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OPTIONS PAPER

AMENDMENT 15 TO THE SHRIMP FISHERY MANAGEMENT PLAN

(INCLUDING ENVIRONMENTAL IMPACT STATEMENT AND REGULATORY IMPACT REVIEW)

MAY 2006

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ABBREVIATIONS USED IN THIS DOCUMENT

AP	Advisory Panel
AHRSAP	Ad Hoc Red Snapper Advisory Panel
Council	Gulf of Mexico Fishery Management Council
CPUE	Catch Per Unit Effort
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
FMP	Fishery Management Plan
GCEL	General Counsel for Enforcement and Litigation
GOM	Gulf of Mexico
HAPC	Habitat Area of Particular Concern
IFQ	Individual Fishing Quota
ITQ	Individual Transferable Fishing Quota
IRFA	Initial Regulatory Flexibility Analysis
LASAF	Limited Access System Administrative Fund
mp	Million Pounds
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MSY	Maximum Sustainable Yield
NMFS	NOAA's National Marine Fisheries Service
OY	Optimum Yield
QS	Quota Shares
RA	Regional Administrator
RFA	Regulatory Flexibility Act of 1980
RFFMP	Reef Fish Fishery Management Plan
RIR	Regulatory Impact Review
SFA	Sustainable Fisheries Act
SEIS	Supplemental Environmental Impact Statement
SEP	Socioeconomic Panel
SSBR	Spawning Stock Biomass Per Recruit
SPR	Spawning Potential Ratio
SMZ	Special Management Zone
SFA	Sustainable Fisheries Act
USCG	United States Coast Guard
VMS	Vessel Monitoring System

Draft Supplemental Environmental Impact Statement (DSEIS) Cover Sheet

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(X) Administrative
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SUMMARY

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Notice of intent to prepare DSEIS published on: XXX (XX FR XXX)
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Table of Contents for DSEIS

The table of contents and sections comprising the DSEIS are as follows:

Fishery Impact Statement - Social Impact Assessment Summary

This integrated document contains all elements of the Plan Amendment, DSEIS, IRFA, RIR, Fishery Impact Statement (FIS) and a Social Impact Assessment (SIA). The Table of Contents for the FIS/SIA is provided separately to aid reviewers in referencing corresponding sections of the amendment.

1.0 INTRODUCTION

1.1. Background

The species of shrimp managed under the Shrimp FMP are as follows:

Brown shrimp	*Farfantepenaeus aztecus*
White shrimp	*Litopenaeus setiferus*
Pink shrimp	*Farfantepenaeus duorarum*
Royal Red shrimp	*Hymenopenaeus robustus*

The three species of penaeid shrimp comprise more than 99% of the landings in the Gulf of Mexico shrimp fishery. In recent years, average annual landings have been approximately 150.0 million pounds (MP) (tails); however, since 2002 landings have declined sharply due to economic conditions in the fishery and hurricane damage, particularly in 2005 when landings dropped to approximately 92 MP. Brown shrimp provide the largest portion of annual shrimp landings in the northern Gulf with average landings in the 1990's of approximately 80.0 MP. Landings since 2000, however, have dropped from _____ to only _____ in 2005. This species is distributed from the Mexican border through Apalachicola Bay, Florida (GMFMC 1981). Brown shrimp are caught out to at least 50 fathoms, though most catches are taken from less than 30 fathoms. The brown shrimp fishery is the primary fishery that interacts with red snapper, particularly juveniles, in the northern and western Gulf; and because effort is higher in this fishery for federal waters of the EEZ, total finfish bycatch is higher as opposed to the white and pink shrimp fisheries.

White shrimp are the second most abundant species with 1998 and 1999 landings of approximately 55.0 MP and 2000 landings of over 70.0 MP. From 2000 to 2005, landings _____. White shrimp are distributed from the Mexican border through Apalachee Bay (Figure 11, GMFMC 1998). Typically, white shrimp are caught inshore of 15 fathoms, and the white shrimp fishery has a secondary impact on juvenile red snapper, and this fishery is the second largest contributor to overall finfish bycatch.

Pink shrimp landings were approximately 19.0 MP in 1996, but dropped to only about 8.0 MP in 1999 and 7.0 MP in 2000. Since 2000 landings have remained relatively stable at approximately _____ MP. This species is distributed across the northern Gulf from the Florida Keys to Mexico; however, they are most common in the Tortugas and Sanibel areas off Florida (GMFMC 1980). Pink shrimp are usually taken from waters less than 25 fathoms with the majority of catch being harvested in 11 to 15 fathoms. There are minimal impacts to red snapper from the pink shrimp fishery because the amount of effort expended in the northern and western Gulf is small compared to Florida, and particularly the south Florida area of the Tortugas. In this area, the major bycatch component is invertebrates.

1.2 Purpose and Need for Action

The Magnuson-Stevens Fishery Conservation and Management Act (M-SFCMA) requires NOAA Fisheries and regional fishery management councils (Councils) to prevent overfishing, and to achieve, on a continuing basis, the optimum yield (OY) of federally managed fish stocks. The purpose of these mandates is to ensure fishery resources are exploited in a way that provides the greatest overall benefit to the Nation, particularly with respect to providing food production

and recreational opportunities, while protecting marine ecosystems. To further this goal, the M-SFCMA (National Standard 9) also requires federal fishery managers to minimize bycatch and bycatch mortality to the extent practicable.

Overcapitalization in the Gulf of Mexico shrimp fishery has in the past resulted in fishing capacity exceeding that required to efficiently harvest the OY. Fishing capacity is the ability of a vessel or fleet of vessels to catch fish, and is generally defined by the number of vessels in the fleet, the size of each vessel, the technical efficiency of each vessel, and the time each vessel spends fishing. Profits are reduced when vessels expend more effort than is needed to harvest available resources.

The incidental take of juvenile red snapper has been a significant bycatch problem in the Gulf of Mexico shrimp fishery, the resolution of which has challenged fishery managers for many years. Despite the use of bycatch reduction devices (BRDs) in shrimp trawl gear, the fishery has been taking juvenile red snapper at a rate that jeopardizes the success of the red snapper rebuilding plan approved in Amendment 22 to the Gulf of Mexico Reef Fish Fishery Management Plan (FMP) (SEDAR7 2005) and, therefore, the red snapper fishery's ability to produce OY over the long term.

Reducing red snapper bycatch in the shrimp fishery is complicated because bycatch is largely tied to the amount of effort the fleet applies in harvesting shrimp. Recent information suggests BRDs used by the fleet to minimize bycatch have not been as effective as previously thought, and that a comprehensive effort-reduction/bycatch-quota program may be needed to achieve the large-scale bycatch reduction required to end overfishing of red snapper by the shrimp fishery and to reduce overall bycatch to the extent practicable. On the other hand, GMFMC (2005) indicated that there has been a significant reduction in the level of participation in the offshore shrimp fishery since approximately 2001 due to low shrimp prices from competition with foreign imports and high fuel costs. This amendment also concluded that the decline in participating vessels will likely continue through 2012. Furthermore, Hurricanes Katrina and Rita in 2005 damaged or destroyed a large number of shrimping vessels and their associated infrastructure such that landings, and probably effort, were reduced in 2005 to approximately one third of the average during the 1990s.

The purpose of this amendment is to further reduce effort and bycatch in the shrimp fishery, if needed, with a secondary goal of improving socioeconomic conditions for shrimp fishery participants and shrimp fishing communities. Although the focus of further bycatch reduction is on juvenile red snapper, alternatives being considered would effectuate further reduction in all finfish bycatch. Additionally, actions are being considered to enhance enforcement and to further the ability of the shrimp and red snapper fisheries to achieve OY.

Alternative means to reduce overall effort in the shrimp fishery are difficult to evaluate at this time given our poor understanding of participation and effort. The Council recently approved Shrimp FMP Amendment 13, which will establish programs that, when implemented, provide needed data and information on participation, effort, and bycatch in the shrimp fishery. However, fishery managers will have difficulty fully understanding the effects and tradeoffs of alternative effort controls and reduction programs for a number of years given the likelihood of continued reduction in fishing vessels due to competition with foreign imports and high fuel costs and more especially, the damaging effects of the 2005 hurricane season on participation and effort in the shrimp fishery.

The Council is concurrently evaluating in Amendment 27/14 to the Shrimp and Reef Fish FMPs, respectively, actions to end overfishing in the directed red snapper fishery and to improve the performance of BRDs used in the shrimp fishery. The schedule for Amendment 27/14 is driven by the need to implement any needed TAC adjustments prior to the 2007 fishing season to coincide with the potential implementation of the Council's proposed Individual Fishing Quota program.

1.3 History of Management

The Shrimp FMP, supported by an Environmental Impact Statement (EIS), was implemented on May 15, 1981. The FMP defined the Shrimp Fishery Management Unit to include brown shrimp (*Farfantepenaeus aztecus*), white shrimp (*Litopenaeus setiferus*), pink shrimp (*Farfantepenaeus duorarum*), royal red shrimp (*Hymenopenaeus robustus*), seabobs (*Xiphopeneus kroyeri*), and rock shrimp (*Sicyonia brevirostris*). The actions implemented through the FMP and its subsequent amendments, have addressed the following objectives:

1. Optimize the yield from shrimp recruited to the fishery.
2. Encourage habitat protection measures to prevent undue loss of shrimp habitat.
3. Coordinate the development of shrimp management measures by the Gulf of Mexico Fishery Management Council (Council or GMFMC) with the shrimp management programs of the several states, where feasible.
4. Promote consistency with the Endangered Species Act and the Marine Mammal Protection Act.
5. Minimize the incidental capture of finfish by shrimpers, when appropriate.
6. Minimize conflict between shrimp and stone crab fishermen.
7. Minimize adverse effects of obstructions to shrimp trawling.
8. Provide for a statistical reporting system.

The principal thrust of the plan was to enhance yield in volume and value by deferring harvest of small shrimp to provide for growth. Principle actions included: (1) establishing a cooperative Tortugas Shrimp Sanctuary with the state of Florida to close a shrimp trawling area where small pink shrimp comprised the majority of the population most of the time; (2) a cooperative 45-day seasonal closure with the state of Texas to protect small brown shrimp emigrating from bay nursery areas; and (3) seasonal zoning of an area of Florida Bay for either shrimp or stone crab fishing to avoid gear conflict.

Amendment 1, supported by an Environmental Assessment (EA), was approved later that year. This amendment provided the Regional Administrator (RA) of the NMFS Southeast Regional Office with the authority (after conferring with the GMFMC) to adjust by regulatory amendment the size of the Tortugas Sanctuary or the extent of the Texas closure, or to eliminate either closure for one year.

Amendment 2/EA (1983), updated catch and economic data in the FMP. **Amendment 3/EA** (1984) resolved another shrimp-stone crab gear conflict on the west-central coast of Florida.

Amendment 4/EA, partially approved in 1988 and finalized in 1989, identified problems that developed in the fishery and revised the objectives of the FMP accordingly. The annual

review process for the Tortugas Sanctuary was simplified, and the GMFMC's and RA's review for the Texas closure was extended to February 1st. A provision that white shrimp taken in the exclusive economic zone (EEZ) be landed in accordance with a state's size/possession regulations to provide consistency and facilitate enforcement with the state of Louisiana was to have been implemented at such time when Louisiana provided for an incidental catch of undersized white shrimp in the fishery for seabobs. This provision was disapproved by the NMFS with the recommendation that it be resubmitted under the expedited 60-day Secretarial review schedule after Louisiana provided for a bycatch of undersized white shrimp in the directed fishery for seabobs. This resubmission was made in February of 1990 and applied to white shrimp taken in the EEZ and landed in Louisiana. It was approved and implemented in May of 1990.

In July 1989, the NMFS published revised guidelines for FMPs that interpretatively addressed the M-SFCMA's (then called the Magnuson Fishery Conservation and Management Act) National Standards (50 CFR Part 602). These guidelines required each FMP to include a scientifically measurable definition of overfishing and an action plan to arrest overfishing should it occur.

In 1990, Texas revised the period of its seasonal closure in Gulf waters from June 1 to July 15 to May 15 to July 15. The FMP did not have enough flexibility to adjust the cooperative closure of federal waters to accommodate this change, thus an amendment was required.

Amendment 5/EA, approved in 1991, defined overfishing for Gulf brown, pink, and royal red shrimp and provided for measures to restore overfished stocks if overfishing should occur. Action on the definition of overfishing for white shrimp was deferred, and seabobs and rock shrimp were deleted from the management unit. The duration of the seasonal closure to shrimping off Texas was adjusted to conform with the changes in state regulations.

Amendment 6/EA (1993), eliminated the annual reports and reviews of the Tortugas Shrimp Sanctuary in favor of monitoring and an annual stock assessment. Three seasonally opened areas within the sanctuary continued to open seasonally, without need for annual action. A proposed definition of overfishing of white shrimp was rejected by the NMFS as not being based on the best available data.

