

**Annual Report for 2015
on the Implementation of the Terms and Conditions of the
2011 Biological Opinion on the Continued Authorization of Reef Fish Fishing
under the Gulf of Mexico Reef Fish Management Plan**

**National Marine Fisheries Service
National Oceanic and Atmospheric Administration
Southeast Fisheries Science Center**

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Introduction

The Gulf of Mexico reef fish fishery uses bottom longlines and vertical lines to target snappers, groupers, tilefish, jacks, and other species. The National Marine Fisheries Service (NMFS) began placing observers on Gulf of Mexico reef fish fishery vessels in the second half of 2006 and continues to sample the fishery. On September 30, 2011, a Biological Opinion on the Continued Authorization of Reef Fish Fishing under the Gulf of Mexico Reef Fish Management Plan was completed and the corresponding incidental take statement was issued. This Biological Opinion included several reasonable and prudent measures (RPMs) to minimize the impacts of future takes of sea turtles and smalltooth sawfish by the Gulf reef fish fishery and to monitor levels of incidental take. These RPMs require NMFS to: (1) avoid and minimize take through outreach and education; (2) minimize future gear impacts through research; and (3) monitor the frequency, magnitude, and impact of incidental take. Non-discretionary Terms and Conditions (T&C) are specified for each of these RPMs.

This report satisfies several Terms and Conditions of the 2011 Biological Opinion on the Gulf of Mexico reef fish fishery that NMFS is required to implement. It specifically addresses T&C 1a-c – develop and implement a comprehensive outreach plan to promote that takes be avoided to the extent practicable and that any captured sea turtle or smalltooth sawfish are handled in a way that minimize adverse effects from incidental take and reduces the likelihood of mortality; T&C 3 –conduct or fund projects to characterize the fishery and its interactions with sea turtles and smalltooth sawfish, and potential fishing gear and fishing behavior modifications that reduce adverse impacts from this fishery; T&C 4 – update careful release protocols and modify release gears as new information becomes available; T&C 5 –observe a minimum of 100,000 bottom longline hooks per year; T&C 6 –provide a minimum of 105 sea days per year of observer coverage for the vertical line component of the fishery; T&C 7 – determine and implement the number of trips, sets, and/or hook-hours that must be observed in areas typically fished off southwest Florida and adjacent to where smalltooth sawfish are most common, such as off the Florida Keys to be confident that smalltooth sawfish take is as extremely rare as estimated; T&C’s 8-11 –specify observer data and sample collection and record keeping requirements, review observer data, and provide information on captures¹ and release condition of each bycaught sea turtle in the bottom longline portion of the U.S. Gulf of Mexico reef fish fishery; T&C 13 –progress towards improving quantitative stock assessments of the primary incidentally-caught species; T&C 15 –maintain a database on fishing gear found associated with sea turtle strandings and to share the results with SERO; and T&C 18 –prepare an annual bycatch report including bycatch estimates and CPUEs, a summary of the methods and data used, the distribution of observed and total fishing effort for the bottom longline component of the Gulf reef fish fishery, and every year starting after the 2012 fishing year a total three-year running take estimate for each component of the fishery must be provided.

One significant difference between the 2009 and 2011 Biological Opinions is the establishment of a rarity threshold for sea turtle takes. NMFS determined that the best way to deal with statistical problems caused by the rarity of sea turtle takes per unit effort was to devise a rarity metric which would confirm the rarity of the event in a statistical manner and provide

¹For the purpose of this report, captures of sea turtles (hereafter “takes”) refers to sea turtles that were incidentally captured during fishing operations.

confidence that the overall take in the fishery is below the Incidental Take Statement (and is on track to remain below the three-year Incidental Take Statement). NMFS is confident that the annual take level would not be exceeded if the observed take level is 1 or less per 100,000 hooks; this is the rarity threshold established for sea turtle takes. For any year in which there is a take rate of one or fewer loggerheads per 100,000 hooks, an annual estimated take will not be calculated because the take rate is too low to derive a precise point estimate of take.

To comply with government regulations (*i.e.*, Magnuson-Stevens Fishery Conservation and Management Act - MSFCMA), confidential information has been removed from this Annual Report; therefore, exact reproduction of the estimates provided in the appendix may not be possible.

1. RPM 1: Avoiding and Minimizing Take Through Outreach and Education

1.1. T&C 1 Develop and Implement a Comprehensive Outreach Plan

The Reef Fish Outreach Plan for the Gulf of Mexico is designed to meet the requirements of the Terms and Conditions of the Biological Opinion by training permitted participants in the reef fish fisheries as well as government officials from both State and Federal Agencies, and non-governmental organizations (NGOs). The required in-person training and education of commercial and recreational fishermen on: (1) identification of sea turtle species, (2) how to use required and recommended sea turtle gear-removal equipment, (3) the “Careful Release and Protocols for Sea Turtle Release with Minimal Injury,” and (4) the importance of maximizing gear removal to maximize post-release survival of sea turtles, and can be conducted through voluntary workshops, fishing club meetings, and/or dockside visits. SEFSC, working with the Gulf of Mexico Fishery Management Council (GMFMC), identifies groups and offers training throughout the region.

