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SEAMAP ENVIRONMENTAL AND BIOLOGICAL ATLAS OF THE GULF OF MEXICO, 2013

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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 2013 (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); and 2012 (Rester 2014). 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 2013, 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 2012. Overall survey objectives in 1982 to 2013 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-first in a series of SEAMAP environmental and biological atlases presents such data, in a summarized form, collected during the 2013 SEAMAP surveys.

MATERIALS AND METHODS

Methodology for the 2013 SEAMAP surveys is similar to that of the 1982 through 2012 surveys. Sampling was conducted within the U.S. Exclusive Economic Zone (EEZ) and state territorial waters. The NOAA Ship OREGON II collected plankton and environmental data during the Winter Plankton Survey from February 1-28. The NOAA Ship OREGON II collected plankton and environmental data during the Spring Plankton Survey from May 1-29, while the USM/GCRL vessel TOMMY MUNRO sampled on May 21 and May 22, and the Louisiana vessel BLAZING SEVEN sampled from May 6-9. Vessels that participated in collecting plankton and environmental data during the Fall Plankton Survey included the NOAA Ship GORDON GUNTER (August 21 - September 28), the Alabama vessel DISCOVERY (September 6), the Louisiana vessel BLAZING SEVEN (September 13-14), and USM/GCRL vessel TOMMY MUNRO (September 5-6).

Vessels that participated in the Summer Shrimp/Groundfish Survey and concurrently sampled plankton and environmental data included the USM/GCRL vessel TOMMY MUNRO (July 12-14), the Louisiana vessel PELICAN (June 8-12), and the NOAA Ship OREGON II (June 9 – July 18). The Alabama vessel DISCOVERY (June 3 and June 12), Texas vessels SABINE LAKE, SAN JACINTO, NUECES BAY, R.J. KEMP, and SAN ANTONIO BAY (June 3-27), and Florida using the TOMMY MUNRO (June 8-25) did not sample plankton in conjunction with the summer survey.

NOAA Ships participated in the Reef Fish Survey from February 2 – June 4. Florida sampled from August 1 through October 31 aboard the R/V Gulf Mariner.

Vessels that participated in the Fall Shrimp/Groundfish Survey and concurrently sampled plankton and environmental data included the NOAA Ships OREGON II (October 28 – December 6); the USM/GCRL vessel TOMMY MUNRO (November 11-12); and the Louisiana vessel BLAZING SEVEN (October 28-30 and November 18). The Alabama vessel DISCOVERY (November 22), Texas vessels SAN JACINTO, SABINE, MATAGORDA BAY, SAN ANTONIO BAY, and NUECES BAY (November 11-21), and Florida using the TOMMY MUNRO (October 9-19) did not sample plankton in conjunction with the fall survey.

Mississippi conducted bottom longline sampling monthly from March to October as part of the Bottom Longline Survey. Alabama sampled in March, May, June, July, August, and October. Louisiana sampled in March, April, May, June, August, and September. Texas conducted bottom longline sampling from June through September.

Alabama sampled reef fish over artificial and natural reefs during the Vertical Line Survey in May and September. Louisiana sampled reef fish over artificial reefs, oil and gas platforms, and natural habitat in February, March, May, June, July, August, September, and 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 m^3, but is typically 30 to 40 m^3 at the shallowest stations and 300 to 400 m^3 at the deepest stations. A single or double 2x1 m pipe frame neuston net fitted with 0.947 (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 2012 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

[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.

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.

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 2013.

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: Forel-Ule data was 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 $MgCO_3$ 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 except the Texas vessels. The Texas vessels tow 10 minutes parallel to the depth stratum.

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 40-ft and 20-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 and Texas measure 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. Two types of gear are used to deploy video cameras: 1) a single-funnel fish trap (2.13 m long by 0.76 m square) with the camera mounted at a height of 25 cm above the bottom of the trap; or 2) a 4 camera array with 4 cameras mounted orthogonal to each other at a height of 25 cm above the bottom. Both gears are baited with squid before deployment. The resultant video recordings (typically of one-hour duration) are processed back at the laboratory where fish are identified and counted independently by two tape readers. Final counts are entered into the SEAMAP reef fish database along with additional observations on habitat and fish activity.

The hardbottom database from which sampling sites for this survey are chosen was developed in the following manner. Areas of natural reef habitat from Brownsville, Texas to the southern tip of Florida (at 81° 00' W longitude and 24° 02' N latitude) and between 9 and 110 m water depth were first inscribed on navigation charts, then divided into 10 by 10 nautical mile blocks (primary sample units). Each block was subdivided into 100-m^2, secondary sample units that were numbered and initially classified as being “reef” or “nonreef” and then entered into a database. Prior to the survey, blocks are selected from this database in the eastern and western Gulf with probability proportional to the number of “reef” sample units within a block. Within each selected block, 100 sample sites are randomly selected. During the survey each selected block is occupied for one 24-h period, where night hours are devoted to ship's echo sounder surveys of up to 100 sites and daytime hours to trap/video sampling. Each potential sample site surveyed at night is given a final determination as being either a reef site or not based on echo patterns, vertical relief and other characteristics. Up to 8 actual "reef" sites are then randomly selected for sampling during that day (Russell, unpublished report). Trap/video sampling begins one hour after sunrise and ends one hour before sunset. Trap soak time is one hour.

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. During the NMFS component of the Reef Fish Survey, fish abundance is also measured with a fisheries acoustic device.

BOTTOM LONGLINE SURVEY

This nearshore survey complements an existing long-term fisheries independent survey currently being conducted by NMFS offshore, by targeting shark and finfish species within the shallow waters of the north central Gulf of Mexico. The objectives of the survey were to collect information on coastal shark and finfish abundances and distribution with a 1-mile longline and to collect environmental data. During the 2013 Bottom Longline Survey, the survey design included several sampling regions off Alabama, Mississippi, Louisiana, and Texas.

Stations were chosen randomly within each area and were stratified by depth (0-5m, 5-10m, and 10-20m). The stations were sampled between the hours of 7:30 a.m. and 7:30 p.m. each month. The sampling protocol follows the procedures established by the NMFS bottom longline survey. All equipment used in this inshore bottom longline survey is identical to the equipment used by NMFS. 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 scomber*. The mainline was weighted down with a 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. A total of 12 grids were fished per survey. Two structure and two non-structure areas were randomly chosen and equally allocated across three depth strata. Vertical line reels were baited with Atlantic mackerel. Soak time was five minutes. Fish were retained and processed for age and fecundity. All fish were sacrificed for otoliths at stations deeper than 60 m. In water depth less than 60 m, stations were assigned as tag and release or collection sites.

Louisiana started vertical line sampling in 2011. In Louisiana, the sampling frame is subdivided into 3 sampling blocks based on depth between 89 degrees longitude and 91 degrees longitude, with the water depth ranging from 60 to 360 feet. Each block is sampled quarterly in a rotation. Within these sampling blocks there is a possibility of randomly selecting 40 different corridors within the block. The actual sites are randomly selected within the corridor boundary and sampled at the chief scientist's discretion. The sites roughly consist of artificial reefs, natural bottom, and petroleum production platforms.

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 40-ft and 20-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 40-ft and 20-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 100 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

Primary data collection and sampling for reef fish assessment were conducted during February through June by NMFS personnel and from August by Florida personnel. 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, 1985-2013. 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 the Atlantic bluefin 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 2013. This report contained the results and an overview of the effect of the 2011 Texas Closure. After review of these data and other information, the GMFMC voted to continue the Texas Closure for 2013.

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 king mackerel, red snapper, gray triggerfish, gag grouper, red grouper, mutton snapper, blacknose sharks, and blacktip sharks.

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 2013.

	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

Table 1. List of SEAMAP survey activities from 1982 to 2013 (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	JAN.-FEB.	--		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	FEB.-MAR.	MARCH-OCTOBER		FEBRUARY-AUGUST
2009	SEPTEMBER-NOVEMBER	FEB.-MAR.	MARCH-OCTOBER		APRIL-AUGUST
2010	SEPTEMBER-NOVEMBER	FEB.-MAR.	MARCH-OCTOBER	APRIL-DECEMBER	MARCH-SEPTEMBER
2011	OCTOBER-NOVEMBER		MARCH-OCTOBER	MAY-DECEMBER	APRIL-JULY
2012	OCTOBER-NOVEMBER	JANUARY-FEBRURY	MARCH-OCTOBER	MARCH-OCTOBER	JANUARY-AUGUST
2013	OCTOBER-DECEMBER	FEBRUARY	MARCH-OCTOBER	FEBRUARY-OCTOBER	FEBRUARY-OCTOBER

Table 2. 2013 Summer Shrimp/Groundfish Survey species composition list, 391 trawl stations, for those vessels that used either a 40-ft or 20-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 CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Finfishes					
Micropogonias undulatus	Atlantic croaker	54498	1178.6	131	33.5
Chloroscombrus chrysurus	Atlantic bumper	18613	670.9	99	25.3
Stenotomus caprinus	longspine porgy	17786	431.5	133	34
Peprilus burti	gulf butterfish	17478	310.9	143	36.6
Lagodon rhomboides	pinfish	11437	641.2	139	35.5
Syacium papillosum	dusky flounder	6816	314	139	35.5
Trachurus lathami	rough scad	6792	136.9	100	25.6
Saurida brasiliensis	largescale lizardfish	6307	30.7	140	35.8
Anchoa hepsetus	striped anchovy	4801	61.9	48	12.3
Prionotus longispinosus	bigeye searobin	4606	60.4	117	29.9
Serranus atrobranchus	blackear bass	4376	47.2	76	19.4
Trichiurus lepturus	Atlantic cutlassfish	4057	117.3	96	24.6
Upeneus parvus	dwarf goatfish	3751	95	112	28.6
Cynoscion arenarius	sand seatrout	3117	83.2	104	26.6
Synodus foetens	inshore lizardfish	2852	301.1	227	58.1
Lutjanus synagris	lane snapper	2578	299.2	75	19.2
Pristipomoides aquilonaris	wenchman	2479	109	76	19.4
Scorpaena calcarata	smoothhead scorpionfish	2443	47.5	62	15.9
Eucinostomus gula	silver jenny	2327	75.1	29	7.4
Haemulon aurolineatum	tomtate	2175	209.5	71	18.2
Leiostomus xanthurus	spot	2167	144.3	81	20.7
Peprilus paru	harvestfish	2105	19.8	41	10.5
Anchoa lyolepis	dusky anchovy	2030	5.1	17	4.3
Centropristis philadelphica	rock sea bass	1858	49.7	98	25.1
Synodus poeyi	offshore lizardfish	1724	17.3	122	31.2
Peprilus paru	harvestfish	1643	8	17	4.3
Prionotus stearnsi	shortwing searobin	1606	15.6	82	21

Table 2. Species composition list (continued)					
GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Syacium gunteri	shoal flounder	1504	30.3	115	29.4
Saurida normani	shortjaw lizardfish	1312	24.8	20	5.1
Diplectrum formosum	sand perch	1298	113.1	115	29.4
Selene setapinnis	Atlantic moonfish	1230	55.4	116	29.7
Synodus	lizard fishes	1079	63.4	79	20.2
Rhomboplites aurorubens	vermilion snapper	1008	69.3	61	15.6
Sphoeroides dorsalis	marbled puffer	990	33.2	87	22.3
Halieutichthys aculeatus	pancake batfish	970	8.3	99	25.3
Bellator militaris	horned searobin	930	14.6	57	14.6
Orthopristis chrysoptera	pigfish	921	75.1	28	7.2
Anchoa mitchilli	bay anchovy	919	1.5	31	7.9
Calamus proridens	littlehead porgy	897	199.3	49	12.5
Equetus lanceolatus	jackknife fish	876	84.1	68	17.4
Bagre marinus	gafftopsail catfish	815	7.7	11	2.8
Stephanolepis hispida		776	31.7	87	22.3
Lutjanus campechanus	red snapper	771	138	96	24.6
Lepophidium brevibarbe	blackedge cusk-eel	770	26.7	43	11
Cynoscion nothus	silver seatrout	753	31.6	57	14.6
Trachinocephalus myops	snakefish	734	30.9	82	21
Trichopsetta ventralis	sash flounder	701	15.4	33	8.4
Sphoeroides spengleri	bandtail puffer	633	21	74	18.9
Haemulon plumierii	white grunt	626	84.4	17	4.3
Etropus rimosus	gray flounder	612	4.3	10	2.6
Harengula jaguana	scaled sardine	611	22.5	37	9.5
Diplectrum bivittatum	dwarf sand perch	606	12.9	54	13.8
Prionotus paralatus	Mexican searobin	550	7.2	42	10.7
Lepophidium jeannae	mottled cusk-eel	518	23.2	28	7.2
Calamus arctifrons	grass porgy	507	42.1	13	3.3
Acanthostracion quadricornis		468	92.5	95	24.3
Scorpaena agassizii	longfin scorpionfish	459	14.8	29	7.4
Larimus fasciatus	banded drum	434	17.2	45	11.5

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Centropristis ocyurus	bank sea bass	417	20.1	48	12.3
Stellifer lanceolatus	star drum	400	2.8	28	7.2
Bollmannia communis	ragged goby	400	1.2	19	4.9
Pterois volitans	lion fish	391	55	61	15.6
Serranus notospilus	saddle bass	385	2.1	39	10
Mullus auratus	red goatfish	378	17.9	36	9.2
Scorpaena brasiliensis	barbfish	366	32.6	60	15.3
Sphoeroides parvus	least puffer	361	3.1	42	10.7
Haemulon striatum	striped grunt	358	7.3	7	1.8
Ariopsis felis	hardhead catfish	354	52.4	32	8.2
Bothus robinsi	twospot flounder	352	11.5	51	13
Sardinella aurita	Spanish sardine	334	8.7	18	4.6
Etropus crossotus	fringed flounder	309	3.6	43	11
Serranus phoebe	tattler	307	11.7	41	10.5
Scomberomorus maculatus	Spanish mackerel	298	10.9	31	7.9
Decapterus punctatus	round scad	292	4.5	27	6.9
Elops saurus	ladyfish	279	1.6	1	0.3
Monacanthus ciliatus	fringed filefish	278	5.8	59	15.1
Prionotus roseus	bluespotted searobin	271	7.9	58	14.8
Synodus intermedius	sand diver	241	21.8	37	9.5
Pagrus pagrus	red porgy	232	13.6	25	6.4
Opisthonema oglinum	Atlantic thread herring	229	19.2	28	7.2
Antennarius radiosus	singlespot frogfish	223	2.1	37	9.5
Lagocephalus laevigatus	smooth puffer	200	3.9	52	13.3
Ophidion holbrookii	bank cusk-eel	188	18	26	6.6
Oligoplites saurus	leatherjack	185	4.6	5	1.3
Etropus		172	1.3	4	1
Citharichthys spilopterus	bay whiff	168	1.4	44	11.3
Steindachneria argentea	luminous hake	163	0.3	4	1
Polydactylus octonemus	Atlantic threadfin	158	4.8	30	7.7
Prionotus rubio	blackwing searobin	156	10.3	33	8.4