Amendment 7/EA, finalized in 1994, defined overfishing for white shrimp and provided for future updating of overfishing indices for brown, white, and pink shrimp as new data become available. A total allowable level of foreign fishing (TALFF) for royal red shrimp was eliminated; however, a redefinition of overfishing for this species was disapproved.

Amendment 8/EA, submitted in 1995 and implemented in early 1996, addressed management of royal red shrimp. It established a procedure that would allow total allowable catch (TAC) for royal red shrimp to be set up to 30% above MSY for no more than two consecutive years so that a better estimate of MSY could be determined. This action was subsequently negated by the 1996 Sustainable Fisheries Act (SFA) amendment to the M-SFCMA that defined overfishing as a fishing level that jeopardizes the capacity of a stock to maintain MSY, and does not allow OY to exceed MSY.

Amendment 9, supported by a Supplemental Environmental Impact Statement (SEIS) and implemented in 1998, required the use of a NMFS certified bycatch reduction devices

(BRDs) in shrimp trawls used in the EEZ from Cape San Blas, Florida (85°30' W. Longitude) to the Texas/Mexico border, and provided for the certification of the Fisheye BRD in the 30 mesh position. The purpose of this action was to reduce the bycatch mortality of juvenile red snapper by 44% from the average mortality for the years 1984-89 (F=2.06). This amendment exempted shrimp trawls fishing for royal red shrimp outside of 100 fathoms, as well as groundfish and butterfish trawls. It also excluded small try nets and no more than two ridged frame roller trawls that do not exceed 16 feet. Amendment 9 also provided mechanisms to change the bycatch reduction criterion and to certify additional BRDs.

Amendment 10/EA, approved in 2004, required BRDs in shrimp trawls used in the Gulf east of Cape San Blas, Florida (85°30' W. Longitude). Certified BRDs for this area are required to demonstrate a 30% reduction by weight of finfish.

Amendment 11/EA, which was fully implemented in December 2002, required owners and operators of all vessels harvesting shrimp from the EEZ of the Gulf to obtain a federal commercial vessel permit. This amendment also prohibited the use of traps to harvest royal red shrimp from the Gulf of Mexico and to transfer royal red shrimp at sea.

Amendment 12/EA, was included as part of the Generic Essential Fish Habitat (EFH) Amendment that established EFH for shrimp in the Gulf.

Amendment 13/EA, which is currently under review by NMFS would establish an endorsement to the existing federal shrimp vessel permit for vessels harvesting royal red shrimp; define the overfishing threshold and the overfished condition for royal red; define maximum sustainable yield (MSY) and optimum yield (OY) for the penaeid shrimp stocks in the Gulf; establish bycatch reporting methodologies and improve collection of shrimping effort data in the exclusive economic zone (EEZ); require completion of a Gulf Shrimp Vessel and Gear Characterization Form; establish a moratorium on the issuance of commercial shrimp vessel permits; and require reporting and certification of landings during the moratorium.

2.0 MANAGEMENT ALTERNATIVES

Action 1. Alternatives to Further Reduce Bycatch in the Penaeid Shrimp Fishery of the Gulf of Mexico

Alternative 1. No action - Do not establish additional measures to further reduce bycatch in the shrimp fishery but retain the current requirements for the use of bycatch reduction devices (BRDs) in shrimp trawls in the EEZ in accordance with existing regulations

Alternative 2. Further reduce bycatch by restricting fishing by time/area or season

Option a. Add or expand closed seasons to shrimping in the EEZ

Option b. Establish time/area closures to shrimping in the EEZ

Discussion: Current bycatch reduction requirements for the penaeid shrimp fishery in the EEZ include the use of approved bycatch reduction devices (BRD). In past considerations, the

requirement of BRDs was determined to provide the greatest benefit in terms of bycatch reduction and the least burdensome alternative for the shrimp industry. However, they do not appear to be achieving the level of bycatch reduction needed to recover the red snapper stock under the current rebuilding plan. Recent evidence of BRD performance indicates that the primary BRD in use (Fisheye) is not performing at a level that would allow the red snapper stock in the Gulf to recover from its overfished state. Consequently, additional measures are being considered. In Joint Reef Fish Amendment 27/Shrimp Amendment 14, currently under development, the Council is evaluating a change in the bycatch reduction criterion for BRDs in order to certify BRDs with better performance than the Fisheye. The Council has also appointed a special Ad Hoc Shrimp Effort Work Group to evaluate the existing and foreseeable level of effort, considering the effects of economic factors and the damage from Hurricanes Katrina and Rita, and to attempt to determine the optimal level of effort for the shrimp fishery. These analyses of effort will then be considered in conjunction with better performing BRDs to determine if additional measures are needed to further reduce bycatch and effort.

Further reducing bycatch through the implementation of additional seasonal closures (Option a) as opposed to BRDs was discussed at length in Amendments 9 and 10 to the Shrimp FMP. The analysis showed that in essence there were already a large amount of potentially trawlable area that was closed either permanently or seasonally by regulations. Additionally, it was noted that there are a large number of hard-bottom areas, offshore oil and gas structures, artificial reefs, etc. that preclude the use of trawl gear. Furthermore, Hendrickson and Griffin (1993) simulated the effect of seasonal closures for 5 periods and found them all to be ineffective in reducing juvenile snapper bycatch. Time closures (Option b) have not been evaluated; however, since the majority of brown shrimping effort occurs at night, and this fishery is the primary one that has juvenile red snapper bycatch, this alternative would probably have minimal affects on bycatch of juvenile red snapper, unless nighttime closures are implemented. Nighttime closures would have significant negative effects on brown shrimp catches, possibly to the point that offshore operations would cease due to the reduction in CPUE, skyrocketing fuel costs, and continued competition with foreign imports. On the other hand, if additional areas can be located that: (1) consistently contain large numbers of juvenile red snapper, and (2) have been known to be utilized by the shrimp fleet, then closure of such areas (Option b) should help reduce bycatch of juvenile red snapper.

Alternative 3. Further reduce bycatch by setting limits on the amount of trawling gear that can be used aboard each vessel fishing in the EEZ

Option a. For vessels 60 feet in length and larger no more than 4 trawls, excluding a single try net not exceeding 20 feet in head rope length, may be in use while trawling for shrimp in the EEZ inside of 100 fathoms, and each such net shall not exceed:

SubOption a. 60 feet in head rope length
SubOption b. 50 feet in head rope length
SubOption c. 40 feet in head rope length

Option b. For vessels less than 60 feet in length no more than 2 trawls, excluding a single try net not exceeding 20 feet in head rope length, may be in use while trawling for shrimp in the EEZ inside of 100 fathoms, and each such net shall not exceed:

SubOption a. 60 feet in head rope length

SubOption b. 50 feet in head rope length
SubOption c. 40 feet in head rope length

Discussion: Reducing the allowable amount of trawl gear and/or trawl size may reduce bycatch if it is sufficient to effectively reduce effort. Recent data suggest that there is excess effort in this fishery; consequently, the gear modifications would have to be sufficient to remove this excess effort. On the other hand, Hurricanes Katrina and Rita may have significantly reduced fishing effort in the EEZ; however to what level is currently unknown. Additionally, if shrimp vessels are able to simply trawl longer with reduced amounts of gear, they could effectively negate any perceived bycatch reduction.

Alternative 4. Further reduce bycatch by establishing a bycatch quota for the penaeid shrimp fisheries of the Gulf of Mexico

Seasonal Bycatch Quota Alternatives

Option a. Establish a bycatch quota for the summer brown shrimp season (May 1 - August 31 of each year) and prohibit shrimp trawling in the EEZ once 75%, 85%, or 95% of the target average estimate of bycatch during this period has been taken during any given year

Option b. Establish a bycatch quota for the fall white shrimp season (September 1 - November 30 of each year) and prohibit shrimp trawling in the EEZ once 75%, 85%, or 95% of the target average estimate of bycatch during this period has been taken during any given year

Option c. Establish a bycatch quota for the winter and spring pink shrimp season (December 1 - April 30 of each year) and prohibit shrimp trawling in the EEZ once 75%, 85%, or 95% of the target average estimate of bycatch during this period has been taken during any given year

Area Bycatch Quota Actions

Option d. Establish a bycatch quota by statistical subzone or combinations of subzones and prohibit shrimp trawling in the EEZ of such zones or subzones once 75%, 85%, or 95% of the target average estimate of bycatch from each zone or subzone has been taken during any given year

Option e. Establish a bycatch quota by state (extending state lines by longitude to the limits of the EEZ) and prohibit shrimp trawling in the EEZ off such states once 75%, 85%, or 95% of the target average estimate of bycatch from a given state has been taken during any given year

Species Bycatch Quota Actions

Option f. Establish a bycatch quota for all species, year-round and prohibit shrimp trawling in the EEZ once 75%, 85%, or 95% of the target average estimate of bycatch has been taken during any given year

Option g. Establish a bycatch quota for red snapper and prohibit shrimp trawling in the EEZ once 75%, 85%, or 95% of the target average estimate of red snapper bycatch has been taken during any given year

Option h. Establish a bycatch quota for only the managed species in the EEZ and prohibit shrimp trawling in the EEZ once 75%, 85%, or 95% of the target average estimate of bycatch has been taken during any given year for:

Suboption 1. Any managed species
Suboption 2. All managed species
Suboption 3. Only overfished species or species undergoing overfish**ing**

Note: Bycatch quotas could be established in numbers or pounds

Discussion: The Seasonal Bycatch Quota Actions would establish bycatch quotas in species specific shrimp fisheries based on the approximate seasonal lengths of these fisheries for brown, white, and pink shrimp, respectively. Although there is overlap in the catch of these species, there are differences in the areas and times when the majority of harvest occurs. Brown shrimp harvest primarily occurs in offshore waters of Texas and Louisiana during the late spring and summer months while white shrimp are typically harvested closer to shore in summer and fall, thus the bycatch is different. Pink shrimp catch predominantly comes from south Florida in winter, and again the bycatch is different. These alternatives would establish time-specific bycatch quotas. Area Bycatch Quota Actions would set bycatch quotas using statistical subzones (or combinations thereof) or state boundaries. Species Bycatch Quota Actions would establish bycatch quotas for either all species, various options for only managed species, or only red snapper.

The setting of bycatch quotas of any kind for the purpose of bycatch reduction requires some initial estimate of the type and amount of bycatch being harvested by shrimp vessels. Although a standardized bycatch reporting methodology has been proposed in Amendment 13, the type and amount of bycatch is currently unknown and could only be rudimentally estimated. Furthermore, because the annual abundance of many of the bycatch species is related to environmental conditions and reproductive potential, any program to measure bycatch in a given year may not have any relevance to the amount of such bycatch that is available for harvest the following year. The life history of many bycatch species is unknown, others are only annually susceptible to trawl gear, while others may be caught in trawls at various ages. Consequently, a long-term data series of bycatch abundance by species would be needed to appropriately establish bycatch quotas, unless only a very small number of species (i.e., indicators) are selected for quota management. Real-time bycatch quotas would be extremely difficult to enforce without extensive observer coverage that would be cost prohibitive. Self reporting would require extensive training in identification, unless only total poundage was chosen, and would probably be highly inaccurate without observers. On the other hand, if only a subset of the permitted vessels is monitored under the standardized bycatch reporting methodology approved under Amendment 13, a bycatch quota could be established through extrapolation. A bycatch quota could be further simplified if only indicator species are included as with Options g and h above. Using a subset of vessels and indicator species could be a workable means of establishing a

bycatch quota; however, it would probably be highly variable and may not reflect the true level of bycatch.

Alternative 5. Options to Monitor a Bycatch Quota

Option a. Using the proposed standardized bycatch monitoring program established under Amendment 13 to determine the amount and type of bycatch that is occurring in the EEZ, shrimp trawling in the EEZ will be prohibited when the quota is reached based on the bycatch quota selected under Alternative 4 above

Option b. Require retention/weighing/counting of bycatch; shrimp trawling in the EEZ will be prohibited when the quota is reached based on the bycatch quota selected under Alternative 4 above

Option c. Authorize the NMFS to implement a bycatch quota monitoring program in accordance with any established bycatch quota program recommended by the Council under Alternative 4 and established by NMFS

Discussion: Although there is an obvious need to monitor a bycatch quota program to determine if it is effective in meeting its objectives, the first step is to establish the type of program needed and implement it. As discussed under Alternative 4 above, it is doubtful that an accurate and enforceable program to measure bycatch could be implemented in the near future without exorbitant expenditures of funds for observers, unless only a portion of the fleet and/or a limited number of species are included for quota monitoring. On the other hand, if an acceptable program can be designed and implemented, the NMFS would probably be the agency that would actually conduct bycatch quota monitoring. Consequently, allowing NMFS to establish the requirements (Option c) of a monitoring program would probably be the most logical alternative. Option a would utilize the standardized bycatch reporting methodology to sample a subset of vessels; however, as noted this method would probably be highly inaccurate. Option b would be prohibitive from both a cost and practicability standpoint.