1.1.1. T&C 1a Establishment of a POC to interact with constituents on sea turtle interactions

The SEFSC’s point of contact (POC), Charles Bergmann, is a member of the SEFSC Harvesting Systems Unit and is assisted by Nick Hopkins. Mr. Bergmann and Mr. Hopkins answer constituent questions about sea turtle release gear and safe handling and release protocols, and actively reach out to fishermen to learn about their experiences, trouble-shoot problems, and share solutions and successful experiences with other fishermen and NMFS scientists and managers.

1.1.2. T&C 1b In-Person Training and Education of Commercial and Recreational Fishermen

Outreach and training on sea turtle safe handling and release procedures were conducted with commercial and recreational fishers at 12 locations around the Gulf of Mexico in 2015. Training locations included: South Padre Island, Port Isabelle, Port Mansfield, Corpus Christi, Port Aransas, Port O’Connor, Matagorda, Freeport, Galveston, and Sabine Pass, Texas and; Destin and Panama City, Florida. This effort provided information and training in sea turtle release

gear and safe handling methods to approximately 86 vessels. Placards were distributed describing safe handling and release methods as well as the web address for NMFS Technical Memorandum NMFS-SEFSC-580, Careful Release Protocols for Sea Turtle Release with Minimal Injury.

1.1.3. T&C 1c Increased Collaboration and Communication with Federal and State Agency Partners

Training was conducted with Federal and State Agency partners at four of the 12 locations mentioned in 1.1.2 above. Partners that attended these events included Sea Grant agents from Texas and Florida, NMFS Southeast Regional Office, National Park Service, and Texas Parks and Wildlife. Additional training was provided to Florida Fish and Wildlife Commission (FWC) marine enforcement officers at the FWC academy in Quincy, Florida and to the U.S. Coast Guard at the Gulf Regional Fisheries Training Center in New Orleans, Louisiana.

2. RPM 2: Minimizing Future Gear Impacts through Research

2.1. T&C 3 NMFS Conducted or Funded Research that Better Characterizes the Fishery and its Interactions with Sea Turtles and Smalltooth Sawfish

2.1.1. Hook Timer Project

In 2010, NMFS conducted a pilot study, Characterization of Target Catch CPUE as a Function of Bait Soak Time in the Gulf of Mexico Bottom Longline Reef Fish Fishery: A Pilot Study to Examine Potential Sea Turtle Mitigation Measures, to investigate the potential of reducing gear soak times as a method for reducing sea turtle interactions and mortality on reef fish bottom longlines. The objective of the fishery-dependent project was to characterize the catch per unit effort of the primary target species as it relates to hook soak time in the Gulf of Mexico reef fish bottom longline fishery.

The initial phase of the hook timer study carried out Sept.–Dec., 2010 found that the duration of typical sets are longer than necessary to effectively catch reef fish. The study results indicate that reduced soak times could reduce bycatch of sharks and possibly sea turtles, and could reduce the mortality of turtles that are caught. Phase I results were presented at a series of industry workshops in August 2011. Fishers suggested exploring seasonal and bait type effects for reef fish bite times in future research. Based on industry feedback, Phase II of the research was conducted January – May 2013. The experimental design was the same as for Phase I, with the exception of season and alternating bait between sets. The results of Phase II were presented to commercial reef fish fishers through two workshops conducted in Madeira Beach and Cortez, FL in August 2014.

We were unable to detect a seasonal or bait effect for how quickly reef fish take the hook between Phase I and Phase II. The research indicates that reducing the soak time of sets in the bottom longline reef fish fishery has the potential to mitigate the impact of the fishery on sharks and sea turtles without affecting the harvest of target catch. During 2015, researchers conducted an analysis of bottom longline observer data to determine if the outreach efforts resulted in the desired effect by reducing the mean soak time of bottom longlines deployed in the fishery. The results of this research are in a manuscript titled, “Factors Affecting Capture

Time for Species Taken in the Commercial Bottom Longline Fishery in the Eastern Gulf of Mexico,” and are currently under review.

2.1.2. Video Monitoring Pilot Project

No video monitoring projects were conducted in 2015. SEFSC has received funding to conduct testing in 2017 with the cooperation of the shrimp industry.

2.2. T&C 4 Updates to Careful Release Protocols and Modifications of Release Gears as New Information Becomes Available

No updates to release protocols or modifications to release gears were made in 2015.

