Survey. The summarized data in the form of computer plots and data listings were sent to management agencies and industry members. These plots showed station locations, catches of Brown, Pink, and White Shrimp in lb/hr and count/lb, and total finfish catch in lb/hr.

REEF FISH SURVEY

Station locations are plotted in Figure 7. Video tapes from all sources were analyzed using NMFS standardized protocols.

BOTTOM LONGLINE SURVEY

Station locations for the Bottom Longline Survey are plotted in Figure 8. A species composition list is presented in Table 4. The species list is ranked in order of abundance.

VERTICAL LINE SURVEY

Station locations for the Vertical Line Survey are plotted in Figure 9. A species composition list, ranked in order of abundance, is presented in Table 5.

DISCUSSION

The quasisynoptic SEAMAP sampling program and the intended long-term nature of the sampling programs have been designed to provide the baseline data set needed for fishery management and conservation. In 1985, the SEAMAP long-term baseline data was disrupted by the loss of the Spring Plankton Survey and Fall Plankton Survey. In 1986, the SEAMAP Subcommittee renewed its commitment for the collection of baseline plankton data. These ichthyoplankton samples are and will continue to be used by researchers studying taxonomy, age and growth, bioenergetics, and other life history aspects, as well as spawning biomass and recruitment. Information on species' relative distributions within the Gulf of Mexico can be analyzed with respect to environmental data to assess population abundance as a function of environmental change.

Similar analyses and investigations are being undertaken with Summer and Fall Shrimp/Groundfish Survey data. These data sets are being utilized in resource management decisions, and because of the program's ability to process data quickly, the capability exists to optimize some fisheries on a real-time basis. The long-term data set on all of the species collected, not just those of commercial and recreational importance, offers an opportunity to examine ecological relationships, with the eventual goal of developing management models that take into account the multi-species nature of most Gulf fisheries. The value of the SEAMAP program lies in its use for both immediate and long-range management goals.

Much use has already been made of SEAMAP data. For example, during the past SEAMAP surveys an area of very low dissolved bottom oxygen was found off Louisiana in the summers of 1982, 1985-2015. The presence of this phenomenon and some of the related conditions and biological effects were reported by Leming and Stuntz (1984) and Hanifen et al. (1995), and during such occurrences, SEAMAP has distributed special environmental bulletins and news releases to management agencies and the shrimp industry. In addition, SEAMAP data were used to assist in the identification of the minimum 1997 reduction in Red Snapper shrimp trawl bycatch mortality rate that would enable the Red Snapper fishery to still recover to the 20% spawning potential ratio (SPR) by the year 2019 (Goodyear 1997). This analysis was requested and supported by the Gulf of Mexico Fishery Management Council to address the issue of Red Snapper bycatch. SEAMAP data were also used by some coastal states to determine the status of shrimp stocks and their movements just as the shrimping seasons were to be opened and SEAMAP data were used to develop a guide to the grouper species of the western North Atlantic Ocean (Grace et al. 1994). The primary purpose of the guide is for species identification with projects that deploy underwater video camera systems.

Since SEAMAP's inception in 1982, the goal of plankton activities in the Gulf of Mexico has been to collect data on the early life stages of fishes and invertebrates that will complement and enhance the fishery-independent data gathered on the adult life-stage (Lyczkowski-Shultz and Brasher 1996). An annual larval index for Atlantic Bluefin Tuna and Skipjack Tuna is generated each year from the Spring Plankton Survey and is used by the International Commission for the Conservation of Atlantic Bluefin Tunas to estimate stock size (Scott et al. 1993). Larval indices generated from the Summer Shrimp/Groundfish and Fall Plankton Surveys have now become an integral part of the King Mackerel assessment in the Gulf (Gledhill and Lyczkowski-Shultz 2000). Larvae from SEAMAP collections have formed the basis for formal descriptions of larval development for fishes such as the snappers, Cobia, Tripletail, and Dolphin (Drass et al. 2000; Ditty and Shaw 1992; Ditty and Shaw 1993; Ditty et al. 1994). Data on distribution and relative abundance of larvae of all Gulf fishes captured during SEAMAP surveys have been summarized by Richards et al. 1984, Kelley et al. 1985, Kelley et al. 1990, and Kelley et al. 1993.

The SEAMAP data collected during the Summer Shrimp/Groundfish Survey continues to be used extensively for fishery management purposes. In 1981, the Gulf of Mexico Fishery Management Council's plan for shrimp was implemented (Center for Wetland Resources 1980), with one management measure calling for the temporary closure to shrimping in the EEZ off Texas. This closure complements the traditional closure of the Texas territorial sea, normally May 15 through early July of each year. The GMFMC determined that this type of closure would allow small Brown Shrimp to be protected from harvest, but would still allow the taking of larger Brown Shrimp by fishermen in deeper waters.

The National Marine Fisheries Service was charged with evaluating the effects of the Texas Closure and submitted a report to the GMFMC in January 2015. This report contained the results

and an overview of the effect of the 2014 Texas Closure. After review of these data and other information, the GMFMC voted to continue the Texas Closure for 2015.

Data from all SEAMAP surveys have been used in the SouthEast Data, Assessment, and Review (SEDAR) process. SEDAR is a cooperative Fishery Management Council process initiated in 2002 to improve the quality and reliability of fishery stock assessments. SEDAR seeks improvements in the scientific quality of stock assessments and greater relevance of quantities information available to address existing and emerging fishery management issues. SEAMAP data have been used in stock assessments for Greater Amberjack, Almaco Jack, Lesser Amberjack, Snowy Grouper, Speckled Hind, King Mackerel, Red Snapper, Vermillion Snapper, Gray Triggerfish, Gag Grouper, Red Grouper, Mutton Snapper, Lane Snapper, Wenchman, Blacknose Shark, Atlantic Sharpnose Shark, Bonnethead Shark, Smoothhound Sharks, small coastal sharks, and Blacktip Shark.

DATA REQUESTS

It is the policy of the SEAMAP Subcommittee that all verified non-confidential SEAMAP data, collected specimens, and samples shall be available to all SEAMAP participants, other fishery researchers, and management organizations. This atlas presents, to those individuals interested in the data or specimens, a chance to review the data in a summary form.

Data and specimen requests from SEAMAP participants, cooperators and others will normally be handled on a first-come, first-served, and time-available basis. Because of personnel and funding limitations, however, certain priorities must be assigned to the data and specimen requests. These priorities are reviewed by the SEAMAP Subcommittee. For further information on SEAMAP data management, see the [Southeast Area Monitoring and Assessment Program \(SEAMAP\) Management Plan: 2011-2015 \(ASMFC 2011\)](#).

Data requests and inquiries, as well as requests for plankton samples, can be made by contacting Jeff Rester, the SEAMAP Coordinator, Gulf States Marine Fisheries Commission, 2404 Government Street, Ocean Springs, MS 39564; (228) 875-5912 or via e-mail at jrester@gsmfc.org.

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Table 1. List of SEAMAP survey activities from 1982 to 2015.

SEAMAP SURVEY ACTIVITIES						
YEAR	WINTER SHRIMP/GROUNDFISH	SPRING PLANKTON	SPRING SHRIMP/GROUNDFISH	SUMMER SHRIMP/GROUNDFISH	BUTTERFISH	FALL PLANKTON
1982	--	APRIL-MAY	--	JUNE-JULY	--	--
1983	--	APRIL-MAY	--	JUNE-JULY	--	--
1984	--	APRIL-MAY	--	JUNE-JULY	--	AUGUST
1985	--	--	--	JUNE-JULY	JULY-AUGUST	SEPTEMBER
1986	--	APRIL-MAY	--	JUNE-JULY	MAY-JUNE	SEPTEMBER
1987	--	APRIL-MAY	--	JUNE-JULY	--	SEPTEMBER
1988	--	MARCH-MAY	--	JUNE-JULY	--	SEPTEMBER-OCTOBER
1989	--	APRIL-MAY	--	JUNE-JULY	--	SEPTEMBER-OCTOBER
1990	--	APRIL-MAY	--	JUNE-JULY	--	SEPTEMBER-OCTOBER
1991	--	APRIL-MAY	--	JUNE-JULY	--	AUGUST-SEPTEMBER
1992	--	APRIL-MAY	--	JUNE-JULY	--	AUGUST-OCTOBER
1993	--	APRIL-MAY	--	JUNE-JULY	--	SEPTEMBER-OCTOBER
1994	--	APRIL-MAY	--	JUNE-JULY	--	SEPTEMBER-OCTOBER
1995	--	APRIL-JUNE	--	JUNE-JULY	--	SEPTEMBER
1996	--	APRIL-JUNE	--	JUNE-JULY	--	SEPTEMBER-OCTOBER
1997	--	APRIL-JUNE	--	JUNE-JULY	--	SEPTEMBER-OCTOBER
1998	--	APRIL-JUNE	--	JUNE-JULY	--	SEPTEMBER-OCTOBER
1999	--	APRIL-MAY	--	JUNE-JULY	--	SEPTEMBER-OCTOBER
2000	--	APRIL-MAY	--	JUNE-JULY	--	SEPTEMBER-OCTOBER
2001	--	APRIL-MAY	--	JUNE-JULY	--	AUGUST-OCTOBER
2002	--	APRIL-MAY	--	JUNE-JULY	--	AUGUST-OCTOBER
2003	--	MAY	--	JUNE-JULY	--	AUGUST-OCTOBER
2004	--	APRIL-JUNE	--	JUNE-JULY	--	SEPTEMBER
2005	--	APRIL-MAY	--	JUNE-AUGUST	--	--
2006	--	APRIL-MAY	--	JUNE-JULY	--	AUGUST-SEPTEMBER
2007	--	MARCH-JUNE	--	JUNE-AUGUST	--	AUGUST-SEPTEMBER
2008	--	APRIL-JUNE	APRIL	JUNE-AUGUST	--	SEPTEMBER
2009	JANUARY-FEBRUARY	APRIL-JUNE	MARCH	JUNE-JULY	--	AUGUST-SEPTEMBER
2010	FEBRUARY	APRIL-MAY	APRIL	JUNE-AUGUST	--	AUGUST-SEPTEMBER
2011	FEBRUARY	MAY	--	JUNE-JULY	--	AUGUST-SEPTEMBER
2012	--	APRIL-MAY	--	MAY-JULY	--	AUGUST-SEPTEMBER
2013	--	MAY	--	JUNE-JULY	--	AUGUST-SEPTEMBER
2014	--	MAY	--	JUNE-JULY	--	AUGUST-SEPTEMBER
2015	--	MAY	--	MAY-JULY	--	AUGUST-SEPTEMBER

Table 1. List of SEAMAP survey activities from 1982 to 2015 (continued).

SEAMAP SURVEY ACTIVITIES						
YEAR	FALL SHRIMP/GROUNDFISH	WINTER PLANKTON	BOTTOM LONGLINE	VERTICAL LINE	REEF FISH	
1982	--	--	--		--	
1983	--	DECEMBER	--		--	
1984	--	DECEMBER	--		--	
1985	SEPTEMBER-DECEMBER	--	--		--	
1986	OCTOBER-DECEMBER	--	--		--	
1987	SEPTEMBER-DECEMBER	--	--		--	
1988	OCTOBER-DECEMBER	--	--		--	
1989	OCTOBER-DECEMBER	--	--		--	
1990	OCTOBER-DECEMBER	--	--		--	
1991	SEPTEMBER-DECEMBER	--	--		--	
1992	OCTOBER-DECEMBER	--	--		MAY-JUNE	
1993	OCTOBER-DECEMBER	JANUARY-FEBRUARY	--		MAY-JULY, SEPT., NOV.	
1994	OCTOBER-NOVEMBER	--	--		MAY-JULY, AUG.-OCT., DEC.	
1995	OCTOBER-DECEMBER	--	--		JAN., JUNE-AUG., DEC.	
1996	OCTOBER-DECEMBER	DECEMBER	--		JULY, AUGUST, NOVEMBER	
1997	OCTOBER-DECEMBER	--	--		JUNE, JULY, AUG., NOV.	
1998	OCTOBER-NOVEMBER	--	--		MAY, JULY, AUGUST	
1999	OCTOBER-NOVEMBER	--	--		JAN., AUG., OCT., DEC.	
2000	OCTOBER-DECEMBER	--	--		OCTOBER, NOVEMBER	
2001	OCTOBER-DECEMBER	--	--		MAY, JUNE, OCTOBER	
2002	OCTOBER-DECEMBER	--	--		FEBRUARY-MAY, OCTOBER	
2003	OCTOBER-DECEMBER	--	--		OCTOBER-NOVEMBER	
2004	OCTOBER-DECEMBER	JANUARY	--		FEBRUARY-MARCH	
2005	OCTOBER-NOVEMBER	--	--		FEBRUARY-JULY, OCTOBER	
2006	OCTOBER-DECEMBER	--	--		FEBRUARY-AUGUST	
2007	OCTOBER-DECEMBER	--	--		FEBRUARY-MAY	
2008	SEPTEMBER-NOVEMBER	FEBRUARY-MARCH	MARCH-OCTOBER		FEBRUARY-AUGUST	
2009	SEPTEMBER-NOVEMBER	FEBRUARY-MARCH	MARCH-OCTOBER		APRIL-AUGUST	
2010	SEPTEMBER-NOVEMBER	FEBRUARY-MARCH	MARCH-OCTOBER	APRIL-DECEMBER	MARCH-SEPTEMBER	
2011	OCTOBER-NOVEMBER	--	MARCH-OCTOBER	MAY-DECEMBER	APRIL-JULY	
2012	OCTOBER-NOVEMBER	JANUARY-FEBRUARY	MARCH-OCTOBER	MARCH-OCTOBER	JANUARY-AUGUST	
2013	OCTOBER-DECEMBER	FEBRUARY	MARCH-OCTOBER	FEBRUARY-OCTOBER	FEBRUARY-OCTOBER	
2014	OCTOBER-NOVEMBER	--	MARCH-OCTOBER	MAY-OCTOBER	MAY-SEPTEMBER	
2015	OCTOBER-NOVEMBER	MARCH-APRIL	APRIL-OCTOBER	MAY-OCTOBER	MAY-OCTOBER	

Table 2. 2015 Summer Shrimp/Groundfish Survey species composition list, 377 trawl stations, for those vessels that used a 42-ft trawl.

Species with a total weight of less than 0.0227 kg (0.05 lb) are indicated on the table as 0.0 kg.

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<u>Finfishes</u>					
Micropogonias undulatus	Atlantic croaker	130546	3185.2	129	34.2
Stenotomus caprinus	longspine porgy	19515	634.1	141	37.4
Peprilus burti	Gulf butterfish	18662	712.1	132	35
Chloroscombrus chrysurus	Atlantic bumper	12081	423.6	88	23.3
Leiostomus xanthurus	spot	8110	459.8	82	21.8
Lagodon rhomboides	pinfish	6902	347.7	132	35
Cynoscion nothus	silver seatrout	6374	220.7	68	18
Syacium papillosum	dusky flounder	6171	296.1	156	41.4
Trichiurus lepturus	Atlantic cutlassfish	5656	257.6	106	28.1
Brevoortia patronus	Gulf menhaden	5560	86.8	28	7.4
Prionotus longispinosus	bigeye searobin	5071	67.7	145	38.5
Cynoscion arenarius	sand seatrout	5001	154.6	91	24.1
Decapterus punctatus	round scad	4790	27.3	32	8.5
Lutjanus synagris	lane snapper	3623	432.6	106	28.1
Scorpaena calcarata	smoothhead scorpionfish	3476	59.5	81	21.5
Haemulon aurolineatum	tomtate	3125	195.8	96	25.5
Trachurus lathami	rough scad	3031	80.3	69	18.3
Eucinostomus gula	silver jenny	2885	81.7	34	9
Diplectrum formosum	sand perch	2883	205.2	150	39.8
Synodus foetens	inshore lizardfish	2711	308.1	256	67.9
Serranus atrobranchus	blackear bass	2544	28.3	74	19.6
Larimus fasciatus	banded drum	2484	82.2	55	14.6
Saurida brasiliensis	largescale lizardfish	2470	12.9	101	26.8
Pristipomoides aquilonaris	wenchman	2165	100.8	84	22.3
Anchoa hepsetus	broad-striped anchovy	1916	32.9	62	16.4
Syacium gunteri	shoal flounder	1906	36.6	103	27.3
Prionotus stearnsi	shortwing searobin	1697	22.3	58	15.4