Action 2. Alternatives to Further Reduce Effort in the Penaeid Shrimp Fishery of the Gulf of Mexico

Alternative 1. No Action – Do not require further reductions in shrimping effort in the penaeid shrimp fishery of the Gulf of Mexico

Alternative 2. Further reduce effort by limiting transferability of shrimp vessel permits

Option a. Vessel permits may only be transferred to a vessel of equal or lesser size (in length)

Option b. Vessel permits may only be transferred to a vessel of equal or lesser horsepower

Option c. Vessel permits may only be transferred to a vessel or person (corporate or otherwise) that can demonstrate landings of shrimp in 1 of the past 3 years (or can

demonstrate that the permittee or vessel could legally land and sell shrimp in a state in 1 of the past 3 years)

Discussion: Potentially limiting transfer of permits to vessels of the same or lesser size would tend to keep effort from increasing thereby adding stability to the fishery. It may also have implications to bycatch and EFH that may increase with increasing size of vessels and the possibility of vessels using more and larger gear. On the other hand, a downsizing of the fleet in terms of the size of vessels could increase risks in terms of vessel safety. Limiting transferability to vessels that can demonstrate participation in the shrimp fishery would also help maintain stability, allow state-permitted vessels/persons to enter the offshore fishery, and prevent speculative entry into the fishery. On the other hand, limitations on the transferability have produced negative economic impacts in other fisheries.

Alternative 3. Further reduce effort by eliminating latent permits

Option a. Vessel permits will not be renewed unless a vessel has demonstrated commercial landings of shrimp in 2 of the 3 years preceding/following implementation of this amendment

Option b. Vessel permits will not be renewed unless a vessel has demonstrated commercial landings of shrimp in 3 of the 5 years preceding/following implementation of this amendment

Option c. Vessel permits will not be renewed unless a vessel has demonstrated commercial landings of shrimp in excess of 10,000 pounds in 2 of the 3 years or 3 of the 5 years preceding/following implementation of this amendment

Option d. Vessel permits will not be renewed unless a vessel has demonstrated commercial landings of shrimp in excess of 15,000 pounds in 2 of the 3 years or 3 of the 5 years preceding/following implementation of this amendment

Discussion: In recent years, there has been a large amount of latent effort in the shrimp fishery due to economic conditions that have resulted in inactivity of vessels due to high fuel costs and low market prices. Some of these vessels may be precluded from the shrimp fishery of the EEZ under action to implement a moratorium that is part of Amendment 13 to the Shrimp FMP. Although not currently fishing, many of these vessels would potentially qualify for reissuance of permits under the moratorium. Additionally, federal permits have been issued to vessels that are probably not fishing in the EEZ and were obtained on speculation. For example, as of November 30, 2004, there were 84 permitted vessels that are under 30 feet in length, and 10 of those vessels were under 20 feet in length. Such vessels are not likely to be operating in the EEZ for any significant period of time, if at all. Eliminating permits that are not being used could increase stability and probably profitability for the vessels that are actively participating in the shrimp fishery of the EEZ in the Gulf. On the other hand, analyses in Amendment 13 indicate that the number of valid shrimp vessel permits will probably continue to decline until at least 2012 due to the aforementioned high operating costs and low prices for shrimp. These factors have made it unprofitable for many large vessels to operate. Consequently, it is likely in the short term that latent permits will be subsumed with vessels exiting the fishery. Furthermore, Hurricanes Katrina and Rita have destroyed or rendered unfishable many vessels, and it is uncertain how many of these vessels were active in the offshore shrimp fishery and how many will return.

Additionally, if the landings requirement for permit renewal is based on landings preceding the implementation of this amendment, active vessels could be precluded from renewing their permits if it takes the owners a year or more to return to the fishery following the hurricanes.

Alternative 4. Further reduce effort in the penaeid shrimp fishery of the Gulf of Mexico through permit/fishing reductions

Option a. Establish a trip-based individual fishing quota (IFQ) system or a landings-based system for the shrimp fishery in the EEZ. Specify the number of days, trips, or landings per month or per year for each qualifying vessel. Set each vessels limit at or below the vessel's historical average number of fishing trips, days fished, or landings

Option b. Establish a fractional permit limited access system under which each shrimp vessel permit will revert to one-half of a permit beginning in the third, fifth, or tenth year following the implementation of a permit moratorium. A shrimp vessel would then be required to have on board a full permit (i.e., two half permits) to be eligible to fish for shrimp in the EEZ

Option c. Establish a fractional permit limited access system under which each shrimp vessel permit will revert to one-half of a permit upon transfer of a permit from one person (corporate or otherwise) to another following the implementation of a permit moratorium. A shrimp vessel would then be required to have on board a full permit (i.e., two half permits) to be eligible to fish for shrimp in the EEZ. This provision would not apply to transfers between vessels owned by the same person (corporate or otherwise

Discussion: As noted in Amendment 13, the shrimp fishery in the Gulf is currently experiencing a decline in the number of vessels due to low prices from competition with foreign imports and high fuel costs. Nance (2003) indicated that a reduction in fishing mortality, which may be related to effort, would not initially result in a reduction in shrimp yield for all penaeid species. Consequently, some reduction in effort could provide increased benefits to shrimpers and more closely approximate OY if they effectively accumulate a larger share of the shrimp crop in a given year. If the decline in the number of permitted vessels continues as expected, the effective effort will be reduced at some point along with a reduction in bycatch. Fractional permit systems, as with Options b and c, could reduce the number of permit holders by 50% at some future date. Depending on the level of participation, effective effort, and the industry's ability to compensate and fish harder, this alternative may or may not result in an equal reduction in effective effort and bycatch. On the other hand, a 50% reduction in the number of shrimp vessel permits would probably reduce effort and catch significantly, and the reduction could result in shrimp harvests being below OY. Based on the economic situation that the shrimp industry has encountered from large increases in shrimp imports and high fuel costs, effort may already be reduced by over one third. This statement is based on the fact that there are currently approximately 2,500 valid shrimp vessel permits as compared with previous estimates using the SLF and VOUF of nearly 4,000. Although a reduction in the number of permits does not directly relate to a decrease in effort, anecdotal information indicates that a large number of vessels are not operating due to high fuel costs and low shrimp prices that make shrimping unprofitable. If this information is correct, additional bycatch reduction may have already occurred. Furthermore, the impacts of Hurricanes Katrina and Rita on the number of vessels that will likely be fishing in the near future is unknown could be significant, especially in the short-term.

Action to establish a trip-based IFQ system or a landings-based system (Option a) would reduce effort and bycatch through a reduction in trips or days fished, as data are currently collected by NMFS. Each vessel permit holder would be allocated a certain number of days/trips to fish within a season or landings. As with area or seasonal closures, some type of VMS or electronic logbook would likely be needed in order to enforce this alternative. Another difficulty in implementing this alternative would be determining the number of days/trips that would be optimum with regard to shrimp harvest and bycatch reduction. Also, there would be a problem with how individual vessels' initial and future qualification and allocations are determined. This would entail decisions on whether all vessels would get the same number of days to fish or if it would be prorated based on previous historical participation, vessel size, or other criteria. Obviously vessel length and numbers of nets would be factors to consider when evaluating operational costs and shares (days) if a prorated IFQ system is used. On the other hand, limiting the length of trips could reduce efficiency and increase costs, possibly to the point that large boats that have high operating costs and make extended trips could not continue operations.

Action 3. Alternatives to improve enforcement through the requirement of VMS

Alternative 1. No action - do not require VMS systems aboard shrimp trawl vessels fishing in or transiting any portion of the EEZ of the Gulf of Mexico

Alternative 2. Require a properly functioning NMFS certified VMS aboard all shrimp trawl vessels fishing in or transiting the EEZ of the Gulf of Mexico off the West Coast of Florida South of 29EN. Latitude (Yankeetown, Florida).

Alternative 3. Require a properly functioning NMFS certified VMS aboard all shrimp trawl vessels fishing in or transiting the EEZ of the Gulf of Mexico off Texas during any period in which only part of these waters are closed in conjunction with the Texas Closure.

Alternative 4. Require a properly functioning NMFS certified VMS aboard all shrimp trawl vessels fishing in or transiting the EEZ of the Gulf of Mexico off the West Coast of Florida South of 29EN. Latitude (Yankeetown, Florida) and require a properly functioning NMFS certified VMS aboard all shrimp trawl vessels fishing in or transiting the EEZ of the Gulf of Mexico off Texas during any period in which only part of these waters are closed in conjunction with the Texas Closure.

Alternative 5. Require a properly functioning NMFS certified VMS aboard all shrimp trawl vessels fishing in or transiting the EEZ of the Gulf of Mexico.

Discussion: The requirement of Vessel Monitoring Systems (VMS) has been shown to be an effective management tool for enforcement in policing closed fishing areas in the EEZ of other regions of the U.S. Currently, there are numerous closed areas to shrimping in state waters and the EEZ of the Gulf of Mexico. In the EEZ, primary areas include the Tortugas Shrimp Sanctuary, FKNMS, Florida Middle Grounds, Pulley's Ridge, East and West Flower Garden Banks, McGrail and Stetson Banks, as well as the cooperative Texas Closure, which is seasonal, and seasonal closures off the west coast of Florida. The requirement of VMS for shrimp vessels would provide an important addition to enforcement capabilities for these closed areas. On the other hand, if the shrimp industry is required to pay for and maintain these VMS, it would create an additional financial burden to an industry that is currently experiencing severely reduced

profits due to price reductions from competition with foreign imports and high fuel costs, as well as impacts from recent hurricanes. Finally, VMS or 100% coverage using electronic logbooks would be needed to enforce a trip/days fished IFQ system.

3.0 DESCRIPTION OF THE FISHERY

3.1 Description of the Shrimp Fishery

3.1.1 General Features

The Final Environmental Impact Statement (FEIS) for the original Shrimp FMP and the FMP as revised in 1981 contain a description of the Gulf shrimp fishery. In its appendix, the FEIS of February 1981 includes the Habitats, Distribution, and Incidental Capture of Sea Turtles. This material is incorporated by reference and is not repeated here in detail. Amendment 9 (GMFMC 1997) with SEIS updated this information.

As an overview, the management unit of this FMP consists of brown, white, pink, and royal red shrimp. Seabobs and rock shrimp occur as incidental catch in the fishery.

Brown shrimp is the most important species in the U.S. Gulf fishery with principal catches made from June through October. Annual commercial landings in recent years range from approximately 61 to 103 million pounds of tails depending on environmental factors that influence natural mortality. The fishery extends offshore to about 40 fathoms.

White shrimp, second in value, are found in near shore waters to about 20 fathoms from Texas through Alabama. There is a small spring and summer fishery for overwintering individuals, but the majority are taken from August through December. Recent annual commercial landings range from approximately 36 to 71 million pounds of tails.

Pink shrimp are found off all Gulf states but are most abundant off Florida's west coast and particularly in the Tortugas grounds off the Florida Keys. Most landings are made from October through May with annual commercial landings range from approximately 6 to 19 million pounds of tails. In the northern and western Gulf states, pink shrimp are landed mixed with brown shrimp and are usually counted as browns. Most catches are made within 30 fathoms.

The commercial fishery for royal red shrimp has expanded in recent years with the development of local markets. This deep-water species is most abundant on the continental shelf from about 140 to 275 fathoms east of the Mississippi River. Thus far, landings have not reached the MSY, OY, and TAC estimate of 392,000 pounds of tails in any year and have varied from approximately 200,000 to 300,000 pounds from a high of approximately 336,000 pounds in 1994.

The three principal species (penaeids) are short-lived and provide annual crops; however, royal red shrimp live longer, and several year classes may occur on the grounds at one time. The condition of each shrimp stock is monitored annually, and none has been classified as being overfished for over 40 years.

Brown, white, and pink shrimp are subjected to fishing from inland waters and estuaries, through the state-regulated territorial seas, and into federal waters of the EEZ. Royal red shrimp occur only in the EEZ. Management measures implemented under the M-SFCMA apply only to federal waters in the EEZ. Cooperative management occurs when state and federal regulations are consistent. Examples are the seasonal closure off Texas, the Tortugas Shrimp Sanctuary, and the shrimp/stone crab seasonally closed zones off Florida.

The NMFS has classified commercial shrimp vessels comprising the near shore and offshore fleet into size categories from under 25 feet to over 85 feet. More than half fall into a size range from 56 to 75 feet.

Federal permits for shrimp vessels are currently required, and state license requirements vary. Many vessels maintain licenses in several states because of their migratory fishing strategy. The number of vessels in the fishery at any one time varies due to economic factors such as the price and availability of shrimp and cost of fuel. In addition to the federal shrimp vessel permits, the NMFS maintains two types of vessel files, both of which are largely dependent on port agent records. One is for vessels that are recorded as landing shrimp, the SLF; the other is the VOUF that lists vessels observed at ports. The number of commercial vessels participating in the Gulf shrimp fishery is not known but approximately 2,951 vessels obtained a permit sometime within the period from implementation of Amendment 11 (December 2002) and May 5, 2005, and previous estimates from the SLF and VOUF indicated approximately 4,000 vessels. The NMFS estimates fishing effort independently from the number of vessels fishing. The NMFS uses the number of hours actually spent fishing from interview data with vessel captains to develop reports as 24-hour days fished. These estimates have been controversial and not well understood because the effort reported does not necessarily reflect the number of active vessels in the fleet.

