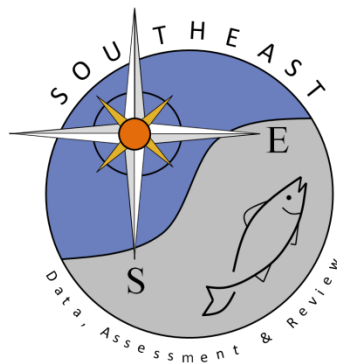


Southeast Shrimp Trawl Observer Program Metadata

Gary Decossas and Sarina Atkinson

SEDAR99-WP-02

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Southeast Shrimp Trawl Observer Program Metadata

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March 3, 2026

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I. Description

The Federal commercial shrimp fishery operates year-round in the Gulf of America and South Atlantic. Three commercially important penaeid shrimp species: brown shrimp (*Farfantepenaeus aztecus*), white shrimp (*Litopenaeus setiferus*) and pink shrimp (*Farfantepenaeus duorarum*) comprise the majority of shrimp landed in the southeastern U.S. waters. Rock shrimp (*Sicyonia* spp.) are also targeted, primarily in the South Atlantic. The majority of brown shrimp catch is from offshore waters off the coasts of Texas and Louisiana across a wide range of depths between <10 – 30+ fathoms, while white shrimp are caught in the same areas, but primarily in shallower waters off the coast of Louisiana (< ~10 fathoms and never deeper than 30 fathoms). Pink shrimp are caught primarily during the winter months in waters between 10 – 30 fathoms off southwestern Florida, most commonly at night. Rock shrimp are primarily targeted from waters off the east coast of Florida in depths between 10 – 40 fathoms. The gear typically utilized by the fishery includes: otter trawl gear, skimmer, pusher-head, and butterfly trawls.

The commercial shrimp fishery in the southeastern U.S. is managed through the Shrimp Fishery Management Plan of the Gulf of Mexico (GMFMC 2026) and the Shrimp Fishery Management Plan of the South Atlantic (SAFMC 2026). Bycatch reduction devices (BRDs) have been required in Federal waters of the South Atlantic since 1997, and in the Gulf of America since 2004. Additionally, since 1989, turtle exclusion devices (TEDs) have been mandated for the entire fleet.

The efforts that would result in the inception of the shrimp observer program began in the early 1990s, where Congressional mandates created via Magnuson-Stevens amendments (1990 and 1996) required the Secretary of Commerce to conduct a multi-year shrimp trawl bycatch research program to identify and minimize the impacts of shrimp trawling on Federal managed species in the Gulf of America and southeastern Atlantic. One component of this research plan began in February 1992 and involved the deployment of observers on commercial shrimp vessels through a cooperative effort involving NOAA Fisheries and the Gulf and South Atlantic Fisheries Foundation, Inc. (Foundation). Other organizations including the Texas Shrimp Association, North Carolina Division of Marine Fisheries, and Georgia Department of Natural Resources also placed observers on vessels in order to collect fisheries-specific catch information and BRD evaluation data. From 1992 to 1996, BRD designs were evaluated during commercial shrimp observations. Starting in 1998, interim BRD designs were certified based on the data collected by the shrimp observer program and Foundation.

The program at the time then switched objectives to collect data on Red Snapper bycatch in the Gulf of America shrimp fishery based on recommendations from a 1997 Congressionally mandated independent Red Snapper peer review panel. The panel concluded that observers were needed on all vessels involved with the fishery to quantify catch and associated bycatch, as well as the release mortality of Red Snapper (MRAG Americas, 1997)(Scott-Denton 2005). In May 1998, the NOAA Fisheries component of the regional observer program intensified coverage of the shrimp fishery operating in the Western Gulf of America. Through other legislative measures, mandatory BRDs, observers, logbooks, and vessel monitoring systems units were required for this fishery. During the time, efforts to place observers on randomly-selected shrimp

vessels were met with a high refusal rate from the shrimp industry; thus, based on safety concerns and a lack of enforcement mechanism for a non-permitted fishery, the mandatory observer program became a voluntary charter program.

In 2007, the Southeast Fisheries Science Center (SEFSC) implemented a mandatory shrimp observer program for the commercial Gulf of America penaeid fishery in response to the trawls catching juvenile Red Snapper and the implementation of the Red Snapper Individual Fishing Quota (IFQ) system (NOAA SEFSC 2025). In 2008, the program was expanded to include the South Atlantic Penaeid shrimp fishery as well as the rock shrimp fisheries.

The overall goal of the mandatory shrimp observer program is to provide quantitative biological, vessel, and gear-selectivity information for the southeastern shrimp fisheries (NOAA SEFSC 2025). The primary objectives of the program are: (1) provide general fishery bycatch characterization and catch rates for finfish species by area and target species, and (2) provide catch rates that can be used to estimate protected species bycatch levels (NOAA SEFSC 2025). Observer coverage of the entire southeastern shrimp fishery ranges between 1 and 2% based on industry effort. Coverage in the Gulf of America composes a majority of this coverage (>1%), while South Atlantic Penaeid and Rock shrimp constitute a minority of this coverage (0.5 - 0.9 %).

II. Methodology

Sample Design

The historical method for selecting vessels for observer coverage in the federal commercial shrimp fishery is loosely defined below and not well documented.