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Prionotus ophryas	bandtail searobin	148	7.7	51	13
Scomberomorus cavalla	king mackerel	146	4.6	22	5.6
Aluterus schoepfii	orange filefish	139	75.7	38	9.7
Cyclopsetta chittendeni	Mexican flounder	136	17.9	45	11.5
Ophidion beani	longnose cusk-eel	134	7.4	18	4.6
Gymnothorax saxicola	honeycomb moray	132	10.5	54	13.8
Porichthys plectrodon	Atlantic midshipman	119	3.6	45	11.5
Ogcocephalus parvus	roughback batfish	114	1	35	9
Urophycis floridana	southern hake	113	7.5	30	7.7
Prionotus alatus	spiny searobin	106	2.4	27	6.9
Apogon affinis	bigtooth cardinalfish	105	0.7	21	5.4
Pareques umbrosus	cubbyu	101	5.5	25	6.4
Diplodus holbrooki	spottail pinfish	100	8	3	0.8
Bairdiella chrysoura	silver perch	100	5.2	9	2.3
Brevoortia patronus	gulf menhaden	99	4.3	16	4.1
Lutjanus griseus	grey snapper	97	35.7	25	6.4
Ogcocephalus declivirostris	slantbrow batfish	96	1.6	14	3.6
Etropus cyclosquamus	shelf flounder	90	0.6	7	1.8
Symphurus diomedeanus	spottedfin tonguefish	87	2.5	28	7.2
Cynoscion spp.	seatrouts	83	0	2	0.5
Stephanolepis hispida	planehead filefish	83	3.8	11	2.8
Kathetostoma albigutta	lancer stargazer	81	2.9	26	6.6
Eucinostomus argenteus	spotfin mojarra	77	2.3	6	1.5
Chaetodon ocellatus	spotfin butterflyfish	74	6.8	27	6.9
Chaetodipterus faber	Atlantic spadefish	73	3.7	21	5.4
Urophycis cirrata	gulf hake	72	1.5	17	4.3
Bregmaceros atlanticus	antenna codlet	71	0.1	21	5.4
Selar crumenophthalmus	bigeye scad	70	2.7	12	3.1
Rhizoprionodon terraenovae	Atlantic sharpnose shark	70	54.1	28	7.2
Pseudupeneus maculatus	spotted goatfish	69	4.1	9	2.3
Engyophrys senta	spiny flounder	68	0.7	21	5.4

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Prionotus martis	barred searobin	66	2.2	17	4.3
Ancylopsetta ommata	ocellated flounder	66	5.6	33	8.4
Epinephelus morio	red grouper	65	62.1	32	8.2
Nicholsina usta	emerald parrotfish	63	5.8	22	5.6
Rhynchoconger flavus	yellow conger	62	4.1	16	4.1
Scomber japonicus	chub mackerel	61	3.7	1	0.3
Ogcocephalus cubifrons	polka-dot batfish	60	2.9	20	5.1
Brotula barbata	bearded brotula	60	3.1	21	5.4
Chaetodon sedentarius	reef butterflyfish	58	3	18	4.6
Citharichthys macrops	spotted whiff	53	2.2	24	6.1
Balistes capriscus	gray triggerfish	53	9.2	26	6.6
Centropristis striatus	black sea bass	53	4.4	4	1
Cyclopsetta fimbriata	spotfin flounder	51	7.3	33	8.4
Hoplunnis macrura	freckled pike-conger	51	0.6	10	2.6
Sphoeroides	common puffers	50	0	1	0.3
Hippocampus erectus	lined seahorse	50	0.3	31	7.9
Ancylopsetta dilecta	three-eye flounder	49	2.7	19	4.9
Raja texana	roundel skate	49	15.3	34	8.7
Gastropsetta frontalis	shrimp flounder	46	2.6	23	5.9
Citharichthys gymnorhinus	anglefin whiff	45	0.1	22	5.6
Chilomycterus schoepfii	striped burrfish	45	8.7	28	7.2
Serranus tortugarum	chalk bass	43	0.4	2	0.5
Sphyraena guachancho	guaguanche	43	4.8	14	3.6
Calamus nodosus	knobbed porgy	43	11.2	12	3.1
Hemipteronotus novacula	pearly razorfish	42	2.4	19	4.9
Bothus ocellatus	eyed flounder	41	1	15	3.8
Holacanthus bermudensis	blue angelfish	40	17.6	13	3.3
Eucinostomus harengulus	tidewater mojarra	39	2.7	18	4.6
Prionotus scitulus	leopard searobin	37	1.3	9	2.3
Paralichthys albigutta	gulf flounder	37	12.4	17	4.3
Hemicaranx amblyrhynchus	bluntnose jack	36	0.7	9	2.3

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Selene vomer	lookdown	36	0.5	18	4.6
Lachnolaimus maximus	hogfish	35	13.1	9	2.3
Calamus leucosteus	whitebone porgy	32	9.8	9	2.3
Ogcocephalus cubifrons		32	11.5	25	6.4
Ariomma bondi	silver-rag	30	0.6	4	1
Schultzea beta	school bass	29	0.4	2	0.5
Raja eglanteria	clearnose skate	29	17.5	20	5.1
Hoplunnis diomedianus	blacktail pike-conger	28	0.2	12	3.1
Astrapogon alutus	bronze cardinalfish	28	0.1	9	2.3
Menticirrhus americanus	southern kingfish	28	3.8	11	2.8
Caranx crysos	blue runner	28	4.2	11	2.8
Ogcocephalus corniger	longnose batfish	27	0.7	17	4.3
Symphurus plagiusa	blackcheek tonguefish	26	0.6	8	2
Ophidion selenops	mooneye cusk-eel	26	0.1	11	2.8
Priacanthus arenatus	bigeye	26	3.2	19	4.9
Etrumeus teres	round herring	26	0.2	4	1
Otophidium omostigmum	polka-dot cusk-eel	26	0.3	8	2
Neomerinthe hemingwayi	spinycheek scorpionfish	25	0.9	7	1.8
Chromis enchrysura	yellowtail reeffish	24	0.3	14	3.6
Pareques iwamotoi	blackbar drum	24	1.7	8	2
Caulolatilus intermedius	anchor tilefish	24	1.6	13	3.3
Prionotus tribulus	bighead searobin	23	2.6	12	3.1
Symphurus urospilus	spottail tonguefish	23	0.8	5	1.3
Apogon quadrisquamatus	sawcheek cardinalfish	22	0.1	13	3.3
Cryptotomus roseus	bluelip parrotfish	21	0.2	13	3.3
Decodon puellaris	red hogfish	21	0.6	10	2.6
Symphurus civitatium	offshore tonguefish	20	0.4	6	1.5
Lonchopisthus micrognathus	swordtail jawfish	20	0.1	7	1.8
Apogon pseudomaculatus	twospot cardinalfish	19	0.1	12	3.1
Gymnachirus texae	fringed sole	19	0.3	9	2.3
Bathyanthias cubensis		19	0.2	5	1.3

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Pomacanthus arcuatus	gray angelfish	19	5.5	12	3.1
Canthigaster rostratus		19	0.1	8	2
Rypticus bistrispinus	freckled soapfish	17	0.2	14	3.6
Antennarius ocellatus	ocellated frogfish	17	1.3	13	3.3
Peristedion gracile	slender searobin	17	0.1	6	1.5
Caulolatilus cyanops	blackline tilefish	17	0.1	5	1.3
Paralichthys squamilentus	broad flounder	16	5.1	10	2.6
Holocentrus bullisi	deepwater squirrelfish	16	0.4	5	1.3
Gymnachirus melas	naked sole	16	0.5	14	3.6
Ophidion grayi	blotched cusk-eel	15	0.9	3	0.8
Ophidion marginatum	striped cusk-eel	15	0.6	6	1.5
Aluterus heudelotii	dotterel filefish	15	4.8	8	2
Paralichthys lethostigma	southern flounder	14	5.7	10	2.6
Conodon nobilis	barred grunt	14	1.7	1	0.3
Echeneis neucratoides	whitefin sharksucker	14	3.4	8	2
Pontinus longispinis	longspine scorpionfish	13	0.5	5	1.3
Seriola zonata	banded rudderfish	13	0.8	12	3.1
Ophidion josephi	crested cusk-eel	13	0.6	6	1.5
Ocyurus chrysurus	yellowtail snapper	13	2.6	4	1
Calamus penna	sheepshead porgy	12	6.7	7	1.8
Antennarius striatus	striated frogfish	12	0.1	6	1.5
Mustelus canis	smooth dogfish	12	11.3	8	2
Bellator egretta	streamer searobin	12	0.2	6	1.5
Sphyrna tiburo	bonnethead	12	32	9	2.3
Bellator brachychir	shortfin searobin	11	0	6	1.5
Citharichthys cornutus	horned whiff	11	0	3	0.8
Acanthostracion polygonius	honeycomb cowfish	11	6.7	9	2.3
Seriola dumerili	greater amberjack	11	4.5	4	1
Apogon aurolineatus	bridle cardinalfish	11	0	6	1.5
Calamus bajonado	jolthead porgy	11	24.5	7	1.8
Neobythites gilli	cusk-eel	10	0.1	3	0.8

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Umbrina coroides	sand drum	10	1.6	1	0.3
Opsanus pardus	leopard toadfish	10	0.2	6	1.5
Mycteroperca phenax	scamp	10	3.2	8	2
Lepophidium spp.	cusk-eels	10	0.1	1	0.3
Squatina dumeril	Atlantic angel shark	9	15.9	7	1.8
Parablennius marmoreus	seaweed blenny	9	0	8	2
Pomacanthus paru	French angelfish	9	3.9	4	1
Paraconger caudilimbatus	margintail conger	9	0.9	6	1.5
Urophycis earlli	Carolina hake	9	0.3	6	1.5
Echiophis intertinctus	spotted spoon-nose eel	9	2.3	8	2
Rypticus maculatus	whitespotted soapfish	8	0.2	5	1.3
Echeneis naucrates	sharksucker	7	3.2	6	1.5
Serranus annularis	orangeback bass	7	0.1	4	1
Physiculus fulvus	metallic codling	7	0.1	3	0.8
Carcharhinus acronotus	blacknose shark	7	20	5	1.3
Ariosoma balearicum	bandtooth conger	7	0.2	4	1
Epinephelus flavolimbatus	yellowedge grouper	7	0.2	6	1.5
Sphoeroides nephelus	southern puffer	7	0.8	5	1.3
Rhinoptera bonasus	cownose ray	7	49.7	4	1
Rhinobatos lentiginosus	Atlantic guitarfish	7	3.8	4	1
Halichoeres bathyphilus	greenband wrasse	6	0.1	5	1.3
Pomatomus saltatrix	bluefish	6	1	5	1.3
Rachycentron canadum	cobia	6	0.2	2	0.5
Pristigenys alta	short bigeye	6	0.4	5	1.3
Mustelus sinusmexicanus	Gulf smoothhound	6	4.4	6	1.5
Anchoviella perfasciata	Poey's anchovy	6	0	1	0.3
Cynoscion nebulosus	spotted seatrout	6	1.7	1	0.3
Hirundichthys rondeletii	blackwing flyingfish	5	0	3	0.8
Ostichthys trachypomus		5	0.1	2	0.5
Gymnothorax nigromarginatus	blackedge moray	5	0.5	2	0.5
Scorpaena plumieri	spotted scorpionfish	5	1.3	2	0.5

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Eucinostomus	mojarras	4	0.1	1	0.3
Ogcocephalus pantostictus	spotted batfish	4	0.8	3	0.8
Pterois	lion fishes	4	0.2	1	0.3
Canthigaster jamestyleri		4	0	1	0.3
Ogcocephalus nasutus	shortnose batfish	4	0.1	2	0.5
Gymnura micrura	smooth butterfly ray	4	10.5	4	1
Synodus synodus	red lizardfish	4	0.1	2	0.5
Sparisoma atromarium		4	0	3	0.8
Opsanus beta	gulf toadfish	3	0.1	3	0.8
Mustelus	smooth hound sharks	3	1.1	2	0.5
Hemanthias vivanus	red barbier	3	0	2	0.5
Urophycis regia	spotted hake	3	0.2	1	0.3
Paradiplogrammus bairdi	lancer dragonet	3	0	3	0.8
Sphyraena borealis	northern sennet	3	0.4	2	0.5
Lactophrys trigonus	trunkfish	3	2.2	2	0.5
Scorpaena spp.	scorpionfishes	3	0	1	0.3
Caranx hippos	crevalle jack	3	0.3	2	0.5
Fistularia tabacaria	bluespotted cornetfish	3	0.7	3	0.8
Diplectrum	perch	3	0	1	0.3
Phaeoptyx xenus	sponge cardinalfish	3	0	3	0.8
Lutjanus analis	mutton snapper	3	6.7	3	0.8
Serranus subligarius	belted sandfish	3	0	3	0.8
Dysomma anguillare	shortbelly eel	3	0	1	0.3
Ophichthus puncticeps	palespotted eel	3	0.4	3	0.8
Achirus lineatus	lined sole	3	0.1	1	0.3
Menticirrhus littoralis	gulf kingfish	3	0.4	1	0.3
Raja lentiginosa	speckled skate	3	2.4	3	0.8
Sciaenops ocellatus	red drum	3	15.1	2	0.5
Hemanthias aureorubens	streamer bass	3	0	1	0.3
Engraulis eurystole	silver anchovy	3	0	1	0.3
Dorosoma petenense	threadfin shad	3	0.1	2	0.5

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Hippocampus reidi	longsnout seahorse	2	0	1	0.3
Paraconger		2	0	1	0.3
Trachinotus carolinus	Florida pompano	2	0	1	0.3
Gobiosoma xanthiprora	yellowprow goby	2	0	2	0.5
Dasyatis americana	southern stingray	2	0.8	1	0.3
Pomacentrus fuscus	dusky damselfish	2	0	1	0.3
Prionotus	searobins	2	0	2	0.5
Narcine brasiliensis	lesser electric ray	2	0.1	2	0.5
Holocentrus adscensionis	squirrelfish	2	0.1	1	0.3
Risor ruber	tusked goby	2	0	2	0.5
Gobiesox strumosus	skilletfish	2	0	2	0.5
Phaeoptyx pigmentaria	dusky cardinalfish	2	0	1	0.3
Pomacentrus variabilis	cocoa damselfish	2	0	2	0.5
Seriola rivoliana	almaco jack	2	1.3	1	0.3
Myliobatis freminvillii	Bullnose ray	2	5.9	2	0.5
Epigonus pandionis	deepwater cardinalfishes	2	0	1	0.3
Estropus microstomus	smallmouth flounder	2	0	1	0.3
Pleuronectes	northern flounders	2	0	1	0.3
Sardinella		1	0	1	0.3
Bathophilus		1	0	1	0.3
Hyporthodus niveatus		1	0	1	0.3
Ophichthus gomesii	shrimp eel	1	0.1	1	0.3
Trinectes maculatus	hogchoker	1	0	1	0.3
Cheilopogon cyanopterus	margined flyingfish	1	0	1	0.3
Pogonias cromis	black drum	1	0.7	1	0.3
Foetorepus agassizii	spotfin dragonet	1	0	1	0.3
Conger oceanicus	conger eel	1	0.2	1	0.3
Coryphaena hippurus	dolphin	1	0	1	0.3
Microspathodon chrysurus	yellowtail damselfish	1	0	1	0.3
Ophichthus rex	king snake eel	1	0.3	1	0.3
Histrio histrio	sargassum frogfish	1	0	1	0.3