A recreational shrimp trawl fishery occurs seasonally and almost entirely in the inside waters of the states. There are about 8,000 small boats participating using trawls up to 16 feet in width. About half the boats are licensed in Louisiana.

Bait landings of juvenile brown, pink, and white shrimp, occur in all states and are not routinely included in the NMFS statistics. Estimates from the original FMP suggest landings of about 5 MP (whole weight) in 1980.

Various types of gear are used to capture shrimp including but not limited to cast nets, haul seines, stationary butterfly nets, wing nets, skimmer nets, traps, and beam trawls. The otter trawl with various modifications, is the dominant gear used in offshore waters. A basic otter trawl consists of a heavy mesh bag with wings on each side designed to funnel the shrimp into the codend or tail. A pair of otter boards or trawl doors positioned at the end of each wing hold the mouth of the net open by exerting a downward and outward force at towing speed.

The two basic otter-trawl designs used by the Gulf shrimp fleet are the flat and the semi-balloon trawls (Klima and Ford 1970). The mouth of the flat trawl is rectangular in shape, whereas the mouth of the semi-balloon design forms a pronounced arch when in operation.

Try nets are small otter trawls about 12 to 16 feet in width that are used to test areas for shrimp concentrations. These nets are towed during regular trawling operations and lifted periodically to allow the fishermen to assess the amount of shrimp and other fish and shellfish being caught.

These amounts in turn determine the length of time the large trawls will remain set or whether more favorable locations will be selected.

Until the late 1950s, most shrimp vessels pulled single otter trawls ranging from 80 to 100 feet in width (Idyll, 1963). Double-rig trawling was introduced into the shrimp fleet during the late 1950s. The single large trawl was replaced by two smaller trawls, each 40 to 50 feet in width, towed simultaneously from stoutly constructed outriggers located on the port and starboard sides of the vessels. The port trawl was towed about 150 feet in back of the starboard trawl to prevent fouling. The advantages of double-rig trawling include: (1) increased catch per unit of effort, (2) fewer handling problems with the smaller nets, (3) lower initial gear costs, (4) a reduction in costs associated with damage or loss of the nets, and (5) greater crew safety (Idyll, 1963).

In 1972, the quad rig was introduced in the shrimp fishery, and by 1976 it became widely used in the EEZ of the western Gulf. The quad rig consists of a twin trawl pulled from each outrigger. One twin trawl typically consists of two 40-foot trawls connected to a center sled and spread by two outside trawl doors. Thus, the quad rig with two twin trawls has a total spread of 160 feet versus the total spread of 110 feet in the old double rig of two 55-foot trawls. The quad rig has less drag and is more fuel efficient. For some designs, a lower opening reduces fish bycatch (David Harrington, personal communication).

Although the industry continuously works to develop more efficient gear designs and fishing methods, the quad rig is still the primary gear used in federal waters. In recent years, the skimmer trawl has become a major gear in the inshore shrimp fishery in the northern Gulf.

3.1.2 Social and Economic Descriptions of the Gulf Shrimp Fishery

3.1.2.1 Overview

A general description of the fishery is found in Section 3.2.1 above. However, this section presents additional detailed information considered to be important to a thorough understanding of the social and economic aspects of the fishery, and thus to the analysis of the management alternatives being considered in this amendment. Unless stated otherwise, the descriptive information presented in the sections below are with regard to conditions as they existed in 2002, since this is the most recent year for which complete data are available to generate the necessary information.

As with any commercial fishery, the Gulf of Mexico commercial shrimp fishery has three primary sectors: the harvesting sector (i.e. vessels), dealers/wholesalers, and processors.[7] The harvesting sector is the focus of the following description and analysis given that it is the sector most directly affected by management measures. However, that sector has multiple components as well. In addition, though the shrimp fishery is dominated by the use of otter trawls, butterfly and skimmer nets are also important in nearshore waters. In particular, skimmer nets have become increasingly important in Louisiana's inshore fishery, and their use is spreading in other inshore areas of the northern and eastern Gulf.[8] Finally, though most shrimp in the Gulf are

[7]Some companies operate as both dealer/wholesalers and processors.

[8]Skimmer nets are illegal in Texas.

harvested for consumptive purposes, a commercial bait shrimp fishery does exist. Since the purpose of this amendment relates to the offshore trawl fishery for penaeid shrimp and its impacts to the red snapper stock, the descriptive discussions of this section are focused on this harvesting sector and the dealers, wholesalers, and processors.

Multiple databases exist by which to gauge participation and conditions in the Gulf shrimp fishery. Historically, NMFS' Gulf Shrimp Landings File (SLF) has been the primary source of landings data. The Vessel Operating Units File (VOUF) has been another source of information regarding the participation of vessels in the fishery. The weaknesses of these two data sources were previously outlined in Amendment 11 (GMFMC 2001). In general, the SLF provides an incomplete picture of vessel participation due to the practice of consolidating trips in such a manner that the landing vessel's identity is sometimes suppressed.[9] The VOUF's primary weakness is its reliance on the dockside observation of vessels and their gear for purposes of determining current participation in the fishery, though it is also hampered by the fact that it only tracks Coast Guard documented vessels (i.e. state registered boats are not taken into account). These weaknesses partly precipitated the desire for a federal permit, so as to better identify and characterize the universe of participants in the EEZ component of the fishery. However, since the permit is only required for vessels operating in federal waters, permit data cannot be used to assess participation throughout all waters of the Gulf of Mexico. The ability to assess such participation has been recently improved by the implementation of trip ticket programs in Louisiana and Alabama, and the required reporting of vessel identification numbers in Florida's trip ticket program. Data from those programs began to be directly incorporated into the SLF in 2002. Finally, possession of a permit does not necessitate actual participation in the fishery (i.e. some vessel permits may be "latent" as a result of an owner's temporary loss of a vessel, a decision to use the vessel in another fishery, or speculation). Therefore, a composite of all these data sources has been used to generate information regarding participation in the entire fishery, though the focus will be on federal Gulf shrimp permit holders and their activities.

3.1.2.2 The Gulf Shrimp Fishery

In 2002, at least 7,483 vessels (including Coast Guard documented vessels and state registered boats) were active in the commercial Gulf shrimp fishery. Of these 7,483 vessels, 5,086 have not possessed a federal Gulf shrimp permit between the time of the permit program's inception and when the permit data were most recently compiled (May 5, 2005). The other 2,397 active vessels are those that have possessed a valid permit at some point during this time period (i.e. of the 2,951 vessels that have been permitted, 554 were not active in the fishery).

Total food shrimp landings and revenues were 145.24 MP (tails) and $376.19 million, respectively. Those landings and revenues can be broken down further into the following general categories: landings and revenues to permitted vessels, to non-permitted vessels, to large as opposed to small vessels,[10] and to unknown vessels. It is important to remember that "known" vessels includes all permitted vessels (active and inactive) and all active, non-permitted vessels. This breakdown and related statistics are presented in Tables 5.1 and 5.2.

[9]See Kazmierczak et al. (2003) for the potential analytical repercussions of this practice.

[10]Large vessels are those greater than or equal to 60 feet in length, while small vessels are less than 60 feet.

Small vessels are more numerous than large vessels within the fishery as a whole and within the universe of non-permitted vessels. However, as would be expected, large vessels predominate the universe of permitted vessels. Large vessels also account for a much higher percentage of landings and revenues than their smaller counterparts within the fishery as a whole (i.e. they account for 78.6% of revenues to known vessels in the fishery), and even more so within the universe of permitted vessels. Conversely, because of their dominant numbers within the non-permitted universe (i.e. they outnumber large vessels nearly 20 to 1), small vessels account for a much higher percentage of landings and revenues within that particular group.

With respect to comparisons between the total and permitted universes, for large vessels, the data are very similar with respect to average landings and revenues. This finding is expected since it is difficult to imagine that many large vessels could survive economically without ever operating in the EEZ, and thus most would need a federal permit. This expectation is reflected by the relatively small level of food shrimp landings by large non-permitted vessels. Conversely, small permitted vessels attain much higher levels of food shrimp landings and revenues on average relative to all small vessels. This finding reflects the fact that small permitted vessels, who are more "serious" than their non-permitted small vessel counterparts (i.e. they spend more time operating in the Gulf food shrimp fishery), represent a much smaller percentage of the small vessel universe relative to the proportion that large permitted vessels represent within the large vessel universe.

A few more observations about the non-permitted vessels are worthy of noting before switching focus to the permitted vessels. Specifically, there is a much wider range of landings and revenues within that group than what would be expected, given the federal permit requirement in EEZ waters. Landings ranged from 4 pounds to over 152,000 pounds and revenues from $9 to nearly $384,000 in 2002. Breaking down the gross revenues for these vessels into reasonable groupings, of the 5,086 non-permitted vessels, the vast majority (3,364) grossed less than $10,000 in food shrimp revenues in 2002. Another 1,392 vessels had gross revenues between $10,000 and $50,000. And 256 vessels had gross revenues between $50,000 and $100,000. These revenue levels are to be expected for vessels that do not operate in EEZ waters and would thus not need to have a permit. However, 45 non-permitted vessels had revenues between $100,000 and $150,000, 22 vessels had revenues between $150,000 and $200,000, and another 7 vessels exceeded $200,000. It is questionable whether these vessels, particularly the top 29 vessels, could achieve such levels of revenue generation without ever venturing into federal waters. This observation may deserve further exploration by the Council and NMFS.

3.1.2.3 The Gulf Shrimp EEZ Fishery

With respect to the universe of permitted vessels, from this point forward, it is assumed that the best way to characterize this group is to examine the nature and activities of the vessels that presumably would have participated in the fishery and would qualify for a federal Gulf shrimp permit under the moratorium as proposed in Amendment 13 to the Shrimp FMP prior to the impacts of Hurricanes Katrina and Rita in the fall of 2005. Therefore, this is the group of vessels that will be assumed to represent the largest number of vessels that would be able to participate in the EEZ fishery if no action is taken regarding additional measures to cap effort at some lower level.

Dependency on the Gulf food shrimp fishery is considered most important for current purposes, as that component of the fishery is the focal point of management. Physical characteristics are also examined. The data on the distribution of vessels' revenues and their physical characteristics are broken down further according to vessel size category (i.e. "large" versus "small" vessels). The purpose of examining the data by vessel size is to gain a better understanding of fishery participants, their activities and behavior, and the roles they respectively play in the fishery as a whole.

With respect to statistics regarding the distribution of revenues for the permitted universe, the fact that the standard deviations are consistently close to or larger than the mean values indicates a high degree of heterogeneity within this group. That is, the amount of revenue earned within each fishery differs considerably between vessels. The lone exception is with respect to the percentage of their revenues which come from the Gulf food shrimp fishery. For the group as a whole, most have relied on this fishery for nearly 79% of their revenues. Most vessels, though certainly not all, have a relatively high degree of dependency on the Gulf food shrimp fishery. With respect to physical characteristics, as opposed to landings and revenues, the fleet is much more homogeneous, though some differences do exist.

A primary source of this heterogeneity appears to be vessel size. As would be expected, small vessels generate lower levels of landings and revenues on average relative to their larger counterparts. On average, they are also "smaller" in regards to almost all of their physical attributes (e.g. they use smaller crews, fewer and smaller nets, have less engine horsepower and fuel capacity, etc.). Small vessels are also older on average, indicating the trend towards the building and acquisition of larger vessels in the fishery during recent years. Larger vessels also tend to be steel-hulled. Fiberglass hulls are most prominent among small vessels, though steel and wood hulls are also common. Nearly two-thirds of large vessels have freezing capabilities while few small vessels have such equipment. Small vessels still rely on ice for refrigeration and storage, though more than one-third of large vessels also rely on ice. Some vessels are so small that they rely on live wells for storage, but these vessels are not major players in the EEZ component of the fishery.

Most interesting is the difference between large and small vessels with respect to their dependency on the food shrimp fishery. The percentage of revenues arising from food shrimp landings is nearly 87% for large vessels, but only slightly more than 61% for small vessels. Thus, on average, large vessels are more dependent than their smaller counterparts on the food shrimp fishery. Put alternatively, small vessels are more diverse and flexible than large vessels with respect to their operations, in general and across fisheries. This finding is consistent with those in Funk (1998). However, it is also the case that dependency on food shrimp is much more variable within the small vessel sector than the large vessel sector. That is, many small vessels are quite dependent on food shrimp landings, while many others illustrate little if any dependency.

Consequently, dependency can be tied to the distribution of active versus inactive (i.e. "latent") vessels in the Gulf shrimp fishery through 2002.[11] The data indicate that, of the 2,951 permitted vessels, 554 did not have any verifiable Gulf shrimp landings in 2002, while 2,397 vessels did.

[11]For present purposes, "active" is defined as having any identifiable landings in the Gulf food shrimp fishery.

