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SEAMAP ENVIRONMENTAL AND BIOLOGICAL ATLAS OF THE GULF OF MEXICO, 2009

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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 2008 (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) and 2008 (Rester 2011). 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 March 2009, 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 2008. Overall survey objectives in 1982 to 2009 were to assess the distribution and abundance of recreational and commercial organisms collected by plankton, trap/video, bottom longlines, 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 twenty-seventh in a series of SEAMAP environmental and biological atlases presents such data, in a summarized form, collected during the 2009 SEAMAP surveys.

MATERIALS AND METHODS

Methodology for the 2009 SEAMAP surveys is similar to that of the 1982 through 2008 surveys. Sampling was conducted within the U.S. Exclusive Economic Zone (EEZ) and state territorial waters. The Alabama vessel A.E. VERRILL (January 21), the Louisiana vessel PELICAN (January 26-29), and Texas vessels SAN JACINTO, SABINE LAKE, MATAGORDA BAY, NUECES and R.J. KEMP (February 3-24) sampled waters off Alabama, Louisiana, and Texas as part of the Winter Shrimp/Groundfish Survey.

The NOAA Ship OREGON II collected plankton and environmental data during the Winter Plankton Survey from February 8 to March 14 while the Mississippi vessel TOMMY MUNRO sampled from March 3-5. The NOAA Ship GORDON GUNTER collected plankton and environmental data during the Spring Plankton Survey from April 3 to June 1. Vessels that participated in collecting plankton and environmental data during the Fall Plankton Survey included the NOAA Ship GORDON GUNTER (August 26 - September 28), USM/GCRL vessel TOMMY MUNRO (September 16-17), Louisiana vessel PELICAN (September 22-25), and the Alabama vessel A.E. VERRILL (September 2).

The Louisiana vessel PELICAN sampled waters off Louisiana from March 15-18 during the Spring Shrimp/Groundfish Survey. Vessels that participated in the Summer Shrimp/Groundfish Survey and concurrently sampled plankton and environmental data included the USM/GCRL vessel TOMMY MUNRO (June 2 - July 1), the Louisiana vessel PELICAN (June 16-19), and the NOAA Ship OREGON II (June 8 - July 17). The A.E. VERRILL (June 8-11), Texas vessels SAN JACINTO, SABINE LAKE, MATAGORDA BAY, NUECES and R.J. KEMP (June 1-24), and Florida using the TOMMY MUNRO (July 10-30), did not sample plankton in conjunction with the summer survey.

The NOAA Ship OREGON II participated in the Reef Fish Survey from April 15 - May 28, while the NOAA Ship GANDY participated in the Reef Fish Survey from June 11 - August 1.

Vessels that participated in the Fall Shrimp/Groundfish Survey and concurrently sampled plankton and environmental data included the NOAA Ships OREGON II (October 10 - November 20); the USM/GCRL vessel TOMMY MUNRO (October 2-5); and the Louisiana vessel PELICAN (September 22-24). The Alabama vessel A.E. VERRILL (November 7-17), Florida using the TOMMY MUNRO (October 9-28), and Texas vessels SAN JACINTO, SABINE LAKE, MATAGORDA BAY, NUECES and R.J. KEMP (November 2-18) did not sample plankton in conjunction with the fall survey.

Mississippi participated in the Inshore Bottom Longline Survey that compliments an existing NMFS offshore bottom longline survey. Mississippi conducted bottom longline sampling monthly from March 12 to October 12.

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 (except those collected by Louisiana vessels) 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. Plankton samples collected by Louisiana vessels were retained by LDWF for sorting and identification at their facilities using the same protocols used at ZSIOP. 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 and LDWF were sent to the SEAMAP Archiving Center, managed in conjunction with the FWC, for long-term storage under museum conditions.

[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.

Sorted ichthyoplankton samples from 1982 through 2008 are available for loan to researchers throughout the country. The alternate bongo and neuston samples from each station are retained at USM/GCRL as a backup for those samples transshipped to ZSIOP in case of loss or damage during transit. These backup unsorted plankton samples are curated and housed at the SEAMAP Invertebrate Plankton Archiving Center, managed in conjunction with USM/GCRL, and are available for use by researchers.

See the SEAMAP Operations Manual for a more detailed description of sampling methods and protocols. Refer to the NOAA vessel cruise reports for more specific information on the individual SEAMAP Plankton Surveys conducted during 2009.

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 Centigrade.
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. Values in the tables that follow are the mean of the three samples.

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) and appears in the Tables as such.

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

The sampling strategy and a description of the statistical rationale for the sampling design as described by Nichols in the 1982 SEAMAP Atlas (Stuntz et al. 1985) have been modified. Since 1987, the strategy has been that day/night sampling sites were chosen randomly in areas stratified by depth and statistical area. These areas are shrimp statistical zones 4 through 21 (Figure 1). Trawl stations sampled by NMFS, Florida, Alabama, Mississippi, and Louisiana are made with a standard SEAMAP 40-ft net, and Texas sampled with a 20-ft net. Depth strata consisted of 1 fm intervals from 5 to 20 fm, a 2 fm interval from 20 to 22 fm, a 3 fm interval from 22 to 25 fm, 5 fm intervals from 25 to 50 fm and a 10 fm interval from 50 to 60 fm. Trawls were towed perpendicularly to the depth contours and covered the entire depth stratum on each station. Single tows were for a maximum of 55 minutes; for certain stations, a series of consecutive trawl tows was necessary to cover a given depth stratum, with a minimum individual tow across each stratum of 10 minutes and a maximum tow of 55 minutes. The Texas vessels towed 10 minutes parallel to the depth stratum. The Louisiana samples did not cover a complete depth stratum on several stations because of the distance between depth contours.

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 4 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.

Winter Shrimp/Groundfish Survey

The design of the Winter Shrimp/Groundfish Survey was similar to the other Shrimp/Groundfish Surveys. The Winter Shrimp/Groundfish Survey sampled waters off Alabama in NMFS statistical zone 11, off Louisiana in NMFS statistical zones 13-15, and off Texas in NMFS statistical zones 17-21 (Figure 1).

Spring Shrimp/Groundfish Survey

The design of the Spring Shrimp/Groundfish Survey was similar to the other Shrimp/Groundfish Surveys. During the Spring Shrimp/Groundfish Survey, Louisiana completed trawl stations off the coast of Louisiana in NMFS shrimp statistical zones 13 through 15 (Figure 1). Catch rates were treated in the same manner as the other Shrimp/Groundfish Survey, with the exception to shrimp catches, where Louisiana measures a minimum of 50 shrimp.

REEF FISH SURVEY

The primary purpose of this survey is to assess relative abundance and compute population estimates of reef fishes 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 fishes 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.

INSHORE 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 are to collect information on coastal shark and finfish abundances and distribution with a 1-mile longline and to collect environmental data. During the 2009 Inshore Bottom Longline Survey, the survey design included three Gulf of Mexico sampling regions: Mississippi Sound, south of the Mississippi and Alabama Barrier Islands, and northern Chandeleur Sound.

Stations were chosen randomly within each area and were stratified by depth (0-5m, 5-10m, and 10-20m). The stations were sampled over a four-day period 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 shark 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 weights. 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. This research is conducted on the USM/GCRL vessel TOM MCILWAIN.

RESULTS

PLANKTON SURVEYS

The SEAMAP Archiving Center received 29,700 identified ichthyoplankton lots in 2009. Most of these samples have been accessioned into the SEAMAP Archiving Center computer systems and the remaining samples are being prepared for accession.

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

TRAWL SURVEYS

Winter Shrimp/Groundfish Survey

Alabama, Louisiana, and Texas completed the Winter Shrimp/Groundfish Survey in January and February. A plot of station locations is presented in Figure 5. A species composition list is presented in Table 2 ranked in order of abundance, within the categories of finfish, crustaceans, and other invertebrates.

Spring Shrimp/Groundfish Survey

Louisiana completed the Spring Shrimp/Groundfish Survey in April. It has always been a goal of SEAMAP to conduct seasonal trawl surveys, but funding limitations have prevented all SEAMAP partners from participating. A plot of station locations is presented in Figure 6 while a species composition list is listed in Table 3.

Summer Shrimp/Groundfish Survey

Shrimp and groundfish sampling was conducted during June through July from south of Tampa, Florida to Brownsville, Texas. Figure 7 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 4, 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 September through November from off Tampa, Florida to Brownsville, Texas. Figure 8 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 5, 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 150 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 August by NMFS personnel. Station locations are plotted in Figure 9. A species composition listing from the traps is presented in Table 6. The species list for Table 6 is ranked in order of abundance. Video tapes from all sources were analyzed using NMFS standardized protocols.

INSHORE BOTTOM LONGLINE SURVEY

Station locations for the Inshore Bottom Longline Survey are plotted in Figure 10. A species composition list is presented in Table 7. The species list is ranked in order of abundance.

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 Gulf-wide plankton and Fall Mackerel 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, 1985-2008. 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 2009. This report contained the results and an overview of the effect of the 2008 Texas Closure. After review of these data and other information, the GMFMC voted to continue the Texas Closure for 2009.

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 approved by the Subcommittee. 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 2009.

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

Table 2. 2009 Winter Shrimp/Groundfish Survey species composition list, 110 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	7233	322.8	60	54.5
Cynoscion nothus	silver seatrout	1638	30.1	62	56.4
Leiostomus xanthurus	spot	1416	100.2	33	30.0
Cynoscion arenarius	sand seatrout	1186	44.1	51	46.4
Stellifer lanceolatus	star drum	572	6.9	59	53.6
Stenotomus caprinus	longspine porgy	523	15.6	6	5.5
Larimus fasciatus	banded drum	422	6.8	31	28.2
Trichiurus lepturus	Atlantic cutlassfish	383	3.8	25	22.7
Prionotus roseus	bluespotted searobin	339	6.6	14	12.7
Prionotus tribulus	bighead searobin	283	1.2	14	12.7
Citharichthys spilopterus	bay whiff	266	2.2	24	21.8
Peprilus burti	gulf butterfish	207	1.2	54	49.1
Syacium gunteri	shoal flounder	182	1.9	26	23.6
Bairdiella chrysoura	silver perch	170	4.3	7	6.4
Sphoeroides parvus	least puffer	145	1.1	24	21.8
Ariopsis felis	hardhead catfish	113	6.0	18	16.4
Prionotus longispinosus	bigeye searobin	102	3.7	15	13.6
Anchoviella perfasciata	Poey's anchovy	96	2.0	7	6.4
Menticirrhus americanus	southern kingfish	87	6.3	29	26.4
Diplectrum bivittatum	dwarf sand perch	72	1.1	13	11.8
Etropus crossotus	fringed flounder	49	0.8	17	15.5
Chaetodipterus faber	Atlantic spadefish	41	0.7	9	8.2
Bagre marinus	gafftopsail catfish	36	1.1	11	10.0
Harengula jaguana	scaled sardine	34	1.1	1	0.9
Lagodon rhomboides	pinfish	33	1.1	8	7.3
Anchoa mitchilli	bay anchovy	29	0.1	13	11.8

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Synodus foetens	inshore lizardfish	28	3.2	10	9.1
Lutjanus campechanus	red snapper	26	0.6	8	7.3
Syacium papillosum	dusky flounder	24	0.4	4	3.6
Antennarius radiosus	singlespot frogfish	22	0.1	5	4.5
Symphurus plagiusa	blackcheek tonguefish	22	0.5	18	16.4
Peprilus paru	harvestfish	22	0.9	12	10.9
Prionotus rubio	blackwing searobin	18	0.4	15	13.6
Engyophrys senta	spiny flounder	16	0.2	4	3.6
Orthopristis chrysoptera	pigfish	15	0.9	7	6.4
Etropus cyclosquamus	shelf flounder	14	0.1	3	2.7
Porichthys plectrodon	Atlantic midshipman	13	0.2	5	4.5
Paralichthys albigutta	gulf flounder	12	1.7	1	0.9
Urophycis floridana	southern hake	9	0.1	8	7.3
Lagocephalus laevigatus	smooth puffer	9	0.1	5	4.5
Dorosoma petenense	threadfin shad	8	0.2	5	4.5
Chloroscombrus chrysurus	Atlantic bumper	8	0.1	6	5.5
Ophidion josephi	crested cusk-eel	8	0.2	3	2.7
Upeneus parvus	dwarf goatfish	7	0.1	6	5.5
Anchoa hepsetus	striped anchovy	7	0.1	2	1.8
Selene setapinnis	Atlantic moonfish	7	0.1	3	2.7
Bollmannia communis	ragged goby	7	0.0	4	3.6
Carcharhinus signatus	night shark	7	6.6	1	0.9
Centropristis philadelphica	rock sea bass	6	0.2	4	3.6
Symphurus parvus	pygmy tonguefish	5	0.1	1	0.9
Brevoortia patronus	gulf menhaden	5	0.2	5	4.5
Selene vomer	lookdown	5	0.1	3	2.7
Dasyatis sabina	Atlantic stringray	4	2.0	3	2.7
Stephanolepis hispida	planehead filefish	4	0.0	3	2.7
Achirus lineatus	lined sole	3	0.0	2	1.8
Syngnathus louisianae	chain pipefish	3	0.0	2	1.8

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Cyclopsetta fimbriata	spotfin flounder	3	0.5	1	0.9
Lepophidium brevibarbe	blackedge cusk-eel	2	0.1	1	0.9
Trachurus lathami	rough scad	2	0.0	1	0.9
Balistes capriscus	gray triggerfish	2	0.3	2	1.8
Scorpaena calcarata	smoothhead scorpionfish	2	0.4	1	0.9
Caranx crysos	blue runner	2	0.1	1	0.9
Urophycis regia	spotted hake	2	0.0	1	0.9
Halieutichthys aculeatus	pancake batfish	2	0.0	2	1.8
Sciaenops ocellatus	red drum	2	13.7	1	0.9
Symphurus civitatium	offshore tonguefish	2	0.3	1	0.9
Pogonias cromis	black drum	1	8.3	1	0.9
Caranx hippos	crevalle jack	1	0.0	1	0.9
Conodon nobilis	barred grunt	1	0.0	1	0.9
Menidia beryllina	inland silverside	1	0.0	1	0.9
Gobionellus oceanicus	highfin goby	1	0.0	1	0.9
Trinectes maculatus	hogchoker	1	0.0	1	0.9
Dorosoma cepedianum	gizzard shad	1	0.1	1	0.9
Ogcocephalus declivirostris	slantbrow batfish	1	0.0	1	0.9
Sphyrna tiburo	bonnethead	1	1.7	1	0.9
Ogcocephalus pantostictus	spotted batfish	1	0.1	1	0.9
Peprilus triacanthus	butterfish	1	0.0	1	0.9
Cyclopsetta chittendeni	Mexican flounder	1	0.0	1	0.9
Astroscopus y-graecum	southern stargazer	1	0.0	1	0.9
Narcine brasiliensis	lesser electric ray	1	1.2	1	0.9
Dasyatis say	bluntnose stingray	1	2.7	1	0.9
Paraconger caudilimbatus	margintail conger	1	0.0	1	0.9
Sphyraena guachancho	guaguanche	1	0.1	1	0.9

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Crustaceans					
Litopenaeus setiferus	white shrimp	3677	39.2	70	63.6
Trachypenaeus spp.	roughneck shrimps	1595	4.0	22	20.0
Rimapenaeus similis	roughback shrimp	1505	2.7	60	54.5
Farfantepenaeus aztecus	brown shrimp	575	8.0	31	28.2
Xiphopenaeus kroyeri	seabob	532	1.5	10	9.1
Callinectes similis	lesser blue crab	443	2.7	49	44.5
Squilla empusa	mantis shrimp	313	3.3	45	40.9
Portunus gibbesii	irridescent swimming crab	223	0.9	31	28.2
Sicyonia dorsalis	lesser rock shrimp	113	0.2	17	15.5
Farfantepenaeus duorarum	pink shrimp	67	1.6	16	14.5
Rimapenaeus constrictus	roughneck shrimp	39	0.1	10	9.1
Persephona crinita	pink purse crab	27	0.1	15	13.6
Squilla chydaea	mantis shrimp	23	0.1	5	4.5
Libinia dubia	longnose spider crab	10	0.7	8	7.3
Calappa sulcata	yellow box crab	9	1.1	7	6.4
Pagurus pollicaris	flatclaw hermit crab	7	0.2	5	4.5
Portunus spinimanus	blotched swimming crab	7	0.0	3	2.7
Sicyonia brevirostris	brown rock shrimp	6	0.1	5	4.5
Persephona mediterranea	mottled purse crab	5	0.0	5	4.5
Gibbesia neglecta	mantis shrimp	5	0.0	2	1.8
Leptochela		4	0.0	2	1.8
Hepatus epheliticus	calico crab	4	0.0	4	3.6
Parapenaeus politus	deepwater rose shrimp	3	0.0	2	1.8
Pagurus longicarpus	long-armed hermit crab	3	0.0	3	2.7
Ovalipes floridanus	Florida lady crab	3	0.0	3	2.7
Anasimus latus	stilt spider crab	3	0.0	3	2.7
Leiolambrus nitidus	white elbow crab	2	0.0	2	1.8

Table 2. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Arenaeus cribrarius	speckled swimming crab	2	0.0	2	1.8
Cryptodromiopsis antillensis	hairy sponge crab	1	0.0	1	0.9
Metoporhaphis calcarata	false arrow crab	1	0.0	1	0.9
Isopoda	isopods	1	0.0	1	0.9
Eurypanopeus		1	0.0	1	0.9
Solenocera spp.	humpback shrimps	1	0.0	1	0.9
Callinectes sapidus	blue crab	1	0.1	1	0.9
Livoneca redmanii	isopod	1	0.0	1	0.9
Others					
Lolliguncula brevis	Atlantic brief squid	970	6.6	88	80.0
Loligo pealeii	longfin squid	43	2.6	21	19.1
Cantharus cancellarius	cancellate cantharus	27	0.1	4	3.6
Armina		20	0.0	5	4.5
Loligo spp.	squids	15	0.1	5	4.5
Neverita duplicata	shark eye	10	0.1	9	8.2
Loligo plei	arrow squid	3	0.1	3	2.7
Oliva sayana	lettered olive	1	0.0	1	0.9
Aplysia brasiliana	mottled seahare	1	0.1	1	0.9
Busycon sinistrum	lightning whelk	1	0.0	1	0.9