3. RPM 3: Monitoring the Frequency, Magnitude, and Impact of Incidental Take

3.1. Coastal Logbook Data

Landings and fishing effort of commercial bottom longline vessels operating in the Gulf of Mexico are monitored by NMFS through the coastal logbook program. The program collects catch and effort data by fishing trip for vessels with permits to fish in a number of fisheries managed by the GMFMC. The coastal logbook program began in 1990 with the objective of a census of reef fish fishery permitted vessel activity, with the exception of Florida where a 20% sample of vessels was required to report. Beginning in 1993, the sampling in Florida was increased to require reports from all vessels permitted in the reef fish fishery.

3.1.1 Data Collection Methodology

For each fishing trip the logbook database includes a unique trip identifier, the landing date, fishing gear deployed, areas fished, number of days at sea, gear specific fishing effort (*e.g.*, longline: number of sets, number of hooks per set, length of the longline), species caught, and weight of the landings in pounds. Multiple areas and gears fished may be recorded for a single fishing trip. Data are filtered to remove records with missing effort data, clearly erroneous data (*e.g.*, more than 24 sets/day, longline lengths more than 25 miles), and trips that report fishing in both regions. Since coastal logbook data are trip-based, effort cannot be apportioned among areas when multiple areas are recorded in a single trip. Total effort reported to the coastal logbook program was compiled by the species targeted. Reef fish targeted trips were defined as trips by those vessels that did not have a commercial directed shark permit, or trips by vessels that did have a commercial directed shark permit but landed 2/3 by weight species other than sharks. The data were further stratified by region as defined by the Reef Fish Observer Program: eastern Gulf of Mexico and western Gulf of Mexico. The eastern region included statistical areas 1-10 and the western region included statistical areas 11-21 (Figure 1).

Three measures of effort were summarized for the reef fish fishery: number of trips, number of sets, and total hooks fished. Hook hours fished could not be used as a measure of fishing effort because of inconsistent reporting of the time spent fishing. In some cases, fishers reported hours fished per set, but other fishers reported total hours fished. In many cases, it was not clear which “hours of fishing” had been reported. Additionally, different start and end points are used to measure Average Soak Duration for SBLOP and RFOP. SBLOP calculates it from

when the set ends to when the haul begins, whereas RFOP calculates it from when the first buoy is set to when the last buoy is retrieved.

3.1.2. Coverage Levels

All vessels with permits to land federally managed species (other than swordfish and tunas) in the Gulf of Mexico are required to report landings and effort information to the coastal logbook program.

3.1.3. Reported Effort

All reef fish effort (trips, sets, and total hooks fished) for both regions during 2015, as defined in section 3.1.1, reported to the coastal logbook program (less filtered data as defined above) was included in the totals provided in Table 1. Reported effort (trips, sets, and hooks fished) by region, target, and permit type are provided in Table 2.

3.1.4. Supplemental Discard Program

In August 2001, NMFS initiated a program to collect commercial fishing vessel discard data from Gulf of Mexico and US South Atlantic Federally managed commercial fisheries. A reporting form was developed that supplements the existing coastal logbook forms that are mandatory for those fisheries. Discard data from the SEFSC coastal fisheries discard logbook program have been routinely used to calculate the number discarded fish from commercial fishing vessels. For Gulf of Mexico stocks, however, observer reported discard data have been used for discard calculation (including discards of protected species) rather than the fisher reported discard logbook data. Observer data from the US South Atlantic are few and the discard logbook data are still used to inform stock assessments.

Data collection for the discard logbook program involves, each year, a 20% random sample of vessels with Gulf of Mexico Federal reef fish, snapper-grouper, king mackerel, Spanish mackerel, dolphin/wahoo, and shark permits. To ensure that the sample is representative of vessels with those Federal permits, the universe of permitted vessels is stratified by region and gear fished. A random sample (weighted by fishing effort reported in the previous year) is selected, without replacement, from each stratum. Fishing gear strata include hand line, bandit reel, trolling, bottom longline, trap, gillnet, and diving. The selected fishers are instructed to complete a supplemental discard form for every fishing trip they make. Trips with no discards are reported as such.

Reported data include the numbers of discards by species, estimated condition of the animal when released, reason for release (due to regulations or unmarketable/unwanted), and the fishing area where the animal was discarded. During 2015, no protected species interactions with bottom longline vessels in the Gulf of Mexico were reported to the supplemental discard logbook program.