Large and small vessels comprised approximately 75% and 25% of the active group, respectively. However, small vessels represented a majority of the inactive group, nearly 53% compared to 47% for large vessels. In general, a vessel could be found to be latent for a variety of reasons, including permit speculation, participation in other fisheries at that time, and the vessel being sunk or otherwise inoperable. It is also possible that a vessel's landings were not identified because of the previously noted data recording and management issues. This fact is important to bear in mind because it is much more likely that a small vessel's landings would have been missed, due to the consolidation of landings and suppression of vessel identifiers in the SLF, than a large vessel, particularly if the former was in fact a state registered boat, and even more so if that boat were operating out of Texas and Mississippi, where trip ticket programs covering the food shrimp fishery are not in operation.

An examination of the geographic distribution of inactive vessel owners sheds some light onto this issue. Specifically, 32% of the inactive vessels' owners are from Texas, 29.4% are from Florida (including the east coast), 11.3% are from Louisiana, 10.7% are from Alabama, 7.4% are from Mississippi, and the remaining 9.2% are from non-Gulf states. It is quite likely that many if not most of the alleged "latent" permitted vessels in Texas and Mississippi may in fact be active, but their landings cannot be specifically identified given current data collection practices. For the other areas, the likely explanation is a combination of permit speculation and the flexible operations of those vessels, particularly those that are small. However, this question can only be answered with certainty upon changes in current data collection practices (e.g. not consolidating landings of small vessels and suppressing their vessel identifiers in the SLF) and/or the implementation of trip ticket programs for the food shrimp fishery in Texas and Mississippi.

To illustrate the difference that inclusion or exclusion of the inactive permitted vessels has on vessels' dependency on the food shrimp fishery revenues, refer to Table 5.14. If inactive vessels are removed, for the permitted group as a whole, dependency increases from about 79% to nearly 97%. For large vessels, the increase is from about 87% to nearly 98%. Consistent with the above discussion, the change in dependency is most dramatic for the small vessels, which increases from about 61% to nearly 94% when the inactive vessels are removed from consideration.

3.1.2.4 Historical and Current Economic Status of the Gulf Shrimp Fishery's Harvesting Sector

As has been noted in various publications and the media coverage, the Gulf shrimp fishery has been in economic decline for approximately the past three years. Travis and Griffin (2004) discuss this decline and its causes in detail, the highlights of which follow. It is also highly likely that this decline as been greatly accelerated through the impacts of Hurricanes Katrina and Rita in 2005; however, measurement of this increased decline and level of participation cannot be accomplished at this time.

According to Funk (1998), which examined fleet profitability during the 1965 through 1995 time period, the average annual rate of return (net revenue or profit as a percentage of revenue) for the fishery as a whole was 12.5%, which is a respectable figure for capital investors. Given the inherent variability in shrimp stock conditions from year to year and, thus, landings and revenues, it is not surprising that profitability was also quite volatile from year to year, with the industry experiencing exceptionally high profits in some years and very low or negative profits (losses) in other years. In addition to the annual variability in abundance, economic performance

appeared to be largely driven by changes in fuel prices, with changes in crew share expenses playing a secondary role. Several researchers have noted that fuel costs have and continue to represent a significant portion of the industry's operating costs (Haby et al. 2003; Ward et al. 1995). Thus, fluctuations in fuel prices can significantly impact the industry's economic performance.

In addition to variability over time, Funk's (1998) analysis also indicated that economic performance varied by vessel size. In general, rates of return tend to be higher on average for smaller vessels than for larger vessels, even though revenues and aggregate profits tend to be higher for the larger vessels. This result indicates that the costs of operating larger vessels also tend to be relatively higher, both in the aggregate and on a per unit basis, than those of smaller vessels. However, Funk (1998) hypothesized that ownership status and level of participation in the fishery were two of the most important factors explaining this variation in profitability. That is, smaller vessels tend to be predominantly operated by their owners, but only participate in the shrimp fishery on a part-time basis. These factors increase the flexibility of these vessels' operations. In general, these vessels will only participate in the fishery when revenue and/or profit per unit of effort is relatively high. When low or negative profits are being earned, these vessels and their owners will allocate their time to other fisheries and endeavors. Conversely, the larger vessels are more frequently operated by hired captains, and participate in the fishery on a full-time basis. In addition to the fact that these captains must be paid, as well as the crew, these vessels have much less flexibility with respect to when they participate in the fishery. Good captains must be retained, lest they be lost to other owners, and bills for relatively high "fixed" costs, such as insurance, mortgage payments, etc., must still be paid regardless of whether the vessel fishes or not. Furthermore, many of these larger vessels are part of a vertically integrated operation (i.e. they are owned by processing firms). In such instances, the goal of the owner is likely to maximize profits for the entire operation as opposed to the individual vessel. A stable supply of shrimp is critical to the profitable operation of processing plants. All of these factors will cause these larger vessels to continue operating in the shrimp fishery, even when profits are low or negative. Therefore, on average and over time, a lower rate of return should be expected for larger vessels relative to smaller vessels in this fishery. Funk's (1998) results confirm this expectation. Nonetheless, overall, this industry was historically profitable during this time period.

According to a subsequent analysis, whose primary purpose was to analyze the impacts of the recent changes in TED regulations (NMFS 2002), the large vessel component of the fishery was profitable to highly profitable between 1998 and 2000. Nominal shrimp prices were relatively stable and fuel prices were relatively low by historical standards, and abundance tended to be higher than historical averages. Undoubtedly, strong conditions at the macroeconomic level created relatively high levels of consumer demand for shrimp, which in turn engendered strong economic performance in the shrimp industry.

However, economic conditions took an abrupt change in the latter half of 2001. Evidence indicates that as imports surged, macroeconomic conditions deteriorated, and when the post September 11, 2001, era began, the industry was hit by sharply declining prices and higher insurance premiums.[13] At least for the large vessel sector, profits turned into losses by the end of

[13]Increases in vessel insurance premiums are documented in a Commercial Fisheries News article, a reprint of which can be found at http://www.fishresearch.org/Articles/2002/10/insurance.asp.

2001. The deteriorating trend appears to have continued through 2002 and 2003, exacerbated by increases in fuel prices that began in the latter part of 2002 and continued through 2003. According to average price data reported by the Bureau of Labor Statistics (BLS), from 2002 to 2003, fuel prices increased between 21% and 29%, depending on the selected fuel price index.[14] Regardless of which index used, fuel prices increased significantly which, in turn, significantly increased shrimp vessels' operating costs.

By 2002, as indicated in the economic analysis of the 2003 Texas Closure policy (Travis and Griffin, 2003) and the supplemental economic analysis of Amendment 10 to the Shrimp Fishery Management Plan (NMFS 2003), economic conditions deteriorated to the point where all sectors of the Gulf shrimp fishery, regardless of vessel size, state, or gear, were facing negative profits (losses), on average, by the end of 2002. According to the Texas Closure analysis, for the fishery as a whole in 2002, the average rate of return (profits or losses as a percentage of revenue) was expected to be approximately -41%, with lower loss rates being experienced for the small vessel sector (-30%) relative to the large vessel sector (-45%). Regardless of whether the Texas Closure policy was continued or not, projections for 2003 indicated that these economic losses would persist under current conditions.

The analyses clearly indicate that rapidly declining prices have been the primary source of the recent deterioration in the industry's economic condition. In the aggregate, the average nominal price of shrimp in the Gulf decreased by approximately 28% between 2000 and 2002. Revenues decreased even more as a result of relatively lower shrimp abundance and, therefore, landings in 2001 and 2002 relative to 2000. The magnitude of the price decline has varied by shrimp size category, with the under 15 count ("jumbo") and 68 and over count ("small") size categories seeing the smallest declines (approximately 23%) and the 31-40 and 41-50 count ("large" and "medium") size categories seeing the largest declines (approximately 35%). Due to inflation, these price declines are even larger in real terms.

According to Haby et al. (2003), increases in shrimp imports have been the primary cause of the recent decline in U.S. shrimp prices. A complete discussion of the factors contributing to the increase in imports can be found in Haby et al. (2003). In general, recent surges in imports have been caused by increases in the production of foreign, farm-raised shrimp. More specifically, increased competition from shrimp imports has been due to three primary factors: 1) changes in product form due to relatively lower wages in the exporting countries, 2) shifts in production to larger count sizes, and 3) tariff and exchange rate conditions which have been favorable to shrimp imports into the U.S. With respect to the first factor, lower wage rates have allowed major shrimp exporters (e.g. Thailand) to increase production of more convenient and higher value product forms, such as hand-peeled raw and cooked shrimp. With respect to the second factor, changes in farming technology and species have allowed production of foreign product to shift towards larger, more valuable sizes. As a result of these factors, imports are more directly competing with the product traditionally harvested by the domestic industry, thereby reducing the latter's historical comparative advantage with respect to these product forms and sizes. Finally, with respect to the third factor, the lack of duties on shrimp imports into the U.S., the

[14]According to information posted to http://data.bls.gov on February 17, 2004, the Consumer Price Index's average price data for fuel oil, Series APU00007251, indicates that fuel prices increased by 21% between 2002 and 2003. However, the PPI's data on average prices for #2 diesel fuel, Series WPU057303, indicates that fuel prices increased by 29% during this time.

presence of relatively significant duties on shrimp imports into the European Union (E.U.), and the recent strength of the U.S. dollar relative to foreign currencies have created favorable conditions for countries exporting products to the U.S.

As Haby et al.(2003) note, the increase in imports has caused the domestic industry's share of the U.S. shrimp market to decrease from 44.6% to 14.8% between 1980 and 2001. While the growth in imports was relatively steady throughout most of this time period (for e.g., 4% to 5% in the late 1990's), shrimp imports surged by 16% in 2001. Since 2001, which is the last year accounted for in their analysis, shrimp imports have continued to rise. Although the increase in 2002 was a modest 7.2%, relative to the increase in 2001, a significant increase of 17.5% occurred in 2003 according to the most recently available data.[15] Undoubtedly, these increases have led to further erosion in the domestic industry's market share and additional price declines.

The economic analysis of the 2003 Texas Closure was recently re-examined and updated to further investigate changes to the industry's current economic status. This analysis revealed that, on average, vessels were not even able to cover their variable costs in 2002. Preliminary information indicates that prices have continued to decline in 2003,[16] which would lead to the expectation that the vessels' inability to cover their variable costs has continued in 2003. If vessels cannot cover their variable costs, they will be forced to cease operations (i.e. exit the fishery), at least until conditions change.

Projections of fleet size, as measured by full-time equivalent vessels (FTEVs), and nominal effort were updated and extended farther into the future (20 years, or through 2021) to determine how long it would take for the fishery to reach an equilibrium state, assuming no changes in external factors (e.g. imports, regulations, etc.). In general, equilibrium occurs once economic losses are no longer being incurred (i.e. economic profits are zero) and fleet size is stable (i.e. fleet size has reached its minimum level).

According to these projections, the average rate of return in the fishery for 2002 is projected to have been approximately -33%, slightly better than initial projections, and the difference between the rates of return in the small vessel sector and large vessel sector also narrowed to a small degree (-27% and -36%, respectively). Economic losses are forecast to continue throughout the fishery on average until 2012, *ceteris paribus*. As would be expected, these losses cause vessels to continue exiting from the fishery during this time. The size of the large vessel sector and level of associated fishing activity decline continuously, in terms of FTEVs and nominal effort, through 2012 and are expected to have decreased by 39% and 34%, respectively, relative to 2002 levels. However, only the large vessel sector reaches an equilibrium by 2012. Although the number of FTEVs and nominal effort are expected to decrease in the small vessel sector by approximately 29% by 2012, the small vessel sector continues to decrease in size and effort throughout the entire twenty-year simulation. The logic behind this differential result

[15]Shrimp import data can be found at http://www.st.nmfs.gov/st1/trade/trade_prdct_cntry.html Statistics cited in this report were based on data posted as of March 25, 2004.

[16]Currently available data for 2003 indicates that the decline in nominal prices from 2000 is 36% across all size categories. Depending on the size category, the declines range from 27% to 40%.

between the large and small vessel sectors is fairly straightforward. Specifically, as large vessels, which predominately operate in offshore waters, exit the fishery, their departure leads to an improvement in the economic performance of the large vessels that remain in the fishery, primarily as a result of increases in CPUE in offshore waters. However, given the migration pattern of shrimp from inshore to offshore waters, the departure of large vessels does not generally increase CPUE in inshore waters where the smaller vessels tend to operate. Conversely, the departure of small vessels improves the economic performance of both small and large vessels by removing competition in inshore waters and by allowing more shrimp to escape into offshore waters (i.e., CPUE should increase in both inshore and offshore waters). Although the economic performance of large vessels is expected to improve more quickly than that of small vessels, *ceteris paribus*, it must be emphasized that, under current conditions, economic recovery even in the large vessel sector is not expected for several years.