Table 3. 2009 Spring Shrimp/Groundfish Survey species composition list, 24 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	7614	498.3	24	100.0
Stellifer lanceolatus	star drum	5673	35.1	20	83.3
Cynoscion nothus	silver seatrout	1326	79.1	14	58.3
Cynoscion arenarius	sand seatrout	997	67.7	18	75.0
Trichiurus lepturus	Atlantic cutlassfish	654	17.3	18	75.0
Prionotus roseus	bluespotted searobin	487	7.4	23	95.8
Anchoa mitchilli	bay anchovy	435	1.9	15	62.5
Citharichthys spilopterus	bay whiff	424	4.2	19	79.2
Leiostomus xanthurus	spot	345	26.0	20	83.3
Anchoviella perfasciata	Poey's anchovy	336	8.5	12	50.0
Syacium gunteri	shoal flounder	264	3.6	18	75.0
Etropus crossotus	fringed flounder	245	3.9	21	87.5
Sphoeroides parvus	least puffer	171	1.0	20	83.3
Larimus fasciatus	banded drum	136	2.5	16	66.7
Symphurus plagiusa	blackcheek tonguefish	134	2.4	22	91.7
Diplectrum bivittatum	dwarf sand perch	95	1.8	6	25.0
Brevoortia patronus	gulf menhaden	92	9.6	5	20.8
Trachurus lathami	rough scad	74	0.7	9	37.5
Prionotus tribulus	bighead searobin	73	0.7	8	33.3
Menticirrhus americanus	southern kingfish	32	4.8	8	33.3
Gobionellus boleosoma	darter goby	24	0.1	5	20.8
Balistes capriscus	gray triggerfish	18	3.6	2	8.3
Lutjanus campechanus	red snapper	14	0.4	3	12.5
Peprilus triacanthus	butterfish	13	0.9	4	16.7
Peprilus paru	harvestfish	10	0.7	4	16.7
Anchoa hepsetus	striped anchovy	10	0.1	2	8.3
Ophidion josephi	crested cusk-eel	10	0.4	2	8.3

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Antennarius radiosus	singlespot frogfish	10	0.0	7	29.2
Sphyraena guachancho	guaguanche	9	1.4	1	4.2
Porichthys plectrodon	Atlantic midshipman	9	0.2	6	25.0
Diplectrum formosum	sand perch	9	0.2	1	4.2
Polydactylus octonemus	Atlantic threadfin	8	0.2	2	8.3
Selene setapinnis	Atlantic moonfish	8	0.2	4	16.7
Bairdiella chrysoura	silver perch	7	0.1	2	8.3
Stephanolepis hispida	planehead filefish	6	0.0	5	20.8
Lepophidium brevibarbe	blackedge cusk-eel	6	0.1	4	16.7
Ariopsis felis	hardhead catfish	6	1.8	5	20.8
Centropristis philadelphica	rock sea bass	5	0.1	3	12.5
Bagre marinus	gafftopsail catfish	5	0.6	3	12.5
Archosargus probatocephalus	sheepshead	4	9.5	1	4.2
Paralichthys lethostigma	southern flounder	4	1.8	3	12.5
Saurida brasiliensis	largescale lizardfish	3	0.1	2	8.3
Cyprinodon variegatus	sheepshead minnow	3	0.0	1	4.2
Chaetodipterus faber	Atlantic spadefish	3	0.1	3	12.5
Opisthonema oglinum	Atlantic thread herring	2	0.1	1	4.2
Urophycis floridana	southern hake	2	0.1	2	8.3
Upeneus parvus	dwarf goatfish	2	0.0	1	4.2
Ancylopsetta ommata	ocellated flounder	2	0.2	2	8.3
Chloroscombrus chrysurus	Atlantic bumper	2	0.0	2	8.3
Cyclopsetta chittendeni	Mexican flounder	2	0.1	1	4.2
Synodus foetens	inshore lizardfish	1	0.1	1	4.2
Sciaenops ocellatus	red drum	1	7.0	1	4.2
Selene vomer	lookdown	1	0.0	1	4.2
Citharichthys macrops	spotted whiff	1	0.0	1	4.2
Cyclopsetta fimbriata	spotfin flounder	1	0.2	1	4.2
Halieutichthys aculeatus	pancake batfish	1	0.0	1	4.2

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Crustaceans					
Trachypenaeus spp.	roughneck shrimps	2672	7.9	21	87.5
Litopenaeus setiferus	white shrimp	622	20.6	22	91.7
Callinectes similis	lesser blue crab	521	5.9	22	91.7
Rimapenaeus similis	roughback shrimp	317	0.7	1	4.2
Squilla empusa	mantis shrimp	280	3.0	18	75.0
Sicyonia dorsalis	lesser rock shrimp	129	0.2	7	29.2
Portunus gibbesii	irridescent swimming crab	113	0.7	18	75.0
Farfantepenaeus aztecus	brown shrimp	103	1.7	16	66.7
Squilla chydaea	mantis shrimp	80	0.4	10	41.7
Callinectes sapidus	blue crab	28	6.4	9	37.5
Stenorhynchus seticornis	yellowline arrow crab	17	0.0	6	25.0
Calappa sulcata	yellow box crab	16	3.0	7	29.2
Portunus spinimanus	blotched swimming crab	13	0.1	7	29.2
Sicyonia brevirostris	brown rock shrimp	12	0.1	5	20.8
Penaeopsis serrata	megalops shrimp	8	0.0	1	4.2
Eurypanopeus		6	0.0	1	4.2
Hepatus epheliticus	calico crab	6	0.1	4	16.7
Libinia emarginata	portly spider crab	5	0.2	4	16.7
Persephona mediterranea	mottled purse crab	5	0.0	4	16.7
Leptochela		4	0.0	3	12.5
Metoporhaphis calcarata	false arrow crab	4	0.0	2	8.3
Persephona crinita	pink purse crab	3	0.0	2	8.3
Ovalipes floridanus	Florida lady crab	3	0.0	2	8.3
Xiphopenaeus kroyeri	seabob	2	0.0	1	4.2
Farfantepenaeus duorarum	pink shrimp	2	0.0	2	8.3
Speocarcinus lobatus	gulf squareback crab	1	0.0	1	4.2
Anasimus latus	stilt spider crab	1	0.0	1	4.2

Table 3. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Sicyonia spp.	rock shrimps	1	0.0	1	4.2
Porcellana sayana	spotted porcelain crab	1	0.0	1	4.2
Others					
Lolliguncula brevis	Atlantic brief squid	491	7.6	22	91.7
Loligo spp.	squids	75	1.7	9	37.5

Table 4. 2009 Summer Shrimp/Groundfish Survey species composition list, 617 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	280846	8564.5	303	49.1
Stenotomus caprinus	longspine porgy	40393	1374.3	324	52.5
Chloroscombrus chrysurus	Atlantic bumper	28259	1064.5	190	30.8
Trichiurus lepturus	Atlantic cutlassfish	24894	552.8	245	39.7
Peprilus burti	gulf butterfish	20120	1058.9	247	40.0
Cynoscion nothus	silver seatrout	18319	689.0	202	32.7
Prionotus roseus	bluespotted searobin	13462	64.4	76	12.3
Lagodon rhomboides	pinfish	10806	765.1	231	37.4
Prionotus longispinosus	bigeye searobin	9123	192.4	264	42.8
Leiostomus xanthurus	spot	7810	656.2	147	23.8
Haemulon aurolineatum	tomtate	7797	384.4	104	16.9
Cynoscion arenarius	sand seatrout	6642	371.6	227	36.8
Syacium papillosum	dusky flounder	6334	319.8	169	27.4
Trachurus lathami	rough scad	5406	141.1	140	22.7
Harengula jaguana	scaled sardine	5366	216.9	109	17.7
Serranus atrobranchus	blackear bass	4976	39.5	136	22.0
Saurida brasiliensis	largescale lizardfish	4559	19.2	164	26.6
Stephanolepis hispida	planehead filefish	4379	75.0	110	17.8
Synodus foetens	inshore lizardfish	4139	488.9	364	59.0
Anchoa hepsetus	striped anchovy	3591	60.0	111	18.0
Selene setapinnis	Atlantic moonfish	3276	161.4	209	33.9
Larimus fasciatus	banded drum	2961	153.1	97	15.7
Stellifer lanceolatus	star drum	2827	33.3	68	11.0
Centropristis philadelphica	rock sea bass	2537	93.0	211	34.2
Opisthonema oglinum	Atlantic thread herring	2187	207.3	102	16.5
Syacium gunteri	shoal flounder	2118	38.3	172	27.9
Lutjanus synagris	lane snapper	1910	246.0	102	16.5

Table 4. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Orthopristis chrysoptera	pigfish	1815	198.3	49	7.9
Prionotus stearnsi	shortwing searobin	1794	16.0	110	17.8
Diplectrum formosum	sand perch	1757	142.2	123	19.9
Pristipomoides aquilonaris	wenchman	1739	128.2	114	18.5
Upeneus parvus	dwarf goatfish	1633	36.2	128	20.7
Trichopsetta ventralis	sash flounder	1265	29.1	63	10.2
Mullus auratus	red goatfish	1242	84.7	37	6.0
Calamus proridens	littlehead porgy	1200	237.3	59	9.6
Scorpaena calcarata	smoothhead scorpionfish	1195	22.0	43	7.0
Halieutichthys aculeatus	pancake batfish	1176	8.0	127	20.6
Eucinostomus	mojarras	961	45.4	40	6.5
Centropristis ocyurus	bank sea bass	944	37.9	79	12.8
Synodus intermedius	sand diver	911	68.8	94	15.2
Trachinocephalus myops	snakefish	907	63.5	74	12.0
Bellator militaris	horned searobin	841	12.7	40	6.5
Bothus robinsi	twospot flounder	799	22.6	61	9.9
Decapterus punctatus	round scad	795	32.2	48	7.8
Haemulon plumierii	white grunt	754	187.4	35	5.7
Rhomboplites aurorubens	vermilion snapper	725	56.4	52	8.4
Ariopsis felis	hardhead catfish	724	134.6	68	11.0
Prionotus paralatus	Mexican searobin	703	26.0	51	8.3
Citharichthys spilopterus	bay whiff	670	8.1	84	13.6
Peprilus paru	harvestfish	669	47.7	62	10.0
Acanthostracion quadricornis	scrawled cowfish	660	106.1	94	15.2
Eucinostomus gula	silver jenny	629	29.8	46	7.5
Equetus lanceolatus	jackknife fish	607	56.8	49	7.9
Prionotus martis	barred searobin	602	17.2	46	7.5
Sphoeroides dorsalis	marbled puffer	563	23.4	61	9.9
Etropus crossotus	fringed flounder	547	9.2	105	17.0
Lepophidium jeannae	mottled cusk-eel	542	25.9	27	4.4

Table 4. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Lutjanus campechanus	red snapper	518	73.6	133	21.6
Lepophidium brevibarbe	blackedge cusk-eel	516	19.1	73	11.8
Saurida normani	shortjaw lizardfish	516	52.0	25	4.1
Steindachneria argentea	luminous hake	509	4.7	10	1.6
Sardinella aurita	Spanish sardine	478	25.4	49	7.9
Anchoa mitchilli	bay anchovy	467	0.7	19	3.1
Calamus arctifrons	grass porgy	444	64.2	18	2.9
Prionotus scitulus	leopard searobin	432	15.4	23	3.7
Symphurus plagiusa	blackcheek tonguefish	428	12.5	46	7.5
Ophidion holbrookii	bank cusk-eel	415	36.5	43	7.0
Cyclopsetta chittendeni	Mexican flounder	411	44.5	126	20.4
Porichthys plectrodon	Atlantic midshipman	382	9.2	107	17.3
Sphoeroides parvus	least puffer	351	1.5	53	8.6
Synodus	lizard fishes	340	2.0	28	4.5
Menticirrhus americanus	southern kingfish	305	37.9	45	7.3
Urophycis floridana	southern hake	297	28.2	54	8.8
Aluterus schoepfii	orange filefish	296	139.0	52	8.4
Serranus notospilus	saddle bass	282	0.8	12	1.9
Prionotus rubio	blackwing searobin	277	38.9	49	7.9
Diplectrum bivittatum	dwarf sand perch	275	6.1	61	9.9
Serranus phoebe	tattler	255	9.9	14	2.3
Diplodus holbrooki	spottail pinfish	252	19.5	3	0.5
Cynoscion spp.	seatrouts	251	0.9	25	4.1
Brevoortia patronus	gulf menhaden	223	7.6	21	3.4
Prionotus alatus	spiny searobin	213	5.7	28	4.5
Etropus		213	2.3	9	1.5
Scorpaena brasiliensis	barbfish	207	18.3	41	6.6
Synodus poeyi	offshore lizardfish	201	1.5	50	8.1
Lagocephalus laevigatus	smooth puffer	201	5.4	60	9.7
Citharichthys macrops	spotted whiff	198	8.2	50	8.1

Table 4. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Prionotus tribulus	bighead searobin	173	9.1	50	8.1
Kathetostoma albigutta	lancer stargazer	172	7.3	41	6.6
Symphurus diomedeanus	spottedfin tonguefish	169	4.6	44	7.1
Scorpaena agassizii	longfin scorpionfish	162	6.5	18	2.9
Bairdiella chrysoura	silver perch	159	1.0	4	0.6
Etropus cyclosquamus	shelf flounder	156	1.3	18	2.9
Pagrus pagrus	red porgy	151	14.8	27	4.4
Etrumeus teres	round herring	139	0.8	7	1.1
Epinephelus morio	red grouper	138	63.9	36	5.8
Sphoeroides spengleri	bandtail puffer	130	6.6	33	5.3
Hoplunnis macrura	freckled pike-conger	130	1.2	40	6.5
Apogon pseudomaculatus	twospot cardinalfish	126	0.7	17	2.8
Balistes capriscus	gray triggerfish	116	29.3	67	10.9
Sphyraena guachancho	guaguanche	112	20.7	37	6.0
Ancylopsetta ommata	ocellated flounder	112	19.5	60	9.7
Raja texana	roundel skate	105	39.5	57	9.2
Hippocampus erectus	lined seahorse	103	0.7	27	4.4
Bollmannia communis	ragged goby	100	0.2	30	4.9
Hemipteronotus novacula	pearly razorfish	99	4.6	22	3.6
Scorpaena spp.	scorpionfishes	98	2.9	3	0.5
Bregmaceros atlanticus	antenna codlet	97	0.1	33	5.3
Bagre marinus	gafftopsail catfish	97	21.4	7	1.1
Urophycis cirrata	gulf hake	96	2.2	26	4.2
Lutjanus griseus	grey snapper	92	38.6	30	4.9
Paralichthys lethostigma	southern flounder	90	19.0	31	5.0
Cyclopsetta fimbriata	spotfin flounder	88	9.3	40	6.5
Pareques umbrosus	cubbyu	86	5.3	27	4.4
Decapterus macarellus	mackeral scad	86	0.6	9	1.5
Ancylopsetta dilecta	three-eye flounder	84	4.4	33	5.3
Rhynchoconger flavus	yellow conger	80	5.8	19	3.1

Table 4. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Monacanthus ciliatus	fringed filefish	78	1.9	25	4.1
Caranx crysos	blue runner	78	7.3	25	4.1
Selene vomer	lookdown	76	5.1	12	1.9
Brotula barbata	bearded brotula	76	22.9	33	5.3
Ogcocephalus declivirostris	slantbrow batfish	75	1.3	35	5.7
Saurida		69	0.3	9	1.5
Anchoa lyolepis	dusky anchovy	69	0.2	2	0.3
Chaetodipterus faber	Atlantic spadefish	69	8.7	22	3.6
Ogcocephalus pantostictus	spotted batfish	68	10.1	26	4.2
Prionotus ophryas	bandtail searobin	68	4.1	33	5.3
Rhizoprionodon terraenovae	Atlantic sharpnose shark	68	44.8	27	4.4
Paralichthys squamilentus	broad flounder	61	13.1	23	3.7
Calamus bajonado	jolthead porgy	61	1.8	6	1.0
Lachnolaimus maximus	hogfish	61	23.4	16	2.6
Antennarius radiosus	singlespot frogfish	59	0.9	26	4.2
Calamus		58	0.4	15	2.4
Hemicaranx amblyrhynchus	bluntnose jack	56	6.4	14	2.3
Engyophrys senta	spiny flounder	54	0.2	22	3.6
Mustelus canis	smooth dogfish	50	68.8	26	4.2
Chilomycterus schoepfii	striped burrfish	50	10.2	24	3.9
Ophidion grayi	blotched cusk-eel	50	3.6	12	1.9
Chaetodon ocellatus	spotfin butterflyfish	48	4.0	19	3.1
Symphurus civitatium	offshore tonguefish	46	0.9	12	1.9
Urophycis regia	spotted hake	45	2.6	7	1.1
Ogcocephalus parvus	roughback batfish	44	2.6	19	3.1
Apogon affinis	bigtooth cardinalfish	43	0.4	5	0.8
Caulolatilus intermedius	anchor tilefish	42	3.8	17	2.8
Echeneis neucratoides	whitefin sharksucker	41	15.5	14	2.3
Nicholsina usta	emerald parrotfish	41	2.4	21	3.4
Syacium spp.	lefteye flounders	41	2.7	3	0.5