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Prionotus scitulus</i>	leopard searobin	1406	46.4	18	4.8
<i>Anchoa mitchilli</i>	bay anchovy	1388	2.1	34	9
<i>Stellifer lanceolatus</i>	star drum	1368	16.8	25	6.6
<i>Stephanolepis hispida</i>		1187	44	131	34.7
<i>Centropristis philadelphicus</i>	Rock Sea bass	1166	55.1	109	28.9
<i>Bellator militaris</i>	horned searobin	1164	16.1	58	15.4
<i>Sphoeroides dorsalis</i>	marbled puffer	1144	27.8	92	24.4
<i>Synodus macrostigmus</i>		1016	74.8	89	23.6
<i>Prionotus martis</i>	barred searobin	1005	18.2	24	6.4
<i>Selene setapinnis</i>	Atlantic moonfish	966	63.9	92	24.4
<i>Rhomboplites aurorubens</i>	vermillion snapper	951	61.9	72	19.1
<i>Serranus phoebe</i>	tattler	938	46.5	49	13
<i>Halieutichthys</i>		934	6	81	21.5
<i>Lutjanus campechanus</i>	red snapper	929	234.7	118	31.3
<i>Upeneus parvus</i>	dwarf goatfish	903	32.5	58	15.4
<i>Synodus poeyi</i>	offshore lizardfish	858	7.1	106	28.1
<i>Scorpaena brasiliensis</i>	barbfish	828	43.9	80	21.2
<i>Anchoa lyolepis</i>	dusky anchovy	784	3.5	9	2.4
<i>Harengula jaguana</i>	scaled herring	773	37	39	10.3
<i>Orthopristis chrysoptera</i>		761	72	32	8.5
<i>Eucinostomus</i>	mojarras	742	22.7	4	1.1
<i>Etropus crossotus</i>	fringed flounder	715	8.1	77	20.4
<i>Bothus robinsi</i>	twospot flounder	690	20.4	83	22
<i>Acanthostracion quadricornis</i>	scrawled cowfish	667	95.6	109	28.9
<i>Monacanthus ciliatus</i>	fringed filefish	659	9.6	90	23.9
<i>Trachinocephalus myops</i>	bluntnose lizardfish	639	48.5	82	21.8
<i>Opisthonema oglinum</i>	Atlantic thread herring	630	38	39	10.3
<i>Calamus proridens</i>	littlehead porgy	598	108.2	68	18
<i>Trichopsetta ventralis</i>	sash flounder	578	13.9	39	10.3
<i>Sphoeroides spengleri</i>	bandtail puffer	575	22.1	88	23.3
<i>Centropristis ocyurus</i>		571	27.3	58	15.4

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Diplectrum bivittatum</i>	dwarf sand perch	553	12.2	60	15.9
<i>Haemulon plumierii</i>	white grunt	541	92.2	23	6.1
<i>Equetus lanceolatus</i>	jackknife fish	468	42.2	72	19.1
<i>Prionotus paralatus</i>	Mexican searobin	461	15.4	28	7.4
<i>Mullus auratus</i>	red goatfish	449	25	48	12.7
<i>Prionotus roseus</i>	bluespotted searobin	439	13.7	64	17
<i>Saurida normani</i>	shortjaw lizardfish	431	31	20	5.3
<i>Lepophidium breviparbe</i>	blackedge cusk-eel	423	13.2	48	12.7
<i>Calamus arctifrons</i>	grass porgy	419	47.1	20	5.3
<i>Urophycis floridana</i>		411	27.1	42	11.1
<i>Scorpaena agassizii</i>	longfin scorpionfish	378	10.7	28	7.4
<i>Cyclopsetta chittendeni</i>	Mexican flounder	369	36.4	75	19.9
<i>Lepophidium jeannae</i>	mottled cusk-eel	347	16.4	35	9.3
<i>Sardinella aurita</i>	round sardinella	332	19.2	30	8
<i>Prionotus tribulus</i>	bighead searobin	322	7.9	47	12.5
<i>Ophidion holbrookii</i>	bank cusk-eel	306	22.5	46	12.2
<i>Serranus notospilus</i>	saddle bass	297	1.2	35	9.3
<i>Sphoeroides parvus</i>	least puffer	282	1.6	57	15.1
<i>Haemulon striatum</i>	striped grunt	273	9.8	6	1.6
<i>Prionotus alatus</i>	spiny searobin	271	5.1	36	9.5
<i>Citharichthys spilopterus</i>	bay whiff	233	3.5	40	10.6
<i>Lagocephalus laevigatus</i>	smooth puffer	222	6.8	57	15.1
<i>Balistes capriscus</i>	gray triggerfish	207	22.5	72	19.1
<i>Porichthys plectrodon</i>	Atlantic midshipman	202	4.4	75	19.9
<i>Prionotus rubio</i>	blackfin searobin	200	14.6	18	4.8
<i>Ancylopsetta ommata</i>	ocellated flounder	198	11.6	51	13.5
<i>Ogcocephalus declivirostris</i>	slantbrow batfish	196	3.2	41	10.9
<i>Pterois volitans</i>	lion fish	192	56.1	33	8.8
<i>Eucinostomus argenteus</i>	spotfin mojarra	188	5.9	9	2.4
<i>Bollmannia communis</i>	ragged goby	186	0.7	25	6.6
<i>Microgobius thalassianus</i>		175	0.5	2	0.5

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
Chaetodon ocellatus	spotfin butterflyfish	171	12.3	48	12.7
Lutjanus griseus	gray snapper	170	52.7	28	7.4
Ariopsis felis	hardhead catfish	168	36	19	5
Aluterus schoepfii	orange filefish	165	76.8	56	14.9
Prionotus ophryas	bandtail searobin	155	6.9	55	14.6
Engraulis eurystole	camiguana anchovy	154	0.8	8	2.1
Halieutichthys aculeatus	pancake batfish	153	1.6	47	12.5
Steindachneria argentea	luminous hake	153	1.2	3	0.8
Pagrus pagrus	red porgy	152	20.9	23	6.1
Symphurus plagiusa	blackcheek tonguefish	149	4.1	15	4
Chaetodipterus faber	Atlantic spadefish	148	10.9	27	7.2
Synodus synodus	red lizardfish	141	1	7	1.9
Pareques umbrosus	cubbyu	140	9.3	36	9.5
Eucinostomus harengulus	tidewater mojarra	133	4.9	12	3.2
Nicholsina usta	emerald parrotfish	128	10.2	35	9.3
Symphurus civitatum		126	2.1	27	7.2
Cynoscion	sea trout	123	0.7	3	0.8
Synodus intermedius	sand diver	121	15.7	40	10.6
Pterois	lion fishes	114	25.3	27	7.2
Menticirrhus americanus	jewsharp drummer	109	13.2	26	6.9
Kathetostoma albigutta	lancer stargazer	109	5.5	39	10.3
Bairdiella chrysoura	silver perch	108	6.8	10	2.7
Peprilus paru	harvestfish	102	3.7	19	5
Cyclopsetta fimbriata	spotfin flounder	97	7.4	40	10.6
Calamus nodosus	knobbed porgy	94	17.9	20	5.3
Diplodus holbrookii	spottail pinfish	93	3.6	6	1.6
Epinephelus morio	red grouper	92	47.8	28	7.4
Etrumeus teres	Atlantic red herring	91	1	18	4.8
Chaetodon sedentarius	reef butterflyfish	87	4.3	20	5.3
Antennarius radiosus	big-eyed frogfish	86	1.1	27	7.2
Citharichthys macrops	spotted whiff	82	2.8	16	4.2

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Lachnolaimus maximus</i>	hogfish	80	21.5	15	4
<i>Ogocephalus parvus</i>	roughback batfish	74	0.7	35	9.3
<i>Gastropsetta frontalis</i>	shrimp flounder	72	4.6	36	9.5
<i>Ancylopsetta dilecta</i>	three-eye flounder	70	3.5	22	5.8
<i>Apogon affinis</i>	bigtooth cardinalfish	69	0.3	13	3.4
<i>Gymnothorax saxicola</i>	honeycomb moray	69	6.2	42	11.1
<i>Hippocampus erectus</i>	lined seahorse	65	0.6	46	12.2
<i>Symphurus diomedeanus</i>		65	1.9	28	7.4
<i>Stephanolepis setifer</i>	pygmy filefish	63	2.3	10	2.7
<i>Peprilus paru</i>	harvestfish	63	0.8	9	2.4
<i>Pristigenys alta</i>	short bigeye	63	6.3	32	8.5
<i>Urophycis regia</i>	spotted codling	63	3	8	2.1
<i>Scomberomorus maculatus</i>	Atlantic Spanish mackerel	57	4.7	22	5.8
<i>Engyophrys senta</i>	spiny flounder	56	0.2	22	5.8
<i>Xyrichtys novacula</i>	pearly razorfish	54	2.9	18	4.8
<i>Chilomycterus schoepfii</i>	burrfish	53	9.2	34	9
<i>Pomacanthus arcuatus</i>	gray angelfish	49	21	15	4
<i>Raja texana</i>	roundel skate	48	14.1	29	7.7
<i>Scomberomorus cavalla</i>	king mackerel	46	2	10	2.7
<i>Calamus penna</i>	sheepshead porgy	46	3.8	7	1.9
<i>Apogon quadrisquamatus</i>	sawcheek cardinalfish	46	0.1	16	4.2
<i>Caulolatilus intermedius</i>	anchor tilefish	45	4.3	12	3.2
<i>Etropus rimosus</i>	gray flounder	45	0.6	7	1.9
<i>Apogon pseudomaculatus</i>	twospot cardinalfish	43	0.3	16	4.2
<i>Urophycis cirrata</i>	Gulf hake	42	1.3	11	2.9
<i>Apogon aurolineatus</i>	bridle cardinalfish	41	0.1	10	2.7
<i>Hoplunnis diomediana</i>	blacktail pike-conger	40	0.3	11	2.9
<i>Paralichthys albigutta</i>	Gulf flounder	37	8.5	12	3.2
<i>Rhizoprionodon terraenovae</i>	Atlantic sharpnose shark	37	13.3	19	5
<i>Stephanolepis hispida</i>	planehead filefish	37	0.3	14	3.7
<i>Decodon puellaris</i>	red hogfish	37	2.5	11	2.9

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Gymnachirus texae</i>	fringed sole	36	0.4	17	4.5
<i>Sphoeroides nephelus</i>	southern puffer	34	2.8	14	3.7
<i>Pontinus longispinis</i>	longspine scorpionfish	34	0.8	9	2.4
<i>Astrapogon alutus</i>	bronze cardinalfish	33	0.1	16	4.2
<i>Hoplunnis macrura</i>	freckled pike-conger	31	0.3	10	2.7
<i>Trinectes maculatus</i>	hogchoker	30	0.6	5	1.3
<i>Chromis enchrysur</i>	yellowtail reeffish	30	0.5	18	4.8
<i>Pseudupeneus maculatus</i>	spotted goatfish	30	2	8	2.1
<i>Ogcocephalus cubifrons</i>		29	6	18	4.8
<i>Caranx crysos</i>	blue runner	29	3.1	17	4.5
<i>Paralichthys lethostigma</i>	southern flounder	29	9.1	21	5.6
<i>Holacanthus bermudensis</i>	blue angelfish	28	13.6	14	3.7
<i>Phaeoptyx pigmentaria</i>	dusky cardinalfish	28	0.1	4	1.1
<i>Sphyraena guachancho</i>	guaguanche	27	4.1	8	2.1
<i>Ophidion holbrookii</i>	longnose cusk-eel	26	2.2	9	2.4
<i>Bembrops anatrostris</i>	duckbill flathead	26	0.5	1	0.3
<i>Citharichthys gymnorhinus</i>	anglefin whiff	26	0.1	17	4.5
<i>Diaphus</i>		25	0.1	1	0.3
<i>Bagre marinus</i>	gafftopsail catfish	25	2.3	8	2.1
<i>Aluterus heudelotii</i>		25	6.8	15	4
<i>Achirus lineatus</i>	lined sole	23	0.6	4	1.1
<i>Ophidion josephi</i>	crested cusk-eel	23	1.1	17	4.5
<i>Ogcocephalus corniger</i>	longnose batfish	23	0.5	16	4.2
<i>Bellator egretta</i>	streamer searobin	22	0.3	3	0.8
<i>Mustelus sinusmexicanus</i>	Gulf smoothhound	20	29.1	16	4.2
<i>Microspathodon chrysurus</i>	yellowtail damselfish	20	0.4	3	0.8
<i>Brotula barbata</i>	bearded brotula	19	6.4	13	3.4
<i>Bregmaceros atlanticus</i>	antenna codlet	19	0	4	1.1
<i>Raja eglanteria</i>	clearnose skate	19	11.4	16	4.2
<i>Urophycis earllii</i>	Carolina hake	19	0.5	10	2.7
<i>Rhynchoconger flavus</i>		18	0.9	8	2.1

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Bothus ocellatus</i>	eyed flounder	18	0.4	8	2.1
<i>Otophidium omostigma</i>	polka-dot cusk-eel	17	0.2	5	1.3
<i>Anisotremus virginicus</i>	porkfish	17	4	4	1.1
<i>Rhinobatos lentiginosus</i>	Atlantic guitarfish	16	9.3	12	3.2
<i>Canthigaster rostrata</i>		16	0.2	10	2.7
<i>Selar crumenophthalmus</i>	bigeye scad	15	2.3	9	2.4
<i>Physiculus fulvus</i>	hakeling	15	0.1	3	0.8
<i>Ocyurus chrysurus</i>	yellowtail snapper	15	1.8	6	1.6
<i>Seriola dumerili</i>	greater amberjack	15	1.5	13	3.4
<i>Aluterus scriptus</i>	scrawled filefish	15	3.5	7	1.9
<i>Centropristis striata</i>	black sea bass	14	1.5	8	2.1
<i>Priacanthus arenatus</i>	bigeye	14	2.6	10	2.7
<i>Echeneis</i>	sharksuckers	14	3.4	9	2.4
<i>Pareques iwamotoi</i>	blackbar drum	14	0.7	7	1.9
<i>Echeneis naucrates</i>	sharksucker	13	4.6	9	2.4
<i>Mycteroperca microlepis</i>	gag	13	5.8	1	0.3
<i>Aluterus monoceros</i>	unicorn filefish	13	7.9	7	1.9
<i>Paralichthys squamilentus</i>	broad flounder	13	3.7	9	2.4
<i>Rypticus maculatus</i>	whitespotted soapfish	12	0.2	11	2.9
Apogonidae	cardinalfishes	12	0	2	0.5
<i>Oligoplites saurus</i>	leatherjack	12	0.1	5	1.3
Ophidion	cusk-eels	12	0.6	7	1.9
<i>Halichoeres bivittatus</i>	slippery dick	12	0.4	3	0.8
<i>Antennarius ocellatus</i>	ocellated frogfish	12	0.8	10	2.7
<i>Echiophis intertinctus</i>	spotted spoon-nose eel	12	3.2	9	2.4
<i>Etropus</i>		12	0.3	2	0.5
<i>Gymnachirus melas</i>	naked sole	11	0.2	8	2.1
<i>Calamus bajonado</i>	jolthead porgy	11	14	5	1.3
<i>Foetorepus goodenbeani</i>	palefin dragonet	11	0.2	1	0.3
<i>Pomatomus saltatrix</i>	bluefish	11	1.7	7	1.9
<i>Squatina dumeril</i>	Atlantic angel shark	11	22.2	7	1.9

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Prognathodes aya</i>	bank butterflyfish	10	0.3	5	1.3
<i>Opsanus pardus</i>	leopard toadfish	10	0.1	6	1.6
<i>Gobiesox strumosus</i>	skilletfish	10	0	6	1.6
<i>Selene vomer</i>	lookdown	10	0.5	5	1.3
<i>Ophichthus gomesii</i>	shrimp eel	9	1	5	1.3
<i>Dorosoma cepedianum</i>	American gizzard shad	9	0.2	2	0.5
<i>Cryptotomus roseus</i>	bluelip parrotfish	9	0.1	5	1.3
<i>Mustelus canis</i>	dusky smooth-hound	9	3.4	3	0.8
<i>Ogcocephalus pantostictus</i>	spotted batfish	9	1.6	3	0.8
<i>Brevoortia</i>	menhadens	8	0.4	1	0.3
<i>Neobythites gilli</i>		8	0	3	0.8
<i>Bathyanthias mexicanus</i>	yellowtail bass	8	0.1	3	0.8
<i>Symphurus urospilus</i>	spottail tonguefish	7	0.2	5	1.3
<i>Carcharhinus acronotus</i>	blacknose shark	7	40.5	2	0.5
<i>Ariosoma belearicum</i>		7	0.4	4	1.1
<i>Apogon</i>	cardinalfishes	7	0	3	0.8
<i>Neomerinthe hemingwayi</i>	spinycheek scorpionfish	7	5.2	4	1.1
<i>Hemicaranx amblyrhynchus</i>	bluntnose jack	7	0.5	3	0.8
<i>Rhinoptera bonasus</i>	cownose ray	7	18.9	5	1.3
<i>Paraconger caudilimbatus</i>	margintail conger	7	0.7	4	1.1
<i>Diplectrum</i>	perch	6	0	3	0.8
<i>Echeneis neucratoides</i>	whitefin sharksucker	6	2.6	4	1.1
<i>Brevoortia gunteri</i>	finescale menhaden	6	0.4	2	0.5
<i>Serranus subligarius</i>	belted sandfish	6	0	4	1.1
<i>Dasyatis americana</i>	southern stingray	6	8.9	5	1.3
<i>Ophidion grayi</i>	blotched cusk-eel	6	0.6	5	1.3
<i>Hoplunnis tenuis</i>	spotted pike-conger	5	0.1	1	0.3
<i>Hyporthodus flavolimbatus</i>		5	7.8	5	1.3
<i>Foetorepus agassizii</i>	spotfin dragonet	5	0	2	0.5
<i>Antennarius multiocellatus</i>	longlure frogfish	5	0	3	0.8
<i>Antennarius striatus</i>	striated frogfish	5	0.2	4	1.1