The major emphasis from 1992 to 2003 for the newly formed shrimp observer program was bycatch characterization and BRD evaluation aboard shrimp vessels; however, several other projects also evolved, such as TED evaluations, BRD certifications, Rock shrimp characterizations, and BRD evaluations in the Rock shrimp fishery. Data and methods of collection varied among projects and participation in the program was voluntary. From 1992 to May 1998, vessel operators were solicited to participate through phone and mail correspondence, port agents, and the Foundation. In May 1998, the NOAA Fisheries component of the program became mandatory. Under this selection process, vessels were randomly selected based on the previous complete year of effort, which were stratified by statistical area, depth, and season. The selection pool was generated from NOAA Fisheries shrimp landings and cross-referenced with USCG documentation records. However, by June 1998, problems began arising due to the high rate of refusals from the industry, observer safety, etc; thus, the program became a voluntary program. From June 1998 to May 2003, efforts were made to randomize the selection of charter vessels that had been based on the vessel selection procedures previously mentioned. In May 2003, a portion of shrimp permits from the Southeast Regional Office (SERO) were obtained and used to facilitate contacting selected vessels. Vessel operators who volunteered to participate were used only if vessels selected under the randomized process were not available. Collectively,

throughout the 1992 to 2003 time period, the majority of vessel operators volunteered to participate and the vessel selection was non-random.

Starting in 2007, for the Gulf of America, federally permitted Gulf Shrimp (SPGM) vessels were randomly selected based on the previous year of trawling effort, stratified by four aggregated areas (Florida, Mississippi/Alabama, Louisiana, and Texas), depth (nearshore <10 fathoms, offshore \geq 10 fathoms), and quadrimester (e.g. quadrimester 1: January – April). Effort (24-hour seadays) utilized for sampling allocation in the Gulf of America shrimp fishery was generated from a model utilizing electronic logbook (ELB) data, trip ticket landings, and SERO vessel permit information (Lowther 2023). This procedure was very similar to what was developed in 1998, but included better sources of information to develop the selection frame.

For the South Atlantic Penaeid shrimp, the historical process of vessel selection was very similar to that of the Gulf of America with a few differences. First, federally permitted South Atlantic Penaeid Shrimp (SPA) vessels were randomly selected based on the previous year of landings (i.e. from trip tickets), rather than trawling effort. This was done because model generated effort like the Gulf of America was/is not available for the South Atlantic shrimp fishery. Second, the spatial stratifications were defined as south (south of Georgia/Florida border), central (South Carolina to Georgia/Florida border), and north (North Carolina). Third, depth was not used as a stratum for sampling allocation in the South Atlantic.

For South Atlantic Rock shrimp, the process of vessel selection is very simple compared to the Gulf of America and South Atlantic Penaeid shrimp fisheries. For this fishery, the vessel selection process merely randomly selects 10 active permit holders South Atlantic Rock Shrimp (RSLA) that reported landings in the prior year (from trip tickets). Starting in 2026, the vessel selection process for South Atlantic Rock Shrimp will change to include selecting all vessels that have an active RSLA permit that reported landings in the prior year. This was done in order to ensure better coverage amongst small and generally non-active fishing fleet (<40 vessels on average that reported landings with active RSLA permit since 2023)

If selected for observer coverage, a vessel must take an observer on enough trips until the sea day coverage minimum is reached. Minimum sea days are 18 for Gulf of America Penaeid shrimp, 6 for South Atlantic Penaeid shrimp, and 10 for South Atlantic Rock shrimp

Much of the current vessel selection processes for the three shrimp vessel selection procedures remained the same. However, some changes were made for the second quadrimester selection in 2023 and then improved in the first quadrimester selection in 2026. The sampling universe for selection in each of the shrimp fisheries consisted of vessels that met the following criteria:

- (1) the vessel/owner possessed an active limited access Gulf Shrimp (SPGM) permit, an open access South Atlantic Penaeid Shrimp (SPA) permit, or a limited access South Atlantic Rock Shrimp (RSLA) permit depending on the fishery being sampled
- (2) the permit holder (i.e. vessel/owner) must have reported landings of brown, white, pink, or rock shrimp with an otter trawl or offshore skimmer gear in the same quadrimester and area of the previous year

- (3) the permit holder must not have been selected for observer coverage for the prior quadrimester or in the current quadrimester of selection in any of the three shrimp fisheries (Gulf of America Penaeid, South Atlantic Penaeid, or South Atlantic Rock Shrimp).

For the Gulf of America Penaeid shrimp fishery, the sampling universe in 2023 was stratified into four aggregate areas, which are the same as the historical vessel selection process (**Figure 1**):

- (1) statistical zones 1-9 (east of Panama City Beach, FL)
- (2) statistical zones 10-12 (west of Panama City Beach, FL to east of the Mississippi River)
- (3) statistical zones 13-17 (west of the Mississippi River to Port Arthur, TX)
- (4) statistical zones 18-21 (south of Port Arthur to Brownsville, TX)

The sampling universe in 2026 was stratified into five aggregate areas, which are the same as those identified in Detloff 2024.

- (1) statistical zones 1-3 (Florida Keys northward to Palm Harbor, Florida)
- (2) statistical zones 4-8 (Palm Harbor, Florida to Panama City Beach)
- (3) statistical zones 9-14 (west of Panama City Beach to Atchafalaya River Delta, LA)
- (4) statistical zones 15-18 (Atchafalaya River Delta to south of San Luis Pass, TX)
- (5) statistical zones 19-21 (San Luis Pass, TX to Brownsville, TX)

Like the historical selection process, vessel selections were carried out on a quadrimester basis (i.e. January – April, etc.).

In 2023, the depth strata were removed from the current vessel selection procedure because the process of assigning a depth stratum to each vessel could not be replicated. Currently, within the program it is believed that this list of vessels with landings by depth (and area) is an artifact of the previous model that generated effort estimates in the Gulf of America as that system merged effort information from ELB sources and landings information from the trip ticket system. Given the lack of knowledge surrounding this historical process and the creation of a newly developed Gulf of America shrimp effort model with different methodology, the decision was made to remove depth as a stratification variable.