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Cephalopholis cruentata	graysby	1	0	1	0.3
Prognathodes aya	bank butterflyfish	1	0	1	0.3
Lophius americanus	goosefish	1	0.3	1	0.3
Rhynchoconger gracilior		1	0	1	0.3
Citharichthys	lefteye flounders	1	0	1	0.3
Ophidiidae	cusk-eels	1	0	1	0.3
Scorpaena dispar	hunchback scorpionfish	1	0.1	1	0.3
Diodon holocanthus	balloonfish	1	0.3	1	0.3
Gymnothorax moringa	spotted moray	1	0.2	1	0.3
Seriola	amberjacks	1	0	1	0.3
Echiodon dawsoni	chain pearlfish	1	0	1	0.3
Apterichtus		1	0	1	0.3
Antennarius	anglerfishes	1	0	1	0.3
Archosargus probatocephalus	sheepshead	1	1.6	1	0.3
Syngnathus springeri	bull pipefish	1	0	1	0.3
Carcharhinus falciformis	silky shark	1	1.1	1	0.3
Emblemaria piratula	pirate blenny	1	0	1	0.3
Fistularia petimba	red cornetfish	1	0	1	0.3
Saurenchelys cognita		1	0	1	0.3
Gobiidae	gobies	1	0	1	0.3
Emblemaria atlantica	banner blenny	1	0	1	0.3
Astrapogon puncticulatus	blackfin cardinalfish	1	0	1	0.3
Hypoplectrus		1	0	1	0.3
Serraniculus pumilio	pygmy sea bass	1	0	1	0.3
Parexocoetus brachypterus	sailfin flyingfish	1	0	1	0.3
Foetorepus goodenbeani	palefin dragonet	1	0	1	0.3
Caranx bartholomaei	yellow jack	1	0	1	0.3
Syngnathus scovelli	Gulf pipefish	1	0	1	0.3
Sardinella janeiro	orangespot sardine	1	0	1	0.3
Elopidae	bigeyed herrings	1	0	1	0.3
Mycteroperca microlepis	gag	1	0.7	1	0.3

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Hypleurochilus		1	0	1	0.3
Lutjanus vivanus	silk snapper	1	0.1	1	0.3
Heteropriacanthus cruentatus	glasseye snapper	1	0	1	0.3
Pomacentrus partitus	bicolor damselfish	1	0	1	0.3
Symphurus spp.	tonguefishes	1	0	1	0.3
Gordiichthys		1	0	1	0.3
Holacanthus ciliaris	queen angelfish	1	0.1	1	0.3
Ginglymostoma cirratum	nurse shark	1	100	1	0.3
Aluterus monoceros	unicorn filefish	1	1	1	0.3
Bollmannia boqueronensis	white-eye goby	1	0	1	0.3
<u>Crustaceans</u>					
Farfantepenaeus aztecus	brown shrimp	24801	334.6	210	53.7
Rimapenaeus constrictus	roughneck shrimp	14489	52.4	39	10
Portunus spinicarpus	longspine swimming crab	10929	40.1	149	38.1
Sicyonia brevirostris	brown rock shrimp	8523	92.8	110	28.1
Squilla empusa	mantis shrimp	6607	41.2	91	23.3
Rimapenaeus similis	roughback shrimp	6147	30.8	67	17.1
Callinectes similis	lesser blue crab	4901	47.3	131	33.5
Squilla chydaea	mantis shrimp	3285	14.3	68	17.4
Solenocera vioscai	humpback shrimp	2756	12.5	39	10
Sicyonia dorsalis	lesser rock shrimp	1701	3.4	47	12
Portunus gibbesii	irridescent swimming crab	1560	6.6	83	21.2
Litopenaeus setiferus	white shrimp	1392	48.9	82	21
Farfantepenaeus duorarum	pink shrimp	1360	37.7	66	16.9
Parapenaeus politus	deepwater rose shrimp	1236	2	23	5.9
Solenocera atlantidis	dwarf humpback shrimp	785	1.2	35	9
Metapenaeopsis goodei	Caribbean velvet shrimp	681	1.3	35	9
Xiphopenaeus kroyeri	seabob	585	2.8	17	4.3
Anasimus latus	stilt spider crab	574	2.6	64	16.4

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Scyllarus chacei	chace slipper lobster	371	1.2	54	13.8
Munida pusilla		314	0.1	11	2.8
Mesopenaeus tropicalis	salmon shrimp	303	0.5	12	3.1
Stenorhynchus seticornis	yellowline arrow crab	270	0.6	76	19.4
Portunus spinimanus	blotched swimming crab	206	9.5	55	14.1
Leiolambrus nitidus	white elbow crab	159	0.3	32	8.2
Calappa sulcata	yellow box crab	150	27.7	43	11
Raninoides louisianensis	gulf frog crab	149	1.2	27	6.9
Platylambrus granulata	bladetooth elbow crab	146	0.4	46	11.8
Portunus ordwayii		144	1.6	18	4.6
Callinectes sapidus	blue crab	135	12.5	38	9.7
Palaemonetes		131	0	2	0.5
Stenocionops furcatus furcatus	furcate crab	94	2	50	12.8
Cryptodromiopsis antillensis	hairy sponge crab	86	0.4	46	11.8
Podochela sidneyi	shortfinger neck crab	83	0.1	35	9
Scyllarides nodifer	ridged slipper lobster	79	21.2	32	8.2
Sicyonia burkenroadi	spiny rock shrimp	74	0.1	15	3.8
Pseudorhombila quadridentata	flecked squareback crab	68	0.6	18	4.6
Stenorhynchus		51	0.1	21	5.4
Libinia dubia	longnose spider crab	47	0.2	18	4.6
Calappa flammea	flame box crab	47	11	23	5.9
Squilla rugosa		46	0.4	13	3.3
Mithrax pleuracanthus	shaggy clinging crab	45	0.1	19	4.9
Penaeopsis serrata	megalops shrimp	43	0	3	0.8
Iliacantha liodactylus	purse crab	41	0.2	4	1
Mithrax hispidus	coral clinging crab	36	0.1	18	4.6
Persephona crinita	pink purse crab	33	0.1	23	5.9
Parthenope agonus		25	0	16	4.1
Sicyonia typica	kinglet rock shrimp	25	0.1	7	1.8
Squilla deceptrix		25	0.1	2	0.5
Petrochirus diogenes	giant hermit crab	24	1.6	18	4.6

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Parasquilla coccinea	mantis shrimp	24	0.1	2	0.5
Myropsis quinquespinosa	fivespine purse crab	24	0.2	6	1.5
Paguristes sericeus	blue-eyed hermit	23	0.1	20	5.1
Speocarcinus lobatus	gulf squareback crab	22	0	4	1
Ovalipes floridanus	Florida lady crab	22	0.2	11	2.8
Metoporhaphis calcarata	false arrow crab	22	0	14	3.6
Euphrosynoplax clausa	craggy bathyal crab	21	0.1	12	3.1
Dardanus fucosus	bareye hermit	21	0	9	2.3
Pagurus pollicaris	flatclaw hermit crab	20	0.3	15	3.8
Acetes americanus	aviu shrimp	20	0	1	0.3
Lobopilumnus agassizii	areolated hairy crab	17	0	13	3.3
Sicyonia parri	rock shrimps	17	0.2	1	0.3
Latreutes parvulus	sargassum shirmp	17	0	1	0.3
Pilumnus sayi	spineback hairy crab	16	0.1	10	2.6
Leiolambrus nitidus	white elbow crab	16	0	4	1
Macrocoeloma trispinosum	spongy decorator crab	15	0.1	11	2.8
Dardanus insignis	red brocade hermit	15	0.2	10	2.6
Mithrax acuticornis	sharphorn clinging crab	14	0.1	8	2
Libinia emarginata	portly spider crab	12	1.3	6	1.5
Scyllarus depressus	scaled slipper lobster	12	0.1	2	0.5
Palicus faxoni	finned stilt crab	12	0	9	2.3
Munida forceps	squat lobster	11	0	4	1
Stenocionops spinimanus	prickly spider crab	11	0.1	3	0.8
Gonodactylus bredini		11	0	7	1.8
Mithrax forceps	red-ridged clinging crab	10	0	2	0.5
Porcellana sayana	spotted porcelain crab	10	0	5	1.3
Solenocera acuminata		10	0	1	0.3
Squilla spp.	mantis shrimps	10	0	3	0.8
Iliacantha subglobosa	longfinger purse crab	10	0	6	1.5
Portunus sayi	sargassum swimming crab	9	0.1	5	1.3
Paguristes triangulatus	hermit crab	9	0	4	1

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Pinnotheridae	pea crabs	9	0	3	0.8
Gibbesia neglecta	mantis shrimp	9	0.1	5	1.3
Lysmata		9	0	8	2
Hepatus epheliticus	calico crab	9	0.4	7	1.8
Galathea rostrata		8	0	2	0.5
Collodes trispinosus		8	0	7	1.8
Macrocoeloma		8	0	7	1.8
Plesionika longicauda	pandalid shrimp	7	0	5	1.3
Stenopus scutellatus	golden coral shrimp	6	0	5	1.3
Porcellana sigsbeiana	striped porcelain crab	6	0	3	0.8
Stenopus		6	0	5	1.3
Paguristes spp.	hermit crabs	6	0	4	1
Alpheus floridanus	sand snapping shrimp	6	0	2	0.5
Podochela lamelligera	neck crab	6	0	5	1.3
Pilumnus floridanus	plumed hairy crab	6	0	6	1.5
Petrolisthes galathinus	banded porcelain crab	6	0	2	0.5
Parapenaeus americanus		5	0	1	0.3
Parthenope fraterculus	rough elbow crab	5	0	5	1.3
Pagurus bullisi	hermit crab	5	0	3	0.8
Manucomplanus ungulatus		5	0	4	1
Tozeuma serratum	serrate arrow shrimp	4	0	3	0.8
Ethusa microphthalma	broadback sumo crab	4	0	3	0.8
Xanthidae	mud crabs	4	0	3	0.8
Iliacantha sparsa	shouldered purse crab	4	0	3	0.8
Synalpheus		4	0	4	1
Pagurus impressus	dimpled hermit	3	0	1	0.3
Homola barbata		3	0	1	0.3
Menippe adina	Gulf stone crab	3	0	1	0.3
Penaeidae	penaeid shrimps	3	0	1	0.3
Acanthocarpus alexandri	gladiator box crab	3	0	2	0.5
Calappa		3	0	3	0.8

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Coelocerus spinosus	channelnose spider crab	3	0	3	0.8
Sicyonia stimpsoni	eyespot rock shrimp	3	0	2	0.5
Processa		3	0	3	0.8
Portunus depressifrons	flatface swimming crab	3	0.1	2	0.5
Callidactylus asper	spurfinger purse crab	2	0	2	0.5
Portunus floridanus		2	0.1	2	0.5
Callinectes ornatus	shelligs	2	0.1	1	0.3
Lysmata wurdemanni	peppermint shrimp	2	0	2	0.5
Pyromaia cuspidata	dartnose pear crab	2	0	1	0.3
Persephona mediterranea	mottled purse crab	2	0	2	0.5
Processa profunda		2	0	1	0.3
Euchirograpsus americanus	American talon crab	2	0	2	0.5
Solenocera spp.	humpback shrimps	2	0	1	0.3
Osachila semilevis	thinlip jewelbox crab	2	0	1	0.3
Calappidae	box crabs	2	0	2	0.5
Pagurus annulipes		2	0	1	0.3
Hypoconcha spinosissima	spiny shellback crab	2	0	2	0.5
Scyllarus americanus	American slipper lobster	2	0	2	0.5
Isopoda	isopods	2	0	2	0.5
Palicus alternata		2	0	1	0.3
Pilumnus dasypodus	shortspine hairy crab	2	0	2	0.5
Arenaeus cribrarius	speckled swimming crab	2	0	2	0.5
Stenocionops		1	0	1	0.3
Inachidae		1	0	1	0.3
Panulirus argus	Caribbean spiny lobster	1	1.5	1	0.3
Macrocoeloma camptocerum	Florida decorator crab	1	0	1	0.3
Speocarcinus carolinensis	Carolinian squareback crab	1	0	1	0.3
Panopeus occidentalis	furrowed mud crab	1	0	1	0.3
Odontodactylus brevirostris		1	0	1	0.3
Pseudosquilla ciliata		1	0	1	0.3
Decapoda	crabs	1	0	1	0.3

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Synalpheus townsendi	Townsend snapping shrimp	1	0	1	0.3
Hypoconcha arcuata	granulate shellback crab	1	0	1	0.3
Squilla edentata		1	0	1	0.3
Pseudomedaeus agassizii	rough rubble crab	1	0	1	0.3
Sicyonia spp.	rock shrimps	1	0	1	0.3
Podochela		1	0	1	0.3
Macrocoeloma eutheca		1	0	1	0.3
Portunus spp.	swimming crabs	1	0	1	0.3
Paguridae	right-handed hermit crabs	1	0	1	0.3
Ranilia muricata	muricate frog crab	1	0	1	0.3
Carpoporus papulosus	narrowfront rubble crab	1	0	1	0.3
Alpheus normanni	green snapping shrimp	1	0	1	0.3
Meiosquilla quadridens		1	0	1	0.3
Glyptoxanthus erosus	eroded mud crab	1	0	1	0.3
Pilumnus		1	0	1	0.3
Acanthilia intermedia	granulose purse crab	1	0	1	0.3
Mithrax		1	0	1	0.3
Phimochirus holthuisi	red-striped hermit	1	0	1	0.3
Anchistioides antiguensis		1	0	1	0.3
Synalpheus fritzmuelleri	speckled snapping shrimp	1	0	1	0.3
Stenocionops furcatus coelatus	spider crab	1	0	1	0.3
Hypoconcha		1	0	1	0.3
Raninoides loevis	furrowed frog crab	1	0	1	0.3
Aega		1	0	1	0.3
Podochela gracilipes	unicorn neck crab	1	0	1	0.3
Nerocila acuminata		1	0	1	0.3
<u>Others</u>					
Loligo plei	arrow squid	20436	258.4	214	54.7
Lolliguncula brevis	Atlantic brief squid	6618	62.8	142	36.3