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
Mycteroperca phenax	scamp	5	3.6	5	1.3
Opistognathus lonchurus	moustache jawfish	5	0	2	0.5
Dasyatis say	bluntnose stingray	5	1.1	3	0.8
Hypleurochilus bermudensis	barred blenny	5	0	4	1.1
Calamus leucosteus	whitebone porgy	5	3.6	3	0.8
Citharichthys cornutus	horned whiff	5	0	2	0.5
Stephanolepis setifer	pygmy filefish	5	0	1	0.3
Phaeoptyx xenus	sponge cardinalfish	5	0	4	1.1
Halichoeres bathyphilus	greenband wrasse	5	0.2	3	0.8
Uroconger syringinus	threadtail conger	4	0.3	3	0.8
Serraniculus pumilio	pygmy sea bass	4	0	3	0.8
Sphoeroides	common puffers	4	0	2	0.5
Serranus tortugarum	chalk bass	4	0	1	0.3
Rhinoptera brasiliensis	Brazilian cow-nosed ray	4	4.1	1	0.3
Opsanus beta	Gulf toadfish	4	0.1	3	0.8
Acanthostracion polygonius	honeycomb cowfish	4	3.1	2	0.5
Cynoglossidae	tongue soles	4	0.5	1	0.3
Lonchopisthus micrognathus	swordtail jawfish	4	0	4	1.1
Carangoides bartholomaei	yellow jack	4	0.1	4	1.1
Gymnura micrura	smooth butterfly ray	4	4.1	2	0.5
Lophiodes reticulatus	reticulate goosefish	4	0.5	3	0.8
Gymnothorax nigromarginatus	blackedge moray	4	0.5	3	0.8
Parablennius marmoreus	seaweed blenny	4	0	4	1.1
Sphyraena borealis	northern sennet	4	0.2	3	0.8
Carangoides ruber	bar jack	4	0.1	1	0.3
Monolene sessilicauda	deepwater flounder	4	0	1	0.3
Zalieutes mcgintyi	tricorn batfish	3	0	1	0.3
Bellator brachychir	shortfin searobin	3	0	2	0.5
Narcine brasiliensis	lesser electric ray	3	1.2	2	0.5
Gymnothorax kolpos	blacktail moray	3	0.5	2	0.5
Holocentrus	soldierfishes	3	0.1	1	0.3

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Menticirrhus littoralis</i>	Gulf kingfish	3	0.6	1	0.3
<i>Synodus</i>	lizard fishes	3	0	3	0.8
<i>Sparisoma atomarium</i>	greenblotch parrotfish	3	0	1	0.3
<i>Diodon holocanthus</i>	balloonfish	3	2	3	0.8
<i>Serranus annularis</i>	orangeback bass	3	0	3	0.8
<i>Etropus cyclosquamus</i>	shelf flounder	3	0	3	0.8
<i>Elacatinus xanthiprora</i>	yellowprow goby	3	0	2	0.5
<i>Schultzea beta</i>	school bass	3	0	1	0.3
<i>Rypticus bistrispinus</i>	freckled soapfish	3	0	3	0.8
<i>Stegastes variabilis</i>	cocoa damselfish	3	0	3	0.8
<i>Hemanthias vivanus</i>	red barbier	3	0	2	0.5
<i>Muraena retifera</i>	reticulate moray	3	0.3	2	0.5
<i>Sphyrna tiburo</i>	bonnethead	3	5.5	3	0.8
<i>Sargocentron bullisi</i>	deepwater squirrelfish	2	0	2	0.5
<i>Gymnachirus nudus</i>	flabby sole	2	0.1	1	0.3
<i>Rhynchoconger flavus</i>	yellow conger	2	0	1	0.3
<i>Emblemaria atlantica</i>	banner blenny	2	0	1	0.3
<i>Hemanthias aureorubens</i>	streamer bass	2	0	1	0.3
<i>Haemulon sciurus</i>	bluestriped grunt	2	0.4	2	0.5
<i>Astrapogon punctulatus</i>	blackfin cardinalfish	2	0	2	0.5
<i>Parexocoetus brachypterus</i>	sailfin flyingfish	2	0	2	0.5
<i>Opsanus tau</i>	oyster toadfish	2	0.1	2	0.5
<i>Holocentrus adscensionis</i>	squirrelfish	2	0	2	0.5
<i>Syngnathus floridae</i>	dusky pipefish	2	0	2	0.5
<i>Anchoviella perfasciata</i>	flat anchovy	2	0	2	0.5
<i>Pronotogrammus martinicensis</i>	rougtongue bass	2	0	2	0.5
<i>Fistularia petimba</i>	Pacific cornetfish	2	0.2	2	0.5
<i>Carcharhinus limbatus</i>	blacktip shark	2	1.4	1	0.3
<i>Scorpaena dispar</i>	hunchback scorpionfish	2	0	2	0.5
<i>Stegastes partitus</i>	bicolor damselfish	2	0.1	1	0.3
<i>Menticirrhus saxatilis</i>	Gulf minkfish	2	0.3	2	0.5

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Cynoscion nebulosus</i>	spotted seatrout	2	0.7	1	0.3
<i>Cosmocampus albirostris</i>		2	0	2	0.5
<i>Pogonias cromis</i>	black drum	2	12.2	2	0.5
<i>Canthigaster jamestyleri</i>		2	0	2	0.5
<i>Scomber colias</i>		2	0.1	1	0.3
<i>Rachycentron canadum</i>	cobia	1	1.3	1	0.3
<i>Hippocampus reidi</i>	longsnout seahorse	1	0	1	0.3
Rajidae	rays	1	0	1	0.3
<i>Diapterus</i>	longspine mojarras	1	0.2	1	0.3
<i>Dactylopterus volitans</i>	flying gurnard	1	0.3	1	0.3
<i>Ophioblennius</i>		1	0	1	0.3
<i>Caranx hippos</i>	crevalle jack	1	0.2	1	0.3
<i>Hemanthias leptus</i>	longtail bass	1	0	1	0.3
<i>Apogon maculatus</i>	flamefish	1	0	1	0.3
<i>Pomacanthus paru</i>	French angelfish	1	0	1	0.3
<i>Cantherhines pullus</i>	orangespotted filefish	1	0	1	0.3
<i>Apogon phenax</i>	mimic cardinalfish	1	0	1	0.3
<i>Seriola zonata</i>	banded rudderfish	1	0.1	1	0.3
<i>Mycteroperca</i>		1	0	1	0.3
<i>Acanthurus chirurgus</i>	doctorfish	1	0	1	0.3
<i>Dipturus olseni</i>	spreadfin skate	1	1.6	1	0.3
Carangidae	jacks	1	0	1	0.3
<i>Citharichthys</i>	sanddabs	1	0	1	0.3
<i>Ogcocephalus cubifrons</i>	polka-dot batfish	1	0.4	1	0.3
<i>Ariomma regulus</i>	spotted driftfish	1	0.2	1	0.3
<i>Histrio histrio</i>	sargassum frogfish	1	0	1	0.3
<i>Calamus</i>		1	0	1	0.3
<i>Anthias tenuis</i>	threadnose bass	1	0	1	0.3
<i>Epinephelus guttatus</i>	red hind	1	0.6	1	0.3
<i>Chilomycterus antillarum</i>	web burrfish	1	0.5	1	0.3
<i>Fistularia tabacaria</i>	bluespotted cornetfish	1	0.6	1	0.3

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
Scorpaena plumieri	spotted scorpionfish	1	0.4	1	0.3
Scorpaena	scorpionfishes	1	0	1	0.3
Hypoplectrus		1	0	1	0.3
Caulolatilus cyanops	blackline tilefish	1	0	1	0.3
Archosargus probatocephalus	sheepshead	1	1.5	1	0.3
Scorpaena brachyptera	shortfin scorpionfish	1	0	1	0.3
Canthigaster	sharpnosed puffers	1	0	1	0.3
Paralichthyidae		1	0	1	0.3
Calamus calamus	saucereye porgy	1	0.1	1	0.3
Remora remora	common remora	1	0.6	1	0.3
Ophichthus puncticeps	palespotted eel	1	0.2	1	0.3
Astroscopus y-graecum	southern stargazer	1	0	1	0.3
Odontoscion dentex	reef croaker	1	0.2	1	0.3
Synagrops bellus	blackmouth bass	1	0	1	0.3
Dasyatis centroura	clam cracker	1	265	1	0.3
Prionotus	North American searobins	1	0	1	0.3
Mustelus	smooth hound sharks	1	1.5	1	0.3
Trachinotus carolinus	Florida pompano	1	0.6	1	0.3
Sciaenops ocellatus	red drum	1	5.6	1	0.3
Mustelus norrisi	Florida smoothhound	1	0.5	1	0.3
Bregmaceros cantori	striped codlet	1	0	1	0.3
Ginglymostoma cirratum	nurse shark	1	0.8	1	0.3
Gobioides broussoneti		1	0	1	0.3
Cephalopholis cruentata	graysby	1	0.1	1	0.3
Peristedion gracile	slender searobin	1	0	1	0.3
Hypoplectrus puella	barred hamlet	1	0	1	0.3
Rhinoptera	cownosed rays	1	10.9	1	0.3
Canthidermis maculata		1	0	1	0.3
Hyporhamphus unifasciatus	Atlantic silverstripe halfbeak	1	0	1	0.3

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF	% FREQUENCY OCCURRENCE
				TOWS WHERE CAUGHT	
<u>Crustaceans</u>					
<i>Farfantepenaeus aztecus</i>	brown shrimp	40564	1208.1	185	49.1
<i>Callinectes similis</i>	lesser blue crab	16192	153.2	114	30.2
<i>Rimapenaeus similis</i>	Roughback shrimp	13429	51.7	91	24.1
<i>Squilla empusa</i>	Mantis shrimp	6158	57.5	106	28.1
<i>Sicyonia brevirostris</i>	brown rock shrimp	5017	68.7	124	32.9
<i>Portunus spinicarpus</i>	longspine swimming crab	3822	21.4	129	34.2
<i>Portunus gibbesii</i>	iridescent swimming crab	3443	17.7	115	30.5
<i>Litopenaeus setiferus</i>	northern white shrimp	2801	101.7	73	19.4
<i>Farfantepenaeus duorarum</i>	northern pink shrimp	2488	57.3	70	18.6
<i>Solenocera vioscai</i>	humpback shrimp	1789	9.9	35	9.3
<i>Squilla chydarea</i>		1778	11.3	58	15.4
<i>Sicyonia dorsalis</i>	lesser rock shrimp	1212	2.5	39	10.3
<i>Portunus spinimanus</i>	blotched swimming crab	932	28.5	88	23.3
<i>Anasimus latus</i>	stilt spider crab	417	2.1	43	11.4
<i>Rimapenaeus constrictus</i>		344	0.8	23	6.1
<i>Parapenaeus politus</i>	deep-water rose shrimp	323	0.8	25	6.6
<i>Solenocera atlantidis</i>	dwarf humpback shrimp	307	0.4	44	11.7
<i>Metapenaeopsis goodei</i>	Caribbean velvet shrimp	246	0.6	22	5.8
<i>Scyllarus chacei</i>	Chace slipper lobster	234	0.9	40	10.6
<i>Callinectes sapidus</i>	blue crab	212	28.4	67	17.8
<i>Stenorhynchus seticornis</i>	yellowline arrow crab	207	0.5	90	23.9
<i>Raninoides louisianensis</i>	Gulf frog crab	190	1.3	28	7.4
<i>Xiphopenaeus kroyeri</i>	Atlantic seabob	182	1.2	11	2.9
<i>Calappa sulcata</i>	yellow box crab	134	33.2	53	14.1
<i>Leiolambrus nitidus</i>	white elbow crab	97	0.2	24	6.4
<i>Scyllarides nodifer</i>	ridged slipper lobster	78	24.8	24	6.4
<i>Stenorhynchus</i>		67	0.2	22	5.8
<i>Cryptodromiopsis antillensis</i>	decorator crab	64	0.4	40	10.6

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Portunus ordwayi</i>		64	0.6	20	5.3
<i>Platylambrus granulata</i>	bladetooth elbow crab	62	0.2	35	9.3
<i>Pseudorhombila quadridentata</i>	flecked squareback crab	50	0.5	11	2.9
<i>Sicyonia burkenroadi</i>	spiny rock shrimp	47	0.1	12	3.2
<i>Macrocoeloma trispinosum</i>	spongy decorator crab	43	0.3	17	4.5
<i>Manucomplanus ungulatus</i>		42	0	5	1.3
<i>Petrolisthes galathinus</i>	banded porcelain crab	40	0	6	1.6
<i>Podochela sidneyi</i>	shortfinger neck crab	36	0.1	21	5.6
<i>Plesionika longicauda</i>		29	0.1	7	1.9
<i>Stenocionops furcatus</i>	furcate spider crab	29	0.2	24	6.4
<i>Hepatus epheliticus</i>	calico box crab	27	1.2	13	3.4
<i>Euphosynoplax clausa</i>	craggy bathyal crab	27	0.2	13	3.4
<i>Persephona crinita</i>	pink purse crab	26	0.1	6	1.6
Xanthidae	mud crabs	23	0	10	2.7
<i>Mithrax hispidus</i>	coral clinging crab	22	0.1	10	2.7
<i>Paguristes sericeus</i>	blue-eye hermit	22	0	14	3.7
<i>Squilla rugosa</i>		21	0.2	11	2.9
<i>Scyllarus depressus</i>	scaled slipper lobster	21	0.1	10	2.7
<i>Mesopenaeus tropicalis</i>	salmon shrimp	17	0.1	7	1.9
<i>Squilla deceptrix</i>		17	0	4	1.1
<i>Dardanus insignis</i>	red brocade hermit	17	0.1	11	2.9
<i>Gibbesia neglecta</i>		17	0.2	7	1.9
<i>Munida forceps</i>		17	0	5	1.3
<i>Myropsis quinquespinosa</i>	fivespine purse crab	16	0.1	6	1.6
<i>Iliacantha sparsa</i>	shouldered purse crab	15	0	8	2.1
<i>Petrochirus diogenes</i>	giant hermit	15	0.2	8	2.1
<i>Dardanus fucosus</i>	bareye hermit	14	0	5	1.3
<i>Sicyonia laevigata</i>	coral shrimp	13	0.1	1	0.3
<i>Paguristes</i>		13	0	9	2.4
<i>Metoporphaphis calcarata</i>	false arrow crab	13	0	6	1.6
<i>Portunus sayi</i>	sargassum swimming crab	12	0	6	1.6

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
Macrocoeloma		12	0	8	2.1
Libinia emarginata	portly spider crab	12	1.5	9	2.4
Parthenope agona		11	0	6	1.6
Speocarcinus lobatus	Gulf squareback crab	11	0	6	1.6
Mithrax pleuracanthus	shaggy clinging crab	10	0	8	2.1
Stenocionops furcatus coelatus		10	0.3	8	2.1
Squilla		10	0.1	4	1.1
Persephona mediterranea	mottled purse crab	9	0.1	3	0.8
Calappa flammea	flame box crab	9	1.6	9	2.4
Munida		9	0	6	1.6
Ovalipes floridanus	Florida lady crab	8	0.1	7	1.9
Lobopilumnus agassizii	areolated hairy crab	8	0	7	1.9
Ethusa microphthalma	broadback sumo crab	8	0	6	1.6
Alpheus		8	0.5	6	1.6
Pagurus bullisi		8	0.1	3	0.8
Caridea		8	0	1	0.3
Majidae	spider crabs	7	0	3	0.8
Nemausa acuticornis	sharphorn clinging crab	7	0	4	1.1
Sicyonia typica	kinglet rock shrimp	6	0	3	0.8
Portunus depressifrons	flatface swimming crab	6	0.1	3	0.8
Euchirograpsus americanus	American talon crab	6	0	2	0.5
Menippe adina	Gulf stone crab	6	0	3	0.8
Nephropsis aculeata	Florida lobsterette	6	0	3	0.8
Macrocoeloma camptocerum	Florida decorator crab	5	0.2	3	0.8
Acanthocarpus alexandri	gladiator box crab	5	0.1	1	0.3
Collodes robustus		5	0	3	0.8
Pilumnus sayi	spineback hairy crab	5	0	5	1.3
Paguristes hummi		5	0	2	0.5
Stenocionops spinimanus	prickly spider crab	5	0.2	4	1.1
Pseudomedeus agassizii	rough rubble crab	5	0	3	0.8
Pagurus pollicaris	flatclaw hermit	5	0	3	0.8

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Platylambrus fraterculus</i>	rough elbow crab	5	0	4	1.1
<i>Munida irrasa</i>		4	0	2	0.5
<i>Podochela lamelligera</i>		4	0	4	1.1
<i>Stenopus</i>		4	0	4	1.1
<i>Podochela riisei</i>	longfinger neck crab	4	0	3	0.8
<i>Libinia dubia</i>	longnose spider crab	4	0	2	0.5
<i>Iliacantha subglobosa</i>	longfinger purse crab	4	0	4	1.1
<i>Pilumnus</i>		4	0	3	0.8
<i>Balamus trigonus</i>		4	0	1	0.3
<i>Hypoconcha spinosissima</i>	spiny shellback crab	4	0	4	1.1
<i>Petrolisthes</i>		4	0	2	0.5
<i>Podochela gracilipes</i>	unicorn neck crab	3	0	2	0.5
<i>Gonodactylus bredini</i>		3	0	3	0.8
Parthenopidae	elbow crabs	3	0	2	0.5
<i>Macrocoeloma eutheca</i>		3	0	2	0.5
Alpheidae	snapping shrimps	3	0	2	0.5
<i>Scyllarus americanus</i>	American slipper lobster	3	0	3	0.8
<i>Palicus alternata</i>		3	0	3	0.8
<i>Lysmata wurdemanni</i>	peppermint shrimp	3	0	3	0.8
<i>Menippe mercenaria</i>	Florida stone crab	3	0.8	3	0.8
<i>Palicus faxoni</i>	finned stilt crab	3	0	2	0.5
Solenoceridae	solenocerid shrimps	2	0	1	0.3
<i>Iridopagurus</i>		2	0	1	0.3
<i>Raninoides loevis</i>	furrowed frog crab	2	0	1	0.3
<i>Galathea rostrata</i>		2	0	1	0.3
<i>Stenopus scutellatus</i>	golden coral shrimp	2	0	1	0.3
<i>Livoneca</i>		2	0	1	0.3
<i>Phimochirus</i>		2	0	2	0.5
<i>Tyche emarginata</i>	fourhorn crab	2	0.1	2	0.5
<i>Callinectes ornatus</i>	shelligs	2	0.1	2	0.5
<i>Nanoplax xanthiformis</i>	rough squareback crab	2	0	2	0.5