Table 4. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Selar crumenophthalmus	bigeye scad	39	4.4	16	2.6
Rypticus maculatus	whitespotted soapfish	38	1.3	13	2.1
Echeneis naucrates	sharksucker	38	18.4	13	2.1
Sphoeroides nephelus	southern puffer	37	2.7	15	2.4
Gymnothorax saxicola	honeycomb moray	35	3.1	27	4.4
Peristedion gracile	slender searobin	33	0.1	13	2.1
Ophidion josephi	crested cusk-eel	33	1.4	13	2.1
Pomatomus saltatrix	bluefish	33	6.1	3	0.5
Chaetodon sedentarius	reef butterflyfish	32	1.6	9	1.5
Carcharhinus acronotus	blacknose shark	31	51.8	21	3.4
Symphurus urospilus	spottail tonguefish	31	0.9	12	1.9
Seriola dumerili	greater amberjack	30	3.0	9	1.5
Calamus nodosus	knobbed porgy	29	7.1	10	1.6
Pareques iwamotoi	blackbar drum	29	2.4	8	1.3
Saurida caribbaea	smallscale lizardfish	29	0.1	4	0.6
Synodus synodus	red lizardfish	29	2.4	5	0.8
Paralichthys albigutta	gulf flounder	28	14.0	12	1.9
Neomerinthe hemingwayi	spinycheek scorpionfish	28	3.9	12	1.9
Unid.fish	fishes	27	7.7	10	1.6
Carcharhinus limbatus	blacktip shark	27	7.3	5	0.8
Holacanthus bermudensis	blue angelfish	27	11.6	11	1.8
Centropristis striatus	black sea bass	27	4.2	5	0.8
Anchoviella perfasciata	Poey's anchovy	25	0.5	1	0.2
Raja eglanteria	clearnose skate	23	10.0	14	2.3
Calamus leucosteus	whitebone porgy	22	10.0	4	0.6
Squatina dumeril	Atlantic angel shark	21	34.9	11	1.8
Charcharhinus plumbeus	sandbar shark	21	2.9	1	0.2
Bembrops anatirostris	longnose duckbill	20	0.6	3	0.5
Pontinus longispinis	longspine scorpionfish	20	0.2	5	0.8
Paraconger caudilimbatus	margintail conger	20	0.8	8	1.3

Table 4. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Scomberomorus maculatus	Spanish mackerel	20	4.4	13	2.1
Prognathodes aya	bank butterflyfish	18	0.4	6	1.0
Phaeoptyx xenus	sponge cardinalfish	18	0.1	7	1.1
Pomacanthus arcuatus	gray angelfish	18	3.2	7	1.1
Ariomma regulus	spotted driftfish	18	2.8	7	1.1
Gymnachirus texae	fringed sole	18	0.4	10	1.6
Conodon nobilis	barred grunt	17	1.1	3	0.5
Alosa chrysochloris	blue herring	17	1.3	5	0.8
Aluterus heudelotii	dotterel filefish	17	1.0	15	2.4
Bellator brachychir	shortfin searobin	17	0.0	3	0.5
Ophidion beani	longnose cusk-eel	16	1.1	8	1.3
Aluterus scriptus	scrawled filefish	16	2.7	13	2.1
Seriola zonata	banded rudderfish	16	2.1	6	1.0
Apogon spp.	cardinalfishes	16	0.0	6	1.0
Ogcocephalus corniger	longnose batfish	14	0.4	7	1.1
Priacanthus arenatus	bigeye	14	3.1	9	1.5
Trinectes maculatus	hogchoker	14	0.2	3	0.5
Otophidium omostigmum	polka-dot cusk-eel	14	0.2	5	0.8
Etelis oculatus	queen snapper	14	0.0	1	0.2
Pristigenys alta	short bigeye	13	0.8	9	1.5
Chilomycterus antennatus	bridled burrfish	12	1.4	4	0.6
Ogcocephalus cubifrons	polka-dot batfish	12	5.0	12	1.9
Opsanus pardus	leopard toadfish	12	0.7	10	1.6
Rhinoptera bonasus	cownose ray	12	92.8	8	1.3
Mulloidichthys martinicus	yellow goatfish	12	0.1	1	0.2
Physiculus fulvus	metallic codling	12	0.1	3	0.5
Diplectrum	perch	11	0.0	2	0.3
Seriola	amberjacks	11	0.9	3	0.5
Hoplunnis tenuis	spotted pike conger	11	0.1	3	0.5
Dasyatis americana	southern stingray	11	16.9	8	1.3

Table 4. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Hemanthias aureorubens	streamer bass	10	0.1	2	0.3
Sphyraena borealis	northern sennet	10	1.6	4	0.6
Gymnothorax nigromarginatus	blackedge moray	10	1.6	7	1.1
Menticirrhus saxatilis	northern kingfish	10	1.8	5	0.8
Urophycis spp.	hakes	10	0.2	3	0.5
Hoplunnis diomedianus	blacktail pike-conger	9	0.0	5	0.8
Decodon puellaris	red hogfish	9	0.4	4	0.6
Neobythites gilli	cusk-eel	9	0.0	4	0.6
Pseudupeneus maculatus	spotted goatfish	9	0.6	3	0.5
Mycteroperca microlepis	gag	9	6.3	6	1.0
Prionotus	searobins	9	0.0	2	0.3
Gastropsetta frontalis	shrimp flounder	8	0.8	8	1.3
Sphyrna tiburo	bonnethead	8	29.8	4	0.6
Rhinobatos lentiginosus	Atlantic guitarfish	8	4.7	8	1.3
Gobiesox strumosus	skilletfish	8	0.0	5	0.8
Ophidion	cusk-eels	8	0.1	6	1.0
Rachycentron canadum	cobia	8	8.6	3	0.5
Monacanthus tuckeri	slender filefish	7	0.0	1	0.2
Eucinostomus harengulus	tidewater mojarra	7	0.2	1	0.2
Hoplunnis		7	0.1	1	0.2
Astrapogon alutus	bronze cardinalfish	7	0.0	5	0.8
Ophidion selenops	mooneye cusk-eel	7	0.0	7	1.1
Ariomma bondi	silver-rag	7	0.3	4	0.6
Caulolatilus chrysops	goldface tilefish	6	1.2	4	0.6
Pomacentrus variabilis	cocoa damselfish	6	0.1	6	1.0
Epinephelus flavolimbatus	yellowedge grouper	6	0.5	4	0.6
Scorpaena dispar	hunchback scorpionfish	6	0.1	3	0.5
Narcine brasiliensis	lesser electric ray	6	1.9	4	0.6
Chilomycterus atringa	spotted burrfish	6	0.0	1	0.2
Pomacentrus partitus	bicolor damselfish	6	0.1	4	0.6

Table 4. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Phaeoptyx pigmentaria	dusky cardinalfish	6	0.0	2	0.3
Carcharhinus brevipinna	spinner shark	6	1.0	2	0.3
Ophichthus gomesii	shrimp eel	6	2.5	3	0.5
Lophius americanus	goosefish	6	0.5	1	0.2
Lepophidium spp.	cusk-eels	6	0.0	5	0.8
Gymnachirus melas	naked sole	5	0.2	3	0.5
Antennarius ocellatus	ocellated frogfish	5	0.8	5	0.8
Dipturus olseni	spreadfin skate	5	2.4	3	0.5
Caulolatilus cyanops	blackline tilefish	5	0.2	3	0.5
Ophichthus spp.	snake eels	5	0.6	3	0.5
Canthigaster rostrata	sharpnose puffer	5	0.0	1	0.2
Aluterus monoceros	unicorn filefish	5	4.1	1	0.2
Scomberomorus cavalla	king mackerel	5	1.0	4	0.6
Sphyrna lewini	scalloped hammerhead	4	1.8	1	0.2
Epinephelus niveatus	snowy grouper	4	1.3	4	0.6
Blenniidae	blennies	4	0.0	3	0.5
Lonchopisthus micrognathus	swordtail jawfish	4	0.0	1	0.2
Epinephelus nigritus	warsaw grouper	4	0.0	3	0.5
Mycteroperca phenax	scamp	4	1.0	4	0.6
Cyclopsetta		4	0.0	1	0.2
Gnathophis bracheatopos	longeye conger	4	0.2	4	0.6
Calamus penna	sheepshead porgy	4	1.5	3	0.5
Apogon aurolineatus	bridle cardinalfish	3	0.0	3	0.5
Histrio histrio	sargassum frogfish	3	0.1	1	0.2
Myliobatis freminvillii	Bullnose ray	3	16.7	2	0.3
Bathyanthias mexicanus	yellowtail bass	3	0.0	1	0.2
Antennarius	anglerfishes	3	0.0	2	0.3
Calamus calamus	saucereye porgy	3	1.3	2	0.3
Decapterus	mackerel scads	3	0.0	3	0.5
Haemulon	grunts	3	0.0	2	0.3

Table 4. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Carapus bermudensis	Atlantic pearlfish	3	0.0	3	0.5
Urophycis earlli	Carolina hake	3	0.2	3	0.5
Opsanus beta	gulf toadfish	3	0.1	3	0.5
Entomacrodus nigricans	pearl blenny	3	0.0	2	0.3
Echiophis intertinctus	spotted spoon-nose eel	3	0.6	3	0.5
Xenichthidae		3	0.0	1	0.2
Exocoetidae	flyingfishes	3	0.1	2	0.3
Odontoscion dentex	reef croaker	3	0.2	1	0.2
Raja lentiginosa	speckled skate	3	2.0	3	0.5
Gymnura micrura	smooth butterfly ray	3	4.9	3	0.5
Rypticus bistrispinus	freckled soapfish	3	0.0	3	0.5
Hypleurochilus geminatus	crested blenny	3	0.0	3	0.5
Xyrichtys martinicensis	rosy razorfish	3	0.1	1	0.2
Citharichthys	lefteye flounders	2	0.0	1	0.2
Antennarius striatus	striated frogfish	2	0.1	2	0.3
Syngnathus louisianae	chain pipefish	2	0.0	2	0.3
Halichoeres caudalis	painted wrasse	2	0.0	2	0.3
Serranus spp.	sea basses	2	0.0	1	0.2
Menticirrhus littoralis	gulf kingfish	2	0.5	2	0.3
Apogon maculatus	saddletailed cardinalfish	2	0.0	1	0.2
Acanthostracion polygonius	honeycomb cowfish	2	1.7	2	0.3
Scorpaena grandicornis	plumed scorpionfish	2	0.1	1	0.2
Fistularia tabacaria	bluespotted cornetfish	2	0.9	2	0.3
Lepophidium staurophor	barred cusk-eel	2	0.0	1	0.2
Chromis enchrysura	yellowtail reeffish	2	0.0	2	0.3
Dasyatis sabina	Atlantic stringray	2	2.7	2	0.3
Eucinostomus melanopterus	flagfin mojarra	2	0.0	1	0.2
Conger triporiceps	manytooth conger	2	0.5	2	0.3
Bollmannia boqueronensis	white-eye goby	2	0.0	1	0.2
Raja ackley	ocellate skate	2	0.1	2	0.3

Table 4. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Halichoeres bivittatus	slippery dick	2	0.1	1	0.2
Paralichthys dentatus	fluke	1	1.2	1	0.2
Astrapogon alutus		1	0.0	1	0.2
Epinephelus	groupers	1	0.0	1	0.2
Prognichthys gibbifrons	bluntnose flyingfish	1	0.0	1	0.2
Dorosoma petenense	threadfin shad	1	0.1	1	0.2
Bothidae	lefteye flounders	1	0.0	1	0.2
Anchoa nasus	longnose anchovy	1	0.0	1	0.2
Ginglymostoma cirratum	nurse shark	1	550.0	1	0.2
Carcharhinus falciformis	silky shark	1	54.5	1	0.2
Stephanolepis setifer	pygmy filefish	1	0.0	1	0.2
Citharichthys cornutus	horned whiff	1	0.0	1	0.2
Gobiidae	gobies	1	0.0	1	0.2
Sciaenops ocellatus	red drum	1	4.5	1	0.2
Brevoortia	menhadens	1	0.1	1	0.2
Mugil curema	silver mullet	1	0.0	1	0.2
Serranus subligarius	belted sandfish	1	0.0	1	0.2
Holocentrus adscensionis	squirrelfish	1	0.4	1	0.2
Priacanthidae	bigeyes	1	0.0	1	0.2
Paralichthys	southern flounders	1	0.3	1	0.2
Opistognathus spp.	jawfishes	1	0.0	1	0.2
Gobiosoma xanthiprora	yellowprow goby	1	0.0	1	0.2
Hemanthias vivanus	red barbier	1	0.0	1	0.2
Bothus ocellatus	eyed flounder	1	0.0	1	0.2
Conger		1	0.0	1	0.2
Clupeidae	herrings	1	0.0	1	0.2
Astroscopus guttatus	northern stargazer	1	0.2	1	0.2
Myliobatis goodei	southern eagle ray	1	1.9	1	0.2
Hypoplectrus unicolor	butter hamlet	1	0.0	1	0.2
Gnathophis		1	0.1	1	0.2

Table 4. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Upeneus		1	0.0	1	0.2
Rhinoptera brasiliensis	Brazilian cow-nosed ray	1	14.8	1	0.2
Fistularia petimba	red cornetfish	1	0.0	1	0.2
Archosargus probatocephalus	sheepshead	1	0.5	1	0.2
Heteropriacanthus cruentatus	glasseye snapper	1	0.0	1	0.2
Phaeoptyx conklini	freckled cardinalfish	1	0.0	1	0.2
Holocentrus bullisi	deepwater squirrelfish	1	0.0	1	0.2
Astroscopus y-graecum	southern stargazer	1	0.0	1	0.2
Caranx	bigeye jacks	1	0.0	1	0.2
Ocyurus chrysurus	yellowtail snapper	1	0.2	1	0.2
Echeneis	sharksuckers	1	0.2	1	0.2
Dysomma anguillare	shortbelly eel	1	0.0	1	0.2
Pareques acuminatus	high-hat	1	0.0	1	0.2
Gymnothorax kolpos	blacktail moray	1	0.3	1	0.2
Serraniculus pumilio	pygmy sea bass	1	0.0	1	0.2
Decodon		1	0.0	1	0.2
Crustaceans					
Farfantepenaeus aztecus	brown shrimp	76563	1203.4	384	62.2
Callinectes similis	lesser blue crab	31797	299.4	302	48.9
Squilla empusa	mantis shrimp	15778	96.6	188	30.5
Rimapenaeus similis	roughback shrimp	7811	34.1	130	21.1
Portunus spinicarpus	longspine swimming crab	5243	37.2	126	20.4
Litopenaeus setiferus	white shrimp	4893	195.3	164	26.6
Sicyonia brevirostris	brown rock shrimp	3938	47.1	117	19.0
Rimapenaeus constrictus	roughneck shrimp	3719	12.5	29	4.7
Farfantepenaeus duorarum	pink shrimp	3042	68.8	127	20.6
Solenocera vioscai	humpback shrimp	2792	11.0	87	14.1
Sicyonia dorsalis	lesser rock shrimp	2431	5.8	96	15.6

Table 4. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Xiphopenaeus kroyeri	seabob	1557	10.5	23	3.7
Squilla chydaea	mantis shrimp	1443	7.2	92	14.9
Portunus gibbesii	irridescent swimming crab	1241	6.8	125	20.3
Anasimus latus	stilt spider crab	980	6.6	80	13.0
Callinectes sapidus	blue crab	627	121.6	147	23.8
Parapenaeus politus	deepwater rose shrimp	616	1.1	32	5.2
Trachypenaeus spp.	roughneck shrimps	583	1.9	10	1.6
Ovalipes floridanus	Florida lady crab	506	3.1	30	4.9
Portunus spinimanus	blotched swimming crab	491	11.7	84	13.6
Balanus trigonus		420	1.5	4	0.6
Calappa sulcata	yellow box crab	278	57.7	113	18.3
Solenocera atlantidis	dwarf humpback shrimp	226	0.2	18	2.9
Metapenaeopsis goodei	Caribbean velvet shrimp	216	0.3	25	4.1
Portunus spp.	swimming crabs	157	0.8	9	1.5
Mesopenaeus tropicalis	salmon shrimp	136	0.4	8	1.3
Raninoides louisianensis	gulf frog crab	128	1.2	27	4.4
Sicyonia spp.	rock shrimps	115	0.4	7	1.1
Stenorhynchus seticornis	yellowline arrow crab	108	0.3	42	6.8
Galatheidae	squat lobsters	108	0.0	5	0.8
Gibbesia neglecta	mantis shrimp	102	1.0	8	1.3
Scyllarides nodifer	ridged slipper lobster	83	19.3	21	3.4
Platylambrus granulata	bladetooth elbow crab	76	0.2	41	6.6
Penaeus		62	2.0	2	0.3
Alpheidae	snapping shrimps	60	0.0	20	3.2
Scyllarus chacei	chace slipper lobster	55	0.2	13	2.1
Crustaceans	Unidentified crustacean	54	8.5	23	3.7
Dardanus insignis	red brocade hermit	50	0.1	12	1.9
Arenaeus cribrarius	speckled swimming crab	49	2.4	15	2.4
Cryptodromiopsis antillensis	hairy sponge crab	42	0.2	23	3.7
Sicyonia burkenroadi	spiny rock shrimp	39	0.0	8	1.3