In 2026, an additional stratification involving net-configuration within time and area strata (two-net or four-net configuration) was added for the allocation process within the Gulf shrimp observer program utilizing information collected from the Annual Landings and Gear Survey program operated by the SEFSC.

In total, 2,550 seadays are allotted to the Gulf of America Penaeid shrimp observer program every calendar year (850 seadays per quadrimester). This equates to about an expected coverage rate of 1.5-2% based on historical shrimp effort since 2007. Allotted samples are allocated based on prior years' fishing average effort across aggregated areas within a quadrimester, which is provided by the updated effort algorithm developed in Detloff (2024). These numbers are occasionally adjusted depending on fishery compliance (i.e. vessels not contacting the program when taking trips even though selected for observation) (~35%), but never less than 850 seadays.

For the South Atlantic Penaeid shrimp fishery, the sampling universe was stratified into three regions, which are the same as the historical vessel selection process (**Figure 1**):

- (1) South: FIN areas 722 – 748 (GA/FL border to Atlantic side of the Keys)
- (2) Central: FIN areas 706 – 722 (SC/NC border to GA/FL border)
- (3) North: FIN areas 630 – 705 (~ North Carolina)

Like the historical selection process, vessel selections were carried out on a quadrimester basis (i.e. January – April, etc.). Rather than utilizing landings from trip tickets to determine the allocative process, trip ticket effort data from the Atlantic Coastal Cooperative Statistics Program (ACCSP) warehouse were utilized. This decision was made to switch to this allocation scheme during the second quadrimester selection in 2023 in order to standardize metrics for the Gulf and South Atlantic Penaeid shrimp selections. Both programs now utilize effort (i.e. industry sea days) to determine the sample allocation over their respective spatial-temporal grids.

Regarding the selection of vessels in South Atlantic Rock Shrimp fishery, each year, ten vessels of approximately 30 vessels in the sampling frame that meet the criteria specified earlier are randomly selected for coverage from July 1 through November 30. The current process does not significantly differ from the historical process.

For all three fisheries, if a vessel was selected, the same historical minimum sea day coverage must be met.

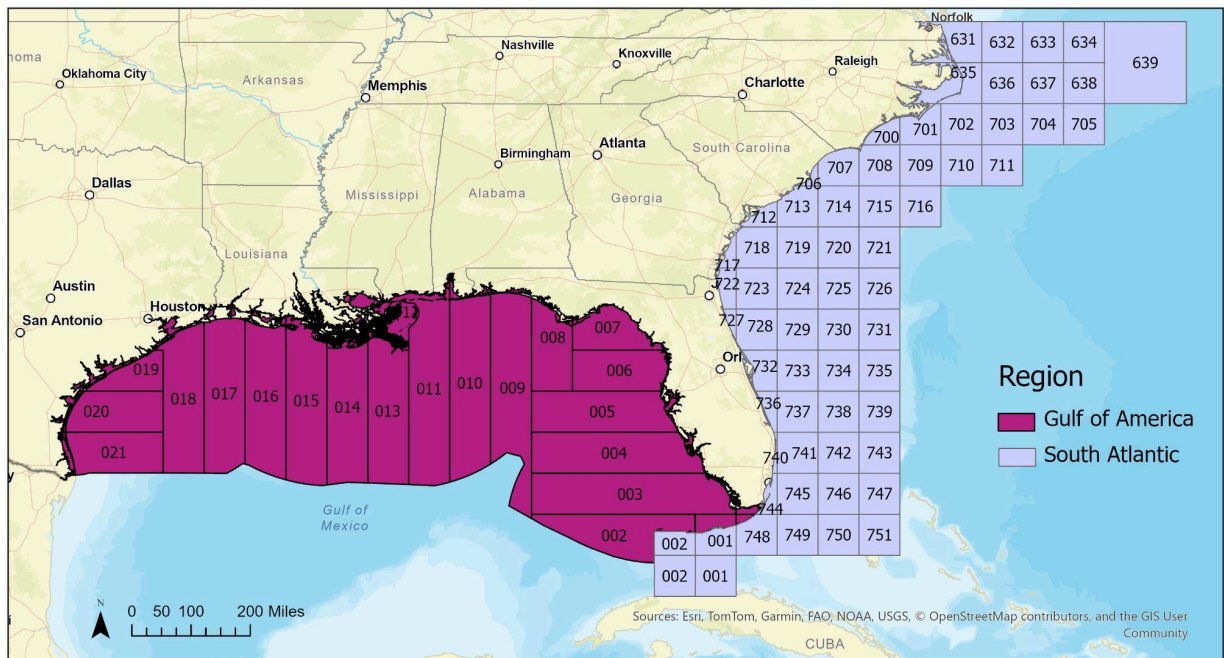


Figure 1. Map of fishing areas used in the sampling universe stratification.

Sampling Protocol

From 1992 to 2003, there were several different projects being completed by the shrimp observer program (bycatch characterization, BRD evaluation, Red Snapper Initiative, and BRD certification) all of which had varying data collection protocols. Vessel and gear characteristics were recorded for all projects, which included information such as vessel length, hull construction, gross tonnage, engine horsepower and crew size. Gear characteristics such as BRD and TED designs, net type, etc. were also recorded at the start of each trip. For each tow, bottom time, vessel speed and operational aspects relative to each net were documented.