3.2. Observer Programs

3.2.1. Background

The two mandatory SEFSC-based NMFS observer programs in the Gulf of Mexico that monitor the commercial reef fish sector are the Shark Bottom Longline Observer Program (SBLOP) and the Reef Fish Observer Program (RFOP). The SBLOP has been observing the shark-directed bottom longline fishery in the Atlantic Ocean and Gulf of Mexico since 1994 (Hale and Carlson 2007, Hale *et al.* 2007, Morgan *et al.* 2009, Hale *et al.* 2009, Hale *et al.* 2010). Currently 202 U.S. fishers are permitted to target sharks (excluding dogfish) in the Atlantic Ocean and Gulf of Mexico, and an additional 248 fishers are permitted to land sharks incidentally. Amendments to the Consolidated Atlantic Highly Migratory Species Fishery Management Plan, based on updated stock assessments, have eliminated the major directed shark fishery in the U.S. Atlantic and Gulf of Mexico (NMFS 2007). Amendment 22 to the GMFMC's Reef Fish Fishery Management Plan dictates mandatory observer coverage which is accomplished through the RFOP. In July 2006, NMFS, in collaboration with the commercial fishing industry and the GMFMC, implemented a mandatory observer program to characterize the commercial reef fishery operating in the U.S. Gulf of Mexico (Scott-Denton *et al.* 2010, Scott-Denton *et al.* 2011, Scott-Denton and Williams 2013). The fishery consists of approximately 800 federally permitted vessels. The primary gears used include bottom longline and vertical lines (bandit reel - electric or hydraulic; and hand lines). Although numerous reef fish species are retained, the predominant targets of these fisheries are groupers and snappers.

3.2.2. Data Collection Methodology

NMFS observers were placed on commercial reef fish vessels operating throughout the Gulf of Mexico based on random selection stratified by season, gear, and region. Seasonal categories (*i.e.*, quarters) for both observer programs were: 1) January – March, 2) April – June, 3) July – September, and 4) October – December. Regions for the purpose of this analysis, for both observer programs, were eastern Gulf (shrimp statistical zones 1-10) and western Gulf (shrimp statistical zones 11-21; Figure 1).

For the SBLOP, vessels possessing valid directed shark and reef fish permits were randomly selected for coverage, with a target coverage level of 4-6% based on previous years effort in the coastal fisheries logbook. Because of the overlap with vessels targeting reef fish and shark within the same trip and vessels possessing directed shark permits (Hale and Carlson 2007), observers boarded trips regardless of the indicated target species. In 2015, a lapse in funding resulted in observer coverage of the shark research fishery and non-research fishery only; thus, no trips targeting reef fish were observed by SBLOP in 2015. This did not affect our ability to meet the target coverage level for the entire fishery.

In the RFOP, proportional sampling effort, based on coastal logbook data, among seasons and gears in the eastern and western Gulf of Mexico for all vessels with federal reef fish permits was recommended by NMFS in 2006, and used thereafter for vessel selection stratification purposes. In 2009, through Catch Shares funding, additional observer coverage was directed toward the reef fish fishery in the eastern Gulf of Mexico to monitor protected species. This increased coverage alternates between gear types (bottom longline for two years and vertical line for one year). In 2015, increased coverage was directed toward the bottom longline fishery although at a reduced level due to funding. Collectively in 2015, the primary gear types assessed included bottom longline and vertical line (bandit reel and hand line). Mandatory

observer coverage for the reef fish fishery is currently approximately 4% of the total sea days reported in 2015 coastal logbook data.

For both programs, selection letters requiring observer coverage were issued to the permit holder via U.S. Certified Mail approximately one to two months prior to the upcoming fishing season. Once the permit holder received the selection letter, he or she was required to make contact with the observer coordinator and indicate intent to fish during the upcoming fishing season. If the permit holder intended to fish, the observer coordinator deployed an observer to the port of departure. Vessels were required to have a current Commercial Fishing Vessel Safety Examination decal prior to the selection period for mandatory observer coverage.

Trip, set/haul, gear and fishing characteristics by program for the 2015 commercial reef fish season are depicted (Table 3). Effort by region (Table 4) and by region and season (Table 5) are given. Sea days and percent coverage levels are depicted in Table 6. Protected resources interactions are shown in Table 7.

3.2.3. T&C 5 Bottom Longline Component of the Gulf Reef Fish Fishery

The SBLOP did not observe any trips targeting reef fish in 2015; however, 83 trips targeting sharks were observed in 2015.

The RFOP observed 492,839 hooks (724 sets on 26 trips; Table 3) targeting shallow-water reef fish (mainly red grouper) or deepwater grouper/tilefish (mainly yellowedge grouper and tilefish) using bottom longline gear in the Gulf of Mexico in 2015 – the Biological Opinion requires observation of a minimum of 100,000 bottom longline hooks per year. The length of the mainline for this gear ranged from 0.6 to 17.7 km with an average of 8.1 km. The bottom depth fished ranged from 35.7 to 420.6 m with an average of 90.0 m. Hooks set ranged from 29 to 2,006 hooks with an average of 693 hooks fished. Circle hooks were deployed on all sets with size 13/0 the dominant (55.1%). The average soak duration (the time from when the first buoy entered the water until the last buoy was hauled back) was 4.1 hr. Two sea turtles, no marine mammals, and one sea bird interaction were documented in the bottom longline component of the Gulf of Mexico reef fish fishery in 2015 (Table 7).