Table 4. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Hepatus epheliticus	calico crab	35	0.6	18	2.9
Pilumnus sayi	spineback hairy crab	30	0.1	20	3.2
Podochela sidneyi	shortfinger neck crab	30	0.1	19	3.1
Mithrax hispidus	coral clinging crab	30	0.1	17	2.8
Leiolambrus nitidus	white elbow crab	27	0.1	16	2.6
Paguristes sericeus	blue-eyed hermit	26	0.0	20	3.2
Sicyonia typica	kinglet rock shrimp	25	0.1	8	1.3
Persephona mediterranea	mottled purse crab	25	0.2	9	1.5
Unidentified crustacean		24	2.9	12	1.9
Libinia emarginata	portly spider crab	21	0.7	12	1.9
Pseudorhombila quadridentata	flecked squareback crab	21	0.2	10	1.6
Stenocionops furcatus furcatus	furcate crab	20	0.3	14	2.3
Metoporhaphis calcarata	false arrow crab	19	0.0	9	1.5
Iliacantha liodactylus	purse crab	18	0.0	9	1.5
Penaeopsis serrata	megalops shrimp	17	0.0	1	0.2
Pagurus bullisi	hermit crab	17	0.0	5	0.8
Scyllarus depressus	scaled slipper lobster	17	0.2	7	1.1
Paguristes triangulatus	hermit crab	16	0.0	6	1.0
Calappa flammea	flame box crab	16	1.9	13	2.1
Persephona crinita	pink purse crab	16	0.1	12	1.9
Porcellana sayana	spotted porcelain crab	15	0.0	5	0.8
Collodes robustus	spider crab	15	0.0	9	1.5
Petrochirus diogenes	giant hermit crab	14	0.4	10	1.6
Macrocoeloma trispinosum	spongy decorator crab	14	0.1	9	1.5
Pseudomedaeus agassizii	rough rubble crab	13	0.0	9	1.5
Portunus ordwayi	red hair swimming crab	12	0.1	8	1.3
Dardanus fucosus	bareye hermit	12	0.0	7	1.1
Processidae	night shrimps	12	0.0	1	0.2
Porcellana sigsbeiana	striped porcelain crab	11	0.0	3	0.5
Plesionika edwardsii	soldier striped shrimp	11	0.0	3	0.5

Table 4. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Euphrosynoplax clausa	craggy bathyal crab	10	0.1	7	1.1
Acanthocarpus alexandri	gladiator box crab	10	0.1	1	0.2
Myropsis quinquespinosa	fivespine purse crab	9	0.0	4	0.6
Mithrax pleuracanthus	shaggy clinging crab	7	0.0	5	0.8
Stenocionops spinimanus	prickly spider crab	7	1.5	5	0.8
Portunus sayi	sargassum swimming crab	6	0.0	5	0.8
Stenocionops furcatus coelatus	spider crab	6	0.1	4	0.6
Solenocera spp.	humpback shrimps	6	0.0	2	0.3
Porcellanidae	porcelain crabs	6	0.0	2	0.3
Parthenope agona	yellow elbow crab	6	0.0	3	0.5
Diogenidae	left-handed hermit crabs	5	0.0	3	0.5
Speocarcinus lobatus	gulf squareback crab	5	0.0	2	0.3
Portunidae	swimming crabs	5	0.0	1	0.2
Libinia dubia	longnose spider crab	5	0.1	5	0.8
Alpheus floridanus	sand snapping shrimp	5	0.0	3	0.5
Pagurus pollicaris	flatclaw hermit crab	5	0.1	5	0.8
Mithrax forceps	red-ridged clinging crab	5	0.0	4	0.6
Sicyonia stimpsoni	eyespot rock shrimp	3	0.0	1	0.2
Isopoda	isopods	3	0.0	3	0.5
Neopanope packardii	Florida grassflat crab	3	0.0	2	0.3
Alpheus	snapping shirmps	3	0.0	3	0.5
Xanthidae	mud crabs	3	0.0	2	0.3
Sicyonia laevigata	rock shrimp	3	0.0	3	0.5
Plesionika longicauda	pandalid shrimp	3	0.0	2	0.3
Parasquilla coccinea	mantis shrimp	3	0.0	3	0.5
Podochela lamelligera	neck crab	2	0.0	2	0.3
Galathea		2	0.0	1	0.2
Decapoda	crabs	2	0.0	1	0.2
Podochela		2	0.0	2	0.3
Acanthilia intermedia	granulose purse crab	2	0.0	2	0.3

Table 4. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Hypoconcha		2	0.0	2	0.3
Raninoides loevis	furrowed frog crab	2	0.0	2	0.3
Palicus obesus		2	0.0	2	0.3
Raninoides spp.	frog crabs	2	0.0	2	0.3
Squilla edentata		2	0.0	1	0.2
Sicyonia parri	rock shrimps	2	0.0	2	0.3
Dardanus		2	0.0	1	0.2
Solenoceridae	solenocerid shrimps	2	0.0	2	0.3
Caridea		2	0.0	2	0.3
Parapenaeus spp.	penaeid shrimps	1	0.0	1	0.2
Dyspanopeus texanus	gulf grassflat crab	1	0.0	1	0.2
Iliacantha subglobosa	longfinger purse crab	1	0.0	1	0.2
Calappa angusta	nodose box crab	1	0.0	1	0.2
Munidopsis robusta		1	0.0	1	0.2
Macrocoeloma		1	0.0	1	0.2
Paguristes hummi	left-handed hermit crabs	1	0.0	1	0.2
Porcellana spp.	porcelain crabs	1	0.0	1	0.2
Ethusa microphthalma	broadback sumo crab	1	0.0	1	0.2
Mithrax		1	0.0	1	0.2
Pilumnus		1	0.0	1	0.2
Homola		1	0.0	1	0.2
Sicyoniidae	rock shrimps	1	0.0	1	0.2
Majidae	spider crabs	1	0.0	1	0.2
Palicus alternata		1	0.0	1	0.2
Stomatopoda	mantis shrimps	1	0.0	1	0.2
Paguridae	right-handed hermit crabs	1	0.0	1	0.2
Parthenope	elbow crabs	1	0.0	1	0.2
Calappa		1	0.0	1	0.2
Menippe mercenaria	Florida stone crab	1	0.4	1	0.2
Raninidae	frog crabs	1	0.0	1	0.2

Table 4. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Lysmata		1	0.0	1	0.2
Paguristes spp.	hermit crabs	1	0.0	1	0.2
Leptodius		1	0.0	1	0.2
Others					
Loligo plei	arrow squid	16605	187.3	200	32.4
Loligo pealeii	longfin squid	9154	115.4	155	25.1
Lolliguncula brevis	Atlantic brief squid	5543	49.7	206	33.4
Loligo spp.	squids	4906	74.5	74	12.0
Amusium papyraceum	paper scallop	3613	22.1	79	12.8
Mollusca	molluscs	734	1353.2	92	14.9
Unid other		230	265.5	70	11.3
Unid other		197	161.1	64	10.4
Polystira albida	white giant turris	88	0.5	9	1.5
Anadara baughmani	Baughman's ark	77	0.3	10	1.6
Argopecten gibbus	calico scallop	68	0.5	18	2.9
Pitar cordatus	Schwengel's pitar	62	1.2	23	3.7
Polystira tellea	delicate giant turret	47	0.5	13	2.1
Aplysia brasiliana	mottled seahare	41	1.4	13	2.1
Octopus vulgaris	common Atlantic octopus	33	6.2	19	3.1
Euvola raveneli	Ravenel's scallop	32	0.1	10	1.6
Gastropoda	snails	30	0.2	16	2.6
Pteria colymbus	Atlantic wing-oyster	29	0.5	14	2.3
Lirophora clenchi	Clench venus	25	0.3	10	1.6
Distorsio clathrata	Atlantic distorsio	24	0.3	6	1.0
Sconsia striata	royal bonnet	18	0.3	8	1.3
Octopus		16	1.4	10	1.6
Macoma pulleyi	delta macoma	16	0.2	3	0.5
Hexaplex fulvescens	giant eastern murex	13	1.2	4	0.6

Table 4. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Semirossia equalis	greater shining bobtail	12	0.0	6	1.0
Aplysia morio	sooty seahare	9	1.1	6	1.0
Conus austini	cone shell	7	0.1	5	0.8
Aplysia	opistobranchs	7	0.2	4	0.6
Conus	cones	6	0.1	2	0.3
Tonna galea	giant tun	6	1.4	4	0.6
Octopus joubini	Atlantic pygmy octopus	4	0.0	2	0.3
Murex hidalgoi		4	0.2	2	0.3
Neverita duplicata	shark eye	4	0.0	4	0.6
Teuthoidea		3	0.0	1	0.2
Cantharus cancellarius	cancellate cantharus	3	0.0	3	0.5
Architectonica nobilis	common sundial	3	0.0	2	0.3
Narcissia trigonaria		3	0.3	2	0.3
Busycon sinistrum	lightning whelk	2	0.1	2	0.3
Macoma brevifrons	short macoma	2	0.0	2	0.3
Aequipecten muscosus	rough scallop	2	0.0	2	0.3
Laevicardium laevigatum	egg cockle	2	0.1	2	0.3
Ficus communis	Atlantic figsnail	2	0.3	1	0.2
Antillophos candeanus	beaded phos	2	0.0	1	0.2
Arcinella cornuta	Florida spiny jewelbox	2	0.0	1	0.2
Fasciolaria tulipa	true tulip	2	0.2	2	0.3
Pseudochama radians	Atlantic jewelbox	2	0.0	1	0.2
Tellina tampaensis	Tampa tellin	2	0.0	1	0.2
Chicoreus		2	0.0	2	0.3
Laevicardium mortoni	yellow eggcockle	2	0.0	2	0.3
Strombus alatus	Florida fighting conch	2	0.1	1	0.2
Atrina serrata	sawtooth penshell	1	0.1	1	0.2
Pleuroploca gigantea	horse conch	1	0.0	1	0.2
Hiatella		1	0.0	1	0.2
Conidae		1	0.0	1	0.2

Table 4. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Argopecten		1	0.0	1	0.2
Fasciolhunter	mollusks	1	0.0	1	0.2
Latirus		1	0.0	1	0.2
Muricidae		1	0.0	1	0.2
Cancellaria reticulata	common nutmeg	1	0.0	1	0.2
Sinum perspectivum	white baby-ear	1	0.0	1	0.2
Chicoreus dilectus		1	0.0	1	0.2
Scaphella		1	0.0	1	0.2
Atrina rigida	stiff penshell	1	0.1	1	0.2
Calyptraea		1	0.0	1	0.2
Nudibranchia	nudibranchs	1	0.0	1	0.2

Table 5. 2009 Fall Shrimp/Groundfish Survey species composition list, 529 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	237394	10536.0	351	66.4
Stenotomus caprinus	longspine porgy	23558	952.2	237	44.8
Chloroscombrus chrysurus	Atlantic bumper	21201	541.7	236	44.6
Serranus atrobranchus	blackear bass	11454	132.8	131	24.8
Leiostomus xanthurus	spot	9430	925.6	196	37.1
Lagodon rhomboides	pinfish	7428	574.4	222	42.0
Lutjanus campechanus	red snapper	5872	204.0	286	54.1
Cynoscion nothus	silver seatrout	5817	387.7	205	38.8
Trichiurus lepturus	Atlantic cutlassfish	5385	276.4	148	28.0
Syacium papillosum	dusky flounder	5379	254.8	113	21.4
Syacium gunteri	shoal flounder	5367	94.2	207	39.1
Prionotus longispinosus	bigeye searobin	5294	191.4	226	42.7
Synodus foetens	inshore lizardfish	4893	569.5	337	63.7
Haemulon aurolineatum	tomtate	4199	236.5	94	17.8
Peprilus burti	gulf butterfish	4181	291.2	189	35.7
Cynoscion arenarius	sand seatrout	3970	413.3	199	37.6
Larimus fasciatus	banded drum	3774	232.0	128	24.2
Harengula jaguana	scaled sardine	3404	125.6	128	24.2
Anchoa hepsetus	striped anchovy	2977	40.7	95	18.0
Diplectrum bivittatum	dwarf sand perch	2603	45.6	122	23.1
Saurida brasiliensis	largescale lizardfish	2452	11.6	84	15.9
Trachurus lathami	rough scad	2387	123.6	82	15.5
Centropristis philadelphica	rock sea bass	2371	101.7	196	37.1
Decapterus punctatus	round scad	2176	24.6	28	5.3
Ariopsis felis	hardhead catfish	2161	399.5	132	25.0
Scorpaena calcarata	smoothhead scorpionfish	2116	29.7	89	16.8

Table 5. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Diplectrum formosum	sand perch	2101	145.5	109	20.6
Lutjanus synagris	lane snapper	2041	168.5	194	36.7
Sphoeroides parvus	least puffer	1954	10.7	129	24.4
Stellifer lanceolatus	star drum	1932	33.7	84	15.9
Pristipomoides aquilonaris	wenchman	1906	101.7	90	17.0
Chaetodipterus faber	Atlantic spadefish	1889	203.6	128	24.2
Cyclopsetta chittendeni	Mexican flounder	1821	105.0	156	29.5
Selene setapinnis	Atlantic moonfish	1779	73.1	159	30.1
Upeneus parvus	dwarf goatfish	1772	64.6	89	16.8
Stephanolepis hispida	planehead filefish	1484	61.7	83	15.7
Halieutichthys aculeatus	pancake batfish	1298	8.6	124	23.4
Calamus proridens	littlehead porgy	1280	189.1	52	9.8
Mullus auratus	red goatfish	1267	92.7	34	6.4
Prionotus roseus	bluespotted searobin	1258	31.7	75	14.2
Orthopristis chrysoptera	pigfish	1225	118.0	77	14.6
Prionotus rubio	blackwing searobin	1145	55.8	74	14.0
Peprilus paru	harvestfish	1130	29.6	98	18.5
Etropus crossotus	fringed flounder	1114	16.6	126	23.8
Trichopsetta ventralis	sash flounder	1109	25.1	45	8.5
Bellator militaris	horned searobin	1082	19.5	44	8.3
Etropus		925	7.0	7	1.3
Eucinostomus gula	silver jenny	920	20.5	96	18.1
Prionotus stearnsi	shortwing searobin	908	8.7	49	9.3
Synodus intermedius	sand diver	850	60.0	74	14.0
Rhomboplites aurorubens	vermilion snapper	837	38.9	66	12.5
Opisthonema oglinum	Atlantic thread herring	821	46.8	80	15.1
Lepophidium jeannae	mottled cusk-eel	806	35.3	30	5.7
Trachinocephalus myops	snakefish	802	47.8	63	11.9
Synodus poeyi	offshore lizardfish	793	5.6	64	12.1
Haemulon plumierii	white grunt	708	150.2	30	5.7

Table 5. 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	705	33.5	52	9.8
Acanthostracion quadricornis	scrawled cowfish	643	109.8	93	17.6
Equetus lanceolatus	jackknife fish	625	49.0	45	8.5
Eucinostomus	mojarras	576	23.6	22	4.2
Lepophidium brevibarbe	blackedge cusk-eel	565	18.5	67	12.7
Prionotus scitulus	leopard searobin	533	16.8	23	4.3
Cynoscion spp.	seatrouts	508	1.6	40	7.6
Bagre marinus	gafftopsail catfish	467	60.0	63	11.9
Citharichthys spilopterus	bay whiff	466	8.2	63	11.9
Bothus robinsi	twospot flounder	458	13.0	49	9.3
Saurida normani	shortjaw lizardfish	413	34.0	19	3.6
Sardinella aurita	Spanish sardine	404	19.6	36	6.8
Sphoeroides dorsalis	marbled puffer	394	14.5	51	9.6
Anchoa mitchilli	bay anchovy	381	0.5	37	7.0
Ophidion holbrookii	bank cusk-eel	365	32.4	41	7.8
Prionotus paralatus	Mexican searobin	364	15.0	26	4.9
Selar crumenophthalmus	bigeye scad	363	11.7	17	3.2
Prionotus martis	barred searobin	354	15.5	40	7.6
Caranx crysos	blue runner	351	23.9	70	13.2
Hemicaranx amblyrhynchus	bluntnose jack	347	12.4	56	10.6
Brevoortia patronus	gulf menhaden	346	36.3	42	7.9
Porichthys plectrodon	Atlantic midshipman	336	6.2	91	17.2
Scorpaena brasiliensis	barbfish	327	22.5	45	8.5
Scorpaena spp.	scorpionfishes	261	1.5	17	3.2
Menticirrhus americanus	southern kingfish	247	37.4	55	10.4
Peprilus triacanthus	butterfish	246	18.2	6	1.1
Ophidion beani	longnose cusk-eel	237	11.9	33	6.2
Lagocephalus laevigatus	smooth puffer	233	14.0	55	10.4
Monacanthus ciliatus	fringed filefish	225	2.4	36	6.8
Calamus arctifrons	grass porgy	221	26.7	9	1.7

Table 5. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Ophidion josephi	crested cusk-eel	214	9.4	46	8.7
Scomberomorus maculatus	Spanish mackerel	193	18.0	55	10.4
Citharichthys macrops	spotted whiff	175	5.7	46	8.7
Bollmannia communis	ragged goby	169	0.5	26	4.9
Aluterus schoepfii	orange filefish	168	74.1	34	6.4
Steindachneria argentea	luminous hake	159	1.8	2	0.4
Prionotus alatus	spiny searobin	143	5.9	17	3.2
Sphoeroides spengleri	bandtail puffer	136	5.1	30	5.7
Gymnachirus texae	fringed sole	129	1.6	37	7.0
Pagrus pagrus	red porgy	127	22.0	14	2.6
Epinephelus morio	red grouper	126	85.4	35	6.6
Selene vomer	lookdown	125	4.5	43	8.1
Etropus cyclosquamus	shelf flounder	124	1.4	7	1.3
Peprilus paru	harvestfish	123	4.7	13	2.5
Symphurus plagiusa	blackcheek tonguefish	118	2.9	34	6.4
Ogcocephalus declivirostris	slantbrow batfish	117	6.7	33	6.2
Balistes capriscus	gray triggerfish	117	21.3	65	12.3
Eucinostomus harengulus	tidewater mojarra	114	3.8	18	3.4
Symphurus diomedeanus	spottedfin tonguefish	113	3.0	34	6.4
Pareques umbrosus	cubbyu	112	5.6	28	5.3
Engyophrys senta	spiny flounder	111	0.4	38	7.2
Hoplunnis macrura	freckled pike-conger	108	0.8	31	5.9
Sphyraena guachancho	guaguanche	105	7.6	35	6.6
Scomberomorus cavalla	king mackerel	102	9.2	31	5.9
Apogon pseudomaculatus	twospot cardinalfish	101	0.5	13	2.5
Kathetostoma albigutta	lancer stargazer	100	4.4	30	5.7
Hemipteronotus novacula	pearly razorfish	97	4.6	17	3.2
Prionotus ophryas	bandtail searobin	95	3.5	49	9.3
Ophidion grayi	blotched cusk-eel	94	6.1	18	3.4
Serranus phoebe	tattler	88	2.6	12	2.3