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Amusium papyraceum	paper scallop	5747	56.6	63	16.1
Argopecten gibbus	calico scallop	5428	27.5	23	5.9
Loligo pealeii	longfin squid	5387	87.2	79	20.2
Loligo spp.	squids	2147	16.3	14	3.6
Mollusca	molluscs	270	7.4	2	0.5
Macoma brevifrons	short macoma	214	1.5	3	0.8
Pitar cordatus	Schwengel's pitar	195	4.5	33	8.4
Euvola raveneli	Ravenel's scallop	164	0.5	20	5.1
Anadara baughmani	Baughman's ark	141	1.2	14	3.6
Aplysia morio	sooty seahare	64	5	15	3.8
Octopus vulgaris	common Atlantic octopus	56	7.5	34	8.7
Polystira albida	white giant turris	42	0.4	15	3.8
Evola	bivalves	36	0.1	16	4.1
Pleurobranchus	slugs	32	1.4	14	3.6
Octopus joubini	Atlantic pygmy octopus	26	0.1	17	4.3
Semirossia tenera	lesser shining bobtail	24	0.1	14	3.6
Lirophora clenchi	Clench venus	20	0.2	6	1.5
Loliginidae		18	0	2	0.5
Ficus communis	Atlantic figsnail	17	1.1	14	3.6
Anadara ovalis	blood ark	17	0	4	1
Cantharus cancellarius	cancellate cantharus	14	0	7	1.8
Strombus alatus	Florida fighting conch	14	1	7	1.8
Neverita		12	0.1	7	1.8
Laevicardium mortoni	yellow eggcockle	12	0.2	5	1.3
Sconsia striata	royal bonnet	12	0.2	4	1
Anadara transversa	transverse ark	11	0.2	2	0.5
Cassis madagascariensis	cameo helmet	11	27.4	7	1.8
Narcissia trigonaria		10	0.9	9	2.3
Aequipecten muscosus	rough scallop	10	0	9	2.3
Hexaplex fulvescens	giant eastern murex	9	1.2	6	1.5
Aequipecten glyptus	red-ribbed scallop	8	0	2	0.5

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Nodipecten		7	1.2	7	1.8
Polystira tellea	delicate giant turret	6	0.1	3	0.8
Cassis tuberosa	Caribbean helmet	6	7.1	4	1
Chlamys benedicti	Benedict scallop	6	0	6	1.5
Tonna galea	giant tun	5	1.4	5	1.3
Aplysiidae	opisthobranchs	5	0.1	1	0.3
Neverita duplicata	shark eye	5	0	5	1.3
Brasilissa alta		5	0.2	2	0.5
Chicoreus pomum	apple murex	5	0	4	1
Macoma pulleyi	delta macoma	5	0	2	0.5
Octopus briareus	Caribbean reef octopus	4	0.1	4	1
Felimare		4	0	4	1
Pecten		3	0	1	0.3
Cymatium parthenopeum	giant triton	3	0	2	0.5
Atrina spp.	penshells	3	0.1	2	0.5
Spondylus americanus	Atlantic thorny oyster	3	0.9	3	0.8
Chione		3	0	1	0.3
Bulla striata	striate bubble	3	0	2	0.5
Chicoreus florifer-dilectus		3	0	3	0.8
Haminoea succinea	amber glassy-bubble	3	0	1	0.3
Aplysia	opistobranchs	3	0.1	2	0.5
Conus austini	cone shell	2	0	1	0.3
Chicoreus beauii	beau's murex	2	0	1	0.3
Atrina rigida	stiff penshell	2	1.1	1	0.3
Chama congregata	corrugate jewelbox	2	0.3	2	0.5
Macrocallista maculata	calico clam	2	0.1	2	0.5
Anadara chemnitzi		2	0	1	0.3
Distorsio mcgintyi		2	0	2	0.5
Callista eucymata	glory-of-the-seas venus	2	0	2	0.5
Phalium granulatum	Scotch bonnet	2	0	2	0.5
Strombus costatus	milk conch	2	0.6	2	0.5

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Cancellaria reticulata	common nutmeg	2	0	2	0.5
Noetia ponderosa	ponderous ark	2	0	2	0.5
Busycon pulleyi	prickly whelk	2	0.4	1	0.3
Busycon sinistrum	lightning whelk	2	0.1	2	0.5
Pleurobranchidae		2	0.1	2	0.5
Scaphella junonia	junonia	2	0.2	2	0.5
Astrea americana		1	0	1	0.3
Turbo castaneus		1	0	1	0.3
Pteria colymbus	Atlantic wing-oyster	1	0	1	0.3
Distorsio clathrata	Atlantic distorsio	1	0	1	0.3
Anomalocardia auberiana	pointed venus	1	0	1	0.3
Trigonostoma tenerum		1	0	1	0.3
Hiatella arctica	Arctic hiatella	1	0	1	0.3
Conus	cones	1	0	1	0.3
Laevicardium pictum	painted eggcockle	1	0	1	0.3
Cypraea cervus	atlantic deer cowrie	1	0.4	1	0.3
Aplysia brasiliana	mottled seahare	1	0	1	0.3
Cypraea		1	0	1	0.3
Chlamys sentis	scaly scallop	1	0	1	0.3
Cymatium rubeculum-occidentale		1	0	1	0.3
Pleuroploca gigantea	horse conch	1	3.7	1	0.3
Crassatellidae		1	0.1	1	0.3
Fasciolaria tulipa	true tulip	1	0.4	1	0.3
Xenophora conchyliophora	American carriersnail	1	0	1	0.3
Gastropoda	snails	1	0	1	0.3
Fusinus		1	0	1	0.3
Barbatia candida	white-beard ark	1	0	1	0.3
Ficus	fig	1	0.1	1	0.3
Sinum maculatum	brown baby ear	1	0	1	0.3
Bursatella leachii	ragged seahare	1	0.5	1	0.3
Turbinidae		1	0	1	0.3

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Eucrassatella speciosa	beautiful crassatella	1	0	1	0.3
Laevicardium		1	0	1	0.3
Papyridea		1	0	1	0.3
Natica canrena	colorful moonsnail	1	0	1	0.3
Cypraea spurca		1	0	1	0.3
Opisthobranchia	opisthobranchs	1	0	1	0.3
Murex cabritti		1	0	1	0.3
Aequipecten		1	0	1	0.3
Hiatella		1	0	1	0.3
Oliva fulgurator		1	0	1	0.3
Lamellaria perspicua	transparent lamellaria	1	0	1	0.3

Table 3. 2013 Fall Shrimp/Groundfish Survey species composition list, 273 trawl stations, for those vessels that used either a 40-ft or 20-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 CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Finfishes					
Micropogonias undulatus	Atlantic croaker	61035	2550.8	140	51.3
Stenotomus caprinus	longspine porgy	11361	317.6	89	32.6
Lagodon rhomboides	pinfish	6823	457.4	84	30.8
Chloroscombrus chrysurus	Atlantic bumper	6789	115.7	82	30
Leiostomus xanthurus	spot	5462	426.4	79	28.9
Trachurus lathami	rough scad	4086	159	42	15.4
Prionotus longispinosus	bigeye searobin	3102	74.9	90	33
Serranus atrobranchus	blackear bass	3040	36.6	49	17.9
Syacium papillosum	dusky flounder	2487	124.3	76	27.8
Peprilus burti	gulf butterfish	2100	144.2	73	26.7
Haemulon aurolineatum	tomtate	1980	74.8	47	17.2
Syacium gunteri	shoal flounder	1905	31.6	65	23.8
Synodus foetens	inshore lizardfish	1846	243	146	53.5
Mullus auratus	red goatfish	1827	88.5	21	7.7
Eucinostomus gula	silver jenny	1642	56.5	38	13.9
Upeneus parvus	dwarf goatfish	1398	46.7	44	16.1
Cynoscion arenarius	sand seatrout	1379	116	97	35.5
Lutjanus synagris	lane snapper	1158	93.1	55	20.1
Bellator militaris	horned searobin	1089	16.7	23	8.4
Diplectrum formosum	sand perch	1084	66.5	86	31.5
Centropristis philadelphica	rock sea bass	1074	50.8	65	23.8
Scorpaena calcarata	smoothhead scorpionfish	1021	20.1	29	10.6
Lutjanus campechanus	red snapper	990	66.6	78	28.6
Trichopsetta ventralis	sash flounder	950	19.8	35	12.8
Bagre marinus	gafftopsail catfish	938	144.2	65	23.8
Pristipomoides aquilonaris	wenchman	918	49.5	32	11.7
Prionotus stearnsi	shortwing searobin	858	10.7	28	10.3

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Cynoscion nothus	silver seatrout	855	44.6	73	26.7
Stephanolepis hispida		818	27.8	54	19.8
Larimus fasciatus	banded drum	778	41	53	19.4
Centropristis ocyurus	bank sea bass	717	22.5	37	13.6
Harengula jaguana	scaled sardine	655	30.3	30	11
Selene setapinnis	Atlantic moonfish	642	18.1	66	24.2
Sphoeroides dorsalis	marbled puffer	569	23.2	42	15.4
Sphoeroides parvus	least puffer	547	4	47	17.2
Calamus arctifrons	grass porgy	516	56.8	8	2.9
Trichiurus lepturus	Atlantic cutlassfish	502	29.6	51	18.7
Ariopsis felis	hardhead catfish	497	51.4	52	19
Orthopristis chrysoptera	pigfish	484	37.3	31	11.4
Stellifer lanceolatus	star drum	480	6.1	49	17.9
Diplectrum bivittatum	dwarf sand perch	468	9.6	29	10.6
Synodus	lizard fishes	455	34.6	35	12.8
Synodus poeyi	offshore lizardfish	449	6.7	34	12.5
Decapterus punctatus	round scad	431	7.2	23	8.4
Etropus rimosus	gray flounder	415	6.4	8	2.9
Lepophidium jeannae	mottled cusk-eel	410	21.1	21	7.7
Cyclopsetta chittendeni	Mexican flounder	407	24.3	57	20.9
Etropus crossotus	fringed flounder	384	5.7	45	16.5
Prionotus paralatus	Mexican searobin	380	9.3	23	8.4
Scorpaena brasiliensis	barbfish	363	17.2	39	14.3
Halieutichthys		344	2.4	27	9.9
Trachinocephalus myops	snakefish	340	22	49	17.9
Calamus proridens	littlehead porgy	318	69	35	12.8
Chaetodipterus faber	Atlantic spadefish	317	13	66	24.2
Rhomboplites aurorubens	vermilion snapper	310	26.9	28	10.3
Halieutichthys aculeatus	pancake batfish	303	2.3	48	17.6
Caranx crysos	blue runner	296	20.9	45	16.5
Haemulon plumierii	white grunt	293	63.2	20	7.3

Table 3. Species composition list (continued)					
GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Saurida brasiliensis	largescale lizardfish	263	1.2	27	9.9
Sphoeroides spengleri	bandtail puffer	249	8.3	35	12.8
Scorpaena agassizii	longfin scorpionfish	238	9.4	14	5.1
Lepophidium brevibarbe	blackedge cusk-eel	213	9.4	28	10.3
Eucinostomus argenteus	spotfin mojarra	186	4.6	18	6.6
Bothus robinsi	twospot flounder	182	5.3	40	14.7
Acanthostracion quadricornis		175	33	43	15.8
Anchoa hepsetus	striped anchovy	174	2.7	20	7.3
Synodus intermedius	sand diver	168	12.8	23	8.4
Prionotus alatus	spiny searobin	163	2.9	19	7
Serranus phoebe	tattler	156	6.7	14	5.1
Prionotus rubio	blackwing searobin	148	6.3	19	7
Sardinella aurita	Spanish sardine	142	6.3	17	6.2
Ogcocephalus declivirostris	slantbrow batfish	139	1.9	20	7.3
Equetus lanceolatus	jackknife fish	137	12.4	23	8.4
Citharichthys spilopterus	bay whiff	134	1.6	26	9.5
Ophidion holbrookii	bank cusk-eel	125	14.4	23	8.4
Apogon pseudomaculatus	twospot cardinalfish	122	0.6	10	3.7
Brevoortia patronus	gulf menhaden	110	9.2	20	7.3
Monacanthus ciliatus	fringed filefish	107	1.9	29	10.6
Prionotus ophryas	bandtail searobin	91	4.2	32	11.7
Prionotus roseus	bluespotted searobin	87	3.5	29	10.6
Lagocephalus laevigatus	smooth puffer	86	5.2	23	8.4
Saurida normani	shortjaw lizardfish	85	7.8	9	3.3
Balistes capriscus	gray triggerfish	82	5.7	28	10.3
Porichthys plectrodon	Atlantic midshipman	82	1.8	34	12.5
Opisthonema oglinum	Atlantic thread herring	77	4.3	15	5.5
Symphurus diomedeanus	spottedfin tonguefish	77	2.5	23	8.4
Pterois volitans	lion fish	76	13.1	17	6.2
Pareques umbrosus	cubbyu	74	2.4	24	8.8
Peprilus paru	harvestfish	70	3.2	13	4.8

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Eucinostomus harengulus	tidewater mojarra	69	3.6	8	2.9
Menticirrhus americanus	southern kingfish	67	9.3	16	5.9
Hemicaranx amblyrhynchus	bluntnose jack	63	0.7	24	8.8
Prionotus martis	barred searobin	60	2.8	11	4
Pagrus pagrus	red porgy	58	8	12	4.4
Neomerinthe hemingwayi	spinycheek scorpionfish	57	4.5	11	4
Prionotus tribulus	bighead searobin	56	2.8	21	7.7
Aluterus schoepfii	orange filefish	53	24.7	19	7
Gymnachirus texae	fringed sole	51	0.7	16	5.9
Calamus nodosus	knobbed porgy	50	4.9	11	4
Pareques iwamotoi	blackbar drum	48	3.7	8	2.9
Brotula barbata	bearded brotula	48	4.8	17	6.2
Selene vomer	lookdown	45	0.7	17	6.2
Ariomma regulus	spotted driftfish	44	2.1	17	6.2
Citharichthys macrops	spotted whiff	42	1.6	10	3.7
Paralichthys squamilentus	broad flounder	41	15.2	14	5.1
Calamus leucosteus	whitebone porgy	40	12.5	6	2.2
Cynoscion spp.	seatrouts	38	0.2	1	0.4
Lutjanus griseus	grey snapper	38	12.2	9	3.3
Prionotus scitulus	leopard searobin	37	1.5	13	4.8
Astrapogon alutus	bronze cardinalfish	35	0.1	7	2.6
Rhynchoconger flavus	yellow conger	35	2.1	13	4.8
Lachnolaimus maximus	hogfish	35	14.4	11	4
Kathetostoma albigutta	lancer stargazer	35	1.6	19	7
Peprilus paru	harvestfish	34	1.5	13	4.8
Sphyraena guachancho	guaguanche	33	4.4	10	3.7
Paralichthys lethostigma	southern flounder	33	14.7	13	4.8
Caulolatilus intermedius	anchor tilefish	33	1.4	7	2.6
Ophidion beani	longnose cusk-eel	30	2.1	10	3.7
Aluterus heudelotii	dotterel filefish	30	2.4	14	5.1
Ancylopsetta dilecta	three-eye flounder	30	2.5	7	2.6