When developing the sampling protocol for bycatch characterization, the first trips to determine the exact methodology to use occurred in April of 1992 in the Gulf of America and June 1992 in the Atlantic. Fishery-specific data were collected from one randomly selected net for each tow. Nets trailing behind the try net were not sampled. Catch from the net was placed into a partitioned area, mixed to ensure randomness, shoveled into baskets with total weights obtained. Approximately 20% of the catch was subsampled for species composition in which species weight and number were obtained. Thirty specimens for each selected species from these characterizations were measured for length. During the modified characterization trips (i.e. not fully characterized trips), 20 selected species (or taxa) of finfish were processed with the remaining sub-sample grouped into non-shrimp crustaceans, fish, other non-crustacean invertebrates or debris. In addition to this, all sea turtles were identified to species, measured, tagged, photographed, and released.

For BRD evaluation trips, which started during the same time frame as the characterization trips, NOAA Fisheries approved observers collected data to evaluate different BRD designs. These trips were comparative control/experiment tests where comparisons of catch data for nets equipped with BRD/TED gear combinations and TED-only were conducted. Experimental and control nets were alternated (approximately mid-trip) from starboard to port outboard nets to reduce net and side biases. Generally, only two outboard nets were sampled. The characterization protocol followed the modified bycatch characterization scheme. When time permitted, all Red Snapper from the subsamples were counted and weighed.

Following the certification of the Gulf fisheye and Jones-Davis BRD designs in 1998, an intensive effort was made to evaluate the effectiveness of these BRD designs under commercial operations. These trips (called by the program the “Red Snapper Initiative” only utilized the newly approved BRD designs and onboard sampling methods were similar to the BRD evaluation trips, with following exceptions:

- (1) The control net had a closed BRD, while the experimental net was equipped with the Gulf fisheye or Jones-Davis BRD design.
- (2) Gear was alternated every third day.
- (3) Total shrimp weights and red snapper counts and weights were obtained for each experimental and control net, with all Red Snapper measured.
- (4) If time permitted, the last tow of the night was typically subsampled for use in a modified bycatch characterization.

For BRD certification trips, onboard data collection procedures were similar to the Red Snapper Initiative trips discussed above. A minimum of 30 successful tows, a specific number of Red Snapper caught, and consistent tow times were among some of the testing requirements for BRD certification. The full procedures are supposedly described at length in a 1999 document entitled “Gulf of Mexico Bycatch Reduction Device Test Protocol Manual”, but no citation was given in Scott-Denton 2004.

Starting in 2007, the mandatory observer program provided quantitative biological and gear-selectivity information for the southeastern shrimp fishery, similar to that of the processes created by the end of 2003. All tow start and end times, location information, and net descriptions (towed behind the try net, bogged down with debris, successful tow, etc.) are recorded.

For each sampled tow, additional net information is also recorded. If a vessel trawled 4 nets, then two nets are sampled and if a vessel trawled 2 nets, then only the net opposite the try net is sampled. Sampled net information includes the total weight of catch (in kilograms), total kept penaeid shrimp weight (in either head on or head off units), and the total weight and number of Red Snapper caught in the net.

When species characterization is conducted for a sampled net, a single basket of catch is set aside and weighed. A list of species are separated out, weighed and counted. Shrimp species are weighed head on. Prior to a trip, the observer may be informed by the observer coordinator to characterize additional commercially important or rare species. This process was not historically documented and reasons for the additional characterization of important or rare species do not exist.

The historical list of individual species required for specific characterization for each fishery were the following:

| <u>Gulf of America Penaeid</u> | <u>South Atlantic Penaeid</u> | <u>South Atlantic Rock Shrimp</u> |
|---------------------------------------|--------------------------------------|--|
| ● Brown Shrimp | ● Brown Shrimp | ● Rock Shrimp |
| ● White Shrimp | ● White Shrimp | ● Brown Shrimp |
| ● Pink Shrimp | ● Pink Shrimp | ● White Shrimp |
| ● Blacknose Shark | ● Blue Crab | ● Pink Shrimp |
| ● Spinner Shark | ● Cannonball Jellyfish | ● Iridescent Swimming Crab |
| ● Finetooth Shark | ● Star Drum | ● Longspine Swimming Crab |
| ● Blacktip Shark | ● Atlantic Mendhaden | ● Dusky Flounder |
| ● Atlantic Sharpnose Shark | ● Spinner Shark | ● Inshore Lizardfish |
| ● Bonnethead Shark | ● Silky Shark | ● Spinner Shark |
| ● Smooth Dogfish Shark | ● Finetooth Shark | ● Silky Shark |
| ● Florida Smoothhound Shark | ● Blacktip Shark | ● Finetooth Shark |
| ● Lemon Shark | ● Atlantic Sharpnose Shark | ● Blacktip Shark |
| ● Lane Snapper | ● Bonnethead Shark | ● Atlantic Sharpnose Shark |
| ● Atlantic Croaker | ● Smooth Dogfish Shark | ● Bonnethead Shark |
| ● Southern Flounder | ● Scalloped Hammerhead Shark | ● Smooth Dogfish Shark |

- Black Drum
 - Cobia
 - Vermilion Snapper
 - Red Drum
 - Spotted Seatrout
 - King Mackerel
 - Spanish Mackerel
 - Longspine Porgy
- Spotted Seatrout
 - Silver Seatrout
 - Weakfish
 - Spot
 - Atlantic Croaker
 - Southern Kingfish
 - Northern Kingfish
 - Red Drum
 - Black Drum
 - Cobia
 - Southern Flounder
 - Summer Flounder
 - King Mackerel
 - Spanish Mackerel
 - Scup
 - Gag
 - Black Seabass
 - Bank Seabass
 - Rock Seabass
 - Florida Pompano
 - Bluefish
- Scalloped Hammerhead Shark
 - Spotted Seatrout
 - Silver Seatrout
 - Weakfish
 - Spot
 - Atlantic Croaker
 - Southern Kingfish
 - Northern Kingfish
 - Red Drum
 - Black Drum
 - Cobia
 - Southern Flounder
 - Summer Flounder
 - King Mackerel
 - Spanish Mackerel
 - Scup
 - Gag
 - Black Seabass
 - Bank Seabass
 - Rock Seabass
 - Florida Pompano
 - Bluefish

All other species not identified by the observer coordinator or on the identified list are aggregated into larger categories such as other invertebrates, other sharks not listed, or other finfish grouped. If a species appears dominant in the basket, but does not appear on the species list, it may be recorded on the blank Species Characterization Form, but this is at the discretion of the observer.