3.2.4. T&C 6 Vertical Line Component of the Gulf Reef Fish Fishery

The RFOP observed 890 sea days (8,161 sets during 200 trips; Table 3) targeting shallow-water reef fish, mainly red grouper and snapper in the Gulf of Mexico in 2015 – the Biological Opinion requires a minimum of 105 sea days per year of observer coverage for the vertical line component of the fishery. The bottom depth fished ranged from 2.3 to 272.2 m with an average of 42.9 m, and the number of hooks ranged from 1 to 240 hooks with an average of 25 hooks fished. Circle hooks were deployed on most (98.9%) sets with size 8/0 the dominant (32.9%). The average soak duration was 0.5 hr. Four loggerhead sea turtle, no marine mammal, and no sea bird interactions were documented in the vertical line component of the Gulf reef fish fishery in 2015. Table 8 provides a summary of takes, gear characteristics, capture and release conditions, and final disposition of sea turtles documented by the observer program.

3.2.5. Modified Buoy Gear of the Gulf Reef Fish Fishery

While not specifically addressed in the T&Cs of the 2011 Biological Opinion, modified buoy gear has been used in the Gulf reef fish fishery in recent years. The RFOP did not observe any trips on vessels using modified buoy gear in 2015.

3.2.6. T&C 7 Determine and Implement the Number of Trips, Sets, and/or Hook-Hours that Must be Observed to be Confident that Smalltooth Sawfish Take is as Extremely Rare as Estimated

NOAA Fisheries observers have never documented a smalltooth sawfish take in the GOM reef fish fishery, so there are no data with which to calculate the number of trips, sets, and/or hook-hours that must be observed to be confident that smalltooth sawfish take is as extremely rare as estimated. We interpret the lack of observed takes as support for the description of smalltooth sawfish takes as extremely rare.

3.2.7. T&Cs 8, 9, 10, 11 Documentation of Protected Species Interactions

Observers record information on the SEFSC sea turtle life history form or collect specified data for smalltooth sawfish, take photographs, and when possible, tag animals prior to release (T&C 8). In 2015, none of the six bycaught sea turtles were brought aboard, so no tags were applied. A tissue biopsy sample for genetic analysis was obtained from one turtle while it was held alongside the vessel. All turtles were released alive.

Observers collect data pertaining to vessel, gear, location, and biological information. For each set (the location of gear placement at a defined time), the type, number and construction material of the fishing gear were recorded (T&C 10). Latitude, longitude, depth, and environmental parameters including sea state and bottom type were recorded at the start of each set. The total time the gear remained in the water (soak or fishing time) was calculated. Fishery data were obtained from each set. Discarded and retained species were processed, recording length, weight, and condition when brought onboard, and if necessary, condition at release. Sightings or capture of sea turtles and other protected species were recorded in accordance with NMFS protocol (NMFS 2008), SEFSC observer program staff are notified when takes occur, and SERO is notified no later than 3 days after the conclusion of each trip (T&C 11).

3.3. T&C 13 Improvements in Quantitative Stock Assessment

NMFS has made progress towards the goal of improved quantitative stock assessment. We are developing a variety of quantitative assessment tools to evaluate the risks and benefits associated with various impact assessment approaches. This process will enable identification of the most sensitive assessment parameters, which can be useful when prioritizing research and data collection efforts.

3.4. T&C 15, 16 Fishing Gear Found Associated with Stranded Sea Turtles

STSSN participants collect fishing gear associated with stranded sea turtles and send it to Mr. Charles Bergmann (SEFSC) for identification. The “Fishing Gear Database” for the Gulf of Mexico and SE U.S. (Texas-North Carolina) is maintained and updated quarterly by staff at the SEFSC Pascagoula Laboratory. In 2015, 116 sea turtle strandings and incidental captures (116 in the Gulf of Mexico, 0 in the Atlantic) were reported with associated fishing gear. It is important to

note that quarterly updates may not include all gear found in the previous quarter since there is a time lag for individual states submission of gear/data. A copy of the database including all 2015 data to date was submitted to SERO on January 15, 2016

3.5. T&C 18 Annual Bycatch Report

Four sea turtles were observed taken in the randomly sampled portion of the vertical line component of the Gulf of Mexico reef fish fishery in 2014. Two sea turtles were captured in the bottom longline component of the fishery. No sawfish, sea birds, or marine mammals were observed as bycatch in the Gulf of Mexico reef fish fishery in 2014. Like sea turtle takes, the frequency of these events is rare. Three-year running sea turtle take estimates are provided in Appendix A.

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Figure 1. Map of shrimp fishery statistical zones in the Gulf of Mexico.