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
Isopoda	isopods	2	0	2	0.5
Paguridae	right-handed hermit crabs	2	0	2	0.5
Lysiosquilla scabricauda		2	0.1	2	0.5
Panulirus argus	Caribbean spiny lobster	2	0.2	1	0.3
Stenocionops		2	0	1	0.3
Lysmata		2	0	1	0.3
Podochela		2	0	2	0.5
Megalobrachium		2	0	1	0.3
Iliacantha liodactylus		2	0	1	0.3
Munida pusilla		2	0	1	0.3
Paguristes oxyophthalmus		2	0	1	0.3
Livoneca redmanii		2	0	1	0.3
Acanthilia intermedia	granulose purse crab	2	0	1	0.3
Scyllarides		2	0	1	0.3
Euphosynoplax		1	0	1	0.3
Pleoticus robustus	royal red shrimp	1	0	1	0.3
Palicidae	stilt crabs	1	0	1	0.3
Mithraculus forceps	red-ridged clinging crab	1	0	1	0.3
Petrolisthes armatus	green porcelain crab	1	0	1	0.3
Portunus		1	0	1	0.3
Calappa tortugae	nodose box crab	1	0	1	0.3
Mithrax		1	0	1	0.3
Porcellana sigsbeiana	striped porcelain crab	1	0	1	0.3
Pyromaia cuspidata	dartnose pear crab	1	0	1	0.3
Porcellana sayana	spotted porcelain crab	1	0	1	0.3
Pagurus impressus	dimpled hermit	1	0	1	0.3
Stenocionops spinosissimus	tenspine spider crab	1	0	1	0.3
Paguristes triangulatus		1	0	1	0.3
Hypoconcha arcuata	granulate shellback crab	1	0	1	0.3
Diogenidae	left-handed hermit crabs	1	0	1	0.3
Synalpheus		1	0	1	0.3

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
Euryplax nitida	glabrous broadface crab	1	0	1	0.3
Pilumnus floridanus	plumed hairy crab	1	0	1	0.3
Alpheus formosus	striped snapping shrimp	1	0	1	0.3
Glyptoxanthus erosus	eroded mud crab	1	0	1	0.3
Euryalidae		1	0	1	0.3
Hippolytidae		1	0	1	0.3
Danielum ixbauchac		1	0	1	0.3
Platylambrus pourtalesii	spinous elbow crab	1	0	1	0.3
Phimochirus holthuisi	red-striped hermit	1	0	1	0.3
Sicyonia	rock shrimps	1	0	1	0.3
Nibilia antilocapra	shorthorn spiny crab	1	0	1	0.3
Calappidae	box crabs	1	0	1	0.3
Callidactylus asper	spurfinger purse crab	1	0	1	0.3
Alpheus floridanus	sand snapping shrimp	1	0	1	0.3
<u>Others</u>					
Amusium papyraceum	paper scallop	11188	127.9	68	18
Loligo	Slender Inshore squid	8489	131.2	212	56.2
Argopecten gibbus	Atlantic calico scallop	3117	30.9	22	5.8
Lolliguncula brevis	Atlantic brief squid	3014	37.6	88	23.3
Loligo pealeii	longfin inshore squid	2776	49.8	86	22.8
Pitar cordatus	corded pitar	231	4.5	37	9.8
Loligo		191	1.4	9	2.4
Euvola raveneli		166	0.9	21	5.6
Polystira albida	white giant-turris	116	1.2	22	5.8
Macoma pulleyi	delta macoma	93	0.9	2	0.5
Crepidula maculosa	spotted slippersnail	87	0	1	0.3
Lirophora clenchi		45	0.6	10	2.7
Anadara baughmani	skewed ark	43	0.6	13	3.4
Octopus vulgaris	common octopus	30	6.8	16	4.2

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
Anadara transversa	transverse ark	21	0.3	3	0.8
Conus austini		21	0.3	8	2.1
Octopus joubini	Atlantic pygmy octopus	20	0.7	13	3.4
Nassarius vibex	bruised nassa	20	0	2	0.5
Narcissia trigonaria		16	0.7	11	2.9
Tonna galea	giant tun	15	2.3	11	2.9
Sconsia striata	royal bonnet	14	0.3	9	2.4
Distorsio clathrata	Atlantic distorsio	13	0.2	4	1.1
Aplysia morio	sooty seahare	13	2.1	9	2.4
Aplysia		12	0.6	8	2.1
Laevicardium laevigatum	eggcockle	10	0.4	3	0.8
Atrina rigida	stiff penshell	7	1.6	4	1.1
Cantharus cancellarius	cancellate cantharus	7	0	4	1.1
Dendrodoris		6	0.4	2	0.5
Anadara ovalis	blood ark	6	0.1	3	0.8
Pleurobranchus		6	0.5	3	0.8
Lindapecten muscosus	rough scallop	5	0	4	1.1
Octopus briareus	Caribbean reef octopus	5	1.6	4	1.1
Ostrea stentina	crested oyster	5	0	1	0.3
Laevicardium mortoni	yellow eggcockle	5	0.1	4	1.1
Semirossia tenera		5	0	4	1.1
Macoma brevifrons	short macoma	5	0	2	0.5
Ficus communis	Atlantic figsnail	5	0.3	5	1.3
Turbo castaneus		4	0	2	0.5
Chicoreus florifer		4	0	2	0.5
Conus cancellatus	cancellate cone	3	0	1	0.3
Polystira tellea	delicate giant-turris	3	0.1	2	0.5
Corbulidae		3	0	1	0.3
Busycon plagosus		3	0.4	1	0.3
Arcinella cornuta	Florida spiny jewelbox	3	0	2	0.5
Noetia ponderosa	ponderous ark	3	0.1	1	0.3

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
Phalium granulatum	Scotch bonnet	2	0.1	1	0.3
Neverita duplicata	shark eye	2	0	1	0.3
Gastropoda	gastropods	2	0.8	2	0.5
Cypraeidae		2	0.1	1	0.3
Cypraea cervus	atlantic deer cowrie	2	0.1	2	0.5
Arca zebra	turkey wing	2	0.1	2	0.5
Calliostoma		2	0	2	0.5
Antillophos		2	0	1	0.3
Urosalpinx cinerea	Atlantic oyster drill	2	0	1	0.3
Strombus costatus	milk conch	2	0	2	0.5
Cassis flammea	flame helmet	2	3.7	2	0.5
Oliva sayana	lettered olive	1	0	1	0.3
Murex cabritti		1	0	1	0.3
Sinum maculatum	brown baby ear	1	0	1	0.3
Pitar		1	0	1	0.3
Pectinidae		1	0	1	0.3
Calliostoma jujubinum	mottled topsnail	1	0	1	0.3
Acmaea		1	0	1	0.3
Lirophora latilirata	imperial venus	1	0	1	0.3
Aplysia brasiliiana	mottled seahare	1	0	1	0.3
Busycon		1	0.1	1	0.3
Hexaplex fulvescens	giant eastern murex	1	0	1	0.3
Diodora cayenensis	Cayenne keyhole limpet	1	0	1	0.3
Murex hildalgoi		1	0.6	1	0.3
Anadara		1	0.1	1	0.3
Pleurobranchaea		1	0	1	0.3
Lithophaga		1	0	1	0.3
Spondylus		1	0.2	1	0.3
Hiatella arctica	Arctic hiatella	1	0	1	0.3
Turritella exoleta	eastern turritella	1	0	1	0.3
Helix		1	0	1	0.3

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Euvola ziczac</i>	zigzag scallop	1	0	1	0.3
<i>Pteria colymbus</i>	Atlantic wing-oyster	1	0	1	0.3
<i>Euvola</i>		1	0	1	0.3
<i>Semirossia equalis</i>		1	0	1	0.3
<i>Murex</i>		1	0	1	0.3
<i>Atrina serrata</i>	sawtooth penshell	1	0	1	0.3
<i>Nodipecten nodosus</i>	lions-paw scallop	1	0.3	1	0.3
<i>Conus daucus</i>	carrot cone	1	0	1	0.3
<i>Spondylus americanus</i>	Atlantic thorny oyster	1	0.4	1	0.3
<i>Laevicardium pictum</i>	painted eggcockle	1	0	1	0.3

Table 3. 2015 Fall Shrimp/Groundfish Survey species composition list, 339 trawl stations, for those vessels that used a 42-ft trawl.

Species with a total weight of less than 0.0227 kg (0.05 lb) are indicated on the table as 0.0 kg.

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<u>Finfishes</u>					
Micropogonias undulatus	Atlantic croaker	105436	3989.9	162	47.8
Stenotomus caprinus	longspine porgy	13884	527	129	38.1
Leiostomus xanthurus	spot	11253	849	135	39.8
Chloroscombrus chrysurus	Atlantic bumper	11139	328.3	98	28.9
Prionotus longispinosus	bigeye searobin	8033	162	129	38.1
Peprilus burti	Gulf butterfish	5279	297.2	119	35.1
Serranus atrobranchus	blackear bass	5163	52.8	66	19.5
Rhomboplites aurorubens	vermillion snapper	4741	243.3	77	22.7
Lutjanus synagris	lane snapper	4527	509.4	127	37.5
Syacium gunteri	shoal flounder	4033	73.5	99	29.2
Cynoscion nothus	silver seatrout	3434	158	85	25.1
Lutjanus campechanus	red snapper	3220	235.6	166	49
Trachurus lathami	rough scad	3216	166	59	17.4
Diplectrum formosum	sand perch	3192	203.5	136	40.1
Lagodon rhomboides	pinfish	3054	195.2	132	38.9
Haemulon aurolineatum	tomtate	2952	193.8	97	28.6
Synodus foetens	inshore lizardfish	2793	308.8	219	64.6
Syacium papillosum	dusky flounder	2756	124.3	141	41.6
Larimus fasciatus	banded drum	2630	115.8	70	20.6
Cynoscion arenarius	sand seatrout	2139	155.5	114	33.6
Eucinostomus	mojarra	1965	55.7	22	6.5
Centropristis philadelphicus	Rock Sea bass	1829	85.1	124	36.6
Decapterus punctatus	round scad	1742	40.7	51	15
Upeneus parvus	dwarf goatfish	1544	65.1	61	18
Diplectrum bivittatum	dwarf sand perch	1434	24.2	69	20.4
Ariopsis felis	hardhead catfish	1281	206	73	21.5
Pristipomoides aquilonaris	wenchman	1256	72.2	47	13.9

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Saurida brasiliensis</i>	largescale lizardfish	1013	4.5	60	17.7
<i>Calamus proridens</i>	littlehead porgy	957	137.5	69	20.4
<i>Scorpaena calcarata</i>	smoothhead scorpionfish	920	16.4	83	24.5
<i>Anchoa hepsetus</i>	broad-striped anchovy	878	12.9	30	8.8
<i>Lepophidium brevibarbe</i>	blackedge cusk-eel	838	23.2	64	18.9
<i>Mullus auratus</i>	red goatfish	832	53.5	31	9.1
<i>Sphoeroides parvus</i>	least puffer	805	4.4	81	23.9
<i>Opisthonema oglinum</i>	Atlantic thread herring	798	43.9	50	14.7
<i>Harengula jaguana</i>	scaled herring	774	27	69	20.4
<i>Etropus crossotus</i>	fringed flounder	738	11.6	67	19.8
<i>Brevoortia patronus</i>	Gulf menhaden	729	36.6	33	9.7
<i>Trichiurus lepturus</i>	Atlantic cutlassfish	726	46.3	62	18.3
<i>Synodus poeyi</i>	offshore lizardfish	664	4.4	75	22.1
<i>Prionotus stearnsi</i>	shortwing searobin	647	7.4	34	10
<i>Stellifer lanceolatus</i>	star drum	637	7.7	18	5.3
<i>Trichopsetta ventralis</i>	sash flounder	622	15.4	29	8.6
<i>Anchoa lyolepis</i>	dusky anchovy	613	8.6	39	11.5
<i>Stephanolepis hispida</i>		599	28.7	92	27.1
<i>Halieutichthys</i>		593	4	76	22.4
<i>Orthopristis chrysoptera</i>		587	48.6	56	16.5
<i>Bellator militaris</i>	horned searobin	564	9	51	15
<i>Sphoeroides dorsalis</i>	marbled puffer	479	20.5	68	20.1
<i>Haemulon plumierii</i>	white grunt	470	79.6	23	6.8
<i>Selene setapinnis</i>	Atlantic moonfish	469	30.4	68	20.1
<i>Serranus notospilus</i>	saddle bass	449	2.2	19	5.6
<i>Cyclopsetta chittendeni</i>	Mexican flounder	441	37.8	82	24.2
<i>Trachinocephalus myops</i>	bluntnose lizardfish	430	25.3	78	23
<i>Haemulon striatum</i>	striped grunt	401	15.6	7	2.1
<i>Prionotus paralatus</i>	Mexican searobin	399	12.6	26	7.7
<i>Centropristis ocyurus</i>		395	21.3	57	16.8
<i>Prionotus scitulus</i>	leopard searobin	395	12.8	28	8.3

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Caranx crysos</i>	blue runner	384	25.2	55	16.2
<i>Anchoa mitchilli</i>	bay anchovy	374	0.5	15	4.4
<i>Synodus macrostigmus</i>		357	26.2	56	16.5
<i>Eucinostomus gula</i>	silver jenny	352	12.4	51	15
<i>Acanthostracion quadricornis</i>	scrawled cowfish	335	47	72	21.2
<i>Serranus phoebe</i>	tattler	334	12.9	32	9.4
<i>Sardinella aurita</i>	round sardinella	314	11.7	41	12.1
<i>Chaetodipterus faber</i>	Atlantic spadefish	313	17.6	84	24.8
<i>Saurida normani</i>	shortjaw lizardfish	297	27.3	19	5.6
<i>Scorpaena brasiliensis</i>	barbfish	269	19	54	15.9
<i>Ophidion holbrookii</i>	bank cusk-eel	245	21.5	49	14.5
<i>Ogcocephalus declivirostris</i>	slantbrow batfish	229	5	42	12.4
<i>Prionotus rubio</i>	blackfin searobin	223	20.7	39	11.5
<i>Lepophidium jeannae</i>	mottled cusk-eel	205	11	27	8
<i>Bothus robinsi</i>	twospot flounder	203	6.5	51	15
<i>Trinectes maculatus</i>	hogchoker	198	5	7	2.1
<i>Sphoeroides spengleri</i>	bandtail puffer	191	7.1	46	13.6
<i>Neomerinthe hemingwayi</i>	spinycheek scorpionfish	189	5	10	2.9
<i>Prionotus roseus</i>	bluespotted searobin	189	7.8	57	16.8
<i>Stegastes partitus</i>	bicolor damselfish	186	4.3	4	1.2
<i>Citharichthys spilopterus</i>	bay whiff	185	2.8	36	10.6
<i>Halieutichthys aculeatus</i>	pancake batfish	181	1.8	52	15.3
<i>Balistes capriscus</i>	gray triggerfish	178	22	68	20.1
<i>Porichthys plectrodon</i>	Atlantic midshipman	176	3.1	73	21.5
<i>Monacanthus ciliatus</i>	fringed filefish	171	2.7	54	15.9
<i>Scorpaena agassizii</i>	longfin scorpionfish	170	6.8	23	6.8
<i>Prionotus alatus</i>	spiny searobin	167	4.7	27	8
<i>Equetus lanceolatus</i>	jackknife fish	166	9.1	42	12.4
<i>Ophidion josephi</i>	crested cusk-eel	151	6.1	31	9.1
<i>Aluterus schoepfii</i>	orange filefish	149	58.2	37	10.9
<i>Eucinostomus harengulus</i>	tidewater mojarra	138	5.3	13	3.8