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Hoplunnis macrura	freckled pike-conger	30	0.2	12	4.4
Gymnothorax saxicola	honeycomb moray	29	2.9	17	6.2
Phaeoptyx pigmentaria	dusky cardinalfish	29	0.1	4	1.5
Chaetodon ocellatus	spotfin butterflyfish	29	2.5	12	4.4
Echeneis neucratoides	whitefin sharksucker	28	12.6	14	5.1
Urophycis floridana	southern hake	28	4.2	6	2.2
Paralichthys albigutta	gulf flounder	26	9.1	9	3.3
Ancylopsetta ommata	ocellated flounder	25	4.1	15	5.5
Scomberomorus cavalla	king mackerel	25	5.3	11	4
Etropus cyclosquamus	shelf flounder	25	0.3	3	1.1
Cyclopsetta fimbriata	spotfin flounder	24	2.6	12	4.4
Diplodus holbrooki	spottail pinfish	21	1.5	2	0.7
Gastropsetta frontalis	shrimp flounder	21	1.6	11	4
Priacanthus arenatus	bigeye	21	3.2	12	4.4
Ophidion josephi	crested cusk-eel	20	0.8	4	1.5
Chaetodon sedentarius	reef butterflyfish	20	0.8	7	2.6
Hemipteronotus novacula	pearly razorfish	19	1	8	2.9
Apogon aurolineatus	bridle cardinalfish	18	0	5	1.8
Selar crumenophthalmus	bigeye scad	18	1	6	2.2
Bollmannia communis	ragged goby	18	0.1	8	2.9
Haemulon striatum	striped grunt	18	0.3	2	0.7
Pseudupeneus maculatus	spotted goatfish	18	1.4	11	4
Apogon affinis	bigtooth cardinalfish	17	0.2	5	1.8
Ogcocephalus parvus	roughback batfish	16	0.1	13	4.8
Hippocampus erectus	lined seahorse	16	0.1	13	4.8
Chilomycterus schoepfii	striped burrfish	16	5.6	11	4
Nicholsina usta	emerald parrotfish	16	1.1	10	3.7
Engyophrys senta	spiny flounder	16	0.1	4	1.5
Decapterus	mackerel scads	15	0	1	0.4
Calamus penna	sheepshead porgy	15	4.6	2	0.7
Rypticus maculatus	whitespotted soapfish	14	0.7	7	2.6

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Antennarius radiosus	singlespot frogfish	14	0.2	11	4
Bothus ocellatus	eyed flounder	14	0.2	6	2.2
Bathyanthias		14	0.1	3	1.1
Sphyrna tiburo	bonnethead	13	10.5	7	2.6
Urophycis cirrata	gulf hake	13	0.8	3	1.1
Opsanus pardus	leopard toadfish	13	0.1	7	2.6
Scorpaena spp.	scorpionfishes	12	0.2	2	0.7
Sphyraena borealis	northern sennet	12	1.3	5	1.8
Holacanthus bermudensis	blue angelfish	12	4.8	8	2.9
Narcine brasiliensis	lesser electric ray	11	1.8	7	2.6
Dasyatis americana	southern stingray	11	20.7	5	1.8
Anchoa mitchilli	bay anchovy	11	0	2	0.7
Rhizoprionodon terraenovae	Atlantic sharpnose shark	11	11.8	7	2.6
Chromis enchrysura	yellowtail reeffish	11	0.2	5	1.8
Pristigenys alta	short bigeye	10	0.3	4	1.5
Citharichthys gymnorhinus	anglefin whiff	10	0	7	2.6
Hoplunnis diomedianus	blacktail pike-conger	10	0.1	5	1.8
Raja eglanteria	clearnose skate	10	4.5	9	3.3
Pomacentrus variabilis	cocoa damselfish	10	0.1	6	2.2
Ogcocephalus corniger	longnose batfish	10	0.2	5	1.8
Decodon puellaris	red hogfish	9	0.4	4	1.5
Raja texana	roundel skate	9	2.8	8	2.9
Squatina dumeril	Atlantic angel shark	8	14.2	3	1.1
Antennarius ocellatus	ocellated frogfish	8	0.6	7	2.6
Urophycis regia	spotted hake	8	1.2	4	1.5
Bairdiella chrysoura	silver perch	7	0.3	1	0.4
Echeneis naucrates	sharksucker	7	3.7	7	2.6
Epinephelus morio	red grouper	7	8.8	6	2.2
Rachycentron canadum	cobia	7	31	4	1.5
Prognathodes aya	bank butterflyfish	7	0.1	2	0.7
Apogon quadrisquamatus	sawcheek cardinalfish	7	0	6	2.2

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Serranus subligarius	belted sandfish	7	0	4	1.5
Centropristis striatus	black sea bass	7	0.5	4	1.5
Canthigaster rostratus		6	0	2	0.7
Symphurus plagiusa	blackcheek tonguefish	6	0.2	4	1.5
Lopholatilus chamaeleonticeps	blue tilefish	6	0.4	4	1.5
Mustelus	smooth hound sharks	6	8	5	1.8
Pontinus longispinis	longspine scorpionfish	6	0	2	0.7
Euleptorhamphus velox	flying halfbeak	6	0.5	1	0.4
Caranx hippos	crevalle jack	6	0.7	2	0.7
Etrumeus teres	round herring	6	0.2	3	1.1
Paraconger caudilimbatus	margintail conger	5	0.5	3	1.1
Ophidion	cusk-eels	5	0.2	4	1.5
Bellator egretta	streamer searobin	5	0	3	1.1
Hemanthias aureorubens	streamer bass	5	0.2	3	1.1
Caulolatilus chrysops	goldface tilefish	5	0.1	1	0.4
Rypticus bistrispinus	freckled soapfish	5	0	4	1.5
Serranus notospilus	saddle bass	5	0	4	1.5
Pomacanthus arcuatus	gray angelfish	5	2.6	4	1.5
Scomberomorus maculatus	Spanish mackerel	5	1	3	1.1
Sphoeroides nephelus	southern puffer	4	0.6	4	1.5
Gobiesox strumosus	skilletfish	4	0	2	0.7
Parablennius marmoreus	seaweed blenny	4	0	4	1.5
Urophycis earlli	Carolina hake	4	0.4	2	0.7
Menticirrhus littoralis	gulf kingfish	4	0.8	2	0.7
Anchoa lyolepis	dusky anchovy	4	0	1	0.4
Dasyatis sabina	Atlantic stringray	3	0.8	2	0.7
Ogcocephalus cubifrons	polka-dot batfish	3	0.8	3	1.1
Congridae	conger eels	3	0	2	0.7
Gymnachirus melas	naked sole	3	0.1	2	0.7
Phaeoptyx xenus	sponge cardinalfish	3	0	2	0.7
Hyporthodus flavolimbatus		3	0.5	3	1.1

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Gymnothorax moringa	spotted moray	3	1.3	2	0.7
Sciaenops ocellatus	red drum	3	8.6	3	1.1
Dorosoma petenense	threadfin shad	3	0.1	3	1.1
Halichoeres bathyphilus	greenband wrasse	3	0.1	3	1.1
Rhinobatos lentiginosus	Atlantic guitarfish	2	1.5	2	0.7
Pareques		2	0	1	0.4
Bellator brachychir	shortfin searobin	2	0	1	0.4
Canthigaster jamestyleri		2	0	1	0.4
Dactylopterus volitans	flying gurnard	2	0.1	1	0.4
Antennarius striatus	striated frogfish	2	0.1	2	0.7
Calamus		2	0	1	0.4
Opsanus tau	oyster toadfish	2	0.5	1	0.4
Symphurus civitatium	offshore tonguefish	2	0.1	1	0.4
Brevoortia gunteri	finescale menhaden	2	0.3	1	0.4
Gobionellus	darter gobies	2	0	1	0.4
Ogcocephalus cubifrons		2	0.5	2	0.7
Echiophis intertinctus	spotted spoon-nose eel	2	0.4	2	0.7
Seriola dumerili	greater amberjack	2	0.7	2	0.7
Lutjanidae	snappers	2	0	1	0.4
Scorpaena plumieri	spotted scorpionfish	2	0	1	0.4
Holocentrus bullisi	deepwater squirrelfish	2	0	1	0.4
Pogonias cromis	black drum	2	11.1	2	0.7
Serranus tortugarum	chalk bass	2	0	1	0.4
Otophidium omostigmum	polka-dot cusk-eel	2	0	1	0.4
Physiculus fulvus	metallic codling	1	0	1	0.4
Synodus synodus	red lizardfish	1	0	1	0.4
Scaridae	parrotfishes	1	0	1	0.4
Dasyatis say	bluntnose stingray	1	0.7	1	0.4
Ogcocephalus pantostictus	spotted batfish	1	0.5	1	0.4
Emblemaria atlantica	banner blenny	1	0	1	0.4
Hyporthodus niveatus		1	0	1	0.4

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Hirundichthys rondeletii	blackwing flyingfish	1	0.1	1	0.4
Ocyurus chrysurus	yellowtail snapper	1	0	1	0.4
Balistes vetula	queen triggerfish	1	0	1	0.4
Gobiidae	gobies	1	0	1	0.4
Lutjanus vivanus	silk snapper	1	0	1	0.4
Lonchopisthus micrognathus	swordtail jawfish	1	0	1	0.4
Myliobatis goodei	southern eagle ray	1	10	1	0.4
Halichoeres bivittatus	slippery dick	1	0.1	1	0.4
Mycteroperca microlepis	gag	1	2.3	1	0.4
Diodon holocanthus	balloonfish	1	0.6	1	0.4
Dasyatis	fintail stingrays	1	0.7	1	0.4
Carapus bermudensis	Atlantic pearlfish	1	0	1	0.4
Carcharhinus acronotus	blacknose shark	1	8.8	1	0.4
Ophichthus puncticeps	palespotted eel	1	0.1	1	0.4
Chromis scotti	purple reeffish	1	0	1	0.4
Ariosoma balearicum	bandtooth conger	1	0	1	0.4
Lepophidium spp.	cusk-eels	1	0	1	0.4
Mycteroperca phenax	scamp	1	0.8	1	0.4
Pomatomus saltatrix	bluefish	1	0.2	1	0.4
Stephanolepis setifer	pygmy filefish	1	0	1	0.4
Gymnothorax nigromarginatus	blackedge moray	1	0	1	0.4
Epinephelus itajara	goliath grouper	1	20.4	1	0.4
Diplectrum	perch	1	0	1	0.4
Cryptotomus roseus	bluelip parrotfish	1	0	1	0.4
Dasyatis centroura	clam cracker	1	200	1	0.4
Hoplunnis tenuis	spotted pike conger	1	0	1	0.4
Rhinoptera bonasus	cownose ray	1	4.5	1	0.4
Aluterus monoceros	unicorn filefish	1	0.2	1	0.4
Conger oceanicus	conger eel	1	0	1	0.4
Caulolatilus cyanops	blackline tilefish	1	0	1	0.4
Antennarius pauciradiatus	dwarf frogfish	1	0	1	0.4

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
<u>Crustaceans</u>					
Farfantepenaeus aztecus	brown shrimp	6379	160.4	106	38.8
Sicyonia brevirostris	brown rock shrimp	4837	93.8	46	16.8
Portunus spinicarpus	longspine swimming crab	2504	18.7	77	28.2
Litopenaeus setiferus	white shrimp	2332	51.1	86	31.5
Callinectes similis	lesser blue crab	1498	20	74	27.1
Portunus gibbesii	irridescent swimming crab	904	5	61	22.3
Squilla empusa	mantis shrimp	793	8.6	59	21.6
Rimapenaeus constrictus	roughneck shrimp	585	2.5	24	8.8
Farfantepenaeus duorarum	pink shrimp	552	10.5	38	13.9
Xiphopenaeus kroyeri	seabob	520	1.6	22	8.1
Solenocera vioscai	humpback shrimp	452	2.2	30	11
Rimapenaeus similis	roughback shrimp	387	1.2	38	13.9
Squilla chydaea	mantis shrimp	335	2.2	28	10.3
Anasimus latus	stilt spider crab	322	2.7	36	13.2
Portunus spinimanus	blotched swimming crab	313	6.7	29	10.6
Solenocera atlantidis	dwarf humpback shrimp	208	0.2	15	5.5
Sicyonia dorsalis	lesser rock shrimp	199	0.6	10	3.7
Scyllarus chacei	chace slipper lobster	138	0.5	24	8.8
Stenorhynchus seticornis	yellowline arrow crab	127	0.3	37	13.6
Mesopenaeus tropicalis	salmon shrimp	120	0.4	4	1.5
Metapenaeopsis goodei	Caribbean velvet shrimp	97	0.1	15	5.5
Calappa sulcata	yellow box crab	69	15.3	24	8.8
Raninoides louisianensis	gulf frog crab	57	0.6	16	5.9
Scyllarides nodifer	ridged slipper lobster	36	9.9	15	5.5
Pagurus pollicaris	flatclaw hermit crab	31	0.4	18	6.6
Callinectes sapidus	blue crab	21	2.2	6	2.2
Mithrax hispidus	coral clinging crab	20	0.1	6	2.2
Portunus ordwayii		20	0.2	10	3.7

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Stenocionops furcatus furcatus	furcate crab	18	0.4	12	4.4
Persephona crinita	pink purse crab	17	0.1	9	3.3
Libinia dubia	longnose spider crab	16	0.2	13	4.8
Cryptodromiopsis antillensis	hairy sponge crab	14	0.1	10	3.7
Plesionika longicauda	pandalid shrimp	14	0	3	1.1
Mithrax forceps	red-ridged clinging crab	13	0	5	1.8
Pseudorhombila quadridentata	flecked squareback crab	12	0.1	5	1.8
Platylambrus granulata	bladetooth elbow crab	11	0	7	2.6
Euchirograpsus americanus	American talon crab	11	0	4	1.5
Dardanus insignis	red brocade hermit	11	0.4	6	2.2
Petrolisthes galathinus	banded porcelain crab	11	0	3	1.1
Munida		10	0	1	0.4
Speocarcinus lobatus	gulf squareback crab	10	0	5	1.8
Sicyonia burkenroadi	spiny rock shrimp	9	0	2	0.7
Myropsis quinquespinosa	fivespine purse crab	9	0	5	1.8
Podochela sidneyi	shortfinger neck crab	9	0	5	1.8
Macrocoeloma trispinosum	spongy decorator crab	8	0.1	6	2.2
Pilumnus sayi	spineback hairy crab	7	0	6	2.2
Paguristes spp.	hermit crabs	7	0	4	1.5
Portunus depressifrons	flatface swimming crab	7	0.1	1	0.4
Stenorhynchus		6	0	5	1.8
Synalpheus		6	0	4	1.5
Leiolambrus nitidus	white elbow crab	5	0	2	0.7
Euphrosynoplax clausa	craggy bathyal crab	5	0	3	1.1
Parthenope	elbow crabs	5	0	1	0.4
Majidae	spider crabs	4	0	2	0.7
Munida pusilla		4	0	3	1.1
Pagurus bullisi	hermit crab	4	0	1	0.4
Parthenope agonus		4	0	3	1.1
Pyromaia cuspidata	dartnose pear crab	4	0	1	0.4
Persephona mediterranea	mottled purse crab	4	0	4	1.5