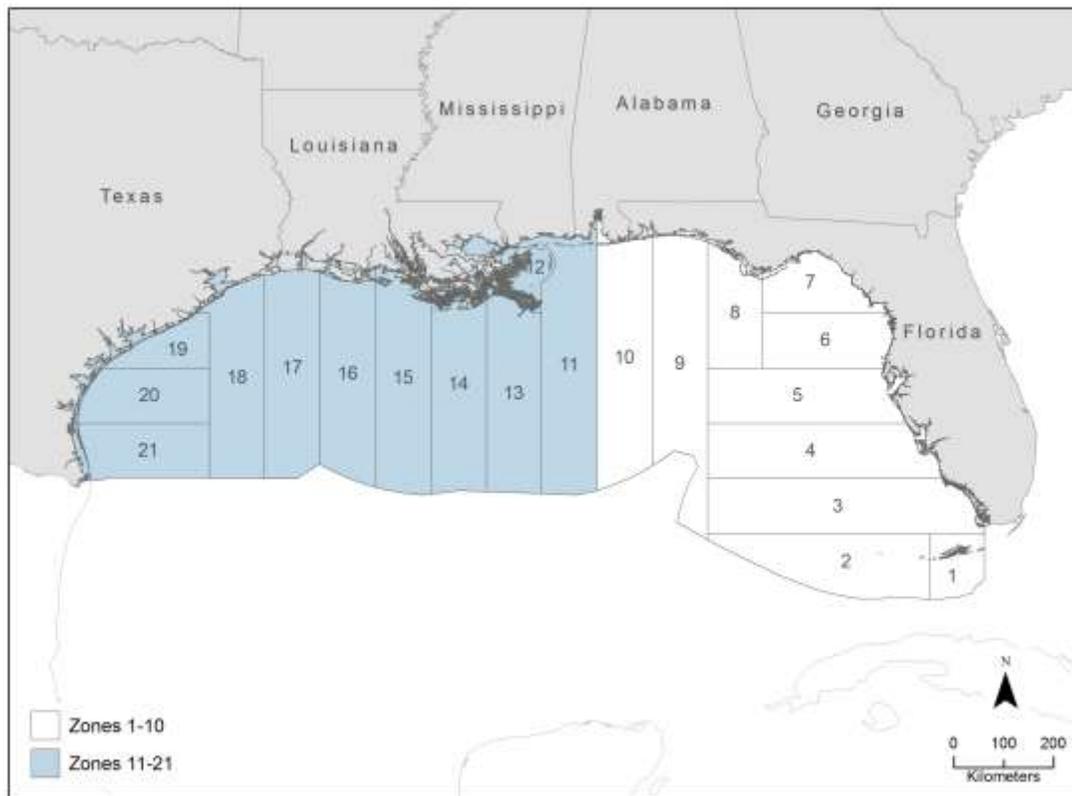


Table 1. Effort by region (combined statistical zones, East = 1-10, West = 11-21) reported to the coastal logbook program during 2015. Non-confidential data only

Effort Measure	Eastern Gulf	Western Gulf
Number of trips	654	524
Number of sets	21,187	4,490
Total hooks fished	16,253,007	4,258,284

Table 2. Detailed effort reported to the coastal logbook program during 2015 including all effort, subdivided by target group (as defined in section 3.1.1).

Region	Target ¹	Permit ²	Trips	Sets	Total hooks
Eastern Gulf	reef fish	0	474	15,610	11,889,067
Eastern Gulf	reef fish	1	180	5,577	4,363,940
Eastern Gulf	shark	0	*	*	*
Eastern Gulf	shark	1	*	*	*
Eastern Gulf	mixed	0	*	*	*
Eastern Gulf	mixed	1	NR	NR	NR
Western Gulf	reef fish	0	55	3,966	4,137,250
Western Gulf	reef fish	1	*	*	*
Western Gulf	shark	0	*	*	*
Western Gulf	shark	1	469	524	121,034
Western Gulf	mixed	0	NR	NR	NR
Western Gulf	mixed	1	NR	NR	NR

¹reef fish – trips by vessels that did not have a commercial directed shark permit and trips by vessels that did have a commercial directed shark permit but landed 2/3 by weight species other than sharks;

shark – trips by vessels with directed shark permits that landed 2/3, by weight, sharks of any species;

mixed – trips by vessels with directed shark permits that did not land a 2/3 majority of either shark or reef fish species

² 0 – vessels without directed shark permits, 1 – vessels with directed shark permits

* Data not presented due to data confidentiality requirements

NR – no reports to coastal logbook program

Table 3. Trip, set, and gear characteristics for all sets targeting reef fish species in the Gulf of Mexico in 2015 observed by the Reef Fish Observer Program.