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Synodus intermedius</i>	sand diver	130	16	37	10.9
<i>Symphurus plagiusa</i>	blackcheek tonguefish	106	2.2	20	5.9
<i>Prionotus ophryas</i>	bandtail searobin	106	4	51	15
<i>Symphurus diomedeanus</i>		104	2.7	35	10.3
<i>Prionotus tribulus</i>	bighead searobin	103	5.3	37	10.9
<i>Peprilus paru</i>	harvestfish	101	3.1	20	5.9
<i>Ancylopsetta ommata</i>	ocellated flounder	99	9.6	43	12.7
<i>Calamus arctifrons</i>	grass porgy	94	11.4	10	2.9
<i>Bairdiella chrysoura</i>	silver perch	91	4	5	1.5
<i>Pareques umbrosus</i>	cubbyu	89	4.5	30	8.8
<i>Lutjanus griseus</i>	gray snapper	89	32.1	39	11.5
<i>Prionotus martis</i>	barred searobin	87	3.8	22	6.5
<i>Calamus nodosus</i>	knobbed porgy	87	10.1	17	5
<i>Menticirrhus americanus</i>	jewsharp drummer	83	8.7	26	7.7
<i>Pagrus pagrus</i>	red porgy	83	12.8	20	5.9
<i>Chaetodon ocellatus</i>	spotfin butterflyfish	80	5.8	45	13.3
<i>Urophycis floridana</i>		78	7.5	11	3.2
<i>Etrumeus teres</i>	Atlantic red herring	74	1.6	10	2.9
<i>Apogon pseudomaculatus</i>	twospot cardinalfish	72	0.4	15	4.4
<i>Pterois volitans</i>	lion fish	70	15.9	30	8.8
<i>Ophidion grayi</i>	blotched cusk-eel	66	6.3	11	3.2
<i>Rhynchoconger flavus</i>		62	3.3	21	6.2
<i>Lagocephalus laevigatus</i>	smooth puffer	61	6.9	36	10.6
<i>Apogon affinis</i>	bigtooth cardinalfish	60	0.7	9	2.7
<i>Etopus</i>		58	0.7	11	3.2
<i>Symphurus civitatum</i>		58	1	28	8.3
<i>Kathetostoma albigutta</i>	lancer stargazer	57	2.4	19	5.6
<i>Hippocampus erectus</i>	lined seahorse	55	0.6	23	6.8
<i>Schultzea beta</i>	school bass	50	0.8	3	0.9
<i>Epinephelus morio</i>	red grouper	49	35.9	22	6.5
<i>Etopus cyclosquamus</i>	shelf flounder	49	10	4	1.2

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Paralichthys lethostigma</i>	southern flounder	49	13.8	27	8
<i>Lachnolaimus maximus</i>	hogfish	48	15.5	13	3.8
<i>Nicholsina usta</i>	emerald parrotfish	47	4.9	16	4.7
<i>Ogcocephalus parvus</i>	roughback batfish	47	0.5	33	9.7
<i>Citharichthys macrops</i>	spotted whiff	46	1.6	17	5
<i>Cyclopsetta fimbriata</i>	spotfin flounder	44	4.7	31	9.1
<i>Bollmannia communis</i>	ragged goby	43	0.1	12	3.5
<i>Selar crumenophthalmus</i>	bigeye scad	43	3.4	16	4.7
<i>Engyophrys senta</i>	spiny flounder	42	0.2	17	5
<i>Ocyurus chrysurus</i>	yellowtail snapper	42	4.1	10	2.9
<i>Chromis enchrysur</i>	yellowtail reeffish	42	0.6	7	2.1
<i>Sphyrna tiburo</i>	bonnethead	39	15.5	17	5
<i>Stegastes variabilis</i>	cocoa damselfish	38	0.9	1	0.3
<i>Bagre marinus</i>	gafftopsail catfish	38	3.3	18	5.3
<i>Gymnachirus texae</i>	fringed sole	36	0.4	23	6.8
<i>Chaetodon sedentarius</i>	reef butterflyfish	35	1.5	14	4.1
<i>Diplodus holbrookii</i>	spottail pinfish	33	2.7	4	1.2
<i>Brotula barbata</i>	bearded brotula	33	6.9	17	5
<i>Echeneis neucratoides</i>	whitefin sharksucker	32	12.1	12	3.5
<i>Gymnothorax saxicola</i>	honeycomb moray	31	3.4	20	5.9
<i>Sargocentron bullisi</i>	deepwater squirrelfish	28	0.6	6	1.8
<i>Centropristis striata</i>	black sea bass	28	4	7	2.1
<i>Pareques iwamotoi</i>	blackbar drum	27	1.5	12	3.5
<i>Gastropsetta frontalis</i>	shrimp flounder	26	2	19	5.6
<i>Raja texana</i>	roundel skate	26	8.5	20	5.9
<i>Ancylopsetta dilecta</i>	three-eye flounder	26	1.3	9	2.7
<i>Corvula batabana</i>	blue croaker	26	0.5	3	0.9
<i>Priacanthus arenatus</i>	bigeye	26	2.8	19	5.6
<i>Pristigenys alta</i>	short bigeye	25	1.7	19	5.6
<i>Aluterus heudelotii</i>		24	5	18	5.3
<i>Urophycis regia</i>	spotted codling	24	2.2	4	1.2

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Sphyraena guachancho</i>	guaguanche	24	3.6	11	3.2
<i>Canthigaster jamestyleri</i>		23	0.3	5	1.5
<i>Antennarius radiosus</i>	big-eyed frogfish	23	0.3	11	3.2
<i>Bellator egretta</i>	streamer searobin	22	0.2	6	1.8
<i>Scomberomorus cavalla</i>	king mackerel	22	5.2	13	3.8
<i>Pterois</i>	lion fishes	21	6.8	6	1.8
<i>Ophidion holbrookii</i>	longnose cusk-eel	21	1.6	8	2.4
<i>Echeneis naucrates</i>	sharksucker	19	8.8	11	3.2
<i>Pomacanthus arcuatus</i>	gray angelfish	19	7.2	10	2.9
<i>Bathyanthias mexicanus</i>	yellowtail bass	18	0.3	4	1.2
<i>Ogcocephalus cubifrons</i>		18	4.5	14	4.1
<i>Rhizoprionodon terraenovae</i>	Atlantic sharpnose shark	18	31.2	8	2.4
<i>Apogon aurolineatus</i>	bridle cardinalfish	17	0	10	2.9
<i>Ogcocephalus corniger</i>	longnose batfish	17	0.3	11	3.2
<i>Ariomma regulus</i>	spotted drifffish	17	0.7	11	3.2
<i>Hoplunnis macrura</i>	freckled pike-conger	17	0.2	11	3.2
<i>Rypticus maculatus</i>	whitespotted soapfish	17	0.3	12	3.5
<i>Phaeoptyx pigmentaria</i>	dusky cardinalfish	16	0	6	1.8
<i>Brevoortia</i>	menhadens	16	1.6	2	0.6
<i>Canthigaster rostrata</i>		16	0.1	6	1.8
<i>Scomberomorus maculatus</i>	Atlantic Spanish mackerel	15	3.7	7	2.1
<i>Sphoeroides nephelus</i>	southern puffer	15	1.5	10	2.9
<i>Synodus</i>	lizard fishes	15	1.4	5	1.5
<i>Serranus tortugarum</i>	chalk bass	14	0.1	1	0.3
<i>Calamus bajonado</i>	jolthead porgy	14	7.6	1	0.3
<i>Caulolatilus intermedius</i>	anchor tilefish	14	1.3	8	2.4
<i>Citharichthys gymnorhinus</i>	anglefin whiff	14	0	12	3.5
<i>Pseudupeneus maculatus</i>	spotted goatfish	14	1	6	1.8
<i>Hoplunnis diomediana</i>	blacktail pike-conger	14	0.1	5	1.5
<i>Calamus penna</i>	sheepshead porgy	14	4	6	1.8
<i>Holacanthus bermudensis</i>	blue angelfish	13	3.9	10	2.9

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
Calamus leucosteus	whitebone porgy	13	5.9	8	2.4
Paralichthys albigutta	Gulf flounder	13	3.3	10	2.9
Prognathodes aya	bank butterflyfish	12	0.4	6	1.8
Syacium		12	0.1	3	0.9
Apogon	cardinalfishes	11	0	8	2.4
Chilomycterus schoepfii	burrfish	11	2.5	9	2.7
Selene vomer	lookdown	11	0.4	7	2.1
Xyrichtys novacula	pearly razorfish	10	0.6	9	2.7
Astrapogon stellatus	conchfish	10	0	4	1.2
Sciaenops ocellatus	red drum	10	40.2	5	1.5
Citharichthys cornutus	horned whiff	9	0	6	1.8
Raja eglanteria	clearnose skate	8	4.2	7	2.1
Urophycis cirrata	Gulf hake	8	0.4	3	0.9
Pomatomus saltatrix	bluefish	8	2.9	7	2.1
Chromis		8	0.1	1	0.3
Gymnachirus melas	naked sole	7	0.2	6	1.8
Antennarius ocellatus	ocellated frogfish	7	0.7	7	2.1
Opsanus pardus	leopard toadfish	7	0.2	6	1.8
Calamus		7	0.3	4	1.2
Elops saurus	ladyfish	7	1.3	4	1.2
Anthias nicholsi	yellowfin bass	7	0.2	2	0.6
Lonchopisthus micrognathus	swordtail jawfish	7	0	4	1.2
Hemanthias aureorubens	streamer bass	7	0.1	2	0.6
Narcine brasiliensis	lesser electric ray	7	2.7	4	1.2
Apogon quadrisquamatus	sawcheek cardinalfish	7	0	4	1.2
Hemicaranx amblyrhynchus	bluntnose jack	7	0.1	4	1.2
Echiophis intertinctus	spotted spoon-nose eel	6	1.5	6	1.8
Acanthostracion polygonius	honeycomb cowfish	6	3.7	3	0.9
Pontinus longispinis	longspine scorpionfish	6	0.1	5	1.5
Alectis ciliaris	African pompano	6	0.4	5	1.5
Cynoscion	sea trout	6	0	3	0.9

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
Ophidiidae	brotulas	5	0	2	0.6
Bregmaceros atlanticus	antenna codlet	5	0	1	0.3
Lepophidium		5	0	4	1.2
Aluterus monoceros	unicorn filefish	5	2.6	5	1.5
Etropus rimosus	gray flounder	5	0.1	1	0.3
Dasyatis say	bluntnose stingray	5	8.5	5	1.5
Archosargus probatocephalus	sheepshead	5	2.5	3	0.9
Sparisoma atomarium	greenblotch parrotfish	5	0.1	1	0.3
Halichoeres bathyphilus	greenband wrasse	5	0.1	4	1.2
Decodon puellaris	red hogfish	5	0.2	2	0.6
Holocentrus rufus	longspine squirrelfish	4	0.1	1	0.3
Ogcocephalus pantostictus	spotted batfish	4	1.1	4	1.2
Echeneis	sharksuckers	4	1	3	0.9
Dasyatis americana	southern stingray	4	6.8	4	1.2
Sphyræna borealis	northern sennet	4	0.6	3	0.9
Polydactylus octonemus	Atlantic threadfin	4	0.4	2	0.6
Rhinobatos lentiginosus	Atlantic guitarfish	4	2	4	1.2
Isopisthus		4	0.6	2	0.6
Trachinotus carolinus	Florida pompano	4	1.3	4	1.2
Neobythites gilli		4	0	2	0.6
Scorpaenodes tredecimspinosus		3	0.1	1	0.3
Parablennius marmoreus	seaweed blenny	3	0	3	0.9
Fistularia petimba	Pacific cornetfish	3	0.5	3	0.9
Mycteroperca phenax	scamp	3	0.9	3	0.9
Pogonias cromis	black drum	3	15	3	0.9
Peprilus paru	harvestfish	3	0.3	2	0.6
Syacium micrurum	channel flounder	3	0.1	1	0.3
Gymnothorax kolpos	blacktail moray	3	0.6	2	0.6
Physiculus fulvus	hakeling	3	0	2	0.6
Gymnothorax nigromarginatus	blackedge moray	3	0.3	3	0.9
Blenniidae	blennies	3	0	2	0.6

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
Hemanthias vivanus	red barbier	3	0	3	0.9
Rachycentron canadum	cobia	3	1.7	2	0.6
Carcharhinus acronotus	blacknose shark	3	23.9	3	0.9
Eucinostomus argenteus	spotfin mojarra	3	0.1	3	0.9
Mustelus sinusmexicanus	Gulf smoothhound	3	2.5	2	0.6
Menticirrhus saxatilis	Gulf minkfish	3	0.8	3	0.9
Hoplunnis tenuis	spotted pike-conger	3	0	2	0.6
Rhinoptera bonasus	cownose ray	3	17.5	3	0.9
Urophycis	codlings	2	0.2	2	0.6
Citharichthys	sanddabs	2	0	2	0.6
Mycteroperca microlepis	gag	2	1	1	0.3
Phaeoptyx xenus	sponge cardinalfish	2	0	2	0.6
Lactophrys trigonus	trunkfish	2	0.1	1	0.3
Lutjanus analis	mutton snapper	2	5.2	2	0.6
Seriola dumerili	greater amberjack	2	0.6	2	0.6
Bregmaceros		2	0	1	0.3
Ophidion	cusks-eels	2	0	2	0.6
Gobiesox strumosus	skilletfish	2	0	2	0.6
Rypticus bistrispinus	freckled soapfish	2	0	2	0.6
Conodon nobilis	barred grunt	2	0.1	1	0.3
Ginglymostoma cirratum	nurse shark	2	0.7	2	0.6
Dasyatis sabina	Atlantic stingray	2	2.9	2	0.6
Squatina dumeril	Atlantic angel shark	2	1	2	0.6
Epinephelus	groupers	2	0	2	0.6
Seriola rivoliana	almaco jack	2	2.4	2	0.6
Gymnothorax ocellatus	Caribbean ocellated moray	2	0.4	2	0.6
Rhynchoconger		2	0.1	1	0.3
Holocentrus adscensionis	squirrelfish	2	0.1	1	0.3
Paraconger caudilimbatus	margintail conger	2	0.3	1	0.3
Caranx hippos	crevalle jack	2	0.2	2	0.6
Neoconger mucronatus	ridged eel	1	0	1	0.3

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
Diodon holocanthus	balloonfish	1	0.5	1	0.3
Holacanthus ciliaris	queen angelfish	1	0	1	0.3
Cosmocampus elucens		1	0	1	0.3
Phaeoptyx conklini	freckled cardinalfish	1	0	1	0.3
Halichoeres	wrasses	1	0	1	0.3
Mustelus	smooth hound sharks	1	1	1	0.3
Epinephelus itajara	goliath grouper	1	33.3	1	0.3
Stephanolepis setifer	pygmy filefish	1	0	1	0.3
Decapterus macarellus	mackerel scad	1	0	1	0.3
Umbrina coroides	sand drum	1	0	1	0.3
Hypoplectrus nigricans		1	0	1	0.3
Hypleurochilus bermudensis	barred blenny	1	0	1	0.3
Antennarius multiocellatus	longlure frogfish	1	0	1	0.3
Abudefduf saxatilis	sergeant major	1	0	1	0.3
Symphurus parvus	pygmy tonguefish	1	0	1	0.3
Scorpaena plumieri	spotted scorpionfish	1	0.5	1	0.3
Opsanus beta	Gulf toadfish	1	0	1	0.3
Stephanolepis setifer	pygmy filefish	1	0	1	0.3
Bothus lunatus	peacock flounder	1	0.2	1	0.3
Paralichthys dentatus	fluke	1	0.2	1	0.3
Manta birostris	Atlantic manta	1	21.4	1	0.3
Syngnathus springeri	bull pipefish	1	0	1	0.3
Hoplunnis		1	0	1	0.3
Caranx latus	horse-eye jack	1	0	1	0.3
Hemiramphus brasiliensis	ballyhoo	1	0	1	0.3
Dasyatis centroura	clam cracker	1	260	1	0.3
Monolene sessilicauda	deepwater flounder	1	0	1	0.3
Canthigaster	sharpnosed puffers	1	0	1	0.3
Scorpaena	scorpionfishes	1	0	1	0.3
Gonostoma atlanticum	Atlantic fangjaw	1	0	1	0.3
Mustelus canis	dusky smooth-hound	1	0.2	1	0.3

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
Symphurus urospilus	spottail tonguefish	1	0	1	0.3
Ophichthus gomesii	shrimp eel	1	0.1	1	0.3
Paralichthys squamilentus	broad flounder	1	0.1	1	0.3
Achiridae	American soles	1	0	1	0.3
Opsanus tau	oyster toadfish	1	0.1	1	0.3
Acanthemblemaria		1	0	1	0.3
Bythitidae	brotulas	1	0	1	0.3
Bothus ocellatus	eyed flounder	1	0	1	0.3
Serranus subligarius	belted sandfish	1	0	1	0.3
Mustelus norrisi	Florida smoothhound	1	2.9	1	0.3
Hyporthodus flavolimbatus		1	0.2	1	0.3
Serranidae	groupers	1	0	1	0.3
Lutjanus	common snappers	1	0	1	0.3
Pontinus castor	longsnout scorpionfish	1	0	1	0.3
Urophycis earllii	Carolina hake	1	0.3	1	0.3
Symphurus	straightmouth tonguefishes	1	0	1	0.3
Synagrops		1	0	1	0.3
Antennarius striatus	striated frogfish	1	0	1	0.3
<u>Crustaceans</u>					
Farfantepenaeus aztecus	brown shrimp	15623	333.6	168	49.6
Callinectes similis	lesser blue crab	3740	60.8	109	32.2
Litopenaeus setiferus	northern white shrimp	3003	76.8	59	17.4
Portunus gibbesii	iridescent swimming crab	2399	10.8	109	32.2
Portunus spinicarpus	longspine swimming crab	2232	13	119	35.1
Farfantepenaeus duorarum	northern pink shrimp	2121	45.9	65	19.2
Sicyonia brevirostris	brown rock shrimp	2062	34.2	100	29.5
Squilla empusa	Mantis shrimp	1803	18.8	103	30.4
Rimapenaeus similis	Roughback shrimp	1795	5.1	76	22.4
Solenocera vioscai	humpback shrimp	808	4.1	35	10.3