In 2025, the species characterization list was changed to where there is just one list for all fisheries. Observers were asked to characterize (count and weigh) all snappers, groupers, and sharks to species. Additionally, observers were instructed to count and weigh individual species (specified below) and weigh only the grouped species specified below.

Individual Species

- Brown Shrimp
- White Shrimp
- Pink Shrimp
- Rock Shrimp
- Tiger Shrimp
- Blue Crab
- Caribbean Spiny Lobster
- Cannonball Jellyfish
- Bank Seabass
- Black Seabass

Groups

- Discarded Penaeus
- Debris
- Crustaceans
- Jellyfishes
- Invertebrates
- Drums and Croakers
- Flatfishes
- Kingfishes
- Lizardfishes
- Menhadens

- Rock Seabass
- Black Drum
- Red Drum
- Bluefish
- Cobia
- Crevalle Jack
- Dusky Flounder
- Southern Flounder
- Summer Flounder
- Florida Pompano
- Gray Triggerfish
- King Mackerel
- Spanish Mackerel
- Lionfish
- Longspine Porgy
- Scup
- Spotted Seatrout
- Weakfish
- Seatrouts
- Shads
- Teleosts
- Skates and Rays

III. Temporal coverage

While data collection under a voluntary observer program may have begun in 1992, the first year of observer data available in the SEFSC Oracle database starts in 1997. Prior to 2007, the mandatory shrimp observer program did not formally exist and any observer data collected was a result of a specially funded project with specific research goals and possibly different sampling protocols.

Trip numbers (five to six digit alpha numeric code) are provided by the observer coordinator and are used to distinguish data collected under the mandatory shrimp observer program versus a special project. The first character denotes the organization conducting the project, while the second character denotes the project type. Four consecutive numbers follow to signify the number of the trip program completed. **Table 1** summarizes the trip types (first and second character of the trip number) available and the first year in which it appears in the database.

Table 1. Observer data available in the SEFSC Oracle database.

| Trip Type Code | Description (Organization, Project) | First Year of Data |
|-----------------------|--|---------------------------|
| FB | Gulf of Mexico Foundation, BRD Evaluation | 2001 |
| FE | Gulf of Mexico Foundation, Effort | 1999 |
| FG | Gulf of Mexico Foundation, BRD Certification | 1999 |
| FT | Gulf of Mexico Foundation, TED Evaluation | 2005 |
| GA* | SEFSC, South Atlantic Mandatory Penaeid Shrimp | 2008 |
| GB | SEFSC, BRD Evaluation | 1998 |
| GC | SEFSC, Bycatch Characterization | 2001 |
| GD* | SEFSC, Deepwater Royal Red | 2010 |
| GG | SEFSC, Gulf of Mexico BRD Certification | 1999 |
| GH | SEFSC, North Carolina Blue Crab | 2012 |
| GI* | SEFSC, Mandatory Skimmer Trawl | 2012 |
| GL | SEFSC, Experiment Skimmer (TED evaluations) | 2004 |
| GM | SEFSC, Modified Bycatch Characterization | 2001 |
| GN | SEFSC, Naked Net (TED alternative) | 1997 |
| GP | SEFSC, Electronic Monitoring Pink Shrimp (Sawfish) | 2014 |
| GR* | SEFSC, Gulf Mandatory Penaeid Shrimp/Red Snapper Initiative | 2001 |
| GT | SEFSC, TED Evaluation | 2000 |
| GV | SEFSC, EM Gulf shrimp fishery work aboard NOAA Research Vessel | 2022 |
| GW* | SEFSC, South Atlantic Mandatory Rock Shrimp | 2008 |
| GX | SEFSC, Rock Shrimp Characterization | 2001 |
| GY | SEFSC, Rock Shrimp BRD Evaluation | 2003 |
| GZ | SEFSC, Soft TED Evaluation | 1997 |
| SB | South Atlantic Foundation, BRD Evaluation | 2001 |
| SE | South Atlantic Foundation, Effort | 2012 |
| SS | South Atlantic Foundation, BRD Certification | 1999 |
| ST | South Atlantic Foundation, TED Evaluation | 2006 |

* Indicates trips that are selected under the mandatory shrimp observer program. Prior to 2007, GR trips were a part of a Red Snapper Initiative project. Skimmer trawl trips (GI) are dependent on funding availability. Deepwater Royal Red (GD) trips are from vessels selected under the Gulf of America Penaeid shrimp fishery and designated GD after the fact based on target.

IV. Spatial coverage

Spatial coverage includes the Gulf of America and South Atlantic (**Figure 1**). In the Gulf of America, the spatial coverage ranges from west Florida to Texas. In the South Atlantic, the spatial coverage spans from east Florida to North Carolina.