Table 5. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Rhizoprionodon terraenovae	Atlantic sharpnose shark	88	83.3	35	6.6
Prionotus tribulus	bighead searobin	84	8.9	26	4.9
Calamus nodosus	knobbed porgy	83	24.1	14	2.6
Ancylopsetta ommata	ocellated flounder	82	17.7	47	8.9
Lachnolaimus maximus	hogfish	80	36.8	18	3.4
Otophidium omostigmum	polka-dot cusk-eel	78	0.7	11	2.1
Cyclopsetta fimbriata	spotfin flounder	72	5.7	33	6.2
Lutjanus griseus	grey snapper	65	30.0	22	4.2
Paralichthys albigutta	gulf flounder	63	19.3	30	5.7
Symphurus civitatium	offshore tonguefish	63	1.2	16	3.0
Elopidae	bigeyed herrings	63	0.0	1	0.2
Raja texana	roundel skate	62	24.0	44	8.3
Brotula barbata	bearded brotula	60	8.9	28	5.3
Rhynchoconger flavus	yellow conger	60	3.6	20	3.8
Conodon nobilis	barred grunt	59	6.7	7	1.3
Hippocampus erectus	lined seahorse	58	0.5	20	3.8
Urophycis floridana	southern hake	56	9.5	14	2.6
Sphyrna tiburo	bonnethead	56	44.9	21	4.0
Dorosoma petenense	threadfin shad	52	1.2	13	2.5
Pristigenys alta	short bigeye	50	0.7	22	4.2
Paralichthys lethostigma	southern flounder	49	15.3	29	5.5
Scorpaena agassizii	longfin scorpionfish	49	1.8	4	0.8
Ogcocephalus parvus	roughback batfish	49	0.3	22	4.2
Centropristis striatus	black sea bass	48	7.6	14	2.6
Paralichthys squamilentus	broad flounder	47	11.2	8	1.5
Sciaenops ocellatus	red drum	44	160.9	8	1.5
Echeneis neucratoides	whitefin sharksucker	43	15.0	19	3.6
Menticirrhus littoralis	gulf kingfish	43	3.9	3	0.6
Etropus rimosus	gray flounder	42	1.0	2	0.4
Chaetodon ocellatus	spotfin butterflyfish	41	3.6	15	2.8

Table 5. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Serranus notospilus	saddle bass	41	0.1	4	0.8
Priacanthus arenatus	bigeye	39	4.5	12	2.3
Gymnothorax saxicola	honeycomb moray	39	3.6	27	5.1
Calamus penna	sheepshead porgy	38	14.4	9	1.7
Urophycis regia	spotted hake	37	2.1	12	2.3
Raja eglanteria	clearnose skate	36	14.4	19	3.6
Synodus	lizard fishes	35	0.2	9	1.7
Nicholsina usta	emerald parrotfish	33	3.1	11	2.1
Dasyatis americana	southern stingray	32	55.9	21	4.0
Peristedion gracile	slender searobin	31	0.9	2	0.4
Apogon spp.	cardinalfishes	31	0.0	5	0.9
Anchoa lyolepis	dusky anchovy	31	0.1	7	1.3
Ariomma regulus	spotted driftfish	31	0.8	8	1.5
Apogon affinis	bigtooth cardinalfish	31	0.3	3	0.6
Eucinostomus argenteus	spotfin mojarra	30	0.3	10	1.9
Pareques iwamotoi	blackbar drum	29	1.7	11	2.1
Holacanthus bermudensis	blue angelfish	28	7.5	8	1.5
Neomerinthe hemingwayi	spinycheek scorpionfish	27	5.3	11	2.1
Caulolatilus intermedius	anchor tilefish	25	1.2	12	2.3
Caranx hippos	crevalle jack	25	0.7	3	0.6
Symphurus urospilus	spottail tonguefish	24	0.5	8	1.5
Chilomycterus schoepfii	striped burrfish	23	9.0	18	3.4
Gastropsetta frontalis	shrimp flounder	23	1.9	9	1.7
Lepophidium spp.	cusk-eels	23	0.1	5	0.9
Ophidion	cusk-eels	21	1.5	7	1.3
Phaeoptyx xenus	sponge cardinalfish	21	0.1	8	1.5
Synagrops bellus	blackmouth bass	21	0.2	1	0.2
Apogon aurolineatus	bridle cardinalfish	21	0.0	8	1.5
Menticirrhus saxatilis	northern kingfish	21	3.2	8	1.5
Sphoeroides nephelus	southern puffer	20	2.2	13	2.5

Table 5. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Rypticus maculatus	whitespotted soapfish	20	0.7	10	1.9
Aluterus heudelotii	dotterel filefish	20	3.5	15	2.8
Congridae	conger eels	19	0.2	11	2.1
Caulolatilus cyanops	blackline tilefish	18	1.6	4	0.8
Ogcocephalus corniger	longnose batfish	17	0.2	9	1.7
Phaeoptyx pigmentaria	dusky cardinalfish	16	0.0	9	1.7
Saurida caribbaea	smallscale lizardfish	16	0.0	2	0.4
Ophidion selenops	mooneye cusk-eel	16	0.1	4	0.8
Trachinotus carolinus	Florida pompano	16	6.0	8	1.5
Pogonias cromis	black drum	16	65.0	4	0.8
Hemanthias aureorubens	streamer bass	16	0.1	6	1.1
Dasyatis sabina	Atlantic stringray	15	7.0	6	1.1
Ancylopsetta dilecta	three-eye flounder	15	1.4	6	1.1
Prognathodes aya	bank butterflyfish	15	0.3	3	0.6
Mustelus canis	smooth dogfish	15	12.7	11	2.1
Antennarius radiosus	singlespot frogfish	15	0.3	8	1.5
Unid.fish	fishes	14	0.1	8	1.5
Elops saurus	ladyfish	13	1.5	7	1.3
Ogcocephalus cubifrons	polka-dot batfish	13	4.0	9	1.7
Opsanus pardus	leopard toadfish	13	0.3	9	1.7
Pomacentrus variabilis	cocoa damselfish	13	0.1	8	1.5
Narcine brasiliensis	lesser electric ray	13	6.0	7	1.3
Caulolatilus		12	0.4	2	0.4
Decodon puellaris	red hogfish	12	0.4	7	1.3
Decapterus macarellus	mackeral scad	11	0.4	2	0.4
Hemanthias vivanus	red barbier	10	0.1	3	0.6
Squatina dumeril	Atlantic angel shark	10	14.0	4	0.8
Pontinus longispinis	longspine scorpionfish	10	0.0	5	0.9
Apogon quadrisquamatus	sawcheek cardinalfish	9	0.0	2	0.4
Echeneis naucrates	sharksucker	9	3.4	9	1.7

Table 5. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Mycteroperca microlepis	gag	9	10.4	7	1.3
Rypticus bistrispinus	freckled soapfish	9	0.1	8	1.5
Urophycis cirrata	gulf hake	9	0.4	1	0.2
Phaeoptyx conklini	freckled cardinalfish	8	0.0	4	0.8
Estropus microstomus	smallmouth flounder	8	0.1	2	0.4
Ogcocephalus pantostictus	spotted batfish	8	2.1	5	0.9
Paraconger caudilimbatus	margintail conger	8	0.4	4	0.8
Pomacanthus arcuatus	gray angelfish	7	3.0	6	1.1
Mustelus	smooth hound sharks	7	6.8	5	0.9
Carcharhinus acronotus	blacknose shark	7	28.5	7	1.3
Calamus		7	0.4	3	0.6
Dasyatis say	bluntnose stingray	7	7.3	4	0.8
Chilomycterus antennatus	bridled burrfish	7	0.2	2	0.4
Chaetodon sedentarius	reef butterflyfish	7	0.3	3	0.6
Centropristis	black sea basses	7	0.1	2	0.4
Serranidae	sea basses and groupers	7	0.0	1	0.2
Scorpaena dispar	hunchback scorpionfish	6	0.3	1	0.2
Paralichthys	southern flounders	6	0.1	2	0.4
Gymnachirus melas	naked sole	6	0.1	4	0.8
		6	0.5	3	0.6
Lonchopisthus micrognathus	swordtail jawfish	6	0.0	3	0.6
Seriola dumerili	greater amberjack	6	2.7	3	0.6
Uroconger syringinus	threadtail conger	5	0.1	2	0.4
Bathyanthias mexicanus	yellowtail bass	5	0.1	1	0.2
Mycteroperca phenax	scamp	5	1.0	5	0.9
Epinephelus flavolimbatus	yellowedge grouper	5	3.1	3	0.6
Astrapogon puncticulatus	blackfin cardinalfish	5	0.0	3	0.6
Sphyraena borealis	northern sennet	5	0.9	2	0.4
Gymnothorax nigromarginatus	blackedge moray	5	0.6	5	0.9
Bairdiella chrysoura	silver perch	5	0.1	1	0.2

Table 5. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Alectis ciliaris	African pompano	5	0.5	5	0.9
Epinephelus niveatus	snowy grouper	5	0.2	5	0.9
Rachycentron canadum	cobia	4	0.7	3	0.6
Chauliodus sloani	Sloan's fangfish	4	0.0	1	0.2
Gobiidae	gobies	4	0.0	3	0.6
Ophichthus gomesii	shrimp eel	4	0.6	4	0.8
Ophichthus spp.	snake eels	4	0.6	4	0.8
Rhinobatos lentiginosus	Atlantic guitarfish	4	2.7	4	0.8
Aluterus scriptus	scrawled filefish	4	1.5	2	0.4
Gobiesox strumosus	skilletfish	4	0.0	4	0.8
Cryptotomus roseus	bluelip parrotfish	4	0.0	1	0.2
Holocentrus	soldierfishes	4	0.0	1	0.2
Opsanus tau	oyster toadfish	4	0.2	1	0.2
Echiophis intertinctus	spotted spoon-nose eel	3	0.6	3	0.6
Pomatomus saltatrix	bluefish	3	0.7	3	0.6
Diplodus holbrooki	spottail pinfish	3	0.5	1	0.2
Ariomma bondi	silver-rag	3	0.3	2	0.4
Hypoplectrus puella	barred hamlet	3	0.0	2	0.4
Mugil curema	silver mullet	3	0.1	2	0.4
Oligoplites saurus	leatherjack	3	0.1	2	0.4
Gobiosoma xanthiprora	yellowprow goby	3	0.0	2	0.4
Serranus subligarius	belted sandfish	3	0.0	2	0.4
Seriola rivoliana	almaco jack	2	0.9	2	0.4
Synodontidae	lizardfishes	2	0.0	1	0.2
Myrophis platyrhynchus	broadnose worm eel	2	0.1	1	0.2
Albula vulpes	bonefish	2	0.1	2	0.4
Gerres cinereus	yellowfin mojarra	2	0.0	2	0.4
Epinephelus nigritus	warsaw grouper	2	0.2	2	0.4
Canthigaster rostrata	sharpnose puffer	2	0.0	1	0.2
Stephanolepis setifer	pygmy filefish	2	0.0	1	0.2

Table 5. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Acanthurus chirurgus	doctorfish	2	0.9	2	0.4
Bollmannia boqueronensis	white-eye goby	2	0.0	1	0.2
Mugil cephalus	black mullet	2	0.4	2	0.4
Rhinoptera bonasus	cownose ray	2	17.7	1	0.2
Aluterus monoceros	unicorn filefish	2	0.3	1	0.2
Scorpaena plumieri	spotted scorpionfish	2	0.3	2	0.4
Anchoa cubana	Cuban anchovy	2	0.0	1	0.2
Antennarius striatus	striated frogfish	2	0.1	2	0.4
Ginglymostoma cirratum	nurse shark	2	275.0	1	0.2
Calamus leucosteus	whitebone porgy	2	0.3	2	0.4
Pseudupeneus maculatus	spotted goatfish	2	0.1	1	0.2
Urophycis earlli	Carolina hake	2	0.1	2	0.4
Labridae	wrasses	2	0.0	2	0.4
Antennarius ocellatus	ocellated frogfish	2	0.0	1	0.2
Hippocampus reidi	longsnout seahorse	2	0.0	2	0.4
Lophius		2	0.1	1	0.2
Anchoa nasus	longnose anchovy	1	0.0	1	0.2
Opsanus beta	gulf toadfish	1	0.0	1	0.2
Carcharhinus isodon	finetooth shark	1	0.7	1	0.2
Dasyatis centroura	clam cracker	1	200.0	1	0.2
Holocentrus bullisi	deepwater squirrelfish	1	0.0	1	0.2
Micrognathus crinitus	banded pipefish	1	0.0	1	0.2
Halichoeres bathyphilus	greenband wrasse	1	0.1	1	0.2
Fistularia tabacaria	bluespotted cornetfish	1	1.0	1	0.2
Mycteroperca interstitialis	yellowmouth grouper	1	0.2	1	0.2
Opistognathus aurifrons	yellowhead jawfish	1	0.0	1	0.2
Hypleurochilus bermudensis	barred blenny	1	0.0	1	0.2
Gymnothorax kolpos	blacktail moray	1	0.4	1	0.2
Bellator		1	0.0	1	0.2
Haemulon sciurus	bluestriped grunt	1	0.1	1	0.2

Table 5. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Ophichthus rex	king snake eel	1	0.1	1	0.2
Kyphosus sectatrix	Bermuda chub	1	0.4	1	0.2
Lophius americanus	goosefish	1	0.1	1	0.2
Chromis enchrysura	yellowtail reeffish	1	0.0	1	0.2
Ogcocephalus nasutus	shortnose batfish	1	0.0	1	0.2
Parahollardia lineata	jambeau	1	0.0	1	0.2
Hemiramphus brasiliensis	ballyhoo	1	0.0	1	0.2
Syngnathidae	pipefishes	1	0.0	1	0.2
Citharichthys gymnorhinus	anglefin whiff	1	0.0	1	0.2
Antennarius sanguineus	bloody frogfish	1	0.0	1	0.2
Chromis		1	0.0	1	0.2
Gymnura micrura	smooth butterfly ray	1	0.4	1	0.2
Pareques acuminatus	high-hat	1	0.0	1	0.2
Diodon hystrix	porcupinefish	1	0.3	1	0.2
Echeneis	sharksuckers	1	0.1	1	0.2
Echeneidae	remoras	1	0.0	1	0.2
Dorosoma cepedianum	gizzard shad	1	0.0	1	0.2
Epinephelus itajara	goliath grouper	1	35.0	1	0.2
Sphoeroides pachygaster	blunthead puffer	1	0.3	1	0.2
Starksia ocellata	checkered blenny	1	0.0	1	0.2
Raja ackley	ocellate skate	1	0.1	1	0.2
Microgobius	bannerfin gobies	1	0.0	1	0.2
Gobiosoma longipala	twoscale goby	1	0.0	1	0.2
Prionotus	searobins	1	0.1	1	0.2
Abudefduf saxatilis	sergeant major	1	0.0	1	0.2
Achirus lineatus	lined sole	1	0.0	1	0.2
Ophichthus ophis	spotted snake eel	1	0.2	1	0.2
Acanthostracion polygonius	honeycomb cowfish	1	0.7	1	0.2
Serranus spp.	sea basses	1	0.0	1	0.2
Halichoeres bivittatus	slippery dick	1	0.0	1	0.2

Table 5. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Bothus ocellatus	eyed flounder	1	0.0	1	0.2
Scarus taeniopterus	princess parrotfish	1	0.0	1	0.2
Haemulidae	grunts	1	0.0	1	0.2
Seriola fasciata	lesser amberjack	1	0.5	1	0.2
Diodon holocanthus	balloonfish	1	0.5	1	0.2
Trachinotus falcatus	permit	1	0.0	1	0.2
Diplectrum	perch	1	0.0	1	0.2
Echiophis punctifer	snapper eel	1	0.3	1	0.2
Bregmaceros atlanticus	antenna codlet	1	0.0	1	0.2
Crustaceans					
Farfantepenaeus aztecus	brown shrimp	27786	707.1	286	54.1
Callinectes similis	lesser blue crab	6987	152.1	225	42.5
Litopenaeus setiferus	white shrimp	4784	168.3	167	31.6
Portunus spinicarpus	longspine swimming crab	4253	27.3	98	18.5
Sicyonia dorsalis	lesser rock shrimp	3628	13.7	64	12.1
Squilla empusa	mantis shrimp	3572	41.1	171	32.3
Portunus gibbesii	irridescent swimming crab	2371	15.0	165	31.2
Farfantepenaeus duorarum	pink shrimp	2246	45.6	98	18.5
Sicyonia brevirostris	brown rock shrimp	2155	30.3	90	17.0
Xiphopenaeus kroyeri	seabob	2037	7.8	5	0.9
Solenocera vioscai	humpback shrimp	1899	9.5	39	7.4
Rimapenaeus similis	roughback shrimp	1216	4.2	90	17.0
Crustaceans	Unidentified crustacean	881	89.5	24	4.5
Squilla chydaea	mantis shrimp	818	5.1	66	12.5
Portunus spinimanus	blotched swimming crab	457	12.8	82	15.5
Metapenaeopsis goodei	Caribbean velvet shrimp	407	0.5	17	3.2
Solenocera atlantidis	dwarf humpback shrimp	236	0.2	20	3.8
Anasimus latus	stilt spider crab	198	1.5	41	7.8