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Solenocera atlantidis</i>	dwarf humpback shrimp	560	0.7	35	10.3
<i>Squilla chydæa</i>		451	3	45	13.3
<i>Rimapenaeus constrictus</i>		389	0.4	10	2.9
<i>Sicyonia dorsalis</i>	lesser rock shrimp	314	1.2	31	9.1
<i>Anasimus latus</i>	stilt spider crab	245	1.7	33	9.7
<i>Parapenaeus politus</i>	deep-water rose shrimp	218	0.6	9	2.7
<i>Portunus spinimanus</i>	blotched swimming crab	217	9.1	59	17.4
<i>Raninoides louisianensis</i>	Gulf frog crab	178	1.2	31	9.1
<i>Calappa sulcata</i>	yellow box crab	125	27.1	52	15.3
<i>Stenorhynchus seticornis</i>	yellowline arrow crab	119	0.3	64	18.9
<i>Metapenaeopsis goodei</i>	Caribbean velvet shrimp	118	0.2	19	5.6
<i>Scyllarus chacei</i>	Chace slipper lobster	87	0.3	32	9.4
<i>Callinectes sapidus</i>	blue crab	81	4.7	24	7.1
<i>Xiphopenaeus kroyeri</i>	Atlantic seabob	76	0.5	7	2.1
<i>Munida flinti</i>		62	0	1	0.3
<i>Portunus ordwayi</i>		62	0.4	20	5.9
<i>Cryptodromiopsis antillensis</i>	decorator crab	51	0.2	25	7.4
<i>Scyllarides nodifer</i>	ridged slipper lobster	50	11.1	25	7.4
<i>Sicyonia laevigata</i>	coral shrimp	49	0.4	10	2.9
<i>Munida pusilla</i>		44	0	2	0.6
<i>Mithrax hispidus</i>	coral clinging crab	43	0.1	17	5
<i>Stenocionops furcatus</i>	furcate spider crab	43	0.9	29	8.6
<i>Platylambrus granulata</i>	bladetooth elbow crab	34	0.1	23	6.8
<i>Mesopenaeus tropicalis</i>	salmon shrimp	32	0.1	4	1.2
<i>Pseudorhombila quadridentata</i>	flecked squareback crab	32	0.2	16	4.7
<i>Paguristes sericeus</i>	blue-eye hermit	30	0.1	19	5.6
<i>Calappa flammea</i>	flame box crab	28	3	19	5.6
Xanthidae	mud crabs	27	0.1	14	4.1
<i>Leiolumbrus nitidus</i>	white elbow crab	26	0.1	12	3.5
<i>Macrocoeloma trispinosum</i>	spongy decorator crab	22	0.1	14	4.1
Majidae	spider crabs	18	0.2	5	1.5

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
Hepatus epheliticus	calico box crab	17	0.8	13	3.8
Podochela sidneyi	shortfinger neck crab	13	0	8	2.4
Petrolisthes galathinus	banded porcelain crab	13	0	4	1.2
Petrochirus diogenes	giant hermit	13	0.5	7	2.1
Parthenope agona		12	0	9	2.7
Myropsis quinquespinosa	fivespine purse crab	10	0.1	5	1.5
Gibbesia neglecta		10	0.1	4	1.2
Stenocionops spinimanus	prickly spider crab	10	0.1	8	2.4
Petrolisthes		10	0	2	0.6
Squilla deceptrix		9	0.1	3	0.9
Portunus sayi	sargassum swimming crab	9	0.2	4	1.2
Solenocera necopina	deepwater humpback shrimp	9	0	2	0.6
Sicyonia burkenroadi	spiny rock shrimp	9	0	5	1.5
Munida forceps		9	0	2	0.6
Stenocionops		9	0.1	4	1.2
Lysiosquillidae	lysiosquillid mantis shrimps	8	0	2	0.6
Leiolambrus		8	0	3	0.9
Dardanus fucosus	bareye hermit	8	0	6	1.8
Persephona crinita	pink purse crab	8	0	4	1.2
Porcellana sigsbeiana	striped porcelain crab	8	0	3	0.9
Pseudomedaeus agassizii	rough rubble crab	7	0	5	1.5
Ovalipes floridanus	Florida lady crab	7	0.3	4	1.2
Pilumnus sayi	spineback hairy crab	7	0	6	1.8
Leiolambrus granulatus		7	0	3	0.9
Portunus floridanus		6	0.1	3	0.9
Lysmata wurdemanni	peppermint shrimp	6	0	3	0.9
Podochela		6	0	4	1.2
Isopoda	isopods	6	0	3	0.9
Macrocoeloma eutheca		5	0	3	0.9
Raninoides loevis	furrowed frog crab	5	0	3	0.9
Alpheus		5	0	4	1.2

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Mithraculus forceps</i>	red-ridged clinging crab	5	0	2	0.6
<i>Lobopilumnus agassizii</i>	areolated hairy crab	5	0	4	1.2
<i>Plesionika longicauda</i>		5	0	1	0.3
<i>Stenopus scutellatus</i>	golden coral shrimp	5	0	5	1.5
<i>Libinia emarginata</i>	portly spider crab	5	0.4	4	1.2
<i>Iliacantha liodactylus</i>		4	0	4	1.2
<i>Persephona mediterranea</i>	mottled purse crab	4	0	3	0.9
<i>Arenaeus cribrarius</i>	speckled swimming crab	4	0.2	3	0.9
<i>Nephropsis</i>		4	0	1	0.3
<i>Coelocerus spinosus</i>	channelnose spider crab	4	0.4	1	0.3
<i>Libinia dubia</i>	longnose spider crab	4	0	4	1.2
<i>Dardanus insignis</i>	red brocade hermit	4	0	4	1.2
<i>Persephona</i>		3	0	3	0.9
<i>Parthenope</i>		3	0	1	0.3
<i>Portunus</i>		3	0	2	0.6
<i>Squilla</i>		3	0	2	0.6
<i>Pilumnus floridanus</i>	plumed hairy crab	2	0	2	0.6
<i>Gonodactylus bredini</i>		2	0	2	0.6
<i>Iliacantha subglobosa</i>	longfinger purse crab	2	0	2	0.6
<i>Scyllarus americanus</i>	American slipper lobster	2	0	2	0.6
<i>Nemausa acuticornis</i>	sharphorn clinging crab	2	0	2	0.6
<i>Pyromaia cuspidata</i>	dartnose pear crab	2	0	1	0.3
<i>Macrocoeloma camptocerum</i>	Florida decorator crab	2	0	2	0.6
<i>Munida irrasa</i>		2	0	2	0.6
Leucosiidae	purse crabs	2	0	1	0.3
Solenoceridae	solenocerid shrimps	2	0	1	0.3
<i>Scyllarus depressus</i>	scaled slipper lobster	2	0	2	0.6
Paguristes		2	0	2	0.6
<i>Hexapanopeus angustifrons</i>	smooth mud crab	2	0	1	0.3
<i>Platylambrus fraterculus</i>	rough elbow crab	2	0	1	0.3
<i>Collodes robustus</i>		2	0	2	0.6

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Petrolisthes armatus</i>	green porcelain crab	1	0	1	0.3
Scyllaridae	slipper lobsters	1	0	1	0.3
<i>Menippe</i>		1	0.1	1	0.3
<i>Synalpheus</i>		1	0	1	0.3
<i>Tyche emarginata</i>	fourhorn crab	1	0	1	0.3
<i>Ethusa</i>		1	0	1	0.3
<i>Callinectes ornatus</i>	shelligs	1	0.1	1	0.3
<i>Podochela gracilipes</i>	unicorn neck crab	1	0	1	0.3
<i>Mesorhea sexspinosa</i>		1	0	1	0.3
<i>Panulirus argus</i>	Caribbean spiny lobster	1	1.4	1	0.3
<i>Gonodactylus</i>		1	0	1	0.3
<i>Cronius ruber</i>	blackpoint sculling crab	1	0	1	0.3
<i>Euphosynoplax clausa</i>	craggy bathyal crab	1	0	1	0.3
<i>Palicus obesus</i>		1	0	1	0.3
<i>Galathea rostrata</i>		1	0	1	0.3
<i>Pilumnus</i>		1	0	1	0.3
<i>Podochela riisei</i>	longfinger neck crab	1	0	1	0.3
<i>Palicus</i>		1	0	1	0.3
<i>Pagurus impressus</i>	dimpled hermit	1	0	1	0.3
<i>Metoporphaphis calcarata</i>	false arrow crab	1	0	1	0.3
<i>Callidactylus asper</i>	spurfinger purse crab	1	0	1	0.3
<i>Paguristes triangulatus</i>		1	0	1	0.3
<i>Meiosquilla quadridens</i>		1	0	1	0.3
<i>Pagurus pollicaris</i>	flatclaw hermit	1	0	1	0.3
<i>Manucomplanus ungulatus</i>		1	0	1	0.3
<i>Nanoplax xanthiformis</i>	rough squareback crab	1	0	1	0.3
<i>Mithrax</i>		1	0	1	0.3
<i>Palicus affinis</i>	Antillean stilt crab	1	0	1	0.3
<i>Pagurus bullisi</i>		1	0	1	0.3
<i>Euchirograpsus americanus</i>	American talon crab	1	0	1	0.3
<i>Platylambrus pourtalesii</i>	spinous elbow crab	1	0	1	0.3

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
Macrocoeloma		1	0	1	0.3
Palicus faxoni	finned stilt crab	1	0	1	0.3
Stenocionops spinosissimus	tenspine spider crab	1	0	1	0.3
Acanthocarpus alexandri	gladiator box crab	1	0	1	0.3
<u>Others</u>					
Amusium papyraceum	paper scallop	7943	102.6	64	18.9
Loligo	Slender Inshore squid	2582	63.4	168	49.6
Loligo pealeii	longfin inshore squid	933	50.3	68	20.1
Pitar cordatus	corded pitar	482	10.4	33	9.7
Anadara baughmani	skewed ark	341	5	16	4.7
Argopecten gibbus	Atlantic calico scallop	213	1.8	24	7.1
Lolliguncula brevis	Atlantic brief squid	184	2.2	34	10
Loligo		118	2.2	6	1.8
Polystira albida	white giant-turris	90	0.7	17	5
Anadara ovalis	blood ark	63	0.1	2	0.6
Euvola raveneli		31	0.2	16	4.7
Laevicardium mortoni	yellow eggcockle	19	1.1	9	2.7
Octopus vulgaris	common octopus	17	2	16	4.7
Distorsio clathrata	Atlantic distorsio	15	0.2	5	1.5
Conus austini		14	0.1	5	1.5
Macoma brevisfrons	short macoma	13	0.1	3	0.9
Lirophora clenchi		12	0.2	8	2.4
Ficus communis	Atlantic figsnail	7	0.1	6	1.8
Sconsia striata	royal bonnet	7	0.1	3	0.9
Narcissia trigonaria		7	0.4	6	1.8
Pteria colymbus	Atlantic wing-oyster	6	0	4	1.2
Arca zebra	turkey wing	5	0.1	3	0.9
Euvola		5	0	4	1.2
Lindapecten muscosus	rough scallop	4	0	2	0.6

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER	TOTAL WEIGHT	NUMBER OF	% FREQUENCY
		CAUGHT	CAUGHT (KG)	TOWS WHERE CAUGHT	OCCURRENCE
<i>Busycotypus spiratus</i>		4	2.4	3	0.9
<i>Fasciolaria lilium hunteria</i>		4	0.2	3	0.9
<i>Chicoreus dilectus</i>		4	0	1	0.3
<i>Tonna galea</i>	giant tun	4	0.2	4	1.2
<i>Polystira</i>		4	0.1	2	0.6
<i>Atrina serrata</i>	sawtooth penshell	3	0.6	2	0.6
<i>Aplysia morio</i>	sooty seahare	3	1.9	2	0.6
<i>Conus</i>		3	0	2	0.6
<i>Atrina rigida</i>	stiff penshell	2	0.6	2	0.6
<i>Nodipecten</i>		2	0.1	1	0.3
<i>Hexaplex fulvescens</i>	giant eastern murex	2	0.1	1	0.3
<i>Chicoreus florifer</i>		2	0	2	0.6
<i>Astrea phoebia</i>		1	0	1	0.3
<i>Laevicardium pictum</i>	painted eggcockle	1	0	1	0.3
<i>Hypselodoris edenticulata</i>	florida regal doris	1	0	1	0.3
<i>Cassis madagascariensis</i>	cameo helmet	1	0.2	1	0.3
<i>Bulla striata</i>	striate bubble	1	0	1	0.3
<i>Laevicardium</i>		1	0	1	0.3
<i>Spathochlamys benedicti</i>	Benedict scallop	1	0	1	0.3
<i>Distorsio constricta mcgintyi</i>		1	0	1	0.3
<i>Aequipecten glyptus</i>	red-ribbed scallop	1	0	1	0.3
<i>Architectonica nobilis</i>	common sundial	1	0	1	0.3
Pinnidae		1	0	1	0.3
<i>Cypraea spurca</i>		1	0	1	0.3
<i>Aplysia brasiliana</i>	mottled seahare	1	0	1	0.3
<i>Stramonita haemastoma</i>		1	0	1	0.3
<i>Murex cabritti</i>		1	0	1	0.3
<i>Arcinella cornuta</i>	Florida spiny jewelbox	1	0	1	0.3

Table 4. 2015 Bottom Longline Survey species composition list. Species with no weight recorded were too large to measure.

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL NUMBER WEIGHED	TOTAL WEIGHT
<u>Finfishes</u>				
Bagre marinus	gafftopsail catfish	1112	1040	1801.43
Carcharhinus limbatus	blacktip shark	1073	830	12040.62
Rhizoprionodon terraenovae	Atlantic sharpnose shark	479	379	1059.97
Sciaenops ocellatus	red drum	244	222	1816.66
Carcharhinus leucas	bull shark	118	48	1786.73
Dasyatis americana	southern stingray	93	34	1331.1
Carcharhinus brevipinna	spinner shark	73	51	571.35
Carcharhinus isodon	finetooth shark	37	28	218.9
Carcharhinus acronotus	blacknose shark	34	33	296.41
Ariopsis felis	hardhead catfish	28	25	17.03
Pogonias cromis	black drum	9	8	63.18
Unid.fish		8	0	
Sphyrna mokarran	great hammerhead	6	5	179.8
Negaprion brevirostris	lemon shark	5	3	185.8
Rachycentron canadum	cobia	5	2	13.6
Dasyatis centroura	clam cracker	4	0	
Rhinoptera bonasus	cownose ray	4	2	24.6
Echeneis naucrates	sharksucker	3	0	
Sphyrna lewini	scalloped hammerhead	3	1	2.27
Sphyrna tiburo	bonnethead	2	2	8.99
Opisthonema oglinum	Atlantic thread herring	2	0	
Unid other		2	0	
Unid other		2	0	
Dasyatis say	bluntnose stingray	2	0	
Caranx hippos	crevalle jack	1	1	13.9
Coryphaena hippurus	dolphin	1	1	1.95
Scomberomorus maculatus	Atlantic Spanish mackerel	1	1	0.4
Rhinoptera brasiliensis	Brazilian cow-nosed ray	1	0	

Table 4. 2015 Bottom Longline Survey species composition list. Species with no weight recorded were too large to measure.

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL NUMBER WEIGHED	TOTAL WEIGHT
Galeocerdo cuvier	tiger shark	1	0	
Lagocephalus laevigatus	smooth puffer	1	0	
Aetobatus narinari	bonnetray	1	0	
Dasyatidae	stingrays	1	1	14
Ophichthus gomesii	shrimp eel	1	0	
Mobula hypostoma	Atlantic devil ray	1	0	

Table 5. 2015 Vertical Line Survey species composition list. Species with no weight recorded were too large to measure.