V. Data Source Contact

National Oceanic and Atmospheric Administration (NOAA)
National Marine Fisheries Service (NMFS)
Southeast Fisheries Science Center (SEFSC)
Fisheries Statistics Division (FSD)
Observer Program Branch
Contact Person: Gary Decossas
Email Address: gary.decossas@noaa.gov

VI. Field Descriptions

Field descriptions were organized based on the main observer forms: Trip Summary, Gear Sheet, Station sheet, Net Sheet, and Species Characterization Sheet. These tables containing field names as they appear in the database can be found in the Appendix. Additional columns, such as first year used and last year used, provide more detail on temporal changes to the database when fields were added or no longer on the forms as well. Only Red Snapper lengths (in millimeters) are recorded and stored in a separate table. Basic protected species information is also collected when encountered and stored in separate tables in the database.

VII. References

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VIII. Appendix

The field descriptions presented in this Appendix reflect the structure and contents of the database as of 2024. Minor modifications may have been made since the database continues to be actively maintained and updated.

Trip Information

| Field Name | Description | First Year Used | Last Year Used |
|--------------------|---|----------------------------|-----------------------|
| TRIPNUMBER | Uniquely assigned number for that trip. The first letter refers to the organization conducting the project and the second character refers to the project type. | 1997 | Present |
| REGION | A = Atlantic and G = Gulf | 2000 | Present |
| STARTDATE | Start date of the trip | 1997 | Present |
| ENDDATE | End date of the trip | 1997 | Present |
| SAMPLEDTOWS | Number of tows sampled | 2000 | 2024 |
| UNSAMPLEDTOWS | Number of tows unsampled | 2000 | 2024 |
| PORTOFORIGIN | City where vessel departed | Retroactively entered 2020 | Present |
| PORTOFORIGIN_STATE | State where vessel departed | Retroactively entered 2020 | Present |

Gear Information

| Field Name | Description | First Year Used | Last Year Used |
|--------------------|--|------------------------|-----------------------|
| TRIPNUMBER | Uniquely assigned number for that trip. | 1997 | Present |
| TOWNUMBER | Assigned number for the tow sampled by observer for each trip | 1997 | Present |
| GEARCODE | Arbitrary A, B, C, etc. that observer designates to a particular gear configuration if configurations are different between tows | 1997 | Present |
| DATE | Date of starting tow number or date when the changes occurred | 1997 | Present |
| NETTYPE | Net type (e.g. semi-balloon, balloon, balloon w/bib, flat, mongoose, Jib, etc.) | 1997 | Present |
| HEADROPELENGTH | Length of trawl head rope (in feet and inches in decimal form) | 1997 | Present |
| FOOTROPELENGTH | Length of trawl foot rope (in feet and inches in decimal form) | 1997 | Present |
| TRAWLBODYMATERIAL | Nylon, poly, sapphire, or spectra | 1997 | Present |
| TRAWLBODYMESH SIZE | Stretched length to the nears 1/8" | 1997 | Present |
| CODENDMATERIAL | Nylon, poly, sapphire, or spectra | 1997 | Present |
| CODENDMESH SIZE | Stretched length to the nears 1/8" | 1997 | Present |
| CODENDTWIN SIZE | Twin size (9 if unknown) | 1997 | Present |
| DOORMATERIAL | Aluminum, woode, steel, other, or none | 1997 | Present |

| | | | |
|----------------------|---|------|---------|
| DOORLENGTH | Length of door (in feet and inches in decimal form) | 1997 | Present |
| DOORHEIGHT | Height of door (in feet and inches in decimal form) | 1997 | Present |
| DUMMYDOORLENGTH | Total length of dummy door (in feet and inches in decimal form) | 1997 | Present |
| LEGLNGTH_TOP | Length of top legline (in feet and inches in decimal form) on the trawl's standard door. Top legline length is measured from the point of cable attachment at the door to the point where the first mesh on the net is tied to the cable. | 1997 | Present |
| LEGLNGTH_BOTTOM | Length of bottom legline (in feet and inches in decimal form) on the trawl's standard door. Bottom legline length is measured from the point of cable attachment at the door to the point where the first mesh on the net is tied to the cable. | 1997 | Present |
| LEGLNGTH_DUMMYTOP | Length of top legline (in feet and inches in decimal form) on the trawl's dummy door. | 1997 | Present |
| LEGLNGTH_DUMMYBOTTOM | Length of bottom legline (in feet and inches in decimal form) on the trawl's dummy door. | 1997 | Present |
| TRAWLEXTMATERIAL | Nylon, poly, sapphire, or spectra | 1997 | Present |
| TRAWLEXTMESH SIZE | Stretched length to the nears 1/8" | 1997 | Present |
| CHAFFINGGEARTYPE | Whiskers, mesh, metal, or none | 1997 | Present |
| TICKLERCHAINLENGTH | Length of chain (in feet and inches in decimal form) | 1997 | Present |
| TICKLERCHAIN SIZE | Gauge (thickness) of the metal part of the link to the nearest 1/16-inch (in decimal form) | 1997 | Present |
| LAZYLINERIGGING | Elephant ears or choke (rings) | 1997 | Present |
| BRDTYPE | BRD type (e.g. Fisheye, Jones-Davis, Modified Jones Davis, Extended Funnel, Composite, etc.) | 1997 | Present |
| BRDGEARCODE1 | This is a value that was carried over from an older version of DB, No longer used. | 1997 | 2011 |
| BRDGEARCODE2 | This is a value that was carried over from an older version of DB, No longer used. | 1997 | 2011 |
| BRDGEARCODE3 | This is a value that was carried over from an older version of DB, No longer used. | 1997 | 2011 |
| BRDGEARCODE4 | This is a value that was carried over from an older version of DB, No longer used. | 1997 | 2011 |
| BRDPOSITION | Top of offset from top seam (blank if Jones-Davis BRD) | 1998 | Present |
| BRDSPOOKERCONE | Yes or No | 1998 | Present |
| BRDCODENDLENGTH | Number of meshes | 1998 | Present |
| BRDCIRCUMFERENCE | Number of meshes | 1998 | Present |
| BRDDISTFROMEAR_FT | Distance of escape opening from elephant ear or choke rings (in feet) | 1998 | Present |
| BRDDISTFROMEAR_IN | Distance of escape opening from elephant ear or choke rings (in inches) | 1998 | Present |
| BRDDISTFROMTIEOFF_FT | Distance of escape opening from tie off rings (in feet) | 1998 | Present |
| BRDDISTFROMTIEOFF_IN | Distance of escape opening from tie off rings (in inches) | 1998 | Present |
| BRDFISHEYEOFFSET | Number of meshes the fisheye is offset from top | 1998 | Present |