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Ovalipes floridanus	Florida lady crab	4	0.1	4	1.5
Pilumnus dasypodus	shortspine hairy crab	4	0	4	1.5
Arenaeus cribrarius	speckled swimming crab	3	0	3	1.1
Hepatus epheliticus	calico crab	3	0	3	1.1
Lobopilumnus agassizii	areolated hairy crab	3	0	3	1.1
Paguristes triangulatus	hermit crab	3	0	2	0.7
Macrocoeloma		3	0	3	1.1
Pachycheles rugimanus	sculptured porcelain crab	3	0	1	0.4
Munida forceps	squat lobster	3	0	1	0.4
Petrochirus diogenes	giant hermit crab	3	0	2	0.7
Clibanarius vittatus	thinstripe hermit crab	3	0	2	0.7
Dardanus fucosus	bareye hermit	3	0	1	0.4
Gonodactylus bredini		3	0	3	1.1
Stenocionops furcatus coelatus	spider crab	3	0	2	0.7
Squilla deceptrix		3	0	2	0.7
Pagurus defensus		2	0	1	0.4
Macrocoeloma camptocerum	Florida decorator crab	2	0	2	0.7
Squilla rugosa		2	0	2	0.7
Macrocoeloma eutheca		2	0	2	0.7
Mithrax		2	0	1	0.4
Porcellana sayana	spotted porcelain crab	2	0	2	0.7
Parapenaeus politus	deepwater rose shrimp	2	0	1	0.4
Manucomplanus ungulatus		2	0	1	0.4
Acanthilia intermedia	granulose purse crab	1	0	1	0.4
Porcellana sigsbeiana	striped porcelain crab	1	0	1	0.4
Collodes robustus	spider crab	1	0	1	0.4
Metoporhaphis calcarata	false arrow crab	1	0	1	0.4
Isopoda	isopods	1	0	1	0.4
Parasquilla coccinea	mantis shrimp	1	0	1	0.4
Sicyonia typica	kinglet rock shrimp	1	0	1	0.4
Podochela gracilipes	unicorn neck crab	1	0	1	0.4

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Mithrax acuticornis	sharphorn clinging crab	1	0	1	0.4
Iliacantha sparsa	shouldered purse crab	1	0	1	0.4
Phimochirus holthuisi	red-striped hermit	1	0	1	0.4
Stenopus		1	0	1	0.4
Podochela lamelligera	neck crab	1	0	1	0.4
Xanthidae	mud crabs	1	0	1	0.4
Stenocionops spinimanus	prickly spider crab	1	0	1	0.4
Calappa		1	0	1	0.4
Portunus floridanus		1	0	1	0.4
Palicus faxoni	finned stilt crab	1	0	1	0.4
Paguristes sericeus	blue-eyed hermit	1	0	1	0.4
Mithrax pleuracanthus	shaggy clinging crab	1	0	1	0.4
Megalobrachium		1	0	1	0.4
Scyllarus americanus	American slipper lobster	1	0	1	0.4
Alpheus formosus	striped snapping shrimp	1	0	1	0.4
Parthenope fraterculus	rough elbow crab	1	0	1	0.4
Tyche emarginata	fourhorn crab	1	0	1	0.4
Diogenidae	left-handed hermit crabs	1	0	1	0.4
Callinectes ornatus	shelligs	1	0.1	1	0.4
Alpheidae	snapping shrimps	1	0	1	0.4
Dyspanopeus texanus	gulf grassflat crab	1	0	1	0.4
Others					
Amusium papyraceum	paper scallop	7988	87.4	44	16.1
Loligo plei	arrow squid	1419	27.9	60	22
Loligo pealeii	longfin squid	1129	41.4	71	26
Lolliguncula brevis	Atlantic brief squid	285	3.2	60	22
Pitar cordatus	Schwengel's pitar	176	4.4	21	7.7
Anadara baughmani	Baughman's ark	128	2	10	3.7
Polystira albida	white giant turris	117	0.9	13	4.8

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Loligo spp.	squids	64	1.3	12	4.4
Macoma brevifrons	short macoma	39	0.4	2	0.7
Sconsia striata	royal bonnet	34	0.5	7	2.6
Neverita		19	0.1	14	5.1
Lirophora clenchi	Clench venus	16	0.1	6	2.2
Neverita duplicata	shark eye	16	0.2	10	3.7
Chama macerophylla	leafy jewelbox	11	1.8	2	0.7
Cantharus cancellarius	cancellate cantharus	10	0	6	2.2
Octopus vulgaris	common Atlantic octopus	10	2.4	10	3.7
Atrina rigida	stiff penshell	9	5.8	5	1.8
Argopecten gibbus	calico scallop	9	0	3	1.1
Pteria colymbus	Atlantic wing-oyster	7	0.1	3	1.1
Laevicardium mortoni	yellow eggcockle	7	0.5	3	1.1
Octopus joubini	Atlantic pygmy octopus	6	0.6	6	2.2
Arca zebra	turkey wing	6	0.4	3	1.1
Semirossia tenera	lesser shining bobtail	6	0	4	1.5
Anadara ovalis	blood ark	5	0	4	1.5
Octopus burryi	brownstripe octopus	4	0.6	4	1.5
Pecten ziczac	zigzag scallop	4	0	1	0.4
Noetia ponderosa	ponderous ark	4	0	4	1.5
Anadara floridana	cut-ribbed ark	4	0	1	0.4
Spondylus ictericus	digitate thorny oyster	3	0.4	1	0.4
Tonna galea	giant tun	3	0.2	2	0.7
Hexaplex fulvescens	giant eastern murex	3	0	2	0.7
Murex		3	0.1	2	0.7
Conus	cones	3	0	2	0.7
Octopus		3	0.2	3	1.1
Busycon sinistrum	lightning whelk	3	0.1	2	0.7
Pleurobranchus	slugs	3	0.1	3	1.1
Distorsio clathrata	Atlantic distorsio	3	0	2	0.7
Agriopoma texasianum	Texas venus	2	0	2	0.7

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Euvola raveneli	Ravenel's scallop	2	0	2	0.7
Narcissia trigonaria		2	0	2	0.7
Macrocallista maculata	calico clam	2	0	2	0.7
Pisania tincta	tinted cantharus	2	0	1	0.4
Astrea americana		2	0	2	0.7
Aequipecten muscosus	rough scallop	2	0	2	0.7
Felimare		2	0	2	0.7
Ficus communis	Atlantic figsnail	2	0.1	2	0.7
Pleuroploca gigantea	horse conch	1	0	1	0.4
Conus austini	cone shell	1	0	1	0.4
Aequipecten glyptus	red-ribbed scallop	1	0	1	0.4
Nemocardium transversum	transverse micro-cockle	1	0	1	0.4
Atrina seminuda	half-naked penshell	1	0.2	1	0.4
Polystira tellea	delicate giant turret	1	0	1	0.4
Busycotypus spiratus	pearwhelk	1	0.2	1	0.4
Aplysia morio	sooty seahare	1	0.2	1	0.4
Strombus alatus	Florida fighting conch	1	0	1	0.4
Xenophora conchyliophora	American carriersnail	1	0	1	0.4
Chlamys benedicti	Benedict scallop	1	0	1	0.4
Aplysia	opistobranchs	1	0.1	1	0.4
Semirossia equalis	greater shining bobtail	1	0	1	0.4
Dendrodoris		1	0	1	0.4
Murex cellulosus		1	0	1	0.4
Phalium granulatum	Scotch bonnet	1	0	1	0.4
Armina		1	0	1	0.4
Chicoreus florifer-dilectus		1	0	1	0.4
Diodora cayenensis	Cayenne keyhole limpet	1	0	1	0.4
Cyphoma		1	0	1	0.4
Ischadium recurvum	hooked mussel	1	0	1	0.4

Table 4. 2013 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
Finfishes				
Rhizoprionodon terraenovae	Atlantic sharpnose shark	1732	1539	5226.3
Carcharhinus limbatus	blacktip shark	450	307	3696.9
Bagre marinus	gafftopsail catfish	308	259	426.6
Sciaenops ocellatus	red drum	153	141	1231.9
Lutjanus campechanus	red snapper	143	135	645.4
Carcharhinus acronotus	blacknose shark	110	107	877.7
Ophichthus rex	king snake eel	90	43	241.3
Carcharhinus leucas	bull shark	82	24	360.6
Mustelus canis	dusky smooth-hound	66	63	276.9
Carcharhinus brevipinna	spinner shark	49	41	601.1
Carcharhinus isodon	finetooth shark	28	24	94.5
Dasyatis americana	southern stingray	25	8	272.0
Sphyrna lewini	scalloped hammerhead	22	11	217.4
Mustelus	smooth hound sharks	19	18	135.0
Arius felis	hardhead catfish	19	15	20.2
Carcharhinus plumbeus	sandbar shark	16	12	295.8
Unid.fish		15	0	
Galeocerdo cuvier	tiger shark	14	6	39.4
Sphyrna mokarran	great hammerhead	12	4	139.6
Caranx hippos	crevalle jack	5	5	53.3
Pogonias cromis	black drum	4	4	37.3
Carcharhinus falciformis	silky shark	4	4	34.3
Dasyatis sabina	Atlantic stingray	4	4	13.8
Brotula barbatum	bearded brotula	3	3	4.8
Rhinoptera bonasus	cownose ray	3	1	6.0
Rachycentron canadum	cobia	2	0	
Negaprion brevirostris	lemon shark	2	1	11.5

Table 4. 2013 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
Trichiurus lepturus	Atlantic cutlassfish	1	1	0.2
Scomberomorus maculatus	Atlantic Spanish mackerel	1	1	2.2
Squilla empusa	Mantis shrimp	1	0	
Rhinoptera brasiliensis	Brazilian cow-nosed ray	1	1	12.9
Sphyrna tiburo	bonnethead	1	1	6.0
Thunnus atlanticus	blackfin tuna	1	1	9.0
Ginglymostoma cirratum	nurse shark	1	1	85.0
Echeneis naucrates	sharksucker	1	0	
Cynoscion arenarius	sand seatrout	1	0	
Pristipomoides aquilonaris	wenchman	1	1	0.3
Dasyatis say	bluntnose stingray	1	0	
Rhodophyceae		1	1	3.4

Table 5. 2013 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
Finfishes				
Lutjanus campechanus	red snapper	1610	1597	2927.9
Balistes capriscus	gray triggerfish	24	24	50.2
Pagrus pagrus	red porgy	20	20	17.4
Cynoscion arenarius	sand seatrout	17	9	5.5
Seriola rivoliana	almaco jack	14	14	28.3
Rhomboplites aurorubens	vermilion snapper	14	14	7.5
Seriola dumerili	greater amberjack	11	11	29.8
Sciaenops ocellatus	red drum	8	8	43.5
Caranx crysos	blue runner	8	2	1.6
Carcharhinus falciformis	silky shark	5	0	
Carcharhinus brevipinna	spinner shark	5	0	
Rhizoprionodon terraenovae	Atlantic sharpnose shark	4	2	8.9
Carcharhinus limbatus	blacktip shark	4	0	
Echeneis naucrates	sharksucker	3	3	3.3
Selene setapinnis	Atlantic moonfish	3	2	0.4
Mycteroperca phenax	scamp	3	3	7.5
Lutjanus synagris	lane snapper	3	3	3.2
Pomatomus saltatrix	bluefish	3	3	3.2
Haemulon aurolineatum	tomtate	2	2	0.4
Epinephelus morio	red grouper	2	2	7.1
Lagodon rhomboides	pinfish	2	2	1.4
Epinephelus flavolimbatus	yellowedge grouper	1	1	3.9
Seriola zonata	banded rudderfish	1	1	1.6
Euthynnus alletteratus	false albacore	1	1	2.3
Remora remora	common remora	1	0	
Rachycentron canadum	cobia	1	1	1.9
Bagre marinus	gafftopsail catfish	1	0	
Decapterus punctatus	round scad	1	1	0.1

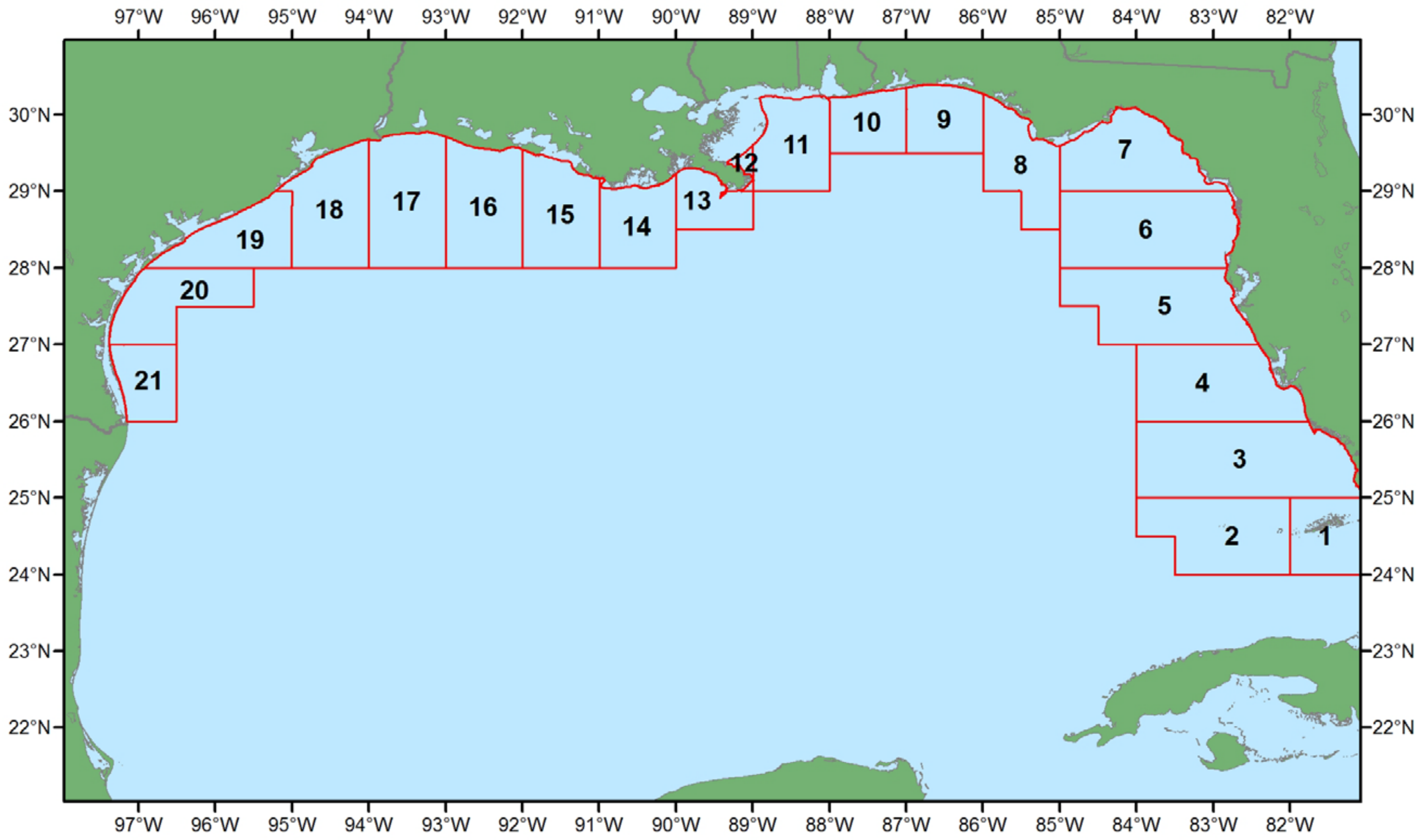

Figure 1. Statistical zones for shrimp in the Gulf of Mexico.