Table 5. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Rimapenaeus constrictus	roughneck shrimp	195	0.4	20	3.8
Calappa sulcata	yellow box crab	164	33.2	72	13.6
Stenorhynchus seticornis	yellowline arrow crab	157	0.4	52	9.8
Portunus sayi	sargassum swimming crab	128	0.9	10	1.9
Raninoides louisianensis	gulf frog crab	107	1.1	27	5.1
Scyllarus chacei	chace slipper lobster	106	0.3	11	2.1
Portunus ordwayii		91	0.4	5	0.9
Scyllarides nodifer	ridged slipper lobster	70	12.0	24	4.5
Callinectes sapidus	blue crab	68	8.8	27	5.1
Leiolambrus nitidus	white elbow crab	47	0.1	10	1.9
Galatheidae	squat lobsters	46	0.0	2	0.4
Sicyonia parri	rock shrimps	45	0.2	10	1.9
Stenocionops furcatus furcatus	furcate crab	43	0.4	20	3.8
Persephona crinita	pink purse crab	41	0.2	11	2.1
Unidentified crustacean		39	24.4	16	3.0
Portunus spp.	swimming crabs	38	0.5	12	2.3
Sicyonia typica	kinglet rock shrimp	33	0.1	8	1.5
Macrocoeloma trispinosum	spongy decorator crab	29	0.3	17	3.2
Platylambrus granulata	bladetooth elbow crab	27	0.2	14	2.6
Calappa flammea	flame box crab	26	4.9	17	3.2
Ovalipes floridanus	Florida lady crab	24	0.5	9	1.7
Mithrax hispidus	coral clinging crab	24	0.1	7	1.3
Pilumnus sayi	spineback hairy crab	23	0.1	12	2.3
Cryptodromiopsis antillensis	hairy sponge crab	22	0.1	15	2.8
Dardanus insignis	red brocade hermit	21	0.1	7	1.3
Plesionika longicauda	pandalid shrimp	19	0.2	4	0.8
Paguristes sericeus	blue-eyed hermit	19	0.0	9	1.7
Petrochirus diogenes	giant hermit crab	18	0.2	13	2.5
Pagurus bullisi	hermit crab	17	0.0	5	0.9
Parapenaeus politus	deepwater rose shrimp	15	0.2	3	0.6

Table 5. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Mesopenaeus tropicalis	salmon shrimp	15	0.1	2	0.4
Podochela sidneyi	shortfinger neck crab	15	0.0	13	2.5
Scyllarus depressus	scaled slipper lobster	14	0.0	2	0.4
Alpheidae	snapping shrimps	13	0.0	10	1.9
Pagurus pollicaris	flatclaw hermit crab	13	0.2	10	1.9
Euphrosynoplax clausa	craggy bathyal crab	13	0.0	6	1.1
Gibbesia neglecta	mantis shrimp	12	0.1	5	0.9
Pseudomedaeus agassizii	rough rubble crab	11	0.0	8	1.5
Dardanus fucosus	bareye hermit	10	0.0	6	1.1
Xanthidae	mud crabs	9	0.0	3	0.6
Acanthilia intermedia	granulose purse crab	9	0.0	4	0.8
Hepatus epheliticus	calico crab	9	0.2	8	1.5
Libinia emarginata	portly spider crab	9	1.3	9	1.7
Penaeopsis serrata	megalops shrimp	9	0.0	1	0.2
Parasquilla coccinea	mantis shrimp	9	0.1	6	1.1
Synalpheus		9	0.0	3	0.6
Menippe adina	Gulf stone crab	9	0.5	3	0.6
Sicyonia burkenroadi	spiny rock shrimp	8	0.0	3	0.6
Pseudorhombila quadridentata	flecked squareback crab	8	0.1	3	0.6
Speocarcinus lobatus	gulf squareback crab	8	0.0	3	0.6
Myropsis quinquespinosa	fivespine purse crab	7	0.0	3	0.6
Palicus obesus		7	0.0	2	0.4
Mithrax		7	0.0	5	0.9
Mithrax forceps	red-ridged clinging crab	7	0.0	5	0.9
Iliacantha liodactylus	purse crab	6	0.0	5	0.9
Podochela lamelligera	neck crab	5	0.0	2	0.4
Petrolisthes armatus	green porcelain crab	5	0.0	3	0.6
Parthenope serrata	sawtooth elbow crab	5	0.0	3	0.6
Plesionika edwardsii	soldier striped shrimp	4	0.0	1	0.2
Arenaeus cribrarius	speckled swimming crab	4	0.1	3	0.6

Table 5. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Stomatopoda	mantis shrimps	4	0.0	4	0.8
Caridea		4	0.0	2	0.4
Metoporhaphis calcarata	false arrow crab	3	0.0	3	0.6
Munida forceps	squat lobster	3	0.0	2	0.4
Libinia dubia	longnose spider crab	3	0.0	2	0.4
Squilla edentata		3	0.0	2	0.4
Trachypenaeus spp.	roughneck shrimps	3	0.0	2	0.4
Munida		3	0.0	3	0.6
Manucomplanus ungulatus		2	0.0	2	0.4
Alpheus	snapping shirmps	2	0.0	2	0.4
Danielum ixbauchac	red sea crab	2	0.0	1	0.2
Acanthocarpus alexandri	gladiator box crab	2	0.0	2	0.4
Macrocoeloma		2	0.0	1	0.2
Menippe mercenaria	Florida stone crab	2	0.4	2	0.4
Parthenope	elbow crabs	2	0.0	1	0.2
Persephona mediterranea	mottled purse crab	2	0.0	2	0.4
Stenocionops spinimanus	prickly spider crab	2	0.6	2	0.4
Lysiosquilla scabricauda	mantis shrimp	1	0.0	1	0.2
Solenocera spp.	humpback shrimps	1	0.0	1	0.2
Petrolisthes galathinus	banded porcelain crab	1	0.0	1	0.2
Pagurus impressus	dimpled hermit	1	0.0	1	0.2
Raninoides spp.	frog crabs	1	0.0	1	0.2
Paguristes oxyophthalmus		1	0.0	1	0.2
Porcellana sayana	spotted porcelain crab	1	0.0	1	0.2
Isopoda	isopods	1	0.0	1	0.2
Squillidae	mantis shrimps	1	0.0	1	0.2
Porcellana sigsbeiana	striped porcelain crab	1	0.0	1	0.2
Porcellana spp.	porcelain crabs	1	0.0	1	0.2
Podochela		1	0.0	1	0.2
Pinnixa		1	0.0	1	0.2

Table 5. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Paguridae	right-handed hermit crabs	1	0.0	1	0.2
Goneplacidae		1	0.0	1	0.2
Calappa angusta	nodose box crab	1	0.0	1	0.2
Sicyonia laevigata	rock shrimp	1	0.0	1	0.2
Collodes robustus	spider crab	1	0.0	1	0.2
Leucosiidae	purse crabs	1	0.0	1	0.2
Processidae	night shrimps	1	0.0	1	0.2
Paguristes triangulatus	hermit crab	1	0.0	1	0.2
Sicyonia spp.	rock shrimps	1	0.0	1	0.2
Pseudosquilla ciliata		1	0.0	1	0.2
Decapoda	crabs	1	0.0	1	0.2
Mithrax pleuracanthus	shaggy clinging crab	1	0.0	1	0.2
Osachila antillensis		1	0.0	1	0.2
Panulirus argus	Caribbean spiny lobster	1	1.0	1	0.2
Raninoides loevis	furrowed frog crab	1	0.0	1	0.2
Lysmata wurdemanni	peppermint shrimp	1	0.0	1	0.2
Pyromaia cuspidata	dartnose pear crab	1	0.0	1	0.2
Alpheus floridanus	sand snapping shrimp	1	0.0	1	0.2
Others					
Loligo pealeii	longfin squid	4616	89.3	136	25.7
Amusium papyraceum	paper scallop	3562	27.8	61	11.5
Argopecten gibbus	calico scallop	2421	22.9	16	3.0
Loligo plei	arrow squid	1809	24.7	89	16.8
Lolliguncula brevis	Atlantic brief squid	1256	16.9	144	27.2
Loligo spp.	squids	1199	33.1	52	9.8
Polystira tellea	delicate giant turret	200	1.7	12	2.3
Unidentified other		185	385.8	26	4.9
Mollusca	molluscs	155	3904.8	28	5.3

Table 5. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Unid other		117	76.0	16	3.0
Anadara baughmani	Baughman's ark	99	1.3	14	2.6
Pitar cordatus	Schwengel's pitar	82	1.5	22	4.2
Macoma pulleyi	delta macoma	76	0.6	4	0.8
Euvola raveneli	Ravenel's scallop	39	0.2	17	3.2
Sconsia striata	royal bonnet	28	0.4	6	1.1
Turbo castanea	chestnut turban	27	0.1	1	0.2
Octopus		20	3.2	9	1.7
Distorsio clathrata	Atlantic distorsio	19	0.1	6	1.1
Aplysia morio	sooty seahare	18	0.7	3	0.6
Octopus vulgaris	common Atlantic octopus	18	2.4	12	2.3
Lirophora clenchi	Clench venus	15	0.2	4	0.8
Polystira albida	white giant turris	14	0.1	3	0.6
Conus austini	cone shell	12	0.1	4	0.8
Pleuroploca gigantea	horse conch	9	1.9	3	0.6
Cantharus cancellarius	cancellate cantharus	9	0.0	6	1.1
Aequipecten muscosus	rough scallop	8	0.2	8	1.5
Pycnodonte		7	0.0	5	0.9
Laevicardium laevigatum	egg cockle	7	0.6	3	0.6
Gastropoda	snails	6	0.0	5	0.9
Laevicardium mortoni	yellow eggcockle	5	0.0	4	0.8
Anadara ovalis	blood ark	5	0.0	3	0.6
Busycon sinistrum	lightning whelk	4	0.1	3	0.6
Neverita duplicata	shark eye	4	0.1	4	0.8
Tonna galea	giant tun	4	1.5	3	0.6
Spondylidae		3	0.1	2	0.4
Pteria colymbus	Atlantic wing-oyster	3	0.1	2	0.4
Melongenidae		3	0.0	1	0.2
Chicoreus		3	0.0	3	0.6
Antillophos candeanus	beaded phos	2	0.0	1	0.2
Dendrodoris krebsii		2	0.3	2	0.4

Table 5. Species composition list (continued)

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)	NUMBER OF TOWS WHERE CAUGHT	% FREQUENCY OCCURRENCE
Latirus		2	0.0	2	0.4
Anadara transversa	transverse ark	2	0.2	2	0.4
Chicoreus florifer-dilectus		2	0.0	2	0.4
Cypraeidae		2	0.0	2	0.4
Chlamys imbricata	knobby scallop	2	0.3	1	0.2
Oliva sayana	lettered olive	2	0.0	1	0.2
Anadara floridana	cut-ribbed ark	2	0.0	1	0.2
Semirossia equalis	greater shining bobtail	2	0.0	2	0.4
Narcissia trigonaria		2	0.0	2	0.4
Hiatella		1	0.0	1	0.2
Sinum perspectivum	white baby-ear	1	0.0	1	0.2
Marginella		1	0.0	1	0.2
Macoma		1	0.0	1	0.2
Cypraea cervus	atlantic deer cowrie	1	0.1	1	0.2
Turbinidae		1	0.0	1	0.2
Busycon		1	0.0	1	0.2
Cassis flammea	flame helmet	1	3.4	1	0.2
Crucibulum auricula	West Indian cup-and-saucer	1	0.0	1	0.2
Arcinella cornuta	Florida spiny jewelbox	1	0.0	1	0.2
Busycon plagosus		1	0.0	1	0.2
Cymatium parthenopeum	giant triton	1	0.0	1	0.2
Cassis tuberosa	Caribbean helmet	1	0.4	1	0.2
Architectonica nobilis	common sundial	1	0.0	1	0.2
Modiolus americanus	American horsemussel	1	0.0	1	0.2
Atrina spp.	penshells	1	0.1	1	0.2
Atrina rigida	stiff penshell	1	1.0	1	0.2
Calyptraeidae		1	0.0	1	0.2
Pectinidae	bivalves	1	0.0	1	0.2
Hypselodoris edenticulata	florida regal doris	1	0.0	1	0.2
Calyptraea		1	0.0	1	0.2
Cypraea		1	0.1	1	0.2

Table 6. 2009 Reeffish Survey species composition list, 46 trap stations where a fish trap was used.
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					
Lutjanus campechanus	red snapper	147	143.6	11	23.9
Pagrus pagrus	red porgy	102	50.8	24	52.2
Rhomboplites aurorubens	vermilion snapper	102	53.3	13	28.3
Epinephelus morio	red grouper	35	64.2	9	19.6
Balistes capriscus	gray triggerfish	23	19.2	10	21.7
Calamus nodosus	knobbed porgy	22	7.5	7	15.2
Mycteroperca phenax	scamp	16	21.5	10	21.7
Calamus leucosteus	whitebone porgy	12	5.1	4	8.7
Holacanthus bermudensis	blue angelfish	4	1.9	2	4.3
Chaetodon sedentarius	reef butterflyfish	4	0.3	2	4.3
Diplectrum formosum	sand perch	4	0.8	2	4.3
Syacium papillosum	dusky flounder	4	0.5	3	6.5
Stenotomus caprinus	longspine porgy	2	0.2	1	2.2
Haemulon aurolineatum	tomtate	2	0.4	1	2.2
Centropristis ocyurus	bank sea bass	2	0.3	2	4.3
Calamus proridens	littlehead porgy	2	0.6	1	2.2
Chaetodon ocellatus	spotfin butterflyfish	2	0.2	1	2.2
Lutjanus synagris	lane snapper	1	0.6	1	2.2
Gymnothorax moringa	spotted moray	1	0.7	1	2.2
Seriola zonata	banded rudderfish	1	0.1	1	2.2
Echeneis naucrates	sharksucker	1	1.7	1	2.2
Stephanolepis hispida	planehead filefish	1	0.0	1	2.2
Caulolatilus microps	blueline tilefish	1	2.7	1	2.2
Caulolatilus chrysops	goldface tilefish	1	1.1	1	2.2

Table 7. 2009 Bottom Longline Survey species composition list. Species with no weight recorded were too large to measure.

GENUS/SPECIES	COMMON NAME	TOTAL NUMBER CAUGHT	TOTAL WEIGHT CAUGHT (KG)
Finfishes			
Rhizoprionodon terraenovae	Atlantic sharpnose shark	559	1193.70
Carcharhinus limbatus	blacktip shark	226	1023.00
Bagre marinus	gafftopsail catfish	88	105.95
Dasyatis americana	southern stingray	57	24.00
Carcharhinus brevipinna	spinner shark	44	149.80
Sciaenops ocellata	red drum	41	352.95
Carcharhinus isodon	finetooth shark	40	162.65
Arius felis	hardhead catfish	29	19.35
Carcharhinus acronotus	blacknose shark	27	99.62
Carcharhinus leucas	bull shark	25	17.20
Sphyrna tiburo	bonnethead	11	24.15
Galeocerdo cuvier	tiger shark	9	
Pogonias cromis	black drum	5	62.00
Rhinoptera bonasus	cownose ray	4	
Sphyrna mokarran	great hammerhead	3	
Dasyatis sabina	Atlantic stingray	1	
Dasyatis say	bluntnose stingray	1	
Ginglymostoma cirratum	nurse shark	1	
Pomatomus saltatrix	bluefish	1	0.35
Micropogonias undulatus	Atlantic croaker	1	
Scomber scombrus	Atlantic mackerel	1	2.80
Caretta caretta	Loggerhead	1	

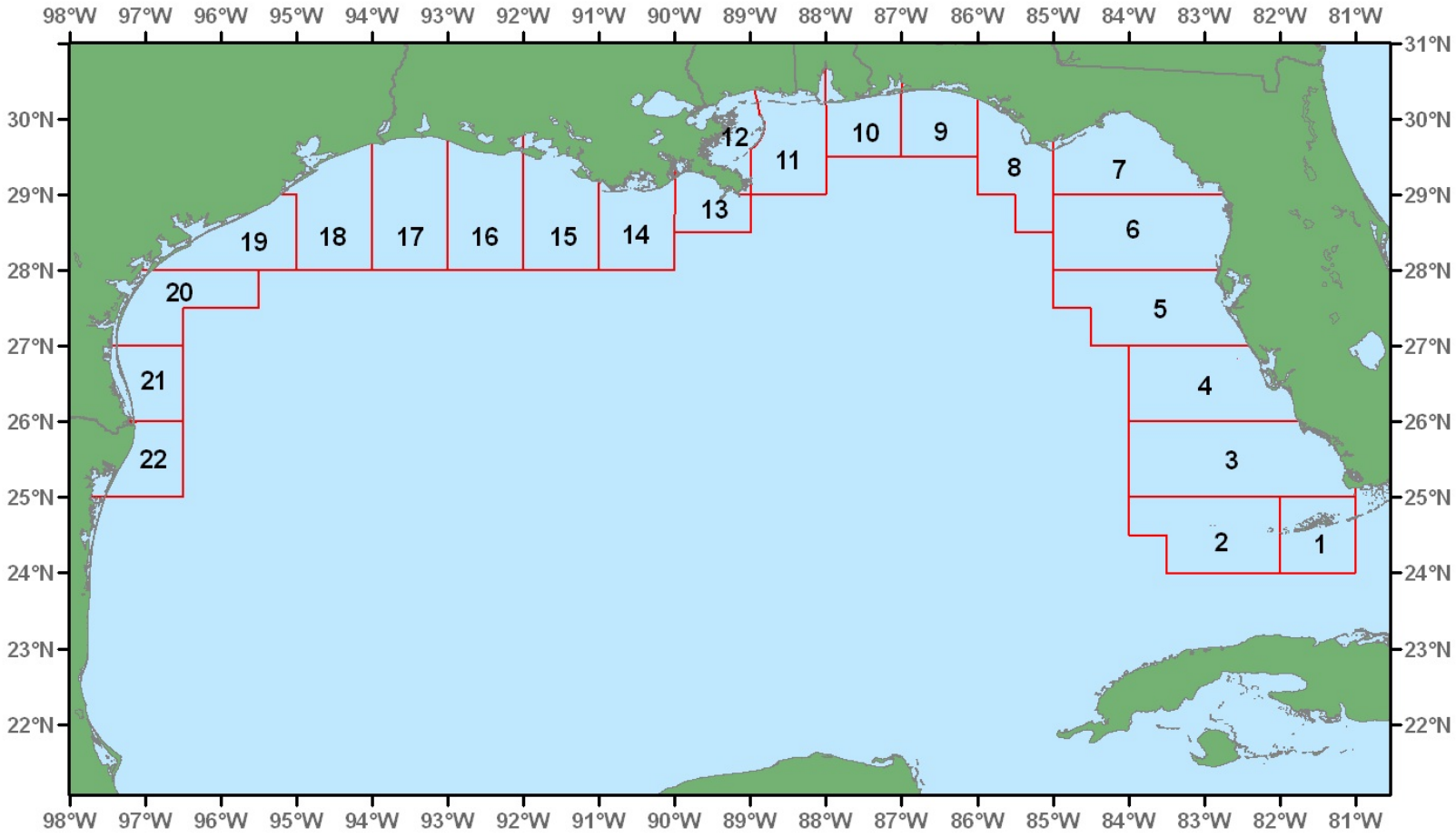

Figure 1. Statistical zones for shrimp in the Gulf of Mexico.