It is important to note that these projections assumed that external factors such as imports, fuel prices, and other costs remain unchanged from their 2002 status. That is, recent information regarding increases in fuel prices, insurance premiums, and imports, and further declines in shrimp prices during 2003 were not incorporated into the model and analysis since final data are not yet available. Since these changes would be expected to further erode the harvesting sector's economic performance, the projections of economic losses, decreases in fleet size and effort, and the period of time before the large vessel sector stabilizes are likely underestimated. Thus, unless other factors change in a manner that would contravene these adverse impacts, these projections should be considered conservative. Such contravening factors would include those which could be reasonably expected to increase prices. Such factors could include improvements in product quality and successful marketing programs that promote domestic, wild food shrimp, both of which would be expected to increase its demand. Tariffs and other import restrictions (e.g. more stringent standards on the presence of antibiotics in farmed shrimp) could also lead to price increases.

Another major factor in the analysis of future participation in the shrimp fishery both inshore and offshore, is the impacts of Hurricanes Katrina and Rita in 2005. It has been documented that numerous small and large vessels were destroyed from Bayou LaBatre, Alabama to Sabine, Texas, and large portions of the infrastructure that supports these vessels (docks, ice houses, dealers, etc.) were also destroyed. At present it is impossible to determine how many or which kinds (large or small) of vessels will be participating in the shrimp fishery in the next few years.

3.1.2.5 Gulf Shrimp Dealer/Wholesaler Sector

In addition to the harvesting sector, dealers/wholesalers play an important role in the Gulf shrimp industry. Unfortunately, no studies have been done to specifically examine their current economic performance. However, given the documented declines in the harvesting sector and the processing sector, and also given the fact that many dealers are also harvesters or processors, it is logical to conclude that this sector is also experiencing adverse economic conditions for the same reasons. These adverse conditions have also been exacerbated by the destruction of facilities as the direct result of Hurricanes Katrina and Rita in 2005.

This sector is characterized in Table 5.12 . In 2002, 626 dealers were identified in the SLF data. Note that this figure is considerably higher than in previous, recent years. For example, between 1999 and 2001, this figure was in the 310 to 320 range. Such a dramatic increase is inconsistent with the hypothesis that this sector was also experiencing harsh economic conditions. However,

the answer to this apparent mystery lies primarily in certain harvesters' responses to the poor economic conditions.[17] Specifically, in their attempts to reduce costs and obtain higher prices for their product, it appears that many harvesters decided to remove one of the so-called "middlemen" by obtaining dealer licenses themselves in order to sell directly to the public. An in-depth examination of the data appears to support this conclusion.

Specifically, and as is suggested by the statistics, there is considerable heterogeneity within this sector with respect to individual dealers' volume and sales. The data indicate that, of the 623 dealers reporting sales figures, 63.4% (395) reported food shrimp sales of less than $100,000. Of these, over 70% reported sales of less than $10,000. It is highly likely that the vast majority of these dealers are in fact harvesters who decided to obtain a dealer license and sell their own product rather than sell through a traditional dealer/wholesaler. When you factor out these dealers, that leaves 228 dealers who sold more than $100,000 of food shrimp. This figure is closer to what would be expected given numbers from previous years and prevailing economic conditions. These firms are likely the traditional dealers that have dockside businesses/facilities. Of these 228 dealers, 139 had food shrimp sales volumes between $100,000 and $1.0 million, while the remaining 89 had sales exceeding $1.0 million. Many of these 89 dealers are also processing firms. Three firms had sales exceeding $10.0 million.

3.1.2.6 Gulf Shrimp Processing Sector

With respect to the processing sector, descriptive statistics regarding employment, overall volume and sales, and food shrimp volume and sales is presented in Table 5.13. As with the harvesting and dealer sectors, there is considerable heterogeneity within the processing sector regarding employment, volume, and sales. The data indicate that 21 processors had less than $1.0 million in food shrimp production, 22 had between $1.0 and $5.0 million, 9 had between $5.0 and $10.0 million, 11 had between $10.0 and $20.0 million, and the remaining 11 exceeded $20.0 million.

However, the data also indicates that a majority of these firms are highly dependent on the processing of food shrimp. Unfortunately, with current data, it is not possible to determine with certainty how much of the shrimp being processed is domestic as opposed to imported. However, by cross-referencing multiple data sources, Keithly et al. (2005) attempted to approximate this figure.[18] According to their findings, use of imports by domestic processors increased steadily through the 1980's and for example, in 1986, accounted for about one-third of production. Between 1992 and 1994, which was apparently the peak period, domestic and imported product accounted for nearly equal proportions of total processed shrimp products in the Southeast region. Even though, as noted previously, imports have continued to increase since then, Southeast shrimp processing activities have not increased proportionately as a result.

[17]Improved identification of dealers also plays a role, though it appears not a significant one.

[18]The one weakness with their approach is the assumption that all domestic production is utilized by the processing sector. While in normal economic times, this assumption would be plausible, it is less reasonable in dire economic times when harvesters shift from traditional sales channels and instead sell directly to the public.

Keithly et al. (2005) hypothesized that this outcome is a direct result of a significant and steady decrease in the deflated price of processed shrimp from over $7.00/pound in the early 1980's to less than $4.00/pound in recent years. This decline has also precipitated a decline in processors' marketing margins (i.e. per unit profitability). As a result of the declining margins, some processors have adjusted by increasing output in order to compensate; but many have been unable to make such an adjustment, and thus have been forced to exit the industry. This is illustrated by the fact that the number of Gulf shrimp processors has fallen from 124 to 72 between 1980 and 2001. Thus, the situation illustrates the classic case of an industry in economic decline, wherein the number of firms falls, and those who remain become larger in size (as measured by output). That is, the industry has become more concentrated. Moreover, Keithly et al. (2005) concluded that, if production of farm-raised shrimp continues to increase and a substantial portion of that production enters the U.S. market, the price of processed shrimp will continue to decline; margins will continue to narrow; and consolidation will continue to occur as additional firms exit and remaining firms attempt to compensate by increasing their output.

3.2 Fishing Communities

3.2.1 General Features

A "fishing-dependent community" is defined in the Magnuson-Stevens Act, as amended in 1996, as "a community which is substantially dependent on or substantially engaged in the harvesting or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew and United States fish processors that are based in such community" (Magnuson-Stevens Act section 3(16)). In addition, the National Standard Guidelines (May 1, 1998; 63FR24211) define a fishing-dependent community as a social or economic group whose members reside in a specific location and share a common dependency on commercial, recreational, or subsistence fishing or on directly related fisheries-dependent service and industries (for example, boatyards, ice suppliers, tackle shops).

The literature on fishing-dependent communities addresses three areas: identification of the communities, selection of variables appropriate for assessment and the assessment method itself. Community identification and selection criteria can be very complex or very simple. A simple first level approach would involve examining social and demographic variables at the county level where some fishing activity occurs. A more complex approach involves attempting to gather data and information on as small an entity as possible that qualifies as a fishing community. As the definition of community moves farther from traditional economic or political entities, less official data are available and more field research is required to complete the baseline profile and include relevant social and cultural value data.

Jacob et al. (2001) developed a protocol for defining and identifying fishing-dependent communities in accordance with National Standard 8. The project used central place theory to identify communities. A central place is where services, goods and other needs are met for the residents in the central place, as well as for those in surrounding hinterlands. It differs from using an administrative unit such as county boundaries, which may distort smaller communities or locality data as it is aggregated. The authors believed central place theory works well for defining and identifying fishing-dependent communities or localities as it provides a geographic basis for including multiplier effects that capture forward and backward linkages. In most fishing-dependent communities, forward linkages include those businesses that handle the fish

once it is brought to the dock, such as fish houses, wholesalers, exporters, and seafood shops and restaurants. Backward linkages are the goods and services fishermen depend upon such as boat building and repair; net making and repair; marinas; fuel docks; bait, tackle and other gear vendors. Using their protocol of defining fishing-dependent communities, the authors initially determined five communities as commercially fishing-dependent and seven communities as recreationally fishing dependent. Further investigations resulted in validating five communities as commercially fishing dependent. The authors expressed little confidence in the data used and indicators developed based on such data to confirm the other communities as recreationally fishing-dependent communities. The five commercially fishing-dependent communities are: Steinhatchee, Apalachicola, Panama City, Ochopee/Everglades City, and Panacea.

The Generic Essential Fish Habitat Amendment (GMFMC, 2004a) provides more extensive characterization of fishing-dependent communities throughout the Gulf coasts. The fishing communities included in the characterizations are: (1) Alabama: Fairhope, Gulf Shores, Orange Beach, Bayou La Batre, and Dauphin Island; (2) Florida: Pensacola, Gulf Breeze, Ft. Walton Beach, Destin, Panama City, Panama City Beach, Port St. Joseph, Apalachicola, East Point, Carabelle, St. Marks, Horseshoe Beach, Cedar Key, Yankeetown, Inglis, Crystal River, Homosassa, New Port Richey, Tarpon Springs, Clearwater, Madeira Beach, St. Petersburg, Tampa, Cortez, Matlacha, Bokeelia, Ft. Myers Beach, Naples, Marco Island, Everglades, Key Largo, Islamorada, Marathon, Big Pine Key-Summerland Key, and Key West; (3) Louisiana: Venice, Empire, Grand Isle, Golden Meadow, Cutoff, Chauvin, Dulac, Houma, Delcambre, Morgan City, and Cameron; (4) Mississippi: Pascagoula, Gautier, Biloxi, and Gulfport; and, (5) Texas: Port Arthur, Galveston, Freeport, Palacios, Port Lavaca, Seadrift, Rockport, Port Aransas, Aransas Pass, Brownsville, Port Isabel, and South Padre Island.

3.2.2 Shrimp Fishing Communities

Further characterizations of fishing-dependent communities and approaches/data needs to assess the regulatory impacts on these communities are found in Section 7 and are incorporated herein by reference.

4.0 AFFECTED ENVIRONMENT

Section 1502.15 of the CEQ regulations states “environmental impact statements shall succinctly describe the area(s) to be affected or created by the alternatives under consideration.” The following is description of the physical, biological, economic, social, and administrative environments affected by this action.

4.1 Physical Environment

The physical environment for shrimp has been described in detail in the EIS for the Generic Essential Fish Habitat Amendment and is incorporated here by reference (GMFMC 2004a). The GOM has a total area of 564,000 km^2 (218,000 sq. mi.). It is a semi-enclosed, oceanic basin connected to the Atlantic Ocean by the Straits of Florida and to the Caribbean Sea by the Yucatan Channel. Oceanic conditions are primarily affected by the Loop Current, the discharge of freshwater into the Northern Gulf, and a semi-permanent, anticyclonic gyre in the western Gulf. Gulf water temperatures range from 12º C to 29º C (54º F to 84º F) depending on time of year and depth of water. In the GOM, adult red snapper are found in submarine gullies and depressions; over coral reefs, rock outcrops, and gravel bottoms; and are associated with oilrigs

and other artificial structures (GMFMC, 2004a). Adult penaeid shrimp are found in nearshore and offshore silt, mud, and sand bottoms while juveniles are found inhabiting estuaries.

Environmental Sites of Special Interest Relevant to Red Snapper and Penaeid Shrimp

Cooperative Texas Shrimp Closure (Figure 4.1) – A shrimp nursery ground off Texas cooperatively closed by the Council and the state of Texas for 45 to 60 days out to either 15 or 200 miles. The closure results in shrimp growing to approximately 39 count/pound (5,474 square nautical miles).

Tortugas Shrimp Sanctuary (Figure 4.2)- A shrimp nursery ground in the Florida Keys permanently closed to use of trawls and harvest or possession of shrimp. Results in shrimp growing to about 47 count/pound before harvest (3,652 square nautical miles).

Southwest Florida Seasonal Closure (Shrimp/Stone Crab) (Figure 4.1) - Closure of federal and state waters to shrimping from November 1 through May 20 inshore of the line to protect juvenile stone crab and prevent loss of stone crab traps in trawls (4,051 square nautical miles).

Central Florida Shrimp/StoneCrab Separation Zones (Figure 4.3) - Closure of state and federal waters to either shrimping or crabbing from October 5 to May 20. Crab or shrimp fishing alternate in Zones IV and V (174 square nautical miles).

Longline/Buoy Gear Area Closure (Figure 4.1) - Permanent closure to use of these gears for reef fish harvest inshore of 20 fathoms off the Florida shelf and inshore of 50 fathoms for the remainder of the Gulf (72,300 square nautical miles).

Madison/Swanson and Steamboat Lumps Marine Reserves (Figure 4.1) - No-take marine reserves sited on gag spawning aggregation areas where all fishing except for surface trolling during May through October is prohibited (219 square nautical miles).

Tortugas North and South Marine Reserves (Figure 4.1) - No-take marine reserves cooperatively implemented by the state of Florida, National Ocean Survey (NOS), the Council, and the National Park Service (see jurisdiction on chart) (185 square nautical miles). In addition, Generic Amendment 3 for addressing EFH requirements, Habitat Areas of Particular Concern (HAPC), and adverse effects of fishing in the following FMPs of the GOM: Shrimp, Red Drum, Reef Fish, Stone Crab, Coral and Coral Reefs in the GOM and Spiny Lobster and the Coastal Migratory Pelagic resources of the GOM and South Atlantic (GMFMC 2005a) prohibited the use of anchors in these HAPCs.