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL NUMBER WEIGHED	TOTAL WEIGHT
<u>Finfishes</u>				
Lutjanus campechanus	red snapper	1201	1171	2309.66
Balistes capriscus	gray triggerfish	19	16	37.66
Rhomboplites aurorubens	vermilion snapper	18	9	5.3
Seriola rivoliana	almaco jack	12	4	4.67
Pagrus pagrus	red porgy	6	5	4.35
Lutjanus synagris	lane snapper	5	3	0.87
Carcharhinus falciformis	silky shark	5	3	8.5
Seriola dumerili	greater amberjack	4	2	7.72
Caranx crysos	blue runner	3	0	
Mycteroperca phenax	scamp	3	0	
Rachycentron canadum	cobia	2	0	
Micropogonias undulatus	Atlantic croaker	2	1	1.18
Carcharhinus acronotus	blacknose shark	2	0	
Elops saurus	ladyfish	2	1	0.8
Rhizoprionodon terraenovae	Atlantic sharpnose shark	2	1	4.1
Ariopsis felis	hardhead catfish	2	2	0.84
Cynoscion arenarius	sand seatrout	2	1	1
Selene setapinnis	Atlantic moonfish	1	0	
Chaetodipterus faber	Atlantic spadefish	1	1	0.91
Trachurus lathami	rough scad	1	1	0.36
Sphyraena barracuda	great barracuda	1	0	
Lutjanus griseus	gray snapper	1	1	3
Haemulon aurolineatum	tomtate	1	1	0.2
Mycteroperca interstitialis	yellowmouth grouper	1	0	
Pogonias cromis	black drum	1	0	
Euthynnus alletteratus	false albacore	1	1	2.17
Sciaenops ocellatus	red drum	1	0	

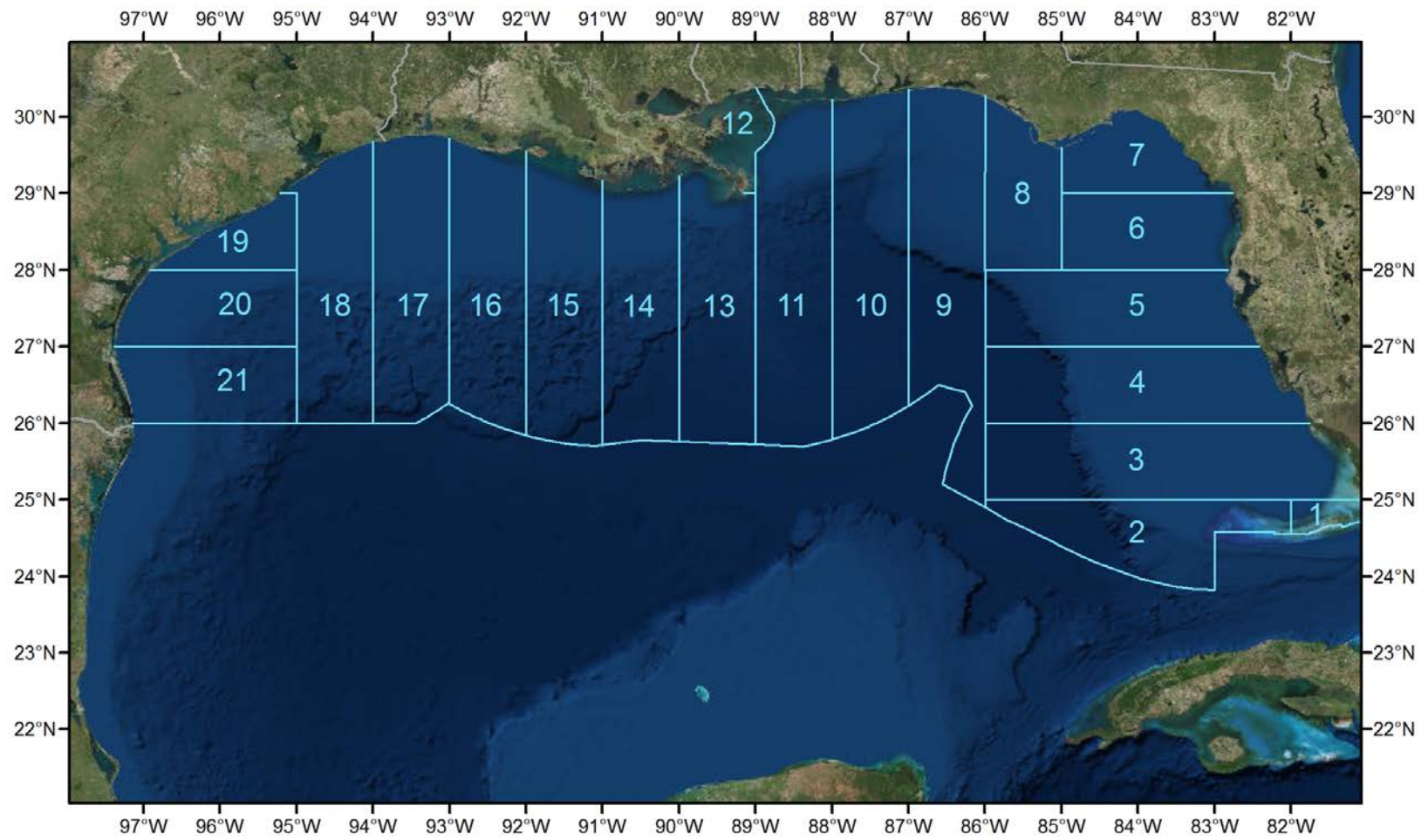


Figure 1. Statistical zones for shrimp in the Gulf of Mexico.

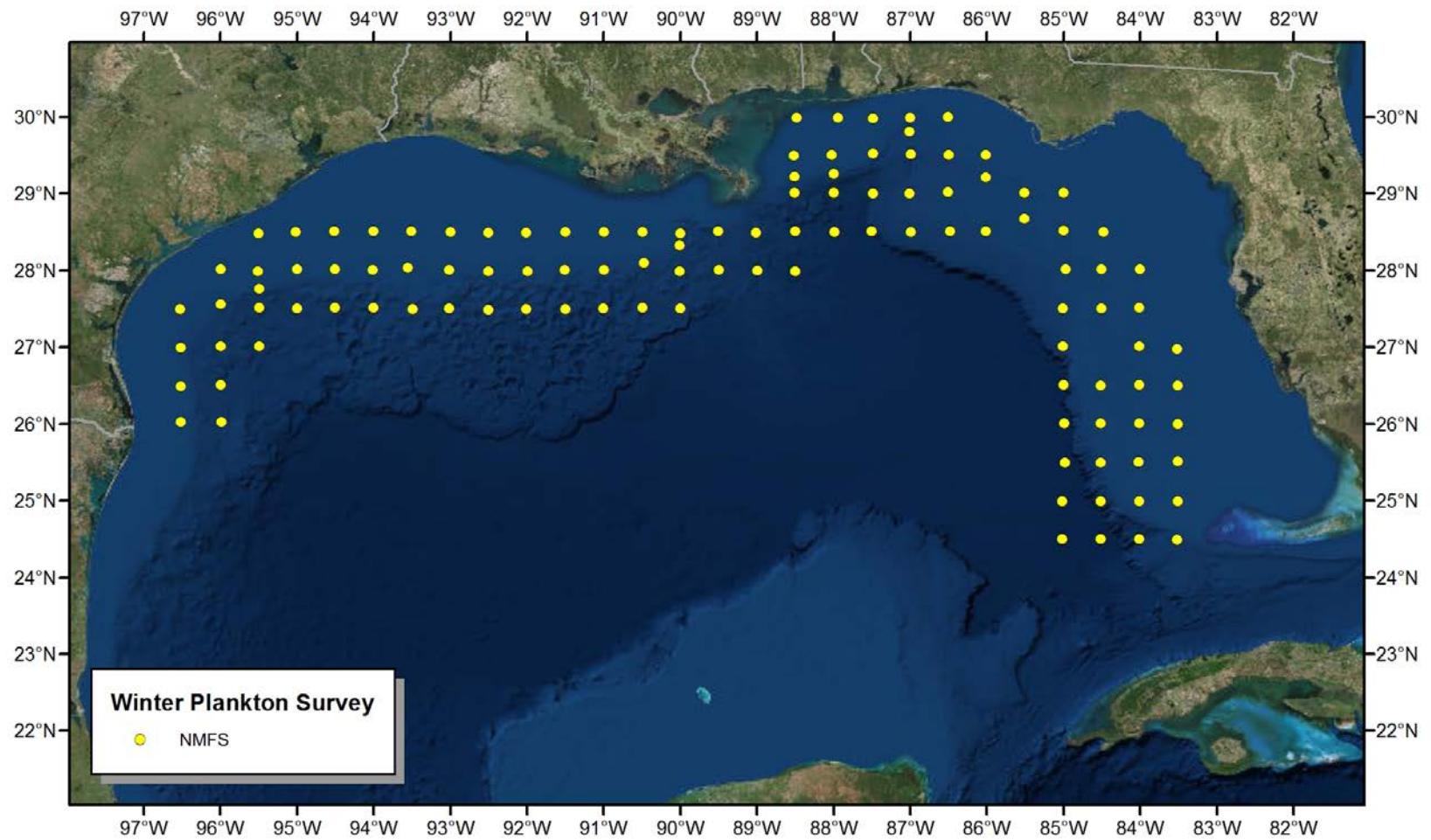


Figure 2. Locations of plankton and environmental stations during the 2015 Winter Plankton Survey.

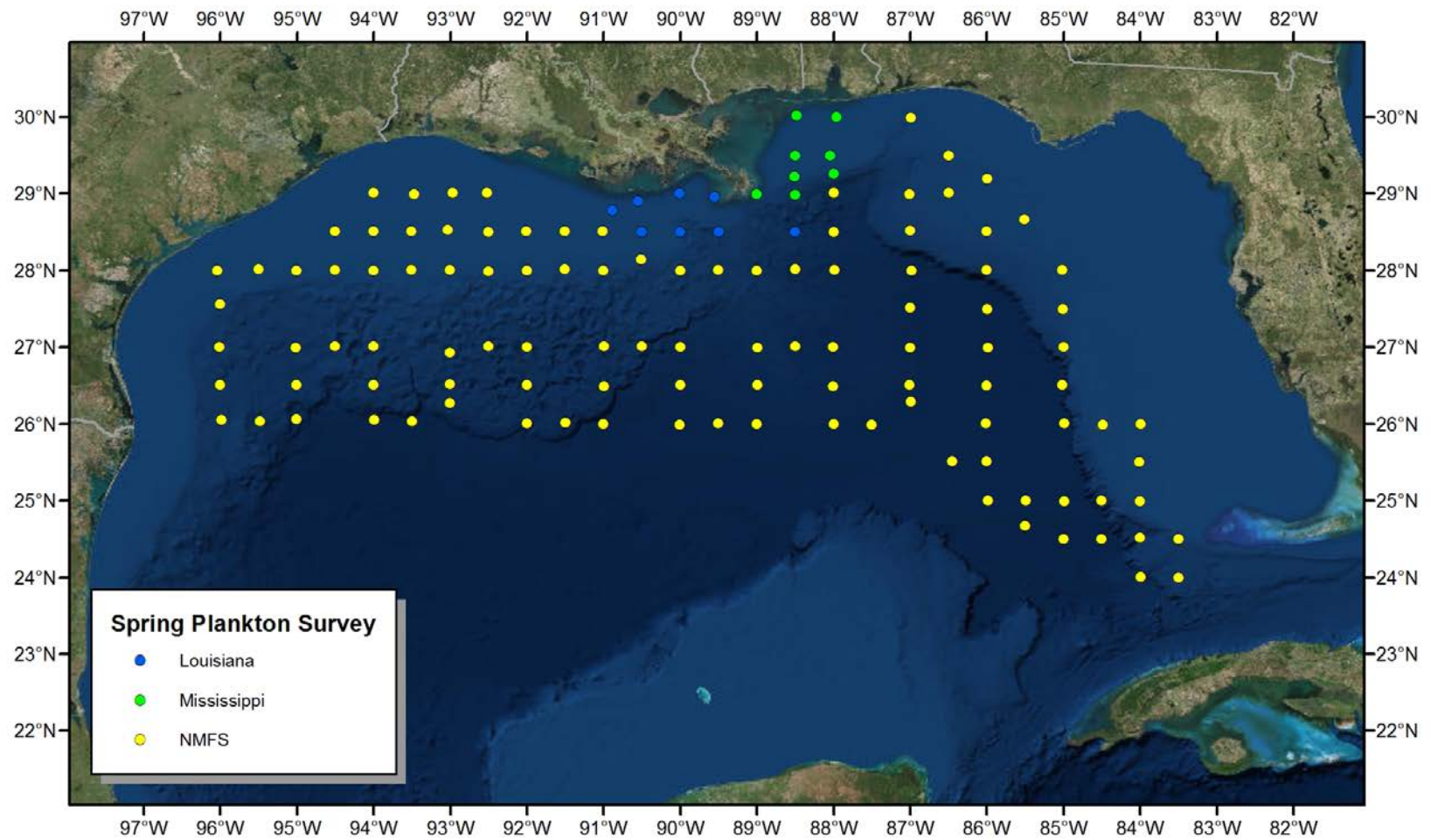


Figure 3. Locations of plankton and environmental stations during the 2015 Spring Plankton Survey.

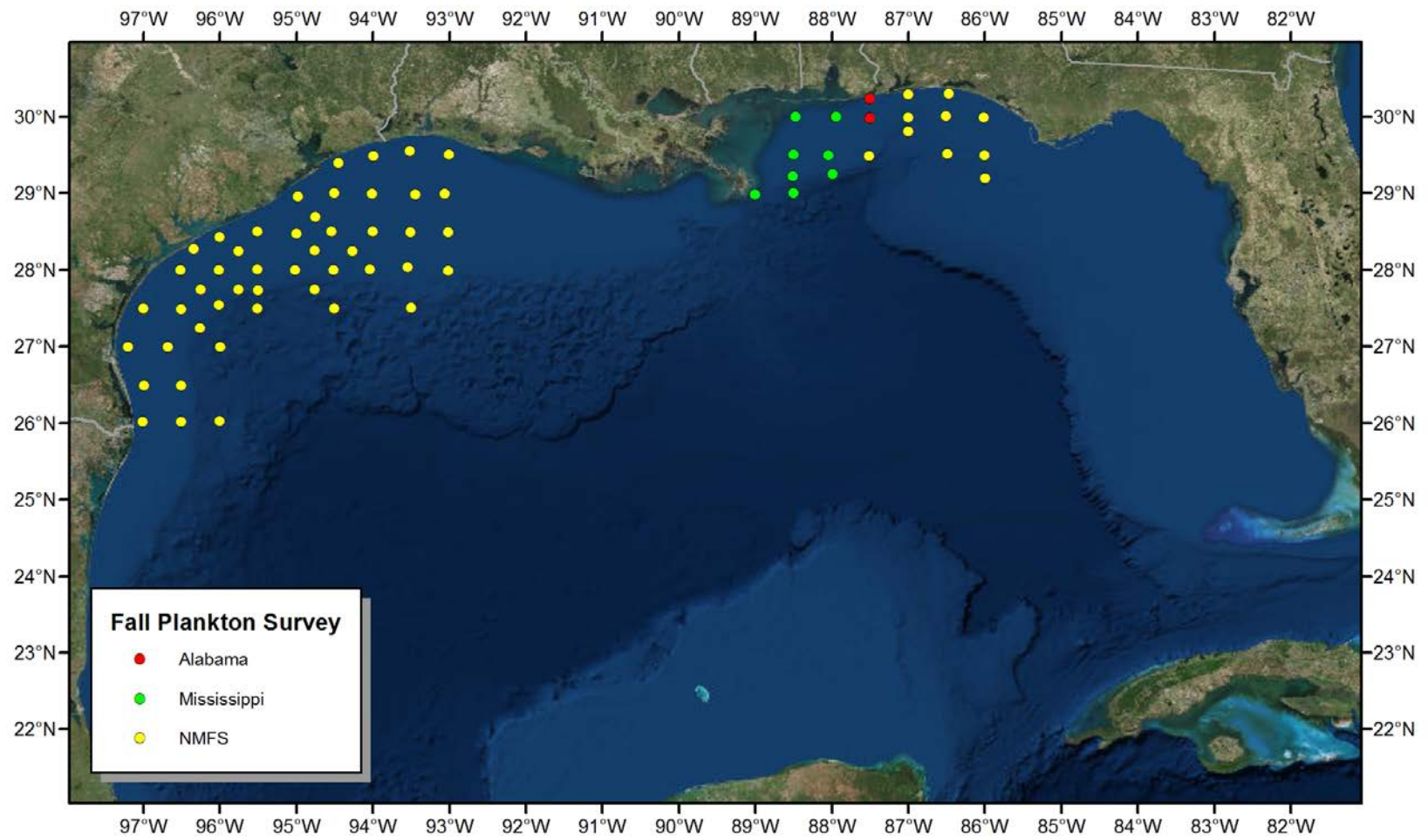


Figure 4. Locations of stations during the 2015 Fall Plankton Survey.