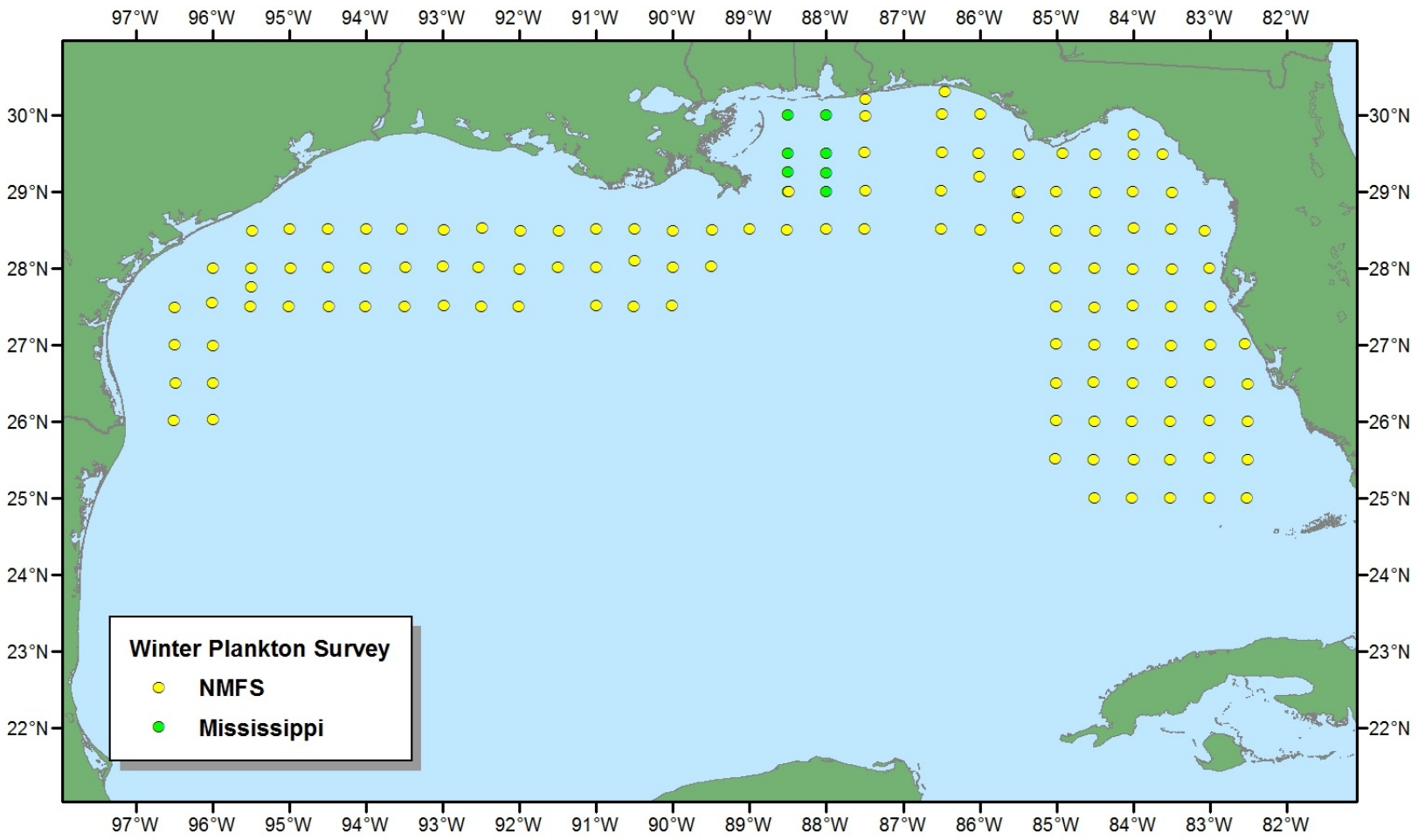

Figure 2. Locations of plankton and environmental stations during the 2009 Winter Plankton Survey.

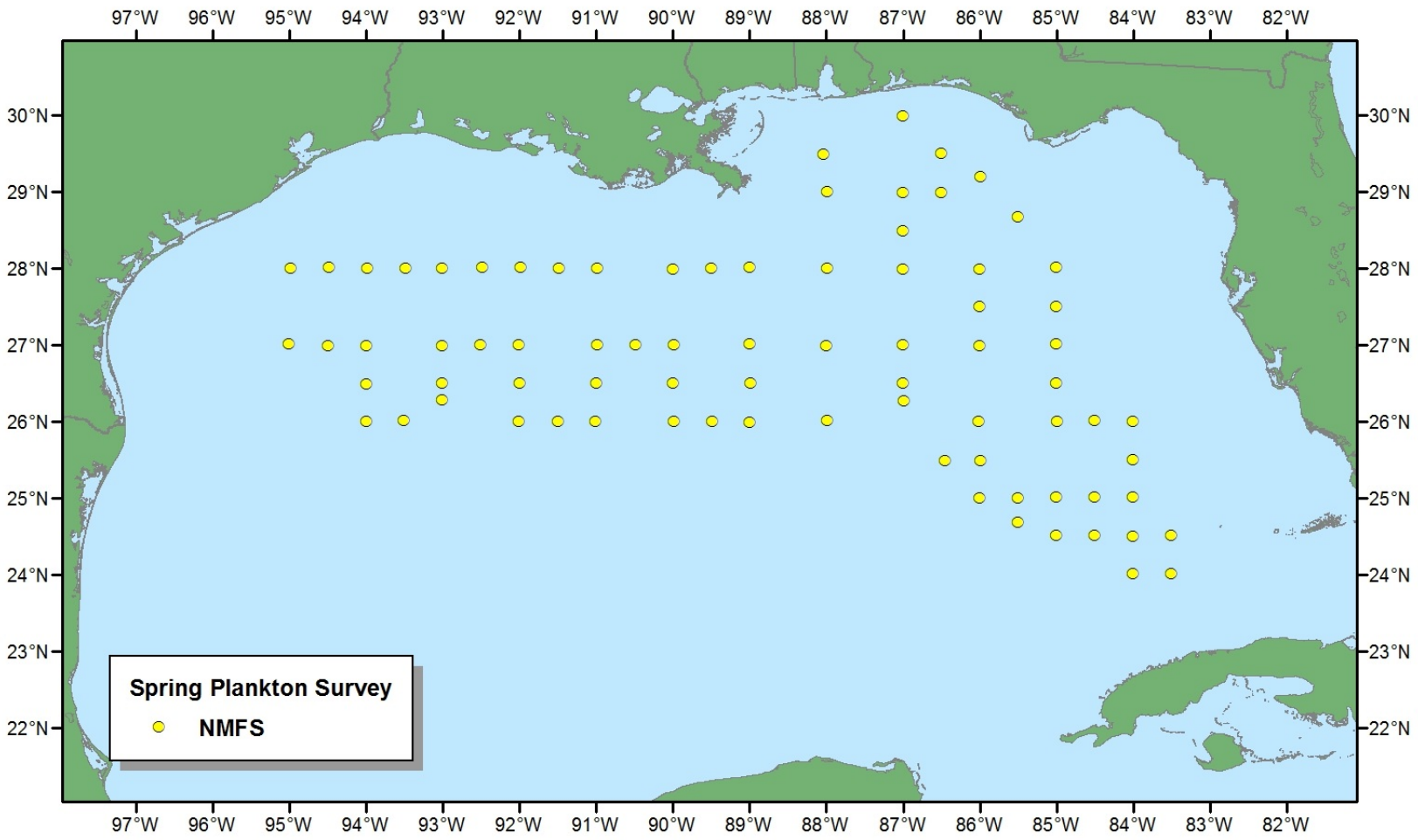

Figure 3. Locations of plankton and environmental stations during the 2009 Spring Plankton Survey.

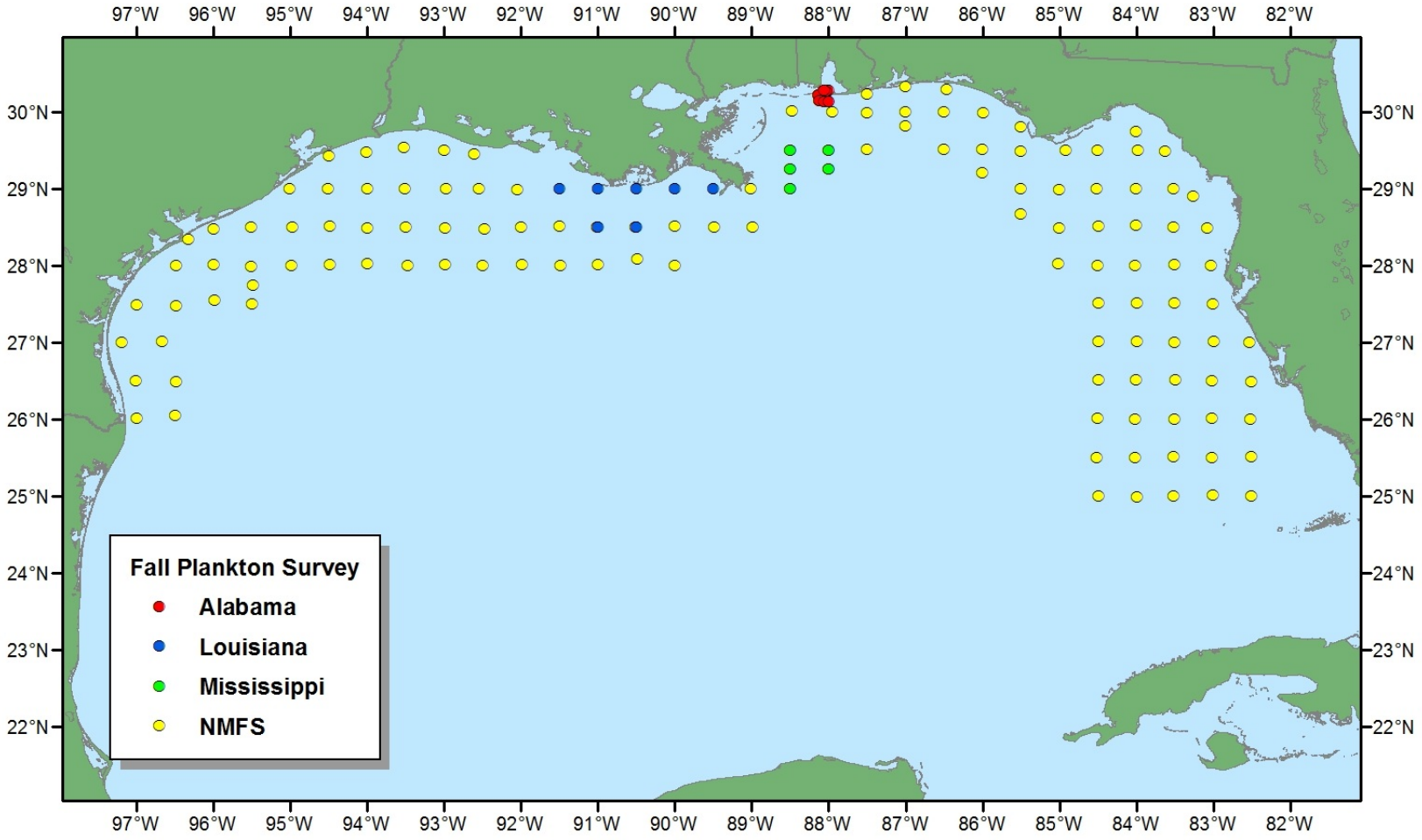

Figure 4. Locations of plankton and environmental stations during the 2009 Fall Plankton Survey.

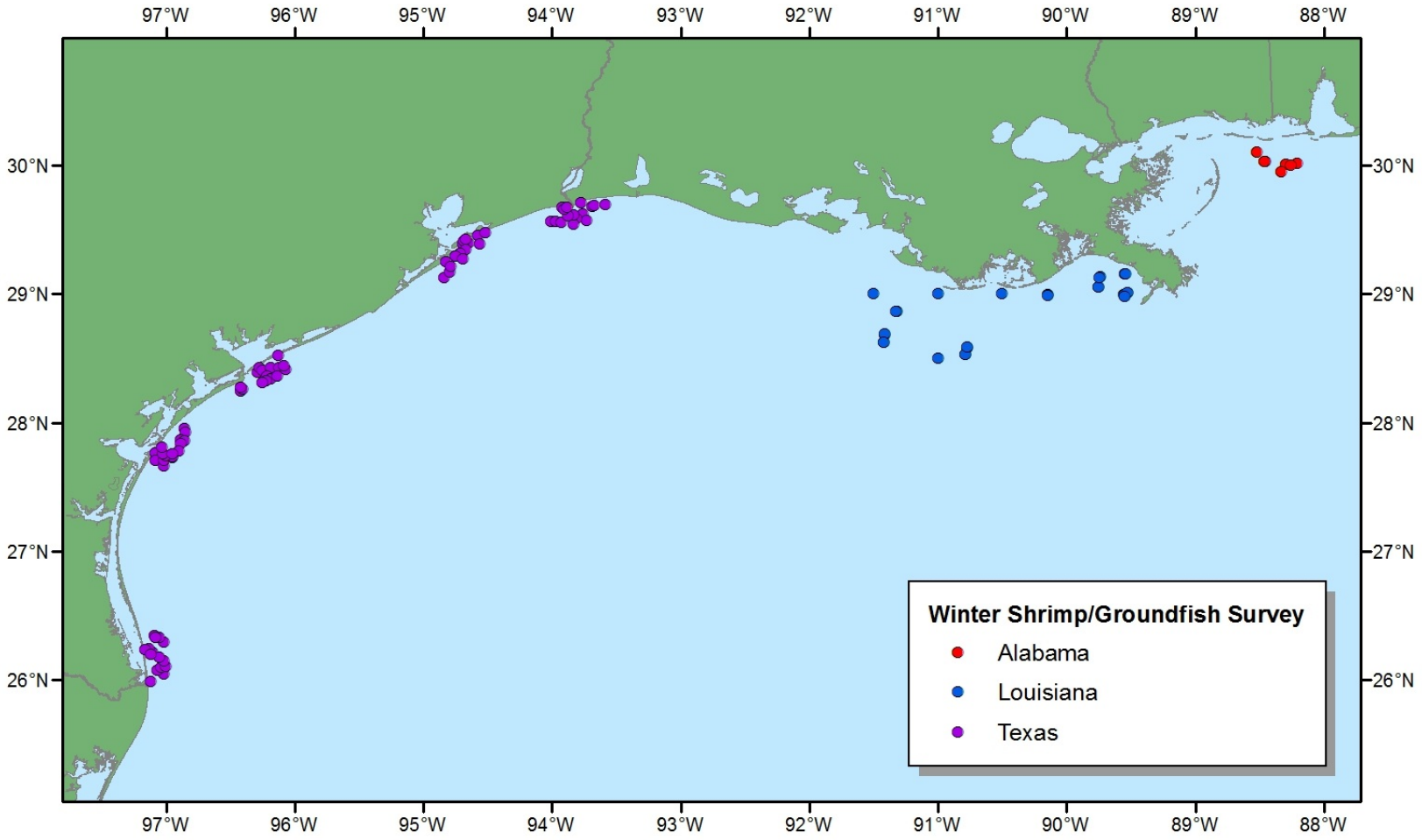

Figure 5. Locations of stations during the 2009 Winter Shrimp/Groundfish Survey.