Individual reef areas and bank HAPCs of the northwestern GOM including: East and West Flower Garden Banks, Stetson Bank, Sonnier Bank, MacNeil Bank, 29 Fathom, Rankin Bright Bank, Geyer Bank, McGrail Bank, Bouma Bank, Rezak Sidner Bank, Alderice Bank, and Jakkula Bank (Figures 4.1 and 4.4) - Pristine coral areas protected by preventing use of some fishing gear that interacts with the bottom (263.2 square nautical miles). Subsequently, some of these areas were made a marine sanctuary by NOS and this marine sanctuary is currently being revised. Bottom anchoring and the use of trawling gear, bottom longlines, buoy gear, and all traps/pots on coral reefs are prohibited in the East and West Flower Garden Banks, McGrail Bank, and on the significant coral resources on Stetson Bank.

Florida Middle Grounds HAPC (Figure 4.1) - Pristine soft coral area protected from use of any fishing gear interfacing with bottom (348 square nautical miles).

Pulley Ridge HAPC (Figure 4.5) - A portion of the HAPC where deep-water hermatypic coral reefs are found is closed to anchoring and the use of trawling gear, bottom longlines, buoy gear, and all traps/pots (2,300 square nautical miles).

Stressed Areas for Reef Fish (Figure 4.1) - Permanent closure Gulf-wide of the near shore waters to use of fish traps, power heads, and roller trawls (i.e., "rock hopper trawls") (48,400 square nautical miles).

Alabama Special Management Zone (SMZ) (Figure 4.6) In the Alabama SMZ, fishing by a vessel operating as a charter vessel or headboat, a vessel that does not have a commercial permit for Gulf reef fish, or a vessel with such a permit fishing for Gulf reef fish, is limited to hook-and-line gear with no more than 3 hooks. Nonconforming gear is restricted to bag limits, or for reef fish without a bag limit, to 5% by weight of all fish aboard.

Additionally, Generic Amendment 3 for addressing EFH requirements (GMFMC 2005a) requires a weak link in the tickler chain of bottom trawls on all habitats throughout the GOM EEZ. A weak link is defined as a length or section of the tickler chain that has a breaking strength less than the chain itself and is easily seen as such when visually inspected. Also, the amendment establishes an education program on the protection of coral reefs when using various fishing gears in coral reef areas for recreational and commercial fishermen.

4.2 Biological Environment

The biological environment of the Gulf of Mexico, including the species addressed in this amendment, is described in detail in the final EIS for the Generic Essential Fish Habitat amendment and is incorporated here by reference (GMFMC 2004a).

4.2.1 Shrimp

4.2.1.1 Penaeid Shrimp Life History and Biology

Brown, white, and pink shrimp use a variety of habitats as they grow from planktonic larvae to spawning adults (GMFMC 1981). Brown shrimp eggs are demersal and occur offshore. The larvae occur offshore and begin to migrate to estuaries as postlarvae. Postlarvae migrate through passes on flood tides at night mainly from February - April with a minor peak in the fall. Postlarvae and juveniles are common to highly abundant in all U.S. estuaries from Apalachicola Bay in the Florida panhandle to the Mexican border. In estuaries, brown shrimp postlarvae and juveniles are associated with shallow vegetated habitats but also are found over silty sand and non-vegetated mud bottoms. Adult brown shrimp occur in neritic Gulf waters (i.e., marine waters extending from mean low tide to the edge of the continental shelf) and are associated with silt, muddy sand, and sandy substrates. More detailed discussion on habitat associations of brown shrimp is provided in Nelson (1992) and Pattillo et al. (1997).

White shrimp are offshore and estuarine dwellers and are pelagic or demersal, depending on life stage. The eggs are demersal and larval stages are planktonic; both occur in nearshore marine waters. Postlarvae migrate through passes mainly from May-November with peaks in June and

September. Juveniles are common to highly abundant in all Gulf estuaries from Texas to about the Suwannee River in Florida. Postlarvae and juveniles inhabit mostly mud or peat bottoms with large quantities of decaying organic matter or vegetative cover. Migration from estuaries occurs in late August and September and appears to be related to size and environmental conditions (e.g., sharp temperature drops in fall and winter). Adult white shrimp are demersal and generally inhabit nearshore Gulf waters to depths less than 30 m on bottoms of soft mud or silt. See Nelson (1992) and Pattillo et al. (1997) for more detailed information on habitat associations of white shrimp.

Pink shrimp occupy a variety of habitats, depending on their life stage. Eggs and early planktonic larval stages occur in marine waters. Eggs are demersal, whereas larvae are planktonic until the postlarval stage when they become demersal. Juveniles inhabit almost every U.S. estuary in the Gulf but are most abundant in Florida. Juveniles are commonly found in estuarine areas with seagrass where they burrow into the substrate by day and emerge at night. Adults inhabit offshore marine waters with the highest concentrations in depths of 9 to 44 m.

4.2.1.2 Status of the Penaeid Shrimp Stocks

The three principal species (penaeids) of shrimp harvested by the shrimp fishery are short-lived and provide annual crops. The condition of each shrimp stock is monitored annually, and none has been classified as being overfished for over 40 years (Nance, 2005; Hart and Nance, 2005).

Brown shrimp is the most important species in the U.S. Gulf fishery with principal catches made from June through October. Annual commercial landings in recent years range from approximately 61 to 103 million pounds of tails depending on environmental factors influencing natural mortality. The fishery extends offshore to about 40 fathoms. White shrimp, second in value, are found in near shore waters to about 20 fathoms from Texas through Alabama. There is a small spring and summer fishery for overwintering individuals, but the majority is taken from August through December. Recent annual commercial landings range from approximately 36 to 71 million pounds of tails. Pink shrimp are found off all Gulf States but are most abundant off Florida's west coast and particularly in the Tortugas grounds off the Florida Keys. Most landings are made from October through May with annual commercial landings range from approximately 6 to 19 million pounds of tails. In the northern and western Gulf states, pink shrimp are landed mixed with brown shrimp and are usually counted as browns. Most catches are made within 30 fathoms.

4.2.3 Protected Species

Species in the Gulf of Mexico protected under the Endangered Species Act (ESA) include: Six marine mammal species (blue, sei, fin, humpback, sperm, and North Atlantic right whales); five sea turtles (Kemp's Ridley, loggerhead, green, leatherback, and hawksbill); and two fish species (Gulf sturgeon and smalltooth sawfish). Twelve species of fish in the GOM are currently on the candidate list, two of which are reef fish [note: the goliath grouper was removed from the list of species of special concern in 2006 (NMFS 2006)]. For more complete descriptions, refer to the final EIS to the Council's Generic EFH amendment (GMFMC, 2004a) and the recently completed a biological opinion for Reef Fish Amendment 23 (NMFS, 2005b). These reports contain the most updated information on GOM protected species at this time.

The biological opinion prepared for Reef Fish Amendment 23 (NMFS, 2005b) evaluated the effects of all fishing activity authorized under the FMP on threatened and endangered species, in accordance with section 7 of the ESA. The biological opinion, which was based on the best available commercial and scientific data, concluded the continued operation of the GOM reef fish fishery is not likely to jeopardize the continued existence of threatened or endangered species. This fishery is also classified in the 2005 List of Fisheries as a Category III fishery (71 FR 247). This classification indicates the annual mortality and serious injury of a marine mammal stock resulting from any fishery is less than or equal to 1% of the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population. However, an incidental take statement was issued specifying the amount and extent of anticipated take, along with reasonable and prudent measures deemed necessary and appropriate to minimize the impact of these takes. Terms and conditions to address reporting requirements identified as reasonable and prudent measures will not require any additional regulatory action because existing NMFS monitoring and reporting programs and associated regulations are adequate. However, measures are needed to ensure any caught sea turtle or smalltooth sawfish incidentally caught by the fishery is handled in such a way as to minimize stress to the animal and increase its survival rate. The Council addressed these measures in Reef Fish Amendment 18A.

For the shrimp fishery, the most recent opinion on the Shrimp FMP was completed on December 2, 2002 (NMFS 2002). This non-jeopardy opinion analyzed the effects of all shrimp trawling in the southeastern United States. The incidental take specified in that opinion has not been exceeded. Since that opinion was completed, no new information has emerged revealing effects of the action that may affect the listed species in the GOM that were analyzed in that opinion (i.e., sea turtles and whales) in a manner or to an extent not previously considered. A new species has been listed, as well as critical habitat designated for an already listed species, since the last consultation. Gulf sturgeon critical habitat, designated on March 19, 2003, is not located in the action area, thus will not be affected. However, the smalltooth sawfish, which was listed as endangered on April 1, 2003, does occur in the action area and may be affected based on its previous incidental capture in this fishery.

Otter trawls may directly affect smalltooth sawfish that are foraging within or moving through an active trawling location via direct contact with the gear. The long, toothed rostrum of the smalltooth sawfish causes this species to be particularly vulnerable to entanglement in any type of netting gear, including the netting used in shrimp trawls. The saw penetrates easily through nets, causing the animal to become entangled when it attempts to escape. Mortality of entangled smalltooth sawfish is believed to occur as a result of the net being out of the water for a period of time with the smalltooth sawfish hanging from it before being disentangled (Simpfendorfer, pers. comm. 2005). Despite increased effort placed on collecting smalltooth sawfish data since NMFS was petitioned to list the smalltooth sawfish in 1999 (e.g., Simpfendorfer and Wiley 2004, Poulakis and Seitz 2004), records of incidental capture in shrimp trawls are rare.

4.3 Economic and Social Environment

4.3.1 Economic Environment

Section 6 contains a detailed description of the economic environment potentially affected by the measures in this amendment and is incorporated herein by reference.

4.3.2 Social Environment

4.3.2.1. Shrimp Fishery

When examining the Gulf shrimp fishery's social as opposed to economic environment, the focus of the discussion shifts primarily from vessels and firms to people and places (i.e. communities), though obviously vessels and firms are a part of those communities. At this time, there is very little detailed information on fishermen, fishing-dependent businesses, or communities that depend on the Gulf shrimp fishery. In order to understand the impact that any new rules and regulations will have on participants in the fishery, in-depth community profiles need to be developed that will aid in the description of communities involved in this fishery, both present and historical. Social science research is currently being conducted by NMFS in communities in the Gulf of Mexico. Part of this research is being conducted under contract with Impact Assessment, Inc. (IAI). The purpose of this phase of the research is to compile baseline information regarding communities in each Gulf state, which are believed to have some level of association with marine fisheries. That is, based on a full range of descriptive information and analyses, IAI developed a basic typology of the study communities and their involvement with marine fisheries and related industries. NMFS will eventually use this information to determine which communities are "fishing communities," as per the meaning of the term under National Standard 8. In general, "fishing communities" are communities which are "substantially dependent on or substantially engaged in" fishing or fishing related activities. At this time, the NMFS has only received the final report for Louisiana and, most recently, a draft of the report for west Florida. Only the Louisiana report will be referenced for current purposes. Until all of the research is completed, and in-depth community profiles are developed for some sample communities, it is not possible to fully describe the possible impacts of any change in federal fishing regulations in the federal Gulf shrimp fishery.

Nonetheless, it is possible to look at the geographic distribution of landings and revenues, vessels, primary permit owners[1], dealers/wholesalers, and processors. Such information should be useful in gauging the fishery's importance to particular communities, and the importance of certain communities to the fishery. At least for Louisiana communities, some insights can be offered with respect to impacts on communities that are potentially "fishing communities," within the meaning of National Standard 8. Further, by comparing basic demographic information of communities associated with the Gulf shrimp fishery to national averages, it should be possible to discern whether any of these communities are socioeconomically is advantaged, and thus whether impacts on them should be given special consideration, as per Executive Order 12898.

Permit owners are geographically distributed across 332 different communities (Table 4.3). Though the vast majority reside in Gulf states, a fair number reside in many other states, ranging from the South and Mid-Atlantic States, and even the west coast of the U.S. The geographic distribution of permit and vessel ownership is important since, when federal regulations are imposed on permitted vessels which experience adverse impacts, it can generally be assumed that they will be most keenly felt in the communities with the largest number of permit owners. The data indicate that the Texas communities of Brownsville, Port Isabel, Palacios, and Port

[1] "Primary" in this case means the individual or business to whom the permit was actually issued, even though there may be more than one owner.

Arthur are home to more than 16% of the federal permit owners. Other Texas communities where permit ownership is relatively important are Freeport, Port Lavaca, and Aransas Pass. In Louisiana, permit ownership is prevalent in the communities of Cut Off, Chauvin, New Orleans, Houma, and
Abbeville[2]. In Mississippi, Biloxi and Ocean Springs are the primary hubs of permit ownership. In Alabama, permit ownership is concentrated in Bayou La Batre and in Florida, Ft. Myers Beach is clearly the dominant community with respect to permit ownership, particularly if Ft. Myers is included.