| | | | |
|------------------------|--|------|---------|
| | center | | |
| BRDFISHEYEESCAPEHEIGHT | Height of fisheye escape opening (in inches) | 1998 | Present |
| BRDFISHEYEESCAPEWIDTH | Width of fisheye escape opening (in inches) | 1998 | Present |
| BRDFISHEYEESCAPESHAPE | Shape of escape opening (e.g. oval, diamond, square, halfmoon, rectangle, triangle, etc.) | 1997 | Present |
| BRDLOCATION | BRD is in front, centered, or behind the elephant ears | 1997 | Present |
| BRDELEPHANTLENGTH | The length of the Elephant ears to from the point of attachment to the tip of the ring (in inches) | 1998 | Present |
| BRDELEPHANTTOTIEOFF_FT | Distance from point of attachment of elephant ear to tie off rings (in feet) | 1998 | Present |
| BRDELEPHANTTOTIEOFF_IN | Distance from point of attachment of elephant ear to tie off rings (in inches) | 1998 | Present |
| TEDTYPE | Soft, hard, or none | 1997 | Present |
| TEDDESIGN | Weedless, curved bar, straight bar, none, or unknown | 1997 | Present |
| TEDOPENING | Top, bottom, or none | 1997 | Present |
| TEDINSHOREONLY | Yes or No | 2013 | Present |
| TEDFUNNEL | Yes or No | 1997 | Present |
| TEDFLAP | Yes or No | 1997 | Present |
| TEDCOVERFLAP | Single or double | 2013 | Present |
| TEDACCELFUNNEL | Stretched measurement of horizontal opening of accelerator funnel (in inches) | 2013 | Present |
| TEDLENMESH | Length of mesh, not stretched (in inches) | 2013 | Present |
| TEDLEADEDGE | Stretched leading edge (in inches) | 2013 | Present |
| TEDFORWARDCUT | Stretched forward cut (in inches) | 2013 | Present |
| TEDFLAPLEN | Length of flap, not stretched (in inches) | 2013 | Present |
| TEDANGLE | Angle of TED with respect to the plane of the net (in degrees) | 1997 | Present |
| TEDLENGTH | Total length of the TED grid (in inches) | 1997 | Present |
| TEDWIDTH | Total width of the TED grid (in inches) | 1997 | Present |
| TEDMATERIAL | Material type used in TED construction (e.g. aluminum for hard TED or polypropylene mesh for a soft TED) | 1997 | Present |
| TEDNUMFLOATS | Total number of floats attached to TED | 1997 | Present |
| TEDFLOATTYPE | Construction (e.g. sponge, foam, plastic, other) and shape (e.g. football, bullet, cylinder, round) of float | 1997 | Present |
| TEDSPACEBARS | Maximum space between bars (in inches) | 2013 | Present |
| PHOTOGRAPHED | 0 = not photographed, 1 = photographed | 1997 | Present |
| COMMENTS | Comments relative to net type, rope measurements, cod end, doors, lazy line, etc. | 1997 | Present |

Station Information

| Field Name | Description | First Year Used | Last Year Used |
|-------------------|---|------------------------|-----------------------|
| TRIPNUMBER | Uniquely assigned number for that trip. | 1997 | Present |
| TOWNUMBER | Assigned number for the tow sampled by observer for each trip | 1997 | Present |
| DATETIMEIN | Start date and time in when the nets are set | 1997 | Present |
| LATIND | Latitude in degrees at start of tow | 1997 | Present |