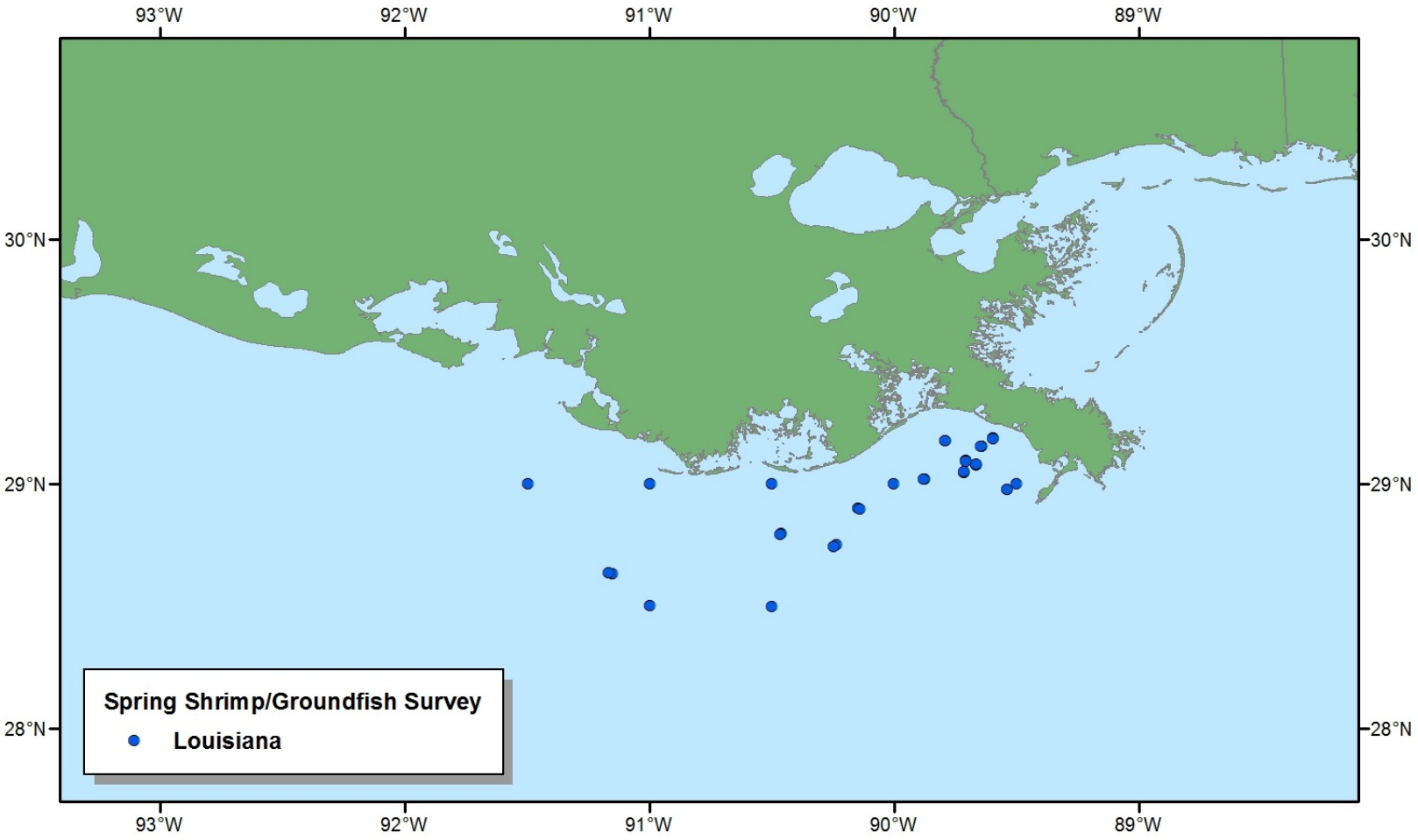

Figure 6. Locations of stations during the 2009 Spring Shrimp/Groundfish Survey.

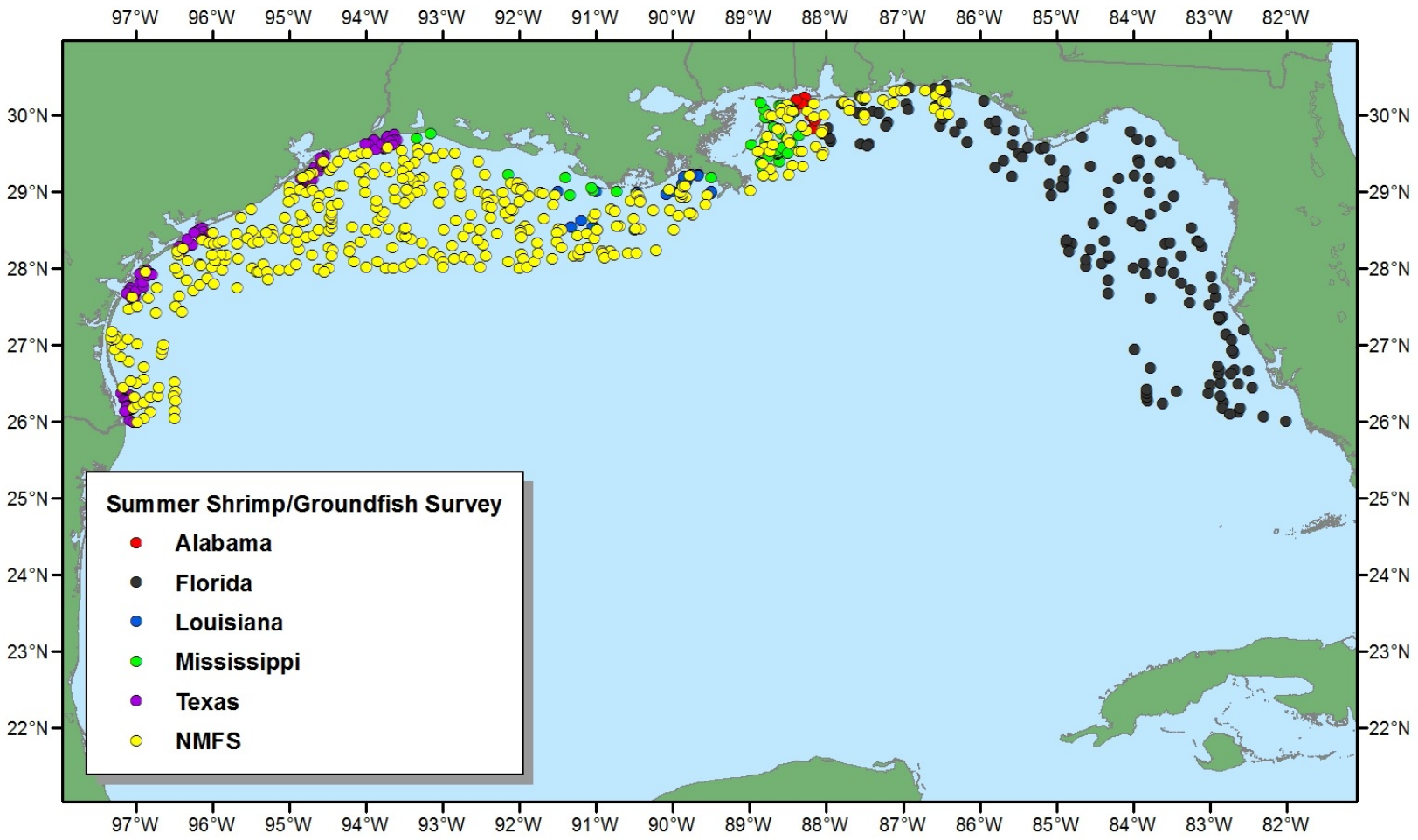

Figure 7. Locations of stations during the 2009 Summer Shrimp/Groundfish Survey.

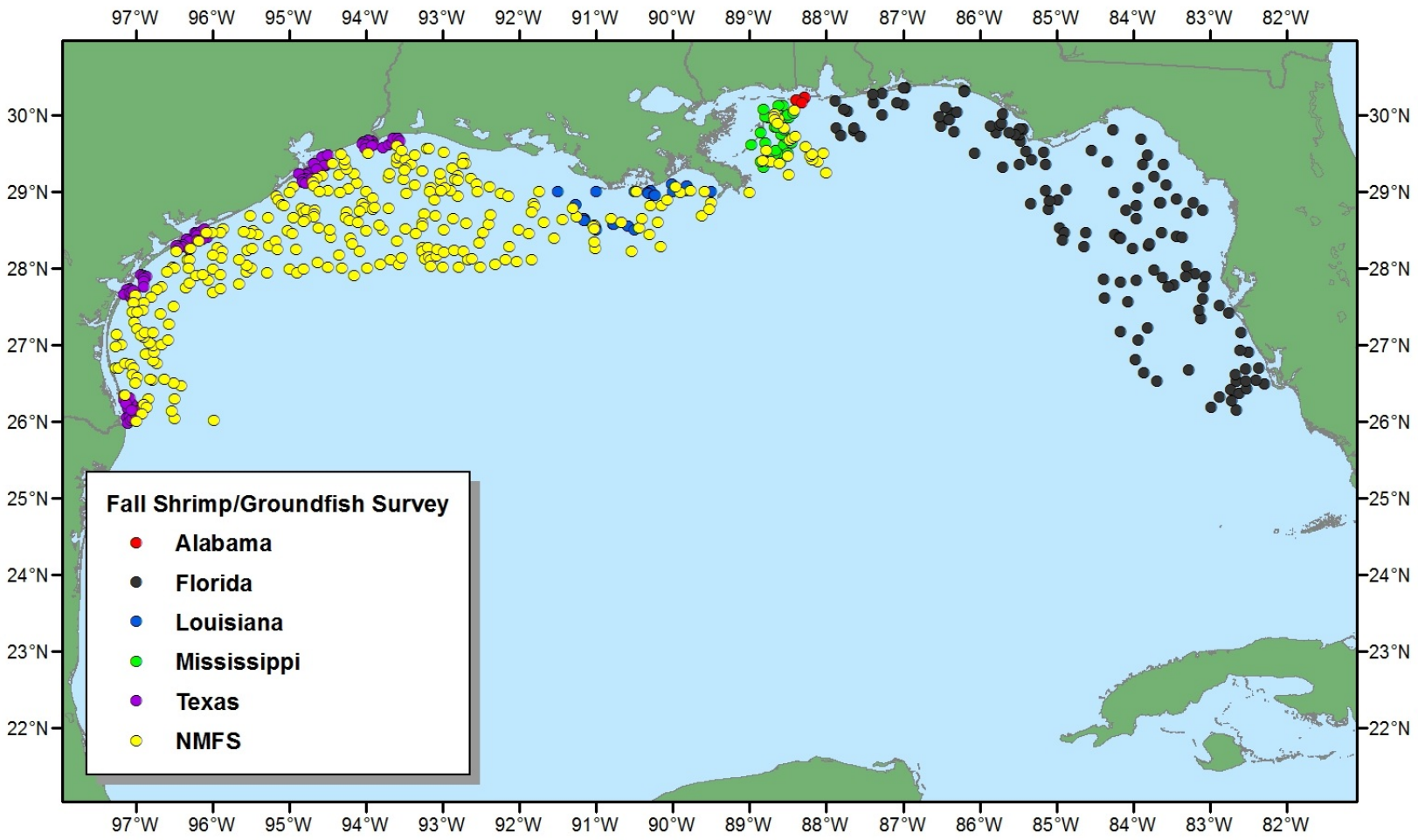

Figure 8. Locations of stations during the 2009 Fall Shrimp/Groundfish Survey.

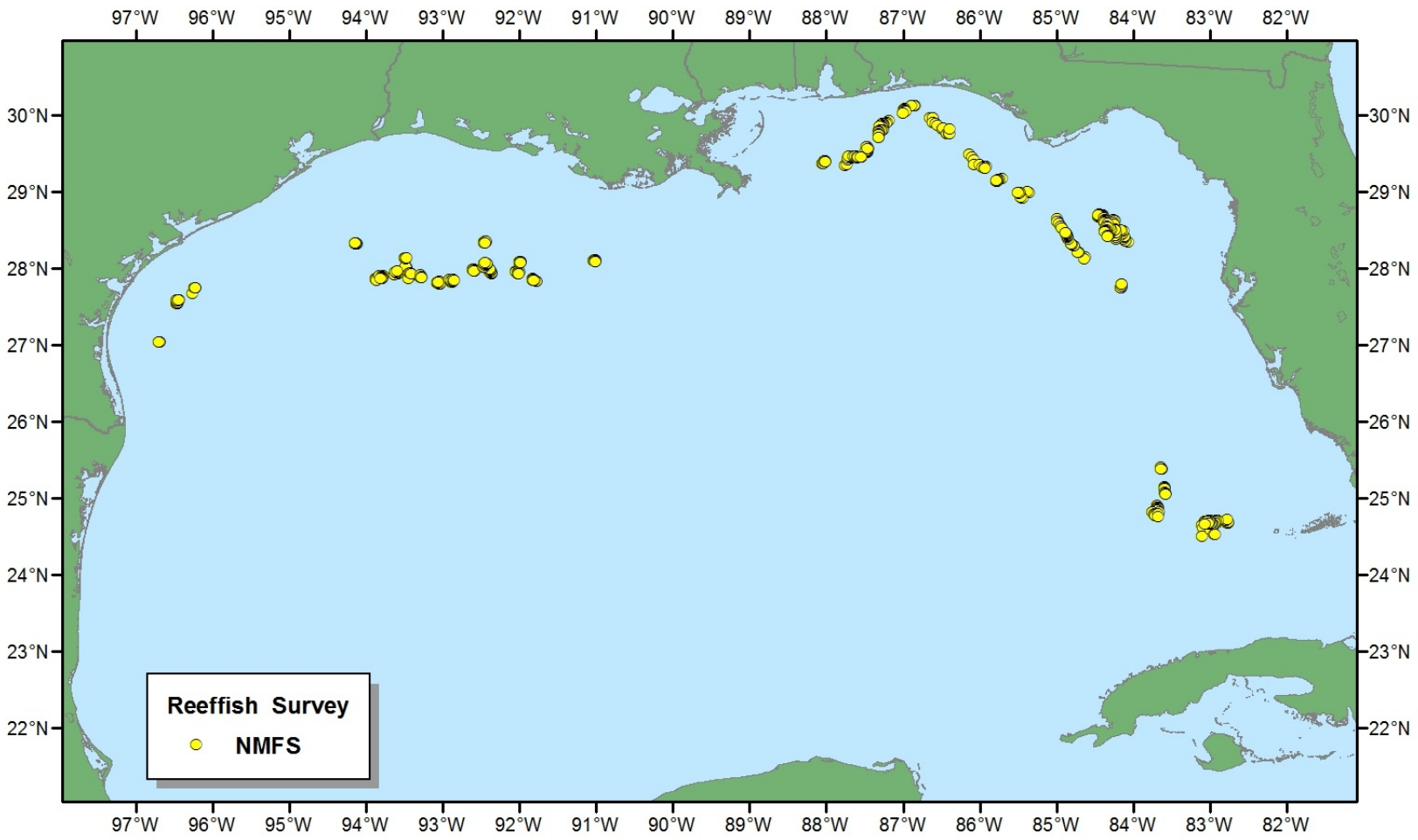

Figure 9. Locations of stations during the 2009 Reeffish Survey.

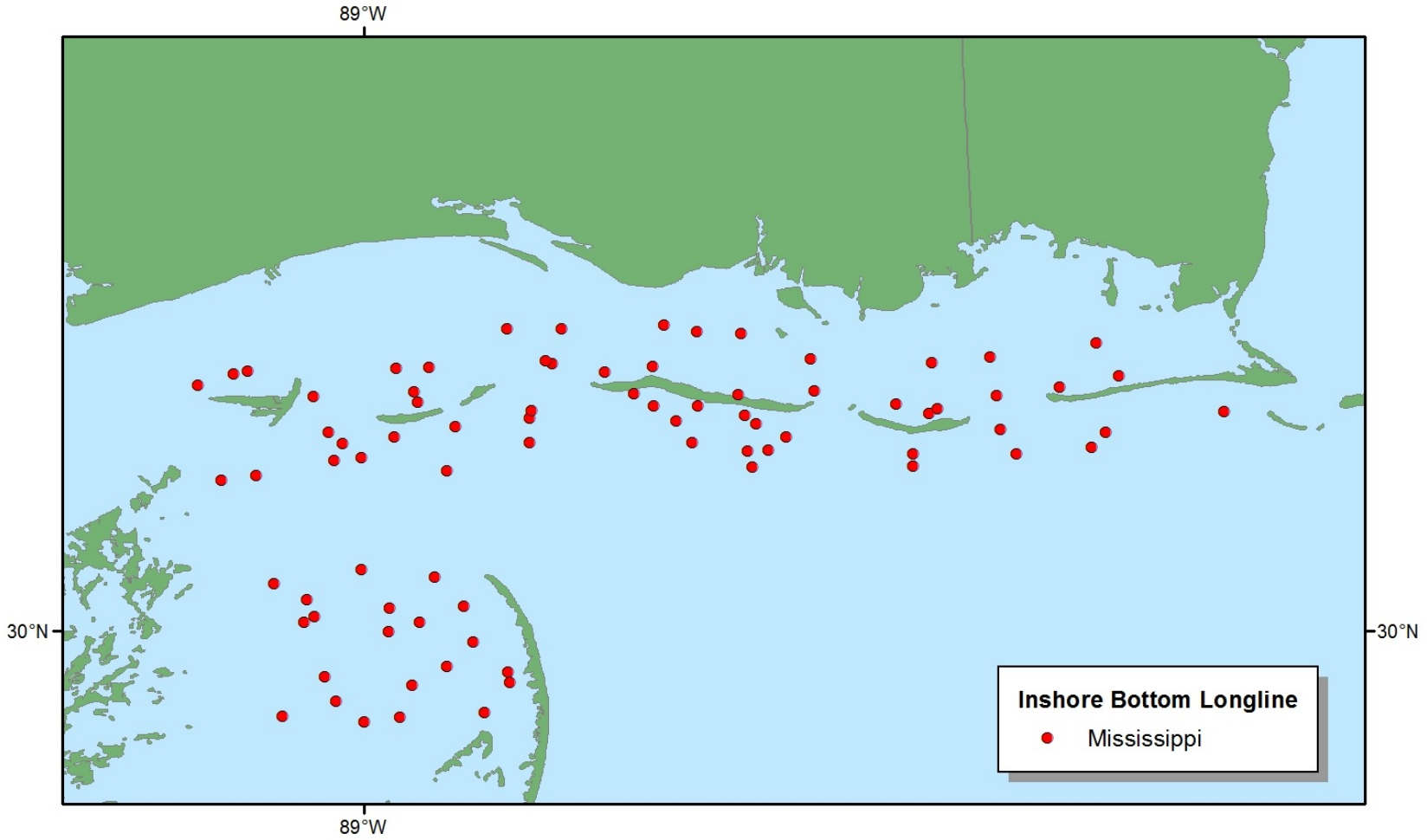

Figure 10. Locations of stations during the 2009 Inshore Bottom Longline Survey.