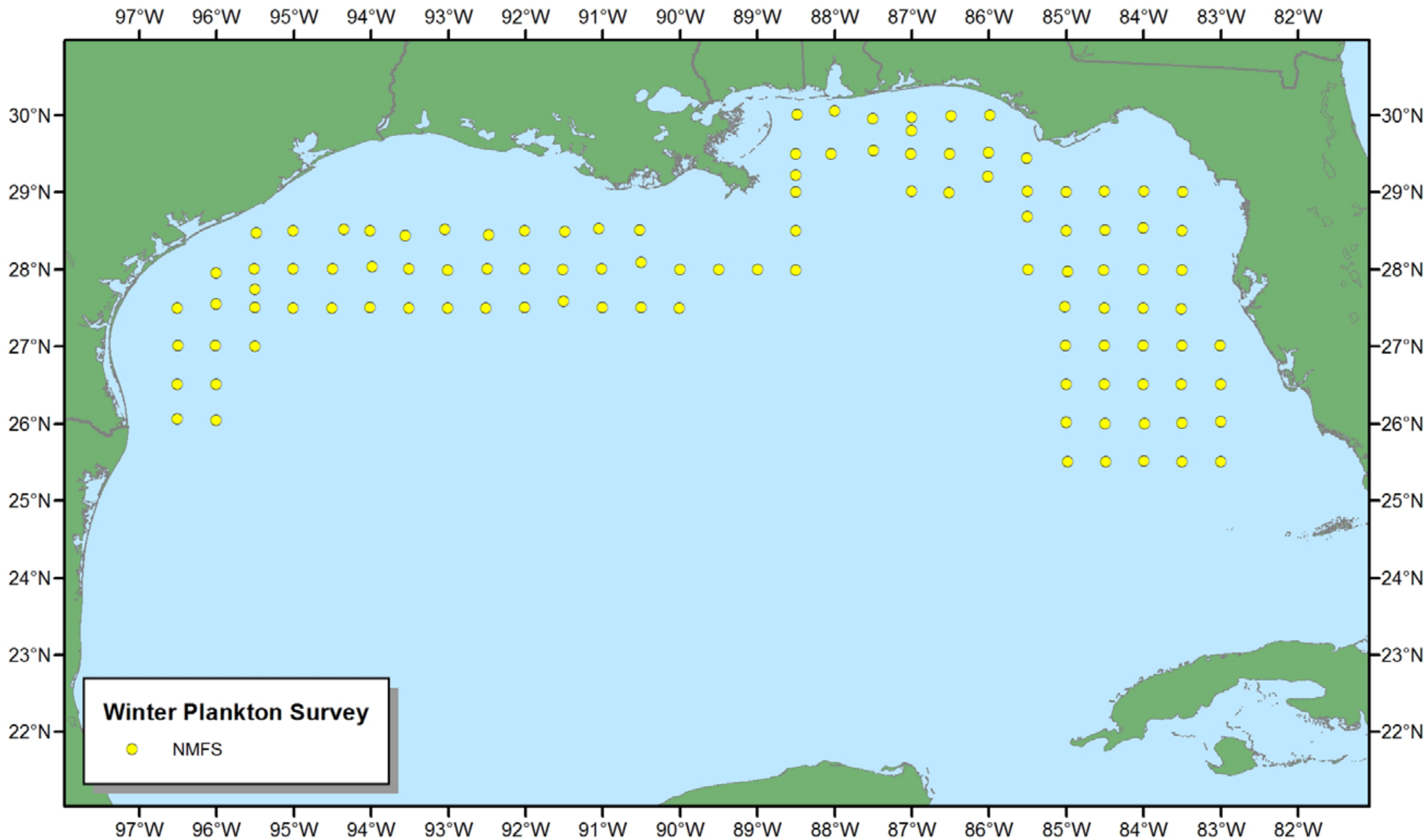

Figure 2. Locations of plankton and environmental stations during the 2013 Winter Plankton Survey.

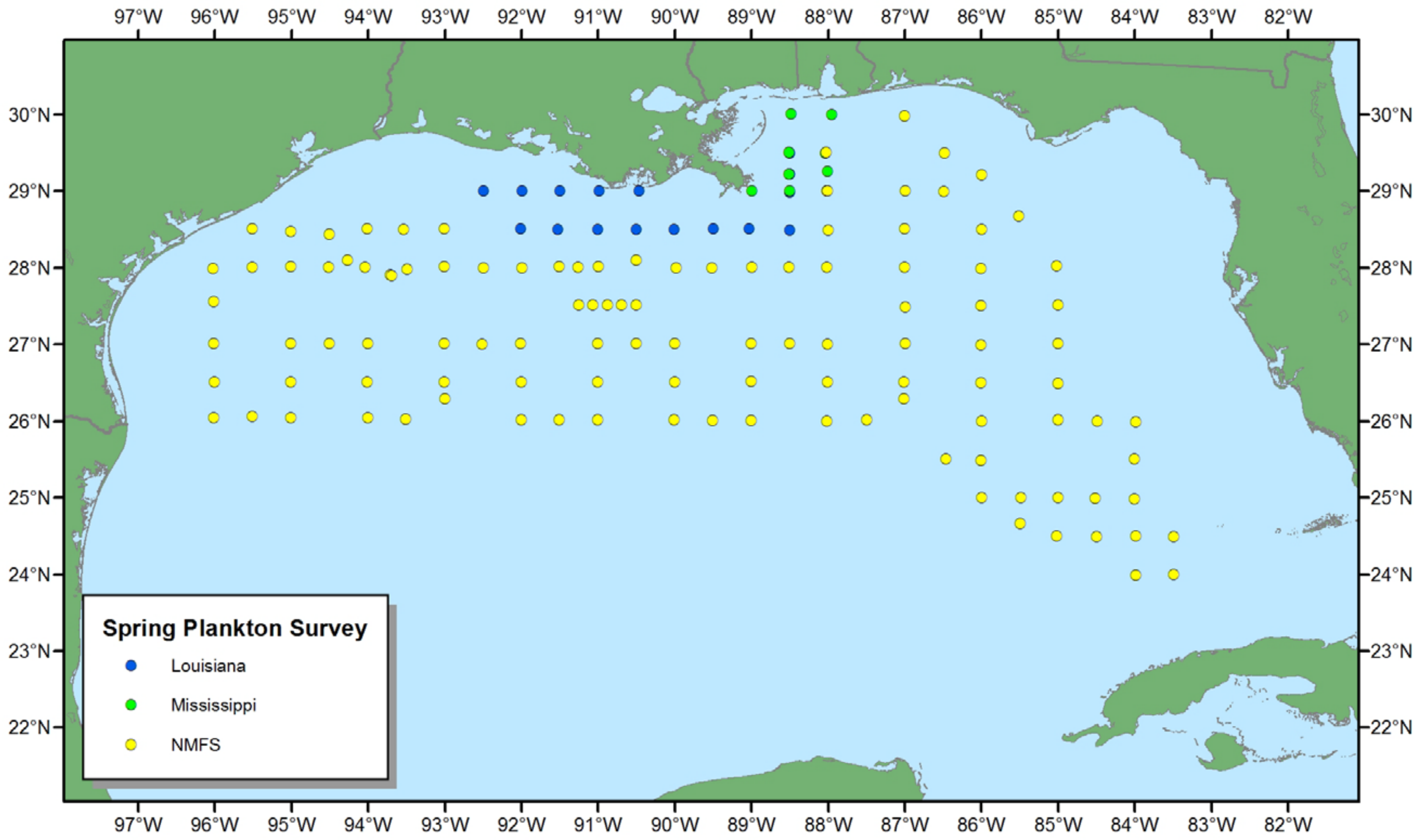

Figure 3. Locations of plankton and environmental stations during the 2013 Spring Plankton Survey.

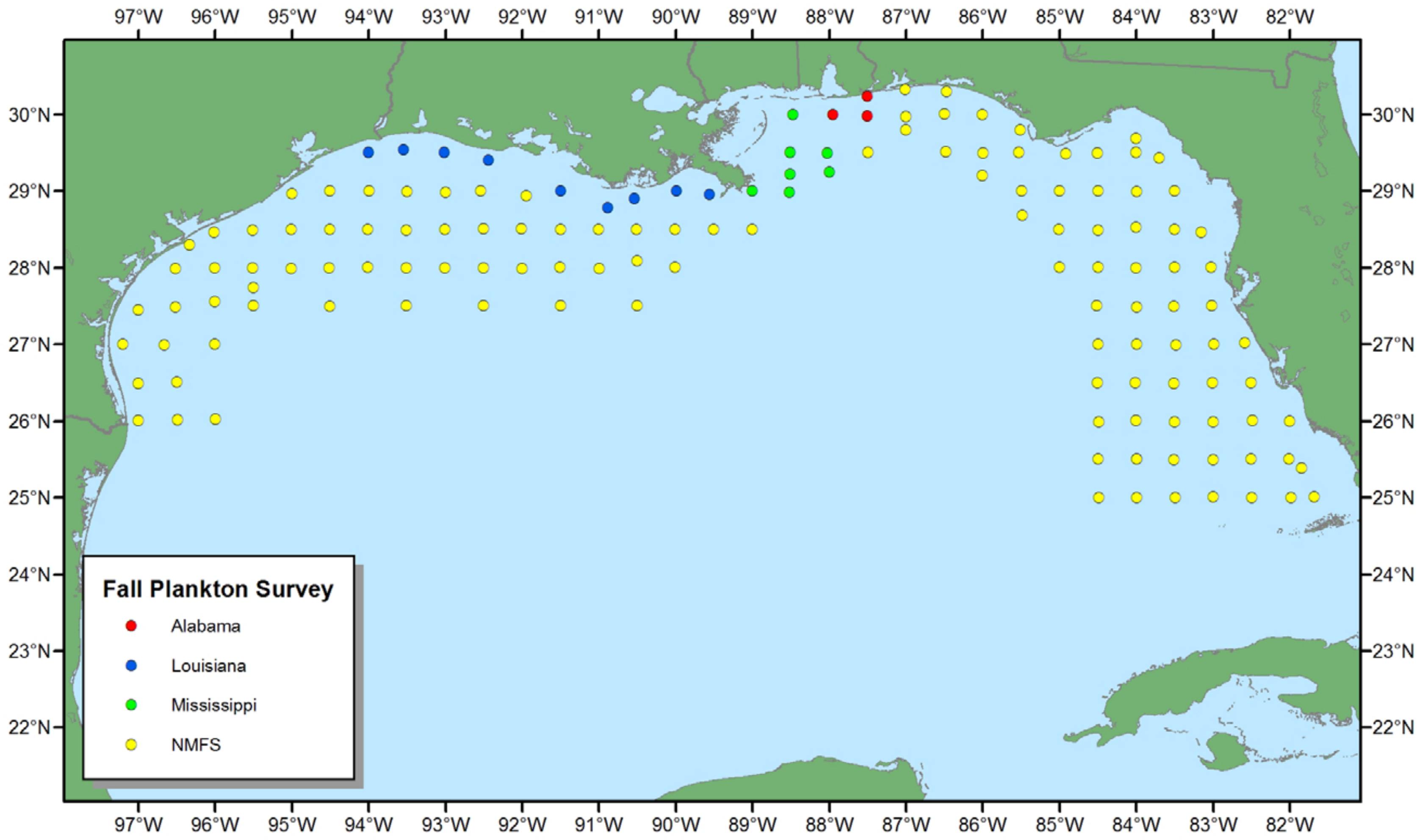

Figure 4. Locations of stations during the 2013 Fall Plankton Survey.

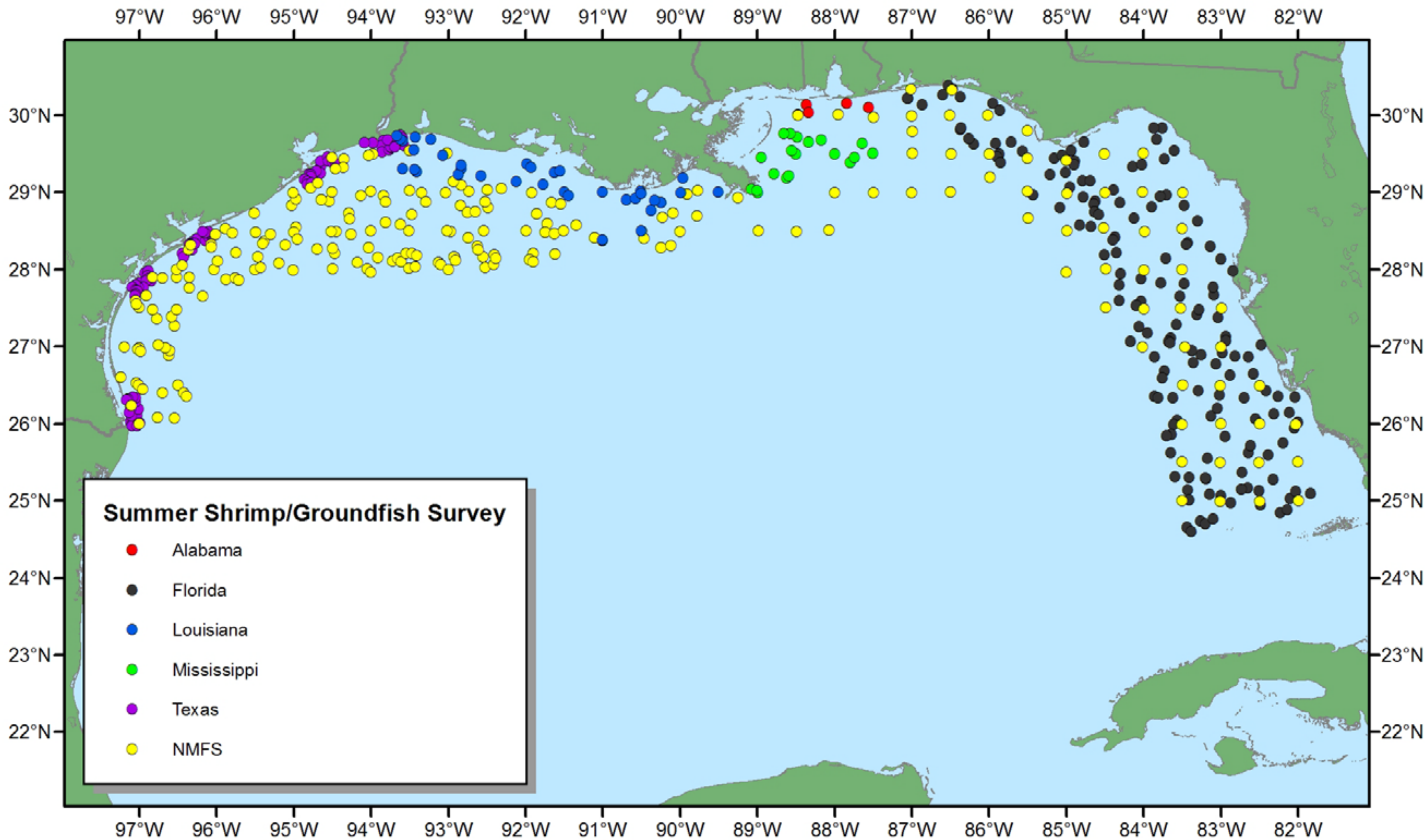

Figure 5. Locations of stations during the 2013 Summer Shrimp/Groundfish Survey.