| | | | |
|-----------------------|--|------|---------|
| LATINM | Latitude in minutes at start of tow | 1997 | Present |
| LATINS | Latitude in seconds at start of tow | 1997 | Present |
| LONIND | Longitude in degrees at start of tow | 1997 | Present |
| LONINM | Longitude in minutes at start of tow | 1997 | Present |
| LONINS | Longitude in seconds at start of tow | 1997 | Present |
| DEPTHIN | Water depth at the start of the tow (in feet) | 1997 | Present |
| DATETIMEOUT | End date and time out when nets begin haul back | 1997 | Present |
| LATOUTD | Latitude in degrees at start of haul back | 1997 | Present |
| LATOUTM | Latitude in minutes at start of haul back | 1997 | Present |
| LATOUTS | Latitude in seconds at start of haul back | 1997 | Present |
| LONOUTD | Longitude in degrees at start of haul back | 1997 | Present |
| LONOUTM | Longitude in minutes at start of haul back | 1997 | Present |
| LONOUTS | Longitude in seconds at start of haul back | 1997 | Present |
| DEPTHOUT | Water depth at the end of tow (in feet) | 1997 | Present |
| HOURSTOWED | Hours towed from time in to time out (in decimal hours), computed by observer | 1997 | Present |
| CALCHOURSTOWED | Calculated hours towed from time in to time out (in decimal hours) | 1997 | Present |
| VESSELSPEED | Average speed of tow (in knots) | 1997 | Present |
| STATZONE | Statistical zone at time in | 1997 | Present |
| OPCODE1 | Operational code for each net. See appendix 11 of protocol manual. | 1997 | Present |
| OPCODE2 | Operational code for each net. See appendix 11 of protocol manual. | 1997 | Present |
| OPCODE3 | Operational code for each net. See appendix 11 of protocol manual. | 1997 | Present |
| OPCODE4 | Operational code for each net. See appendix 11 of protocol manual. | 1997 | Present |
| TOTALNETSTOWED | Total number of nets trawled. Do not include the try net. | 1997 | Present |
| SEASTATE | Wave height (1 = 0-2 feet; 2 = 3-5 feet; 3 = 6-8 feet; 4 = 8+ feet) | 1997 | Present |
| NETRETRIEVALDIRECTION | Direction (up sea "U" - against the wave direction, down sea "D" - with the wave direction, or cross sea "C" - perpendicular to wave direction) the vessel is heading while retrieving the nets. If the sea is flat, ask the captain the tide direction and use in place of wave direction | 1997 | Present |
| SCALETYPE | Type of scale used (D = digital; M = mechanical; B = both; U = unknown) | 1997 | Present |
| COMMENTS | Additional information about the trawl | 1997 | Present |

Net Information

| Field Name | Description | First Year Used | Last Year Used |
|------------|--|-----------------|----------------|
| TRIPNUMBER | Uniquely assigned number for that trip. | 1997 | Present |
| TOWNUMBER | Assigned number for the tow sampled by observer for each trip | 1997 | Present |
| GEARCODE | Arbitrary A, B, C, etc. that observer designates to a particular gear configuration if configurations are different between tows | 1997 | Present |

| | | | |
|------------------------|--|------|---------|
| NETPOSITION | Net position number of the sample net. Port and starboard are determined by facing the bow of the vessel. (Net # 1 is the outside port net and is usually the first recorded on the form). If a vessel is using 4 nets, you will sample nets 1 and 4. If a vessel is using 2 nets, you will sample net 2 or 3 (sample the one that is opposite the try net). | 1997 | Present |
| EXPORCTRL | E = net is experimental, C = net is control. Closed BRDs are typically "C" and open BRDs are typically "E". | 1997 | Present |
| BRDOPENORCLOSED | Open - BRD is open, Closed - BRD is closed, N/A - no BRD or Unknown - Not known if open or closed | 1997 | Present |
| SAMPLEWEIGHT | If a characterization is performed, after mixing the catch, obtain a onebasket sample (approximately 70 pounds) from each net. Weigh the basket in kilograms. If characterization is not performed, it will be 99.9 | 1997 | Present |
| SAMPLEWEIGHTCODE | Null of all | 1997 | Present |
| TOTALCATCHWEIGHT | Weight of total catch (in kilograms) | 1997 | Present |
| TOTALCATCHWEIGHTCODE | Null for all | 1997 | Present |
| SHRIMPTOTALWEIGHT | Weight of all kept penaeid (brown, white, pink) shrimp (in kilograms) | 1997 | Present |
| SHRIMPTOTALWEIGHTCODE | Null or 8 (meaning under 0.01 kg) | 1997 | Present |
| SHRIMPHEADSONOFF | O = head is left on the shrimp, X = head is removed | 1997 | Present |
| SNAPPERTOTALWEIGHT | Total weight of red snapper (in kilograms) | 1997 | Present |
| SNAPPERTOTALWEIGHTCODE | Null or 9 (meaning unknown) | 1997 | Present |
| SNAPPERTOTALNUMBER | Total number of red snapper | 1997 | Present |
| SNAPPERLESS100MM | Total number of red snapper that have a fork length less than or equal to 100mm | 1997 | Present |
| SNAPPERGRTR100MM | Total number of red snapper that have a fork length greater than 100mm | 1997 | Present |
| SNAPPERBROKENLESS100MM | Total number of broken (UNMEASURABLE) red snapper that have a fork length less than or equal to 100mm | 1997 | Present |
| SNAPPERBROKENGTR100MM | Total number of broken (UNMEASURABLE) red snapper that have a fork length greater than 100mm | 1997 | Present |
| SNAPPERBROKENUNKNOWN | Total number of broken (UNMEASURABLE) red snapper of unknown length (greater than or less than 100mm unknown) | 1997 | Present |
| COMMENTS | Additional information about the trawl | 1997 | Present |

Species Net Characterization

| Field Name | Description | First Year Used | Last Year Used |
|--------------|--|-----------------|----------------|
| GENSP | Shortened genus species name | 1997 | 2024 |
| SPECIES_CODE | 4-character abbreviated species code | 2025 | Present |
| NMFS_CODE | NMFS species code | 2025 | Present |
| NUMBER | Number of individuals in basket by species | 1997 | Present |
| NUMBERCODE | 8 specimen too small to measure, 9 No data | 1997 | Present |

| | | | |
|------------------|--|------|---------|
| SAMPLEWEIGHT | Weight of sample in basket by species in kg | 1997 | Present |
| SAMPLEWEIGHTCODE | 8 - too small to measure, 9 - no data | 1997 | Present |
| SELECTWEIGHT | Weight of sample in basket by a select species in kg | 1997 | Present |
| SELECTWEIGHTCODE | 8 - too small to measure, 9 - no data | 1997 | Present |