	Bottom Longline	Vertical Line
Number of Trips	26	200
Trip Length (days)	7 – 21 (\bar{x} = 14.0)	1 – 19 (\bar{x} = 5.5)
Number of Vessels	24	137
Total Sets	724	3,161
Sea Days	314	390
Bottom Depth (m)	35.7 – 420.6 (\bar{x} = 90.0)	2.3 – 272.2 (\bar{x} = 42.9)
Mainline Length (km)	0.6 – 17.7 (\bar{x} = 8.1)	
Mainline Material	Cable (80.0%) Monofilament (20.0%)	Monofilament (77.3%) Cable (15.8%) Other (6.8%) Poly (0.1%) Nylon (<0.1%)
Mainline Test (lbs)	900 – 2,400 (\bar{x} = 1,401)	10 – 1,800 (\bar{x} = 244)
Gangion Length (ft)	2.9 – 12.0 (\bar{x} = 5.8)	
Gangion Material	Monofilament (100%)	
Distance Between Hooks (ft)	7.0 – 50.0 (\bar{x} = 29.1)	
Rod Mount	-	Fixed (74.9%) Portable (25.1%)
Reel Type	-	Electric (49.7%) Hydraulic (27.2%) Hand (23.1%)
Number of Hooks/Set	29 – 2,006 (\bar{x} = 693)	1 – 240 (\bar{x} = 25)
Hook Brand	Mustad (85.1%) Eagle Claw (14.9%)	Mustad (93.3%) Eagle claw (3.6%) Gamakatsu (1.1%) NR (1.1%) Youvella (0.5%) Owner (0.1%) Daiichi (0.1%) Trident (0.1%)
Hook Shape	Circle (100%)	Circle (98.9%) J-Hook (0.5%) Double Circle (0.4%) Lure/J-Hook (0.1%) Double J-Hook (0.1%)
Hook Offset	Straight (71.3%) Offset (28.7%) - 10° (93.2%) - 30° (6.8%)	Straight (91.8%) Offset (8.2%) - 10° (85.8%) - 15° (6.6%) - 25° (3.8%) - 5° (3.8%)
Hook Size	13/0 (55.1%) 14/0 (21.4%) 11/0 (12.0%) 15/0 (9.3%) 12/0 (1.5%) 16/0 (0.7%)	8/0 (32.9%) 9/0 (31.2%) 10/0 (8.4%) 13/0 (8.0%) 14/0 (4.5%) 12/0 (2.8%) 6/0 (2.4%) 2/0 (2.1%) 3/0 (1.9%) 11/0 (1.9%) 4/0 (1.2%) 5/0 (0.9%) 7/0 (0.8%) 15/0 (0.6%) NR (0.3%) 1/0 (0.1%)
Total Hooks Set	492,839	200,597
Avg Soak Duration in hrs ¹	0.4 – 14.9 (\bar{x} = 4.1)	<0.1 – 15.0 (\bar{x} = 0.5)
Total Hours Fished (sets)	2,920.7 (719)	3,981.6 (8,154)
Total Hook Hours	2,043,382.0	143,065.7

¹ Different start and end points are used to measure Average Soak Duration for SBLOP and RFOP. SBLOP calculates it from when the set ends to when the haul begins, whereas RFOP calculates it from when the first buoy is set to when the last buoy is retrieved.

² Includes one unsampled trip.

NR – not recorded by observer

Table 4. Effort by region for all observed sets targeting reef fish species in the Gulf of Mexico Reef Fish Observer Program for 2015.

	Bottom Longline	Vertical Line
Eastern Gulf		
n	669	6,921
Hooks Set	456,550 ¹	88,004
Hours	2,529.5 ²	3,011.8 ³
Western Gulf		
n	*	1,240
Hooks Set	*	112,593
Hours	*	969.8 ⁴

¹ Hooks set was not reported for 3 sets.

² Hours was not reported for 3 sets.

³ Hours was not reported for 5 sets.

⁴ Hours was not reported for 2 sets.

* Data not displayed due to confidentiality.

Table 5. Observed reef fish effort (trips, sets, and hooks) for the Gulf of Mexico from the Reef Fish Observer Program by region, gear type, and season for 2015. Data were aggregated into two seasons (1 – January-June and 2 – July-December).

	Season	Eastern Gulf		Western Gulf	
		Bottom Longline	Vertical Line	Bottom Longline	Vertical Line
TRIPS	1	13.3	65.9	*	30.9
	2	10.7	72.0	*	31.2
SETS	1	340	3,324	*	702
	2	329	3,597	*	538
HOOKS	1	232,709	46,974	*	64,137
	2	223,841 ¹	41,030	*	48,456

¹ Hooks set was not reported for 3 sets.

* Data not displayed due to confidentiality

Table 6. Number of sea days for all gear types for Observer Program sets and industry in the Gulf of Mexico in 2015.

Gear Type	RFOP	Industry	Percent Coverage
Bottom Longline	314	8,273	3.8%
Vertical Line	890	21,199	4.2%
Total	1,204	29,472	4.1%

Table 7. Observed protected species interactions for sets targeting reef fish species in the Gulf of Mexico in 2015.

	Bottom Longline	Vertical Line
Sea Turtles	2	4
Marine Mammals	0	0
Sea Birds	1	0

Table 8. Summary of sea turtle takes observed in the Gulf of Mexico reef fish fishery in 2015. Seasons = 1 – Jan-Mar, 2 – Apr-Jun, 3 – Jul-Sep, 4 – Oct-Dec.