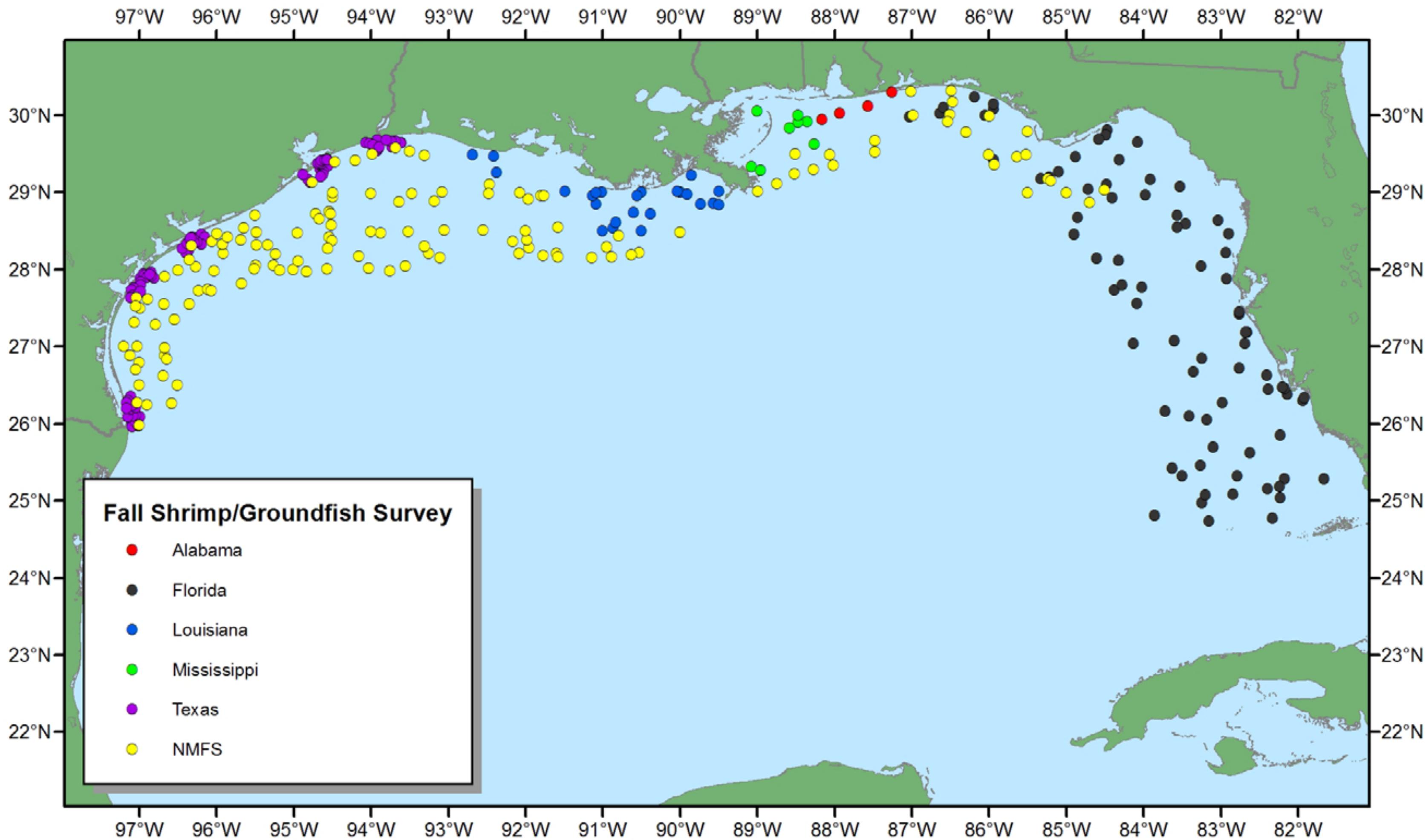

Figure 6. Locations of stations during the 2013 Fall Shrimp/Groundfish Survey.

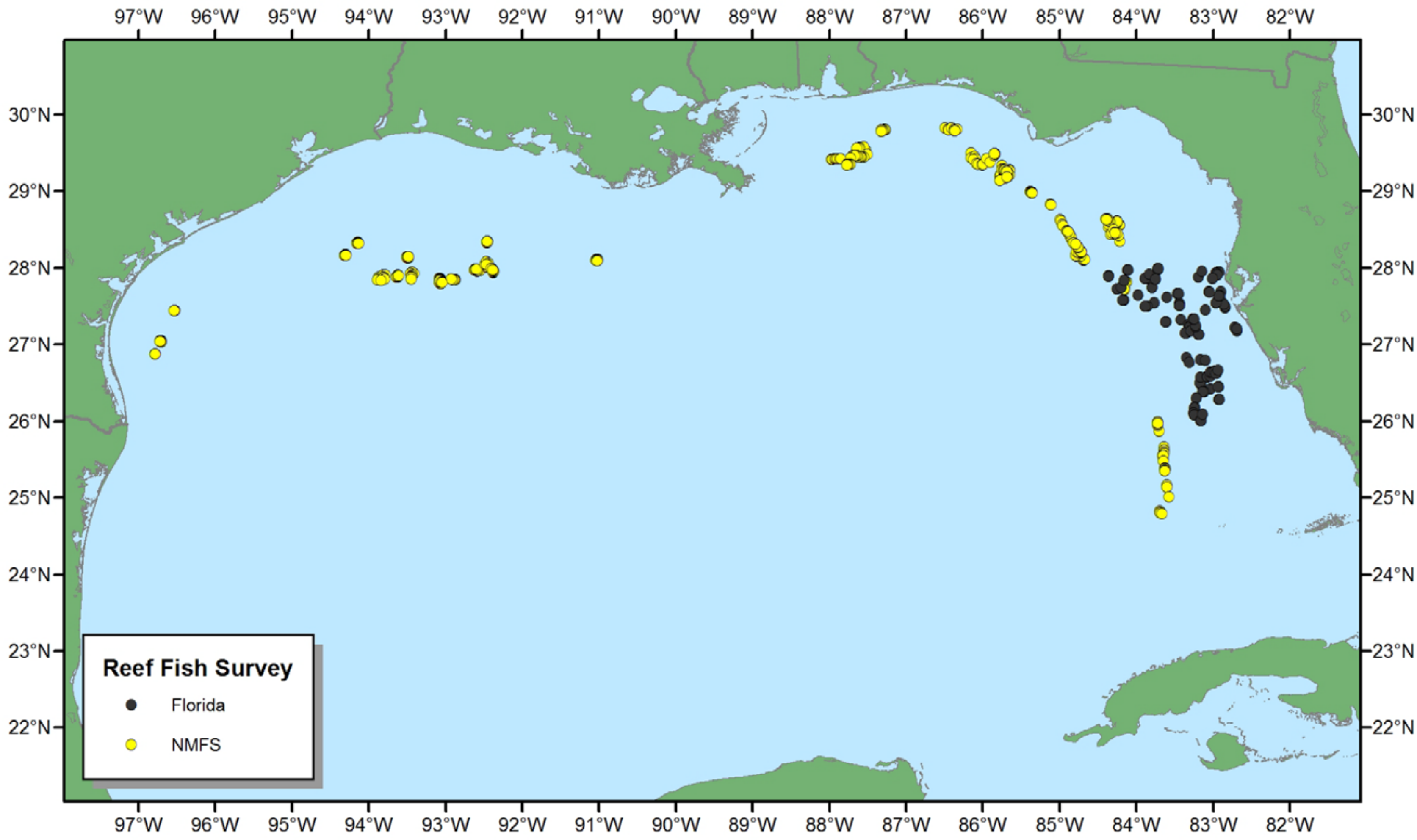

Figure 7. Locations of stations during the 2013 Reef Fish Survey.

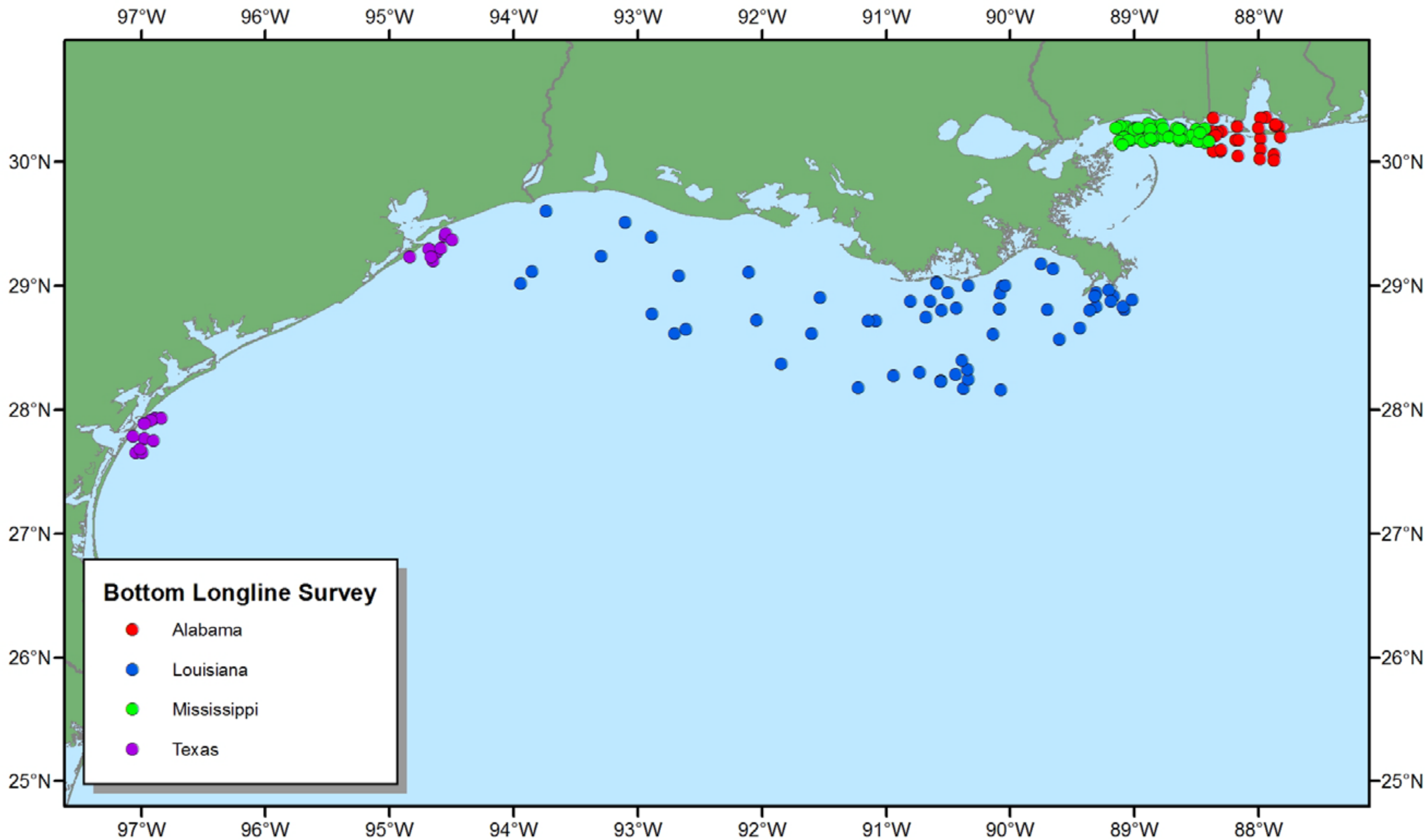

Figure 8. Locations of stations during the 2013 Inshore Bottom Longline Survey.

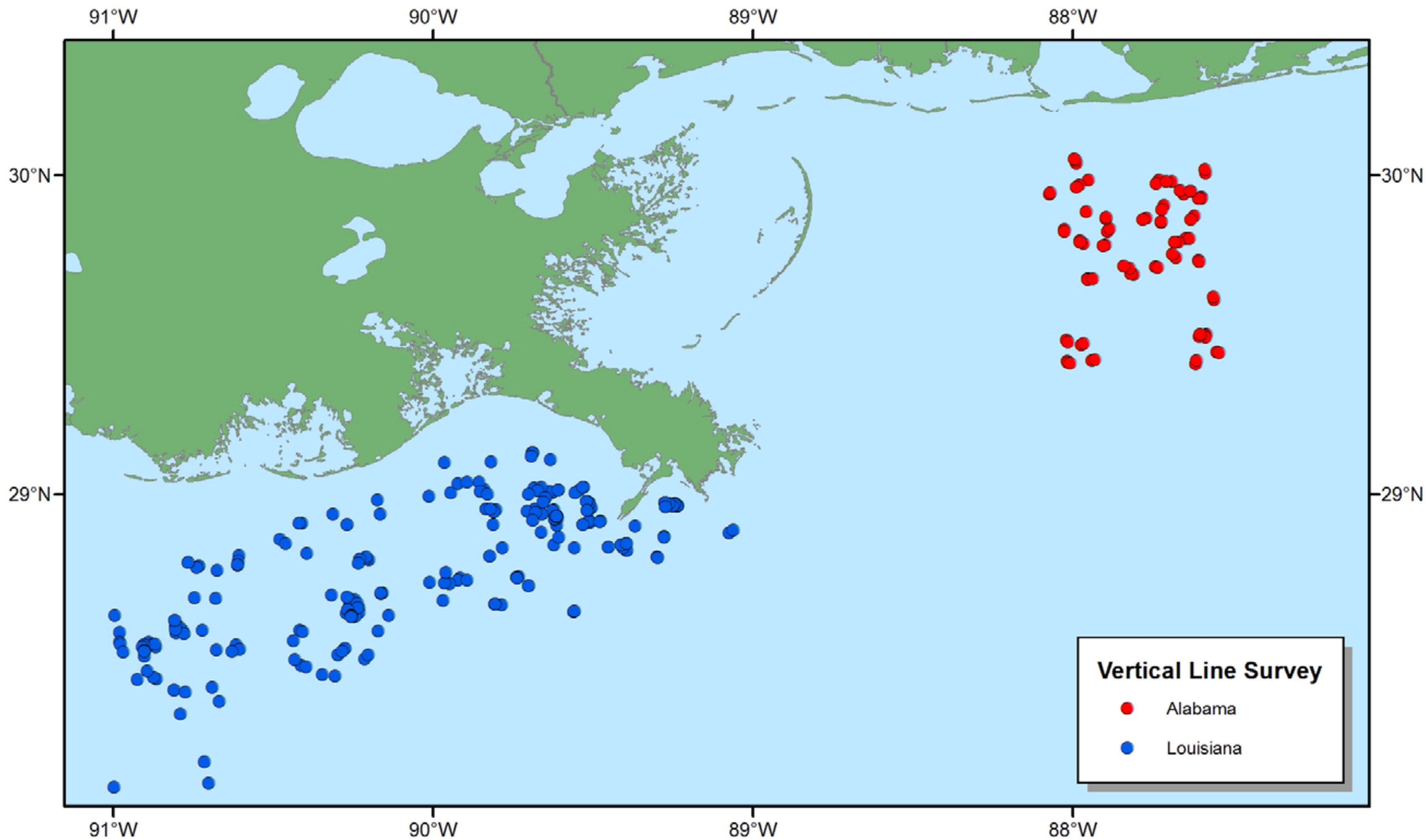

Figure 9. Locations of stations during the 2013 Vertical Line Survey.