The information presented in Table 4.4 regarding the distribution of food shrimp dealers, landings, and sales by community provides additional insights into the importance of the shrimp fishery to particular communities, and their importance to the fishery. Some of the communities that appear to be most important are similar to those with the greatest number of vessel permit owners. However, differences do exist. Some of these differences are likely because the distribution of permit owners only considers vessels that are permitted for the EEZ fishery, whereas the information in Table 4.4 pertains to all Gulf food shrimp landings, regardless of whether they came from federal or state waters. Specifically, in addition to the communities with concentrations of permit ownership, the communities of Dulac, Golden Meadow, Empire, Grand Isle, and Venice in Louisiana, Port Bolivar and Galveston in Texas, and Key West in Florida also appear to have very strong relationships with the Gulf shrimp fishery. Conversely, the association between the fishery and the Louisiana communities of Houma and New Orleans appear to be less strong by these standards. Such is the case even more so with Pt. Lavaca, Texas and Ocean Springs, Mississippi. These findings illustrate that fishing vessel owners do not always live where their product is being bought and sold[3].

Though shrimp sales and landings volume are potentially important indicators of a community's ties to the fishery, also of interest is the number of vessels that supply shrimp to dealers in each community. More so than volume and sales, number of vessels is indicative of how many fishermen and fishing households have a relationship with a particular community. This information is presented in Table 4.5. Note that, in this case, all known Gulf shrimp vessels are taken into account. In Table 4.6, only federally permitted Gulf shrimp vessels are considered. There are significant differences between the two, which in turn reflect differences between communities and their relationship with harvesters whose activities predominantly take place in the EEZ as opposed to state waters. For example, when taking all vessels into account, communities in Louisiana occupy nine of the top ten spots within the ranking (Dulac, Golden Meadow, Grand Isle, Lafitte, Venice, Chauvin, Empire, Houma, and New Orleans) with only Port Arthur being the non-Louisiana community in that group. Conversely, when only looking at federally permitted vessels, four communities in both Texas (Port Arthur, Palacios, Brownsville, and Freeport) and Louisiana (Dulac, Abbeville, Grand Isle, and Golden Meadow) rank in the top ten, along with Ft. Myers Beach, Florida and Bayou La Batre, Alabama. In general, it is fairly clear that many communities in Louisiana have stronger ties to vessels that operate in state

[2] According to IAI's research, New Orleans should likely not be considered a single community, but rather a "supra" community composed of several "sub-communities." This issue deserves further research.

[3] Note that the information in this table was compiled according to where the shrimp were bought and sold, which is oftentimes different from the port of landing (i.e. where the shrimp cross the dock) since product is often trucked from a port to a dealer that may be in a different community. For this analysis, vessel counts were not presented according to port of landing since, within the SLF, the "port" code is oftentimes a county or parish, which does not allow the analyst to determine the specific community where the vessel is docked.

waters, while several communities in Texas are more closely aligned with federally permitted vessels. For example, Lafitte, Chauvin, Empire, Houma, and New Orleans have much stronger relationships with vessels that operate in state as opposed to federal waters, while the opposite is true for Port Arthur, Palacios, Bayou La Batre, Brownsville, Freeport, Biloxi, Sabine Pass, and Ft. Myers Beach.

Because of the decline in the number of shrimp processors and the resulting fact that most communities only have one or two shrimp processors, and the "rule of three" which requires NMFS to protect businesses' confidential information, very little detailed information regarding processing activities can be revealed at the community level. Nonetheless, the ranking should provide some insights into approximately how important shrimp processing activities are to the 39 communities listed in Table 4.7. Some observations are worthy of noting.

First, the processors in Lakeland and Dover, Florida are obviously very important within the industry. However, given their inland locations and the fact that no domestic shrimp dealers are located in these communities, it is quite likely that these processors rely mostly if not entirely on imported product[4]. Most of the other communities appear to have a very strong or at least some relationship with domestic harvesters and dealer/wholesalers. Further, with the exceptions of processors in Dallas, Kemah, Seadrift, and Port O'Connor, Texas, and two additional processors in Saraland, Alabama and Panacea, Florida, the other processors and thus their communities rely heavily if not entirely on shrimp with respect to their processing activities. Again, how much of that shrimp comes from domestic production cannot be known with certainty, though Keithly et. al's (2005) analysis suggests a likely estimate of 60%. Communities that appear to have a very strong relationship with shrimp processing activities, though not nearly as much so with harvesting and wholesaling activities, would include Delcambre, Louisiana, Tampa, Florida, D'Iberville, Mississippi, and Bon Secour, Alabama. Undoubtedly, many of the processors in these communities receive product from nearby communities that have closer ties to harvesters and dealers. For example, recent field research suggests a strong relationship between dealer/wholesalers and vessel owners in Abbeville, Louisiana, who also have a strong relationship with vessels ported in Intracoastal City, Louisiana, with processors in Delcambre, Louisiana.

Upon taking into account all of the presented placed-based information regarding the Gulf shrimp fishery, some ranking of communities according to the strength of their relationship with the fishery should be possible. Although this ranking is somewhat subjective, it does take into account all of the place-based factors that have been discussed, both in terms of how high each community ranked and how many factors for which it was highly ranked. Some emphasis has been placed on factors that are specific to the EEZ component of the fishery, and thus this ranking should be seen in this light. The rankings are presented in Table 4.8. It is worth noting that the top four ranked communities (Brownsville, Port Arthur, Port Isabel, and Palacios) are all in Texas.

In addition to the place-based fishery data above, additional information can be gleaned by looking at the socio-demographic composition of these communities. As per Executive Order 12898, of specific interest are communities that have relatively high percentages of minorities, communities which are lower than average with respect to important socioeconomic factors,

[4] This hypothesis has in fact been confirmed by several industry representatives.

such as level of education, average household income, and poverty rates, and communities which have a relatively strong economic dependence on the fishing industry in general. These factors would be evaluated relative to national averages. For example, nationally, slightly more than 29% of the population is composed of minorities: Blacks/African Americans (12.3%), American Indians/Native Alaskans (0.9%), Asians (3.6%), and Hispanics/Latinos (12.5%). Average household income is $41,994 and 12.4% of the population lives in poverty. Over 80.4% of the population have a high school education or better, while 24.4% have a bachelor's degree or higher. This information generally comes from the Census Bureau (2000) but, in the case of some Louisiana communities, additional insights were gleaned from IAI's report (2004) regarding the identification of fishing communities. For current purposes, the focus is on the communities noted above that have the strongest relationship with the fishery.

Upon an analysis of the Census data for each community, many communities (24) appear to be relatively vulnerable to social and economic impacts as a result of adverse management changes, or adverse changes due to other factors. That is, these communities would find it more difficult to adjust to or "absorb" adverse impacts because, relative to other communities, they lack the sufficient human, physical, and financial capital to do so. From a social justice perspective, the impacts of the Gulf shrimp fishery management changes on these communities should be given additional consideration. More specifically, the twenty-four communities can be subjectively broken into three groups: 1) communities which reflect all five of the attributes noted above (Group 1), 2) communities which indicate at least four of the attributes noted above (Group 2), and 3) communities that exhibit at least three of the attributes noted above(Group 3). Within each of those groups, there are seven, fifteen, and two communities, respectively. The identities of communities falling into each group are listed in Table 4.9 below. Communities in the first group would be the most vulnerable (i.e. least able to adapt), followed by those in the second and third groups, respectively. Note that, according to IAI's research, Dulac, Empire, Abbeville, Golden Meadow, Venice, Chauvin, Cameron, Montegut, Houma, and Delcambre, Louisiana were determined to be primarily involved with marine fisheries, while Boothville and Grand Isle, Louisiana were determined to be secondarily involved with marine fisheries. Specific attributes of each community are developed in more detail in Shrimp Amendment 13 (GMFMC 2005).

4.4 Administrative Environment

4.4.1 Federal Fishery Management

Federal fishery management is conducted under the authority of the Magnuson-Stevens Act (16 U.S.C. 1801 et seq.), originally enacted in 1976 as the Fishery Conservation and Management Act. The Magnuson-Stevens Act claims sovereign rights and exclusive fishery management authority over most fishery resources within the EEZ, an area extending 200 nautical miles from the seaward boundary of each of the coastal states, and authority over US anadromous species and continental shelf resources that occur beyond the EEZ.

Responsibility for federal fishery management decision-making is divided between the Secretary and eight regional fishery management councils that represent the expertise and interests of constituent states. Regional councils are responsible for preparing, monitoring, and revising management plans for fisheries needing management within their jurisdiction. The Secretary is responsible for promulgating regulations to implement proposed plans and amendments after ensuring management measures are consistent with the Magnuson-Stevens Act and with other

applicable laws summarized in Section 10. In most cases, the Secretary has delegated this authority to NMFS.

The Council is responsible for fishery resources in federal waters of the GOM. These waters extend to 200 nautical miles offshore from the nine-mile seaward boundary of the states of Florida and Texas, and the three-mile seaward boundary of the states of Alabama, Mississippi, and Louisiana. The length of the GOM coastline is approximately 1,631 miles. Florida has the longest coastline of 770 miles along its Gulf coast, followed by Louisiana (397 miles), Texas (361 miles), Alabama (53 miles), and Mississippi (44 miles).

The Council consists of seventeen voting members: 11 public members appointed by the Secretary; one each from the fishery agencies of Texas, Louisiana, Mississippi, Alabama, and Florida; and one from NMFS. The public is also involved in the fishery management process through participation on advisory panels and through council meetings that, with few exceptions for discussing personnel matters, are open to the public. The regulatory process is also in accordance with the Administrative Procedures Act, in the form of "notice and comment" rulemaking, which provides extensive opportunity for public scrutiny and comment, and requires consideration of and response to those comments.

Regulations contained within FMPs are enforced through actions of the NOAA's Office of Law Enforcement, the USCG, and various state authorities. To better coordinate enforcement activities, federal and state enforcement agencies have developed cooperative agreements to enforce the Magnuson-Stevens Act. These activities are being coordinated by the Council's Law Enforcement Advisory Panel and the Gulf States Marine Fisheries Commission's (GSMFC) Law Enforcement Committee have developed a 5-year "GOM Cooperative Law Enforcement Strategic Plan - 2001-2006."

4.4.2 State Fishery Management

The purpose of state representation at the council level is to ensure state participation in federal fishery management decision-making and to promote the development of compatible regulations in state and federal waters. The state governments of Texas, Louisiana, Mississippi, Alabama, and Florida have the authority to manage their respective state fisheries. Each of the five Gulf States exercises legislative and regulatory authority over their states' natural resources through discrete administrative units. Although each agency is the primary administrative body with respect to the states natural resources, all states cooperate with numerous state and federal regulatory agencies when managing marine resources. A more detailed description of each states primary regulatory agency for marine resources is provided in Amendment 22 (GMFMC 2004b).

5.0 ENVIRONMENTAL CONSEQUENCES

5.1 Direct and Indirect Effects on the Physical Environment

5.2 Direct and Indirect Effects on the Biological/Ecological Environment

5.3 Direct and Indirect Effects on the Economic/Social Environment

7.6 Identification of All Relevant Federal Rules, which may Duplicate, Overlap or Conflict with the Proposed Rule

7.7 Substantial Number of Small Entities Criterion

7.8 Significant Economic Impact Criterion

7.9 Description of Significant Alternatives to the Proposed Rule and Discussion of how the Alternatives Attempt to Minimize Economic Impacts on Small Businesses

7.10 Conclusion

8.0 OTHER APPLICABLE LAW

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10.0 LIST OF AGENCIES, ORGANIZATIONS, AND PERSONS TO WHOM COPIES OF THE AMENDMENT/SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT ARE SENT

Gulf of Mexico Fishery Management Council

Law Enforcement Advisory Panel
Red Snapper Advisory Panel
Shrimp Advisory Panel
Standing Scientific and Statistical Committee (SSC) and Special Reef Fish and Shrimp SSC

Coastal Zone Management Programs

Alabama, Florida, Louisiana, Mississippi, and Texas

Other Agencies, Organizations, or Persons

Alabama Cooperative Extension Service
Alabama Department of Conservation and Natural Resources, Marine Resources Division
Florida Fish and Wildlife Conservation Commission
Florida Sea Grant
Louisiana Cooperative Extension Service
Louisiana Department of Wildlife and Fisheries
Mississippi Cooperative Extension Service
Mississippi Department of Marine Resources

National Marine Fisheries Service Southeast Regional Office
National Marine Fisheries Service Southeast Fisheries Science Center
National Marine Fisheries Service Silver Spring Office
National Marine Fisheries Service Law Enforcement
Texas Cooperative Extension Service
Texas Parks and Wildlife Department
United States Fish and Wildlife Service
United States Coast Guard

11.0 PUBLIC HEARING LOCATIONS AND DATES

12.0 REFERENCES

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TABLES

14.0 FIGURES

15.0 APPENDICES

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