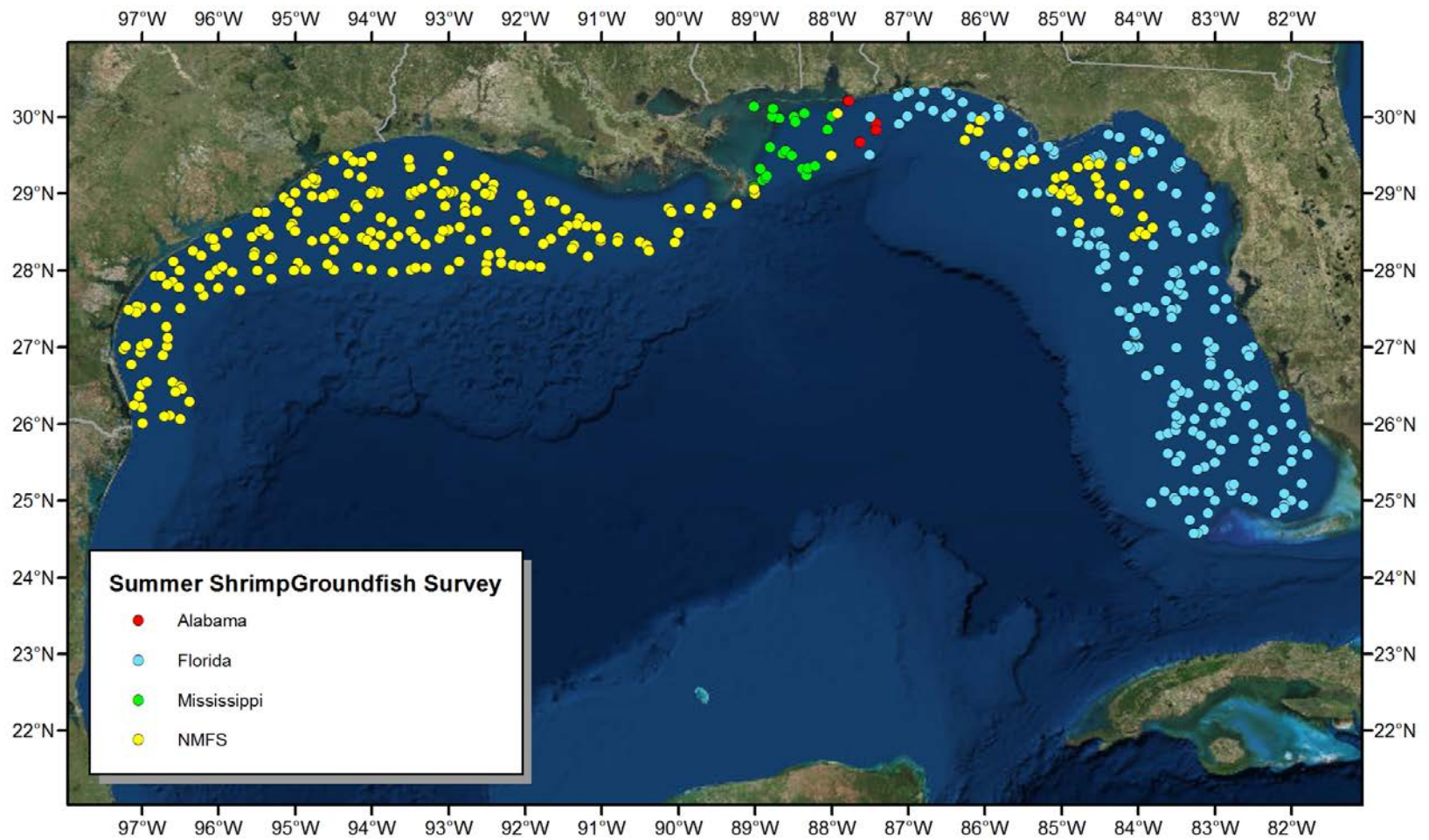


Figure 5. Locations of stations during the 2015 Summer Shrimp/Groundfish Survey.

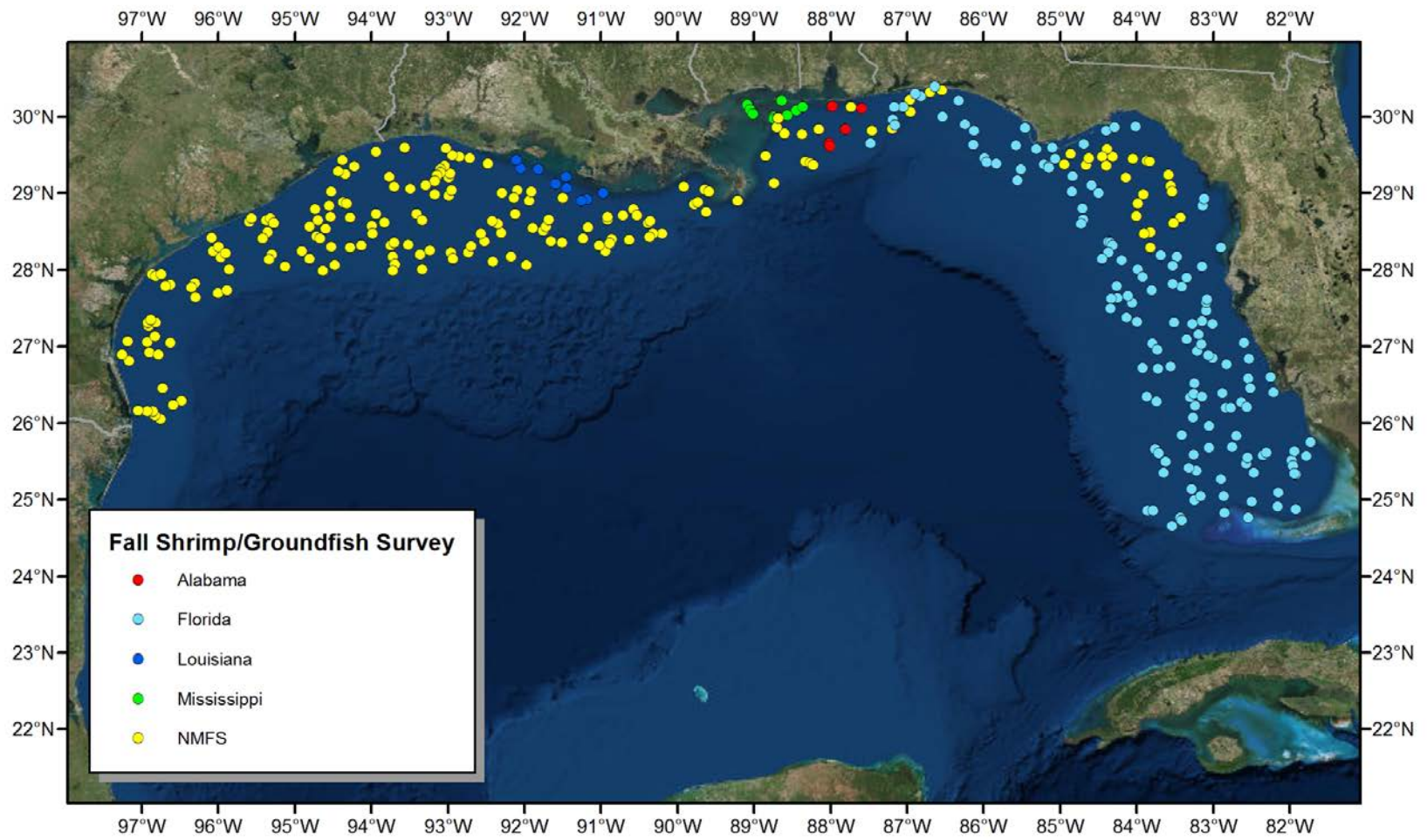


Figure 6. Locations of stations during the 2015 Fall Shrimp/Groundfish Survey.

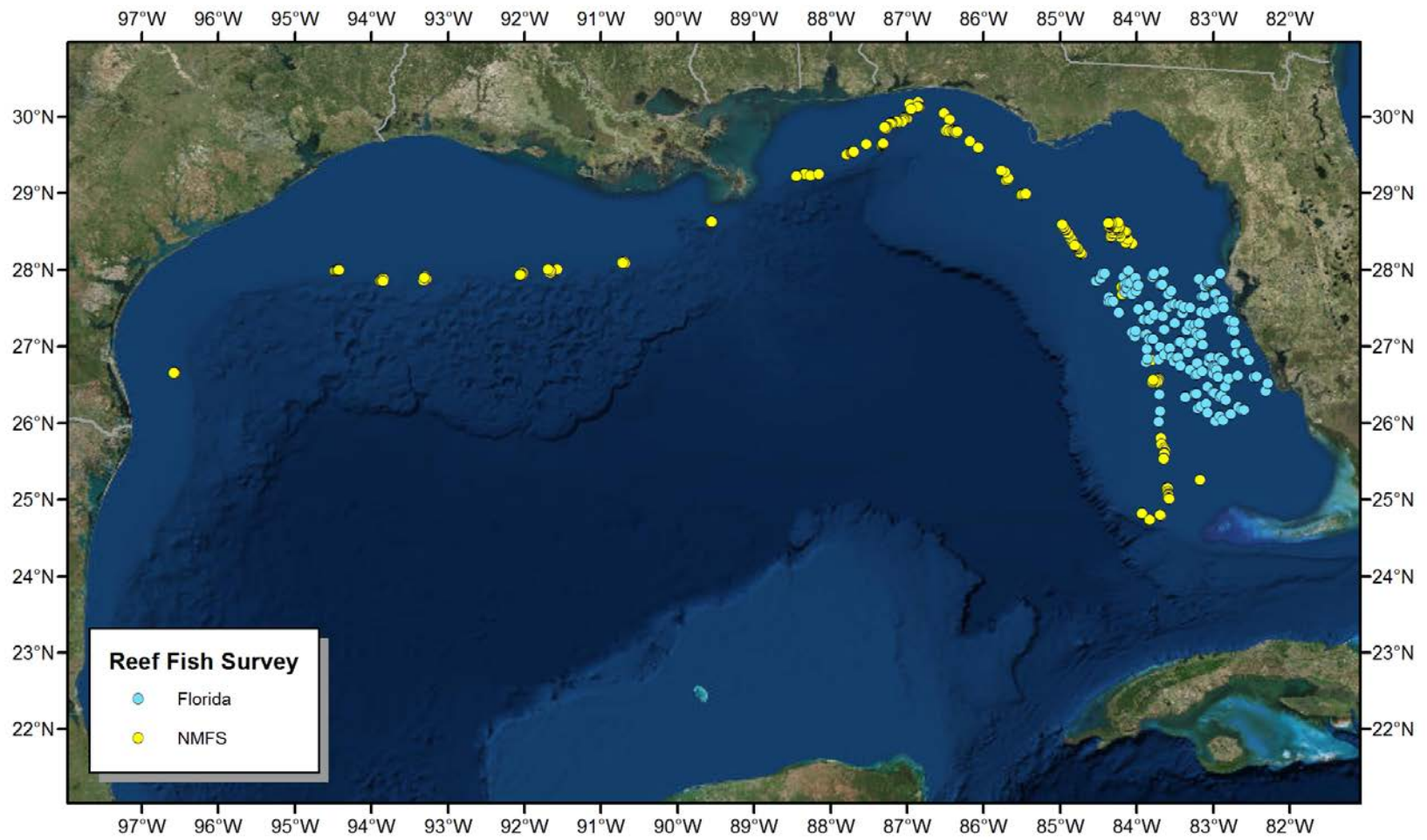


Figure 7. Locations of stations during the 2015 Reef Fish Survey.

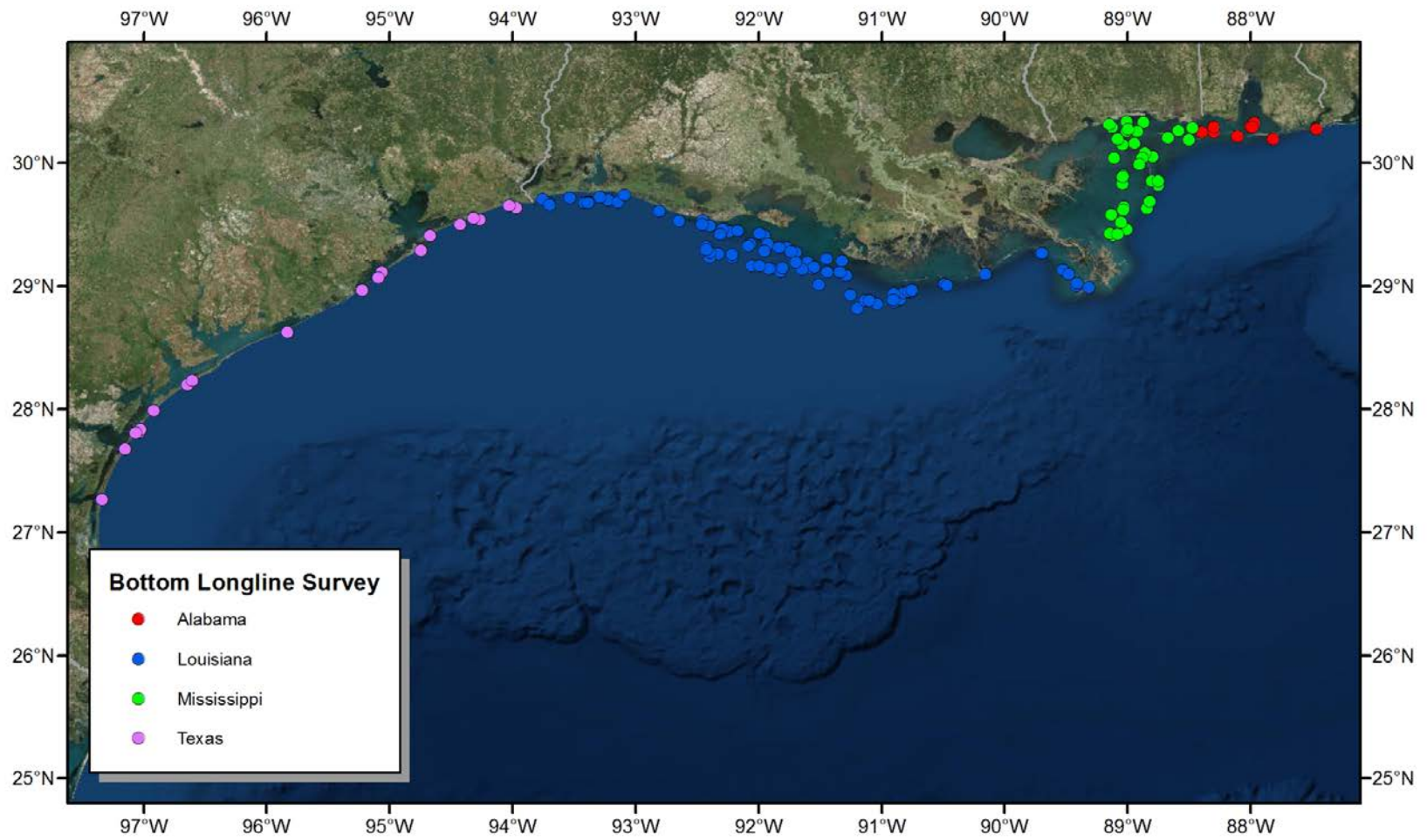


Figure 8. Locations of stations during the 2015 Inshore Bottom Longline Survey.

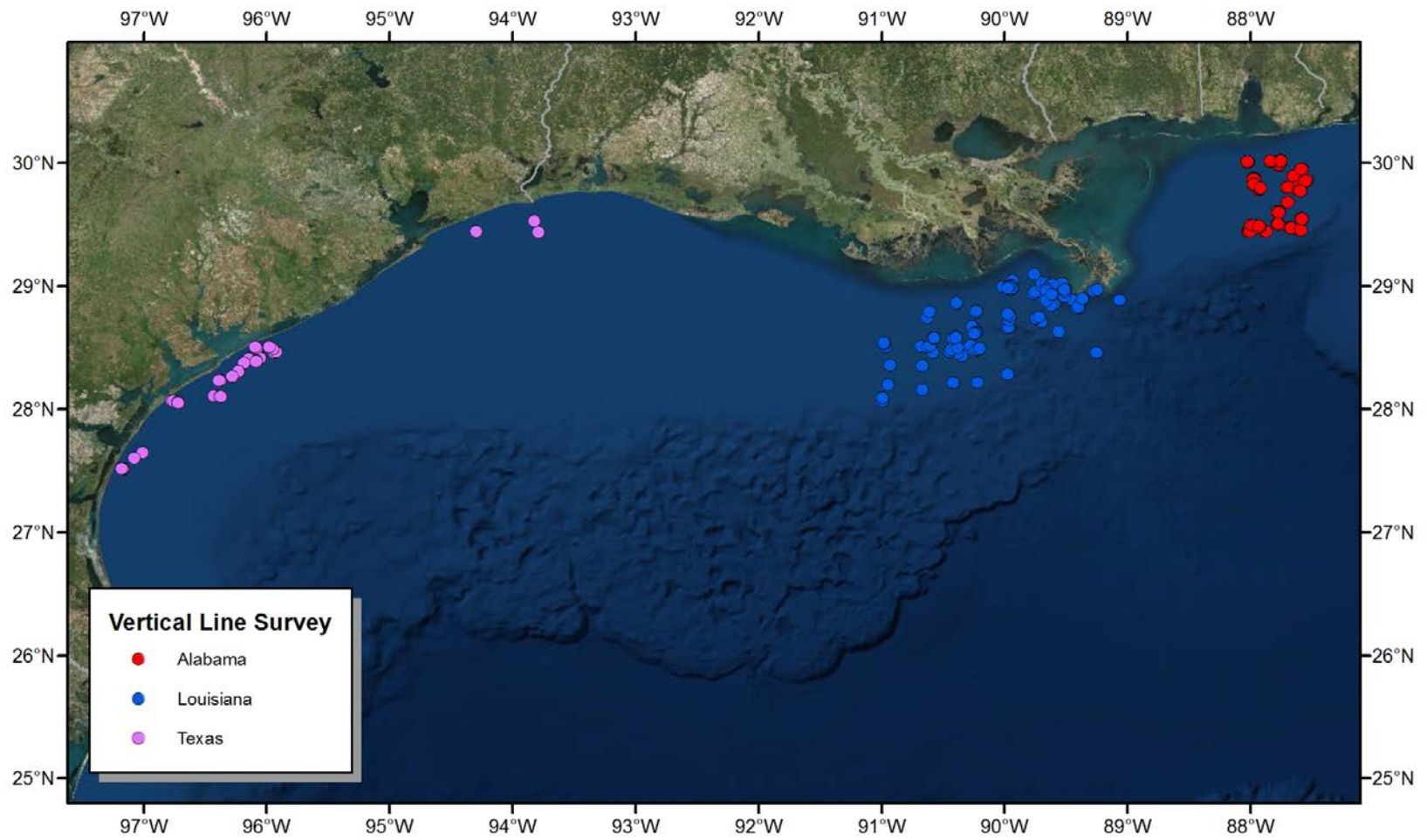


Figure 9. Locations of stations during the 2015 Vertical Line Survey.