	Turtle 1	Turtle 2	Turtle 3	Turtle 4	Turtle 5	Turtle 6
Species	Loggerhead	Loggerhead	Loggerhead	Loggerhead	Loggerhead	Loggerhead
Observer Program	RFOP	RFOP	RFOP	RFOP	RFOP	RFOP
Gear	Handline	Bottom longline	Bottom longline	Vertical Line (Bandit)	Handline	Handline
Season	1	1	2	2	2	3
Depth (ft)	93	174	183	115	112	60
# of Hooks	1	750	700	2	1	1
Hook Type	Circle	Circle	Circle	Circle	Circle	Circle
Hook Size	7/0	14/0	13/0	14/0	8/0	14/0
Offset (°)	0	0	0	10	0	10
Bait	Herring	Squid or herring	Cut herring or skate	Squid	Squid	Mullet
Capture Condition	Alive, injured	Alive, injured	Comatose/unresponsive	Alive, injured	Alive, uninjured	Alive injured
Final Disposition	Released alive	Released alive	Released alive	Released alive	Released alive	Released alive
Hook Location	Front flipper	Shoulder	Beak internal, upper jaw	Beak external, upper jaw	Holding bait/hook	Front flipper
Hook Removed	Yes	No	No	Yes	Yes	No
Entangled Capture	No	No	No	Yes	No	No
Entangled Released	No	No	No	No	No	No
Line Left (ft)	0.0	0.0	0.2	0.0	0.0	0.0
Estimated Carapace Length (ft)	3.0	3.5	1.8	3.0	3.0	3.0
Injury Category Row	I	I	VI	I	V	I
Release Condition Column	D	C	C	D	D	C

Injury Category Row:

I: Hooked externally

V: No hook injury involved

VI: Comatose/resuscitated

Release Condition Column:

C: released with hook or with hook and with trailing line ≤ half the length of the carapace

D: released with all gear removed

Appendix A

Extrapolated Total Takes of Loggerhead Sea Turtles in the Eastern Gulf of Mexico in the Bottom Longline and Vertical Line Portions of the Reef Fish Fishery.

T&C 18 specifies that the Annual Report on the Implementation of the Terms and Conditions of the 2009 Biological Opinion for the Gulf of Mexico Reef Fish Fishery include bycatch and catch per unit effort (CPUE) estimates for periods in which the take level for the bottom longline component was high enough to exceed the rarity threshold. In 2015 the sea turtle take level did not exceed the rarity threshold of 1 take per 100,000 hooks for the bottom longline component. In 2015 we observed two loggerhead sea turtle takes in 492,839 observed hooks, for a take rate of 1 take per 246,419 hooks. Extrapolated bycatch estimates using the methods employed in previous reports were conducted for the vertical line component (Table A1), and as stated in the 2009 report (SEFSC, 2009b), these 2015 extrapolated estimates are based upon sparse data sets (*i.e.*, four sea turtle takes in nearly a half a million observations) and should not be assumed to be reasonable without potentially invoking large assumptions regarding unobserved events.

Table A1. Extrapolated total takes and catch per unit effort (CPUE, in takes per hooks-hour) of loggerhead sea turtles in the Eastern Gulf of Mexico Vertical line component of the reef fish fishery based on observations by the Reef Fish Observer Program for 2015. Total logbook reported effort for the vertical line component in 2015 was 6,759,786 hook-hours.

Observer Program	CPUE (hook-hours)	Takes	95% CI	CV
RFOP	0.000028	189.0	73.5 – 486.0	0.50

The 2011 Biological Opinion of the Gulf of Mexico reef fish fishery requires NMFS to produce a three-year running sea turtle take estimate for each component of the fishery every year starting after 2012. The number of observed takes did not exceed the rarity threshold (1 take per 100,000 hooks) in any year from 2009 through 2015 for the bottom longline component of the fishery, so no estimates of take were required. However, since take estimates were computed using methods described in a 2009 report (SEFSC 2009a) and presented in the 2013 report, they have been consolidated and presented below.

Year	Observer Program	Estimated Takes	95% CI	CV
2013	RFOP	11.9	3.4 - 41.4	0.70
2014	RFOP	*		
2015	RFOP	*		
Three-year running total		11.9		

* No estimate because observations were less than the rarity threshold.

The three-year running sea turtle take estimate for the vertical line component of the fishery is presented below. Observed sea turtle takes in the vertical line component of the Gulf of Mexico reef fish fishery occurred in 2014 (1 turtle) and 2015 (4 turtles) for the years 2013 through 2015.

Year	Observer Program	Estimated Takes	95% CI	CV
2013	RFOP	0		
2014	RFOP	120.1	21.2 – 680.4	0.99
2015	RFOP	189.0	73.5 – 486.0	0.50
Three-year running total		309.1		

The three-year running sea turtle take estimate for all components (bottom longline and vertical line) of the fishery was 321.